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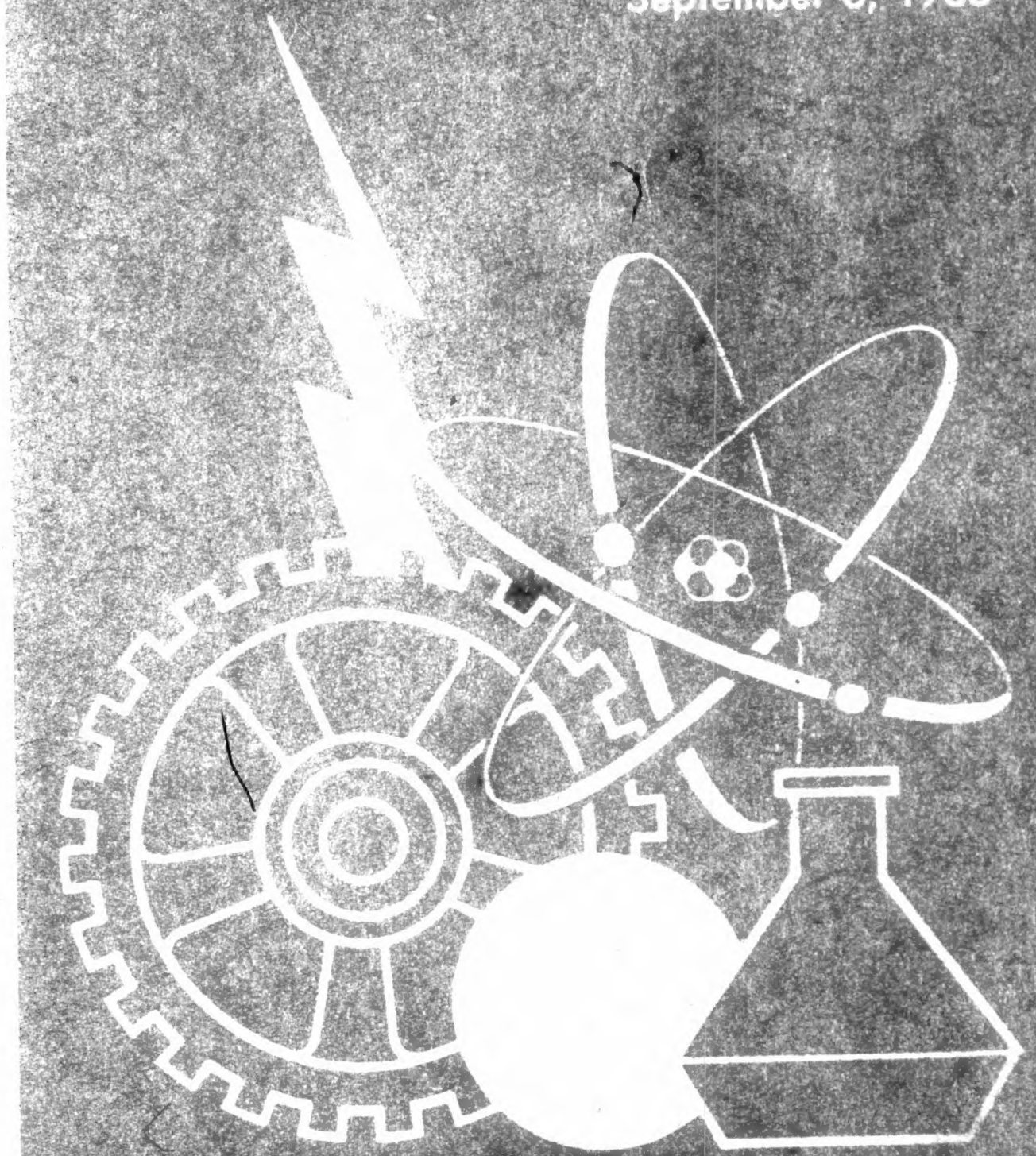
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

September 6, 1983



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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

September 6, 1983 Volume 1034 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Dec. 3, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,209,993, Re. S.N. 508,208, Filed June 27, 1983, Cl. 62/080, EFFICIENCY AIR CYCLE ENVIRONMENTAL CONTROL SYSTEM, George C. Rannenberg, Owner of Record: *United Technologies Corp., Hartford, Conn.,* Attorney or Agent: Richard N. James, Ex. Gp.: 344

4,275,212, Re. S.N. 507,896, Filed June 24, 1983, Cl. 546/290, METHOD OF PREPARING PYRIDINYLOXYPHENOLS AND DERIVATIVES, Jon A. Orvik, Owner of Record: *Dow Chemical Co., Midland, Mich.,* Attorney or Agent: Richard G. Waterman, Ex. Gp.: 121

4,275,986, Re. S.N. 508,076, Filed June 24, 1983, Cl. 414/730, PROGRAMMABLE AUTOMATIC ASSEMBLY SYSTEM, Joseph F. Engelberger, et al., Owner of Record: *Unimation, Inc., Danbury, Conn.,* Attorney or Agent: Reginald K. Bailey, Ex. Gp.: 314

4,354,449, Re. S.N. 508,384, Filed June 27, 1983, Cl. 118/126, TWO SIDED COATER, Stanley C. Zink, Owner of Record: *Black Clawson Co., Middletown, Ohio,* Attorney or Agent: Nathaniel R. French, Ex. Gp.: 162

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,169,290, Reexam. No. 90/000,432, Requested: Aug. 8, 1983, Cl. 364/900, DATA RECORDING METHOD AND APPARATUS, Alan C. Reed, et al., Owner of Record: *Utility Devices, Inc., Salt Lake City, Utah,* Attorney or Agent: Cushman, Darby and Cushman, Ex. Gp.: 237, Requester: Spensley, Horn, et al., Costa Mesa, Calif.

4,281,762, Reexam. No. 90/000,430, Requested: Aug. 5, 1983, Cl. 206/390, IN-STORE COUPON AND METHODS, James C. Hattemer, Owner of Record: *Graphic Resources, Inc., Cincinnati, Ohio,* Attorney or Agent: Wood, Herron & Evans, Ex. Gp.: 241, Requester: Graphic Resources, Inc., Cincinnati, Ohio

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Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their legal assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

VS Ltd., Philadelphia, Pa., Reg. No. 1,196,287, for the mark comprising a miscellaneous design, Can. No. 13,590.

Hosiery Corp. of America, Inc., assignee, by mesne assignment of Hosiery Promotions, Inc., Chicago, Ill., Reg. No. 749,155, for the mark "LOLA", Can. No. 13,601.

Dial-A-Car, Inc., Oklahoma City, Okla., Reg. No. 1,145,246, for the mark "DIAL-A-CAR" and design, Can. No. 13,639.

Comp-U-Plan Corp., Olando, Fla., Reg. No. 1,150,014, for the mark "PAR", Can. No. 13,706.

Allied Artists Corp., Bloomington, Minn., Reg. No. 1,195,395, for the mark "THE MYSTICS", Can. No. 13,736.

Sportempos, Inc., New York, N.Y., Reg. No. 919,811, for the mark "LE POLO SPORTSTEMPOS SPORTISSIMO" and design, Can. No. 13,747.

Coated Textile Mills, Inc., Pawtucket, R.I., Reg. No. 778,246, for the mark "DURA-GARD", Can. No. 13,766.

Phones Unlimited, Inc., Virginia Beach, Va., Reg. Nos. 1,122,101 and 1,122,102, for the marks "PHONES UNLIMITED" plus design and "PHONES UNLIMITED", Can. No. 13,774.

National Bellas Hess, Inc., assignee of National Bellas Hess Co., Inc., North Kansas City, Mo., Reg. No. 246,510, for the mark "GLADIATOR" and design, Can. No. 13,779.

Fairfield Sporting Goods, Inc., Chicago, Ill., Reg. No. 1,015,361, for the mark "KWIK STIX", Can. No. 13,809.

Vincove Winery, assignee of Vincent F. Coviello, d.b.a., Vincove Winery, Paterson, N.J., Reg. No. 421,196, for the mark "VINCOVE" and design, Can. No. 13,821.

ERMA S. BROWN,
Deputy Clerk of the Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

GEORGE KUDRAVETZ,
Program Manager,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 5-335,860 (3,911,120). PHOSPHONATED N,N-DI-SUBSTITUTED FATTY AMIDES AS BACTERICIDAL AND FUNGICIDAL AGENTS.

SN 5-448,429 (3,910,948). 1,3-DIACYL DERIVATIVES OF IMIDAZOLIDINE.

SN 6-202,032 (4,390,787). METHOD AND APPARATUS FOR AUTOMATIC EGG MASS COUNTING.

SN 6-337,044 (4,391,153). SEGMENTED FIBER SAMPLER.

SN 6-356,870 (4,390,360). CONTROL OF SICKLEPOD, SHOWY CROTALARIA, AND COFFEE SENNA WITH A FUNGAL PATHOGEN.

SN 6-370,019 (4,391,828). DIBUTYLORTHOBENZYLMETHOXYBENZENES AND DIBUTYLORTHOCINNAMYLMETHOXYBENZENES AS MOSQUITO LARVAE GROWTH INHIBITORS.

DEPARTMENT OF THE AIR FORCE

SN 6-171,614 (4,387,989). COHERENT OPTICAL FEATURE IDENTIFIER APPARATUS.

SN 6-192,406 (4,387,971). DYNAMIC DAMPING SYSTEM.

SN 6-200,226 (4,390,816). SCAN CORRECTED VIDICON CAMERA APPARATUS.

SN 6-216,103 (4,388,614). AUTOMATICALLY SEQUENCED SIGNALING SYSTEM.

SN 6-225,556 (4,387,344). PHOTON STORAGE TUBE HIGH POWER LASER SYSTEM.

SN 6-231,074 (4,387,955). HOLOGRAPHIC REFLECTIVE GRATING MULTIPLEXER/DEMULTIPLEXER.

SN 6-239,955 (4,390,854). BROAD BANDWIDTH SURFACE ACOUSTIC WAVE FILTER APPARATUS WITH STAGGERED TUNING.

SN 6-286,817 (4,387,467). SATELLITE TEST CHAMBER WITH ELECTROMAGNETIC REFLECTION AND RESONANCE DAMPING FOR SIMULATING SYSTEM GENERATED ELECTROMAGNETIC PULSES.

SN 6-300,761 (4,391,660). COPPER CONTAINING BALLISTIC ADDITIVES.

SN 6-304,123. THICK FILM RADIATION DETECTOR.

SN 6-308,976 (4,387,962). CORROSION RESISTANT LASER MIRROR HEAT EXCHANGER.

SN 6-442,494. SNOW SCALE/RATE METER.

SN 6-452,604. PULSE T RANSFORMER MOUNT FOR LASER DIODES.

SN 6-498,238. LASER CLOCK.

SN 6-498,334. SIMULTANEOUS NULLING IN THE SUM AND DIFFERENCE PATTERNS OF A MONOPULSE RADAR ANTENNA.

SN 6-498,335. INTEGRATED INSULATION WALL ASSEMBLY.

SN 6-501,944. HIGH THERMAL CAPACITANCE MULTILAYER THERMAL INSULATION.

SN 6-501,945. IMPROVED ABSOLUTE DISTANCE SENSOR.

SN 6-502,028. HIGH RESOLUTION PRINTING HEAD.

SN 6-502,771. METHOD AND APPARATUS FOR DETECTING ACOUSTIC EMISSIONS FROM METAL MATRIX WIRE.

SN 6-502,818. LOW HEIGHT FIN CONTROL ACTUATOR.

SN 6-504,353. CO_2LASER STABILIZATION AND SWITCHING.

SN 6-504,354. DEACTIVATION OF THIONYL CHLORIDE CELLS.

DEPARTMENT OF THE ARMY

SN 6-078,348 (4,389,947). BLAST SUPPRESSIVE SHIELDING.

SN 6-230,558 (4,390,838). BROADBAND MEASUREMENT SYSTEM.

SN 6-243,287 (4,391,178). LOGISTIC VEHICLE ARMOR.

SN 6-243,292 (4,392,084). SUSTAINER CIRCUIT FOR PLASMA DISPLAY PANELS.

SN 6-255,906 (4,391,196). ADD-ON IGNITER FOR PYROGEN TYPE IGNITER.

SN 6-267,126 (4,389,918). AMMUNITION BELT FEED MAGAZINE SYSTEM.

SN 6-311,368 (4,385,055). 2-ACETYL-AND 2-PROPIONYLPYRIDINE THIOSEMICARBAZONES AS ANTIMALARIALS.

SN 6-316,575 (4,391,799). PROTECTIVE GEL COMPOSITION FOR TREATING WHITE PHOSPHORUS BURN WOUNDS.

SN 6-322,503 (4,391,678). METHODS OF MAKING INFRARED DETECTOR ARRAY COLD SHIELD.

SN 6-330,117 (4,390,271). PROCESS FOR PRODUCING ORTHOGRAPHIC PROJECTION IMAGE OF COMPLEX TERRAIN/TARGETS FROM AN AUTOMATIC SYSTEM USING TWO PHOTOGRAPHS.

SN 6-496,366. PROCESS OF AND APPARATUS FOR LASER ANNEALING OF FILM-LIKE SURFACE LAYERS OF CHEMICAL VAPOR DEPOSITED SILICON CARBIDE AND SILICON NITRIDE.

SN 6-501,687. AUTOMATED DESIGN PROGRAM FOR LSI AND VLSI CIRCUITS.

SN 6-505,666. MILLIMETER-WAVE CUT-OFF SWITCH.

SN 6-505,667. MONOLITHIC MILLIMETER-WAVE ELECTRONIC SCAN ANTENNA USING SCHOTTKY BARRIER CONTROL AND METHOD FOR MAKING SAME.

SN 6-505,668. MILLIMETER-WAVE ELECTRONIC PHASE SHIFTER USING SCHOTTKY BARRIER CONTROL.

DEPARTMENT OF COMMERCE

SN 6-266,484 (4,391,969). MODIFIED SULFUR CEMENT.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-250,840. CROSS-SLICE DATA ACQUISITION SYSTEM FOR PET SCANNER.
SN 6-284,089 (4,390,699). 6-KETO-MORPHINANS BELONGING TO THE 14-HYDROXY-SERIES.
SN 6-266,379 (4,390,026). ULTRASONIC THERAPY APPLICATOR THAT MEASURES DOSAGE.
SN 6-494,378. OPTICAL COUPLING DEVICE FOR BIOMICROSCOPE.
SN 6-496,275. BROADBAND ISOTROPIC PROBE SYSTEM FOR SIMULTANEOUS MEASUREMENT OF COMPLEX E- AND H-FIELDS.
SN 6-497,839. ARABINOSYL 5-AZACYTOSINE (ARA-AC) USED AS AN ANTITUMOR AGENT FOR HUMAN TUMOR ZENOGRAFTS.

DEPARTMENT OF THE INTERIOR

SN 6-219,705 (4,389,900). CAPACITANCE PROBE SENSOR DEVICE.
SN 6-267,506 (4,389,896). BOREHOLE GAUGE FOR IN-SITU MEASUREMENT OF STRESS AND OTHER PHYSICAL PROPERTIES.

DEPARTMENT OF AGRICULTURE

SN 4-780,596 (3,586,712). ATTRACTANT FOR PINK BOLLWORM MOTHS.
SN 5-194,475 (3,736,231). PREPARATION OF INSOLUBILIZED ENZYMES.
SN 5-908,601 (4,394,447). PRODUCTION OF HIGH-PYRUVATE XANTHAN GUM ON SYNTHETIC MEDIUM.
SN 6-193,581 (4,393,862). SOLAR AIR DUCT.

DEPARTMENT OF THE AIR FORCE

SN 5-938,993 (4,383,664). VIBRATION SUPPRESSING TRUNK FINGERS FOR AIR CUSHION DEVICES.
SN 6-249,255 (4,384,469). PITOT-STATIC TESTER TUBE.
SN 6-277,489 (4,384,749). RELIABILITY ROLLER BEARING.
SN 6-267,938 (4,381,884). ADJUSTABLE HOLDER FOR AN OPTICAL ELEMENT.
SN 6-279,137 (4,383,867). SOLVENT MIXTURE FOR REMOVING CURED POLYURETHANE COATINGS.
SN 6-281,437 (4,385,198). GALLIUM ARSENIDE-GERMANIUM HETEROFACE JUNCTION DEVICE.
SN 6-300,839 (4,385,938). DUAL SPECIES ION IMPLANTATION INTO GAAS.
SN 6-324,347. PROGRAMMABLE DIGITAL TEMPERATURE CONTROLLER APPARATUS.
SN 6-332,784 (4,384,344). LAYOUT FOR SINGLE LEVEL BLOCK ACCESS CHIP.
SN 6-342,988 (4,382,144). SYNTHESIS OF ARYLENE BIS-SILANOLS.
SN 6-347,227 (4,384,198). TIME SHARED APERTURE DEVICE.
SN 6-465,230. WINDBLAST LEG PROTECTOR ASSEMBLY.
SN 6-475,676. INTEGRATED MULTIPERTURE OPTICAL SYSTEM.
SN 6-491,108. TRI-STATE TYPE DRIVER CIRCUIT.
SN 6-493,387. PRINTED CIRCUIT BALUN.
SN 6-497,444. FIBER OPTIC DATA DISTRIBUTION FOR PHASED ARRAY ANTENNA.
SN 6-497,447. PHASE-LOCKED VOLTAGE CONTROLLED OSCILLATOR APPARATUS FOR LINEAR OR COMPLEX FREQUENCY MODULATED WAVEFORMS.
SN 6-498,336. QUARTZ CRYSTAL RESONATORS.

DEPARTMENT OF COMMERCE

SN 6-272,231 (4,393,699). PNEUMATIC ADHESION TESTER.
SN 6-465,942. METHOD AND APPARATUS UTILIZING CRYSTALLINE COMPOUND SUPERCONDUCTING ELEMENTS HAVING EXTENDED STRAIN OPERATING RANGE CAPABILITIES WITHOUT CRITICAL CURRENT DEGRADATION.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-497,839. ARABINOSYL 5-AZACYTOSINE (ARA-AC) USED AS AN ANTITUMOR AGENT FOR HUMAN TUMOR XENOGRAFTS.
SN 6-500,832. TRANSFORMING GROWTH FACTOR-BETA FROM HUMAN PLATELETS.
SN 6-500,927. TRANSFORMING GROWTH FACTOR-BETA FROM HUMAN PLACENTAS.
SN 6-508,323. GENETIC REASSORTMENT OF ROTAVIRUSES FOR PRODUCTION OF VACCINES AND VACCINE PRECURSORS.

DEPARTMENT OF THE INTERIOR

SN 6-278,038 (4,394,051). METHOD OF HYDROSPALLING.
SN 6-317,638 (4,394,142). WATER SPRAY COOLER.
SN 6-327,539 (4,394,368). HIGH TEMPERATURE HYDROLYSIS OF ALUMINUM SULFATE SOLUTIONS.

Errata

The following registration numbers were inadvertently canceled in the "Trademarks Registrations Cancelled, Section 8" section of the Official Gazettes listed below:

986,906	TM 128	Dec. 16, 1980
1,064,401	TM 208	May 10, 1983
1,056,120	TM 122	June 7, 1983

Consequently, the above identified registrations are still active.

MARK M. NEWMAN
Director, Trademark Examining Operation.

Aug. 12, 1983.

Errata

The following registration numbers were inadvertently renewed in the "Trademark Registrations Renewed" section of the Official Gazettes listed below:

740,712	TM 147	Mar. 1, 1983
393,230	TM 148	Aug. 3, 1982

Consequently, the above identified registrations are not renewed..

MARK M. NEWMAN
Director, Trademark Examining Operation.

Aug. 12, 1983.

Patents Available for License or Sale

3,620,043. SPLINE-TYPE PIVOTS, UNIVERSAL JOINTS AND FLEXIBLE COUPLINGS. *James A. Oliff, Esq.*, Parkhurst & Oliff, 277 S. Washington St., Alexandria, Va. 22314. (703) 836-6400.

3,798,374. SOUND REPRODUCING SYSTEM UTILIZING MOTIONAL FEEDBACK. *Stanley Thayer Meyers*, 122 N. Riverside Ave., Red Bank, N.J. 07701.

3,809,048. MULTIPLE-ARM CROSSBOW. *Carl E. Handford,* R. R. #2, Box 75, Winchester, Ind. 47394.

4,136,764. MOTHER ALICE BREAD VENDING MACHINE. *Alice Johnson,* 8650 Belford Ave., Los Angeles, Calif. 90045.

4,197,671. KINEMATIC OPTICAL DEVICE. *Walter Debrouwer,* 305 Norwegian Ave., Modesto, Calif. 95350.

4,213,540. TYPE-BREAD BOX DISPENSER. *Louise A. Stanford,* 2009 Brighton Rd., Avondale, Md. 20782.

4,291,660. RECYCLING EXHAUST FUMES VALVE. *Isaac Molyneaux,* P.O. Box 813, Jamaica, N.Y. 11430.

4,302,883. EXACTO-MAC. *J. Philip Smyth,* Exacto-Mac Limited Partnership, c/o Thomspson, Weir & Barclay, P.O. Box 2044, New Haven, Conn. 06521.

4,303,915. SILENT COMMUNICATOR. *Mark C. Jacobs,* 2755 Cottage Way, Suite 5, Sacramento, Calif. 95825.

4,353,537. SECURING AND CLAMPING DEVICE. *James Koufos,* 22188 Harrisburg, Wstv. Rd., Alliance, Ohio 44601.

4,357,137. SHAFT COUPLING. *James A. Oliff, Esq.,* Parkhurst & Oliff, 277 S. Washington St., Alexandria, Va. 22314. (703) 836-6400.

4,377,727. STETHOSCOPE HAVING MEANS FOR MEASURING PULSE FREQUENCY. Correspondence to: *Joseph C. Schwalbach,* 1010 Second Ave., Suite 1607, San Diego, Calif. 92101.

4,379,541. HOLDER FOR CONTAINER. *Donald M. Harkness,* Christchurch, New Zealand. Correspondence to: Holman & Stern, 2401 Fifteenth St., N.W., Washington, D.C. 20009.

4,388,741. AUTOMATIC SEWER. *E. C. Breon,* 13807 A Dragline, Austin, Tex. 78728.

4,395,640. SPECIAL ELECTRICAL CONVENIENCE OUTLET (SECO). Correspondence to: *James F. Cottone,* 2001 Jefferson Davis Hwy., Ste. 1008, Crystal Plz. 1, Arlington, Va. 22202.

4,398,368. FISH CATCHER, *Chikao Nishi.* Correspondence to: Koda and Androlia, 1880 Century Park East, Suite 519, Los Angeles, Calif. 90067.

The General Electric Co. is prepared to grant non-exclusive licenses under the following patents on reasonable terms to domestic manufacturers and requests publication of this notice in the Official Gazette:

Applications for licenses should be addressed to: Technology Programs Patent Counsel, Power Systems Sector, General Electric Co., 1 River Rd., Bldg. #2, Rm. 413, Schenectady, N.Y. 12345

3,310,433. CERAMIC ARTICLE COATED WITH SILVER CONTAINING OXYGEN AND METHOD OF MAKING SAME.

3,548,222. THERMIONIC POWER GENERATION APPARATUS.

3,551,708. HEAT SHIELDED THERMIONIC CONVERTER.

3,650,844. DIFFUSION BARRIERS FOR SEMICONDUCTIVE THERMOELECTRIC, GENERATOR ELEMENTS.

3,652,421. N-TYPE LEAD TELLURIDE.

3,708,704. THERMIONIC CATHODES FOR MHD GENERATORS.

3,715,241. DOPED TIN TELLURIDE BRAZING MATERIAL FOR SEMICONDUCTIVE THERMOELECTRIC GENERATOR ELEMENTS.

3,750,399. COMBUSTOR-BOILER FOR RANKINE-CYCLE ENGINES.

3,769,570. AC-DC CONVERTER CIRCUIT FOR MINIMIZING HARMONICS.

3,811,849. REFACTORY BODIES AS FIXED BED COAL GASIFICATION DILUENTS.

3,821,358. CLOSED-CYCLE THERMOCHEMICAL PRODUCTION OF HYDROGEN AND OXYGEN.

3,821,362. HYDROGEN PRODUCTION BY DISSOCIATION OF STEAM WITH LIQUID TIN.

3,850,714. THERMAL INSULATION STRUCTURE.

3,899,031. VAPOR GENERATOR.

3,933,993. USE OF CONCENTRATED IRON REAGENT FOR REDUCING POLLUTANT CONTENT OF A FLUID.

3,989,330. ELECTRICAL KELLY COCK ASSEMBLY.

3,989,433. APPARATUS FOR CONTROLLING RESISTANCE TO EXTRUSION OF A ROD-LIKE THROUGH.

4,003,435. METHOD AND APPARATUS FOR DEPLOYMENT AND RETROEVAL OF FIXED LENGTHS OF ELECTRICAL CABLE INTO AND FROM A WELL BORE.

4,003,456. ELECTRICAL CABLE REELING APPARATUS.

4,008,573. MOTIVE FLUIDS FOR EXTERNAL COMBUSTION ENGINES.

4,009,754. ELECTRICAL CABLE FEEDING AND REMOVING APPARATUS.

4,011,059. SELF-CENTERING TRAVERSING STIRRER SHAFT FOR FIXED BED GASIFIER.

4,017,113. ELECTRICAL CABLE OVERSHOT-GRAPPLING TOOL.

4,025,248. RADIALLY EXTENDED VAPOR INLET FOR A ROTARY MULTIVANED EXPANDER.

4,025,262. VARIABLE LENGTH EXTRUSION DIE.

4,049,390. METHOD FOR EXTRUSION OF COAL CONTAINING BODY.

4,049,392. METHOD FOR EXTRUSION OF COAL CONTAINING BODY.

4,053,976. METHOD OF MAKING NB_3SN COMPOSITE WIRES AND CABLES.

4,056,946. LOW TEMPERATURE COOLER/CONDENSER.

4,070,161. DOUBLE SEAL GATE VALVE STRUCTURE.

4,085,578. PRODUCTION OF WATER GAS AS A LOAD LEVELING APPROACH FOR COAL GASIFICATION POWER PLANTS.

4,098,586. GRATE FOR COAL GASIFIER.

4,117,344. CONTROL SYSTEM FOR A RANKINE CYCLE POWER UNIT.

4,128,121. NB_3GE SUPERCONDUCTIVE FILMS.

4,129,166. NB_3GE SUPERCONDUCTIVE FILMS GROWN WITH AIR.

4,129,167. NB_3GE SUPERCONDUCTIVE FILMS GROWN WITH NITROGEN.

4,130,301. DOUBLE-WALLED WELL CASING STRUCTURE.

4,130,861. POWER LINE CARRIER NOISE ELIMINATION.
4,137,051. GRATE FOR COAL GASIFIER.
4,139,024. THERMAL INSULATION STRUCTURE.
4,150,953. COAL GASIFICATION POWER PLANT AND PROCESS.
4,151,329. NB_3GE SUPERCONDUCTIVE FILMS.
4,151,330. NB_3GE SUPERCONDUCTIVE FILMS GROWN WITH NITROGEN.
4,152,899. THERMAL ENERGY STORAGE AND RELEASE UTILIZING COMBINED SENSIBLE HEAT AND LATENT HEAT OF FUSION.
4,154,582. METHOD OF SOLIDS DISCHARGE FROM COAL GASIFIER GRATE.
4,154,901. NB_3GE SUPERCONDUCTIVE FILMS GROWN WITH AIR.
4,191,535. COAL EXTRUSION APPARATUS AND PROCESS.
4,192,583. SOLAR RECEIVER HELIOSTAT REFLECTOR HAVING A LINEAR DRIVE AND POSITION INFORMATION SYSTEM.
4,268,405. METHOD FOR FORMING GLAUBER'S SALT CRYSTALS WITH REDUCED ENCAPSULATION BY THE ADDITION OF ETHYLENE GLYCOL MONOBUTYL ETHER.

Applications for license may be addressed to: Patent Counsel, Data Communication Products Business Department, General Electric Co., Mountain View Rd., Lynchburg, Va. 24502.

4,291,314. TRANSVERSE MAGNETIC PRINTING HEAD.
4,328,503. HIGH RESOLUTION MAGNETIC PRINTING HEAD.
4,339,760. MAGNETIC PRINTING HEAD HAVING A HIGH SIGNAL-TO-NOISE RATIO.
4,342,039. HIGH RESOLUTION MAGNETIC PRINTING HEAD.
4,370,661. EASILY ASSEMBLED TRANSVERSE MAGNETIC PRINTING HEAD.
4,374,005. METHOD FOR FABRICATING A TRANSVERSE MAGNETIC PRINTING HEAD.

Hilliard-Lyons Patent Management, Inc. is prepared to grant nonexclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed to: Vice-President - Licensing, Hilliard-Lyons Patent Management, Inc., 545 S. Third St., Louisville, Ky. 40202.

3,500,804. FREE PISTON ENGINE.
3,501,088. BALANCED FREE PISTON ENGINE.
3,524,436. FREE PISTON ENGINE APPARATUS.
3,525,102. ENGINE.
3,610,214. UNSYMMETRICAL, DOUBLE-ACTING FREE PISTON ENGINE.
3,610,216. BALANCED-FREE PISTON ENGINE.
3,610,217. BALANCED-FREE PISTON ENGINE.
3,643,638. FREE PISTON ENGINE IGNITION APPARATUS.
3,673,999. ELECTRICAL APPARATUS FOR INITIATING COMBUSTION IN FREE PISTON ENGINES.
3,694,111. FREE PISTON ENGINE BOUNCE COMPRESSOR.
3,722,481. INTERNAL COMBUSTION ENGINE FUEL SUPPLY APPARATUS.
3,769,950. FREE PISTON ENGINE STARTING APPARATUS.
3,853,100. FREE PISTON ENGINE WITH ANTI-KNOCK MEANS.
3,859,966. LINEAR BALANCED FREE PISTON MACHINES.
3,861,222. COUNTERBALANCED FIXED STROKE COMPRESSORS.
3,861,223. FIXED STROKE PISTON MACHINES WITH IMPROVED COUNTER BALANCING AND DRIVING MECHANISM.
3,927,530. SUPERCHARGED INTERNAL COMBUSTION ENGINE.
3,944,299. MACHINE BEARING CONSTRUCTION AND ARRANGEMENT.
3,958,841. NON-FRICTION PRESSURE SEAL.
4,019,528. FLUID MIXING APPARATUS.
4,044,618. MACHINE DRIVE MECHANISM.
4,046,115. FREE PISTON ENGINE FUEL FEEDING APPARATUS.
4,085,711. FREE PISTON ENGINE WITH OPPOSED CYLINDERS.
4,189,958. COMPRESSOR.
3,547,586. INORGANIC PHOSPHATE ASSAY AND REAGENTS THEREFOR.
3,652,222. BILIRUBIN ASSAY.
3,742,196. METHOD AND ELECTRONIC CONTROL FOR THE ANALYZATION OF SERUM CHEMISTRIES.
3,897,812. SCREW DRIVER.
3,913,647. SCREW DRIVER.
3,923,088. BITING SCREW DRIVER.
4,105,056. NONSLIP SCREW DRIVER.
3,923,645. METHOD FOR OXIDIZING MERCAPTANS OCCURRING IN PETROLEUM REFINING STREAMS.
4,069,138. METHOD AND CATALYST FOR REMOVING MERCAPTANS AND MERCAPTIDE COMPOUNDS FROM AQUEOUS ALKALINE SOLUTIONS AND HYDROCARBON DISTILLATES.
4,090,954. METHOD FOR OXIDIZING MERCAPTANS AND MERCAPTIDE COMPOUNDS FROM AQUEOUS ALKALINE SOLUTIONS AND HYDROCARBON DISTILLATES.
4,120,865. METAL COMPLEX AND METHOD FOR PREPARING.
4,243,551. CATALYST FOR OXIDIZING MERCAPTANS AND MERCAPTIDE COMPOUNDS AND METHOD FOR PREPARING.
3,972,272. MINE BRATTICE.
4,360,154. RAIL JOINT BAR BOLT NUT LOCKING ASSEMBLY.
4,017,116. RECREATION VEHICLE.
4,106,651. LEFT AND RIGHT HANDED CHILD-RESISTANT SAFETY CAP.
3,835,857. MALE URINAL DEVICE.
3,863,638. SHEATH ARRANGEMENT FOR MALE URINAL DEVICE.
4,187,851. SHEATH ARRANGEMENT FOR MALE URINAL DEVICE AND METHOD OF FORMING THE SAME.
4,283,881. CASEMENT WINDOW SECURITY GUARD.
3,907,725. ASBESTOS-FREE DRYWALL JOINT COMPOUND UTILIZING ATTA-

PULGITE CLAY AS ASBESTOS SUBSTITUTE.

3,356,627. AQUEOUS BLENDS OF TWO WATER-INSOLUBLE POLYMERS, ONE OF WHICH HAS 1 TO 15% OF A MONOMER CONTAINING AN ALCOHOLIC HYDROXYL, AMINO, AMIDO OR UREIDO GROUP.

4,316,364. VAPOR COMPRESSOR REFRIGERANT SYSTEM MONITOR.

4,184,852. METHOD FOR MAKING METHANE FROM METAL CARBIDES.

4,130,627. PROCESS FOR RECOVERING MINERAL VALUES FROM FLY ASH.

4,277,033. WEB SUPPLY ARRANGEMENT.

4,310,977. DISPOSABLE SCROLL HOLDER.

Re. 29,753. ASBESTOS-FREE JOINT COMPOUNDS.

PATENT NOTICES

Certificates of Correction for the Week of Sept. 6, 1983

Re. 31,188	4,354,966	4,375,096	4,382,940
3,919,929	4,356,325	4,375,581	4,383,059
4,176,017	4,358,281	4,375,707	4,383,328
4,198,498	4,358,334	4,376,168	4,383,612
4,204,025	4,358,711	4,376,190	4,383,681
4,237,115	4,361,183	4,376,661	4,384,070
4,263,407	4,361,629	4,377,501	4,384,953
4,267,111	4,362,460	4,378,505	4,385,009
4,293,158	4,363,720	4,379,210	4,385,036
4,293,305	4,366,117	4,379,422	4,385,152
4,296,631	4,368,134	4,380,134	4,385,398
4,310,667	4,368,687	4,380,447	4,385,637
4,312,850	4,368,814	4,380,655	4,385,820
4,322,182	4,369,985	4,380,656	4,386,415
4,325,123	4,370,004	4,381,202	4,386,702
4,325,328	4,370,032	4,381,359	4,387,152
4,326,251	4,371,282	4,381,464	4,387,284
4,326,290	4,372,044	4,381,501	4,387,634
4,329,331	4,372,602	4,381,962	4,387,808
4,337,015	4,372,696	4,382,470	4,388,105
4,338,612	4,373,035	4,382,620	4,388,130
4,341,111	4,373,398	4,382,653	4,388,166
4,344,403	4,374,041	4,382,790	4,388,269
4,346,492	4,374,304	4,382,865	4,388,461
4,349,544	4,374,438	4,382,933	

Disclaimers

3,424,111.—*Louis Maslow,* Dallas, Pa. READILY ASSEMBLABLE AND ADJUSTABLE SHELVING. Patent dated Jan. 28, 1969. Dislciamer filed July 13, 1983, by the assignee, *Metropolitan Wire Corp.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,325,937.—*Kemet D. Spence,* Potlatch, Ind. and *Robert E. Andrews,* Pullman, Wash. MICROBIAL INSECTICIDE. Patent dated Apr. 20, 1982. Disclaimer filed June 15, 1983, by the assignee, *Battelle Development Corp.*

The term of this patent subsequent to May 5, 1998, has been disclaimed.

4,328,203.—*Kemet D. Spence,* Potlatch, Ind. and *Robert E. Andrews,* Pullman, Wash. MICROBIAL INSECTICIDE. Patent dated May 4, 1982. Disclaimer filed June 15, 1983, by the assignee, *Battelle Development Corp.*

The term of this patent subsequent to Sept. 16, 1997, has been disclaimed.

Disclaimers and Dedications

4,148,263. —*James Marshall Suttles,* Elberton, Ga. SHELVING ASSEMBLY. Patent dated Apr. 10, 1979. Disclaimer and Dedication filed July 18, 1983, by the assignee, *The Mead Corp.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

4,153,469.—*Vladimir I. Alexandrov, Vyacheslav V. Osiko, Vladimir M. Tatarinsev* and *Viktor T. Udovenchik,* Moscow, U.S.S.R. MONOCRYSTALS BASED ON STABILIZED ZIRCONIUM OR HAFNIUM DIOXIDE AND METHOD OF PRODUCTION THEREOF. Patent dated May 8, 1979. Disclaimer and Dedication filed May 18, 1983, by the assignee, *Vsesojuznoje Objedinenije "Licensintorg".*

Hereby disclaims and dedicates the remaining term of said patent.

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The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
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	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
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Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
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Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
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New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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	Milwaukee Public Library	(414) 278-3043

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director ..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,243,822 to 3,248,737, inclusive

Plant Patents ..... Numbers 2,616 to 2,627 inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED SEPTEMBER 6, 1983

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T103,401
USE OF CARBOXYMETHYL HYDROXYETHYL CELLULOSE IN FRACTURING FLUIDS

Thomas G. Majewicz, R.D. 1, Box 285, Chadds Ford, Pa. 19317

Filed Dec. 13, 1982, Ser. No. 449,096
Int. Cl.³ E21B *43/26*
U.S. Cl. 252—8.55 R
No Drawing. 5 Pages Specification

Carboxymethyl cellulose is not normally considered a good candidate as a thickener for fracturing fluids for subterranean formations due to the poor salt sensitivity of its solutions. It has been found that if carboxymethyl cellulose is modified with hydroxyethyl functionality, the salt sensitivity of its aqueous solutions is improved to a point where it can be used in this application. Specifically, carboxymethyl hydroxyethyl cellulose having carboxymethyl D.S. of 0.7 to 1 and hydroxyethyl M.S. of 0.3 to 2 can be so employed.

T103,402
ARYLOXY SUBSTITUTED PHOTOGRAPHIC COUPLERS AND PHOTOGRAPHIC ELEMENTS AND PROCESSES EMPLOYING SAME

Philip T. S. Lau, Kodak Park Works, Rochester, N.Y. 14650

Division of Ser. No. 324,237, Nov. 23, 1981. This application Feb. 3, 1983, Ser. No. 463,425
Int. Cl.³ C07C *103/75*
U.S. Cl. 564—218
No Drawing. 42 Pages Specification

Couplers of good reactivity contain an aryloxy coupling-off group having in an ortho position a polarizable carbonyl, sulfonyl or phosphinyl substituent group which is free of photographic dye groups and photographic reagent groups.

T103,403
15-DEOXY-16-HYDROXY-16-VINYL AND CYCLOPROPYL SUBSTITUTED PROSTANOIC ACIDS AND CONGENERS

Martin J. Weiss, 975 Phyllis La., Oradell, N.J. 07649; Charles V. Grudzinskas, 21 Fifth Ave., Nyack, N.Y. 10923; Middleton B. Floyd, Jr., 5 Babbling Brook La., Suffern, N.Y. 10901, and Sow-Mei L. Chen, 7 Tulip Ct., Park Ridge, N.J. 07656

Continuation of Ser. No. 201,842, Oct. 29, 1980, abandoned. This application May 3, 1982, Ser. No. 374,061
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—121
No Drawing. 105 Pages Specification

This disclosure describes esters having prostaglandin-like activity of 15-deoxy-16-hydroxy-16-substituted-prostanoic acids formed by replacing the hydroxy group of the C_1-carboxylic acid substituent with para-acetamidophenoxy, methylsulfonylamido, para-acetylphenoxy, para-phenylphenoxy, C_3-C_{10} cycloalkoxy, arylalkoxy wherein the alkoxy group has from 7-12 carbon atoms, phenoxy or phenoxy substituted with 1-3 chlorine atoms or C_1-C_3 alkyl, phenacyloxy or phenacyloxy ring-substituted with from 1-3 bromine atoms, a nitro moiety, C_{1-C8} arylalkyl, or arylalkoxy wherein the alkoxy group has from 7-12 carbon atoms; substituted arylamino (C_1-C_{12}), substituted-naphthoxy, fluorenoxy, carboxyalkoxy (C_5-C_{11}), 5-indanyloxy, benzoylphenoxy, benzyloxy or ring-substituted benzyloxy, glyceryloxy, phosphatoglyceryloxy, amino substituted with an alkanoyl or cycloalkanoyl group; aroyl or substituted aroyl; alkylsulfonyl; arylsulfonyl or substituted-arylsulfonyl, hydrazinyl and substituted hydrazinyl; alkylamino (C_1-C_5), or the semicarbazide of the para-formylphenoxy group.

REISSUES

SEPTEMBER 6, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,368

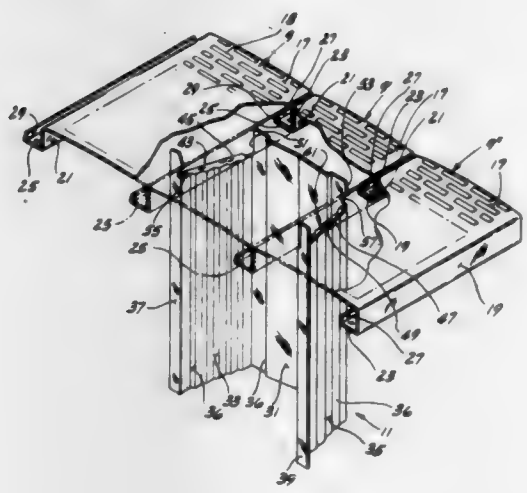
FLOUR SYSTEM FOR GRAIN BIN

Mark A. Trumper, Sullivan, Ill., assignor to Grain Systems, Inc., Assumption, Ill.

Original No. 4,137,682, dated Feb. 6, 1979, Ser. No. 855,610, Nov. 29, 1977. Application for reissue Jan. 21, 1980, Ser. No. 114,128

Int. Cl.³ E04B *1/70*

U.S. Cl. 52—303 **12 Claims**



8. In a floor system for a grain bin having a plurality of side-by-side floor members interlocked together and a plurality of channel-shaped floor support members bearing on a foundation and supporting said floor members above the foundation, wherein the improvement comprises: each of said floor support members having means thereon for snap fit securement of said floor support member onto said floor members so as to prevent relative vertical movement between said floor members and said floor support members.

Re. 31,369

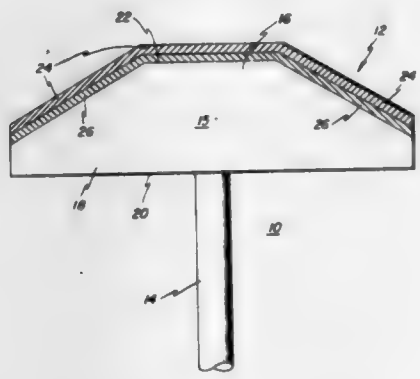
METHOD FOR JOINING AN ANODE TARGET COMPRISING TUNGSTEN TO A GRAPHITE SUBSTRATE

Thomas M. Devine, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Original No. 4,073,426, dated Feb. 14, 1978, Ser. No. 788,244, Apr. 18, 1977. Application for reissue Apr. 5, 1982, Ser. No. 365,080

Int. Cl.³ B23K *1/04*

U.S. Cl. 228—122 **14 Claims**



1. A method for joining an anode target to a graphite substrate of a disc for use in a rotating x-ray anode tube comprising the process steps of

a. preparing a graphite substrate for assembling an anode target to a preselected surface area thereof;

b. disposing a layer of a metal [of a predetermined thickness] on [the] *said* preselected surface area of [the] *said* substrate, [the] *said* layer of metal having a [predetermined] thickness *of at least ¼ mil* and [comprising a] *consisting of at least one* metal selected from the group consisting of [rhodium, osmium, ruthenium,] platinum[, palladium] and an alloy of platinum and [chromium] *chromium*, wherein chromium is present in amounts up to about 1 percent by weight;

c. disposing [an] anode target *material* on [the] *said* layer of metal, [the] *said* anode target *material* comprising a metal selected from the group consisting of tungsten and a tungsten-rhenium alloy wherein rhenium is present in amounts up to about 25 percent by weight;

d. preheating [the] *said* substrate, layer of metal and anode target *material* in a [controlled] *hydrogen* atmosphere at a first elevated temperature of from about 600° to about 900° C. for a predetermined period of time;

e. heating [the] *said* substrate, [the] *said layer of* metal [layer] and [the] *said* anode target *material* to a second elevated temperature of from about 1770° to 1830° C. for a predetermined period of time up to 5 minutes in a [controlled] *hydrogen* atmosphere to braze the anode target *material* to [the] *said* preselected surface area of [the] *said* substrate, and

f. cooling [the] *said* substrate, *layer of* metal [layer] and *resulting* anode target in a [controlled] *hydrogen* atmosphere to a low enough temperature to permit exposure to the atmosphere.

Re. 31,370

SYSTEM FOR EXPOSURE MEASUREMENT AND/OR FOCUS DETECTION BY MEANS OF IMAGE SENSOR

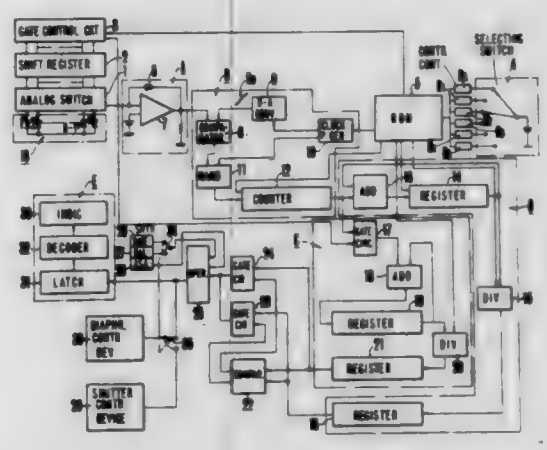
Yukio Mashimo, Tokyo; Nobuaki Sakurada, Kanagawa; Tadashi Ito, Kanagawa; Fumio Ito, Kanagawa, and Nobuhiko Shinoda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Original No. 4,047,187, dated Sep. 6, 1977, Ser. No. 563,462, Mar. 31, 1975. Application for reissue Sep. 5, 1979, Ser. No. 72,666

Claims priority, application Japan, Apr. 1, 1974, 49-36790; Apr. 1, 1974, 49-36791; Apr. 1, 1974, 49-36792

Int. Cl.³ G03B *7/08*

U.S. Cl. 354—23 D **80 Claims**



1. An exposure measurement system comprising;

a plurality of photoelectric converting elements each for converting a portion of a light beam into an electrical signal corresponding to a portion of the light beam,

scanning means electrically coupled with said elements for sensing the outputs of the elements one after another,

digital converting means coupled to said scanning means for converting the sensed outputs of the photoelectric converting elements into digital signals,

a processing device coupled to said digital converting means for processing the output of the photoelectric converting elements converted into digital values by means of the digital converting means in accordance with a predetermined estimation function so as to determine an exposure value[.] *and*

control means for controlling the processing operation of said processing device, said control means being operable for causing the processing device to select optional elements whose outputs are to be utilized for the determination of the exposure value.

Re. 31,371

DEVELOPING SYSTEM

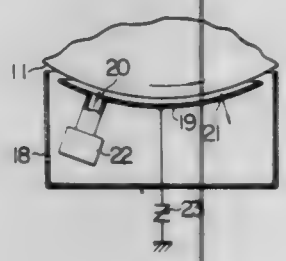
Shoji Kuroishi, Yokohama; Tsuguo Kimura, Zushi; Masami Emoto, Yokohama, and Shiro Yamamoto, Tokyo, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Original No. 4,052,127, dated Oct. 4, 1977, Ser. No. 593,293, Jul. 7, 1975. Continuation of Ser. No. 435,270, Jan. 21, 1974, abandoned. Application for reissue Aug. 31, 1981, Ser. No. 297,931

Claims priority, application Japan, Jan. 24, 1973, 48-10033; May 7, 1973, 48-51007

Int. Cl.³ G03G *15/06, 15/10*

U.S. Cl. 355—10 **10 Claims**



1. A developing system for electrophotographic copying apparatus for the type comprising:

a member having a surface of photosensitive material; and

means for forming an electrostatic latent image on said photosensitive surface by successive charging and exposure steps;

wherein the improvement comprises:

developing means for supplying a developer to said member to develop the latent image, said developing means comprising an electrode disposed in opposing relationship with the surface of said member with the developer interposed therebetween; and

means for [permitting] *enabling* the induced potential on the electrode from said electrostatic latent image to float below a given value, said [permitting] *enabling* means comprising constant voltage means connected between said electrode and ground for preventing said induced potential from exceeding said given value.

Re. 31,372

METHOD FOR MEASURING ANTISTREPTOLYSIN CONCENTRATION IN BLOOD

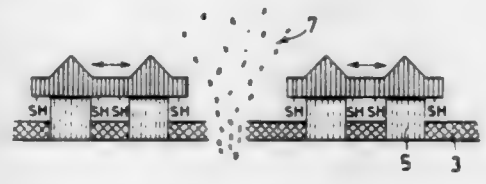
Antonio Ricci, Siena, Italy, assignor to Istituto Sieroterapico e Vaccinogeno Toscano "Sclavo" S.p.A., Siena, Italy

Original No. 4,148,609, dated Apr. 10, 1979, Ser. No. 747,048, Dec. 2, 1976. Application for reissue Apr. 8, 1981, Ser. No. 252,219

Claims priority, application Italy, Dec. 22, 1975, 9660 A/75

Int. Cl.³ G01N *33/54*

U.S. Cl. 436—522 **5 Claims**



1. A method for measuring the antistreptolysin concentration in a sample of human blood, comprising the steps of:

(a) preparing a plurality of solutions of different concentrations of oxidized O-streptolysin;

(b) preparing a solution of a reducing substance selected from the group consisting of thiols, sodium metabisulfite and sodium sulfite;

(c) diluting a blood sample with a nonhemolytic solution;

(d) introducing an equal volume of diluted blood in each of the solutions prepared in step (a);

(e) incubating the solutions prepared in step (d) at a temperature in the range between room temperature (18° C.–21° C.) and 50° C. for about 15 minutes;

(f) adding to the incubating solutions prepared in step (e) a measured volume of the solution prepared in step (b);

(g) incubating the solution prepared in step (f) at a temperature in the range between room temperature and 50° C. for sufficient time to cause the sedimentation of the red blood cells to occur, and

(h) noting the sample containers in which no hemolysis has taken place.

Re. 31,373

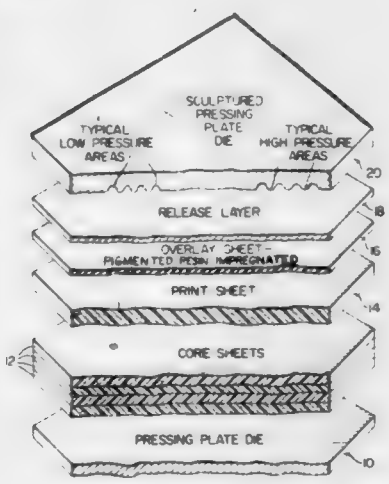
HIGH PRESSURE DECORATIVE LAMINATE HAVING REGISTERED COLOR AND EMBOSSING

Israel S. Ungar; Herbert I. Scher, both of Randallstown, and Delbert A. Williams, Baltimore, all of Md., assignors to Nevamar Corporation, Odenton, Md.

Original No. 4,092,199, dated May 30, 1978, Ser. No. 528,776, Dec. 2, 1974. Application for reissue Dec. 7, 1978, Ser. No. 967,213

Int. Cl.³ B32B *31/20*

U.S. Cl. 156—222 **8 Claims**



1. A method of forming a unitary decorative laminate having registered color and embossing comprising:

A. assembling in a stack from the bottom up

(1) backing means for said decorative laminate,
(2) a thermosetting resin impregnated fibrous print sheet provided with a first color,
(3) a fibrous overlay sheet substantially uniformly impregnated with an opacifying mixture of a thermosetting resin impregnating solution having dispersed therein finely divided pigment of a color contrasting with said first color, said pigment being retained substantially on the fibers of said overlay sheet and *not being bound to the cellulose of the paper, and*
(4) a sculptured pressing plate die having a surface with high areas and low areas capable of being impressed into the uppermost of said fibrous sheets with said high and low areas adjacent said overlay sheet, and means to prevent said sculptured pressing plate die from sticking to said overlay sheet during lamination;

B. applying to the upper and lower surfaces of said assembly sufficient heat and pressure to cure said resins to produce said unitary embossed decorative high pressure laminate by
(1) effecting a lamination of said fibrous sheets together with each other and with said backing means,
(2) imparting the sculptured surface of said die to the uppermost of fibrous sheets and
(3) effecting lateral flow of said opacifying mixture of said thermosetting resin and said pigment on said overlay sheet from the debossed portions of the surface of said laminate to the embossed portions of said laminate *causing a separation of colors* so that said first color is visible in said debossed portions and said contrasting color of said finely devided pigment is visible in said embossed portions; and

C. stripping said sculptured die from the resultant laminated assembly so as to provide said laminate having areas of registered color and embossing.

Re. 31,374

COUNTERCURRENT DECANTATION

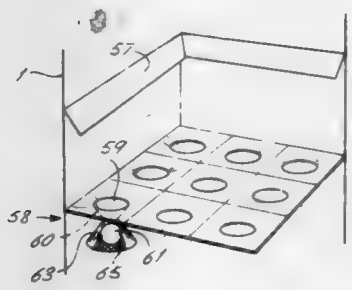
Christopher C. Dell, Leeds, England, assignor to National Research Development Corporation, London, England

Original No. 4,174,281, dated Nov. 13, 1979, Ser. No. 901,616, May 1, 1978. Application for reissue Jul. 10, 1981, Ser. No. 282,001

Claims priority, application United Kingdom, May 3, 1977, 18453/77

Int. Cl.³ B01D *21/10*

U.S. Cl. 210—800 **13 Claims**



1. Countercurrent decantation apparatus comprising a first cell and a second cell interconnected by a valve responsive to the amount of solid thereon to open, for passing the solid by gravity from the first cell into the second cell, when more than a certain amount of solid is on the valve and to close while there is still enough solid thereon to prevent bulk mixing of liquid in the second cell with liquid from the first cell, the first cell and the second cell also being interconnected by a liquid passage means, said valve comprising a stationary structure [and a], *a spherical* buoyant barrier member *and means for impeding upward vertical movement of, and forming a substantially liquid tight seal with, said buoyant member, consisting of a circular sealing surface bounding a circular aperture formed in said stationary structure*, said buoyant member being of a form to enable accumulation of solids on the top thereof in cooperation with said stationary structure, so as to provide movement between an upper closed position attained in response to the buoyancy of said barrier member and a lower open position which is attained in response to downward pressure exerted by the weight of solid collected on the buoyant barrier member [, wherein the buoyant member is a sphere which in the upper closed position obturates a circular aperture in said stationary structure].

12. A method of countercurrent decantation comprising the steps of:

passing a solid from a first cell containing said solid in a liquid to a valve having a stationary structure, [and a] *a spherical* buoyant barrier member *and means for impeding upward vertical movement of, and forming a substantially liquid tight seal with, said buoyant member, consisting of a circular sealing surface bounding a circular aperture formed in said stationary structure*, said [buoyant member being of a] spherical form [to enable] *enabling* accumulation of solids on the top thereof in cooperation with said stationary structure;

permitting said buoyant barrier member to open in response to the amount of solids thereon when more than a certain amount of solid is on said buoyant barrier member;

passing said solid through said open barrier member of said valve and into a second cell containing said liquid;

permitting said buoyant barrier member to close in response to its buoyancy with respect to said liquid while there is a sufficient amount of solid on said buoyant barrier member to prevent mixing of said liquid in said first and second cells; and

passing said liquid from said second cell to said first cell by means independent of said valve.

Re. 31,375

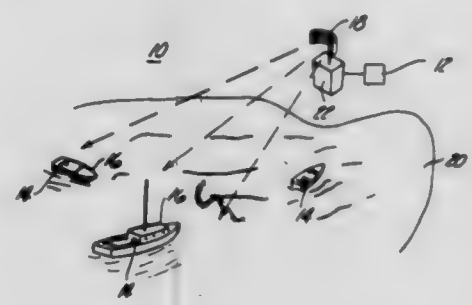
TRANSPONDER-RESPONDER SYSTEM

John C. Sellers, 8702 Morton Ave., Brooklyn, Ohio 44144, and James A. Romanauski, 8800 Farbar, Kirtland, Ohio 44094

Original No. 4,107,675, dated Aug. 15, 1978, Ser. No. 774,520, Mar. 4, 1977. Application for reissue May 20, 1980, Ser. No. 151,606

Int. Cl.³ G01S *13/76, 13/80*

U.S. Cl. 343—6.5 LC **16 Claims**



8. A transponder-responder system comprising a home station and at least one remote stations, said home station having means for transmitting a periodic interrogation pulse via a directional antenna and means for varying the rotational position of said antenna;

said remote station comprising means for receiving said interrogation pulse, means for activating a first predetermined frequency oscillator contained in said remote station upon receipt of said interrogation pulse, said means for activating said first oscillator comprising a single shot multivibrator comprising a multivibrator responsive to the receipt of said interrogation pulse for generating an output pulse of a predetermined duration, said multivibrator output pulse being connected as an input signal to said first oscillator, said oscillator being activated only during the duration of said multivibrator output pulse, and means responsive to the output from said first oscillator for transmitting a serially encoded signal at a frequency correlated to the frequency of said first oscillator, wherein the duration of transmission of said

encoded signal is substantially the same as the duration of said multivibrator output pulse;

said home station further comprising means for receiving said encoded signal, a second oscillator contained within the home station and having a frequency substantially the same as said first oscillator, means for activating the second oscillator upon receipt of said encoded signal, a deserializer having a data input and/or clock input, the output from said home station receiving means being connected to said deserializer data input and the output from said second oscillator being connected to said deserializer clock input, means for determining the elapsed time between the transmission of the last interrogation pulse and the receipt of said encoded signal, means for determining the rotational position of the directional antenna, means for storing the value of said elapsed time, the rotational position of the directional antenna and the output from the deserializer upon receipt of said encoded signal.

PLANT PATENTS

GRANTED SEPTEMBER 6, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,097

ROSE PLANT

F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.

Filed May 27, 1982, Ser. No. 382,400
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—9 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by unusual near Neyron rose coloring having a salmon colored petal undersurface which appears to lighten as flowers open.

5,098

ROSE PLANT

O. L. Weeks, 926 W. Philadelphia, Ontario, Calif. 91761

Filed Dec. 10, 1981, Ser. No. 329,241
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—11 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by high centered Indian Orange and pale yellow bicolored flowers borne singly on strong stems becoming ruffled at maturity and abundant, dark green leathery foliage.

5,099

AFRICAN VIOLET NAMED FIRERIDER

Arnold W. Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan American Plant Company, Parrish, Fla.

Filed Apr. 10, 1981, Ser. No. 252,837
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct African Violet plant, substantially as herein shown and described, characterized by its profuse production of purple-red flowers of large size.

5,100

AFRICAN VIOLET NAMED CAMELOT

Arnold W. Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan American Plant Company, Parrish, Fla.

Filed Apr. 10, 1981, Ser. No. 252,838
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct African Violet cultivar, substantially as herein shown and described, characterized by its production of a profusion of shell pink flowers having striking dark pink eyes and excellent keeping quality, the zygomorphic flower having three large and two smaller petals.

PATENTS

GRANTED SEP. 6, 1983

ERRATA

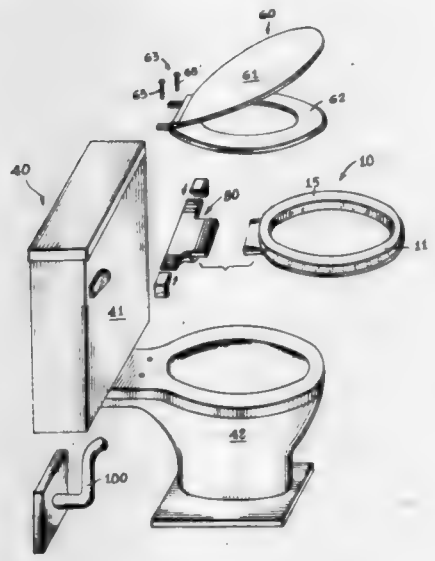
For CLASS	See PATENT NO.
604–020	4,402,318
369–271	4,402,405
267–064	4,402,493
285–025	4,402,773
428–402	4,402,856
548–421	4,402,878
548–421	4,402,879
428–335	4,402,983

PATENTS

GRANTED SEPTEMBER 6, 1983

GENERAL AND MECHANICAL

4,402,091
TOILET EVACUATION DEVICE
William D. Ellis, 4702 W. Maulding Ave., and Ralla S. Ellis, 4704 W. Maulding Ave., both of Las Vegas, Nev. 89118
Filed Jul. 9, 1982, Ser. No. 396,923
Int. Cl.³ E03D *9/05*
U.S. Cl. 4—217 **8 Claims**



1. In combination with a water closet assembly including a toilet bowl and a hinged seat, an improved evacuation ring device adapted to be connected to an external vacuum source wherein the evacuation ring comprises;

a generally circular hollow ring body having an upper surface configured to form a seal with the bottom of the hinged seat, a bottom surface which is configured to form a seal with the top of the toilet bowl and a downwardly depending lip portion which extends inside the ring of the bowl, wherein the downwardly depending lip portion is provided with a plurality of tubular evacuation apertures which are in open communication with said external vacuum source, and

a hollow T-Shaped vacuum base member connected to, and intermediate, said hollow ring body and said source of vacuum; wherein the hollow base of the T-shaped member forms a primary vacuum port; and the hollow arms of the T-shaped member form auxiliary vacuum ports, wherein the T-shaped vacuum base member is provided with a plurality of scored segments on all of its ends, and said scored segments may be selectively removed to foreshorten any portion.

4,402,092
SPRING MECHANISM FOR TOILET SEATS
Larry L. Smallwood, 1240 South 16th St., Grover City, Calif. 93449
Filed Oct. 2, 1981, Ser. No. 307,846
Int. Cl.³ A47K *13/12*
U.S. Cl. 4—240 **3 Claims**

1. A spring mechanism for returning a toilet seat to a desired angular position relative to a toilet bowl comprising:

(a) a rotatable pivot shaft mounted on the toilet bowl and to which the toilet seat is secured so that the shaft is rotated whenever the toilet seat is rotated over its angular travel;

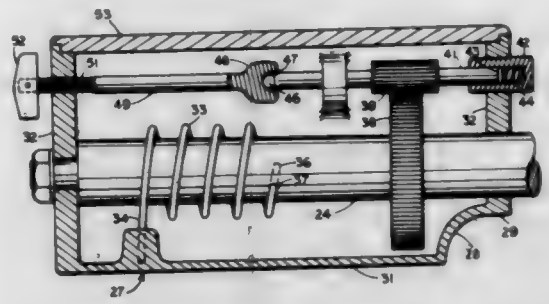
(b) a spring interconnecting the toilet bowl and the pivot shaft and biased to yieldably hold the toilet seat in a desired position;

(c) a gear secured to the pivot shaft;

(d) an idler shaft;

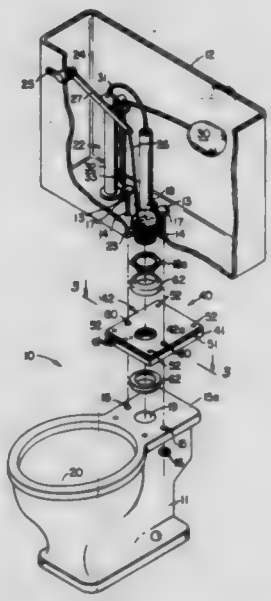
(e) a gear secured to the idler shaft engaging the gear on the pivot shaft;

(f) and a slipping clutch connected to the idler shaft and connected to the toilet bowl to regulate the speed of rotation of the idler shaft as it is rotated by the spring



acting on the pivot shaft, said slipping clutch permitting slippage when the toilet seat is manually rotated on the pivot shaft.

4,402,093
EMERGENCY VALVE UNIT FOR PREVENTING OVERFLOW OF A TOILET
Johnie N. Luker; Johnie D. Luker, and David K. Luker, all of Culbertson, Nebr., assignors to James F. Parker, Rowlett, Tex.
Filed May 4, 1982, Ser. No. 374,829
Int. Cl.³ E03D *11/00*; E03C *1/242*; F16K *21/18*
U.S. Cl. 4—427 **12 Claims**



1. In a typical, commercially-available toilet of the type having a stool section with a water tank secured thereon, said water tank being fluidly connected to a bowl in said stool section by means of a fluid passage, the improvement comprising:

an emergency valve unit positioned in said fluid passage and having an open position which allows flow through said passage and a closed position which blocks flow through said passage; said valve unit including:

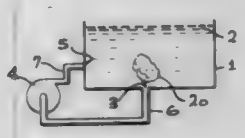
means to manually move said valve unit to its open and closed positions.

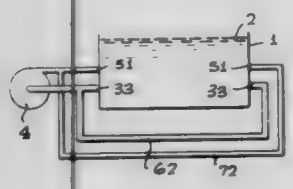
4,402,094

SAFETY CIRCULATION SYSTEM

John T. Sanders, 1441 Calle Pimiento, Thousand Oaks, Calif. 91360

Filed Mar. 18, 1982, Ser. No. 359,578
Int. Cl.³ E04H 3/16, 3/18, 3/19
U.S. Cl. 4—504 8 Claims





1. A safety circulation system in a circulating liquid system having a tub or other container of liquid, at least one suction port in the tub and connected by piping to the pump, and a return line from the pump to at least one submerged return port in the tank, the invention comprising: the suction port being arranged as an outer annulus about a return port and adjacent thereto, whereby blockage of the suction port results in simultaneous blockage of the adjacent return port, thereby reducing the flow requirement to said suction port.

8. A safety circulation system in a circulating liquid system having a tub or other container of liquid, multiple suction ports in the tub and connected by piping to a pump, and a return line from the pump to at least one submerged return port in the tank, the invention comprising: arrangement of the suction ports in one or more rings, each said ring disposed annularly about and adjacent to a return port, said multiple suction ports in each ring being connected together outside the tank, whereby blockage of said suction ports results in simultaneous blockage of the return port, thereby reducing the flow of liquid to said port.

4,402,095

ULTRASONICALLY OPERATED WATER FAUCET

Robert B. Pepper, P.O. Box 277, Bolinas, Calif. 94924

Filed Mar. 26, 1981, Ser. No. 247,997
Int. Cl.³ E03C 1/05
U.S. Cl. 4—623 44 Claims

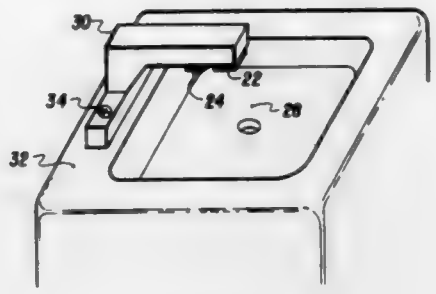
1. A faucet for a fluid comprising:

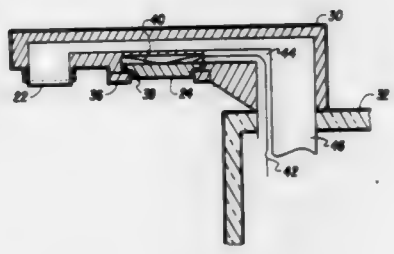
a fluid inlet;

a fluid outlet;

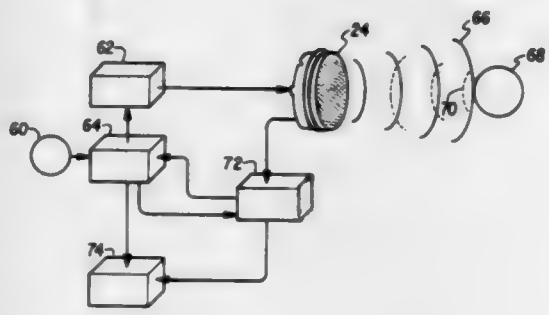
distance measuring means located in a predetermined spatial relationship with the fluid outlet for detecting and measuring the distance of an object from the fluid outlet; and

valve means coupled between the fluid inlet and the fluid outlet and coupled to the distance measuring means for causing the fluid to flow from the fluid inlet to the fluid outlet in response to the detection of an object within a predetermined distance of the fluid outlet and for preventing the fluid from flowing from the fluid inlet to the fluid









outlet when no object is detected within the predetermined distance.

4,402,096

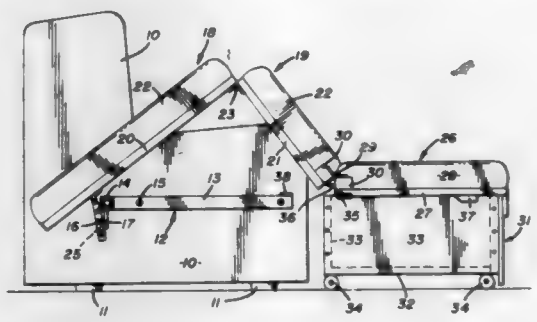
FOLDING BED CHAIR WITH DETACHABLE CUSHIONS

Stan W. Atimichuk, Toronto, Canada, assignor to Morgan Green, Bradford, Canada, a part interest

Continuation-in-part of Ser. No. 163,321, Jun. 26, 1980. This application Jun. 11, 1981, Ser. No. 272,655
Int. Cl.³ A47C 13/00
U.S. Cl. 5—17 1 Claim

1. An improvement in a folding bed chair having a pair of horizontally spaced vertically positioned arms and a movable support arranged for movement from a first position between said arms to a second position outwardly of said arms, three cushion assemblies and hinges securing said three cushion assemblies to one another in end to end relation, the improvement comprising means for holding said arms in spaced relation and partially supporting two of said three cushion assemblies when said cushion assemblies are in bed configuration and chair configuration, said means comprising a horizontally positioned U-shaped tubular member defining a pair of spaced parallel portions and a right angular joining base portion therebetween, said spaced parallel portions of said U-shaped tubular member being positioned alongside and attached to said spaced

arms in oppositely disposed relation, fasteners incorporating hinges detachably engaged on said base portion of said U-shaped tubular member and on one of said two said cushion assemblies inwardly from the end thereof opposite the other one of said two cushion assemblies, said one of said two cushion assemblies and the third cushion assembly movably at-



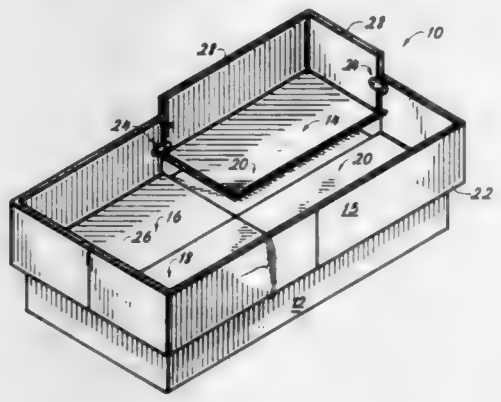
tached to said movable support and resting thereon, portions of said two cushion assemblies resting on said spaced parallel portions of said U-shaped tubular member when said movable support is in said second position outwardly of said arms and said two cushion assemblies resting on said base section of said U-shaped tubular member when said movable support is in said first position between said arms.

4,402,097

EXPANDABLE SUPPORT FRAME FOR FLEXIBLE SLEEPING MATTRESSES

Frances M. Scott, 6104 Ricky Allen Rd., Knoxville, Tenn. 37918

Filed Sep. 24, 1980, Ser. No. 190,327
Int. Cl.³ A47C *19/04*
U.S. Cl. 5—181 **7 Claims**



1. An expandable support frame suitable for providing supportive confinement for variously sized flexible mattresses, said frame comprising:

a support member suitable for positioning on a supporting surface and defining a top disposed at a preselected location spaced from said supporting surface;

an expandable mattress housing mounted on said top of said support member said housing including interlocking housing segments, each housing segment including a horizontal base element and vertical side element such that said housing segments form a supportive base bounded by four vertical sides for retaining a flexible mattress;

at least one removable housing expansion segment of a size substantially less than each of said housing segments which expansion segment includes a horizontal base element and a vertical side element, said expansion segment combining with said interlocking housing segments to expand at least one of the length and width dimensions of said housing and thus the effective size of said housing; and

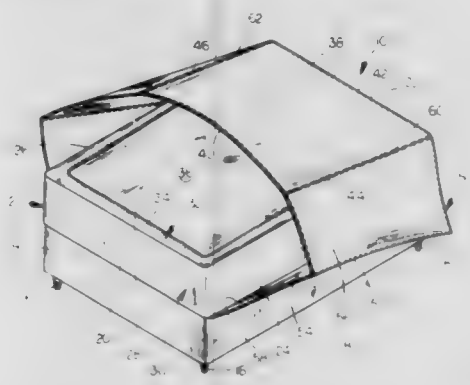
a plurality of detachable joining members for releasably interlocking said housing segments and said expansion segment thereby providing means for fixedly assembling said housing segments and expansion segment into a single unit having a continuous horizontal surface and vertical sides.

4,402,098

FITTED AND DRAPED BED COVERING

Paule McClam, 1805 Winnie Dr., Apt. #2, Bellevue, Nebr. 68005

Filed Sep. 28, 1981, Ser. No. 306,308
Int. Cl.³ A47G *9/00*
U.S. Cl. 5—494 **12 Claims**



1. A bed covering for a mattress having a head end, a foot end, opposite sides and a top surface, said bed covering comprising,

a fitted side covering adapted to overlie the head end, foot end and sides of a mattress and means for fitting said side covering onto a mattress,

a top portion adapted to overlie the top surface of the mattress, and having a head edge, a foot edge and opposite side edges,

a skirt portion folded along a medial lower edge thereof so as to present a folded lower edge and interior and exterior upper edges,

said exterior upper edge of the skirt portion being connected to the top portion along the foot edge and opposite side edges thereof,

said interior upper edge of the skirt portion being connected to said fitted side covering,

said skirt portion being vertically movable with said top portion relative to said fitted side covering thereby to accommodate the entry of a person between said top portion and a mattress onto which said bed covering is fitted said lower edge of said skirt portion being disposed substantially below the mattress when said top portion lies flat on said top surface of the mattress.

4,402,099

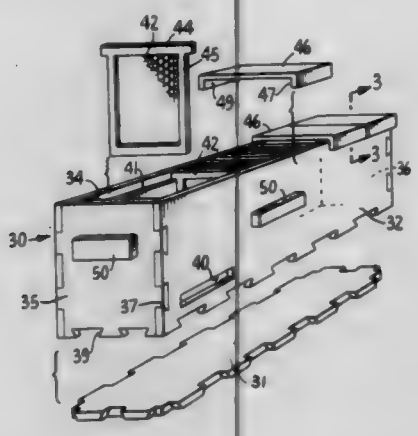
BEEHIVE FOR IMPROVED BEEKEEPING IN TROPICAL COUNTRIES

James L. Platt, Jr., Novato, Calif., assignor to Chevron Research, San Francisco, Calif.

Filed May 4, 1981, Ser. No. 259,897
Int. Cl.³ A01K *47/00*
U.S. Cl. 6—1 **12 Claims**

1. A beehive particularly adapted for suspended use with tropical bees in tropical environments comprising an elongated flat rectangular base, an elongated rectangular front panel having a bee entrance portal at a lower corner, an elongated rectangular back panel and two rectangular end panels, each of said base and said panels having complementary tapered notches along at least some of its edges for mating and engaging with those of the other panels and the base to releasably affix them to one another and form a knock-down structure which defines an open-topped hive body that can be easily assembled and disassembled in remote areas, said front and back panels each having an internal longitudinal notch along its top edge, a plurality of rectangular top closing panels sized to span between the front and back panels and having flanges on their end edges which in place frictionally engage said front

and back panels, which top closing panels are individually removable and which, in place, cover the hive body open top, said base and panels being fabricated from a laminate of a poly(acrylonitrile-butadiene-styrene) sheet over poly(acrylonitrile-butadiene-styrene) foam, a plurality of removable comb foundation elements suspended from the internal longitudinal



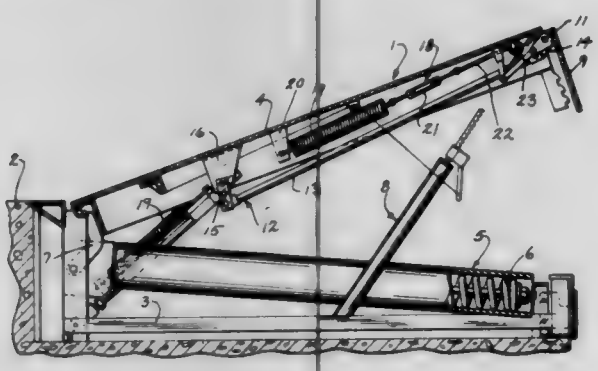
notches in the front and back panels such that the tops of the comb foundation elements are recessed from the top surfaces of said front and back panels so as not to interfere with said closing panels and oriented such that bees entering and exiting said portal move in a direction generally parallel to said comb foundation elements, and means attached to at least two opposite ones of said panels for suspending said beehive.

4,402,100

LIP COUNTERBALANCING MECHANISM FOR A DOCKBOARD

Randall J. Slusar, Greenfield, Wis., assignor to Kelley Company, Inc., Milwaukee, Wis.

Filed Sep. 9, 1981, Ser. No. 300,638
Int. Cl.³ E01D *1/00*
U.S. Cl. 14—71.3 **10 Claims**



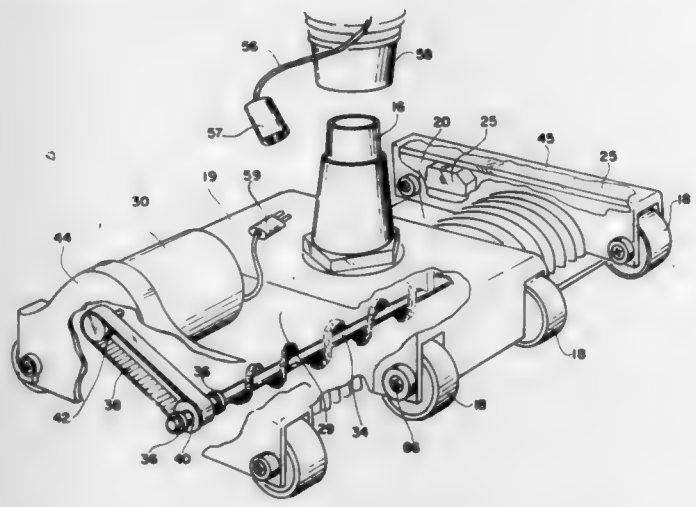
10. A dockboard having an improved lip counterbalancing mechanism, comprising a supporting structure, a ramp hinged at its rear edge to the supporting structure and movable between a generally horizontal cross traffic position and an upwardly inclined position, a lip hinged to the forward edge of the ramp and movable between a downwardly hanging pendant position and an extended position, means for moving the ramp from the horizontal position to the upwardly inclined position, and a lip counterbalancing mechanism comprising a lip engaging arm mounted for pivotal movement about said hinge axis and having a surface engageable with the underside of the lip, a first link having one end pitovally connected to said lip engaging arm at a location spaced from said hinge axis, a second link having one end pivotally connected to the opposite end of said first link at a pivot axis, the opposite end of said second link being pivotally connected to said ramp at a fixed second pivot axis, an extension spring mounted generally horizontally beneath the ramp and having a rear end connected to the ramp, a flexible member having one end connected to the forward end of the spring, a guide member mounted beneath the ramp and located forwardly of said spring to guide the flexible member in movement, the opposite end of said flexible member extending downwardly from said guide member and being connected to said first pivot axis, whereby the force of said spring acts to move said links toward an in-line position and pivot said arm forwardly to provide a counterbalancing action to aid in moving the lip to its extended position, said spring being disposed to exert a greater spring force when the lip is in the pendant position than when the lip is in the extended position, said links being disposed so that the force of the spring when the lip is in the pendant position will act through a relatively small moment arm to provide a first counterbalancing moment acting against said lip, and said links being disposed so that when the lip is moved toward the extended position the force of the spring will act through a substantially greater moment arm to provide a second counterbalancing moment substantially greater than said first counterbalancing moment.

4,402,101

POWER POOL CLEANER

Robert M. van Zyl, 4074 Hillside Rd., Lafayette Hill, Pa. 19444

Filed Aug. 7, 1981, Ser. No. 291,043
Int. Cl.³ E04H *3/20*
U.S. Cl. 15—1.7 **12 Claims**



1. A device for cleaning and scrubbing the bottom and/or sides of a pool or the like, comprising a housing, an elongate brush of a dimension approaching the width of the housing, mounted for rotation in an elongate aperture in the lower part of said housing, a sealed electric motor for driving said brush in rotation, with its bristles in contact with the bottom of the pool, said housing being equipped with a plurality of wheels such that it may be caused to roll along the bottom of the pool, while bristles of the brush are in vigorous scrubbing contact with the bottom of the pool for substantially the entire width of the brush, said brush as well as said housing being made of flexible material such that a substantial portion of the width of the brush can remain in contact with the bottom of the pool as a result of flexing, even when curved portions of the pool bottom are being encountered.

4,402,102

CORNER PAINT ROLLER

Ziad A. Al-samman, 1310½ Linwood Ave., Los Angeles, Calif. 90017

Filed Nov. 20, 1981, Ser. No. 323,189
Int. Cl.³ B44D *3/28*
U.S. Cl. 15—230.11 **6 Claims**

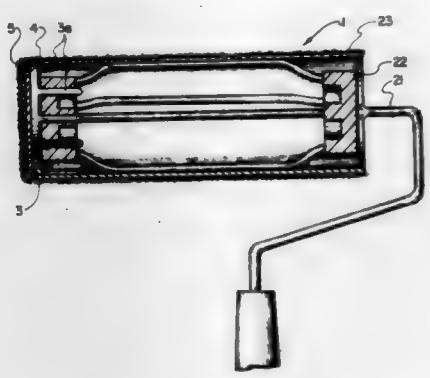
1. An improved corner paint roller comprising in combination:

(a) a conventional paint applicator of the roller type consisting of a paint roller axle and handle combination, a roller structure rotatably mounted on said axle, and a standard

removable paint roller cylinder inserted over said roller structure,

(b) a paint roller corner painting assembly comprising:

(1) a roller attachment base having means for attaching said base to the end of said roller structure on opposite side of said axle attachment end,



(2) a corner paint applicator, and

(3) a dual attachment disk having a contact-cement surface on each side, where said corner paint applicator is affixed to one side of said dual attachment disk and where other side of said dual attachment disk is affixed to said roller attachment base.

4,402,103

CLEANING UNIT FOR COPYING MACHINE

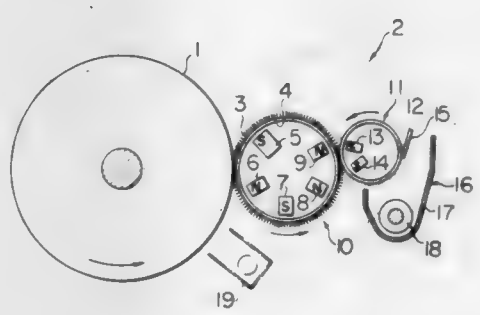
Nobuyuki Yanagawa, Chigasaki; Yoshiharu Iwanaga, Tokyo, and Toyozi Ishikawa, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Aug. 28, 1981, Ser. No. 297,203

Claims priority, application Japan, Aug. 30, 1980, 55-123218[U]

Int. Cl.³ G03G *21/00*

U.S. Cl. 15—256.52 **18 Claims**



1. A cleaning unit for use in a copying machine for removing developer particles from the surface of an electrostatic latent image carrier; comprising a cleaning roller having a movable surface on which brushes of a reduced length are implanted and adapted to move in contact with the surface of the carrier and having means for generating a magnetic field disposed therein, an auxiliary cleaning roller disposed for rotation and disposed in contact with the cleaning roller for removing developer particles from the cleaning roller, and a remover for removing developer particles from the auxiliary cleaning roller.

4,402,104

DEVICE FOR THE SURFACE CLEANING OF ROTATING MACHINE ELEMENTS

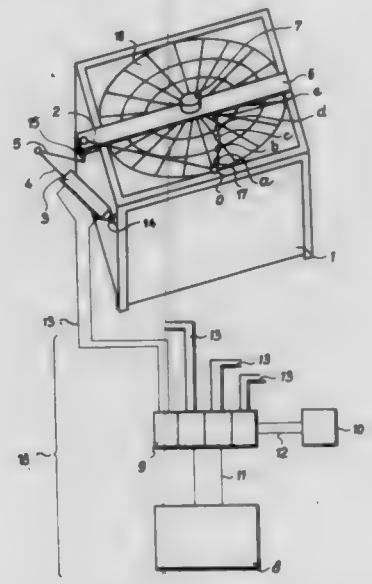
Jaroslav Olesovsky, Ricmanice, and Frantisek Hanik, Brno, both of Czechoslovakia, assignors to Prvni brnenska strojirna, koncernovy podnik, Brno, Czechoslovakia

Filed Oct. 14, 1981, Ser. No. 311,389

Int. Cl.³ B08B *3/02*

U.S. Cl. 15—312 R **5 Claims**

1. A device for the surface cleaning of a rotating machine element, comprising a cleaning arm pivotally mounted upon fixed structure associated with the machine to oscillate in a plane parallel to the surface of the rotating machine element to be cleaned, a cleaning nozzle mounted on the swinging cleaning arm, driving means for oscillating the cleaning arm, controlling gear for the operating member, the operating member and the controlling gear therefor being so constructed and



arranged that in one cycle of the cleaning process the swinging arm repeatedly travels from an extreme radially outer position with respect to the axis of rotation of the machine element to radially inner positions which are successively positioned at progressively smaller distance from the axis of rotation of the machine element.

4,402,105

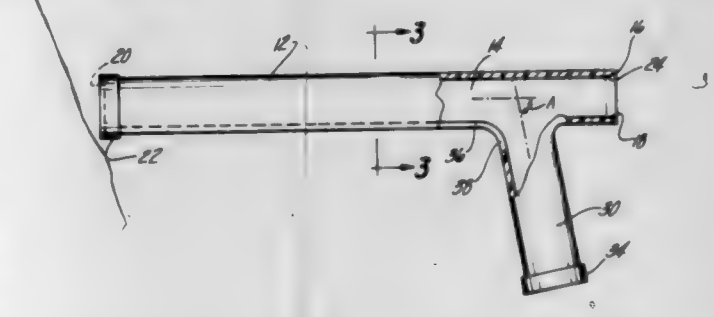
VACUUM CLEANER ATTACHMENT

Thomas J. Garbacik, 5111 Prairie View, Brighton, Mich. 48116

Filed Aug. 17, 1981, Ser. No. 293,679

Int. Cl.³ A47L *9/06*

U.S. Cl. 15—398 **5 Claims**



1. For use with a vacuum cleaner having a hose with a connector at one end, said vacuum cleaner, when activated, producing a vacuum at the connector, an attachment for the vacuum cleaner comprising:

an elongated body, said body having a longitudinally extending chamber formed in it, said chamber being open to one end of said body,

means at said open end of the body for detachable connection with said hose connector,

an elongated handle joined to and extending laterally outwardly from said body adjacent the open end of the body, said handle including an arcuate section adjacent its junction with said body, and

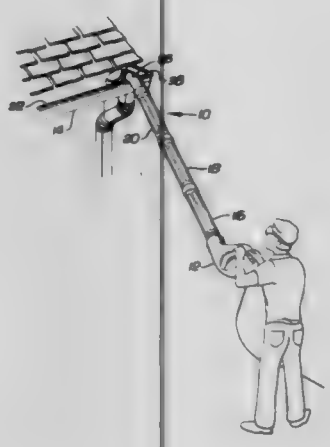
said body and said handle including an elongated and longitudinally extending slot formed along one side of said body and said handle arcuate section, said slot being open to said chamber.

4,402,106

BLOWER ATTACHMENT FOR CLEANING RAIN GUTTERS

Charles A. Mattson, Chatsworth, Calif., assignor to Allegretti & Company, Chatsworth, Calif.

Filed Aug. 26, 1981, Ser. No. 296,428
Int. Cl.[3] A47L *5/00*
U.S. Cl. 15—406 3 Claims



1. For use with a hand-held air blower, an attachment for cleaning out leaves, twigs and other debris from the trough of a rain gutter, comprising:

an extension for conducting the air flow from the air blower to approximately the height of the gutter;

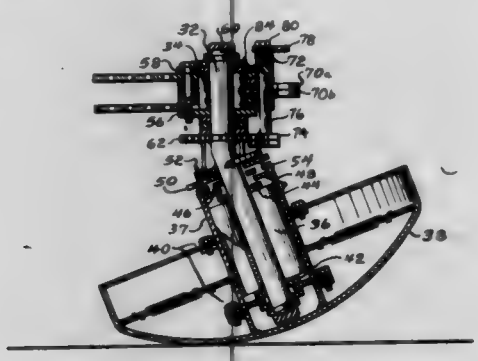
an elbow to direct the air flow from said extension into the trough, said elbow including an inner section attached to said extension to conduct the air flow over the lip of the gutter, a terminal section to receive the air flow from said inner section and direct the air flow into the trough, and a joint allowing rotation between said inner section and said terminal section about an axis lying generally horizontal with respect to the ground, whereby the operator of the air blower may selectively direct the air flow to the left or to the right and set the downward inclination of the air flow into the trough by rotating the terminal section with respect to the inner section.

4,402,107

MOBILE STRUCTURE

Alfred J. Geisler, Jr., Rt. #1, P.O. Box 295A, Hampshire, Ill. 60140

Division of Ser. No. 891,882, Mar. 30, 1978. This application Apr. 24, 1981, Ser. No. 256,993
Int. Cl.[3] B60B *33/00*
U.S. Cl. 16—18 A 1 Claim



1. In a mobile structure, a support and carrying assembly for carrying the structure at each of its supports comprising:

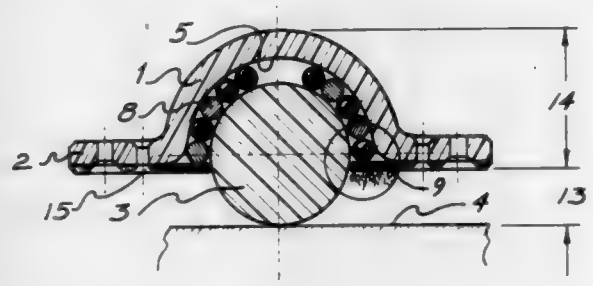
a shaft; with a first portion, having locking means affixed thereto, pivotally mounted to the structure for selective positioning, and defining a first axis of rotation; a second shaft portion intergral with said first portion and defining a second axis of rotation; and a dish member mounted on said second shaft portion for free rotation about said second axis whereby substantial contact with the terrain is provided and selective orientation of said disk is obtained; and wherein said locking means comprises a first gear member fixedly mounted on said first shaft portion and a second gear member mounted for selective reciprocal motion on said mobile structure, whereby said second gear member selectively engages said first gear member to lock said shaft in position.

4,402,108

REDUCED STATIC CASTOR

Hans U. Pannwitz, P.O. Box 67, Odessa, Fla. 33556

Filed Feb. 17, 1981, Ser. No. 234,751
Int. Cl.[3] B60B *33/08*
U.S. Cl. 16—26 3 Claims



1. A castor to provide mobile support for a burden of furniture or equipment, comprising:

a housing body having a semi-spherical socket, said socket having a vertical axis extending through the spherical center thereof;

a spherical member of smaller diameter than the socket residing in said socket with a space therebetween;

a plurality of spherical bearings positioned in the space between the socket and spherical member;

retainer means for closing the space at the terminus of said socket to lock the bearings into the space between the socket and spherical member; including means disposed between said body and said retainer means for wiping the surface of said spherical member with an anti-static chemical; and

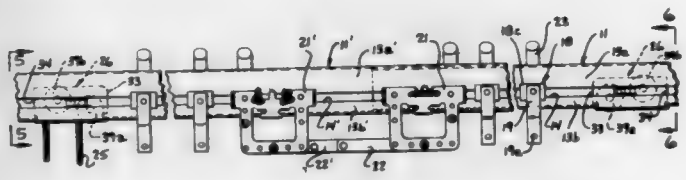
a flange disposed on said housing body, said flange supporting the burden at locations spaced from said vertical axis such that any flexure of said housing body resulting from the burden will be resisted by said bearings disposed nearest to said retainer means to maintain said socket in a semi-spherical configuration and to maintain a full distribution of bearing load among all of said bearings.

4,402,109

TRAVERSE ROD AND PULLEY HOUSING ASSEMBLY

Thor Ohman, and Mark J. Terlecke, both of Madison, Wis., assignors to Graber Industries, Inc., Middleton, Wis.

Filed Jul. 31, 1981, Ser. No. 288,937
Int. Cl.[3] A47H *5/032*
U.S. Cl. 16—95 D 16 Claims



1. In a traverse rod assembly including inner and outer telescoping tubular rod members of generally D-shaped cross section, each rod member having face wall means of generally U-shaped cross section defining the top, front and bottom of the rod and rear wall means at the rear of the rod member having upper and lower rear wall portions spaced apart to

define a longitudinal slot extending lengthwise of the rod member, the inner and outer rod members each having a generally rectangular rod opening through its face wall at the bottom of the rod member and spaced forwardly from its lower rear wall portion, a plurality of drapery carriers each having a head portion inside a rod member and a neck portion in the slot and means outside the rod members for attaching a drapery thereto, a pair of pulley housings of like construction each including first and second spaced housing sidewalls and first and second housing end walls extending between the housing side walls and cord guide means disposed between the housing side walls, the pulley housings being adapted for insertion into the ends of the inner and outer rod members with their first housing end walls innermost and with the first housing side wall of the pulley housing in the inner rod member juxtaposed to the rear wall means of the inner rod member and with the second housing side wall of the pulley housing in the outer rod member juxtaposed to the rear wall means of the outer rod member, the pulley housings each having lower portions dimensioned to pass downwardly through the rod opening in the respective rod member, each pulley housing having a first housing retaining lip projecting from the lower portion of its first end wall adapted to underlie the underside of the face wall of the rod member at the one end of the rod opening and a second housing retaining lip projecting from the lower portion of its second end wall adapted to underlie the underside of the face wall of the rod member at the other end of the rod opening, one of said retaining lips being resiliently movable relative to the pulley housing to snap over the end of the rod opening and allow the lower portion of the pulley housing to move into the rod opening, and each pulley housing having means thereon engageable with the inner side of the rod members for positioning the pulley housings therein.

4,402,110

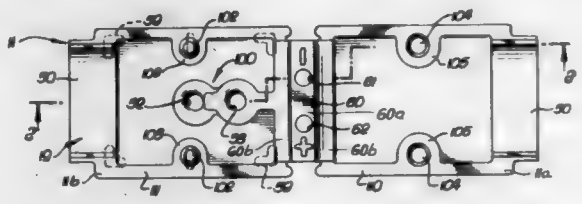
LENS CAP HOLDER FOR ATTACHMENT TO CIRCUIT BOARDS HAVING A PLASTIC INVERTED U-SHAPED HINGE

John M. Savage, Jr., 8118 W. 83rd St., Apt. C, Playa del Rey, Calif. 90291

Division of Ser. No. 57,890, Jul. 16, 1979, Continuation-in-part of Ser. No. 907,735, May 19, 1978, Pat. No. 4,195,330, which is a continuation-in-part of Ser. No. 787,016, Apr. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 638,626, Dec. 8, 1975, abandoned. This application Mar. 8, 1982, Ser. No. 355,474

Int. Cl.³ E05D *1/02*

U.S. Cl. 16—225 **6 Claims**



1. A plastic hinge integrally interconnecting two plastic container sections having end walls, comprising

(a) an intermediate portion, and

(b) two reduced thickness webs respectively integrally interconnecting said intermediate portion with said end walls so that the end walls and intermediate portion define an inverted U-shape, and wherein said end walls and said hinge together define a container end wall when said end walls are swung into a substantially common plane with said intermediate portion.

4,402,111

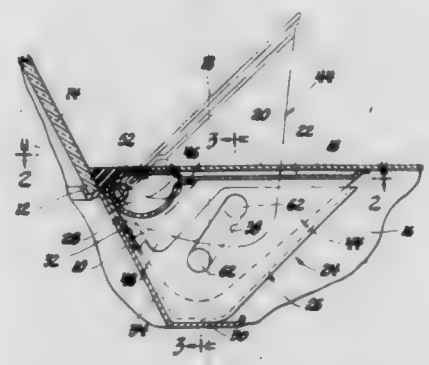
CLOSURE PANEL HINGE WITH TORSION BAR

Donald A. Selby, Southfield, and Leonard P. Silk, East Lansing, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 19, 1981, Ser. No. 312,402

Int. Cl.³ E05F *1/12*

U.S. Cl. 16—308 **3 Claims**



1. A hinge for mounting a closure panel on a body panel comprising:

a body bracket mounted on the body panel;

a panel bracket mounted on the closure panel;

a torsion bar having one end attached to one of the panels and the other end attached to the bracket mounted on the other panel so that the torsion bar torsionally biases the closure panel to a normal position relative the body panel;

first cam means acting between the body bracket and the panel bracket including a cam surface on one of the brackets and a cam follower on the other bracket; and

a cam slot provided in the bracket mounted on the one panel having the one end of the torsion bar attached thereto, said torsion bar extending through the cam slot and coacting therewith to define a second cam means whereby upon pivotal movement of the closure panel the first and second cam means cooperate to bodily shift the closure panel to avoid interference of the closure panel with the body panel.

4,402,112

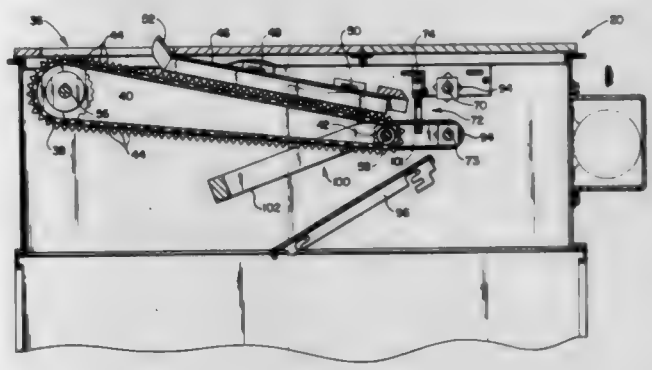
AUTOMATIC POULTRY DEBONING APPARATUS

Geno N. Gasbarro, 1305 Noe-Bixby Rd., Columbus, Ohio 43227

Filed Apr. 2, 1981, Ser. No. 250,257

Int. Cl.³ A22C *21/00*

U.S. Cl. 17—11 **4 Claims**



1. In an automated poultry deboning apparatus for separating the meat from the bone of poultry dark meat portions, the combination of, a housing means; a conveying means mounted in said housing means including means to engage and transport the poultry portion along a predetermined path of travel with the bone portion disposed longitudinally to the direction of travel along said conveying means; nozzle means supported in said housing and comprising a generally ring-shaped member provided with a central opening and a plurality of outlet ports spaced around the circumference of said opening and disposed to direct a fluid stream from each outlet port at an acute angle

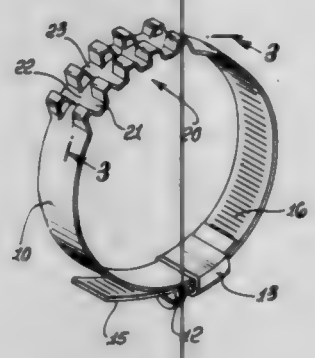
with respect to the longitudinal disposition of the bone portion of each poultry portion advanced along said conveying means, said nozzle means including an annular passage communicating with each of said outlet ports, said streams of of fluid from said outlet ports directed to impinge at closely adjacent points along the intersection of the meat and bone of said poultry portions beginning with the leading end of the bone first exposed to said streams as it is advanced along said conveying means to cause separation of the poultry meat from the adjacent bone sections of said portions, said bone aligned to pass through said central opening of said nozzle means; a source of pressurized fluid operatively connected to said annular passage; power means operatively connected to said conveying means; and a first and second compartment means disposed below said nozzle means for separate collection of the poultry meat and the bone.

4,402,113

FLEXIBLE CLAMP FOR HOSE, CABLE AND THE LIKE

Donald J. Smith, Woodland Hills, Calif., assignor to Communications Technology Corporation, Los Angeles, Calif.

Filed Dec. 30, 1981, Ser. No. 335,738
Int. Cl.³ B65D *63/02*; F16L *33/00*
U.S. Cl. 24—20 R **3 Claims**



1. A flexible clamp for hose, cable and the like comprising
a single strip having opposite ends and means for joining said ends to form said strip into a band,
with a portion of said strip having first and second parallel sections as integral parts of said strip,
with said first section having a corrugated shape and with said second section having a variable length and conforming to the curvature of said band,
said second section comprising a plurality of sequentially overlapping tongues defining a substantially continuous inner surface for said band.

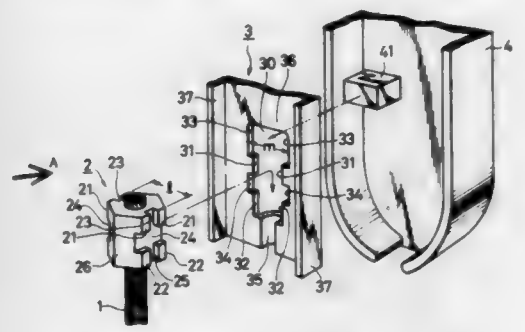
4,402,114

BUCKLE MECHANISM FOR SEAT BELTS AND METHOD FOR THE PRODUCTION THEREOF

Masayuki Takagi, Fujisawa, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

Filed Feb. 18, 1981, Ser. No. 235,684
Claims priority, application Japan, Feb. 28, 1980, 55/24608
Int. Cl.³ A44B *17/00*
U.S. Cl. 24—201 R **1 Claim**

1. A buckle mechanism adapted for use in safety belts for vehicles comprising:
(A) A cable;
(B) a connector crimped onto said cable and having at least two opposed sides,
(1) a longitudinal groove formed in each said side coaxial with the axis of said cable, and
(2) a flattened portion on each said side extending in a latitudinal direction with respect to said grooves;
(C) a buckle base having a back plate, said back plate being provided therein with an opening, both sides of said opening being defined by opposed side walls having a pair of opposed projections adapted to coact with said grooves; and
(D) a buckle cover capable of being coupled with said cable or connector, and having a projection adapted to be positioned inside said opening; and wherein
(E) application of a pull to said connector through said cable in a longitudinal direction from the place where said



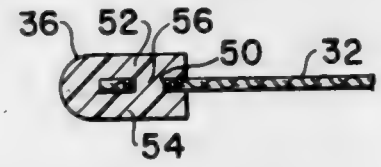
grooves stand opposite to said side walls of said buckle base permits the engagement of said grooves with said projections and secures said connector to said buckle base; and
(F) movement of said connector toward the disengaging direction is prevented by said projection of said buckle cover.

4,402,115

SLIDE FASTENER STRINGER WITH STABILIZED TEXTILE TAPES

George B. Moertel, Conneautville, Pa., assignor to Talon, Inc., Meadville, Pa.

Filed Aug. 13, 1980, Ser. No. 177,708
Int. Cl.³ A44B *19/00*
U.S. Cl. 24—205.16 R **6 Claims**



1. A slide fastener stringer comprising
a tape having a row of closely spaced openings surrounded by displaced tape material in an inner edge portion of the tape,
a plurality of spaced coupling elements molded onto the inner edge portion with pairs of leg portions molded on the opposite sides of the inner edge portion and with joining portions molded through the openings and joining opposite leg portions of each pair of leg portions together,
said tape having at least one stabilized portion adjacent each of the openings,
said stabilized portion having compacted tape material including at least some of the displaced tape material which is set sufficiently to maintain the openings, and
wherein the tape includes a channel extending longitudinally through the tape adjacent the openings and including at least some of the displaced tape material which is compacted and set to form stabilized portions.

4,402,116

CONCEALED INTERLOCKING FASTENER

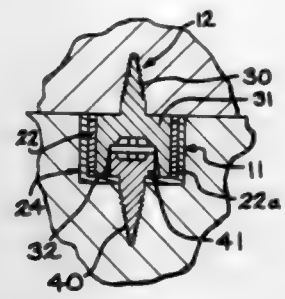
Alexander W. Schenck, 2991 Chapshire Dr. SE., Grand Rapids, Mich. 49506

Filed Jun. 9, 1980, Ser. No. 157,889
Int. Cl.³ A44B *17/00*
U.S. Cl. 24—217 R **8 Claims**

1. A fastener for interconnecting a pair of structural elements in a hidden manner, said fastener having a first screw for attachment to one of said elements, said first screw having an

elongated hollow head defining a blind cavity opening through one end of said head;

means in said cavity for receiving a tool and providing a positive interference engagement therewith for rotating said screw;



a second screw having a head, said head of said second screw having a tool engaging means and having a cross sectional size to slidably and snuggly seat within the cavity of the head of said first screw in a frictional lock and aligned axially therewith; and

resilient deformable means closing frictionally on said elongated head of said first screw.

4,402,117

DEVICE FOR FIXING TWO PLATES TO ONE ANOTHER

Hiroji Kitagawa, Nagoya, Japan, assignor to Kitagawa Industries Co., Ltd., Nagoya, Japan

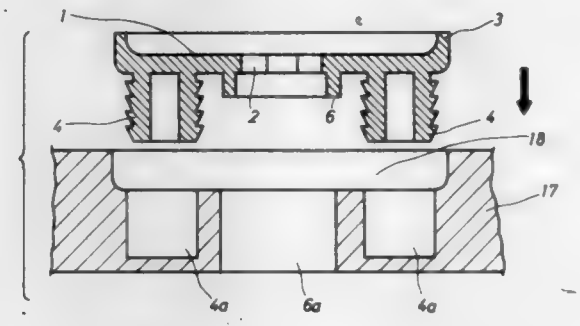
PCT No. PCT/JP80/00213, § 371 Date May 7, 1981, § 102(e) Date May 7, 1981, PCT Pub. No. WO81/00895, PCT Pub. Date Apr. 2, 1981

PCT Filed Sep. 22, 1980, Ser. No. 261,210

Claims priority, application Japan, Oct. 1, 1979, 54-136091[U]

Int. Cl.³ A44B *17/00*

U.S. Cl. 24—221 R **2 Claims**



1. A device for fixing two plates to one another, said device comprising:

a first molded part having opposing first and second surfaces, said molded part including a first through hole extending between central portions of said first and second surfaces, said first through hole having circumferentially opposing elongated portions extending in a first direction, a first upstanding cylindrical portion extending from said first surface and surrounding said first through hole, first fastening means extending from said first surface for fastening to one of said plates, and first engaging means on said second surface;

a second molded part having opposing third and fourth surfaces, said second molded part including a second through hole extending between central portions of said third and fourth surfaces, a second upstanding cylindrical portion extending from said third surface and surrounding said second through hole, second fastening means extending from said third surface for fastening to a second of said plates, and second engaging means on said fourth surface for engaging said first engaging means such that said second and fourth surfaces are intimately joined in surface contact, wherein said second molded part further includes cam means fixed to the radially inner surface of said second upstanding cylindrical portion, said cam means circumferentially extending about the periphery of said second cylindrical portion except in said first direction, when said first and second molded parts are engaged by said engaging means; and

an engaging part including a shaft portion, a head portion at one end of said shaft portion and a stopper portion extending transverse to said shaft portion from a second end of said shaft portion,

whereby said stopper portion is inserted, while oriented in said first direction, from said first surface through said first and second through holes, and is rotated to engage said cam means for locking said first and second molded parts in said engaged condition.

4,402,118

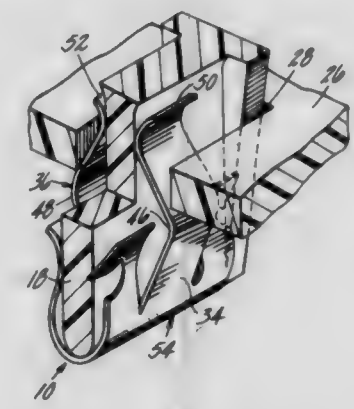
CLIP FOR SECURING A PANEL TO A SUPPORT

Nicholas M. Benedetti, Sterling Heights, Mich., assignor to USM Corporation, Farmington, Conn.

Filed Sep. 28, 1981, Ser. No. 306,197

Int. Cl.³ F16L *33/12*

U.S. Cl. 24—289 **7 Claims**



1. A resilient clip for retaining a projection on a panel into an opening in a support, comprising:

(a) substantially symmetrical opposed side members adapted to lock against the sides of the projection;

(b) a central rounded main support member connecting said side members together to form a substantially "U" or "V" shape configuration to the clip;

(c) said side members having opposed elongated centrally located legs with rounded locking shoulders and means for engaging the sides of the projection;

(d) each of said side members also having substantially symmetrical opposed separate locking legs disposed adjacent said centrally located legs so that the locking legs of one side member oppose the locking legs of the other side member;

(e) each of said locking legs having locking tabs spaced apart from said engaging means and adapted to lock against the sides of the projection in a loaded condition;

(f) said locking shoulders extending outwardly away from one another and are adapted to lock against the sides of the opening in the support to load said engaging means against the sides of the projection and to retain the projection of the panel into the opening in the support while permitting removal of the panel from the support.

4,402,119

FILTER BAG HOOKS

Harley G. Peterson, LaCrescenta, and Reginald Sidaway, LaCanada, both of Calif., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Aug. 28, 1981, Ser. No. 296,944

Int. Cl.³ A44B *13/00*

U.S. Cl. 24—370 **5 Claims**

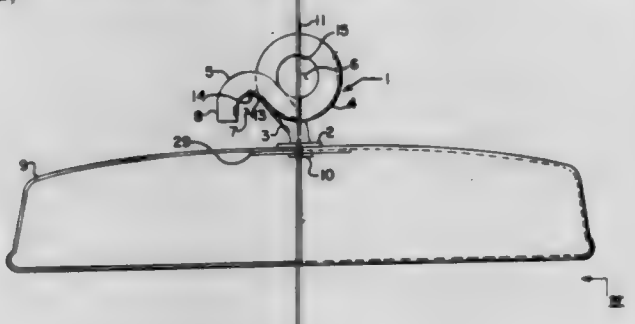
1. A hook for fastening a filter bag cap to a support member,

said hook being substantially in the shape of an integral curvilinear rod comprising:

an anchor located at one end of said rod, said anchor providing means for connecting the filter bag cap to said hook;

a first straight section, said first straight section comprising said rod extending from said anchor at a slope in a generally straight section;

a first eye formed by a first curvilinear section of said rod into which a support member may be inserted, said first curvilinear section comprising said rod extending from said first straight section into a generally helical ring portion, the helical ring portion axial centerline being nearly perpendicular to an original axial centerline of said rod;



a second eye, said second eye being formed by a second curvilinear section of said rod through which a tension member may be inserted to impart a force against said hook in a direction generally opposite the imparting of a force upon said hook by said anchor and for moving the filter bag cap toward the support member, said second eye being spaced from said first eye such that the tension member in said second eye is removable when said first eye is held by the support member, said second curvilinear section comprising said rod extending from said helical ring portion into a semicircular bend having an inside radius generally facing toward said anchor; and

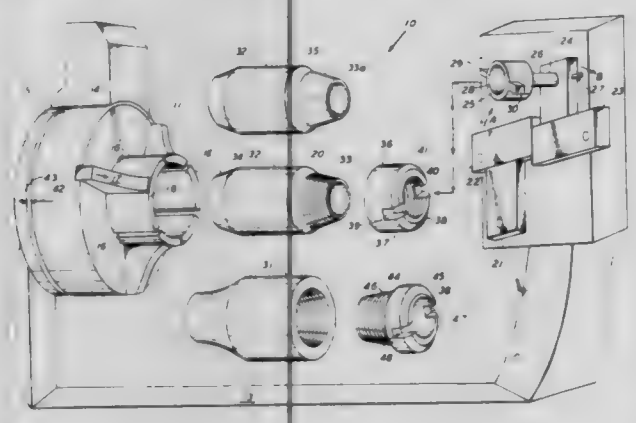
a second straight section, said second straight section comprising said rod extending from said semicircular bend in a generally straight section.

4,402,120

APPARATUS FOR RETHREADING TUBULAR MEMBERS

Jerry Haygood, Houston, Tex., assignor to Reed Tubular Products Company, Houston, Tex.

Filed Nov. 6, 1981, Ser. No. 318,914
Int. Cl.³ B23B *7/04*; B23G *1/22*; B23B *15/00*
U.S. Cl. 29—40 **10 Claims**



1. Apparatus for reworking a threaded tubular member having defective threads or defective sealing surfaces thereon, said apparatus comprising:

an automated machining system having a rotatable spindle and a rotatable and slidable tool turret, said system having automatic control means programmed to automatically form a finished thread on a blank tubular member;

said automated machining system having at least one locator stop position programmed therein and a rework program contained therein;

adapter means adapted to snugly engage a defective threaded tubular member and having locator engagement means thereon;

an axially and rotatably adjustable locator means, with locking means, located on said tool turret and arranged to be positioned in axial alignment with the close proximity to a tubular member in said collet at said locator stop position; and,

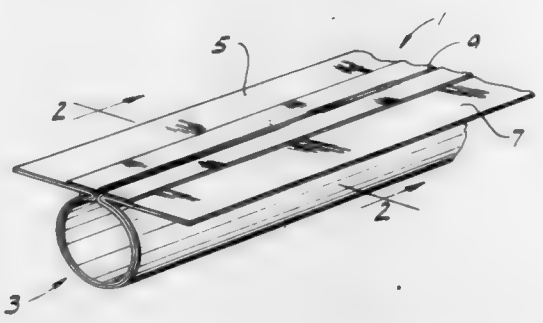
alignment means on said locator means adapted for close fitting engagement with said locator engagement means.

4,402,121

METHOD OF MANUFACTURING HEAT ABSORBING ELEMENTS

Stephen W. Blakely, Apt. A, 503 Beacon, Alton, Ill. 62002, and Stephen F. Hager, 1121 Taylor Ave., Godfrey, Ill. 62035

Filed Sep. 10, 1981, Ser. No. 300,891
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—157.3 A **5 Claims**



1. A method of manufacturing a heat absorbing element comprising:

combining a first metal strip face-to-face with a second metal strip having a width greater than the width of the first strip to form a composite metal strip wherein the side margins of the second strip extend laterally outwardly beyond the side edges of the first strip, the composite strip thus having a central portion extending longitudinally of the strip comprising a double thickness of strip and portions extending longitudinally of the strip on opposite sides of the central portion each comprising one less thickness of strip than the central portion;

forming the central portion of the composite strip into a tube extending longitudinally of the strip; and

seaming the tube closed along a line extending longitudinally of the tube, said side portions of the composite strip extending laterally outwardly away from the seam on opposite sides of the seam to form a pair of fins along the tube.

4,402,122

TOOL FOR INSTALLING METAL CLIPS

Ronald G. Hawkins, Massena; Edward J. Davoy, Norwood; Robert M. Hooker, Brushton, and John E. Muniak, Massena, all of N.Y., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 10, 1981, Ser. No. 319,949
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—243.56 **11 Claims**

7. A device for placing two clips in locking engagement with the respective ends of a spacing member, the device comprising:

a center member,

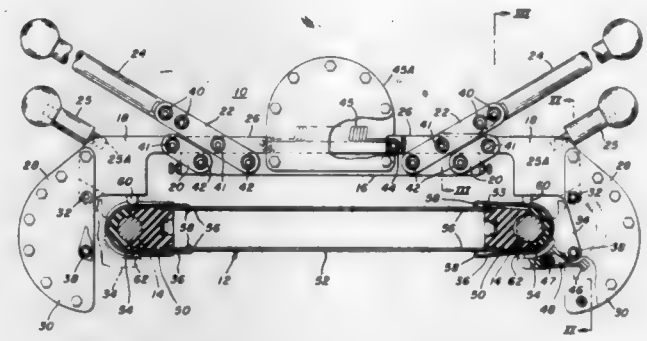
two right angle members disposed adjacent the respective ends of the center member and in a manner that places one extension of each of said members in a generally perpendicular relationship to the longitudinal axis of the center member,

means mechanically connecting the two right angle mem-

bers to the center member in a manner that permits relative longitudinal movement therebetween,

two rotatable handles located for effecting relative longitudinal movement of the center and right angle members,

a spring located between and connected to the right angle members to effect return of the members to an at-rest position after they are moved from such position, and



a third member disposed at the end of the extension of each right angle member that is perpendicular to the center member and configured to engage the base of a clip,

means mechanically connecting each of said third members respectively to the right angle members in a manner that permits rotation of each third member relative to the right angle members,

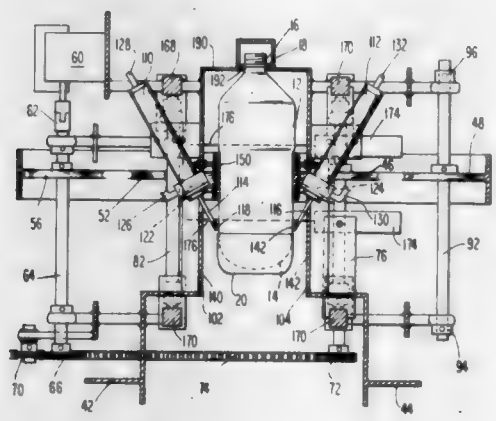
said right angle and third members having means to engage and close opposed legs of the clips on a spacing member.

4,402,123

PROCESS AND APPARATUS FOR REMOVING BASE CUPS FROM PLASTIC BOTTLES

Harry J. Mitchell, 313 N. Belleview Ave., Langhorne, Pa. 19047

Filed Sep. 14, 1981, Ser. No. 301,990
Int. Cl.³ B23P *19/00*; B26F *3/00*
U.S. Cl. 29—426.2 **10 Claims**



9. A process for the removal of a base cup from a plastic bottle, comprising the steps of:

(a) Conveying said bottle between substantially parallel lands of conveyor means frictionally engaging the sides of said bottle; and

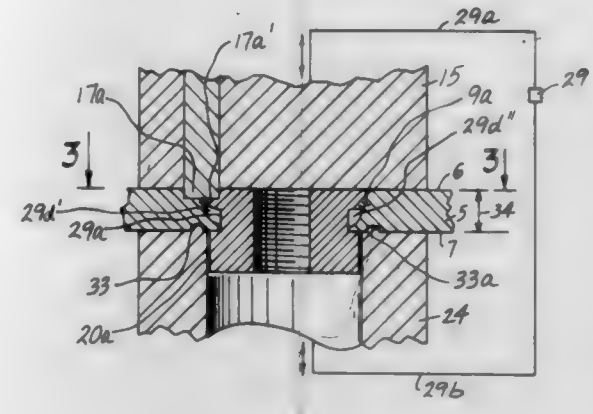
(b) Contemporaneously removing said base cup by deforming said bottle slightly above said base cup with mechanical depending fingers located at an angle of about 25° to about 30° upward from the vertical and lowering said fingers to force said base cup axially away from said bottle until said base cup is sheared from said bottle.

4,402,124

METHOD OF PRESSURE LOCKING AN APERATURED NUT INTO A DIE-SIDE HOLE OF A METAL PLATE

Guenther Krueger, 16 Bristol Ct., Berkeley Heights, N.J. 07422

Filed Jan. 25, 1982, Ser. No. 342,187
Int. Cl.³ B21D *39/00*; B23P *11/00*
U.S. Cl. 29—520 **6 Claims**



1. A method for mounting a nut within a plate punch-aperture, comprising in combination: die-punching an aperture through a plate having a plate-thickness of at least about ¼ inch to produce punch-side and die-side plate holes between which a punched aperture channel extends, walls forming said punched aperture channel in juxtaposition to said punch side hole being substantially vertical to a plate face surrounding said punch side hole, and walls forming said die-side hole being substantially flared outwardly such that said die-side hole is substantially larger at a die-side plate face relative to said punch-side hole, inserting from a die-side of said aperture a bottom end of a nut having extending axially therethrough a female-threaded through-channel, into and through said aperture, said nut having a first diameter at said bottom end fractionally less than a second diameter of said aperture channel at its most narrow point, and said nut having a head of a third enlarged diameter substantially larger than said second diameter and substantially less than a fourth diameter of said die-side hole, said nut being inserted such that said head at a lower edge thereof rests on a flared surface of said walls forming said punched aperture channel, and said nut having at a location spaced-between said bottom end and said head a shaft diameter less than said first diameter, and thereafter pressing a punch-side face of the plate at a press-location adjacent said punch-side hole with sufficient force to malleably force a ridge of plate-material into intermediate space between said bottom end and said head at a position adjacent said bottom end thereby said nut becomes locked-in against withdrawal from said die-side hole, and thereafter at spaced-apart points circumscribing said die-side hole's periphery pressing adjacent faces of said die-side plate face and a top face of said nut head at locations in juxtaposition to said die-side hole's walls that are substantially flared, such that said nut is locked against turning in the aperture.

4,402,125

MACHINING CENTER

Richard R. Carroll, Chagrin Falls, and Alan M. Papp, Eastlake, both of Ohio, assignors to Litton Industrial Products, Inc., Cleveland, Ohio

Filed Aug. 5, 1981, Ser. No. 290,412
Int. Cl.³ B23Q *1/57*
U.S. Cl. 29—568 **5 Claims**

1. A machining center comprising

tool spindle means,

tool changing means,

tool drum assembly means including

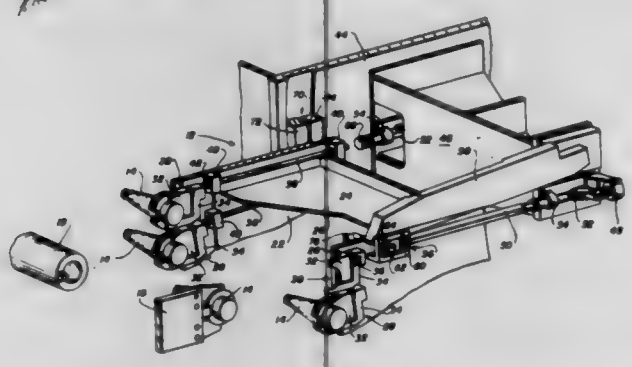
first and second integral tool drums rotatable about and axially spaced along a selected axis each having a plurality of tool holding chucks about the periphery thereof,

each of said tool holding chucks having a movable jaw,

an extension rod operatively associated with each said movable jaw on one of said first and second tool drums for permitting movement of said associated movable jaw from a predetermined remote location,

tool housing means for rotatably supporting said tool drum assembly means including

first actuator means for displacing the extension rod of said one tool drum located at a selected angular location



for displacing the movable jaw of the associated tool holder located at the selected angular location, and

second actuator means for displacing the movable jaw of the tool holding chuck of the other one of said tool drums located at the same selected angular location,

means for supporting said tool housing means for axial displacement, and

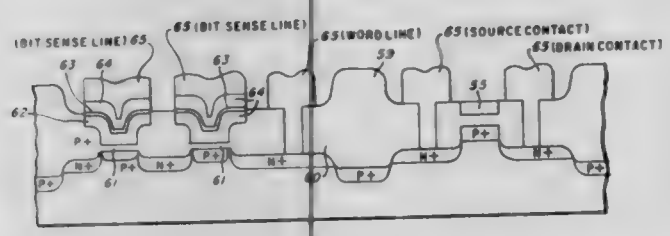
means for axially displacing said tool housing means from a first position to a second position.

4,402,126

METHOD FOR FABRICATION OF A NON-VOLATILE JRAM CELL

Richard A. Chapman, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 18, 1981, Ser. No. 264,888
Int. Cl.³ H01L *21/265*
U.S. Cl. 29—571 **11 Claims**



1. A method for fabrication of a non-volatile, random-access data storage cell, comprising the steps of:

(a) forming channels of one conductivity type separated by areas of the opposite conductivity type on a semiconductor substrate;

(b) constructing vertical JFET devices having source regions of said one conductivity type at spaced intervals along said channels;

(c) forming multi-dielectric stacks in such a proximity to the source region of each said JFET device so as to capacitively couple said multi-dielectric stacks to said source regions; and

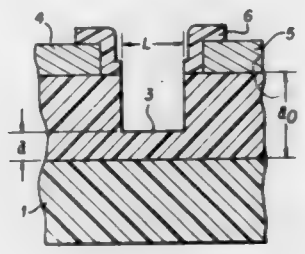
(d) forming metal lines for interconnection of said cells and peripheral devices contained on said substrate.

4,402,127

METHOD OF MANUFACTURING A LOGIC CIRCUIT INCLUDING AT LEAST ONE FIELD-EFFECT TRANSISTOR STRUCTURE OF THE NORMALLY-OFF TYPE AND AT LEAST ONE SATURABLE RESISTOR

Ngu T. Pham, and Gerard Nuzillat, both of Paris, France, assignors to Thomason-CSF, Paris, France

Continuation-in-part of Ser. No. 121,179, Feb. 13, 1980, abandoned. This application Aug. 21, 1981, Ser. No. 295,108
Claims priority, application France, Feb. 13, 1979, 79 03639
Int. Cl.³ H01L *21/302*
U.S. Cl. 29—571 **6 Claims**



1. A method of manufacturing a logic circuit having at least one field effect transistor and at least one saturable resistor, comprising:

forming an active semiconductor layer on a face of a semi-insulating substrate, said active layer formed with a thickness of at least a predetermined value a_1;

depositing simultaneously ohmic contacts to produce source and drain regions for said at least one saturable resistor and said at least one field effect transistor;

depositing a Schottky contact between the source and drain ohmic contacts of said at least one saturable resistor to form a gate region;

depositing a metal connection between the source contact and the Schottky contact of said at least one saturable resistor;

applying a voltage to the source and drain contact of said at least one saturable resistor and then measuring the drain-source current therein to deduce therefrom a measure of the localized thickness of a_1 at the location of the logic circuit including the at least one saturable resistor and the at least one field effect transistor;

cutting a groove between the source and drain contacts of the at least one field effect transistor to obtain a predetermined channel depth a_o from the bottom of said groove to said semi-insulating substrate, the depth of said groove $(a_1 - a_o)$ being determined by the localized measurement of a_1 from the preceding step; and

depositing a Schottky contact in the groove of said at least one field effect transistor.

4,402,128

METHOD OF FORMING CLOSELY SPACED LINES OR CONTACTS IN SEMICONDUCTOR DEVICES

Scott C. Blackstone, Hopewell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 20, 1981, Ser. No. 284,728
Int. Cl.³ H01L *21/223;* B01J *17/00*
U.S. Cl. 29—591 **10 Claims**

1. A method of forming closely spaced conductive lines for a semiconductor device, comprising the steps of:

forming a first layer of insulating material of silicon oxide on a semiconductor body;

forming a silicon nitride barrer layer of insulating material on the first layer of insulating material;

forming a layer of polycrystalline siicon on the barrier layer;

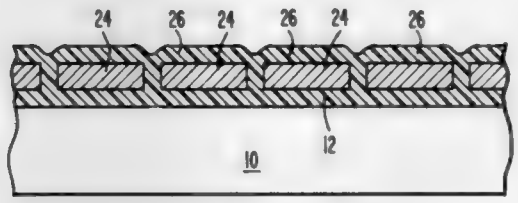
forming an apertured masking layer on the layer of polycrystalline silicon;

etching the polycrystalline silicon layer, through the apertures of the mask down to the silicon nitride barrier layer,

to form at least one polycrystalline silicon island having exposed side walls;

coverting the exposed side walls of the islands to selectively unetchable regions with respect to the remainder of the island;

removing the apertured masking layer and etching any unconverted portions of the silicon island to expose portions of the silicon nitride barrier layer, the remaining converted portions defining the spacing between subsequently formed conductive lines;



removing any exposed portions of the silicon nitride barrier layer;

depositing a layer of conductive material on the first insulating layer to fill the space between each of the converted polycrystalline silicon portions and form the conductive lines;

removing the converted portions of polycrystalline silicon and the remainder of the silicon nitride barrier layer thereunder; and

depositing a layer of insulating material between the conductive lines and over the conductive lines.

4,402,129

METHOD FOR WINDING THE STATOR OF A THREE PHASE GENERATOR

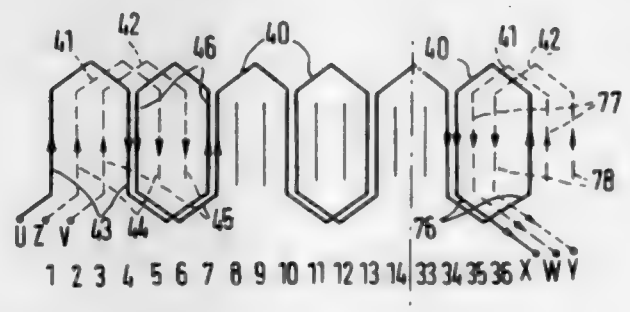
Helmut Kreuzer, and Manfred Frister, both of Schwieberdingen, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 4, 1981, Ser. No. 240,388

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008212

Int. Cl.³ H02K *15/00*

U.S. Cl. 29—596 **4 Claims**



1. Method for winding a first, second and third (40,41,42) winding, respectively, associated with the first, second and third phase of a three-phase a-c generator on a stator having a plurality of slots, comprising the steps of

winding a first partial winding (43) of a first phase, forming part of said first winding (40), in a first direction (clockwise) in a first and fourth slot (1, 4) of the stator, leaving empty second and third intervening slots (2, 3);

then winding a first partial winding (44) of a second phase and forming part of the second winding (41) in the first direction in the second and a fifth slot (2, 5);

then winding a first partial winding (45) of a third phase and forming part of the third winding (42) in the first direction in the third slot (3) and a sixth slot (6);

then continuing to wind the first winding (40) by winding, in opposite direction (counterclockwise), and starting from the seventh slot back to the fourth slot, the second partial winding (46) of said first winding (40);

then continuing, in like manner, winding the second partial windings of each of the second and third windings (41, 42) in said opposite direction, backwardly, from respectively the eighth and ninth slots to the fifth and sixth slots;

and connecting the winding starts and winding ends of said first, second and third windings to each other to form a prdetermined three-phase configuration.

4,402,130

METHOD FOR CONNECTING ARMATURE COIL TO COMMUTATOR SEGMENT

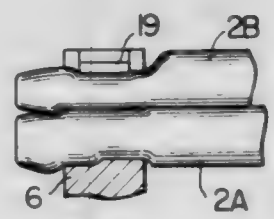
Kazuhiro Tsuruoka, and Hisanobu Kanamaru, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 21, 1981, Ser. No. 285,636

Claims priority, application Japan, Jul. 21, 1980, 55-98816

Int. Cl.³ H01R *43/04, 43/06*

U.S. Cl. 29—597 **7 Claims**



1. A method for connecting armature coils to commutator segments the method comprising the steps of:

forming a stepped portion to prevent axial escapement of said armature coils at a bottom of a slot formed in each of said commutator segments,

inserting portions of said armature coils into the slot,

pressing inserted portions of said armature coils to plastically deform a lower coil of said armature coils to conform to a contour of said stepped portion at the bottom of the slot, and then

pressing-deforming an edge of an opening at the top of said slot to bring an upper and the lower coil of said armature coils into close contact with each other and to fix the upper and lower coils in the slot by a deformed area of the opening.

4,402,131

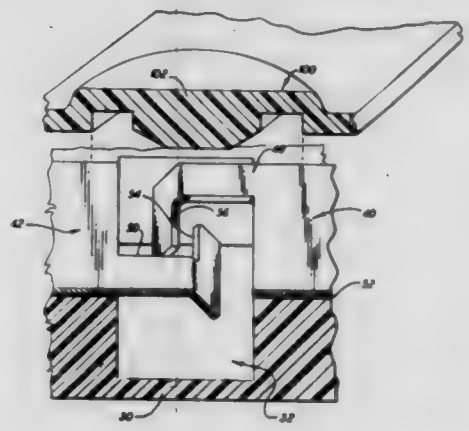
ELECTRICAL SWITCH ASSEMBLY AND METHOD OF MANUFACTURE

Joseph A. Roberts, Hudson, N.H., assignor to Advanced Circuit Technology, Nashua, N.H.

Continuation-in-part of Ser. No. 290,220, Aug. 5, 1981, which is a continuation-in-part of Ser. No. 216,162, Dec. 15, 1980. This application Nov. 4, 1981, Ser. No. 318,202

Int. Cl.³ H01H *11/04*

U.S. Cl. 29—622 **27 Claims**



1. A method of fabricating an electrical switch assembly

comprising a dielectric substrate having at least one cavity formed in one face of said substrate, and one or more electrically conductive circuits formed of resiliently flexible conductive material fixed in part to said dielectric substrate, each of said electrically conductive circuits having an array of switch means, each said switch means comprising a pair of contact members overlying said cavity, said pair of contact members comprising (a) integral extensions of such said conductive circuits and including (b) a pair of generally L-shaped fingers (1) disposed inwardly for a distance and (2) cantilevered from the edge of their associated cavity, said L-shaped fingers occupying the same plane adjacent the edge of their associated cavity, extending beyond the geometric center of said associated cavity, and extending, in part, above or below the plane of said one face; said method comprising the steps of:

(a) providing a resiliently flexible electrically conductive sheet;

(b) removing material from areas of said electrically conductive sheet while leaving a pattern of conductors and said contact members but continuous to one another;

(c) severing the continuous contact members to form said L-shaped fingers;

(d) permanently deforming said L-shaped fingers at least in part;

(e) providing a dielectric substrate having cavities at predetermined locations in one surface thereof; and

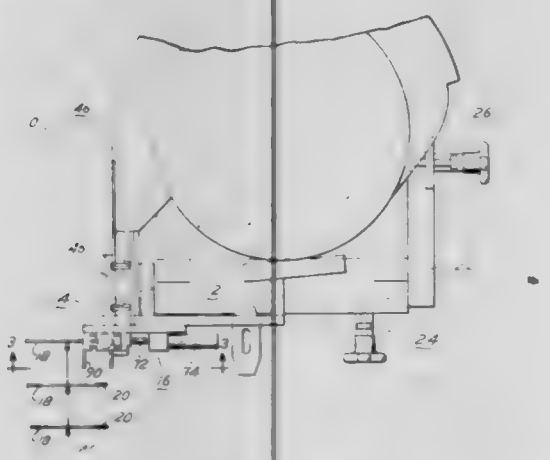
(f) fixedly positioning said pattern of conductors and L-shaped fingers resulting from step (d) relative to said one surface of the dielectric panel, with said L-shaped fingers positioned at least in part overlying said cavities.

4,402,132

DEVICE FOR ATTACHING INSULATOR PODS TO WIRE TERMINALS

Theodore V. West, Michigan City, Ind., assignor to Burcliff Industries, Inc., Mishawaka, Ind.

Filed Apr. 2, 1981, Ser. No. 250,434
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—759 **15 Claims**



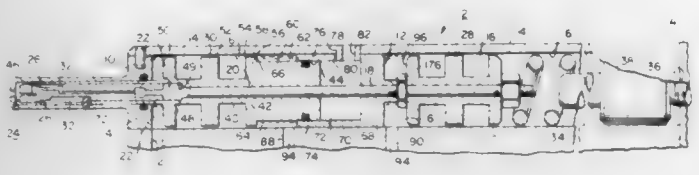
1. In a device for attaching insulator pods to wires having terminals thereon, the combination of upper and lower terminal gripping assemblies having means with slots therein and means with pins disposed in the slots of said upper and lower assemblies, means for supporting said gripping assemblies, means for moving said assemblies to and from a terminal gripping position, means for moving a pod longitudinally into engagement with said gripping assemblies and in alignment with a terminal held therein, each of said slots having an initial portion parallelling the terminal and an angular portion extending away from the terminal when in gripped position, said upper and lower assemblies initially gripping the terminal along the length thereof and adapted to move said grip rearwardly along the terminal when said pins are in said parallel slot portions and to pivot away from the terminal by way of said angular slot portion when said pins are in said angular slot portion, utilizing said pivoting motion to transfer the grip from the terminal to the pod, said pivoting motion being initiated by the force exerted on said upper and lower assemblies by the advancing pod.

4,402,133

CONTACT PULLER

Doyle E. Cribbs, Titusville, and James R. Weckerly, Kennerdell, both of Pa., assignors to GTE Products Corporation, Conn.

Filed Dec. 31, 1981, Ser. No. 336,147
Int. Cl.³ H05K *3/30*; H01R *43/00*
U.S. Cl. 29—739 **15 Claims**



1. Apparatus for pulling a contact comprising

(a) a barrel having a bore extending axially of said barrel, said barrel having a first end and a second end;

(b) a first stop member internal of said barrel and plugging said bore to define a first bore cavity to one side of said first stop member and to define a second bore cavity to the opposite side of said first stop member, said first stop member having an aperture therethrough which extends from said first bore cavity to said second bore cavity;

(c) an elongated rod positioned in said bore and extending through said aperture from said first bore cavity to said second bore cavity, said rod including a second stop member positioned along the portion of said rod extending into said first bore cavity;

(d) means attached to the end of said rod for gripping a pin to be pulled, said gripping means including at least one camming surface;

(e) a first piston fixedly attached to the opposite end of said rod extending into said second bore cavity;

(f) a second piston slidably attached to said rod in said first bore cavity, said second piston being positioned between said first and second stop members and including a cam follower which engages said camming surface;

(g) first means attached to said barrel to move said first piston towards said first stop member so that said elongated rod attached to said first piston moves said camming surface relative to said cam follower to relieve said gripping means; and,

(h) second means attached to said barrel to move said second piston towards said second stop member so that said cam follower is moved relative to said camming surface to close said gripping means and to move said first piston away from said first stop member so that said elongated rod attached to said first piston moves said second piston and said gripping means towards said first stop member.

4,402,134

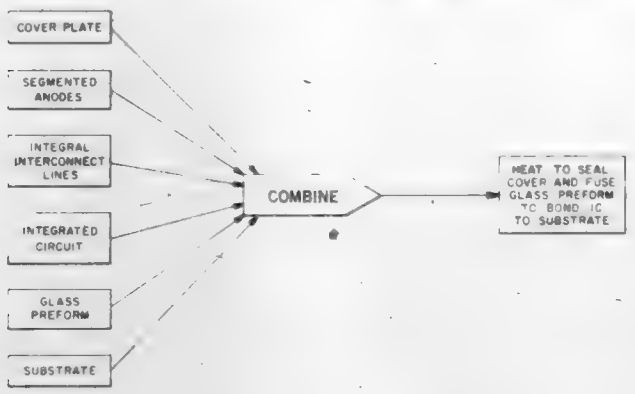
METHOD OF MAKING AN INTEGRATED DISPLAY DEVICE

Richard DuBois, North Caldwell, N.J., assignor to Edison International, Inc., Rolling Meadows, Ill.

Continuation of Ser. No. 23,076, Mar. 23, 1979, abandoned, which is a division of Ser. No. 850,919, Nov. 14, 1977, abandoned. This application Nov. 3, 1980, Ser. No. 203,239
Int. Cl.³ H05K *3/30*
U.S. Cl. 29—832 **2 Claims**

1. In a method of producing an integrated display device comprising a substrate and a cover bonded thereto which forms a hermetically sealed enclosure having an integrated circuit mounted therein, which method includes the steps of mounting said integrated circuit on said substrate, forming a plurality of anodes on said substrate, forming integral electric leads on said subsrate, said electric leads interconnecting at least said anodes and said integrated circuit, said anodes having

at least a part thereof coated with a phosphor, and heating said substrate and cover for heat bonding said cover to said substrate, the improvement comprising the steps of providing a low temperature glass preform on said substrate for affixing



said integrated circuit to said substrate wherein said low-temperature glass preform fuses when said cover and substrate are heated for heat bonding said cover and said integrated circuit to said substrate simultaneously during the same heating operation.

4,402,135

METHOD OF FORMING A CIRCUIT BOARD

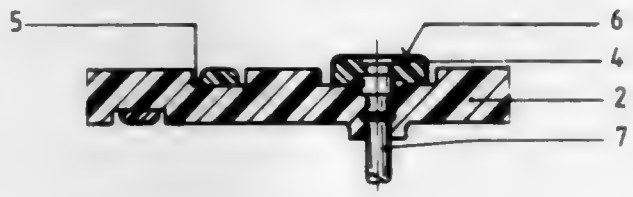
Otto Schweingruber, Glashütten, and Werner Häfner, Buchen-Hainstadt, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Apr. 3, 1981, Ser. No. 250,830

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1980, 3014041

Int. Cl.³ H05K *3/30*

U.S. Cl. 29—832 **2 Claims**



1. A method of forming a circuit board comprising the steps of:

fabricating by injection molding a support of an insulating material having channels in the pattern of one or more electrically conductive paths;

injecting an electrically conductive plastic in the channels of the support through a form means having wall portions which cooperate with the channels, the wall portions of the form preventing the channels from being completely filled and thereby forming spaces between the sides of the electrically conductive plastic and the sides of the channels when the form means is removed; and

precipitating an electrically conductive metal galvanoplastically on the electrically conductive plastic and in the formed spaces.

4,402,136

DEVICE FOR CUTTING PIPES

Wlodzimierz Rast, North Adelaide, Australia, assignor to Rast Patent Manufacturers Pty. Limited, North Plympton, Australia

PCT No. PCT/AU80/00035, § 371 Date Mar. 17, 1981, § 102(e) Date Mar. 17, 1981, PCT Pub. No. WO81/00225, PCT Pub. Date Feb. 5, 1981

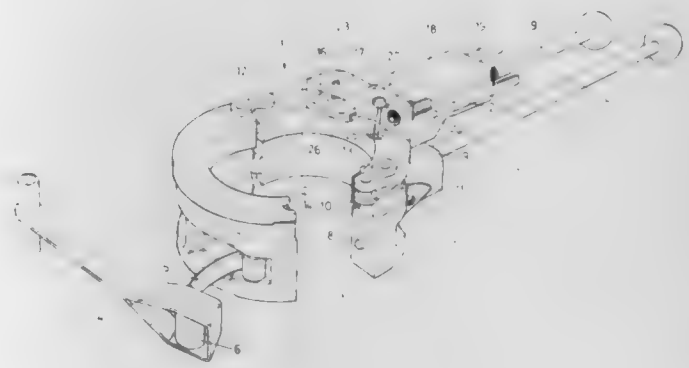
This PCT application filed Jul. 18, 1980, Ser. No. 247,535

Claims priority, application Australia, Jul. 18, 1979, PD9625

Int. Cl.³ B23D *21/08*

U.S. Cl. 30—101 **5 Claims**

1. A pipe cutter for cutting pipes of plastics material, said cutter comprising: a split yoke configured to clamp on a pipe to be cut, a saddle guided against one end face of the yoke and movable on the yoke to rotate around the axis of the yoke, and a cutter disposed on a cutter holder mounted on the face of the saddle remote from the said yoke and operable to engage and cut the pipe in the region outside of the said split yoke and the said saddle as the saddle moves around the yoke, said yoke comprising two semicircular parts pivoted to each other at one of their ends, and a clamp to clamp the other ends together whereby a pipe may be inserted into the cutter when the yoke is in the opened position, and said saddle being circular and also formed of two portions, the said saddle having an in-



turned flange engageable with an internal circumferential slot in the yoke, said two portions at one of their respective adjacent ends being joined by a connecting link, said link being pivoted to said adjacent ends, said other ends of said portions being engageable by a protuberance on one end engaging in a socket in said other end, whereby when the hinged portions of the yoke and saddle are aligned, said yoke and saddle can be opened and closed simultaneously, and means for rotating the said saddle on the said yoke when the said yoke is in the closed position.

4,402,137

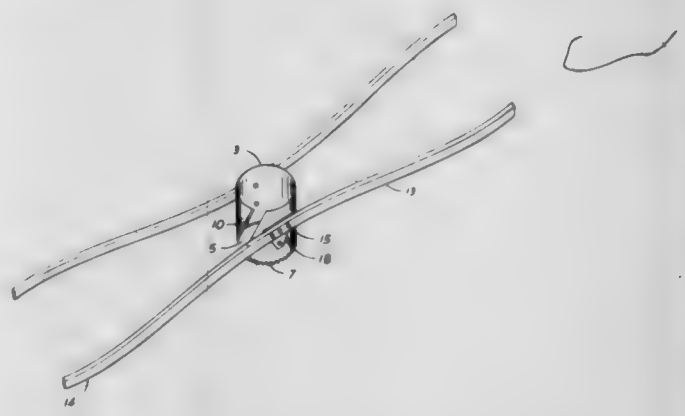
SINGLE ELEMENT CORN EAR STRIPPER

Bruce F. Kovach, 5918 Radnor, Detroit, Mich. 48224

Filed Sep. 20, 1982, Ser. No. 420,263

Int. Cl.³ A47J *17/02*

U.S. Cl. 30—121.5 **2 Claims**

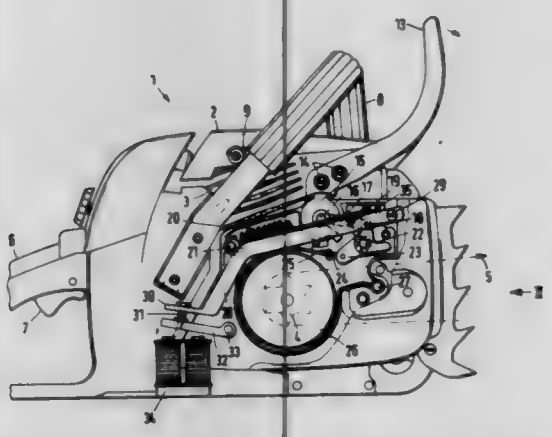


1. A tool for cutting corn kernels from the cob comprising a resilient annular cutting element forming an arc substantially less than a full circle which also has an angular opening large enough to allow resilient movement of the said annular cutting element and which is angled enough to cause the said annular cutting element to overlap itself longitudinally relative to its axes, a primary cutting edge located on and around the bottom edge of the said annular cutting element and being integral with it, a secondary cutting edge integral with the said annular cutting element and located adjacent to and angling over the major portion of the said angular opening, and a holding means secured to the exterior of the said annular cutting element.

4,402,138
SAFETY DEVICE

Volker Glöckle, Sachsenheim; Rainer Glöckle, Stuttgart; Hermann Weiss, Grossbottwar; Heinz Layer, Schwaikheim, and Klaus Schnaithmann, Winnenden, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed May 15, 1981, Ser. No. 263,998
Claims priority, application Fed. Rep. of Germany, May 17, 1980, 3018952
Int. Cl.³ B27B *17/02*
U.S. Cl. 30—382 16 Claims



1. A safety device for power equipment having a brake device, said safety device comprising:

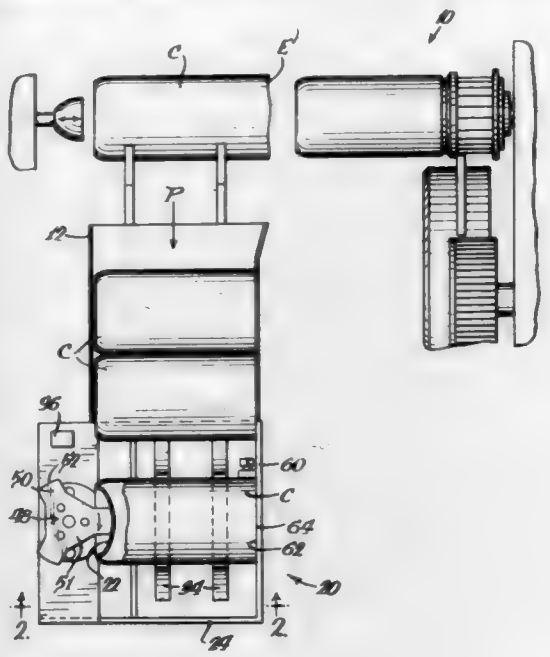
a mass body which is responsive to acceleration forces and is operatively connected with said brake device, said mass body having at least one support part, which is under holding force, for supporting said mass body in a rest position, said mass body being displaceable from said rest position under the effect of acceleration force, and six springs which are oriented in different directions, said mass body being a sphere which is held by said springs, said six springs being embodied as helical compression springs and are uniformly spaced from one another, said spherical mass body being arranged exclusively between said six springs.

4,402,139
METHOD AND APPARATUS FOR DETECTING DOME DEPTH

Wesley Noyes, Stillwater, Minn., assignor to National Can Corporation, Chicago, Ill.

Filed Oct. 29, 1980, Ser. No. 201,716
Int. Cl.³ B07C *5/06*
U.S. Cl. 33—174 L 17 Claims

1. A dome depth detection apparatus for sensing the depth of an inwardly domed end wall of a drawn and ironed container comprising frame means defining a path for gravity feed of said containers, rotatable means on said frame adjacent said path and having pockets for receiving said containers with the weight of said containers causing rotation thereof, a fixed guide surface of said frame means along one side of said path, a rotating member on the opposite side of said path having means engageable with the domed end wall for sensing the

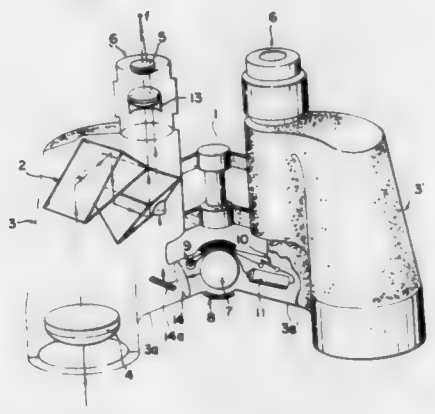


depth of the domed end wall of said container and indicating a shallow dome less than a preselected minimum.

4,402,140
TELESCOPE WITH COMPASS

Shoichi Nagae, 7, Yokohama-cho, Matsue-shi, Shimane-ken, Japan

Filed Dec. 2, 1977, Ser. No. 856,947
Int. Cl.³ G01C *17/18, 17/24*
U.S. Cl. 33—272 5 Claims



1. A telescope having a body tube positionable in horizontal and vertical directions for obtaining a magnified image of a distant object comprising a compass having a case mounted to be positioned in directions in which the body tube of said telescope is positioned, a compass direction indicator mounted for universal movement with respect to the case in which the indicator is carried, the indicator being pendulous such that the indicator is rotatable in a horizontal direction in the case, a means for bringing into a field or periphery of a field of vision of the tube of said telescope the image of a sign of direction signal detected by and shown on said compass and directed to the tube irrespective of any angle change of the body tube in a vertical direction, and a means for observing from the same tube an image of a distant object to which said telescope is directed together with a sign of the direction indicated by said compass wherein said means for bringing in the field or periphery of the field of vision of said telescope said sign of direction which is shown on said compass and directed to the tube of said telescope comprises an objective lens set against the compass, and a small second prism pasted on the back surface of said first prism.

2. A telescope having a body tube positionable in horizontal

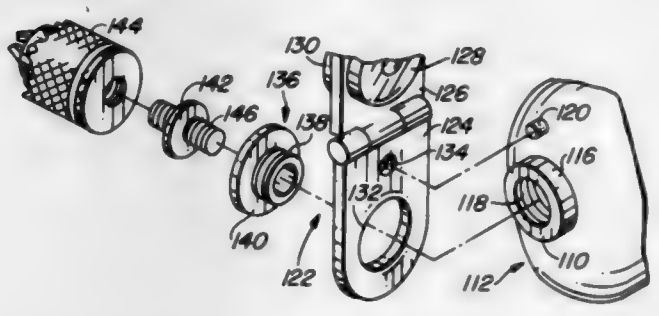
and vertical directions for obtaining a magnified image of a distant object comprising a compass having a case mounted to be positioned in directions in which the body tube of said telescope is positioned, a compass direction indicator mounted for universal movement with respect to the case in which the indicator is carried, the indicator being pendulous such that the indicator is rotatable in a horizontal direction in the case, a means for bringing into a field or periphery of a field of vision of the tube of said telescope the image of a sign of direction signal detected by and shown on said compass and directed to the tube irrespective of any angle change of the body tube in a vertical direction, and a means for observing from the same tube an image of a distant object to which said telescope is directed together with a sign of the direction indicated by said compass wherein the telescope comprises binoculars having parallel tubes and a hinge joining the tubes and wherein the case is mounted adjacent the hinge.

4,402,141

LEVELING MECHANISMS FOR HAND-HELD POWER DRILL

John W. Sterrenberg, 8350 E. McKellips Rd. - #146, Scottsdale, Ariz. 85257, assignor to John W. Sterrenberg, Scottsdale, Ariz.

Filed Apr. 5, 1982, Ser. No. 365,302
Int. Cl.³ G01C *9/28*
U.S. Cl. 33—334 **6 Claims**



1. An apparatus comprising in combination:

(a) a hand-held power drill having a housing containing a rotatable drive member proximate a front portion thereof, said rotatable drive member having an axis of rotation, said drill housing having an aperture in the front portion thereof allowing access to said rotatable drive member, said drill housing further including a projection extending from the front portion thereof surrounding the aperture, said projection having an inner and an outer periphery;

(b) a support engaging the front portion of said drill housing and extending perpendicular to the axis of rotation of said rotatable drive member, said support having a first hole therein for allowing said support to surround the outer periphery of said projection;

(c) securing means for securing said support against the front portion of said drill housing;

(d) a chuck;

(e) a drive shaft for coupling said chuck to said rotatable drive member; and

(f) a first bubble level attached to said support.

4,402,142

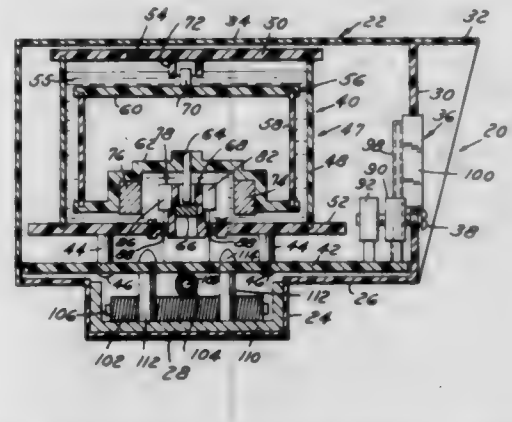
ELECTRONIC COMPASS FOR AUTOMOTIVE VEHICLES

Robert C. Dinsmore, G-3100 Miller West, Flint, Mich. 48507

Continuation-in-part of Ser. No. 184,032, Sep. 4, 1980, abandoned. This application May 7, 1981, Ser. No. 261,524
Int. Cl.³ G01C *17/24*
U.S. Cl. 33—348 **7 Claims**

1. A compass for vehicles such as automobiles and the like comprising first means adapted for fixed disposition with respect to said vehicle and second means adapted for movement with respect to said first means for following the earth's magnetic field, sensing means responsive to relative positions of said first and second means for indicating orientation of said vehicle with respect to the earth's magnetic field, and means responsive to said sensing means for displaying said orientation including two-character display means for displaying said orientation as one of the characters "N", "E", "S" and "W" indicative of the cardinal compass points and as two-character combinations of said characters indicative of secondary compass points intermediate successive ones of said cardinal compass points,

said two character display means comprising a multiple-aperture light pipe in which the first display character is a multiple-segment character defined by six linear segment apertures disposed in a first rectangular pattern having two segment apertures on each side and one segment aperture on each end, a seventh segment aperture extending across said first rectangular pattern between said two segment apertures on each side of said first rectangular pattern, and eighth and ninth segment apertures extending diagonally across said first rectangular pattern, and the



second character is a multiple-segment character defined by six linear segment apertures disposed in a second rectangular pattern laterally adjacent to said first rectangular pattern and having two segment apertures on each side and one segment aperture on each end, a seventh segment aperture extending across said second rectangular pattern between said two segment apertures on each side of said second rectangular pattern, eighth and ninth segment apertures extending in an inverted V-shaped pattern between lower corners of said second rectangular pattern,

said first through said seventh segments of said first display character being identical to said first through said seventh segments of said second display character,

said two character display means further comprising eighteen individually selectable light emitting means disposed one in association with each said aperture for selectively and alternately indicating at said first display character the letters "N" and "S" and for selectively and alternately indicating at said second display character the letters "E" and "W".

4,402,143

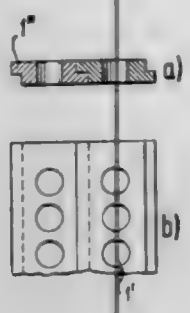
BOTTOM FOR FLUIDIZED BED

Peter Schulz; Knut Vaupel, both of Essen, and Jürgen Klein, Essen-Überruhr, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 34,439, Apr. 30, 1979, Pat. No. 4,286,393. This application Mar. 26, 1981, Ser. No. 249,661
Claims priority, application Fed. Rep. of Germany, May 9, 1978, 2819704
The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.
Int. Cl.³ F26B *17/10*
U.S. Cl. 34—57 R **8 Claims**

1. A bottom for a fluidized bed, particularly for a fluidized bed conveyor, comprising a plurality of elongated metal bar members arranged side-by-side in substantial parallelism and

together forming said bottom, each of said bar members having a plurality of openings for passage of a fluidizing gas there-



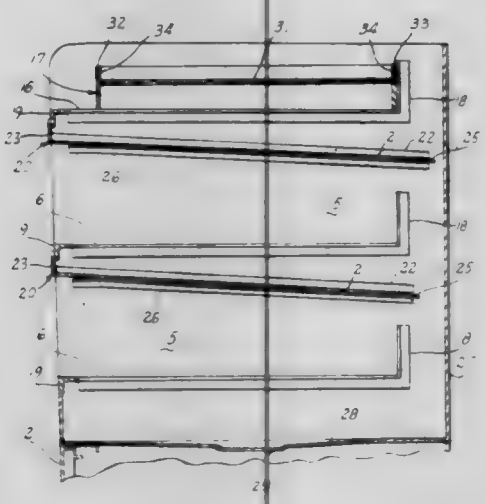
through, and adjacent ones of said bar members engaging one another at contact locations which are gas impermeable at least during operation of the fluidized bed.

4,402,144

SILICONE MILK BATH UNIT

Jean A. Dumke, 7525 N. 107th St., Milwaukee, Wis. 53224

Filed Aug. 26, 1981, Ser. No. 296,464
Int. Cl.³ F26B *9/00*
U.S. Cl. 34—192 **5 Claims**



1. An apparatus for drying surgical instruments or the like coated with a solution, comprising:

a housing having a rear wall, a pair of opposite side walls, a top, a bottom wall having a drain opening therein, and door means providing a closure for the front of said housing;

a plurality of vertically spaced pairs of horizontally extending first supports on said side walls defining tracks for slidably supporting instrument trays thereon, said instrument trays having a perforated surface that supports the coated instruments and permits excess solution to drip therethrough, each of said first supports having an upright stop portion at its rear edge for limiting the extent to which said instrument trays may be slid rearwardly upon said first supports;

a cross member extending between each pair of first supports, each cross member extending longitudinally between the front edges of said pair of first supports and having a downwardly directed flange portion,

a plurality of vertically spaced pairs of second supports on said side walls for slidably supporting drip trays thereon, said pairs of second supports located beneath respective pairs of first supports and sloping downwardly and rearwardly so that their rear edges are lower than their front edges; and

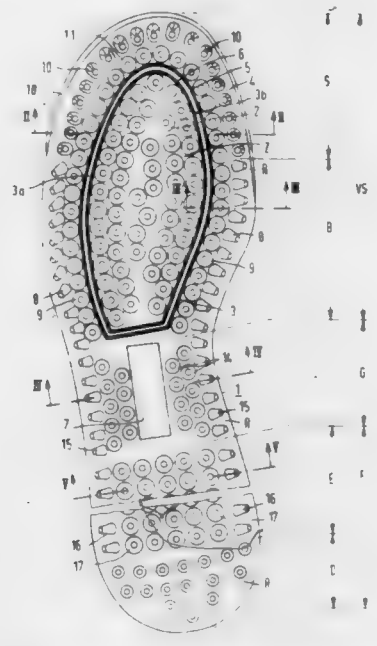
each of said drip trays includes a lip at its rear edge and an upright wall at its front edge, the lips of downwardly succeeding drip trays being progressively spaced from the rear wall by a greater distance thereby providing a greater space between the lip of the lowermost drip tray and the rear wall than the upper drip trays, and said upright wall extending vertically a sufficient distance to engage the downwardly directed flange portion of said cross members to limit the extent to which said drip trays may be slid rearwardly upon said second supports.

4,402,145

TREAD SOLE FOR ATHLETIC SHOE CONSISTING OF RUBBER OR ANOTHER MATERIAL HAVING RUBBER-ELASTIC PROPERTIES

Armin A. Dassler, Herzogenaurach, Fed. Rep. of Germany, assignor to PUMA-Sportschuhfabriken Rudolf Dassler KG, Herzogenaurach, Fed. Rep. of Germany

Filed Aug. 27, 1981, Ser. No. 296,783
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1980, 3032268
Int. Cl.³ A43B *13/04*
U.S. Cl. 36—32 R **22 Claims**



1. Tread sole for athletic shoes comprised of rubber or like material having rubber-elastic properties, said sole being provided with nubs uniformly distributed over at least a portion of the tread and forming a unit with the tread sole, some of the nubs being oriented, as a whole, obliquely to the sole surface, characterized by the combination of the following features:

(a) the obliquely oriented nubs are arranged exclusively along a rim of the sole in zones of the sole corresponding to the ball, the ankle joint, and the heel region of a foot as at least one outermost row of nubs;

(b) some of the nubs being provided in a marginal zone of the toe of the sole, said marginal zone nubs being arranged with their longitudinal axes substantially perpendicular to the sole tread and having a smaller profile height than the obliquely oriented nubs; and

(c) expansion grooves being located in a frontal region of the sole starting approximately from the zone of the ankle joint and extending forwardly up into the marginal zone of the toe of the sole.

4,402,146

RUNNING SHOE SOLE WITH HEEL TABS

Rui M. Parracho, Peabody, and Kevin J. Crowley, Newburyport, both of Mass., assignors to Converse Inc., Wilmington, Mass.

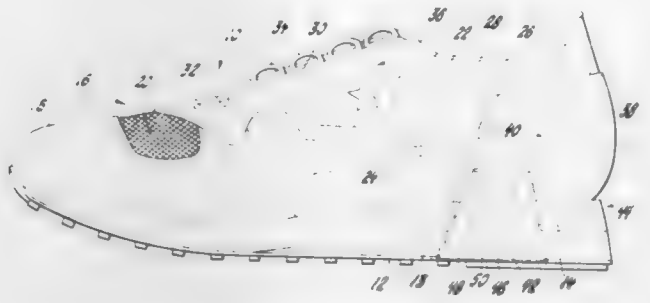
Filed Oct. 8, 1981, Ser. No. 309,663
Int. Cl.³ A43B *5/00, 13/04, 23/08*
U.S. Cl. 36—129 **12 Claims**

1. An athletic shoe, comprising:

an outsole portion;

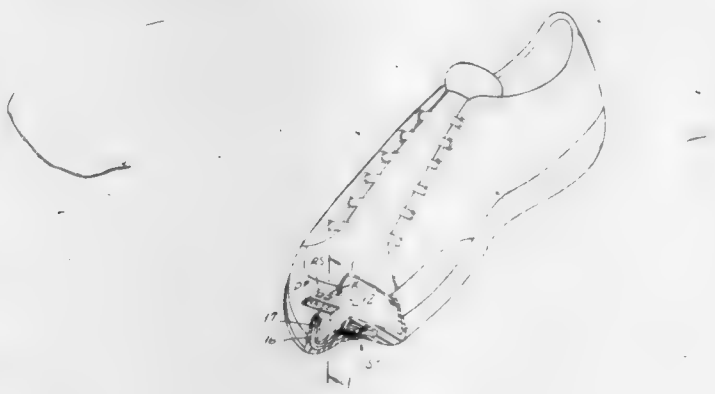
a heel lift portion fastened to said outsole portion;

a midsole portion fastened to said outsole portion and to said heel lift portion;
an upper portion fastened to said midsole portion and including a heel counter portion;
lateral stabilization means fastened to said outsole portion and to said heel counter portion for resiliently opposing



compressive forces in the midsole and heel lift portions of the shoe at the edge of the front of the heel area;
said lateral stabilization means being disposed on opposite sides of said shoe adjacent opposite sides of said heel counter portion and defining an interval therebetween, said interval extending around a rear heel portion of said shoe.

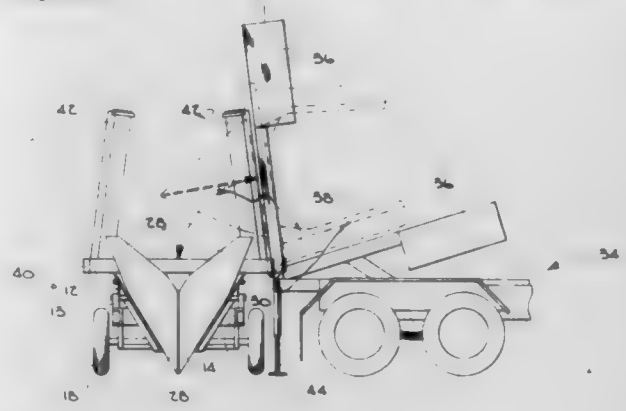
4,402,147
SHOE HAVING AUTOMATIC STEP COUNTER
Chyuan-Jong Wu, 2/F, No. 17-1, Lane 52, I-Tung St., Taipei City, Taiwan
Filed May 27, 1981, Ser. No. 267,630
Int. Cl.[3] A43B *23/00*; G01C *22/00*
U.S. Cl. 36—136 **19 Claims**



1. A shoe comprising a sole and an upper, switch means operatively arranged to produce an electrical signal in response to a user taking a step, an electronic counter means for counting electrical signals from said switch means, and electronic display means responsive to output from said counter means.

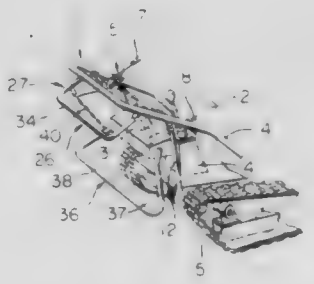
4,402,148
METHOD OF DIGGING AND TRANSPORTING TREES
Richard A. Schiffelbein, 3727 SE. 21st St., Topeka, Kans. 66605
Filed Dec. 8, 1980, Ser. No. 214,375
Int. Cl.[3] B60P *3/00*; A01G *23/04*
U.S. Cl. 37—195 **1 Claim**

1. A method of digging and transporting trees comprising the steps of:
cutting the earth and roots surrounding a tree by a series of spades which move radially downward and inward from an excavating machine in a cone-shape;
providing a trailer-mounted receptacle having an open bottom and a cone-shape substantially identical to the root ball
lifting the root ball and tree by the excavating machine and depositing said ball and tree in said trailer-mounted receptacle for transport to the site of relocation;
transporting said tree to the site of relocation;
reengaging the ball and tree by extending the spades of the excavating machine between the ball and the receptacle until said spades project through the open bottom of the receptacle;



lifting the ball and tree out of the receptacle with the excavating machine; and depositing the ball and tree in a ground cavity previously dug.

4,402,149
IMPACT GUARD FOR DECLUTCHING SNOW THROWER
Tuneo Fujii, No. 285, Oaza-Koike, Tsubame-shi, Niigata-ken, Japan
Filed Aug. 31, 1982, Ser. No. 413,261
Claims priority, application Japan, Apr. 10, 1982, 57-52212[U]
Int. Cl.[3] E01H *5/09*; F16D *19/00*
U.S. Cl. 37—245 **3 Claims**

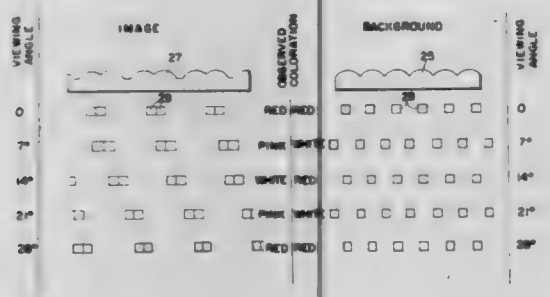


1. A snow plow including an automotive car body equipped with an engine, a transmission and a clutch means; an operation frame attached to the rear upper portion of said car body; a clutch operation means attached to said operation frame, said clutch operation means being designed to operate for engaging or disengaging said clutch means; and a snow plow apparatus mounted on the car body, wherein said operation frame is provided with an upper guard frame having a substantially same width as the car body with freedom of oscillation; the car body is provided, under said upper guard frame, with a lower guard frame having a substantially same width as the car body with freedom of oscillation; said both guard frames are connected by means of a first connecting means; and any one of both guard frames is connected with the clutch operation means by means of a second connecting means so that when an impact is applied on either guard frame the clutch operation means is designed to operate for disengaging the clutch means.

4,402,150
VERIFICATION DEVICE

Paul F. Sullivan, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 11, 1981, Ser. No. 262,120
Int. Cl.[3] G03B *25/02, 21/60;* G09F *19/00*
U.S. Cl. 40—454 19 Claims

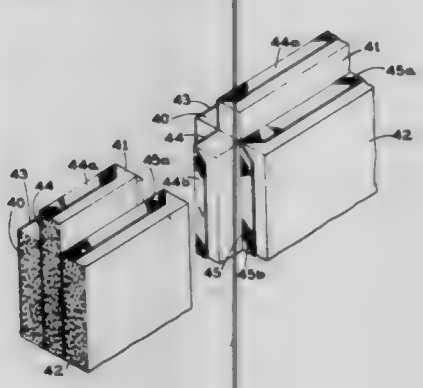


1. A verification device providing predetermined optical effects by the viewing thereof at various viewing angles, said verification device comprising a transparent lenticular sheet having parallel rows of lenticules arranged in regularly positioned rows interrupted by shifted lenticule row segments within said rows to form a predetermined pattern of irregularly positioned lenticules in a background of regularly positioned lenticule rows, said parallel rows of lenticules being aligned with parallel colored lines positioned opposite said rows of lenticules and in registry with the lenticules.

4,402,151
VISUAL DISPLAY ARRANGEMENT

Robert S. Medow, 5369 Trowbridge Dr., Dunwoody, Ga. 30338

Filed Oct. 5, 1981, Ser. No. 308,097
Int. Cl.[3] G09F *23/00;* A63H *33/26;* H01R *4/02;* H05K *1/00*
U.S. Cl. 40—569 4 Claims



1. A visual display arrangement comprising a plurality of substantially rigid display panels interconnected along adjoining edges in substantially edge-to-edge engagement by tongue-and-groove joints to form a single continuous substantially rigid display panel assembly, each of said display panels comprising:

first and second electrically conductive layers separated by a thickness of dielectric material, and a visual display layer on the side of said display panel closer to said first electrically conductive layer than to said second electrically conductive layer;

a set of one or more lamps each having a pair of electrically conductive rigid terminals which are manually insertable into said display panel to mount the lamp in front of said visual display layer;

one of said pair of lamp terminals being long enough to penetrate said first electrically conductive layer and to extend into said dielectric material without contacting said second electrically conductive layer when the lamp is mounted in front of said visual display layer;

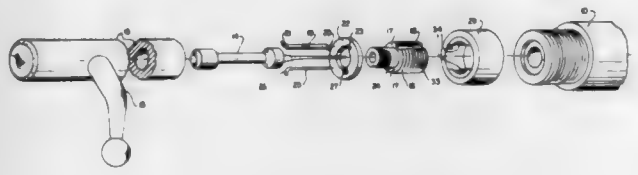
the other of said lamp terminals being long enough to extend through said dielectric material into contact with said second electrically conductive layer when the lamp is mounted in front of said visual display layer, a dielectric sheath on said other terminal insulating it from said first electrically conductive layer;

and circuit means for connecting said electrically conductive layers across an electrical power source, said circuit means including selectively operable switch means for controlling the energization of the lamps mounted on the display panel.

4,402,152
BOLT MECHANISM AND RECEIVER FOR BOLT ACTION RIFLE

Richard J. Casull, P.O. Box 276, Freedom, Wyo. 83120

Filed Jan. 12, 1981, Ser. No. 224,092
Int. Cl.[3] F41C *11/00, 15/00*
U.S. Cl. 42—16 3 Claims



1. In a bolt action type firearm, in which the barrel of the firearm is attached to a receiver and a bolt is received in a bolt-receiving bore in the receiver, with the bolt having an extractor associated with the head end thereof for engaging the rim of a cartridge and extracting the cartridge from a chamber in the barrel when the bolt is withdrawn to its retracted position, an improved assembly at the head end of the bolt for retaining the extractor therein, said improved assembly comprising

a bolt head having an externally threaded end portion adapted to be received in an internally threaded bore in the head end of the bolt, with the other end portion of the bolt head having an enlarged diameter so as to form a shoulder around the periphery of the bolt head between the threaded portion and the enlarged portion;

a recessed slot in the surface of the enlarged portion of the bolt head extending from the shoulder at the inner end of the enlarged portion to the opposite end of the enlarged portion;

an elongate extractor member adapted to be positioned longitudinally within the recessed slot in the enlarged portion of the bolt head, said extractor having an upturned tang at its end approximate the threaded portion of the bolt head; and

a ring retaining member adapted to fit over the threaded end portion of the bolt head and abut the shoulder formed by the enlarged end portion of the bolt head, said ring retaining member having a notch in its inside surface to receiving the upturned tang of the extractor member,

whereby when the bolt head is threaded into the threaded bore in the head end of the bolt, the ring retaining member is held firmly between the head end of the bolt and the shoulder formed by the enlarged end portion of the bolt head, and the extractor member is firmly retained within the recessed slot in the bolt head by the ring retaining member.

4,402,153
CARTRIDGE LOAD FOR A REVOLVER

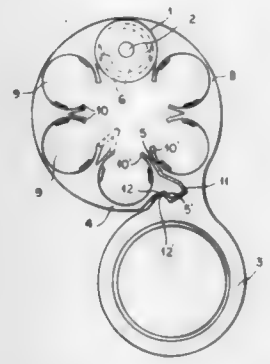
Kurt Peter, Donaustrasse 101/12, A-2344 Maria Enzersdorf-Südstadt, and Gerhard Muck, Peter Jordanstrasse 159, 1180 Wien, both of Austria

Filed Apr. 7, 1981, Ser. No. 251,730
Claims priority, application Austria, Apr. 16, 1980, 2052/80
Int. Cl.[3] F42B *39/04*
U.S. Cl. 42—89 14 Claims

1. A load package for a cylinder of a revolver, said cylinder having angularly equispaced bores adapted to receive respective cartridges, said package comprising:

an array of angularly spaced cartridge corresponding in number to said bores;

a circumferentially closed cartridge ring of synthetic resin material formed with a plurality of angularly equispaced seats each receiving one of said cartridges, said cartridge ring having at least one weakened point whereby an outward force applied to said ring will rupture said ring at said weakened point; and



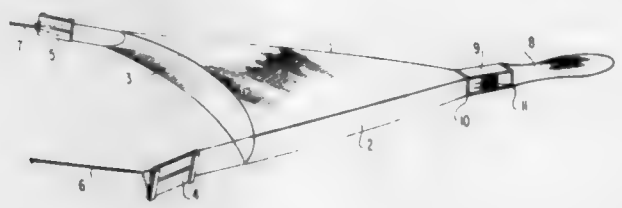
a grip ring unitary with said cartridge ring and adapted to be pulled to rupture said cartridge ring and enable said cartridge ring to be drawn away from said array of cartridges upon said cartridges being inserted in said bores, said cartridge ring being formed with an inwardly extending slit bridged by said weakened point, said grip ring being affixed to said cartridge ring on one side of said slit and having a projection extending into a recess formed on said cartridge ring on the opposite side of said slit.

4,402,154

METHODS AND APPARATUS FOR CLASSIFYING MARINE ITEMS

Paul E. Pence, Destin, Fla., assignor to Marine Classifiers, Inc., Destin, Fla.

Filed Mar. 18, 1981, Ser. No. 241,562
Int. Cl.³ A01K *73/02*
U.S. Cl. 43—9 **20 Claims**



1. A method of classifying marine items in an underwater environment,

said method utilizing

floating vessel means;

marine-catch container means having marine item receiving entrance means; and

operating means interconnecting said floating vessel means and said marine-catch container means and operable, in response to movement of said floating vessel means, to induce marine-catch entrapping movement of said marine-catch container means,

said method being characterized by the improvement comprising:

separating relatively smaller marine items under water from a flow of marine items and water entering said entrance means of said marine-catch container means;

discharging said separated, relatively smaller marine items generally laterally of said marine-catch container means prior to the flowing of the remainder of said marine items into the entrance of said marine-catch container means;

said separating and discharging of said relatively smaller marine items being generally operable to

reduce the amount of marine items flowing toward said marine-catch container means, and

increase the average size of marine items flowing toward said marine-catch container means;

said separating of said relatively smaller marine items being operable to retain marine items, generally larger than said separated relatively smaller marine items, in said flow of marine items and water entering said entrance means; and

baffling the flow of marine items and water flowing toward said marine-catch container means by

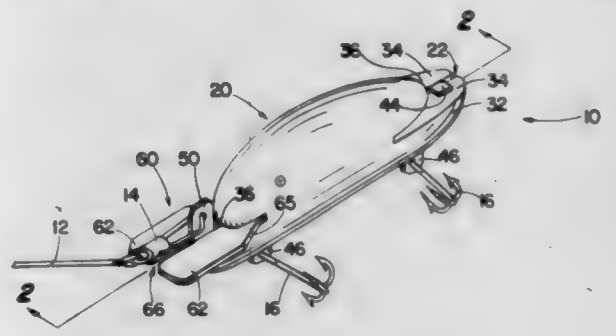
providing baffle means positioned generally upstream of the entrance means of said marine-catch container means, with said baffle means being operable to reduce the flow rate of water entering said entrance means of said marine catch container means so as to increase the degree of dispersion of said marine-catch therewithin.

4,402,155

FISH LURE

Thurman H. Mumma, 10510 Brosius Rd., Garrettsville, Ohio 44231

Filed Nov. 19, 1981, Ser. No. 322,776
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.09 **6 Claims**



6. A fish lure, comprising:

(a) a symmetrical body portion having a first, axially extending ventral slot, a second slot positioned at right angles to the ventral slot and intersecting the ventral slot at one end of the body portion, a third slot positioned at right angles to the ventral slot and intersecting the ventral slot at the end of the body portion remote from the second slot, the body portion also including a chamber having end walls located at each end of the chamber proximate the second and third slots, the second and third slots also defining sidewalls converging toward the center of the body portion;

(b) a hook carrier engageable with the body portion, the hook carrier having first projecting portions extending outwardly of the body portion adjacent the ventral slot for attachment of hooks, a second projection extending outwardly of the body portion for attachment of a fishing line, the hook carrier being insertable into the ventral slot for retention there, the hook carrier including a third projection extendable into the chamber and engageable with one of the end walls, the hook carrier also including a laterally extending tab at that end of the hook carrier remote from the second and third projections, the laterally extending tab engageable with a surface of the body portion formed by the second and third slots; and,

(c) a wedge for securing the carrier and the body portion together, the wedge engageable with the third projection and insertable into either the second or third slots, the wedge including an axially extending slot dividing the wedge into bifurcated sections, and a slot-like opening in line with the axially extending slot, the spacing between the slot-like opening and the axially extending slot being such that the second and third projections of the hook carrier can be received, respectively, by the axially ex-

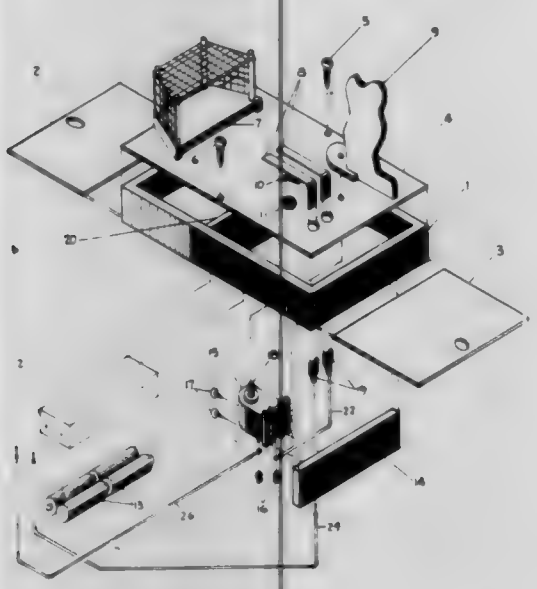
tending slot and the slot-like opening, the wedge also including converging side edges tapering to an apex adjacent the slot-like opening, the side edges engageable with the sidewalls defined by the second and third slots whereby, upon inserting the wedge into the body portion, the hook carrier and the body portion will be fixedly secured relative to each other.

4,402,156

COIN-OPERATED BANK

Edward P. Zimmer, 4545 Chestnut Ridge Rd., Apt. 110A, Williamsville, N.Y. 14221, and Joseph F. Cardinal, 1744 Colvin Blvd., Tonawanda, N.Y. 14223

Filed Aug. 19, 1981, Ser. No. 294,197
Int. Cl.³ A63H *33/00*
U.S. Cl. 46—4 **9 Claims**



1. A toy coin bank comprising:

(a) a housing adapted to be supported during use having a hollow interior defining a coin storage region and having a surface defining a coin handling area;

(b) an opening in said surface in communication with said coin storage region and of a size allowing a coin to pass therethrough;

(c) electrically-operated coin propelling means carried by said housing for moving a coin along said surface and through said opening in response to completion of an electrical circuit operatively associated with said propelling means;

(d) a pair of electrical contacts carried by said housing connected electrically to said circuit and positioned to receive a coin placed thereon to bridge said contacts thereby completing said electrical circuit through said coin; and

(e) said coin propelling means comprising an electric motor located within said housing and positioned with the output shaft thereof disposed generally perpendicular to said surface defining said coin handling area and a coin striking member fixed to said shaft for rotation therewith about an axis generally perpendicular to said surface and into engagement with said coin from said contacts along said surface toward said opening;

(f) whereby when a coin is placed by the user on said contacts said electrical circuit is completed through said coin thereby operating said propelling means to move the coin from said contacts along said surface and through said opening into said storage region.

4,402,157

SHEET MATERIAL DEVICE WITH LOOSELY ROTATABLE MEMBER

David L. White, and Beverly A. White, both of 7777 Mohrle, Fowlerville, Mich. 48836

Continuation-in-part of Ser. No. 136,364, Apr. 1, 1980, Pat. No. 4,309,839. This application Jun. 29, 1981, Ser. No. 278,208
The portion of the term of this patent subsequent to Jan. 12, 1998, has been disclaimed.
Int. Cl.³ A63H *3/38*
U.S. Cl. 46—36 **9 Claims**



1. An amusement device, comprising:

a body member formed of a sheet material, said body member having a front side and a rear side, and a first body opening and a second body opening, each extending between said front side and said rear side;

a handle movably disposed adjacent the rear side of the body member, the handle having an opening;

a first controlled member disposed adjacent the front side of the body member adjacent the first body opening and having a diameter larger than said first body opening, and means in said first body opening connecting the first controlled member to the handle such that the first controlled member is moved with respect to said body member as the handle is being manipulated with respect to the body member;

a second controlled member disposed adjacent the second body opening on the front side of the body, the second controlled member having a diameter larger than the second body opening;

a pair of tab means of a sheet material disposed in the second body opening so as to be rotatably movable therein, said tab means each having one end connected to the second controlled member in spaced relationship, the tab means being disposed in the handle opening and each being enlarged with a diameter larger than the handle opening such that as the handle is moved in a closed curved path of motion with respect to the body member, the second controlled member is moved with respect to said body member.

4,402,158

TOY EMPLOYING GOVERNOR TO CONTROL RATE OF MOVEMENT OF MOVABLE MEMBER

Yoshizo Seki, Tokyo, Japan, and Saburo Watanabe, Gardena, Calif., assignors to Tomy Corporation, Carson, Calif.

Filed Feb. 2, 1981, Ser. No. 230,852
Claims priority, application Japan, Feb. 9, 1980, 55-15029
Int. Cl.³ A63H *11/10*; F16J *3/04*
U.S. Cl. 46—44 **10 Claims**

1. A toy which comprises:

a housing;

a primary moving means mounted on said housing and movable between a first position and a second position;

a first means operatively associated with said primary moving means and capable of moving said primary movable means from said first position to said second position:

a second means and a rectilinearly movable governing means both operatively associated with said primary mov-

able means, said second means capable of moving said primary movable means from said second position to said first position and concurrently said governing means governing the rate of movement of said primary movable means from said second position to said first position, said second means structurally distinct from said first means, said governing means structurallly distinct from said second means;

at least one secondary movable means mounted on said housing in operative association with said primary movable means and said first means, said secondary movable means movable from an initial position to a subsequent position in association with movement of said primary movable means from its first position to its second position and from said subsequent position to said initial position in response to movement of said primary moving means from its second position to its first position.

10. A device for governing the rate of movement of two members which are movable with respect to one another which comprises:

a hollow body having a first portion, a second portion and a permanently enclosed interior extending between said first and said second portions, said first portion of said body connecting to and moving in conjunction with one of said movable members and said second portion of said body connecting to and moving in conjunction with the other of said two movable members, said first and said second portions of said body movable with respect to each other



between at least a first position and a second position in response to movement of said two members with respect to one another, said interior of said body having a first volume when said first and said second portions of said body are in their first position and a second volume when said first and said second portions of said body are in their second position;

said body including an opening into the interior of said body, said opening being capable of conducting a fluid in to and out of the interior of said body, fluid moving into said body in response to a change in the volume of the interior of said body from said first volume to said second volume and out of said body in response to a change in the interior of said body from said second volume to said first volume;

a roughened surface associated with said body and surrounding the periphery of said opening;

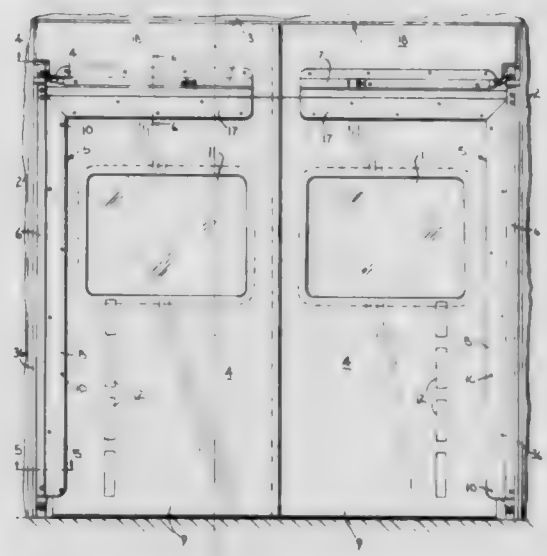
a diaphragm located in association with said roughened surface and capable of partially sealing against said roughened surface and when said diaphragm is partially sealed against said roughened surface said partial seal between said diaphragm and said roughened surface governing the rate of fluid movement into said interior of said body, said rate of fluid movement into said interior of said body governing the rate of change of the volume of said interior of said body from said first volume to said second volume which in turn governs the rate of movement of said first portion and said second portion of said body and said members attached thereto.

4,402,159

TRAFFIC DOOR

James A. Domagalski, Cascade, Wis., assignor to Kelley Company, Inc., Milwaukee, Wis.

Filed Feb. 25, 1981, Ser. No. 238,119
Int. Cl.³ E01F *13/00*
U.S. Cl. 49—9 **14 Claims**



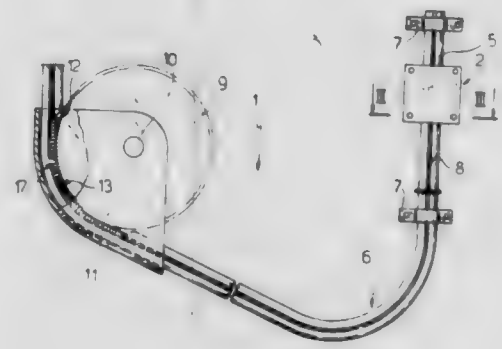
1. A pre-assembled door assembly, comprising a vertical rail structure, and a door mounted for swinging movement on said rail structure, said rail structure including a vertical rail member to be secured to the jamb of the doorway and being offset from the plane of said door, said rail structure also including a pair of spaced bearings located at the upper and lower ends of said vertical rail member respectively, said door comprising a frame including a generally vertical frame section and an upper horizontal frame section, and a panel supported by said frame, said vertical rail member extending substantially the full height of said door and being disposed in a generally line contact with said vertical frame section, whereby said vertical rail member will not interfere with swinging movement of the door and will seal the gap between the vertical frame section and the doorway jamb.

4,402,160

WINDOW WINDER DEVICE WITH FLEXIBLE DRIVE SCREW

Enzo Brusasco, Turin, Italy, assignor to Roltra, S.p.A., Turin, Italy

Filed May 13, 1981, Ser. No. 263,137
Claims priority, application Italy, May 22, 1980, 53220/80[U]
Int. Cl.³ E05F *11/48*
U.S. Cl. 49—352 **7 Claims**



7. A window winder device, particularly for the control of the movable windows of motor vehicles, comprising:

a plate connectable to one edge of an associated window pane;

at least one guide slidably coupled to the said plate and disposed parallel to the direction of displacement of the said window pane;

said guide constituting an end portion (5) of a tubular element (6) internally engaged, in a slidable manner, by a flexible screw (13) connected to the said plate by attachment means (3) for displacing it along the said guide;

the flexible screw (13) having a flexible metal core (14) and an outer cover (15) of synthetic material fixed to the said core (14);

the end portion (5) of the said tubular element (6) having a longitudinal slit (8) engaged in a slidable manner by the said attachment means (3);

the said attachment means comprising a projection (3) extending radially from one end of the said flexible screw (13) through the said slit (8) and connected to the said plate (2), this latter having rigidly connected thereto at least two cylindrical bushes (21) slidably coupled to an outer cylindrical surface of the said end portion (5) of the said tubular element (6); and

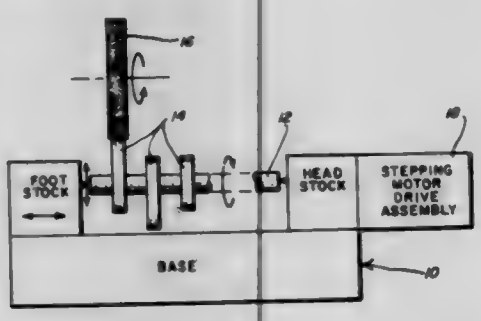
drive means operable to impart to and fro movements to the said flexible screw member.

4,402,161

CYLINDRICAL GRINDING MACHINE

Ralph E. Price, and Jack D. Harrel, both of Waynesboro, Pa., assignors to Litton Industrial Products, Inc., Waynesboro, Pa.

Filed Oct. 2, 1981, Ser. No. 308,232
Int. Cl.[3] B24B *17/10*
U.S. Cl. 51—101 R **3 Claims**



1. A cylindrical grinder for effecting stock removal from a cam surface on a workpiece comprising:

means for supporting the workpiece for rotation about a predetermined axis,

grinding assembly means including a grinding wheel,

means for defining a selected velocity profile for each revolution of the workpiece, the velocity profile having a plurality of acceleration/deceleration segments each having a first and second radiused end portions each terminating at one end tangential to the constant velocity direction, said defining means including

pulse driven stepping motor means which will rotate the workpiece one complete revolution when issued a predetermined number of pulses, and

pulse generating means for driving said stepping motor means including an oscillator for generating a continuous train of pulses at a fixed rate or frequency and divide by N means for defining which pulses of the pulse train will be successively issued to said stepping motor means, and

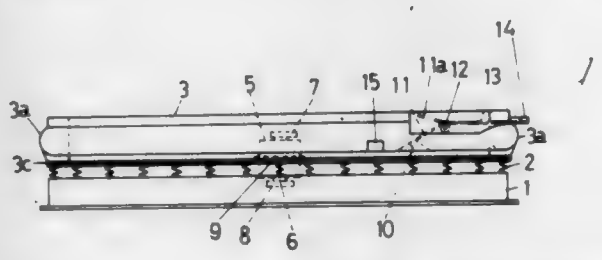
means for commanding a selected N number for said divide by N means for each pulse of said predetermined number of pulses to be issued to said stepping motor means thereby defining said selected velocity profile having a plurality of acceleration/deceleration segments each having first and second radiused end portions each terminating at one end tangential to the constant velocity direction whereby the time interval between each two successive pulses issued to said stepping motor means being driven along a velocity profile including a plurality of acceleration/deceleration segments will be discrete and predetermined.

4,402,162

LONG-TRAVEL ANNULAR VIBRATORY BARREL FINISHING APPARATUS FOR LINE-PROCESSING

Hisamine Kobayashi, Nagoya, Japan, assignor to Kabushiki Kaisha Shikishima Chipton, Nagoya, Japan

Division of Ser. No. 137,441, Apr. 4, 1980, Pat. No. 4,317,313.
This application Dec. 30, 1981, Ser. No. 335,667
Claims priority, application Japan, Apr. 9, 1979, 54-42881; Mar. 5, 1980, 55-27800
Int. Cl.[3] B24B *31/00*
U.S. Cl. 51—163.2 **3 Claims**



1. A long travel vibratory barrel finishing apparatus for line processing of workpieces to be finished, said vibratory finishing apparatus comprising:

barrel means having two independent concentric elongated vibratory barrels each having two opposed semicircular barrel outer wall segments and straight barrel outer wall segments extending therebetween to form the elongated barrel, each barrel having a cross-section transverse to the length thereof which is symmetrical about the center of the cross-section;

a plurality of springs supporting the bottom of said barrel means and extending along the bottom of the barrel in a line generally parallel to the axes of the circular cross-sectional portion;

a vibrator at the center of said barrel means and having a vertical rotary shaft and having unbalancing weights on the upper and lower ends of said rotary shaft at a predetermined angle to each other around the axis of the shaft for producing a predetermined vibration force on said barrel means during rotation of said shaft;

workpiece and finishing medium removal means in one of said barrels, a screen at the downstream end of said removal means over the interior of said one barrel for separating finishing medium from the workpiece and returning it to said one barrel;

a workpiece conduit means extending from said screen into the other barrel and being the sole means of conveying workpieces from said one barrel to the other barrel; and

a further workpiece finishing medium removal means in said other barrel and a further screen at the downstream end of said further removal means.

4,402,163

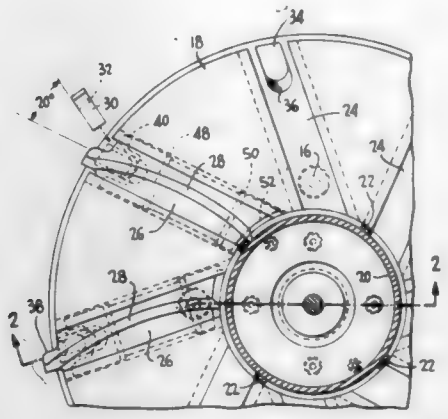
VANE RETENTION APPARATUS FOR ABRASIVE BLASTING MACHINE

James H. Carpenter, and Donald G. Corderman, both of Hagerstown, Md., assignors to Kennecott Corporation, Cleveland, Ohio

Filed Mar. 18, 1981, Ser. No. 245,028
Int. Cl.[3] B24C *5/06*
U.S. Cl. 51—435 **13 Claims**

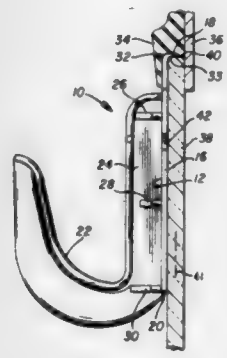
1. For use in an abrasive blasting machine, a blast wheel vane comprising a mounting base and a projecting vane element, said base having inner and outer end portions; the improvement residing in a retaining pin receiving groove in the underside of said base outer end portion, said groove having one side edge extending substantially longitudinally of said base and another side edge extending generally longitudinally of but sloping relative to the longitudinally extent of said base with

that portion of said groove adjacent said another side edge being an access area for a retaining pin and that portion of said



groove adjacent said one side edge being a retaining area for a retaining pin.

4,402,164
UNITARY RACK WITH LATCH MEANS
Johnny C. Elkins, 120 W. 4th St., San Angelo, Tex. 76901
Filed Mar. 16, 1981, Ser. No. 244,219
Int. Cl.³ A47F *5/08*
U.S. Cl. 52—27 **8 Claims**



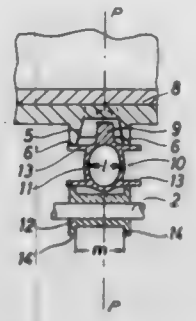
1. In a window havng a frame, a window glass captured within said frame by a gasket which abuts an edge of the glass and covers a marginal edge portion of the glass, the combination with said window of a rack;

said rack includes a hanger and a blade; said blade is flat on one side and said hanger is supported on the side opposed to the flat side of said blade; said blade has a marginal edge which is received under said gasket;

the upper marginal end of said blade terminates in a latch means which engages an edge of the glass and restrains the rack from movement away from the edge of the glass; said latch means is a lip which extends perpendicularly respective to the flat side of the blade, so that the lip engages the edge of the glass while the flat of the blade engages a marginal area of the glass adjacent to the lip.

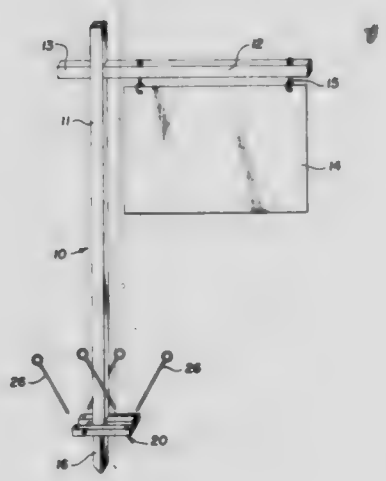
4,402,165
RACK AND THE USE THEREOF IN AN OPENING AND CLOSING DEVICE FOR ROOF HATCHES AND SKYLIGHTS
Niels T. Jensen, Brondby Strand, Denmark, assignor to Dansk Gartneri-Teknik A/S, Brondby Strand, Denmark
Filed Feb. 24, 1981, Ser. No. 237,724
Int. Cl.³ A01G *9/14*; F16H *1/00*; E04B *1/343*
U.S. Cl. 52—72 **9 Claims**

1. A cogged rack having a body shaped substantially like an I-beam, the body comprising two longitudinal ribs projecting to both sides and extending in parallel planes and a toothed crest characterized in that the body is hollow and oval in transverse cross section, that the body has a projecting portion projecting above the plane of each pair of ribs, that the toothed crest is formed integral with said projecting portion and is



perpendicular to said planes, and that the cogs of the rack are formed in said toothed crest.

4,402,166
SIGN POST WITH STABILIZER
Robert R. Wortham, Jr., P.O. Box 9330, Forth Worth, Tex. 76107
Filed Jun. 5, 1981, Ser. No. 270,613
Int. Cl.³ E02D *5/74*
U.S. Cl. 52—155 **8 Claims**



1. A support post comprising

an upright post including a lower stake portion to be driven into the ground;

an elongated stabilizer for coupling to said post, to be disposed transverse to said post for engagement with the ground surface and extending in opposite directions from said post; said stabilizer being pivotally coupled to said post, to conform to the ground contour while said post is generally vertical;

a plurality of ground anchor rods, each comprising an elongated linear stem and an enlarged head;

said stabilizer having means defining guide paths for receiving and guiding the stems of said anchor rods into the ground;

said guide path means including first and second path means disposed in planes transverse to the longitudinal axis of said stabilizer and spaced in one direction from said post; said first and second path means being disposed to guide first and second anchor rods at an angle relative to the plane of said post and said stabilizer, with said rods traversing said plane from opposite sides thereof;

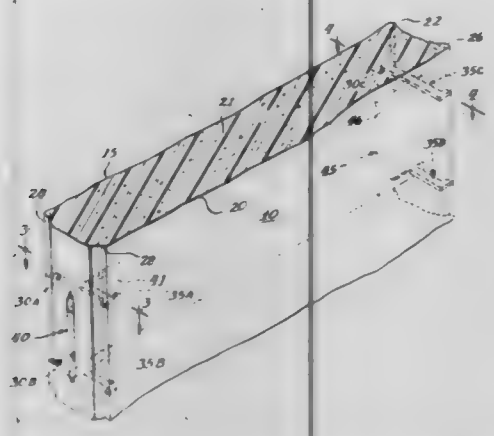
and said guide path means including third and fourth path means disposed in planes transverse to the longitudinal axis of said stabilizer and spaced in the opposite direction from said post; said third and fourth path means being disposed to guide third and fourth anchor rods at an angle relative to the plane of said post and said stabilizer with said rods traversing said plane from opposite sides thereof.

4,402,167

PANEL FASTENING STRUCTURE

John F. Denucci, Roberts, Wis., assignor to The Vollrath Company, Sheboygan, Wis.

Filed Jan. 5, 1981, Ser. No. 222,487
Int. Cl.[3] E04B *2/82, 1/90, 1/41*
U.S. Cl. 52—426 3 Claims



1. An improvement in a locking device for a panel assembly wherein said locking device is adapted to be disposed at one end of said panel assembly and wherein said panel assembly has an opposed pair of generally flat, spaced-apart, first and second wall members each defining a channel along opposed margins of the panel assembly at one end, said improvement comprising:

(a) a first fastening member secured to said locking device and adapted to engage said channel of said first wall member;

(b) a second fastening member adapted to engage said channel of said second wall member and adapted to engage said first fastening member; and

(c) means on said first and second fastening members for maintaining the position of said first and second fastening members relative to each other when engaged to thereby maintain said wall members in spaced-apart relationship,

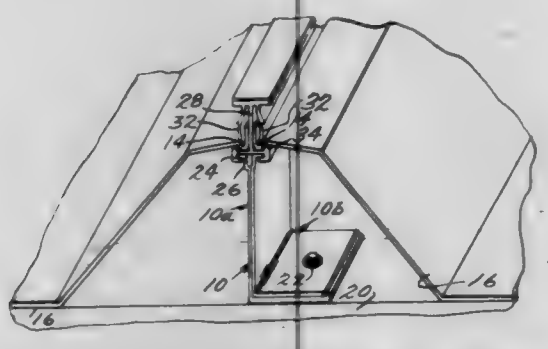
each of said first and second fastening members having a first and second portion arranged in a generally L-shaped configuration with one of said portions adapted to be received in said channel of one of said wall members.

4,402,168

PANEL CONNECTION

Adolph J. Maier, Jr., 128 W. Livingston Pl., Metairie, La. 70005

Filed Dec. 8, 1980, Ser. No. 214,268
Int. Cl.[3] E04D *3/362*
U.S. Cl. 52—478 4 Claims



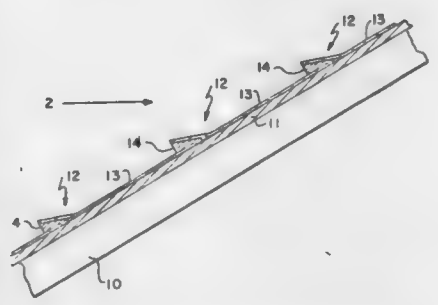
1. A mounting clip for mounting roof and wall panels to a supporting structure comprising first and second L-shaped plates each having a body and a foot, the body of the first plate having an outer end portion offset from the remainder of the body in the direction of the respective foot and parallel to said remainder of the body so as to form a shoulder at the juncture of said offset portion and said remainder, the outer end portion having a lip projecting from its outer end in the same direction as and generally parallel to the respective foot and the body of the second plate having an outer end portion offset from the remainder of the body in the opposite direction of the respective foot and parallel to said remainder of the body so as to form a shoulder at the juncture of said offset portion and said remainder, the outer end portion having a lip projecting from its outer end generally parallel to the respective foot and in the opposite direction from said foot, said plates being sized so that one plate can nest with the other plate and when so nested, the bodies and lips form a T-shaped in cross section with a space between said outer end portions.

4,402,169

SURFACING FOR ROOF AND SIDING STRUCTURES OF BUILDINGS

Otis M. Martin, 5624 Bodie Ct., San Jose, 95123, and John K. Kough, Morgan Hill, Calif., assignors to Otis M. Martin, San Jose, Calif.

Filed Aug. 5, 1980, Ser. No. 175,539
Int. Cl.[3] E04D *1/20, 1/36*
U.S. Cl. 52—540 2 Claims



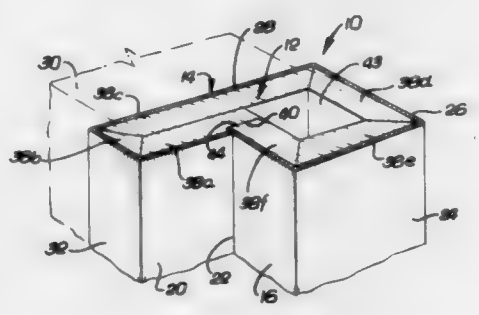
1. A surfacing arrangement for a roof or siding comprising a first strip of surfacing composition material having upper and lower horizontal margins when applied horizontally to a building structure; an elongate shadow-line forming member disposed over the upper surface of said first strip at the upper margin of the strip, said member having a flat inner wall in face-to-face contact with said strip, an end wall extending outwardly from said strip generally normal thereto, and an outer wall projecting away from the outer edge of said end wall; and a second strip of the same composition material as said first strip and having a lower margin in face-to-face contact with the outer wall of said elongate member and terminating at the outer edge of said end wall, the end wall of said shadow-line member being arranged to extend continuously between said outer and inner strips and being made of a material different from said composition material.

4,402,170

MILLWORK MEMBER OF FOLDED CONSTRUCTION

Marc A. Seidner, 234 Conway Ave., Los Angeles, Calif. 90024

Filed Feb. 19, 1981, Ser. No. 235,838
Int. Cl.[3] E04C *2/00;* E06B *1/04*
U.S. Cl. 52—631 20 Claims



1. A rabbetted one-piece door jamb comprising:

a composition board core that is cut to form first, second, third, fourth, fifth and sixth successive sections assembled in a generally L-shaped configuration and defining a rectangular cavity extending therethrough, said first section

being notched longitudinally to engage an end of said sixth section which extends in a direction generally perpendicular to said first section, said first and third sections extending generally parallel to one another and abutting against one another for substantially the entire length of said first section; and

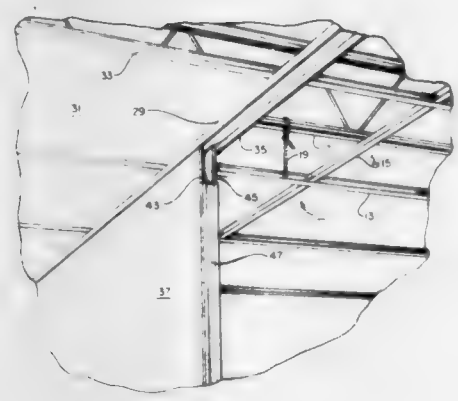
an exterior skin bonded to each of said core sections and extending completely around said core to form the exterior surface thereof.

4,402,171

CEILING GRID BRACKET

David R. Snyder, 120 Key Crt., Hurst, Tex. 76053

Filed Jan. 22, 1982, Ser. No. 341,797
Int. Cl.³ E04B *1/00*
U.S. Cl. 52—741 **2 Claims**



1. A method of securing the base portion of a channel member to an exposed ceiling grid structure, said channel member being adapted to support a partition in the interior of a building, comprising the steps of:

providing a bracket having a U-shaped central portion adapted to be received on said ceiling grid structure and oppositely facing flanges extending outwardly from said U-shaped central portion generally parallel to the plane of the base portion of said channel member;

placing said bracket over said ceiling grid and placing said channel member below said bracket whereby said channel member crosses said ceiling grid in transverse fashion, the portion of the ceiling grid not traversed by said channel member being visible from the interior of said building when said bracket is in place;

passing mounting means through said channel member base portion and said bracket flanges without contacting said ceiling grid structure; and

passing fastening means through said U-shaped portion of said bracket which is received on said ceiling grid structure to thereby prevent movement of said channel member along the longitudinal axis of said ceiling grid structure.

4,402,172

FLEXIBLE PACKAGING STRUCTURE AND PROCESS FOR MAKING IT

Duane A. Krueger, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

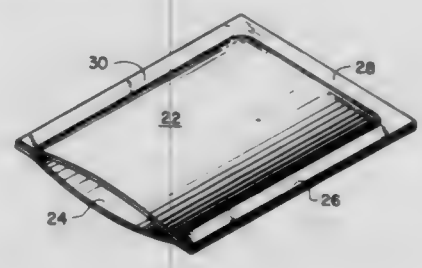
Filed Dec. 22, 1980, Ser. No. 218,947
Int. Cl.³ B65B *55/06*
U.S. Cl. 53—425 **3 Claims**

1. A process for making a multiple layer laminate packaging material and for making a package from said material, the process comprising the steps of:

coextruding a multiple layer film having as one outside layer thereof polypropylene modified with a fused ring acid anhydride, the layer adjoining said modified polypropylene layer being a polypropylene layer;

drawing said coextruded film and an unprimed aluminum foil into and through a nip of rolls, with said modified polypropylene layer being positioned in face to face relation with said foil;

applying effective amounts of heat and pressure, over effective periods of time respectively to adhere said foil to said film at the interface of said foil with said modified polypropylene layer, forming therefrom a multiple layer laminate packaging material, said pressure being applied at said nip, said heat being applied during contact of said sheet-like materials with said rolls;



adhesively laminating a biaxially oriented, abuse resistant, polymer film to the surface of said foil opposite the surface adhered to said anhydride modified polypropylene;

forming a portion of said multiple layer packaging material into a pouch;

filling a product into the pouch;

closing and sealing the pouch;

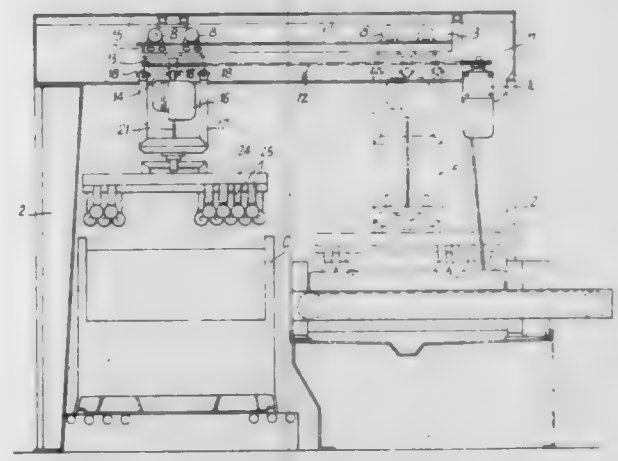
and heating the filled and sealed pouch under retort conditions of at least about 100° C. for at least about 5 minutes, to affect increased levels of adhesion between said foil and said modified polypropylene layer.

4,402,173

MANUALLY CONTROLLED MACHINE FOR LOADING OR UNLOADING ARTICLES IN CASES WHERE SUCH ARTICLES ARE STOWED

Michel Thierion, Muizon, France

Filed Apr. 27, 1981, Ser. No. 257,584
Claims priority, application France, Apr. 30, 1980, 80 09804
Int. Cl.³ B65B *21/00, 5/08, 35/56;* B65G *57/04*
U.S. Cl. 53—538 **9 Claims**



1. Machine for loading, or unloading, bottles lying head to tail, between a first station (A) reserved for the bottles and a second station (B) reserved for containers (C), said machine comprising a horizontal runway (1) passing above said first station (A) in the longitudinal median zero thereof and above said second station (B), a carriage (7) rollingly mounted on the runway (1), a tackle-block (16) attached to the carriage (7) and having a chain for carrying a plate (24) provided with suction cups (25), the runway (1), above said station (B), having a center line which is substantially in the vertical plane of the longitudinal geometrical axis of a first half, in transverse direction, of a container disposed at said second station (B), said center line being substantially tangential to the vertical plane of

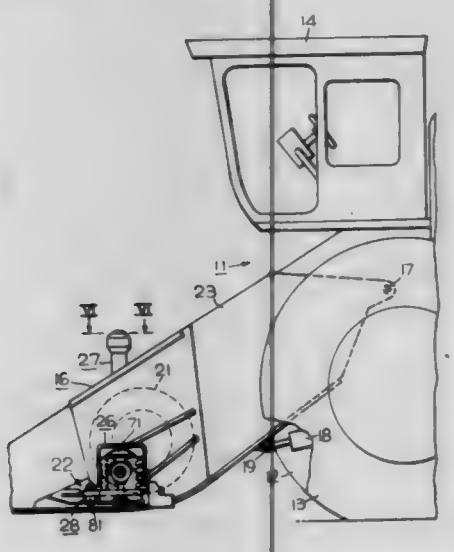
the longitudinal geometrical axis of the second half due to a semi-circular incurvation (4), the plate (24) having a width equal to the inner half-width and a length equal to the inner length of the containers (C).

4,402,174

SICKLE DRIVE WITH RESONANT SPRING ON THE NONDRIVEN END OF THE SICKLE

Jerry C. Boone, Independence, Mo., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jul. 2, 1981, Ser. No. 280,099
Int. Cl.³ A01D *55/02*; F16H *23/00*
U.S. Cl. 56—306 **1 Claim**



1. A crop-cutting device for a harvester comprising:
a support,
an elongated sickle horizontally reciprocable in its direction of elongation,
power drive means connected only to one end of said sickle for reciprocating the latter, said drive means being the only motion imparting means connected to said one end of said sickle and said one end of said sickle being free of any direct relationship with an energy storing and releasing mechanism,
a lever having one end pivotally connected to the other end of said sickle and extending in a transverse direction from the latter,
means pivotally connecting a portion of said lever at a point thereof spaced from said one end of said lever to said support for oscillating movement of said lever about an oscillation axis spaced from said sickle during reciprocation of the latter,
a torsion bar of rod-like configuration and
means nonrotatably and rigidly securing opposite ends of said torsion bar to said support and lever, respectively, the resonant frequency of said sickle and oscillating elements connected thereto falling within a predetermined high speed range of operating frequencies of reciprocation of said sickle during a crop-cutting operation, said torsion bar cyclically receiving energy from and imparting energy to said sickle during reciprocation of the latter by said power drive means.

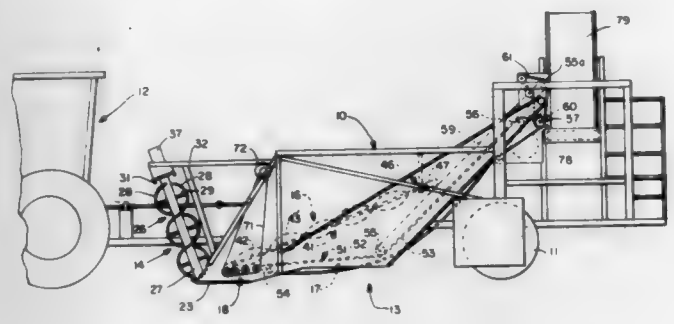
4,402,175

PEPPER HARVESTING MACHINE

Norman H. Watenpaugh, Gilroy, Calif., assignor to Patent Technology, Inc., San Francisco, Calif.

Filed Mar. 9, 1981, Ser. No. 241,605
Int. Cl.³ A01D *45/00*
U.S. Cl. 56—327 R **5 Claims**

1. A machine for field harvesting of peppers or pepper fruit comprising a mobile frame movable over a field having spaced rows of pepper plants, a picking assembly carried by the frame, the assembly comprising a structure formed to straddle a row of the plants, means carried adjacent the advancing end of the structure for upwardly straightening the plants, dual means extending rearwardly of said first named means for repeatedly impacting both sides of the plant as the structure advances over the same, conveyor means for receiving the fruit that is removed from the plant and for conveying the same to the rear of the structure, the conveyor means including two laterally



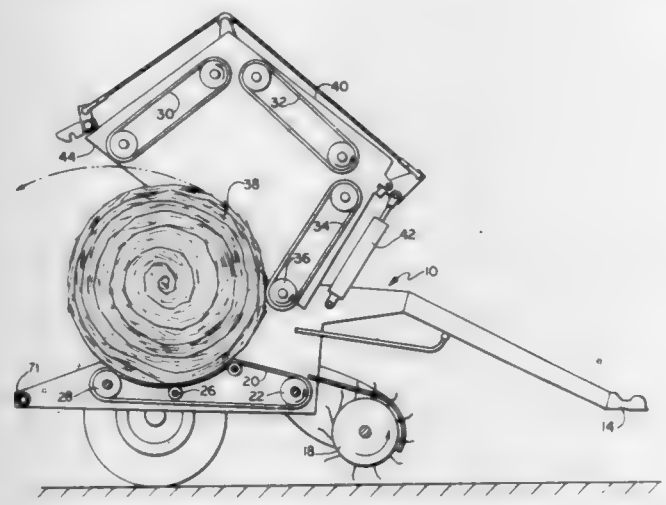
spaced conveyor belts having portions extending generally below the impacting means, and additional means disposed between the first named means and the advancing end of the conveyor means for picking up fruit located at or near the ground surface and for delivering the same to said conveying means.

4,402,176

ROUND BALER AND DISCHARGE MEANS

John Arnold, Coldwater; Wilbur E. Groeneveld, Celina; Warner Heckley, Rockford; Leroy M. Kluver, Celina, all of Ohio, and Richard W. Kunkle, Portland, Ind., assignors to The Paul Revere Corporation, Greenwich, Conn.

Filed Jul. 13, 1981, Ser. No. 283,048
Int. Cl.³ A01D *39/00*
U.S. Cl. 56—341 **7 Claims**



5. A bale forming means having an upper and lower section defining a round bale forming cavity, the upper section acting as a tailgate through which a bale is expelled from the cavity, said lower section having a transversely positioned rear frame member; pivoting means connecting the upper and lower sections at the front periphery of the cavity, said upper section pivots relative to the lower section to open and close said cavity; said pivoting means being elevated relative to said rear frame member so that it is no higher than the midpoint of the diameter joining the rear frame member and the central axis of the bale cavity with the front periphery of the bale cavity, means for raising and lowering said upper section; and means for moving the bale in a front to back relationship for discharging a finished bale over said rear frame member and out through said raised upper section.

4,402,177
PROCESS AND APPARATUS FOR STOPPING AN OPEN-END SPINNING APPARATUS

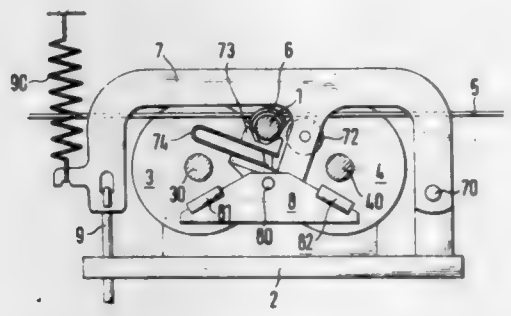
Eberhard Grimm; Rudolf Oexler, both of Ingolstadt, and Eugen Hini, Lenting, all of Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Dec. 16, 1981, Ser. No. 331,203

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049139

Int. Cl.³ D01H *1/241*

U.S. Cl. 57—88 **7 Claims**



1. A method for stopping an open end spinning apparatus of the type which includes a spinning rotor, a shaft mounted to said rotor, a plurality of rotatable support rollers having axial shafts, said support rollers defining a wedge-shaped gap therebetween in which said shaft is supported for rotation during operation, a tangential belt engaging said shaft which presses said shaft against said support rollers and by which said shaft is driven, means for lifting said tangential belt off of said shaft, means for moving said shaft away from said support rollers after said tangential belt is lifted off of said shaft, stop means against which said shaft is braked when said tangential belt is lifted off of said shaft, wherein the method comprises applying a braking force to said shafts of said support rollers after said rotor shaft is moved away from the support rollers.

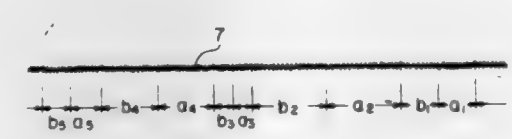
4,402,178
TEXTURED MULTIFILAMENT YARN HAVING ALTERNATING TWISTS

Takao Negishi; Teiryo Kojima, both of Otsu, and Kazuo Tomiita, Tokyo, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Nov. 21, 1980, Ser. No. 209,217

Int. Cl.³ D02G *1/02, 3/26*

U.S. Cl. 57—205 **17 Claims**



1. A textured multifilament yarn made of a thermoplastic synthetic material and having alternating twists therein, which comprises:

a. all the constituent filaments constituting the textured yarn having crimps of a twist configuration obtained through imparting twists in said yarn and heat setting said twists over substantially the entire portions of said filaments;

b. said textured yarn alternatingly having S-twist yarn portions and Z-twist yarn portions, which are distributed along the length of said yarn and which vary in their lengths, either said S-twist yarn portions or Z-twist yarn portions being designated as A and the other being designated as B;

c. in substantially all the A's existing in said yarn, and in substantially the entire portion of each A, substantially all the constituent filaments having a crimp configuration consistent with twist structure of said yarn and forming a compact structure, and said yarn having a substantially uniform twist density along the length of said yarn and having a substantially uniform thickness along the length of said yarn;

d. in substantially all the B's existing in said yarn, and in substantially the entire portion of each B, substantially all the crimp configurations of all constituent filaments being not consistent with twist structure of said yarn but appearing therefrom and forming a bulky structure, and said yarn having substantially uniform twist density along the length of said yarn and having substantially uniform thickness along the length of said yarn;

e. said yarn being substantially free from any non-twist yarn portions; and

f. said A and B being different from each other only in their configurations and being substantially the same in their constituent filaments.

4,402,179
YARN FALSE TWISTING APPARATUS HAVING IMPROVED THREAD-UP CAPABILITY

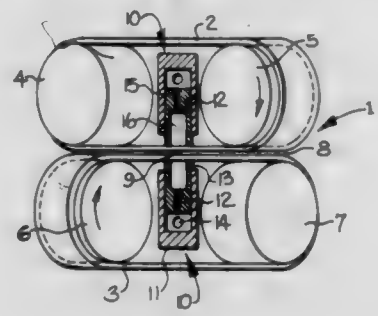
Peter Dammann, Remscheid, and Benno Frank, Wuppertal, both of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Fed. Rep. of Germany

Filed Jun. 12, 1981, Ser. No. 272,938

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1981, 3114302

Int. Cl.³ D02G *1/04, 1/08*

U.S. Cl. 57—336 **11 Claims**



1. A yarn false twisting apparatus comprising

a frame,

a pair of twist imparting members, each having a generally flat yarn engaging friction surface, and with at least one of the members being readily flexible in a direction perpendicular to its friction surface,

means mounting said members to said frame for rotational movement wherein portions of the respective yarn engaging friction surfaces are disposed in opposing relationship and define a twisting zone therebetween,

drive means for operatively rotating each of said members, and such that a yarn may be advanced along a path of travel through said twisting zone while having twist imparted thereto,

biasing means operatively mounted adjacent at least said one flexible twist imparting member for biasing said one member toward the other member at said twisting zone, said biasing means comprising a cylinder mounted on the side of said one member opposite its yarn engaging friction surface and aligned with said twisting zone, a piston slidably mounted in said cylinder and having a face at one end and a free opposite end which is positioned to directly overlie said twisting zone, and fluid supply means including a branch line leading into said cylinder for conveying a fluid under pressure into said cylinder to act against the face of said piston to bias the free end thereof into operative contact with the adjacent surface of said one flexible member and thereby bias the same toward said other member at said twisting zone and nip the yarn advancing therethrough, and

control means operatively associated with said biasing means for selectively substantially reducing the pressure of said fluid supply means acting upon said piston face, to

thereby facilitate the thread-up of said apparatus by limiting the nipping force applied to the yarn, said control means including a relief line connected to said branch line, and a valve positioned in said relief line, whereby opening the valve in said relief line acts to at least substantially reduce the pressure acting upon the face of said piston.

4,402,180

OIL PRESSURE MONITORING SYSTEM

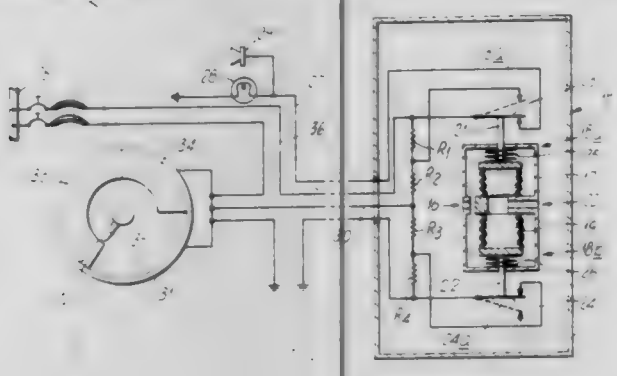
Matthew R. Reid, St. Giles, and Kenneth J. Hart, Ruislip, both of England, assignors to Rolls-Royce Limited, London, England

Filed May 5, 1981, Ser. No. 260,837

Claims priority, application United Kingdom, Jun. 19, 1980, 8020136

Int. Cl.³ F02C *7/06*

U.S. Cl. 60—39.08 **5 Claims**



1. In an oil pressure monitoring system for a gas turbine engine having a compressor, a bearing chamber, means to supply pressurized oil to said chamber, drainage means from said chamber for draining pressurized oil therefrom, sealing means for said chamber to prevent oil leakage therefrom, said sealing means supplying pressurized air from said compressor to externally of said chamber, the improvement in said oil pressure monitoring system comprising:

a first pressure differential switch means responsive to a pressure differential between pressure of oil supplied to said chamber and to pressure of air supplied by said compressor, said first pressure differential switch means being actuated when said pressure of oil is at a predetermined first value greater than said pressure of air;

a second pressure differential switch means responsive to a second pressure differential between oil supplied to said chamber and to pressure of air supplied by said compressor, said second pressure differential switch means being actuated when said pressure of oil is at a second value greater than said pressure of air, said second value being greater than said first value; and

indicator means having a pointer movable between a first position indicating rate of oil supply to said bearing chamber is unsatisfactory, a second position indicating rate of oil supply to said bearing chamber is adequate under conditions of caution, and a third position indicating rate of oil supply to said bearing chamber is adequate under normal engine operating conditions, said indicator means including an electrical circuit means operatively connected to said first pressure differential switch means and to said second pressure differential switch means, said electrical circuit means including a first circuit actuated when neither of said first and second pressure differential switch means has been actuated so as to cause said pointer to move to said first position, a second electrical circuit actuated when said first pressure differential switch means is actuated to cause said pointer to move to said second position, and a third electrical circuit actuated when both of said first and second pressure differential switch means have been actuated to cause said pointer to move to said third position.

4,402,181

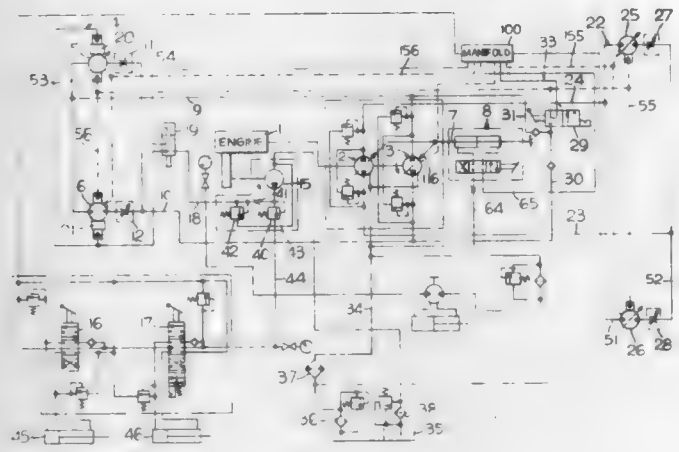
HYDRAULIC DRIVE SYSTEM FOR A VEHICLE

Alvin W. Acker, and Clyde R. Headrick, both of Topeka, Kans., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 10, 1980, Ser. No. 214,639

Int. Cl.³ F16D *31/02*

U.S. Cl. 60—427 **10 Claims**



1. A hydrostatic vehicle drive system comprising, a front hydrostatic drive circuit including a front variable displacement pump, dual displacement front wheel motors, a flow limiting valve limiting the flow to each of said front wheel motors to assure drive on both front wheel motors, a rear hydrostatic drive circuit including a rear variable displacement pump, dual displacement rear wheel motors, a flow limiting valve limiting the flow to each of said rear wheel motors to assure drive on both rear wheel motors, a common drive for simultaneously driving said pumps, a hydraulic servocontrol valve controlling the displacement of the variable displacement pumps, a reservoir supplying hydraulic fluid to the said variable displacement pumps, a hydraulic selector valve for selectively selecting the displacement of said front and rear wheel motors, a return flow circuit for said pumps providing a source of pressurizing fluid for said servocontrol valve and said selector valve, said hydraulic servocontrol valve and said hydraulic selector valve connected to said return flow circuit for selectively controlling displacement of said variable displacement pumps and displacement of said motors to provide four wheel drive in two speed ranges and infinite speed over each range of the drive system.

4,402,182

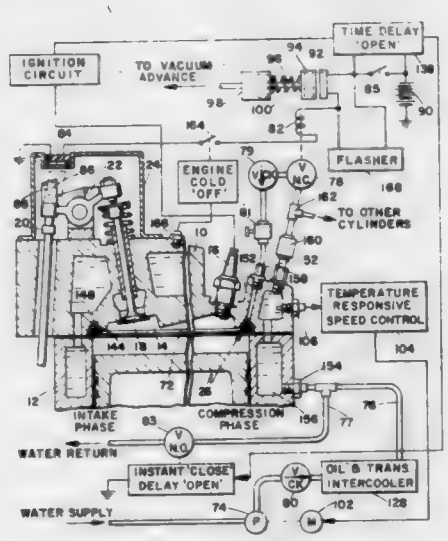
COMBINED INTERNAL COMBUSTION AND STEAM ENGINE

Hugo S. Miller, 4133 Caflur Ave., San Diego, Calif. 92117

Filed Jul. 17, 1981, Ser. No. 284,351

Int. Cl.³ F01B *29/04*

U.S. Cl. 60—712 **10 Claims**



1. In combination with an internal combustion engine having

at least one cylinder with an upper end, a head secured on the upper end of said cylinder, said head having a combustion chamber with ignition means and timed fuel inlet control means therein, the improvement comprising:

a thin, flat boiler pack recessed entirely within said head and held between the head and the confronting upper end of the cylinder, in thermally conducting engagement therewith;

said boiler pack comprising a hollow ring member having a circumferential water distributing chamber therein within the thickness of the ring member, with a water inlet having means for connection to a source of pressurized water;

said ring member having a substantially circumferential steam injection slot opening inwardly into said cylinder;

said ring member including a substantially flat upper ring and a substantially flat lower ring spaced therefrom, with a circumferential outer wall connecting the rings and enclosing said water distributing chamber,

a superheat ring fixed between said upper and lower rings with steam conducting ports communicating therebetween from said chamber to said injection slot;

a control valve connected between said water inlet and the source of pressurized water;

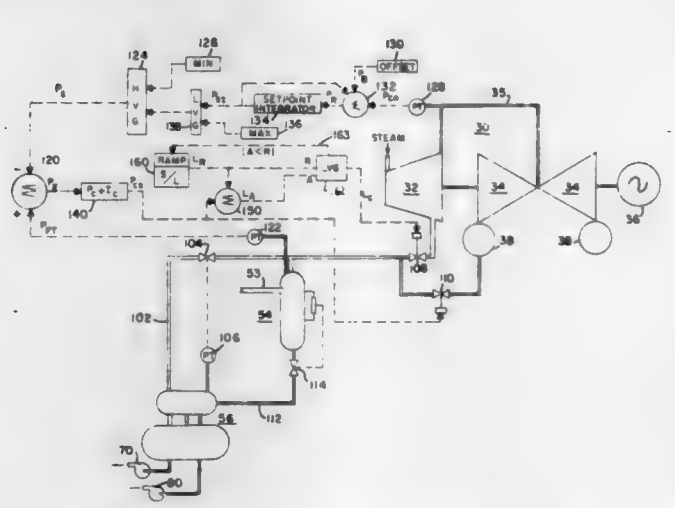
and timing means actuated by said timed fuel inlet control means to open said control valve and release water into said distribution chamber when the cylinder is in the compression phase of the engine cycle.

4,402,183

SLIDING PRESSURE FLASH TANK

Vladimir T. Dimitroff, Peabody; Darrell M. Silva, Revere, and Bruce D. Taber, Boxford, all of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Nov. 19, 1981, Ser. No. 322,988
Int. Cl.³ F01K *13/02*
U.S. Cl. 60—660 **9 Claims**



1. In a steam turbine power plant wherein at least a portion of the total steam flow through a steam turbine is obtained from a flash tank connected to a steam admission point, a control system for regulating the flow of steam from the flash tank in accordance with steam turbine admission pressure comprising:

means generating a pressure reference signal based on turbine admission pressure;

means generating an actual pressure signal based on flash tank pressure;

means generating a first valve position signal based on the difference between the reference signal and the actual pressure signal;

means generating a second valve position signal based on the speed/load signal for the steam turbine;

a bypass valve responsive to the first valve position signal; and,

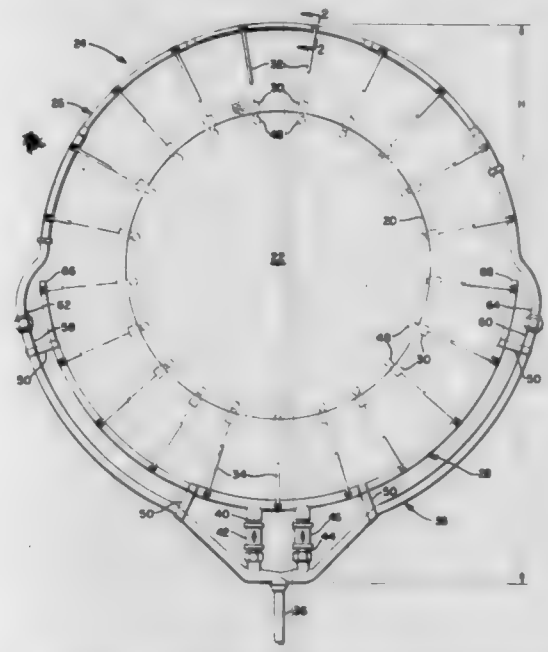
a steam admission valve responsive to said second valve position signal when the bypass valve is open and to said first valve position signal after the bypass valve is closed.

4,402,184

GAS TURBINE ENGINES

Robie L. Faulkner, and Graham E. Ogborne, both of San Diego, Calif., assignors to International Harvester Company, Chicago, Ill.

Filed Dec. 8, 1980, Ser. No. 214,321
Int. Cl.³ F23R *3/28*; F02C *7/228*
U.S. Cl. 60—739 **10 Claims**



1. A gas turbine engine fuel supply system comprising: upper and lower, arcuately shaped fuel manifolds having, together, an essentially circular configuration; a circular array of equiangularly spaced fuel injectors spaced concentrically within the circle formed by said manifolds; fuel lines connecting those fuel injectors girdled by each of the manifolds to that manifold at generally equidistantly spaced locations therealong; means for supplying fuel to the upper manifold at the opposite ends thereof; a fuel supply line connected between said fuel supplying means and said lower manifold approximately mid way between the ends of the latter; and means in said fuel supply line for creating a pressure drop that is effective to cause said fuel to be distributed at rates approaching equal through the upper and lower fuel manifolds.

4,402,185

THERMOELECTRIC (PELTIER EFFECT) HOT/COLD SOCKET FOR PACKAGED I.C. MICROPROBING

Robert M. Perchak, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Jan. 7, 1982, Ser. No. 337,786
Int. Cl.³ F25B *21/02*
U.S. Cl. 62—3 **6 Claims**

1. An apparatus for selectively heating and cooling an I.C. chip comprising:

a base formed of high thermal conductivity material and having a cavity for mounting the I.C. chip inside the cavity and selectively acting as one of a heat source or a heat sink, said cavity having a flat floor;

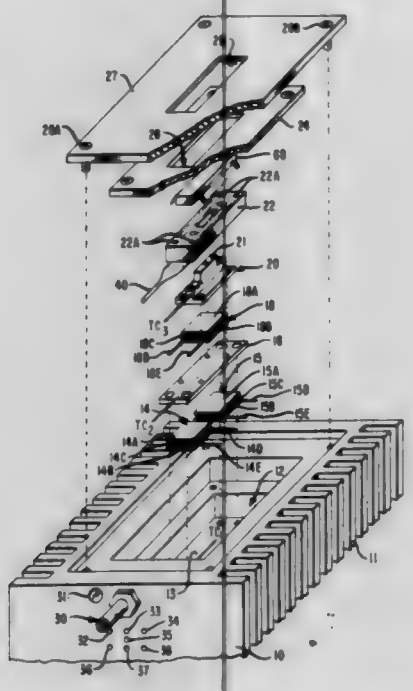
a pair of primary thermoelectric modules having upper and lower faceplates, said lower faceplates being in thermal contact with said cavity floor;

a heat conductive pad having upper and lower surfaces, the lower surface of said pad being in thermal contact with the upper faceplates of said primary thermoelectric modules;

a secondary thermoelectric module having upper and lower faceplates, the lower faceplate of said secondary module

being in thermal contact with the upper surface of said heat conductive pad;

a heat conductive block having a base in thermal contact with the upper faceplate of said secondary thermoelectric module and an upwardly extending portion having a contact surface; and



a slotted I.C. chip socket in integral relationship with the upwardly extending portion of said block such that, upon insertion into said socket, the chip is in thermal contact with said contact surface of the block.

4,402,186

STIRLING HEATING PUMP

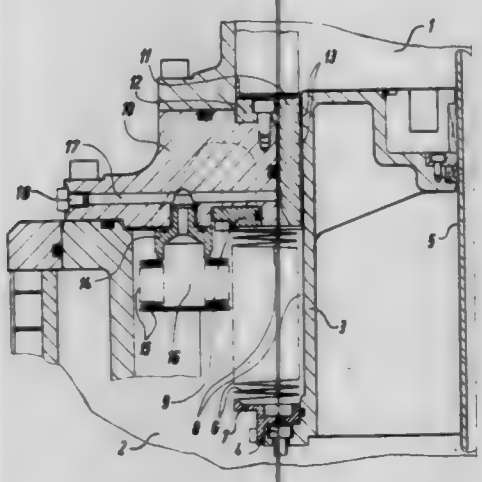
Helmut Feustel, Bielefeld, and Rainer Moeres, Gütersloh-Friedrichsdorf, both of Fed. Rep. of Germany, assignors to Gartemann & Hollmann GmbH, Bielefeld, Fed. Rep. of Germany

Filed Jun. 19, 1981, Ser. No. 275,232

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023660

Int. Cl.³ F25B 9/00

U.S. Cl. 62—6 **6 Claims**



1. A drive unit of a Stirling heating pump having a compression chamber and a working piston acting upon said compression chamber, the drive unit comprising a crank drive actuating said working piston; a closed housing for accommodating said crank drive; a diaphragm bellows arranged in said closed housing and surrounding said working piston for sealing said compression chamber from said housing, said diaphragm bellows having an inner hollow communicating with said compression chamber; a pressure throttling element arranged between said compression chamber and said inner hollow of said diaphragm bellows for protecting said inner hollow of said diaphragm bellows from relatively high pressure variations in said compression chamber, while allowing relatively low pressure variations in said inner hollow of said diaphragm bellows; and means for compensating the pressure variations in said diaphragm bellows and including a compensating diaphragm expansible also in said closed housing and having an inner hollow communicating with said inner hollow of said diaphragm bellows so as to form a closed flow circuit.

4,402,187

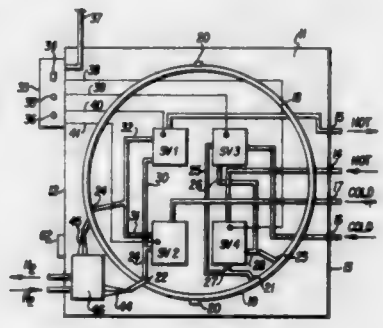
HYDROGEN COMPRESSOR

Peter M. Golben, Wyckoff, and Matthew J. Rosso, Jr., Ringwood, both of N.J., assignors to MPD Technology Corporation, Wyckoff, N.J.

Filed May 12, 1982, Ser. No. 377,553

Int. Cl.³ F17C 11/00

U.S. Cl. 62—48 **6 Claims**



1. A hydrogen compressor comprising an inlet for hydrogen gas fed at a low inlet pressure and an outlet for hydrogen gas at high pressure, therebetween at least two sets of connected units A, C and E and at least two sets of units serving the unit functions B, D and F said A through F being

A. a first chamber in communication with said inlet through a one-way valve adapted to admit hydrogen gas into said first chamber at said low inlet pressure containing a first hydridable material having an adsorption pressure below said low inlet pressure at a first temperature

B. heat exchange means associated with said first chamber adapted to operate alternately to maintain said first chamber at or below said first temperature and to raise the temperature of said first chamber to a second temperature higher than said first temperature

C. a second chamber in communication with said first chamber through a one-way valve adapted to prevent flow of hydrogen from said second chamber to said first chamber and containing a second hydridable material forming a less stable hydride than said first hydridable material and having a plateau pressure at a temperature below said second temperature less than the plateau pressure of said first hydridable material at said second temperature

D. heat exchange means associated with said second chamber adapted to operate alternately to maintain said second chamber at a temperature lower than said second temperature and at a third temperature higher than said first temperature

E. a third chamber in communication with said second chamber through a one-way valve adapted to prevent flow of hydrogen from said third chamber to said second chamber and in communication with said outlet and containing a third hydridable material forming a less stable hydride the said second hydridable material and having a plateau pressure at a temperature below said third temperature less than the plateau pressure of said second hydridable material at said third temperature

F. heat exchange means associated with said third chamber adapted to operate alternately to maintain said third chamber at a temperature lower than said third temperature and at a fourth temperature higher than said first temperature

and control means for alternating the temperature capability of heat exchange means B, D and F to maintain the lower of the two specified temperatures when hydrogen is being adsorbed by the hydridable material in the associated chambers and at the higher of the two specified temperatures when hydrogen is

present in and being desorbed from the hydridable material in the associated chambers.

4,402,188

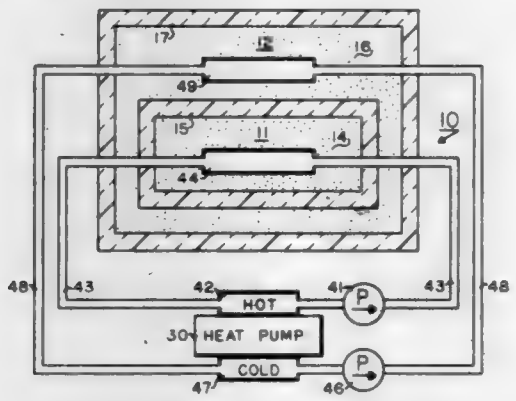
NESTED THERMAL RESERVOIRS WITH HEAT PUMPING THEREBETWEEN

Stephen F. Skala, 3839 S. Wenonah Ave., Berwyn, Ill. 60402

Continuation-in-part of Ser. No. 56,739, Jul. 11, 1979, abandoned. This application Oct. 1, 1981, Ser. No. 307,757

Int. Cl.³ F25B *27/02*

U.S. Cl. 62—56 **5 Claims**



1. A process for energy efficient recharging of an inner thermal reservoir at an extreme temperature by heat exchange with a surrounding thermal reservoir at a moderate temperature, comprising the steps of:

selecting from a plurality of reservoirs in a nested configuration a pair of reservoirs for heat transfer therebetween,

exchanging heat between a hot surface of a heat pump and the warmer reservoir of the selected pair, and

exchanging heat between a cold surface of the heat pump and the cooler reservoir of the selected pair.

4,402,189

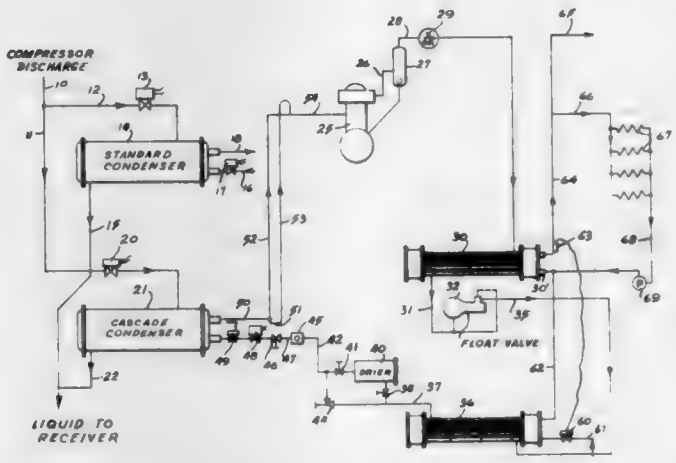
REFRIGERATION SYSTEM CONDENSER HEAT RECOVERY AT HIGHER TEMPERATURE THAN NORMAL CONDENSING TEMPERATURE

Bruce S. Schaeffer, Waynesboro, Pa., assignor to Frick Company, Waynesboro, Pa.

Division of Ser. No. 235,404, Feb. 18, 1981, Pat. No. 4,325,226. This application Nov. 12, 1981, Ser. No. 320,358

Int. Cl.³ F25B *7/00*

U.S. Cl. 62—79 **2 Claims**



1. The method of heating a medium efficiently to a relatively high temperature using a primary refrigeration system having a condensing means, and an auxiliary refrigeration system, comprising the steps of causing the refrigerant of said auxiliary refrigeration system to flow in separate interconnected condensing and subcooling states isolated by trap means permitting only liquid refrigerant to flow to the subcooling stage, passing the medium first into heat exchange relation with refrigerant in said subcooling stage and then into heat exchange relation with refrigerant in said condensing stage through a medium line interconnecting the condensing and subcooling stages, and in which the medium which is in heat exchange relation with refrigerant in said subcooling stage is out of heat exchange relation with the medium which is in heat exchange relation with refrigerant in said condensing stage, whereby the medium can approach the temperature in said condensing stage, sensing the temperature of the heated medium and controlling its flow to maintain a predetermined temperature, and heating and vaporizing the subcooled refrigerant from said auxiliary refrigeration system in the condensing means of said primary refrigeration system in which the condensing temperature is substantially below the condensing temperature of said auxiliary refrigeration system.

4,402,190

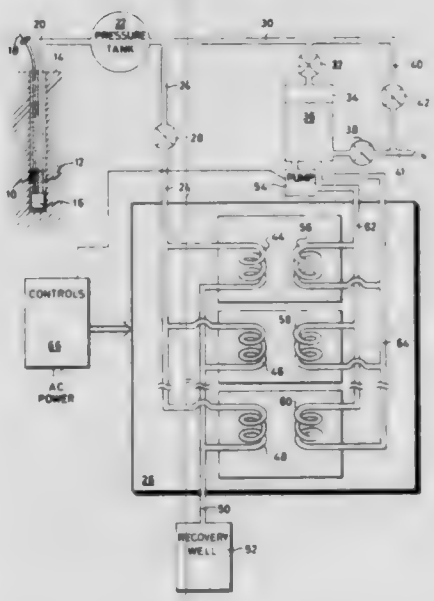
APPARATUS AND METHOD FOR HEATING AND CHILLING CONCRETE BATCH WATER

Samuel I. Reid, P.O. Box 346, Smyrna, Tenn. 37167

Filed May 11, 1982, Ser. No. 377,022

Int. Cl.³ F25D *17/00*

U.S. Cl. 62—178 **9 Claims**



1. Water temperature control apparatus for providing temperature conditioned water comprising:

a water source for selectively operating as a heat sink and a heat source;

a water storage tank for holding temperature conditioned water;

a multiplicity of reversable heat pumps each having all external water source ports connected to each other in parallel, said multiplicity of heat pumps for selectively controlling the temperature of water in said storage tank, each of said multiplicity of reversable heat pumps comprising;

a refrigerant suitable for changing phase between a liquid and a gas phase in response to pressure and temperature,

a source water heat exchanger for receiving and discharging water from said water source and for passing said refrigerant therethrough, said source water exchanger including a gas refrigerant port and a liquid refrigerant port, and said water and said refrigerant cooperating to exchange heat therebetween while being maintained physically separate from each other,

a storage water heat exchanger for receiving and discharging water circulating between said water storage tank and said heat exchanger and for passing said refrigerant therethrough, said storage heat exchanger including a gas refrigerant port and a liquid refrigerant port, and said storage water and said refrigerant cooperating to exhange heat therebetween while being maintained physically separate from each other,

a refrigerant compressor having a low pressure port and a

high pressure port for compressing refrigerant in a gaseous form,

a reversing valve connected between said gas refrigerant port of said source heat exchanger, and said gas refrigerant port of said storage heat exchanger, and between said compressor low pressure port and said compressor high pressure port, said reversing valve operating to maintain gas flow through said compressor from said low pressure port to said high pressure port while selectively changing the direction of gas refrigerant flow through said source and said storage heat exchangers,

a refrigerant expansion means having a high pressure port and a low pressure port for passing liquid refrigerant therethrough,

a fluid flow reversing bridge comprising four fluid one-way valves connected between said liquid refrigerant port of said source heat exchanger, and said liquid refrigerant port of said storage heat exchanger, and between said high pressure port and low pressure port of said expansion means, said reversing bridge operating to maintain liquid flow through said expansion means from said high pressure port to said low pressure port while selectively changing the direction of liquid refrigerant flow through said source heat exchanger and said storage heat exchanger in response to the direction of gas refrigerant flow as determined by said reversing valve; and

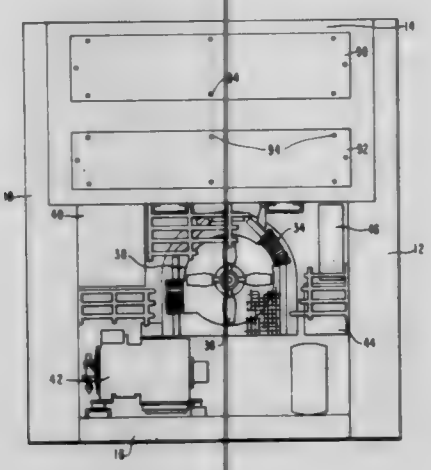
circuitry for monitoring and controlling the operation of said multiplicity of reversable heat pumps to maintain the temperature of said storage water within a preselected temperature range.

4,402,191

EVAPORATOR SECTION FOR CONTAINER REFRIGERATION UNIT

Donald D. King, Chanhassen, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Jan. 5, 1982, Ser. No. 337,181
Int. Cl.³ B60H *3/04*
U.S. Cl. 62—239 **6 Claims**



1. In a transport refrigeration unit having an upper evaporator section with upper fan means and a lower evaporator coil therein, and a lower condenser section thermally insulated from the evaporator section, an arrangement permitting the provision of reversal of direction of evaporator air flow between a draw-through mode for top discharge and, alternatively, a blow-through mode for bottom discharge, comprising:

a generally open, horizontal frame supporting electric motor means and centrifugal fan means driven thereby, said fan means comprising wheel means supported by motor shaft means, and scroll means having discharge opening means;

motor mount bracket means carried by said frame;

means for positioning said scrolls in a disposition with said discharge opening means in a vertical plane for operation in a draw-through mode, and in a horizontal plane for operation in a blow-through mode;

planar plate means having opening means therein located to register with said scroll discharge opening means, with the remainder of said plate means adapted to block air flow through the plane of the plate adjacent said opening means;

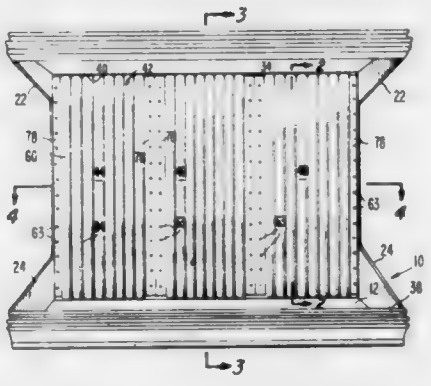
means securing said motor means to said motor mount means in a fashion to permit shifting said motor means and wheel means to separate positions in accordance with positioning of said scroll means in one or the other of the two positions.

4,402,192

REFRIGERATED DISPLAY CASE HAVING AN ACCORDION-TYPE COMBINED AIR DUCT AND SERVICE DOOR

James Henry, Levittown, Pa., assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Dec. 31, 1981, Ser. No. 336,144
Int. Cl.³ A47F *3/04*
U.S. Cl. 62—256 **14 Claims**



1. In a refrigerated display case of the air curtain type in which air is continuously recirculated about a product display space, said case having a service opening at its back for stocking the case from the rear, the improvement that comprises a wall structure forming a rear duct portion for the circulated air combined with a rear service door, said wall structure comprising:

(a) a flexible, hollow closure adapted to be folded and extended to open and closed positions respectively, said closure being adapted to close said service opening substantially completely when in its extended position, said closure being formed with open upper and lower ends for the passage of the circulated air therethrough, said closure including at least one pair of vertically disposed, transversely spaced side walls covering the service opening and having a height and width corresponding to the height and width, respectively, of the service opening, the walls of said pair being of a flexible material folded upon itself in a horizontal direction in the open position of the closure, the space between the walls being in communication with said open upper and lower ends of the closure, said walls being spaced apart both in their folded condition and in said extended position of the closure;

(b) a track member fixedly mounted upon the case, said member extending horizontally above the service opening and said walls of the closure; and

(c) means engaging the closure with said track member for movement of the closure between said extended and folded positions, said means comprising a plurality of wall suspension elements movably mounted on the track member, said closure being connected to said suspension elements in a depending position within the service opening.

4,402,193

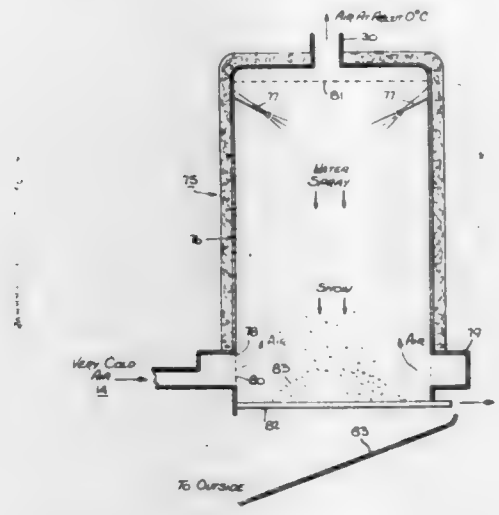
DUAL OPEN CYCLE HEAT PUMP AND ENGINE

Richard McFee, R.D. 1, Union Springs, N.Y. 13160

Division of Ser. No. 146,600, May 5, 1980, Pat. No. 4,326,388. This application Aug. 4, 1981, Ser. No. 290,101

Int. Cl.³ F25D *5/00*

U.S. Cl. 62—304 **5 Claims**



1. In combination,

a cold air reservoir for air at a first temperature and pressure;

a hot air reservoir for receiving air at a second temperature greater than said first temperature;

a preheater including a vertically disposed tube having an inlet at a lower end to receive a flow of cold air from said cold air reservoir at a temperature below freezing and means for fine spraying water into said tube at an upper end to effect a heat exchange between the water and the flow of cold air to freeze the water into snow and to heat the air; and

a heat exchanger connected to an upper end of said tube of said preheater to receive the air heated in said tube and to said hot air reservoir to deliver the heated air thereto.

4,402,194

ICE MAKING APPARATUS TO BE INCORPORATED IN REFRIGERATORS

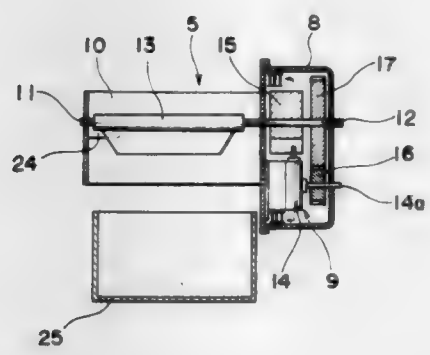
Tomohisa Kuwako, Anjo, and Yoshitaka Fujiwara, Nagoya, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishi Kasugai, Japan

Continuation-in-part of Ser. No. 172,281, Jul. 25, 1980, abandoned. This application Dec. 22, 1981, Ser. No. 333,614

Claims priority, application Japan, Jul. 30, 1979, 54-104088[U]

Int. Cl.³ F25C *5/06*

U.S. Cl. 62—353 **2 Claims**



2. An ice making apparatus to be incorporated in a refrigerator comprising:

an ice making tray;

a tray shaft on which said tray is mounted for being turned over from an up position to a down position so as to permit ice pieces to be discharged therefrom;

an inductor type synchronous motor of the type in which the motor is reversed when the drive shaft thereof is blocked;

a driving gear mounted on said drive shaft of said synchronous motor;

a driven gear mounted on said tray shaft and meshed with said driving gear for rotating said ice making tray;

a cam member mounted on said tray shaft;

a changeover lever pivotally mounted on said synchronous motor at the center of said lever and having a pin member at the upper end thereof projecting into the path of rotation of said cam member for being pivoted in one or the other directions by said cam as said tray shaft rotates to one or the other of two predetermined positions with said tray in the up and down positions;

a spring member secured to said synchronous motor at a base portion thereof and having two leg portions engageable with said pin member for urging said pin member to one of two spaced positions when said pin is engaged by said cam member;

a rotary member mounted on said drive shaft of said synchronous motor;

a pivotal movement regulating member pivotally mounted on said synchronous motor and being positioned between said changeover lever and said rotary member, said pivotal movement regulating member having a pair of first and second engaging shoulders on one side thereof engageable by the lower end of said changeover lever, and a pair of third and fourth engaging shoulders on the other side thereof, one of said third and fourth shoulders being engaged by said rotary member on said drive shaft to block rotation thereof when said pin is urged to one position, and the other of said third and fourth shoulders being engaged by said rotary member on said drive shaft to block rotation thereof when said pin is urged to the other position; and

a stop for restricting free rotation of said ice making tray at a point ahead of said predetermined positions for causing said ice making tray to be twisted when said ice making tray is in the up position and in the down position.

4,402,195

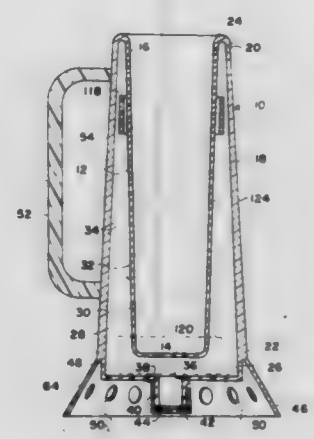
DRINKING MUG

Loyal E. Campbell, 2075 Fisher St., Huntsville, Ala. 35803

Filed Feb. 2, 1982, Ser. No. 345,035

Int. Cl.³ F25D *3/08*

U.S. Cl. 62—457 **8 Claims**



1. A drinking container assembly comprising:

a circular-shaped tumbler;

a transparent cylinder surrounding the sides, and extending below, said tumbler and spaced from said tumbler, and a top of said tumbler and cylinder being sealably connected;

a bottom closure extending across and closing a bottom end of said cylinder and spaced from the bottom of said tumbler;

a filling neck member centrally positioned on, and extending below, said bottom closure and having a central opening

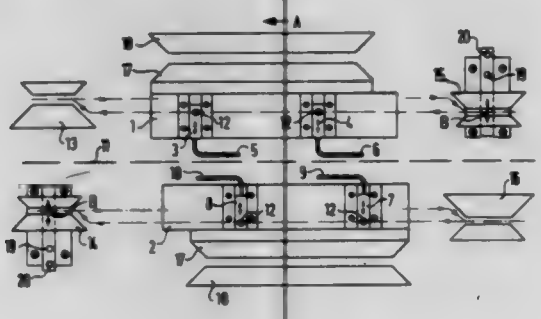
through said bottom closure, and said filling neck member having a threaded region about said opening;
a threaded closure adapted to mate with and sealably close said filling neck member;
a skirt attached to and extending down from an outer region of said bottom closure and extending below said filling neck member to provide a base support for said assembly;
a series of spaced openings around and through said skirt, enabling air circulation under the bottom of said container; and
a handle attached to the side of said cylinder.

4,402,196

FLAT KNITTING MACHINE HAVING A STROKING-IN DEVICE

Gottfried Kühnert, Aalen, Fed. Rep. of Germany, assignor to Universal Maschinenfabrik Dr. Rudulf Schieber GmbH & Co. KG, Westhausen, Fed. Rep. of Germany

Filed Apr. 5, 1982, Ser. No. 365,925
Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120554
Int. Cl.³ D04B *7/04*
U.S. Cl. 66—64 **5 Claims**



1. A flat knitting machine comprising a machine frame, a carriage movable over needle beds, and stroking-in wires mounted in holders on the carriage with free ends trailing in the direction of carriage traverse in front of the withdrawal positions of the needles, said stroking-in wires being respectively movable into and out of working positions at the positions of reversal of movement of the carriage, first cam means arranged on the machine frame at the regions of carriage movement reversal and displaceable perpendicular to the longitudinal axes of the needle beds, said first cam means being engageable with entraining projections on the holders, and second cam means on the carriage which can be switched into and out of action for selective displacement of said first cam means on the machine frame.

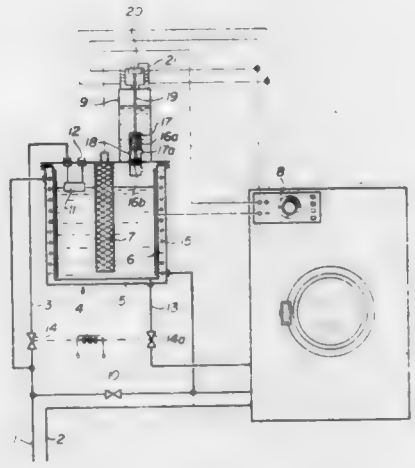
4,402,197

AUTOMATIC WASHING MACHINE OR DISHWASHER

Alain Groult, Annemasse, France; Augusto Porta, Carouge, Switzerland, and Herve Tournier, Valleiry, France, assignors to Battelle Memorial Institute, Carouge, Switzerland

PCT No. PCT/CH80/00156, § 371 Date Aug. 6, 1981, § 102(e) Date Aug. 6, 1981, PCT Pub. No. WO81/01863, PCT Pub. Date Jul. 9, 1981
PCT Filed Dec. 17, 1980, Ser. No. 293,635
Claims priority, application Switzerland, Dec. 20, 1979, 11313/79; Dec. 20, 1979, 11314/79
Int. Cl.³ D06F *39/02*; C25B *1/26*
U.S. Cl. 68—12 R **5 Claims**

1. A fabric- or dish-washing machine comprising:
a receptacle for receiving articles to be washed;
a first conduit connected between a source of washing water and said receptacle for delivering washing water to said receptacle;
a second conduit connected to said receptacle for discharging used washing water therefrom;
a cell enclosing at least one anode and at least one cathode;
a third conduit connected between a source of water and said cell;
a fourth conduit connected between said cell and said receptacle for delivering hypochlorite solution formed in said cell to said receptacle;
first, second, third and fourth valves respectively providing in said first, second, third and fourth conduits for respectively controlling the flow therethrough:
a programmer connected to all of said valves for controlling the flow of water to and from said receptacle, the flow of water to said cell, and the flow of hypochlorite solution to said receptacle for washing of said articles;



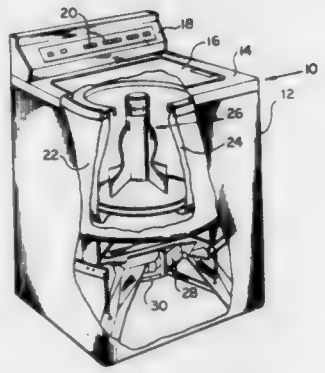
a reservoir containing a supply of sodium chloride;
a metering device connected between said reservoir and said cell for feeding, upon operation of said metering device, sodium chloride to said cell; and
control means responsive to said programmer for operating said metering device and controlling the electrical energization of said anode and said cathode whereby said anode and said cathode are energized and said sodium chloride is delivered to said cell at predetermined times in the cycle of operation of said machine for delivery of hypochlorite solution to said receptacle.

4,402,198

WATER PUMPING AGITATOR FOR AUTOMATIC WASHERS

Roger J. Cartier, St. Joseph Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 19, 1981, Ser. No. 294,299
Int. Cl.³ D06F *13/02*
U.S. Cl. 68—18 FA **12 Claims**



9. In an automatic washer of the type having an oscillatory agitator, the improvement of:
pumping means comprising channel means forming a circulatory path extending upwardly through said agitator and through which liquid is to be pumped; and
valve means at a lower end of said channel means below the level of liquid during operation of the agitator and movably responsive to oscillation of the agitator;
said channel means defining a seating means engageable

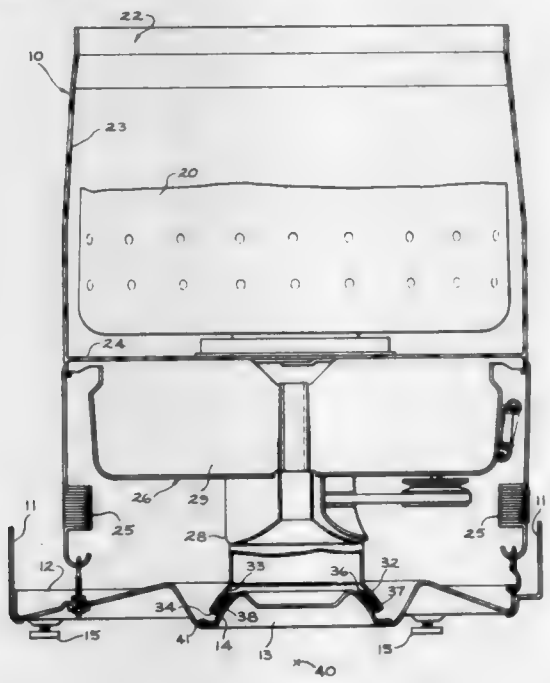
with said valve means upon movement of said agitator in at least one direction to form together with said valve means a means for pumping liquid generally upwardly through said circulatory path.

4,402,199

DIFFERENTIALLY DAMPED SUPPORT ASSEMBLY FOR WASHING MACHINE

Richard A. Waugh, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sep. 14, 1981, Ser. No. 301,487
Int. Cl.³ D06F *37/24*
U.S. Cl. 68—23.3 **9 Claims**



8. A support assembly for a washing machine having an assembly of working parts for effecting washing of fabrics in a liquid and extraction of liquid from the fabrics, the support assembly comprising:

a cabinet structure housing the assembly of working parts, said cabinet structure having a base including an upwardly projecting generally spherical bearing surface for pivotally supporting said assembly of parts:

a free floating intermediate member formed with opposed generally spherical faces complimentary to said bearing surface and slidably mounted on said bearing surface;

a mount secured to the assembly of working parts for movement therewith during operation of said machine and including a generally spherical lower support surface complimentary to the upper face of said intermediate member; said mount being positioned with said support surface slidably mounted on said intermediate member;

means providing a first, relatively low coefficient of friction, interface between said intermediate member and said bearing surface; and

means providing a second, relatively high coefficient of friction, interface between said intermediate member and said support surface so that said intermediate member moves with said mount about said bearing surface as said mount moves with said assembly of washing parts;

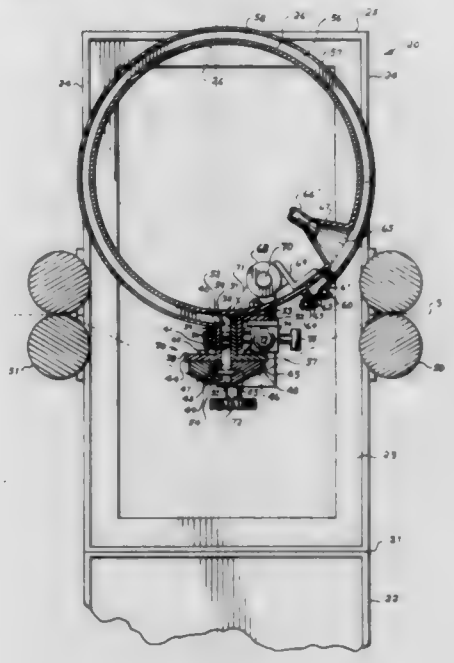
said intermediate member coming into interfering engagement with said base upon a predetermined amplitude of movement of said mount so that movement of said mount greater than the predetermined amplitude results in relative movement between said intermediate member and said mount.

4,402,200

MEANS FOR APPLYING FOAMED TREATING LIQUOR

Graham F. Clifford, and James K. Turner, both of Stanley, N.C., assignors to Gaston County Dyeing Machine Company, Stanley, N.C.

Filed Sep. 4, 1981, Ser. No. 299,533
Int. Cl.³ D06B *1/08*
U.S. Cl. 68—200 **17 Claims**



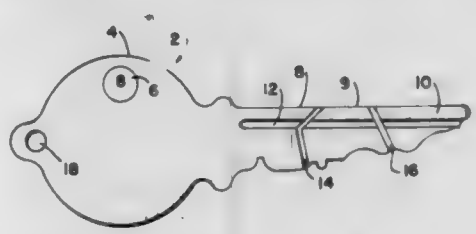
1. Means for applying foamed treating liquor to a flat width of traveling substrate comprising a cylindrical supporting member mounted to extend transversely across the width of the traveling substrate adjacent a surface of the substrate, an applicator nozzle mounted on said cylindrical supporting member and projecting therefrom into foam applying disposition across the width of the substrate, a cover plate mounted on said cylindrical supporting member in spaced relation to the surface thereof to form a foam distribution chamber therebetween and communicating with said nozzle for distributing foamed treating liquor thereto, side walls mounted on said surface of said cylindrical supporting member and supporting said cover plate to define the transverse extent of said distribution chamber, and an inlet port communicating with said distribution chamber at a circumferential spacing from said nozzle and intermediate the transverse extent of said cylindrical supporting member, said side walls diverging from a relatively close spacing at said inlet port to approximately the full width of said nozzle at said nozzle, whereby foamed treating liquor introduced into said chamber through said inlet port will be distributed transversely through the width of said chamber as it flows circumferentially to said nozzle for application from said nozzle across the width of said substrate.

4,402,201

SNAP-OFF KEY

Clarence Nokes, 120 Third St., NE., Washington, D.C. 20002

Filed Nov. 14, 1980, Ser. No. 207,032
Int. Cl.³ E05B *19/26*
U.S. Cl. 70—395 **12 Claims**



1. A snap-off key comprising:

a key body further comprising a lobe portion and a unitary shank portion;

said shank portion further comprising a plurality of longitudinally disposed grooves on one or both lateral faces, a plurality of protuberances disposed along one or both edges and one or a plurality of score grooves cut substantially lateral across said shank portion in an irregular pattern.

4,402,202

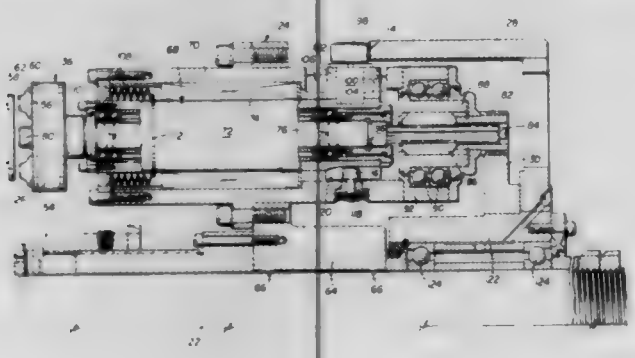
METHOD AND APPARATUS FOR ROLL FLANGING CONTAINER BODIES

Laszlo A. Gombas, Rte. 7, Box 555Q, Evergreen, Colo. 80439

Filed Jul. 1, 1981, Ser. No. 279,335

Int. Cl.³ B21D *19/04*

U.S. Cl. 72—94 **25 Claims**



1. Apparatus for flanging a cylindrical metal container body at an edge adjacent to an open end thereof, comprising:

a machine base;

a main shaft carried by said machine base for relative rotation with respect thereto;

a container body transport means carried by said main shaft for rotation therewith and having a pocket for carrying a cylindrical metal container with its axis parallel to the axis of the main shaft;

a flanging tool assembly axially aligned with said pocket and carrying a flanging roller radially offset from a central axis of the tool assembly, wherein said roller is adapted to flange a container body edge adjacent to an open end thereof by combined axial movement into said open end and rotational motion around the adjacent edge;

a turret assembly carried by said main shaft for rotation therewith and carrying said flanging tool assembly for axial motion parallel to the axis of the main shaft and for rotational motion about said central axis of the flanging tool assembly, wherein said central axis is parallel to the axis of the main shaft and radially offset therefrom;

a cam means carried by said machine base and substantially non-rotatable with respect thereto, wherein the cam means is operatively connected to the turret assembly for imparting axial movement to said flanging tool assembly, said cam means being adapted for imparting at least two discrete stages of axial advancement to the flanging tool assembly, wherein the first stage includes an axial advancement subsequent to, in use, initial contact between the flanging roller and the container body edge, followed by a period of substantial non-advancement, and the second stage includes a further axial advancement following the first stage period of substantial non-advancement, followed by a further period of substantial non-advancement; and means for imparting rotation to said flanging tool assembly about said central axis.

4,402,203

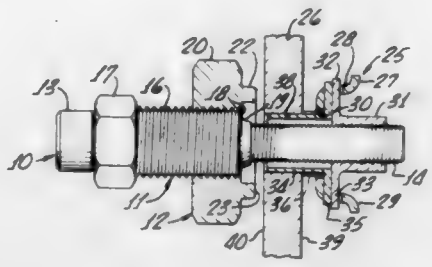
FASTENER INSTALLATION TOOL

Jorge W. Molina, Torrance, Calif., assignor to Deutsch Fastener Corp., El Segundo, Calif.

Filed Jul. 22, 1982, Ser. No. 400,880

Int. Cl.³ B21J *15/34*

U.S. Cl. 72—114 **8 Claims**



1. A fastener installation tool comprising

a first member having internal threads and external threads,

a second member having a threaded shank meshed with said internal threads of said first member,

said threaded shank projecting beyond one end of said first member and being meshable with threads of a fastener having a nut and a projecting tubular portion, and

a third member having internal threads,

said external threads of said first member meshing with said internal threads of said third member,

said third member having an abutment surface at one end thereof for engaging a workpiece upon rotation of said third member relative to said first member so as to advance said third member outwardly with respect to said one end of said first member, and thereafter producing an axial reaction on said first member for causing said first member to move said threaded shank of said second member axially so that said second member can force the tubular portion of such a fastener into an opening in the workpiece with the end of said tubular portion projecting therebeyond,

said one end of said first member having a die surface for engaging the end of such a tubular portion when so forced into an opening in a workpiece upon rotation of said first member relative to said third member so as to cause advancement of said first member relative to said third member, for deflecting said end of said tubular portion against said workpiece for forming a retention flange.

4,402,204

WIRE COILING MACHINE

Frank S. Russell, Northboro, and Robert J. Simonelli, Grafton, both of Mass., assignors to Sleeper & Hartley Corp., Worcester, Mass.

Continuation-in-part of Ser. No. 201,204, Oct. 27, 1980, Pat. No. 4,372,141. This application Apr. 6, 1981, Ser. No. 251,194

Int. Cl.³ B21F *11/00*

U.S. Cl. 72—131 **16 Claims**

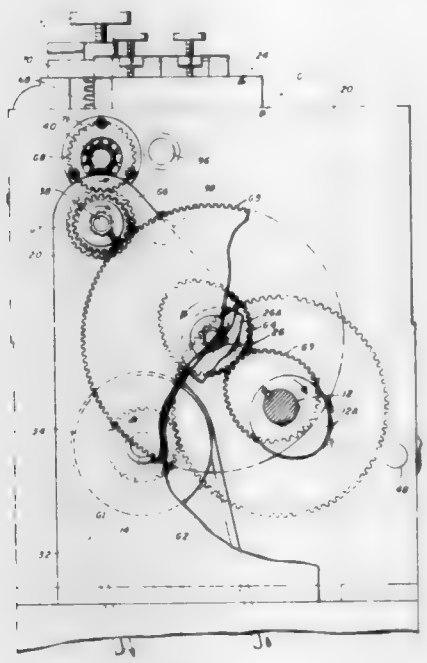
1. In a wire coiling machine having a work station at which a coil spring or the like is formed and a pair of feed rollers between which the wire is fed, the improvement comprising;

means connected to said feed rollers for driving including means for rotating at least one of the feed rollers at a variable drive speed to, in turn, feed the wire at a variable speed to the work station,

means connected to said feed rollers for controlling wire feed to intermittently interrupt wire feed in synchronism with the cutting of the wire subsequent to the coiling thereof,

said means for driving comprising means for controlling the speed of wire feed to have a maximum speed feed while

coiling and decreasing to a minimum speed feed in synchronism with the intermittent interruption of wire feed,
said means for driving further comprising a drive shaft and means powering the drive shaft,
a cam shaft,
non-circular gear means driving the cam shaft from the drive shaft to provide said variable drive speed,
at least one cam mounted on the cam shaft,



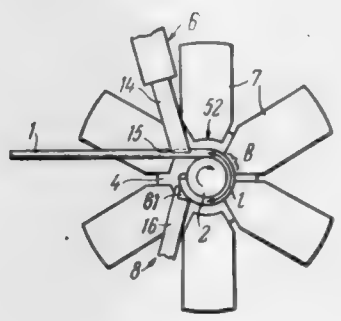
and means for supporting the cam shaft including housing means having an opening for receiving the cam shaft and a support member having means defining a bearing surface for the cam shaft and secured to the housing means about the housing means opening to cover said opening,
said opening being of greater diameter than the cam maximum diameter,
whereby the cam may be withdrawn from the cam shaft through the housing means opening when the support member is removed.

4,402,205

APPARATUS FOR FORMING HELICAL SPRINGS

Vladimir K. Yakovlev, ulitsa Moskovskaya, 25, kv. 9; Elektron P. Lugovoi, pereulok Krasnoarmeisky, 73, kv. 21, and Vasily A. Ivankov, pereulok Krasnoarmeisky, 92 Kv. 16, all of Azov Rostovskoi, U.S.S.R.

Division of Ser. No. 55,296, Jul. 5, 1979, Pat. No. 4,302,959, which is a continuation of Ser. No. 856,766, Nov. 29, 1977, abandoned. This application Nov. 17, 1981, Ser. No. 322,260
Claims priority, application U.S.S.R., Jan. 20, 1977, 2445308; Jan. 20, 1977, 2445309
Int. Cl.³ B21F *3/04*
U.S. Cl. 72—138 **20 Claims**



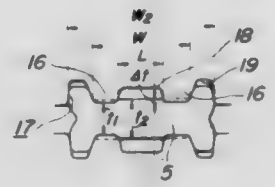
1. An installation for forming cylindrical helical springs from gauge bars, comprising:
a bed, a spindle mounted on said bed;
means adapted to rotate said spindle;
a mandrel having a first free end and a second end fixed within said spindle and rotating therewith to wind a bar and form same;
means for guiding said bar while it is wound on said mandrel mounted on said bed;
coil-forming means for forming spaced coils of a spring which includes an arm mounted on said bed along the path of movement of a formed coil, said arm being arranged to shift said formed coil by a predetermined distance toward said free end of said mandrel;
a number of sectors uniformly positioned around said mandrel and mounted on said spindle so as to rotate therewith;
said sectors being arranged to move radially toward the surface of said mandrel to press said bar against said mandrel over a portion of the circumference of said mandrel, while said sectors, at the remaining portion of said circumference, move radially from said surface to allow a just formed coil to be free from the pressing force produced by said sectors;
said sectors passing under said bar guiding means to form spaced coils of a spring; and
means for imparting radial movement to said sectors as well as movement along said mandrel.

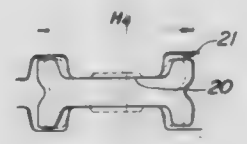
4,402,206

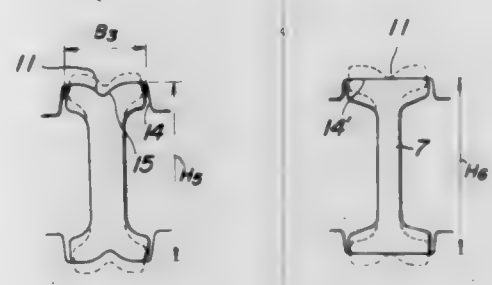
METHOD OF ROLLING SLABS FOR THE MANUFACTURE OF BEAM BLANKS AND A ROLL TO BE USED THEREFOR

Tadaaki Yanazawa; Teruaki Tanaka; Masashi Yamashita; Takashi Ehiro; Hiroshi Okumura; Shinzo Saito, and Takashi Kusaba, all of Kurashiki, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed May 20, 1981, Ser. No. 266,310
Claims priority, application Japan, Mar. 5, 1981, 56-31508
Int. Cl.³ B21B *1/08*
U.S. Cl. 72—221 **5 Claims**





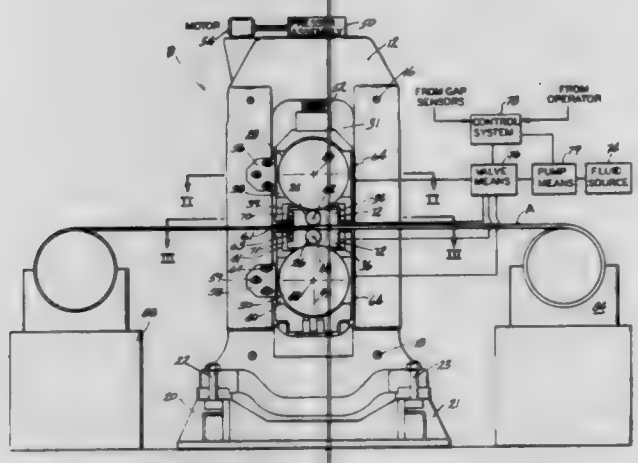


1. A method of rolling raw materials inclusive of slabs for the manufacture of beam blanks, which comprises the steps of
(a) subjecting a raw material whose section consists of a web portion and a flange portion, to a partial rolling such that said web portion is partially rolled at regions inclusive of at least joints of said flange portion, except a remaining central region among a plurality of regions divided in the widthwise direction of said web portion, and
(b) subjecting only the remaining central region to a rolling without rolling said regions rolled in the above step (a).

4,402,207
ZERO CLEARANCE DEVICE FOR ROLLING MILL APPARATUS

Thomas E. Buder, Godfrey, Ill., assignor to Olin Corporation, New Haven, Conn.

Filed Jul. 9, 1981, Ser. No. 281,801
Int. Cl.³ B21B *31/02*
U.S. Cl. 72—241 9 Claims



1. A rolling mill apparatus for reducing the thickness of a continuous strip material, said apparatus comprising:

a pair of laterally spaced housings;

each said housing having a window with sidewalls;

at least two rolls between which said strip passes;

means for supporting each of said rolls within said windows;

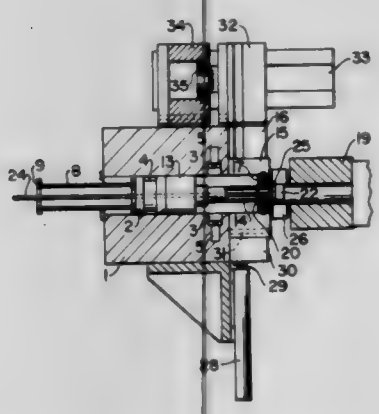
inflatable means for substantially maintaining said rolls in vertical and lateral alignment and for substantially preventing shifting and cross-over of said rolls, said inflatable means comprising a plurality of metal or metal alloy panels having inflatable fluid passageways; and

each said panel being disposed between one of said supporting means and a respective one of said window sidewalls so that clearances between said support means and said sidewalls are substantially eliminated.

4,402,208
INDIRECT EXTRUSION PRESS WITH DIE CHANGER

Guenter W. Sibler, Pittsburgh, Pa., assignor to Sutton Enigneering Company, Pittsburgh, Pa.

Filed Apr. 13, 1981, Ser. No. 253,778
Int. Cl.³ B21C *23/02*
U.S. Cl. 72—263 3 Claims

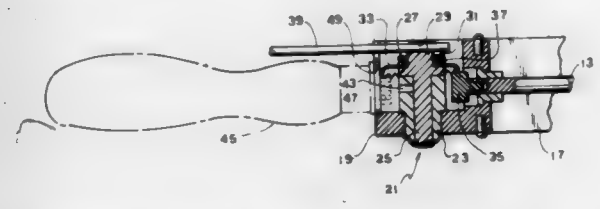


1. In an indirect extrusion press, a gate lock housing having a rear face and an extrusion-receiving horizontal passage extending through it from front to back, a die slide behind said housing provided with a die-receiving passage therethrough aligned with said housing passage, a billet container behind said die slide movable toward and away from it, ram means behind the container movable toward and away from it, tubular means slidably disposed in said housing passage, releasable gate lock means in said housing normally holding said tubular means in place, an indirect-extrusion stem secured to said tubular means in alignment therewith and extending rearwardly through the die slide toward said container, a fully loose die disposed in the front end of said container and abutting against the rear end of said stem, said ram means including means for engaging the rear end of a billet in the container for extruding the billet through the die, means operable after extrusion and release of said gate lock means for moving said tubular means and stem forward together to move the stem clear of the slide as said ram means pushes the die into said slide passage, and sliding means for then moving the die slide with the die therein tranversely of the indirect-extrusion stem and out to the side of the housing for cleaning or replacing the die.

4,402,209
LIQUID LEVEL FLOAT GAUGE CALIBRATION MEANS

Italo Di Domenico, Pittsford, N.Y., assignor to Qualitrol Corporation, Fairport, N.Y.

Filed Jun. 11, 1981, Ser. No. 272,735
Int. Cl.³ G01F *23/08*
U.S. Cl. 73—1 H 3 Claims

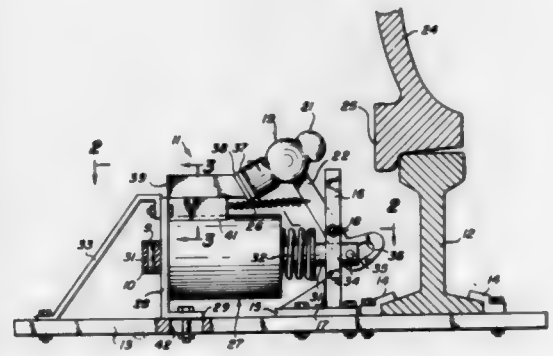


1. A liquid level gauge including a housing, a liquid level dial mounted upon the housing, a driving shaft rotatably supported in the housing, a pointer attached to the driving shaft adjacent the dial to indicate liquid level in a tank upon which the housing is mounted, a float assemblage including a float arm and a float connected thereto, an adapter secured to a reduced portion of the housing, a gear arranged in the adapter to couple the float arm and the driving shaft, calibration means positioned in the adapter operable to provide calibration between pointer movement and float movement, said adapter being formed with an opening for receipt of a tool for rotation of the crown gear by slip coupling means to the shaft, a tool capable of being inserted into said opening comprising a gear for engaging said crown gear and a pinion affixed to an end of the driving shaft, said pinion being arranged to mesh with the crown gear.

4,402,210
ACOUSTIC SIGNATURE INSPECTION OF RAILROAD WHEELS

Robert M. Vandeberg, 5622 S. 139th St., Omaha, Nebr. 68137

Filed Sep. 17, 1981, Ser. No. 303,198
Int. Cl.³ G01N *3/30, 29/04*
U.S. Cl. 73—12 9 Claims



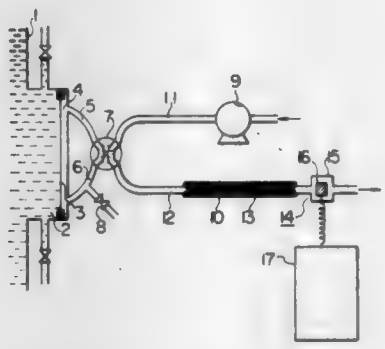
1. An electromagnetic exciter for use in acoustic signature inspection of the wheels of railroad cars comprising

a. a base adapted to be secured in place adjacent the gage side of a railroad rail;
b. an impact member comprising an impact head carried by a pivot arm;
c. means mounting the pivot arm on the base for pivotal movement so that, when the exciter is in place, the head swings in a plane normal to the associated rail between an inactive position, wherein it is clear of passing wheels, and an active position, wherein it will strike the inner face of a passing wheel;
d. yielding stop means defining said inactive position and serving to retard rebound of the impact member following return of that member to the inactive position;
e. spring means biasing the impact member toward the inactive position;
f. a solenoid mounted on the base and having a reciprocable armature which is spring biased to a rest position, and a coil which upon energization shifts the armature to an actuated position; and
g. a lost motion force-transmitting connection between the armature and the pivot arm which affords to the impact member an initial range of motion wherein it is accelerated away from the inactive position by the armature as the latter moves from the rest to the actuated position, and a terminal range of motion wherein said member swings to its active position solely as a result of the kinetic energy imparted to it by the armature during said initial range of motion.

4,402,211
SYSTEM FOR MONITORING ABNORMALITY OF OIL-FILLED ELECTRIC DEVICES

Katuo Sugawara; Etsuo Ohe, both of Hitachi; Ichitaro Tani, Kitaibaraki, and Hideo Tsukioka, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 20, 1981, Ser. No. 265,656
Claims priority, application Japan, May 20, 1980, 55-65903; Jun. 5, 1980, 55-74973
Int. Cl.³ G01N *7/10*
U.S. Cl. 73—19 **12 Claims**

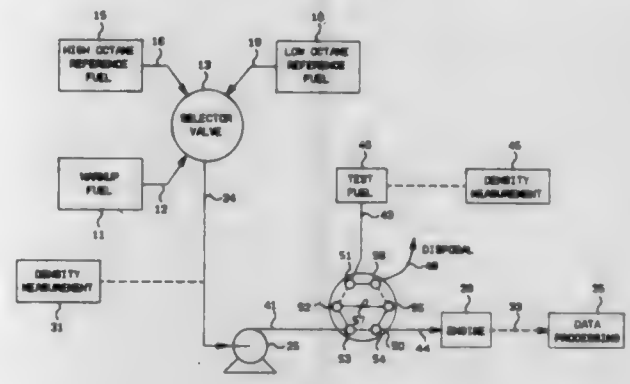


1. A system for monitoring an abnormality of oil-filled electric devices comprising a gas-in-oil separator which separates the gas staying dissolved in the insulating oil in the casing of an oil-filled electric device, a gas reservoir where the separated gas is collected, an air feeder which supplies air for delivering out the gas in said gas reservoir, a separating column packed with a gas separating filler whereby the gas supplied thereinto from said gas reservoir is separated into the respective components, a gas detector unit comprising a combustible gas detector element, made from a semiconductor element which varies in its internal impedance when contacted with a combustible gas, disposed in a case which connects at its one end to the outlet of said separating column and opens at its other end into the atmosphere, and a change-over valve disposed at a location connecting said gas reservoir, said air feeder and said separating column and adapted to switch a route which passes air from said air feeder along with said gas into said separating column via said gas reservoir to and from a route which passes said air directly into said separating column.

4,402,212
OCTANE NUMBER MEASURING SYSTEM

W. Ves Childs, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 8, 1981, Ser. No. 271,157
Int. Cl.³ G01L *23/22*; G01N *33/22*
U.S. Cl. 73—35 **9 Claims**



1. Apparatus comprising:
a sample valve means having at least first, second, third, fourth, fifth and sixth ports, said first and second ports being in fluid communication with each other, said third and fourth ports being in fluid communication with each other and said fifth and sixth ports being in fluid communication with each other when said sample valve means is in a first position and said first and sixth ports being in fluid communication with each other, said second and third ports being in fluid communication with each other and said fourth and fifth ports being in fluid communication with each other when said sample valve means is in a second position, said second and fifth ports being connected in fluid communication with each other through a sample loop;
means for supplying at least a first reference fuel having a first known octane number and a second reference fuel having a second known octane number different from said first known octane number to the third port of said sample valve means;
means for supplying a test fuel having an unknown octane number to the first port of said sample valve means;
an engine means having a fuel inlet;
means for supplying fuel from said fourth port to the fuel inlet of said engine means;
means for actuating said sample valve means to change the position of said sample valve means; and
means for establishing a first signal representative of the rate of change of the cylinder pressure in said engine means when said first reference fuel is flowing to said third port and said sample valve means is in said first position, for establishing a second signal representative of the rate of change of the cylinder pressure in said engine means when said second reference fuel is flowing to said third port and said sample valve means is in said first position, and for establishing a third signal representative of the rate of change of the cylinder pressure in said engine means when said sample valve means is actuated from said first position to said second position so as to supply said test fuel from said sample loop to said engine means.

4,402,213
METHOD AND DEVICE FOR DETECTING AND LOCATING LEAKS IN PIPELINES

William M. Hogan, Jacksonville, Ark., assignor to AGL Corporation, Jacksonville, Ark.

Continuation-in-part of Ser. No. 196,269, Oct. 14, 1980, Pat. No. 4,375,763. This application Jun. 29, 1981, Ser. No. 278,476
Int. Cl.³ G01M *3/28*
U.S. Cl. 73—40.5 R **10 Claims**

1. A leak locator probe for use in detecting leaks in a pipe comprising:
(a) a tubular housing having a first end and a second end, one

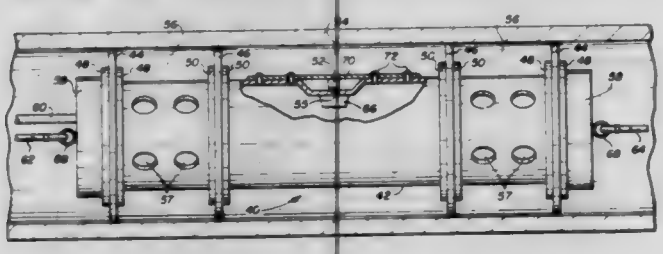
of said ends closed and the other open for communication with only one end of the pipe, with an aperture located in the cylindrical wall of said housing;

(b) airflow measuring means disposed adjacent said aperture for measuring airflow through said aperture;

(c) check valve means disposed adjacent said aperture to permit airflow only from the interior of said housing to the exterior thereof;

(d) first sealing means disposed on the exterior of said housing for providing a seal between said housing and the pipe and for defining a first sealed volume defined by the exterior walls of said housing, the interior walls of the pipe and said sealing means, said sealed volume located so that said aperture provides a fluid passageway between said sealed volume and the interior of said housing;

(e) second sealing means disposed on the exterior of said housing for defining a second and third sealed volume, said second volume adjacent one side of said first sealed volume, said third sealed volume adjacent the other side



of said first sealed volume, said housing having at least one aperture in said wall for providing a fluid passageway between said second sealed volume and the interior of said housing and at least one aperture in the wall of said housing for providing a fluid passageway between said third sealed volume and the interior of said housing;

(f) a first cable attached to the first end of said housing for pulling the leak locator through the pipe in a first direction,

(g) a second cable attached to the second end of said housing for pulling the leak locator through the pipe in the second direction, said first and second cable reciprocating the leak locator within the pipe; and

(h) means for pressurizing the end of said pipe adjacent the open one of the first and second ends of said housing such that air flows through the aperture in said housing from the interior thereof to said first sealed volume when a leak is traversed by the leak locator and air flow from said first sealed volume to the interior of said housing is inhibited by said check valve means.

4,402,214

FILTER ELEMENT TEST METHOD AND APPARATUS

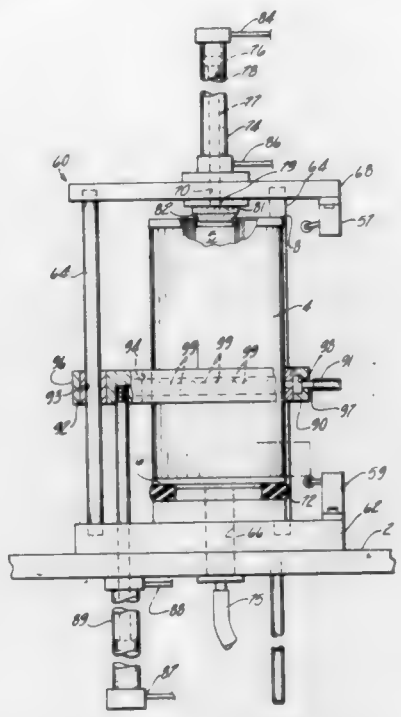
Morgan H. Morgan, Greeneville, Tenn., and Pamela T. Anders, Berkley, Mich., assignors to Facet Enterprises, Inc., Tulsa, Okla.

Filed Apr. 8, 1981, Ser. No. 252,484
Int. Cl.³ G01M *3/20*
U.S. Cl. 73—40.7 **25 Claims**

1. The method of testing a fluid filter element for defects comprising the steps of:

passing a test fluid having foreign particles entrained therein through a filter element to be tested;

moving a probe adjacent to the periphery of and transversely across the longitudinal axis of said filter element to collect foreign particles passing through said filter element; and



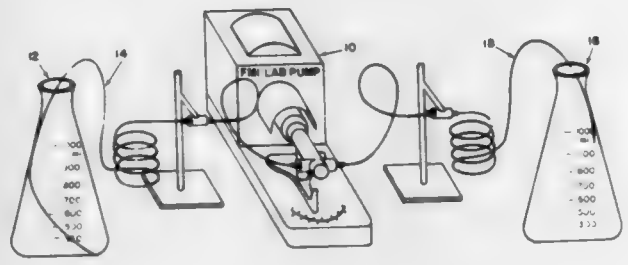
measuring the concentration of particles collected by said probe.

4,402,215

RHEOLOGICAL TESTING METHOD

Thomas G. Guastavino, Cherry Hill, N.J., assignor to The United States of America, Washington, D.C.

Filed Sep. 11, 1981, Ser. No. 301,254
Int. Cl.³ G01N *11/04*
U.S. Cl. 73—55 **2 Claims**



1. The method of measuring the potential anti-misting behavior of a polymer-modified fluid, which comprises:

a. adding a polymer to said fluid;

b. pumping said fluid and polymer through a conduit at a first pressure;

c. measuring the flow rate at said first pressure;

d. increasing the pumping pressure applied to said fluid and polymer and measuring the flow rate at the increased pumping pressure; and

e. comparing the flow rate at a given pumping pressure with the flow rate at a lower pumping pressure to determine if the flow rate decreases with increasing pumping pressure.

4,402,216

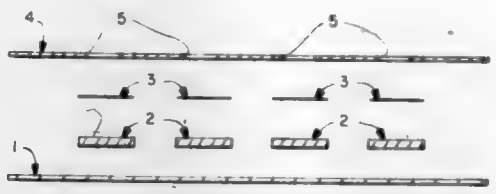
ERYTHROCYTE DEFORMABILITY MONITOR

David D. Peterson, Pleasanton, Calif., assignor to Nuclepore Corporation, Pleasanton, Calif.

Filed Aug. 31, 1981, Ser. No. 298,195
Int. Cl.³ G01N *33/48*
U.S. Cl. 73—61.4 **11 Claims**

1. A device for monitoring erythrocyte deformability comprising a plurality of membranes characterized by high density, straight-through, capillary-shaped pores, the mean pore size of

each said membrane being in the range of about 0.50 microns and about 10 microns, each said membrane having a different



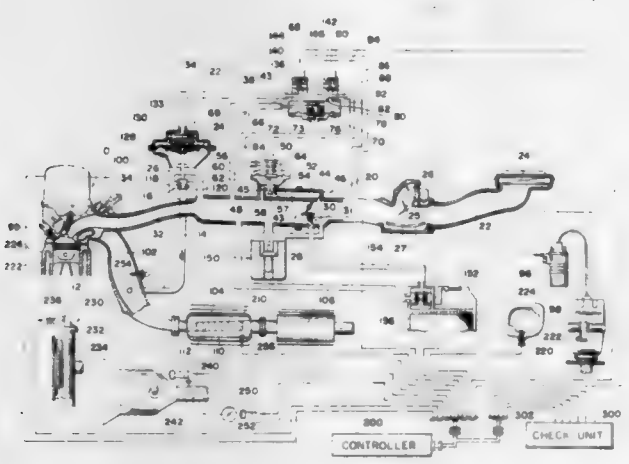
nominal mean pore size from the others; each said membrane having absorbent material in contact with one surface thereof.

4,402,217

ELECTRONIC ENGINE CONTROL SYSTEM WITH CHECKING UNIT FOR SENSORS AND ACTUATORS THEREIN

Kazuhiro Higashiyama, Atsugi, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Mar. 31, 1981, Ser. No. 249,742
Claims priority, application Japan, Apr. 7, 1980, 55-44589
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.3 **22 Claims**



22. In an electronic control system for an internal combustion engine for controlling a fuel injection amount, an intake air flow rate, a spark ignition timing, an exhaust gas recirculation rate and an idle air flow rate corresponding to the engine operating condition, which system includes sensors for determining the air flow rate, the engine speed, an engine coolant temperature, an exhaust gas oxygen concentration, an exhaust gas temperature, a transmission neutral position, a throttle angle position, starter switch position, an air-conditioner switch position and a battery voltage, actuators for controlling the air flow rate, the fuel injection amount, the exhaust gas recirculation rate and the idle air flow rate and a microcomputer processing the sensor signals to determine duty factors of control signals for controlling the ratio of energized periods and deenergized periods of the actuators for controlling the engine operation corresponding to the engine operating condition,

a method for checking operation of each of said actuators comprising the steps of:

producing a driving signal to be fed to the actuator to be checked, which driving signal is indicative of a predetermined duty factor;

turning on a display while the actuator is energized by said driving signal; and

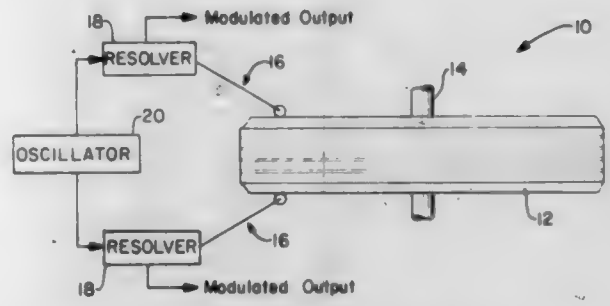
comparing the display with the actuator operation.

4,402,218

METHOD AND APPARATUS FOR SIDEWALL BULGE AND VALLEY DETECTION

Jean Engel, Bissen, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 3, 1981, Ser. No. 270,087
Int. Cl.³ G01B *5/28*
U.S. Cl. 73—146 **22 Claims**



1. Apparatus for determining the presence of valleys and bulges in the sidewalls of a tire, comprising:

first means for receiving, inflating, and rotating a tire;

second means positioned opposite the tire for monitoring surface deflections of the sidewalls of the tires during rotation and presenting output signals corresponding to said deflections, said second means comprising a displacement transducer including a probe interconnected with a resolver, movement of said probe generating a corresponding output from said resolver, said probe including a roller bearing at an end of an arm and further including a scaper maintained in close juxtaposition to said roller bearing; and

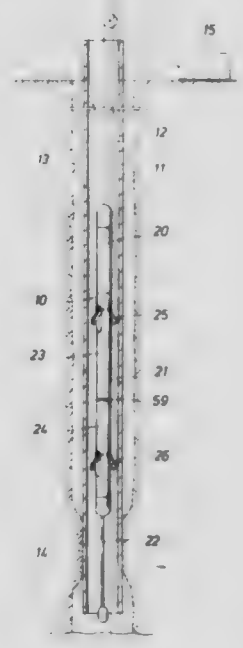
third means connected to and receiving said output signals from said second means for determining against preselected criteria the existence of a valley or a bulge within a sidewall of the tire as a function of said output signals.

4,402,219

APPARATUS FOR DETECTING THE STUCK POINT OF DRILL PIPES IN A BOREHOLE

Jean M. Hache, Bourg-la-Reine, France, assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Dec. 21, 1981, Ser. No. 333,153
Claims priority, application France, Dec. 31, 1980, 80 27868
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—151 **21 Claims**



1. A method for detecting the stuck point of a conduit in a borehole comprising:

(a) lowering an apparatus in the conduit, the apparatus in-

cluding a body having first and second parts movably mounted with respect to each other and normally biased toward each other by a biasing force,

(b) anchoring each of the body parts inside the conduit under control from the surface,

(c) detecting relative movements between the parts when the conduit is deformed by stresses applied from the surface, and

(d) uncoupling the biasing force from the first part after said anchoring step and before said detecting step to eliminate the application of the force between the parts during said detecting step.

4,402,220

WIND DIRECTION INDICATOR

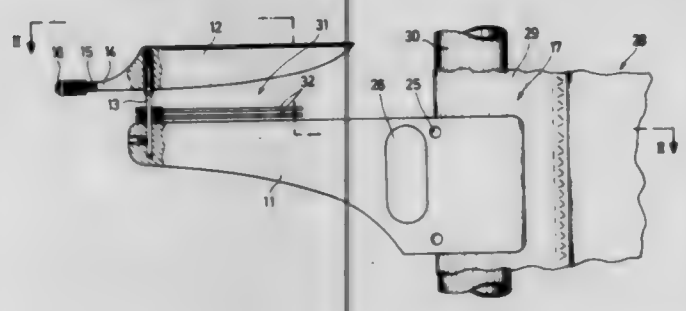
Werner Kuhlmann, Stephanskirchen, and Werner Redlinger, Öhningen, both of Fed. Rep. of Germany, assignors to Pfeiffer Gerätebau GmbH, Radolfzell, Fed. Rep. of Germany

Filed Dec. 30, 1980, Ser. No. 221,303

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1980, 3000894; Oct. 14, 1980, 8027377[U]

Int. Cl.³ G01W *1/00*

U.S. Cl. 73—188 **13 Claims**



1. A wind direction indicator for a sailing craft, comprising:

an outrigger;

a weather vane rotatably mounted at one end of the outrigger; and,

attachment means at the opposite end of the outrigger for engaging, and enabling the outrigger to be carried by, a sleeve portion of a sail used for attaching the sail to a mast by overfitting the mast, the attachment means including a pair of jaws urged together by resilient means, the outrigger being attachable at an angular orientation relative to the sail, about the mast, the angular orientation remaining fixed irrespective of all subsequent rotational orientations of the sailing craft, the mast and the sail, relative to one another, whereby the wind direction indicator can be operationally fixed to remain clear of wind currents driving the sail.

4,402,221

ACOUSTIC SUSPENSION SYSTEM

Mark C. Lee, La Canada, and Taylor G. Wang, Glendale, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 12, 1981, Ser. No. 272,837

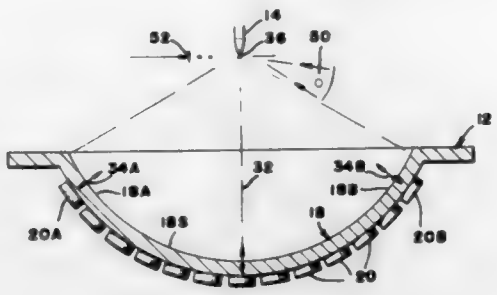
Int. Cl.³ F16C *32/00*

U.S. Cl. 73—505 **14 Claims**

1. An acoustic levitation apparatus, comprising:

an acoustic source having a major axis, as seen in a cross-sectional view, for directing acoustic energy from locations on opposite sides of the major axis substantially toward a focus, said source having source portions on either side of said axis which are constructed to vibrate along local axes which are not parallel to each other but which are instead directed substantially at said focus;

an acoustic reflector having a reflecting surface facing said source, said reflecting surface positioned near said focus, at a distance therefrom which is less than half the distance



of the source from the focus, to reflect sound in a direction substantially toward said source; and

a quantity of fluid between said source and reflector.

4,402,222

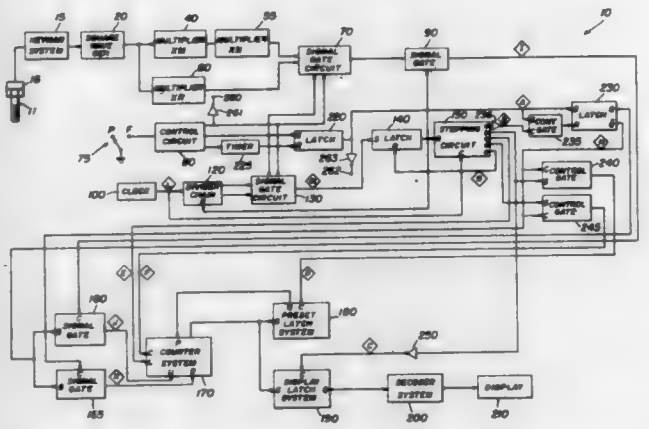
BOLT LOAD DETERMINING APPARATUS

Gene E. Olson; Donald D. Grover; Christopher B. Stout; Thomas P. Becker; Glenn A. Kaufman, all of Kenosha, and Norbert J. Kot, Milwaukee, all of Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Jan. 26, 1982, Ser. No. 342,901

Int. Cl.³ G01H *13/00*; G01N *29/00*

U.S. Cl. 73—579 **30 Claims**



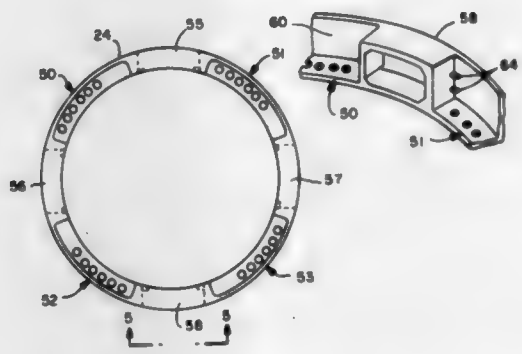
1. Bolt load determining apparatus comprising means for providing a first pulsating signal at a first frequency being a selected harmonic of the resonant frequency of the bolt in a first loaded condition thereof and for thereafter providing a second pulsating signal at a second frequency being the same harmonic of the resonant frequency of the bolt in a second loaded condition thereof, means for multiplying the first frequency by a factor M dependent on the first frequency and the geometry and composition of the bolt and thereafter multiplying the second frequency by the factor M, counter means having an up input to receive pulses to be counted up from zero and a down input to receive pulses to be counted down from the number counted at said up input, means for coupling the first pulsating signal to one of said inputs for a predetermined duration and for thereafter coupling the second pulsating signal to the other of said inputs for the predetermined duration, and means for indicating the number of pulses remaining in said counter means which number is representative of the difference in load on the bolt between the first and second loaded conditions.

4,402,223

ULTRASONIC SECTOR SCANNER UTILIZING ROTATING TRANSDUCER

Ted F. Naumann, Jr., Shingle Springs; Ronald C. Carnes, Folsom, and Axel F. Briskea, Shingle Springs, all of Calif., assignors to General Electric Company, Rancho Cordova, Calif.

Filed Aug. 7, 1981, Ser. No. 290,830
Int. Cl.³ G01N 29/00
U.S. Cl. 73—625 8 Claims



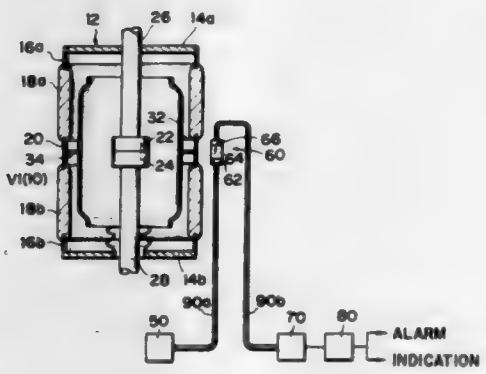
6. For use in an ultrasonic sector scanner, a transducer support wheel for rotating a plurality of transducers, said wheel including a circumferential rim surface, and a plurality of generally rectangular recessed seats within said circumferential surface for receiving transducers inserted radially inwardly with respect to said wheel, each seat having a central opening in the radially inward direction for transmitting ultrasonic energy to and from a transducer mounted in the seat, each corner of said seat having a support tab on the radially inward side for supporting a surface of said transducer facing a central opening.

4,402,224

PRESSURE RESPONSIVE MONITORING DEVICE FOR VACUUM CIRCUIT INTERRUPTERS

Tomio Fukushima, Higashimine, Japan, assignor to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,617
Claims priority, application Japan, Mar. 24, 1980, 55-37098; May 22, 1980, 55-68312
Int. Cl.³ G01L 9/00
U.S. Cl. 73—705 27 Claims



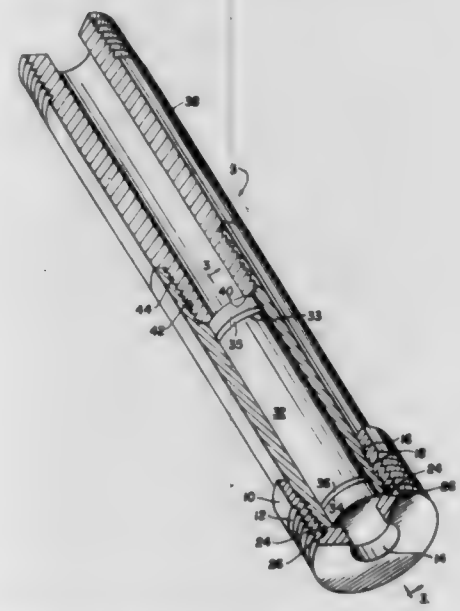
1. A pressure responsive monitoring device for a vacuum circuit interrupter having an evacuated envelope, comprising an electric field generating member for generating an electric field, a voltage detecting circuit loop which includes a light source for generating light, an electric field detecting member for detecting change of electric field in said electric field generating member depending upon the change of vacuum pressure of said envelope of the vacuum circuit interrupter, a photoelectric converting member for converting an output light signal from said electric field generating member to an electric signal, and a vacuum pressure discriminating member for discriminating vacuum pressure of said envelope of the vacuum circuit interrupter in response to the electric signal of said photoelectric converting member, said electric field detecting member comprising an electric field sensitive means for changing an angle of polarization of the light generated by said light source and an analyzing element for analyzing an output light generated by the electric field sensitive element.

4,402,225

PRESSURE TRANSMITTING APPARATUS

Alma L. Myrick, 2618 Hazel St., Texarkana, Ark. 75504

Continuation-in-part of Ser. No. 121,683, Feb. 15, 1980, abandoned. This application Jun. 12, 1981, Ser. No. 272,954
Int. Cl.³ G01L 7/16
U.S. Cl. 73—706 7 Claims



1. Apparatus for transferring pressure from a flow line having a first fluid therein to a standby line having one end in communication with said flow line, said standby line having a closed column of a second fluid and a pressure indicating means therein, said apparatus comprising a piston mounted for axial movement in said standby line when subjected to pressure, said piston being disposed between said flow line and said indicating means, said standby line comprising a sleeve having said piston mounted therein, means for limiting the axial movement of said piston in said sleeve, the diameter of said piston being slightly less than the inside diameter of said sleeve, and sealing means disposed between said piston and said sleeve, whereby pressure in said flow line is transferred to said piston to effect limited movement thereof and to subject said second fluid and said fluid indicating means to said pressure, said piston having circumferential bores therein near the ends thereof, and said sealing means comprising O-rings mounted in said bores, said O-rings being formed of a material that can withstand temperatures up to 1000° F.

4,402,226

ICE STRESS GAUGE

Thomas K. Perkins, Dallas, and Edward J. McBride, Irving, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 11, 1980, Ser. No. 215,219
Int. Cl.³ G01L 19/04, 7/06
U.S. Cl. 73—708 18 Claims

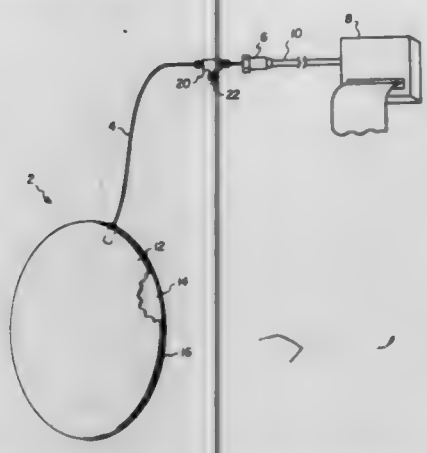
5. An ice stress gauge comprising:

two substantially identically shaped metal sheets joined together along their outer edges to form a fluid-tight enclosed volume between said sheets, said enclosed volume being less than the volume occupied by said metal sheets;

a conduit having one end bonded to at least one of said sheets in communication with said enclosed volume;

a pressure transducer having a fluid input coupled to a second end of said conduit, and an output for providing an indication of pressure at said input; and

a liquid filling said enclosed volume, said conduit, and said pressure transducer input;



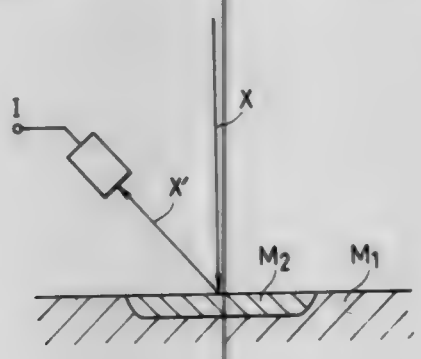
wherein the ratio of the thickness of each of said sheets to the largest dimension of said sheets is greater than 0.005.

4,402,227

METHOD OF DETERMINING FATIGUE LIFE OF METALS

Makoto Hayashi; Shinji Sakata, and Tasuku Shimizu, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 15, 1981, Ser. No. 264,142
Claims priority, application Japan, May 16, 1980, 55/65499
Int. Cl.[3] G01N *3/32*
U.S. Cl. 73—812 8 Claims



1. A method of determining the fatigue life of a subject metal, comprising:

forming a recessed portion in the subject metal of which the fatigue life is to be determined;

melt-adhering a test metal into said recessed portion, said test metal exhibiting a half-value width which varies depending upon the degree of deformation by fatigue and having a residual fatigue life nearly equal to the subject metal;

subjecting the metal-adhering test metal together with the subject metal to fatigue;

thereafter detecting a diffracted X-ray which is obtained when said melt-adhered test metal is irradiated with an X-ray;

finding the half-value width of X-ray diffraction relying upon the diffracted X-ray which is detected;

comparing said half-value width with a fixed reference half-value width versus stress cycle characteristic of said test metal; and

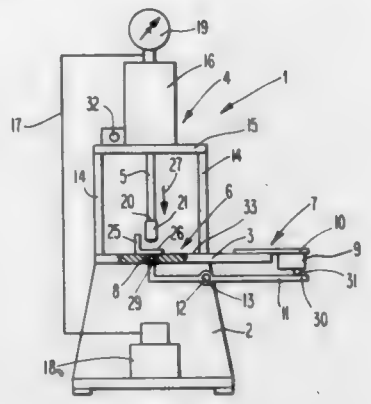
determining the fatigue life of said subject metal from said comparing.

4,402,228

APPARATUS AND METHOD FOR TESTING THE HARDNESS OF BATTERY COMPONENTS

William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Filed Jun. 4, 1981, Ser. No. 270,495
Int. Cl.[3] G01N *3/20*
U.S. Cl. 73—849 21 Claims



1. An apparatus for determining the deformability of a component, which apparatus comprises:

a. a base having an aperture disposed therein;

b. a ram operatively associated with the base and located in substantial axial alignment with the aperture;

c. limiting switch means comprising lever means, one portion of which extends into the aperture and the other portion of which is operatively associated with a switch, so that contact between the component and the portion of the lever means located within the aperture causes operation of the switch; and

d. means for advancing the ram with respect to the aperture;

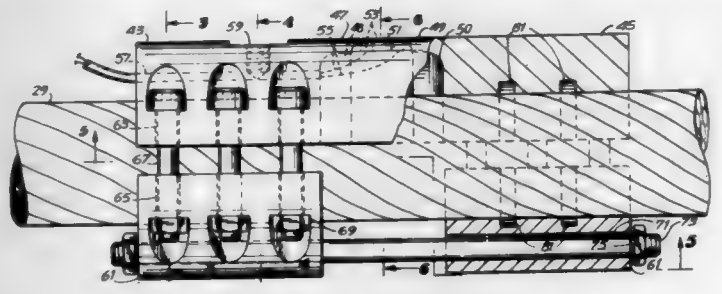
whereby a component positioned on the base and over the aperture is capable of being advanced by the ram, into the aperture, and into contact with the limiting switch means.

4,402,229

CABLE TENSION MEASURING APPARATUS

Paul Byrne, Plano, Tex., assignor to Core Laboratories, Inc., Dallas, Tex.

Filed Jul. 17, 1981, Ser. No. 284,485
Int. Cl.[3] G01L *5/10*
U.S. Cl. 73—862.39 10 Claims



1. Apparatus for measuring tension on a cable, comprising:

a strain bridge including at least two clamp means for attachment to the cable and a web portion integrally formed with and extending between the clamp means;

sensing means affixed to the web means for producing an output signal proportional to the tension thereon; and

circuit means connected to the sensing means for processing the output signal and for providing a readable output representative of the tension on the cable.

4,402,230

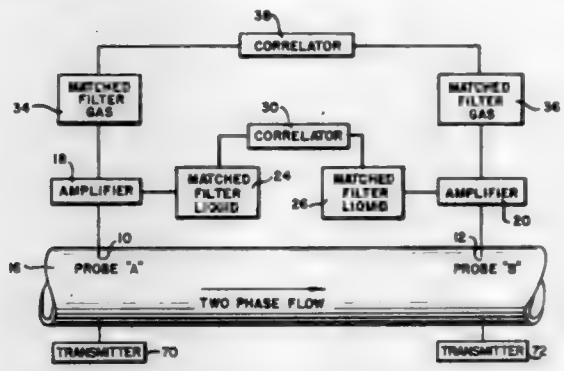
METHOD AND APPARATUS FOR MEASURING FLOW VELOCITY USING MATCHED FILTERS

Apostolos C. Raptis, Downers Grove, Ill. (Granted to U. S. Department of Energy under the provisions of 42 U.S.C. 2182)

Filed Jul. 17, 1981, Ser. No. 284,050

Int. Cl.³ G01F *1/74*

U.S. Cl. 73—861.04 **6 Claims**



1. A flowmeter for measuring in a multiphase flow, the flow rates of individual phase flow components having their own respective flow disturbance frequency characteristic comprising:

detecting means for deriving from each of a pair of positions spaced apart in the direction of multiphase flow, an input signal corresponding to flow disturbances in the multiphase flow;

for each respective phase flow component, a pair of matched filters for filtering said input signals, with each of said pair of matched filters matched to the flow disturbance frequency characteristic of an individual phase flow component to be measured, each of said pair of matched filters generating an output signal corresponding only to the flow of said individual phase flow component being measured; and

means for comparing the output signals of each of said pair of matched filters to determine the respective delay time between said pair of positions of the corresponding individual phase flow component being measured and to derive thereby the respective flow velocity of said individual phase flow component being measured.

5. A method of measuring in a multiphase flow, the flow rates of phase flow components having their own respective flow disturbance frequency characteristics, comprising the steps of:

a. for each phase flow component, obtaining first and second digital electrical signals corresponding to disturbances in the flow of said phase flow component, by sensing the passage of flow disturbances in the flow of said phase flow component respectively past a pair of positions spaced apart in the direction of multiphase flow;

b. calculating for each phase flow component with the aid of a digital computer, using respective ones of said first and said second digital electrical signals as a database, pairs of matched filter transfer functions matched to the flow disturbance frequency characteristics of each of said phase flow components, respectively;

c. obtaining third and fourth digital electrical signals corresponding to disturbances in the multiphase flow by sensing the passage of flow disturbances in the multiphase flow respectively past said pair of positions;

d. filtering with the aid of the digital computer each of said third and said fourth signals to obtain pairs of matched filter output signals corresponding to respective ones of said phase flow components, by multiplying said third and said fourth signals with pairs of matched filter transfer functions which are matched to the flow disturbance frequency characteristics of respective ones of said phase flow components; and

e. comparing each of said pairs of matched filter output signals to determine the delay between said pair of positions of each phase flow component being measured, respectively.

4,402,231

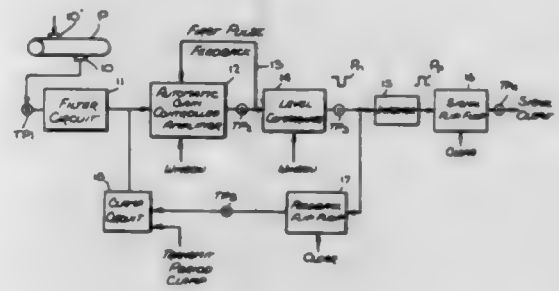
AGC AMPLIFIER FOR ULTRASONIC MEASURING SYSTEM

Matthew C. Ryan, Lansdale, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Apr. 9, 1981, Ser. No. 252,347

Int. Cl.³ G01F *1/66*

U.S. Cl. 73—861.27 **7 Claims**



1. In an ultrasonic system for measuring the flow rate of a fluid conducted through a pipe, the system being provided with a transducer to emit a pulse of ultrasonic energy which is propagated through the fluid and is received by a second transducer at a different position, the received signal burst having a low level noise component and a higher level signal component constituted by a first pulsatory swing and a series of subsequent swings; a receiving stage responsive to said signal burst to produce an output signal whose time position depends on the flow rate of the fluid, said stage comprising:

A. an automatic gain control amplifier having an input to which said signal burst is applied;

B. a normally-disabled voltage-responsive clamp circuit connected to the input of the amplifier; said clamp circuit, when activated, functioning to ground said input;

C. means coupled to the output of the amplifier to produce a voltage for activating the clamp circuit at a point in time following the first swing and preceding the second swing in the signal burst, whereby the controlled gain of the amplifier is determined entirely by the first swing; and

D. means to derive an output signal from the output of the amplifier, which is coincident with the first swing.

4,402,232

ENGAGEMENT PRESSURE MEASURING APPARATUS FOR ROLLERS IN PRINTING MACHINES

Albert Stegmüller, Friedberg; Herbert Stöckl, Augsburg, and Johann Winterholler, Friedberg, all of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Jun. 5, 1981, Ser. No. 270,963

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1980, 3029048

Int. Cl.³ G01L *1/02*; G01B *7/16*

U.S. Cl. 73—862.55 **17 Claims**

1. In a rotary printing machine,

apparatus to measure the engagement pressure of two rollers rolling off against each other comprising, in accordance with the invention,

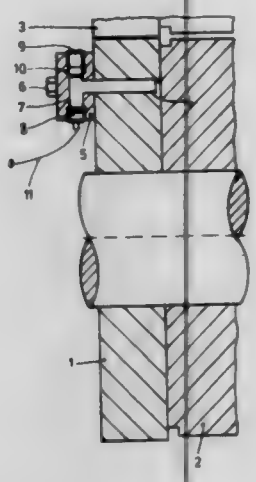
a chamber (4) formed in one of the rollers (1; 31–34) and located in a rolling zone subject to compressive deformation upon exertion of said engagement pressure by the engaging other roller (3; 30, 35–38);

a flowable substance entirely filling the chamber in said one roller;

a pressure transducer (8) positioned in pressure transfer relationship to the flowable substance;

and output means coupled to the pressure transducer and

furnishing data representative of said engagement pressure upon deformation of said one roller in said zone and



consequent deformation of a surface area of said one roller adjacent said chamber.

4,402,233

APPARATUS FOR DRIVING A ROTATABLE MANTLE MOUNTED ON A FIXED AXLE

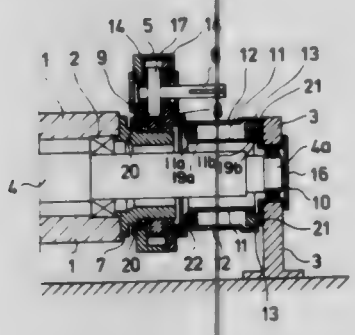
Pentti Toivonen and Juhani Ovaska, both of Jyväskylä, Finland, assignors to Valmet Oy, Finland

Filed Feb. 6, 1981, Ser. No. 232,308

Claims priority, application Finland, Feb. 7, 1980, 800386

Int. Cl.³ F16H *57/00*; B60B *15/16*; B21B *13/02*

U.S. Cl. 74—411 **8 Claims**



1. In apparatus for driving a rotatable mantle, such as a mantle of a deflection-compensated roll of a paper machine, mounted by bearings on a fixed axle and including at least one drive gear mounted on a respective shaft which itself is fitted with bearings in a carrier situated in the region of an end of the fixed axle and wherein said at least one drive gear is adapted to drive a secondary gear ring coupled to the rotatable mantle, the improvement comprising:

a substantially tubular axle fixed to an end of said rotatable mantle;

a housing or gear box constituting said carrier for said at least one drive gear mounted by bearings on said tubular axle which is fixed to said rotatable mantle so that said housing or gear box and associated components are fixed to said mantle to follow any deflections thereof; and

rotation preventing means for fixing said housing or gear box against rotation about said fixed axle and for permitting the housing or gear box to follow any deflections of said mantle, said rotation preventing means including a toothed coupling member.

4,402,234

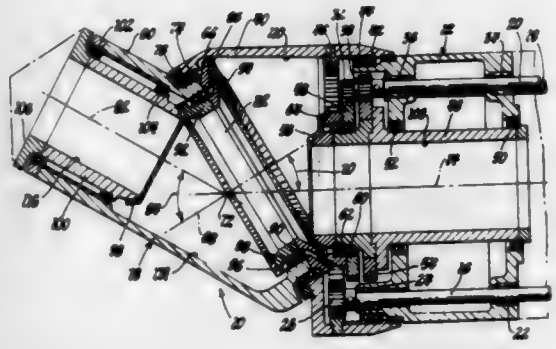
THREE-AXIS WRIST MECHANISM

Antoni J. Malarz, Warren, and Gerald C. Rieck, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 13, 1981, Ser. No. 292,725

Int. Cl.³ B25J *17/02*; F16H *1/22*; G05G *11/00*

U.S. Cl. 74—417 **3 Claims**



1. A mechanical wrist mechanism for positioning a work tool comprising; a relatively stationary base, three independent rotational axes having a point of mutual intersection with two of said axes being angularly fixed relative to each other and one of the axes being angularly fixed relative to said base and the third of said axes being movable angularly relative to the both of the two axes and angularly alignable with the other axis while maintaining the point of mutual intersection; a tool support member rotatable on the third of said axes including a tool mounting surface; a pair of housing means rotatably supported on respective ones of the two said axes; gear means for providing independent rotation of said support member and said housing means about their respective axis for selectively establishing the positioning of said tool mounting surface within a substantially hemispherical envelope; and continuously unobstructed passage means between the base and the tool mounting surface including cavities in said base, said housing means and said tool support member for the enclosed containment of work tool related structures.

4,402,235

GEARSHIFT DEVICE

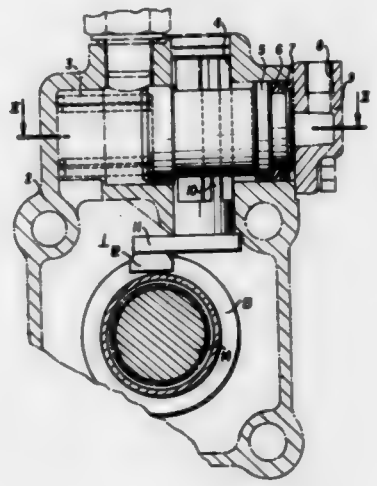
Gunther Bendel, Tettnang, and Siegfried Loffler, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen A.G., Friedrichshafen, Fed. Rep. of Germany

Filed May 16, 1980, Ser. No. 150,290

Claims priority, application Fed. Rep. of Germany, May 18, 1979, 292036

Int. Cl.³ F01B *9/00*

U.S. Cl. 74—473 R **13 Claims**



1. A gear unit including a gearshift device, said gearshift

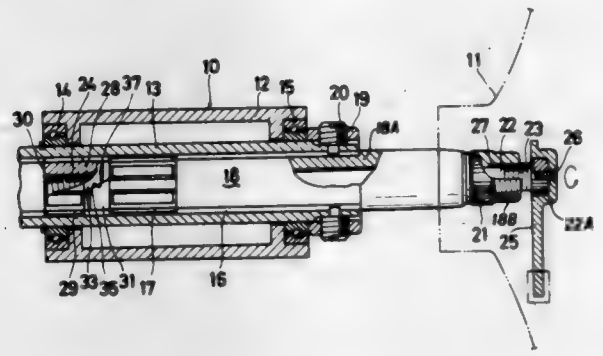
device including shift lever means, said shift lever means being affixed to an end of a rocking shaft whereby rotation of the shaft effects movement of the shift lever means in a plane radial to the shaft, a piston mounted for movement in a cylinder transversely relative to the rocking shaft, a transverse recess in the piston through which the rocking shaft passes, direct coupling means between the recess and the rocking shaft connecting the shaft and the piston, whereby movement of the piston causes rotation of the rocking shaft, and the length of the recess relative to the diameter of the rocking shaft limiting the stroke of the piston.

4,402,236

REGULATING APPARATUS FOR A STEERING WHEEL

Masumi Nishikawa, Toyoake, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Feb. 3, 1981, Ser. No. 231,155
Claims priority, application Japan, Feb. 25, 1980, 55-023123
Int. Cl.³ B62D *1/18*; G05G *5/22*; F16B *2/14*
U.S. Cl. 74—493 **4 Claims**



1. A regulating apparatus for a steering wheel of a vehicle body comprising:

a case fixed to said vehicle body,

an outer shaft rotatably mounted on said case and having an inner spline member formed in the inner circumference thereof,

an inner shaft axially slidably mounted within said outer shaft and rotatable for transmitting rotational torque generated by rotation of said steering wheel and further comprising a first and second separately spaced projection with a first and second tapered portion respectively formed thereon and an outer spline member formed on an outer circumferential surface thereof,

a locking member axially slidably mounted within said outer shaft according to sliding movement of said inner shaft and further comprising a third and fourth separately spaced projection with a third and fourth tapered portion respectively formed thereon and engageable with said first and second tapered portion of said inner shaft for locking sliding movement of said inner and outer shafts and an outer spline member formed on an outer circumferential surface of said locking member, and

a locking rod operatively connected to said inner shaft and said locking member for engaging or disengaging said inner shaft and said locking member via said first, second, third and fourth tapered portions.

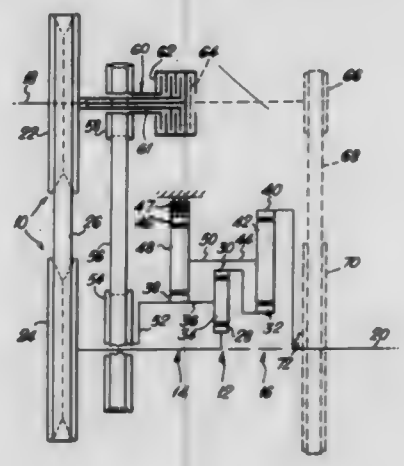
4,402,237

VARIABLE RATIO POWER TRANSMISSION MECHANISMS

Malcolm Tomlinson, Luton, England, assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 29, 1981, Ser. No. 278,622
Int. Cl.³ F16H *37/00*
U.S. Cl. 74—689 **11 Claims**

1. A variable ratio power transmission mechanism in which a rotary drive member is connected to drive an input member of a mechanical variator that is operable to provide a steplessly variable ratio drive at an output member of the variator, the output member of the variator is connected to drive an output member of the transmission mechanism by way of interconnected first, second and third planetary gearsets each comprising first and second members meshing with at least one planetary member that is rotatably mounted on a carrier member, the first member of the first planetary gearset is connected to the output member of the variator, the second member of the first planetary gearset is connected to the first member of the third planetary gearset, the carrier member of the first plane-



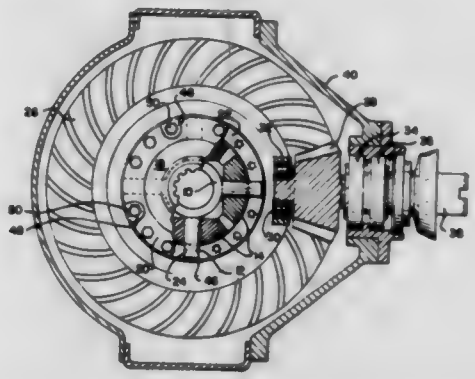
tary gearset is connected to the first member of the second planetary gearset, the second member of the second planetary gearset is held stationary, the carrier members of the second and third planetary gearsets are interconnected, the second member of the third planetary gearset is connected to the output member of the transmission mechanism, and one of the carrier members has a drive connection to the input member of the variator effective to recirculate torque from the said carrier member to the input member of the variator.

4,402,238

DIFFERENTIAL CASE

Robert D. Craig, 350 North Rd., Butler, Pa. 16001

Filed Jun. 27, 1980, Ser. No. 163,733
Int. Cl.³ F16H *1/38*
U.S. Cl. 74—710 **1 Claim**



1. A differential case having at least one port in the periphery of the case and an assembly within the case which has at least one shaft carrying at least one pinion and the shaft having an outer end aligned with the port, the improvement comprising a rigid retaining band surrounding the case and covering the port, the band having a plurality of bolt lugs along one edge of the band and extending radially inwardly to receive a bolt which passes through each bolt lug and joins the band to the case so as to maintain the band in a fixed relationship with respect to the case thereby preventing the shaft from being ejected from the case when the shaft breaks.

4,402,239

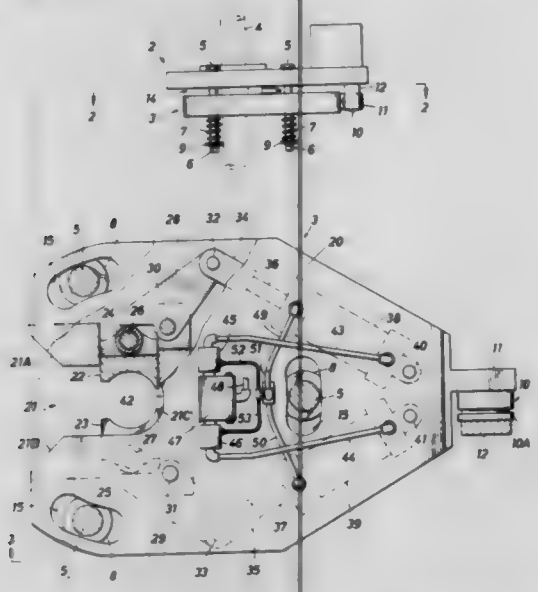
BACK-UP POWER TONGS AND METHOD

Tommy R. Mooney, Houston, Tex., assignor to Eckel Manufacturing Company, Inc., Odessa, Tex.

Continuation of Ser. No. 34,741, Apr. 30, 1979, abandoned. This application Mar. 13, 1981, Ser. No. 243,653

Int. Cl.³ B25B *17/00*

U.S. Cl. 81—57.16 14 Claims



1. An apparatus for preventing axial rotation of a pipe member by a rotary tong assembly having downward extending leg portions affixed to said rotary tong assembly, said apparatus comprising:

a body member having an open throat portion for receiving said pipe member and a plurality of apertures for receiving said downward extending leg portions of said rotary tong assembly,

first and second gripping members within said body member each linearly and radially movable toward said pipe member,

first and second powered cylinder means each pivotably mounted within said body member and interconnected with one of said gripping members for urging said gripping members into engagement with said pipe member,

power supply means connected to both said first and second cylinder means for simultaneous activation of said gripping member,

first and second pivotally mounted lever means each pivotably connected with a respective one of said cylinder means and in engagement with a respective one of said gripping members for increasing the force exerted on said pipe member by said gripping members in response to said cylinder means, and

a bracing block member affixed within said body member in a position opposite said open throat with respect to said gripping members for providing pivotable support for said lever means and preventing said open throat portion of said body member from spreading.

4,402,240

HEAT EXCHANGER RIBBON SLITTING DEVICE AND METHOD

Ross A. Moyer, Lafayette, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 29, 1980, Ser. No. 221,094

Int. Cl.³ B26D *1/62, 3/12*

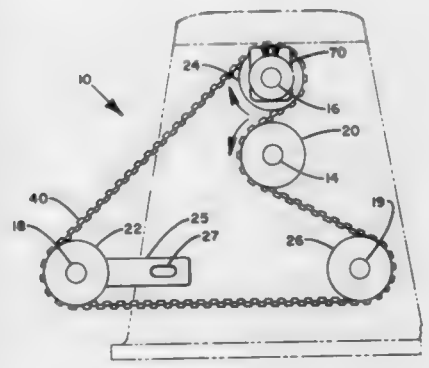
U.S. Cl. 83—343 5 Claims

1. A mechanism for forming a ribbon of thin sheet stock having spaced slits extending inwardly from an edge of the ribbon for use in a heat exchanger which comprises:

a first slitter wheel having closely spaced teeth circumferentially spaced about the wheel and being mounted on a first shaft, said teeth defining a top surface located at the radially outermost portion of the wheel and a perpendicular edge which extends radially inwardly from the top surface and partially defines a void between adjacent teeth;

a second slitter wheel having closely spaced teeth circumferentially spaced about the wheel and being mounted on a second shaft, said teeth defining a top surface located at the radially outermost position of the wheel and a perpendicular edge which extends radially inwardly from the top surface and partially defines a void between adjacent teeth;

said second slitter wheel coacting with the first slitter wheel when said slitter wheels are rotated with the top surface of a tooth from the first slitter wheel extending into the void between teeth in the second slitter wheel and the top surface of a tooth of the second slitter wheel extending into a void between teeth in the first slitter wheel and the perpendicular surfaces of the teeth of the respective slitter



wheels being slightly displaced such that the ribbon is slit as it advances between slitter wheels;

means for rotatably driving either the first shaft or the second shaft;

a first pulley mounted to the first shaft;

a second pulley mounted to the second shaft; and

a double sided pulley belt connecting the first pulley to the second pulley to rotate the shaft and attached slitter wheel being driven from the shaft connected to the rotating means while maintaining the teeth of the slitter wheels in registration, said belt being sufficiently elastic to stretch slightly to prevent breakage of the teeth should the top surface of a tooth from one slitter wheel engage the top surface of a tooth from the other slitter wheel while being sufficiently inelastic to maintain the desired spacing between perpendicular surfaces of the respective slitter teeth to enable slitting of the ribbon.

4,402,241

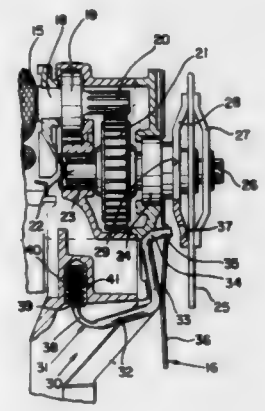
SPINDLE LOCKING MEANS FOR POWER OPERATED TOOL

Robert G. Moores, Jr., Reisterstown, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Aug. 10, 1981, Ser. No. 291,398

Int. Cl.³ B27B *5/38*

U.S. Cl. 83—478 10 Claims



1. In combination with a power-operated tool having a

housing, an output spindle journaled in the housing, a tool element driven by the spindle, means including an inner flange washer for fixedly securing the tool element on the spindle, a stationary guard for the tool element, the guard having a portion disposed between the housing and the inner flange washer, and a locking means for the spindle to facilitate removal of the tool element from the spindle, said locking means comprising a manually-manipulutable pivotable locking pin retained between the housing and the guard, the guard having bearing means therein for slidably receiving one end of the pin, resilient means biasing the pin in a direction away from the flange washer, and the flange washer having at least one aperture formed therein for selectively receiving the end of the pin, whereby whenever the pin is pivoted against the biasing force of the resilient means, the end of the pin extends beyond the bearing means in the guard and is received within the aperture in the flange washer, thereby locking the spindle against rotation.

4,402,242

ELECTRONIC MUSICAL INSTRUMENT BY TIME DIVISION MULTIPLEXED TONE SELECTION

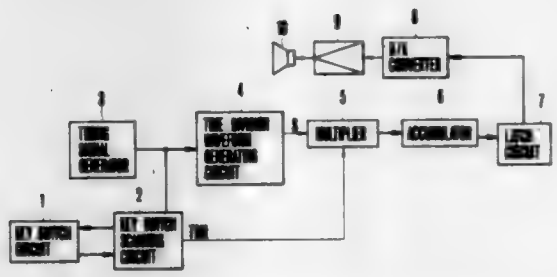
Tetsuo Nishimoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 964,932, Nov. 30, 1978. This application Jan. 26, 1981, Ser. No. 228,402

Claims priority, application Japan, Dec. 15, 1977, 52-150895

Int. Cl.³ G10H *1/00*

U.S. Cl. 84—1.01 **7 Claims**



1. An electronic musical instrument comprising:

a plurality of key switches;

a key switch scanning circuit for sequentially scanning each of said key switches at a predetermined speed to produce time-division-multiplexed key data signals wherein each individual key has a separate and individual time slot so that the key data signals represent the depressed states of respective keys by the existence of a signal at corresponding time slots;

a time-division-multiplexed tone waveform generating circuit which provides an output signal by generating sequentially all of the tone signals over a plurality of octaves within the range of the musical instrument on a time division basis during each scanning period and in synchronism with the scanning of said key switches, said tone signals representing respectively the frequencies of all of the notes that the musical instrument can generate; and

means, responsive to said key data signals, for selectively delivering out the output signal of the time-division-multiplexed tone waveform generating circuit to produce respective musical tone signals in accordance with the depressed states of respective keys when said time-division-multiplexed key data signals arrive.

4,402,243

SYNTHESIZER CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENT

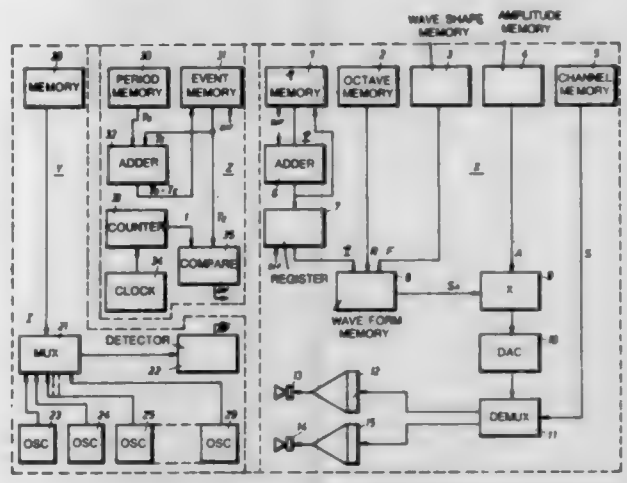
Christian J. Deforeit, 202, Rue des Joncs Marins, F-91620 La Ville du Bois, France

Filed Feb. 19, 1981, Ser. No. 235,843

Claims priority, application France, Feb. 22, 1980, 80 03892

Int. Cl.³ G10H *1/06, 7/00*

U.S. Cl. 84—1.01 **9 Claims**



1. In a polyphonic synthesizer for generating periodic signals, the synthesizer having a plurality of memories in which are stored numerical data commensurate with the instantaneous phase, octave and amplitude of an analog periodic signal to be produced, the synthesizer further having means for addressing and reading said memories and means responsive to command signals for generating scanning samples of the analog periodic signals to be produced from data read from said memories, an improved command signal generator comprising:

clock pulse generator means, said clock pulse generator means providing clock pulses at a fixed frequency;

counter means responsive to the pulses provided by said clock pulse generator means, said counter means storing a number commensurate with received clock pulses;

memory means having a plurality of memory locations for storing at respective of said memory locations a numerical period value and a numerical event value commensurate with the frequency of the analog signal to be produced;

comparator means receiving as input signals the stored numerical event value and the number stored in said counter means, said comparator means comparing the stored numerical event value with the number stored in said counter means and generating a command signal if said stored number is at least equal to said event value; and

means for adding said period value and said event value and for storing the resulting total at the memory means memory location previously occupied by an event value in response to the generation of a command signal by said comparator means.

4,402,244

AUTOMATIC PERFORMANCE DEVICE WITH TEMPO FOLLOW-UP FUNCTION

Akira Nakada, Hamamatsu; Eisaku Okamoto, Hamakita, and Kiyoshi Yoshida, Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed May 28, 1981, Ser. No. 267,688

Claims priority, application Japan, Jun. 11, 1980, 55/78784; Jun. 18, 1980, 55/82506

Int. Cl.³ G10F *1/00*

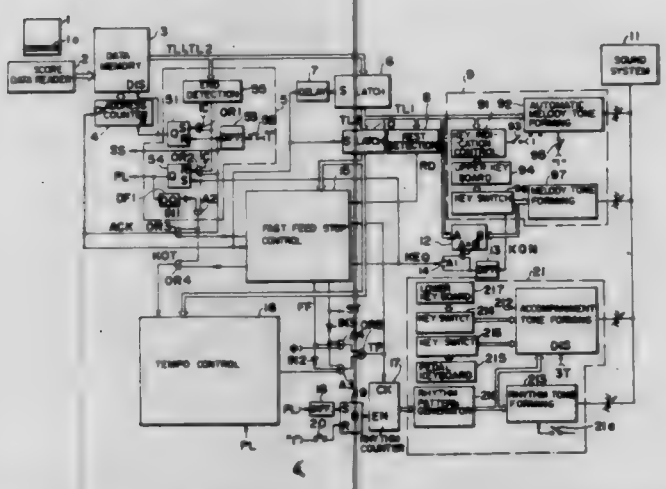
U.S. Cl. 84—1.03 **77 Claims**

1. An automatic performance device including memory means storing musical data and read-out means therefor, said musical data including automatic performance tone generation timing data, and wherein automatic performance is carried out

in accordance with said musical data successively read out from said memory means by said read-out means, comprising:

keyboard means provided with a plurality of keys for generating a key relation signal in response to a depressed key among said keys;

tone signal producing means for producing a tone signal in response to said depressed key; and



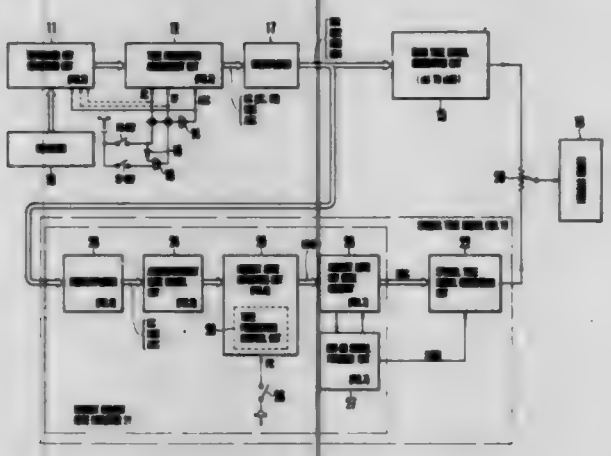
control means connected to said keyboard means and said memory means for supplying a control signal to said read-out means, said control signal being generated in accordance with a comparison between (a) a measured time interval between the time of readout of said timing data and the generation of said key relation signal and (b) said tone generation timing data, so that the occurrence time of subsequent read-out of said musical data is controlled in accordance with the result of said comparison.

4,402,245

ELECTRONIC MUSICAL INSTRUMENT WITH SPECIAL TONE GENERATOR

Akiyoshi Oya; Takashi Ubayama, both of Hamamatsu, and Hideo Suzuki, Shizuoka, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

Filed Apr. 23, 1981, Ser. No. 256,824
Claims priority, application Japan, Apr. 30, 1980, 55-57715
Int. Cl.³ G10H *1/22, 1/36*
U.S. Cl. 84—1.17 10 Claims



1. An electronic musical instrument comprising:

a keyboard provided with a plurality of keys;

designating means for designating one of first and second performance modes;

tone production means including a plurality of tone production channels smaller in number than that of said keys, which produces a musical tone corresponding to a depressed key;

dividing means for dividing said keys into at least two key groups, and for dividing said tone production channels into the same number of tone production channel groups as that of said key groups, each of said key groups corresponding to one of said tone production channel groups when said first performance mode is designated by said designating means;

assigning means for assigning key information data corresponding to said depressed key to an available channel of the tone production channel group corresponding to the key group to which said depressed key belongs when said first performance mode is designated by said designating means, and for assigning key information data corresponding to said depressed key to an available channel of said plurality of tone production channels when said second performance mode is designated by said designating means; and

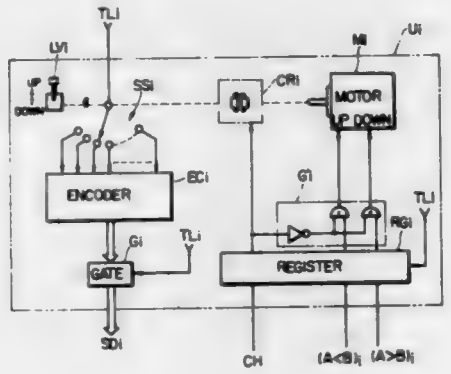
special tone production means for producing a special tone relating to special key information data assigned to the tone production channel group corresponding to a predetermined key group among said key groups when said first performance mode is designated, and for producing a special tone relating to special key information data assigned to said tone production channel corresponding to a predetermined key group among said key groups when said second performance mode is designated, said special tone having tonal quality different from that of the musical tone produced from said tone production means.

4,402,246

TONE QUALITY PRESETTING APPARATUS IN ELECTRONIC MUSICAL INSTRUMENT

Tomoaki Sekiguchi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 3, 1981, Ser. No. 327,109
Claims priority, application Japan, Dec. 10, 1980, 55-175015
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.19 11 Claims



1. A tone quality presetting apparatus for use in an electronic musical instrument having a tone generator section comprising:

a plurality of tone quality pattern setting means for setting tone quality patterns such as tone color and effect, each setting means being selectively driven by manual operating means or powered driving means to set values on said setting means;

memory means having a plurality of memory addresses and address-designating means, for storing in said memory addresses data representing said values set on said setting means, and being adapted to be recalled to said data stored in said memory addresses designated by said address-designation means to cause such data to be read out from said memory means, the read-out data actuating said driving means to set said setting means according to the read-out data;

selecting means for selecting either said data representing said values set on said setting means or the data read out from said memory means, and for delivering the selected one to said tone generator section; and

controlling means for causing, when said memory means is recalled and before said driving means has set said setting means according to the data read out from said memory means, said selecting means to select for delivery to said

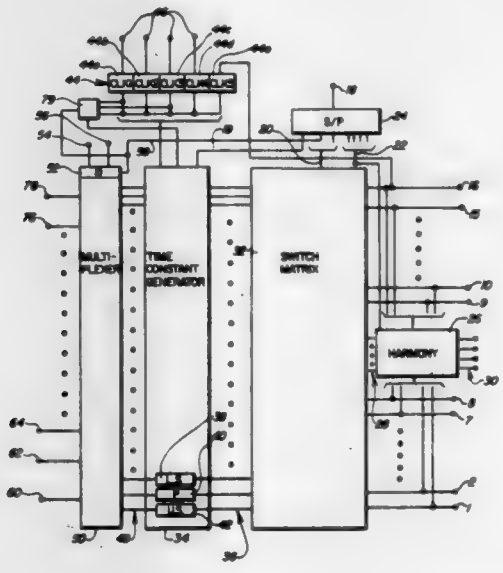
tone generator section the data read out from said memory means, and for causing, when said driving means has set said setting means according to the data read out from said memory means, said selecting means thereafter to select for delivery to said tone generator section data representing said values set on said setting means.

4,402,247

INTEGRATED CIRCUIT GENERATING KEYING ENVELOPE SIGNALS

Angelo A. Bione, Elmhurst, Ill., assignor to The Marmon Group Inc.

Filed Sep. 17, 1981, Ser. No. 303,245
Int. Cl.³ G10H *1/057*
U.S. Cl. 84—1.26 **9 Claims**



1. An electronic musical instrument having a keyboard for generating a plurality of key down selection signals, controls means for generating a plurality of control signals and an integrated circuit package receiving said key down selection signals and said control signals for generating time multiplexed envelope keying signals, said integrated circuit package comprising:

switch matrix means receiving said key down selection signals and said control signals and for generating a plurality of time constant activation signals;

a plurality of integrated time constant circuits receiving said activation signals and for generating keying envelope signals; and

multiplexer means receiving said keying envelope signals and having a plurality of output lines, and for time division multiplexing selected ones of said keying envelope signals into a plurality of time intervals on each of said plurality of output lines.

4,402,248

CYMBAL DRUM

John Pearce, 17667 NE. 116th, Redmond, Wash. 98052

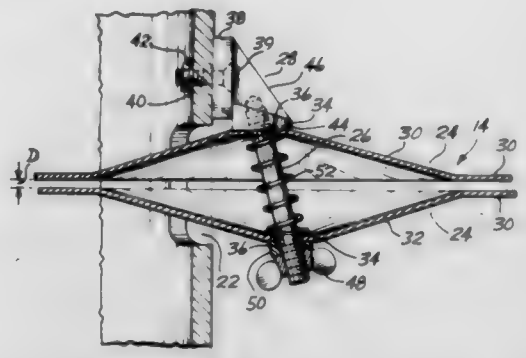
Filed Sep. 16, 1981, Ser. No. 302,859
Int. Cl.³ G10D *13/02*
U.S. Cl. 84—411 R **28 Claims**

1. A musical instrument comprising:

a drum having a plurality of openings disposed about its cylinder portion; and

a plurality of cymbal assemblies mounted on said drum, each cymbal assembly including:

a pair of cymbals adapted to clash together in response to the beating of the drum, the cymbals of each cymbal assembly extending partially through a corresponding drum opening, and



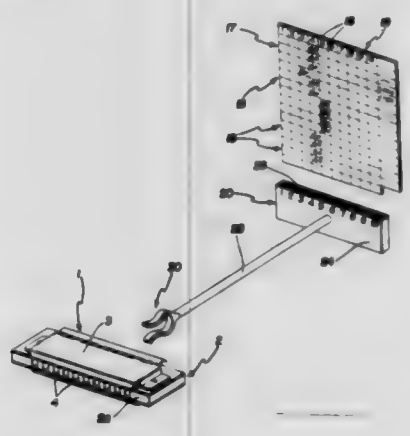
movement-resisting biasing means for applying a biasing force on the cymbal pairs which must be overcome to enable the cymbals to clash together.

4,402,249

HARMONICA MUSIC HOLDER AND LEARNING SYSTEM

Alvin M. Zankman, 1316 Titania La., McLean, Va. 22101

Filed Jun. 29, 1981, Ser. No. 278,383
Int. Cl.³ G10D *9/00*
U.S. Cl. 84—453 **11 Claims**



1. An educational device for instructing harmonica playing, comprising:

(a) a music sheet having a matrix printed thereon, said matrix columns aligned with harmonica blow holes, said music sheet including blow hole identifying means printed in the matrix for enabling a harmonica player to correctly identify said holes and position the player's mouth directly thereon for blowing or drawing to produce a desired pattern of notes on the harmonica, said identifying means being a series of numbers respectively located within at least one matrix column so that the numbers are vertically aligned with their corresponding blow holes;

said numbers respectively representing musical notes collectively defining a musical sequence, to enable said harmonica player to play said sequence by positioning and repositioning said player's mouth to physically contact and cover said blow holes in alignment with numbers being consecutively scanned in the matrix;

said identifying means further including symbols printed adjacent the numbers informing the player whether to blow or draw through the blow holes to produce desired chords or notes;

(b) retaining means for positioning the music sheet in a stationary position away from the harmonica and player to enable visual observation of the numbers and

(c) fastening means interconnecting the retaining means to the harmonica.

4,402,250
AUTOMATIC CORRECTION OF AIMING IN FIRING AT MOVING TARGETS

Hans-Friedrich Baasch, Zurich, Switzerland, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

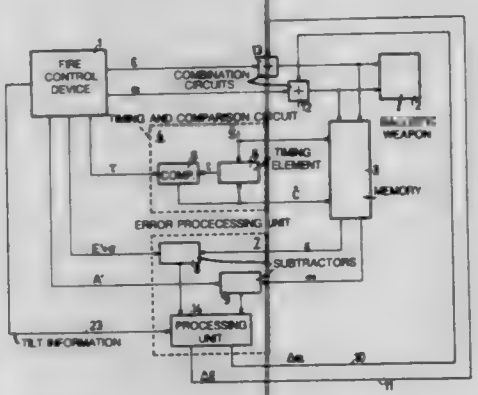
PCT No. PCT/NL80/00023, § 371 Date Feb. 26, 1981, § 102(e) Date Feb. 26, 1981, PCT Pub. No. WO81/00149, PCT Pub. Date Jan. 22, 1981

PCT Filed Jun. 25, 1980, Ser. No. 243,959

Claims priority, application Netherlands, Jun. 29, 1979, 7905061

Int. Cl.³ F41G *5/08*

U.S. Cl. 89—41 AA **9 Claims**



1. A method for correcting aiming errors of a ballistic weapon which is aimed at a moving target in response to changing azimuth values α and elevation values ϵ received from a fire control device, said method comprising the steps of:

(a) continually storing the instantaneous azimuth and elevation values received by the ballistic weapon;

(b) measuring the present azimuth A and elevation E of the target;

(c) computing a corrected azimuth A′ and elevation $E'+\sigma$ of a position at which a projectile fired by the ballistic weapon should have been aimed to account for meteorological influences and superelevation;

(d) computing a projectile's time of flight τ to said position from the ballistic weapon;

(e) comparing the corrected azimuth A′ and elevation $E'+\sigma$ with the respective azimuth value α and elevation value ϵ which was stored for a period corresponding to the time of flight τ, and determining differences representing aiming errors $\Delta\alpha$ and $\Delta\epsilon$, respectively; and

(f) adjusting the aim of the ballistic weapon to correct for the errors $\Delta\alpha$ and $\Delta\epsilon$.

4,402,251
DETECTION OF LINE OF SIGHT REVERSAL AND INITIATION OF FIRING COMMANDS FOR A MODIFIED ACCELERATION PREDICTOR FIRE CONTROL SYSTEM ENGAGING MANEUVERING TARGETS

Harold H. Burke, and Toney R. Perkins, both of Bel Air, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 18, 1981, Ser. No. 303,664

Int. Cl.³ F41G *5/06*

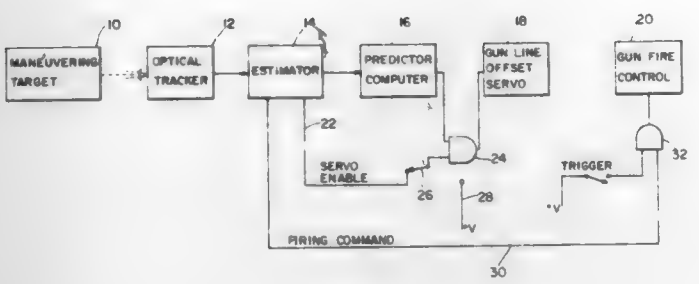
U.S. Cl. 89—41 ME **7 Claims**

1. A weapon fire control system comprising:

optical tracking means for generating target tracking data signal;

estimating means connected to the output of the tracking means for filtering the tracking data signals and detecting target area exceeding a minimum threshold;

predicting means having its input connected to the output of the estimating means for computing the offset equation relating target present and future position



$$T_f = T_p + \left[1 - \frac{\omega^2 \Delta t_f^2}{12}\right] \cdot \frac{1}{2} A_N \Delta t_f^2$$

where

T_f, T_p = target position-future and present

A_N = target acceleration normal to target velocity

V = target velocity

Δt_f = projectile time-of-flight

$A_{N/V} = \omega$

ω = cyclic frequency of maneuvering target;

gating means connected at its inputs to the outputs of the estimating means and the predicting means, the gating means being enabled by the area threshold detection; and

means responsive to the enabled gating means for offsetting a weapon from a line-of-sight of the optical tracking means, as a function of the computed offset, in preparation of firing a weapon.

4,402,252
WEAPON COUNTER-RECOIL DAMPENING MECHANISM FOR A MACHINE CANNON HAVING A WEDGE TYPE BREECH BLOCK

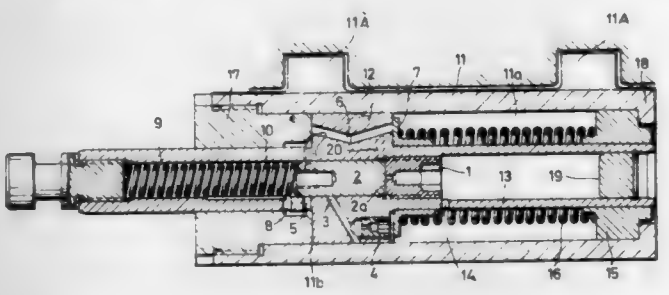
Walter Klumpp, Duisburg, Fed. Rep. of Germany, assignor to Rheinmetall GmbH., Duesseldorf, Fed. Rep. of Germany

Filed Apr. 16, 1981, Ser. No. 254,758

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1980, 3015102

Int. Cl.³ F41F *19/12*

U.S. Cl. 89—43 R **9 Claims**



1. In a machine cannon with a wedge type breech block, an improved counter-recoil dampening and braking mechanism comprising a longitudinally slidably cylinder secured to the housing of the machine cannon and a stationary piston having a pair of oppositely axially extending piston rods disposed therein and dividing the interior of said cylinder into a front and a rear chamber, one of said piston rods being secured to the stationary cradle of the machine cannon, said stationary piston having first throttling passage means adapted to provide a nearly unbraked passage of hydraulic braking fluid therethrough during recoil of the cannon from a first side of said stationary piston to the other side of said stationary piston, and said stationary piston having second passage means of reduced cross-section relative to said first passage means adapted to provide a braked passage of hydraulic braking fluid from said other side of said stationary piston to said first side during counter-recoil, the improvement comprising,

said one piston rod being hollow and having a flying piston

having a front and rear side slidably disposed therein and a coil spring biasing said flying piston towards said second passage means, the rear side of said flying piston being adapted to be pressured by hydraulic fluid flowing from said rear chamber through said second passage means during counter-recoil of the machine cannon and third throttling passage means disposed in said stationary piston, and after said flying piston has traversed a predetermined first distance is adapted to be additionally pressured by hydraulic fluid flowing from said rear chamber through said third passage means, whereby there is exerted on said cylinder during counter-recoil first a strong braking action and then a reduced braking action.

4,402,253

LOADING PENDULUM

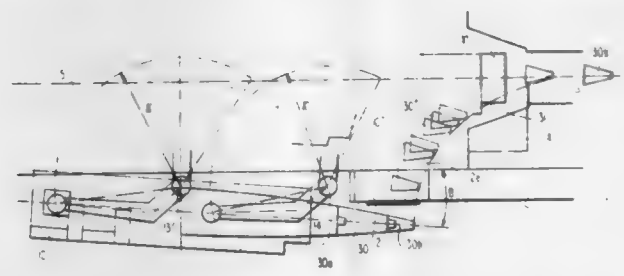
Olle Gustavsson, and Göran Sundmar, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Dec. 18, 1980, Ser. No. 217,638

Claims priority, application Sweden, Dec. 18, 1979, 7910440

Int. Cl.³ F41F *9/04*

U.S. Cl. 89—46 **10 Claims**



1. In a firearm having a gun barrel with loading chamber, a trunion rotatably supporting a loading pendulum, for assuming during ammunition loading of said firearm the elevation angle of said firearm, an apparatus for supporting a loading tray to said loading pendulum comprising:

a pair of arms connected at one of the ends thereof by first and second drive shafts to said loading pendulum, said arms extending perpendicular from said loading pendulum and thence in a forward direction of said firearm at first and second different angles, the remaining ends of said arms connected to said loading tray at first and second loading points; and

driving means for rotating said drive shafts;

said loading tray in a first ammunition receiving position being supported obliquely to a vertical plane of said gun barrel, and, in response to rotation of said drive shafts, moving to a second ammunition delivery position coincident with the axis of the gun barrel and loading chamber.

4,402,254

PNEUMATIC STARTER DEVICE

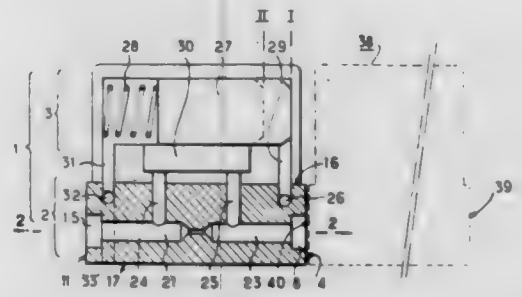
Eric Petrimaux, Evreux; Michel Nicolas, Plaisir; Pierre Prudhomme, St. Germain en Laye, and Daniel Boutielle, Ville D'Avray, all of France, assignors to La Telemecanique Electrique, France

Filed Dec. 1, 1980, Ser. No. 211,966

Int. Cl.³ F15B *13/04*

U.S. Cl. 91—29 **3 Claims**

1. In combination with a double acting pneumatic motor, a progressive pneumatic starter device having supply and outlet ports, a supply valve having an inlet port connected to the outlet port of said progressive pneumatic starter device, said supply valve further having outlet and exhaust ports and means, movable from a first to a second position, for connecting the outlet port to the inlet port of the supply valve in the said first position and for connecting the outlet port to the exhaust port of the supply valve in the said second position, a control valve for said double acting pneumatic motor and a supply line having a first end connected to the outlet port of said supply valve and a second end connected to the said control valve, said progressive pneumatic starter device further comprising first and second unrestricted channel portions respectively connected to the supply and outlet ports and a third restricted channel portion permanently connecting said first and second unrestricted channel portions together, first and second unrestricted passages respectively connected to said first and second unrestricted channel portions, pneumatic switching means having a work state in which it establishes a



communication between the said first and second passages, and having a rest state in which it prevents the said communication, said pneumatic switching means having a control inlet and being switched from its rest state to its work state each time the air pressure applied at the said control inlet exceeds a predetermined value and a control line connecting the said second end of the supply line to the said control inlet of the pneumatic switching means.

4,402,255

COMPRESSED-AIR VIBRATOR WITH RECIPROCATING PISTON

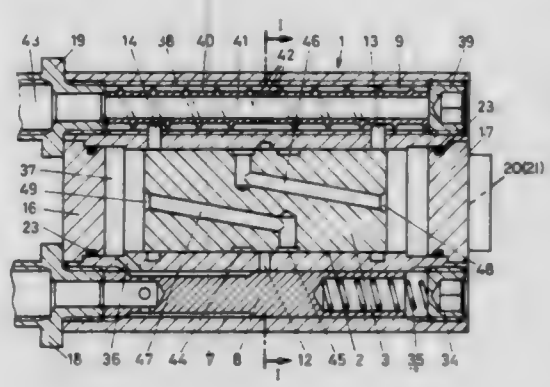
Willy Fink, Girsbergstrasse, 8479 Waltalingen, Switzerland, and Alex Fehr, Henggart, Switzerland, assignors to Willy Fink, Switzerland

Filed Nov. 18, 1980, Ser. No. 207,939

Claims priority, application Switzerland, Nov. 20, 1979, 10344/79

Int. Cl.³ F01L *21/02*

U.S. Cl. 91—234 **7 Claims**



1. In a compressed-air vibrator including a cylinder housing having two longitudinal end surfaces each provided with a closure cover, a piston having two opposing ends each having a circumferential edge, reciprocated by said compressed air being arranged within a cylinder bore which is disposed within said housing; a central inlet groove in said cylinder bore; axial bores extending to the end surfaces of said piston; said compressed air being alternatingly conducted into two work chambers of said cylinder bore through said inlet groove and axial bores; and outlets in said work chambers for said compressed air controlled by the piston edges, the improvement comprising: said cylinder housing being a profiled member including four cross positioned ribs encompassing the central cylinder bore; four bores being arranged one each in said ribs and extending parallel to the axis of said cylinder bore; one said bore being an inlet bore for the infeed of compressed air, one said

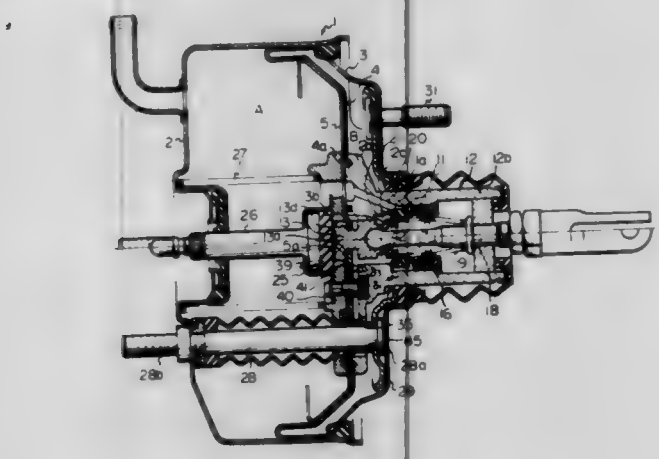
bore being an outlet bore for said compressed air; and fastening bolts being located in said remaining two bores.

4,402,256

PNEUMATIC SERVO BOOSTER

Hiromi Ando, Tokyo, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Mar. 5, 1981, Ser. No. 240,611
Claims priority, application Japan, Mar. 28, 1980, 55-41222
Int. Cl.[3] F15B *9/08*
U.S. Cl. 91—369 A 3 Claims



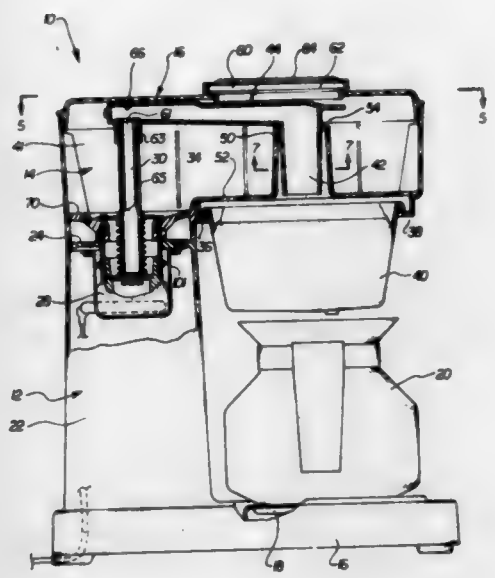
1. A pneumatic servo booster comprising:
a shell housing including front and rear shells;
a valve body slidably extending through an opening formed in said rear shell;
a flexible diaphragm connected to said valve body and partitioning the interior of said shell housing into a first chamber adapted to be connected to a vacuum source and a second chamber;
a plunger slidably fitted in a bore in said valve body and connected to an input rod extending through a rear end of said valve body;
a valve mechanism incorporated within said valve body and including a poppet valve within said valve body, a first valve seat on said valve body and a second valve seat on said plunger, said valve mechanism including means for connecting said first and second chambers when said poppet valve is spaced from said first valve seat and seated on said second valve seat;
said plunger being movable by said input rod in a forward direction away from said poppet valve during an actuating stroke, whereby the servo booster including said valve body actuates in said forward direction, and upon release of the input pressure to said input rod, said plunger moves in a rearward direction toward said poppet valve in a return stroke, whereby the servo booster including said valve body returns in said rearward direction;
at least one reinforcing rod extending through the interior of said shell housing and between said front and rear shells and fixed thereto; and
resilient return movement restricting means for restricting the return movement of said valve body with respect to said shell housing in said rearward direction, for restricting resiliently the return movement of said plunger with respect to said shell housing in said rearward direction, and for defining a normal non-actuated condition of the servo booster such that at a rearwardmost position of said plunger said poppet valve engages with both said first and second valve seats, said resilient return movement restricting means comprising a member slidably mounted on said reinforcing rod, and a resilient abutment on said reinforcing rod, said member abutting said plunger and said resilient abutment at said rearwardmost position of said plunger.

4,402,257

ELECTRIC COFFEE MAKER

Vincent G. Marotta, 18801 So. Park Blvd., Shaker Heights, Ohio 44122

Continuation of Ser. No. 279,666, Jul. 1, 1981, abandoned. This application Sep. 28, 1982, Ser. No. 425,496
Int. Cl.[3] A47J *31/00*
U.S. Cl. 99—307 22 Claims



1. A coffee brewer having a housing including a base and a hood mounted atop said base, said base being somewhat L-shaped and having a coffee decanter support portion extending horizontally therefrom to support a coffee decanter thereon and a body portion extending upwardly from said support portion, said hood being mounted atop said body portion and having an overhanging portion extending horizontally outward from said body portion so as to overhang said decanter support portion, the underside of said overhanging portion of said hood being vertically spaced above said decanter support to allow room for a decanter and a coffee basket, said hood having walls defining a water chamber therein for containing water to be heated so that essentially all of the water to be heated is located above the underside of said hood, an electric water pump heater mounted inside said body portion immediately below said hood and having a pump well extending upwardly therefrom, a pump tube extending from said pump well upwardly into said water chamber, a water discharge spout located in said hood in fluid communication with the upper end of said pump tube and extending outwardly from said tube and terminating in a discharge portion thereof which extends essentially vertically downwardly through the underside of said hood to discharge heated water into a said coffee basket located therebelow, whereby said pump tube is of a shortened length thereby minimizing the volume of water maintained in said tube whereby the temperature of water discharged into said coffee basket is increased.

4,402,258

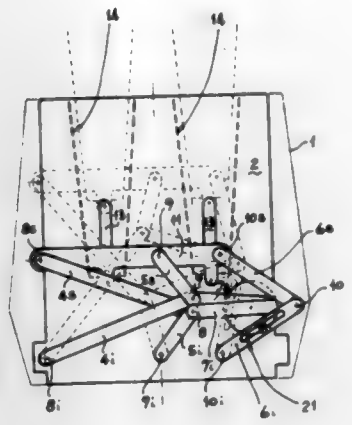
TOASTER AND ELECTRIC CONTROL THEREFOR

Renato Guarnerio, Via G. Forni, 72, 20161 Milano, Italy

Filed Sep. 29, 1980, Ser. No. 191,933
Int. Cl.[3] A47J *37/08*
U.S. Cl. 99—393 4 Claims

1. Toaster device for the automatic introduction and extraction of slices of bread comprising a toaster frame; slice-carrying supports movable in a vertical upwardly and downwardly direction; two identical leverages positioned on opposed ends of said supports to move said supports and an electric motor to operate said leverages in parallel, each said leverages being

formed by three toggle-joint levers, hinged at one end to the frame and a pair of levers hinged to toggle pins of said toggle-



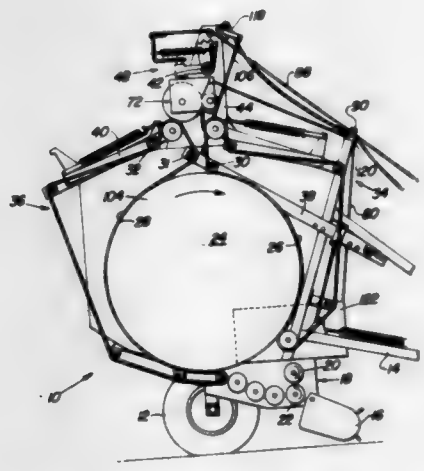
joint levers, said supports carrying a crossbar at each end to which is attached the other end of said toggle-joint levers.

4,402,259

BINDING DEVICE FOR CYLINDRICAL BALE FORMING BALER

Jean Viaud, Gray, France, assignor to Deere & Company, Moline, Ill.

Filed Aug. 20, 1981, Ser. No. 294,650
Claims priority, application France, Aug. 20, 1980, 80 18201
Int. Cl.³ B65B *13/18*
U.S. Cl. 100—5 **11 Claims**



1. In a binding device for a baler comprising a plurality of rollers and two sets of flexible members supported on said rollers and defining a bale-forming chamber for rolling up harvested products into a cylindrical bale, the improvement comprising:

a guide extending generally parallel to the longitudinal axis of said chamber;

a rotatable control wheel;

twine feeding means for holding said twine and responsive to the rotation of said control wheel, feeding twine toward a bale in said chamber;

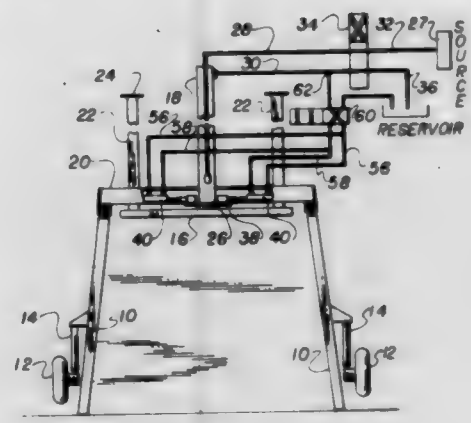
a support means for mounting said wheel, said feeding means and said guide on said baler (1) for movement of said wheel about an axis perpendicular to the longitudinal axis of said chamber (2) for movement of said wheel into and out of engagement with one of said sets and (3) for guiding said twine.

4,402,260

HYDRAULIC PACKER SAFETY LATCH

Don R. Johnson, Wolfforth, Tex., assignor to Harris & Thrush Manufacturing Company, Wolfforth, Tex.

Filed Oct. 13, 1981, Ser. No. 310,377
Int. Cl.³ B30B *13/00*
U.S. Cl. 100—35 **4 Claims**



1. In a cotton module builder having

a. side walls,

b. a carriage extendig from one side wall to the other,

c. a tramper mounted for vertical reciprocation to the carriage with

(i) a foot on the bottom, and

(ii) a stop on the top,

d. a hydraulic tramper cylinder on the carriage,

e. a flange on the lower end of the tramper cylinder,

f. a reciprocating ram telescoped within the cylinder and attached to the tramper foot

g. a source of hydraulic fluid under pressure,

h. a hydraulic tramp line attached to the top of the tramper cylinder,

i. a hydraulic lift line attached to the bottom of the tramper cylinder, and

j. a tramper valve attaching the tramp line and lift line to the source;

an improved latch for releasable holding the hydraulic cylinder flange firmly against the carriage comprising:

k. a tongue mounted for movement on the carriage,

i. a hydraulic latch cylinder for moving the tongue underneath structure on the tramper cylinder,

m. a tee in said hydraulic tramp line,

n. a latch valve on said tee,

o. a hydraulic latch line and unlatch line extending from said latch valve to the latch cylinder,

p. so that the latch cylinder may be actuated only when pressure is in said tramp line.

4,402,261

SMALL IMPACT PRINTER WITH HAMMER MASK

Chihiro Ohtsuki, and Hitoshi Mikoshiba, both of Shiojiri, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Mar. 6, 1981, Ser. No. 241,330
Claims priority, application Japan, Mar. 6, 1980, 55/28466; Mar. 6, 1980, 55/28467
Int. Cl.³ B41J *9/02*
U.S. Cl. 101—93.29 **18 Claims**

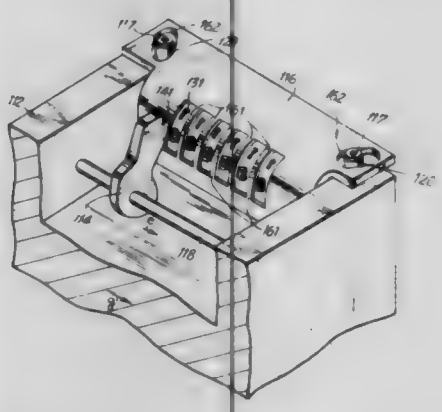
1. In an impact printer of the character drum type including a character drum having peripheral characters thereon, said drum being mounted on a shaft for rotation therewith about the longitudinal drum axis, the radius of said drum being variable with temperature, an ink roller for supplying ink to said characters, at least one hammer for selectively impacting characters on said drum, means for positioning a print medium between said characters and said at least one hammer, the improvement therein comprising:

a mask interposed between said drum and said at least one hammer, said mask having at least an opening where-

through said at least one hammer, when actuated, impacts a selected character on said drum;

a frame having at least one projection and supporting said drum shaft;

means for positioning said mask at a selected position relative to said drum, said means for positioning being connected to said mask and having at least one inclined plane in sliding engagement with said frame projection, said means for positioning expanding or contracting in the



direction transverse to the radius of said drum in response to increase or decrease respectively in ambient temperature, said at least one inclined plane sliding relative to said at least one projection and moving said means for positioning in the direction of the radius of said drum in response to said transverse expansion and contracting of said means for positioning, said mask moving with said means for positioning in the direction of the radius of said drum in response to said expansion and contraction of said means for positioning.

4,402,262

PRINTING PROCESS AND PRINTING COMPOSITIONS

John A. Handforth, Macclesfield, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Jun. 12, 1981, Ser. No. 273,182

Claims priority, application United Kingdom, Jun. 23, 1980, 8020489

Int. Cl.³ B41M *1/12*

U.S. Cl. 101—129 **3 Claims**

1. A process of printing onto a substrate which comprises the steps:

(a) taking an aqueous printing composition which comprises

(i) 30–70% by volume, based on the total volume of the composition, of particles of a primary polymer (A) having a minimum film-forming temperature of not less than 25° C. and selected from the group and consisting of homopolymers and copolymers of vinyl chloride, vinylidene chloride, methyl methacrylate, or vinyl acetate,

(ii) 1.5–33% by weight, based on the weight of the primary polymer (A) of a secondary polymer (B) which is present as an aqueous solution or as a dispersion in which the disperse particles have a minimum film-forming temperature less than 25° C. and selected from the group consisting of alkyd resins, acrylic resins, polyurethane-containing resins, shellacs, modified cellulose, starches, proteins and hydrolyzed polyvinyl acetate,

(iii) 70–30% by volume, based on the total volume of the composition, of an aqueous phase comprising water or a mixture of water and a water-miscible organic solvent; and

(iv) optionally, a pigment or other colourant;

(b) applying the aqueous composition to a substrate by a printing process at a temperature lower than the minimum film-forming temperature of the primary polymer (A) and greater than the minimum film-forming temperature of the secondary polymer (B) when (B) is present as a dispersion; and

(c) thereafter raising the temperature of the printed substrate to a temperature at lease equal to the minimum film-forming temperature of the primary polymer (A).

4,402,263

AUTOMATIC INK OR WATER QUANTITY ADJUSTING DEVICE FOR PRINTING MACHINE

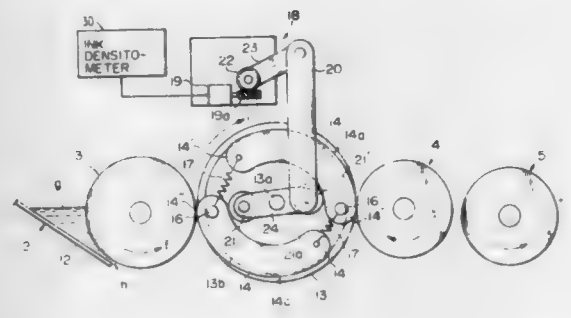
Yoshinori Honkawa, Fuchu, Japan, assignor to Ryobi, Ltd., Hiroshima, Japan

Filed Nov. 4, 1981, Ser. No. 318,098

Claims priority, application Japan, Nov. 7, 1980, 55-157427

Int. Cl.³ B41F *31/12, 31/26, 31/34*

U.S. Cl. 101—350 **8 Claims**



1. In a printing machine of the type wherein a fluid is transferred to a printing means from a fountain roller via at least one other roller, an automatic fluid quantity adjusting device comprising:

a transfer control roller for transferring said fluid from said fountain roller to said other roller, said transfer control roller comprising movable means having a contact surface, said movable means contacting said fountain roller over said contact surface, said movable means comprising at least one arcuate member having an outer curved surface and being pivotally mounted near one end; and

control means for moving and pivoting said arcuate member to change the amount of said outer curved surface which contacts said fountain roller to change the amount of fluid transferred to said other roller.

4,402,264

APPARATUS FOR ADJUSTING THE INK METERING DEVICE OF A PRINTING MACHINE INKING MECHANISM

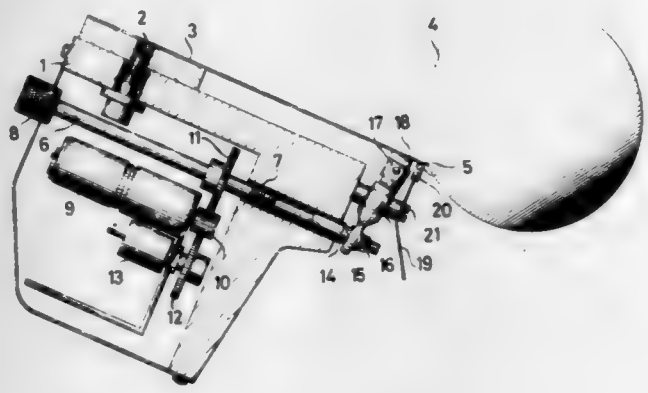
Willi Weisgerber, Johannisberg, Fed. Rep. of Germany, assignor to Miller-Johannisberg Druckmaschinen GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Jun. 15, 1981, Ser. No. 273,773

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1980, 3025980

Int. Cl.³ B41F *31/04, 31/06*

U.S. Cl. 101—365 **6 Claims**



1. In a printing machine inking mechanism having an ink metering device, an ink fountain ductor and set screws for adjusting the ink feed gap between the metering device and the ductor, control means for adjusting selectively the ink feed gap at longitudinally spaced locations along said gap comprising:

(a) a plurality of spaced set screws supported by the ink fountain with capacity for selected longitudinal adjustment, each set screw having a relatively short free end extending outwardly of the ink fountain structure,

(b) a ball joint affixed to the free end of each set screw and providing a pivot axis extending transversely of the longitudinal axis of the set screw on which the joint is mounted, said pivot axis being parallel to the plane of the ink metering device,

(c) a plurality of pivot pins affixed to the ink metering device, each pivot pin being located adjacent to one of the longitudinally spaced locations along the ink feed gap, and

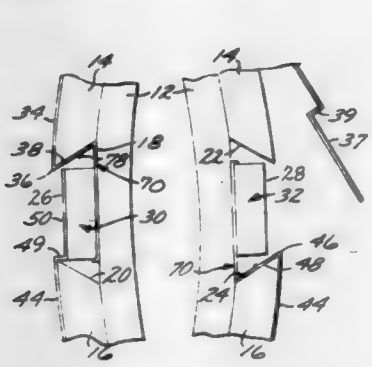
(d) a plurality of articulatable adjusting levers interposed between the free ends of the set screws and the ink metering device, each adjusting lever being disposed approximately perpendicularly to the ink metering device and having an end connected pivotally to a set screw by mounting said lever end on the ball joint of said set screw and having an opposite end mounted pivotally on one of the pivot pins affixed to the ink metering device, whereby each adjusting lever has only two articulation points, said articulation points being located at the opposite ends of the lever.

4,402,265

MAGNETIC PRINTING SADDLE

John E. Pickard, San Antonio, Tex., assignor to Beach Manufacturing Corporation, Huntington Beach, Calif.

Continuation of Ser. No. 961,470, Nov. 16, 1978, abandoned.
This application Apr. 3, 1981, Ser. No. 250,884
Int. Cl.³ B41F *27/02, 27/12*
U.S. Cl. 101—382 MV **9 Claims**



1. A magnetically locked printing saddle apparatus for a web printing press and comprising:

an axially elongated printing cylinder;

printing saddle means of predetermined radial thickness mounted on said cylinder and terminating in first and second axial edges spaced apart to form therebetween an axial groove having a radial depth corresponding with said predetermined radial thickness;

an axially elongated magnetic lockup bar disposed on said cylinder in said axial groove and formed with an outwardly facing magnetic locking surface;

mounting means mounting said lockup bar from said cylinder; and,

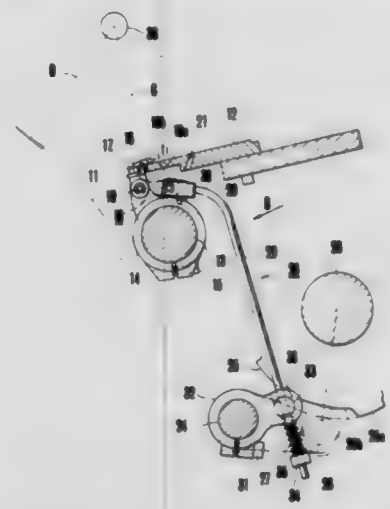
a flexible printing plate for mounting on said saddle and inlcuding respective oppositely disposed first and second extremities, said first extremity being engagable with said first axial edge and said second extremity is formed with a radially inwardly turned leg projecting substantially perpendicular to the tangent of the circumferential surface of said saddle at said second edge to engage said second edge and lock said plate from shifting circumferentially on said saddle away from said groove, said second extremity then being bent to project circumferentially from said leg to form said pad disposed over said radially outwardly facing magnetic surface.

4,402,266

FRONT LAY DEVICE FOR SHEET-FED ROTARY PRINTING PRESSES

Hiroyuki Sugiyama, Toride, Japan, assignor to Komori Printing Machinery Co. Ltd., Japan

Filed Apr. 26, 1982, Ser. No. 371,407
Claims priority, application Japan, May 8, 1981, 56-68243
Int. Cl.³ B41F *21/04*
U.S. Cl. 101—409 **4 Claims**



1. A front lay device for a sheet-fed rotary printing press, comprising:

a feed table having a front end;

a stop shaft disposed downwardly of said front end and reciprocably angularly movable about its own axis;

a stop holder mounted on said stop shaft and having a stop located adjacent to said front end of said feed table;

a swingable hold-down member pivotably mounted by a pivot shaft on said stop holder and having a hook-shaped distal end disposed adjacent to said front end of said feed table;

a cam shaft rotatable in synchronization with said stop shaft for driving said swingable hold-down member;

a link shaft drivable by said cam shaft for reciprocable angular movement about its own axis; and

a quadruplet link mechanism for transmitting reciprocable angular movement of said link shaft as swinging movement to said swingable hold-down member to move the latter away from and toward an upper surface of said front end of said feed table while said stop shaft makes a single reciprocable angular movement, said link shaft and said pivot shaft serving as joints at two opposite ends of said quadruplet link mechanism.

4,402,267

METHOD AND APPARATUS FOR HANDLING PRINTED SHEET MATERIAL

Howard W. DeMoore, Dallas, Tex., assignor to Printing Research Corporation, Dallas, Tex.

Filed Mar. 11, 1981, Ser. No. 242,715
Int. Cl.³ B41F *21/00*
U.S. Cl. 101—419 **25 Claims**

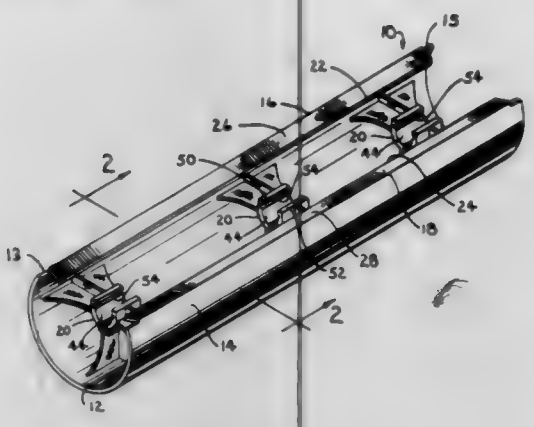
23. A skeleton wheel for supporting and transferring a freshly inked printed sheet from a printing station of a printing press or the like without marring the freshly inked surface, comprising:

a wheel member having a generally cylindrical sheet supporting surface with an ink repellent coating formed thereon;

a fabric covering comprising a woven cloth treated with a fabric softening agent and then treated with a liquid repellent agent; and

means for attaching said fabric covering relatively loosely to said wheel member to cover said sheet supporting surface such that said fabric covering is capable of accommodat-

ing sufficient relative movement between a printed sheet supported and transferred thereby and said sheet support-



ing surface substantially without marring or damaging the printed sheet.

4,402,268

ELECTRIC PRIMER FOR CASELESS PROPELLANT CHARGES

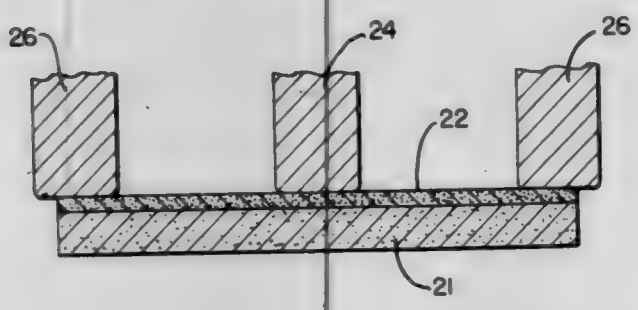
Hubert Usel, Schretterweg 17, 6401 Inzing, Tyrol, Austria, assignor to Hubert Usel, Tyrol, Australia

Continuation of Ser. No. 886,424, Mar. 14, 1978, abandoned, which is a continuation of Ser. No. 627,019, Oct. 29, 1975, abandoned. This application Apr. 30, 1980, Ser. No. 145,571

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1974, 2451370

Int. Cl.³ F42C *19/12*

U.S. Cl. 102—202.5 **15 Claims**



1. An electric primer for caseless propellant charges which comprises an electrically conductive layer comprising an electrically conductive material consisting essentially of a finely particulate, crystalline antimony as an electron conductor dispersed in a crystalline explosive material comprised of a picrate and/or a styphnate of potassium, barium or ammonium; said electron conductor being finely divided within said explosive material whereby electric current flow proceeds across the explosive material, the particles of the electron conductor shorten the current path leading across the explosive material and the electric resistance is reduced; said crystalline explosive material being doped with antimony as an electron conductor to include atoms and/or particles of antimony within crystals of the explosive material whereby the current path through the individual doped crystals of the explosive material is shortened and the electric resistance is reduced; and said explosive material constituting 60–90% by volume of said electrically conductive layer based on a total volume of said explosive material and said electron conductor.

4,402,269

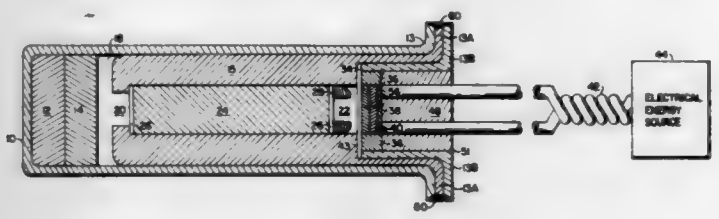
ELECTRIC DELAY DETONATOR

Rex L. Smith, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 29, 1981, Ser. No. 278,026

Int. Cl.³ F42C *19/02, 11/00*

U.S. Cl. 102—202.13 **7 Claims**



1. A delay detonator comprising:

an outer casing with a lip at the only open end of said outer casing;

detonation material placed at the closed end of said outer casing for detonating upon the occurrence of a predetermined event;

an inner casing with two open ends, one open end having a lip that conforms to the lip of the outer casing when said inner casing is inserted into said outer casing, said inner casing terminating a set distance from said detonation material;

a pyrotechnic delay mix placed in said inner casing a set distance from said detonation material for igniting said detonation material;

an igniter charge placed in said inner casing a set distance from the pyrotechnic delay mix for igniting said mix;

an access piece placed between the pyrotechnic delay mix and the igniter charge for restricting the ability of said igniter charge to punch through said mix;

a bridgewire mix next to said igniter charge for detonating said igniter charge;

signal leads electrically connected to said bridgewire mix for igniting said bridgewire mix; and

sealing material for holding said signal leads, bridgewire mix, and igniter charge in a fixed position with respect to the lipped ends of said outer and inner casings.

4,402,270

HIGH SPEED DETONATING CORD WITH MODIFIED VELOCITY OF DETONATION

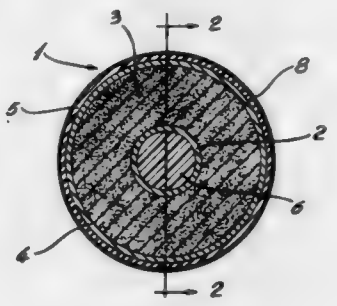
Francis H. G. McCaffrey, Brownsburg, Canada, assignor to CXA Ltd/CXA LTEE, North York, Canada

Filed Oct. 26, 1981, Ser. No. 314,760

Claims priority, application Canada, Nov. 14, 1980, 364671

Int. Cl.³ F42B *3/10*; C06C *5/04*

U.S. Cl. 102—275.3 **5 Claims**

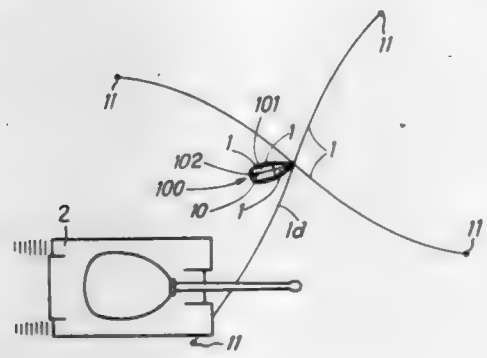


1. A method for modifying the velocity of detonation of a very-high-detonation-velocity detonating cord having a core of high explosive, a sheath surrounding said core and at least one hollow space within said core extending over the length of the said cord, which method comprises interposing at one or more positions within and along the said hollow space a flexible, elongated blockage element.

4,402,271
ANTI-TANK MINE WITH WIDE SURFACE OF ACTION

Richard Heidmann, and Jean Poisson, both of Vernon, France, assignors to Societe Europeenne De Propulsion, Puteaux, France

Filed Mar. 13, 1981, Ser. No. 243,429
Claims priority, application France, Mar. 20, 1980, 80 06248
Int. Cl.³ F42B 23/04
U.S. Cl. 102—362 11 Claims



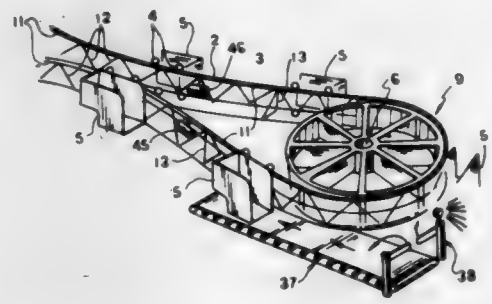
1. An antitank mine with a wide area of action, comprising means for detecting a target of the tracked vehicle type and a mine body incorporating a pyrotechnical charge, means for controlling the triggering of the mine in response to a signal given by the said target detection means, means for firing the charge and means for propelling the mine body triggered by the said control means, wherein said mine comprises a plurality of flexible guide-detection cables, each cable being provided with both target detection means to deliver a signal indicating a target and reinforcement means to act as a guide when the mine body moves under the action of the said propelling means,

wherein said plurality of guide-detection cables are spreadable in several different directions around the mine body, and said mine further comprises means for selecting an active cable providing a target indicative signal, said selecting means being controlled by the said control means after the delivery of a target indicative signal by one of the cables to disconnect from the mine body all the other cables.

4,402,272
RAIL-TRANSPORTATION SYSTEM

Willy Habegger, CH-3626 Hünibach bei Thun, Switzerland

Filed May 7, 1981, Ser. No. 261,501
Claims priority, application Fed. Rep. of Germany, May 10, 1980, 3018009
Int. Cl.³ B61B 5/02, 9/00; E01B 25/00
U.S. Cl. 104—178 28 Claims



1. A rail transportation system comprising:

a longitudinally elongated rail assembly including

a longitudinally extending upper rail,

a longitudinally extending lower rail below said upper rail, and

struts interconnecting said rails and rigidly fixing same together as an open box beam;

a flexible traction element extending along said rails;

a car including

a car body to one transverse side of said rails and having

an outside frame,

an inside frame adapted to support a load, and

a parallelogrammatic linkage between said frames for maintaining said inside frame horizontal even when said outside frame is tipped,

an upper wheel carried on said inside frame to the other transverse side of said rails and riding on said upper rail and bearing on same in one transverse direction toward said car body,

a lower wheel carried on said inside frame on said one side of said rails, riding on said lower rail, and bearing on same in a transverse direction generally opposite said one transverse direction, and

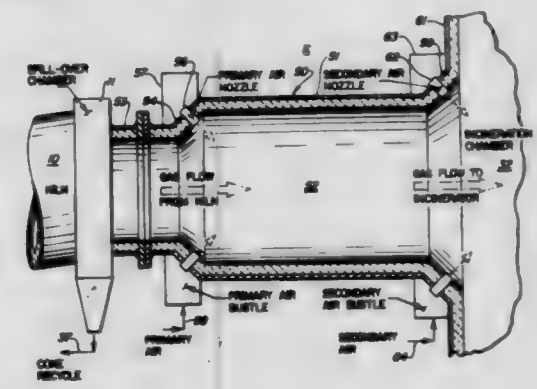
means for securing said car body to said traction element; and

drive means for displacing said traction element longitudinally and thereby advancing said car longitudinally along said rails.

4,402,273
REDUCTION OF NITROGEN OXIDE EMISSIONS FROM CALCINERS

Gary J. Nagl, Hoffman Estates, and Leslie C. Hardison, Barrington, both of Ill., assignors to ARI Technologies, Inc., Palatine, Ill.

Filed Mar. 1, 1982, Ser. No. 353,198
Int. Cl.³ F23G 5/00
U.S. Cl. 110—229 10 Claims



1. In a process for calcining carbonaceous solids wherein a hot effluent gas stream containing hydrocarbon vapors and entrained carbonaceous solid particles is removed from a calciner and introduced into a thermal incinerator for combustion of said vapors and said particles, the improvement which comprises effecting preliminary combustion of the hydrocarbon vapors but not the carbonaceous solid particles in said gas stream using substantially the stoichiometric amount of combustion air, and introducing the resultant gas that is substantially free of hydrocarbons and oxygen into the thermal incinerator and therein effecting combustion of said carbonaceous solid particles with additional combustion air, whereby to reduce the nitrogen oxide emissions from the incinerator.

4,402,274
METHOD AND APPARATUS FOR TREATING POLYCHLORINATED BIPHENYL CONTAMINED SLUDGE

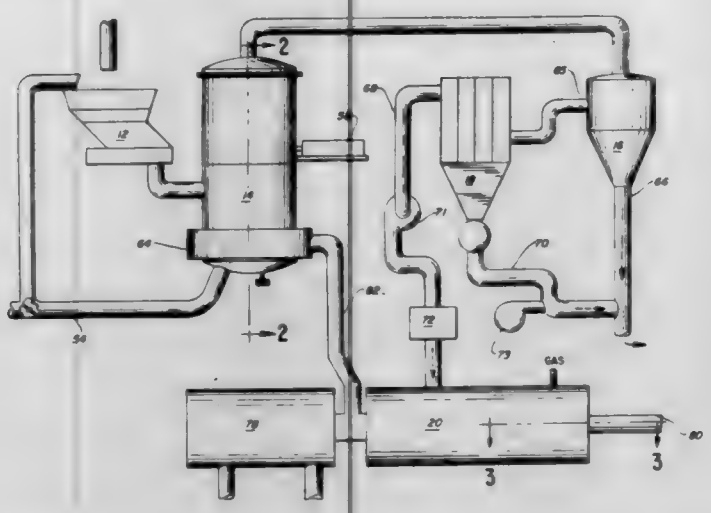
William C. Meenan, 330 Douglas Ave., Waukegan, Ill. 60085, and George D. Sullivan, 1043 Old Elm La., Glencoe, Ill. 60022

Filed Mar. 8, 1982, Ser. No. 355,538
Int. Cl.³ F23G 7/00
U.S. Cl. 110—346 11 Claims

1. A method for treating polychlorinated biphenyl contaminated sludge comprising the steps of:

heating the sludge by exposure to hot gas at a temperature of from 850° to 2,500° F. thereby driving the water and the polychlorinated biphenyls from the sludge;

forming a fluidized stream of the fine particulates and gaseously entrained PCB material; and



burning the PCB material by transversely injecting the PCB material into a burner flame at spaced points along the length of the flame.

4,402,275

PROCESS FOR THE CONTINUOUS BLOWING OF FINE-PARTICLED REDUCING AGENTS CONSISTING PREDOMINANTLY OF MINERAL COAL INTO A SHAFT FURNACE

Antoine Weiner; Fernand Artois, both of Luxembourg, and Raymond Limpach, Huncherange, all of Luxembourg, assignors to Arbed S.A., Luxembourg, mbourg

Filed Sep. 2, 1981, Ser. No. 298,726

Claims priority, application Luxembourg, Sep. 4, 1980, 82750; Oct. 2, 1980, 82821

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—347 **9 Claims**

1. In a metallurgical process in which fine-particle mineral coal is continuously blown into a shaft furnace, the improvement which comprises the steps of:

mixing the fine-particle mineral coal with at least one fine-particle solid carrier of carbon in the form of alkaline compost made by rotting household waste sewage sludge or a combination thereof;

storing the resulting mixture in a bulk store, the quantity of the said carbon carrier being sufficient to loosen the said mixture and to prevent it from caking and sticking in the bulk store:

withdrawing the mixture from the store; and

blowing the mixture continuously into the shaft furnace.

4,402,276

METHOD OF CONTROLLING THE SPEED OF ROTATION OF THE DRIVE MOTOR OF AN EMBROIDERY, STITCHING OR SEWING MACHINE

Karl Steinki, Meerbusch, and Hans-Gerd Ripkens, Goch, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed May 18, 1981, Ser. No. 264,740

Claims priority, application Fed. Rep. of Germany, May 31, 1980, 3020721

Int. Cl.³ D05B *69/18, 21/00*

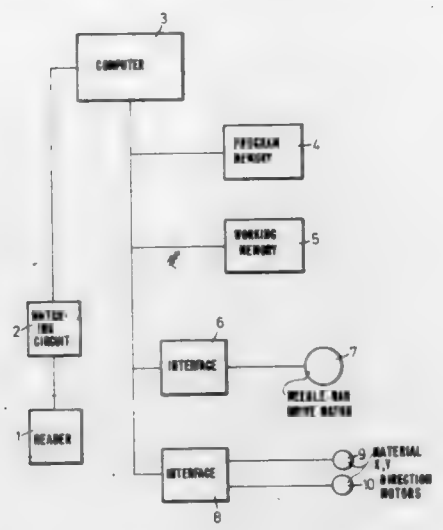
U.S. Cl. 112—262.3 **13 Claims**

1. In a method of controlling the speed of rotation of a drive motor for movement of at least one needle bar on embroidery, stitching or sewing machines during operation, in which the relative movement between the material being worked and the needle bar(s) is effected by motors separate from the needle bar drive, wherein needle speed is selected in dependency on stitch lengths, the latter being operatively stored in a data carrier therefor, the improvement comprising the steps of

cyclically at each instant:

sequentially storing individual lengths of a plurality of succeeding stitches from the data carrier;

scanning the individual lengths of said respective plurality of stored lengths and determining a longest of said lengths,



controlling the speed of rotation of the drive motor for the needle bar in each instant to the respective longest length determined.

4,402,277

AEROFOIL SAIL

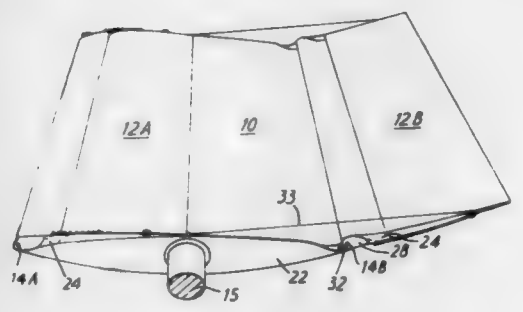
Barry Wainwright, Help Cottage, Dundry, Bristol BS18 8JF, England

Filed Nov. 13, 1981, Ser. No. 321,057

Claims priority, application United Kingdom, Nov. 21, 1980, 8037393; Jul. 8, 1981, 8121130

Int. Cl.³ B63H *9/04*

U.S. Cl. 114—103 **3 Claims**



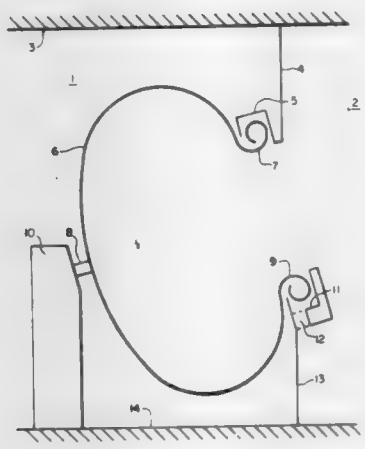
1. An aerofoil sail comprising a rigid main panel and an essentially rigid flap hinged to one side thereof, the trailing flap having a degree of torsional flexibility whereby it can twist to provide different angles of incidence at opposite ends thereof, a plurality of stop means being along the edge of the flap provided to limit the hinging of the flap in an extended condition, the stop means at the lower end of the sail being initially engageable when the flap moves into extended condition, the remaining stop means being engageable as a result of further pressure on the flap causing the flap to twist, so that the angle of incidence to the air flow can be lower at the top of the sail than at the bottom of the sail.

4,402,278

DRAGEE-MAKING DRUM WITH PARTITION WALL FOR SEPARATING THE BLACK ZONE FROM THE GREY ZONE

Kurt Waldkirch; Gunther Seifried, both of Mannheim, and Egon Krohn, Uetersen, all of Fed. Rep. of Germany, assignors to PS Pharma Maschinen und Gerate GmbH, Mannheim, Fed. Rep. of Germany

Filed Jan. 27, 1982, Ser. No. 343,106
Int. Cl.³ A23G *3/20*; B05C *3/00*; A01J *21/00*
U.S. Cl. 118—19 **2 Claims**



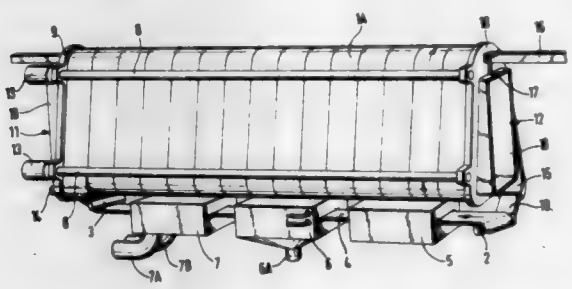
1. An improved dragee-making drum having a mouth that is accessible through an opening in a partition wall that is disposed adjacent the mouth of the drum and that separates the grey zone on the side of the wall from which the mouth is accessible through the opening from the black zone on the other side of the wall, wherein the improvement comprises: the mouth of the drum is provided with a flanged rim, and a U-seal providing a channel therein is disposed on said partition wall at the opening therein, the flanged rim being positioned within the channel.

4,402,279

TREATMENT CHAMBER

Stefan H. Witte, Göketdrsg. 49, and Björn Heed, Litlandagatan 19, both of Gothenburg, Sweden

PCT No. PCT/SE81/00143, § 371 Date Jan. 11, 1982, § 102(e) Date Jan. 11, 1982
PCT Filed May 12, 1981, Ser. No. 341,986
Int. Cl.³ B05B *13/00, 15/04*
U.S. Cl. 118—326 **10 Claims**



1. Treatment chamber intended to be used as a spray booth, comprising an endless band which is spirally rerouted and displaceable in the longitudinal direction of the chamber and forms the lateral walls of the same, and a spray element disposed within the confines of said chamber.

4,402,280

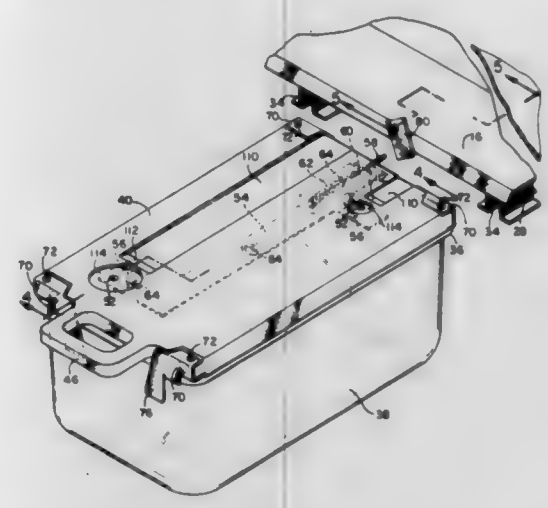
ANIMAL CAGING SYSTEM

William R. Thomas, 325 W. Seventh St., Hazelton, Pa. 18201

Continuation-in-part of Ser. No. 206,058, Nov. 12, 1980, Pat. No. 4,343,261, which is a continuation-in-part of Ser. No. 76,698, Sep. 18, 1979, abandoned. This application Apr. 21, 1982, Ser. No. 370,183
Int. Cl.³ A01K *1/03*
U.S. Cl. 119—15 **7 Claims**

1. An animal housing system of the type having a plurality of cages slideably disposed on flanges depending from shelves in a rack, the shelves having integral air supply and air exhaust ducts communicating with an air source and an air discharge, the ducts opening to the cages disposed in the rack, the system comprising:

a plurality of cage covers having openings aligned with the openings of the ducts when the cages are inserted in the rack;



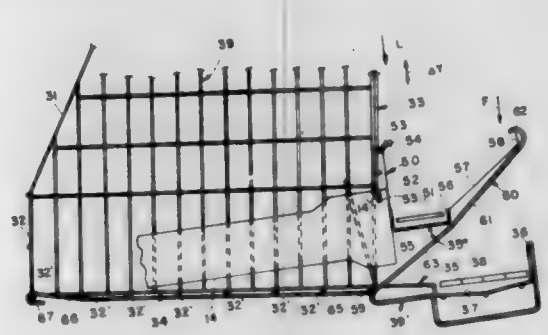
at least one spring-loaded sliding valve member for each cage cover, slideably mounted on the cage cover and having tabs biased to normally block the openings in the covers, the valve member having a protrusion extending to contact the rack upon partial insertion and to slide said tabs to uncover the openings upon full insertion of the cage.

4,402,281

POULTRY CAGE FEED TROUGH STABILIZING SYSTEM

Charles A. White, Woodstock, Ga., assignor to U.S. Industries, Inc., New York, N.Y.

Filed Jan. 22, 1979, Ser. No. 5,284
Int. Cl.³ A01K *31/06*
U.S. Cl. 119—18 **10 Claims**



1. For use in a poultry cage system in which a plurality of wire mesh cages are connected in tiers and which include feed troughs supported by the cages along the front thereof and of the type having conveyors disposed within the feed troughs, and wherein the mesh cage include wires extending longitudinally along the lower front corner and along the bottom of the cage spaced from the front, improved means for stabilizing the feed trough against twisting due to deflection of the cage system in response to loading forces on the cage and trough comprising:

a stabilizing rod having hook means at one end for engaging a top corner of the through remote from the cage, said wire formed to extend downwardly and inwardly under the trough and thence rearwardly and terminating at a second end remote from said hook means at said one end with said second end shaped to be secured to a longitudi-

nally extending cage floor wire with said rod in tension to effect a downward force on the outer top edge of the trough and said rod engaging the outer corner of the trough floor for equalizing the loading force on the trough at its connection to the cage to maintain the floor of the trough generally horizontal to prevent adverse contact between the conveyors and the feed troughs.

4,402,282

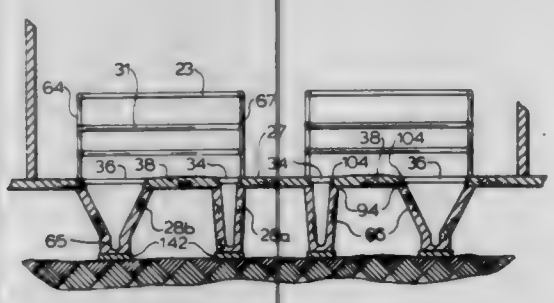
METHOD OF CONSTRUCTING A SYSTEM OF GUTTERS FOR A SWINE BUILDING

Ronald L. Steidinger, Forrest, Ill., assignor to Forrest Redi-Mix Co., Forrest, Ill.

Division of Ser. No. 157,198, Jun. 6, 1980, Pat. No. 4,353,328. This application Jul. 30, 1981, Ser. No. 288,490

Int. Cl.³ A01K *1/01*

U.S. Cl. 119—28 **2 Claims**



1. The method of constructing a swine house flush gutter system utilizing preformed gutter sections having opposed walls and an adjoining trough portion comprising the steps:

(1) Excavating an area within a swine building having foundation walls;

(2) Pouring a plurality of concrete footings between two opposite foundation walls in said excavated area;

(3) Permitting said concrete footings to set;

(4) Setting said preformed gutter sections on said footings;

(5) Abutting said gutter sections end to end to form rows;

(6) Providing a drain means in each of said gutter section rows;

(7) Attaching preformed floor sections to the top walls of two gutter sections of adjacent gutter rows;

(8) abutting said floor sections end to end to form walkways above and between said gutter section rows whereby said gutter section rows provide structural support for said floor sections obviating the need for any earth backfilling steps in the construction of said gutter system.

4,402,283

Patent Not Issued For This Number

4,402,284

INTERNAL COMBUSTION ENGINE ROCKER ARM ARRANGEMENT HAVING A READILY REPLACEABLE PLATE SPRING

Masayuki Houma, Tokyo, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Feb. 26, 1981, Ser. No. 238,572

Claims priority, application Japan, Mar. 3, 1980, 55-26153[U]

Int. Cl.³ F01L *1/18*

U.S. Cl. 123—90.39 **3 Claims**

1. In an internal combustion engine having a cylinder head the combination of:

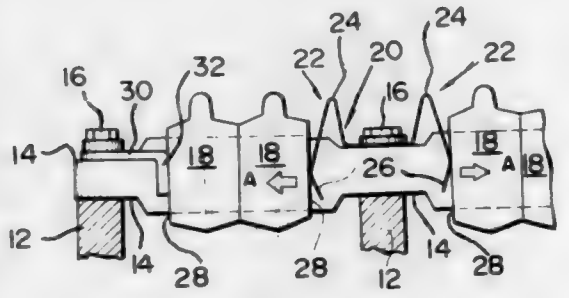
first, second and third mounting brackets extending from said cylinder head;

a rocker arm shaft removably mounted on said mounting brackets;

first and second rocker arms pivotally mounted on said rocker arm shaft between said first and second mounting brackets;

third and fourth rocker arms pivotally mounted on said rocker arm shaft between said second and third mounting brackets;

a single plate spring having two pairs of bent flexible fingers, said plate spring being detachably mounted on said second mounting bracket so that the first pair of flexible fingers



spacedly straddle said rocker arm shaft to contact a lateral side of said first rocker arm and a second pair of flexible fingers which spacedly straddle said rocker arm shaft to contact a lateral side of said third rocker arm, said plate spring being arranged to bias said first and third rocker arms away from said second mounting bracket and into contact with said second and fourth rocker arms; and

abutment means extending from each of said first and third mounting brackets toward said second mounting bracket for abutting said second and fourth rocker arms and for maintaining said first and second and third and fourth rocker arms in predetermined positions, said abutment means being connected to and stationary with respect to said first and third mounting brackets.

4,402,285

SELF-CONTAINED HYDRAULIC LASH ADJUSTER

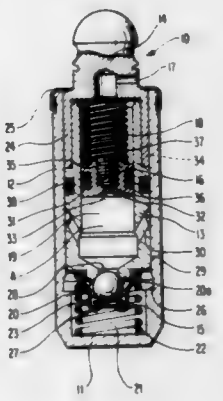
Fuminao Arai, Kawiya; Hisashi Kodama, Nagoya, and Yoshio Okabe, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 27, 1981, Ser. No. 238,792

Claims priority, application Japan, Mar. 3, 1980, 55-26437

Int. Cl.³ F01L *1/24*

U.S. Cl. 123—90.58 **5 Claims**



1. A self-contained hydraulic lash adjuster comprising a hollow cylindrical housing means having a bottom wall, first hollow plunger means having a bottom wall reciprocable within said housing means, actuating means reciprocable in said housing means in engagement with said first plunger means, a pressure chamber defined between the bottom wall of said housing means and the bottom wall of said first plunger

means, second plunger means slidably and sealingly disposed within said first plunger means, a reservoir chamber adapted to contain hydraulic fluid defined within said first plunger means between said second plunger means and the bottom wall of said first plunger means, first spring means interposed between said actuating means and said second plunger means for biasing said second plunger means into engagement with the surface of the fluid in said reservoir, passage means extending through the bottom wall of said first plunger means for hydraulic communication between said reservoir chamber and said pressure chamber, one-way valve means for controlling hydraulic communication through said passage means, said valve means allowing fluid flow from said reservoir chamber to said pressure chamber but prohibiting fluid flow from said pressure chamber to said reservoir chamber through said passage means, second spring means provided in said pressure chamber for constantly biasing said first plunger means away from the bottom wall of said housing means and fluid return passage means allowing fluid return from said pressure chamber to said reservoir chamber.

4,402,286

ELECTRICAL CONTROL SYSTEM FOR STOPPING AND STARTING A MOTOR-VEHICLE ENGINE

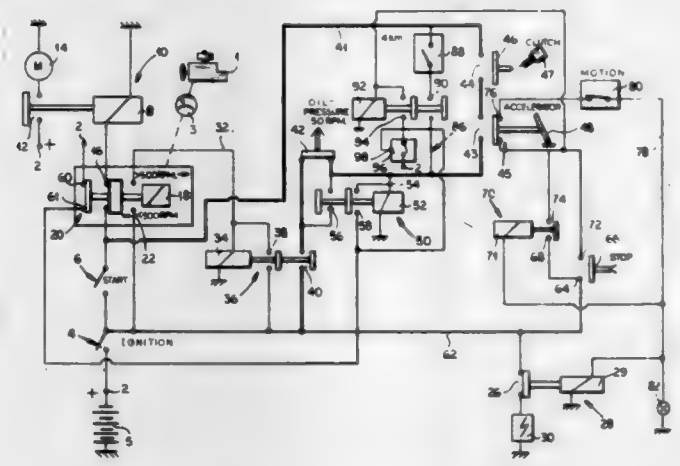
Ernst-Olav Pagel, Böhmfeld, and Robert Euringer, Biber, both of Fed. Rep. of Germany, assignors to Audi Nsu Auto Union AG, Neckarsulm, Fed. Rep. of Germany

Filed Feb. 9, 1981, Ser. No. 232,813

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 3005100

Int. Cl.³ F02N *17/00*

U.S. Cl. 123—179 B **13 Claims**



1. In combination with an internal-combustion engine having an electric starting motor, an ignition system, and an electric power source, a control system comprising:

a main ignition switch connected in series between said power source and said ignition switch and closable to energize said ignition system from said power source;

a manual start switch and an automatic start switch connected in series with each other between said main ignition switch and said electric starting motor and both closable when said main ignition switch is closed to energize said starting motor from said power source, whereby opening of either of said start switches disconnects said starting motor from said power source;

first speed-sensing means connected to said engine for generating an output and opening said automatic start switch only when said engine is operating above a predetermined intermediate rate, whereby when said engine operates above said predetermined rate even with said manual start switch closed said first speed-sensing means deenergizes said start motor;

a manually operable restart switch;

restart enabling means connected to said restart switch and to said first speed-sensing means for connecting said manual restart switch in parallel to said manual start switch after said first speed-sensing means generates said output; and

holding circuit means connected to said restart enabling means for maintaining said manual restart switch connected in parallel to said manual start switch until said main ignition switch is opened.

4,402,287

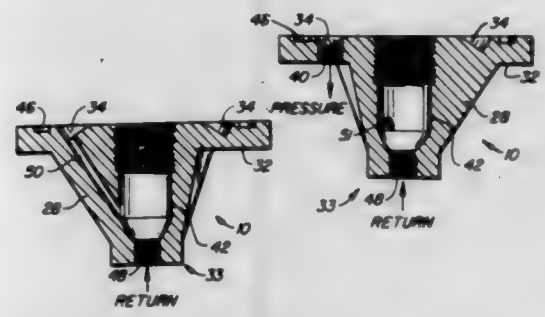
OIL FILTER ADAPTER

Clarence L. Cochran, Stockton, Calif., assignor to Frantz Filters, Inc., Stockton, Calif.

Filed Feb. 16, 1982, Ser. No. 349,299

Int. Cl.³ F01M *11/03*

U.S. Cl. 123—196 A **5 Claims**



1. In combination with an engine lubricating system including a filter mounting block having a dirty oil outlet and a clean oil inlet for passing oil from and to said engine, an adapter for connecting a bypass filter having a dirty oil inlet and a filtered oil outlet, said adapter comprising:

an adapter body including means for mounting said body on the filter mounting block, said body having a first passage therethrough which defines direct a flow path between the dirty oil outlet and the bypass filter, a second passage therethrough which defines a direct flow path between the bypass filter and the clean oil inlet and a third passage between the first passage and the second passage whereby a portion of the oil from the engine is returned directly to the engine without passing through the bypass filter, said third passage being substantially unobstructed.

4,402,288

SYSTEM FOR REGULATING THE ENGINE SPEED

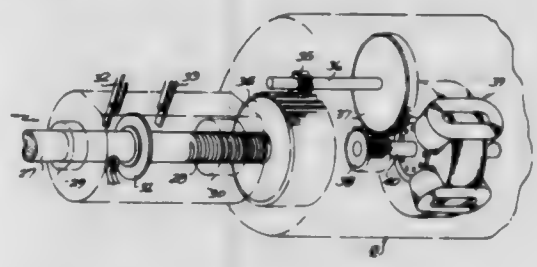
Masaaki Ohgami, Musashino; Makoto Shikata, Musashimurayama, and Kazuo Hara, Musashino, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Jan. 9, 1981, Ser. No. 223,676

Claims priority, application Japan, Mar. 7, 1980, 55-29332

Int. Cl.³ F02D *1/04, 9/00*; F02M *23/04, 51/06*

U.S. Cl. 123—339 **13 Claims**



1. In a system for regulating the engine speed of a type having a battery with terminals, a generator connected to the engine and for charging said battery and a throttle valve provided in a carburetor of the engine, the improvement comprising

an actuator means for actuating said throttle valve,

means comprising a regulating circuit for controlling the idling speed of the engine via said actuator means so as to maintain the voltage between the terminals of said battery

substantially at a predetermined constant valve comprising,

a constant-voltage circuit means having an input being applied with voltage from a terminal of said battery, said constant-voltage circuit means at an output thereof for producing a set constant voltage,

comparing circuit means for operatively comparing the voltage at said terminal of said battery with said set constant voltage and for producing an output signal in dependency on the difference between said voltages, and

a driving circuit means for sending a driving signal to said actuator means in dependency on said output signal of said comparing circuit means, and

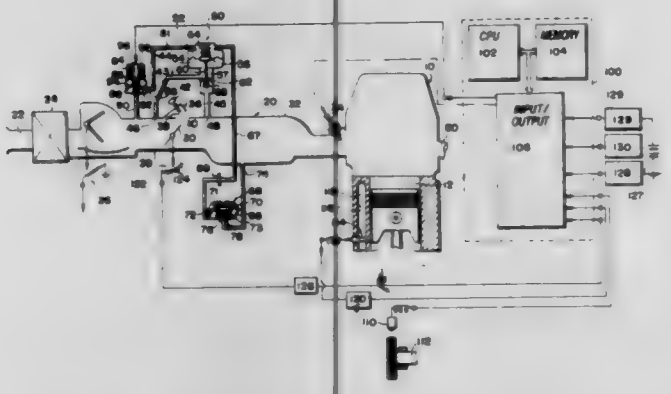
said actuator means being responsive to said driving signal of said driving circuit means for opening and closing said throttle valve, respectively, in dependency on said output signal of said comparing circuit means for regulating the idling engine speed so as to maintain the voltage between the terminals of said battery at said predetermined constant value.

4,402,289

IDLE SPEED CONTROL METHOD AND SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Kenji Ikeura, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 151,532, May 19, 1980, abandoned.
This application Jun. 28, 1982, Ser. No. 393,081
Claims priority, application Japan, May 22, 1979, 54-62204; May 22, 1979, 54-64841
Int. Cl.³ F02B *32/00, 3/00;* F02M *25/06*
U.S. Cl. 123—339 **9 Claims**



1. An intake air flow rate control system for an internal combustion engine in which is selectively carried out either feedback control or open loop control depending upon engine operating conditions and wherein smooth transition between open loop control and feedback control of intake flow rate is effected, said system including an air flow rate control valve means with an actuator means which is operated in response to a pulse signal applied thereto to vary the duty cycle of said actuator means corresponding to the duty cycle of said pulse signal,

wherein said system comprises:

sensor means for measuring engine temperature and in response generating a sensor signal indicative of measured engine temperature;

first means for detecting an engine driving condition to determine if an open loop condition exists; and

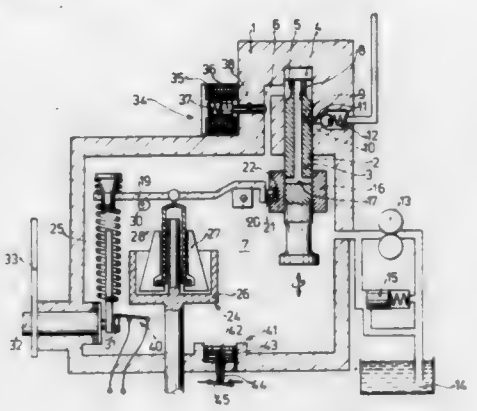
second means for determining an open loop control value based on the value of said sensor signal and for generating said variable duty cycle to be applied to said actuator means, said second means repeatedly correcting said open loop control value based on the value of said sensor signal during carrying out of open loop control whereby a smooth transition between open loop control and feedback control is thereafter provided.

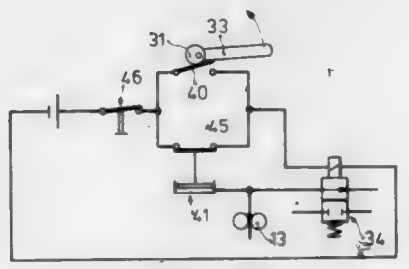
4,402,290

FUEL INJECTION PUMP

Gerald Höfer, Weissach-Flacht, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,136
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1979, 2945484
Int. Cl.³ F02D *31/00*
U.S. Cl. 123—359 **9 Claims**





1. A fuel injection pump for internal combustion engines comprising a supply pump arranged to generate an rpm-dependent fuel pressure, an adjusting lever arranged to preselect the rpm and an electrically actuatable valve positioned relative to a fuel line bore that communicates with a pump work chamber, at least one switch actuatable with the adjusting lever disposed in an electric line leading to said electrically actuatable valve, said electrically actuatable valve being controllable in accordance with the supply pump pressure whereby at an idling position of the adjusting lever and at an actual supply pump pressure which is larger than the supply pump pressure at the idling speed of the injection pump the injection of fuel is interrupted by closing said fuel line bore by means of said electrically actuatable valve.

4,402,291

EMISSION CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINES USING AN AMPLITUDE MODULATED SIGNAL

Shigeo Aono, Tokyo, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Continuation of Ser. No. 753,796, Dec. 23, 1976, abandoned.
This application Mar. 13, 1979, Ser. No. 20,128
Claims priority, application Japan, Dec. 27, 1975, 50-155775
Int. Cl.³ F02B *33/00;* F02M *7/00*
U.S. Cl. 123—440 **8 Claims**

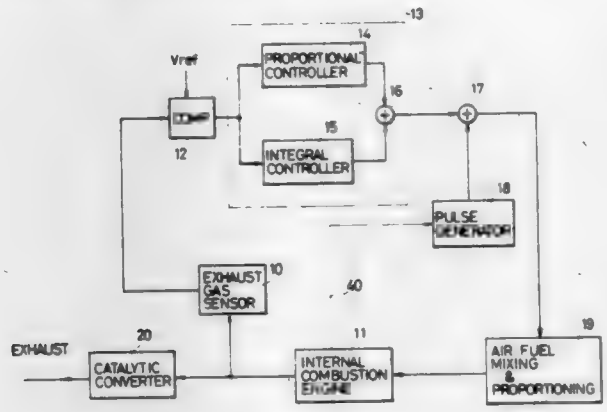
1. Emission control apparatus for a multi-cylinder internal combustion engine having an exhaust passage in common to the cylinders of the engine, comprising:

exhause composition sensing means disposed in said exhaust passage for sensing the concentration of a composition of exhaust emissions from said cylinders, and providing an output signal representative thereof;

means responsive to said output signal for generating a control signal representative of said sensed concentration, said control signal generating means comprising means for

comparing said output signal from said exhaust composition sensing means to a predetermined value, outputting a first signal indicative of said output signal being higher than said predetermined value, and outputting a second signal indicative of said output signal being below said predetermined value, and means for integrating said first and second signals to obtain said control signal;

means for generating a bipolar pulsating signal having substantially equal amplitudes of opposite polarity at a frequency higher than the frequency at which said sensed concentration fluctuates;



means for combining said control signal with said pulsating signal to obtain a combined signal with frequency higher than said control signal; and

means for mixing and proportioning air and fuel supplied to said cylinders in response to said combined signal;

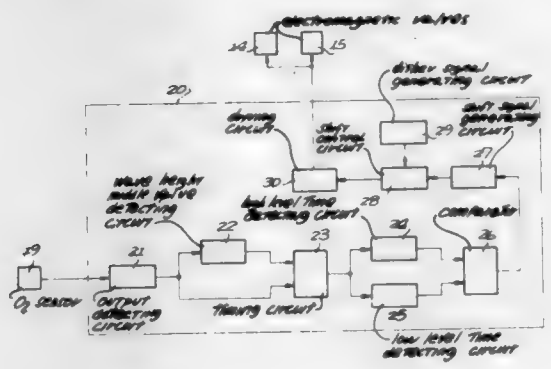
whereby said means for mixing and proportioning is feedback controlled with a resultant fluctuation of said sensed concentration of said exhaust composition.

4,402,292

AIR-FUEL RATIO CONTROL SYSTEM

Masaaki Ohgami, and Fujio Matsui, both of Musashino, Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Mar. 5, 1981, Ser. No. 240,639
Claims priority, application Japan, Mar. 7, 1980, 55-29331
Int. Cl.³ F02D *35/00*
U.S. Cl. 123—440 **2 Claims**



1. In an air-fuel ratio control system for an internal combustion engine having an intake passage, an exhaust passage, an air-fuel mixture supply means, an on-off type electromagnetic valve for correcting the air-fuel ratio of the air-fuel mixture supplied by said air-fuel mixture supply means, dither signal generating circuit means for producing a periodical dither signal, a shift control circuit means for shifting the level of the center of said dither signal, driving circuit means for producing a driving output for said on-off type electromagnetic valve, and an O_2 sensor means for detecting the concentration of oxygen in exhaust gases passing through said exhaust passage, the improvement comprising

first circuit means for producing a reference value;

timing circuit means for detecting the period of time when the output of said O_2 sensor means is higher than said reference value and the period of time when the output of said O_2 sensor means is lower than said reference value for producing an output signal dependent on the difference between said periods; and

shift signal generating circuit means for generating a shift signal in dependency on the output of said timing circuit means;

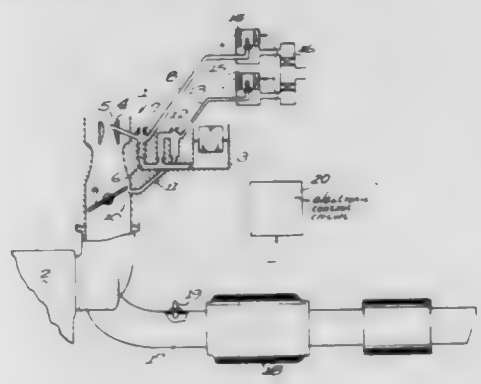
said shift control circuit means for controlling the air-fuel ratio of the mixture in such a direction that said difference is decreased.

4,402,293

AIR-FUEL RATIO CONTROL SYSTEM

Masaaki Ohgami, Musashino, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohoma, both of, Japan

Filed Mar. 5, 1981, Ser. No. 240,690
Claims priority, application Japan, Mar. 7, 1980, 55-29330
Int. Cl.³ F02D *35/00*
U.S. Cl. 123—440 **8 Claims**



1. In an air-fuel ratio control system for an internal combustion engine of the type having an intake passage, an exhaust passage, an air-fuel mixture supply device, an on-off type electromagnetic valve means for correcting the air-fuel ratio of the air-fuel mixture supplied by said air-fuel mixture supply device, O_2 sensor means for detecting the concentration of oxygen in exhaust gases passing through said exhaust passage, the improvement comprising

a dither signal generating circuit means for producing a periodical dither signal having an unchanging wave form pattern,

a shift control circuit means for shifting the level of a center of said dither signal in dependency on the concentration of oxygen detected by the O_2 sensor means,

driving circuit means operatively connected to said shift control circuit means and for producing a driving output for said on-off type electromagnetic valve means,

means for detecting a transient state of the engine operation by a variation in a waveform corresponding to the dither signal, said O_2 sensor means for generating said waveform by detecting said concentration of oxygen in the exhaust gases passing through said exhaust passage,

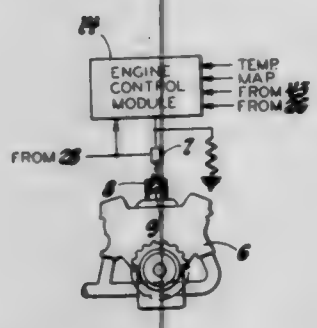
a control circuit including an integrating circuit and a square wave generating circuit means for generating square pulses according to the integration output of the integrating circuit for operatively driving said electromagnetic valve means, and

switching means for operatively connecting said O_2 sensor means to said driving circuit means via said control circuit and for disconnecting said O_2 sensor means from said driving circuit means via said shift control circuit means when said means for detecting detects the transient state.

4,402,294
FUEL INJECTION SYSTEM HAVING FUEL INJECTOR CALIBRATION

Harold R. McHugh, Kokomo, Ind., and William L. Walters, Santa Barbara, Calif., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 28, 1982, Ser. No. 343,495
Int. Cl.³ F02B 3/00, 33/00
U.S. Cl. 123—480 3 Claims



1. An internal combustion engine fuel injection system including a fuel injector selected from a number of injectors having fuel flow characteristics varying from one another, the system comprising, in combination:

a calibration resistor having a value representing the actual predetermined fuel flow rate of the fuel injector;

memory means effective to store a schedule of fuel injector fuel flow rate calibration values corresponding to calibration resistor values;

means effective to measure the values of predetermined engine operating parameters indicative of engine fuel requirements;

means responsive to the values of the predetermined engine operating parameters effective to determine the fuel flow requirements for each injector energization event;

means effective to sample the value of the calibration resistor;

means effective to retrieve from the memory means the stored fuel injector fuel flow rate calibration value corresponding to the sampled value of the calibration resistor; and

means effective to energize the fuel injector for a time dependent upon the retrieved fuel injector fuel flow rate calibration value to provide the determined fuel flow requirement for each energization event, whereby the calibration resistor provides for a measure of the fuel injector characteristics so that the injection amount for each injection event is independent of varying injector-to-injector fuel flow characteristics.

4,402,295
ELECTRONICALLY CONTROLLED FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINE

Hironobu Ono, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation-in-part of Ser. No. 249,477, Mar. 31, 1981, abandoned. This application Nov. 22, 1982, Ser. No. 443,638
Claims priority, application Japan, Mar. 31, 1980, 55-41312
Int. Cl.³ F02D 5/00, 17/00
U.S. Cl. 123—493 22 Claims

1. An electronically controlled fuel injection apparatus for an internal combustion engine which controls the amount of fuel supplied to said internal combustion engine by controlling an injector, comprising:

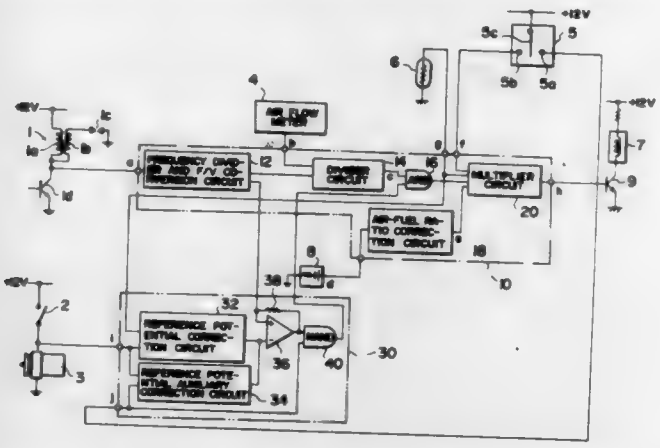
engine rotational speed detecting means for detecting a rotational speed of said engine to produce an engine rotational speed signal;

throttle aperture detecting means for detecting an open degree of a throttle valve to produce a throttle aperture signal;

air conditioner compressor activation detecting means for producing an air conditioner compressor activation signal when an air conditioner is activated;

engine rotational speed comparing means having a hysteresis characteristic for producing high engine rotational speed signal when a level of said engine rotational speed signal exceeds a reference value of said hysteresis characteristic and producing a low engine rotational speed signal when the level of said engine rotational speed signal is below said reference value of said hysteresis characteristic;

correction means for raising said reference value when said air conditioner compressor activation signal is produced;



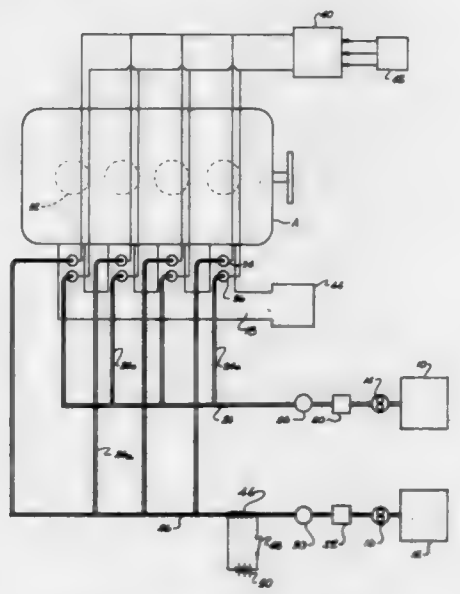
fuel injection cut means for producing a fuel injection cut signal when a minimum open degree of said throttle value is detected by said throttle aperture signal and said high engine rotational speed signal is produced; and

calculation means for calculating the amount of basic fuel injection based on said engine rotational speed signal and correcting said amount of basic fuel injection in accordance with an operation condition to produce a fuel injection signal for controlling said injector and inhibiting said fuel injection signal when said fuel injection cut signal is produced.

4,402,296
DUAL FUEL SUPPLY SYSTEM AND METHOD FOR AN INTERNAL COMBUSTION ENGINE

Walter J. Schwarz, PA 212 Beech Mountain, Banner Elk, N.C. 28604

Filed May 4, 1981, Ser. No. 260,252
Int. Cl.³ F02B 75/12; F02M 59/00, 43/00; F02D 19/00
U.S. Cl. 123—575 9 Claims



1. A method of operating an internal combustion engine of the type having a plurality of combustion chambers and an intake manifold through which fuel is delivered to said combustion chamber, said method comprising:

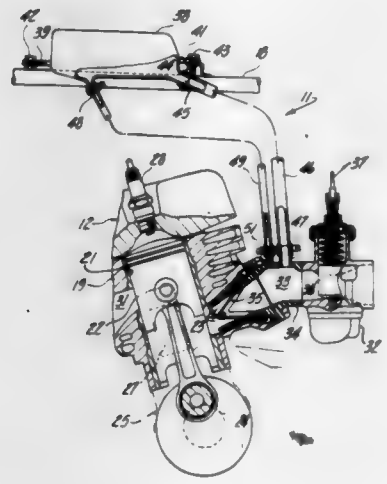
providing a first source of gasoline fuel;
providing a second source of alcohol fuel separate from said first source in a physically separated storage container;
delivering said gasoline fuel directly to said intake manifold in a predetermined amount;
delivering said alcohol fuel directly to said intake manifold separately from said gasoline fuel in a predetermined ratio to said amount of gasoline fuel;
vaporizing said fuels in said intake manifold;
injecting and mixing said fuels in vapor phase at the intake manifold ports prior to combustion in said combustion chamber; and
adding a corrosion inhibitor in solute with said alcohol fuel to inhibit corrosion by the alcohol, said inhibitor including a component compound having sufficient vapor pressure to be active in the vapor phase and effective to inhibit corrosion in exposed air spaces in addition to the liquid space of said alcohol fuel mixture in said storage container.

4,402,297

INTAKE SYSTEM OF ENGINES

Motoaki Hyodo, Shizuoka, and Soichi Anma, Fukurio, both of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 25, 1981, Ser. No. 277,325
Claims priority, application Japan, Jun. 28, 1980, 55-88066
Int. Cl.³ F02B 75/18
U.S. Cl. 123—591 **6 Claims**



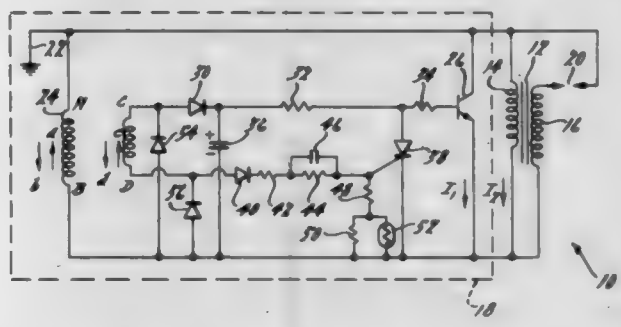
1. An induction system for an internal combustion engine having a chamber that cyclically varies in volume, an intake passage communicating with said chamber, a charge forming device for delivering a charge to said intake passage, a throttle valve in said intake passage for controlling the flow therethrough, a plenum chamber, and conduit means communicating said plenum chamber with a portion of said intake passage upstream of said variable volume chamber and downstream of said charge forming device and said throttle valve, the improvement comprising said plenum chamber having a lower wall with a fuel return opening formed therein at a point vertically above said intake passage portion, said fuel return opening being spaced from the opening of said conduit means into said plenum chamber, and a fuel return conduit extending generally vertically and communicating said fuel return opening with said intake passage for returning condensed fuel from said plenum chamber to said intake passage by gravity flow.

4,402,298

IGNITION SYSTEM TRIGGER CIRCUIT FOR INTERNAL COMBUSTION ENGINES

Koji Morita, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Oct. 8, 1981, Ser. No. 309,587
Claims priority, application Japan, Oct. 9, 1980, 55-141708
Int. Cl.³ F02P 3/06, 1/00
U.S. Cl. 123—599 **7 Claims**



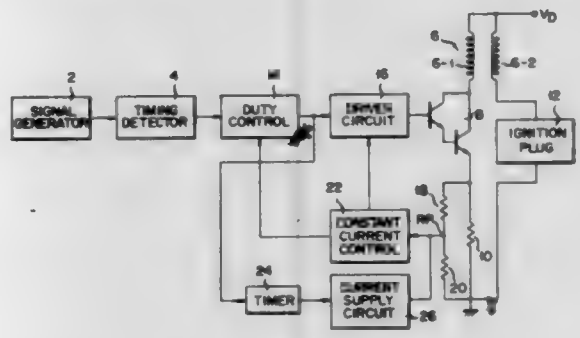
1. In a magneto-type ignition system for internal combustion engines, a trigger circuit coupled to an ignition coil of said ignition system, comprising:
a first generating coil, connected in parallel with a primary winding of said ignition coil, for supplying current flow to said primary winding;
first switching means, also connected in parallel with said primary winding of said ignition coil, for controlling the current flow through said primary winding;
a capacitor in association with said first switching means;
second switching means, in association with said capacitor and said first switching means, for cooperating with said capacitor to render said first switching means non-conductive;
a second generating coil, in association with said capacitor and said first and second switching means, for supplying the power to charge said capacitor and to control the conduction of said first and second switching means, such that said capacitor is charged and said first switching means is rendered conductive by one half wave of the output from said second generating coil and said second switching means is rendered conductive by the other half wave output from said second generating coil;
the conduction of said second switching means being operative to discharge said capacitor and render non-conductive said first switching means, whereby the current flow from said first generating coil is directed through said primary winding of said ignition coil to induce a sparking potential in said secondary winding of said ignition coil.

4,402,299

IGNITION COIL ENERGIZING CIRCUIT

Satoshi Nakao, Tokyo; Yasuo Taguchi, and Takashi Higuchi, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 6, 1981, Ser. No. 309,054
Claims priority, application Japan, Oct. 9, 1980, 55-141744
Int. Cl.³ F02P 1/00
U.S. Cl. 123—632 **2 Claims**



1. An ignition coil energizing circuit comprising:

a signal generating circuit for generating an output signal having a frequency corresponding to an engine rotational speed;

a switching circuit connected to an ignition coil;

a current detecting circuit having a resistive means connected in series to said switching circuit, for producing an output signal corresponding to a voltage drop across said resistive means;

a first control circuit for supplying to said switching circuit a control signal having a duty cycle corresponding to a duty cycle of an output signal from said signal generating circuit and controlling a conduction state of said switching circuit;

a second control circuit for controlling a conduction state of said switching circuit in response to an output signal generated from said current detecting circuit and maintaining a current flowing through said current detecting circuit at a predetermined value while said switching circuit is being turned on by the control signal of said first control circuit;

a timer for generating an output signal responsive to said switching circuit being kept on for more than a predetermined period of time by said first control circuit; and

a current supply circuit for supplying a gradually increasing current to said resistive means in response to an output signal of said timer.

4,402,300

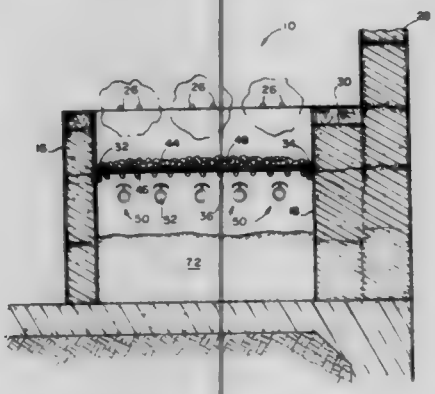
COOKING UNIT, METHOD, AND BURNER ASSEMBLY FOR GRILLING LARGE QUANTITIES OF FOOD

Philip I. Houck, 205 7th St., Ocean City, Md. 21842

Filed May 19, 1981, Ser. No. 265,157

Int. Cl.³ A47J *37/00, 37/08*

U.S. Cl. 126—41 R **15 Claims**



1. A gas-fired cooking unit for grilling food over a radiant bed of refractory coals comprising:

a first pair of parallel side walls having flat top surfaces;

a second pair of parallel side walls cooperating with said first pair to define a heating enclosure;

a plurality of food holding members extending across said heating enclosure and having end portions resting on the flat top surfaces of said first pair of parallel side walls, the lengths of said food holding members being greater than the distance between other edges of said first pair of parallel side walls;

a coal grate assembly mounted within said heating enclosure for supporting a bed of refractory coals below the food holding members in position to direct radiant cooking heat upward toward food supported by said food holding members;

burner means supported below said coal grate assembly for heating the bed of refractory coals to incandescent temperatures, said burner means comprising a plurality of spaced apart elongate burner assemblies extending between one of said pairs of side walls, each of said burner assemblies comprising a tubular member having a plurality of apertures formed therein for distributing a cooking gas, valve means for controlling the rate of flow of cooking gas through the tubular member, and a flame guard assembly releasably mounted on said tubular member;

said flame guard assembly comprising an elongate shield having a width sufficient to cover the apertures formed in said tubular member for preventing grease from cooking food falling into said apertures, support means for spacing said shield vertically above said tubular member so that hot combustion products flow upwardly around side edges of said shield, and means for releasably mounting said support means on said tubular member; and

a bed of absorbent material positioned below said burner assemblies for absorbing drippings falling from food being cooked to thereby prevent accumulation of excess flammable material below the food being cooked.

4,402,301

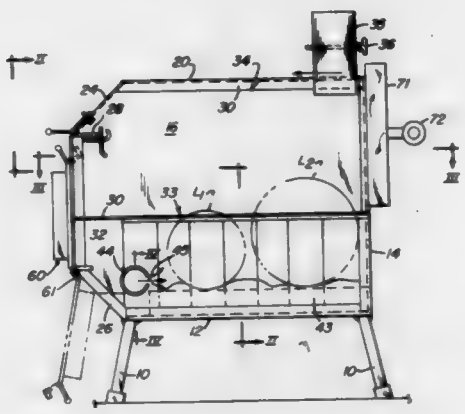
WOOD-BURNING STOVE

Wayman Squires, R.D. 3- Duke Rd., Calcutta, Ohio 43920

Filed Oct. 30, 1980, Ser. No. 202,127

Int. Cl.³ F24B *11/00*

U.S. Cl. 126—77 **10 Claims**



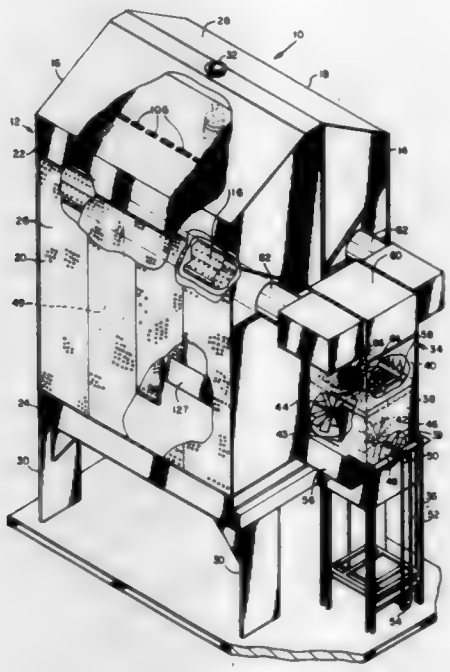
1. A stove apparatus for the combustion of solid fuel such as wood logs to provide heat for a dwelling or the like, said stove apparatus including the combination of stove walls including a floor wall joined together in a substantially airtight manner to form a firebox and a heat chamber thereabove, fuel carrier means including spaced-apart upstanding rails attached to said floor wall and extending in said firebox above said floor wall to support a fuel supply during burning, a lining of refractory brick in said firebox on said floor wall with said fuel carrier means extending above the refractory brick on the floor wall to permit the formation of an ash bed below the fuel, smoke pipe means coupled to an opening in one of said stove walls to carry away smoke and waste products of combustion, a hinged access door to normally close an opening on one of said stove walls to permit feeding the fuel into the firebox, an air-supply manifold pipe extending from rail-to-rail at one end portion in said firebox below said access door, said manifold pipe having a sealed end at one stove wall attached thereto for support, said manifold pipe extending through an opposed stove wall to said one stove wall for support thereby above said floor wall at an elevation in said firebox which is generally above said firebrick, said manifold pipe having a plurality of spaced-apart, air-discharge openings arranged to direct generally horizontal streams of heated air toward fuel on said fuel carrier means above and below the fuel support surface of said fuel carrier means, the flow of air in said air-supply manifold pipe being conductively heated by the air-supply manifold pipe within the firebox above said refractory brick for discharging streams of heated air from said air-discharge openings, and means to control the flow of air in said manifold pipe.

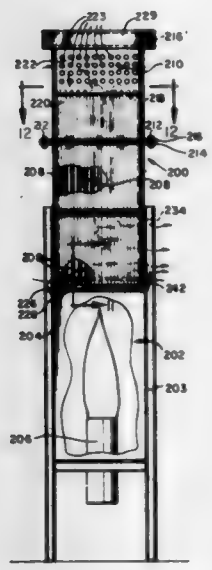
4,402,302

AIR HEATING APPARATUS

Christianus M. T. Westelaken, St. Mary's, Ontario, Canada

Filed Jun. 19, 1981, Ser. No. 275,439
Int. Cl.³ F26B *17/12*
U.S. Cl. 126—117 **7 Claims**





1. An air heating apparatus for alternatively providing direct or indirect heating of a flow of air, comprising:

a base portion including a combustion chamber having a burner for providing a flow of combustion gas, and a plurality of open tubes having first ends communicating with the combustion chamber for receiving the flow of combustion gas from the combustion chamber, the tubes having second ends extending beyond the base portion;

a tubular structure connected to the base portion, the tubular structure having partition means for dividing the tubular structure into a heat exchange chamber adjacent the base portion and surrounding the tubes and a manifold chamber remote from the base portion, the partition means cooperating with the tubes to have the combustion gas flow into the manifold chamber;

air inlet means in one of said heat exchange and manifold chambers, the air inlet means being in the manifold chamber to have ambient air combined with the combustion gas when the direct heating arrangement is desired and the air inlet means being in the heat exchanger chamber with the combustion gas exhausted to atmosphere when the indirect heating arrangement is desired; and

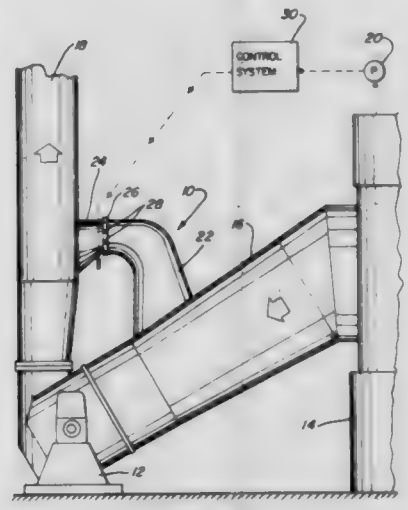
air exhaust means communicating with the heat exchange chamber for having ambient air flow into the air inlet means and through the heat exchange chamber to provide a flow of heated air.

4,402,303

FAN FLOW CONTROL DEVICE

Donald E. Koenneman, 11264 W. Mexico Dr., Lakewood, Colo. 80226

Filed Jan. 28, 1982, Ser. No. 343,579
Int. Cl.³ F23N *1/08*; F23J *11/00*
U.S. Cl. 126—307 A **4 Claims**



1. Apparatus for preventing an excessive loss of pressure of a gaseous fluid in a duct on the inlet side of a fan comprising:

a furnace having an outlet through which a gaseous fluid is discharge;

a fan having an inlet for receiving said gaseous fluid and an outlet for discharging said gaseous fluid;

a duct for connecting said outlet of said furnace and said inlet of said fan and for providing a passageway for said gaseous fluid from said furnace to said fan;

another duct for connecting said outlet of said fan to said duct for connecting said outlet of said furnace and said inlet of said fan and for providing a passageway for at least a portion of said gaseous fluid being discharged from said fan;

a louvered damper capable of movement between a fully closed position and a fully opened position for controlling the amount of gaseous fluid flowing through said duct from said outlet of said fan to said duct for connecting said furnace to said inlet of said fan; and wherein

said damper is responsive to the pressure in said furnace.

4,402,304

SULFUR MELTING APPARATUS AND METHOD

Jan M. Corey, 39 W. 6th Ave., Mesa, Ariz. 85202

Continuation of Ser. No. 52,959, Jun. 29, 1979, abandoned. This application Sep. 21, 1981, Ser. No. 303,908
Int. Cl.³ F24H *1/00*
U.S. Cl. 126—343.5 A **5 Claims**

1. A system for rapidly melting prilled or granular solid sulfur, said system comprising in combination:

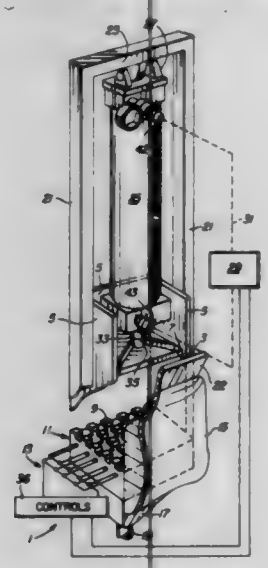
(a) a chamber into which a predetermined amount of said solid sulfur can be loaded, said chamber being bounded at one end by a bounding surface;

(b) force producing means for applying force tending to compress said solid sulfur in said chamber, forcing pieces of said solid sulfur against said bounding surface, said force producing means including a piston and means for forcing said piston against said solid sulfur, said means for forcing said piston causing said piston to exert at least approximately five pounds per square inch on solid sulfur in said chamber;

(c) heating means for heating a first portion of said bounding surface to a temperature which causes melting of solid sulfur pieces pressed against said first portion of said bounding surface to produce liquid sulfur, said first portion of said

bounding surface having first and second sets of parallel grooves therein producing a waffled surface, the grooves of said first set being non-parallel to the grooves of said second set, there being a sufficient number of said grooves, and each of said grooves being sufficiently deep, to effectuate a predetermined rate of transfer of heat from said bounding surface to solid sulfur in said chamber;

(d) a plurality of seepage holes in said grooves in said first portion of said bounding surface, said force forcing said liquid sulfur out of said chamber through said seepage holes to allow more of said solid sulfur to be pressed against said first portion of said bounding surface and melted by heat from said first portion of said bounding surface, said force producing means being sufficiently great in diameter, and



there being a sufficiently large number of said seepage holes disposed sufficiently close to each other to ensure that the low thermal conductivity of melted sulfur between said first portion of a bounding surface and said solid surface of said bounding surface does not substantially insulate said pieces of solid sulfur from heat conducted from said first portion of said bounding surface, wherein said piston has an inner surface containing a plurality of grooves to increase surface area of said piston contacting solid sulfur in said chamber, said system including second heating means for heating said piston; and

(e) means for heating the walls of said chamber, said walls containing a plurality of grooves to increase the surface area of said walls contacting solid sulfur in the chamber to improve transfer of heat from said heated walls to said sulfur.

4,402,305

APPARATUS FOR HEATING A SWIMMING POOL

Richard D. Kremen, 3205 N. Salida Del Sol, Chandler, Ariz. 85224

Filed Feb. 23, 1981, Ser. No. 236,656
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—415 **1 Claim**

1. A solar pool heater apparatus, comprising:

liner means for absorbing solar radiation, said liner means comprising a fabric sheet having high absorbtivity, and a specific gravity greater than one, said fabric sheet having a plurality of apertures therethrough;

said liner means further comprising reinforcing means for providing said fabric sheet with substantial tensile strength,

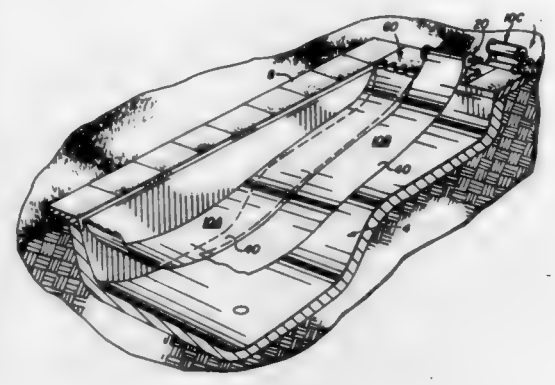
said reinforcing means comprising a matrix of interconnected cords coupled to said fabric sheet,

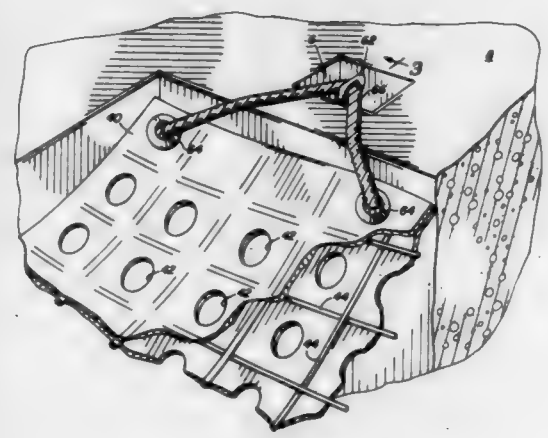
said cords comprising nylon cords, said suspension means comprising:

grommet means having portions set in opposed first and second ends of said fabric sheet for providing structurally sound attachment points in said fabric sheet; and

hook means coupled to opposed ends of said pool for engaging said grommet means so that said fabric sheet can be suspended in said pool to absorb solar radiation,

said suspension means further comprising cart means for storing said fabric sheet out of said pool and further for transporting said fabric sheet to and from said pool,





said cart means comprising:

spool means for rolling and unrolling said fabric sheet about an axis of said spool means; and

drive means coupled to said spool means for controllably rotating said spool means.

4,402,306

THERMAL ENERGY STORAGE METHODS AND PROCESSES

Robert C. McElroy, Jr., 5600 N. 26th St., Arlington, Va. 22207

Continuation-in-part of Ser. No. 134,501, Mar. 27, 1980, abandoned. This application Mar. 22, 1982, Ser. No. 360,659
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—436 **4 Claims**

1. A thermal energy collecting and storing device including:

(a) a thermally insulated storage vessel having top, bottom and side walls forming a heat retaining material holding chamber,

(b) a solar portal having upper and lower surfaces within said top wall,

(c) said solar portal including a tubular member having an upper and lower portion extending from said top wall of said vessel into said heat retaining material holding chamber and spaced from said side walls of said vessel,

(d) said spacing between said side walls and said tubular member forming a second peripheral chamber about said solar portal,

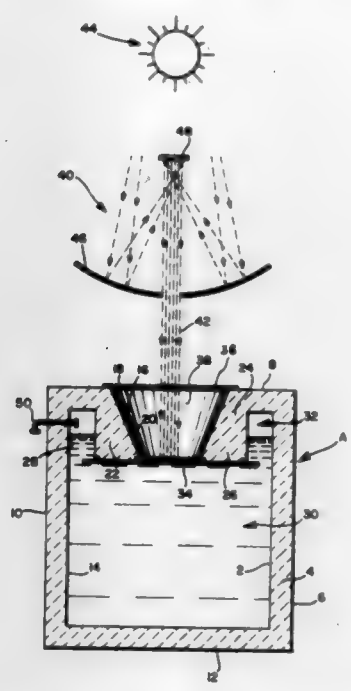
(e) a material having good heat retaining capacity and a relatively low melting point and substantially filling said holding chamber and a portion of said second peripheral chamber and surrounding said lower portion of said tubular member,

(f) said peripheral chamber including an expansion area above said heat retaining material to permit said material to expand when heated,

(g) means associated with said lower surface of said solar portal for closing said lower portions of said tubular mem-

ber and for transmitting energy to said heat retaining material,

(h) a transparent sheet associated with said upper surface of said solar portal for closing said upper portion of said tubular member,



(i) said transparent sheet and said means associated with said lower surface being spaced from each other and forming a third chamber for insulating said holding chamber from the outside of said storage vessel, and

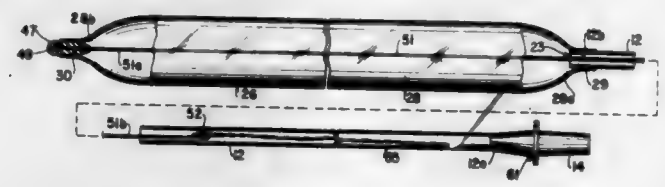
(j) a solar concentrator positioned above said solar portal for directing concentrated solar rays through said solar portal and onto said means for transmitting energy.

4,402,307

BALLOON CATHETER WITH ROTATABLE ENERGY STORING SUPPORT MEMBER

Bruce L. Hanson, Wayne, N.J., and Sidney Wolvek, Brooklyn, N.Y., assignors to Datascope Corp., Oakland, N.J.

Filed Oct. 31, 1980, Ser. No. 202,868
Int. Cl.³ A61B *19/00*; A61M *29/02*
U.S. Cl. 128—1 D **24 Claims**



1. An intra-aortic balloon device for the body of a subject comprising:

an elongated tubular catheter having a distal end adapted to be inserted into the body and a proximal end,

an inflatable and deflatable envelope having its distal end sealed and its proximal end attached to the distal end of said catheter, said catheter adapted for supplying fluid therethrough to inflate and deflate said envelope,

an elongated member having a distal first portion extending within the envelope to form a support therefor and a second portion extending within said catheter, the distal end of said envelope being attached to the distal end of said elongated member,

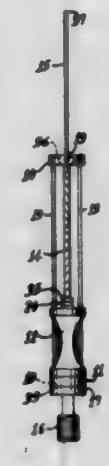
means for attaching the second portion of said elongated member to said catheter, at least part of said elongated member being of a material which is twisted relative to its longitudinal axis to store energy as said envelope is rotated to wrap it relative to said catheter and said elongated member is rotated between the distal end of said envelope and its part of the second portion attached to the catheter, said energy storage part of said elongated member having a retentive memory to untwist and to tend to restore to its original shape by releasing its energy stored during twisting to assist in unwrapping the envelope.

4,402,308

MEDICAL IMPLANTATION DEVICE

Walter P. Scott, 314 Ponte Vedra Blvd., Ponte Vedra, Fla. 32082

Filed Nov. 3, 1980, Ser. No. 203,320
Int. Cl.³ A61N *5/00*
U.S. Cl. 128—1.2 **31 Claims**



1. An injector for implanting materials within a body comprising

a unitary elongated needle having a forward sharpened end portion and a rearward end portion, said forward end portion including transverse slots spaced therealong to receive and carry materials to be implanted within a body, means attached to said rearward end portion to rotate said needle radially about its longitudinal axis to expel the materials from said slots into the body; and

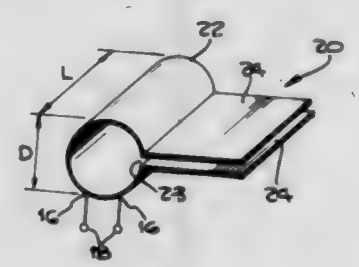
an elongated continuous sheath having an open forward end and slidably mounted on and juxtaposed directly surroundingly about said needle over a length at least sufficient to provide a protective cover for all of said slots and any materials therein to be implanted, means for slidingly retracting said sheath on said needle to uncover and expose the entire circumference of said needle and said slots and any materials therein to be implanted on said forward end portion of said needle and to retain said sheath in a retracted position on said needle.

4,402,309

THERAPEUTIC MAGNETIC ELECTRODE

William H. Harrison, Woodland Hills, Calif., assignor to Donald L. Morton & Associates, Pacific Palisades, Calif.

Filed Oct. 22, 1981, Ser. No. 313,656
Int. Cl.³ A61N *1/42*
U.S. Cl. 128—1.3 **13 Claims**



1. An electrode for use in the treatment of animal tissue by hyperthermia comprising:

(a) electrically conductive material in the form of a longitudinally slotted cylinder including means for coupling to a supply of radio frequency energy; and,

(b) capacitor plates electrically and physically attached

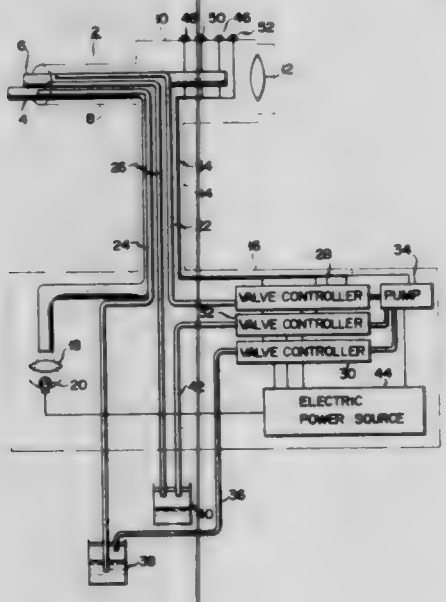
radially outward to respective sides of the slot in parallel-spaced relationship with a dielectric material disposed therebetween and being sized and spaced to make the electrode self-resonant at said radio frequency.

4,402,310

ENDOSCOPE SYSTEM

Tetsuya Kimura, Fuchu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1980, Ser. No. 206,374
Claims priority, application Japan, Nov. 22, 1979, 54/151611
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—4 **16 Claims**



1. An endoscope system comprising:

an endoscope provided with an insertion section to be introduced into a coeliac cavity of a body, a control section remote from said insertion section for controlling the operation of the endoscope and a first fluid passage for supplying a fluid to said insertion section;

signal generating means in said control section and including a first depressible electrical switching element provided on said control section for generating a first electrical signal having a signal level which is a function of a depression force applied to the first switching element;

air flow generating means separate from said control section for generating an air flow;

a first tube coupled to said air flow generating means and through which air flows, said first tube extending from the endoscope and communicating with the first fluid passage of the endoscope;

a first valve coupled to said first tube for adjusting the flow rate of air flowing through the first tube, said first valve being located separate from said control section; and

actuating means located separate from said control section and being coupled to said signal generating means and responsive to said first electrical signal for actuating said first valve for setting the flow of air through said first tube in accordance with the signal level of said first electrical signal from said signal generating means of said control section.

4,402,311

ENDOSCOPE FOR MEDICAL TREATMENT

Shinichiro Hattori, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 131,626
Claims priority, application Japan, Mar. 30, 1979, 54-38181
Int. Cl.³ A61B *1/00*
U.S. Cl. 128—4 **13 Claims**

1. An endoscope for medical treatment of a body part, comprising:

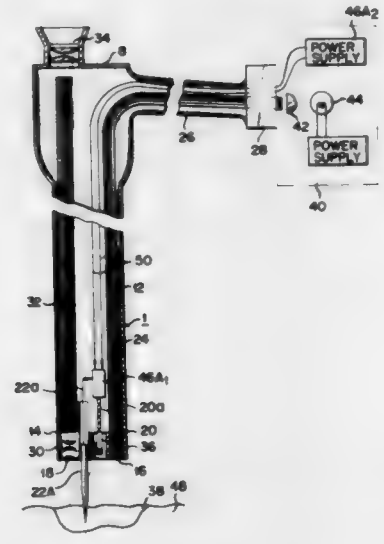
an endoscope having a distal end portion, said distal end portion including an observation optical system;

a thermal energy generating means mounted on said distal end portion for providing thermal energy to the outside from said distal end portion for heating the body part to be treated;

a temperature detecting means mounted on said distal end portion for detecting the temperature of the body part to be heated by said thermal energy and providing a detection signal which is a function of the detected temperature of said heated part, said temperature detecting means including:

at least one heat-responsive element;

at least one thermally conductive needle with said at least one heat-responsive element respectively built-in, said



needle being normally totally within said distal end portion of said endoscope; and

plunger means mounted at a predetermined position in said distal end portion of said endoscope for selectively displacing said at least one needle out of said distal end portion and toward the heated body part;

said thermal energy generating means further including thermal insulating means for heat insulating said thermal energy generating means from said temperature detecting means for decreasing the amount of thermal energy leaked from said thermal energy generating means to said temperature detecting means; and

control means coupled to said temperature detecting means for feedback controlling said thermal energy generating means in response to said detection signal for maintaining said heated body part at a predetermined temperature.

4,402,312

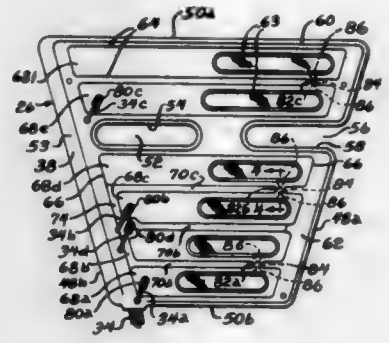
COMPRESSION DEVICE

Frank K. Villari, Oak Park; Larry D. Annis, Elgin, and Goldie J. Westgaard, Prairie View, all of Ill., assignors to The Kendall Company, Boston, Mass.

Filed Aug. 21, 1981, Ser. No. 294,959
Int. Cl.³ A61H *1/00*
U.S. Cl. 128—24 R **3 Claims**

1. A device for applying compressive pressures against a patient's limb from a source of pressurized fluid comprising: an elongated pressure sleeve for enclosing a length of a patient's limb, said sleeve having a plurality of sets of adjoining, laterally extending fluid pressure chambers, each set consisting of an upper chamber and a lower chamber, said sets being progressively arranged longitudinally along the sleeve from a lower portion of the limb proximal the patient's heart, relative to said lower portion; means in said sleeve defining an opening between the adjacent upper and lower chambers of each set of chambers, each said upper chamber being otherwise closed to ingress and egress of fluid; a plurality of conduits separately communicating with only the lower chambers of each of said sets of chambers; means for intermittently inflating and deflat-

ing each of the lower chambers, only through said conduits, and thus said upper chambers, only through said opening means; and means for maintaining the opening means in said chamber sets in an open configuration comprising a piece of open cell foam positioned in and extending entirely through said openings, said foam extending from the lower to the upper chamber in each set, whereby, upon application of fluid under pressure through a selected conduit to its associated lower



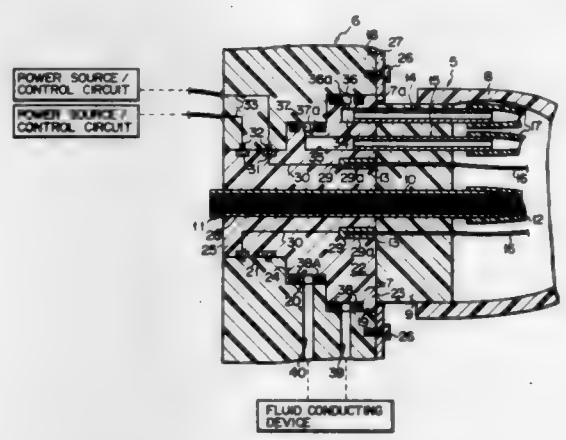
chamber, sequential inflation of the selected lower and upper chambers occurs with inflation of the lower chamber being initiated first and the upper chamber thereafter, only through the opening means between the selected chambers, and initiation of deflation of said chambers also occurs sequentially with initiation of deflation of the selected lower chamber occurring first and the upper chamber thereafter, only through the opening means between the selected chambers.

4,402,313

ENDOSCOPE LIGHT SOURCE DEVICE

Hisao Yabe, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1980, Ser. No. 208,066
Claims priority, application Japan, Nov. 22, 1979, 54-151613
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—6 **26 Claims**



1. In an endoscope system comprising an endoscope having a light guide and an endoscope connector having a base through which said light guide passes, said light guide projecting from said base, and said endoscope connector further having contact pins and air-conducting tubes projecting from said base substantially in parallel with said light guide,

the improvement comprising:

a light source device body including a fluid conducting means; and means defining a fitting cavity having a substantially cylindrical portion;

a substantially cylindrical connector receptacle having:

an outer peripheral wall;

a substantially central through hole penetrated by said light guide which passes through said base of said endoscope connector; and

axial connection holes formed in said connector receptacle so as to be penetrated by respective contact pins projecting from said endoscope connector base substantially in parallel with said light guide;

said substantially cylindrical connector receptacle being rotatably received in said fitting cavity of said light source device body in a state rotatable about said central through hole of said connector receptacle;

a light source unit provided in said light source device body in a state facing said light guide when said connector receptacle is received in said fitting cavity of said light source device body;

control circuits provided in said light source device body;

first electrical connecting leads provided in said connector receptacle, and which respectively have two ends, one end of each first electrical connecting lead being connected to a corresponding contact pin when said connector receptacle is received in said fitting cavity of said light source device body;

second electrical connecting leads in said fitting cavity defining means, and which respectively have two ends, one end of each second electrical connecting lead being connected to a corresponding control circuit;

means for electrically connecting said first electrical connecting leads to respective ones of said electrical connecting leads at their other respective ends when said connector receptacle takes any desired rotated position in said fitting cavity, including:

a plurality of contact rings mounted on and extending around the outer periphery of said connector receptacle, each contact ring being connected to the other end of a corresponding respective first electrical connecting lead; and

a plurality of contact strips fixed in said substantially cylindrical portion of said fitting cavity of said light source device body in a state so as to contact a corresponding respective contact ring, each contact strip being further connected to the other end of a corresponding respective second electrical connecting lead;

connection conduits in said connector receptacle, and which respectively have two ends, one of said ends thereof communicating with corresponding respective air-conducting tubes projecting from said endoscope connector base;

air passages which respectively have two ends, one of said ends thereof being connected to the other ends of corresponding respective ones of said connection circuits; and

further air-conducting tubes coupling respective ones of said air passages at the respective other ends thereof, with said fluid-conducting means when said connector receptacle takes any desired rotated position in said fitting cavity, said further air-conducting tubes each having a portion of the length thereof loosely wound about an outer surface portion of said connector receptacle.

4,402,314

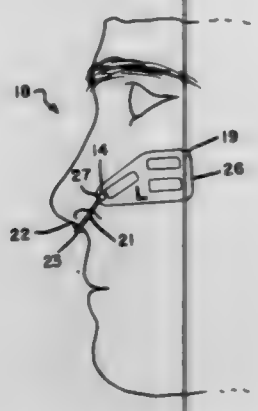
SURGICAL NASAL SEPTUM SPLINT

Richard L. Goode, 1583 Arbor Ave., Los Altos, Calif. 94022

Filed Aug. 19, 1981, Ser. No. 294,312
Int. Cl.³ A61F *5/04, 5/08*
U.S. Cl. 128—76 C **19 Claims**

1. A surgical nasal splint comprising a pair of mirror image members adapted to be placed in the nasal passage with each member of said pair aligned on opposite sides of the nasal septum, each said member including a thin flat body, permanent magnet means attached to each said body for magnetically

attracting said pair of members toward each other, said means having a mutually attractive force for maintaining said mem-



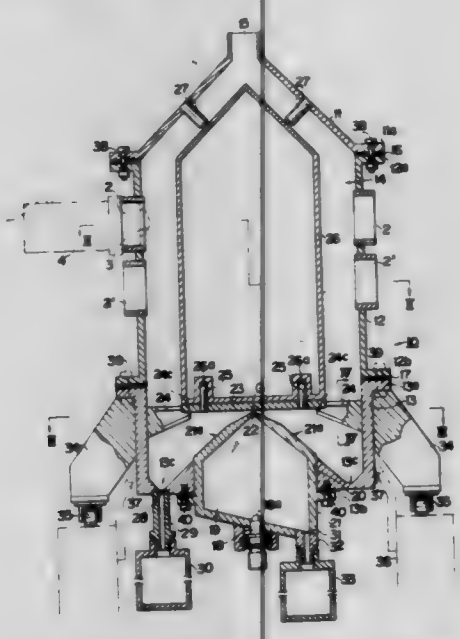
bers immobile while pressing against each other from opposite sides of the nasal septum.

4,402,315

INHALATION TOXICITY TESTING APPARATUS

Shuji Tsuda, Tokorozawa, and Makoto Iwasaki, Toride, both of Japan, assignors to Tokiwa Kagaku Kikai Co., Ltd., Tokyo, Japan

Filed May 18, 1981, Ser. No. 264,770
Claims priority, application Japan, May 29, 1980, 55-71677
Int. Cl.³ A61M *15/00*
U.S. Cl. 128—200.18 **7 Claims**



1. An inhalation toxicity testing apparatus of the type wherein the noses or heads of small test animals are exposed to the mist of a test liquid, comprising:

a. a vertical, hollow cylindrical outer housing defining an outer boundary of a chamber for the passage of the mist, said outer housing including a plurality of circumferentially spaced-apart openings therein, each adapted to receive the nose or head of a test animal, and an outlet at the top for exhausting the mist therethrough;

b. means, disposed in said housing below said openings, for supplying an upward flow of the test liquid in the form of mist into said chamber; said mist supplying means including mist generating means for atomizing the test liquid into mist, and means, disposed in fluid communication between said mist generating means and said chamber, for controlling the droplet size distribution of the mist by removing relatively large size droplets from the mist; said control means including:

(1) a casing disposed at the bottom of said outer housing and defining a mist reservoir for receiving the mist, said casing having a vertically extending injection port at the top thereof for injecting the mist from said reservoir into said chamber, said injection port being aligned with the vertical axis of said outer housing;

(2) a horizontal disc-shaped baffle located within said outer housing below said openings and immediately above said injection port, said baffle having a smaller diameter than said outer housing, so as to leave a free space therebetween for the passage of the mist, whereby the mist in the reservoir is injected through the injection port to impinge against said baffle for droplet size control; and

(3) a plurality of circumferentially spaced-apart support arms extending radially inward from the inner wall of said outer housing below said baffle so as to support said baffle on the radially inward ends thereof; and

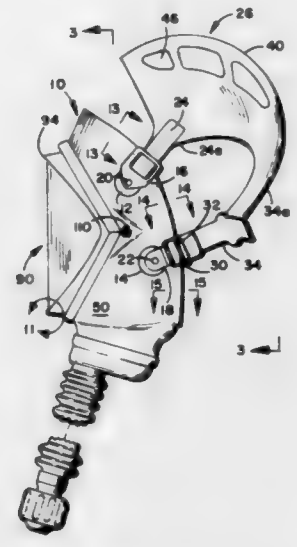
c. an inner housing placed on said baffle and configured in substantial conformity with the inner configuration of said outer housing to define an inner boundary of said chamber, said chamber being substantially annular and being defined between said inner housing and said outer housing and extends from the free space outside said baffle to said exhaust outlet.

4,402,316

BREATHING GAS MASK

Donald L. Gadberry, Huntington Beach, Calif., assignor to U.S.D. Corp., Santa Ana, Calif.

Filed Apr. 27, 1981, Ser. No. 257,537
Int. Cl.³ A62B *7/00*
U.S. Cl. 128—201.15 **15 Claims**



1. A breathing gas mask having a major lens surface therein for viewing formed as a separate lens portion and connected to the remainder of the mask as an initially separable item wherein the improvement comprises:

said lens surface having a raised bead portion projecting outwardly therefrom in at least a portion of the peripheral region thereof for causing said lens to rest thereagainst instead of on the major lens surface to remove the major lens surface of the lens from a surface upon which it is placed so that it lies is speced relationship therefrom as supported by the raised bead portion.

4,402,317

SMOKE INHALATION SAFETY DEVICE

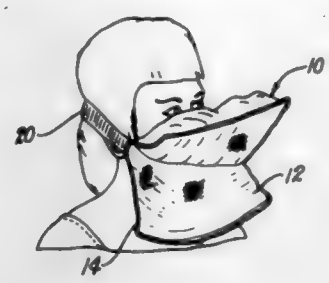
Roy E. Martin, 1202 W. Third, Lee's Summit, Mo. 64063

Filed Jul. 6, 1981, Ser. No. 281,025
Int. Cl.³ A62B *7/00*
U.S. Cl. 128—205.27 **8 Claims**

1. A yieldable, metal free covering adapted to readily conform to the shape of the face when placed across the face against the nose and mouth and use while breathing therethrough in a smoky atmosphere to protect the respiratory system against undue smoke inhalation, said device comprising:

a closed, pillow-like bag of soft, flexible, air permeable material; and

a filling of relatively small, discrete, substantially dust free fragments of loose, barkless, aromatic wood chips, shav-



ings or the like pleasant to the smell and enveloped in said bag,

said fragments being incapable of inhalation from the bag during said breathing and being lightly coated with a pleasantly fragrant substance having an oily consistency.

4,402,318

METHOD FOR INACTIVATING VIRUSES, BACTERIA, ETC. IN VITRO AND PRODUCTION OF VACCINES

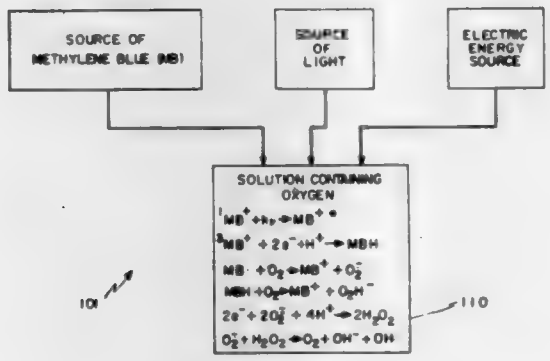
Mitchell R. Swartz, 2 Ridgewood Rd., Malden, Mass. 02148

Division of Ser. No. 49,702, Jun. 18, 1979, Pat. No. 4,305,390, which is a continuation-in-part of Ser. No. 879,822, Feb. 21, 1978, Pat. No. 4,181,128, which is a continuation-in-part of Ser. No. 636,290, Nov. 25, 1975, Pat. No. 4,139,348. This application May 29, 1981, Ser. No. 268,562

The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.

Int. Cl.³ D61M *37/00*

U.S. Cl. 604—20 **6 Claims**



1. A method of inactivating viruses, bacteria, cells, toxins or the like, in vitro, that comprises introducing to the viruses, bacteria, cells, toxins or the like, an active component capable of assuming an excited electronic state when subjected to light and an electric field concurrently, and concurrently applying an electric field and light to said viruses, bacteria cells, toxins or the like.

4,402,319

RELEASABLE BALLOON CATHETER

Hajime Handa; Yasuhiro Yonekawa; Sen Yamagata; Waro Taki, all of Kyoto; Yoshito Ikada, and Hiroo Iwata, both of Uji, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Division of Ser. No. 121,036, Feb. 13, 1980, Pat. No. 4,346,712. This application Dec. 30, 1981, Ser. No. 335,814

Claims priority, application Japan, Apr. 6, 1979, 54-42197; Sep. 14, 1977, 54-118634

Int. Cl.³ A61M *29/02*

U.S. Cl. 128—325 **9 Claims**

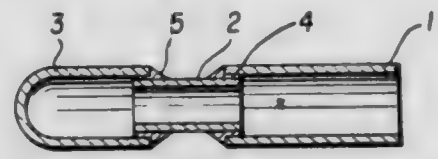
1. A releasable balloon catheter, comprising:

a tubular catheter body;

an inflatable balloon provided at one end of said catheter body so that a curable liquid may be introduced into the balloon from the catheter;

a severable tube formed at a joint part between said balloon and said catheter body;

said balloon catheter being constructed such that when said balloon catheter is inserted into a vessel and carried to the



desired site by the blood stream and the balloon is inflated by the introduction of said curable liquid into the balloon through the catheter body and is fixed face-to-face with the wall of the vessel at the desired site, said severable tube is severed when a torsional force is applied thereby cutting said severable tube and releasing said balloon from said catheter.

4,402,320

ANIMAL EAR TAG APPLICATORS

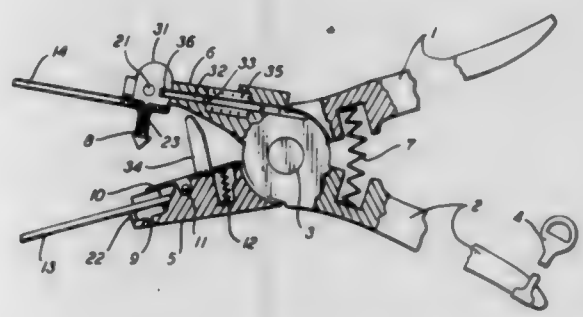
David B. Filmer, Newport, Australia, assignor to Agri Plastics International Pty. Limited, Newport, Australia

Division of Ser. No. 125,062, Feb. 27, 1980, Pat. No. 4,368,735. This application Mar. 23, 1982, Ser. No. 361,639

Claims priority, application Australia, Mar. 9, 1979, PD7978

Int. Cl.³ A01K *11/00*

U.S. Cl. 128—330 **5 Claims**

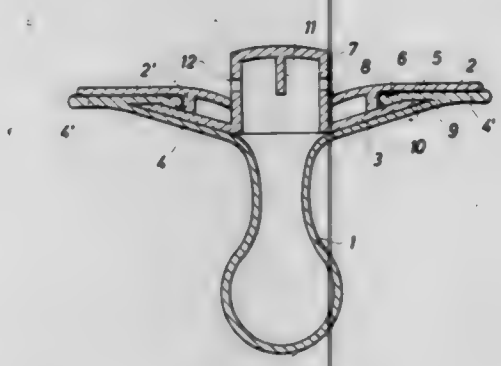


1. An applicator for an animal ear tag, said applicator including first and second jaw members, first and second handles respectively extending from and being integral with said first and second jaw members with the handles and jaw members being pivotally interconnected to perform a pliers-type action, spring means biassing the handles away from each other, a pin member pivotally mounted on said first jaw member for movement between an engage position directed toward the second jaw member and a release position, a recess and aligned aperture in said second jaw member to receive said pin member in said engage position, a slidable bolt carried by said first jaw member for longitudinal sliding movement between a position in which said pin member is engaged thereby and locked and a position in which said pin member is released, a release rod mounted on the second jaw member and directed towards the first jaw member, said release rod being arranged to displace said bolt to said pin member release position when the jaw members are closed and thereby permit pivotal movement of said pin to the release position, a plate pivotally mounted on the second jaw member, one end of said plate being slotted and said plate being spring biased to urge said slotted end toward the second jaw member to overlie the recess and aperture and provide a passage for said pin member.

4,402,321
COMFORTER

Marie-Louise Berg, 27 Drosselvej, 4000 Roskilde, Denmark

PCT No. PCT/DK79/00034, § 371 Date May 13, 1980, § 102(e) Date May 13, 1980, PCT Pub. No. WO80/00657, PCT Pub. Date Apr. 17, 1980
PCT Filed Sep. 19, 1979, Ser. No. 252,978
Claims priority, application Denmark, Sep. 20, 1978, 4173/78
Int. Cl.[3] A61J *17/00*
U.S. Cl. 128—359 1 Claim



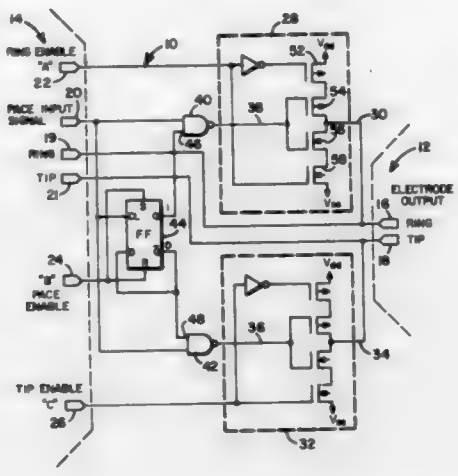
1. A comforter comprising:
a teat rubber having a hollow bulbous portion closed at one end and integrally attached at its open end to one end of a hollow elongated cylindrical member having a longitudinal axis, said portion and said member being intended for insertion into the mouth of a user;
a truncated generally conical flange attached at its smaller diameter to the other end of said member and arranged to taper outwardly from said axis and away from said portion;
said flange further comprising a substantially circular outer edge and attached thereto a rim having a first lip directed substantially radially inwardly toward said axis, said first lip terminating in a bead which is in spaced relation to said axis; said rim having a second lip directed substantially radially outward from said first lip and being coextensive therewith;
a safety shield shaped so as to extend between and contiguously adjoin a major portion of said conical flange surface directed toward said axis and the adjacent surface of said first lip; and
fastening means overlying said rim such that said second lip is supported and said first lip is entrapped between said shield and said fastening means;
thus, securing together said comforter.

4,402,322
PACER OUTPUT CIRCUIT

Stephen R. Duggan, Rosemount, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 25, 1981, Ser. No. 247,481
Int. Cl.[3] A61N *1/36*
U.S. Cl. 128—419 PG 4 Claims

1. An improved pacer output/input circuit of the type having first
and second output electrode connections for coupling to the heart, for producing a biphasic stimulation output pulse from single ended power supply and having an output voltage twice that of said power supply in response to pace input signals including:
a first current limiting buffer for selectively sourcing or sinking current from a first output electrode connection in response to a first control signal;
a second current limiting buffer for selectively sourcing or sinking current from said second output electrode in response to a second control signal; and
wherein the improvement comprises: means for producing a time sequence of the complementary first and second



control signals in response to a sequence of pace input pulses.

4,402,323
DISPOSABLE ELECTROPHYSIOLOGICAL EXPLORING ELECTRODE NEEDLE

David L. White, Wyoming, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed May 12, 1981, Ser. No. 262,882
Int. Cl.[3] A61B *5/04*; A61N *1/04*
U.S. Cl. 128—642 8 Claims

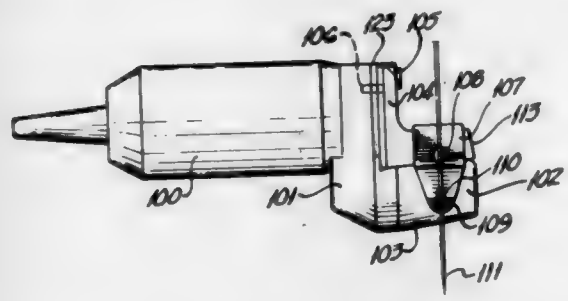


1. A body implantable lead comprising:
a conductor having a proximal end and a distal end;
an insulating sheath covering said conductor;
an electrical connector attached to said proximal end of said conductor;
an electrode assembly suitable for chronic implantation, having a conductive fixation device electrically coupled to said distal end of said conductor; and
means removably electrically coupled to said electrode assembly and removably frictionally engaged by said fixation device for establishing temporary electrical contact with body tissue.

4,402,324
BIOPSY NEEDLE GUIDE FOR SECTOR SCANNER

Gunnar Lindgren, Upsala, Sweden; Richard E. Molesworth, Englewood, and Jack R. Sorwick, Parker, both of Colo., assignors to Technicare Corporation, Solon, Ohio

Filed Jun. 29, 1981, Ser. No. 278,514
Int. Cl.[3] A61B *10/00*
U.S. Cl. 128—660 7 Claims



1. For use in an ultrasound sector scan imaging system em-

ploying a scan head having at least a first portion for providing motive power, and a second portion, connected to and axially offset generally downwardly from said first portion, carrying a transceiver for imaging a sector area in a plane normal to and below a common axis of said first and second portions, apparatus for utilizing said scan head and imaging system in a biopsy procedure comprising:

adapter means, fixedly, removably mountable to said first portion and including an integral segment extending along and generally above said second portion; and

guide means, detachably fixedly mountable to said integral segment, said guide means including a downwardly extending protuberance intersecting the plane of said sector area alongside said second portion, said protuberance defining a groove, adapted to receive a biopsy needle, said groove lying in said plane, said protuberance further defining a depression, transversely intersecting said groove, and facing outwardly from alongside said second portion, for pressured maintenance of a needle in said groove;

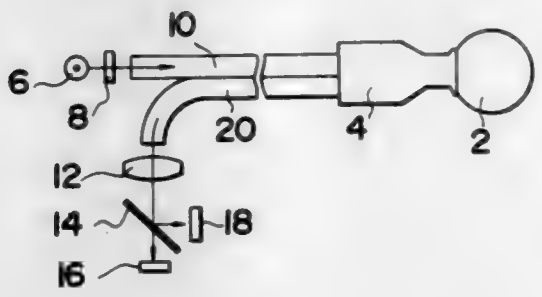
whereby a needle, when maintained in said groove, and guided downwardly into the sector area, proceeds through said sector plane obliquely to scan lines from said scan head.

4,402,325

OPHTHALMIC DEVICE TO DIAGNOSE THE EYE FUNDUS

Seija Sawa, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 12, 1980, Ser. No. 186,669
Claims priority, application Japan, Sep. 29, 1979, 54-126006
Int. Cl.³ A61B *3/00*
U.S. Cl. 128—666 **16 Claims**



1. An opthalmic device for measuring blood circulation in the eye fundus to diagnose the condition of the eye comprising:

means for generating a source light including wavelengths in at least the visible and near infrared range;

means for introducing the source light into an eye;

means for receiving the light reflected from the fundus of the eye;

first means responsive to a visible wavelength band of light picked up by the receiving means for producing a first electric signal indicative of a first plethysmogram;

second means responsive to a near infrared wavelength band of light picked up by the receiving means for producing a second electric signal indicative of a second plethysmogram; and

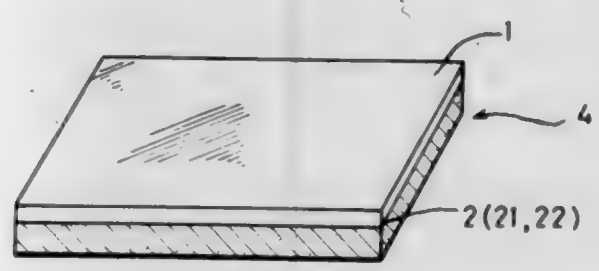
means responsive to the first and second electric signals for visually presenting waveforms of the individual first and second plethysmograms to provide a synchronized comparison therebetween, whereby diagnosis of the eye is possible as a result of the synchronized comparison between the visually and individually presented waveforms of the first and second plethysmograms.

4,402,326

OCCLUSION PRESSURE IMAGE SYSTEM

Michiaki Okano, Uji, and Shuhei Furuichi, Shiga, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Apr. 29, 1981, Ser. No. 258,646
Claims priority, application Japan, May 2, 1980, 55-59278
Int. Cl.³ A61C *3/00*
U.S. Cl. 128—774 **29 Claims**



1. An occlusion pressure image display system designed to make visual display of the occlusion pressure signals detected by an occlusion pressure sensor, said system comprising an occlusion pressure sensor and a CRT display unit,

said sensor comprising:

(a) a complex pressure sensitive element, including a rectifying layer and a pressure sensitive layer, said element changing electric characteristic thereof in response to occlusion pressure by detecting the occlusion pressure of the teeth;

(b) an upside electrode and an underside electrode, said electrodes being constructed by arranging thin strip pieces or segments in such manner that said strip pieces or segments are arranged in regularly crossing or coordinated relation vertically of said pressure sensitive element on the upside and underside of the element, so as to form a plurality of pressure sensitive blocks marked off from one another on the pressure sensitive element;

(c) an insulating film enveloping said element inclusive of said upside and underside electrodes; and

(d) a switching means constructed to lead the occlusion pressure signal detected by said sensor to said CRT display unit by electrically scanning said pressure sensitive blocks of said sensor in synchronism with horizontal and vertical signals of CRT.

4,402,327

EXTERNAL CARDIAC COMPRESSION ALARM SYSTEM

E. H. Lambert, 44 Gunton Dr., Lowestoft Suffolk, NR 32 4QB, England, and T. A. Don Michael, 2108 Truxtun Ave., Bakersfield, Calif. 93301

Filed Jun. 12, 1981, Ser. No. 272,925
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—774 **7 Claims**



1. A cardiac compression alarm system for insertion through the mouth and esophagus to a position adjacent the chest region, comprising:

sensor means configured to be inserted through the mouth and esophagus into the chest region of a person for sensing changes in external pressure applied to said chest region;

a conduit joined to said sensor means, said conduit of sufficient length so as to extend from the sensor means through the esophagus and mouth to a position external to the person;

measuring means, joined to said conduit, for measuring a change in the force exerted on said sensor means in said chest region; and

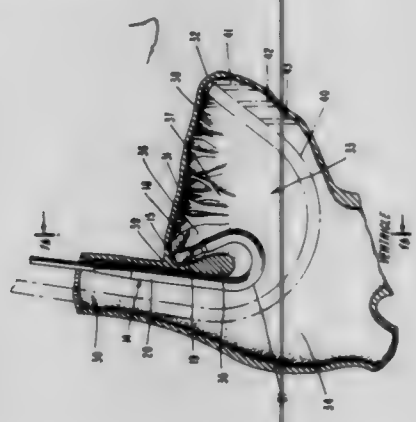
indicating means, joined to said measuring means, for indicating the change in the force measured by said measuring means.

4,402,328

CRISTA TERMINALIS ATRIAL ELECTRODE LEAD

Carl Doring, Wollstonecraft, Australia, assignor to Telectronics Pty. Limited, Lane Cove, Australia

Filed Apr. 28, 1981, Ser. No. 258,322
Int. Cl.³ A61N 1/04
U.S. Cl. 128—785 69 Claims



1. An atrial electrode lead for connection to a cardiac pacemaker circuit module comprising:

a first conductor having a proximal end and a distal end;

a first pliant insulating tube surrounding said first conductor;

a first coupling member electrically connected to said proximal end of said first conductor, for connecting said first conductor to said cardiac pacemaker circuit module;

a distal electrode tip electrically connected to said distal end of said first conductor; and

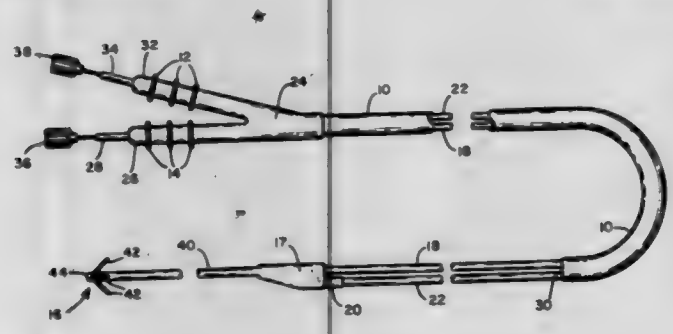
means for shaping said first conductor to bend around the crista terminalis of the heart to place said distal electrode tip into substantial electrical contact with cardiac tissue at the junction of the superior margin of the right atrial appendage and the origin of the crista terminalis once said atrial electrode lead is inserted into the right atrium of a human heart.

4,402,329

POSITIVE ANCHORING A-V LEAD

Terrell M. Williams, Coon Rapids, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 28, 1981, Ser. No. 306,050
Int. Cl.³ A61N 1/04
U.S. Cl. 128—785 15 Claims



1. A body implantable lead comprising:

an atrial conductor having a proximal end and a distal end;

a ventricular conductor having a proximal end and a distal end;

an outer insulative sheath covering a portion of said atrial conductor and a portion of said ventricular conductor;

a ventricular electrode coupled to the distal end of said ventricular conductor;

a first electrical connector coupled to the proximal end of said ventricular conductor;

a second electrical connector coupled to the proximal end of said atrial conductor; and

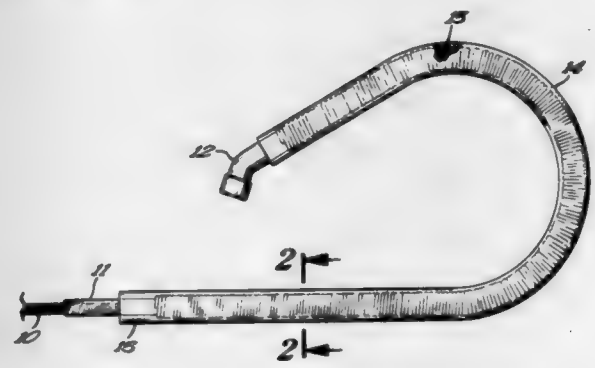
an atrial electrode assembly coupled to said distal end of said atrial conductor and including means for actively affixing said atrial electrode assembly to body tissue.

4,402,330

BODY IMPLANTABLE LEAD

Fredric W. Lindemans, Minneapolis, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 78,090, Sep. 24, 1979, abandoned. This application May 8, 1981, Ser. No. 261,718
Int. Cl.³ A61N 1/04
U.S. Cl. 128—786 7 Claims



1. In a lead for a body implantable electrical stimulation system of the type having electrical conducting means and means electrically insulating said conducting means, said conducting and insulating means defining a flexible lead body, the improvement which comprises non-conducting, multifilar means coiled about a portion of said lead body for imparting a resilient orientation maintaining stiffness to said lead body portion and means overlying said coiled means to provide a smooth exterior surface at said lead body portion, said overlying means comprising means extending beyond said lead body portion and coiled means for providing a stiffness transition region adjacent said lead body portion.

4,402,331

PORTABLE LAVAGE DEVICE

Terry J. Taldo, Grand Prairie, and Kenneth R. Jackson, Arlington, both of Tex., assignors to Delta Manufacturing and Sales, Inc., Tex.

Filed Mar. 27, 1981, Ser. No. 248,510
Int. Cl.³ B08B 3/02
U.S. Cl. 134—58 R 21 Claims

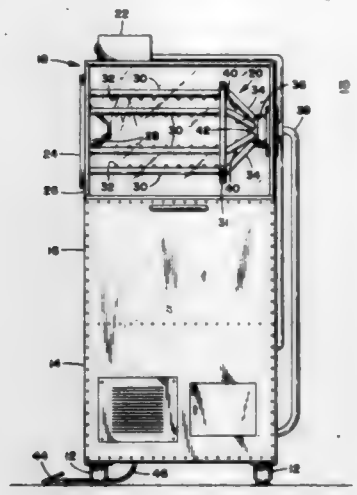
1. A lavage device comprising:

a. a tank for holding a cleansing fluid,

b. pump means coupled to and operatively interconnected with said tank for circulating said cleansing fluid under a gradually varying pressure from a maximum to a minimum pressure to reduce noise during operation of the device and facilitate cleansing,

c. spaced nozzle means coupled to and operatively interconnected with said circulating pump and arranged to discharge said fluid under said gradually varying pressure against an object to be cleansed, and

d. said pump means including fluid flow restrictive means interconnecting with said nozzle means for gradually



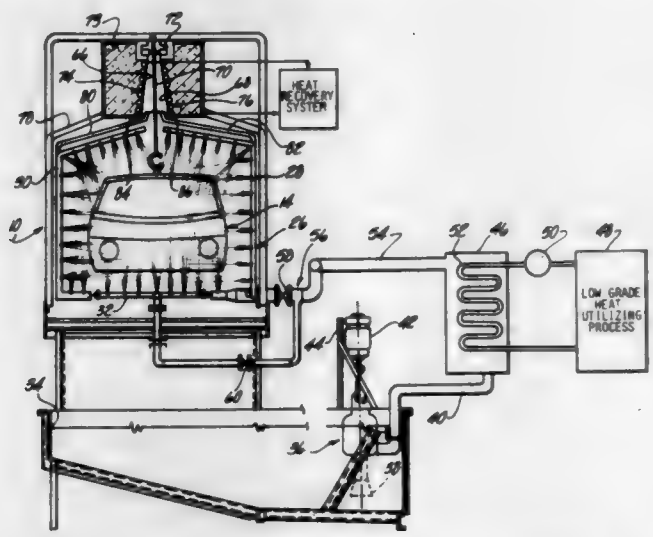
varying the pressure of said cleansing fluid during operation of said lavage device.

4,402,332

APPARATUS FOR HEAT ENERGY RECOVERY FROM ESCAPING STEAM

Norman F. Bradshaw, Surrey, England, and Gerald P. Schrubba, Huntington Woods, Mich., assignors to Haden Schweitzer Corporation, Madison Heights, Mich.

Filed Dec. 19, 1980, Ser. No. 218,393
Int. Cl.³ B08B 3/02
U.S. Cl. 134—104 **4 Claims**



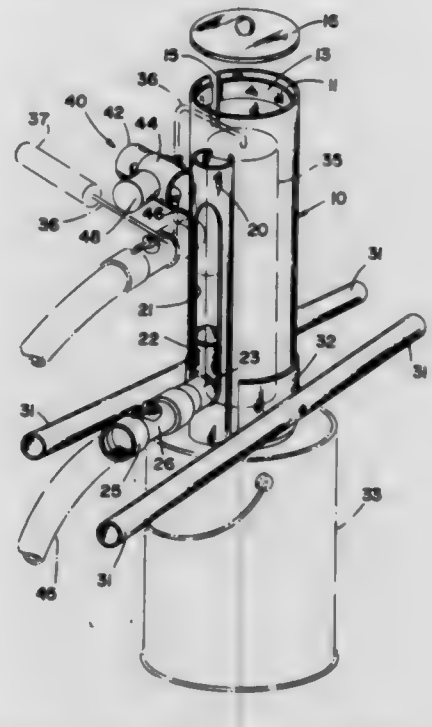
1. In a pretreatment plant of the type including an open ended tunnel casing through which workpieces are conveyed for pretreatment operations prior to paint spraying finishing of said workpieces, wherein said conveyance includes an overhead conveyor including hangers extending into said tunnel casing through an overhead slot, a plurality of hot water sprays within said casing for pretreatment of said workpieces, said hot water sprays being directed toward said workpieces and producing steam emissions in said tunnel casing, condenser means disposed within said slot and including cooling fluid conduit means for cooling said condenser means to produce codensation of said steam moving towards said slot after contacting the workpieces, means for catching condensate from said condenser means and directing said condensate away from the workpieces and outside of said casing, and heat recovery means for recovering usable heat from said condensate.

4,402,333

PAINT ROLLER CLEANING DEVICE

Leon E. Frizzell, 119 Margie Dr., Pleasant Hill, Calif. 94523, and Joseph C. Frizzell, 221 Palin, Galt, Calif. 95632

Filed Jan. 11, 1982, Ser. No. 338,478
Int. Cl.³ B08B 3/02
U.S. Cl. 134—138 **10 Claims**



1. A paint roller cleaning device comprising:
a. a cylindrical casing large enough in diameter to surround a paint roller, said casing having an open bottom, an open top, and an elongated slot in the wall thereof said slot having a long axis parallel to the long axis of said casing;
b. means to suspend a paint roller within said casing to be out of contact with the interior wall of said casing and to have the axis of rotation of said paint roller parallel to the long axis of said casing;
c. a housing mounted on the exterior of said casing to bridge said slot;
d. a nozzle moveable within said housing in a direction parallel with the axis of said casing, said nozzle positioned to direct a stream of fluid through said slot in a direction that is not radial with respect to said casing; and
e. means to provide liquid to said nozzle.

4,402,334

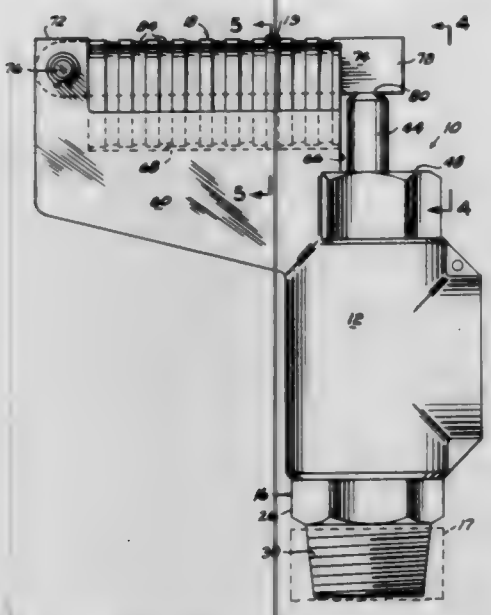
RUPTURE BAND RELIEF VALVE

Julian S. Taylor, 8300 SW. 8, Oklahoma City, Okla. 73108

Continuation-in-part of Ser. No. 159,263, Jun. 13, 1980, Pat. No. 4,317,470. This application Dec. 14, 1981, Ser. No. 330,538
Int. Cl.³ F16K 13/04
U.S. Cl. 137—70 **7 Claims**

1. A relief valve, comprising:
a housing;
means at one end of the housing forming an inlet passage;
valve means normally closing the inlet passage,
said valve means including a stem slidably projecting through the housing end opposite the inlet passage;
radially projecting arm means supported by the housing end portion opposite the inlet passage;
a lever normally abutting the outwardly projecting end surface of said valve stem in overlying relation and connected with said arm means for pivoting movement about an axis normal to the longitudinal axis of said valve stem; and,
band means extending transversely across said arm means and said lever for maintaining said valve means in inlet passage closed position,

said stem acting to pivot said lever relative to said arm means and extend said band means beyond its tensile



strength limit and open the inlet passage in response to predetermined pressure against said valve means.

4,402,335

DAMPING UNIT FOR MEASURING AND AUTOMATIC CONTROL SYSTEMS

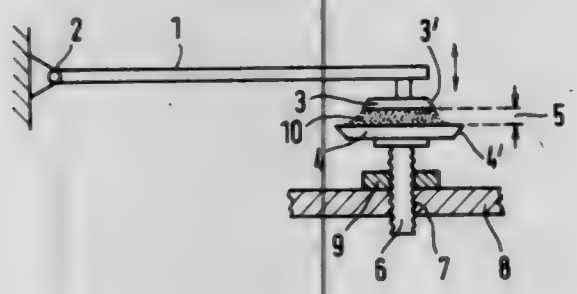
Lothar Kemmler, Mörfelden, Fed. Rep. of Germany, assignor to Samson Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Apr. 14, 1981, Ser. No. 254,190

Claims priority, application Fed. Rep. of Germany, May 6, 1980, 3017321

Int. Cl.³ F16F *9/30*

U.S. Cl. 137—82 **9 Claims**



1. A damping unit for measuring and for automatic control systems, comprising two parts having confronting surfaces in spaced apart relation, said parts being relatively movable toward and away from one another, a damping liquid disposed in the space between said surfaces in contact therewith and having the tendency to spread out in said space, said damping liquid comprising silicone oil such as dimethylpolysiloxane, at least the surfaces of said parts contacted by said damping liquid comprising a fluorinated hydrocarbon polymer, and the space between said surfaces being open at the sides thereof, whereby said damping liquid and said surfaces function to maintain said damping liquid between said parts without the need for any confining means.

4,402,336

HYDRAULIC FLOW DIVIDING AND INTEGRATING EQUIPMENT

Gabor Kalmanczhelyi, and Pal Kiss, both of Budapest, Hungary, assignors to Danuvia Kozponti Szerszam es Keszulekgyar, Budapest, Hungary

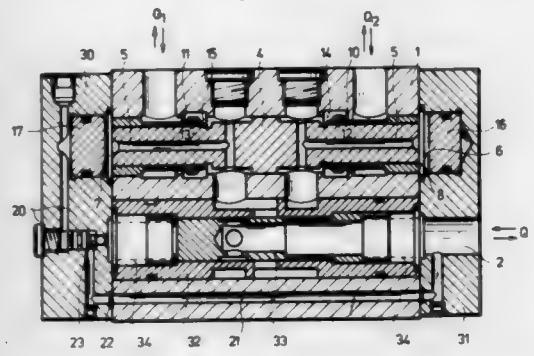
Filed May 7, 1981, Ser. No. 261,614

Claims priority, application Hungary, May 12, 1980, 1164/80

Int. Cl.³ G05D *11/03*

U.S. Cl. 137—101 **3 Claims**

1. In hydraulic flow dividing and integrating equipment comprising a valve body, a slide valve slidable in the valve body and dividing the valve body into two first chambers through which the slide valve passes, two passageways communicating with spaced portions of each of said first chambers, throttle means in some of said passageways and two second chambers disposed one at each end of the slide valve, each said first chamber communicating with its adjacent said second chamber; the improvement comprising rings slidable on the slide valve in each of said chambers, said rings being disposed



between the said two passages that communicate with each of said chambers, the interior of each of the chambers having edges thereon coacting with edges on the rings whereby movement of the rings relative to the slide valve changes the spacing of said edges thereby automatically changing the cross section of the fluid path between the said two passages in each chamber, and a bypass (21) with throttle means (22) therein and a nonreturn valve (23) for bypassing the firstmentioned throttle means (3).

4,402,337

VALVE PROVIDED WITH A THERMALLY-ACTUATED MECHANISM FOR PRESSING VALVE SEATS AGAINST A VALVE GATE BODY

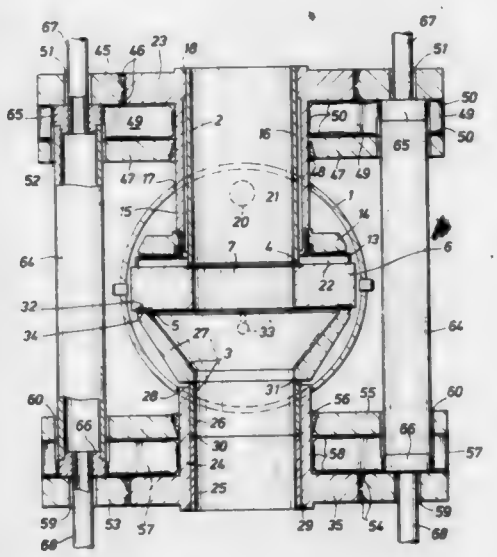
Pieter J. Schuurman, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed May 4, 1981, Ser. No. 260,508

Claims priority, application United Kingdom, Oct. 10, 1980, 8032758

Int. Cl.³ F16K *49/00, 3/02*

U.S. Cl. 137—240 **5 Claims**



1. A valve comprising:

a valve housing containing a fluid supply conduit and a fluid discharge conduit for conveying fluid which flows through the valve, said fluid supply and discharge conduits being interconnected by a flexible seal device;

within the valve housing, a valve gate body which contains an opening and is movable relative to the fluid supply and discharge conduits to open or close the fluid passageway for said flow through the valve;

contact resistant valve seat materials arranged on surfaces of the supply and discharge conduit and valve gate body for

being pressed together to form substantially fluid-tight seals between those conduits and the gate valve body;

at least one heat-expandable metal structure comprising at least one column connected between the fluid supply and discharge conduits so that its thermally-induced expansion and contraction relieves and applies a relatively high force for compressing the valve seat materials on the fluid supply and discharge conduits against those on the valve gate body;

means for heating and cooling said expandable metal structure; and,

means for repositioning the valve gate body when the force compressing it between the fluid supply and discharge conduits is relieved.

4,402,338

STEM FOR A DOUBLE SEAT VALVE

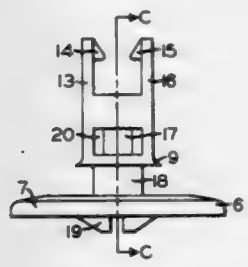
Rudolf Möller, Gehrden, Fed. Rep. of Germany, assignor to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Aug. 22, 1980, Ser. No. 180,280

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2935005

Int. Cl.³ F16K *51/00*

U.S. Cl. 137—315 **5 Claims**



1. A double seated valve assembly comprising, a housing having an inner body portion, said inner body portion having an axial bore and a pair of annular valve seats, a movable carrier having a pair of push rods, each of said push rods includes an enlarged head portion on a first end for receiving a valve disk which cooperates with said annular valve seats to selectively open and close communication with said axial bore, each of said push rods includes forked portion on a second end, said forked portions include at least one inwardly disposed ear having tapered side portions, each of said push rods includes at least one recess having oblique side portions formed on opposite sides from said forked portions and intermediate its end for receiving said inwardly disposed ear which are assisted by said tapered and oblique side portions to positively lock said push rods together when said push rods are inserted into said axial bore and said forked portions are snapped together.

4,402,339

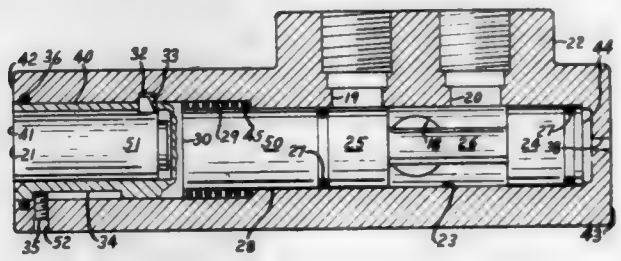
LOCKABLE VALVE FOR HYDRAULIC SYSTEM

Carl H. Owens, 1652 River Bluff Rd., Jacksonville, Fla. 32211

Filed Nov. 26, 1980, Ser. No. 210,721

Int. Cl.³ F16K *35/06*

U.S. Cl. 137—384.6 **20 Claims**



1. A lockable valve in a fluid system comprising a unitary valve body, a cylinder within said valve body, a piston disposed in said cylinder, only three ports communicating between the outside of said body and said cylinder, one said port being an inlet port through which fluid is to be pumped into said cylinder, the other two of said ports being outlet ports for selective withdrawal of the fluid from said cylinder, one of said outlet ports being adapted to be a bypass line connected to a fluid sump and the other of said outlet ports being adapted to be coupled to a control valve of an operational fluid cylinder, said piston being unmovable by the pressure of the fluid in said cylinder and manually movable in said cylinder to selectively fully close either of said outlet ports, a manually lockable means located within said valve body and mechanically coupled to said piston to lock said piston in one position to close said other outlet port with said one outlet port being open, said lockable means including a spring biasing said piston in a direction to close said other outlet port and to open said one outlet port when said lockable means is unlocked and manually released, said inlet port being in communication only with a respective one of each of said outlet ports in said locked position and said unlocked position.

4,402,340

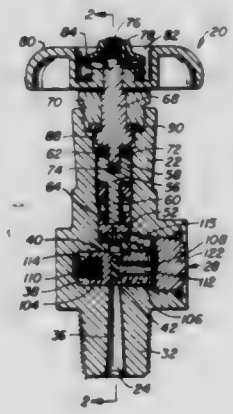
PRESSURE-RESPONSIVE SHUT-OFF VALVE

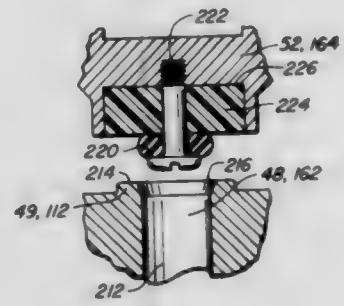
Hanford N. Lockwood, Jr., 2222 Alameda de las Pulgas, San Mateo, Calif. 94403

Filed May 1, 1981, Ser. No. 259,724

Int. Cl.³ F16K *15/18*

U.S. Cl. 137—493.7 **10 Claims**





1. A shut-off valve for use with a pressurized gas cylinder, said shut-off valve comprising:

a body having an inlet port, an outlet port, and a passageway therebetween;

a seat disposed in the passageway;

a plug having a soft surface for sealing against the seat to contain a relatively low pressure at the inlet port and a hard surface for sealing against the seat to contain a relatively high pressure at the inlet port, said soft and hard surfaces being axially spaced apart so that the soft surface engages the seat before the hard surface engages the seat;

pressure-responsive means for automatically engaging the plug against the seat with a first preselected force so that only the soft sealing surface engages the seat whenever the pressure in the cylinder falls below a predetermined level; and,

manual means for engaging the plug against the seat with a second preselected force greater than the first preselected force so that the hard sealing surface engages the seat.

4,402,341

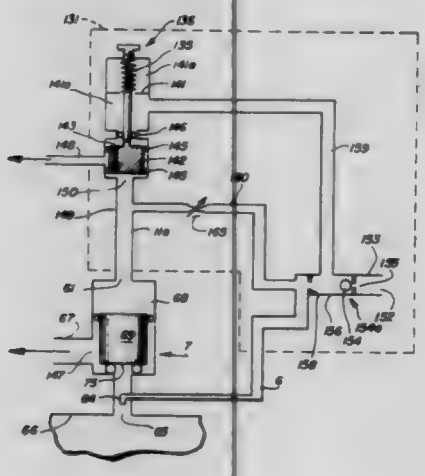
PILOT OPERATED RELIEF VALVE

Raymond G. Reip, Indian Head Park, Ill., assignor to Vapor Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 233,376, Feb. 13, 1981, which is a continuation-in-part of Ser. No. 192,312, Sep. 30, 1980, Pat. No. 4,355,567, which is a continuation-in-part of Ser. No. 233,860, Feb. 17, 1981, which is a continuation of Ser. No. 943,377, Sep. 18, 1978, abandoned. This application Apr. 6, 1981, Ser. No. 247,142

Int. Cl.³ F16K *31/122*

U.S. Cl. 137—489 **1 Claim**



1. In a pilot for operating a main valve to relieve product pressure in predetermined proportion to the pressure excess of the type utilizing continuous product venting, and a flow restrictor to position the piston of the main valve wherein said main valve is of the type having a pressure balanced moveable closure member, and a pressurized head volume thereabove, the improvement comprising;

a valve body;

a pressure sensitive poppet in said body having a first diameter, and adapted for reciprocal motion therein comprising;

an upper end with an extending stem having a second diameter, said second diameter substantially less than said first diameter, and defining an annular pressure sensitive area;

a lower end defining an effective pressure sensing area greater than said annular area;

a passage in said poppet communicating said areas for equalizing upper and lower area pressures exerted on said poppet;

means sensing product pressure and adapted to position said poppet during relief operation;

means pressure sealing said poppet end and stem comprising;

a reciprocating poppet seal attendant said first diameter generating a first seal stiction force;

a reciprocating stem seal attendant said second diameter generating a second seal stiction force;

seat means in said body coating with said poppet lower end comprising;

a poppet seat having an effective flow diameter substantially greater than said stem seal diameter, said poppet seat, poppet and stem seals providing decreased stiction and thereby increased pilot product flow through said poppet seat for poppet positions corresponding to overpressure;

wherein equalized product pressure acting on said poppet providing a net upward force and said decreased stiction improve poppet stability, thereby increasing relief valve capacity for said overpressure; and,

a sensing volume in said body;

a test port in said body;

means fluid communicating said test port, seat means, and sensing volume;

guide means in said communicating means intermediate said test port, sensing volume, and seat means;

a flow sensitive closure member contained in said guide means and adapted for reciprocal motion therein, said closure member sealing said test port or seat means at either extreme of its motion, and maintaining communication withe said volume;

wherein introduction of test vapor at a pressure greater than said product pressure isolates said seat means, thereby

providing pilot operation without increasing product pressure.

4,402,342

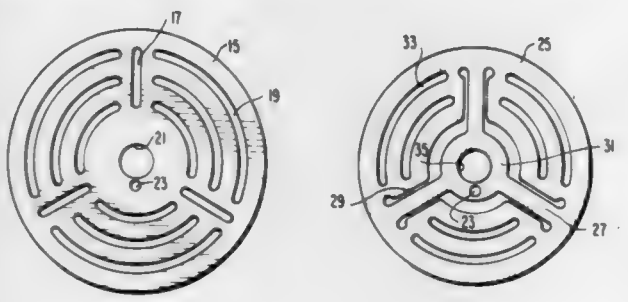
COMPRESSOR VALVE

Win. W. Paget, P.O. Box 1335, Elizabethtown, N.C. 28337

Filed Oct. 16, 1981, Ser. No. 312,325

Int. Cl.³ F16K *15/14*

U.S. Cl. 137—512.15 **2 Claims**



1. In a gas compressor valve assembly comprising a valve seat, a valve guard, and between the valve seat and the valve guard a valve seat plate and a resilient valve member disposed side by side, the valve seat and valve guard and seat plate and valve member all having apertures therethrough with the apertures of the valve member and valve seat plate out of registry with each other, the valve seat having annular concentric grooves that underlie the valve seat plate, the valve member being adapted to flex toward and away from the seat plate thereby to open and close the apertures through the seat plate, the valve member having a plurality of radial arms that interconnect the central portion of the valve member with a peripheral portion of the valve member, and generally radial slots through the valve member bordering said arms; the improvement in which the valve seat plate has radial imperforate portions that underlie said slots thereby to close the slots in the closed position of the valve assembly, said valve seat plate having apertures therethrough that underlie said arms, whereby said arms open and close the last-named apertures as the valve member flexes.

4,402,343

ANIMAL WATERING VALVE WITH PROTECTED BIASING SPRING

Earl C. Thompson, P.O. Box 549, Hewitt, Tex. 76643; Morris C. Keller, Dallas, Tex., and Francis Rustin, Springfield, Mo., assignors to Earl Clayton Thompson, Hewitt, Tex.

Continuation of Ser. No. 233,834, Feb. 12, 1981, abandoned, which is a continuation-in-part of Ser. No. 3,006, Jan. 12, 1979, abandoned. This application Sep. 29, 1982, Ser. No. 427,617

Int. Cl.³ F16K *31/00*; A01K *7/00*

U.S. Cl. 137—614.2 **18 Claims**

1. A valve comprising

a housing having a cylindrical chamber,

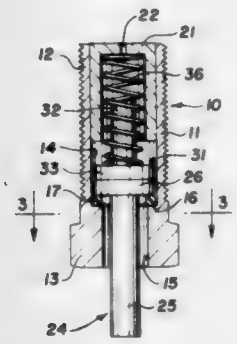
a passage opening from said chamber, and means in said chamber surrounding said passage defining a valve seat;

a valve closure member comprising an elongated stem with a radially enlarged head at one end; said head being configured to seat said valve seat; said stem being dimen-

sioned for clearance with said passage, and to project from said housing thereby enabling rocking of said valve closure member;

a valve control member comprising an axial stem with a radially enlarged head at one end; said control member head having a circular periphery, the diameter of said circular periphery being substantially the same as the diameter of said cylindrical chamber to prevent lateral movement of said head; said control member being disposed in said chamber with its head confronting and engaging said closure member head, and with its stem extending axially away from said closure member.

a helical compression spring disposed over said control member stem and enclosing said stem, for urging said control member toward said closure member; said control member stem being cylindrical, and having a diameter substantially the same as the inner diameter of said helical



compression spring, to prevent lateral movement relative to each other;

said housing having cylindrical recess means opening from said chamber for receiving and confining a portion of said helical spring, including bearing means for the end of said spring remote from said control member; said recess means having a diameter substantially the same as the outer diameter of said helical compression spring, to prevent lateral movement of the portion of said spring disposed within said recess means; a distal portion of said control member stem, surrounded by said spring, being disposed always within said housing recess means;

said spring and said valve control member being thereby confined in said housing, for axial movement without lateral movement; and said control member being urged by said spring to seat said valve closure member on said valve seat.

4,402,344

ADJUSTING DEVICE FOR CONTROLLING A FLOWTHROUGH CROSS SECTION

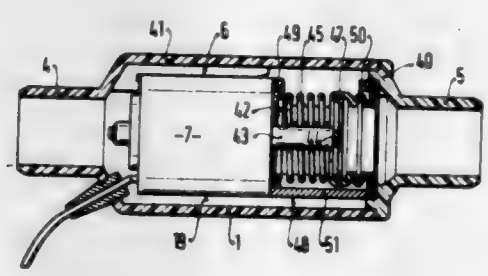
Ulrich Kemmner, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 18, 1981, Ser. No. 264,247

Claims priority, application Fed. Rep. of Germany, May 20, 1980, 3019178

Int. Cl.³ F16K *31/06*

U.S. Cl. 137—625.33 **13 Claims**



1. An adjusting device in a line for controlling flow of an operating medium for internal combustion engines, said adjusting device having an electromechanical actuating member including a housing body portion and a cage portion and a throttle device actuated by said electromechanical actuating member and arranged to control flow of said operating medium through said line, characterized in that said electromechanical actuating member has an axially extending rod-like actuating device extending into said cage portion, said throttle device including a helical spring body that surrounds said rod-like actuating device and has spaced coils through which said operating medium flows, said rod-like actuating device having an end portion connected with a second end of said helical spring body which surrounds said rod-like actuating device within said cage portion, said helical spring body further having a first end portion arranged to rest tightly against a wall forming one end of said electromechanical actuating member housing body portion, a flexible element having a first end secured to one end of said cage portion and a second end portion tightly connected with said second end portion of said helical spring body, whereby a spacing of the coils of said helical spring is controlled by said rod-like actuating device to determine flow of said operating medium through said coils of said helical spring body and said line.

4,402,345

PRECAST FURNACE PIPE INSULATION

Thomas J. Twort, Greenford, England, assignor to Urquhart Engineering Co., Ltd., England and Bloom Eng. Co., Inc., Pa.

Filed Jan. 27, 1982, Ser. No. 343,120

Claims priority, application United Kingdom, Feb. 4, 1980, 8103403

Int. Cl.³ F27D *3/02*

U.S. Cl. 138—149 **7 Claims**

1. Pipe insulation means for installation around a pipe to cover at least part of the surface thereof, which comprises two elongate preformed insulating members each comprising a refractory insulating material, means forming a hinge connection between the members, and means for wedging the members apart in the vicinity of the hinge connection to cause the members to grip the pipe between them.

4,402,346

CRUDE OIL PIPE HAVING LAYERS OF GRADUATED PERMEABILITY TO HYDROGEN SULFIDE

Ivan C. Cheetham; Jack M. Lowe, both of Sutton Coldfield, and Glyn H. Redmond, Birmingham, all of England, assignors to Dunlop Limited, London, England

Continuation of Ser. No. 294,622, Aug. 20, 1981, abandoned, which is a continuation of Ser. No. 19,611, Mar. 12, 1979, abandoned. This application Sep. 7, 1982, Ser. No. 415,691

Claims priority, application United Kingdom, Mar. 14, 1978, 10055/78

Int. Cl.³ F16L *11/00, 55/00*

U.S. Cl. 138—129 **28 Claims**

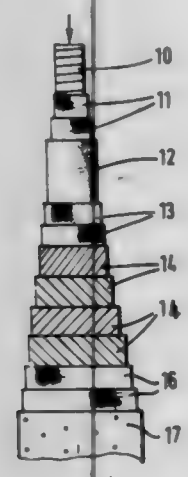
1. A pipe for transporting crude oil therethrough and having a preferential path through the wall of the pipe for passage of a gas emanating from the crude oil, said pipe comprising:

(a) a plurality of superposed annular layers, the innermost lining layer being surrounded by a fluoroplastic sealing

layer which is resistant to oil penetration but permits passage of a gas therethrough;

(b) a reinforcement structure radially outwards of the sealing layer, said structure comprising successive helical turns, spaced along the length of the pipe, of at least one steel cord, each said at least one steel cord being surrounded by a protective sheath;

(c) said protective sheath comprising a layer of a material having a permeability of less than 10×10^{-8} (cm^3 $cm/s/cm^2/bar$) in respect of hydrogen sulphide at 20° C.;



(d) a matrix material surrounding said sheathed steel cord and being of a material of high permeability compared with the material of the sheath, that permeability being greater than 150×10^{-8} (cm^3 $cm/s/cm^2/bar$) in respect of hydrogen sulphide at 20° C., said matrix acting to position longitudinally the helical turns in relation to each other and to define a preferential path of high gas permeability for passage of gas through the reinforcement structure;

(e) an outer cover surrounding the reinforcement structure and being of high gas permeability.

4,402,347

WARP LET-OFF AND ITS DRIVE IN A LOOM

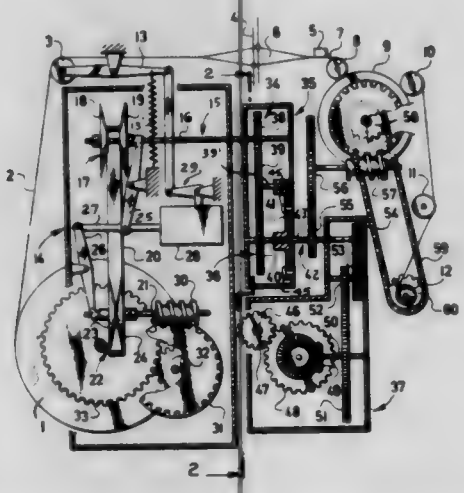
Otto Rotrekl, Brno, and Vladimir Kuda, Blazovice, both of Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Filed Apr. 14, 1981, Ser. No. 254,155

Claims priority, application Czechoslovakia, Apr. 3, 1980, 3033-80

Int. Cl.³ D03D *49/06, 49/20*

U.S. Cl. 139—99 **2 Claims**



1. In a loom having a main shaft, means for forming a shed, a warp beam, the warp beam being driven through a let-off motion responding by a change of the speed of rotation of the warp beam to the change of tension of the warp threads traveling toward the shed, a transmission means driven by the main shaft, the let-off motion having an input-driving element which is drivingly coupled with the transmission means so as to be positively driven by it, and a driven take-up beam for taking-up the cloth produced during operation of the loom, the improvement comprising means including said transmission means positively drivingly connected between the input element and the take-up beam to drive the input-driving element and the take-up beam in synchronism, and means for selectively changing the ratio between the speeds of driving of the input element and the take-up beam.

4,402,348

APPARATUS FOR REGULATING TENSION IN WARPS OF A WEAVING MACHINE

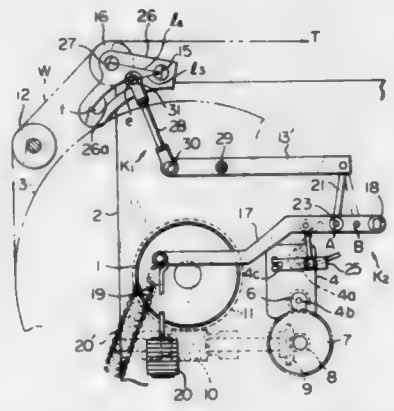
Masahiko Kimbara, and Noboru Kobayashi, both of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Apr. 8, 1981, Ser. No. 252,042

Claims priority, application Japan, Apr. 12, 1980, 55-48209

Int. Cl.³ D03D *49/06*

U.S. Cl. 139—110 **13 Claims**



1. An apparatus for regulating tension in warps of a weaving machine comprising: a tension lever swingably supported on said weaving machine and having a roller supported thereon for regulating the tension in warps delivered from a warp beam; a weight lever swingably supported on said weaving machine and having a load at one end thereof; a means for positively driving said warp beam operatively connected to said weight levers and a line means operatively connecting said tension lever and said weight lever, characterized in that a means for varying a lever ratio is disposed in a system between said weight lever and said tension lever.

4,402,349

PROCESS AND APPARATUS FOR CHARGING TUBULAR REACTORS WITH GRANULAR SOLIDS, MORE PARTICULARLY CATALYSTS

Gerd-Juergen Engert, Ludwigshafen; Klaus de Haas, Worms; Rudolf Magin, Schifferstadt; Franz Nenninger, Heidelberg, and Horst Schauer, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 90,590, Nov. 2, 1979, abandoned. This application Nov. 12, 1981, Ser. No. 320,450

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1978, 2849664

Int. Cl.³ B65B *1/04*

U.S. Cl. 141—9 **6 Claims**

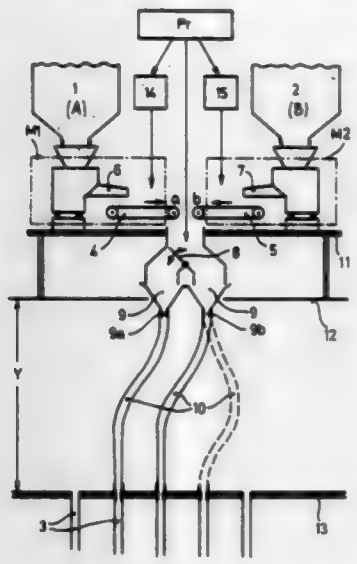
1. A process for charging the tubes of a tubular reactor with granular solids contained in a plurality of stock vessels in such a way that the activity of the granular solids varies progressively from the reaction tube inlet to the reaction tube outlet, comprising

continuously removing homogeneous streams of material of different activity, composition and/or nature from respective ones of said stock vessels,

feeding the streams from said plurality of stock vessels concurrently to respective measuring devices individually associated with said streams, each of said measuring de-

vices being in the form of a conveyor-type metering device of the kind which itself is equipped to weigh the material dispensed by the conveyor,

dispensing the streams of material from the respectively associated metering devices under the control of a regulator, associated with each metering device, concurrently



and at respective rates varying with time in accordance with predetermined parameters,

combining the different streams of material which have been dispensed continuously and in differing amounts and

introducing the combined streams of material, by means of mechanically controllable guide devices, selectively into the tubes to be charged.

4,402,350

SYSTEM FOR THE CONTROL OF A MARINE LOADING ARM

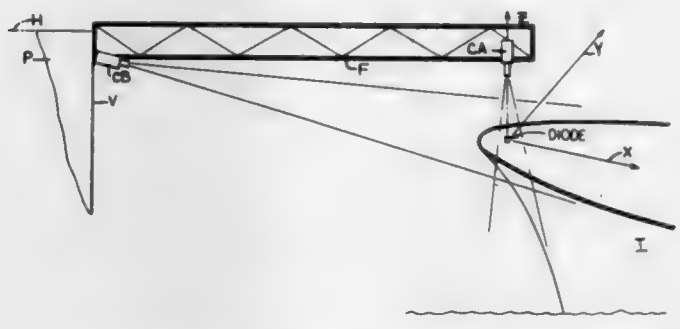
Thomas M. Ehret, Malay Le Grande, and Gerard E. Ovieve, Sens, both of France, assignors to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 205,855, Nov. 10, 1980, abandoned. This application Dec. 23, 1981, Ser. No. 334,004

Claims priority, application United Kingdom, Nov. 12, 1980, 7939091

Int. Cl.³ B65B *57/00*; B67C *5/32*

U.S. Cl. 141—94 **8 Claims**



4. Apparatus for monitoring the position in space of the outer end of an articulated fluid loading arm relative to a platform and for terminating a loading operation when it is predicted that the outer end of the loading arm may move outside a safe operating area, said apparatus comprising:

means for sensing a first angle representative of the vertical orientation of said loading arm;

means for sensing a second angle representative of the horizontal orientation of said loading arm;

means for sensing a third angle representative of the rotational orientation of said loading arm;

means for using the values of said first, second and third angles to calculate the spatial position of the outer end of said loading arm relative to said platform;

means for storing the spatial boundaries of a working area for said outer end of said arm;

means for comparing the actual spatial position of the outer end of said arm with said boundaries;

calculating means for using successive spatial positions of the outer end of said arm for calculating the movement of the outer end of said arm and for predicting that the outer end of said arm may move outside said working boundaries;

means for terminating the flow of fluid through said arm when said calculating means predicts that the outer end of said arm may move outside said working boundaries; and

means for disconnecting the outer end of said loading arm from a vessel being loaded when the outer end of said loading arm moves a predetermined distance outside one of said working boundaries.

4,402,351

OIL SUPPLY MEANS FOR TANKS CONTAINING BLENDED FUEL AND OIL

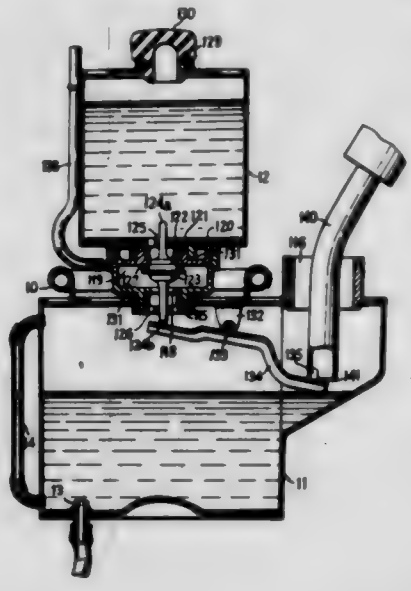
Kazuhiko Momura; Toshiyuki Sato; Atsushi Kanda, all of Iwata, and Nobuyuki Kanno, Hamamatsu, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of Ser. No. 31,383, Apr. 19, 1979, Pat. No. 4,262,710. This application Jan. 15, 1981, Ser. No. 225,449

Claims priority, application Japan, Apr. 28, 1978, 53-51704; Jul. 19, 1978, 53-88109

Int. Cl.³ B65B *3/30*

U.S. Cl. 141—98 **4 Claims**



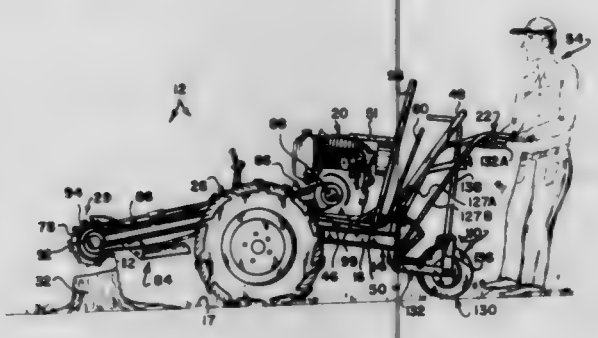
1. In combination: a fuel tank having a fill port and a removable closure for said fill port through which fuel can be charged; an oil tank for containing oil to be blended into fuel contained in said fuel tank, said oil tank having an inlet port and an outlet port communicating with a measuring means, said measuring means comprising a chamber of known volume having an inlet opening adapted to receive a predetermined quantity of oil from said oil tank outlet port and an outlet opening to discharge said predetermined quantity of oil into said fuel tank; valve means for selectively and alternately closing and opening said inlet and outlet openings; and actuating means for actuating said valve means comprising lever means contactible with said valve means, said lever means being so disposed and arranged as to be contacted by a filler nozzle when said filler nozzle is to fill said tank with fuel, said contact serving to cause said lever means to rotate and to move said valve means to open said outlet opening and close said inlet opening, said valve means reverting to the condition where the outlet opening is closed when said contact with said filler nozzle does not occur.

4,402,352

STUMP CUTTING MACHINE

Hubert E. Hodges, Rte. 6, Box 155, Mountain Home, Ark. 72653

Filed May 26, 1982, Ser. No. 382,158
Int. Cl.[3] A01G 23/06
U.S. Cl. 144—2 N 6 Claims



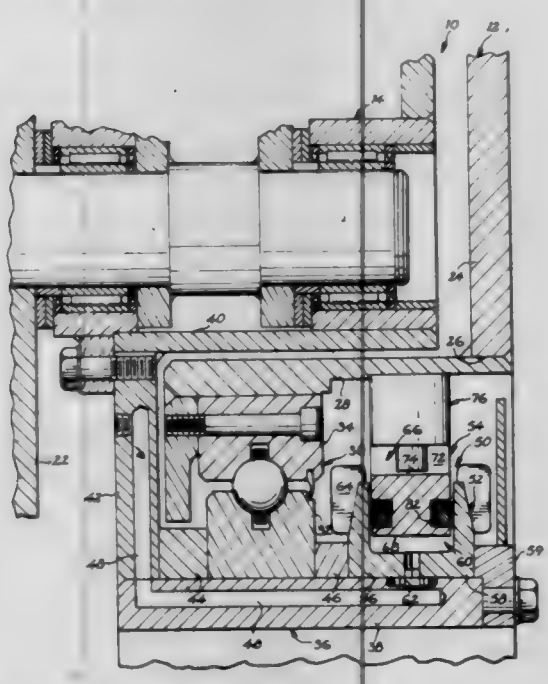
1. A self-propelled stump cuttting machine comprising;
rigid frame means having a front and a rear;
drive wheel means rotatably coupled to the frame means for propelling and supporting the machine;
motor means secured to said frame means for providing operative power;
cutter means projecting outwardly from the frame front for engaging and cutting a stump;
means coupled to said motor means for selectively activating said cutter means;
gear box means coupled to said motor means for selectively activating said drive wheel means;
handle assembly means pivotally coupled to said frame means at the rear thereof and establishing a pivot point, said handle assembly means adapted to be manually grasped by an operator of said machine and operable, when pushed down relative to said frame means, to tilt said cutter wheel means downwardly into engagement with a stump to be treated.

4,402,353

LOG DEBARKER WITH AIR-SEAL COOLING FINS

Ronald D. Pousette, Vancouver, Canada, assignor to Brunette Machine Works, Ltd., New Westminster, Canada

Filed Oct. 8, 1981, Ser. No. 309,556
Int. Cl.[3] B27L 1/00
U.S. Cl. 144—208 E 3 Claims



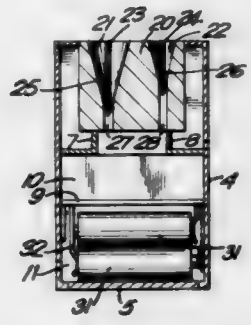
1. In a log debarker having a frame, a ring mounted for rotation on the frame carrying air-pressure-actuated tools, air passage means extending from the frame to the ring for supplying actuating air to the tools, and rotary air-seal-coupling means in the air passage means acting effectively between the frame and ring, including a first seal portion joined to the ring and a second seal portion joined to the frame, a cooling fin system comprising
first fin means including multiple fins joined in heat-conducting relation to the first seal portion, and
second fin means disposed adjacent said first fin means including multiple fins joined in heat-conducting relation to the second seal portion,
said first and second fin means, with rotation of the ring relative to the frame, traveling relatively past one another and cooperating to create cooling air turbulence in the region of the air-seal-coupling means.

4,402,354

SHARPENER FOR COSMETIC PENCILS

Judith Halpern, 1641-35 Third Ave., New York, N.Y. 10028

Filed Aug. 9, 1982, Ser. No. 406,693
Int. Cl.[3] B43L 23/00
U.S. Cl. 145—3.5 9 Claims



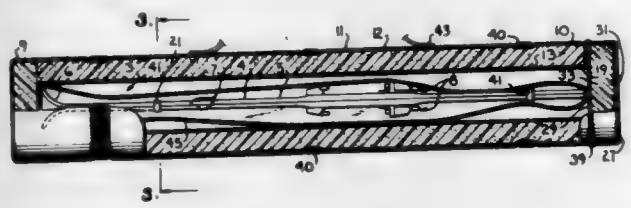
1. A sharpener for cosmetic pencils comprising:
a housing;
sharpening means disposed in said housing and receptive of at least one size cosmetic pencil for sharpening same, wherein said sharpening means includes at least one metal blade;
a solid state thermoelectric cooling device disposed adjacent said sharpening means and at least indirectly thermally contacting said blade; and
means for selectively effecting electrically energization of said cooling device to cool at least said blade.

4,402,355

PROTECTIVE CONTAINER FOR SNOW SKIS

Craig A. Wymore, 6840 Cherry, Kansas City, Mo. 64131, and Neal F. Semrad, 835 Sherborne Ave., Los Angeles, Calif. 90035

Filed Sep. 11, 1981, Ser. No. 301,295
Int. Cl.[3] B65D 81/02
U.S. Cl. 150—52 R 15 Claims



1. A protective container for snow skis comprising:
(a) an enclosed elongate body member including ends thereof, said body member having spaced inner and outer walls, said walls being thin and pliable;
(b) a compartment in said body defined by said inner wall and adapted to receive therein a pair of snow skis;
(c) a passageway through one of said body ends communicating with said compartment;
(d) cap means associated with said one of said ends to selectively close said compartment;
(e) cushion means positioned between said inner and outer

walls to resiliently retain said inner and outer walls in spaced relationship whereby blows impacting said outer wall are cushioned by said cushion means and are prevented from being transmitted to said skis; and

(f) a ski sock adapted to be inserted into said compartment and being fabricated of a thin pliable material for placement over said snow skis prior to the insertion of said snow skis into said container compartment.

4,402,356

TIRE FOR HEAVY TRANSPORT VEHICLES, THE CROWN REINFORCEMENT OF WHICH HAS THERMOCONTRACTABLE CIRCUMFERENTIAL CABLES AND PROCESS FOR MANUFACTURING SAME

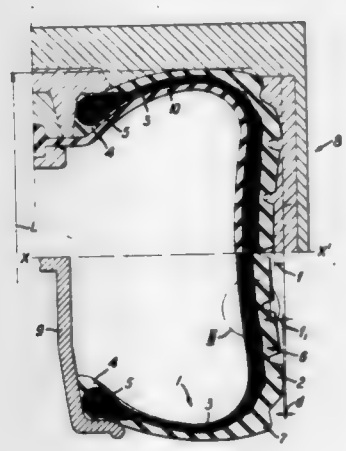
Jacques Musy, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Feb. 5, 1982, Ser. No. 346,129

Claims priority, application France, Feb. 12, 1981, 81 02787; Dec. 23, 1981, 81 24262

Int. Cl.³ B60C *9/00*

U.S. Cl. 152—193 **16 Claims**



1. A tire for aircraft, intended to support heavy loads and inflatable to high pressure, having a tread, a radial carcass reinforcement anchored to at least one bead ring in each bead and a crown reinforcement formed of at least two superimposed plies of extensible circumferential textile cables which is arranged radially outwards of the radial carcass reinforcement, characterized by the fact that the cables of the circumferential cable plies closest to the radial carcass reinforcement form an angle of $0° \pm 2.5°$ from the circumferential direction of the tire, have a relative extensibility upon rupture of at least 8%, preferably between 10% and 26%, when the vulcanized tire is mounted on its service rim, but not yet inflated, and a relative contraction under the effect of the heat at the temperature of vulcanization of at least 1.25%, preferably between 2% and 8%.

4,402,357

LIGHTWEIGHT TRACTION INTENSIFYING MEANS FOR AGRICULTURAL WHEELED TRACTORS AND THE LIKE

Thorvald G. Granryd, P.O. Box 258, Lake Forest, Ill. 60045

Filed Nov. 17, 1981, Ser. No. 322,115

Int. Cl.³ B60C *27/00, 27/20*

U.S. Cl. 152—216 **7 Claims**

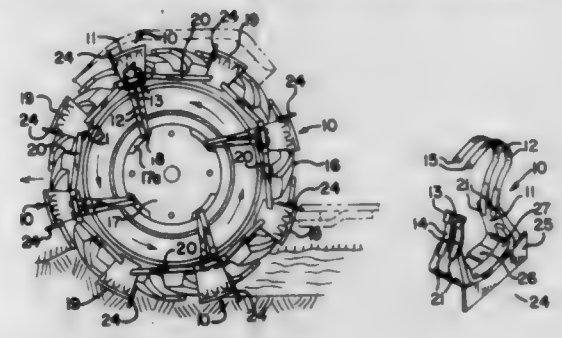
1. Traction intensifying means for a rubber tired vehicle having a power driven drive wheel comprising

a resilient traction bar formed from substantially U-shaped cross section segments of a tire casing having a tread pattern with the configuration of the outer surface-engaging base portion of the U-shaped segment being positioned in use parallel to the outer transverse contour of a vehicle drive wheel, and the substantially parallel portions of said U-shaped segments extending radially outwardly from said base portion being positioned in use parallel to the sidewalls of the vehicle drive wheel,

at least a first belt secured at one end to one of said substantially parallel portions of said U-shaped segment extending radially outwardly from said base portion and having a free end for engaging a cam buckle fastener,

at least a second belt secured at one end to an opposed one of said parallel portions of said U-shaped segment extending radially outwardly from said base portion and having a cam buckle fastener secured to the end thereof for engagement with said free end of said first belt for securing said resilient traction bar to the vehicle drive wheel, and

auxiliary traction enhancing means carried by said resilient



traction bar including a shank portion positioned between the outer transverse contour of the vehicle drive wheel and an inner surface of the base portion of said substantially U-shaped cross section segment of tire casing for securing said auxiliary traction enhancing means in use between said resilient traction bar and the vehicle drive wheel, said auxiliary traction enhancing means further including a radially outwardly extending ground engaging edge portion extending from said shank portion across substantially the transverse width of the vehicle drive wheel.

4,402,358

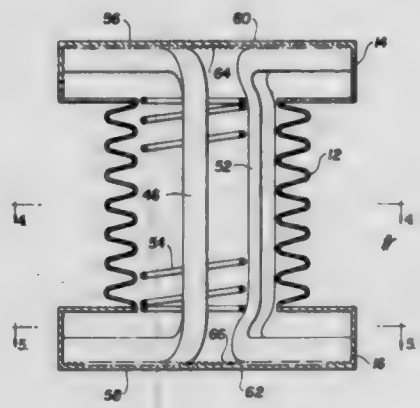
HEAT PIPE THERMAL SWITCH

David A. Wolf, Baltimore, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 15, 1982, Ser. No. 434,674

Int. Cl.³ F28F *13/00*

U.S. Cl. 165—32 **17 Claims**



1. A heat pipe thermal switch for the controlled transfer of heat from a body (**20**) to a heat sink (**22**) comprising:

a bellows (**2**) defining an expansible vapor chamber for vapor of a working fluid;

an evaporation chamber (**16**) and a condensation chamber (**14**) for said vapor at opposite ends of the bellows (**12**), said evaporation chamber (**16**) being thermally coupled to a body (**20**) and said condensation chamber (**14**) being alternately in thermal contact and separated from a heat sink (**12**) across a gap (**24**) between the vapor chamber and said heat sink upon expansion and contraction of said bellows (**12**) in response to vaporization of said working fluid upon the coupling of heat thereto from said body (**20**);

set point control means (26, 27, 28, 30, 31, 32) for adjusting said gap (24) for a contracted state of said bellows (12);

first and second capillary means (46, 48, 50, 52) located inside said bellows (12) for providing fluid coupling of said working fluid between said evaporation and condensation chambers (16, 14); and

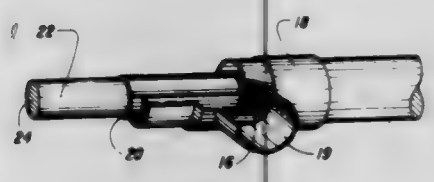
means (54) for maintaining a spaced separation of said first and second capillary means (46, 48, 50, 52) for preventing liquid communication therebetween and wherein one of said capillary means (50, 52) is in liquid communications with the inside surface of said bellows (12).

4,402,359
HEAT TRANSFER DEVICE HAVING AN AUGMENTED WALL SURFACE

Theodore C. Carnavos, Bethel, and Walter J. Golymbieski, Woodbury, both of Conn., assignors to Noranda Mines Limited, Toronto, Canada

Filed Sep. 15, 1980, Ser. No. 187,413
Int. Cl.³ F28F 1/10
U.S. Cl. 165—70 9 Claims





1. In a heat transfer device, a tube of heat conductive material having augmentation on the inner and outer surfaces thereof, the improvement comprising a plurality of pyramid-fins formed integrally with the outer surface of said tube, the pyramid-fins being regularly spaced apart in the range of about 12 to 30 threads per inch (TPI) and having a height which is related to the TPI and which height decreases in the range of about 0.040 to 0.015 inches, respectively, as the TPI increases, resulting in the pyramid-fin density increasing from about 80 to 500 pyramid-fins per square inch.

4,402,360
RETAINER FOR HEAT EXCHANGER CLEANING ELEMENTS

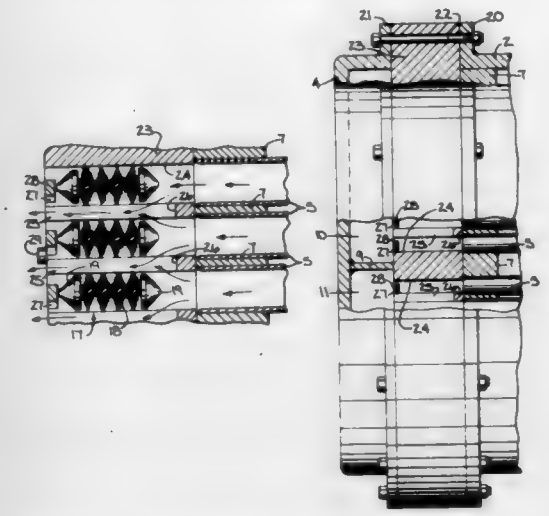
Walter J. Baron, and Laird C. Cleaver, both of Milwaukee, Wis., assignors to Water Services of America, Inc., Milwaukee, Wis.

Filed Nov. 24, 1981, Ser. No. 324,457
Int. Cl.³ F28F 7/00; F28G 15/02
U.S. Cl. 165—76 11 Claims

1. For use in a heat exchanger having a housing containing a plurality of fluid flow tubes arranged with exposed open ends adapted to communicate with a chamber formed by a housing head, and having a plurality of individual tube cleaning elements adapted to move through the tubes to clean them, the combination comprising:

(a) a member adapted to be disposed between the said housing and head and with said member forming a plurality of retaining means for capturing and holding the said plurality of tube cleaning elements,

(b) and means for mounting said member to said housing,

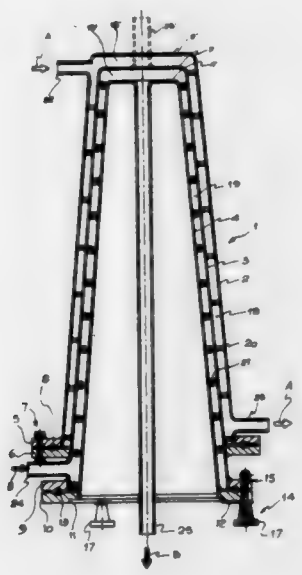


(c) said member being releasable from said mounting means so that all of said plurality of retaining means are removable simultaneously from the said housing.

4,402,361
HEAT EXCHANGER

Aurelio D. Dominguez, Godoy Cruz, Argentina, assignor to Inquimet Sociedad Anonima Industrial Comercial Y Agraria, Argentina

Filed Aug. 17, 1981, Ser. No. 293,195
Claims priority, application Argentina, Aug. 29, 1980, 282361
Int. Cl.³ F28D 7/12
U.S. Cl. 165—156 13 Claims



1. A heat exchanger comprising at least two frustoconical jackets each having a conical wall, a small end closed by a transverse end wall and a large end, said jackets being coaxially superimposed to define an annular space between said conical walls, said annular space having opposite smooth conical surfaces, a large end and a smaller end; inlet means for a first fluid communicating with one end of said annular space and outlet means for said first fluid communicating with the other end of said annular space; a spacer comprising a conical helical element of constant cross section freely and releasably mounted in the annular space between said jackets in contact with the opposite conical surfaces thereof, the diameters of said conical surfaces and of said spacer varying at substantially the same rate in the same direction; said spacer and said conical surfaces defining a helical fluid channel leading from the inlet means to the outlet means; means for releasably attaching the jackets at their large ends and for sealing the large end of said annular space whereby said spacer may be removed from said

annular space and replaced by another spacer having the same or different geometrical configuration, and means for contacting a surface of at least one of said jackets, contiguous but external to said annular space with a second fluid in order to exchange heat between said first and second fluids.

4,402,362

PLATE HEAT EXCHANGER

Evgeny V. Dubrovsky, ulitsa Chaikovskogo, 18, kv. 203, Moscow, U.S.S.R.

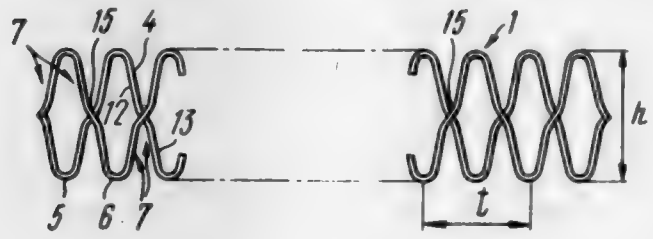
PCT No. PCT/SU79/00053, § 371 Date Mar. 9, 1981, § 102(e) Date Mar. 9, 1981, PCT Pub. No. WO81/00148, PCT Pub. Date Jan. 22, 1981

PCT Filed Jul. 9, 1979, Ser. No. 253,935

Claims priority, application U.S.S.R., May 19, 1977, 2484829

Int. Cl.³ F28F *3/06*

U.S. Cl. 165—166 **4 Claims**



1. A plate heat exchanger with a corrugated heat exchange surface, the corrugations of which are arranged in rows displaced relative to one another through half the pitch of the corrugation, and fins of each corrugation comprise three portions of which the extreme portions are rectilinear and disposed at the crest and the base at an equal angle to the axis of symmetry of the corrugation, and middle portions are rigidly connected with the fins of the corrugations disposed in adjacent rows, wherein the improvement comprises said middle portion of the fins of each corrugation of the heat exchange surface comprising two arc-shaped portions with equal radii of curvature arranged so that the radii of curvature are directed toward one another, the rigid connection of the fins of the corrugations being accomplished at mating points of the arc-shaped portions at a point having the form of a rectangle with sides approximately equal to the thickness of a material of the corrugation.

4,402,363

DEMULSIFICATION OF BITUMEN EMULSIONS USING SALTS OF POLY(TERTIARY AMINO)POLYURETHANES

David R. McCoy, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 2, 1981, Ser. No. 326,465

Int. Cl.³ E21B *43/24, 43/40*

U.S. Cl. 166—267 **5 Claims**

1. A process for recovering petroleum from O/W bitumen emulsions by demulsifying said emulsions comprising contacting the emulsions at a temperature of from between about 25° and 160° C. with water soluble salts prepared by adding inorganic or organic acids to polyurethanes of greater than about 5,000 molecular weight wherein the polyurethanes are prepared by the reaction of polyisocyanates with diols containing at least one tertiary amino group.

5. A process for recovering bitumen from a tar sand formation comprising

injecting into the tar sand a fluid containing hot water and/or steam in order to emulsify the bitumen in the tar sand,

recovering the emulsified bitumen,

demulsifying said emulsions by contacting the emulsions at a temperature of between 25° and 160° C. with water soluble salts prepared by adding inorganic or organic acids to polyurethanes of greater than about 5,000 molecular weight wherein the polyurethanes are prepared by the reaction of polyisocyanates with diols containing at least one tertiary amino group,

converting the salts of the polyurethanes into inactive polyurethanes by pH adjustment of the aqueous phase of the broken emulsion to >8, and

reinjecting the aqueous phase into a bitumen containing formation to recover additional bitumen.

4,402,364

FIRE EXTINGUISHING METHOD

Max Klein, P.O. Box 3, Dalton, Mass. 01226

Filed Dec. 17, 1981, Ser. No. 331,531

Int. Cl.³ A62C *1/00, 3/00*

U.S. Cl. 169—47 **4 Claims**

1. A fire extinguishing method for Class A and Class B fires comprising applying to the burning material a composition consisting essentially of polymer micro-bits and water, said micro-bits being produced by disintegrating a polymer selected from the group of an expanded, non-brittle, thermoplastic styrene-polymer; an expanded, non-brittle, thermoplastic polyolefin, which is the polymer of an ethylenically unsaturated hydrocarbon having from 2 to 6 carbon atoms; or a flexible foamed polyurethane, to eliminate substantially all closed cells from said polymer.

4,402,365

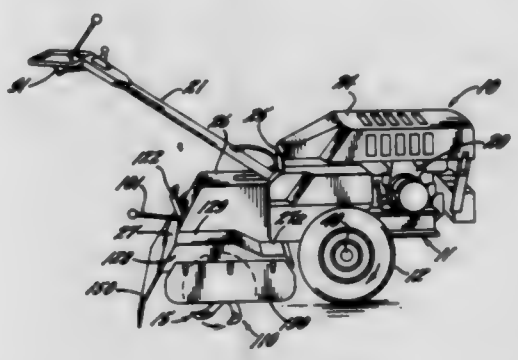
GARDEN TILLER WITH VEGETATION SLOUGHING MEANS

Gerold G. Goertzen, St. Anne, Ill., assignor to Roper Corporation, Kankakee, Ill.

Filed Mar. 30, 1981, Ser. No. 248,871

Int. Cl.³ B62D *51/04;* A01B *33/00*

U.S. Cl. 172—39 **14 Claims**



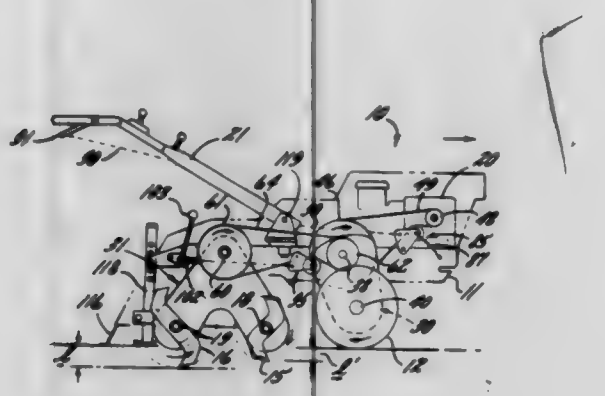
1. A walk behind garden tiller comprising, in combination, a horizontal frame, a handle secured to said frame and projecting rearwardly therefrom for manual guidance of the tiller, an engine mounted on said frame, a tine drive shaft extending transversely to and journaled in a position adjacent said frame, said tine drive shaft having a set of soil penetrating and cutting tines secured thereto, a tine drive train coupled between said engine and said tine drive shaft, said tine drive train being directed to drive the tines such that the undersides thereof move forwardly and then cut upwardly through the untilled soil at the working face, sloughing means mounted forwardly of and transversely to said tine drive shaft for cutting long vegetation carried upwardly by said rotating tines, and said sloughing means being disposed between adjacent tines and defining a lowermost cutting edge which extends from a position within the perihery of the tines and below the level of the tine shaft to a position beyond the periphery of the tines.

4,402,366

SOIL TILLING MACHINE

Douglas D. Dankel, Kankakee, Ill., assignor to Roper Corporation, Kankakee, Ill.

Filed Aug. 15, 1980, Ser. No. 178,470
Int. Cl.[3] B62D *51/04*; A01B *33/02*
U.S. Cl. 172—43 19 Claims



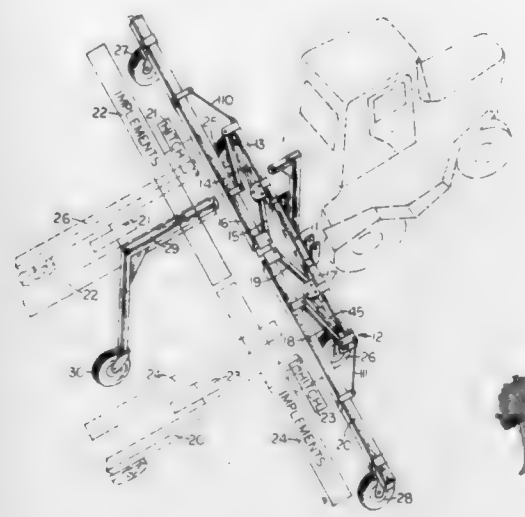
1. A machine for tilling soil along a path of movement of the machine comprising a frame, a plurality of tines defining a forward row of soil tilling tines, a plurality of tines defining a rear row of soil tilling tines located behind said forward row, said tines each being formed with a blade portion disposed transversely to the line of movement of the machine adapted to penetrate untilled soil and pulverize soil during tilling, means on said frame supporting said forward and rear rows of tines for rotation about respective parallel axes disposed transversely to the line of movement of said machine with the cutting periphery of the forward rows of tines being in relatively close longitudinal spaced relation to the cutting periphery of the rear row of tines, drive means carried by said frame for rotating said forward row of tines in an opposite direction than the tines of said rear row with the undersides of the tines of said forward row moving in a rearward direction and the undersides of the tines of said rear row moving in a forward direction and with the tines of said forward row successively contacting soil simultaneously with the tines of the rear row, handle means extending from said frame such that the movement of said machine may be guided by an operator walking with the machine, said tines of said rear row having a deeper soil penetrating capability than the tines of said forward row such that during normal operation of said machine the tines of said forward row break the surface of the earth and penetrate an untilled layer of soil to a controlled relatively shallow depth while the undersides thereof move in a rearward direction and direct the soil rearwardly and upwardly into the spacial separation between said rows of tines and toward the rotating tines of said rear row, resulting in forwardly directed reactionary thrust forces to be exerted on the machine, and said tines of said rear row penetrate a deeper untilled layer of soil to a further controlled depth while the undersides thereof move in a forward direction and direct soil upwardly and forwardly into said spacial separation between said rows of tines and toward the rotating tines of said rear row, resulting in rearwardly directed reactionary thrust forces to be exerted on said machine, said tines of said forward and rear rows having effective cutting diameters, rotative speeds, and depths of soil penetration such that said thrust forces resulting from tilling movement of the tines of said forward row are substantially equal to said thrust forces resulting from tilling movement of the tines of said rear row, whereby both said depths of penetrated soil are thoroughly pulverized and said reactionary rearward and forward thrust forces substantially offset each other to permit relatively easy manipulation of the machine during tilling.

4,402,367

FOLDING TOOL BEAM AND LIFT ASSEMBLY

Chester F. Couser, 1117 Acre St., Guttenberg, Iowa 52052

Filed Jun. 15, 1981, Ser. No. 273,968
Int. Cl.[3] A01B *73/00*
U.S. Cl. 172—456 9 Claims



1. A folding tool beam assembly to which implements are to be hitched to be drawn by a tractor comprising:

a draft beam to be hitched transversely behind said tractor,

first and second tool beams to which said implements are to be hitched, said tool beams while in respective working positions being positioned in a parallel line behind respective spaced portions of said draft beam and while in respective transporting positions being in respective trailing positions perpendicular to said draft beam,

first and second rods for each of said tool beams for pivotally connecting said respective tool beams to said respective spaced portions of said draft beam, the length of each of said second rods being somewhat greater than the length of said respective first rods, each of said first rods having a front end pivotally connected to said respective portion of said draft beam and a rear end connected to an end of said respective tool beam, each of said second rods having a front end pivotally connected to said respective portion of the draft beam at a position spaced along said draft beam outwardly from said front end of said respective first rod at a distance somewhat greater than the length of said respective first rod, each of said second rods having a rear end pivotally connected to said respective tool beam,

an actuator connected between one of said rods for each of said tool beams and said draft beam, the distance between said rear end of each of said second rods and the rear end of said respective first rod being determined such that operation of said actuators moves said ends of said respective tool beams arcuately away from and then toward said draft beam to rotate said tool beams between said respective working positions and said respective transporting positions, and the lengths of said pivotal rods being sufficient to provide enough space between said tool beams while in said transporting positions to contain therebetween said implements while hitched thereto.

4,402,368

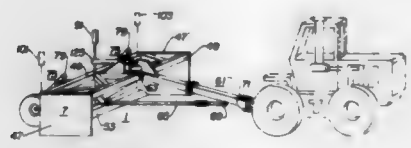
EARTH SCRAPER AND GROUND SUPPORT THEREFOR

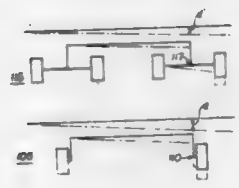
Frank Moberly, P.O. Box 3212, Napa, Calif. 94558

Filed Dec. 1, 1977, Ser. No. 856,245
Int. Cl.[2] A01B *6/22*; E02F *3/76*
U.S. Cl. 172—4.5 10 Claims

9. In earth grading equipment including a ground engaging support means, a scraper chassis assembly including a scraper blade and end plates, means rotatably connecting said scraper chassis assembly in front of said ground engaging support means, and means responsive to irregularities of surface engaged by said ground engaging support means for automati-

cally adjusting said scraper blade toward a fixed plane of scraping, said ground engaging support means including means for minimizing creation of oscillations that might otherwise be established when said automatic adjusting means does not have adequate time to completely adjust from a prior irregularity of surface before encountering a new irregularity, said means for minimizing oscillations including a wheel frame having end members, each of said end members providing a supporting point for said chassis assembly, means supporting said end





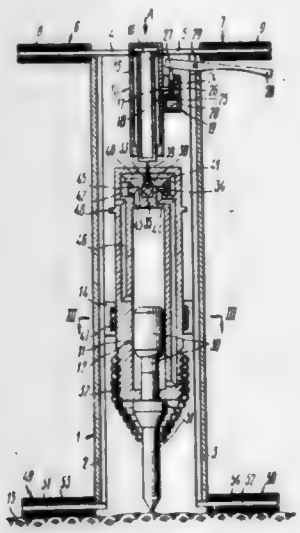
members by a wide axle of a length substantially the width of said scraper chassis assembly end plates and said wide axles having wheels on each end thereof, whereby, surface irregularities in the path of any one of said wheels resulting in deflection of said wheel cause resultant deflection of said supporting point to a lesser degree then would otherwise happen with both wheels subjected to such irregularity and with consequent lesser compensating adjustment necessary from said automatic adjusting means.

4,402,369

PNEUMATIC TOOL

Jury F. Nikitin; Dmitry J. Nikitin; Nikolai A. Rykov, and Igor L. Terekhov, all of Moscow, U.S.S.R., assignors to Moskovskoe Vysshee Technicheskoe Uchilische, Moscow, U.S.S.R.

Filed May 26, 1981, Ser. No. 266,935
Int. Cl.³ B23Q *5/00*
U.S. Cl. 173—18 **8 Claims**



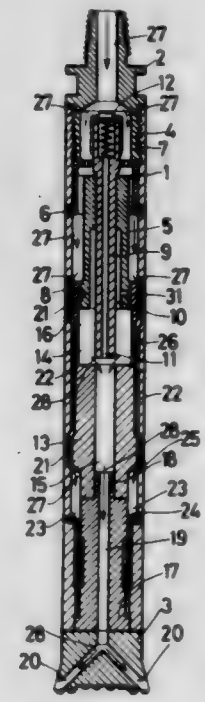
1. A percussive-action pneumatic tool comprising: a frame having a length sufficient for the frame to abut against the surface of a material being worked; handle means mounted on said frame; a source of compressed air; a receptable mounted on said frame, alternatively connectable with said source of compressed air and the ambient atmosphere; means for alternatively connecting said receptacle with said compressed air source and the atmosphere; a rod received in said receptable so that one end thereof extends beyond said receptacle; a percussion mechanism arranged coaxially with said rod; a housing accommodating said percussion mechanism, mounted in said frame for displacement longitudinally thereof; a guide for said housing, mounted on said frame; said one end of said rod, extending beyond said receptacle, being adapted to actuate said housing as compressed air is fed into said receptacle, for displacing said housing with said percussion mechanism longitudinally of said frame; a gas distribution system for alternatingly supplying compressed air to said percussion mechanism and directing compressed air therefrom into the atmosphere.

4,402,370

VALVELESS PNEUMATIC HAMMER

Abraham Gein, and Bernard L. Gien, both of 60 Van Beek St., New Doornfontein, Johannesburg, South Africa

Filed May 15, 1981, Ser. No. 263,996
Int. Cl.³ B25D *9/16*
U.S. Cl. 173—73 **14 Claims**



1. An elongated valveless pneumatic hammer assembly comprising:

an elongated hollow casing;

a backhead assembly at one end of the casing;

a bit assembly at the other end of the casing, having a passage through the bit assembly passing out to the atmosphere at the other end of the assembly;

a chamber divider disposed in the backhead end of the casing having a control rod projecting into the casing, the innermost end of the divider being adapted to seal against a piston bore during a portion of piston movement in use;

a piston having a large bore in one end and a smaller concentric bore through the other end into the larger bore, the larger bore end being adapted to cooperate with the chamber divider end for the sealing of the larger bore, the piston being further adapted to reciprocate between two positions, the first position being with the smaller bore end against the bit assembly with the bit assembly sealing off the smaller bore and the larger piston bore sealed off by the chamber divider end, and the second position being with the piston displaced towards the backhead assembly, the larger bore unsealed and the chamber divider control rod within and sealing off the smaller bore, and with the bit assembly removed from the smaller bore; a first chamber with the piston in the first position, formed by an

upper portion of the bit assembly, the inner wall of the casing and a lower portion of the piston;

a second chamber with the piston in the second position, formed by the larger bore of the piston and an annular recess in the chamber divider; a first fluid supply path through the backhead assembly, between the chamber divider walls and the casing wall, into at least one passage between the inner casing wall and the piston while the piston is in the first piston position and into the first chamber;

a second fluid supply path through the backhead assembly, between the chamber divider wall and inner casing wall, between the inner wall of the large bore of the piston and the outer wall of the control rod and into the second chamber; a first fluid exhaust path from the first chamber into the bit assembly passage with the piston in the second position and out into the atmosphere;

and

a second fluid exhaust path from the second chamber through the smaller piston bore with the piston in its first position, into the bit assembly passage and out to the atmosphere.

4,402,371

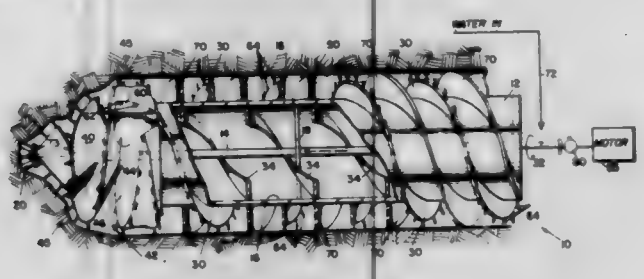
ROTATABLE DRILLING HEAD

Frankie Rocchetti, P.O. Box 195, Crumpler, W. Va. 24825

Filed Apr. 26, 1982, Ser. No. 371,984

Int. Cl.³ E21B *10/44, 1/10*

U.S. Cl. 175—108 **10 Claims**



1. A drilling head for use in mining operations adapted for being rotatable about its elongated axis in a predetermined rotational direction and advanceable so as to cut and remove material particles from a seam of material, said drilling head comprising in combination:

a cylindrical drum having a front end and an open rear end and defining between said front and rear ends an interior cavity;

first spiral means rigidly fixed to the exterior surface of said drum and outwardly projecting therefrom spirally disposed between said front and rear ends, the convolutions of said first spiral means being arranged for forwardly advancing said material particles as said drum rotates in said predetermined direction;

nose spiral means axially disposed in advance of said front end, the radial dimension of successive convolutions of said nose spiral means decreasing away from said front end and arranged for encouraging rearward advancement of said material particles as said drum rotates in said predetermined direction, said nose spiral means at said front end terminating with the forward portion of said first spiral means and defining therewith at least one recovery aperture in communication with said interior cavity so that material particles forwardly advancing by virtue of said first spiral means and rearwardly advancing by virtue of said nose spiral means will pass through said at least one recovery aperture to said interior cavity;

adjustable plate means covering a portion of said at least one recovery aperture for restricting the size of said material particles which pass therethrough; and

second spiral means rigidly carried by said drum and disposed between said front and rear ends in said interior cavity, the convolutions of said second spiral means being arranged for encouraging said material particles which pass through said at least one recovery aperture to rearwardly advance in said interior cavity as said drum rotates in said predetermined direction.

4,402,372

APPARATUS FOR DRILLING UNDERGROUND ARCUATE PATHS AND INSTALLING PRODUCTION CASINGS, CONDUITS, OR FLOW PIPES THEREIN

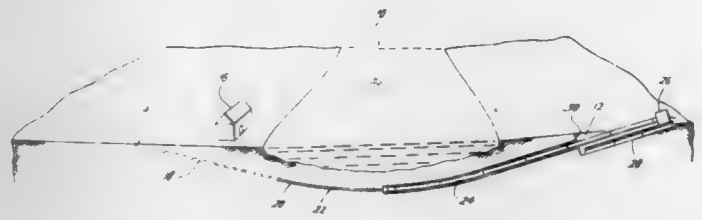
Martin D. Cherrington, Fair Oaks, Calif., assignor to Reading & Bates Construction Co., Houston, Tex.

Division of Ser. No. 77,960, Sep. 24, 1979, Pat. No. 4,319,648.

This application Sep. 21, 1981, Ser. No. 303,891

Int. Cl.³ E21B *7/28, 10/26, 17/00*

U.S. Cl. 175—325 **20 Claims**



1. Apparatus for enlarging a hole along an underground path comprising:

a first reamer having a first diameter, said first reamer also having a leading end and a trailing end;

a second reamer having a second diameter, said second diameter being less than said first diameter; said second reamer being connected to said trailing end of said first reamer,

said reamers being adapted to ream when moved in the direction from said trailing end toward said leading end,

said second reamer being connected to said trailing end of said first reamer by connecting means for providing some separation between the two reamers,

said separation being from five to fifteen times said first diameter of said first reamer.

4,402,373

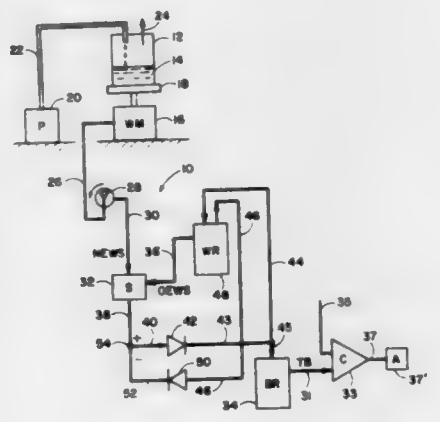
BLOOD LOSS ANALYZER

Perry J. Comeau, R.R. 3 Valley Dr., Searcy, Ark. 72143

Filed Jan. 26, 1982, Ser. No. 342,940

Int. Cl.³ G01G *11/18*

U.S. Cl. 177—1 **14 Claims**



1. Apparatus for determining the total weight of a vaporizable liquid being incrementally placed in a selected container over a selected period of time, comprising;

(a) a first selected container mounted on a weighing means, the output of said weighing means being a continuing electrical signal indicative of the weight of container and contents, at any selected time;

(b) a comparator/subtractor means having a first intermit-

tent input of the new electrical weighing signal (NEWS) from said weighing means;

(c) a weight register (WR) means for continuously outputting an electrical signal equal to the old electrical weighing signal (OEWS), the same being the value of NEWS at the time of the previous intermittent measurement; the output of said WR being the second input to said comparator/subtractor means;

(d) if said NEWS is greater than said OEWS, the output of said comparator/subtractor will be positive, (indicative of added liquid) and including means responsive to said positive signal to augment the reading of said WR; and means to augment the total in a liquid register (LR) by the amount of said positive signal; and

(e) if said NEWS is less than said OEWS, the difference signal will be negative (indicative of a loss of liquid by vaporization), and including means responsive to said negative signal to cause an equal weight to be withdrawn from said WR.

4,402,374

INDIVIDUAL-WHEEL DRIVE FOR VEHICLES

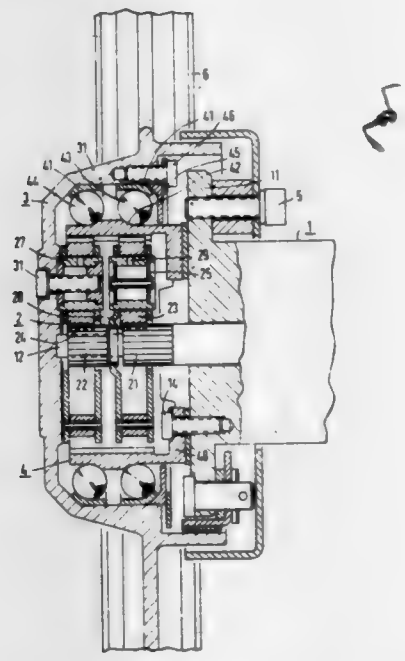
Walter Knur, Uttenreuth, and Siegfried Winkelmann, Tettnang, both of Fed. Rep. of Germany, assignors to Zahnradfabrick Friedrichshafen A.G., Friedrichshafen and Siemens Aktiengesellschaft, Munich, both of, Fed. Rep. of Germany

Continuation of Ser. No. 77,621, Sep. 21, 1979, abandoned. This application Sep. 21, 1981, Ser. No. 304,030

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2842076

Int. Cl.³ B60K *7/00*

U.S. Cl. 180—65 F **8 Claims**



1. Individual-wheel drive apparatus for vehicles, comprising an electric motor disposed on the axle of the wheel to be driven for propelling the vehicle, a planetary gear arrangement coupling the motor drive shaft to the wheel hub, the planetary gear arrangement including at least one sun gear, at least one planetary gear and a hollow gear, the hollow gear being disposed in the wheel hub, at least one planetary gear meshing with a respective sun gear and the hollow gear and disposed to rotate about the sun gear within the hollow gear, the motor including an end bell to which the hollow gear is connected, a bearing being disposed between the wheel hub and the hollow gear, the hollow gear including a common outer surface which is constituted by the material of the hollow gear and which constitutes the inner bearing race of the bearing.

4,402,375

CONTROL SYSTEM FOR A VEHICLE HYDRAULIC SUSPENSION ARRANGEMENT

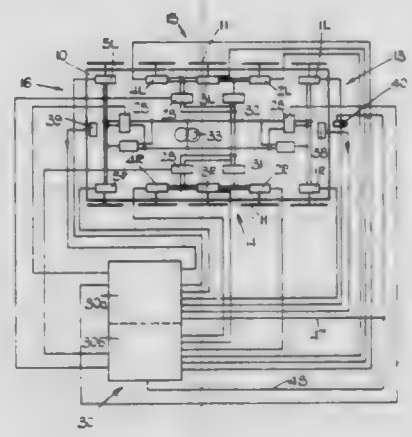
Stanley G. Glaze, Brierley Hill, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jan. 2, 1981, Ser. No. 222,169

Claims priority, application United Kingdom, Jan. 12, 1980, 8001063

Int. Cl.³ B62D *55/14*

U.S. Cl. 180—169 **7 Claims**



1. A control system for a vehicle suspension arrangement which includes a suspension device, a wheel mounted on said device for upward and downward movement relative to a body of the vehicle, and a flow control valve through which fluid is displaced as a result of said relative movement, said control system comprising means for detecting the presence of an obstacle in the path of the vehicle, means for generating an electrical signal in response to said detection, and means responsive to said electrical signal for causing said valve to permit an increased fluid displacement during relative downward movement of the wheel and for causing said valve to reduce said fluid displacement during relative upward movement of the wheel, whereby the distance between the axis of said wheel and an adjacent location on the vehicle body tends to increase, and reduction in said distance is resisted.

4,402,376

VEHICLE SPEED CONTROL APPARATUS

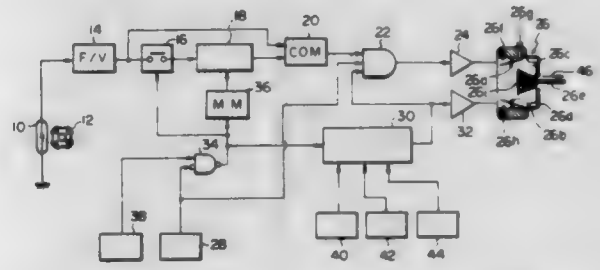
Kazuhiko Hayashi, Toyota; Kou Tanigawa, Akashi, and Takashi Egusa, Kobe, all of Japan, assignors to Toyota Jidosha K.K., Toyota and Fujitsu Ten Limited, Kobe, both of, Japan

Filed Mar. 26, 1981, Ser. No. 247,836

Claims priority, application Japan, Mar. 28, 1980, 55-40189[U]

Int. Cl.³ B60K *31/00*

U.S. Cl. 180—179 **5 Claims**



1. A vehicle speed control apparatus in a vehicle having a throttle valve for adjusting the vehicle speed, the apparatus comprising:

instruction switch means actuable by an operator of the vehicle for generating a first electrical signal;

speed-detecting means for detecting the actual vehicle speed and for generating a second electrical signal which corresponds to the detected vehicle speed;

memory means connected to the instruction switch means to

be controlled by the first electrical signal therefrom to store a selected value of an electrical signal as a third electrical signal which corresponds to a desired vehicle speed;

comparison means for comparing the second electrical signal with a third electrical signal and for generating a fourth electrical signal based on the result of the comparison;

control means for controlling the setting of the throttle valve in response to said fourth electrical signal applied from said comparison means to reduce the difference between the actual vehicle speed and the desired vehicle speed;

high-speed limit means for generating a fifth electrical signal when the vehicle speed exceeds a predetermined upper-limit speed;

first inhibiting means connected to the high-speed limit means, to the instruction switch means, and to the memory means and responsive to said fifth electrical signal to prevent the first electrical signal from being applied to the memory means when the actual vehicle speed exceeds said predetermined upper-limit speed; and

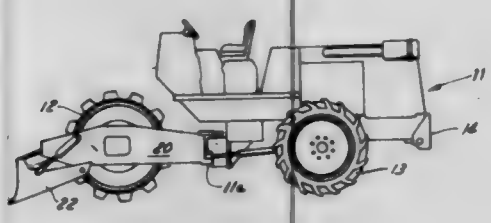
second inhibiting means connected directly to the instruction switch means, coupled to the comparison means and to the control means and responsive to said first electrical signal to prevent the fourth electrical signal from being applied to the control means whenever the instruction switch means is actuated to generate said first electrical signal.

4,402,377

OFF-ROAD VEHICLE HAVING WHEEL SLIP CONTROL

James R. Brooks, Wildwood, Ill., and Christopher C. Castelluccio, Oak Creek, Wis., assignors to Rexworks Inc., Milwaukee, Wis.

Filed Aug. 31, 1981, Ser. No. 298,124
Int. Cl.³ B60K *31/00*
U.S. Cl. 180—197 **6 Claims**



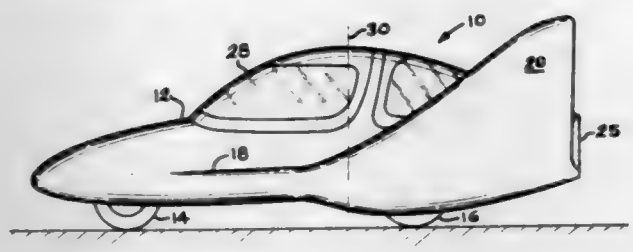
1. An off-the-road vehicle having wheel sets of the same or different forms such as rolls or differentially driven wheels, a hydraulic motor and gear reduction drive for each wheel set, an engine driven variable displacement fluid pump, return lines from the motors to the pump, and a fluid control system which includes a valve associated with each motor and a restricted delivery line from each valve to the associated motor an unrestricted delivery line from each valve to the other motor and a restricted line connecting the two motors, each valve being biased toward a first position by a spring and fluid pressure at the associated motor and having ports connecting the pump and restricted line to the associated motor in such first position, each valve being movable toward a second position by pump output pressure and having ports connecting the pump and the other motor through the unrestricted lines in such second position such as in the event of a loss of traction by the wheel set driven by the associated motor, each of said lines to and connecting said motors having a restrictor which has been preselected to provide the recovery of traction of each wheel set as required by the slipping characteristics of the respective wheel sets.

4,402,378

ENERGY-EFFICIENT MOTORCYCLE

James L. Amick, 1464 Cedar Bend Dr., Ann Arbor, Mich. 48105

Filed Jan. 7, 1981, Ser. No. 223,230
Int. Cl.³ B62D *35/00*
U.S. Cl. 180—210 **4 Claims**



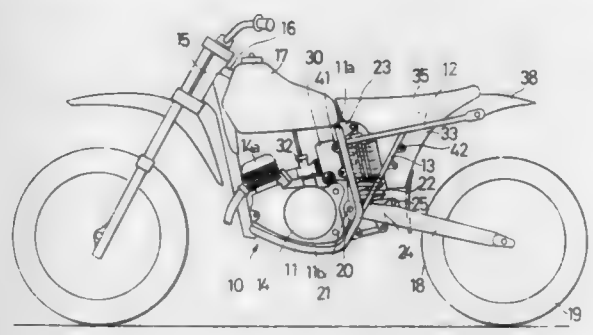
1. An energy-efficient vehicle comprising a streamlined body supported by front and rear wheels, streamlined struts extending outwardly from said body to said rear wheels, vertical airfoils enclosing the upper portions of said rear wheels and extending upwardly and rearwardly to provide aerodynamic stability, and fillets in the junctures between said body and said struts for prevention of flow separation, each of said fillets terminating rearwardly in a blunt base generally perpendicular to the flow direction.

4,402,379

AIR CLEANER SYSTEM FOR MOTORCYCLES

Norio Hoshi, Fujimi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 30, 1981, Ser. No. 279,049
Claims priority, application Japan, Jun. 30, 1980, 55-88866; Sep. 2, 1980, 55-121587
Int. Cl.³ B62K *11/08*
U.S. Cl. 180—225 **10 Claims**



1. An air cleaner system in a motorcycle having a single shock absorber disposed between a body frame and a rear fork supporting a rear wheel, said shock absorber being disposed between an engine and said rear wheel to be close to the center of gravity of a vehicle body, comprising:

substantially one casing including a first section disposed between said engine and said shock absorber, and a second section disposed substantially between said shock absorber and said rear wheel;

said casing being provided with at least one air intake opening;

at least one cleaner element disposed in said casing substantially proximal to said air intake opening;

conduit means for providing fluid communication between said casing and an air-fuel mixing system positioned downstream of said air cleaner system;

said conduit means being provided on said first section of said casing; and

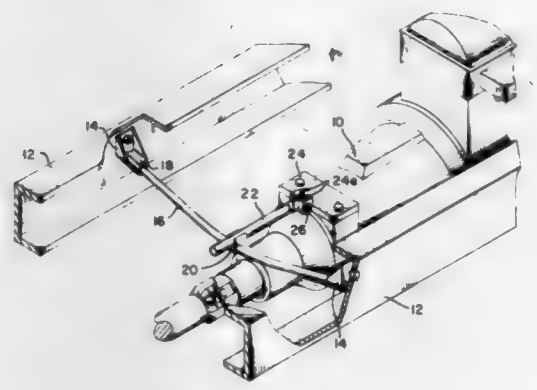
said casing being disposed between said engine and said rear wheel, substantially surrounding at least part of said shock absorber.

4,402,380

APPARATUS AND METHOD FOR SUPPORTING A TRANSMISSION

John R. Strong, Kirkland, Wash., assignor to Paccar Inc., Bellevue, Wash.

Filed Jun. 26, 1981, Ser. No. 277,624
Int. Cl.[3] B60K *17/00*
U.S. Cl. 180—292 20 Claims



1. A lightweight and inexpensive apparatus for supporting the rear end of a cantilevered transmission, which allows for standardized positioning of mounting brackets on a frame during assembly and which readily accommodates minor variations in the positioning of the transmission during assembly, comprising:

(a) a pair of mounting brackets in standard positions on the frame;

(b) a spring extending between the mounting brackets across the frame;

(c) rod receiving means on the spring capable of receiving a variably positioned rod which rigidly extends from the cantilevered transmission; and

(d) a rod rigidly connected to the transmission and extending to the rod receiving means,

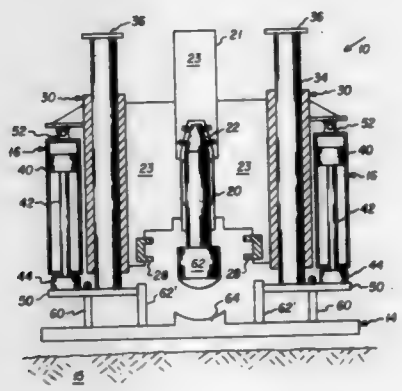
wherein the rod supports the transmission through the rod receiving means and spring.

4,402,381

VEHICLE MOUNTING AND DEPLOYMENT ARRANGEMENT FOR SEISMIC SOURCE

Tom P. Airhart, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 24, 1980, Ser. No. 219,732
Int. Cl.[3] G01V *1/047, 1/09*
U.S. Cl. 181—114 5 Claims



1. An acoustic pulse generator adapted to be carried by and deployed from a transport vehicle having an elastic suspension system comprising:

a. a housing fixedly mounted on said vehicle and provided with an upstanding firing tube;

b. an impact mass adapted to be slidably supported within said firing tube and to be downwardly propelled from;

c. a target plate positionable on the ground beneath said firing tube in axial alignment with said impact mass so as to receive a blow therefrom upon a release thereof;

d. a pair of upstanding, extendable lift cylinders disposed between said housing and said target plate on either side of said firing tube, each of said cylinders including a drive piston provided with a downwardly depending rod extending through the lower end of each said cylinder, the upper ends of said lift cylinders being attached to said housing;

e. bearing plates affixed to the respective lower ends of said piston rods in parallel alignment with said target plates;

f. means for extending said lift cylinders so as to cause said bearing plates to exert downward thrust against said target plate which at least partially shifts the weight of said vehicle from said elastic suspension system to said target plate; and

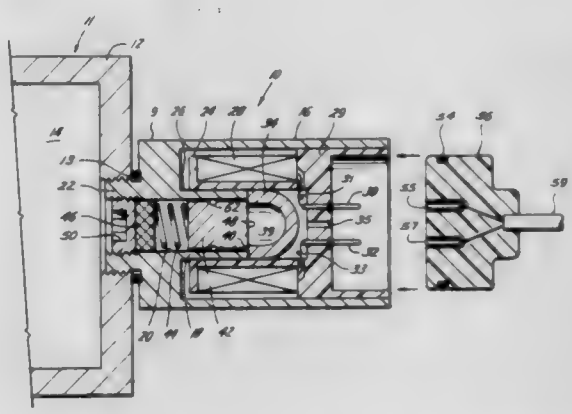
g. a pair of upstanding, telescoping sleeve guides disposed respectively parallel to and adjacent said lift cylinders, each of said sleeve guides consisting of an outer sleeve fixed to said housing and an inner guide shaft whose bottom end is in fixed relation to the lower end of a respective one of said piston rods.

4,402,382

AIR GUN FIRE TIME SENSOR

John C. Mollere, Houston, Tex., assignor to Litton Resources Systems, Inc., Houston, Tex.

Filed May 11, 1981, Ser. No. 262,110
Int. Cl.[3] G01V *1/38*
U.S. Cl. 181—120 6 Claims



1. A fire time sensor for attachment to an air gun of the type having a firing chamber for receiving pressurized air and means for impulsively releasing said pressurized air, thereby developing a pressure drop in said firing chamber, comprising:

a hollow non-magnetic housing;

an elongated non-magnetic barrel including a bore, having a wall, extending longitudinally therethrough, secured at one end to the housing, the other end of said barrel protruding into said housing;

a generator coil having signal output leads mounted on said barrel;

a magnetic end cap having a shoulder for closing the bore at the protruding end of the barrel;

a bar magnet floatingly mounted for longitudinal movement inside said bore;

means for urging said bar magnet against said shoulder;

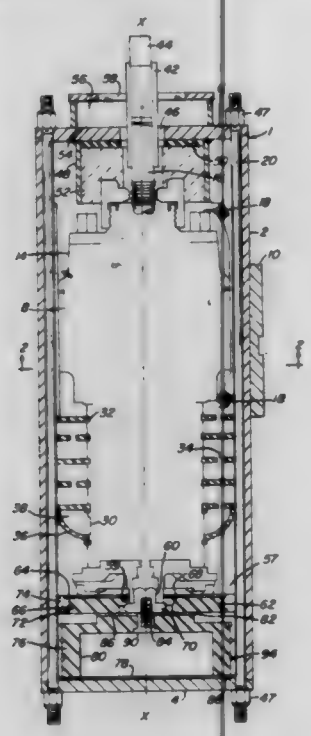
means for securing the housing to said firing chamber; and

means for providing fluid communication between said firing chamber and said bore.

4,402,383
DRILL MOTOR ENCLOSURE

Edward A. Bailey, Newport, N.H., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Sep. 1, 1981, Ser. No. 298,400
Int. Cl.[3] H02K 5/24; F01N 1/24; F16F 7/00
U.S. Cl. 181—202 18 Claims



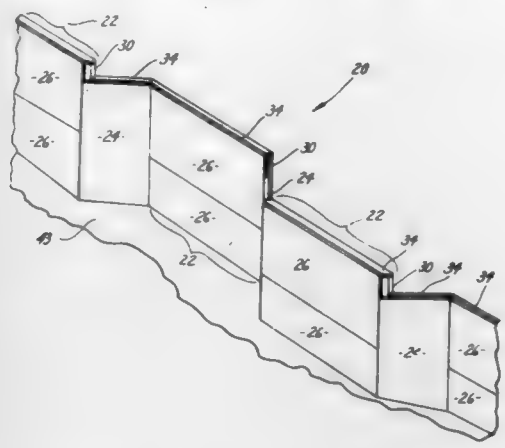
1. A noise dampening rock drill motor enclosure comprising:
a rigid formed housing which encloses a drill motor, said housing having a shell, said shell having a first end and a second end;
anti-rotation means provided within said shell for preventing rotation of said motor within said housing;
said anti-rotation means isolating torsional force of the motor from said formed housing;
a first stabilizer means provided at said first end of said shell capable of vibrationally isolating and supporting one end of said motor within said shell;
a second stabilizer means provided within said shell capable of vibrationally isolating and supporting the motor within said second end of said shell; and
a blanket formed of a resilient material at least partially circumferentially encompassing said motor, said blanket having sufficient strength to maintain the motor in a spaced relationship with the interior of said shell whereby said blanket functions as a noise deadening material.

4,402,384
SOUND BARRIER SYSTEM

Jack B. Smith; Barry W. Holden, and Robert H. Tanner, all of Thomson, Ga., assignors to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Nov. 4, 1981, Ser. No. 318,129
Int. Cl.[3] G10K 11/00
U.S. Cl. 181—210 10 Claims

1. An out-of-doors, ground-mounted, vertical wall sound barrier system comprising a vertical wall composed of successive individual wall sections arranged with immediately adjacent wall sections disposed at an intersecting angle to each other and in abutting relationship to each other along a vertical joint, means joining immediately adjacent wall sections together and holding them in their abutting relationship along the corresponding vertical joint, an earth anchor anchored into the ground at each joint, means securing the bottom portion of each joint to the corresponding earth anchor such that a downwardly directed hold-down force is applied by each anchor to the corresponding joint and wherein at least one of said wall sections comprises a stud frame including a vertical stud member at one vertical joint and a sheet covering one side of the frame including a vertical edge margin secured to said vertical stud member but with the vertical edge of the vertical edge margin of the sheet set inwardly from the outside vertical perimeter of the frame defined by said vertical stud and

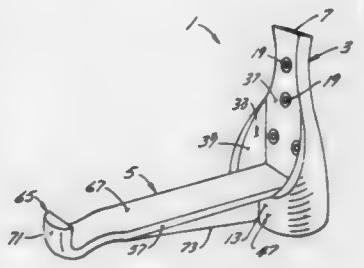


wherein the immediately adjacent wall section to said vertical stud is in abutment with that portion of said vertical stud which is set outwardly from said vertical edge of the sheet.

4,402,385
FOLDING STEP

Peter J. Buche, 262 Cardinal Leger, Pincourt, Quebec, Canada (J7V 3Y7)

Filed May 28, 1981, Ser. No. 267,689
Int. Cl.[3] E06C 7/08, 9/04
U.S. Cl. 182—91 3 Claims

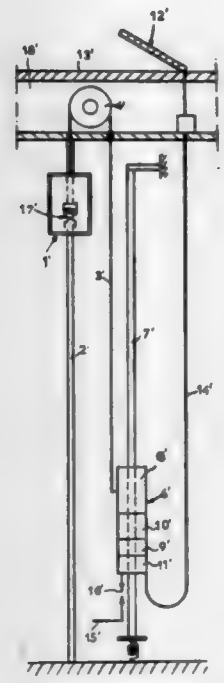


1. A folding step comprising a mounting plate and a step member wherein:
said mounting plate has a front face and a back face, means on the back face for use in fixing the mounting plate to a vertical surface to be climbed, said mounting plate having an upper surface angled downwardly towards the surface to which the plate is to be mounted, a first recess in the back of the mounting plate, a second recess in the front of the mounting plate, the first and second recesses intersecting to form an opening through the plate, said opening extending through the top and bottom of the plate, said front face forming a support cross-bar, said front face having a centrally located elongated vertical slot therein, said slot being continuous from the top of said front face to the bottom thereof;
said step member having an elongated upper face, co-operating means at a first end of said face for retaining said step member in said first recess when said step member is in an operative position, an upwardly extending flange extending from an opposed second end of said upper face of said step member, said flange being angled inwardly such that said flange will seat on said downwardly angled upper surface of said mounting plate when in a stored position to thereby securely retain the step member in the storage position.

4,402,386
SELF-POWERED ELEVATOR USING A LINEAR ELECTRIC MOTOR AS COUNTERWEIGHT

Rene Ficheux, Vincennes, and Marcel Pavoz, Nanterre, both of France, assignors to Otis Elevator Company, Farmington, Conn.

Filed Jul. 20, 1981, Ser. No. 284,836
Claims priority, application France, Sep. 30, 1980, 80 20959
Int. Cl.³ B66B *11/04*
U.S. Cl. 187—29 R 7 Claims

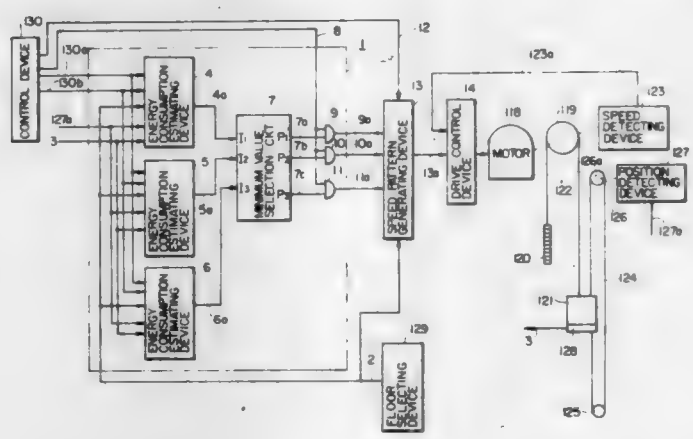


1. An elevator system comprising an elevator car and a shaftway in which the car moves, characterized by: a counterweight, a rail extending the length of the shaftway, a stator of a linear induction motor carried on the counterweight, means for powering the motor, a sheave at the top of the shaft, a rope guided over the sheave for connecting the car and the counterweight, and the rail additionally functioning as the motor armature.

4,402,387
ELEVATOR CONTROL SYSTEM

Shintaro Tsuji, and Toshiyuki Kamohara, both of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1981, Ser. No. 285,687
Int. Cl.³ B66B *1/30*
U.S. Cl. 187—29 R 6 Claims



1. An elevator control system for operating the cage of an elevator at a speed according to a speed pattern, comprising:

energy consumption estimating means for estimating an amount of energy required for said cage to run to a floor where said cage is to be next stopped;

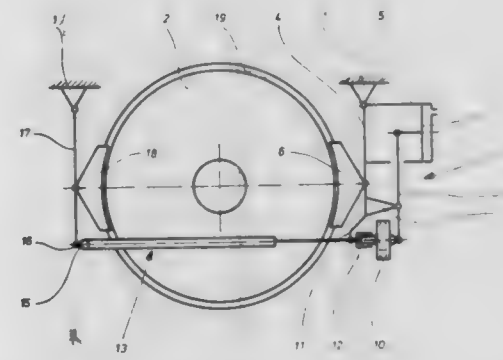
speed setting means for setting a speed for said cage to run to said floor at which said amount of energy is minimized; and

speed pattern generating means for generating a speed pattern corresponding to said cage speed set by said speed setting means.

4,402,388
ADJUSTABLE BRAKE RIGGING FOR RAIL VEHICLES

Bernd Wosegien; Josef Staltmeir, both of Munich, Fed. Rep. of Germany, and Nils B. L. Sander, Osby, Sweden, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

PCT No. PCT/DE80/00130, § 371 Date May 19, 1981, § 102(e) Date May 7, 1981, PCT Pub. No. WO81/00835, PCT Pub. Date Apr. 2, 1981
PCT Filed Sep. 11, 1980, Ser. No. 261,186
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1979, 2937752
Int. Cl.³ B61H *15/00, 1/00;* F16D *65/60*
U.S. Cl. 188—56 12 Claims



1. In a braking device for rail vehicles, a brake actuating unit disposed to one side of a vehicle wheel, a first brake shoe positioned adjacent a contact surface of the vehicle wheel to be pressed thereagainst, a first substantially vertical pivotally mounted brake lever operatively connected to said first brake shoe and having a lower end, said first brake lever being pivotable under a reaction force with respect to a contact force of said first brake shoe applied to said vehicle wheel, a pair of parallel tie rods each having one end pivotally connected to said first brake lever lower end and extending horizontally across both faces of said wheel, a second substantially vertical pivotally mounted brake lever disposed opposite to said first brake lever with respect to said wheel and having a lower end pivotally connectd to each of the other ends of said tie rods, a second brake shoe operatively connected to said second brake lever and substantially opposite said first brake shoe to be pressed against the contact surface of said wheel, traverse means for connecting said tie rods to each other, self-actuating means on said tie rods for adjusting the play between said brake shoes and the contact surface, said adjusting means comprising a screw coupling on each of said tie rods and each screw coupling comprising a pivotable threaded spindle shaft and a nut threaded thereon, and a control device on said traverse means to actuate both of said screw couplings to adjust jointly the lengths of said tie rods.

4,402,389
PRESS BRAKE SAFETY DEVICE

Richard P. Adams, Dewey Rose, and Charles Christian, Jasper, both of Ga., assignors to Royston Manufacturing Corporation, Royston, Ga.

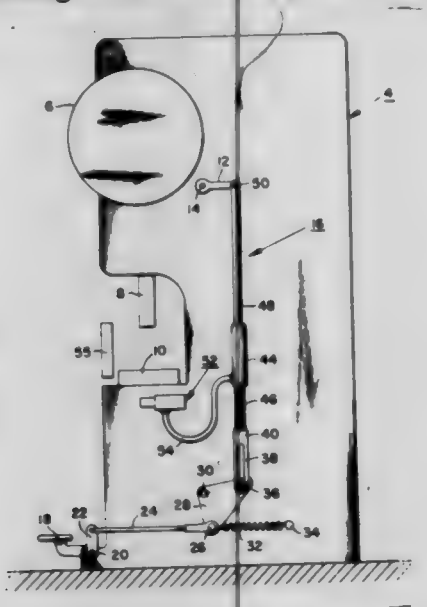
Filed Feb. 25, 1981, Ser. No. 237,972
Int. Cl.³ F16P *3/14*
U.S. Cl. 192—134 12 Claims

1. In a mechanical press brake having a bed, a ram cooperable with the bed, ram control means operable to effect movement of the ram toward the bed to effect a forming operation, a foot-operable pedal movable from a rest position to an operating position, linkage means, connected between the pedal

and the ram control means, for effecting movement of the ram toward the bed upon movement of the pedal to its operating position, and sensing means associated with the bed for sensing the presence of the operator's hands and arms in dangerous proximity to the ram, the improvement comprising means operatively connected to and responsive to the sensing means for disabling the linkage means when the sensing means senses the presence of an operator's hand or arm in dangerous proximity to the ram at least within a preestablished range of ram positions, and the improvement being characterized by:

means connected to the pedal and arranged to urge the pedal toward its rest position;

lost motion means constituting part of the linkage and normally transmitting motion from the pedal to the ram con-



trol means, said lost motion means being movable between a first position in which movement of the pedal effects movement of the ram toward the bed and a second position in which movement of the pedal does not effect movement of the ram; and

an actuator operatively connected to the lost motion means and responsive to the sensing means for moving the lost motion means from its first position to its second position whenever the sensing means senses the presence of an operator's hand or arm in dangerous proximity to the ram;

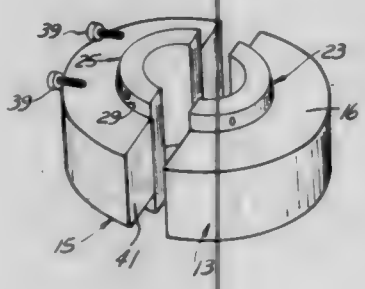
whereby the operative connection between the pedal and the ram control means is disabled without movement of the pedal whenever the operator's hand or arm is in dangerous proximity to the ram.

4,402,390

CONVEYOR ROLL

Alvan H. Feeney, Sterling Heights, Mich., assignor to Stilson Division of Stocker & Yale, Inc., Boston, Mass.

Filed Jun. 12, 1981, Ser. No. 273,256
Int. Cl.³ B65G *13/00*
U.S. Cl. 193—37 **8 Claims**



1. A conveyor roll adapted for mounting on a shaft comprising a pair of opposed symmetrical roll halves of a non-metallic resilient material of semi-cylindrical shape with parallel end walls, each roll half having a semi-cylindrical recess;

a pair of opposed semi-cylindrical metal insert halves nested within and (secured within) bonded to each roll half, respectively and having assembly ends projecting axially outward of said end walls;

each insert half having an elongated semi-cylindrical recess snugly receiving said shaft;

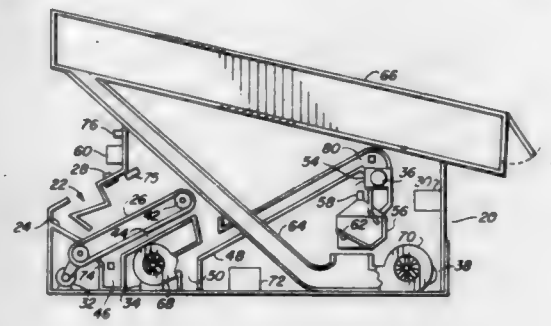
and fastening means interconnecting said insert half assembly ends face to face, interconnecting said roll halves face to face and for securing the assembled roll halves and insert halves to said shaft.

4,402,391

SELECTIVE SCRAP METAL COLLECTION APPARATUS

William J. Tuten, Scottsdale; Kennith D. Crosby, Carefree, and Harold W. Black, Mesa, all of Ariz., assignors to Creative Technology Inc., Scottsdale, Ariz.

Filed Dec. 1, 1980, Ser. No. 211,739
Int. Cl.³ G07F *7/06*
U.S. Cl. 194—4 C **49 Claims**



1. Collection apparatus for collecting scrap metal of a given type and for compensating depositors of said scrap metal of a given type based on the weight of said scrap metal of a given type deposited, comprising:

first means adapted to have scrap metal including metal of said given type placed into it;

classifier means for classifying and separating said scrap metal of a given type from other scrap metal, for depositing scrap metal which is not of said given type in a first receptical, and for depositing the scrap metal of said given type into a classifier;

a first conveyor having a first conveyor motor for transporting scrap metal deposited in the first means to the classifier;

a crusher powered by a crusher motor for crushing scrap metal;

a classifier conveyor for transporting scrap metal of said given type to the crusher;

a weigher having a hopper for weighing material deposited in the hopper, said weigher being positioned so that the material passing through the crusher is deposited in the hopper, said weigher including means for producing electrical signals which are a function of the weight of the hopper and of material placed in the hopper from the crusher;

means for dumping the contents of the hopper responsing to a dump control signal;

a storage compartment for said metal of a given type;

a stacker for conveying crushed metal of a given type when dumped from said hopper to the storage compartment for storage in said compartments;

a coin dispenser responsive to control signals for dispensing compensation to the depositor and for producing an alarm signal identifying the absence of the coins to be dispensed and a jam of the dispenser;

means for producing an alarm signal if any motors of the apparatus are energized and not operating properly;

means for producing an alarm signal if metal is deposited in the first receptical and if the first receptical is full of metal;

means for producing an alarm signal if the classifier conveyor is jammed;

an alarm and an out-of-order display; and

control means for producing control signals for energizing

the motors, for calibrating the weighing system, for dumping the hopper, for determining the weight of the first type of metal deposited in the storage compartment and the amount of compensation to be paid to the depositor, and for producing control signals to control the dispensing of compensation, said control means sensing any alarm signals produced and responsive to any such alarm signals for energizing the alarm and the out-of-order display and for deenergizing the apparatus if the condition causing an alarm signal persists for more than a predetermined period of time.

4,402,392

PORTABLE BELT CONVEYOR, PARTICULARLY A PLATE BELT CONVEYOR FOR CRUSHING PLANTS

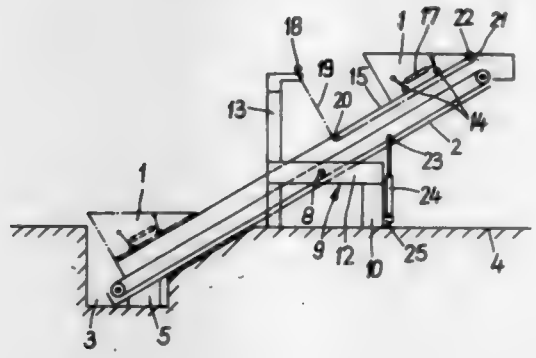
Horst Fabian, and Heinz Thüs, both of Duisburg, Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,098

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032559

Int. Cl.³ B65G *47/20*

U.S. Cl. 198—311 **8 Claims**



1. In a portable belt conveyor including a conveyor bridge which is provided with a feed chute and is pivotally mounted on an undercarriage via a horizontal shaft, and means, connected between said undercarriage and said bridge, for pivoting said bridge about said shaft to a desired angular position; the improvement comprising means for mounting said feed chute on said bridge so that said feed chute is displaceable along the length of said bridge to a position in which the center of gravity of said bridge is at least approximately in the vertical projection plane of said shaft.

4,402,393

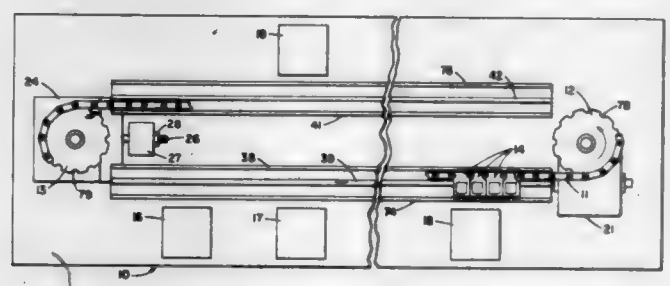
CONVEYOR DRIVEN FIXTURES WHICH ARE PRECISELY POSITIONABLE AT WORK STATIONS

William C. Kent, Garland, Tex., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Sep. 25, 1981, Ser. No. 305,674

Int. Cl.³ B65G *15/64*

U.S. Cl. 198—345 **4 Claims**



1. A conveyor system for advancing workpieces, which comprises:

a plurality of pallets, each having a pair of laterally extending ears which overlay ears on adjacent pallets; each of said ears having a bore therethrough aligned with a bore formed in an ear on an adjacent pallet;

an axle pin extending through and beyond each of said bores;

a roller mounted on the extending portion of each of said axles;

a pair of walls spaced apart a distance sufficient to accommodate said rollers;

a sprocket having arcuate peripheral recesses for receiving said rollers;

means for rotating said sprocket to advance said rollers between said walls;

roller means mounted on and extending horizontally from each of said pallets for riding on the top of a first of said walls;

a third wall parallel to said pair of walls and having top surfaces to provide a way; and

second roller means mounted on and extending horizontally from each of said pallets for riding on the way provided on the top of said third wall.

4,402,394

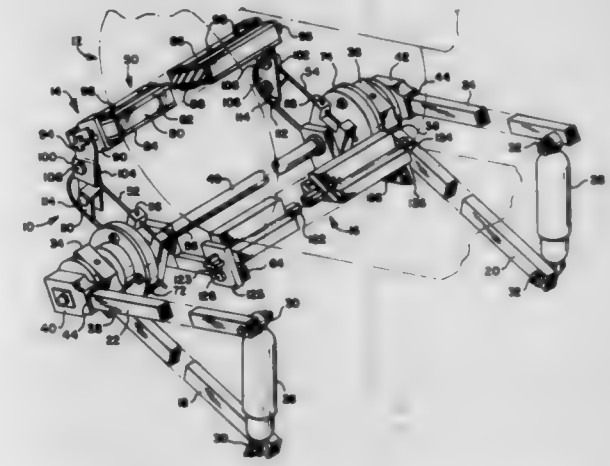
CONVEYOR BELT SCRAPER

Donald L. Stoll, c/o Richwood Industries, Inc., P.O. Box 652, Huntington, W. Va. 25711

Filed Jul. 27, 1981, Ser. No. 286,785

Int. Cl.³ B65G *45/00*

U.S. Cl. 198—499 **14 Claims**



1. An improved conveyor belt scraper apparatus comprising:

primary transversely extending belt scraper means having a portion adapted to come into engagement with a belt surface moving thereover;

secondary transversely extending belt scraper means spaced from said primary scraper means and having a portion thereon adapted to come into engagement with a belt surface;

means mounting said primary and secondary scraper means for rotational movement with respect to each other;

at least one primary actuator arm;

a primary axle attached to said primary actuator arm;

at least one secondary actuator arm;

a secondary axle attached to said secondary actuator arm and being capable of rotational movement with respect to said primary axle; and

resilient means extending between said primary and secondary actuator arms being capable of urging said primary and secondary arms to rotate away from each other.

4,402,395

METHOD AND DEVICE FOR PREVENTING A FLEXIBLE TUBULAR BELT FROM TWISTING FOR USE IN A TUBULAR BELT CONVEYER

Kunio Hashimoto, Fukuoka, Japan, assignor to Haruo Okazaki, Fukuoka, Japan

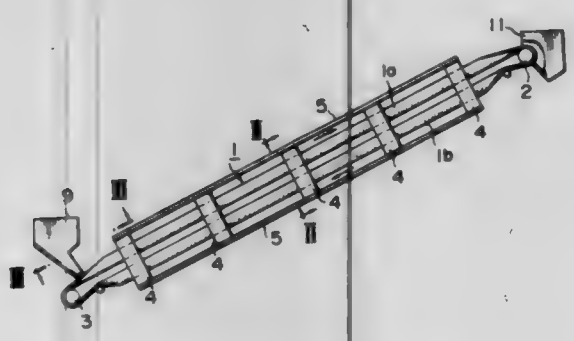
Filed Jun. 2, 1981, Ser. No. 269,479

Claims priority, application Japan, Feb. 18, 1981, 56-22528; Feb. 24, 1981, 56-25733; Feb. 27, 1981, 56-28006; Mar. 4, 1981, 56-30971; Mar. 6, 1981, 56-32155

Int. Cl.[3] B65G *39/16*

U.S. Cl. 198—807

8 Claims



5. A device for preventing a flexible tubular belt from twisting, for use in a tubular belt conveyor wherein a tubular belt is extended between first and second rollers, positioned at a certain distance away from each other, on which the tubular belt is opened, and wherein the belt moving between the two rollers in the tubular form is supported by sets of support rollers which are radially arranged around the peripheries of the belt in contact therewith and are rotatably mounted to support frames, characterized by comprising:

a correction roller support, a correction roller rotatably received in the support in a direction substantially perpendicular to the direction of movement of the belt and in contact therewith, means pivotally connecting the correction roller support to the support frame and means for varying the angle of the correction roller including shift means for pivoting the support and the correction roller in the right or left direction in response to the tubular belt twisting in the opposite direction said shift means and correction roller being operative at a point that the belt is tubular.

4,402,396

INTRAOCULAR LENS CASE

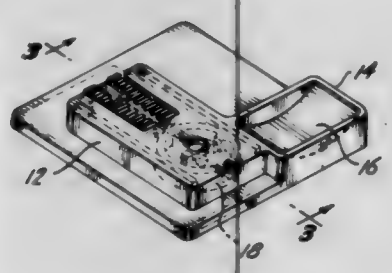
William M. Graham, Burton, Wash., assignor to Cooper Laboratories, Inc., Palo Alto, Calif.

Filed Feb. 16, 1982, Ser. No. 348,684

Int. Cl.[3] B65D *81/18, 25/54;* A61F *1/16, 1/18*

U.S. Cl. 206—5.1

8 Claims



1. A lens case comprising:

a lens holder having a base portion and a flexure zone extending across said base portion, said case including a pair of lens holding members located on opposite sides of said flexure zone, said lens holding members having opposing lens receiving surfaces, said holder being flexible along said flexure zone between a first position wherein said lens receiving surfaces are spaced from each other by a predetermined distance substantially equal to the diameter of a lens to be held by said members and a second position wherein said members are moved away from each other so that said lens receiving surfaces are spaced from each other by a distance greater than the diameter of a lens,

receptacle means for receiving said lens holder, and

actuating means associated with said receptacle means for flexing said lens holder between said first and second positions.

4,402,397

DISPLAY CASE WITH CASTELLATED TONGUE AND GROOVE JOINTS

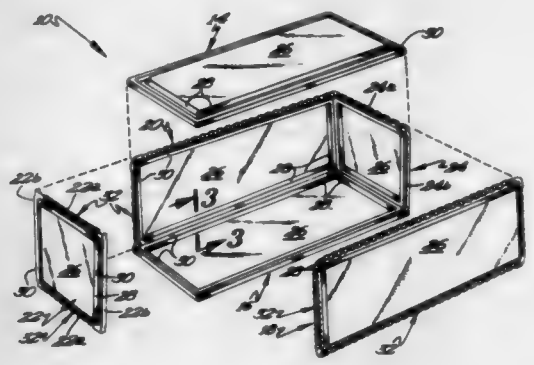
Jack T. Spence, 2040 N. Shore Dr., Wayzata, Minn. 55391

Filed Nov. 28, 1980, Ser. No. 211,103

Int. Cl.[3] B65D *65/10*

U.S. Cl. 206—45.34

6 Claims



1. A knockdown display case constructed of a thin, molded plastic sheet material, said display case comprising:

a top panel;

a bottom panel;

two side panels; and

two end panels, said panels being joined to one another by friction-fit tongue and groove joints, each said panel having a substantially planar central section extending adjacent to and offset from said joints, and wherein each said groove has substantially planar first and second walls, said first and second walls being connected by a bottom wall, the tongue in each of said joints comprising:

a plurality of first wall engaging surfaces;

a plurality of second wall engaging surfaces, said first wall engaging surfaces being spaced from and co-planar with one another and said second wall engaging surfaces being spaced from and coplanar with one another, wherein a first plane defined by said first surfaces and a second plane defined by said second surfaces are spaced from and parallel to one another; and

a plurality of connecting surfaces, said connecting surfaces being substantially parallel to one another and normal to said first and second planes.

4,402,398

COIN CARRYING PLASTIC CARD

Frank E. Smoczynski, 5 N. 466 Leola, St. Charles, Ill. 60107

Filed Nov. 25, 1981, Ser. No. 324,812

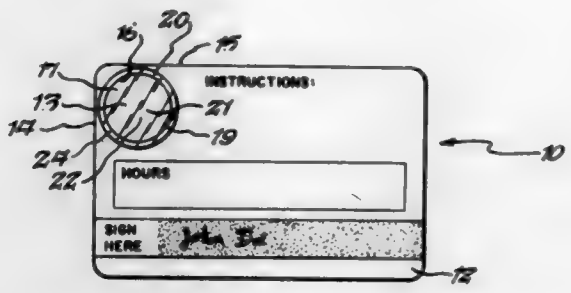
Int. Cl.[3] B32B *3/10;* A45C *11/28*

U.S. Cl. 206—0.82

5 Claims

1. A coin carrying plastic card of a size for carrying in a card-carrying section of a wallet or the like comprising a plastic card body of a first thickness, a hole extending entirely through said plastic card body for receiving a coin of a second thickness, an edge on said card surrounding said hole, said hole being slightly larger than the corresponding dimension of said coin so that said edge on said card lies in contiguous relationship to the edge of said coin when said coin is in said hole, said first thickness being less than said second thickness so that said coin will project outwardly beyond said card in a thickness dimension when said coin is in said hole, said first thickness

also being a sufficiently high proportion of said second thickness so that said edge of said card will provide support to the edge of said coin against movement out of said hole in a direction of the plane of said plastic card, and flexible pressure sensitive tape affixed to one side of said card and extending across said hole for adhesively securing said coin to said card



while permitting selective removal and replacement thereof, said flexible pressure sensitive tape being yieldable in the direction toward said hole for effecting said selective removal of said coin by applying a force on said tape in the direction of said hole to cause said coin to protrude a greater amount from said hole than when said force is absent and thus facilitate grasping of said coin when said force is present.

4,402,399

SYSTEM FOR THE STORAGE OF COINS AND THE LIKE

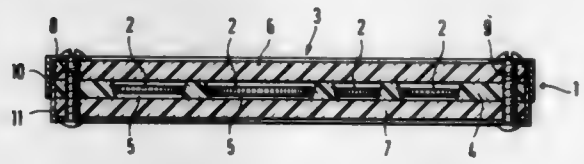
Wolfgang Friess, Lunckenbeinstrasse 22, 8800 Ansbach, Fed. Rep. of Germany

Filed Nov. 3, 1981, Ser. No. 317,815

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1980, 3041530

Int. Cl.³ A45C *11/28*; A47B *81/00*

U.S. Cl. 206—0.83 **7 Claims**



1. A device for storing and displaying coins comprising a carrier body having at least one coin opening for receiving a coin to be displayed, said carrier body being made of a transparent material to thereby enable viewing of the entire coin disposed in said coin opening, transparent covers disposed on both sides of said carrier body, fastening means fastening said covers and said carrier body together to thereby form a rigid structure enclosing said coin, said carrier body having a thickness greater than the coin disposed in said coin opening such that the coin disposed in said coin opening is located in an intermediate position spaced from said covers, said coin opening having a first annular portion which has a diameter less than the largest dimension of said coin, said coin opening having another annular portion having a diameter greater than the largest dimension of said coin such that said first annular portion tightly engages said coin to retain the latter in said coin opening and said other annular portion is spaced from said coin facilitating access of said coin to said coin opening, said carrier body being made of a plasticizer-free synthetic material which does not react with said coin, whereby the coin is tightly retained in said coin opening without reacting chemically with said carrier body while being viewable from all sides.

4,402,400

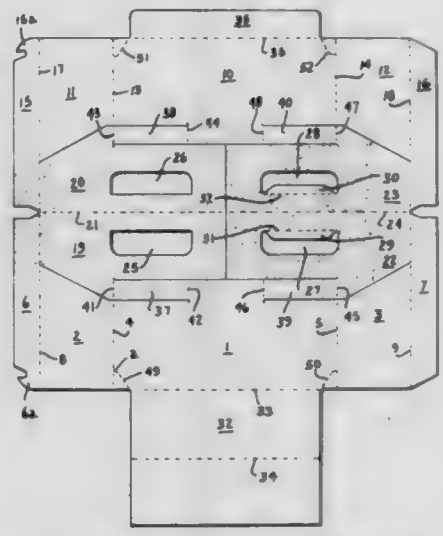
ARTICLE CARRIER

James T. Stout, Acworth, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Dec. 21, 1981, Ser. No. 332,466

Int. Cl.³ B65D *5/48, 75/00*

U.S. Cl. 206—162 **4 Claims**



1. An article carrier comprising a bottom wall, a pair of side walls foldably joined respectively to the side edges of said bottom wall, end wall panels foldably joined respectively to the end edges of said side walls and extending inwardly therefrom to form opposing end walls, riser panels foldably joined respectively to the inner edges of said end wall panels and extending medially inward of the carrier, a multiple ply handle extending between said riser panels, the width of said bottom wall as measured along said end walls being less than the width of said end walls, the lower portions of said side walls being of inwardly bowed configurations, and a fold line extending from one corner of said bottom wall to the fold line between the associated side wall and adjacent end wall panel.

4,402,401

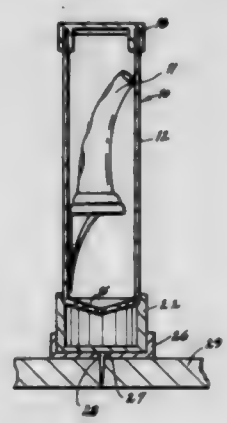
OIL SPOUT CONTAINER

Lester L. Leno, 2441 Paramount Dr., Enumclaw, Wash. 90822

Filed Oct. 26, 1981, Ser. No. 314,751

Int. Cl.³ F16N *33/00*; B67C *9/00*

U.S. Cl. 206—216 **3 Claims**



1. An oil spout container comprising:

a tubular member having an open upper end adapted to receive an oil spout and having an enclosed lower end adapted to retain the oil spout within the member, the lower end being apertured to drain oil from the member;

said tubular member having a length between the open upper end and the enclosed lower end greater than the length of the oil spout;

said open upper end having an annular rim;

a cap frictionally removably mounted to the member's upper end to enclose the member;

said cap having a complementary groove formed therein for

slidably receiving the annular rim of the upper end of the tubular member to seal the upper end to prevent the oil from becoming contaminated;

said cap having a knurled peripheral surface to enable the cap to be easily gripped and slidably mounted on and removed from the annular rim of the upper end of the tubular member;

said enclosed lower end being conical shaped with a central apex to enable the oil to drain toward the apex; and

said enclosed end having a plurality of apertures formed therein to enable oil to drain therethrough wherein at least some of the apertures are spaced from the apex to facilitate rapid draining;

an oil cup frictionally removably mounted to the member's lower end for enclosing the aperture and for accumulating oil draining from the members through the aperture so that the oil cup serves both as an accumulator to store the draining oil and a frictional enclosure to the aperture to prevent the drained oil from becoming contaminated.

4,402,402

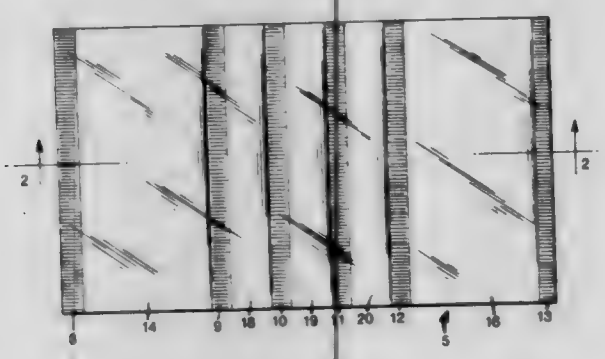
BARRIER SEAL MULTIPLE-COMPARTMENT PACKAGE

Brian R. Pike, 1708 Esplanade, Redondo Beach, Calif. 90277

Filed Oct. 14, 1981, Ser. No. 311,406

Int. Cl.³ B65D *25/08*

U.S. Cl. 206—219 **1 Claim**



1. A multiple compartment container for separately holding material to be mixed within said container, said container comprising film defining an elongated pouch, and rupturable internal transverse seals defining at least five separate compartments, said compartments include two remote compartments and at least three intermediate compartments, said remote compartments each containing one of two materials to be mixed, and said intermediate compartments being initially empty, said three intermediate compartments including one for each of said remote compartments and forming a receptacle for receiving diluted material migrating from an adjacent remote compartment through that internal seal disposed therebetween, and a central compartment for receiving further diluted material which may migrate from the other of said intermediate compartments through internal seals between said intermediate compartments.

4,402,403

GUSSETED POUCH, ESPECIALLY FOR RECEIVING CUT TOBACCO

Heinz Focke, and Oskar Balmer, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

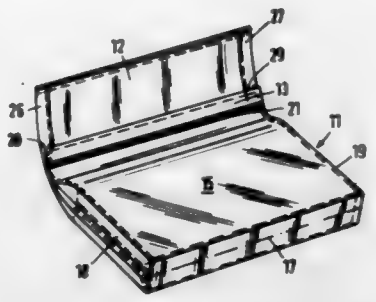
Filed Dec. 30, 1981, Ser. No. 335,490

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1980, 3049601

Int. Cl.³ A24F *23/02*; B65D *33/00, 85/00*

U.S. Cl. 206—245 **5 Claims**

1. Gusseted pouch with a pocket open at the top, which is limited by front and rear walls and by side and bottom walls directed transversely to the latter, consisting of a pouch blank which is itself formed by at least two sheet blanks made of plastic which are connected to one another at their edges and between which an insert blank, especially a paper blank, is located, a closure flap adjoining the pocket in the region of the



rear wall and a gripping flap adjoining it in the region of the front wall, characterised in that in the region of the closure flap and/or gripping flap (**12, 13**) the paper blank (**24**) is provided with lateral recesses (**28, 29; 30, 31**).

4,402,404

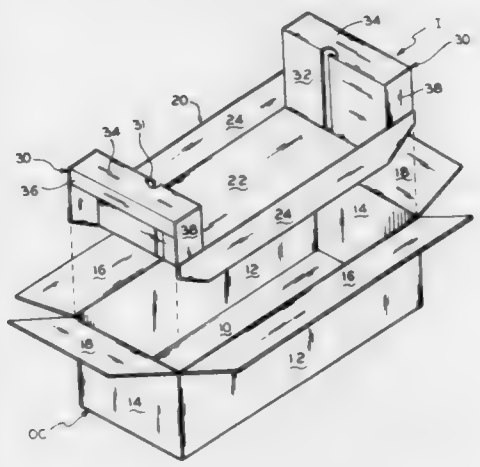
INSERT FOR GARMENT BOX

James F. Nauheimer, Chicago, Ill., assignor to Container Corporation of America, Chicago, Ill.

Filed Jun. 1, 1982, Ser. No. 383,563

Int. Cl.³ B65D *85/18*

U.S. Cl. 206—279 **3 Claims**



1. An insert, for use within an outer shipping container having bottom, side, and end walls, for holding a plurality of garments on hangers having hook portions, said insert being formed from a unitary blank of foldable paperboard and comprising:

(a) a pair of hanger receiving end sections interconnected by a center section;

(b) said center section including:

(i) a generally rectangular bottom wall;

(ii) a pair of side walls foldably joined to and upstanding from opposite side edges of said bottom wall;

(c) each of said end sections including:

(i) an inner panel foldably joined at its lower edge to an end edge of said bottom wall and upstanding therefrom;

(ii) a top panel foldably joined at its inner edge to an upper edge of said inner panel and extending outwardly therefrom;

(iii) said inner and top panels having a common opening for receiving hook portions of garment hangers;

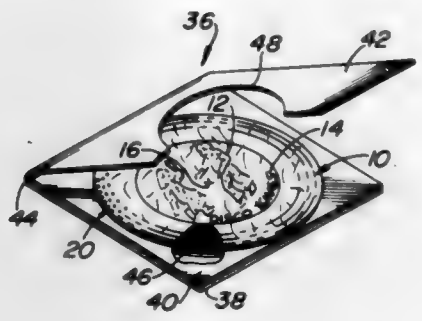
(iv) an outer panel foldably joined at its upper edge to an outer edge of said top panel and extending downwardly therefrom;

(v) a pair of side panels foldably joined at their inner edges to adjacent side edges of said inner panels and foldably joined at their lower edges to lower edges of adjacent center section side panels on diagonal fold lines.

4,402,405
PICTORIAL PHONORECORD MAT

Ronald M. Fullalove, 2637 Cranston Rd., Philadelphia, Pa. 19131

Filed Jun. 8, 1979, Ser. No. 47,194
Int. Cl.³ B65D *85/57*; G11B *3/84*; C09K *3/00*
U.S. Cl. 369—271 27 Claims

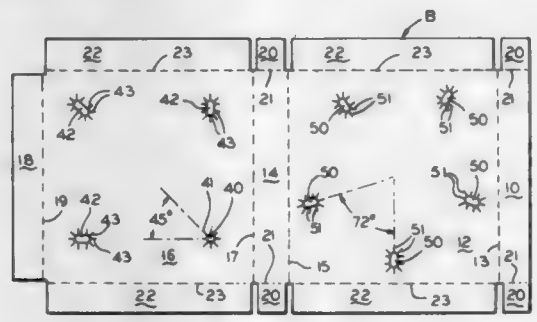


1. A phonorecord mat comprising a felt disc, an opening formed in said disc for placing said disc over the spindle of a turntable, and pictorial material formed on the fibers of said disc, said pictorial material being formed from sublimating disperse dyes.

4,402,406
MULTIPLE SIZED CHAIR BASE

Douglas W. Weathers, and Robert B. Gardner, both of Shelby, N.C., assignors to Container Corporation of America, Chicago, Ill.

Filed Nov. 16, 1981, Ser. No. 321,464
Int. Cl.³ B65D *5/06, 85/00*
U.S. Cl. 206—326 3 Claims



1. In a universal supporting base, formed of paperboard, for holding, within an outer box or wrapper, one of many different sized multi-legged articles of furniture, said base comprising:

(a) a folder having pairs of opposed major and minor side wall panels foldably joined to each other to form a tubular structure open at the ends;

(b) flap means for closing the ends of said structure;

(c) one of said major panels having formed therein four sunburst-type openings strategically positioned in the form of a square and the other one of said major panel having formed therein five sunburst-type openings arranged in the form of a pentagon to accommodate the receipt of legs of one of several articles of furniture having legs of different sizes;

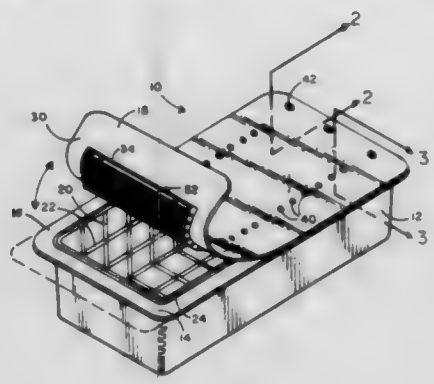
(d) each of said sunburst-type openings including a center aperture and a plurality of slits in said one major panel extending radially outward from said aperture; and

(e) a supporting core positioned within said folder and including a flat elongated center panel, a pair of side panels and a pair of converging panel sections foldably joined between said center panel and said side panels, said center panel and said side panels being positioned in parallel facing engagement with one of said major panels.

4,402,407
STERILIZATION CHEST

George P. Maly, Plaza 215, 2008 Deerpark Dr., Fullerton, Calif. 92631

Filed Dec. 16, 1980, Ser. No. 217,176
Int. Cl.³ B65D *81/20*
U.S. Cl. 206—438 11 Claims



1. A container which seals upon evacuation comprises:

(a) an open-top receptacle having upright sidewalls and a bottom wall;

(b) a peripheral flange about the upper edges of its sidewalls of sufficient width to provide an annular, flat sealing surface;

(c) open channel grooves in said flange, one each, extending along each of at least two opposite sides of said receptacle and located inwardly on said flange surrounded by said annular, flat sealing surface;

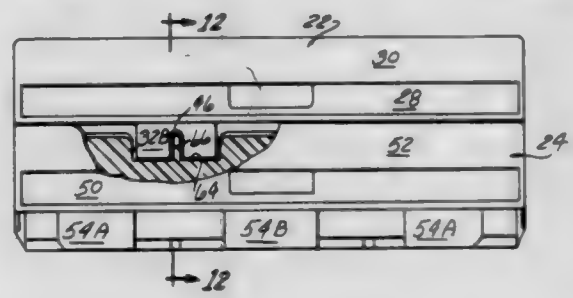
(d) a flexible membrane cover overlying said open top with outside sealing face edges overlying said annular flat sealing surface of said peripheral flange and in sealed contact with said annular flat sealing surface when said chamber is evacuated;

(e) a plurality of membrane stiffening members in side-to-side array carried on the underside of said flexible membrane and terminating short of the sealing face edges with distal legs received in each of said grooves.

4,402,408
MULTILEVEL STACKING CONTAINER

Elsmer W. Kreeger, Allegan, and Edward L. Stahl, Brighton, both of Mich., assignors to Pinckney Molded Plastics, Inc., Pinckney, Mich.

Filed May 21, 1982, Ser. No. 380,520
Int. Cl.³ B65D *21/04*
U.S. Cl. 206—507 4 Claims



1. In a multilevel stacking container adapted to be stacked upon a like container at any one of a plurality of different levels relative thereto, said container including a rectangular bottom, a pair of opposed side walls projecting upwardly from opposite sides of said bottom, and first and second end walls projecting upwardly from the opposed ends of said bottom;

the improvement wherein each of said end walls comprises an inner web fixedly secured along its lower edge to the associated end of said bottom and lying in a first vertical general plane, said inner web having a horizontal upper edge interrupted by uniformly spaced recesses each defined by opposed vertical side edges extending downwardly a uniform distance from said upper edge to a

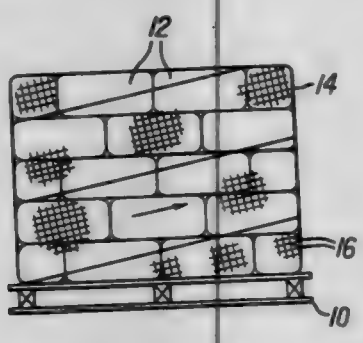
horizontal edge defining the bottom of the recess whereby the top of said inner web is defined by alternate raised and lowered horizontal edge sections, an outer upper web lying in a second general plane parallel to and offset outwardly from said first vertical plane, said outer upper web having a continuous horizontal upper edge projecting upwardly above the raised edge sections of said inner web, a series of spaced lower outer web sections lying in a third general plane parallel to and located between said first and said second general planes and having horizontally aligned horizontal lower edges projecting downwardly below said bottom, means securing the aforementioned webs and web sections to each other with said outer web sections located in coextensive relationship along said end wall to said raised edge sections of said inner web, said means securing including means defining a horizontal platform extending between said inner and said upper outer webs coextensive with and slightly below the top of each of said raised edge sections, the raised edge sections of said first end wall being located directly opposite the lowered edge sections of said second end wall, means defining a relatively narrow vertical slot extending upwardly from the lower edges of at least two of said lower outer web sections of said first end wall, and locater posts on said inner web of said second end wall complementary in shape to said slots and projecting upwardly from at least two coextensive lowered edge sections of the last mentioned inner web, said posts having horizontal upper edges horizontally aligned with the upper surfaces of said platform.

4,402,409

REMARKABLE SUPERIOR PLASTIC NETTING FOR USE IN PALLETIZED LOADS

Robert C. Slocumb, Circle Pines, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Filed Nov. 12, 1981, Ser. No. 320,766
Int. Cl.³ B65D *19/00, 75/02, 71/06*
U.S. Cl. 206—597 10 Claims



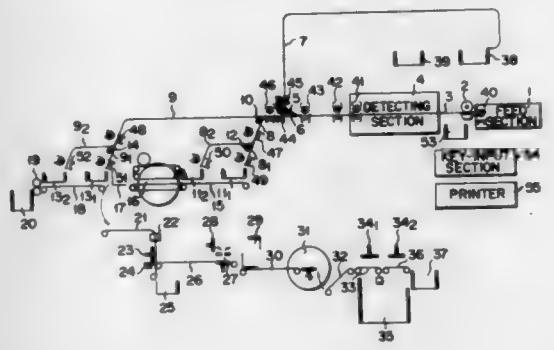
1. In a palletized load utilizing a net material as the pallet wrap, the improvement comprising said plastic net being comprised of a set of longitudinal strands running substantially parallel to the length of the net and at least a second set of strands transverse thereto, said longitudinal strands being predominantly composed of linear low density polyethylene and said longitudinal strands being molecularly oriented by a factor of at least about 4 before being applied to said palletized load, said plastic net when it is applied to said load having a low degree of permanent stretch and a high degree of elastic recovery.

4,402,410

SHEET SORTING APPARATUS

Hiroshi Ohba, and Shigeo Horino, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 22, 1980, Ser. No. 189,220
Claims priority, application Japan, Sep. 25, 1979, 54-122065
Int. Cl.³ B07C *5/10*
U.S. Cl. 209—534 6 Claims



1. A sheet sorting apparatus comprising:

take-out means or taking out sheets one at a time from a stack having a given number of sheets;

conveying means for conveying the sheets taken out by the take-out means;

detecting means for classifying the sheets conveyed by the conveying means into reusable sheets and unreusable sheets;

sorting means for sorting the sheets classified by the detecting means into reusable and unreusable sheets, said sorting means further including a counter means for counting at a plurality of points the number of sheets judged as unreusable by said detecting means;

collecting means for separately collecting the reusable sheets and the unreusable sheets which are sorted by the sorting means until the given number of sheets has been taken out; and

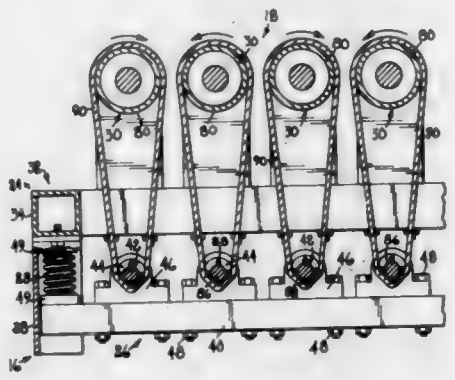
invalidating means for invalidating the unreusable sheets collected in the collecting means after the take-out of the given number of sheets is completed, and when the counts in said counter means are not coincident, said invalidating means does not invalidate said sheets.

4,402,411

APPARATUS FOR SEPARATING ARTICLES

Edgar A. Lafreniere, R.R. 3, Grafton, N. Dak. 58237

Filed Jul. 27, 1981, Ser. No. 287,216
Int. Cl.³ B07C *5/00*
U.S. Cl. 209—617 11 Claims



10. An apparatus for separating articles, said articles having a direction of flow across said apparatus, said apparatus comprising:

a frame having separate upper and lower portions;

a plurality of drive rollers supported by one of said upper and lower portions;

a plurality of driven rollers supported by the other of said upper and lower portions;

a plurality of endless belts, each of said belts extending between one of said drive rollers and one of said driven rollers; said belts supporting said lower portion of said frame from said upper portion, said belts being spaced to prevent articles from passing between them while allowing smaller items to pass therethrough;

means for yieldably separating said upper and lower portions of said frame whereby said belts are caused to tighten about said drive and said driven rollers; and

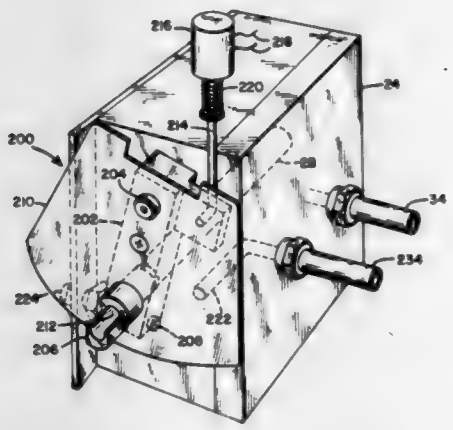
means for driving said drive rollers, said drive rollers thereby driving said belts, said belts being driven in directions perpendicular to the direction of flow of said articles.

4,402,412

MACHINES FOR CLASSIFYING PHARMACEUTICAL CAPSULES

Rex C. Wood, New Brighton, Minn., assignor to Modern Controls, Inc., Elk River, Minn.

Filed Dec. 22, 1980, Ser. No. 218,658
Int. Cl.³ B07C *5/06*
U.S. Cl. 209—625 **10 Claims**



1. An apparatus for removing deformed or misaligned capsules from a more or less continuous stream of moving capsules, comprising

(a) means for propelling a plurality of capsules in an end-to-end stream of capsules;

(b) a pivotable gate having an opening therethrough, said gate being pivotable from a first position wherein said opening is in alignment with said stream to a transverse second position wherein said opening is arcuately displaced from said stream;

(c) a receptacle seated in said gate opening, said receptacle having a bore therethrough in alignment with said stream when said gate is in its first position, and said bore being sized to pass uniform capsules therethrough and to stop nonuniform capsules in said stream;

(d) a controllable air jet positioned in alignment with said receptacle bore when said gate is in its second position, said air jet being directed counter to the direction of movement of said stream; and

(e) means for pivoting said gate between said first and second position and for actuating said air jet.

4,402,413

COUNTERWEIGHT ARRANGEMENT

Emory J. Sickler, Wausau, Wis., assignor to J. I. Case Company, Racine, Wis.

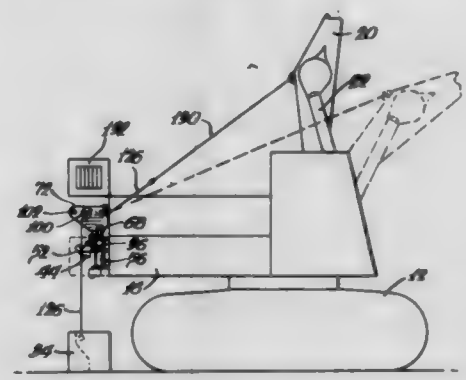
Filed Nov. 19, 1981, Ser. No. 322,897
Int. Cl.³ B66C *23/72*
U.S. Cl. 212—178 **7 Claims**

1. In a mobile vehicle having a working frame and a pivotal boom means at the front end of the frame, an improved means for raising and lowering a counterweight removably mounted to the rear end of the frame, comprising:

counterweight support means extending rearward of the rear of said frame, said counterweight support means includes a pair of transversely spaced support members extending rearwardly of said frame and has transverse notches formed therein, said support members have camming surfaces associated with the outer ends thereof;

a counterweight having a pair of transversely spaced rod members secured thereto which are selectively received into said notches;

connecting means extending between said boom means and said counterweight for selectively raising and lowering said counterweight in response to pivotal movement of said boom means, said connecting means includes a pair of transversely spaced cable means which have first ends secured to said counterweight and second ends which are controlled by pivotal movement of said boom means; and



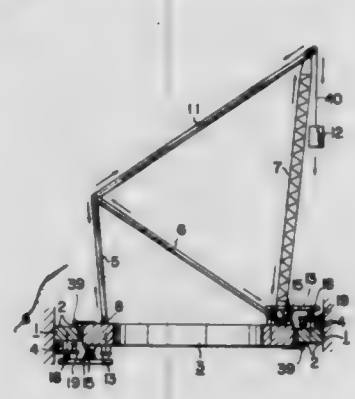
means for selectively controlling the movement of said counterweight into and out of support on said support members, said means includes a pair of sheaves which are respectively supported above said support members and said cable means are received about said sheaves, said sheaves are selectively movable between first and second longitudinal positions such that as said counterweight is raised and lowered with said sheaves in said first positions said rod members are substantially in vertical alignment with said notches and as said counterweight is raised and lowered with said sheaves in said second positions said rod members are positioned rearwardly of the rearward ends of said support means, said camming surfaces cooperate with said rod members to direct said rod members rearwardly around the outer ends of said support members into said notches.

4,402,414

MEANS FOR DISTRIBUTING LOAD UNIFORMLY TO WHEELS

Junzaburo Nitto, Hachioji, Japan, assignor to Kenki Engineering Co., Ltd., Tokyo, Japan

Filed Dec. 23, 1980, Ser. No. 219,552
Claims priority, application Japan, Dec. 24, 1979, 54-167797; Jul. 17, 1980, 55-98113
Int. Cl.³ B66C *23/84*
U.S. Cl. 212—226 **7 Claims**



1. Means for distributing a load uniformly to wheels on a rail which comprises a truck, end stoppers a certain distance apart

attached to the truck, one or more supporting plates attached to the truck at certain intervals between the end stoppers, at least one balancelike distribution link pivotally mounted on the supporting plate by a distribution pin, and a balancelike distribution link pivotally mounted on the axle of the wheel which rolls on the rail, said distribution link on the axle being movably connected at its both ends through a connecting body to said adjoining end stopper and distribution link on the truck, wherein the connecting body is a roller which is pivotally mounted on both ends of the distribution link on the axle, said roller being in contact with an arc-shaped surface, a said arc-shaped surface being made on the distribution link on the truck and on the end stopper.

4,402,415

INTEGRALLY SEALED CONTAINER WITH CAP

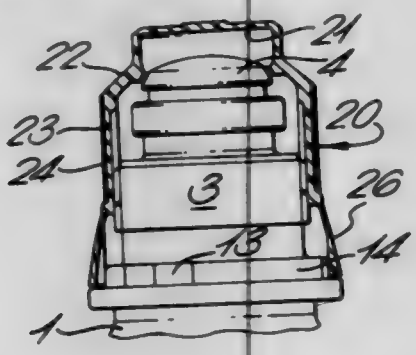
Eric T. Hopley, Poringland, England, assignor to U. G. Closures & Plastics Limited, Middlesex, England

Filed Oct. 16, 1981, Ser. No. 312,072

Claims priority, application United Kingdom, Oct. 17, 1980, 8033670; Sep. 16, 1981, 8127969

Int. Cl.³ B65D *1/02*

U.S. Cl. 215—32 **9 Claims**



1. A sterile pack comprising, in combination, a moulded plastics container to which is attached a moulded plastics cap, (i) the container being integrally sealed at its upper end, the neck of the container being provided with thread and an annular portion of the neck above the thread being frangible, (ii) the cap having a skirt provided with a pilferproof ring which prevents removal of the cap from the container until the pilferproof ring is removed from the cap along a line of weakness joining said ring to said cap skirt, the cap also having a thread complementary with the container thread and means for contacting the container above the said annular portion, characterised in that the thread has a pitch of between 0.05 and 0.095 turns per millimeter per millimeter of thread diameter, and that the diameter of the frangible portion of the container is at most 80% of the thread diameter.

4,402,416

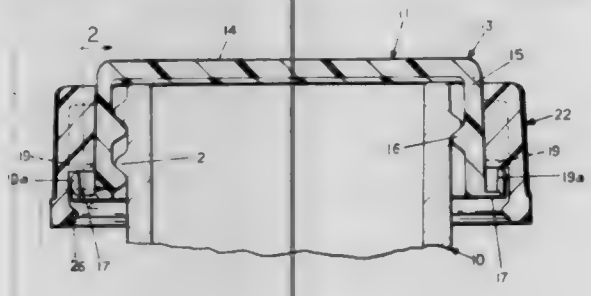
CHILD-RESISTANT PACKAGE

George V. Mumford, Toledo, and Ned J. Smalley, Perrysburg, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 26, 1982, Ser. No. 371,644

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—220 **20 Claims**



1. A child-resistant package comprising

a container having a neck with threads thereon and a child-resistant closure,

said closure comprising a cap made of organic plastic material and having a top wall and a peripheral skirt,

said skirt having threads thereon adapted to engage the threads of the container,

said skirt having a radial flange and a plurality of circumferentially spaced depressions on the upper surface of the radial flange,

and a ring telescoped over the cap and surrounding the skirt of the cap,

said ring having a plurality of lugs on both the radial and peripheral walls of the closure and adapted to engage the depressions at times upon application of a downward force on the ring,

each depression on the radial flange having a substantially vertical surface at one circumferential end adapted to be engaged by a lug on the ring when the ring is rotated in a direction to thread the closure onto the container,

each depression on the radial flange of the closure having an inclined surface at the other circumferential end such that upon mere rotation of the ring in a direction to unthread the closure from the container results in the lugs on the ring sliding up the inclined surfaces so that the closure can only be removed by a combined downward force on the ring and rotational force in the direction of threading the closure off of the container.

4,402,417

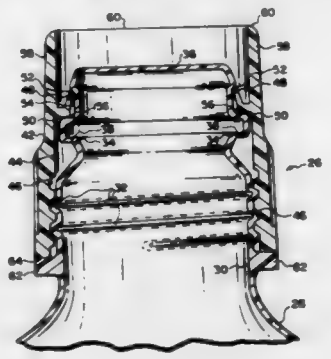
BOTTLE OPENING RING HAVING SHOCK ABSORBING MEANS

William C. Corrigan, Jr., Mundelein; Thomas A. Fowles, McHenry, both of Ill., and Nicholas Gibbons, Thetford, England, assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 28, 1981, Ser. No. 335,113

Int. Cl.³ B65D *41/34*

U.S. Cl. 215—232 **2 Claims**



1. In an opening ring for a bottle having an externally threaded neck portion defining an outlet and sealed by a closure element fused to the neck portion to form a frangible, break-apart line of weakness, said opening ring including a sidewall defining an opening having internal threads thereon for engagement with the external threads on the neck portion such that said opening ring may be threadedly mounted about the neck portion, and closure element engagement means extending from said sidewall for breaking the frangible line of weakness upon rotating said opening ring to effect vertical movement of said closure element engagement means relative to the closure element, the improvement comprising:

a rigid collar extending upwardly from said sidewall;

said collar including an open top portion which is disposed higher than the outlet-sealing closure element and the closure element engagement means; and

a bottom edge of said sidewall which abuts an associated horizontal step on the bottle, thereby preventing inadvertent downward displacement of said collar relative to the closure element which would otherwise cause the closure element engagement means to break the frangible line of weakness;

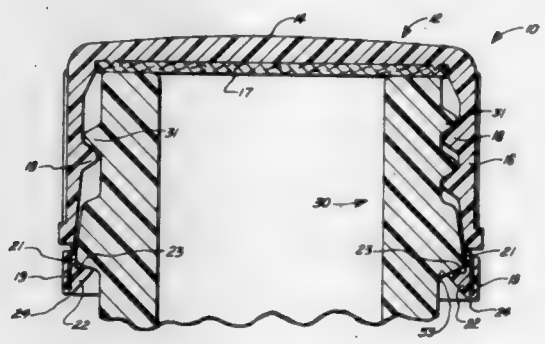
wherein said collar, including said top portion, protects the closure element from accidental blows which would otherwise force the closure element to break apart from the neck portion at the line of weakness, the force of any blow to said collar being transmitted to the bottle through at least one of the horizontal step and the threads.

4,402,418

TAMPERPROOF CLOSURE

Efrem M. Ostrowsky, Highland Park, Ill., assignor to Ethyl Products Company, Richmond, Va.

Filed Nov. 27, 1981, Ser. No. 325,490
Int. Cl.³ B65D *41/34*
U.S. Cl. 215—252 **13 Claims**



1. A thermoplastic closure for fitment to a container which has a threaded neck portion and an outwardly extending annular flange adjacent to but beneath said threaded neck portion, said thermoplastic closure comprising:

a. a top wall;

b. an annular sidewall downwardly extending from said top wall, said sidewall having about its inside surface a thread for cooperation with said neck thread;

c. an annular band attached to the lower portion of said annular sidewall and having an inside diameter larger than the diameter of said annular flange, said attachment being effected by way of a plurality of spaced-apart frangible ribs; and

d. a plurality of spaced-apart tabs pendantly attached to the lower portion of said annular band, said tabs being inwardly foldable so that a tab portion will be in a position of interference with said container annular flange when said closure is fitted to said container, whereby, axial upward movement of said closure, upon unthreading rotation thereof, is resisted by said interference until said frangible ribs are broken.

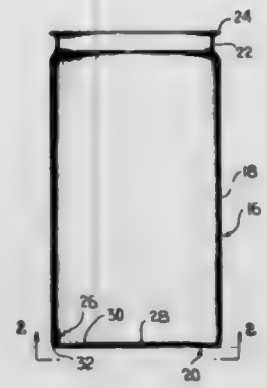
4,402,419

BOTTOM WALL FOR CONTAINER

William C. MacPherson, Downers Grove, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Jun. 26, 1978, Ser. No. 919,187
Int. Cl.³ B65D *8/04*
U.S. Cl. 220—70 **1 Claim**

1. A seamless metal container comprising a body and an integral bottom, said bottom having controlled distension characteristics and being joined to said body by a radius, said bottom having a flat central portion offset inwardly into said body and being joined to said radius by an annular generally frustoconical radially outer portion, the inward offsetting of said flat central portion being equal to the distension of said



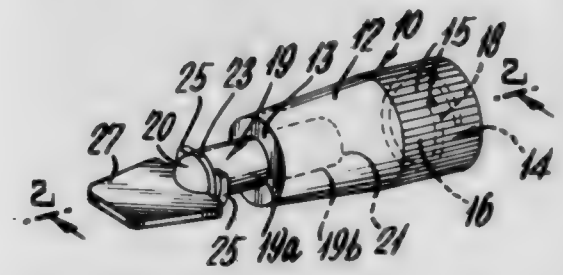
bottom under pressure during conditions of use whereby said bottom becomes flat.

4,402,420

DUAL FUNCTION PORT CAP

Milton P. Chernack, West Hempstead, N.Y., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Filed Dec. 7, 1981, Ser. No. 328,170
Int. Cl.³ B65D *41/34*
U.S. Cl. 220—266 **10 Claims**



1. A port cap comprising:

a. a body member having a wall at its first end, a second end which is open, and a hollow interior,

b. a projection on the wall at the first end of said body member, said projection having a first end which is closed, a second end which is open, and a hollow interior, the hollow interior of said projection being in fluid communication with the hollow interior of said body member,

c. said projection having a weakened peripheral portion located intermediate the wall at the first end of said body member and the closed end of said projection, at least a portion of the interior surface of said projection between said weakened peripheral portion and the wall at the first end of said body member being tapered.

4,402,421

CONTAINER CLOSURE HAVING EASY-OPENING MEANS

John Ruemer, Jr., Baltimore, Md., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 325,462, Nov. 27, 1981. This application Jun. 2, 1982, Ser. No. 384,239
Int. Cl.³ B65D *17/34*
U.S. Cl. 220—269 **12 Claims**

1. An end closure of the type having a wall with a peripheral edge comprising:

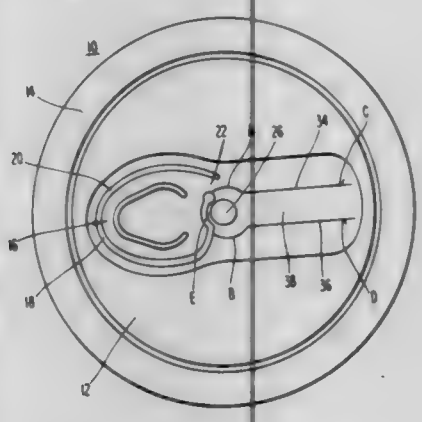
a pour opening panel in said wall, said panel being defined by a primary score line, said primary score line circumscribing said pour opening panel except at a hinge area;

an opening tab attached to said wall at a fulcrum adjacent said primary score line, said opening tab having a handle portion and a forward portion, said forward portion being adapted

to depress said pour opening panel to expose a pour opening when said opening tab is pivoted about said fulcrum;

a fastening means at said fulcrum for securing said opening tab to said wall;

one secondary score line intersecting the said primary score line at a first point and projecting away from said pour opening panel to a second point, said one secondary score line being adjacent to said fulcrum on one side of said fastening means;



another secondary score line intersecting said primary score line at a third point and projecting away from said pour opening panel to a fourth point, said another secondary score line being adjacent said fulcrum on the other side of said fastening means, said one and said another secondary score lines defining a means for retracting said opening tab from said pour opening after said pour opening panel has been depressed, the distance between said one and said another secondary score line being greater in the region of said fastening means than the distance therebetween at said third and said fourth points.

4,402,422

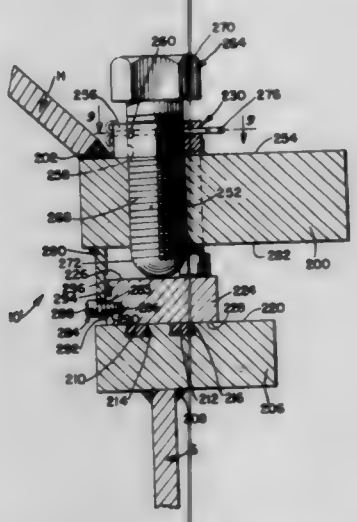
FIELD ADJUSTABLE SEAL

Harold F. Honath, Coraopolis; Gebhart J. Reiling, Pittsburgh; Robert H. Swinderman, Mars, and Richard E. Hills, Coraopolis, all of Pa., assignors to Pittsburgh-Des Moines Corporation, Pittsburgh, Pa.

Filed Nov. 10, 1981, Ser. No. 320,108

Int. Cl.³ E04H *7/20*; G21C *13/08*

U.S. Cl. 220—327 **12 Claims**



1. Joint means for coupling a vessel head to a vacuum vessel shell comprising:

a head flange on the vessel head;

a shell flange on the shell;

a seal ring supported on said shell flange;

a sealing gasket located in a groove defined in said shell flange adjacent said seal ring;

support means for transferring the weight of the head and the vacuum load of the vacuum vessel to said seal ring;

adjustable means interposed between said head flange and said seal ring; and

a sealing skirt coupling said head flange to said seal ring.

4,402,423

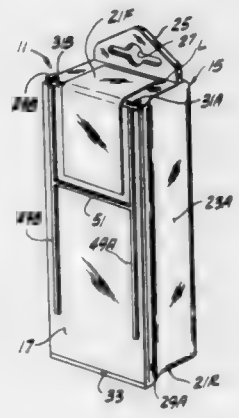
DIE SET PACKAGING SYSTEM

Roman L. Skowronski, Bay Village, and John M. Szekeres, Parma, both of Ohio, assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 12, 1981, Ser. No. 224,474

Int. Cl.³ B65D *25/54*

U.S. Cl. 220—345 **1 Claim**



1. A system for packaging one or more machine tool parts, such as thread cutting dies or the like, comprising a plurality of packages, each package comprising a generally rectangular container having a bottom wall, an end wall at each end of the bottom wall, and a side wall at each side of the bottom wall, the top of the container being open, and a lid for closing the open top of the container, the upper edges of said side walls and the bottom of said lid having dovetail tongue and groove means so that upon said tongue and groove means being engaged with one another, the lid is slidable in a direction generally parallel to the bottom wall of the container from an open position in which the lid is substantially clear of the open top of the container to a closed position in which the open top of the container is closed by the lid, the upper face of the lid and the bottom face of the bottom wall of the container of said packages of the said packaging system having means thereon for at least partially interlocking the bottom wall of the container of an upper package with the lid of the lower package when two or more of the packages are stacked vertically, said package interlocking means comprising receptacle and protuberance means on the container bottom wall and on the lid with the protuberance means of one package being received in the receptacle means of another package, said interlocking means preventing sidewise, endwise, and rotational movement of one stacked package relative to another, wherein said receptacle means comprises two generally U-shaped ribs extending out from the bottom surface from the bottom wall of the container with the bases of said U-shaped ribs being parallel and transverse to the sides of the container with these bases of the U-shaped ribs being spaced apart from one another, and wherein said protruberance means comprises a generally H-shaped rib formed on the upper surface of the lid with a cross rib of H-shaped protruberance rib being received between the parallel bases of the U-shaped rib of the receptacle means and with the inner faces of the H-shaped rib being engageable with the outer faces of the U-shaped receptacle ribs thereby to prevent lateral, longitudinal and rotational movement of one stacked package relative to another.

4,402,424

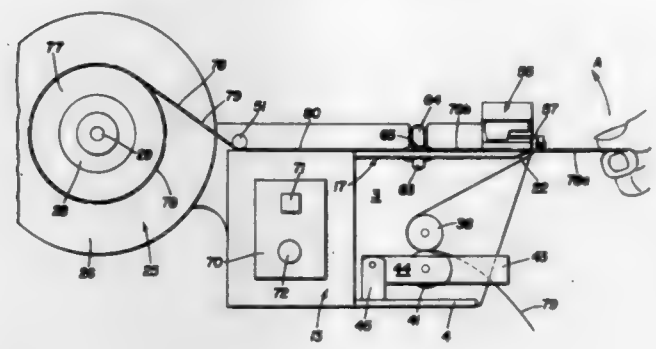
LABEL DISPENSING MACHINE

Harold R. Mattix, Lisbon, Ohio, assignor to Ohio Electronics Machinery, Inc., Sebring, Ohio

Filed Dec. 4, 1981, Ser. No. 327,574

Int. Cl.³ B65C 9/42

U.S. Cl. 221—13 **11 Claims**



1. A machine for individually dispensing a label from a plurality of labels mounted in spaced relationship on a carrier web, said machine including:

(a) a slide plate;

(b) means for supporting a supply of labels and their carrier web;

(c) feed means for moving the web and labels across the slide plate;

(d) switch means for actuating the feed means upon removal of a label from the carrier web;

(e) electronic sensing means mounted adjacent the slide plate in the path of the moving web and labels for detecting the spacing between adjacent labels, said sensing means producing a signal upon detection of said label spacing;

(f) electronic timer means actuated by the signal from the sensing means for deactuating the feed means after passage of predetermined preset feed means actuated time period; and

(g) adjustment means for regulating the preset feed means actuated time period of the timer means.

4,402,425

CONTAINER FOR THE DISPENSING OF INDIVIDUAL TABLETS

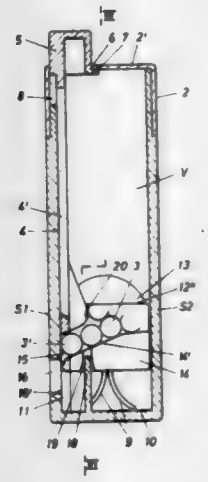
Alfred von Schuckmann, Kervendonk 63, 4178 Kevelaer 2, Fed. Rep. of Germany

Filed Jun. 10, 1980, Ser. No. 158,175

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1979, 2925432; May 10, 1980, 3018041

Int. Cl.³ B65G 59/06

U.S. Cl. 221—202 **18 Claims**



1. In a container for the dispensing of tablets one by one in which a tablet drop-out opening is formed in a container housing wall of the container below a storage chamber therein having a bottom opening, a spring-biased slide, having a depressed position and a non-depressed position, moveably disposed in front of the vicinity of said drop-out opening and releasing at each time one individual tablet so that one tablet at a time can drop out of the drop-out opening, said slide continuing towards the outside of the container in the form of an actuating button, said slide cooperating with a division finger, said division finger in the depressed position of the slide blocking the path between the bottom opening of the storage chamber and the tablet drop-out opening, the improvement comprising

two bottom walls of the container housing are inclined in a V-shape relative to each other defining an inner throat therebetween constituting the bottom opening of the storage chamber, said bottom walls of the container housing define a stationary bottom of said storage chamber,

said slide is movable relative to said bottom walls of the container housing and with respect to the tablets in the storage chamber and is formed with another tablet drop-out opening, said slide is formed in the vicinity of the inner throat with a side wall, said side wall in the non-depressed position of said slide projects over said throat into said storage chamber so as to constitute a partition wall isolating, one one side thereof, the tablets in the storage chamber from said throat,

a side rib mounted on the other side of said slide and directed transversely relative to the inclination of said bottom walls and downwardly toward said another tablet drop-out opening of the slide,

said side rib being formed with a passage opening means for receiving said division finger,

said slide is formed on said other side thereof with a deflection shoulder opposite to said division finger, said deflection shoulder extends approximately to said another tablet drop-out opening.

4,402,426

WEIGHING AND DISPENSING UNIT

Keith Faulkner, Bexley, and David E. Appleford, Romford, both of England, assignors to Portionmat (Engineering) Limited, England

Filed Sep. 4, 1980, Ser. No. 184,166

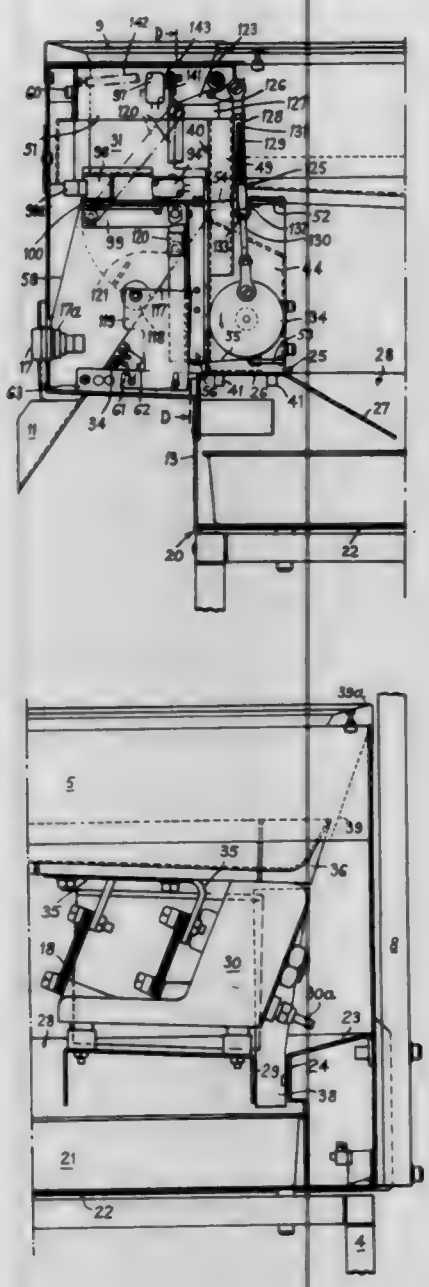
Claims priority, application United Kingdom, Sep. 4, 1979, 7930641; Dec. 11, 1979, 7942672

Int. Cl.³ G01G 13/28

U.S. Cl. 222—56 **30 Claims**

1. A unit for weighing and dispensing portions of flowable solid food of predetermined weight, in which food is fed into a dispensing chamber and onto a weighing platform supported by a movable weighing support, said unit comprising means for sensing a predetermined weight of food on said platform, means for retaining the platform in a position to receive the food, a control circuit for setting the predetermined weight and being operable by a signal from said sensing means to provide a condition in which feed is stopped and the retaining means can release the platform to permit it to move into a position in which a weighed portion of food can be discharged therefrom, means for resetting the weighing platform automatically to its food receiving position after discharge of a weighed portion of food, and electrical drive means connected to said control circuit for driving said reset means, and means for enabling the electrical drive means to continue to operate if the weighing platform should initially be prevented from being reset to its food receiving position by any solid food obstruc-

tion, whereby to enable the weighing platform to be continually moved by the continued operation of the drive means and



reset means to clear said solid food obstruction and thereafter enable the weighing platform to be reset.

4,402,427

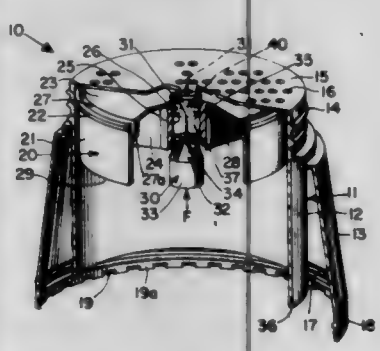
CARTRIDGE PISTON WITH INTEGRALLY MOLDED SEALING PLUG

Alfred J. Muskovin, Greensboro, N.C.; Paul J. Green, and Lawrence J. Aubert, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 22, 1981, Ser. No. 286,096

Int. Cl.³ B67D 5/22

U.S. Cl. 222—47 **11 Claims**



1. A cartridge comprising:

(a) a container having a cylindrical sidewall with a circular top wall affixed thereto, said top wall having a plurality of dispensing outlets therethrough;

(b) a generally rigid, disc-shaped, piston-type lower closure having an upper and a lower side, an aperture extending axially therethrough and a cylindrical sidewall;

(c) an integrally molded, detachable plug depending from the lower side of the closure and aligned with said aperture;

(d) said plug being fixed in a generally spaced relation with the adjacent lower end of said aperture such that there is provided a gap therebetween for use as a filling passageway through said closure, said plug being sized and shaped for insertion into said aperture to close said seal said container after said container is filled; and

(e) said lower closure being telescoped within said container sidewall and having an annular sealing member around the periphery of its upper side in sealing engagement with said container sidewall.

4,402,428

DOSING APPARATUS FOR VISCOUS MATERIALS

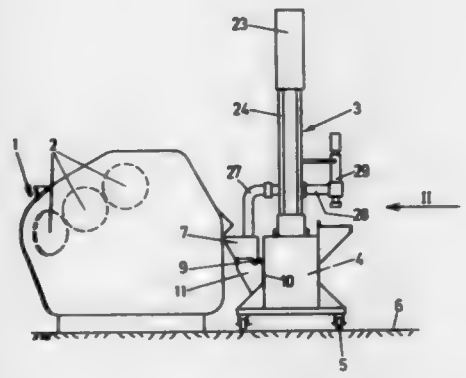
Hans-Jörg Lang, Biberbach, and Ernst Schwerdtel, Munich, both of Fed. Rep. of Germany, assignors to Ludwig Schwerdtel GmbH, Karlsfeld, Fed. Rep. of Germany

Filed Mar. 17, 1981, Ser. No. 244,822

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1980, 3023003

Int. Cl.³ G01G 11/14

U.S. Cl. 222—58 **8 Claims**



1. In a dosing device for viscous materials, especially for paints, including a dosing cylinder in which is disposed a dosing piston coupled with a hydraulically chargeable piston cylinder drive, a multi-way valve disposed downstream of the dosing cylinder and connected on one side to a line for supply of the materials and on another side to a pressure line for the extrusion of metered material by means of the drive via a dispensing valve, each of said lines being selectively connected to the dosing cylinder, the improvement comprising:

an open storage container,

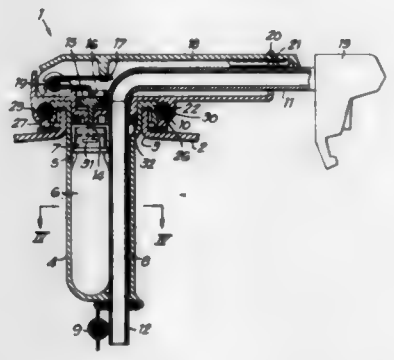
said dosing cylinder defining suction-producing means, said line for the supply of the material to the dosing cylinder interconnecting said storage container with said suction apparatus,

a feed station monitoring device associated with said storage container having a pre-stressable compression spring coupled to first switching means for monitoring the minimal amount of fill in said container as well as an adjustable spring coupled to a second switching means for monitoring the maximal amount of fill in said container.

4,402,429
APPARATUS FOR DRAWING OFF CARBONATED DRINKS FROM A CONTAINER WITH INCORPORATED GAS SUPPLY

Jean R. Vanden Driessche, Brussels, Belgium, assignor to Waterlomat Société Anonyme, Brussels, Belgium

Filed Dec. 4, 1978, Ser. No. 966,272
Claims priority, application France, Dec. 19, 1977, 77 38317
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—153 **2 Claims**



1. Apparatus for drawing carbonated drinks from a container having as a part thereof, a supply of gas in a chamber fitted with a valve device;

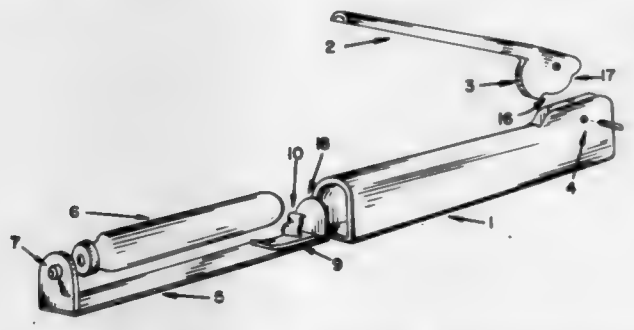
said apparatus comprising a base plate having a drawing-off pipe and a valve actuating means, said base plate having means for securing and locking the same to said container in a position wherein said valve actuating means is adjacent and engageable with said valve device, said valve actuating means and said device together defining a gas pressure regulator;

the means for locking said base plate to said container comprising at least one rod rotatable in said base plate, said rod having a flat side, being tangent to an annular chamber on said container and having a radially extending control lever at one end and outside said base plate, a lever-lid pivoted to said base plate and being arranged to engage said control lever to rotate said rod and thereby lock said base plate to said container by projecting a non-flat portion of said rod into said annular chamber.

4,402,430
MECHANISM FOR DISPENSING CHEMICALS FROM A PRESSURIZED CONTAINER

Mitchell Fox, Altamonte Springs, Fla., and Alfred F. Washburn, 1448 Lakeshore Dr., Mount Dora, Fla. 32757, assignors to Alfred F. Washburn, Mount Dora, Fla.

Filed Sep. 29, 1980, Ser. No. 192,339
Int. Cl.³ F41H *9/00*
U.S. Cl. 222—183 **12 Claims**



5. A hand-held holder for pressurized chemical cartridges, comprising:

a casing having an opening therethrough between first and second ends of said casing;

a cartridge-carrying frame member dimensioned to slide through said opening of said casing, said frame member having first and second ends corresponding to said first and second ends of said casing when fitted therein;

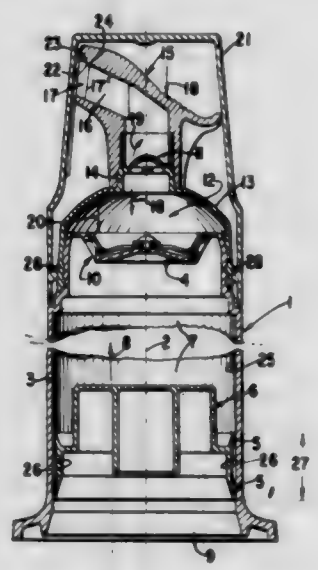
a discharge nozzle at said first end of said frame member, said nozzle adapted to engage a discharge valve fitted to said cartridge for dispensing a pressurized chemical contained therein; and

means at the second end of said casing and the second end of said frame for holding a cartridge carried by said frame in a relatively fixed position, while driving said frame through said casing toward said second end of said casing to cause movement of said nozzle toward and into engagement with said valve to effect the dispensing of the pressurized chemical contained therein.

4,402,431
DISPENSER CONTAINER WITH COMPRESSIBLE PUMP

Georg Wiegner, and Peter Geneschen, both of Viersen, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Jan. 19, 1981, Ser. No. 226,148
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1980, 3035705
Int. Cl.³ B67D *5/42*; B05B *11/02, 11/04*
U.S. Cl. 222—207 **4 Claims**

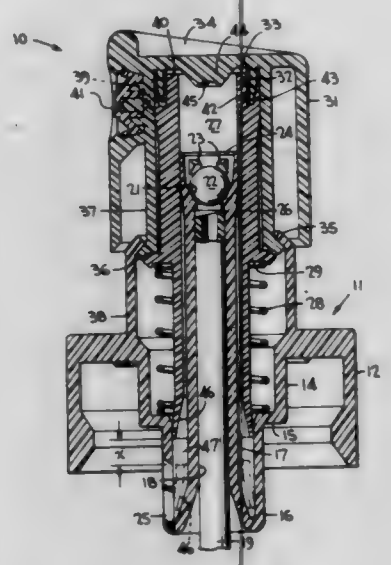


1. A dispenser container for viscous fluids comprising a container body provided with a resiliently compressible portion including a mouthpiece at one end of said container body, the mouthpiece having an outwardly directed outlet; a storage chamber to hold material to be dispensed; a piston member arranged in said container body at the other end contacting the inner wall of the container to define a boundary of the storage chamber, the piston member being movable towards and restrained from movement away from said compressible portion; a top surface to the storage chamber; an elastically compressible pump having an inlet valve in the top surface, an outlet valve in the mouthpiece, and a pump chamber between the valves; a separate removable cover for said dispenser container; and a stopper means adapted to cooperate with the outlet of said mouthpiece to seal said outlet, wherein the inner wall of the container is roughened at the zone of insertion of the piston in such a manner to permit the passage of air but to prohibit the passage of material to be dispensed and there is a small, partial gap between the stopper means and the mouthpiece outlet formed between one edge of the stopper means and the corresponding inner edge of the mouthpiece outlet and being tapered in the manner of a wedge from the inside to the outside, said gap being permeable to air but tight with regard to the material to be dispensed.

4,402,432
LEAK-PROOF DISPENSING PUMP

Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045

Filed Feb. 13, 1980, Ser. No. 121,223
Int. Cl.[3] B05B 11/00
U.S. Cl. 222—321 15 Claims



1. In a liquid dispenser comprising a pump body sealingly mounted on a container of flowable product to be dispensed, said body having a container vent opening therein and a stationary piston thereon, an annular plunger resiliently urged into a fully raised position and mounted for reciprocation on said piston to define therewith a variable volume pump chamber, a valve controlled inlet passage in said piston, a plunger head slidably disposed on said plunger and having a discharge passage adapted to be opened and closed by said plunger upon an increase in pressure within said chamber,

the improvement wherein means are provided for opening and closing said vent opening upon reciprocation of said plunger, said means comprising a vertical first cylindrical wall spaced from and surrounding said piston so as to therewith define a vent chamber which is in open communication with the interior of the container via said vent opening, means defining a container vent passage extending from the interior of the container via said vent opening and said open vent chamber, outwardly of said plunger and outwardly of said plunger head, said opening and closing means further comprising skirt means on said plunger in sealing engagement with an inner surface of said wall for closing said vent passage while said plunger is in its raised position and during an initial downstroke reciprocation thereof, said skirt means being further adapted to open said vent passage upon a further downstroke reciprocation of said plunger, whereby the interior of the container is vented to atmosphere only during said further downstroke reciprocation, and any leakage of product from the container through said vent passage is positively prevented while said plunger is in said raised position and during said initial downstroke.

4,402,433
TWO PART CONTAINER WITH ADJUSTABLE VENTS

George Webinger, Minneapolis, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 1, 1979, Ser. No. 80,999
Int. Cl.[3] B67D 3/00
U.S. Cl. 222—485 6 Claims

1. A two part paperboard container having adjustable vents, for holding a solid sublimable composition comprising:

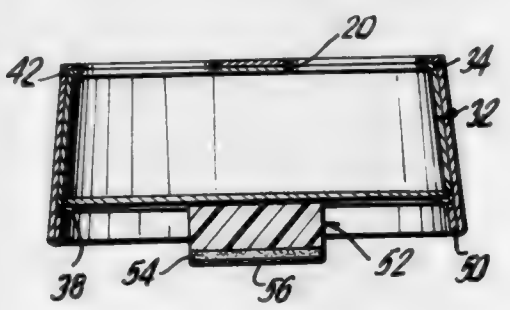
an inner tubular memer of generally truncated, conical configuration, said inner tubular member having a generally circular inner upper cover portion adhesively and irremovably joined to the upper end thereof, said inner upper cover portion being provided with at least one die cut aperture therein, said inner tubular member being adapted to receive said solid composition;

means for sealing the lower end of said inner tubular member;

an outlet tubular sleeve member of generally truncated, conical configuration, said outer sleeve member having a diameter larger than the diameter of said inner member, said outer sleeve member including a generally circular outer upper cover portion, said outer upper cover portion being provided with at least one die cut aperture therein at least as large as the die cut aperture of the inner upper cover member; said inner tubular member being disposed within said outer sleeve member; said members being capable of relative rotation therein about the longitudinal axes of said members;

means for facilitating the relative rotation of said tubular members; and

means for holding said inner tubular member within said outer sleeve member such that a frictional enagement is obtained between the outer surface of said inner tubular



member and the inner surface of said outer sleeve member, and such that the upper surface of said inner upper cover portion abuts the lower surface of said outer upper cover portion whereby when said inner tubular member is rotated relative to said outer sleeve member, the die cut apertures of the upper cover portions of the respective tubular members are relatively movable from a position in which they do not register through partially aligned positions to a fully registered position and back toward the non-registering position such that the solid composition within said inner tubular member is exposed to the air, thereby enabling the composition to sublime;

said means for holding said inner tubular member within said outer sleeve member comprising an annular support member formed from rolling the bottom edge of said outer sleeve member into an upturned U-shaped configuration such that the bottom edge of said inner tubular member rests on the upturned bottom edge of said outer sleeve member and is supported thereby and in frictional air-excluding relation therewith.

4,402,434
FLOW RESPONSIVE CLOSURE DEVICE

Richard D. Baker, 3 Robie Rd., Kennebunk Beach, Me. 04045

Filed Jan. 11, 1982, Ser. No. 338,597
Int. Cl.[3] B65D 5/72, 35/46
U.S. Cl. 222—492 4 Claims

1. An improved automatic closure device for containers containing flowable material, comprising:

a cap member including means to engage said container having a discharge orifice defined within a portion thereof;

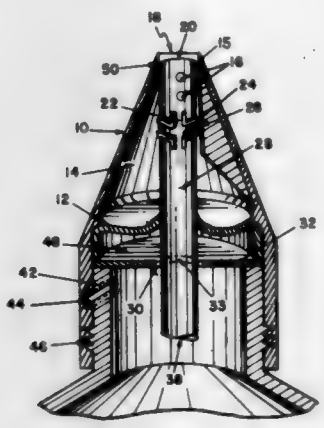
a hollow stem member having a plug at the top thereof adapted to plug said discharge orifice, said stem member having at least one discharge port defined therein in a side thereof;

a resilient diaphragm integral with said hollow stem member adapted to extend over and contact said cap member;

a seal member having an aperture defined therein adapted for said hollow stem member to be fluid-tight and verti-

cally slidable therein and pass therethrough, adapted to form a pressure chamber between itself and said diaphragm member;

a discharge chamber formed above said resilient diaphragm between it and said cap member, said closure device adapted so that when pressure is applied, said flowable material passes into said hollow stem and out said discharge ports and into the discharge chamber thereby applying pressure to the resilient diaphragm which is adapted to then move downward, the pressure being



greater in the discharge chamber than in the pressure chamber on the othere side of said diaphragm allowing the escape of said flowable materials through said discharge orifice and upon the release of said pressure, said resilient diaphragm being adapted to return to its original position, causing said hollow stem and the plug at the top thereof to move upward and reseal said discharge orifice by contacting said cap member; and

further including means for holding open and holding closed said cap member without material pressure on said diaphragm.

4,402,435

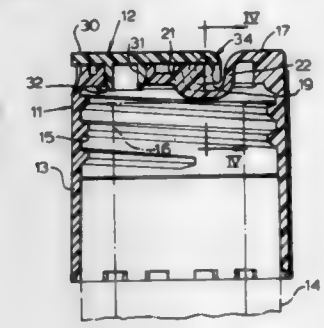
DISPENSING TYPE CAP CLOSURE

Sidney M. Libit, 141 Lakeside Ter., Glencoe, Ill. 60022

Filed May 15, 1981, Ser. No. 264,129

Int. Cl.[3] B65D *47/00*; B67D *3/00*

U.S. Cl. 222—556 **20 Claims**



11. A lightweight plastic dispensing closure comprising a cap portion having a top surface for attaching over a container opening, a recessed wall portion formed in said top surface including a dispensing orifice extending therethrough and a depressed socket portion spaced inward of said orifice, a closure member having a stopper formed on an undersurface thereof dimensioned for a compressible force fit receipt in said orifice and a downturned flange portion mounted for pivotal movement in said socket portion, and a stationary planar surface along said socket portion for engaging with said flange portion to limit upraised pivotal movement of said closure to a full open position slightly beyond the vertical and interengaging means projecting from a forward wall portion of said socket portion and on said flange portion including means for resisting relative movement of the closure member and socket portion both from the full open position towards a closed position and a reverse movement towards the full open position from a position intermediate the full open position and closed position.

4,402,436

DISCHARGE GATE DEVICE FOR BULK CARGO HOPPERS, PARTICULARLY HOPPERS IN BULK CARGO VESSELS

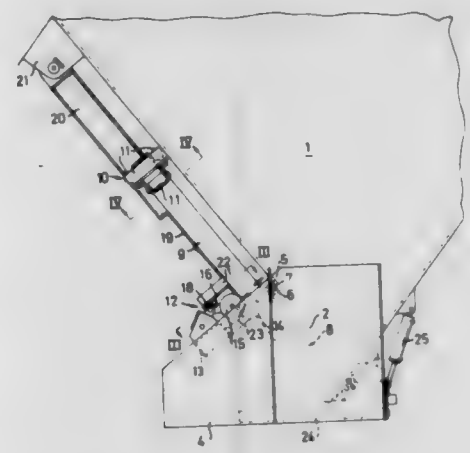
Leif A. Hellgren, Kungsängen, Sweden, assignor to AB Nordstroms Linbanor, Enkoping, Sweden

Filed Jul. 10, 1981, Ser. No. 282,164

Claims priority, application Sweden, Jul. 10, 1980, 8005082

Int. Cl.[3] B65D *47/00*

U.S. Cl. 222—561 **2 Claims**



1. Device for a hopper for bulk cargo, particularly a cargo hopper in bulk cargo vessels, which has a downwardly directed discharge opening closable by a movably mounted cover, characterized in that the cover is mounted firstly for sliding in its own plane between a lower position covering the opening and an upper position exposing the opening, and secondly for movement towards the plane of the opening at the end of the sliding movement to the lower position and away from the plane of the opening at the initial sliding movement toward the upper position, the cover being securely joined to guide girders running in its direction of slide, said girders being slidably mounted in guides which permit a certain pivot movement of the girders perpendicular to the slide movement, means being arranged at the end of the slide movement to the lower position to swing the cover towards the plane of the opening, and vice versa, said guides comprising spaced upper and lower sets of guide rollers, of which the lower sets have a guide roller which runs on the side of the respective guide girder facing away from the opening and which is movable towards and away from the opening to achieve said swinging of the cover, the movable guide roller being journalled in a linkage which includes a first arm at the outer end of which a guide roller is journalled, and a second arm pivotally jointed to the first arm and pivoted in a stationary attachment means, said first and second arms forming between them a toggle joint pointed toward the upper set of guides, and each guide girder having a stop which, toward the end of the slide movement to the lower position, strikes the toggle joint so as to impart, during the final movement, a movement to the guide rollers in the direction toward the opening, so that the cover is pressed against the opening by the guide roller.

4,402,437
PROTECTION ARRANGEMENT FOR A CASTING JET EMERGING FROM A METALLURGICAL VESSEL

Walter Fortner, Linz; Erich Misera, Leonding; Franz Landerl, Enns; Günther Robiczek, Traun, and Meinhard Berger, Linz, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Dec. 16, 1980, Ser. No. 216,987
Claims priority, application Austria, Jan. 25, 1980, 413/80
Int. Cl.³ B22D *11/10, 41/08*
U.S. Cl. 222—607 9 Claims



1. In a protection arrangement for a casting jet emerging from a metallurgical vessel, in particular a casting ladle, and of the type including an articulation-rod assembly pivotable into any space direction and a protective tube fastened to said articulation-rod assembly and enveloping said casting jet, the improvement which is characterized in that said articulation-rod assembly is formed by

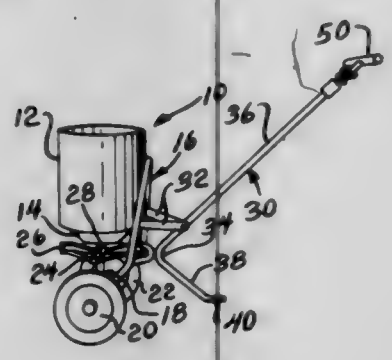
a first four-bar linkage of the parallelogram type, extending vertically and including first two oscillating cranks, a coupler, and a first web extending vertically, said first four-bar linkage being mounted to be rotatable about a vertical axis, an extension arm being hinged to said coupler for carrying said protective tube, and

a second four-bar linkage including second two oscillating cranks, a coupler, and a second web, one of said second two oscillating cranks being formed by said extension arm and said second web being formed by one of said first two oscillating cranks.

4,402,438
SPREADER CONTROL

Ted W. Gregory, Libertyville, Ill., assignor to Jackson Manufacturing Company, Harrisburg, Pa.

Filed Apr. 27, 1981, Ser. No. 257,667
Int. Cl.³ A01C *23/00*
U.S. Cl. 222—625 9 Claims

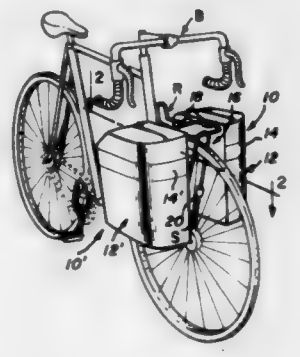


1. In a spreader of the type having a hopper for particulate material such as seed, fertilizer or the like having a dispensing opening therein and gate means for adjusting the effective size of said dispensing opening, and further having wheel means supporting said spreader for movement along the ground, amnd handle means having a gripping portion for an operator of said spreader, the combination of control means on said handle means positioned adjacent said gripping portion for manipulation by an operator without moving a hand from said gripping portion, and means interconnecting said control means and said gate means for controlling the effective size of said dispensing opening, said handle means having an elongated portion, said control means being supported from and axially movable relative to said elongated portion, said control means comprising an operator knob mounted slidably along said elongated portion for closing an opening the dispensing opening and a movable stop mounted on said elongated portion for providing fine adjustment of said operator knob in a direction along the elongated portion, said operator knob and said movable stop operably coupled to said interconnecting means to limit opening and closing of said dispensing opening by said gate means, said control means encircling said elongated portion of said handle means, said movable stop encircling said handle means elongated portion is also being movable axially thereon.

4,402,439
BICYCLE SADDLE BAGS

Glen J. Brown, 458 Thayer Rd., Santa Cruz, Calif. 95060

Filed Dec. 23, 1981, Ser. No. 333,720
Int. Cl.³ B62J *9/00;* A45C *13/04*
U.S. Cl. 224—32 R 19 Claims



1. A stiffener for a streamlined bicycle saddle bag or the like comprising:

a rigid substantially planar back member having a forward edge and an aft edge; and

a flexible sheet member having one edge thereof attached to said back member along said forward edge in such a manner that when unflexed, said sheet member extends away from said back member, said sheet member being provided with means for varying the flexibility thereof such that when a forward portion thereof is flexed in a predetermined manner, a rearward portion thereof is disposed in spaced apart generally parallel relationship to said back member.

4,402,440
INFANT CARRIER

Patricia K. Purtzer, 260 E. Cliff St., Solana Beach, Calif. 92075, and William L. Lauer, San Diego County, Calif., assignors to Patricia K. Purtzer, Solana Beach, Calif.

Filed May 22, 1981, Ser. No. 266,366
Int. Cl.³ A47D *13/02*
U.S. Cl. 224—160 3 Claims

1. An infant carrier for mounting on the truck portion of a carrying person's body, said infant carrier comprising:

harness means adapted to be releasably secured to the person's trunk, said harness means being shaped and configured to symmetrically distribute any weight borne by said harness means to the shoulders and upper back of the person;

compliant, infant body conformable pouch means for holding an infant, said pouch means comprising:

a body portion for supporting the back of the infant, said body portion being adapted to at least partially encircle the infant and terminating in forward flaps having edges normally spaced apart;

a seat connected to said body portion for supporting the weight of the infant;

a front panel connected to said seat portion and interconnecting said spaced flaps at the bottom of said body portion, said body and seat portions and said front panel being mutually shaped and configured to define lower openings through which the legs of the infant can extend; and

fastener means on said pouch means, said fastener means comprising two first fastener means positioned on opposite sides of said pouch means adjacent said front panel and two second fastener means positioned on said flaps spaced upwardly from said respective first fastener means;



connector means on said harness means for quick release connection to said fastener means on said pouch means, whereby said pouch means supports the infant and is releasably fastenable to said harness means, the weight of said pouch means and the infant being borne by said harness means, said pouch means being adapted to support the infant in a substantially upright seated position, said quick release connector and fastener means permitting attachment of said pouch means to said harness means and detachment of said pouch means from said harness means without disturbing said harness connector means and without disturbing the infant.

4,402,441

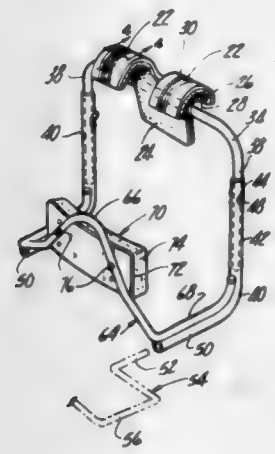
MUSICAL INSTRUMENT CARRIER

Russell S. Jones, 927 Stocker Ave., Flint, Mich. 48503, and Albert R. Casavant, Box 685, Chattanooga, Tenn. 37401

Filed Jan. 9, 1981, Ser. No. 223,810

Int. Cl.³ G01G *5/00*

U.S. Cl. 224—265 **9 Claims**



1. A musical instrument carrier to be supported by the torso of a musician for transport of an instrument while the instrument is being played, said carrier comprising:

a first means for extending over and engaging the shoulders of the musician;

a second means for abuttingly engaging the front torso of the musician;

a third means for connecting said first means to said second means; and

a fourth means connecting with said third means for supporting the instrument adjacent the front torso of the musician,

said third means including means for adjustably and rigidly connecting said first means with respect to said second means to accommodate musicians of different sizes and shapes,

said third means further comprising a pair of substantially L-shaped tubular members, each having a first free end adapted to be positioned adjacent the back torso of the musician and a second free end adapted to extend outwardly from the front torso of the musician adjacent said second means, a first rigid member securing said first free end of each substantially L-shaped member in a spaced relationship, and a second rigid member securing said second free end of each substantially L-shaped member in spaced relationship,

said first rigid member comprising an elongated member having a central shank adapted to extend along the upper back of said musician and supporting said first means and a pair of parallel end shanks angled with respect to said central shank, said end shank being slidably received in a said first end of said L-shaped tubular member and further comprising means for locking said end shanks in position with respect to said substantially L-shaped tubular members.

7. A musical instrument carrier to be supported by the torso of a musician for transport of an instrument while the instrument is being played, said carrier comprising:

a first means for extending over and engaging the shoulders of the musician;

a second means for abuttingly engaging the front torso of the musician;

a third means for connecting said first means to said second means; and

a fourth means connecting with said third means for supporting the instrument adjacent the front torso of the musician,

said third means including means for adjustably and rigidly connecting said first means with respect to said second means to accommodate musicians of different sizes and shapes,

said third means further comprising a pair of substantially L-shaped tubular members, each having a first free end adapted to be positioned adjacent the back torso of the musician and a second free end adapted to extend outwardly from the front torso of the musician adjacent said second means, a first rigid member securing said first free end of each substantially L-shaped member in a spaced relationship, and a second rigid member securing said second free end of each substantially L-shaped member in spaced relationship,

said second rigid member being secured to the external surface of each second end of said substantially L-shaped tubular members and including a raised central portion extending upwardly above the second ends of said substantially L-shaped tubular members adjacent the front torso of the musician, and

said second means being secured to said raised central portion.

4,402,442

VEHICLE TOP SAIL AND SURF BOARD CARRIER

Samuel C. Martino, P.O. Box 1995, Riverview, Fla. 33569

Filed Oct. 2, 1981, Ser. No. 308,178

Int. Cl.³ B60R *9/04*

U.S. Cl. 224—324 **5 Claims**

1. In combination with a vehicle roof including opposite side marginal portions and a surf/sail board to be carried on said roof, a pair of support assemblies for longitudinally spaced portions of said board and for supporting said board in closely

spaced relation above said roof, each of said support assemblies including a pair of laterally spaced apart lightweight resilient body blocks, elongated, flexible, stretchable and elastic tether means extending and connected between each pair of blocks yieldingly biasing said blocks toward each other when said tether means is stretched, each pair of said blocks including adjacent sides and top and bottom surfaces as well as remote sides, said pairs of blocks being spaced apart along the longitudinal extent of said roof with the blocks of each pair of blocks supported from opposite side marginal portions of said roof, said adjacent sides having horizontal open ended grooves formed therein spaced above said bottom surfaces opening toward each other, said board being disposed in horizontal position closely over and extending longitudinally of said roof



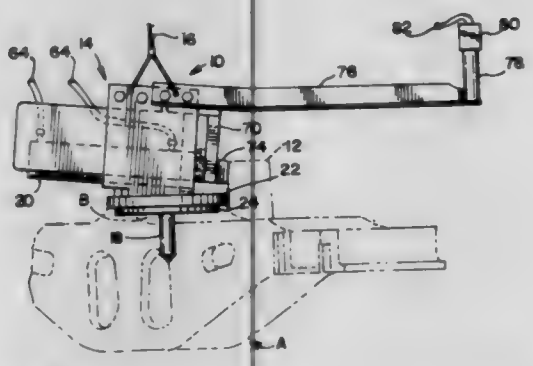
with opposite side marginal portions of said board embracingly and seatingly received in the corresponding grooves and with said pairs of blocks spaced along and engaging said longitudinal spaced portions of said board and said elongated tether means extending between each pair of blocks being in a stretched condition and functioning to clamp said board between said blocks, said tether means extending between portions of said pairs of blocks disposed below said grooves and being spaced above said vehicle roof, an elongated flexible and tensioned strapped passed over the top surfaces of each pair of blocks and having opposite end portions directed downwardly from said blocks and anchored relative to said opposite side marginal edge portions of said roof securing said blocks, and thus said board, in position on said roof against shifting relative thereto.

4,402,443

RISER REMOVAL DEVICE

Victor L. Kerns, Barnhart, and David A. Sager, Florissant, both of Mo., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Apr. 13, 1981, Ser. No. 253,318
Int. Cl.³ B26F *3/00*
U.S. Cl. 225—103 **2 Claims**



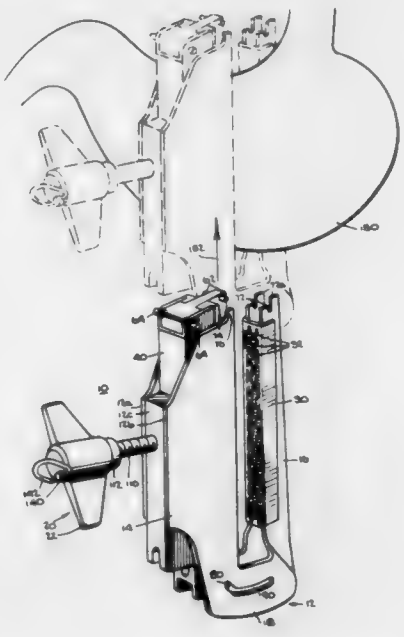
1. A device for removing center plate risers from a bolster casting having a center plate opening, said device comprising:
a frame having a pin engagable with said center plate opening,
a hydraulic cylinder means on said frame having a movable portion,
ram means mounted on said movable portion engagable with said riser,
said frame guidably receiving said ram means in the direction of reciprocating movement so as to eliminate radial loads on said hydraulic cylinder,
and means to actuate said hydraulic cylinder whereby said hydraulic cylinder exerts a force causing said riser to be separated from said casting.

4,402,444

SURGICAL STAPLING INSTRUMENT WITH AUTOMATIC FRAME REINFORCEMENT

David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Apr. 20, 1981, Ser. No. 255,887
Int. Cl.³ A61B *17/04*
U.S. Cl. 227—19 **36 Claims**



1. A surgical stapling instrument comprising:
frame means having a normally open peripheral portion for admitting tissue to be stapled into an interior region of the frame means;
staple driving means for stapling tissue located in the interior region of the frame means, the staple driving means being movably mounted relative to the frame means;
actuator means for causing the staple driving means to move relative to the frame means to clamp the tissue located in the interior region of the frame means against a portion of the frame means in preparation for stapling the tissue; and
means responsive to the motion of the staple driving means for automatically forming a structural connection between portions of the frame means adjacent both sides of the normally open peripheral portion to substantially prevent the portions of the frame means thus structurally connected from spreading apart during stapling of the tissue.

4,402,445

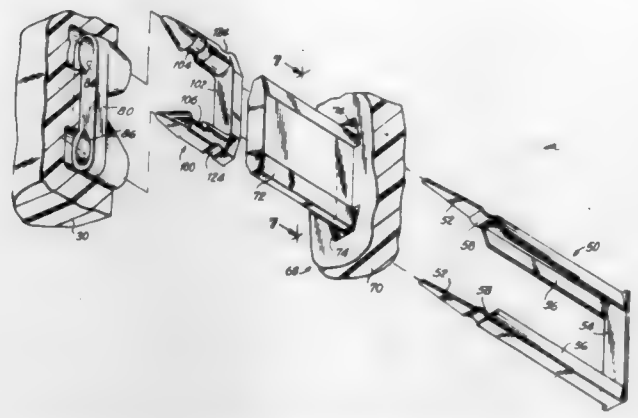
SURGICAL FASTENER AND MEANS FOR APPLYING SAME

David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 9, 1981, Ser. No. 310,065
Int. Cl.³ A61B *17/04*
U.S. Cl. 227—19 **23 Claims**

1. A surgical fastener of plastic-like material comprising:
a fastener member including a base and at least two spaced substantially parallel prongs extending substantially perpendicularly from the base; and
a retainer member including at least two apertures, each aperture being adapted to receive and retain the free end of a respective one of the prongs, each aperture including (a) cam surface means for contacting the associated prong and causing it to twist about its longitudinal axis as it

initially enters the aperture and then allowing the prong to untwist after the prong has penetrated a predetermined distance into the aperture and (b) interlocking surface



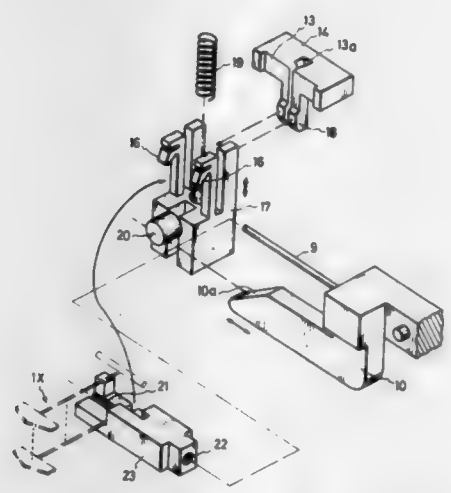
means for interlockingly engaging the associated prong to prevent withdrawal of the prong from the aperture after the prong has been allowed to untwist by the cam surface means.

4,402,446

TAG-PIN ATTACHING APPARATUS

Tadashi Suzuki, Saitama, Japan, assignor to Satogosei Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1981, Ser. No. 251,923
Claims priority, application Japan, Sep. 1, 1980, 55-120813
Int. Cl.³ B65C *5/06*
U.S. Cl. 227—67 **2 Claims**



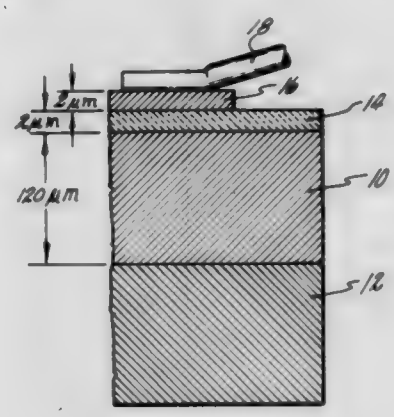
1. In an apparatus for attaching a tag-pin having a pistol-shaped body; a lever supported on said body for rocking movement; a driving rod attached to a piston driven by means of said lever for pushing a transverse bar of tag-pin; a trigger-like lever means directly driving said piston; a feeding mechanism of a tag-pin assembly; a grooved needle provided at one end of said pistol-shaped body, said rod being located for movement on the axis of said needle; and an adjusting means removably attached at the forward portion of said pistol-shaped body to adjust the length of insertion of said grooved needle into an article, the improvement comprising; said piston being provided with a projection having a slope; and a feeding mechanism for inserting tag-pins including a feeding member biased downward by a spring, said feeding member being provided with projections having flexible pawls, a wall member provided with a flexible passing portion for pressing tag-pins toward opposite wall member of feeding hole, and a supporting member provided with a groove supporting the transverse bar of the tag-in and guiding hole for said driving rod, said feeding member being forced up and down by the movement of said piston through the slope of said projection of said piston, and said pawls forcing down the tag-pin assembly to locate the lowest transverse bar of said tag-pin assembly into the groove of said supporting member.

4,402,447

JOINING LEAD WIRES TO THIN PLATINUM ALLOY FILMS

John S. Przybyszewski, Avon, and Richard G. Claing, Manchester, both of Conn., assignors to The United States of America as represented by the Administrator of National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 4, 1980, Ser. No. 212,949
Int. Cl.³ B23K *28/00*
U.S. Cl. 228—103 **4 Claims**



1. The method of bonding a platinum base metal lead wire to a thin base metal film lying on a thin ceramic insulating film which is adhered to a metal substrate which comprises

(a) contacting the lead wire with the thin metal film

(b) applying pressure with a platen to the wire in a direction normal to the film surface, the pressure being sufficient to cause at least 30% deformation of the lead wire, but insufficient to decrease the insulating properties of the insulating film below about 100 ohm, to cause intimate contact of the lead wire with the thin metal film;

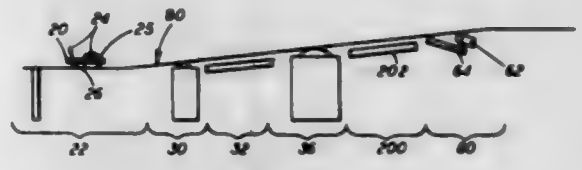
(c) heating of the platen fixture, lead wire, and substrate to at least 865° C. for 4 hr or more to form a diffusion bond between the lead wire and thin metal film.

4,402,448

MASS SOLDERING SYSTEM

Harold T. O'Rourke, Milford, N.H., assignor to Cooper Industries, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 951,052, Oct. 12, 1978, which is a continuation-in-part of Ser. No. 897,495, Apr. 18, 1978, abandoned, which is a continuation-in-part of Ser. No. 856,759, Dec. 2, 1977, abandoned. This application Oct. 30, 1981, Ser. No. 316,971
Int. Cl.³ H05K *3/34;* B23K *1/02*
U.S. Cl. 228—125 **14 Claims**



1. Apparatus for mass joining with solder electrical and electronic components assembled in a circuit board wherein said components have leads which protrude downward through apertures in the board, and comprising in combination:

a mass soldering station adapted to deposit a quantity of molten solder onto said board underside and said protruding leads whereby to join said board and said leads;

a post soldering heating station adjacent said soldering station, said post soldering heating station comprising a heat

source adapted to input heat onto the freshly deposited solder on said board underside and said protruding leads so as to maintain said freshly deposited solder in molten condition;

an excess solder removal station adjacent said post soldering heating station, said excess solder removal station comprising at least one gas jet disposed below the travel path of said board and adapted to direct a fluid gas stream onto the freshly deposited solder on said board underside and said protruding leads before said solder fully solidifies as joints thereon, a source of pressurized fluid, and means connecting said source and said at least one fluid jet; said excess solder removal station being adapted to relocate or remove a portion of the molten solder deposited on said board and said protruding leads before said molten solder solidifies thereon while leaving said molten solder in said apertures substantially intact; and

means for transporting said circuit board in line-through said mass soldering station, and post soldering heating station and said excess sold removal station.

4,402,449

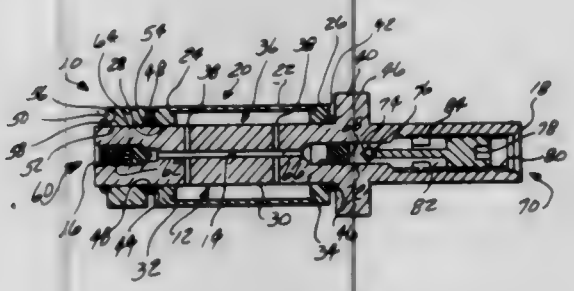
METHOD OF MAKING AN EXPANDABLE MANDREL HAVING A THIN CYLINDRICAL SLEEVE AND A PAIR OF THICK WALL ARCULAR ENDS

Russell E. DuBois, Sr., 142 Chippewa, Clawson, Mich. 48017

Continuation of Ser. No. 180,966, Aug. 25, 1980, Pat. No. 4,366,735. This application Jun. 28, 1982, Ser. No. 392,642

Int. Cl.³ B23K *31/02*

U.S. Cl. 228—165 **1 Claim**



1. A method of joining an expandable mandrel having a thin cylindrical expandable sleeve and a pair of thick wall circular ends extending radially inward defining a bore to an elongated generally circular central body with an outside diameter complementary to the bore and a raised collar formed at a first end, comprising the steps of:

forming a first chamfer and a second chamfer at the outer edges of said bore;

assembling said sleeve over said central body;

wedging a first copper ring between said collar and said first chamfer;

forming a metallic ring having an inside diameter complementary to said outside diameter and a third chamfer along an edge of said inside diameter;

wedging a second copper ring between said second chamfer and said third chamfer;

heating the assembly to a temperature of between 2010 degrees F and 2030 degrees F allowing the copper to melt;

cooling the assembly to room temperature;

heating the assembly to a temperature of between 1650 degrees F and 1660 degrees F and quenching in oil; and

stress relieving the assembly by heating the assembly to 1000 degrees F to achieve a sleeve hardness of Rockwell-C 47/49.

4,402,450

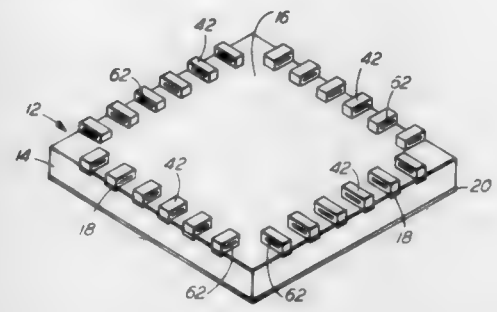
ADAPTING CONTACTS FOR CONNECTION THERETO

Bruce C. Abraham, Limekiln, and Charles R. Fegley, Laureldale, both of Pa., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Aug. 21, 1981, Ser. No. 295,043

Int. Cl.³ B23K *1/12*

U.S. Cl. 228—180 A **8 Claims**



1. A method of adapting first contacts for bonding components such as second contacts thereto, comprising:

interconnecting at least two of the first contacts with a member containing bonding material; and

removing portions of the member adjacent the first contacts thereby forming on each such contact an isolated body containing bonding material.

4,402,451

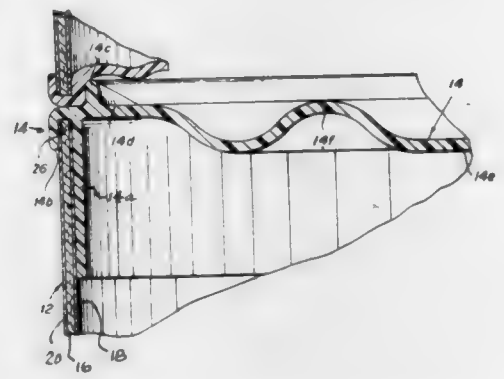
COMPOSITE CONTAINER HAVING SPIN BONDED END

Stephen E. Woerz, Florissant, and Travis K. Canup, Ferguson, both of Mo., assignors to Boise Cascade Corporation, Boise, Id.

Division of Ser. No. 288,344, Jul. 30, 1981, Pat. No. 4,353,761. This application May 6, 1982, Ser. No. 375,707

Int. Cl.³ B65D *3/12*

U.S. Cl. 229—5.5 **6 Claims**



1. A spin bonded composite container comprising:

(a) a vertically arranged cylindrical composite body member including a fibrous body wall layer, an inner thermoplastic synthetic plastic liner layer and an outer label layer;

(b) a synthetic plastic end closure member arranged adjacent one end of said body member, said end closure member including:

(1) a circular center panel portion closing the upper end of said body member;

(2) an inner annular sealing fin portion extending downwardly from said center panel portion adjacent said inner layer; and

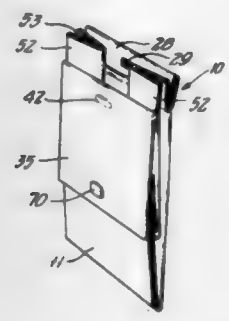
(3) an outer annular chime portion extending downwardly from said center panel portion adjacent said outer layer; and

(c) spin-bond means securing said sealing fin portion to said inner liner layer.

4,402,452
FOLDABLE REUSABLE SHIPPING CARTON

Julius B. Kupersmit, 145-80 228th St., Springfield Gardens, N.Y. 11514

Filed Jul. 9, 1982, Ser. No. 396,889
Int. Cl.[3] B65D *5/08, 33/16, 43/24*
U.S. Cl. 229—41 R 3 Claims

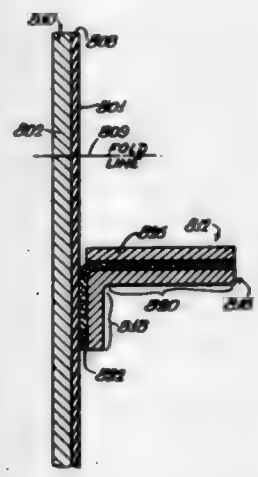


1. An improved foldable reusable shipping carton comprising a unitary blank of fibrous material interconnected to generally rectangular configuration, and including: a bottom wall formed by a plurality of interconnected overlapping flap members; first and second side walls and first and second end walls extending from said bottom wall, an mutually interconnected to form an enclosure, said end walls and one of said side walls having fold lines therein for collapsing said side walls against said bottom in substantially coplanar condition; one of said side walls having an upper fold edge, and a lid member corresponding in size and configuration to said bottom wall interconnected to said side wall at said fold edge; the other of said side walls having an upper fold edge and a foldable flap attached thereto and adapted to overlie said lid member in closed condition, said last mentioned flap and lid member having aligned openings therein for the reception of an exapandable clip element to maintain said carton in closed erected condition; said bottom wall having a third alignable opening therein, said carton, in folded condition, having said lid member overlying said bottom wall to align the opening therein with said last mentioned opening in said bottom wall for reception of said clip to maintain said folded condition.

4,402,453
POUCH WITH CLOSURE SEAL STRIP AND METHOD FOR MAKING SAME

Joseph Regenstein, Jr., Chicago, Ill., assignor to Arvey Corporation, Chicago, Ill.

Filed Jun. 25, 1981, Ser. No. 277,111
Int. Cl.[3] B65D *33/16*
U.S. Cl. 229—62 20 Claims

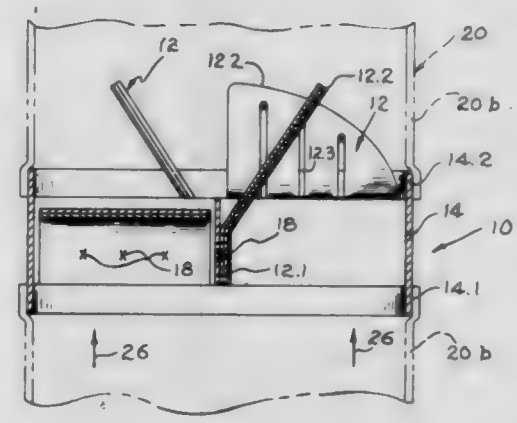


1. A pouch having a closable opening at one end comprising:
first and second opposing webs secured together at least partially around an interior portion of the webs;
said first web having at least one generally straight end edge defining a part of the pouch opening;
said second web having at least one generally straight end edge oriented generally parallel to and in registry with said first web one generally straight end edge and being unsecured to said first web to define part of the opening; and
a sealing strip extending across said pouch and including:
a carrier member having a first portion secured to said first web and an unsecured second portion, said carrier member defining a bend line between said first and second portions about which said second portion may be bent toward or away from said first web,
adhesive adhering means on said second portion of said carrier member for adhering said second portion of said carrier member to at least said second web, and
removable cover means on said carrier member second portion over said adhering means for preventing said adhering means from adhering to either of said webs unless said cover means is removed whereby said webs may be folded over together about at least one fold line across said webs between said first web one generally straight end edge and said carrier member first portion, whereby said cover means can be removed, and whereby said carrier member second portion of said sealing strip can then be adhesively secured to the folded portion of said second web to form a closure seal at said pouch opening.

4,402,454
GAS FLUE DAMPER AND THERMOSTAT METAL THEREFORE

Henry Ty, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 117,895, Feb. 1, 1980, abandoned. This application Oct. 2, 1981, Ser. No. 307,822
Int. Cl.[3] G05D *23/08*
U.S. Cl. 236—1 G 5 Claims



4. A thermally responsive damper means for the flue of a gas-fired apparatus comprising means to be mounted in the flue for movement between a first flue closing position and a second flue-opening position in response to selected temperature change, said means embodying a composite thermostat metal having a first layer of metal of selected thickness and relatively high coefficient of thermal expansion and of work-hardened austenitic stainless steel metallurgically bonded to a first side of a second layer of work-hardened metal of a selected thickness and relatively low coefficient of thermal expansion having a nominal composition by weight of 36 percent nickel and the balance iron for primarily determining the flexivity characteristics of the composite thermostat metal to move the thermostat metal between said flue opening and closing positions in response to selected temperature change characterized in that the metal of the first layer is selected from the group consisting of those AISI Series 300 Stainless Steels having high corrosion resistance properties and relatively high coefficients of thermal expansion which are characterized by being substantially free of transformation during work-hardening so that they retain their relatively high coefficients of thermal expansion when placed in work-hardened condition in the thermostat metal and

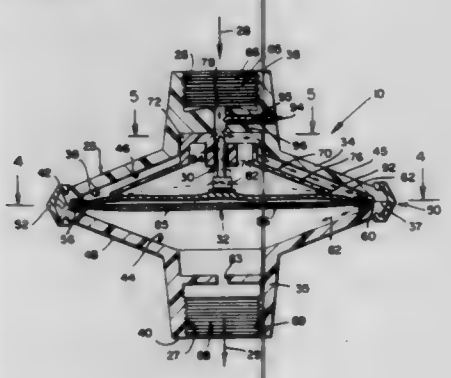
in that a third layer of metal selected from the group consisting of stabilized, high chromium, ferritic stainless steels in the AISI Series 400 Stainless Steels characterized by having relatively lower coefficient of thermal expansion than said first layer material and relatively greater corrosion resistance than said second layer materal is metallurgically bonded to the opposite side of the second metal layer, the third layer being work-hardened and having a thickness comprising at least about 5 percent of the total thickness the composite thermostat metal for providing corrosion protection for the second metal layer in the flue environment, and the first and second layers having a selected thickness for cooperating with the third layer for providing the thermostat metal with a flexivity at a temperature in the range from 50° to 200° F. of at least about 100×10^{-7} in./in./°F.

4,402,455

AUTOMATIC FLUID CONTROL ASSEMBLY

Stanley Kolt, Mamaroneck, N.Y., assignor to Leonard W. Suroff, Jericho, N.Y., a part interest

Filed Aug. 28, 1981, Ser. No. 297,238
Int. Cl.³ G05D *23/12*
U.S. Cl. 236—93 B **6 Claims**



1. An automatic fluid control assembly comprising:

A. housing means having an inlet port and outlet port so as to permit the fluid to flow through said housing means between said ports, said housing means including;

a. a first member having a top end and a lower end with a cavity extending inwardly from said lower end, and said inlet port extending between said top end and said cavity, and

b. a second member having a top end and a lower end with a cavity extending inwardly from said lower end and said outlet port extending between the top end and said cavity,

c. a channel having a plurality of circumferentially extending spaced apart ribs formed on at least one of said members adjacent to said lower end thereof;

B. valve means operatively associated with said inlet port to control the volume of fluid flow through the assembly depending on the position of said valve means relative to said inlet port; and

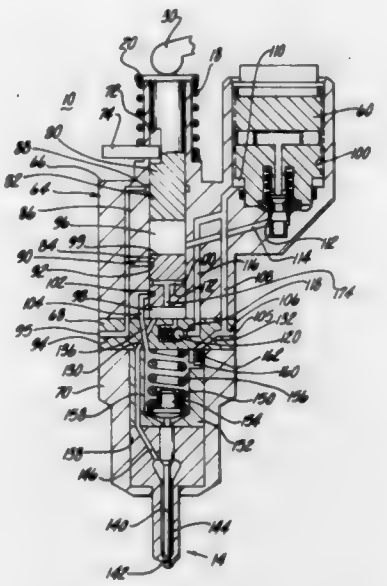
C. temperature responsive drive means mounted within said housing means within said channel so as to maintain the passage between said channel and said drive means wherein fluid can flow therethrough, said temperature responsive drive means being in operative relation with said valve means and adapted to detect temperature changes of the fluid so as to actuate in response to temperature changes within a predetermined range, said valve means being moved to automatically vary the fluid flowing from said inlet port dependent upon the temperature of said fluid.

4,402,456

DOUBLE DUMP SINGLE SOLENOID UNIT INJECTOR

Michael J. Schneider, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 2, 1982, Ser. No. 364,723
Int. Cl.³ F02M *47/02*
U.S. Cl. 239—90 **10 Claims**



1. A cam driven fuel injector having a supply port adapted to be connected to a supply or source of fuel and a drain port comprising:

a body defining a bore;

a driven or pumping piston reciprocatively situated with said bore;

metering piston reciprocatively positioned within said bore remote from said pumping piston;

a timing chamber defined in said bore between said pumping piston and said metering piston;

a metering chamber defined in said bore below said metering piston;

a spring situated within a cavity or spring cage remote from said bore;

a nozzle, having a needle valve, a nozzle passage surrounding said needle valve and at least one flow orifice, said nozzle extending into said spring cage in biasing engagement with said spring to urge said needle valve to close said at least one flow orifice during noninjecting periods;

first means for supplying pressurized fuel to said timing chamber and to said metering chamber;

first dump means for permitting fuel within the timing chamber to be dumped therefrom in correspondence with the motion of said metering piston;

first passage means for transmitting fuel from said metering chamber to said nozzle;

second dump means for dumping the fuel within said metering chamber to the supply through said spring cage in correspondence with the motion of said metering piston; and for stabilizing the pressure force exerted on said nozzle, during the dumping portion of operation, by the fuel within said spring cage with the pressure force exerted on said nozzle by the fuel within said nozzle passage.

4,402,457

FUEL INJECTOR WITH ABRUPT AND STABLE TERMINATION

Richard P. Walter, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 31, 1981, Ser. No. 288,729
Int. Cl.³ F02M *47/02*
U.S. Cl. 239—91 **7 Claims**

1. A fuel injector comprising:

a housing having a first port that is adapted to receive pressurized fuel from a first source, a second port adapted to be connected to a second source of pressurized fuel, a

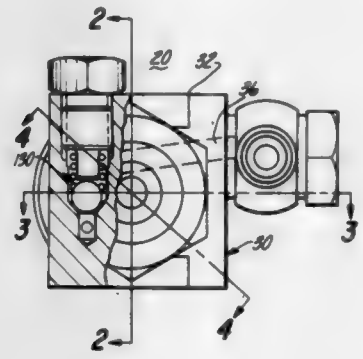
stepped bore and a plurality of fuel passages for communicating fuel;

intensifier piston means reciprocally situated within said stepped bore for defining three variable volume chambers such as an upper or upper chamber, connected to said first port, an inner or middle chamber, a lower or metering chamber, connected to said second port, relative to said housing;

nozzle means extending from said housing and operatively connected, in fluid communication, to said lower chamber, for injecting fuel therefrom in correspondence with the motion of said intensifier piston means, said housing and said intensifier piston means cooperating to provide;

first dump port means selectively connected to said upper chamber for selectively dumping the excess flow from said first source, in correspondence with the motion of said intensifier piston means and for controlling upstream line dynamics;

second dump port means selectively connected to said metering chamber for dumping fuel from said metering chamber, for controllably terminating fuel injection from



said nozzle means, for controllably housing the fuel pressure within said metering chamber, for controlling the closing velocity of said nozzle means and for minimizing the blow back of combustion gases from said nozzle means, said second dump port means defining a shaped flow area which initially varies linearly as a function of the stroke of said intensifier piston means and which thereafter attains a fixed flow area;

said housing further including;

first fuel passage means for connecting said second port with said lower chamber including first check valve means for inhibiting flow of fuel from the lower chamber to said second port;

second fuel passage means for connecting said second dump port means to said second dump port;

third fuel passage means for connecting said first dump port means to said second port including second check valve means for inhibiting the flow between said second port and said first dump orifice means; and

fourth fuel passage means for connecting said first port means to said middle chamber.

4,402,458

APPARATUS FOR ATOMIZING LIQUIDS

Ernst-Guenter Lierke, Schwalbach; Wolfgang Heide, Darmstadt; Rudolf Grossbach, Camberg; Karl Floegel, Friedrichsdorf, and Hartmut Erdmann, Steinbach, all of Fed. Rep. of Germany, assignors to Battelle-Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

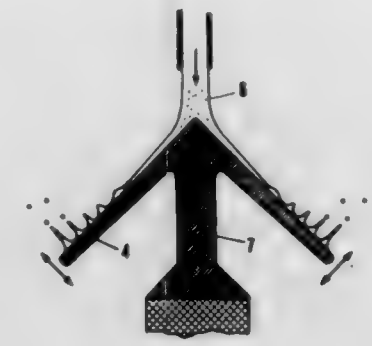
Filed Mar. 30, 1981, Ser. No. 249,138

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1980, 3014142

Int. Cl.³ B05B *17/06*; B05D *1/02*

U.S. Cl. 239—102 **34 Claims**

1. Apparatus for atomizing liquids comprising an ultrasonic excitation system, a bending resonator which oscillates at ultrasonic frequencies, and means for the delivery of liquid into the velocity nodal region of the bending resonator, characterized in that the bending resonator has at least one surface which is outwardly and downwardly inclined with respect to the axis of the excitation system and has a tip, that the flow axis of the liquid delivery means is approximately parallel to the



axis of the excitation system, and that the length of the excitation system is approximately $(2n+1)\ \lambda/4$, wherein n is 0 or an integer.

4,402,459

SPRAY GUN RECIPROCATING DEVICE

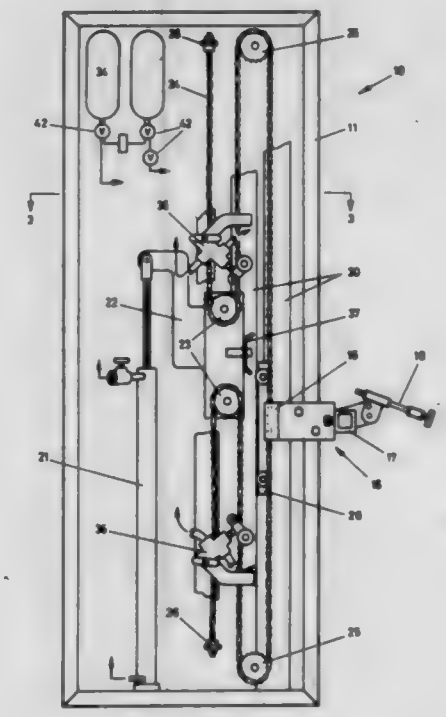
Arnold R. Berry, 89 Bradley Grove, Mitchell Park, Australia 5043

Filed Sep. 22, 1981, Ser. No. 304,471

Claims priority, application Australia, Sep. 22, 1980, PE5683

Int. Cl.³ B05B *3/18*

U.S. Cl. 239—186 **4 Claims**



1. A spray gun reciprocating device comprising:

a frame,

a pressure-fluid actuated ram assembly having two relatively movable sub-assemblies, one said sub-assembly comprising a cylinder and the other said sub-assembly comprising a piston,

mounting means securing one of said sub-assemblies to said frame,

a twin sprocket carrier on the other said sub-assembly, and a pair of driving sprockets mounted for rotation on said sprocket carrier,

a first chain anchor on said frame located at a first position away from said sprocket carrier and a second chain anchor on said frame located at a second position away from said sprocket carrier, at least one of said anchors embodying tension means,

idler sprockets mounted for rotation with respect to the frame,

a chain having two ends secured to respective said chain

anchors and extending over said sprockets to have a portion extending between said idler sprockets,

spray gun mounting means secured to said chain portion,

a pair of pressure accumulators each containing oil in its lower portion and air in its upper portion,

conduit means connecting said accumulator lower portions with respective ends of said cylinder,

an air circuit comprising a compressed air inlet conduit, a pilot operated double acting valve, a pair of cam type pilot control air valves interposed between said inlet conduit and pilot operated valve, and

further conduit means between said pilot operated air valve and the upper portions of respective said accumulators, such that successive actuation of said pilot operated valve alternately imposes pressure on the oil in the lower portions of respective said accumulators.

4,402,460

ROTARY SPRINKLER

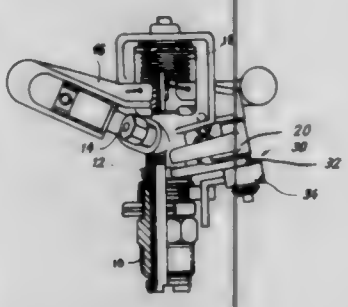
Amos Shavit, and Moshe Gorney, both of Kibbutz Naan, Israel, assignors to Naan Mechanical Works, Kibbutz Naan, Israel

Filed Jun. 30, 1981, Ser. No. 279,082

Claims priority, application Israel, Jul. 9, 1980, 60529

Int. Cl.³ B05B 3/02

U.S. Cl. 239—230 **17 Claims**



1. A sprinkler comprising:

a body defining a nozzle arranged to provide a stream of pressurized liquid;

spring loaded stream deflector and hammer means for intermittently engaging the stream and providing in response to said engagement a force causing intermittent rotation of said body about a rotation axis;

means for selectably limiting the amplitude of motion of said deflector and hammer means and thus determining the direction of rotation of said body and the overall range of the resulting spray, said selectably limiting means having first and second orientations corresponding to rotation of the sprinkler in respective forward and return directions;

selectably positionable protrusion apparatus for defining the azimuthal limits of a desired irrigation zone;

finger means associated with said selectably limiting means for determining the orientation thereof and being selectably positionable in a first position for disengagement from said protrusion apparatus and in a second position for engagement with said protrusion apparatus, said finger means being constructed such that positioning of said finger means in said first position results in positioning of the selectably limiting means in a selected orientation.

4,402,461

FLUID-HANDLING APPARATUS

Richard W. E. Mosse, London, and Kaare B. Vatne, Ware, both of England, assignors to Liquipak International Inc., St. Paul, Minn.

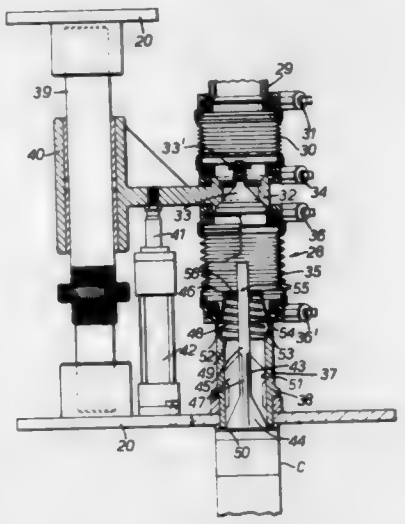
Filed Jul. 1, 1981, Ser. No. 279,343

Int. Cl.³ B05B 1/32; B67D 5/40

U.S. Cl. 239—453 **5 Claims**

1. Apparatus comprising feeding means arranged to feed a fluid, said feeding means comprising ducting, a reciprocatory bellows communicating with said ducting, a driving member connected to said bellows for reciprocating said bellows, an outlet valve in said ducting arranged to open to allow the fluid to flow from the bellows during a pressure stroke thereof, and an inlet valve arranged to open to allow the fluid to flow to the bellows during the suction stroke thereof, characterized in that a second bellows is connected upstream of said inlet valve, and said driving member is connected to a section of said ducting between the bellows and carrying said inlet valve for reciprocating said section and said inlet valve and thus both of the bellows.

2. A liquid-dispensing nozzle, comprising a tubular housing, an annular valve seat on said housing and substantially coaxial therewith and bounding an internal surface of said housing, a valve member including a valve closure part and extending substantially coaxially in said housing and movable relative to said housing axially thereof between a closed condition in which said closure part acts sealingly against said valve seat



and an open condition in which said closure part is spaced from said valve seat, and said valve member also including a valve driving part upstream of said closure part and substantially obturating said tubular housing and arranged to be displaced by a pressure differential between a higher pressure upstream of said driving part and a lower pressure downstream thereof to open said closure part, and a linking part interconnecting said driving part and said closure part and comprising a stem closely encircled by said driving part, biassing means urging said valve member towards said closed condition, and aperture means enabling liquid to flow from upstream of said driving part to downstream thereof, characterized in that said aperture means comprises an annular gap between said stem and said driving part, whereby liquid flows to the downstream portion of the zone of connection between said driving part and said linking part.

4,402,462

PROCESS FOR CONTROLLING A GRINDING INSTALLATION

Ludger Lohnherr, Oelde-Sunninghausen, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed Jun. 4, 1981, Ser. No. 270,269

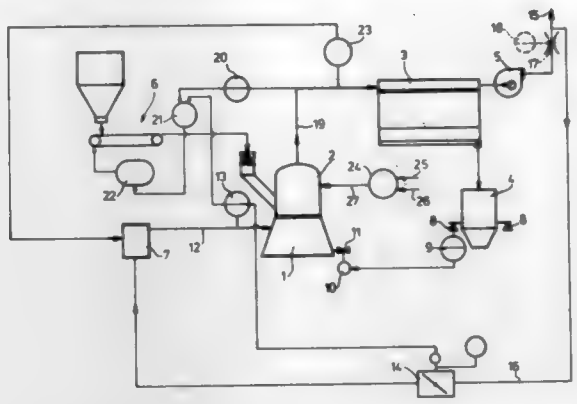
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1980, 3024021

Int. Cl.³ B02C 25/00

U.S. Cl. 241—30 **6 Claims**

1. In a grinding process wherein material to be ground is delivered to an adjustable force grinding mill and ground, then classified pneumatically, and then conveyed pneumatically to a storage silo from which ground material may be withdrawn; the improvement comprising sensing variations in the quantity

of ground material in said silo; and varying the force of said grinding mill inversely to the quantity of material contained in



said silo to maintain the quantity of material in said silo substantially constant.

4,402,463

GRINDING APPARATUS FOR A SUSPENSION OF FIBRES FOR PAPER MANUFACTURING

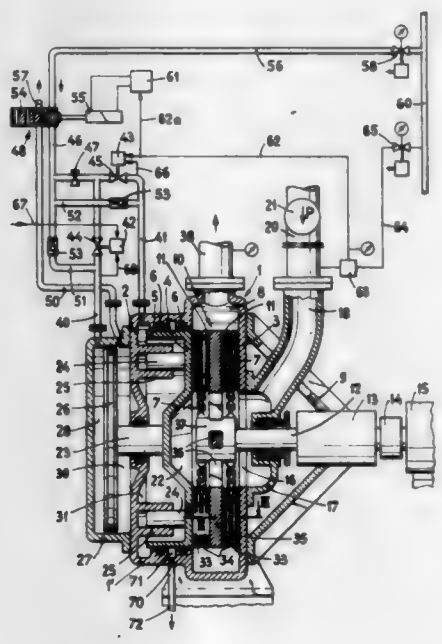
Albrecht Kahmann, and Rainer Meisenberg, both of Weingarten, Fed. Rep. of Germany, assignors to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Aug. 20, 1981, Ser. No. 294,623

Claims priority, application Switzerland, Sep. 5, 1980, 6680/80

Int. Cl.³ B02C *7/14*

U.S. Cl. 241—37 **9 Claims**



1. A grinding apparatus for fibres contained in a stock suspension for use in the paper industry, comprising:

a housing;

a rotor defining an element and rotatably mounted within said housing;

at least a first grinding tool means provided for said rotor;

a wall part defining a second element and coacting with said rotor;

a second grinding tool means provided for said wall part;

both of said grinding tool means defining therebetween a grinding gap;

one of said elements carrying its grinding tool means being moveable in relation to the other element carrying its grinding tool means, in axial direction of the rotor, towards and away from said other element, in order to adjust the grinding gap between said first and second grinding tool means;

a piston-and-cylinder unit which can be impinged by a pressurized fluid medium for adjusting said moveable part;

said piston-and-cylinder unit containing a pressing chamber which is effective in the sense of having both of said grinding tool means approach

one another and a lift-off chamber which is effective in a lift-off direction in the sense of moving apart both of said grinding tool means;

a regulation device for influencing the pressure of the pressurized fluid medium;

said regulation device containing a compensation force regulator which, as a function of the pressure prevailing in an internal space of the housing causes a compensation of the pressure force acting by virtue of such pressure upon the moveable element;

a pressure measuring means for measuring the pressure of the suspension in the housing;

a signal line for operatively connecting the compensation force regulator with said pressure measuring means;

the compensation force regulator bringing the pressure of the pressurized fluid medium to a pressure which is in a predetermined relationship to the pressure of the suspension;

said regulation device further being provided with a grinding force regulator; and

said grinding force regulator enabling influencing the pressure of the pressurized fluid medium as a function of a set value signal and adjustment of a desired grinding force.

4,402,464

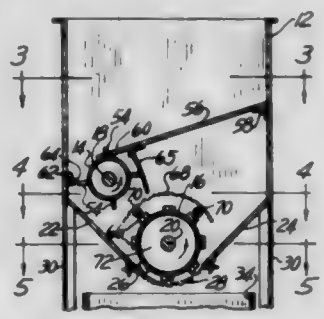
SCRAP GRANULATOR

Harry E. Shire, Sr., and Harry E. Shire, Jr., both of 4985 E. M-71, Corunna, Mich. 48817

Filed Apr. 27, 1981, Ser. No. 257,516

Int. Cl.³ B02C *13/284, 13/286*

U.S. Cl. 241—73 **5 Claims**



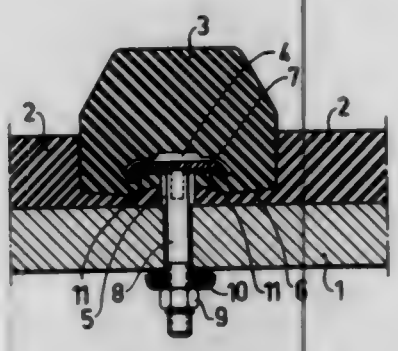
1. An apparatus for granulating articles, said apparatus comprising a housing, a first rotatable drum disposed in said housing proximate a side thereof, said first drum having a plurality of elongated members peripherally projecting therefrom, a bar attached to said side of said housing and disposed relative to said first drum such that said projecting members pass proximate the edge of said bar when said first drum rotates, an inclined plate hingedly mounted at one end to an opposite side of said housing and supported at its other end by said first drum, slots in said other end of said plate for clearing said projecting members on said first drum, said inclined hinged plate defining a chute for articles to be granulated, a stationary inclined panel mounted under said first drum and forming a gravity chute for said articles after said articles have passed between said bar and said members projecting from said drum, a second rotating drum disposed at the bottom of said inclined panel, a plurality of crush bars longitudinally mounted on the periphery of said second drum, an opening at the bottom of said inclined panel, a curvilinear mesh screen mounted over said opening, said curvilinear mesh screen having an inner surface and an outer surface wherein each bar is caused to superficially engage said inner surface of said curvilinear mesh screen while said drum rotates, and whereby said broken articles are further crushed against said inclined panel and said mesh screen and passed through said mesh screen.

4,402,465

WEAR LINING OF RUBBER FOR ROTATABLE DRUMS

Sture Persson, Skelleftea, and Mats Ahlund, Ersmark, both of Sweden, assignors to Skega Aktiebolag, Ersmark, Sweden

Filed Jun. 2, 1981, Ser. No. 269,587
Claims priority, application Sweden, Jun. 10, 1980, 8004323
Int. Cl.³ B02C *17/22*
U.S. Cl. 241—183 5 Claims



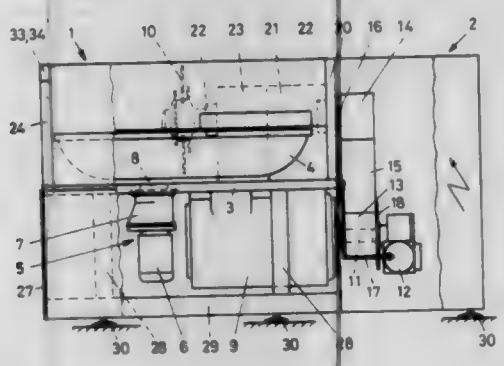
1. In a wear lining for the shell of a rotatable drum a rubber lining plate adjacent the inner surface of the shell; and means pressing said lining plate against said inner surface, said means including a rubber lifting member having a first surface facing said lining plate and a second surface facing the interior of the shell, said first surface having a generally T-shaped slit therein in which a mounting rail is located, said rail being attached to said shell by bolt means such that said rail bears against a surface of said slit and such that said lifting member presses said lining plate against the shell; and a fabric intimately connected to said surface of said slit against which said mounting bar bears, said fabric taking up tensile forces arising when the lifting member is exposed to a lateral load.

4,402,466

BOWL CUTTER AND MIXER FOR FOODSTUFFS

Walter Schmidt, Gossau, Switzerland, assignor to C. Hoegger & Cie. AG, Gossau, Switzerland

Filed May 15, 1981, Ser. No. 264,169
Claims priority, application Switzerland, May 22, 1980, 4022/80
Int. Cl.³ B02C *18/14, 18/24*
U.S. Cl. 241—199.7 11 Claims



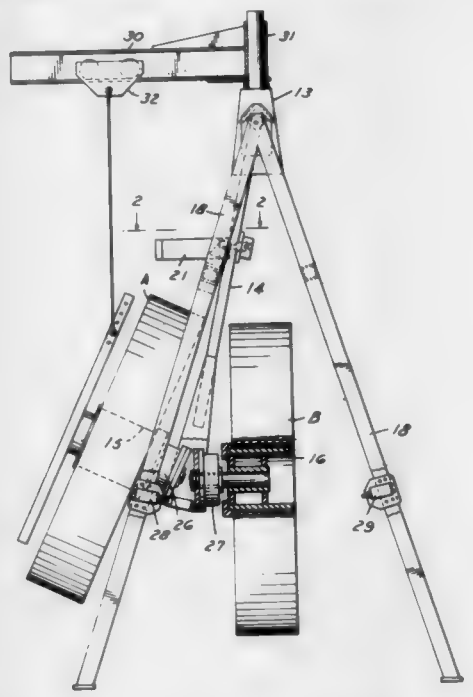
1. An apparatus for cutting and mixing foodstuffs, comprising: a rotatable bowl (4) mounted in a housing, a plurality of rotatable knives (10) mounted on a knife shaft (16) and extending into the bowl, two separate hoods (31, 32) disposed to cover the housing, a pair of separate hinge means (33, 34) disposed centrally above the bowl and individually mounting the hoods such that they can be swung upwardly and apart independently of each other, a primary plate (3) disposed below the bowl, a vertical sidewall (20) attached to the plate and extending upwardly therefrom proximate one end thereof, and an angled yoke (24) extending above the bowl approximately across the middle thereof, said yoke being attached at one higher end to an upper portion of the sidewall and at the other, lower end to the opposite end of the primary plate, said plate, sidewall and yoke assembly constituting a rigid, closed structural core of said apparatus through which all forces act to thereby substantially eliminate operational vibrations, wherein the knife shaft is disposed transverse to the bowl axis (8) on a horizontal support arm (21), said arm being attached to the vertical sidewall and extending inwardly therefrom, connected to the yoke, and to a vertical wall (23) extending upwardly from the primary plate.

4,402,467

WEB HANDLING APPARATUS

Robert F. Kontz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 8, 1981, Ser. No. 271,732
Int. Cl.³ B65H *19/10, 19/22, 19/24*
U.S. Cl. 242—58.2 8 Claims



1. A web handling apparatus for selectively positioning a pair of web rolls so that the web from each roll can be moved past a work station, such as a splicing station, comprising

a frame,

a suspension arm having a first end pivoted to and depending from said frame for swinging movement about a horizontal axis,

said arm being movable between first and second positions on each side of a vertical plane containing the horizontal axis,

positioning means for moving the suspension arm between said first and second positions comprising a cylinder including a cylinder housing mounted on said frame and a shaft connected to said suspension arm,

a pair of roll supports attaching on a second end of said suspension arm positioned such that when the arm is in said first position, one roll of said pair of web rolls is supported so that the web thereof is aligned longitudinally with a work station, and when the arm is in said second position, the other roll of said pair of web rolls is supported with the web thereof longitudinally aligned with the work station, whereby the web can be removed from a said longitudinally aligned roll and moved past the work station.

4,402,468

FILM TAKEUP SPOOL FOR CAMERA

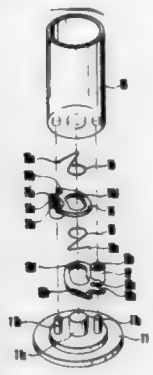
Nobuo Tezuka, and Tatsuya Taguchi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 30, 1981, Ser. No. 278,998
Claims priority, application Japan, Jul. 2, 1980, 55-90875
Int. Cl.³ G03B *1/04;* B65H *75/24*
U.S. Cl. 242—71 6 Claims

1. A film takeup spool for a camera, comprising:

(a) a rotary member having a rotary shaft and pivot pins;

(b) a sleeve hub rotating with the axis of rotation of said rotary member as the center of rotation thereof in unison with said rotary member when film is wound thereon;
(c) engagement members each having a shaft hole fitted on said pivot pin and a guide slot through which said rotary shaft extends, and having a toothed portion for engage-



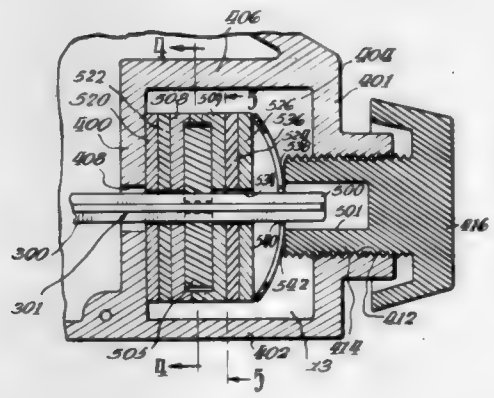
ment in the perforations of said film, said toothed portion moving as said rotary member rotates; and
(d) resilient members imparting bias forces to said engagement members whereby said toothed portions are caused to project radially outwardly of said sleeve hub.

4,402,469

SELF-ALIGNING DRAG DRIVE FOR FISHING REELS

Roy E. Stiner, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jul. 31, 1981, Ser. No. 289,037
Int. Cl.³ A01K *89/02*
U.S. Cl. 242—84.5 A **6 Claims**



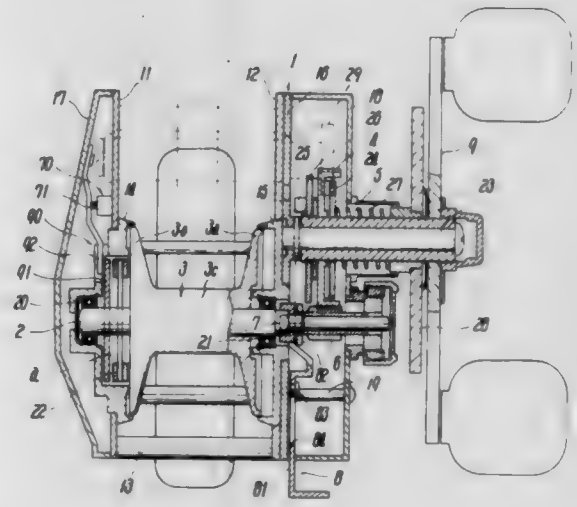
1. In an open faced spinning reel used for casting a bait attached to a fishing line and for retrieving the bait and fishing line after casting,
(a) the reel having a housing with a front forward spool end face, a rear wall, a partition spaced from said rear wall to form a drag pocket in the housing adjacent said rear wall and a central passageway extending from the face to the rear wall defining a central axis,
(b) a pinion assembly mounted in the housing,
(c) a centershaft rotatably mounted in the housing and coaxial with the central axis, said centershaft having an axially extending keyed portion in the drag pocket,
(d) a spool mounted on the shaft for holding the fishing line, and
(e) a handle and gear train assembly mounted in the housing for rotating the centershaft and the spool, the improvement being a drag adjusting mechanism for changing the drag on the centershaft and on the spool comprising:
A. driver means in the drag pocket keyed on said keyed portion of the centershaft for rotation with said centershaft, said means having a non-symmetrical shape about the outer periphery thereof;
B. driven means comprising a pair of shaped members having interfitting segments, said cup shaped members when interfitted enclosing said driver means therein, said driven means encircling said driver means and having an internal non-symmetrical shape matching and spaced from the non-symmetrical shape of the outer periphery of said driver means, said driven means having axially facing friction surfaces externally thereof;
C. friction means encircling said centershaft on either side of said driven means;
D. means urging said friction means, said driver means and said driven means toward said partition; and
E. means coacting with the rear wall of said drag pocket and bearing on said means for urging said friction means toward the partition whereby axial movement of said last named means increases or decreases the drag on said centershaft by forcing the friction means between the partition and the driven means to resist rotation of the driven means by said driver means.

4,402,470

FISHING REEL

Norio Hamayasu, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Nov. 30, 1981, Ser. No. 325,913
Claims priority, application Japan, Dec. 5, 1980, 55-172229
Int. Cl.³ A01K *89/02*
U.S. Cl. 242—84.52 R **14 Claims**

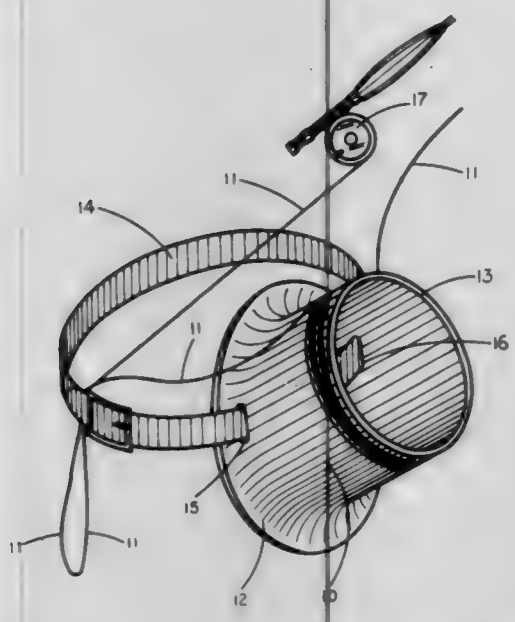


1. A fishing reel comprising:
a body frame,
a spool journalled to said frame and having a spool shaft,
a drive mechanism for driving said spool shaft,
a transmission mechanism including a clutch, for transmitting a driving force from said drive mechanism to said spool shaft, said transmission mechanism upon operation of said drive mechanism, rotating said spool shaft and spool to wind a fishing line onto said spool, said clutch disengaging to make said spool shaft and spool freely rotatable, so that a fishing line may be drawn out of said spool by casting,
a first detector for detecting a drawing-out speed of said fishing line on said spool and providing a first signal corresponding thereto,
a second detector for detecting a rotational speed of said spool and providing a second signal corresponding thereto,
a processor having an arithmetic unit and connected to receive said first and second signals, said processor comparing said first and second signals and providing an actuator control signal which changes in accordance with changes in said first and second signals,
means for applying a rotational resistance against the free rotation of said spool shaft and spool, and
an actuator responsive to the actuator control signal from said processor, said actuator operating according to said control signal when a spool rotational speed exceeds a line drawing-out speed to cause said applying means to apply a rotational resistance against the free rotation of said spool shaft and spool.

4,402,471
FLY-FISHING ARBOR

Carl N. Normann, 1503 Fulton Ave., Apartment 91, Sacramento, Calif. 95825

Filed Aug. 5, 1981, Ser. No. 290,156
Int. Cl.³ B65H 75/40; A01K 91/00
U.S. Cl. 242—96 1 Claim

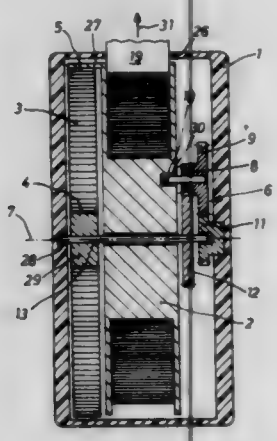


1. A non-rotatable arbor for use in a line routing and storing device comprising a cylindrical section and means for attaching the non-rotatable arbor about the waist-line of a fisherman; said non-rotatable arbor to be positioned and oriented so that its axis points in a forward and upward direction from said waist-line; the improvement wherein the non-rotatable arbor includes an integral flange extending radially outwardly from the end of the cylindrical section facing said fisherman to prevent interference of waders and garments worn by a fisherman with the hand-winding of line onto said cylindrical section.

4,402,472
DEVICE FOR WINDING AND REELING AN ELONGATED FLEXIBLE MEMBER

Paul Burtscher, Bühlwiesenstrasse 25, Dübendorf, Switzerland

Filed Jul. 7, 1980, Ser. No. 166,192
Claims priority, application Switzerland, Jul. 6, 1979, 6352/79
Int. Cl.³ B65H 75/48
U.S. Cl. 242—107.2 6 Claims

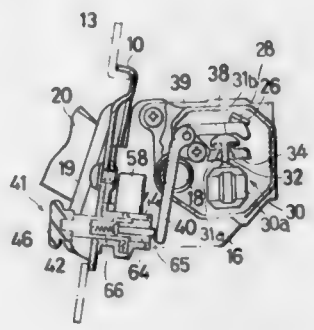


1. A winding and reeling device comprising
a casing,
a first shaft defining a central axis in said casing,
a toothless reel disposed to rotate about the central axis in said casing,
an elongated flexible member wound on said reel and having one end protruding out of said casing,
a spiral spring in said casing adapted to rotationally bias said reel in a take-up rotational direction,
said spiral spring having an inner end and an outer end,
said outer end being connected to said reel,
gear means in said casing operatively connected to the inner end of said spiral spring and being operatively connected to said reel,
said gear means including first and second gears rigidly connected to each other and each having a different number of teeth, a second shaft rigidly connected to said first and second gears and being journalled to said toothless reel eccentrically to said central axis, a third gear rigidly connected to said casing and meshing with said second gear, and a fourth gear meshing with said first gear and being rigidly connected to said first shaft,
said gear means upon rotation causing rotation of the outer end of said spiral spring at a first rotational speed and rotation of the inner end of said spiral spring at a slower second rotational speed,
the improvement being characterized in that
said first and third gears have a first number of teeth and said second and fourth gears have a second number of teeth larger than the first number of teeth, and
wherein a locking member is disposed exteriorly of said casing and is displaceable between a released position and a locking position, said locking member engaging the elongated flexible member in a drawn out position against the biassing force of said spiral spring to define its locking position, a notch in said locking member, and a sliding member movably carried by said casing for movement into said notch for locking said locking member in its released position.

4,402,473
MANUALLY OPERATED LOCKING DEVICE OF SEAT BELT RETRACTOR FOR VEHICLES

Tatsushi Kubota, Okazaki, and Mitsuaki Katsuno, Toyota, both of Japan, assignors to Kabushiki-Kaisha, Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Mar. 19, 1981, Ser. No. 245,316
Claims priority, application Japan, Mar. 24, 1980, 55-38562[U]
Int. Cl.³ A62B 35/02; B65H 75/48
U.S. Cl. 242—107.4 A 7 Claims



1. In a seat belt retractor having a winding shaft upon which webbing is wound by motor means, inertia sensing means actuated by deceleration of the vehicle installed with said retractor and locking means to prevent said winding shaft from rotating when said sensing means is actuated, said locking means including a ratchet wheel and a pawl pivoted to move from a first position out of contact with said ratchet wheel allowing said wheel to rotate in either direction to a second position in contact with said ratchet wheel that locks said wheel against rotation in the webbing protraction direction while allowing rotation of said wheel in the webbing retraction direction, the improvement which comprises:
a pivoted lever mounted to move from an unlocking position to a locking position associated with said pawl so movement of said lever from said unlocking position to said

locking position moves said pawl from said first position to said second position,

manually operable latch means mounted for movement to move said lever between said unlocking and locking positions,

a mechanical connection between said lever and said latch means comprising a resilient means,

said resilient means being structured to apply a biasing force to urge said lever in the direction of said locking position, said force being sufficient to hold said pawl, when said lever is in said locking position, in said second position, but insufficient to cause said pawl when so positioned to prevent said wheel from rotating in the webbing retraction direction.

4,402,474

CYLINDRICAL COIL CARRIER FOR RECEIVING THREADS AND YARNS

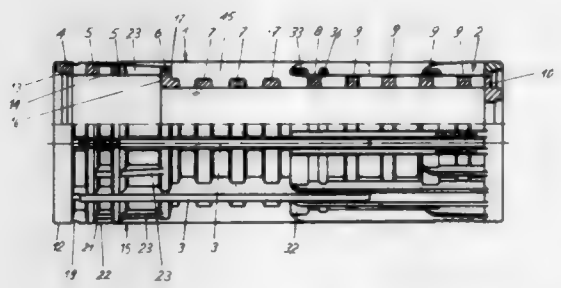
Walter Henning, Alsdorf-Hoengen, Fed. Rep. of Germany, assignor to Messrs. Jos. Zimmerman, Aachen, Fed. Rep. of Germany

Filed Sep. 18, 1981, Ser. No. 303,383

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1980, 3036247

Int. Cl.³ B65H *75/20*

U.S. Cl. 242—118.1 **17 Claims**



1. A cylindrical coil carrier for receiving threads and yarns, said carrier comprising webs which extend substantially parallel to the axis of said carrier and are interconnected by circumferential supporting rings, said carrier having a foot section and a head section, the foot section defining a receptacle for receiving the head section of the adjacent like coil carrier, said coil carrier further including a supporting member and a sliding member axially displaceable relative thereto, said supporting member including a first cylindrical section adjacent said foot section and web sections projecting radially outwardly beyond said supporting rings, said head section including a cylindrical section adjoining the first cylindrical section and having a smaller external diameter than said first cylindrical section, said sliding member being a radially apertured cylindrical body having an internal diameter substantially equal to the external diameter of the cylindrical head section and an external diameter corresponding to the external diameter of the first cylindrical section, said sliding member including guides cooperating with the projecting web sections of the first cylindrical section.

4,402,475

THRUSTERS FOR AIRSHIP CONTROL

Vladimir H. Pavlecka, Newport Beach, Calif., assignor to Airships International, Inc., Tustin, Calif.

Continuation of Ser. No. 952,783, Oct. 19, 1978, abandoned.

This application May 20, 1980, Ser. No. 151,659

Int. Cl.³ B64B *1/26*

U.S. Cl. 244—96 **13 Claims**

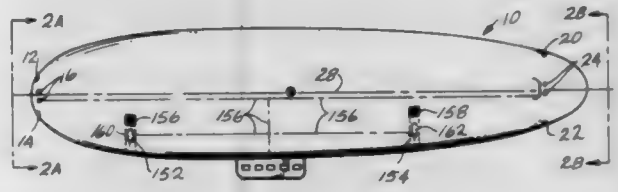
1. A controllable airship having a large internal lifting gas space enclosed within the hull of the airship comprising:

an airship hull having a bow and a stern, said bow and stern having a bow chamber and a stern chamber respectively therein;

first thruster means located at the bow for influencing movements of the front end of the airship, said first thruster means being located internally of the hull of the airship;

first air intake means opening exteriorly of the hull for said first thruster means, said first intake means comprising an inlet to each of said first thruster means being located internally of the hull adjacent said first thruster means for communicating air thereto from said bow chamber without ducting through the lifting gas space and first air intake duct means adjacent said first thruster means for entrance of air into said bow chamber;

second thruster means located at the stern for influencing the movements of the rear end of the airship, said first and second thruster means each comprising a set of four perimetrally spaced-apart pairs of thrusters, each thruster being oriented so as to produce a controlled jet of air in a



direction which is at an angle of 90° with respect to the direction of the controlled jet of air produced by adjacent thrusters, said second thruster means being located internally of the hull of the airship;

second air intake means opening exteriorly of the hull for said second thruster means, said second intake means comprising an inlet to each of said second thruster means being located internally of the hull adjacent said second thruster means for communicating air thereto from said stern chamber without ducting through the lifting gas space and second air intake duct means adjacent said second thruster means for entrance of air into said stern chamber; and

control means connected between an operations control station and the first and second thruster means for controlling the operation of said thruster means.

4,402,476

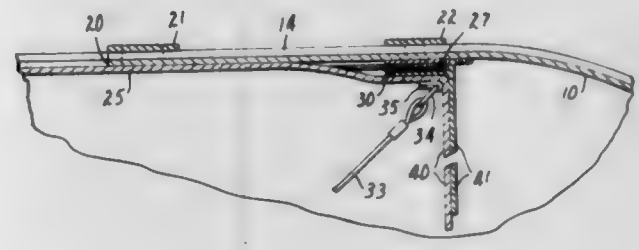
EXHAUST VALVE AND MANEUVERING STRUCTURE FOR LIGHTER-THAN-AIR AIRCRAFT

Matthew H. Wiederkehr, 1604 Euclid St., St. Paul, Minn. 55106

Filed Jan. 28, 1977, Ser. No. 763,511

Int. Cl.³ B64B *1/62*

U.S. Cl. 244—99 **6 Claims**



1. In a lighter-than-air aircraft having an envelope, formed of suitable material, inflatable with a lifting gas and having a large opening located at the upper end, a tape secured to said envelope around said opening, a valve located at said opening for permitting the gas in said envelope to pass quickly out of said opening at the termination of a flight, said valve comprising a piece of said material the dimensions of which exceed the dimensions of said opening, said piece of material being sewn within said envelope about a portion of said opening at a location conforming to but spaced from said opening perimeter, a first strip of releasable fastening tape adhered to the interior of said envelope to complete a path about said opening corresponding to the shape thereof at said spaced location, a second

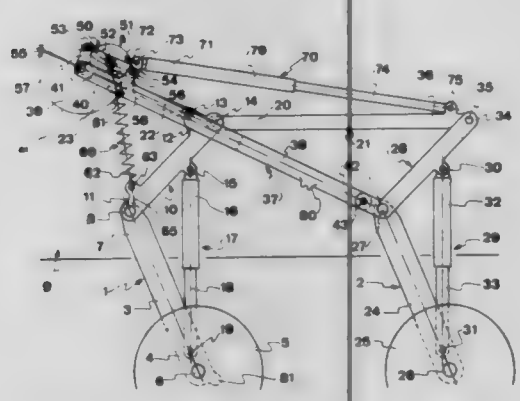
strip mating with said first strip of the fastening tape adhered to said material of said valve and positioned thereon to seal releasably with said first strip for holding said material across said opening to close the same and to permit the material to be peeled away from the envelope to open said opening, said piece of material also extending beyond said second strip of said fastening tape to form a drape hanging from the periphery of the valve when in normal closed position.

4,402,477

TANDEM TYPE LANDING GEAR

Andre Turiot, Morsand S/Orge, and Michel Derrien, Versailles, both of France, assignors to Messier-Hispano-Bugatti (SA), Montrouge, France

Filed Apr. 2, 1982, Ser. No. 364,699
Claims priority, application France, Apr. 8, 1981, 81 07025
Int. Cl.³ B64C *25/26*
U.S. Cl. 214—102 R **10 Claims**



1. Retractable landing gear for assuming "retracted" and "extended" positions, and being of the fuselage type with wheels mounted in tandem for an aircraft having a rigid structure, said landing gear comprising two substantially identical legs each having a rocker beam and an arm linked by a shock absorber, each rocker beam and arm being rotatably mounted, respectively, around two pins integral with said rigid structure, a bar connecting said two arms around two rotation pins to form a deformable parallelogram between said bar, the two arms and the two pins being integral with the rigid structure, a "breaking" strut comprising at least two levers mounted rotatably around the same first pin, the ends not connected to the first pin being mounted rotatably respectively around a second pin integral with a first arm substantially near the pin integral with said rigid structure around which it is rotatably mounted and a third pin integral with the other second leg on said arm such that the portion of the line passing substantially through said third pin and the second pin forms a diagonal of said parallelogram, and the difference in the lengths of the two levers being substantially greater than the value of said diagonal when said landing gear is in the extended position so that the two levers are slightly disaligned.

4,402,478

PROCESS AND DEVICE FOR BRAKING A WIDE-TRACK AIRCRAFT TAXIING ON THE GROUND

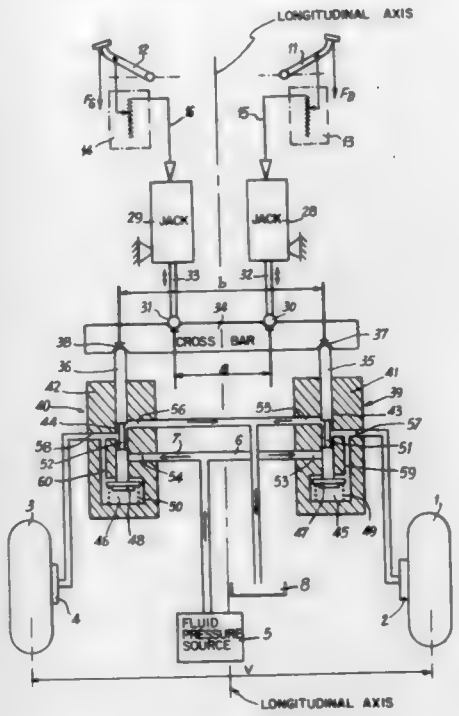
Henri Martin, Saint-Nazaire, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Mar. 2, 1981, Ser. No. 239,361
Claims priority, application France, Mar. 11, 1980, 80 05388
Int. Cl.³ B64C *25/48*; B60T *13/00*
U.S. Cl. 244—111 **9 Claims**

3. Braking system for an aircraft taxiing on the ground, said aircraft having two laterally spaced wheels disposed on opposite sides of the longitudinal axis of the aircraft, said system comprising:

first and second braking means associated respectively with one of said wheels for producing a direct braking action on the associated wheel;

first and second control means associated respectively with said first and second braking means for controlling the braking action thereof, said control means being independently actuatable by a pilot; and



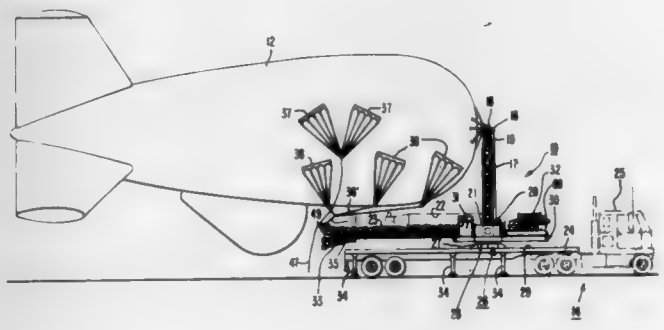
crossed-link means associated with each of said control means for producing, when one of said control means is actuated to produce a direct braking action on its associated wheel, a crossed braking action of lesser magnitude on the other of said wheels.

4,402,479

SMALL TETHERED AEROSTAT RELOCATABLE SYSTEM

Joseph W. Phipps, III, Baltimore, and Warren H. Jensen, Severna Park, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 19, 1981, Ser. No. 275,477
Int. Cl.³ B64F *1/14*
U.S. Cl. 244—116 **1 Claim**



1. Apparatus for controlling an aerostat, said aerostat having a nose line, a tether line and close haul lines, said apparatus comprising

a first platform having an upper substantially plane surface,

a second platform mounted rotatably above the upper surface of the first platform to rotate about a main axis that extends substantially perpendicular to said surface,

a launching tower fastened at its base to the rotatable platform, said tower having an upper end for securing the aerostat at its nose,

a boom having an inner and outer end portion fixedly mounted on the second platform with its inner end adjacent the base of the tower,

a sheave assembly mounted rotatably adjacent the outer end portion of the boom to rotate about an axis substantially normal to the main axis of the second platform and substantially parallel to the longitudinal axis of the boom, said

assembly having a pulley mounted to rotate about an axis normal to the axis of the sheave assembly and the second platform and the longitudinal axis of the boom, said assembly having a counterweight attached to the assembly and spaced from the axis of the assembly to maintain the axis of the pulley substantially horizontal,

a main winch mounted on the second platform adjacent the tower base and the inner end of the boom to pay in and pay out the aerostat tether about the pulley,

a pair of outrigger members adjacent opposite sides of the outer end of the boom, said members being foldable inwardly adjacent the boom and outwardly at opposite sides of the boom for launching and docking the aerostat, said outrigger members each having a close haul winch at their outer ends for close hauling via the close haul lines the aerostat moored to the tower via its nose line, and

a control station mounted on the second platform having means for operating the winches.

4,402,480

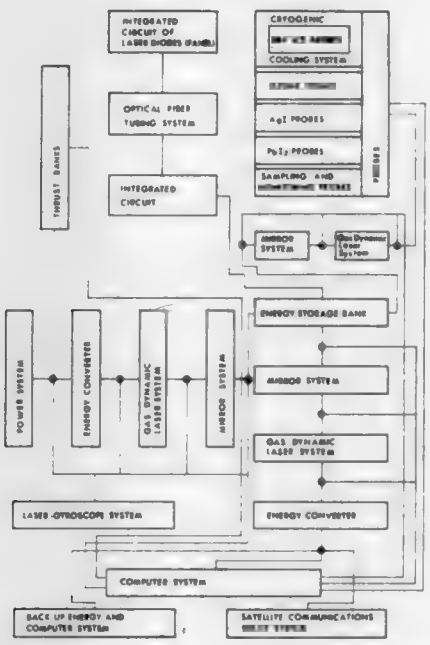
ATMOSPHERE MODIFICATION SATELLITE

Debra M. Udell, 3214 Kingsbridge Ave., Bronx, N.Y. 10463

Continuation-in-part of Ser. No. 42,444, May 25, 1979, abandoned. This application Nov. 19, 1980, Ser. No. 208,473

Int. Cl.³ B64G *1/66*

U.S. Cl. 244—158 R **1 Claim**



1. A satellite for atmospheric modification, sampling and monitoring comprising: a solar panel to absorb and transmit solar energy to an arrangement of laser diodes on an inner surface thereof, wherein, said laser diodes emit an intense beam of light; an optical fiber tubing system connected to said laser diodes for transmitting said intense beam of light to an integrated circuit means; said integrated circuit means emit a beam of semi-electrical energy; an energy storage bank connected to said integrated circuit means thereof, wherein, particles of said beam of semi-electrical energy constantly increase their velocity with motion while said beam of semi-electrical energy is stored and directed to the remaining systems through linkage with a computer; a first mirror system means connected to said energy storage bank varying the frequency of radiation emission with said computer linkage varying the power output thereof, wherein, the said power output varies proportionally to the population of the said energy state; a first gas dynamic laser system means connected to said first mirror system means, wherein, the resulting power output is increased with relay to the remaining systems; a first energy converter connected to said first gas dynamic laser system means to exchange said beam energy to electrical impulses; a computer system connected to said first energy converter programmed to operate the entire satellite through computer linkage to said energy storage bank, said first mirror system means, said first gas dynamic laser system means, said first energy converter, and all remaining elements and systems of said satellite; a satellite communications relay system connected to said first energy converter for transmittance from an Earth Station to override program of said computer for various functions; a back-up energy and computer system connected to said first energy converter, wherein, a second computer system continues the work if the primary computer malfunctions or needs additional programming and, wherein, a secondary energy system consisting of a magnetohydrodynamic (MHD) generator where ionized gas is the fluid passed through electrode plates which provides an additional power output; a second mirror system means connected to said energy storage bank varying the frequency of radiation emission with said computer linkage varying the power output thereof, wherein, the said power output varies proportionally to the population of the said energy state; a second gas dynamic laser system means connected to said second mirror system means, wherein, the resulting power output is increased with relay to the remaining systems; a second energy converter connected to said second gas dynamic laser system means to exchange said beam energy to electrical impulses; a thrust banks means connected to said second energy converter to manuever said satellite in and out of appropriate planes of orbit as determined by connection with said computer control, said satellite communications relay system and a laser gyroscope system means; said laser gyroscope system means connected to said second energy converter receives said electrical impulses to operate a laser to regulate the movement of said satellite and the initial direction of probes for atmospheric modification, sampling and monitoring; a power system means connected to said second energy converter to supply energy to said thrust banks means, said gyroscope means, and other areas of said satellite through said computer; a third mirror system means connected to said energy storage bank varying the frequency of radiation emission with said computer linkage varying the power output thereof, wherein, the said power output varies proportionally to the population of the said energy state; a third gas dynamic laser system means connected to said third mirror system means, wherein, the resulting power output is increased with relay to the remaining system; a probe system connected to said third gas dynamic laser system means, wherein, each probe has a remote control guidance system where the frequency is aligned with said computer and ground-base control and, wherein, said probes will be used to initiate techniques in atmospheric modification using dry ice, AgI, PbI_2 rain-making and snow-making M-Probes, ozone M-Probes, magnetosphere M-Probes, charge M-Probes, Laser M-Probes, Infrared M-Probes, and atmospheric sampling and monitoring through sampling and monitoring M-Probes.

4,402,481

ARTICULATED DEVICE FOR SERVICE COMPONENT

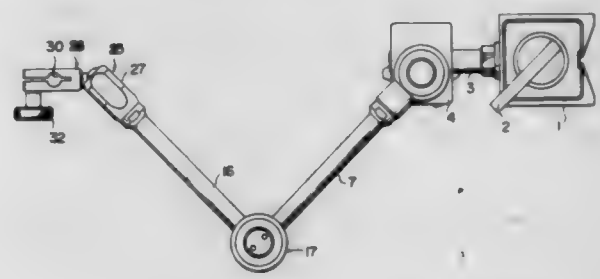
Hiroshi Sasaki, Tokyo, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1980, Ser. No. 346,021

Claims priority, application Japan, Feb. 27, 1981, 56-27896

Int. Cl.³ E04G *3/00*

U.S. Cl. 248—276 **8 Claims**



1. An articulated device for a service component having a clamp member for mounting said device on a base and a service component mount member for mounting a service component, comprising:

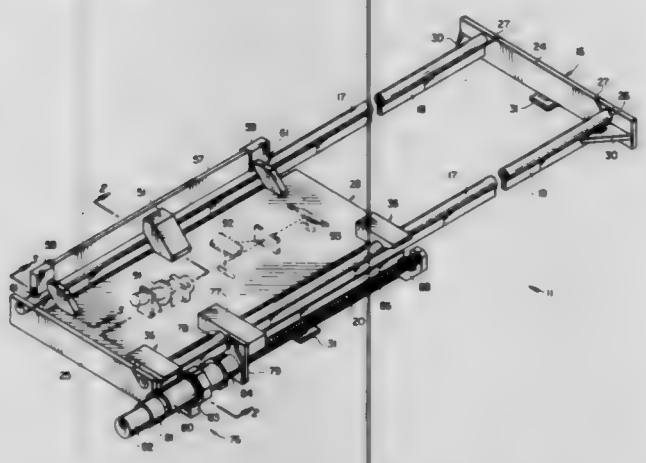
(a) a front arm connected to the clamp member;
(b) a rear arm connected to the service component mount member;
(c) a first engageable member connected to said front arm;
(d) a second engageable member connected to said rear arm;
(e) a first rod incorporated in said front arm, said first rod being slidable in longitudinal direction of said first rod;
(f) a second rod incorporated in said second arm, said second rod being slidable in longitudinal direction of said second rod;
(g) a transmitting shaft rotatably connecting said first and second engageable members with each other, said transmitting shaft being provided with tapered portions opposite to ends of said first and rear rods, said transmitting shaft being movable across said first and second engageable members;
(h) a first ball arranged in said first engageable member between said tapered portion and the end of said first rod;
(i) a second ball arranged in said second engageable member between said tapered portion and the end of said second rod; and
(j) actuating means for actuating said first rod toward said first engageable member, whereby, when said first rod is actuated toward said first engageable member, said transmitting shaft is axially moved by said first ball pressing said tapered portion to fix said front and rear arms at certain angle.

4,402,482

PRECISION TRAVELING OPTICAL TABLE ASSEMBLY

Steven K. Harbaugh, Anaheim, and Frank R. Mitchell, South Pasadena, both of Calif., assignors to American Hoechst Corporation, Somerville, N.J.

Continuation of Ser. No. 7,663, Jan. 29, 1979, which is a continuation of Ser. No. 805,433, Jun. 10, 1977, abandoned. This application Jul. 14, 1980, Ser. No. 167,744
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—466 **11 Claims**



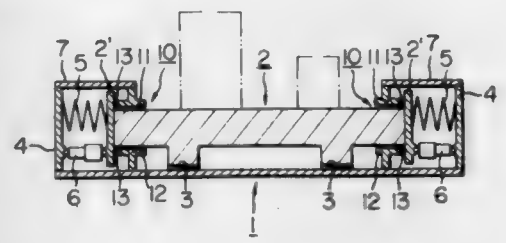
1. In a precision optical table assembly, a rigid rectangular framework, said rigid rectangular framework including a pair of space parallel rails, at least one of said rails having a horizontally extending top surface, an optical table, carriage means mounted on one side of said table and engaging one of said pair of rails to inhibit lateral movement of the table with respect to the rail while permitting longitudinal movement of the table with respect to the rails, additional carriage means carried by the other side of the table and engaging only the horizontally extending top surface of the other rail to permit both longitudinal and lateral movement of the additional carriage means with respect to the other rail without changing the orientation of the optical table, said carriage means and said additional carriage means engaging said pair of rails in a manner permitting the optical table to be freely lifted from the rails in a vertical direction, and drive means connected between the rectangular framework and the table for causing relative longitudinal movement between the table and the rectangular framework.

4,402,483

EARTHQUAKE ISOLATION FLOOR

Hiroshi Kurabayashi, Tokyo; Kozo Sakaba, Matsudo, both of Japan, and Takafumi Fujita, 1-8-2-207, Saiwai-cho, City of Chiba, Chiba Prefecture, Japan, assignors to Mitsubishi Steel Mfg. Co., Ltd. and Takafumi Fujita, both of Tokyo, Japan

Filed Oct. 23, 1980, Ser. No. 199,980
Claims priority, application Japan, Nov. 12, 1979, 54-145419
Int. Cl.³ E04H *9/02*; E02D *27/34*
U.S. Cl. 248—636 **14 Claims**



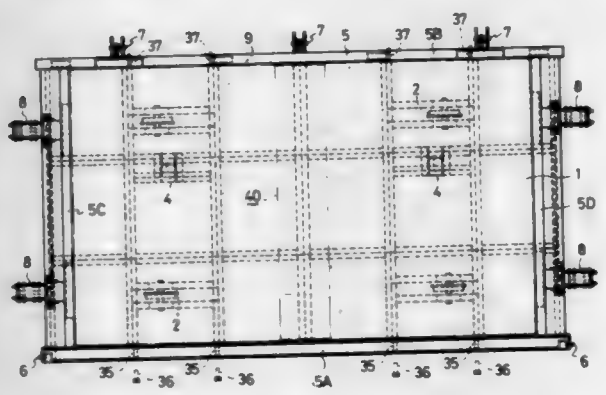
1. An earthquake isolation floor comprising:
a generally flat, horizontal fundamental frame having a pre-determined configuration and an outer periphery;
a support frame smaller than said fundamental frame, said support frame being slidably mounted to said fundamental frame;
a vertical wall disposed above said fundamental frame, and near said periphery of said fundamental frame;
a plurality of horizontal pre-stressed springs disposed about said support frame, each said spring having a first and a second end, said first end being in contact with said vertical wall, and said second end being in contact with said support frame;
an annular cover plate disposed above said support frame, the outer edge of said cover plate being connected to said vertical wall;
a plurality of upper ribs disposed above said support frame and connected to the inner edge of said cover plate; and
a plurality of lower ribs disposed below said support frame and connected to the upper surface of said fundamental frame;
whereby said upper and lower ribs prevent said support frame from rocking.

4,402,484

MOLDING TOOL DEVICE FOR A MOLDING USED IN AN ARCHITECTURAL STRUCTURE

Takao Kataishi, and Iwazou Seo, both of Tokyo, Japan, assignors to Misawa Home Company, Ltd., Tokyo, Japan

Filed Oct. 20, 1981, Ser. No. 313,398
Claims priority, application Japan, May 28, 1981, 56/81744
Int. Cl.³ B28B *7/02*
U.S. Cl. 249—129 **11 Claims**



1. A molding tool device for a molding used in an architectural structure, comprising: a bed positionable to receive thereon material for molding; a plurality of side frames arranged on said bed to define a molding space of a given shape; connectors fastening ones of said side frames to said bed and

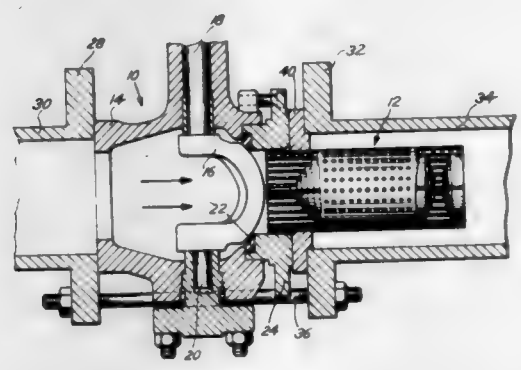
movable for retracting said ones of said side frames from the corresponding side surfaces of the molding formed in said molding space; means located on said bed for underlying and supporting the bottom edge surface of the molding with the bed and molding erected from their molding position, which means comprise a further said side frame detachably mounted on said bed for removal therefrom of said bed.

4,402,485

ECCENTRICALLY NESTED TUBE GAS LINE SILENCER

Allen C. Fagerlund, Marshalltown, Iowa, assignor to Fisher Controls Company, Inc., Marshalltown, Iowa

Filed Jun. 11, 1981, Ser. No. 272,742
Int. Cl.³ F16K *47/08*; F15D *1/04*
U.S. Cl. 251—118 **25 Claims**



1. A device for the attenuation of noise of fluid in non-axisymmetric turbulent flow comprising a conduit having inlet and outlet ends longitudinally disposed one from the other and disposed within said conduit a plurality of nested tubes of varying cross-sectional size but of substantially the same cross-sectional shape, each of said tubes having a longitudinal axis and each of said tubes being open at both ends for providing a longitudinal flow path through each tube and through the ends thereof, the longitudinal axis of each of said tubes being axially aligned in a plane through the longitudinal axis of said conduit, said tubes being eccentrically aligned with respect to each other such that a surface of each tube is in closely spaced relationship with a surface of each adjacent tube along their longitudinal lengths, and means for connecting the tubes, with the smallest nested tube being in axial alignment with the source of non-axisymmetric turbulent flow, whereby fluid enters all of the tubes substantially simultaneously and then substantially fills each tube in sequence, such that when the fluid exits from the device, all of the tubes are substantially filled.

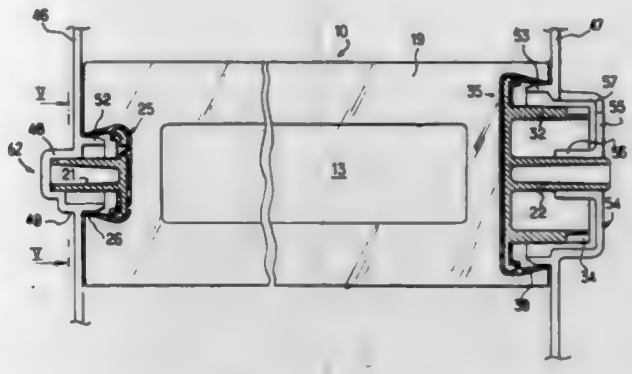
4,402,486

DEVICE FOR MOUNTING OF A SHUTTER IN A PIPING OF A HEATING OR AIR-CONDITIONING INSTALLATION OF A MOTOR VEHICLE

Maurice A. Jacquet, Maurepas, France, assignor to Valeo, Paris, France

Filed Feb. 17, 1981, Ser. No. 234,917
Claims priority, application France, Feb. 18, 1980, 80 03502
Int. Cl.³ F16K *1/228*
U.S. Cl. 251—306 **15 Claims**

1. A device for rotatably and sealingly mounting a sealing shutter in a piping of a motor-vehicle heating or air-conditioning installation, said piping including a wall having a cylindrical hole and a tubular cylindrical projection around said hole and extending inside the piping, said shutter having at least one side with a cylindrical end-piece adapted to be received in said hole and including a tubular lip integral with the shutter around said end-piece, said lip being made of a resiliently deformable material and having an internal tubular surface



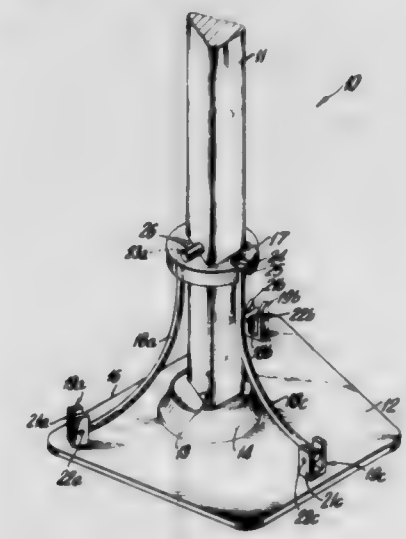
sealingly applied on an external surface of said cylindrical projection on the piping wall.

4,402,487

JACK FOR LIFTING UNBALANCED LOADS

Raymond C. Donnelly, Imperial Gardens, Bldg. 50, Apt. 1C, Wappinger Falls, N.Y. 12590

Filed May 6, 1981, Ser. No. 261,056
Int. Cl.³ B66F *3/00*
U.S. Cl. 254—133 R **8 Claims**



1. A jack assembly for lifting unbalance loads comprising:
a base, a jack column mounted at one end on said base and extending vertically upwards therefrom,
a collar mounted about an intermediate portion of the column,
flexible support means pivotally mounted to the base at one end and coupled at the other end to the collar to prevent tilting of the column during lifting operations, said flexible support means comprising a plurality of rods curving inwardly towards the jack column and being pivotally mounted to the base at one end and wherein said collar includes apertures to accommodate said curved rods,
a jack saddle assembly operatively connected to the column to engage the load for lifting purposes, and
actuating means for driving said jack saddle on the column to lift the load.

4,402,488

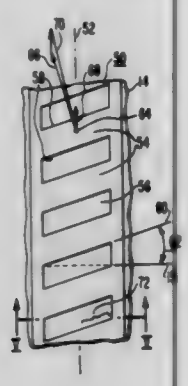
SHEAVE

Harry Berkovitz, Glen Rock, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 13, 1981, Ser. No. 321,157
Int. Cl.³ B66D *1/30, 3/04*
U.S. Cl. 254—371 **2 Claims**

1. In a sheave for guiding and supporting stranded wire rope having a plurality of twisted strands whose longitudinal axes are directed at a predetermined angle relative to the longitudi-

nal axis of the wire rope, with the sheave having a rotational axis and a plurality of grooves disposed about its circumference, and including an elastomeric insert in at least certain of the grooves, with said insert having a plurality of wall portions which define a plurality of treads spaced about the circumference of the sheave for contacting a wire rope, the improvement comprising:



the wall portions of said treads being disposed at a predetermined angle relative to the circumferential axis of the insert, with said predetermined angle being selected such that the wall portions will be substantially perpendicular to the longitudinal axis of each strand as it contacts and extends across a tread.

4,402,489

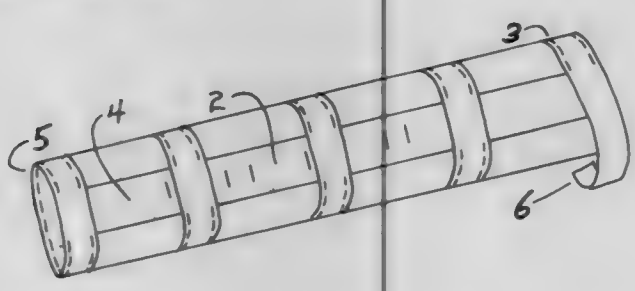
ROPE PROTECTION DEVICE

Richard C. Murray, 402 Lincoln Ave., Staten Island, N.Y. 10306

Filed Jan. 29, 1981, Ser. No. 229,544

Int. Cl.³ B65H *57/04, 57/12*

U.S. Cl. 254—389 **1 Claim**



1. An elongated rope protection device comprising; a flexible channel formed from multiple fabric layers having longitudinal sides curved toward each other with strap means maintaining the sides in spaced apart relationship to define a tube with opened ends adapted to receive and secure a rope therethrough; a plurality of substantially rigid splints spaced apart within the fabric layers, means attaching said splints in predetermined spaced locations along the length of the device to define therebetween hinged areas.

4,402,490

MOVABLE SOUND AND DUST INSULATING WALL PORTION FOR A METALLURGICAL MILL

Gerd Dikta, Grefrath, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 23, 1982, Ser. No. 361,124

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1981, 3114841

Int. Cl.³ C21C *5/40*

U.S. Cl. 266—142 **6 Claims**

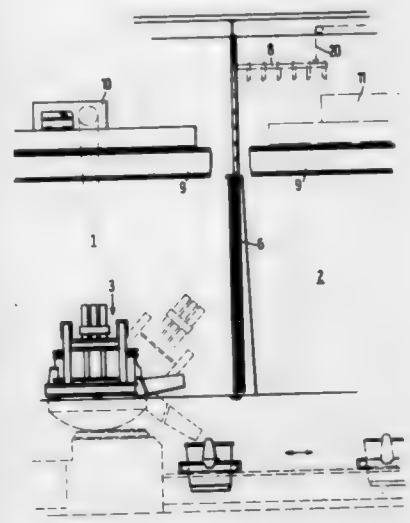
1. In a metallurgical mill having a furnace hall, a casting hall adjacent to said furnace hall, a continuous overhead crane track extending between said furnace hall and said casting hall and a crane riding on said track, the improvement comprising:

(a) a sound and dust insulating wall separating said furnace hall from said casting hall;

(b) said wall having a lower stationary wall element and an upper wall element closing a crane passageway between said furnace hall and said casting hall said upper wall element capable of assuming an opened and a closed position;

(c) said upper wall element comprising

(i) at least three strut members which extend vertically when said upper wall element is in its closed position and extend at an angle to the vertical when said upper wall element is in its open position; and



(ii) at least two adjacent, horizontally extending slats, said slats being pivotally secured, about individual horizontal axis, to said strut members;

(d) said strut members being pivotal about a single horizontal axis;

(e) said upper wall element, when in its closed position, forms a continuous sound and dust insulating surface; and

(f) said upper wall element, when in its open position, has said slats extending vertically downward and blocking said passageway by an amount not to exceed the width of said slats, and allows said crane riding on said track to pass from said casting hall to said furnace hall.

4,402,491

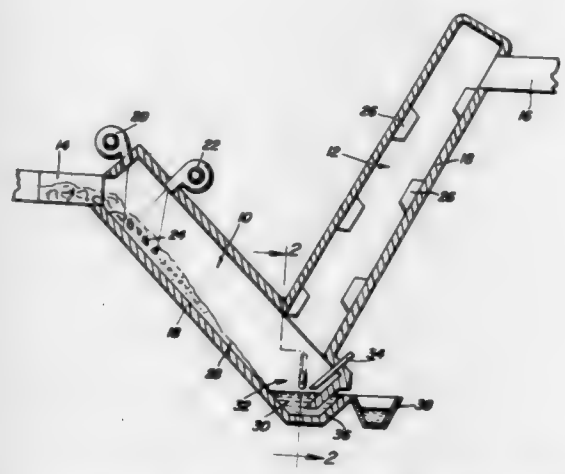
APPARATUS FOR RECLAIMING LEAD AND OTHER METALS

Svend Bergsoe, Glostrup, Denmark, assignor to Paul Bergsoe & Sons A/S, Glostrup, Denmark

Filed Jul. 28, 1982, Ser. No. 402,375

Int. Cl.³ F27D *17/00*

U.S. Cl. 266—144 **17 Claims**



1. An apparatus for reclaiming lead and other metals from scrap containing organic materials in appreciable quantities, such as whole, drained, junk batteries comprising:

(a) an extended combustion and smelting reactor, having

such dimensions that the reaction gases are retained within it for a predetermined time and being lined with suitable refractories that can withstand the temperatures of the reaction gases;

(b) an airlock mechanism for feeding the lead-containing scrap into one end of the reactor;

(c) burner means arranged near ther same end of the reactor and designed to preheat the reactor and to ignite organic materials in the lead-containing scrap;

(d) a sump or well for collecting molten lead or lead alloy in the central part of the reactor; and

(e) an exhaust port in the far end of the reactor for the escape of gases and combustion products formed in the reactor, said exhaust port being connected to an active exhaust system.

4,402,492

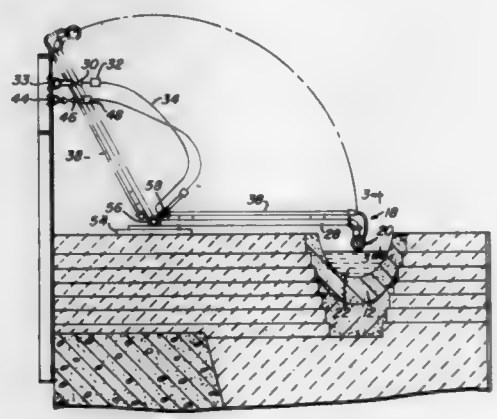
BURNER APPARATUS FOR MOLTEN METAL FUME SUPPRESSION

Arthur L. Elder, Spanish Fork; Mack R. Ostergaard, Pleasant Grove; Dennis R. Smith, Lindon, and Reed H. Warner, Spanish Fork, all of Utah, assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jun. 16, 1982, Ser. No. 389,632

Int. Cl.³ C21B *7/14*

U.S. Cl. 266—196 **7 Claims**



1. In a system in which molten metal is conducted along elongated runners from a source to a receiver and in which said runners are open to the atmosphere, burner apparatus operative to suppress the emission of fume from the surface of the metal flowing in said runners, said burner apparatus comprising:

a body having a fuel discharge opening directed to discharge fluid fuel for combustion in a direction substantially parallel and in close proximity to the surface of the molten metal flowing in said runner;

means for discharging fluid fuel from said opening in amounts sufficient to combine with ambient air in the region of said metal surface for combustion; and

means for dispersing said fluid fuel in an expansive pattern to cover an extended region of said metal surface.

4,402,493

VEHICLE HEIGHT ADJUSTING DEVICE

Kazuo Tsuge, Yokohama, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Continuation of Ser. No. 142,163, Jun. 14, 1980, abandoned.

This application Feb. 23, 1982, Ser. No. 351,365

Claims priority, application Japan, Apr. 19, 1979, 54-52364; Aug. 20, 1979, 54-114311; Aug. 20, 1979, 54-114312; Aug. 20, 1979, 54-114317

Int. Cl.³ F16F *9/04*

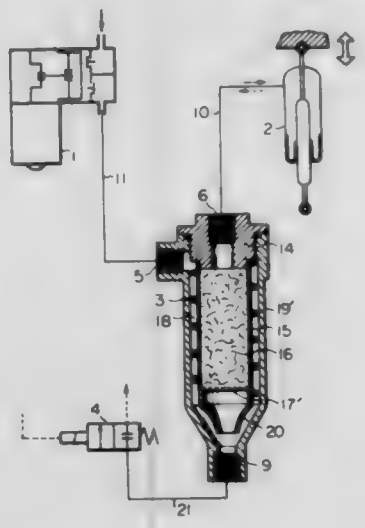
U.S. Cl. 267—64.21 **1 Claim**

1. A vehicle height adjusting device comprising:

an air compressor having an inlet for drawing in atmospheric air and an outlet for delivering pressurized air;

a drain separator including a cylindrical housing having in an upper portion thereof an inlet port connected to said outlet of said air compressor for receiving air therefrom and an outlet port, said cylindrical housing having in a lower portion thereof water collecting means and a water drain port, an imperforate filter casing coaxially disposed in said housing and defining therebetween a helical passage, said casing having extending therethrough a coaxial central bore having an upper end opening into said outlet port and a lower end opposing said drain port, and a water collective filter element such as glass wool or the like positioned within said central bore between said upper and lower ends thereof for separating water from the pressurized air received from said air compressor;

an elevating device connected to said outlet port for receiving therefrom pressurized air to elevate the height of a vehicle;



electromagnetically actuated exhaust valve means, connected to said drain port and actuatable between a first position closing said drain port and a second position opening said drain port, for when in said first position allowing said pressurized air to pass through said outlet port to said elevating device and thereby to elevate a vehicle, and for when in said second position exhausting pressurized air from said elevating device through said outlet port, said filter element and said drain port and exhausting water in said collecting means through said drain port, thereby to lower the height of the vehicle; and

said lower end of said casing being tapered downwardly and inwardly and defining nozzle means for, when said valve means is in said second position thereof, facilitating the removal from said filter element of water collected therein and enabling exhausting of such removed water through said drain port.

4,402,494

PROCESS OF HEAT TREATING COPPER FILM ON CERAMIC BODY AND HEAT TREATING APPARATUS THEREFOR

Atsuo Senda, Ootsu; Tohru Kasanami, and Takuji Nakagawa, both of Kyoto, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 8, 1980, Ser. No. 194,983

Int. Cl.³ C21D *1/06*

U.S. Cl. 266—255 **7 Claims**

1. An apparatus for heat treating a copper film formed on a ceramic body, said apparatus comprising:

a container having a sealed chamber formed therein for receiving at least one ceramic body;

a furnace having an open space for receiving at least one said container;

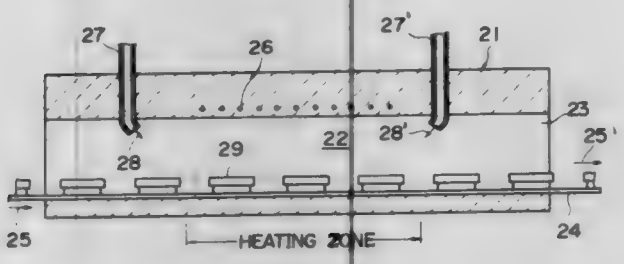
means for supplying an inert gas to said open space externally of said container whereby a generally inert atmosphere is defined in said open space;

a valve associated with said container for permitting gases located inside said chamber to flow from said chamber

into said space whenever the pressure of said gases in said chamber rises above the pressure of said atmmosphere in said space by an amount determined by the structure of said valve;

said furnace including a heater for heating said atmosphere in said space and thereby heating both said gases located in said chamber of said container and any ceramic bodies located in said chamber; and

said container and said furnace being so structured that as



said atmosphere in said space and said gases in said chamber are heated by said heater, the pressure of said gases in said chamber becomes greater than the pressure of said atmosphere in said space, said heater generating sufficient heat to cause the pressure of said gases in said chamber to rise above the pressure of said atmosphere by at least said amount whereby gases located in said chamber flow outside said chamber into said space and said any ceramic bodies located in said chamber are heat treated without being exposed to said inert gas.

4,402,495

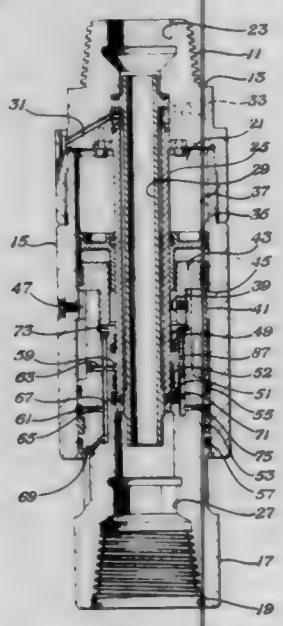
DRILL STRING SHOCK ABSORBER WITH PRESSURIZED LUBRICANT SYSTEM

Billy F. Dyer, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 101,616, Dec. 10, 1979, abandoned. This application Oct. 15, 1981, Ser. No. 311,500

Int. Cl.³ F21B *17/02*; F16F *9/18*

U.S. Cl. 267—125 **3 Claims**



1. In the shock absorbing apparatus for a drill string of the type having a tubular body, a mandrel reciprocally mounted in the body for rotation therewith, an annular chamber in the body containing fluid under pressure for absorbing shock by allowing longitudinal movement of the body and the mandrel with respect to each other, annular and axially spaced seals between the mandrel and an inner wall portion of the body with a sealed lubricant cavity located between the seals containing lubricant, the improvement comprising:

a lubricant passage in the mandrel extending between the chamber and the lubricant cavity; the lubricant passage having a first portion extending into the chamber and a second portion extending into the lubricant cavity that is larger in cross-sectional dimension than the first portion; and

a differential area piston reciprocally and sealingly carried in the lubricant passage first and second portions to provide a lesser pressure in the lubricant cavity than in the chamber and a higher pressure than ambient.

4,402,496

METHOD OF MANIPULATING PRINTED SHEETS

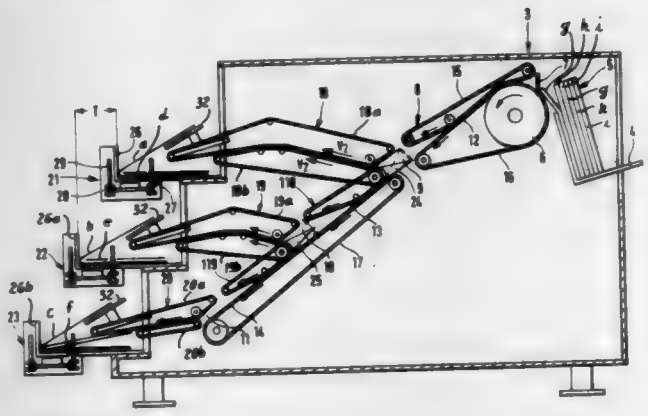
Hans Müller, Zofingen, Switzerland, assignor to Grapha-Holding AG, Hergiswil, Switzerland

Filed Sep. 29, 1981, Ser. No. 307,083

Claims priority, application Switzerland, Oct. 8, 1980, 7500/80

Int. Cl.³ B65H *5/30*

U.S. Cl. 270—55 **8 Claims**



1. A method of manipulating sheets such as sections of newspapers or discrete pages comprising the steps of accumulating and maintaining a first source and at least one second source respectively containing first and second sheets, each of said first sheets having two overlapping panels; establishing a plurality of elongated paths having receiving ends and discharge ends; conveying a first sheet from the first source to the receiving end of each path during each of a series of successive intervals; transporting successive first sheets from the receiving ends toward the discharge ends of said paths; opening up the first sheets in the respective paths; admitting from the second source to each of said paths a second sheet during each of said successive intervals; and assembling each such second sheet with a first sheet in the respective path into a group of sheets during transport of the first sheets toward the respective discharge ends, said assembling step including introducing the second sheets between the panels of the respective first sheets.

4,402,497

APPARATUS FOR UNSTACKING A PILE OF SHEETS

Kurt Weibel, Pfyn, and Walter Würsch, Frauenfeld, both of Switzerland, assignors to WUFAG AG, Oberurnen, Switzerland

Filed Oct. 5, 1981, Ser. No. 308,846

Claims priority, application Switzerland, Oct. 7, 1980, 7477/80

Int. Cl.³ B65H *5/08*

U.S. Cl. 271—11 **10 Claims**

1. An apparatus for unstacking a pile of sheets, comprising:

a drum on a first shaft rotatable about an axis, said drum having a generally circular peripheral outline with a depression bounded by a forward edge farther from said axis;

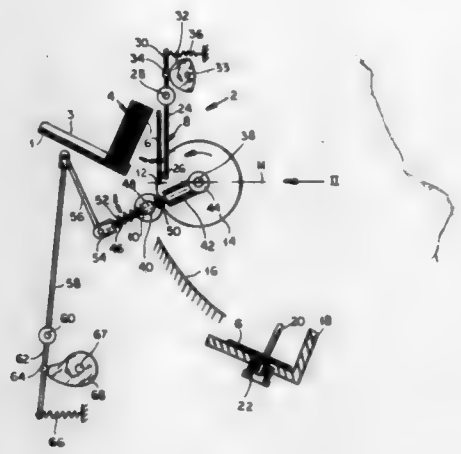
stationary guide means for advancing a pile of sheets to be unstacked in a generally radial direction toward said drum;

pick-up means synchronized with the rotation of said drum for detaching a sheet proximal to said drum from said pile

and introducing a marginal portion of the detached sheet into said depression;

a counterpressure roller confronting said drum on a second shaft parallel to said first shaft, said second shaft being movable relatively to said first shaft in both the radial and the peripheral direction of said drum; and

operating means synchronized with said pick-up means and



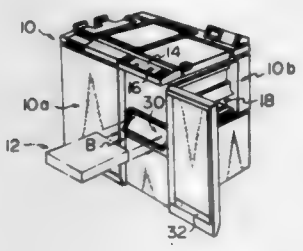
coupled with said second shaft for peripherally displacing said roller in the direction of rotation out of line with said pile prior to the detachment of a sheet by said pick-up means and thereupon displacing said roller in the opposite peripheral direction past said forward edge into a position overlying said marginal portion, said second shaft being provided with biasing means urging said roller toward the sheet portion overlain thereby.

4,402,498

COPYING MACHINE USING SHEET CASSETTE

Minoru Suzuki, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 20, 1981, Ser. No. 245,797
Claims priority, application Japan, Apr. 4, 1980, 55-45611[U]
Int. Cl.³ B65H *5/00*
U.S. Cl. 271—164 **15 Claims**



1. A copying machine comprising a body having a first opening at a first face thereof to permit ingress and egress of a sheet cassette therethrough into and out of said body in a first predetermined direction, and a second opening at a second face to permit ingress and egress of the sheet cassette therethrough in a second predetermined direction which is perpendicular to said first predetermined direction;

means for supporting and locating the sheet cassette in a predetermined sheet feed position when the sheet cassette is introduced into the body through one of the first and second openings; and

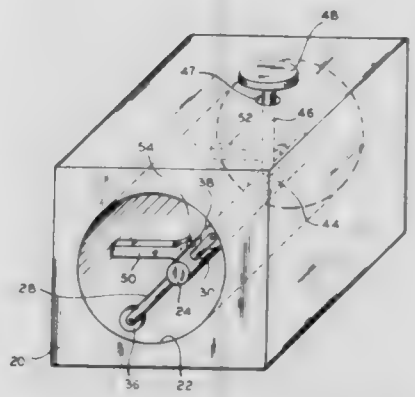
means for feeding sheets one by one from the sheet cassette in the first predetermined direction when the sheet cassette loaded with a sheet stack is located in the predetermined sheet feed position, said sheet feed means being positioned above the supporting and locating means inside the body.

4,402,499

TUNNEL WITH OFF-CENTER SHAFT THEREIN HAVING FURTHER SHAFTS SLIDEABLE THERETHROUGH

Rodney P. Galyean, 2080 Sutherland Pl., Hoffman Estates, Ill. 60195

Filed Feb. 18, 1982, Ser. No. 349,864
Int. Cl.³ A63J *23/00*
U.S. Cl. 272—1 R **8 Claims**



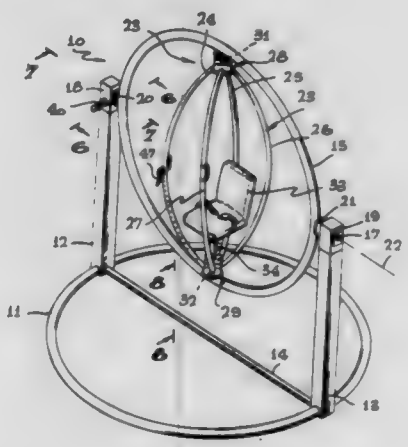
1. An attention getting device comprising a block having a tunnel extending through at least a part thereof, a floating shaft in an off-center position within said tunnel, at least one wall means in said tunnel for precluding a centering of said shaft in said tunnel, a plurality of holes formed diametrically through said shaft, the axis of each of said holes being angularly off-set with respect to the axis of each of the other holes in order to uniformly distribute the directions of said holes around the periphery of said shaft, a sliding shaft slidably positioned in each of said shaft holes, the contour of the wall of said tunnel conforming to the paths followed by the ends of said sliding shafts as said floating shaft rotates, and means for applying a pressure upon said floating shaft at a longitudinal location which is peripherally offset from the cross-sectional center of said floating shaft.

4,402,500

AMUSEMENT DEVICE FOR SIMULATING WEIGHTLESSNESS

William E. Coles, 4201 Topanga Canyon Blvd. #174, Woodland Hills, Calif. 91364

Filed Mar. 27, 1981, Ser. No. 227,792
Int. Cl.³ A63G *1/12*
U.S. Cl. 272—33 R **1 Claim**



1. A device for simulating weightlessness comprising:

a base;

a ring supported for rotation on a horizontal axis;

a frame supported by said ring for rotation on a second axis at right angles to said horizontal axis;

a passenger seat so supported by said frame for rotation therewith that at least one of said axes will pass through the body of a passenger occupying said seat;

said frame comprising portions that are gripable by a passenger occupying said seat;

means for securing a passenger to said seat so confining the passenger's feet each within a different restricted area that a force may be directed against said frame in either of two directions by the passenger's feet whereby said portions being so disposed that reactive forces produced by movements of the passenger's body will be transmitted to said frame and ring;

said portions include handles attached to adjoining parts of the frame at spaced positions;

said frame comprises a pair of circular members coupled together at right angles surrounding said seat and pivotally connected to the inside of said ring as a unitary revolving cage;

said seat is so located that both of said axes will pass through the body of the passenger or such person as may be occupying said seat;

a pair of blocks are secured to said ring at diametrically opposite positions having said second axis passing therethrough;

said cage comprises (a) a pair of hubs each having a stub shaft journaled in one of said blocks and (b) a pair of outwardly bowed bars constituting one of said pair of circular members each having one end rigidly affixed to one of said hubs and the other end rigidly affixed to the other of said hubs;

a second pair of outwardly bowed bars constituting the other of said pair of circular members, each having one end rigidly affixed to one of said hubs and the other end rigidly affixed to the other of said hubs, the seat being mounted within said cage provided by said pairs of bars;

said ring rotatably mounted on said base by means of a pair of supports located on opposite sides of said ring, each of said supports comprising an upright post and a bearing member secured thereto, said horizontal axis passing through said bearing members;

brake mechanism operably coupled between said cage and said ring for manually controlling the speed of movement of said cage relative to said ring; and

adjustable friction means interconnecting said ring with a selected one of said upright posts for selectively restricting the movement of said ring with respect to said upright posts.

4,402,501

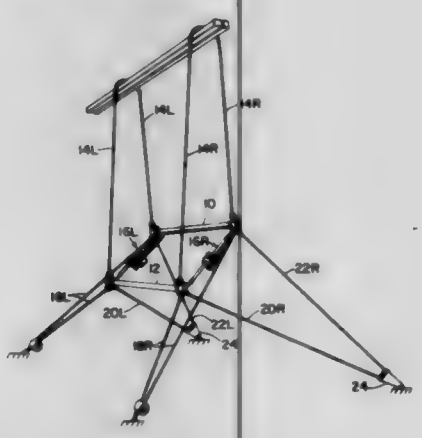
SUSPENDED UNEVEN PARALLEL BARS FOR COMPETITIVE WOMENS GYMNASTICS

Frederick H. Lohman, 58 Fleming Rd., Cincinnati, Ohio 45215

Filed Sep. 29, 1981, Ser. No. 307,075

Int. Cl.³ A63B *3/00*

U.S. Cl. 272—63 **5 Claims**



1. A suspended uneven parallel bar apparatus for gymnastics comprising:

(a) two matching flexible performance bars approximately 8 feet long, each end of which has a hole passing through perpendicular to the length of the bar and to an axis of the cross-section,

(b) a pair of struts of adjustable effective length which connect the adjacent ends of the two performance bars in a way which holds the bars in approximately parallel configuration relative to each other when adjusted, while at the same time being the instruments for changing the bar separation distance to suit the performer,

(c) a means of attachment of the bar separation adjusting struts to the performance bar ends which rigidly holds the said axis of their cross-sections parallel to each other and also the holes through the corresponding ends of the two bars parallel to each other at a specific fixed angle in the range $45° \pm 10°$ to the struts,

(d) a pair of wire ropes of appropriate length for suspending the performance-bars and separation-adjusting-struts assembly from an overhead support with the bars horizontal lengthwise and with corresponding points on the low bar and high bar forming an angle of inclination of $45° \pm 10°$ to horizontal and with the entire bars assembly at the desired height from the floor, said functions being accomplished by hanging each wire rope over a direction-reversing cable guide attached firmly to said overhead support and separated from the other by about ten feet, and attaching the ends of each wire rope to corresponding ends of the performance bars using the holes in the bar ends of points of attachment,

(e) a system of wire ropes connecting the ends of the performance bars to floor anchors positioned forward-outward and rearward-outward from the bar ends which hold the bars assembly in tension in the desired fixed position between the overhead supports and the floor anchors, said system comprising:

(1) two wire ropes which loop around direction-reversing devices attached to the right and left forward-outward-placed floor anchors and whose ends are attached to the ends of the performance bars on each side of the apparatus,

(2) two wire ropes which connect the right and left ends of the highest performance bar to the rearward-outward extending floor anchors, respectively,

(3) two wire ropes which connect the right and left ends of the lowest performance bar to the corresponding rearward-outward-extending floor anchors,

(f) a means for attachment of the floor-anchored tensioning wire ropes to the ends of the performance bars which minimizes the possibility of twisting moments or torques being applied to the performance bars along their length as an axis as a result of unequal tensioning forces among the wire ropes, while at the same time permitting, as much as possible, the natural rotation of the bar ends in the vertical plane about the suspension point as the center sections of the bars are flexed vertically by the gymnast during use.

4,402,502

EXERCISER FOR DISABLED PERSONS

Gilbert E. Peters, Ladysmith, Wis., assignor to Industrial Energy Specialists, Inc., Ladysmith, Wis.

Filed Apr. 3, 1981, Ser. No. 250,619

Int. Cl.³ A63B *23/04*

U.S. Cl. 272—73 **4 Claims**

1. An exerciser for disabled persons or the like, comprising in combination:

(a) a frame mounted to a base,

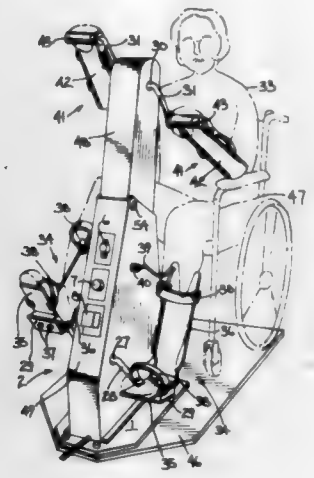
(b) rotatable pedal cranks and hand cranks for connection with the limbs of the operator, and with said pedal cranks having pedals rotatably mounted thereon and with said hand cranks having handles thereon,

(c) means associated with at least one of said cranks to firmly hold the operator's respective limb in aligned position relative to his body during rotation of said cranks, said holding means comprising:

(1) a generally L-shaped rigid leg support having a flat footrest portion which merges into an elongated curved calf-nesting portion,

(2) and means securing said footrest portion to said rotatable pedal,

(d) a housing disposed on said frame,



(e) and a flexible tether connected between said calf-nesting portion of said leg support and said housing,

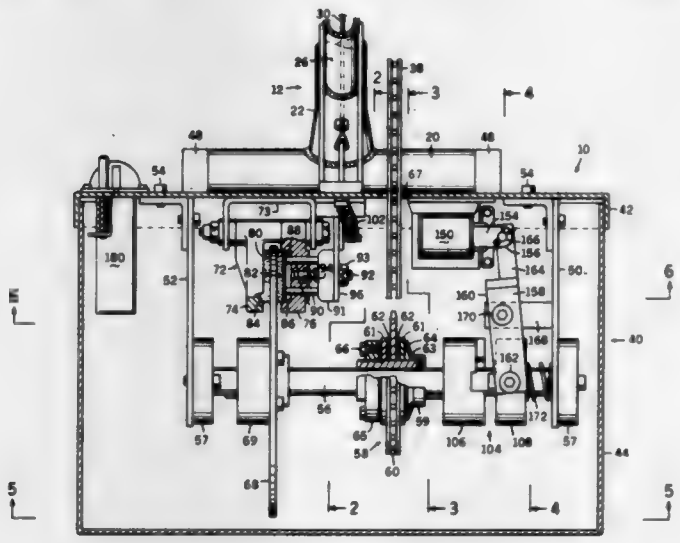
(f) said flexible tether forming means to hold said leg support against pivoting by gravity into engagement with said base when said rotatable pedal crank is not in use, while freeing said leg support from restraint during use of said pedal crank.

4,402,503

EXERCISE BICYCLE

Richard T. Galbierz, St. Louis, Mo., assignor to The Perfection Manufacturing Company, St. Louis, Mo.

Filed Apr. 27, 1981, Ser. No. 257,889
Int. Cl.³ A63B *23/04, 69/16*
U.S. Cl. 272—73 **17 Claims**



1. A driven resistance assembly for an exercise bicycle, the assembly comprising:

(a) support means,

(b) coin-actuated switch means including a timer,

(c) a shaft rotatively mounted to the support means,

(d) brake means including first means on the shaft for selectively applying resistance to rotation of the shaft,

(e) lock means actuated by the switch means and operatively disengageable with second means on the shaft to unlock the shaft on actuation by a coin, and

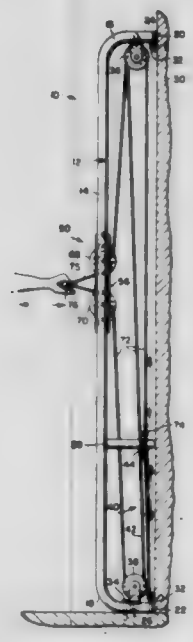
(f) torque limiter assembly means on the shaft and drive assembly means on the shaft and drive means operatively connected between the exercise bicycle and torque limiter assembly means whereby on insertion of a coin the lock means is actuated to unlock the shaft for the duration of the time of the timer and the driven means can be actuated against the resistance of the brake means and on relocking of the shaft at the end of the time, the torque limiter assembly means allows slippage between the drive means and shaft at a decellerating rate thereby avoiding the sudden jolting stoppage which would otherwise occur.

4,402,504

WALL MOUNTED ADJUSTABLE EXERCISE DEVICE

Robert J. Christian, 3500 Hillcrest Dr., Waco, Tex. 76708

Filed May 19, 1981, Ser. No. 265,184
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—118 **18 Claims**



1. An exercise device comprising:

an upstanding elongated fame;

resistance means operatively connected to said frame for providing an exercising force in response to exercising motions of a user;

an upper pulley attached to the upper portion of said frame;

a lower pulley attached to the lower portion of said frame;

a two-ended cable trained around said upper and lower pulleys and operatively connected to said resistance means;

grip means slidably attached to an intermediate portion of said cable for engagement by a user to apply pulling exercising motions to said resistance means through said cable; and

guide means carried by said frame and selectively positionable at various heights relative to said frame, for guiding said intermediate portion of said cable laterally outwardlly of said frame so that the length of said outwardly projecting intermediate cable portion, when not pulled, is substantially constant irrespective of the height of said guide means.

4,402,505

TRUNK EXERCISING DEVICE

Sidney P. Young, Rte. 2, Box 488, Halifax, Va. 24558

Filed Aug. 5, 1981, Ser. No. 290,216
Int. Cl.³ A63B *23/02*
U.S. Cl. 272—130 **7 Claims**

1. An exercising device for strengthening and toning the human torso, said device comprising:

(a) a frame adapted to be secured to a supporting surface,

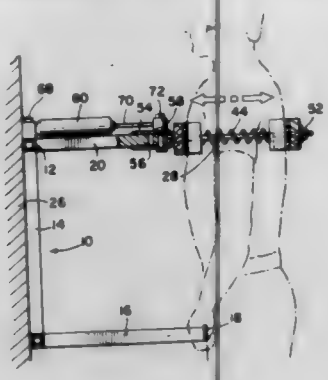
(b) said frame including a horizontally extending mounting arm, a vertically extending post, and a lower support arm,

(c) said frame further including an upper support arm projecting parallel to said lower support arm and perpendicular to said mounting arm,

(d) a yoke adapted to receive the trunk of a human being using said device,

(e) said yoke comprising a first beam with a chest receiving cavity defined therein and a second beam with a back receiving cavity defined therein,

(f) means for securing said yoke to said upper support arm so



that said yoke can be pivoted thereabout in a horizontal plane, and

(g) resistance means secured between said mounting arm and said yoke, said resistance means opposing the pivotal movement of said yoke about said support arm.

4,402,506

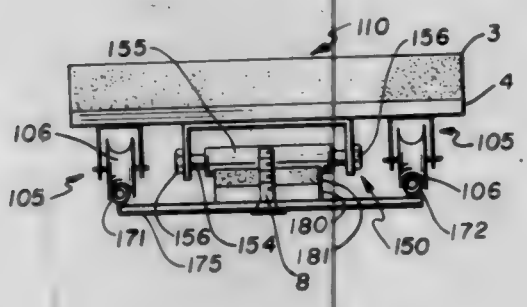
BODY-EXERCISE DEVICE

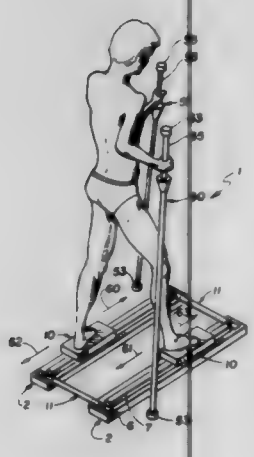
William C. Jones, Box 154, St. Cloud, Minn. 56301

Filed Oct. 10, 1980, Ser. No. 195,773

Int. Cl.³ A63B *21/22*

U.S. Cl. 272—132 **8 Claims**





1. An improved body-exercising device of the type having a pair of rollably supported dollies and two substantially parallel guideway means, each guideway means cooperating with one of said dollies for supporting and guiding the dolly, wherein the improvement comprises:

(a) two substantially compressible pads, one pad attached to each of said pair of dollies, each of said pads adapted to securely receive one foot of a person standing thereon; and

(b) means for adjustably fixing the distance between said substantially parallel guideway means;

and wherein each of said guideway means has at least one projection thereon and said means for adjustably fixing the distance between said guideway means comprises:

(c) at least one substantially rigid connector having a plurality of bores at each of its ends, each bore being adapted to receive one of said projections; and

(d) fastening means cooperating with said projections for fixedly securing said projections in said bores.

4,402,507

BALL-TOSSING DEVICE

Robert H. Hudson, 103 Valley St., Seekonk, Mass. 02771

Filed Oct. 31, 1980, Ser. No. 202,647

Int. Cl.³ A63B *69/40*

U.S. Cl. 273—26 R **3 Claims**



1. A batting practice device including a ball tossing means, said ball tossing means having a pivoted plate with a foot-contacting surface at one end and a ball contacting surface at the other end thereof, a pivoted pawl, said pawl engaging the said other end of the plate, resilient means urging the foot-contacting end upwardly, downward pressure exerted by the foot of a user on the foot-contacting surface of said plate initially stressing and then subsequently releasing the said other end from said pawl to cause said other end to quickly move in an upward direction to toss a ball, means re-setting the ball tossing means whereby removal of the foot of the user allows said resilient means to effect reverse movement of said pivoted plate said other end of the plate swinging the pawl to allow the end to be captured by the pawl whereby the ball tossing means is reset.

4,402,508

HANDLE TRIGGER GRIP

Donald C. Pflueger, 1366 Gross Ave., Charleston A.F.B., S.C. 29404

Filed Dec. 7, 1981, Ser. No. 327,917

Int. Cl.³ A63B *49/00*

U.S. Cl. 273—75 **5 Claims**

1. A combination of a device and a handle secured to a striking area and utilized by a person comprising:

a. an indented portion in said handle;

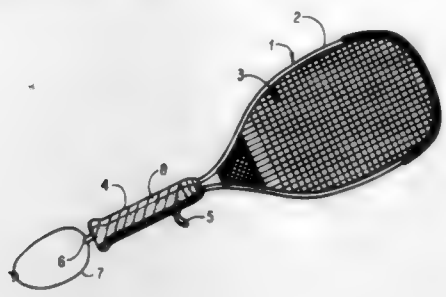
b. a first plurality of grooves within said indented portion in said handle;

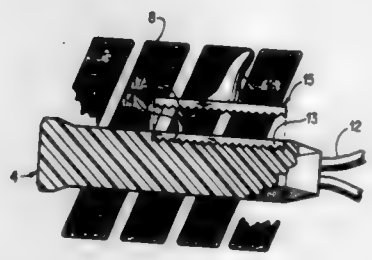
c. a base sized and shaped to fit within said indented portion in said handle, said base having a second plurality of grooves in the bottom portion of said base, whereby when said base is inserted into said indented portion in said handle, said first plurality of grooves will fit into said second plurality of grooves providing a slip-resistant contact between said base and said handle and the upper, outer edges of said base will meet the surrounding external portions of said handle producing a level surface;

d. a trigger extension, with a resting area for supporting a portion of the hand of said person utilizing said handle, secured to said base extending outward from said base away from said handle; and

e. securing means securing said base to said handle and thereby securing the alignment of said trigger extension with respect to said handle,

whereby said handle may be gripped securely utilizing said trigger extension in order to maximize the effectiveness of the





movement of said handle to control the placement of said striking area.

4,402,509

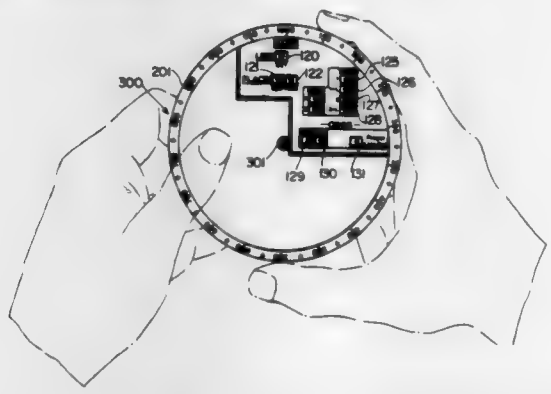
DICE THROWING CRAPS GAME COMPUTER

Charles L. Dersher, P.O. Box 7172, Toledo, Ohio 43615

Filed Mar. 25, 1982, Ser. No. 361,877

Int. Cl.³ G06C *3/00*; G09F *9/00*

U.S. Cl. 273—148 R **4 Claims**



1. A dice throwing craps game computer for determining various positive and negative cyclic trends of probability of certain craps playing functions and appropriate progressive and regressive wagering techniques and values therein, comprising:

(A) a circular topmost frame disc, said frame disc including:

(A 1) a front face having formed therethrough, viewing window groupings corresponding to the major craps playing functions, said groupings including individual windows with identifying indicia lying adjacently;

(A 2) an indicator on the surface of said circular topmost frame disc at the edge thereof;

(B) a circular bottommost sliding disc, larger in diameter than the frame disc (A) and rotationally attached at its center to the center of said frame disc (A) and freely movable relative thereto, said sliding disc, having front and rear faces, said front face being contiguous to said frame disc (A), and having defined thereon a plurality of scales concentrically disposed relative to the center of said sliding disc (B);

(B 1) the first of said scales, having selected numerical designations positioned at the periphery of said sliding disc (B), the entirety of said first scale being at all times visible,

(B 2) the remainder of said scales being positioned on the sliding disc so as to be selectively visible only, through the window of the frame disc (A), said scales, (B 2) being divided into sections corresponding in disposition to the superimposed viewing window groupings (A 1), each one of said scales (B 2) corresponding to a different craps playing function and showing different number patterns under each of said craps playing functions, whereby alignment of selected numerical designations on said first scale (B 1) on said sliding disc relative to indicator (A 2) will place a scale value from the remainder of said scales (B 2) in the said respective reviewing window groupings (A 1.).

4,402,510

PUZZLE TOY

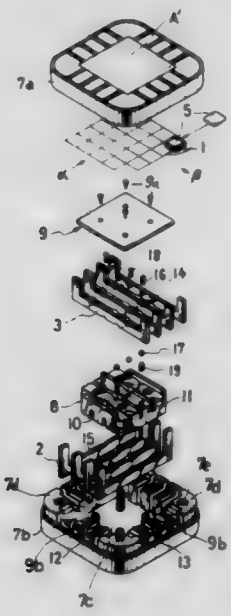
Gunpei Yokoi, Kyoto, Japan, assignor to Nintendo Co., Ltd., Japan

Filed Feb. 12, 1982, Ser. No. 348,506

Claims priority, application Japan, Mar. 10, 1981, 56-33789[U]; Mar. 13, 1981, 56-36818; Jul. 1, 1981, 56-103017

Int. Cl.³ A63F *9/08*

U.S. Cl. 273—153 S **8 Claims**



5. A puzzle toy comprising means forming a plane supporting surface, a plurality of puzzle elements supported on said surface, said elements being arranged on said surface in such a manner and in such number as to form a fitted-in equal-sided square, each of said elements comprising a polarizing plate attached to and supported on a reflecting plate, a transparent plate, means forming individual polarized plates in the form of an equal-sided square on a portion of the underside of said transparent plate, there being on each side of the square one less individual polarized plate than individual puzzle elements, means mounting said transparent plate and the individual polarized plates on the underside thereof above, parallel and adjacent the individual puzzle elements in such a manner that the individual polarized plates are always aligned with a like number of individual puzzle elements, and means transversely and laterally shifting said individual puzzle elements with respect to the individual polarized plates.

4,402,511

GOLF PUTTING TRAINING DEVICE

Luther G. Simjian, Fort Lauderdale, Fla., assignor to Command Automation Inc., Greenwich, Conn.

Filed May 11, 1982, Ser. No. 377,126

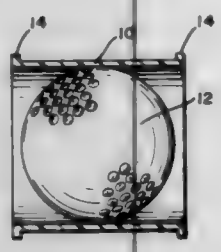
Int. Cl.³ A63B *69/36*

U.S. Cl. 273—183 C **6 Claims**

1. A golf putting device comprising:

a substantially transparent tubing:

a spherical member having the appearance of a golf ball disposed in said tubing, and



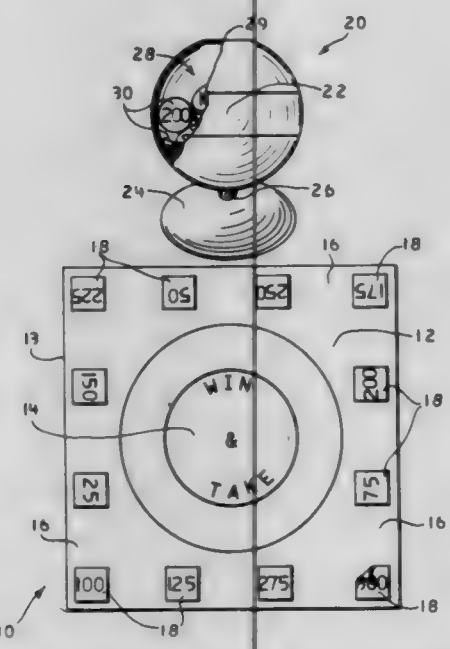
a pair of rims for providing rolling contact with a supporting surface encircling said tubing.

4,402,512

GAME PLAYING METHOD

John Joseph, 674 Eastern Pkwy., Brooklyn, N.Y. 11213

Continuation of Ser. No. 836,431, Sep. 26, 1977, abandoned. This application Jan. 9, 1979, Ser. No. 2,200
Int. Cl.[3] A63F *3/06*
U.S. Cl. 273—273 **4 Claims**



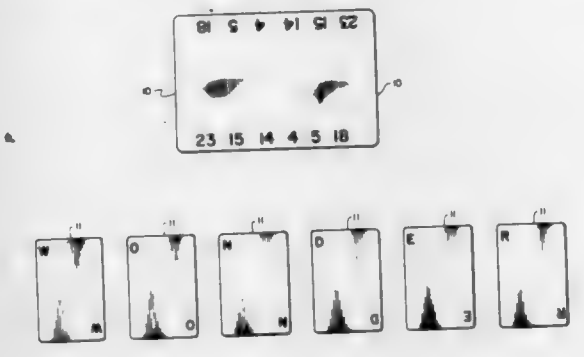
1. A method of playing a game which comprises;
(a) providing a game assembly, which comprises;
(i) a planar sheet having an upper surface bounded by a peripheral edge, said surface defining a playing area, said area being zoned into a central playing zone and a peripheral margin zone interposed between said edge and the central playing zone;
(ii) a plurality of numerical indicia mounted on the peripheral margin zone, each indicia being different from each other indicia;
(iii) a gamepiece for each of said indicia, each gamepiece bearing a different indicia corresponding to one of the indicia on the peripheral margin;
(iv) an additional gamepiece bearing indicia designated as a winning symbol;
(v) an additional gamepiece without indicia; and
(vi) means for randomly selecting one of said gamepieces;
(b) dividing the peripheral margin zone among from 2 to 4 players;
(c) assigning the numerical indicia on the peripheral margin zone among said players;
(d) determining the order of play for said players;
(e) mixing said gamepieces together;
(f) permitting a player, in the order determined in (d) above, to randomly select one of the mixed gamepieces and to receive credit each time the permitted player selects a gamepiece bearing indicia corresponding to an indicia assigned to the permitted player in step (c) above;
(g) returning the randomly selected gamepiece to the non-selected gamepieces and remixing the gamepieces together;
(h) repeating steps (f)–(g) above following said order with the next player until a winner is acclaimed; and
(i) acclaiming one of said players a winner after that player receives credit for each indicia assigned to him and then randomly selects the additional gamepiece bearing indicia designated as a winning symbol.

4,402,513

WORD CARD GAME

Robert M. Head, 4140 S 400 West, Apt. 104, Granger, Utah 84119

Filed Apr. 30, 1982, Ser. No. 373,352
Int. Cl.[3] A63F *1/04*
U.S. Cl. 273—296 **4 Claims**



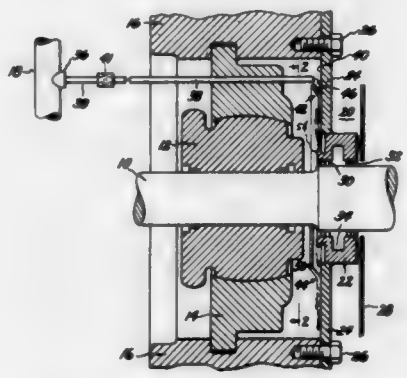
1. A spelling, counting and memory game comprising
at least one word card which has a word imprinted on the reverse face of said word card and a numerical representation of that word on the obverse face of said word card, with the numerical representation being formed by a set of numbers in which each number represents a letter of the alphabet as determined by the numerical arrangement of the letters in the alphabet; and
a plurality of playing cards in which indicia corresponding to the letters of the alphabet or numbers representing letters of the alphabet are printed on said playing cards, so that each of said playing cards represents one of the letters of the alphabet.

4,402,514

FLUID-COOLED OIL DEFLECTOR

Francis D. Ryan, and Harry H. Ho, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 10, 1981, Ser. No. 300,809
Int. Cl.[3] F16J *15/54*; F16L *33/72*
U.S. Cl. 277—22 **8 Claims**



1. In combination with a machine having a generally horizontal shaft mounted for rotation within at least one flow lubricated bearing, a fluid-cooled oil deflector comprising:
seal means encompassing the shaft adjacent the bearing to prevent oil leakage from said bearing axially along the shaft;
a seal support means affixed to the machine for supporting

the seal means, said support means having an inner surface facing the bearing;

means for supplying a continuous stream of cooling fluid to such oil deflector;

a first arcuate gutter affixed to the inner surface of said support means and spanning the shaft at an upper location radially outward from the shaft, said gutter having a plurality of spaced-apart slots for discharging fluid, received substantially at the apex of said gutter and at the radially outer side thereof from said cooling fluid supply means, to flow downward forming a first portion of a substantially uniform flow pattern; and

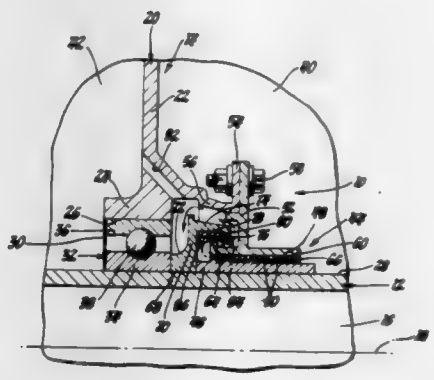
a second arcuate gutter affixed to the inner surface of said support means and spanning the shaft at a lower location radially outward from the shaft, said gutter having a plurality of spaced-apart slots for discharging fluid, collected at the radially inner side of said gutter from said first portion of said uniform flow pattern, to flow downward forming a second portion of said uniform flow pattern across said inner surface of said support means.

4,402,515

LABYRINTH SEAL WITH CONTAMINATION TRAP

Richard C. Malott, Indianapolis, Ind., assignor to General Motors Corp., Detroit, Mich.

Filed Mar. 17, 1982, Ser. No. 359,145
Int. Cl.³ F16J *15/44*
U.S. Cl. 277—24 **5 Claims**



1. In a device having a region of high gas pressure, a region of relatively lower gas pressure, a first member defining a barrier between said high and said relatively lower gas pressure regions, a second member straddling said high and said relatively lower gas pressure regions and rotatable relative to said first member, and an abradable seal between said first and said second members permitting a controlled flow of leakage gas across said first member and producing particles of abraded material tending to entrain in said flow of leakage gas, the improvement comprising, contamination trap means operative to trap and retain abraded seal material impinging thereon, means defining a flow path for said flow of leakage gas, and means supporting said contmination trap means on one of said first and said second members with said contamination trap means generally perpendicular to a portion of said flow path so that abraded material entrained in said flow of leakage gas impinges on and is retained by said contamination trap means.

4,402,516

FULLY CONSUMABLE REMOTELY OPERATED SEAL

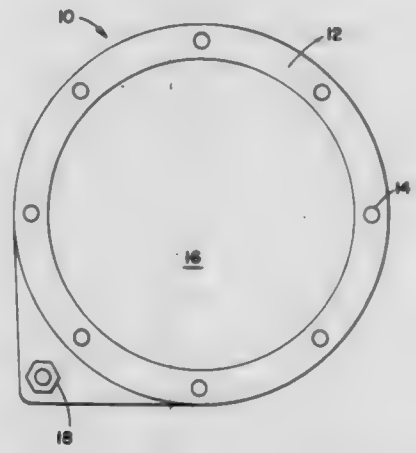
Werner A. Gans, Sunnyvale; Frank G. Borgardt, Cupertino, and George A. Lo, San Jose, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 3, 1983, Ser. No. 454,937
Int. Cl.³ F16J *15/02*
U.S. Cl. 277—26 **4 Claims**

1. A technique for sealing apertures of varying geometric configurations such that the seal may be removed remotely and completely in a non-explosive manner and without requiring oxygen comprising the steps of:

(a) fabricating a mounting frame configured to hermetically fit within said aperture, said mounting frame having substantially the same open area as said aperture;

(b) forming a piece of fully consumable material such that said material fits within said mounting frame;



(c) locating said mounting frame holding said fully consumable material within said aperture; and

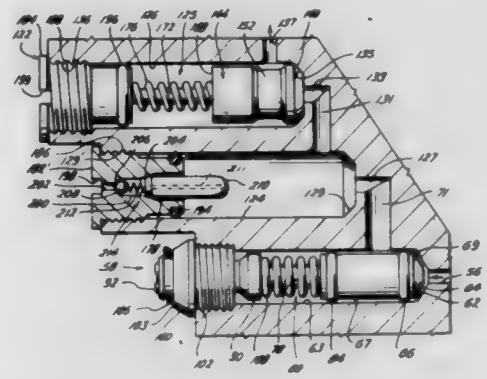
(d) attaching an ignitor to said frame such that said ignitor is in direct communication with said consumable material and may be activated remotely.

4,402,517

WELL PACKER VALVE ARRANGEMENT

Edward T. Wood, and Robert E. Snyder, both of Kingwood, Tex., assignors to Completion Tool Company, Houston, Tex.

Filed Aug. 13, 1982, Ser. No. 408,123
Int. Cl.³ E21B *33/12*; F16J *15/46*
U.S. Cl. 277—34 **3 Claims**



1. A tubular system for use in packing off a well bore, comprising:

a hollow tubular mandrel;

a packer attached to said mandrel at one end of said mandrel;

a valve collar mounted on the other end of said mandrel, the other end of said packer being attached to said collar and having a passageway therethrough, and said collar being in fluid communication with said packer and the interior and exterior of said mandrel by said passageway;

said passageway having enlarged portions in said collar;

a valve system mounted in said enlarged portions, said valve system including three valves;

the first of said valves being mounted in the first of said portions and having a reciprocating member and a stop means for preventing reciprocation of said reciprocating member prior to the application of at least a predetermined difference in pressure between one side of said reciprocating member and the other side, said reciprocating member being located at one end of a first part of said passageway when said stop means prevents reciprocation and having at least two seals thereon for preventing the

flow of fluid from either end of said reciprocating member around the member to said first passageway part;

said first valve being in fluid communication with a second part of said passageway in fluid communication with said interior of said mandrel on one side of said reciprocating member;

said first valve being in fluid communication with said exterior of said mandrel on the other side of said reciprocating member; and

the second of said valves having check means for permitting the flow of fluid from said exterior of said mandrel to said first part of said passageway when the pressure exterior of said mandrel exceeds the pressure in said second portion;

said second portion includes a first bore opening to said exterior of said mandrel and said second valve is located in said first bore;

said second valve includes

a head adapted to connect to said first bore,

a seal mounted on said head and sealingly engaging the walls of said first bore and said head,

and said check means is mounted in said head;

said check means includes

a second bore through said head and substantially coaxial with said first bore;

a third bore through a portion of said head substantially coaxial with said first and second bores, said third bore being of a greater diameter than said second bore and forming a shoulder therewith;

a ball adapted to seal against said shoulder; and

mounting means for reciprocably mounting said ball in said third bore.

4,402,518

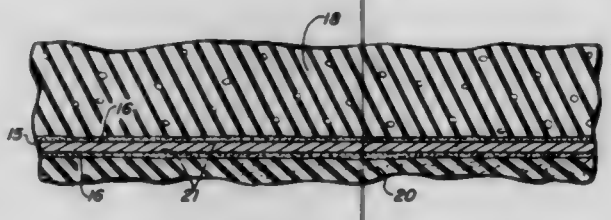
LAMINATED VALVE COVER GASKET ASSEMBLY HAVING SEALING LAYERS OF DIFFERENT THICKNESSES AND MATERIALS

Robert F. Locacius, Lake Zurich, Ill., assignor to Felt Products Mfg. Co., Skokie, Ill.

Filed Oct. 22, 1981, Ser. No. 313,954

Int. Cl.³ F16J *15/10*

U.S. Cl. 277—166 **4 Claims**



1. A laminated valve cover gasket assembly for disposition between a valve cover and a head of an internal combustion engine for providing a perimetric seal therebetween, comprising

a metallic core, the body of which is imperforate,

a relatively thick, conformable cork-rubber facing layer overlying said body,

a relatively thin, fiber-reinforced rubber facing layer underlying said body, said cork-rubber facing layer being at least twice as thick as said fiber-reinforced rubber facing layer, and

adhesive securing each of said layers to said body,

said gasket assembly defining a central opening and a perimetric portion adapted to be clamped between the flange of a valve cover and an engine head to provide a perimetric seal therebetween.

4,402,519

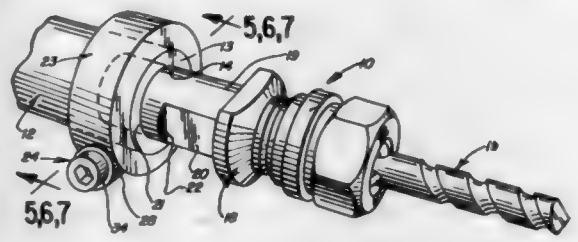
TOOL CONNECTOR

Thomas F. Meaden, and Domingo Hinojosa, both c/o Meaden Screw Products Company, 210 W. 83rd St., Burr Ridge, Ill. 60521

Filed Jul. 3, 1980, Ser. No. 166,083

Int. Cl.³ B23B *31/12*; F16B *21/00*

U.S. Cl. 279—76 **11 Claims**



1. A quick-connect tooling system for releasably locking a tool to a spindle having a cylindrical outer end defining an axially outwardly opening cylindrical bore and a radially outwardly opening U-shaped groove chordally intersecting said bore, said tooling system comprising:

a tool holder having a cylindrical connecting portion provided with a chordal radially outwardly opening recess spaced from an inner end of the tool holder and said recess defining at its inner end a locking surface, said tool holder inner end being coaxially receivable in said spindle bore with said chordal recess intersecting said spindle groove;

an annular locking collar coaxially rotatively mounted on said spindle outer end about said recess, said collar having a chordal cylindrical through bore axially aligned with said spindle groove;

a lock received in said collar bore and said spindle U-shaped groove intersecting said tool holder recess when said tool holder connecting portion is mounted into said spindle outer end, said lock including first and second axially aligned portions, means biasing said portions toward each other to a locking position, shoulder means on at least one of said portions for engaging said tool holder locking surface when the portions are in said locking position to releasably lock the tool holder to the spindle;

displacing means for selectively displacing said shoulder means from said locking position against the action of said biasing means to a released position wherein said shoulder means is displaced from said spindle bore; and

retaining means for selectively retaining said shoulder means in said released position to permit insertion and removal of the tool holder from said spindle as desired.

4,402,520

ROLLER SKATE OR THE LIKE WITH BRAKE ATTACHMENT

Gerd W. Ziegler, Heiligenhaus, Fed. Rep. of Germany, assignor to TSH-Handels AG, Vaduz, Liechtenstein

Filed Apr. 3, 1981, Ser. No. 250,670

Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017762; Oct. 31, 1980, 3041042

Int. Cl.³ A63C *17/14*

U.S. Cl. 280—11.2 **16 Claims**

1. In a wheeled skating device having at least one front wheel and a pair of rear wheels journaled on a transverse axle, the combination therewith of:

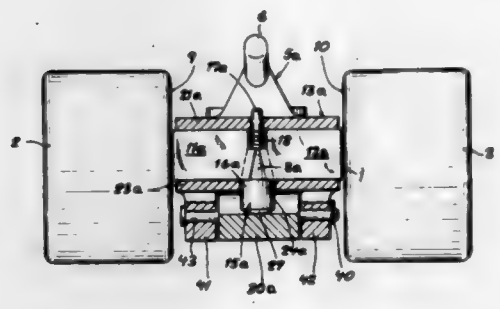
a truck member between said rear wheels supporting said axle;

a bracket fulcrumed on said truck member for limited swinging about a pivotal axis extending rearwardly of said axle in a direction perpendicular to said rear wheels, said bracket having a pair of flexible lateral arms with front extremities carrying wedge-shaped formations and extending between said rear wheels;

a roller journaled on a tail end of said bracket rearwardly of said axle;

resilient means tending to maintain said bracket in a limiting position relative to said truck member in which said roller is elevated above a road surface contacted by all said wheels; and

an upwardly converging extension on said truck member straddled by and coacting with said wedge-shaped formations for driving said front extremities into frictional engagement with said rear wheels upon an elevation of said front wheel sufficient to lower said roller onto the road surface and to swing said bracket about said pivotal axis against the force of said resilient means whereby a braking force is exerted on said rear wheels.

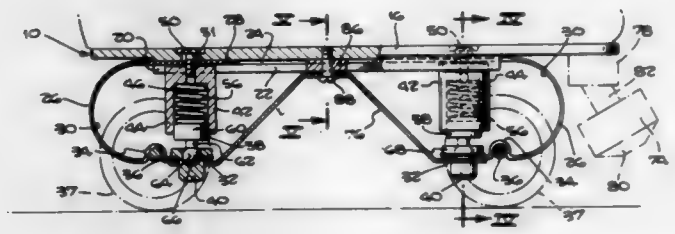


4,402,521

ROLLER SKATE PLATE ASSEMBLY WITH FLOATING AXLES

Douglas R. Mongeon, 2328 N. Maplewood, Orange, Calif. 92665

Filed Oct. 20, 1980, Ser. No. 198,306
Int. Cl.³ A63C *1/24*
U.S. Cl. 280—11.23 **29 Claims**



1. A roller skate plate assembly upon which may be mounted a boot and to which is attached a plurality of skate wheels, comprising:

a spring mounting plate;

a pair of C-shaped leaf springs each mounted at one end upon said spring mounting plate;

a pair of axles mounted upon and before the other end of said C-shaped leaf springs for attaching said skate wheels;

a pair of resilient pivots mounted upon said spring mounting plate and engaging said other end of said C-shaped leaf springs;

said pair of resilient pivots each comprising a housing mounted upon said spring mounting plate having a longitudinal bore therein;

resilient members mounted within said longitudinal bores;

pivot plunger means mounted within said bores and retained therein by said C-shaped leaf springs;

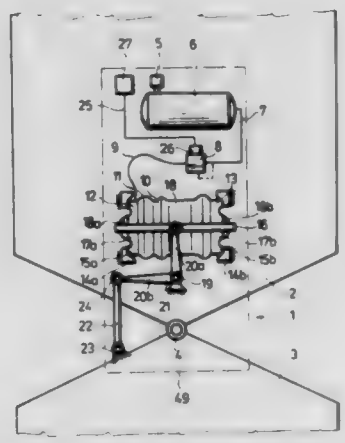
wherein said axles float up and down upon said C-shaped leaf springs and said resilient pivots while pivoting about said resilient pivots.

4,402,522

JACKKNIFING ANGLE INFLUENCING APPARATUS FOR ARTICULATED MOTOR VEHICLE

Istvan Ratsko; Jozsef Ivony, and Nandor Liptai, all of Budapest, Hungary, assignors to Autóipari Kutató Intézet, Budapest, Hungary

Filed Mar. 9, 1981, Ser. No. 241,556
Claims priority, application Hungary, Mar. 10, 1980, 559/80
Int. Cl.³ B60D *1/00*; B62D *53/06*
U.S. Cl. 280—432 **6 Claims**



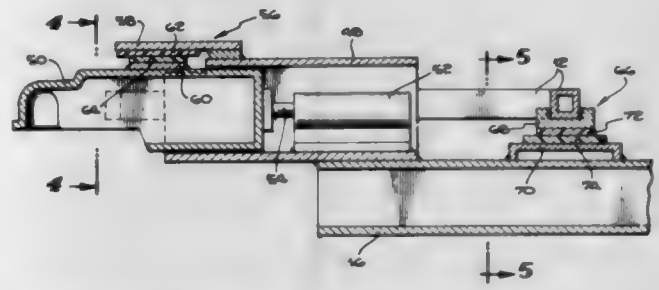
1. In an anti-jackknifing apparatus for an articulated motor vehicle, having damping means containing a pressure medium which is responsive to the magnitude of the jackknifing angle to vary the volume thereof and including two opposite relatively movable walls, the damping means being connectable to one of the vehicle units, and the movable walls being connectable to the other vehicle unit via transmission elements, the improvement wherein the damping means comprises an air spring and a working medium supply source connected thereto, means forming stops on said one of the vehicle units for mounting the air spring and limiting the extreme positions of the movable walls and a frame surrounding the air spring and engaging the walls and connected to one transmission element on said one vehicle unit.

4,402,523

TRAILER HITCH

Larry F. Knowles, 835 Milwood Ave., Venice, Calif. 90291

Filed Feb. 23, 1981, Ser. No. 237,073
Int. Cl.³ B60D *1/06*
U.S. Cl. 280—446 B **6 Claims**



1. A towed vehicle hitch assembly for coupling a towed vehicle to a towing vehicle comprising:

a surge brake means for actuating the braking system of a towed vehicle responsive to deceleration of a towing vehicle, said surge brake means including a brake actuator device mounted between first and second elements of a hitch member, said first and second elements being mounted for relative movement, said brake actuator device being actuatable responsive to said relative movement, at least one sliding bearing, operatively associated with said first and second elements permitting said relative movement, said sliding bearing having generally planer bearing surfaces, at least one of said bearing surfaces being

composed of solid self-lubricating resinous material and permitting unimpaired omniplaner movement of said first element relative to said second element.

4,402,524

BATTERY-CHARGING GENERATOR FOR ELECTRONIC SKI BINDING

Nicholas F. D'Antonio, Liverpool, N.Y.; Dieter Polt, Murnau, and Volker Eibl, Garmisch-Part., both of Fed. Rep. of Germany, assignors to Marker-Patentverwertungsgesellschaft mbH, Baar, Switzerland

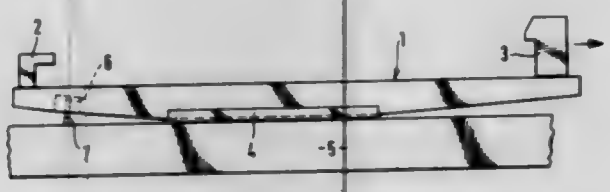
PCT No. PCT/EP80/00034, § 371 Date Dec. 12, 1980, § 102(e) Date Dec. 12, 1980, PCT Pub. No. WO80/02648, PCT Pub. Date Dec. 11, 1980

PCT Filed May 30, 1980, Ser. No. 220,047

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 2923173; Oct. 8, 1979, 2940784

Int. Cl.³ A63C *9/08*

U.S. Cl. 280—612 **11 Claims**



1. An electronic ski binding having an electrical generator for charging a power source, which binding includes a movable binding member mountable on a ski and being movable relative to the ski, said generator comprising induction coil means and magnet means movable relative to each other for generating a current for charging the power source, one of said coil means and of said magnet means being fixedly mounted on said movable binding member and the other of said coil means and of said magnet means being mountable to move with respect to the one of said coil means and said magnet means during operation of the ski binding, whereby said coil means and said magnet means are movable relative to each other during skiing and/or during the stepping of a skier into the binding to charge the power source.

4,402,525

SKI SAFETY BINDING

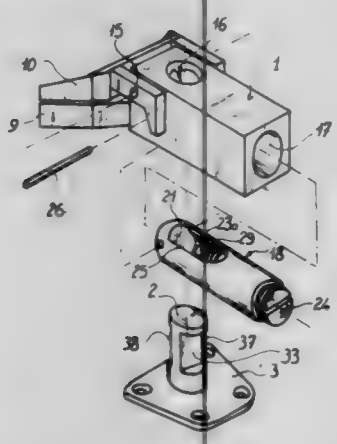
Georges P. J. Salomon, Annecy, France, assignor to Etablissements Francois Salomon et Fils Chemin de la Prairie Prolonge, Annecy, France

Continuation of Ser. No. 31,803, Apr. 20, 1979, abandoned. This application Jun. 22, 1981, Ser. No. 276,293

Claims priority, application France, Apr. 28, 1978, 78 12741

Int. Cl.³ A63C *9/00*

U.S. Cl. 280—628 **8 Claims**



1. A safety binding for a boot on a ski with at least lateral release, comprising

(a) a substantially vertical pivot rigidly connected to a base plate fixed on the ski and having two flat parts diametrically opposed and disposed perpendicularly to the longitudinal axis of said ski;

(b) a body mounted for pivoting movement on said pivot and having boot retaining means thereon, a vertical boot retaining means being mounted for rotation on said body about an axis parallel to the plane of said ski and transversely to its longitudinal axis; and

(c) a locking and compensating system mounted in said body, comprising spring means and assuring retention of said boot on said ski in a fixed position, said locking system cooperating with the flat parts of said pivot and with said vertical boot retaining means for opposing a lateral retention force and a vertical retention force, respectively, upon lateral displacement and lifting of said boot, said locking system being adjusted to permit release of said boot when it is subjected to a predetermined level of stress, said locking system comprising two movable elements in said body, each of said movable elements being forced by said spring means against one of said flat parts, the first of said movable elements being forced against said flat part turned to said boot and comprising an extension in the direction of the second of said movable elements and said spring means being inserted between said second movable element and said extension of said first movable element, thereby forcing said two elements against the two flat parts of said pivot, and said vertical boot retaining means cooperating with said first movable element to separate it from the corresponding flat part when said vertical boot retaining means are displaced vertically, while it exerts no action on said second movable element which is pressed against said corresponding other flat part, in order to cause the lateral retention force due to said spring means to vary inversely with the vertical retention force.

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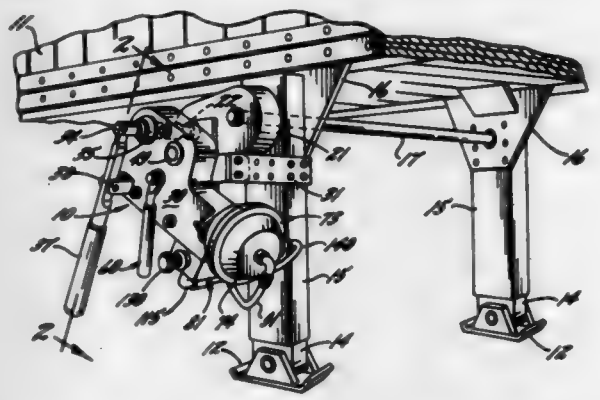
LANDING GEAR ACTUATOR

Larry C. Huetsch, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Jan. 22, 1981, Ser. No. 227,383

Int. Cl.³ B60S *9/02*

U.S. Cl. 280—766.1 **4 Claims**



1. An actuator for a semi-trailer landing gear assembly having a pair of laterally spaced extendible and retractable feet, said landing gear assembly further including a gear mechanism located adjacent one of said feet and having gearing, said gear mechanism having an input defined by a crankshaft and having an output defined by a cross-shaft extending between said feet, said crankshaft being spaced radially from said cross-shaft and being connected to said cross-shaft by said gearing, there being a fixed angular relationship between the axis of said crankshaft and the axis of said cross-shaft, said cross-shaft being operable to extend or retract the feet in dependence upon the direction of rotation of said crankshaft, said actuator comprising a housing, means for mounting said housing at a location disposed adjacent to and outboard of said one foot, a rotatable member carried by said housing and rotatable about an axis coinciding with the axis of the crankshaft, means for connecting said rotatable member to an end portion of said crankshaft, power-

operated means carried by said housing and having a reciprocating element for rotating said member, and means for selectively causing said reciprocating element to rotate said member in either a clockwise or a counterclockwise direction, said member acting through said crankshaft and said gearing to rotate said cross-shaft.

4,402,527

VEHICLE BODY VIBRATION CONTROL APPARATUS

Yutaka Kakehi; Kenjirou Kasai; Katsuyuki Ierada, and Tadashi Beppu, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

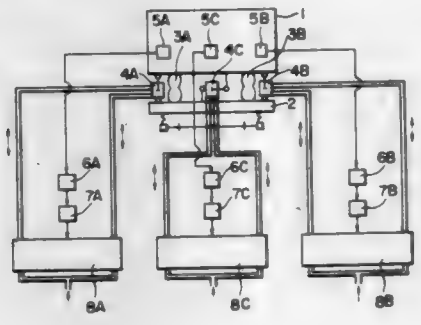
PCT No. PCT/JP80/00162, § 371 Date Mar. 17, 1981, § 102(e) Date Mar. 17, 1981, PCT Pub. No. WO81/00237, PCT Pub. Date Feb. 5, 1981

PCT Filed Jul. 18, 1980, Ser. No. 247,534

Claims priority, application Japan, Jul. 20, 1979, 54-91565

Int. Cl.³ B60G *17/04;* B61F *5/22;* G05D *19/00;* F16F *15/00*

U.S. Cl. 280—707 **6 Claims**



1. A vehicle body vibration control apparatus comprising: springs for supporting the vehicle body, a fluid operating mechanism disposed in parallel with said springs for damping the vibration of said vehicle body, a vibration detector provided on the vehicle body for detecting the acceleration thereof, a compensator circuit for compensating for the results detected by said vibration detector, and a fluid control device for applying fluid of a required amount to said fluid operating mechanism in response to the compensated results detected by said vibration detector, wherein said compensator circuit includes an integrator for producing an integration response component, and a lead-lag circuit for producing a response having components corresponding to a summation of a proportional element and a differential element.

4,402,528

DEFLECTION FITTING FOR A SAFETY BELT

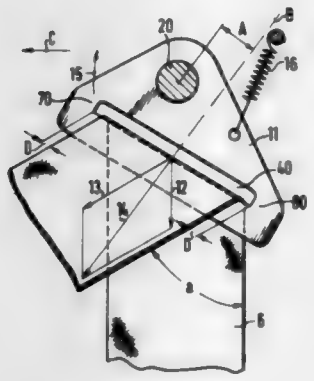
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to REPA Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Jun. 18, 1981, Ser. No. 274,866

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1980, 3023093

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—808 **5 Claims**



1. Deflection fitting for a safety belt which may be pulled out as well as returned to a roll-up device, especially for motor vehicles, for deflecting the belt, the deflection fitting comprising a fitting plate which can swivel about a swivel axis and which has an elongated guide slot through which the safety belt is passed and pulled out from the slot in a travel direction which is at an angle to either side of a plane midway to and perpendicular to the slots' lengthwise dimension, said guide slot defined by a rounded deflection surface and lateral edge webs adjacent thereto, said guide slot arranged asymmetrically to the swivel axis relative to the slot's lengthwise dimension and with the swivel axis arranged asymmetrically to the guide slot on the same side of the perpendicular plane as the travel direction.

4,402,529

SKI POLE FOR MOUNTAIN SKIING

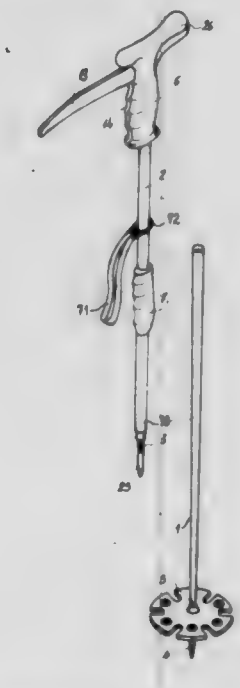
Gilbert J. Cavazza, Viuz en Sallaz, France, assignor to Kerma Societe A Responsabilite Limitee, Sallanche, France

Filed Apr. 15, 1981, Ser. No. 254,302

Claims priority, application France, Jan. 14, 1981, 81 00919

Int. Cl.³ A63C *11/22*

U.S. Cl. 280—816 **14 Claims**



1. A ski pole comprising:

an elongated shank;

a handle formed on the upper end of said shank and having a longitudinally extending slot therein;

snow-engaging means at the lower end of said shank; and

an elongated piolet blade of generally rectangular configuration pivotally connected at one end in said handle and swingable between the retracted position wherein said blade is substantially fully received in said slot and an extended position wherein said blade extends from said handle to lie transverse to said handle and form an ice-ax, an upper end of said handle having a projection in a direction opposite to said blade in the extended position thereof to serve as a piolet peen.

4,402,530

FILE FOLDER WITH CLIPS

Gerard Daguerre, 775 Darveau St. - Apt. 3, Longueuil, Quebec, Canada (J4L 2V6)

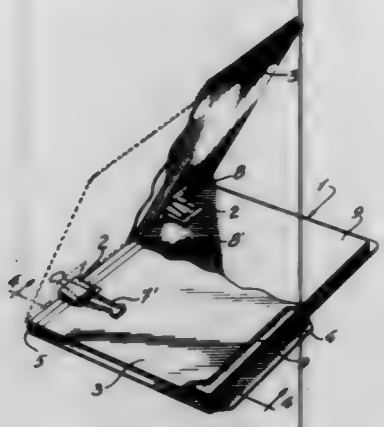
Filed Aug. 24, 1981, Ser. No. 295,656

Int. Cl.³ B42F *13/14*

U.S. Cl. 281—45 **8 Claims**

1. A file folder comprising, in combination, a one-piece file folder having top and bottom leaves and an integral, flexible, interconnecting spine portion at the back of said leaves, and at least one standard spring type clip having a pair of spring-pressed jaws and pair of operating arms extending away from said jaws; said file folder being provided with an opening in the

top leaf adjacent to said spine portion and extending into the latter; said opening being wider and deeper than one of said jaws and associated operating arm; said one jaw being inserted



through said opening, while the other jaw overlies the bottom leaf, whereby the two jaws can clamp the folder and paper sheets inserted into said folder, and the top leaf can be operated because said opening clears said one jaw and associated arm.

4,402,531

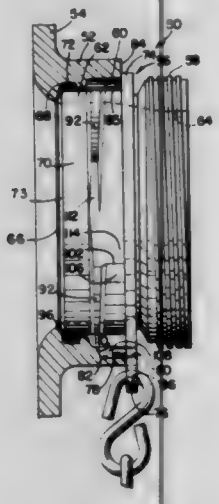
FIRE HYDRANT NOZZLE ASSEMBLY

Harold Kennedy, Jr., Birmingham, Ala., assignor to American Cast Iron Pipe Company, Birmingham, Ala.

Filed Feb. 25, 1980, Ser. No. 124,062

Int. Cl.³ F16L *55/00*

U.S. Cl. 285—14 **31 Claims**



1. A nozzle assembly for a fire hydrant having a barrel, said nozzle assembly comprising:

a nozzle boss member extending outwardly from the hydrant barrel, said nozzle boss member having a generally cylindrical inner surface defining an opening;

at least one boss lug projecting radially inwardly from and extending generally circumferentially along said boss member cylindrical inner surface;

said boss lug having an axial engagement surface facing generally along the axis of said nozzle boss cylindrical inner surface towards the hydrant barrel;

a nozzle member adapted to be retained in said boss member, said nozzle member having a waterway extending therewithin along the axis thereof, and said nozzle member having a generally cylindrical outer surface, said nozzle outer surface being configured at an insertion end for engagement within said nozzle boss member opening, and said nozzle member being configured at an outlet end to alternately receive a cap or a hose connection;

at least one nozzle lug projecting radially outwardly from and extending generally circumferentially along said nozzle member cylindrical outer surface;

said nozzle lug having an axial engagement surface facing generally along the nozzle axis towards said outlet end of said nozzle for engagement with said boss lug axial engagement surface;

said nozzle lug and said boss lug sized and configured such that said nozzle and boss members may be rotationally relatively aligned with each other initially to permit axial passage of said lugs past one another as said nozzle member is inserted into said boss member to reach an inserted position, and thereafter to permit rotation of said nozzle member within said boss member to reach an engaged position whereat said axial engagement surfaces engage to retain said nozzle member in said boss member;

axial limiting surfaces carried by said nozzle member and said boss member for preventing further axial movement of said nozzle member into said boss member past the inserted position;

said cylindrical inner surface of said nozzle boss member and said cylindrical outer surface of said nozzle member having respective annular surface portions defining respective annular clearance regions respectively receiving said nozzle lug and said boss lug, said clearance regions permitting relative rotation of said nozzle member within said nozzle boss member at least between the inserted and the engaged positions;

respective locating engagement surfaces carried by said nozzle member and said boss member configured and positioned so as to engage for locating the engaged position by preventing further rotation of said nozzle member within said boss member past the engaged position, said nozzle member locating engagement surface projecting generally radially outwardly from said nozzle member annular surface portion, and said boss member locating engagement surface facing generally inwardly towards the axis of said nozzle boss cylindrical surface and being generally perpendicular to a radius extending thereto from the axis of said boss member;

a stop carried by at least one of said boss and said nozzle members and extending into the corresponding one of said clearance regions, one of said locating engagement surfaces being provided on said stop and the other of said locating engagement surfaces being provided on the lug of the other of said members;

a pair of corresponding apertures formed in confronting surfaces of said boss and nozzle members and positioned so as to be in alignment when said boss and nozzle members are in the engaged position; and

a pin element configured for insertion through said pair of corresponding apertures to lock said members in the engaged position.

4,402,532

DETACHABLE PIPE JOINT

Günter Henn, Schrobenhausen, Fed. Rep. of Germany

Filed Dec. 19, 1980, Ser. No. 218,179

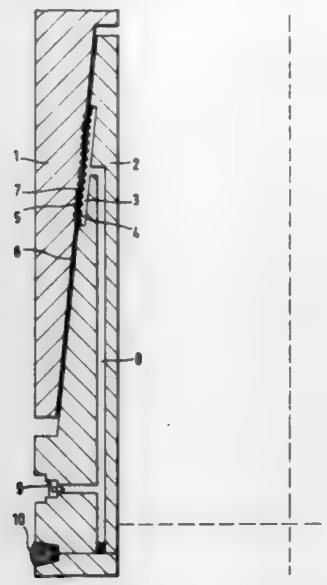
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951354

Int. Cl.³ F16L *17/00*

U.S. Cl. 285—18 **4 Claims**

1. Detachable pipe joints consisting of a pipe end with a sleeve which is conical on the inside and a pipe end with a plug conical on the outside, characterized by the feature that the inside surface of the sleeve (1) or the outside surface of the plug (2) is provided with at least one annular recess (3) which is connected via a hole (8) to an opening on the outside surface of the sleeve (1) or of the plug (2) outside of the region of the joint

and which is closed off by a valve (9), and the recess (3) is provided with a hard covering (4) which is expandable under



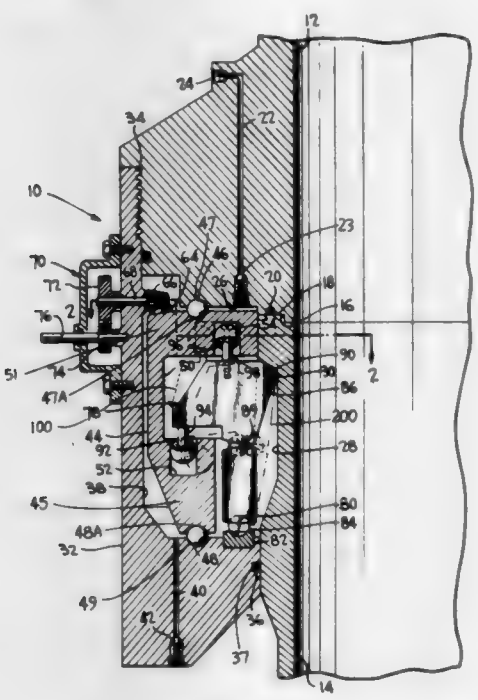
high pressure and the surface area of which is larger than the area resulting from length times height.

4,402,533

CLAMPING MECHANISM FOR CONNECTING MEMBERS IN END-TO-END RELATION

John E. Ortloff, Houston, Tex., assignor to Exxon Production Rsearch Co., Houston, Tex.

Filed Apr. 27, 1981, Ser. No. 258,204
Int. Cl.[3] F16L *37/10*
U.S. Cl. 285—18 6 Claims



1. A clamping mechanism for connecting two members in end-to-end relation comprising:

a first member having a load receiving shoulder;

a second member having a housing attached to and circumscribing one end of said second member and receiving and first member therein;

rotatable actuating means having ball bearing means and an actuating ring supported within said housing by said ball bearing means, said actuating ring having a positioning cam groove and a loading cam groove formed therein; and

a pivotable toggle assembly including a plurality of circumferentially spaced first toggle links each having a load surface, cam follower means attached to said first toggle links and contacting said positioning and load cam grooves to support said first toggle links within said actuating ring, and a plurality of spaced second toggle links having means pivotally connecting said second toggle links at one end to said first toggle links and at the other end to said housing,

wherein said positioning cam groove radially displaces said first toggle links inwardly upon rotation of said actuating ring in a first direction to position said load surface adjacent to said load receiving shoulder and said loading cam groove radially displaces said pivotable connection between said first and second toggle links inwardly upon further rotation of said actuating ring in said first direction to force said load surface into engagement with said load receiving shoulder to preload said first and second members, and

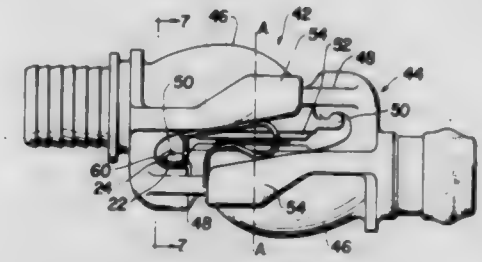
wherein rotation of said actuating ring in a direction opposite from said first direction radially displaces said load surface outwardly relative to said load receiving shoulder disengaging and unloading said first and second members.

4,402,534

AIR HOSE COUPLING LOCK

John R. Keenan, Watertown, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed May 27, 1981, Ser. No. 267,522
Int. Cl.[3] F16L *55/00, 35/00*
U.S. Cl. 285—69 16 Claims



1. A lock for inhibiting uncoupling rotation of a first and a second coupled air hose couplings, each air hose coupling having a lip and a guard arm extending from a body and latchable to the guard arm and lip, respectively, of the other air hose coupling, said lock being a resilient wire form comprising:

a first portion for engaging the exterior surface of the body of a first coupling on one side of the lip of said second coupling;

a second portion extending from said first portion and having a shoulder for engaging an opposing side of said lip of said second coupling from the side of said lip engaged by said first portion and for inhibiting unlocking rotation of said first and second couplings in concert with said first portion; and

a third portion extending from said second portion and having at least one segment to be parallel to the axis of uncoupling rotation for engaging the body of said first coupling and for inhibiting movement of said shoulder parallel to the axis of uncoupling rotation.

4,402,535

ADJUSTABLE BACKING ARRANGEMENT FOR PIPE SUSPENDING SLIPS

Charles D. Bridges, Houston, Tex., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 17, 1981, Ser. No. 244,775
Int. Cl.[3] E21B *19/10*
U.S. Cl. 285—145 17 Claims

1. For a wellhead assembly that includes:

a head having a vertical bore in which a pipe string is to be hung from a shoulder means provided in the bore, via an annular slip assembly which includes a support means seated on the shoulder means, a slip bowl-providing member supported upon the support means and a set of pipe

slips supported in the slip bowl for gripping relation with the pipe string and thus bridging an annular space between the shoulder means in the head bore, and the pipe string; and

a further wellhead structure provided with means for removably mounting it to said head in overlying relation to said head,

a setting and bridging device, comprising:

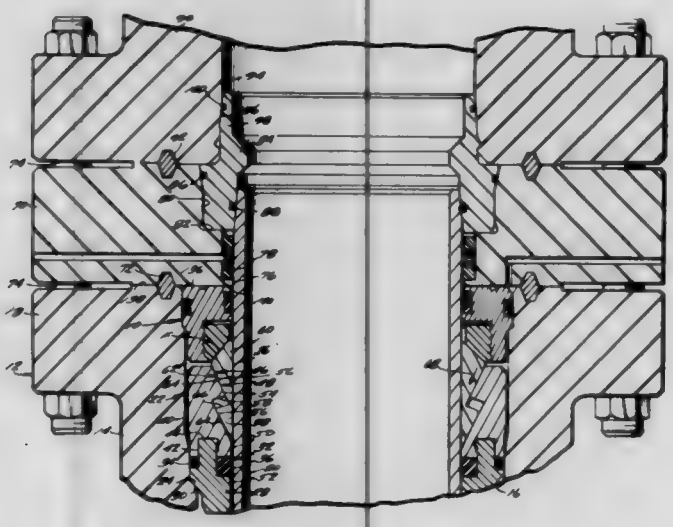
a carrier;

a shoe; and

means height adjustably dependently connecting the shoe with the carrier;

said device being receivable in said annular space, radially between the pipe string and the head bore, with the shoe in slip-setting relation with the pipe slips;

said carrier including means for seating said device in the head bore independently of the slip assembly so that the device may be lowered into the annular space and independently seated with respect to the head, provided the connecting means is so adjusted that the shoe does not first engage the slips in said slip-setting relation; and



said carrier including surface means positioned to be overlyingly abutted by said further wellhead structure when said carrier is seated in said head bore via said seating means, upon corresponding adjustment of said connecting means, so that said connecting means may first be adjusted to permit the shoe to engage the pipe slips in slip-setting relation thereto, with the carrier projecting above where its seating means can seat in said head bore for receipt of application of a downward force applied to the carrier to effect setting of the pipe slips and then be adjusted to permit the carrier to seat in the head bore via its seating means, with the shoe in slip-setting relation to the pipe slips, whereby the device is arranged to serve as a mechanical bridge between the pipe slips and the further wellhead structure, for preventing the pipe slips from unsetting as the pipe string is thermally cycled.

4,402,536

SUNROOF LATCHING MECHANISM

Hal Green, 801 W. 9th St., Southfield, and Norman L. Sorensen, Detroit, both of Mich., assignors to American Sunroof Corporation, Southgate, Mich.

Filed Dec. 24, 1980, Ser. No. 219,914

Int. Cl.³ E05C *5/04*

U.S. Cl. 292—113 **9 Claims**

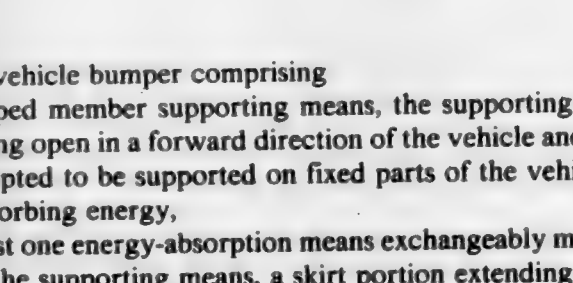
1. A sunroof for a vehicle having an opening in its roof comprising:

a frame extending about the edge of the opening and including an inward projecting ledge; a resilient member lying substantially parallel to the roof and supported by said inward projecting ledge;

a panel adapted to be supported with its perimeter in abutment with the resilient member;

a latch assembly including a latch base affixed to the underside of the panel in proximity to the edge thereof, said latch base having a free end projecting toward the edge, said free end being spaced below said inward projecting ledge;

said free end including an inclined wall extending downward and outward, the inclined wall abutting said inward projecting ledge; and



releasable latch means for engaging said frame and urging an outward movement of said latch base producing a sliding cam action with said inclined wall in abutment with said inward projecting ledge whereby a downward movement of the panel is created with the outward movement of said latch base squeezing said resilient member between the panel and said inward projecting ledge.

4,402,537

BUMPER FOR MOTOR VEHICLES

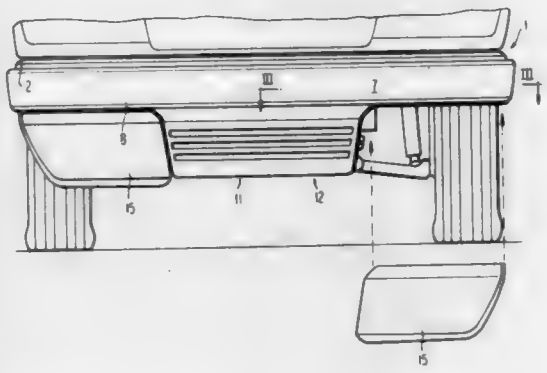
Joseph Gallitzendörfer; Peter Pfeiffer, and Johann Tomforde, all of Sindelfingen, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,397

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1980, 2927036

Int. Cl.³ B60R *19/00*

U.S. Cl. 293—149 **11 Claims**



1. A vehicle bumper comprising

a shaped member supporting means, the supporting means being open in a forward direction of the vehicle and being adapted to be supported on fixed parts of the vehicle for absorbing energy,

at least one energy-absorption means exchangeably mounted in the supporting means, a skirt portion extending downwardly from the bumper, characterized in that

the supporting means and at least a center area of the skirt are formed in one piece,

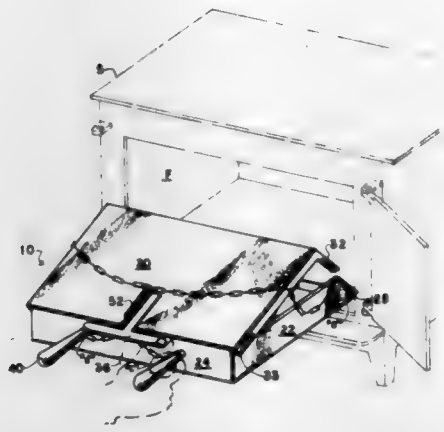
the supporting means and the skirt are formed of a filament reinforced plastic material, and

means are provided in an area of transition between the supporting means and the skirt for enabling a deflection of the skirt about an axis which is substantially horizontal and substantially transverse to the direction of vehicular travel.

4,402,538
ASH SHOVEL

Louie L. Tyndall, 801 W. 9th St., Ayden, N.C. 28513

Filed Oct. 19, 1981, Ser. No. 312,204
Int. Cl.[3] A47F *13/08*
U.S. Cl. 294—55 3 Claims



1. A shovel for removal of ashes from the firebox of a wood stove or fireplace comprising:

(a) a scoop portion having bottom, side, and rear walls and an open front;

(b) a lid having the rear edge hingedly connected to said rear wall of said scoop portion and having a downwardly depending extension at one end thereof, said lid further including tab means for pivotally activating said lid from a first closed position to a second, open position;

(c) a pair of relatively short, horizontally spaced handles attached to and extending rearwardly from said rear wall of said scoop;

(d) said tab means for pivoting said lid comprising at least one tab extending rearwardly beyond said lid, said tab being positioned slightly inwardly from and above said handles such that when said handles are in the operator's hand, either thumb is in easy access to said tab;

(e) a flexible, auxiliary handle means comprising a metal chain attached to at least three spaced points on said shovel, said points including at least one on each side wall and at least one on said rear wall, and a grouping means associated with said chain for gripping and carrying said shovel.

4,402,539
REUSABLE CABLE TERMINATION

Norman G. Dennis, Poplarville, Miss., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 2, 1981, Ser. No. 280,166
Int. Cl.[3] B66C *1/10*; F16G *11/00*
U.S. Cl. 294—78 R 7 Claims

1. A reusable cable termination comprising:

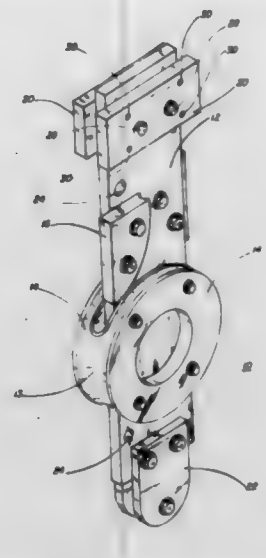
a main frame;

a pair of grooved discs rigidly mounted on said main frame situated parallel to each other and having a transition section so that a cable may smoothly pass from one disc to the other;

means rigidly mounted on said main frame for smoothly guiding said cable onto and off from said discs;

means mounted on said main frame for securely holding the end of said cable; and

means mounted on said main frame for axially aligning said cable with said reusable cable termination such that the support portion of said cable is allowed to stretch when under tension yet said cable is inhibited from springing from the surface of said discs and said guiding means;

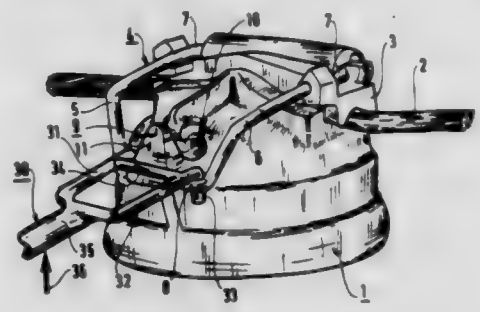


whereby said cable is securely terminated by the capstan action caused by a cable turn around each disc and across said guiding means.

4,402,540
EQUIPMENT FOR CLAMPING AND UNCLAMPING A CABLE ON AN INSULATING CAP

Michel Willem, Abrest, and Lucien Gamet, Saint-Yorre, both of France, assignors to Societe Anonyme dite: Ceraver, Paris, France

Filed May 5, 1981, Ser. No. 260,701
Claims priority, application France, May 16, 1980, 80 11015
Int. Cl.[3] A47F *13/06*
U.S. Cl. 294—19 R 14 Claims



1. Equipment for clamping and unclamping a cable in a groove on an insulator cap having a resilient clamp including a metal wire bent to form a front branch between two side branches, the free ends of which are connected to the cap for pivoting about an axis on one side of the groove, and a protruding stud on the other side of the groove having a first guide surface facing toward the groove and terminating in a first recess having a first downward facing bearing surface, a second guide surface facing away from the groove and terminating at a second recess having a second downward facing bearing surface for engaging the front branch of the clamp wire in the clamping position, wherein the clamping and unclamping equipment comprises:

a tool having two spaced apart side rods which are adapted to contact the front branch of the clamp wire on either side of the protruding stud of such an insulator cap, a crossbar connecting said side rods adjacent one end of each of said side rods and adapted to cooperate with one of the first and second guide and bearing surfaces of the protruding stud when said side rods contact the front branch of the clamp wire of such a cap, and two side hooks, each side hook being formed at the respective one end of each side rod and extending beyond the crossbar in a plane perpendicular to the crossbar;

a handle connected to the other ends of said side rods for manipulating the tool, said side hooks being adapted to hook

onto portions of the front branch of the clamp wire on either side of the protruding stud of such a cap when said crossbar is in contact with the second guide surface of the protruding stud for disengaging the front branch from the second recess upon upward movement of the handle.

4,402,541

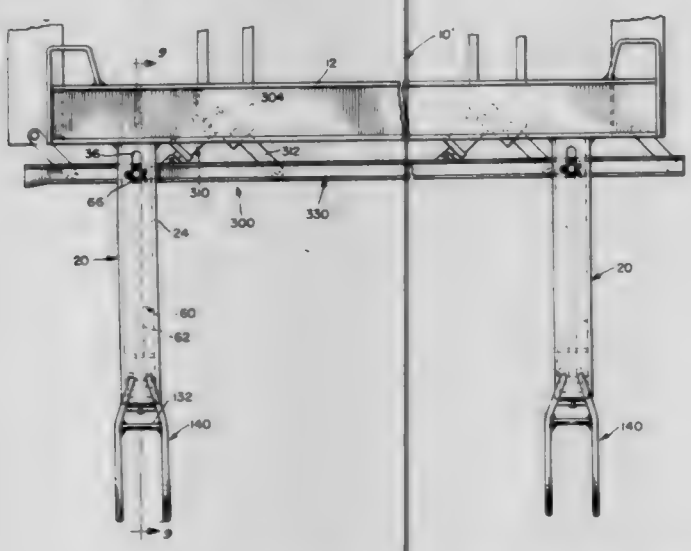
MOVABLE LOAD BAR WITH AUTOMATIC HOOKS

Arthur L. Bomberger, Mount Gretna, Pa., and Claris E. Johnson, Jr., Alexis, Ill., assignors to Butler Manufacturing Company, Kansas City, Mo.

Continuation-in-part of Ser. No. 183,740, Sep. 3, 1980, abandoned. This application Feb. 26, 1982, Ser. No. 352,524

Int. Cl.³ B66C *1/18*

U.S. Cl. 294—81 R **14 Claims**



1. A device for supporting the moving elements using an overhead carrying means comprising:

a load beam having means for movably attaching said load beam to an overhead structure and moving that load beam along a load beam path;

a hollow housing mounted on said load beam;

a rod element movably mounted within said hollow housing and including a shaft and a wedge-shaped head on one end of said rod element;

rod element moving means located outside of said housing and extending into said hollow housing and coupled to said rod element for moving said rod element within said housing;

an actuating means for actuating said rod element moving means, said actuating means including a hydraulic cylinder supported and maintained at a specific spatial location adjacent to and spaced from said load beam path so that said load beam and housing move past said spatially fixed cylinder as said load beam traverses said load beam path, an operating bar attached to said hydraulic cylinder and maintained at said specific spatial location, operating bar coupling means coupling said operating bar to said hydraulic cylinder so that said operating bar is moved toward or away from said load beam by said cylinder upon actuation of said cylinder, receiving means on said operating bar for releasably coupling said rod element moving means to said operating bar when said load bar is located adjacent to said spatially fixed hydraulic cylinder so that movement of said operating bar toward or away from said load beam causes corresponding movement of said rod element moving means coupled thereto toward or away from said load bar whereby said rod element is moved within said housing upon actuation of said hydraulic cylinder; and

a plurality of load grabbing arms located externally of said housing and pivotally supported on said housing, said arms each having a portion thereof located within said housing to be contacted by said rod element head, said arms being located to be pivoted away from said housing by said rod element head when said rod element is moved by said rod element moving means, said grabbing arms having load contacting means thereon which contact a load to be supported.

4,402,542

IMPLEMENT FOR CARRYING WHEELS AND TIRES FOR MOTOR VEHICLES

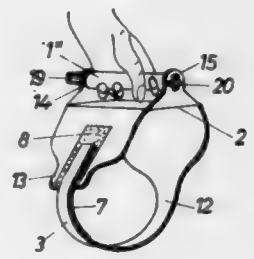
Peter Kreutzer, Quellenstrasse 37, A 1100 Vienna, Austria

Filed Aug. 31, 1981, Ser. No. 298,156

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1981, 2836; Austria, Jun. 25, 1981, 2837

Int. Cl.³ B65D *63/18*

U.S. Cl. 294—156 **11 Claims**



1. An implement for carrying wheels and tires for motor vehicles comprising:

an engaging member, which consists of flexible material and is engageable with the tread of the tire so as to extend in the axial direction thereof,

a handle, which is connected to the engaging member by lugs provided at the edges of the engaging member and extends transversely to the axis of the tire,

a retaining belt, which extends from the engaging member as a continuation thereof and is adapted to extend through the central opening of the rim of the wheel, and

a fastener which is secured to the engaging member and the belt and serves to retain the free end of the retaining belt, said handle being hollow and detachably connected at opposite ends to lugs of the engaging member, said engaging member having substantially the configuration of a rhombus or rhomboid, with extensions differing in length extending from acute-angled corners of said rhomboid, the longer of said extensions constitutes the retaining belt, the shorter of said extensions carries the fastener, and a fixing lug for the attachment of the handle protrudes from each of the obtuse-angled corners of the rhombus or the rhomboid.

4,402,543

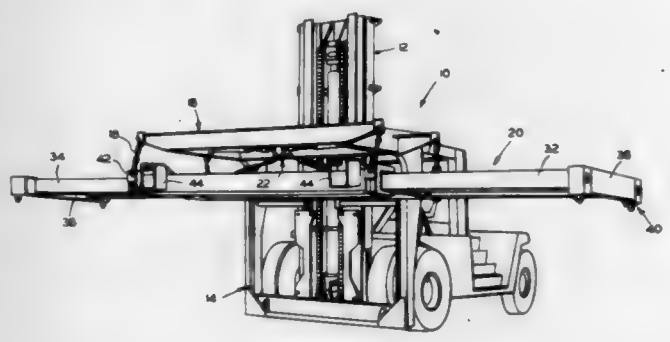
INTERLOCK SYSTEM FOR CONTAINER HANDLER TWIST LOCK

Clark C. Simpson, Martin, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 11, 1980, Ser. No. 215,292

Int. Cl.³ B66C *1/66*

U.S. Cl. 294—81 SF **8 Claims**



1. A lifting beam and twist lock mechanism including two twist locks located adjacent the ends of the beam and capable

of engagement respectively with two corner fittings of a cargo container, each twist lock comprising:

an elongated shank extending from the lifting beam and having a lower end capable of lifting engagement with the corner fitting upon rotation of the shank in a selected direction, the shank having an enlarged upper end and having a regular outer surface, the regular outer surface having a recessed portion; and

a pin connected with the lifting beam having an enlarged upper portion and a lower portion, the upper portion of the pin capable of engagement with the recessed portion to prevent rotation of the shank, the pin having a biased first position wherein the upper portion of the pin is in engagement with the recessed portion and the lower portion of the pin extends from the lifting beam, and a second position wherein the lower portion of the pin is in contact with the cargo container to raise the upper portion of the pin above the recessed portion so that the shank can be rotated to position the lower end of the shank for lifting engagement with the corner fitting; the mechanism further comprising:

a linkage connected with each of the shanks for effecting the simultaneous rotation of the shanks wherein said linkage includes a pair of bars, each bar having an inner end and an outer end, each of the outer ends operatively connected with the shank of a respective twist lock, each of the inner ends operatively connected to a member swivelably connected with the lifting beam so that each of the outer bar ends moves outwardly in response to swivel member movement in a first direction to rotate respective shanks in a respective first rotative direction and each of the outer bar ends move inwardly in response to swivel member movement in a second direction to rotate respective shanks in respective second rotative directions, a power operated extensible and retractable device connected with the swivel member for effecting the movement of the swivel member, so that when each of the shanks is rotated in one of the respective first and second rotative directions the lower end of each shank is positioned for lifting engagement with a respective corner fitting and that when each of the shanks is rotated in the other rotative position the lower end of the respective shank is positioned for insertion into and withdrawal from the respective corner fitting; and wherein

one of the lifting beam ends has an end plate having an opening therethrough and one of the outer bar ends projects through said end plate opening when the respective shank is rotated in one of said first and second rotative directions and is retracted into the lifting beam when the shank is rotated in the other of said rotative directions, said one outer bar end thereby providing a direct visual indication that the twist lock is in condition for lifting a load when said outer bar end is retracted into the lifting beam and is not visible and that the twist lock is not in condition for lifting a load when said outer bar end is extended from the lifting beam and is visible.

4,402,544

FOLDING CANOPY FOR TRUCK AND TRAILER LOADS

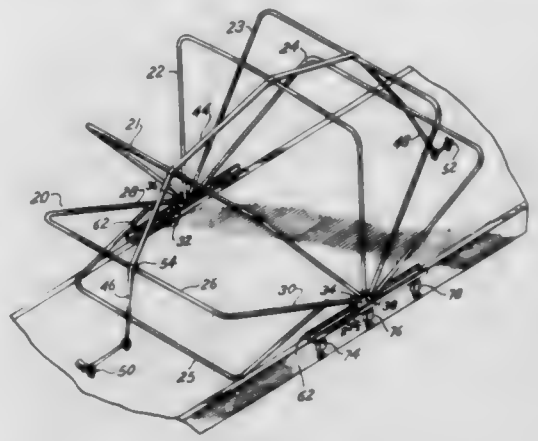
Rufus R. Artim, 8400 Westlake Dr., Merrillville, Ind. 46410, and James A. Mills, 1632 Virginia St., Gary, Ind. 46407

Filed Jan. 7, 1982, Ser. No. 337,531

Int. Cl.³ B60J *7/00*

U.S. Cl. 296—110 **14 Claims**

1. A canopy for truck and trailer loads, comprising two laterally spaced support members, means for securing said support members to the bed of a truck or trailer or to a pallet near the edge thereof, two inverted U-shaped end frame members and a plurality of inverted U-shaped intermediate frame members having the free ends thereof pivoted to said support members and being adapted to fold downwardly to a horizontal position at one longitudinal end of said support members and to unfold over a load, with the uppermost end member of the folded U-shaped members being disposed on the opposite longitudinal end, a spacer means being attached to most of said members to hold said members in spaced relation to each other, and a weather resistant flexible sheet forming a cover extending between and connected only to the one end frame



member including said uppermost U-shaped end frame member which is uppermost when the members are in folded position, said cover when unfolded forming an enclosure over and at the sides of a load, and a means for securing the lower edges of said cover when the canopy is in its unfolded position.

4,402,545

STIFFENED AUTOMOBILE BODY STRUCTURE

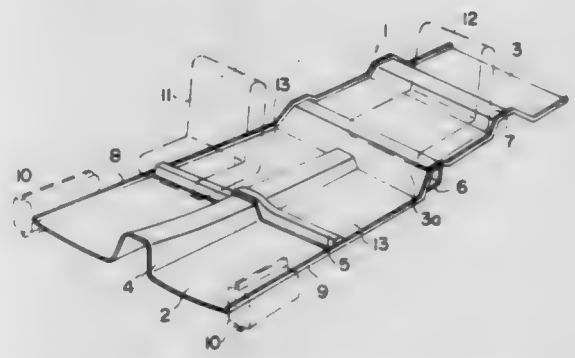
Naomasa Utsunomiya, and Yoshimitsu Tanaka, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Feb. 24, 1981, Ser. No. 237,660

Claims priority, application Japan, Feb. 27, 1980, 55-24602

Int. Cl.³ B62D *25/20*

U.S. Cl. 296—204 **7 Claims**



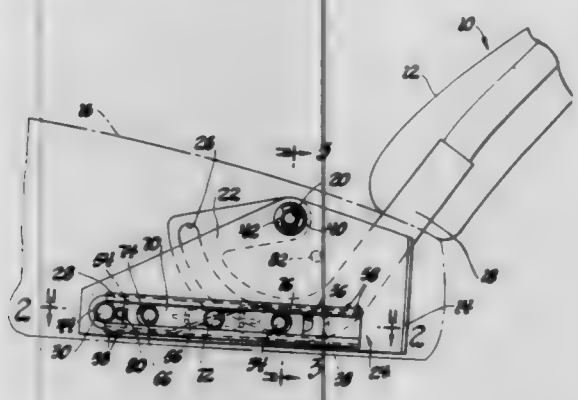
1. An automobile floor panel structure including a plurality of panel sections each having a central portion and surrounding peripheries provided with rigid structures, said panel section being of a curved configuration and formed with a first group of parallel beads extending substantially from at least one of said rigid structures toward said central portion of the panel and a second group of parallel beads substantially perpendicular to said first group of beads and extending substantially from at least one of the other of the rigid structures toward said central portion of the panel, said panel section being surrounded by longitudinal rigid structures including a side sill and a floor tunnel and transverse rigid structures including a central transverse frame member and one of a front and rear transverse frame members, at least one of said transverse frame members being laid on the panel section, said beads being in the form of recessed straight grooves, at least one of the first group of beads extending longitudinally through said central transverse frame member to another panel section in which said first and second groups of beads do not intersect with each other, and said panel section includes a central drain hole means.

4,402,546

SLIDE LOCK SEAT BACK ADJUSTER

James J. Johnson, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 4, 1981, Ser. No. 318,010
Int. Cl.³ A47C 1/027
U.S. Cl. 297—374 3 Claims



1. An infinite position seat back adjuster for a vehicle seat or the like of the type having a seat back frame which is tiltable with respect to a seat cushion frame about a first pivot, comprising:

the seat back frame including an arcuate slot generated about the first pivot and including at least one closed end,

a support member mounted to the seat cushion frame by a second pivot,

a manually operable releasable locking means associated with the support member and linearly movable with respect thereto between a plurality of locked positions,

a stop pin associated with the locking means and movable therewith, the pin being receivable through the arcuate slot and engageable with the closed end of the arcuate slot to provide a positive stop for the seat back frame at a plurality of positions,

movement of the support member about the second pivot as the releasable locking means is moved with respect to the support member maintaining the pin within the arcuate slot at each position of the seat back frame.

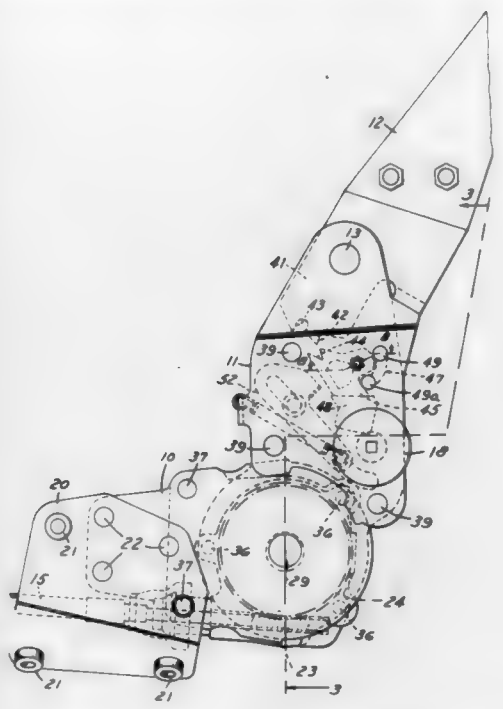
4,402,547

POWER RECLINER WITH INERTIA LATCH

Allen H. Weston, Marshall, Mich., and Bernd A. Klueting, Radevormwald, Fed. Rep. of Germany, assignors to Keiper U. S. A., Inc., Battle Creek, Mich.

Filed Aug. 26, 1980, Ser. No. 181,480
Int. Cl.³ B60N 1/02; A47C 1/025
U.S. Cl. 297—379 7 Claims

1. Hinged adjustable bracket system with inertia latch for an automobile seat comprising a first taumel hinge bracket for fixed attachment to a seat, a second taumel hinge bracket adjustably connected with taumel gearing to said first taumel hinge bracket, a bracket for fixed attachment to a seat back with means for accommodating pivotal movement relative to said second taumel hinge bracket, stop means for limiting backward pivotal movement of said seat back relative to any adjusted operative position of said second taumel hinge bracket, inertia latch means for arresting forward tilting of said seat back upon sudden deceleration and otherwise permitting said forward tilting and manual overriding slide means for actuating said inertia element to a release position comprising a rotatable knob, bellcrank and slide resiliently biased to an inoperative position, with means projecting from said slide for



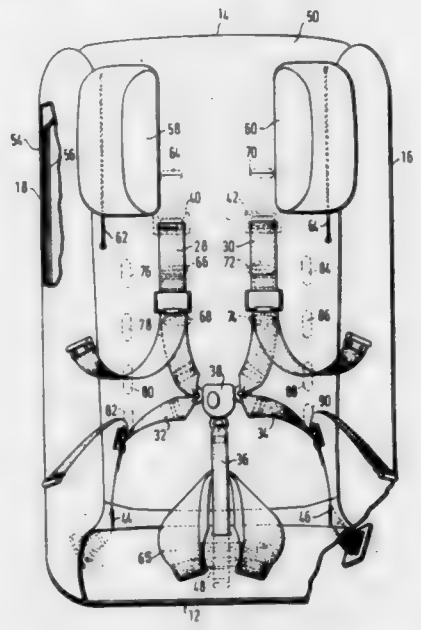
actuating said inertia element to an unlatched position upon manual rotation of said knob.

4,402,548

SAFETY SEATS FOR VEHICLES

Stuart V. Mason, Biggleswade, England, assignor to Britax-Excelsior Limited, England

Filed Feb. 18, 1981, Ser. No. 235,649
Claims priority, application United Kingdom, Feb. 27, 1980, 8006516
Int. Cl.³ A47C 31/00; B60R 21/00
U.S. Cl. 297—464 4 Claims



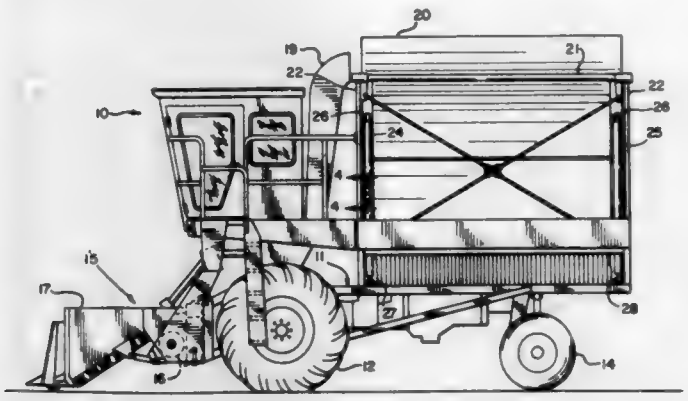
1. A kit of parts for forming a safety seat for a vehicle comprising a shell, a fabric seat cover means for detachably securing the edge of the cover to the edge of the shell, and a set of filler strips, the shell having a seat portion, a back portion and two side portions, each side portion extending between the respective edge of the seat portion and a corresponding edge of the back portion, the seat cover being shaped to fit within the shell and each filler strip being adapted to fit between the cover and a side portion of the shell whereby the interior width of the seat is adjustable by varying the number of superimposed filler strips.

4,402,549

RECEPTACLE LIFT APPARATUS

William C. Swanson, Clarendon Hills, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Dec. 22, 1980, Ser. No. 219,404
Int. Cl.[3] B60P *1/16*
U.S. Cl. 298—18 **3 Claims**



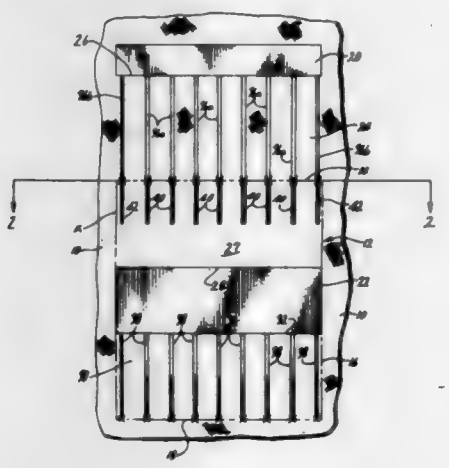
1. In a receptacle dumping vehicle, a mobile chassis, a receptacle mounted on said chassis in a manner permitting elevation of the bottom portion of the receptacle from said chassis, a hydraulic power means including a control valve operatively associated with said vehicle, a linear hydraulic motor having a first rod pivotally connected to said receptacle and attached to a first piston, a second rod pivotally attached to said chassis and attached to a second piston, and a cylindrical housing slidably receiving said first piston in one end and said second piston in the other end, said housing being independent of said chassis and said receptacle for unrestrained movement in the axial direction relative thereto, and a hydraulic circuit connecting said hydraulic motor to said control valve and disposed to provide simultaneous pressurization of the heads of both pistons in response to said control valve.

4,402,550

METHOD FOR FORMING AN IN SITU OIL SHALE RETORT WITH CONTROLLED SEISMIC VIBRATION

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Continuation-in-part of Ser. No. 183,144, Sep. 2, 1980, abandoned. This application Feb. 1, 1982, Ser. No. 344,532
Int. Cl.[3] E21B *43/247*; E21C *41/10*
U.S. Cl. 299—2 **65 Claims**



1. A method for forming a fragmented permeable mass of formation particles in an underground cavity in a subterranean formation, the underground cavity having top, bottom, and side boundaries of unfragmented formation, comprising the steps of:

(a) excavating at least one limited void within the cavity boundaries in the subterranean formation while leaving at least one zone of unfragmented formation within the cavity boundaries adjacent such a limited void;

(b) forming a plurality of spaced apart central blastholes in such a zone of unfragmented formation remote from the cavity side boundaries;

(c) forming a plurality of spaced apart outer blastholes in the zone of unfragmented formation surrounding the central blastholes and adjacent the cavity side boundaries, the distance between adjacent outer blastholes being less than the distance between adjacent central blastholes;

(d) loading explosive into the central blastholes for forming a central explosive charge in each such central blasthole;

(e) loading explosive into the outer blastholes for forming an outer explosive charge in each such outer blasthole, such an outer explosive charge substantially filling the entire cross-sectional area of such an outer blasthole, the energy per unit length of such an outer explosive charge being less than the energy per unit length of such a central explosive charge; and

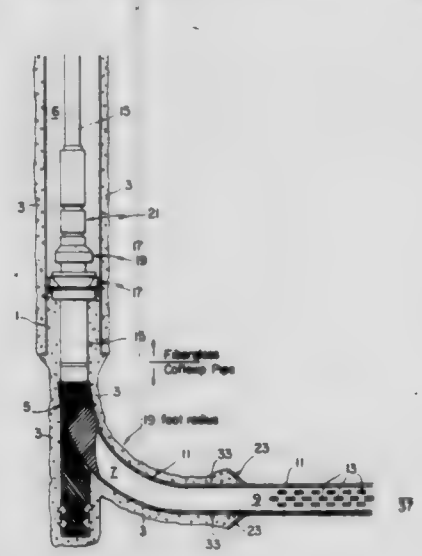
(f) detonating the central and outer explosive charges for explosively expanding the zone of unfragmented formation toward the limited void for forming the fragmented permeable mass of formation particles in the underground cavity.

4,402,551

METHOD AND APPARATUS TO COMPLETE HORIZONTAL DRAIN HOLES

Edward T. Wood, 3415 Fawn Creek; Robert Snyder, 2010 Grove Lake Dr., both of Kingwood, Tex. 77339; William C. Larson, 8301 Ewing Rd., Bloomington, Minn. 55431, and Donald W. Dareing, 13914 Jaycreek Ct., Houston, Tex. 77070

Filed Sep. 10, 1981, Ser. No. 276,609
Int. Cl.[3] E21B *43/28*
U.S. Cl. 299—5 **12 Claims**



1. A method for forming horizontal drainholes for use with in situ leach mining comprising the steps of:

a. forming and casing a generally vertical main hole in the earth;

b. determining the proper whipstock orientation from the bottom of the casing in the main hole which will allow the ore body whose materials are to be recovered to be intersected therefrom in a generally horizontal plane;

c. drilling out sufficient earth and inserting a whipstock guide therein based upon the orientation determined in step b;

d. drilling a radial hole from below the vertical casing and therefrom a horizontal hole using the whipstock guide of step c;

e. casing the radial hole and horizontal hole formed in step d by using a plurality of flexible joined sections of high strength piping, said horizontal hole's casing have holes therein; and

f. cementing the volume around the casing of step e, sur-

rounding the juncture of the radial hole and horizontal hole.

4,402,552

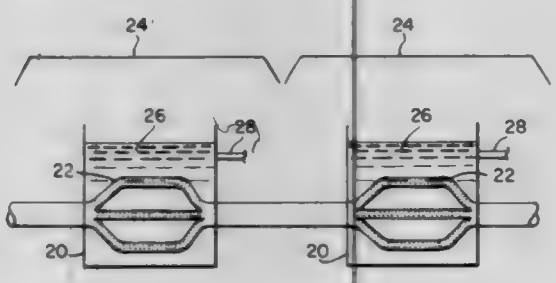
OPEN SURFACE FLOTATION METHOD FOR EXTRACTED CRUDE OIL

Dan M. Bass, and Fun-Den Wang, both of Golden, Colo., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation-in-part of Ser. No. 75,385, Sep. 13, 1979, Pat. No. 4,302,051. This application May 29, 1981, Ser. No. 268,592

Int. Cl.³ E21C *41/10*

U.S. Cl. 299—7 **1 Claim**



1. A method for the separation of crude oil from an oil-wet reservoir comprising the steps of:

(a) first extracting said reservoir material from the ground;

(b) thereafter placing said extracted reservoir material within at least one open cell, each of said at least one open cells including at least one steam injection gallery, said material being in contact with the gallery;

(c) after step (b), introducing hot water at about 100° C. containing a surfactant to the top surface of the material in each of said at least one cells;

(d) at about the same time as step (c), injecting steam containing a surfactant into the reservoir material within each of said at least one cells by means of said injection gallery;

(e) permitting said crude oil to separate from the remainder of said reservoir material by flip flopping positions with the hot water after steps (c) and (d) take place; and

(f) lastly, removing said separated crude oil from said at least one cell and the remainder of the reservoir material.

4,402,553

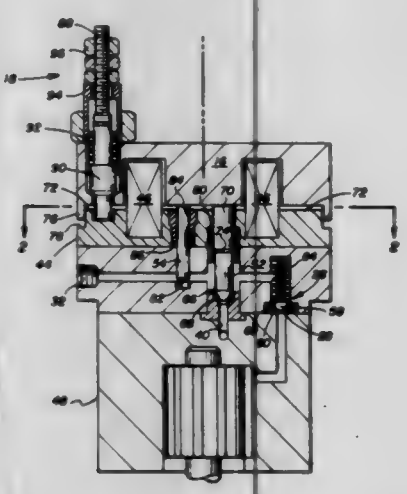
PRESSURE CONTROLLED ELECTRO-HYDRAULIC BRAKE SYSTEM

Larry W. Hipps, 506 Colorado St., Sherman, Tex.

Division of Ser. No. 88,349, Oct. 26, 1979, Pat. No. 4,280,737. This application Apr. 3, 1981, Ser. No. 250,544

Int. Cl.³ B60T *13/68*

U.S. Cl. 303—3 **6 Claims**



1. An electromagnetic hydraulic pressure control valve, comprising:

a valve structure having a hydraulic passage therein;

electromagnetic means secured in a fixed relationship to said valve structure for generating a variable electromagnetic field;

a first member positioned for movement relative to said valve structure, the electromagnetic field exerting a force on said first member with the force being effective on said first member at a first point thereon;

a switch means operable between open and closed positions by the first member for entering pressurized hydraulic fluid into the hydraulic fluid passage when in the closed position, the force exerted by the electromagnetic field on the first member urging the first member to close the switch means;

a pressure monitoring structure having a surface of predetermined cross-sectional area exposed to the hydraulic fluid in the hydraulic fluid passage, the force exerted on the surface by the hydraulic fluid being transmitted through the pressure monitoring structure and acting on the first member, the force acting on the first member being effective at a second point thereon;

a pressure relief control valve stem means movable between open and closed positions for releasing hydraulic fluid from the hydraulic fluid passage to reduce the pressure of the fluid when in the open position, the first member contacting the pressure relief control valve stem means, said pressure relief control valve stem means having a surface of predetermined area exposed to the hydraulic fluid in the hydraulic fluid passage for urging the pressure relief control valve stem means to the open position, the force exerted by the electromagnetic means on the first member urging the pressure relief control valve stem means to the closed position; and

said electromagnetic hydraulic pressure control valve maintaining the pressure of the hydraulic fluid in the hydraulic fluid passage proportional to the strength of the electromagnetic field generated by said electromagnetic means through balancing of the forces acting on the first member, permitting the switch means to move to the closed position when an increase in hydraulic pressure is necessary and permitting the pressure relief control valve stem means to move to the open position and reduce the pressure when the hydraulic pressure exceeds the desired value.

4,402,554

PRESSURE CONTROL DEVICE FOR A PRESSURE ACCUMULATOR

Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 221,585, Dec. 31, 1980, abandoned. This application Sep. 27, 1982, Ser. No. 424,792

Int. Cl.³ B60T *8/02*; F15B *1/02*

U.S. Cl. 303—10 **14 Claims**

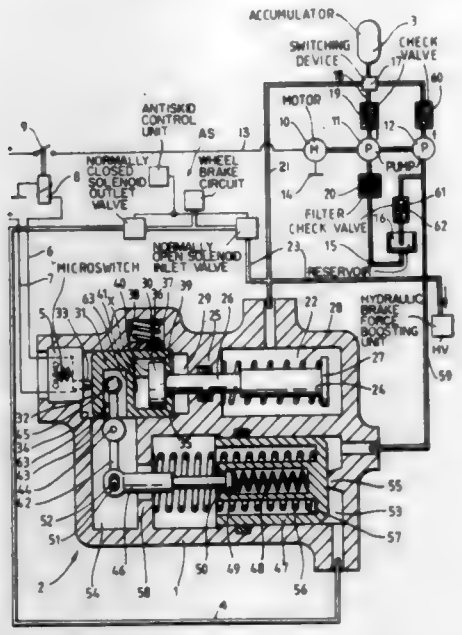
1. A pressure control device for a pressure accumulator for automotive vehicles having an antiskid control system comprising:

at least one user component in addition to said antiskid control system capable of being coupled to said accumulator, said one user component and said antiskid control system requiring different minimum feed pressures for correct operation;

a controllable pump arrangement to feed pressure fluid to said accumulator; and

a switching device coupled to said accumulator to switch on a pump drive means connected to said pump arrangement when pressure in said accumulator falls below a bottom switching threshold corresponding to a first minimum feed pressure for said one user component, to switch off said pump drive when pressure in said accumulator attains a top switching threshold corresponding to a second minimum feed pressure for said antiskid control system,

said second minimum pressure being greater than said first minimum pressure, and to increase said bottom switching



threshold to approximately said top switching threshold when said antiskid control system is operated.

4,402,555

TRACK-TYPE VEHICLE UNDERCARRIAGE

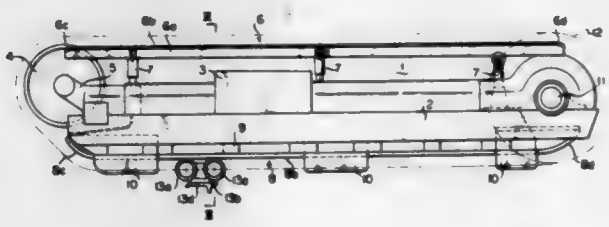
Koji Ogaki, Yokohama; Yukio Tamura; Masashi Kaminishi, both of Hiratsuka, and Yoshinori Takata, Isehara, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Sep. 24, 1980, Ser. No. 190,337

Claims priority, application Japan, Sep. 28, 1979, 54/133270[U]; Sep. 28, 1979, 54/133271[U]; Sep. 28, 1979, 54/133272[U]; Sep. 28, 1979, 54/133273[U]; Sep. 28, 1979, 54/133274[U]

Int. Cl.³ B62D *55/12*

U.S. Cl. 305—11 **3 Claims**



1. A track-type vehicle undercarriage comprising:

a track frame;

recoil means mounted on said track frame, said recoil means having a piston slideably mounted therein and means for biasing said piston forwardly;

a support member fixedly connected to said piston;

a front rail rotatably mounted on said support member;

a sprocket rotatably mounted on said track frame,

said sprocket having a plurality of semi-circular recesses formed at equal angular intervals in the circumference thereof, a center axis of rotation, and a pitch radius;

a carrier rail mounted on and above said track frame, said carrier rail having a front end terminating adjacent and above said front rail and a rear end terminating adjacent and above said sprocket, each end having a downwardly curved portion;

a track rail mounted on said track frame underneath thereof, said track rail having a front end terminating adjacent and below said front rail and a rear end terminating adjacent and below said sprocket, each end having an upwardly curved portion; and

an endless track of linked together track shoes mounted on said carrier rail, front rail, track rail, and sprocket, each of said track shoes being linked together by an elongated pin having opposite ends, said pins being spaced a certain pitch from each other, each pin having rotatably mounted thereon a track roller comprising a pair of raised annular flanges at both ends thereof and an annular land section of a small diameter located between said flanges, said semi-circular recesses of said sprocket receiving said annular land sections, the ends of said carrier rail and track rail permitting smooth travel of the endless track between the front rail, track rail, sprocket and carrier rail;

said curved portion of said rear end of said track rail having an upward curvature such that a center of orbit of said track rollers is located slightly forwardly of said center axis of said sprocket and a center of said curvature is located on a line connecting said center of orbit with a point spaced forwardly apart by half of said pitch from a second point where a pitch circle of said sprocket crosses said orbit at said pitch radius, said curvature having a radius less than said pitch radius.

4,402,556

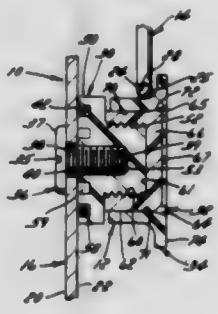
ROLLER ASSEMBLY FOR DISHWASHER RACK

Richard J. Schwind, Akron, Ohio, assignor to Phillips Plastics Corporation, Phillips, Wis.

Filed May 10, 1982, Ser. No. 376,617

Int. Cl.³ F16C *29/02*; A47B *88/00*

U.S. Cl. 308—3.6 **9 Claims**



1. A roller assembly mountable on a component extending from one member to movably support another member comprising:

a stud having means to enable its attachment to said one member, said means comprising a bore extending into said stud and closed at one end and open at its other end and means engageable with said bore for attaining said stud to said one member, said stud having an externally threaded portion;

a bushing having an external bearing portion and a threaded bore closed at one end and open at its other end for receiving said externally threaded portion of said stud whereby said bushing is fixedly but removably mounted on said stud;

and a roller having a bore for receiving said external bearing portion of said bushing whereby said roller is rotatably mounted on said bushing, said bushing including means engageable with said roller to prevent axial removal of said roller from said bushing.

4,402,557

DRILL STEEL CENTRALIZER

Hannu I. Paasonen, Nokia; Pekka M. Salmi, and Jarmo Heinonen, both of Tampere, all of Finland, assignors to Oy Tampella AB, Finland

Filed Aug. 25, 1981, Ser. No. 296,132

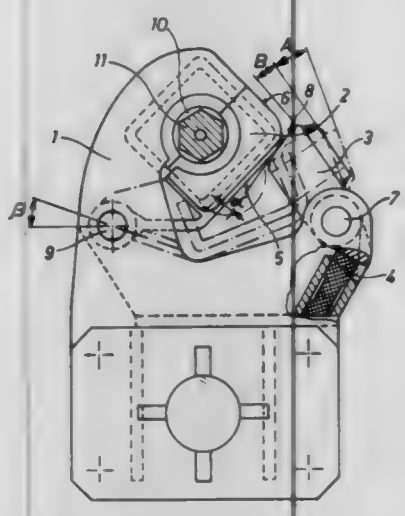
Claims priority, application Finland, Aug. 26, 1980, 802669

Int. Cl.³ F16C *29/10*

U.S. Cl. 308—3.9 **7 Claims**

1. A drill steel centralizer comprising a body (1), a jaw that is stationary in relation to the body, and a movable jaw (2), between which jaws there remains a drill steel guide (10) that can be opened and closed by means of the movement of the movable jaw (2), and a locking device (3), by means of which

the movable jaw (2) can be locked and released into the closed and open positions of the drill steel guide (10), the improvement being that the locking device (3) being held in the locking



position by an elastic member (4) is arranged to transmit the force attempting to open the jaw past the elastic member (4), directly to the body (1).

4,402,558

ROLLING BEARING

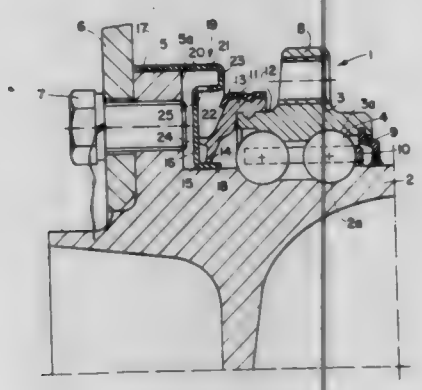
Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eussenheim, and Walter Lothar, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Industries, Inc., King of Prussia, Pa.

Filed Dec. 17, 1981, Ser. No. 331,596

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049090

Int. Cl.³ F16C *1/24*

U.S. Cl. 308—187 **10 Claims**



1. A rolling bearing assembly particularly adapted for wheel bearings in vehicles comprising an inner ring having at least one radially outwardly directed mounting flange, an outer ring and a plurality of rolling elements in the annular space between the inner and outer rings, at least one cap member secured to the inner ring having an annular rim section directed towards the outer ring and a seal ring secured to the outer ring in sliding engagement with said cap member under the rim thereof, said rim portion including at least one lubricant collector chamber defined in part by a radially inwardly facing wall portion and including at least one relatively small opening in said wall portion communicating with said lubricant collector chamber.

4,402,559

COOLING DEVICE FOR A BEARING MEANS

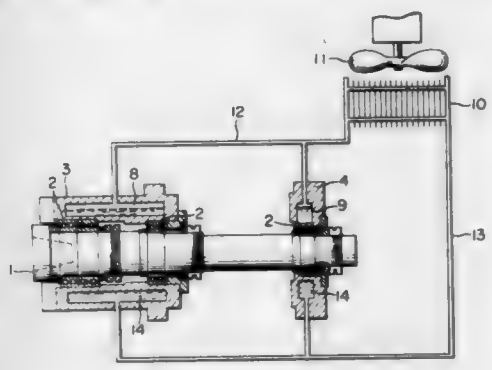
Souichi Shibata, Matsuto; Hitoshi Inoue, Miki, and Kenji Katazawa, Toyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1981, Ser. No. 309,494

Claims priority, application Japan, Oct. 30, 1980, 55-153287

Int. Cl.³ F16C *37/00*

U.S. Cl. 308—189 R **2 Claims**



1. A cooling device for a bearing means comprising:

a bearing support means for supporting a bearing means in position and having a hollow annular chamber therewithin and extending along substantially the entire dimension of said bearing support means parallel to said bearing means;

a refrigerant type fluid substantially filling said hollow chamber and having a vaporization temperature in the range of the temperature to which said bearing means is heated during use;

a heat radiating means spaced from and above the level of said bearing support means; and

a vapor pipe means extending from the top of said hollow chamber to said heat radiating means and a liquid pipe means extending from said heat radiating means to the bottom of said hollow chamber, whereby said refrigerant type fluid circulates through said cooling device without the need for a separate energy source for producing such circulation.

4,402,560

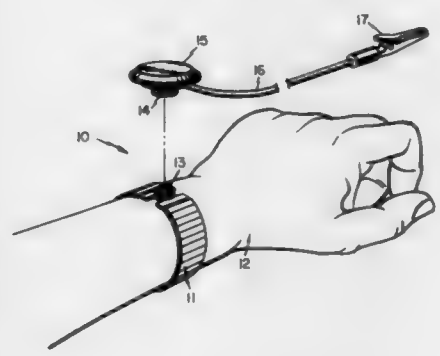
CONDUCTIVE WRIST STRAP

Sheila O. Swainbank, 3523 Flair Dr., Dallas, Tex. 75229

Filed Jul. 13, 1981, Ser. No. 282,778

Int. Cl.³ H01R *4/66*

U.S. Cl. 339—11 **4 Claims**



1. A system for electrically grounding individuals involved in the assembly of electronic components that are electrostatic sensitive comprising:

a wrist strap of conductive material having an electrical connector mounted thereon;

a housing of insulating material having a circular, horizontal cross-section and a central recessed portion;

a mating electrical connector secured to an exterior of an

underside of said housing and having a terminal extending into said recessed portion;

a resistor within said recessed portion having one end electrically connected to said terminal;

a length of conducting ground lead extending into said recessed portion and electrically connected to an opposite end of said resistor;

a shield of insulation encompassing said ground lead and extending into said recessed portion to a position adjacent the lead connection to said resistor;

said recessed portion being filled with an insulating material firmly to bound said resistor and end portions of said ground lead and said shield of insulation to said housing;

said housing having a flange extending circumferentially of said housing opposite said electrical connectors and being sufficiently large to enable the disconnection of the contact between said connectors by the insertion of at least two digits of a hand under diametrically opposed portions of said flange in order to reduce the introduction of fatigue which otherwise might break said conducting ground lead after a number of connections and disconnections between said connectors;

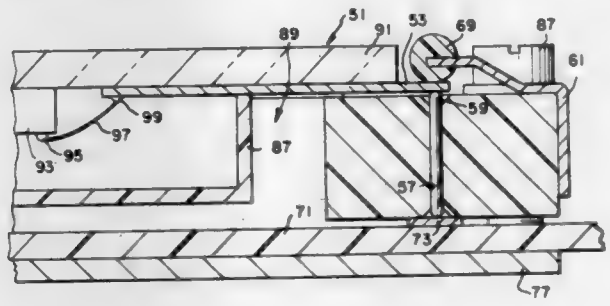
and electrical connecting means at the opposite end of said connecting ground lead for making a conductive connection to a ground at a work station in order to dissipate any electrostatic charges that might otherwise accumulate on the person of the individual and therefore avoid rendering defective the electronic components being assembled.

4,402,561

SOCKET FOR INTEGRATED CIRCUIT PACKAGE WITH EXTENDED LEADS

Dimitry G. Grabbe, Lisbon Falls, Me., and Iosif Korsunsky, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 27, 1981, Ser. No. 248,606
Int. Cl.³ H05K *1/04*
U.S. Cl. 339—17 CF **7 Claims**



1. A socket for connecting a semiconductor chip carrier having resilient leads to a printed circuit board or the like comprising:

(a) a housing for holding said chip carrier, said housing including,

(b) a plurality of spaced-apart apertures aligned with said leads,

(c) electrically conductive needles slidably disposed in said apertures and being freely disposed therein, and having an axial dimension greater than the axial length of said apertures, and

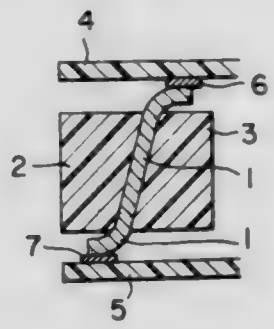
(d) pressure means for applying a force on said leads in the direction of said needles whereby said leads force said needles into said apertures and thereby against electrical circuit paths contained on said board, said paths aligned with said apertures and having said board secured to said frame and said housing.

4,402,562

INTERCONNECTORS

Ryoichi Sado, Saitama, Japan, assignor to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 82,719, Oct. 9, 1979, Pat. No. 4,295,700. This application Mar. 24, 1981, Ser. No. 247,163
Claims priority, application Japan, Oct. 12, 1978, 53-140085
The portion of the term of this patent subsequent to Oct. 20, 1998, has been disclaimed.
Int. Cl.³ H01R *9/09*
U.S. Cl. 339—61 M **3 Claims**



1. An interconnector comprising:

(a) a rectangular connecting piece of a woven cloth of fine mesh wherein the woof fibers are formed from conductive fibers and the warp fibers are formed from non-conducting fibers so that electro-conductivity is obtained only in the direction of the woof, said cloth having anisotropical electroconductivity in the direction parallel to one edge line thereof, and

(b) a couple of holder members made of an electrically insulating material holding said rectangular connecting piece of an elastic material having anisotropical electroconductivity as sandwiched therebetween in such a manner that the two opposite peripheral portions of said rectangular connecting piece at the edge lines perpendicular to the direction of the anisotropical electroconductivity are each extended out of the surfaces of the holder members in the direction forming an angle between 10° and 80° with said surface of the holder member by a height at least equal to the thickness of said rectangular connecting piece.

4,402,563

ZERO INSERTION FORCE CONNECTOR

William Y. Sinclair, Frenchtown, N.J., assignor to Aries Electronics, Inc., Frenchtown, N.J.

Filed May 26, 1981, Ser. No. 266,929
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—75 M **9 Claims**

1. A connector assembly for receiving an electrical component having a plurality of conductive pins disposed in two parallel rows, said connector assembly comprising:

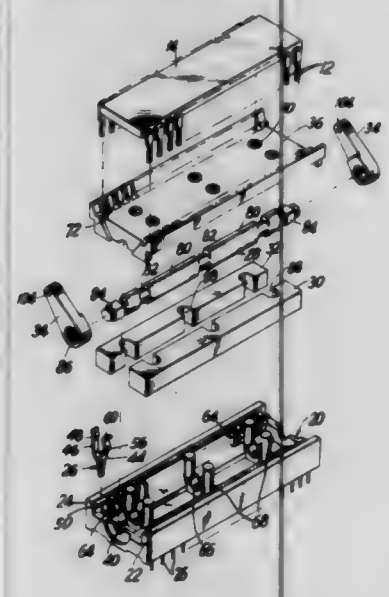
a generally rectangular, non-conductive housing including a bottom wall and two longitudinally extending upstanding side walls disposed in spaced parallel relationship;

a plurality of conductive pin receiving contacts mounted in the base of said housing in two spaced apart parallel rows, each pin receiving contact including first and second upwardly extending arms spaced apart a distance greater than the thickness of a conductive pin of the electrical component enabling said conductive pin to be freely received therebetween, with each said row of contacts being mounted within said housing such that each said second arm of said contacts is braced against the associated side wall of the housing, with a portion of each upwardly extending arm, disposed adjacent the free end thereof, defining the main contact point of each arm and with the first arm of each contact being resilient and configured so as to define an intermediate projecting section extending away from said second arm, with said main contact point

of said second arm being defined by an arcuate bend extending towards said first arm, with each said upstanding side wall including a longitudinally extending detent aligned with said bend in said second arm and interengaged therewith to inhibit the unwanted shifting of said contact within said housing;

said housing further including a cover extending between said side walls, said cover including a pair of opposed downwardly projecting lips, said lips cooperating with said detents of said side walls for positively securing said contacts within said housing; and

closure means mounted within said housing for exerting a force on the projecting section of each said first arm in a



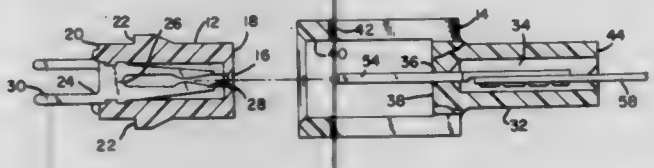
direction towards the associated second arm whereby after the conductive pins of the electrical component are freely mounted between the arms of said contacts, said closure means may be actuated such that a force is exerted on the projecting portion of each contact initially driving said first arm towards said conductive pin until electrical contact is established between said conductive pin and the main contact points of said arms and thereafter causes said main contact point of said first arm to travel upwardly along said conductive pin, said movement of said main contact point of said first arm along said conductive pin functioning to wipe the surface of said pin thereby enhancing the electrical contact therebetween.

4,402,564

LOCKING FLAT FLEXIBLE CABLE TO CIRCUIT BOARD CONNECTOR

Robert H. Frantz, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 15, 1981, Ser. No. 273,695
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—91 R **2 Claims**



1. An electrical connector for interconnecting flat flexible cable with a printed circuit board comprising:

a receptacle member having an elongated housing with a mounting surface, a mating face, a plurality of terminal recesses extending therein from said mounting surface to said mating face, and at least one locking means extending from an outer surface of said receptacle member;

a plurality of receptacle terminals each mounted in a respective one of said recesses with each said receptacle terminal having a body portion including means for holding said receptacle terminal in said recess, a receptacle portion directed towards said mating face and a mounting tail portion extending from mounting surface of said elongated, housing;

a plug member having an elongated body of insulative material defining a mating face, a rear surface, a chamber intermediate said plug member mating face and said rear surface, a cable receiving slot in said rear surface opening into said chamber, a plurality of apertures in said chamber opening on said plug member mating face, an integral shroud surrounding and extending forwardly of said plug member mating face, pairs of opposed inwardly directed teeth profiling said cable receiving slot in a balanced arrangement, and means for engaging said locking means of said receptacle member; and

a multi-conductor flat flexible cable having a plurality of pin terminals each crimped to a respective conductor thereof, said cable being mounted through said slot with said pin terminals projecting from said apertures and said teeth engaging rear portions of said terminals to prevent the rearward withdrawal of said cable from said plug member,

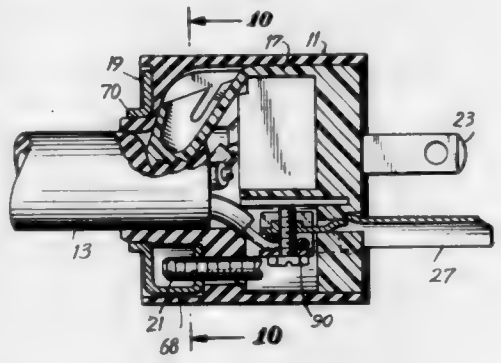
whereby upon mating of said connector said plug member and receptacle member are locked together by said locking means and said means for engaging said locking means and strain relief is provided for said cable by engagement of said pairs of teeth behind respective pin terminals.

4,402,565

POSITIVE RETENTION ELECTRICAL CONNECTOR

John M. Poliak, East Meadow, N.Y., assignor to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,486
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—103 M **2 Claims**



1. A connector apparatus for conductively securing a conductor to a receptacle comprising:

a hollow body having an axial bore for receiving said conductor in an axial position,

a housing adapted to be received in said body, said housing having a plurality of friction surfaces, at least one movable prong including one of said plurality of friction surfaces, and a conductive terminal conductively coupled to said conductor,

cooperative means on said body and said housing for urging said one prong against said conductor radially inward toward said axial position as said housing is inserted within said body,

said body having an exterior end and an opposed interior end, said interior and being adapted to receive said housing, and

a retainer ring having a ring axis coaxial with the axis of said axial bore and having an outer planar side and an opposed inner side, said retainer ring being adapted to be mounted on said exterior end of said body and being formed with openings for receiving fasteners which hold said housing to said body so as to form a unitary connector assembly, said exterior end of said body forming at least one pentagonal recess and said outer planar side of said retainer ring being parallel to said ring axis and having a radially inwardly directed

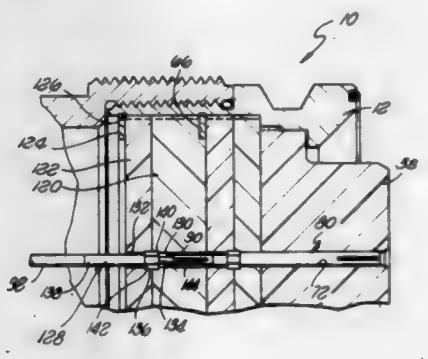
pentagonal portion extending from said inner side adapted to be seated within said pentagonal recess, said retainer ring further having at least one notch at the circumference of said outer planar side.

4,402,566

FIELD REPAIRABLE ELECTRICAL CONNECTOR

Lloyd J. Powell, Newmarket, and John B. Gerow, Oshawa, both of Canada, assignors to International Telephone & Telegraph Corporation, New York, N.Y.

Filed Oct. 13, 1981, Ser. No. 310,633
Int. Cl.³ H01R *13/58*
U.S. Cl. 339—103 M **8 Claims**



1. An electrical connector comprising:

a barrel containing an insulator assembly comprising, in sequence, a front insulator, a bottom rear insulator, a top rear insulator, a rear contact support disc and a strain relief disc;

said front insulator being formed of an elastomer;

said rear insulators and discs being formed of relatively rigid material and having a free sliding fit within said barrel so as to be rearwardly removable therefrom without pushing said front insulator rearwardly in said barrel;

said front insulator having a forwardly facing shoulder on the outer perimeter thereof engaging a rearwardly facing shoulder on said barrel;

a first retaining ring in said barrel positioned behind said top rear insulator removably retaining said front insulator and said rear insulators in said barrel;

the distance between said first retaining ring and said rearwardly facing shoulder, and the axial lengths of said rear insulators being such as to place said outer perimeter of said front insulator under axial compression to provide a seal between said front insulator and said barrel;

a second retaining ring in said barrel behind said strain relief disc removably retaining said discs in said barrel;

said insulator assembly containing a plurality of contact passages extending axially therethrough, each said passage comprising a first bore in said front insulator, a second bore in said bottom rear insulator, a third bore in said top rear insulator, a fourth bore in said rear contact support disc and a fifth bore in said strain relief disc;

a contact positioned in said first, second, third and fourth bores of each of said passage, and a harnessing terminal positioned in said fourth and fifth bores in each said passage;

each said contact embodying a forward pin or socket contacting portion adjacent to the front face of said front insulator, an intermediate annular flange and a rear contacting section in said fourth bore;

each said second bore having a rearwardly facing shoulder therein in front of the flange of its corresponding contact and each said third bore having a forwardly facing shoulder therein behind said flange, said shoulders restricting axial movement of said contacts in said passages;

each said harnessing terminal embodying a forward contacting section mating with the rear contacting section of a corresponding one said contacts, an intermediate annular enlargement and a rear termination end adapted to be connected to a cable conductor;

each said fourth bore having a rearwardly facing shoulder therein in front of the enlargement of its corresponding terminal and said fifth bore having a forwardly facing shoulder therein behind said enlargement, said shoulders restricting axial movement of said terminals in said passages; and

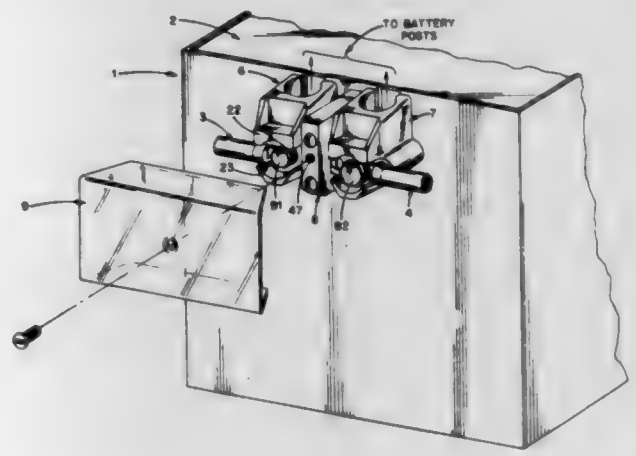
said rear contact support disc and said strain relief disc supporting said terminals in axial positions for alignment with said rear contacting sections of said contacts.

4,402,567

TERMINAL ASSEMBLY

John S. Shambaugh, Holliston, and Robert G. Yetman, Carlisle, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 8, 1981, Ser. No. 271,497
Int. Cl.³ H01R *9/00, 13/64*
U.S. Cl. 339—198 J **4 Claims**



1. A terminal assembly arranged to be connected with first and second electrical cables, said first cable having a lug of a first size and a opening therein of a first size and said second cable having a lug of a second size larger than the lug of the first cable and an opening therein of a second size larger than the opening in the lug of the first cable, said terminal assembly comprising:

first and second spaced-apart sections adapted to be connected with the first and second cables, respectively;

said first section comprising:

a first main body portion of an electrically insulative material having a cavity for the receipt therein of the lug of a cable, having a first passageway extending into the cavity, said first passageway having a width at least equal to the width of the lug of the first cable but less than the width of the lug of the second cable, and having a second passageway extending into the cavity, said second passageway having a width at least equal to the width of the lug of the second cable;

a first metal insert terminal disposed within the first main body portion and having a fastener-receiving opening adjacent to the cavity in the first main body portion; and

a first metal fastener having a portion of a size permitting insertion and passage thereof into the opening in the lug of the first cable and arranged to be advanced into and along the fastener-receiving opening in the first metal insert terminal for securing the first cable with its associated lug to the first metal insert terminal; and

said second section comprising:

a second main body portion of an electrically insulative material and of identical form and construction as said first main body portion;

a second metal insert terminal disposed within the second main body portion and having a fastener-receiving opening adjacent to the cavity in the second main body portion; and

a second metal fastener having a portion of a size permitting insertion and passage thereof into the opening in the lug of the second cable but larger than the opening in the lug of the first cable, said second fastener being

arranged to be advanced into and along the fastener-receiving opening in the second metal insert terminal for securing the second cable with its associated lug to the second metal insert terminal;

wherein:

each of the main body portion of the first and second sections includes arcuate portions defining a generally circular cavity therein of a height and size whereby the associated metal fastener can be effectively advanced into and along the corresponding metal insert terminal only by a socket wrench;

said first passageway in each of said main body portions extends into said cavity from one side thereof; and

said second passageway in each of said main body portions extends into said cavity from the opposite side thereof;

further comprising:

a separator member intermediate to the first and second sections and having a height greater than the heights of the first and second sections for minimizing the possibility of the metal fasteners being shorted together by a metal object or tool during and following the advancement of the metal fasteners into their respective metal insert terminals, said separator member further serving to block access to the cavity in said first main body portion by way of said second passageway therein and serving to block access to the cavity in said second main body portion by way of said first passageway therein;

and wherein:

each of said main body portions has a first boss extending from said one side and a second boss extending from said opposite side;

said separator member having a first recess for positioning said second boss of the first main body portion and a second recess for positioning said first boss of the second main body portion.

4,402,568

METHOD AND APPARATUS FOR AN OPTICAL FOUR-GATE COUPLER

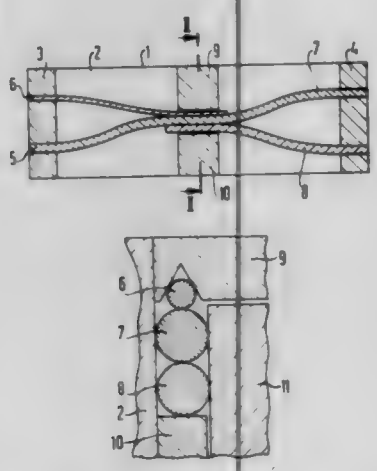
Vaclav Kulich; Herbert Michel, and Hans-Hermann Witte, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 9, 1981, Ser. No. 232,659

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1980, 3010971

Int. Cl.³ G02B 5/172

U.S. Cl. 350—96.16 **28 Claims**



1. An optical four-gate coupler with an in-coming optical fiber waveguide, an outgoing optical fiber waveguide, a thin coupling-in optical fiber waveguide and a coupling-out fiber optical waveguide, in which the planar end faces of the four fibers lie in one plane with their axes abutting one another with axial offset and the diameter of the coupling-in fiber is smaller than that of the other thick fibers, comprising a substrate, all of said fibers mounted together on said substrate, a detent, said thick fiber at the outside resting against said detent, a guide part and a thin fiber (6) mounted in said guide part (9).

4,402,569

OPTICAL FIBRE LIGHT GUIDES FOR USE WITH LASERS

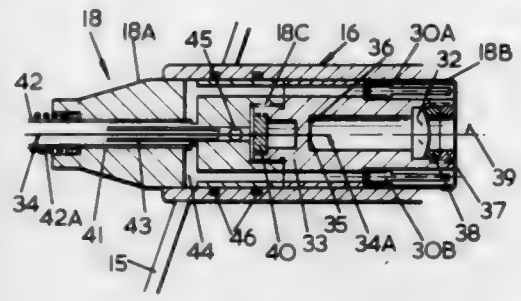
Charles R. Bow, Glasgow, and Ronald J. Burston, Troon, both of Scotland, assignors to Barr & Stroud Limited, Glasgow, Scotland

Filed May 28, 1981, Ser. No. 267,732

Claims priority, application United Kingdom, May 31, 1980, 8017864

Int. Cl.³ G02B 5/17

U.S. Cl. 350—96.26 **6 Claims**



1. A fibre-optic guide for transmitting high power density light waveband radiation, comprising a flexible tubular housing containing a single optical fibre the ends of which are secured to the housing by clamp means, and wherein one end of the housing is in the form of a coupling for releasable attachment to a laser radiant-energy source, which coupling incorporates a lens arrangement accurately located therein for focussing collimated incident radiation onto the pertaining end of the optical fibre and the clamp means in said coupling fixedly locate said pertaining fibre end with respect to the lens arrangement for receiving said focussed radiation, wherein the clamp means in the coupling comprises a collar bonded to the fibre and releasably secured to the coupling and the clamp means at the other end of the housing comprises a member secured to the housing and having an aperture in which the adjoining end of the fibre is fitted whereby the fibre and collar are together rendered replaceable in the guide.

4,402,570

TRIPLE MINIMUM DISPERSION WAVELENGTHS FOR A HIGH NA SINGLE-MODE STEP-INDEX FIBER

Ching T. Chang, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 13, 1981, Ser. No. 253,622

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.30 **3 Claims**

RESULTS OF MINIMUM DISPERSION CALCULATIONS FOR SINGLE-MODE STEP-INDEX FIBERS. THE NOTATIONS T AND V REPRESENT THE SECOND ORDER RESIDUAL DISPERSION AND THE NORMALIZED FREQUENCY, AT THE MINIMUM DISPERSION WAVELENGTH λ_0, RESPECTIVELY

STEP-INDEX FIBER	CORE DIAMETER 2a(μm)	RELATIVE INDEX DIFFERENCE Δ	MATERIAL COMPOSITION	MATERIAL DISPERSION λ_0 (μm)	MATERIAL DISPERSION [ps/(km-nm²)]	TOTAL DISPERSION λ_0 (μm)	TOTAL DISPERSION T [ps/(km-nm²)]	V
A	2.750	1%	QUENCHED SiO_2	1.276	[illegible]	1.335	1.962×10^{-6}	2.193
B	3.462	2.5%	[illegible] SiO_2	1.276	0.0125	1.560	4.31×10^{-4}	1.788
C	3.780	3.0%	[illegible] SiO_2	1.276	0.0125	1.434	1.215×10^{-6}	2.188
						[illegible]	8.02×10^{-6}	2.01
						2.343	2.48×10^{-3}	1.56
D	3.290	3.85%	[illegible] SiO_2	1.276	0.0125	1.304	2.697×10^{-3}	1.88
						[illegible]	1.844×10^{-3}	2.40
						2.750	6.854×10^{-3}	1.35

1. A method of fabricating a step-index single-mode optical fiber that provides minimum total dispersion at three wave-

lengths by cancellation between material and waveguide dispersions comprising:

providing a core material and a cladding material having a refractive index difference $4\% > \Delta > 2.5\%$ and

dimensioning the core to have a diameter 2a so that $(dN/d\lambda)=0$ in accordance with

$$\frac{dN}{d\lambda} = -\lambda \frac{d^2 n_o}{d\lambda^2}\left[1 + \Delta \frac{d(bV)}{dV}\right] - \pi a \left(\frac{No}{\lambda}\right)^2 (2\Delta)^{1.5} \frac{d^2(bV)}{dV^2}$$

where N is the group index of refraction including the sum of the material dispersion and the waveguide dispersion; n_o is the cladding phase index; b is the normalized propagation constant; No is the group index of refraction including material dispersion only; V is the normalized

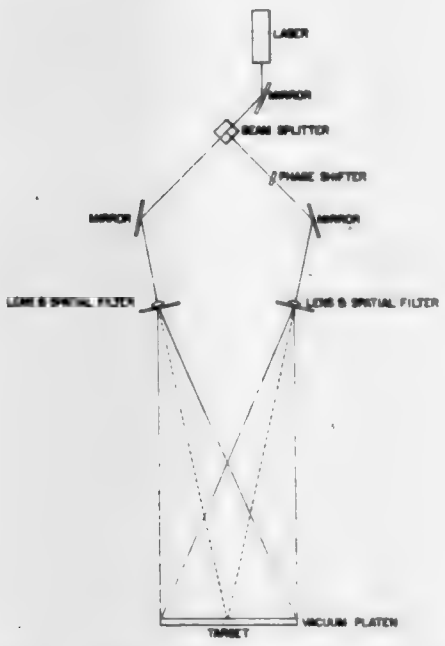
$$\text{frequency} = \pi\left(\frac{2a}{\lambda}\right) n_o \sqrt{2\Delta}$$

4,402,571

METHOD FOR PRODUCING A SURFACE RELIEF PATTERN

James J. Cowan, Lexington; Arthur M. Gerber, Belmont, and Warren D. Slafer, Arlington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 17, 1981, Ser. No. 234,959
Int. Cl.³ G02B *5/18*
U.S. Cl. 350—162.17 **17 Claims**



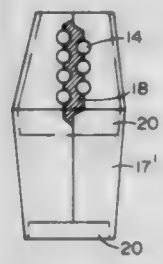
1. A method of producing a surface relief pattern of predetermined configuration in a photosensitive material which comprises exposing said photosensitive material at a first position to a laser interference pattern, exposing said material at a second position to a laser interference pattern, said second position being a rotation of said photosensitive material or of said laser interference pattern about an axis perpendicular to said material's surface from said first positions, wherein at least one of said exposures is below the effective threshold for linear response of said material, the points of intersection of the two patterns being exposed above said threshold as a result of the combined exposures, and developing said material.

4,402,572

PROJECTION DEVICE

Atsuo Tsunoda, Fuchu; Koyo Midorikawa, Tokyo; Hidetoshi Murase, Yokohama; Mikio Suzuta, Tokyo; Masazumi Moriwaki, Tokyo; Noritaka Mochizuki, Yokohama; Setsuo Minami, Kawasaki, and Yoshiya Matsui, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1980, Ser. No. 166,964
Claims priority, application Japan, Jul. 13, 1979, 54/89107
Int. Cl.³ G02B *27/62;* G03G *15/04*
U.S. Cl. 350—167 **14 Claims**



1. A projection device comprising:

a plurality of element lens systems, each system having a linear optical axis and having a light incidence end and a light emergence end, and said plurality of systems having their respective optical axes disposed in parallel, wherein each system comprises at least one bar lens of plastic for forming an image of a part of an object as a part of a corresponding projected image, the length of each said bar lens in the direction of the optical axis thereof being great as compared with the effective diameter of said lens;

a holding member having said plurality of element lens systems arranged therein to form a predetermined array;

a light-intercepting member for intercepting light beams at clearances between said element lens systems; and

a pair of transparent plates, said plates disposed respectively at the incidence ends and the emergence ends of said systems, for passing the light beams therethrough and for coacting with said holding member to shield said element lens systems from the outside atmosphere.

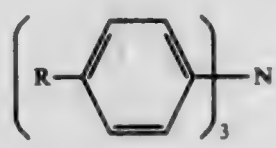
4,402,573

MATERIALS FOR ELECTROCHROMIC DISPLAY DEVICES

Carol R. Jones, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 18, 1981, Ser. No. 274,988
Int. Cl.³ C09K *9/02;* G02F *1/17*
U.S. Cl. 350—357 **4 Claims**

1. In an electrochromic display device comprising a transparent front electrode, a back electrode in spaced relation to said front electrode, and an electrochromic solution contained between said electrodes, the improvement according to which the electrochromic solution comprises a para-substituted triphenylamine compound having the formula

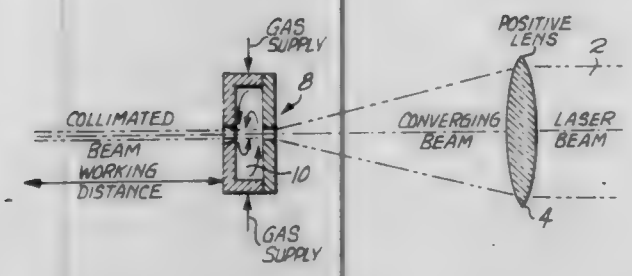


wherein R is lower alkoxy, lower alkyl or halogen.

4,402,574
METHOD AND APPARATUS FOR REFRACTING A LASER BEAM

Ronald J. McConnel, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Apr. 20, 1981, Ser. No. 255,630
Int. Cl.³ G20B 3/12
U.S. Cl. 350—418 17 Claims



1. A method for increasing the useful working distance from the focal point of a beam of laser light delivering energy to a material comprising:

a. bringing the beam of laser light to a point of focus, and

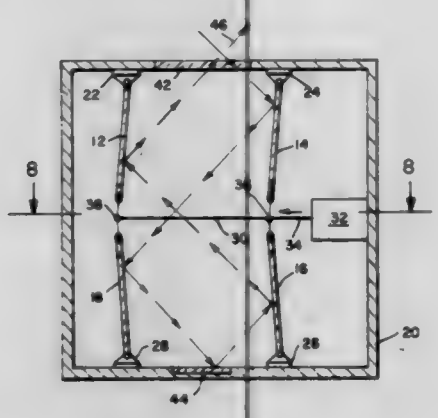
b. locating a gas vortex lens comprising a vortex chamber near the focal point, and

c. providing inlet and outlet bores in the chamber of smaller diameter than the chamber through which the gas egresses, the bores being located on the optical axis so that the beam passes axially through a gaseous medium vortexing in the bores with sufficient velocity to create a negative lens and effectively reduce the angle of divergence of the beam past the focal point.

4,402,575
WIDEBAND OPTICAL BEAM DEFLECTOR

John H. Jacobs, Altadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed May 1, 1981, Ser. No. 259,662
Int. Cl.³ G02B 27/17; G05D 25/00
U.S. Cl. 350—486 43 Claims



1. An apparatus for deflecting an optical beam in response to an electrical signal comprising:

a substantially rigid frame,

a plurality of moving mirrors arranged to each successively reflect the optical beam at least once, each mirror having a first end flexibly attached to the frame to permit rotation of each mirror about substantially parallel axes,

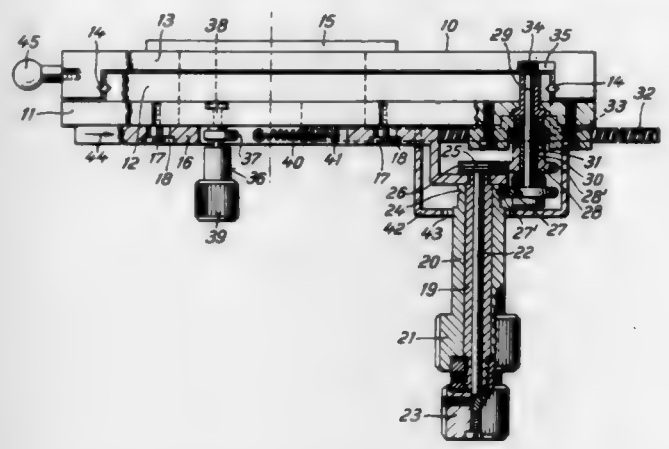
common linkage means attached to a second end of each of the moving mirrors, operative to rotate the mirrors to thereby cumulatively deflect the optical beam,

a stationery mirror fixedly mounted to the frame operative to reflect the optical beam from one moving mirror to another moving mirror, and a single electromechanical actuator attached to the linkage means operative to actuate the linkage means in response to the electrical signal.

4,402,576
ADJUSTING DEVICE FOR THE STAGE OF AN OPTICAL INSTRUMENT

Werner Stahl; Walter Froböse, both of Solms-Oberndorf, and Robert Lisfeld, Greifenstein-Ulm, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,906
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1980, 3027461
Int. Cl.³ G02B 21/26
U.S. Cl. 350—531 11 Claims



1. An adjustable stage for an optical instrument comprising:

a base;

a first slide member mounted on said base for movement in a first coordinate direction;

a second slide member mounted on said first slide member for movement in a second coordinate direction;

first adjusting means for adjusting the position of said first slide member;

second adjusting means for adjusting the position of said second slide member;

first drive means drivingly engaging said first adjusting means for driving said first adjusting means;

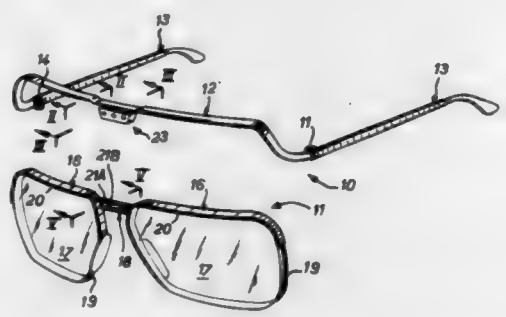
second drive means drivingly engaging said second adjusting means for driving said second adjusting means; and

release means for selectively simultaneously moving said first drive means out of driving engagement with said first adjustment means and said second drive means out of driving engagement with said second adjustment means to enable rapid manual displacement of said first and second slides in said first and second coordinate directions.

4,402,577
EYEGLASS FRAME WITH DETACHABLE FRAME FRONT

Francois Minart, Saint Germain en Laye, France, assignor to Essilor International, cie Generale d'Optique, Creteil, France

Filed Feb. 11, 1981, Ser. No. 233,566
Claims priority, application France, Feb. 18, 1980, 80 03466
Int. Cl.³ G02C 5/10, 5/00
U.S. Cl. 351—125 9 Claims



1. An eyeglass frame comprising a main frame structure and a separate, detachable frame front, said frame front having a

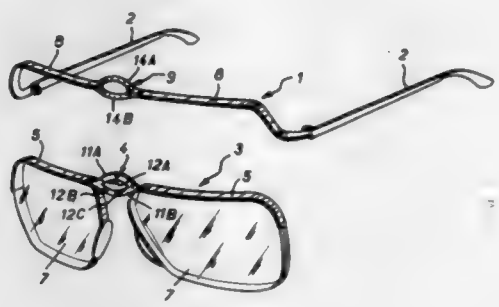
bridge portion defined by a pair of parallel cross members, means for releasably mounting said frame front on said main frame structure including a fastener member having a pair of parallel grooves releasably engageable with said cross members.

4,402,578

SPECTACLE FRAME WITH REMOVABLE LENS HOLDER

Francois Minart, Saint Germain en Laye, France, assignor to Essilor International, cie Generale d'Optique, Cretell, France

Filed Jul. 8, 1981, Ser. No. 281,416
Claims priority, application France, Aug. 12, 1980, 80 17730
Int. Cl.³ G02C *5/00*; G03B *23/00*
U.S. Cl. 351—140 **8 Claims**



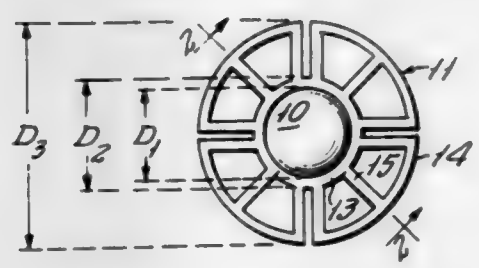
1. A spectacle frame comprising a crossbar, respective wings symmetrically pivoted to the opposite ends of said crossbar, and a removable lens holder carried by said crossbar, said lens holder comprising a central bridge, symmetrically disposed side pieces joined by said central bridge and means on said side pieces for retaining respective lenses, each of said side pieces of said lens holder being designed to mate with a corresponding side section of said crossbar when said lens holder is mounted thereon and said central bridge of said lens holder being designed to mate with a corresponding central section of said crossbar when said lens holder is mounted thereon so as to removably attach said lens holder to said crossbar, said central bridge of said lens holder comprising two branches curved in opposite senses, substantially in alignment with said side pieces of said lens holder and joined together at their respective opposite ends to constitute a substantially plane closed loop, said central bridge of said lens holder carrying at least two resilient retaining clips disposed transversely of said substantially plane loop, and each retaining clip being designed to engage and resiliently retain a co-operating edge portion of said central section of said crossbar so as to removably attach said lens holder to said crossbar.

4,402,579

CONTACT-LENS CONSTRUCTION

Stanley Poler, New York, N.Y., assignor to Lynell Medical Technology Inc., New York, N.Y.

Filed Jul. 29, 1981, Ser. No. 288,217
Int. Cl.³ G02C *7/04*; A61F *1/16*
U.S. Cl. 351—160 R **11 Claims**



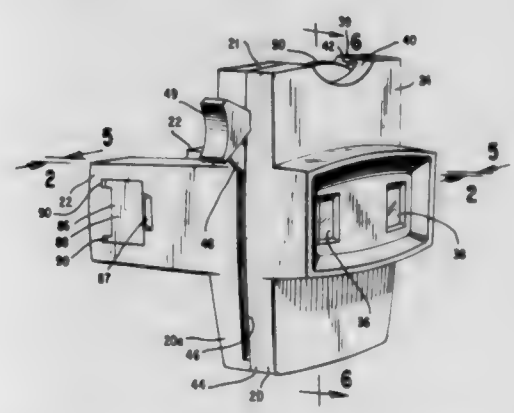
1. A unitary contact lens and haptic construction removably applicable to a corneal surface and integrally formed from the same single sheet of transparent material, comprising a relatively thick rigid central lens component having a generally circular periphery, and a relatively thin pliant generally annular outer haptic component comprising plural leg formations radiating from the lens periphery at angular offset from each other, said haptic component being normally flat but so thin and of such axially compliant nature as to be self-conforming to the curvature of the cornea and to adhere thereto via surface moisture on the cornea.

4,402,580

OPTICAL EXERCISING DEVICE

Richard Ross, 1708 Lee Rd., Winterpark, Fla. 32789

Filed Jul. 31, 1980, Ser. No. 173,957
Int. Cl.³ G03B *21/00*
U.S. Cl. 351—203 **15 Claims**



1. An eye testing/training device, comprising:
a housing;
a pair of side by side viewing openings in said housing;
means for mounting in said housing in the line of sight of said openings a film having a series of frames bearing images to be viewed;
a frame advancing mechanism for advancing successive frames to be viewed before said openings;
at least one movably mounted lens in said housing generally between said film mounting means and said openings; and
means operatively connecting said frame advancing mechanism to said movably mounted lens for moving said lens resulting in a change in the characteristics of the image to the user.

4,402,581

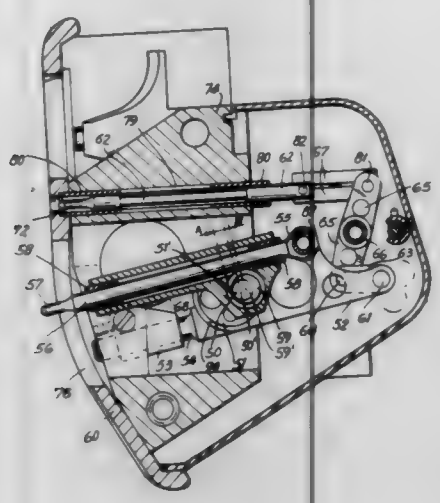
CLAW FEED MECHANISM

Fritz Bauer, Loquaiplatz 13/26, Vienna, Austria A-1010

Continuation of Ser. No. 196,972, Oct. 14, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 430,422
Claims priority, application Austria, Jan. 4, 1980, 39/80
Int. Cl.³ G03B *1/22*
U.S. Cl. 352—192 **10 Claims**

1. A claw feed mechanism for a motion picture camera for advancing film for exposure, said film having opposing perforations along the edges thereof, comprising a drive shaft, first and second eccentrics driven by said drive shaft, a first crank driven by said first eccentric, a second crank including a guide driven by said second eccentric and having two openings in alignment with said opposing perforations on said film, first and second film feeder pins pivotally coupled to said first crank and extending through said respective openings in said guide, said first and second film feeder pins each having a prong at the end thereof for engagement with said opposing perforations on said film, the mutual cooperation between said first crank,

guide and first and second film feeder pins when driven by said first and second eccentrics acting to reciprocate said prongs



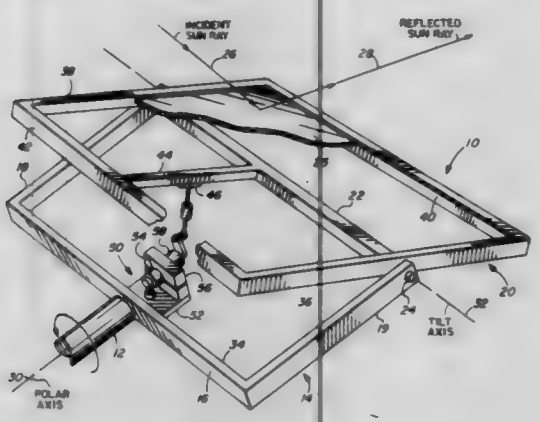
into said opposing perforations and to pivot said prongs to advance said film.

4,402,582

PARASITIC DRIVEN HELIOSTAT MIRROR DECLINATOR

William A. Rhodes, Phoenix, Ariz., assignor to James F. Duffy, Phoenix, Ariz.

Filed Jan. 28, 1982, Ser. No. 343,598
Int. Cl.[3] G03D *21/00*
U.S. Cl. 353—3 18 Claims



1. Apparatus for tilting a mirror assembly of heliostat to track the solar declination, said mirror assembly being tiltedly attached to the heliostat at the declination axis thereof and the mirror assembly being rotated about a polar axis of the heliostat to track azimuthal variations in the sun, comprising:

(a) axial gear drive means coupled to the assembly and which is rotated therewith, said axial gear drive means having an output shaft;

(b) pendulum means geared to said axial gear drive means, said pendulum means being held substantially in a plumb position by the force of gravity as said axial gear drive means is rotated in response to the assembly being rotated;

(c) the output shaft being geared to said axial gear drive means whereby the output shaft is turned by maintenance of said pendulum means substantially plumb as said axial gear drive means is rotated; and

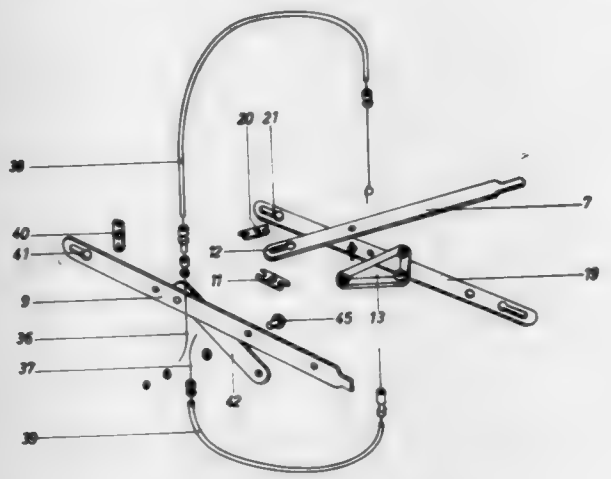
(d) skew bar linkage means coupling said output shaft to the mirror assembly.

4,402,583

FILM READER

Hermann Poehler, Taunusstr. 11, 6352, and Peter Dziemba, Ahornweg 17, 6351, Fed. Rep. of Germany

Continuation of Ser. No. 92,427, Nov. 7, 1979, Pat. No. 4,311,370. This application Aug. 3, 1981, Ser. No. 289,513
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1979, 2926059
Int. Cl.[3] G03B *23/08*
U.S. Cl. 353—27 R 4 Claims



1. A film reader including a housing defining a front wall, a rectangular screen arranged in the front wall, a projector having an illumination plane enclosed in the housing, and a film holder accessible through said front wall and being guided in said illumination plane, comprising a horizontal control lever and a vertical control lever, each being movably arranged in said housing and each having a free end portion extending through said front wall, one of said levers being movable along the horizontal edge and the other lever along a vertical edge of said screen; said film holder including a longitudinal carriage movable in one direction and a transverse carriage supported on said longitudinal carriage for movement in a transverse direction, said transverse carriage being adapted for supporting a film to be projected; the horizontal control lever being rotatable about a fixed pivot point and at the same time guided for longitudinal displacement relative to said fixed pivot point, the vertical control lever being movable in a plane parallel to the plane of movement of said longitudinal carriage; reversing transmission means linked between each of said control levers and said film holder to move the same at a reduced speed in said illumination plane in directions opposite to the directions of movement of said levers, said transmission means including a first equalizing lever hinged to said horizontal control lever and pivotable about a fixed pivot point, a second equalizing lever pivotable in said parallel plane about a fixed pivot point and being hinged to said vertical control lever, a closed loop Bowden cable having its central wire attached at one point to said vertical control lever and at another point to said transverse carriage and a transmission lever pivotable about a fixed pivot point and linked to said first equalizing lever and to said longitudinal carriage.

4,402,584

DUAL SLIDE PROJECTOR AND TRAY

Morrie Palmer, 7626-12th Ave. South, Richfield, Minn. 55427

Filed Feb. 22, 1982, Ser. No. 351,034
Int. Cl.[3] G03B *23/06*
U.S. Cl. 353—117 8 Claims

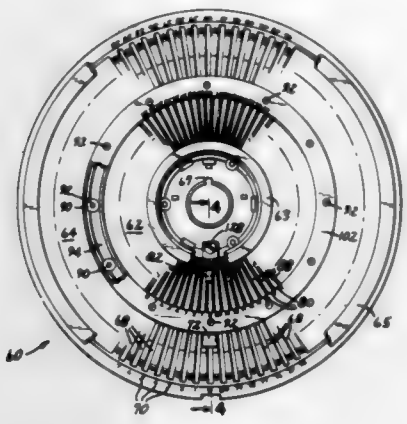
1. A slide tray comprising:

(a) a first circular slide holding ring having predetermined inner and outer diameters;

(b) a second circular slide holding ring having an inner diameter greater than said outer diameter of said first ring, said first and second rings being coplanar;

(c) bearing means for allowing relative rotation between said

first and second rings disposed between said outer diameter of said first ring and inner diameter of said second ring; and



(d) advancement mechanism affixed to each of said rings for independently and incrementally rotating each of said rings so that different slides may be viewed.

4,402,585

ENVELOPE FOR TRANSPARENCIES FOR OVERHEAD PROJECTORS AND LIKE PROJECTING APPARATUSES

Göran W. Gardlund, Lidingö, Sweden, assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

PCT No. PCT/US81/00251, § 371 Date Feb. 25, 1981, § 102(e) Date Feb. 25, 1981, PCT Pub. No. WO81/02639, PCT Pub. Date Sep. 17, 1981

PCT Filed Feb. 25, 1981, Ser. No. 252,121

Claims priority, application Sweden, Mar. 13, 1980, 8001995

Int. Cl.³ G03B *21/11*; F03B *23/00*

U.S. Cl. 353—120 **9 Claims**



1. Envelope for transparencies for overhead projectors, said envelope comprising a substantially rectangular pocket, of transparent plastic sheet material having two longitudinal side edges connected by shorter side edges, which is open at least along one side edge for insertion of the transparency to be presented therebetween, at least one opaque flap attached in a foldable manner along one of the longitudinal side edges of the pocket, said flap being attached to and spaced a distance from the longitudinal edge such that in the unfolded position the flap covers the longitudinal side edge and in the folded position it exposes said longitudinal side edge.

4,402,586

FOCUSING SYSTEM

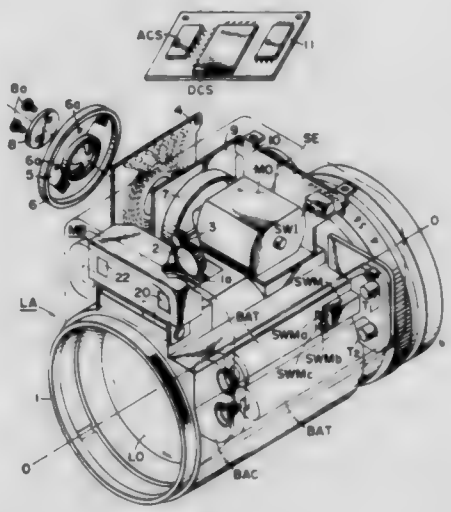
Toshikazu Ichiyanagi, Mitaka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 28, 1981, Ser. No. 287,698

Claims priority, application Japan, Aug. 4, 1980, 55-107575; Oct. 27, 1980, 55-150380; Jan. 29, 1981, 56-11825

Int. Cl.³ G03B *3/10*

U.S. Cl. 354—23 D **13 Claims**



1. A focusing system comprising:

(A) a focus adjustable optical system;

(B) an automatic focusing device for automatically focusing said optical system within a predetermined first focusing range;

(C) means for operating said automatic focusing device;

(D) manual focusing means for manually focusing said optical system within a predetermined second focusing range different from said first focusing range; and

(E) means for assuring that said optical system can be focused automatically within said first focusing range by said automatic focusing device irrespective of the position of said optical system within said second focusing range.

4,402,587

PHOTOMETRIC MODE SWITCHING APPARATUS FOR CAMERAS OF AUTOMATIC EXPOSURE CONTROL TYPE

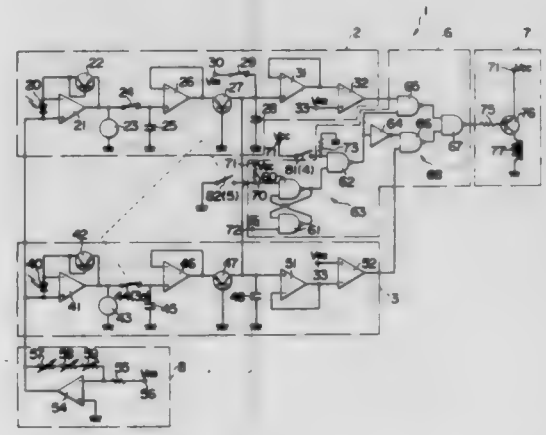
Masafumi Yamasaki, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Sep. 15, 1981, Ser. No. 303,131

Claims priority, application Japan, Nov. 8, 1980, 55-157286

Int. Cl.³ G03B *7/08*

U.S. Cl. 354—31 **5 Claims**



1. A photometric mode switching apparatus for a camera of the automatic exposure control type which includes an average photometric circuit and a spotwise photometric circuit and permits a choice between an average photometric mode and a spotwise photometric mode and in which when the spotwise

photometric mode is chosen, exposure information as intended by a user of the camera is stored in response to a manual operation of a storage switch to permit a subsequent exposure control in accordance with the stored value; the apparatus comprising:

a first switch which is used to make a choice between the average photometric and the spotwise photometric mode;

a second switch interlocked with the storage switch; and

a switching logic circuit operative to pass an output from the spotwise photometry circuit whenever both the first and the second switch are in positions corresponding to the spotwise photometric mode and for passing an output obtained by the average photometry circuit when either one or both of said first and second switches are in positions corresponding to the average photometric mode.

4,402,588

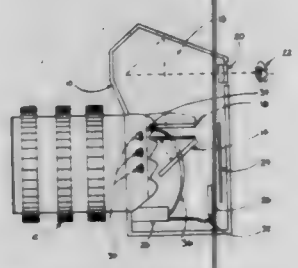
AUTOMATIC PHOTOGRAPH LABELER EMPLOYING CAMERA WITH PASSIVE DISPLAY

George Khait, San Francisco County, and William R. Fish, Santa Clara County, both of Calif., assignors to Electro Mechanical Industries, Inc., Concord, Calif.

Filed Aug. 25, 1981, Ser. No. 296,017

Int. Cl.³ G03B *17/24*

U.S. Cl. 354—106 **13 Claims**



SECTION OF SLR CAMERA WITH FILM AND VIEWING SCREEN READOUTS

1. A camera with means for automatically labeling the film therein, comprising:

a camera enclosure,

film-holding means for holding film in a light-receiving position within said camera,

a lens-shutter assembly for admitting light from outside said camera enclosure into said camera enclosure and focussing said light at said light-receiving position,

passive display means positioned in said camera between said film and said lens-shutter assembly for providing humanly-readable indicia when illuminated by a source of light separate from said passive display means,

said indicia comprising characters and spaces therebetween, said characters being controllable and capable of casting a shadow onto said film when illuminated by said light from outside said camera enclosure and coming through said lens-shutter assembly to said light-receiving position,

whereby said passive display means can be made without focussing lenses so it will be small enough to be retrofittable into existing cameras and will not have to be precisely-positioned in front of said film, and whereby data from daid passive display means can be recorded onto said film without the need for any separate internal light source which requires extra power and tends to fog said film.

4,402,589

CORRECT EXPOSURE ANNUNCIATING DEVICE

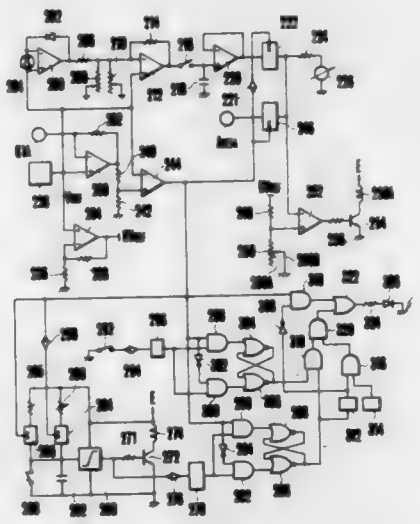
Masaharu Kawamura, Kawasaki; Hiroyuki Kataoka, Omiya; Makoto Katsuma, Kawasaki, and Masanori Uchidoi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Mar. 8, 1982, Ser. No. 356,098

Claims priority, application Japan, Mar. 10, 1981, 56-34372; Mar. 12, 1981, 56-36264

Int. Cl.³ G03B *15/05*

U.S. Cl. 354—128 **3 Claims**



1. A correct exposure annunciating device having a correct exposure annunciating means, driving means to receive a correct exposure annunciating signal from a flash unit for driving said annunciating means, and means to detect a mode of a camera before a release operation of said camera and to override said annunciating means when the detection result thereof indicates an AE mode.

4,402,590

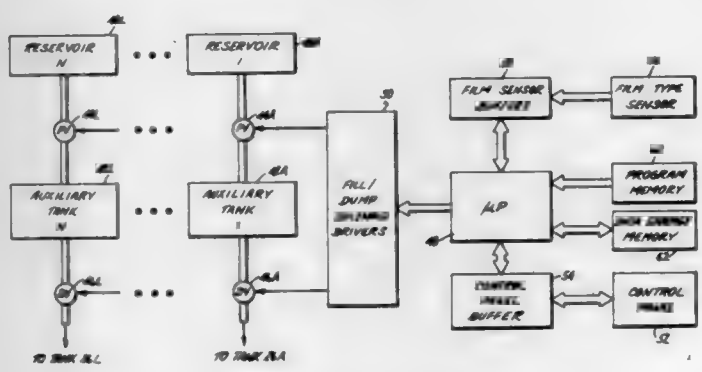
AUTOMATIC REPLENISHER CONTROL FOR MULTIPROCESS PHOTOGRAPHIC PROCESSOR

Barry P. Rubin, Maple Grove, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Jul. 13, 1981, Ser. No. 282,448

Int. Cl.³ G03D *3/06*; G06F *15/46*

U.S. Cl. 354—324 **5 Claims**



1. In a multiprocess processor of photosensitive material of the type having a plurality of tanks for containing processing fluid and in which different photosensitive materials are processed by one of a plurality of different processes by being transported through a unique combination of the tanks, an automatic replenisher contol system comprising:

means for storing replenishment rates for the plurality of tanks;

means for storing pattern information indicative of those tanks of the plurality which are in active use during each of the plurality of different processes;

means for providing a signal indicative of the process in use; and

means for automatically providing replenishment of processing fluids to tanks that are in active use based upon the stored replenishment rates, the signal indicative of the process being used, and the stored pattern information associated with the process being used.

4,402,591

ELECTROPHOTOGRAPHIC APPARATUS

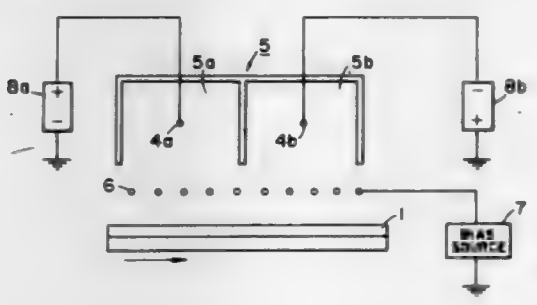
Kimio Nakahata, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

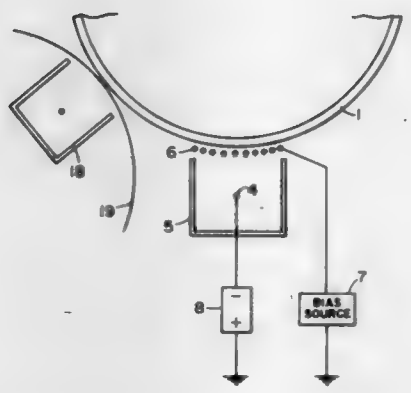
Filed Sep. 26, 1980, Ser. No. 191,030

Claims priority, application Japan, Sep. 29, 1979, 54-126184; Oct. 1, 1979, 54-127196; Oct. 1, 1979, 54-127197; Oct. 9, 1979, 54-130267; Oct. 9, 1979, 54-130268; Oct. 11, 1979, 54-131129; Oct. 22, 1979, 54-136912; Apr. 14, 1980, 55-48912; Apr. 18, 1980, 55-51423

Int. Cl.³ G03G *15/14, 15/16*

U.S. Cl. 355—3 TR **22 Claims**





1. An electrophotographic apparatus having:

an image bearing member capable of bearing an electrostatic latent image on the surface thereof;

latent image formation means for forming an electrostatic latent image on said image bearing member;

developing means for developing the electrostatic latent image;

means for transferring the developed image to a transfer medium;

a pre-transfer corona discharger device provided in an area between said developing means and said transfer means;

a grid disposed in the discharger opening portion of said pre-transfer corona discharger device which faces said image bearing member; and

means for applying a bias potential to said grid, said bias potential having a value which lies between the dark portion potential and the light portion potential of the electrostatic latent image on said image bearing member.

4,402,592

MECHANISM FOR TRANSPORTING PRINTING PLATES

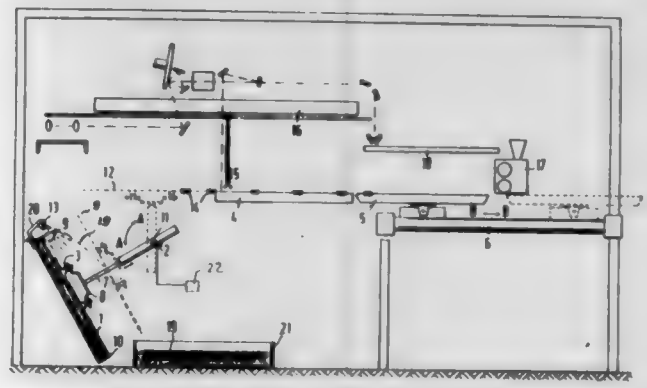
Klaus-Peter Schön, Wiesbaden, and Günter Back, Diedenbergen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 2, 1981, Ser. No. 250,124

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012815

Int. Cl.³ G03G *15/00, 15/22*

U.S. Cl. 355—3 R **6 Claims**



1. A mechanism for transporting printing plates from an inclined stack of plates in a plate holder to an exposure station with the aid of suction, the mechanism comprising:

a swivelable lifting cylinder;

an air jet cooperating with said lifting cylinder;

a piston rod coupled with said lifting cylinder, said piston rod being extensible from and retractable into said lifting cylinder;

means for selectively gripping by suction an uppermost printing plate in the stack of printing plates and for depositing that printing plate on a horizontal conveyor track, said selective gripping means including a dish-shaped plate carried by said piston rod;

means for accommodating swiveling movement of said lifting cylinder between said plate holder, which is disposed in an inclined receiving position with respect to a vertical direction, whereby in the inclined position of the plate holder the uppermost printing plate is gripped by said selective gripping means and a depositing position in which that printing plate is deposited on said horizontal conveyor track; and

means for effecting movement through an angle of greater than 90° between said receiving position of said lifting cylinder and said depositing position.

4,402,593

GROUNDING DEVICE FOR MOVING PHOTOCONDUCTOR WEB

Richard A. Bernard, Norwalk; Pushpavadan S. Nagarsheth, Danbury, and Peter G. Edelman, Wilton, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

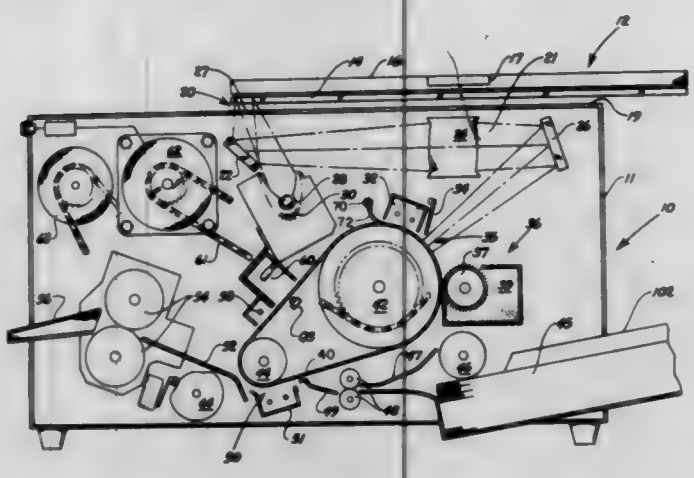
Filed Dec. 31, 1981, Ser. No. 336,114

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 BE **4 Claims**

1. In an electrophotographic copying machine having a movable photoconductor web rotatably mounted on at least a pair of rollers, said web having an insulative support layer, a vapor deposited aluminum layer disposed on said support layer, and a photoconductive layer disposed on said aluminum layer, the improvement comprising a stationary contact electrically connectable to a fixed electrical potential and slidably in contact with said aluminum layer, said stationary contact consisting of a grounding brush having a multiplicity of fibers, each of said fibers comprising a nylon 6 filamentary polymer substrate having finely divided, electrically conductive particles of carbon black suffused through the surface of the fila-

mentary polymer substrate, the electrically conductive particles being present inside the filamentary polymer substrate as a uniformly dispersed phase independent of the phase of the filamentary polymer substrate in an annular region located at the periphery of the filamentary polymer substrate and extending inwardly along the length thereof, the electrically conductive particles being present inside the filamentary polymer substrate in an amount sufficient to render the electrical resistance of the electrically conductive textile fiber not more than about 10^9 ohms/cm.



4,402,594

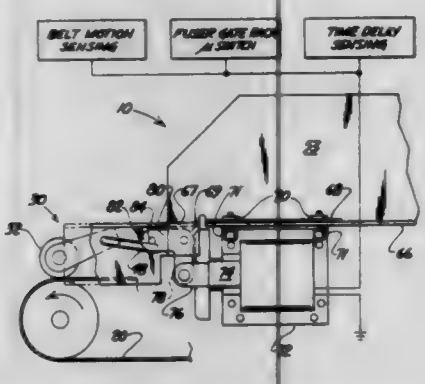
FIRE EXTINGUISHING DEVICE FOR ELECTROPHOTOCOPIER

Frederick J. Pelda, White Plains, N.Y., and Eugene A. Wirth, Huntington, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Division of Ser. No. 108,607, Dec. 31, 1979, Pat. No. 4,341,945. This application Mar. 22, 1982, Ser. No. 360,871

Int. Cl.³ G03G *15/20*

U.S. Cl. 355—3 FU **6 Claims**



1. An electrophotocopying machine, comprising:

a heat fusing apparatus;

a copy paper conveyor associated with and located downstream of the heat fusing apparatus; and

a fire extinguishing device operatively associated with said heat fusing apparatus, said fire extinguishing device including a heat resistant roller movably mounted above and in contact with the copy paper conveyor, means for lifting said roller out of contact with said conveyor when the print cycle for said electrophotocopying machine is energized, means for maintaining said roller out of contact with said conveyor during the copying operation, and means for moving said roller into rolling contact with said conveyor when a copy paper fails to clear the fusing apparatus within a predetermined period of time, whereby any fire of the copy paper is extinguished.

4,402,595

SCANNING TYPE IMAGE FORMATION APPARATUS

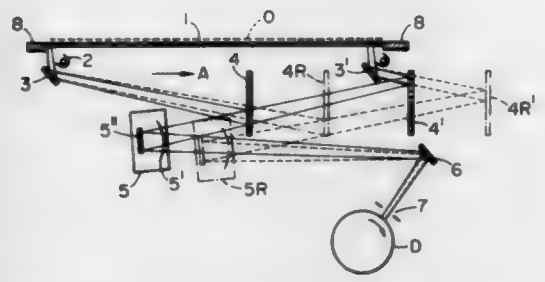
Hiroshi Ogawa; Tateki Nagaoka, and Yoshikuni Tohyama, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1981, Ser. No. 245,097

Claims priority, application Japan, Mar. 25, 1980, 55-37835; Apr. 18, 1980, 55-51422

Int. Cl.³ G03G *15/00, 15/28*

U.S. Cl. 355—8 **21 Claims**



1. A scanning type image formation apparatus for selectively forming images of different magnifications, comprising:

original supporting means for supporting an original thereon;

scanning means for scanning the original;

an electrophotographic photosensitive medium movable along a predetermined endless path; and

a lens for forming on said photosensitive medium the image of the original scanned by said scanning means;

said scanning means being provided with:

first and second reflecting means for reflecting the light from the original into a light path in which the lens is disposed;

first carriage means for supporting said first reflecting means;

second carriage means for supporting said second reflecting means;

first guide means for supporting and guiding said first carriage means so as to be movable parallel to said original supporting means for the scanning of the original;

second guide means for supporting and guiding said second carriage means so as to be movable parallel to said original supporting means for the scanning of the original;

a moving member movable relative to said first and second carriage means and said original supporting means;

third guide means for supporting and guiding said moving member so as to be movable parallel to said original supporting means;

first connecting means for fixing said second carriage means to said moving member in such a manner that during a magnification changing operation the relative fixed positional relation therebetween can be changed;

drive means for selectively forming a forward drive force and a backward drive force;

drive force transmitting wire means connected to said drive means;

second connecting means for connecting said wire means to said first carriage means and said moving member so that said first carriage means and said moving member are reciprocally moved at different velocities by the drive force formed by said drive means, said first and second reflecting means scanning the original during the forward movement thereof; and

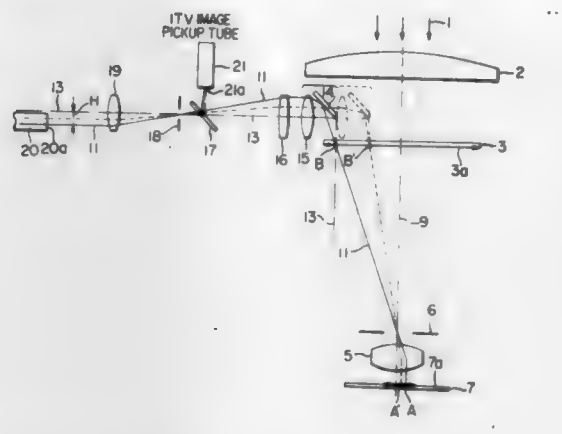
magnification changing means for controlling said first connecting means and changing the relative fixed positional relation between said second carriage means and said moving member correspondingly to a selected magnification to change the length of the light path between the original and the lens correspondingly to the selected magnification.

4,402,596

PROJECTION TYPE EXPOSURE DEVICE

Fujio Kanatani, Yokosuka, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 4, 1982, Ser. No. 345,645
Claims priority, application Japan, Feb. 27, 1981, 56-28034
Int. Cl.³ G03B *27/52, 27/70*
U.S. Cl. 355—43 **6 Claims**



1. A projection type exposure device including:

a main projection objective lens for projecting onto a wafer a predetermined pattern on a negative plate to be projected;

a main illuminating optical system including a condenser lens for illuminating said negative plate to be projected; and

an alignment optical system for forming the image of a reference mark provided on said negative plate to be projected and the image of an alignment mark on said wafer through said main projection objective lens from between said condenser lens and said main projection objective lens;

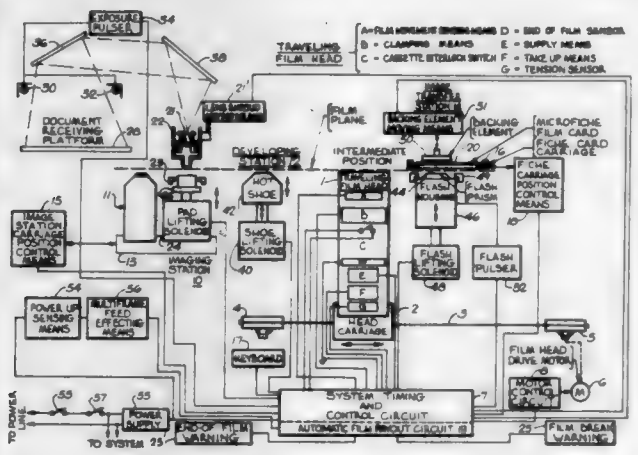
said alignment optical system having a first objective lens and a second objective lens for condensing the light beam from said first objective lens, said first and second objective lenses being disposed on the same optical axis, and a reflecting member for bending said optical axis so that it is orthogonal to said negative plate to be projected, said first objective lens and said reflecting member being movable together relative to said negative to be projected.

4,402,597

FILMSTRIP FOR PREVENTING FOGGING OF INTERMEDIATE FILM IN MICROFICHE RECORDING SYSTEMS

Mark H. McCormick-Goodhart, Grosse Pointe Woods, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Aug. 6, 1981, Ser. No. 290,619
Int. Cl.³ G03B *27/32, 27/52*
U.S. Cl. 355—64 **18 Claims**



1. An improved photographic filmstrip for inhibiting fogging of unexposed areas by interfacial light piping, said filmstrip comprising:

a filmstrip body having a photoactive layer to be imaged; and

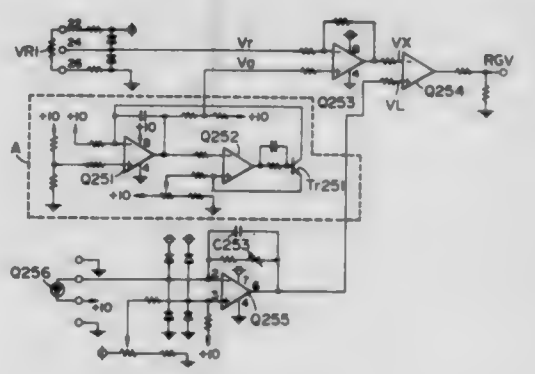
a plurality of propagation barrier means on or in said film body, each of said barrier means being disposed extending in a transverse direction across said filmstrip body to intercept light propagating by internal reflection through said film body towards unimaged areas of said filmstrip, said barrier means being separated from each other along a portion of the length of said filmstrip body and disposed intermediate to longitudinally spaced imaging areas on said filmstrip body, each said barrier region comprising aperture means extending through said filmstrip and disposed across substantially the entire active width of said strip to form a barrier to said propagation by the walls of said aperture means acting as escape points and partially reflecting elements.

4,402,598

EXPOSURE CONTROL APPARATUS

Masahiro Tomosada, Kawasaki; Haruhisa Honda, Tokyo, and Kanou Tanaka, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 219,519, Dec. 23, 1980, abandoned. This application Aug. 10, 1982, Ser. No. 406,989
Claims priority, application Japan, Dec. 27, 1979, 54/172409
Int. Cl.³ G03B *27/72*
U.S. Cl. 355—69 **10 Claims**



1. Exposure control apparatus comprising:

a light source;

generating means for generating a high-frequency voltage to drive said light source;

means for applying pulses of said high-frequency voltage to said light source;

sensing means for sensing the light intensity of said light source; and

control means for controlling a ratio of on/off time of said pushed high-frequency voltage in response to an output signal of said sending means.

4,402,599

SCANNING SURFACE CLEANING METHOD OF ELECTROSTATIC RECORDING APPARATUS

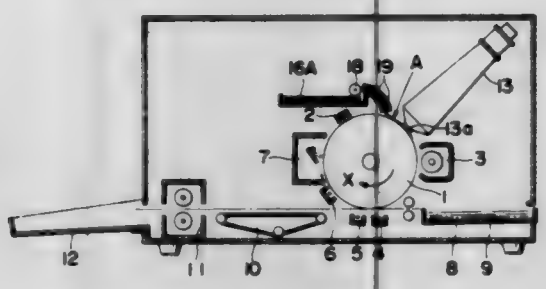
Yutaka Seto, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 11, 1981, Ser. No. 242,689
Claims priority, application Japan, Mar. 17, 1980, 55-33715
Int. Cl.³ G03G *13/22, 21/00*
U.S. Cl. 355—77 **10 Claims**

1. In an electrostatic information recording apparatus comprising reproducing means for scanning and reproducing an electric information signal as an electrostatic latent image upon a picture image forming member, and means including a plurality of devices operable for developing the electrostatic latent image upon said picture image forming member with toner thereby to produce a visualized record,

a method of cleaning the scanning surface of said reproduc-

ing means comprising the steps of: rendering inoperative at least some of the devices of the developing means, which means is used to treat the picture image forming member, when the cleaning operation is necessary; and



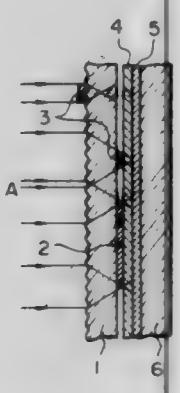
electrostatically attaching a flexible cleaning sheet to the picture image forming member so that the cleaning sheet is carried past the scanning surface of the reproducing means thereby to clean the scanning surface.

4,402,600

PHOTOMASK FOR PRODUCING SEMICONDUCTOR DEVICES

Satoshi Araihara, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 23, 1981, Ser. No. 314,429
Claims priority, application Japan, Oct. 31, 1980, 55-156206[U]
Int. Cl.³ G03B *27/28*
U.S. Cl. 355—125 12 Claims



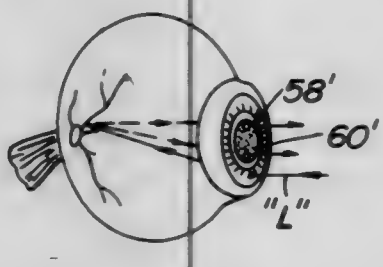
1. A photomask comprising a transparent substrate on one surface of which a mask pattern is formed of a photoshielding film characterized in that the opposite surface to said one surface provided with said mask pattern is roughened in order that rays of incident light from said opposite surface side toward said one surface side are refracted diffusedly through said rough surface.

4,402,601

FUNDUS CAMERA-BASED RETINAL LASER DOPPLER VELOCIMETER

Charles E. Riva, 978 Conestoga Rd., Berwyn, Pa. 19312

Filed Dec. 31, 1980, Ser. No. 221,614
Int. Cl.³ G01P *3/36*; A61B *3/14*
U.S. Cl. 356—28.5 15 Claims



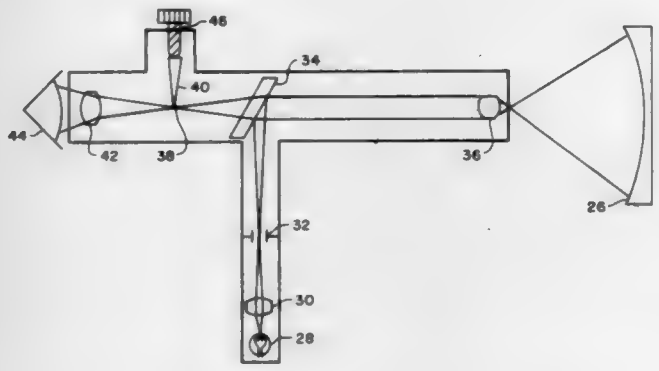
1. Apparatus for absolute measurement of blood flow in retinal vessels, comprising a laser for producing a beam of radiation, means for impinging the beam on at least one retinal vessel in which blood is flowing, means for producing from radiation of the beam scattered by the vessel and the red blood cells flowing therein a bidirectional pair of beams, said last-mentioned means comprising a pair of apertures disposed in the path of the radiation scattered by the vessel and the red blood cells flowing therein, means for detecting and collecting the pairs of beams to provide simultaneous signals representative of the Doppler shift frequencies of the radiation comprising the reflected beams, and means for producing from the signals an output representative of the absolute velocity of the red blood cells.

4,402,602

KNIFE EDGE SYSTEM

John D. Kuppenheimer, Jr., Tewksbury, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Jun. 22, 1981, Ser. No. 276,219
Int. Cl.³ G01B *9/00*
U.S. Cl. 356—124 5 Claims



1. A knife edge system for testing optics, comprising:
a source of light;
means for applying said light to an optic under test, said means for applying including a lens having an f-number which is substantially equal to or less than the f-number of the optic under test;
said lens also focusing light returned from the optic under test;
a knife edge;
means for traversing the focused image with the knife edge; and
an eye piece for viewing the surface of the object under test.

4,402,603

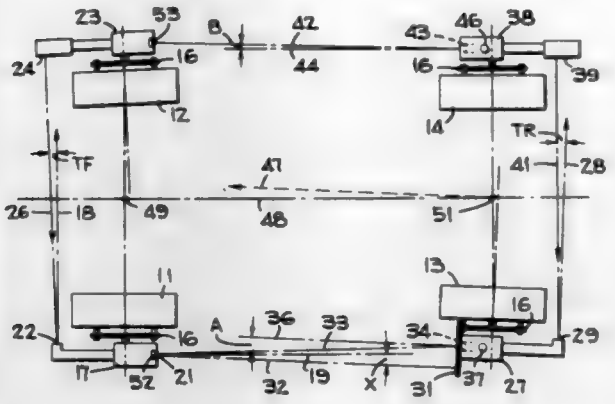
FOUR WHEEL ALIGNMENT APPARATUS AND METHOD

Melvin H. Lill, San Jose, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed May 8, 1981, Ser. No. 261,444
Int. Cl.³ G01B *11/26, 5/255*
U.S. Cl. 356—152 12 Claims

7. A method of measuring individual toe for wheel pairs mounted on front and rear axles of a vehicle chassis, comprising the steps of
mounting a toe measurement device on each wheel in each pair of wheels,
communicating directly the toe measurement devices on wheels on each axle, whereby the total toe of the wheels on each axle is measured directly and simultaneously,
determining the angular relationship of the plane of one

wheel on one axle relative to the plane of one wheel on the other axle on the same side of the chassis, and



referencing the toe of each wheel to the bisector of the total toe angle of the wheels on the other axle.

4,402,604

METHOD FOR THE ON-LINE MEASUREMENT OF INCLUSIONS IN PULP

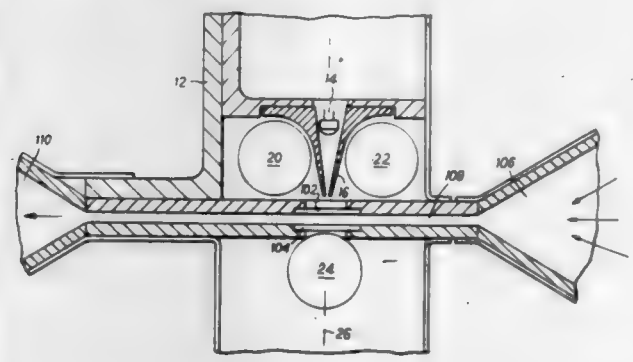
Paul Nash, Kinfauns, Worthing Rd., Horsham, Sussex RH13 7AT, England

Filed Mar. 18, 1981, Ser. No. 245,125

Claims priority, application United Kingdom, Mar. 20, 1980, 8009464

Int. Cl.³ G01N *21/55, 21/88, 23/12*

U.S. Cl. 356—237 **1 Claim**



1. A method of inspecting liquid paper pulp flowing past an inspection station, comprising:

(A) providing at the inspection station a pair of transparent plates defining a flow path for the pulp so that the pulp forms a sheet of predetermined thickness at the inspection station,

(B) positioning light sources on both sides of the sheet,

(C) arranging a plurality of photosensitive devices on one side of the sheet in a row transverse to the direction of flow of the pulp so that each device receives light reflected from and transmitted through the sheet and provides an output signal dependent on the intensity of the reflected and transmitted light,

(D) mixing the pulp with liquid having no fibre content to modify its consistency,

(E) causing the pulp to flow between the plates,

(F) adjusting the position of the light sources and the thickness and consistency of the sheet of pulp so that the amount of light reflected from the sheet to the photosensitive devices is equal to the amount of light transmitted through the sheet to the photosensitive devices,

(G) supplying output signals from the photosensitive devices to circuit means which provide a defect signal when an inclusion in the pulp passes the inspection station,

(H) supplying the defect signals to integrating circuitry which integrates the defect signals with respect to time,

(I) resetting the integrating circuitry when the integration reaches a preset value, and

(J) counting the number of times the preset value is reached, thereby to measure the total equivalent black area of the sheet.

4,402,605

FIREARMS SIGHTING INSTRUMENT

Arne Ekstrand, Helsingborg, Sweden, assignor to Aimpoint AB, Malmo, Sweden

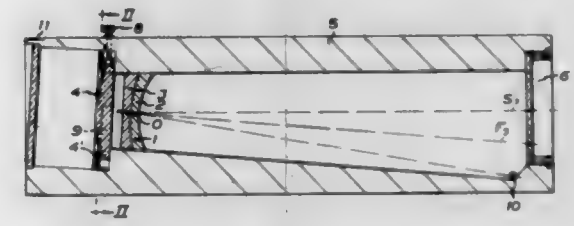
PCT No. PCT/SE80/00080, § 371 Date Nov. 19, 1980, § 102(e) Date Nov. 7, 1980, PCT Pub. No. WO80/02069, PCT Pub. Date Oct. 2, 1980

PCT Filed Mar. 17, 1980, Ser. No. 233,597

Claims priority, application Sweden, Mar. 19, 1979, 7902413

Int. Cl.³ G02B *27/34, 27/36*

U.S. Cl. 356—252 **4 Claims**



1. An optical sighting instrument having a sighting axis and comprising a housing (5) having forward and rear apertures and a lens system supported within the housing between and spaced apart from each of said apertures, the lens system comprising lens means and a concave, substantially spherical semi-transparent mirror surface facing said rear aperature, the focal point (F) of the mirror being located in the housing between said mirror surface and said rear aperture, the sighting instrument further comprising a light source (10) in the form of a small light emitting diode directed towards the concave mirror surface for generating a sighting mark which seems, to an eye looking from behind said rear aperture (6) of the housing, to lie at a great distance in front of the sight, the lens system including a first lens device in which said mirror surface is included as a part and which has a predetermined refraction, and a refraction redressing second lens device which renders the entire lens system substantially zero-refractive, said second lens device being movably and adjustably supported in the housing, a carrier for movably supporting said second lens device, said carrier comprising means for adjusting said second movable lens device in relation to said first lens device and in relation to said sighting axis in two mutually perpendicular directions which are each substantially perpendicular in relation to a major axis (O–F) of the mirror, such that the sighting instrument thereby is adjustable in the vertical and lateral directions by optical inner adjustment without positional alteration of the housing with respect to a carrier member for the housing, for example with respect to a rifle barrel, said adjustment means comprising three supporting means for three-point suspension of said second lens device, two of said three supporting means being substantially perpendicularly spaced and adjustable each along one of two perpendicular axes, and the third of said three supporting means forming a substantially plane supporting surface at a peripheral point of said second lens device for accommodating said adjustment thereof effected by said two adjustment means.

4,402,606

OPTOGALVANIC INTRACAVITY QUANTITATIVE DETECTOR AND METHOD FOR ITS USE

Edward F. Zalewski, Gaithersburg, Md.; Richard A. Keller, and Charles T. Apel, both of Los Alamos, N. Mex., assignors to the United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Feb. 25, 1981, Ser. No. 238,236

Int. Cl.³ G01J *3/30;* G01N *21/72*

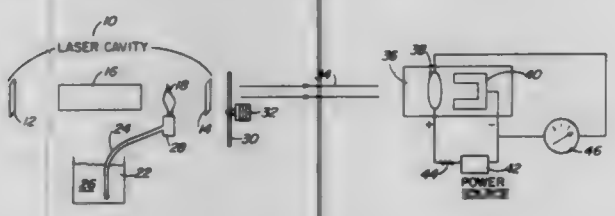
U.S. Cl. 356—315 **8 Claims**

1. An apparatus for quantitatively determining the amount of a species selected from the group consisting of ions, mole-

cules, and atoms contained in a first substance comprising at least said species, said apparatus comprising in combination:

a. means for producing laser radiation at wavelengths which can be absorbed by at least a portion of said species;

b. means for producing an electrical discharge in a second substance whereby the product of said electrical discharge includes at least said species, whereby said species takes part in said electrical discharge, and whereby said laser radiation interacts with at least a portion of said species appearing in said electrical discharge thereby producing an optogalvanic effect therein;



c. means for observing said optogalvanic effect in said portion of said species in said electrical discharge which interacts with said laser radiation; and

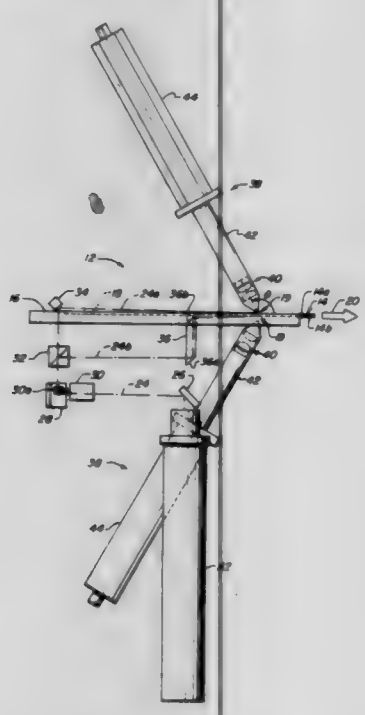
d. means for causing at least a portion of said first substance to interact with said laser radiation at a location spaced between said laser radiation producing means and said optogalvanic observing means thereby permitting said portion of said species to absorb a quantity of said laser radiation, whereby absorption of said quantity of said laser radiation by said portion of said species causes a change in said observed optogalvanic effect in said portion of said electrical discharge which interacts with said laser radiation.

4,402,607

AUTOMATIC DETECTOR FOR MICROSCOPIC DUST ON LARGE-AREA, OPTICALLY UNPOLISHED SURFACES

Lance McVay, Belmont, and Pedro Lilienfeld, Lexington, both of Mass., assignors to GCA Corporation, Bedford, Mass.

Filed May 16, 1980, Ser. No. 150,363
Int. Cl.³ G01N *21/01*
U.S. Cl. 356—338 **27 Claims**



1. A system for detecting the presence of microscopic particulate matter on a generally flat, large area and optically unpolished surface with randomly oriented surface irregularities, said surface advancing in a first direction that is generally coplanar with the surface, comprising,

means for generating a narrow beam of high intensity monochromatic radiation,

means for directing the radiation onto said surface at a highly acute angle measured from said surface, said radiation being scattered by said particulate matter and said optically unpolished surface, said surface scattered radiation having a random orientation with respect to said radiation generating means and a frequency spectrum similar to the frequency spectrum generated by said radiation scattered by said particulate matter to thereby create a background noise,

optical means angularly oriented with respect to said surface to collect radiation from said beam that is scattered by said particulate matter and from said optically unpolished surface, said optical means having high resolution in the field of view on said surface and a large numerical aperture,

said particle scattered radiation received by said optical means being generally proportional to the size of said particulate matter,

electronic means operatively coupled to said optical means for converting said particulate matter scattered radiation into an analog electrical signal whose amplitude corresponds to the intensity of said collected radiation, and

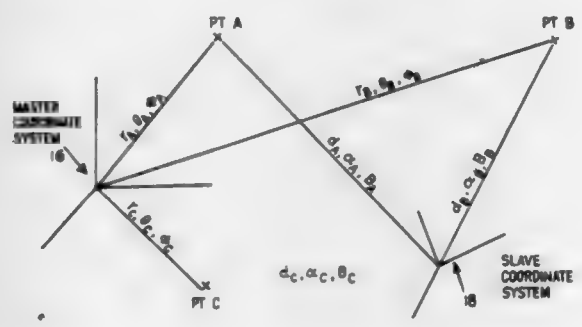
electronic means for filtering out from said signal noise due to scattering of said radiation from said surface.

4,402,608

ROOM SCANNING SYSTEM USING MULTIPLE CAMERA AND PROJECTOR SENSORS

Paul DiMatteo, Huntington, and Paul Rademacher, Glen Head, both of N.Y., assignors to Solid Photography Inc., Melville, N.Y.

Filed Oct. 2, 1980, Ser. No. 193,172
Int. Cl.³ G01B *11/00*; G01C *3/00*
U.S. Cl. 356—375 **10 Claims**

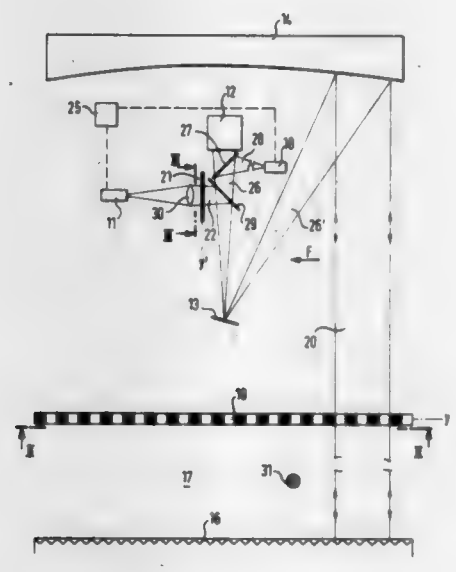


1. A method for automatically obtaining three-dimensional position data on surfaces defining a room and objects therein, comprising the steps of: scanning the room with a plurality of sensors and determining with each sensor the three-dimensional profiles of surfaces visible to each sensor and relative to each sensor's position and orientation; measuring with each sensor the positions in space of at least three noncolinear reference points visible to all sensors for determining relative positions and orientations in space of the sensors, producing said three reference points by light projections from one of said sensors, each sensor having an individual coordinate system, each sensor measuring the positions of said three points relative to said individual coordinate system; transforming automatically data on room profile obtained by each sensor from relative position data during said measuring step into a single common coordinate system.

4,402,609
LIGHT CURTAIN APPARATUS

Günter Fetzer, Gundelfingen, and Horst Biehrer, Ettenheim, both of Fed. Rep. of Germany, assignors to Erwin Sick GmbH Optik-Elektronik, Fed. Rep. of Germany

Filed Jul. 2, 1980, Ser. No. 165,460
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1979, 2927845
Int. Cl.³ G01S *17/06*; G01B *11/04*
U.S. Cl. 356—387 16 Claims

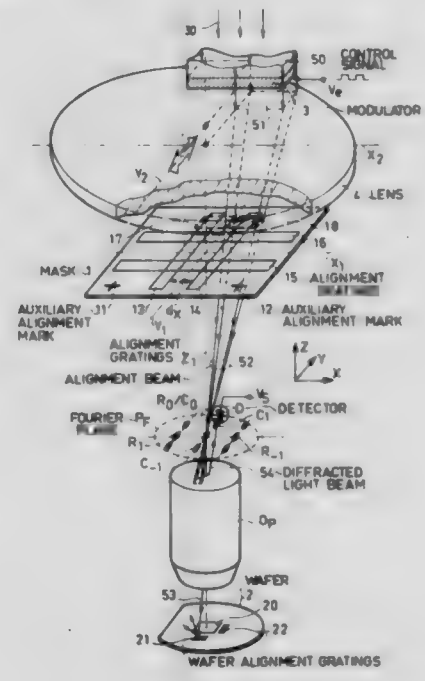


1. Light curtain apparatus incorporating a cyclical scale generator for establishing at least one of the position and size of an object present within a monitored region having first and second ends, the apparatus comprising means for generating a laser light beam, a strip-like concave mirror and the monitored region, a light scanning device located substantially at said focal point for scanning said laser light beam over said strip-like concave mirror whereby to project a parallel light beam which is continuously displaced parallel to itself to form the light curtain through said light exit window across said monitored region, a reflecting stationary scale grid extending along the light exit window to intercept a part of said parallel light beam, a first photoelectric receiving device disposed at one of said first and second ends of said monitored region to receive light transmitted therethrough and convert it into a first electrical monitoring signal, a second photoelectric receiving device for receiving a returned light beam reflected from said reflecting stationary scale grid, said reflecting stationary scale grid having divisions which are so fine that said parallel light beam embraces a plurality of said divisions at any one time, a stationary bar pattern having a plurality of divisions arranged in the returned light beam reflected from said reflecting stationary scale grid at a position occupied by a shadow image of said reflecting stationary scale grid, the divisions of said stationary bar pattern being equal in size and parallel to divisions produced in said shadow image at the stationary bar pattern by the reflecting stationary scale grid, and means for focusing said stationary bar pattern onto said second receiving device, said second receiving device including at least one photoelectric detector for detecting light which periodically passes through the stationary bar pattern to generate a cyclically varying scale signal.

4,402,610
OPTICAL SYSTEM FOR THE AUTOMATIC ALIGNMENT OF TWO MOTIFS COMPRISING ALIGNMENT MARKS OF THE GRATING TYPE, PARTICULARLY IN DIRECT PHOTOREPETITION ON SILICON

Michel Lacombat, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 3, 1980, Ser. No. 212,585
Claims priority, application France, Dec. 18, 1979, 79 30936
Int. Cl.³ G01B *11/27*
U.S. Cl. 356—400 14 Claims



1. A system for the optical alignment of at least a first motif carried by a moving support with respect to a second motif carried by a fixed supporting forming the reference, the first and second motifs comprising in each case alignment marks of the optical grating type having a constant spacing wherein said first motif comprises at least one optical grating and wherein the alignment marks of said second motif comprise at least first and second identical optical gratings, each constituted by a sequence of lines parallel to a first axis of symmetry and located on either side of said axis, the two identical gratings being spaced from one another by predetermined length and wherein two windows define two portions, respectively, of the first and second optical gratings, the system also comprising optical means with a given magnification serving to project the image of said at least first and second identical optical gratings forming alignment marks of the second motif onto one of said at least one optical grating forming alignment marks of the first motif, the projection correlation producing orders of diffraction whose light intensity detected by optoelectronic means represents the alignment stated reached, and said optical means comprising light energy source producing an alignment beam and a selective switch receiving a control signal of given frequency for alternately illuminating at said frequency in each case one of the windows, the output signal of the optoelectronic means also being generally transmitted to electronic comparison means establishing their level difference between alternations of the control signal.

4,402,611
COLORIMETER

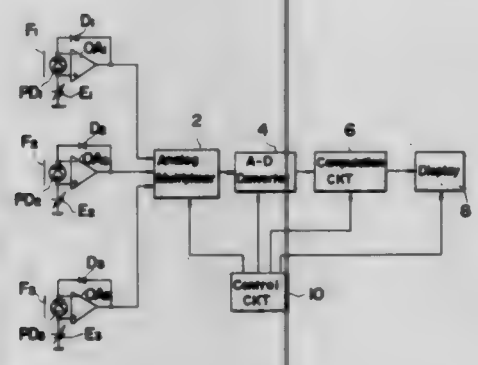
Yoshio Yuasa, Kawachinagano, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jun. 19, 1980, Ser. No. 160,916
Claims priority, application Japan, Aug. 4, 1979, 54-99608
Int. Cl.³ G01J *3/50*
U.S. Cl. 356—405 13 Claims

1. A colorimeter for obtaining the CIE chromaticity coordinates of an object to be measured comprising:

means for obtaining a plurality of light measuring signals with a plurality of different spectral sensitivities, each of said signals being respectively corresponding to the logarithm of each intensity of light sensed with each of the different spectral sensitivities;

computing means, connected to said obtaining means, for computing the CIE chromaticity coordinates from said light measuring signals, said computing means including a first means for calculating a value corresponding to the



logarithm of a sum of a plurality of the intensities of light sensed with the different spectral sensitivities, second means responsive to said obtaining means and said first calculating means, for calculating the logarithms of chromaticity coordinates, respectively, and third means, responsive to said second calculating means, for calculating the chromaticity coordinates; and

means, connected to said computing means, for displaying the CIE chromaticity coordinates.

4,402,612

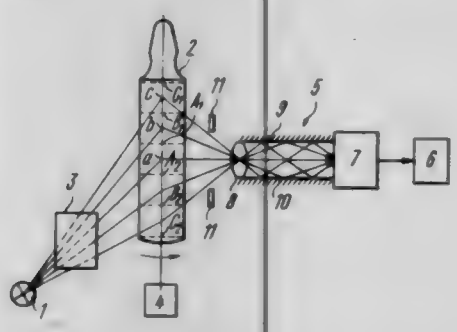
APPARATUS FOR DETECTING FOREIGN PARTICLES IN A LIQUID

Jury V. Alexander, ulitsa Fontanka, 165, kv. 13; Viktor D. Viktorov, Basseinaya ulitsa, 105, kv. 480; Vladimir K. Zuev, ulitsa Sofiskaya, 48, Korpus 1 kv. 164; Gennady S. Orlov, ulitsa Aviatsionnaya, 36, kv. 10; Nikolai A. Filipin, ulitsa Nalichnaya, 36, kv. 110, all of Leningrad, and Fedor S. Khunafin, ulitsa Fadeeva, 6, kv. 87, Moscow, all of U.S.S.R.

Filed Nov. 17, 1980, Ser. No. 207,243

Int. Cl.³ G01N *21/90*

U.S. Cl. 356—427 **4 Claims**



1. An apparatus for detecting foreign particles in a liquid, comprising:

a mechanism for bringing said particles into suspension;

a radiation source irradiating the inspected zone of said liquid;

a radiation receiving device having an output and including a sensing element having a target; and

a projecting system projecting the image of said inspected zone of the liquid on said target of said sensing means, said projecting system comprising a means for superposing the images of different areas of said inspected zone of the liquid, said projecting system including an objective lens and said means for superposing the images comprising two flat parallel reflecting surfaces facing each other and positioned parallel to the axis of said objective lens of said projecting system between said target of said sensing element and said objective lens so that the images of at least of some of said areas of said inspected zone of the liquid are projected on said target of said sensing element after being reflected from one or both of said reflecting surfaces; and

a register means for registering the signal at said output of said radiation receiving device.

4,402,613

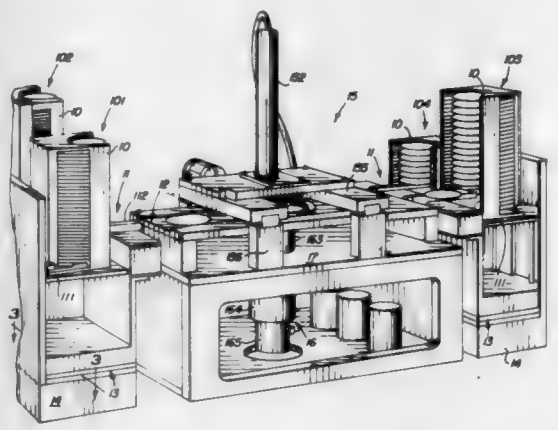
SURFACE INSPECTION SYSTEM

John K. Daly, Scottsdale, and Malvin D. Terry, Phoenix, both of Ariz., assignors to Advanced Semiconductor Materials America, Phoenix, Ariz.

Filed Mar. 29, 1979, Ser. No. 24,944

Int. Cl.³ G01N *21/47, 21/55, 21/84, 21/01*

U.S. Cl. 356—446 **5 Claims**



1. A scattered light surface measuring system for the detection of surface anomalies on reflective surfaces of flat articles to be tested, comprising:

a support having a horizontal upper surface to support a flat test article with its upper reflective surface in a horizontal position;

a collimated light light source mounted above the support and positioned and arranged to transmit a collimated light beam directly perpendicularly upon the horizontal reflective surface in the absence of interception by reflectors, prisms, lenses, or other optical path bending devices;

a scattered light detector surrounding the collimated light beam above the support to intercept the light rays scattered by the surface anomalies of the test article;

the support for the test article is controllably powered to rotate continuously about a vertical axis as required;

the light source is mounted to travel transversely over the support and test article while maintaining the perpendicularity of the collimated light beam to the surface of the test articles;

controllable power means is provided to produce the transverse travel of the light source;

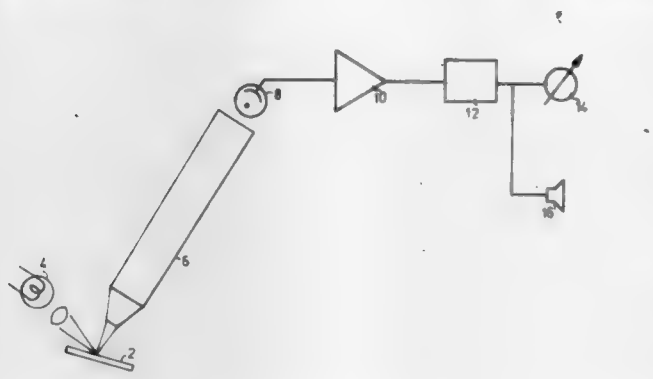
and the control means are operable to cause simultaneous rotation of the test sample and transverse travel of the light source between the center and the perimeter of the test article and produce impingement of the light beam upon the entire area of the test sample in the form of an Archimedean spiral; and

the support for the test article has a perforated upper surface and a controllable vacuum pump is connected thereto through the interior of the support to constitute a vacuum chuck for holding the test article securely in place while the chuck is stationary or rotating.

4,402,614
METHOD AND APPARATUS FOR MEASURING THE MOTILITY OF SPERM CELLS

Asher Porath-Furedi, 10 Kubovy St., Ramat Danya, Jerusalem, Israel

Filed Oct. 15, 1980, Ser. No. 197,194
Claims priority, application Israel, Oct. 25, 1979, 58559
Int. Cl.[3] G01N *21/47, 33/48*
U.S. Cl. 356—446 10 Claims

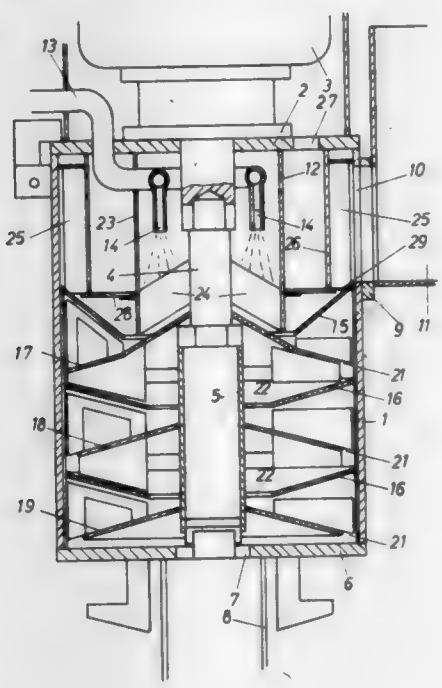


1. A method of measuring sperm motility comprising: directing a beam of light into a suspension of the sperm; optically detecting reflections of the light from the sperm in the suspension; and counting by a detector the number of reflections per unit time to provide an index of sperm motility with respect to the sperm in said suspension, said suspension being supported as a relatively thin film, and said beam of light being directed into said thin film at an angle of less than 30° thereto from the same side as said detector.

4,402,615
MIXING TUBE FOR DRYING BUILDING MATERIALS

Karl M. Mayer, Immenhofen, Fed. Rep. of Germany, assignor to Wachter KG Hindeland, Fed. Rep. of Germany

Filed Aug. 29, 1980, Ser. No. 182,574
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2935007
Int. Cl.[3] B28C *5/08;* B01F *7/26*
U.S. Cl. 366—65 14 Claims



1. An apparatus for mixing dry building materials with water and air in a continuously flowing manner comprising:

a mixing tube having upper and lower portions;

a rotating shaft within said tube extending from said upper portion to said lower portion;

feed means for said dry material, arranged in said upper portion and conveying pump means situated at the said lower end portion;

supporting plates surrounding and joined to said rotating shaft in a conically sloped manner so that with respect to the rotational axis line of the shaft the supporting plates are sloped from the inside above to outside downward and maintain a fixed distance to an inner wall of the mixing tube;

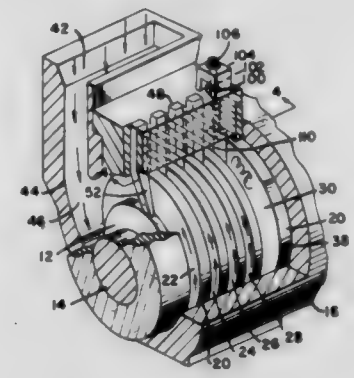
stirring blades supported on said plates; and

fixed plates joined completely around the inner wall of the mixing tube which are sloped with respect to the rotational axis line of the shaft from outside above to inside downward and maintain a fixed distance from the rotating shaft.

4,402,616
ROTARY PROCESSORS

Lefteris N. Valsamis, and Gary S. Donoian, both of West Haven, Conn., assignors to USM Corporation, Farmington, Conn.

Filed Jan. 4, 1982, Ser. No. 336,929
Int. Cl.[3] B29B *1/06*
U.S. Cl. 366—99 12 Claims



1. A multi-stage rotary processor comprising a rotatable element carrying a plurality of processing channels and a stationary element having a coaxial closure surface operationally arranged with said channels to provide enclosed first- and second-stage processing passages, each processing passage having an inlet, an outlet and a channel blocking member associated with the stationary element and arranged so that material fed to the inlet can be carried forward by the channel walls to the blocking member for discharge through the outlet, and where one or more of the first-stage processing passages are adapted to transfer material to a second-stage processing passage; and where

the geometry of said one or more first-stage processing passages relative to the geometry of said second-stage processing passage is such that said one or more first-stage processing passages are capable of processing and transferring material to the second-stage processing passage at a volumetric rate which is less than the rate at which said second-stage processing passage is capable of receiving and processing the transferred material, so that the differential between the rate at which material is supplied by the first stage to the second-stage processing passage and the rate at which the supplied material can be received and processed by the second-stage processing passage can cause fluctuations of flow of material through the second-stage processing passage and through any further processing passages receiving material from the second-stage processing passage; and where said processor includes

adjustable means positioned near the inlet of the second-stage processing passage and arranged and adapted for extension into the passage channel for blocking a portion of the channel to thereby provide the second-stage processing passage with the capability for selectively adjusting the receiving and processing rate of the passage to coordinate the adjusted rate with the rate at which material is supplied from said one or more first-stage process-

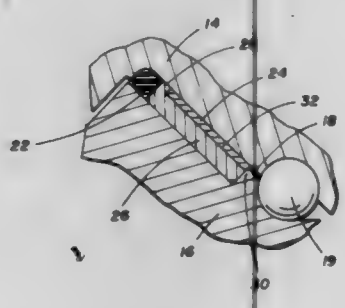
ing passages to provide substantially uniform flow of material through the second-stage processing passage and to maintain said substantially uniform flow through the passage during operation.

4,402,617

THIN WALL SINTERED BUSHING FOR A ROCK BIT

Kenneth O. McDowell, De Soto, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 12, 1981, Ser. No. 262,731
Int. Cl.³ F16C *33/12*
U.S. Cl. 384—95 **8 Claims**



1. An improved rotary rock bit having a rolling cone cutter with structure defining a bearing cavity, mounted on a stationary bearing pin extending from an arm of said cutter, wherein said improvement comprises:

a backing ring member disposed within said cone cavity in an interference fit;

a journal bushing member generally stationarily mounted in said backing ring member in an interference fit and rotationally bearing on said pin; positive abutment means extending radially on axially opposite sides of said bushing member for retaining said bushing member against axial movement under dynamic loading of said pin and cutter; and,

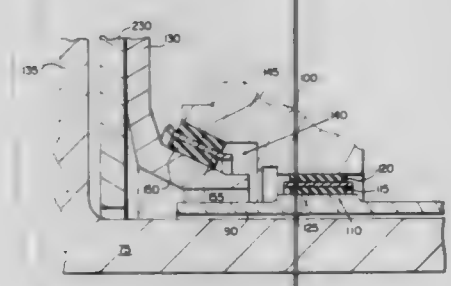
a conformal layer of metal between the radially outer axially extending surface of said bushing and the inner facing engaging surface of said backing ring member; and, wherein said interference fit in conjunction with said conformal layer, resists rotation of said bushing within said backing ring under dynamic loading of said pin and cutter whereby said bushing is substantially stationarily retained in said backing ring during operation of said bit.

4,402,618

HIGH SPEED ROTARY MACHINE BEARING MOUNT STRUCTURE

William E. Fortmann, West Simsbury; James A. Mrazek, South Glastonbury; Robert Telakowski, Windsor Locks, and Robert Sherman, West Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 2, 1981, Ser. No. 230,573
Int. Cl.³ F16C *32/06*
U.S. Cl. 384—107 **6 Claims**



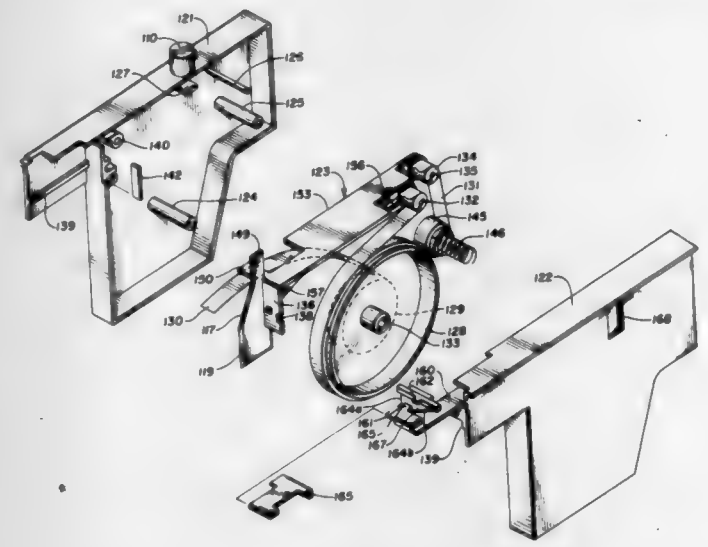
1. A high speed rotary machine including a stator, a rotor comprising a rotatable shaft supported interiorly of said stator on at least one fluid journal bearing, said rotary machine being characterized by said fluid journal bearing comprising a first retainer disposed concentrically outwardly of said shaft, and a mount attaching said retainer to a stationary support therefor in such manner that said retainer is pivotable about a central transverse axis thereof and restrained from rectilinear, radially outward movement, allowing said bearings to track limited, pivotal excursions of said shaft about a central, transverse axis thereof, thereby minimizing nonuniform pressure distribution within said bearing while limiting risk of contact between said stator and rotor due to outward radial movement of said rotor said rotary machine being further characterized by at least one fluid thrust bearing for limiting axial movement of said shaft, said thrust bearing including a retainer disposed proximal to a rotary member fixed to said shaft, said shaft being restrained in an axial direction by a film of pressurized fluid maintained between said retainer and rotary member, said retainer being fixed to a stationary support by at least one mount therefor in such manner that said retainer is pivotable about an axis transverse to the longitudinal axis of said shaft and resists rectilinear, axial shaft movement, while allowing said thrust bearings to track limited pivotal excursions of said shaft about said tranverse axis for minimization of nonuniform pressure distribution in said thrust bearing and risk of contact between said stator and rotor.

4,402,619

PRINTING APPARATUS AND PRINTING CARTRIDGE THEREFOR

Michael W. Paque, Stillwater, and Franklin C. Bradshaw, St. Paul, both of Minn., assignors to Kroy, Inc., St. Paul, Minn.

Filed Mar. 30, 1981, Ser. No. 248,956
Int. Cl.³ B41J *3/30, 15/04*
U.S. Cl. 400—36 **43 Claims**



1. A cartridge for supplying printing tape and ribbon to a printing apparatus, said cartridge comprising:

a cartridge housing;

a spool of printing tape rotatably supported within said housing;

a supply of printing ribbon;

advancing means for advancing said printing tape and printing ribbon toward printing alignment with respect to the printing apparatus;

a ribbon rewind spool;

means for causing rotation of said ribbon rewind spool in response to the rotation of said spool of printing tape; and

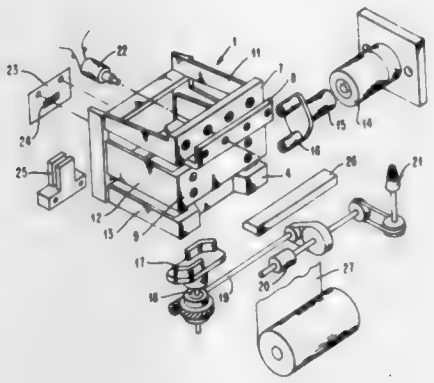
ribbon guide means for guiding said printing ribbon from said printing ribbon supply, toward printing alignment with respect to the printing apparatus and onto said ribbon rewind spool.

4,402,620

COMPACT SHUTTLE PRINTER MECHANISM

Dennis H. Kekas; Charles M. McCray, both of Raleigh, N.C., and William A. Grubbs, Rockville, Md., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Dec. 23, 1981, Ser. No. 333,599
Int. Cl.³ B41J *3/12, 25/28*
U.S. Cl. 400—121 **4 Claims**



1. A dot printer comprising:
at least one dot forming printing element;
a unitary molded flexible plastic combined suspension spring and frame element;
said printing element being affixed to said frame element;
a platen, said platen being arranged adjacent to and parallel with said frame element on which said printing element is affixed;
said unitary molded flexible plastic suspension spring and frame element comprising at least two comb like shaped plate springs having first, second and third legs, respectively, the free ends of said first and third legs being integrally molded with said frame element and the second legs thereof being rigidly mounted to a fixed location in said printer to support said comb like shaped plate springs generally orthogonal to an intended print line and parallel with each other;
a purely linear reciprocating drive means for causing linear reciprocation without orthogonal or off axis forces, said drive means being connected to said frame element and arranged with respect thereto for reciprocating the same and flexing said first and third legs of said comb like shaped plate springs while moving said frame element and said dot forming printing element thereon back and forth along a desired print line parallel to said platen;
said comb like shaped plate springs having the base ends of said first, second and third legs commonly molded together in an integral base element for each of said plate springs, said base elements being freely suspensed for motion when said first and third legs thereof are flexed;
paper print media drive means for feeding said paper incrementally past said platen;
incremental cam and clutch means and an interposer means, said interposer means being affixed to said integrally molded frame element and reciprocated therewith and interacting with said cam and one way clutch means for providing intermittant rotary output, said intermittant rotary output being connected to said paper media drive and incrementing means to increment said paper at the end of each said recriprocation.

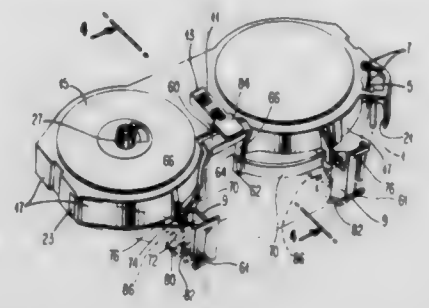
4,402,621

RIBBON CARTRIDGE WITH RIBBON GUIDE ARMS

William A. Abell, Jr., Wilmore; James A. Craft, and Michael L. Morris, both of Lexington, all of Ky., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Sep. 25, 1981, Ser. No. 305,764
Int. Cl.³ B41J *35/28*
U.S. Cl. 400—208 **8 Claims**

1. A printer ribbon cartridge having a top wall, a bottom wall and side walls, and a ribbon guide and containing a printer ribbon, a first hub upon which said ribbon is wound, a second hub upon which said ribbon is wound, said walls defining an area for a spool of ribbon wound on said first hub and an area for a spool wound on said second hub, and defining an exit for said ribbon from one of said spools, through said ribbon guide, and to the other of said spools, said ribbon guide being pivoted



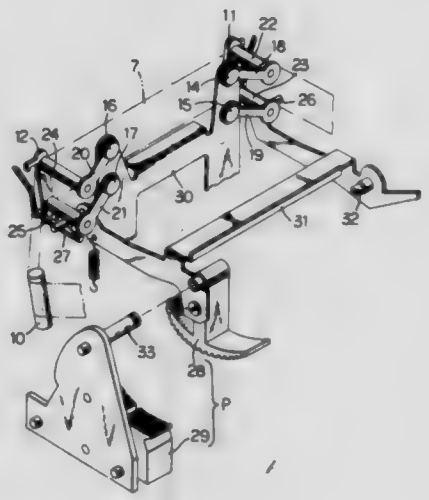
and held on said cartridge, a housing on one of said top and bottom walls on the outside, center of said cartridge holding a resilient member contained within said housing, and a part central to and integral with said guide spaced from the location at which said guide is pivoted, said part being generally contiguous with said housing with said resilient member contacting and resiliently biasing said part.

4,402,622

INK-RIBBON LIFTING APPARATUS

Toshiaki Sugiura, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 30, 1981, Ser. No. 249,235
Claims priority, application Japan, Apr. 15, 1980, 55-50188
Int. Cl.³ B41J *35/08, 35/10, 33/56*
U.S. Cl. 400—212 **7 Claims**



1. In a printing device including a base plate, platen, a print wheel, a ribbon cartridge having outlet and inlet openings and accommodating a ribbon, and a ribbon lifting apparatus to guide an exposed portion of the ribbon looped out of the cartridge through the outlet and inlet openings in a space between the platen and the print wheel and to selectively position, during a printing operation, different transversely spaced longitudinally extending regions of the ribbon, said ribbon lifting apparatus comprising:
drive means;
an operating lever connected to said drive means and movable to different positions upon actuation of said drive means;
a pair of ribbon guides supporting said exposed portion of the ribbon in a first plane parallel to the surface of said print wheel and defining, in cooperation with said outlet and inlet openings, a path of said exposed portion; and
a pair of supporting means, each operatively connected to said operating lever, for supporting said pair of ribbon

guides, respectively, in said first plane, each of said pair of supporting means being pivotally connected to said base plate and moved by said operating lever in a second plane substantially parallel to said first plane to different levels corresponding to an original position and at least one lifted position of said ribbon guides, said different levels being established upon movement of said operating lever to said different positions, respectively, the pivotal motion of said supporting means causing said ribbon guides to move toward and away from each other changing the distance therebetween, whereby said pair of ribbon guides are positioned by said operating lever via said supporting means such that said exposed portion of the ribbon is oscillated to bring said different regions thereof into line with the printing position and such that said pair of ribbon guides are laterally moved to maintain said path of the exposed portion of the ribbon substantially constant in length.

4,402,623

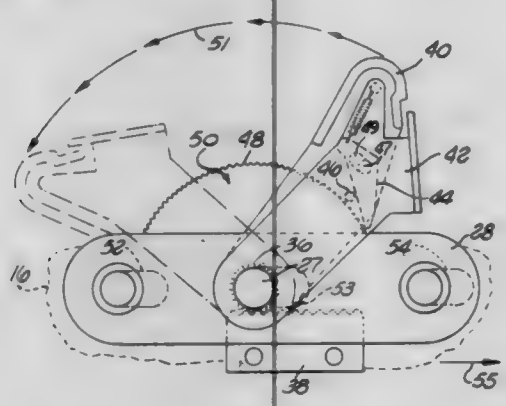
APPARATUS FOR DYNAMICALLY ADJUSTING PAPER TENSION IN A LINEAR MANNER

Michael R. Biche, Sunnyvale, and Gideon W. Baxter, Hayward, both of Calif., assignors to Qume Corporation, San Jose, Calif.

Filed Dec. 14, 1981, Ser. No. 330,178

Int. Cl.³ B41J *11/30*; G03B *1/30*

U.S. Cl. 400—618 **1 Claim**



1. A bi-directional paper feed for a printer comprising: first and second side plates fixed relative to each other in substantially parallel respective planes; a cylindrical platen rotatably mounted through said side plates and having an axis of rotation normal to said planes; a support shaft having an axis parallel to said platen axis and rotatably mounted through said side plates; first and second parallel tractor mechanisms mounted on said support shaft between said side plates to grip respective opposite sides of the paper as it enters and leaves said platen to feed and keep the said paper taut in a path to, around and from said platen; and means to adjust the position of said support shaft relative to said side plates in directions normal to said support shaft, said means including first and second pinion gears fixed relative to and respectively to first and second ends of said support shaft concentric therewith, said means including first and second racks fixed relative to and respectively to said first and second side plates, said first and second pinion gears being respectively in mesh with said first and second racks, counter-rotation and rotation of said support shaft causing adjustment thereof respectively toward and away from said platen by rotational engagement of said pinions with said racks; a lever arm fixedly secured to said support shaft and extending radially therefrom so as to cause said support shaft to rotate and said support shaft and said tractor mechanisms to be displaced away from said platen as said lever arm is pushed away from said platen; an arcuate ratchet gear centered about said support shaft and secured against rotation with respect to said side plates; a pawl pivotally mounted to said lever arm; pawl biasing means for urging said pawl into locking engagement with said ratchet gear so as to secure said support shaft against said counter-rotation; and pawl release means including a second lever arm rotatably mounted about said support shaft for releasing said pawl from engagement with said ratchet gear as said second lever arm is pulled towards said platen.

4,402,624

DEVICE FOR ADJUSTING THE SLOPE OF A KEYBOARD

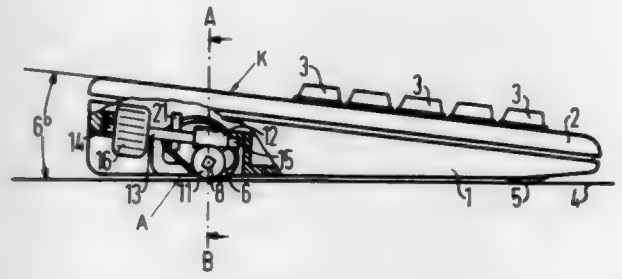
Horst Stahl, Weidach, and Walter Wachs, Krailling, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 27, 1981, Ser. No. 248,243

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014423

Int. Cl.³ B41J *11/56, 29/06*

U.S. Cl. 400—681 **6 Claims**



1. Apparatus for adjusting the inclination angle of a keyboard having a housing and a generally planar working face for a bank of keys comprising a laterally extending adjustment shaft mounted for rotation adjacent one end of said keyboard housing, at least two matching eccentric cam plates disposed and aligned to provide equal lift for rotation on said adjustment shaft at opposed ends thereof for forming seating support surfaces for said one end of said keyboard housing, and control means for enabling selective rotation of said adjustment shaft to infinitely vary the inclination of said keyboard housing between minimum and maximum values as defined by the eccentricity of said cam plates, wherein said control means comprises a rotatable control shaft entirely within said keyboard housing having a first gear member disposed thereon for driving interconnection with a second gear member disposed on said adjustment shaft, and wherein said control means further comprises a hand wheel mounted on said control shaft to rotate it, said housing having a recess permitting operator access to said hand wheel.

4,402,625

APPARATUS FOR CONNECTION AND DISCONNECTION OF A HUB TO AND FROM AN INTERNALLY THREADED SHAFT

Mark Rechkin, Minneapolis, Minn., assignor to Horton Manufacturing Co., Inc., Minneapolis, Minn.

Filed Jun. 8, 1981, Ser. No. 271,521

Int. Cl.³ F16B *1/00*

U.S. Cl. 403—7 **6 Claims**

1. In a hub having a bore and an apparatus for connecting the base of the hub to a shaft end having a threaded axial hole and disconnecting the hub from the shaft, the improvement in said apparatus for connection and disconnection of the hub from the shaft, said improvement including

(a) said hub having stop means formed in said bore,

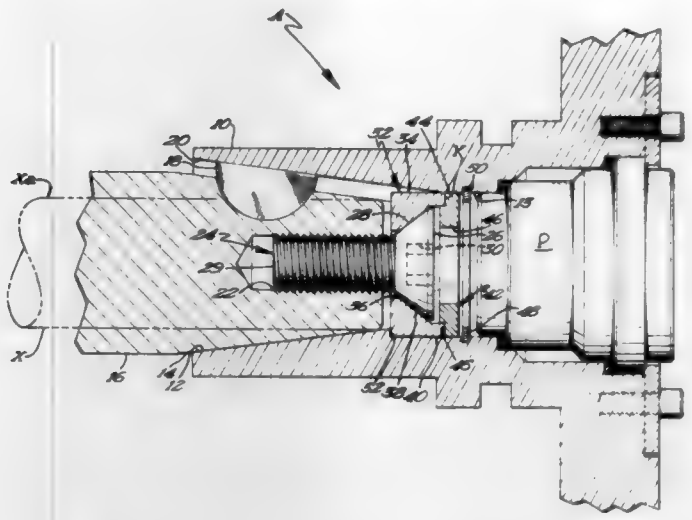
(b) a bolt having a head with a recess therein,

(c) means for receiving the head of said bolt for rotation and against said stop means,

(d) means connected to said receiving means for preventing the displacement of the head of the bolt from said receiving means as the bolt is static and as the bolt is rotated, said preventing means including a ring secured to said receiving means having an internal diameter less than that of the head of said bolt,

(e) means for retaining said receiving means and preventing

means in said bore thereby allowing rotation of said bolt in one direction by engagement of the recess in the head of the bolt by a tool for causing the threaded end to engage



the threads of the axial hole of the shaft to draw the shaft end into the bore and allowing rotation of the bolt in the other direction to force said shaft end from said hub bore.

4,402,626

TORQUE TRANSMITTING COUPLING

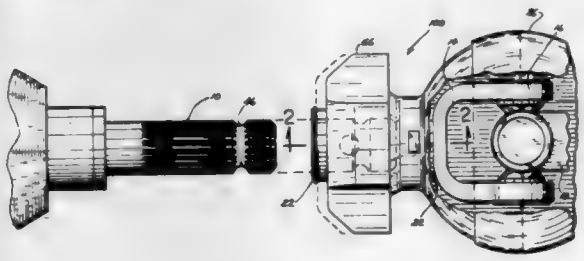
Florian B. Recker, 802 First St., Dyersville, Iowa 52040

Filed Feb. 9, 1981, Ser. No. 233,003

The portion of the term of this patent subsequent to Sep. 15, 1998, has been disclaimed.

Int. Cl.³ B25G *3/18*; F16B *21/00*; F16D *1/00*

U.S. Cl. 403—328 **16 Claims**



1. A torque transmitting coupling comprising:

a housing;

an opening in said housing, a portion of said opening being non-circular, said opening being adapted to receive a non-circular portion of a shaft;

means for selectively locking the non-circular portion of said shaft into the opening in said housing, said locking means being biased to a locked position and selectively movable to an unlocked position;

means operable in response to the removal of said shaft from said opening for holding said locking means in the unlocked position whereby said shaft can be re-inserted into said opening, said holding means comprising a member disposed within said opening and movable within said opening from a first position holding said locking means in said unlocked position to a second position allowing said locking means to move to a locking position; said holding means further comprising a spring for biasing said member to said first position, said member being pushed to said second position by said shaft when said shaft is inserted into said opening and following said shaft to move from the second to the first position thereof when said shaft is removed from the opening whereby said holding means holds said locking means in the unlocked position when the shaft is removed from the opening and allows said locking means to move to the locked position when said shaft is disposed within said opening; said holding means further including a means for retaining said member in said opening, said retaining means comprising said spring means, said spring means having a first coil securely received within a first recess internally formed in said member and a second coil securely received within a second recess internally formed in said housing.

4,402,627

RUNNER TO KEEP OFF SNOWPLOWS

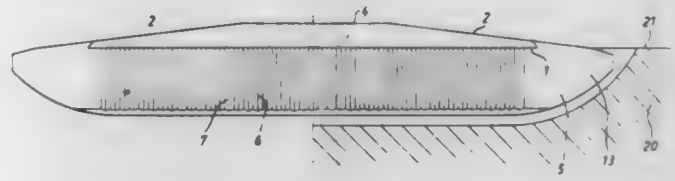
Kurt Schwab, Mils, and Gerhard Unterberger, Fritzens, both of Austria, assignors to D. Swarovski & Co., Wattens, Austria

Filed Apr. 2, 1982, Ser. No. 364,896

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115300

Int. Cl.³ E01F *9/06*

U.S. Cl. 404—15 **10 Claims**



1. A runner to keep snowplows off a pavement or surface area, the runner comprising:

a longitudinally extending upper central portion having a lower base surface for engaging the pavement, the central portion including upper, longitudinally and downwardly sloping end surfaces extending from opposite upper longitudinal ends of said central portion; and laterally extending downwardly sloping side surfaces extending from opposite lateral sides of said central portion; and

a central, longitudinally extending anchor portion of less width than said central portion and depending vertically from a central area of said central portion below said base surface, said anchor portion including upper longitudinally and downwardly sloping end surfaces projecting beyond said sloping end surfaces of said central portion, and in effect forming longitudinal continuations of said central portion sloping end surfaces.

4,402,628

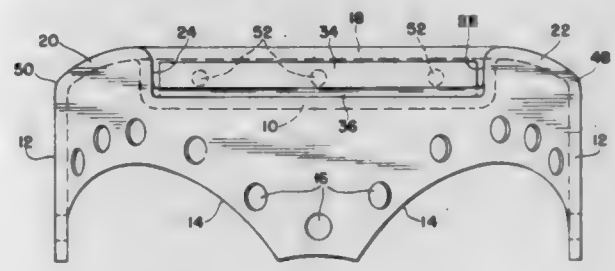
PAVEMENT MARKER

Wilfred J. Grenier, Rutland; Lee B. Zuckerman; John P. Ferris, both of Worcester, and Joseph DeFalco, Shrewsbury, all of Mass., assignors to General Industries, Inc., Rutland, Mass.

Filed Mar. 20, 1981, Ser. No. 245,990

Int. Cl.³ E01F *9/04*

U.S. Cl. 404—16 **9 Claims**



1. A raised plowable pavement marker comprising a hardened steel inverted cup-shaped member including a base and a full surrounding circular depending skirt,

said skirt having means to hold the marker to a pavement with the skirt embedded,

a diametric ridge on the base rising above the base and presenting a convex edge for a plow to ride over,

first and second members each having a convex edge, rising above the base,

said first and second members being generally at right angles to said diametric ridge an being located at opposite ends of said diametric ridge respectively,

said first and second members each having a surface extending laterally on opposite sides of said diametric ridge, said surface rising from a peripheral edge portion of said inverted cup-shaped member and merging with said diametric ridge in the longitudinal direction of said ridge and forming a symetrical transverse arch rising from said base on opposite sides of said diametric ridge to a peak coinciding with the top of said diametric ridge,

said diametric ridge and said first and second members together with said base forming a pair of recesses on opposite sides of said diametric ridge, said recesses each having an open side opposite said diametric ridge between said first and second members,

said base between said first and second members on opposite sides of said diametric ridge being substantially flat,

at least one elongated reflector secured to said bases and located in one of said recesses alongside and substantially parallel with said diametric ridge,

said first and second members at the ends of said diametric ridge serving to protect the market and reflector from a snowplow traveling in a direction normal to said diametric ridge.

4,402,629

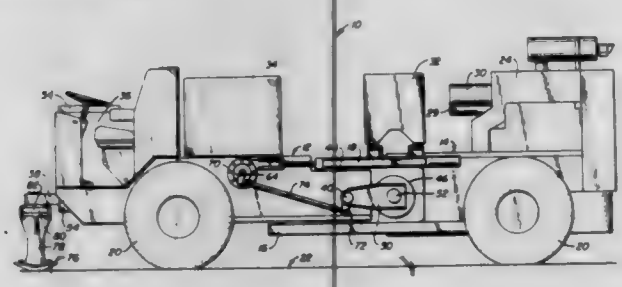
RESONANTLY DRIVEN PAVEMENT CRUSHER

Raymond A. Gurries, Reno, Nev., assignor to Resonant Technology Company, Sparks, Nev.

Continuation-in-part of Ser. No. 157,138, Jun. 5, 1980, Pat. No. 4,340,255. This application Dec. 10, 1981, Ser. No. 329,149

Int. Cl.³ E01C *23/12*

U.S. Cl. 404—90 **24 Claims**



1. A pavement breaker comprising:

a mobile carrier vehicle;

a beam having a resonant frequency with a pair of nodes spaced from the ends of the beam and anti-nodes at each end comprising input and output ends respectively and at the center of the beam;

an oscillator fixed to the input end of the beam to vibrate the beam at at least near its resonant frequency;

means for mounting the beam to the carrier vehicle substantially at the node near the input end of the beam;

a weight superimposed over the beam at the node near the output end and having a bearing surface adapted to bear downwardly against the beam at said node;

means for coupling the weight to the vehicle to control the vertical position of the weight; and

a tool depending from the output end of the beam so that the vibration of the beam causes the tool to travel along an angle of motion oblique to the horizontal, said tool having a first surface lying in a plane substantially parallel to that of the beam and a forwardly directed flanged surface contiguous with the first surface, said flanged surface being inclined at an angle from approximately 6° to 18° closer to horizontal than the angle of motion.

4,402,630

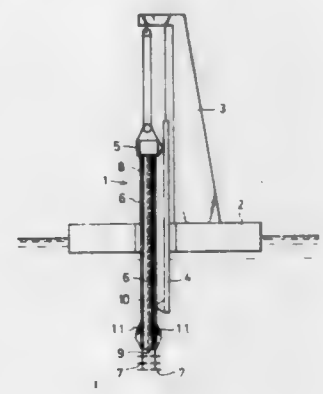
MACHINE FOR AND METHOD OF HARDENING SOFT GROUND

Mituo Miura; Yoshinori Kukino; Takumi Fujii; Kazunori Sugiyama; Takashi Inoue, and Mamoru Ogishima, all of Tokyo, Japan, assignors to Takenaka Komuten Co., Ltd., Osaka and Takenaka Doboku Co., Ltd., Tokyo, both of, Japan

Filed Mar. 8, 1982, Ser. No. 355,647

Int. Cl.³ E02D *3/12*

U.S. Cl. 405—266 **9 Claims**



1. A machine for hardening the soft ground in depth, having elongated agitation shafts provided with agitation vanes at lower portions thereof and fastened rotatably to an elongated support cylinder, a rotary driving means to which the upper ends of said agitation shafts are connected, and a hardener supply unit adapted to discharge a hardener in the vicinity of said agitation vanes, comprising inclination measuring instruments provided on said support cylinder, and a direction control unit, which is provided on such a portion of said support cylinder that is close to said agitation vanes, and which has control plates operated by cylinders, whereby the direction, in which said machine is inserted into and withdrawn from the soft ground, can be controlled.

4,402,631

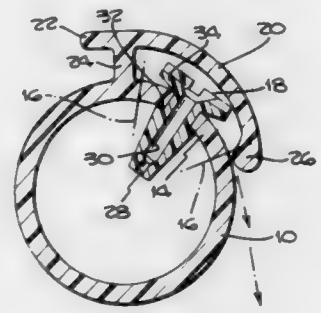
SUBSURFACE IRRIGATION

Yuval Rosenthal, 3328 Jodee Dr., West Covina, Calif. 91791

Filed Nov. 13, 1980, Ser. No. 206,635

Int. Cl.³ E02B *11/00*

U.S. Cl. 405—48 **1 Claim**



1. A subsurface irrigation system comprising:

an elongated flexible tubular conduit having a longitudinal outlet opening band,

a protective flap extending longitudinally of said conduit and having a longitudinal edge secured to the conduit at one side of said outlet opening band,

said flap overlying said outlet opening band,

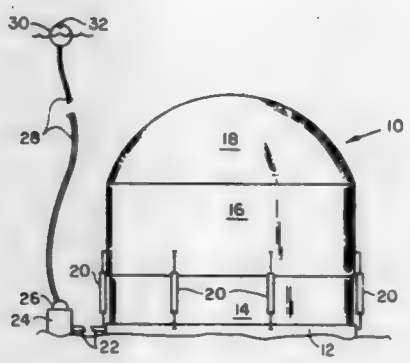
said flap having a free longitudinal edge opposite said secured edge and located at the other side of said outlet opening band from said secured longitudinal edge,

and said conduit, in an unrestrained position, being curved, and when straightened, causing the free longitudinal edge of the protective flap to be biased against the conduit.

4,402,632
SEABED SUPPORTED SUBMARINE PRESSURE TRANSFER STORAGE FACILITY FOR LIQUIFIED GASES

Sidney F. Cook, Corvallis, Oreg., assignor to Cook, Stolowitz & Frame, Visalia, Calif.

Filed Aug. 25, 1980, Ser. No. 180,607
Int. Cl.³ B65G 5/00; F16C 1/12
U.S. Cl. 405—210 7 Claims



1. A seabed supported submarine storage facility for cryogenically cooled and liquified gases, said facility operating entirely submerged at a fixed substantial depth offshore, said facility comprising:

a two-part sealed, slidably telescoping pressure transfer tank adapted for transferring pressure derived from ambient water at said depth to said liquified gases stored in said tank to promote and maintain the liquid state of said gases,

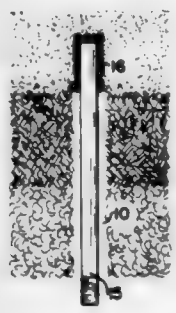
conduit means extending between said tank and the surface to facilitate loading and unloading of said tank,

pressure control means comprising a plurality of hydraulic rams commonly operative between said two parts of said tank for controlling the amount of actual pressure applied to said stored gases.

4,402,633
METHOD OF INSTALLING A ROCK BOLT

James M. Self, Taylor, S.C., assignor to Tanner Chemical Company, Greenville, S.C.

Filed Feb. 17, 1981, Ser. No. 235,015
Int. Cl.³ E21D 20/02
U.S. Cl. 405—261 5 Claims



1. A method for securing metal bolt in a bore hole which comprises:

A. Introducing into said bore hole the following ingredients:

(1) Unsaturated polyester resin syrup;

(2) Finely divided inorganic carbonate or bicarbonate;

(3) An aqueous dispersion of aluminum chlorhydroxide;

(4) A catalyst for initiating the cure of the said unsaturated polyester resin syrup;

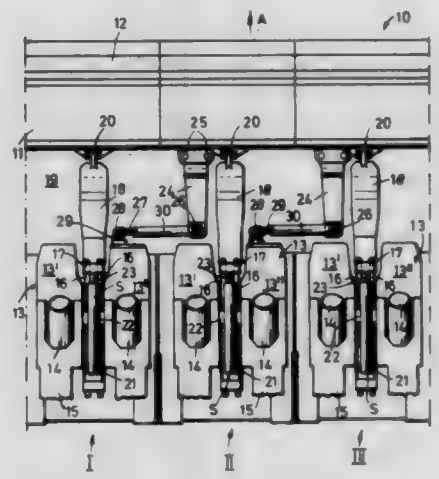
B. Engaging the said metal bolt with the said ingredients in an intimately mixed state before the said mixture of said ingredients hardens;

C. Retaining said metal bolt in fixed engagement with said mixture until the said mixture expands, hardens and secures said bolt.

4,402,634
MINERAL MINING INSTALLATION

Gerhard Merten, Lunen; Horst Schlusener, Werne; Kunibert Becker, Werl, and Herbert Beyer, Werne, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

Filed Jun. 4, 1981, Ser. No. 270,505
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024216
Int. Cl.³ E21D 15/44
U.S. Cl. 405—299 20 Claims

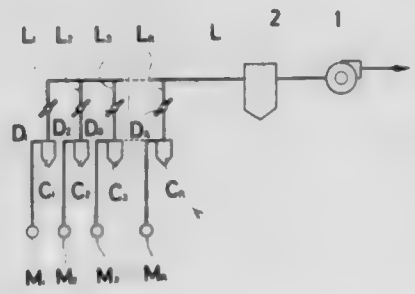


1. A mineral mining installation comprising a longwall structure and a plurality of roof support units positioned side-by-side along the goaf side of the longwall structure, the roof support units being positioned to define an access area between the longwall structure and the roof support units, and a hydraulic bracing ram acting on the longwall structure to brace the longwall structure longitudinally, the bracing ram being pivotally attached to a floor sill of one of the roof support units, wherein the hydraulic bracing ram is positioned at the goaf-side edge portion of the access area closely adjacent to the face-side edge of the floor sill of said one roof support unit, the hydraulic bracing ram lying substantially parallel to the longitudinal axis of the longwall structure, and wherein the bracing forces are transmitted to the longwall structure via a transverse arm attached to the bracing ram and to the longwall structure.

4,402,635
PNEUMATIC CONVEYOR SYSTEM

Toshio Maruo, Tokorozawa, Japan, assignor to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1981, Ser. No. 285,280
Claims priority, application Japan, Jul. 21, 1980, 55/99686; Jul. 21, 1980, 55/99687
Int. Cl.³ B65G 53/66
U.S. Cl. 406—14 16 Claims



1. In a pneumatic conveyor system comprising a plurality of substantially parallel transport pipes; and means for passing air through said transport pipes to transport particulate solids therethrough;

the improvement comprising:

air flow regulator means disposed in each of said transport

pipes for maintaining the airflow through each respective transport pipe substantially constant;

each of said transport pipes having a larger diameter portion, a smaller diameter portion and a converging portion connecting said larger and smaller diameter portions, said converging portion converging in the downstream direction of flow in said transport pipes; and

each of said airflow regulator means including:

a movable generally conical member movably mounted interior of the respective transport pipe in the vicinity of said converging portion so as to selectively cooperate with said converging portion to vary the airflow in said transport pipe, by varying the air flow area between said generally conical member and the inner walls of said converging portion;

a first member coupled to said generally conical member and movably mounted interior of said transport pipe;

a second member coupled to said first member for moving said first member relative to said transport pipe to thereby move said generally conical member relative to said converging portion of said transport pipe to set a given airflow in said transport pipe; and

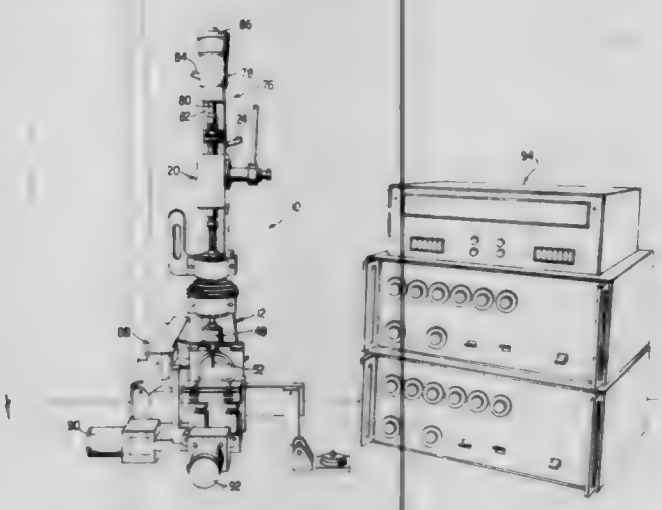
spring means coupling said generally conical member to said first member and biasing said generally conical member toward the upstream direction in said transport pipe such that said generally conical member, responsive to increased airflow in said transport pipe, is resiliently movable relative to said first member and against said biasing force in the downstream direction in said transport pipes to cooperate with said converging portion to reduce said airflow area in said transport pipe to thereby reduce the air flow in said transport pipe to thereby maintain said airflow in said transport pipe substantially constant.

4,402,636

CONVERTIBLE MACHINING CENTER

John A. Cupler, II, 10 Cupler Dr. - LaVale, Cumberland, Md. 21502

Filed Sep. 8, 1980, Ser. No. 184,679
Int. Cl.³ B23B 41/14
U.S. Cl. 408—14 **4 Claims**



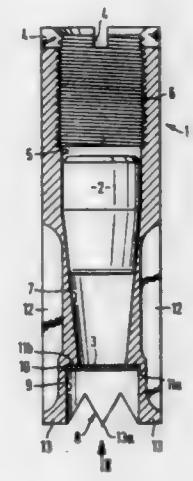
1. In a machining center selectively convertible between micro and macro machining operations including a tool infeed spindle mounted for reciprocal movement along a tool infeed axis and adapted to carry a tool at one end thereof; a first infeed station mounted on said center for infeeding said tool spindle during micro machining operations; a second infeed station mounted on said center and supporting an infeed driver assembly for infeeding said tool spindle during macro machining operations; the improvement wherein said infeed driver assembly includes an elongate infeed driver comprising a rack screw threaded along at least a portion of its length and engaging the other end of said tool infeed spindle, and an adjustable depth stop threaded on said rack and coaxial with said tool infeed spindle for infeeding the same along said axis to a preset depth setting.

4,402,637

SELF-DRILLING DOWEL

Hans-Dieter Seghezzi, Vaduz, Liechtenstein, and Paul Deutschenbaur, Unterpfaffenhofen, Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Nov. 10, 1980, Ser. No. 205,291
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1979, 2945663
Int. Cl.³ F16B 13/06
U.S. Cl. 411—31 **13 Claims**



1. Self-drilling dowel comprising an axially extending tubular member having a leading end and a trailing end with a bore extending therethrough between the leading end and the trailing end, said tubular member having a cutting head on the leading end thereof, said bore having an axially extending portion with the surface thereof being in converging relation in the direction toward the leading end, a spreader member insertable within said bore and engageable with the converging surface thereof for effecting the radial expansion of said tubular member, and means for forming a closure extending transversely across said bore adjacent the leading end thereof so that an axially extending part of said bore extends between the leading end and the closure formed by said means, wherein the improvement comprises that said means comprise a closure member separate from said tubular member and said closure member being displaceably secured into the surface of said bore at a location spaced axially from the leading end of said tubular member and said closure member being axially displaceable from the location at which it is secured within said bore toward the leading end by said spreader member during the radial expansion of said tubular member.

4,402,638

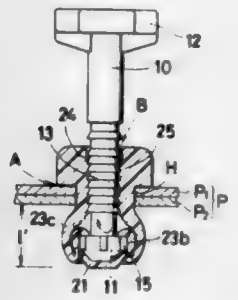
BLIND RIVET

Toshie Tanaka, Machida, Japan, assignor to Nifco Inc., Tokyo, Japan

Continuation of Ser. No. 12,981, Feb. 21, 1979, abandoned. This application Jul. 17, 1981, Ser. No. 284,270
Claims priority, application Japan, Feb. 24, 1978, 53-22294[U]
Int. Cl.³ F16B 13/04
U.S. Cl. 411—34 **4 Claims**

1. A blind rivet made of synthetic resin, which comprises a shank provided with a series of engaging teeth at the outer periphery thereof and with an expanded lower end and a laterally extending pulling head at the opposite upper end, an insert molded continuous rivet body disposed around said shank provided with a resilient continuous enclosing wall surface having a substantially uniform external diameter and in the interior thereof a series of complimentary lock steps adapted to be intimately meshed with said engaging teeth on the shank, a flange-shaped head portion extending laterally from said body adjacent said pulling head and serving to cover one open edge

of a complimentary fitting hole bored in a panel subjected to riveting, said rivet body including a lower portion being inseparably joined in a sealing manner with said expanded lower end of the shank, said lower portion having shoulder means substantially larger in diameter than the diameter of the axially adjacent portion of said shank but smaller than the outer diameter of said rivet body and at least three projections extending radially outwardly from said lower portion a distance substantially equal to the outer diameter of said rivet for centering said lower portion during its insert molding within said rivet body thereby centralizing the positionment of said lower portion relative to said rivet body and insuring a generally uniform wall thickness in said continuous enclosing wall, whereby a simultaneous action exerted to press said head portion of the rivet body down against the panel and to pull the shank upwardly relative to the panel results in a substantially uniform



force being exerted against the entire circumference of the continuous rivet body wall which causes the enclosing wall surface of the rivet body to be inverted within itself due to its resilience to be thereby folded and doubled up and consequently force the continuous enclosing wall surface to bulge out and catch firm hold of the lower edge of the fitting hole to form a seal about the periphery of said hole, said lower portion of said shank being capable of being drawn axially upwardly within said rivet body until it is substantially totally surrounded by said doubled up wall, whereby said complimentary fitting hole is substantially sealed by said blind rivet sealing around the exterior thereof with said hole and said rivet being sealed internally, and disengagement of said blind rivet when said rivet is in a sealing condition relative to said fitting hole is precluded by the engagement of at least one of said engaging teeth with at least one of said locking steps.

4,402,639

ANCHOR BOLT

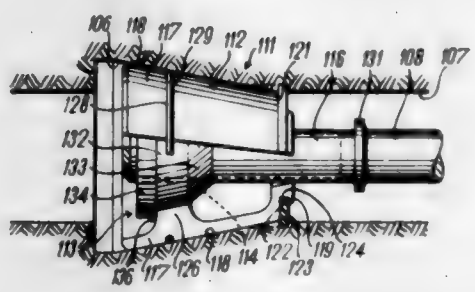
Jürgen Kessler, Stuttgart, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Mar. 12, 1981, Ser. No. 242,915

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010440

Int. Cl.³ F16B *13/04*

U.S. Cl. 411—51 **10 Claims**



1. An anchor bolt suitable for use in a relatively deep drilled hole having a conical enlargement near its base, said bolt comprising an elongated shank, and an anchor which includes a sleeve having radially expandable segments which are held together at one end of said sleeve and a cone element for radially expanding the sleeve segments, characterized in that the segments (117) of the sleeve (112) have over their length extending in the elongated direction of said shank an outside radius which changes in accordance with the conical enlargement (106), each said segment having a substantially smooth radially outer periphery for the length thereof, an annular elastic disc (123) encircling the smaller radius ends of said sleeve segments and securing said sleeve segments together, said elastic disk having a radially outer periphery projecting at least partially beyond the radial periphery of the smaller diameter end of said sleeve and adapted to have a maximum radial diameter greater than the smaller diameter end of the conical enlargement formed in the deep drilled hole.

4,402,640

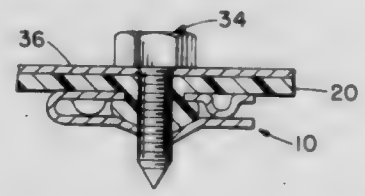
CLINCH NUT FOR PLASTIC PANELS

Francis C. Peterson, St. Charles, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 17, 1980, Ser. No. 197,844

Int. Cl.³ F16B *37/04*

U.S. Cl. 411—112 **7 Claims**



1. A sheet metal clinch nut for use with a plastic panel and a threaded fastener said clinch nut comprising a first generally planar arm member positionable adjacent the plastic panel; a first aperture in said generally planar arm member for receiving an extruded, unpunctured portion of said plastic panel; means for engaging the extruded plastic portion to prevent rotational and axial displacement of the clinch nut relative to said plastic panel; a substantially convex section displaced outwardly from the generally planar arm member to form an extrusion-receiving recess, said section adapted to direct the flow of extruded plastic of said panel into engagement with said means, said section having a second aperture adapted to receive and threadingly engage the shank of the threaded fastener after a leading end of said fastener has punctured the plastic extrusion and passed into said second aperture.

4,402,641

SELF CENTERING FASTENER

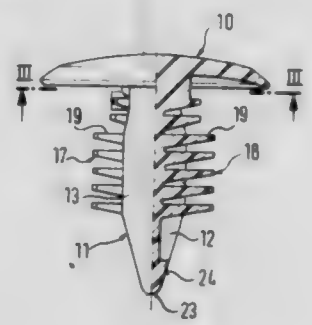
Heino Arff, Norderstedt, Fed. Rep. of Germany, assignor to ITW Ateco GmbH, Norderstedt, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 238,718

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1980, 3014745

Int. Cl.³ F16B *13/02*

U.S. Cl. 411—510 **8 Claims**



1. A one-piece fastening element of synthetic material comprising a head and a relatively rigid shank adapted to be inserted in an aperture in a workpiece, said shank having a longitudinal axis and including a shank portion having a pair of transversely extending webs wherein each web has marginal edges, and a longitudinally extending web extending between

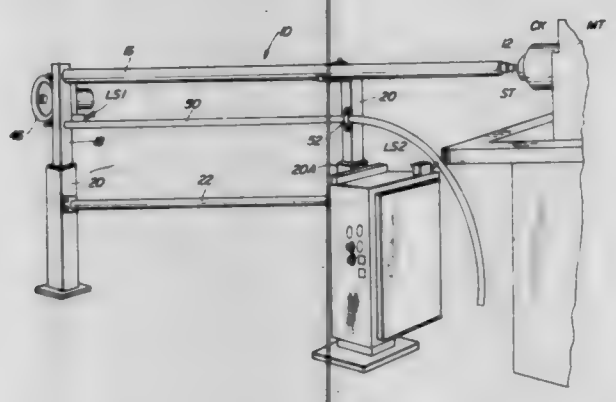
and interconnecting said pair of webs, at least two axial rows of flexible lamellar radial ribs formed integrally with said shank, circumferentially offset and including a plurality of said ribs in axially spaced arrangement, each row extending radially outwardly from said longitudinal web and from between respective marginal edges of said pair of webs, whereby the marginal edges of said pair of webs are adapted to generally centrally locate the longitudinal axis of said shank relative to the center of said aperture and said ribs are adapted to engage said workpiece about the periphery of said aperture to secure said fastening element relative thereto.

4,402,642

MACHINE TOOL BAR FEED

Adolph V. Klancnik, Glenview, and Kenneth A. Klancnik, Palatine, both of Ill., assignors to Universal Automatic Corporation, Des Plaines, Ill.

Filed Jan. 12, 1981, Ser. No. 224,463
Int. Cl.³ B23Q 5/22
U.S. Cl. 414—18 **7 Claims**



1. Bar feed mechanism for feeding the leading end of an elongated bar of stock metal to a machine tool comprising a bar guide for supporting the bar at one side of the machine tool, a ball chain feed wheel having pockets to receive a ball chain the leading end of which has fixed thereto a rigid pusher for pushing the bar toward the machine tool when the wheel is rotated in a bar feed direction, a ball chain receiver for storing a length of the ball chain which trails the ball chain feed wheel, in which the feed wheel is a sprocket and the pockets therein each have a radius substantially equal to that of the chain balls, the balls being drilled to receive a cable on which the balls are threaded to be in contact with one another when the cable is straight with the ball diameter across the drill hole being less than that of the undrilled diameter, and said pusher being attached at one end to the cable by a lost motion connection including a spring means which allows the cable in effect to extend to accommodate the balls to the wheel pockets.

4,402,643

CATALYST LOADER

Irvin V. Lytton, Dickinson, Tex., and Billy B. Burgin, Starks, La., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 18, 1981, Ser. No. 235,452
Int. Cl.³ B65G 27/16; B01J 2/18
U.S. Cl. 414—160 **19 Claims**

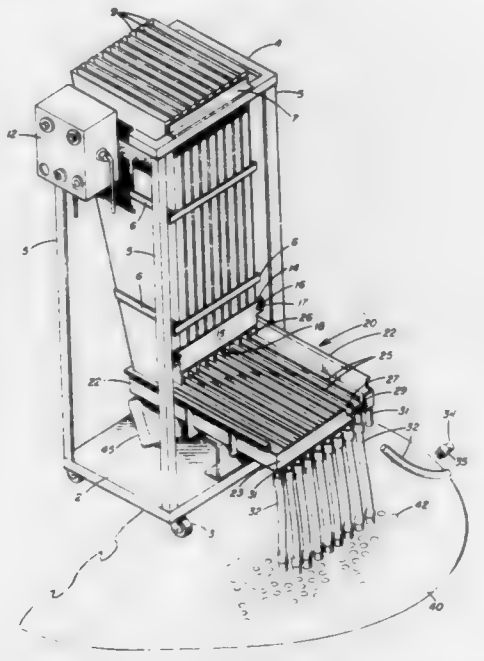
1. Apparatus for charging granular catalyst into a multiplicity of reactor tubes, comprising, in combination:

(a) a plurality of contiguously arranged storage hoppers for containing the granular catalyst, each such hopper having a capacity to hold at least a predetermined quantity of catalyst;

(b) a substantially horizontal vibratory feeder tray having side walls, a back wall, and front wall disposed below said hoppers, said feeder tray having a plurality of V-shaped troughs equal in number to the number of storage hoppers, the discharge end of each such hopper being proximate to and aligned with but spaced from the trough disposed therebelow, each trough having a discharge opening at its forward end adjacent to the front wall of the feeder tray for delivering the catalyst;

(c) discharge spouts attached to the bottom of the feeder tray which openly communicate with the discharge openings in the feeder tray;

(d) flexible, elongated tubular conduit means attached to each discharge spout;



(e) nozzle means attached to the discharge end of each of the flexible tubular conduit means and adapted to being inserted into the top of the reactor tube; and

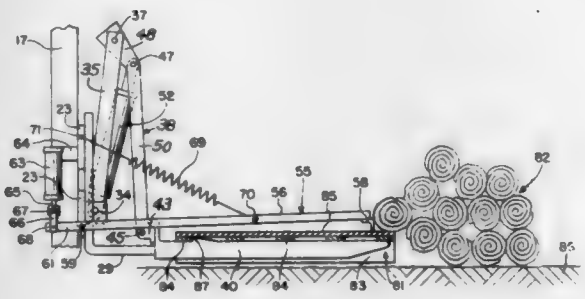
(f) vibratory means mechanically connected to said feeder tray for vibrating said tray, thereby to convey the granular catalyst along the troughs to the discharge openings therein.

4,402,644

POWER OPERATED FORK EXTENSIONS AND PALLET UNLOADING ATTACHMENT FOR A FORK LIFT TRUCK

John Barchard, Crystal Lake, Ill., assignor to Spyder Sales & Service, Inc., Needville, Tex.

Division of Ser. No. 240,121, Mar. 3, 1981. This application Sep. 17, 1982, Ser. No. 419,557
Int. Cl.³ B66F 9/19
U.S. Cl. 414—417 **5 Claims**



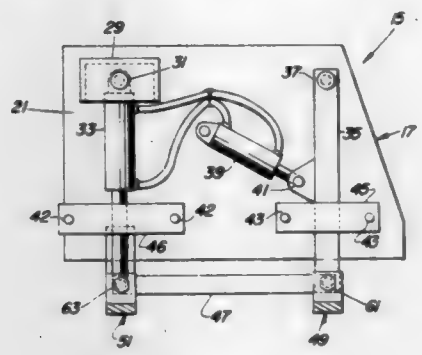
1. In a fork lift truck having a pair of laterally spaced apart forwardly extending forks mounted on a carriage, the carriage movable upwardly and downwardly on a generally vertically disposed mast, sleeve extensions for each of the pair of forks, means for power moving said sleeve extensions forwardly and/or rearwardly on said forks, means on the tops of said sleeve extensions for interlocking with the cross slat of a pallet, means mounted on said carriage and movable from an inoperative position to an operative position engaging and abutting the rearward end of a pallet load when the sleeve extensions are at their maximum forward position and whereby when the sleeve extensions and the interlocked pallet are retracted the load is stripped from the pallet.

4,402,645

LOAD SUPPORT ASSEMBLY

Ross T. Broderick, Dubuque, Iowa, and Dennis L. Munns, Lancaster, Wis., assignors to Deere & Company, Moline, Ill.

Filed Mar. 30, 1981, Ser. No. 248,156
Int. Cl.[3] B66F 9/12
U.S. Cl. 414—685 3 Claims



1. In combination with a vehicle having vertically displaceable lift arms, a first plate vertically oriented and secured to and movable with said lift arms such that said first plate maintains a vertical orientation upon displacement of said lift arms, a second plate vertically disposed parallel to and opposite said first plate and rotatably mounted to said first plate such that said second plate can rotate about its geometric center, means for rotating said second relative to said first plate, a load support assembly comprising: a first link arm vertically disposed and pivotally mounted to said second plate at the upper end, a second link arm parallel to and opposite to said first link arm pivotally mounted to said second plate at the upper end, a linking member pivotally mounted to said first and second linking arm to maintain said linking arms in parallel alignment; a hydraulic cylinder secured to said second plate at one end and one of said linking arms at the other end to impart side motion to said linking arm upon activation of said cylinder.

2. In combination with a vehicle having vertically displaceable lift arms, a load support assembly comprising: a base plate pivotally mounted to said lift arms such that said base plate maintains a generally vertical orientation upon displacement of said lift arms; a linking arm pivotally mounted to said base plate at one end and extending generally vertically; a first lift fork pivotally mounted at one end to said other end of said linking arm and having a general extension outwardly from and perpendicular to said base plate and said linking arm; a second lift fork; a member pivotally mounted to said first lift forks such that said lift forks maintain a generally opposite and parallel alignment; first means for selectively adjusting the relative vertical position of said second lift fork with respect to said first lift fork and for selectively adjusting the relative longitudinal position of said lift forks relative to said base plate.

4,402,646

STABILIZATION SYSTEM FOR A PANTOGRAPHIC DATA ENTRY DEVICE

Jean Le Rouzo, Paris, France, assignor to Regie Nationale des Usines Renault, Billancourt-Boulogne, France

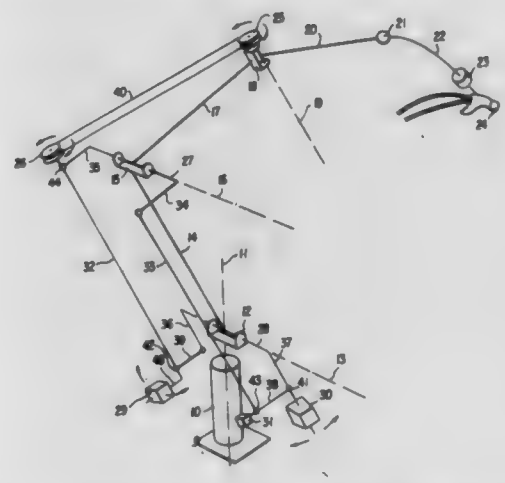
Filed Feb. 2, 1981, Ser. No. 230,676
Claims priority, application France, Feb. 5, 1980, 80 02428
Int. Cl.[3] B25J 9/00
U.S. Cl. 414—719 11 Claims

1. A stabilization system for an apprentice pantographic daty entry device having at least six axes of rotation, said apprentice pantographic data entry device including a first vertical axis, a second horizontal axis, a first arm pivoted at one end thereof in a vertical plane, said one end of said first arm being located at the point of intersection of said first and second axes, a third horizontal axis at the other end of said first arm, a second arm pivoted in said vertical plane at one end thereof, said second arm being pivoted about the point of intersection of said first arm and said third axis,

a fourth axis at the other end of said second arm;

a third arm pivoted in a plane perpendicular to said vertical plane at one end thereof, said third arm being pivoted about the end of intersection of said second arm and said fourth axis, and a polyarticulated aspirator and a gun connected to the other end of said third arm, said stabilization system comprising:

at least one partial parallelogram composed of pivoted linkages, said parallelogram being parallel to a plane defined by said first and second arms;



a plurality of counterweights attached to said pivoted linkages;

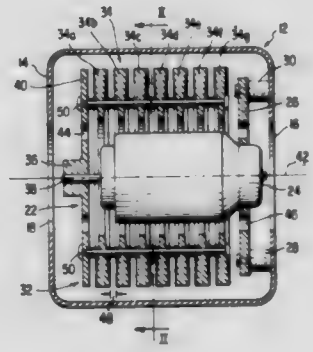
angle transmitting means incorporating said pivoted linkages and adapted to transmit the rotation of said third arm about said fourth axis to a first one of said counterweights, wherein said angle transmitting means further includes pulley means transmitting the rotation of said third arm about said fourth axis to said first one of said couterweights rotatable about a first one of said linkages which is parallel to said first arm.

4,402,647

VISCOSITY IMPELLER

Udo E. Effenberger, 541 W. Park Ave., Tallahassee, Fla. 32301

Filed Dec. 6, 1979, Ser. No. 100,994
Int. Cl.[3] F01D 1/36
U.S. Cl. 415—90 15 Claims



1. In an apparatus for producing an accelerated fluid flow including a housing defining a fluid flow path and having a fluid inlet and a fluid outlet, a motor, and an impeller, said impeller having a hub coupled to said motor for rotation thereby and a plurality of axisymmetrical, coaxially spaced, annular disks, fixedly mounted on said hub, and disposed in said fluid flow path with the interior openings of said plurality of disks forming a fluid inlet channel for the impeller, each of said disks having a pair of side surfaces for exerting shear and centrifugal forces on the fluid proximate said surfaces and flowing between said disks during rotation of said impeller; the improvement wherein: the fluid to be accelerated is a low kinematic viscosity fluid; said side surfaces are smooth; and the cross-sectional profiles of said disks are such that the spacing

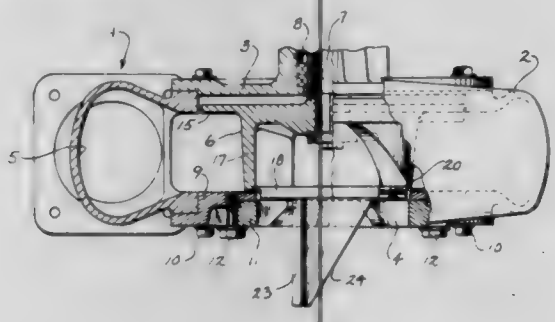
between facing ones of said side surfaces of adjacent disks decreases with increasing distance from the axis of rotation of said impeller so as to maintain the radial flow area between facing side surfaces substantially constant with increasing radial distance from said axis of rotation.

4,402,648

CHOPPER PUMP

Stephen L. Kretschmer, Elk Grove Village, Ill., assignor to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Filed Aug. 31, 1981, Ser. No. 297,855
Int. Cl.³ F04D *29/70*
U.S. Cl. 415—121 B **7 Claims**



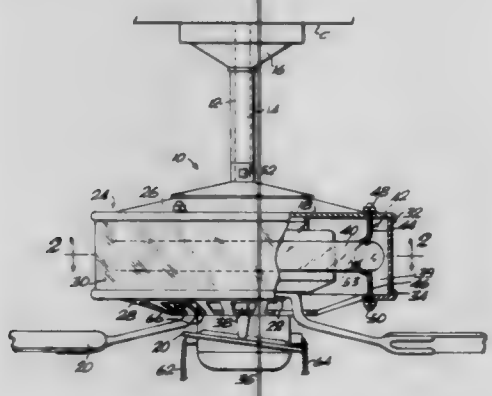
1. A chopper pump for chopping and pumping a slurry containing particulate and fibrous materials, comprising a housing defining a pumping chamber and having an axial inlet opening and a tangential outlet opening, a rotatable impeller mounted within the pumping chamber and having a vane extending toward said inlet, said vane being disposed in a helical relationship to the axis of rotation of the impeller, a fin carried by the impeller and extending outwardly through said inlet opening, with the outer portion of said fin being disposed on the exterior of said housing, said fin having a diagonal cutting edge swept back in the direction of rotation of the impeller, said fin being a portion of a cylinder and disposed concentrically with said axis of rotation, said fin disposed to cut fibrous material in the slurry.

4,402,649

CEILING FAN WITH SELF-CONTAINED LIGHTING

Charles R. Laurel, 4482 Windjammer La., Fort Myers, Fla. 33901

Filed Jul. 29, 1981, Ser. No. 288,048
Int. Cl.³ F04D *29/64*
U.S. Cl. 416—5 **11 Claims**



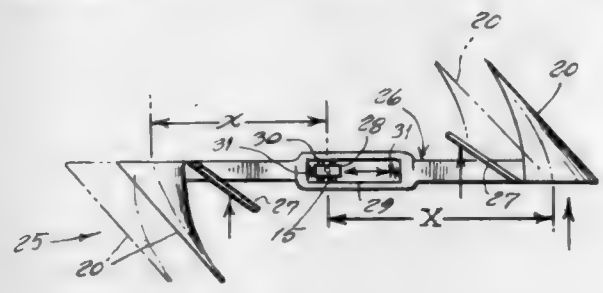
1. A ceiling fan including a motor and control assembly, a plurality of fan blades in fixed attachment to a rotatably driven portion of the motor, and extending radially outwardly therefrom in a spaced relation, a generally vertical mounting tube having an upper end for mounting relative to a ceiling in a conventional manner, and a lower end carrying said motor assembly control assembly and fan blades, a housing disposed about said motor, defining an annular chamber portion outwardly of said motor, and including a lower plate providing a central opening to accommodate said fixed attachment, an upper plate, centrally fixed relative to a lower end portion of said mounting tube and being spaced a predetermined distance from said lower plate, a light transmitting panel disposed in a spanning relation between and about outer peripheries of said top and bottom plates, and means to support a conventional annular fluorescent light tube in said annular chamber, and means to secure said upper and lower plates, and light transmitting panel in assembly.

4,402,650

VERTICAL AXIS ROTOR

Jerry R. Jones, 4445 Tomlinson, Riverside, Calif. 92503

Filed Jul. 10, 1981, Ser. No. 282,271
Int. Cl.³ F03D *3/06*
U.S. Cl. 416—87 **1 Claim**



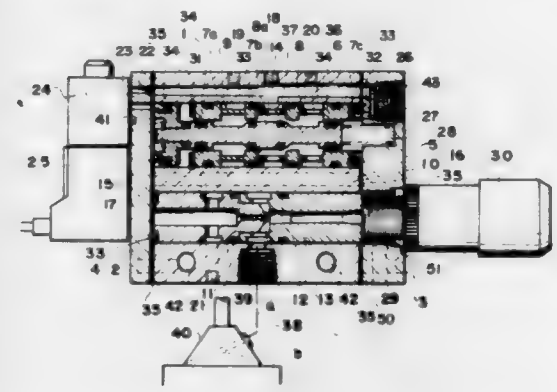
1. A vertical axis rotor, comprising, in combination, a horizontal propeller rotating upon a vertical shaft of a generator, and oppositely facing, stiff, hollow cones on the opposite ends of said propeller, said cones being arcuately curved between an open widemouth end thereof, and a closed, tapering opposite end thereof, and means for shifting said propeller back and forth longitudinally, once during each rotation whereby when the open-mouthed end of the cone faces the wind it is located along a longer pivoting arm and the tapered end of the other cone not facing the wind is on a shorter pivoting arm for greater efficiency, and an inclined vane on each end of said arm, so as to cause the blowing wind to slide the arm horizontally, at each one half rotation of the arm, into the direction of the cone which is catching the wind, and thus increase its distance from the pivot, for increased leverage force.

4,402,651

VACUUM GENERATING DEVICE

Yoji Ise, c/o Kabushiki Kaisha Myotolu Seisakusho, 6-18, Shimomaruko 2-Chome, Ota-Ku, Tokyo, Japan

Filed Mar. 17, 1981, Ser. No. 244,614
Claims priority, application Japan, Mar. 28, 1980, 55-41953[U]
Int. Cl.³ F16K *11/07*
U.S. Cl. 417—182 **13 Claims**



1. A valve assembly comprising a body, a bore formed in said body having an inlet adapted for connection to a flow of air under pressure and a pair of spaced outlets each offset axially on opposite sides of said inlet, a spool located within said bore, a sleeve surrounding said spool, and means for moving said spool relative to said sleeve between opposed axial

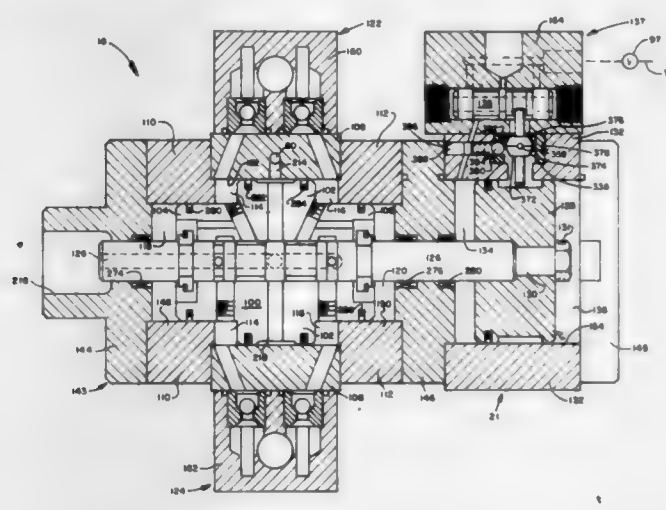
positions, said sleeve comprising a central section having a lateral port adapted to register with the inlet to said bore, and a pair of substantially identical end sections at least one of which is separate from said central section, one of said end sections having a lateral port permitting through flow, the other being blanked so as to prevent through flow, said end sections being interchangeable about said spool to selectively arrange said one end section having the radial port in registry with a selected one of the outlet ports, and the other end section in registry with the other outlet port said spool and each of said end sections having cooperating seal means to selectively permit or block flow from said central section to said selected outlet on corresponding axial positioning of said spool.

4,402,652

LIQUID MOTOR AND PUMP WITH A STROKE REGULATING GAS MOTOR

Charles R. Gerlach, 639 W. Rhapsody, San Antonio, Tex. 78216, and Rodney T. Heath, 4901 East Main, Farmington, N. Mex. 87401

Filed Jun. 25, 1981, Ser. No. 277,266
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—404 **9 Claims**



1. A combined fluid motor-fluid pump of the piston type and a gas motor controller for the liquid motor comprising:

(a) a two stage, double acting piston means providing two separate effective areas at each end and freely reciprocable in a cylinder means, one stage of said piston means providing a first pair of opposite central piston areas and the other stage providing a second pair of opposite outer piston areas on opposite ends of said piston means;

(b) piston rod-valve means mounted centrally of and reciprocable through said piston means and having an extended portion, said piston means being reciprocably mounted on said piston rod-valve means;

(c) first passage means for incoming pressurized fluid in said cylinder means and said piston means and said piston rod-valve means arranged to alternately inject pressurized fluid into said central piston areas and alternately exhaust fluid from the opposite area for causing reciprocation of said piston means;

(d) second passage means for fluid to be pumped connecting through one-way valves to said second piston areas of said piston means alternately drawing in fluid to be pumped into one of said second piston areas and forcing fluid in the opposite piston area out past one-way valves for pumping fluid; and

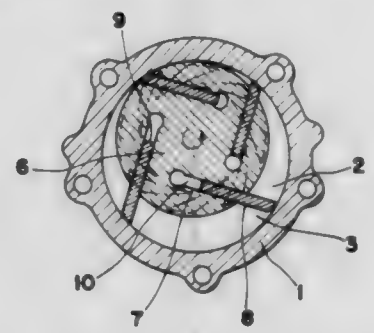
(e) gas operated motor means including a double acting gas powered piston means secured to said extended portion for reciprocating said piston rod-valve means within said two stage piston means, and including speed control means for regulating the rate of reciprocation of said two stage piston means.

4,402,653

ROTARY COMPRESSOR

Teruo Maruyama, Neyagawa; Masao Hara, Kyoto, and Yoshiyuki Morikawa, Otsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 27, 1981, Ser. No. 228,805
Claims priority, application Japan, Jan. 29, 1980, 55-9844
Int. Cl.³ F04C *29/02*
U.S. Cl. 418—76 **20 Claims**



1. In a rotary compressor which comprises a rotor having end faces at opposite ends thereof, a hollow cylinder, end plates having opposite end surfaces respectively facing and closing opposite ends of the cylinder, the rotor being rotatably housed within the cylinder with its end faces in confronting spaced relation to the end surfaces of respective ones of the end plates to form respective gaps therebetween, one of one of the end surfaces and the corresponding facing end faces of the rotor having a first generally ring-shaped oil supply groove defined therein for containing oil and means for providing fluid communication between the first oil supply groove and an oil tank, the improvement comprising:

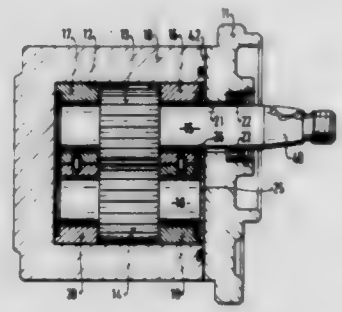
means, including a first arrangement of first patterned shallow grooves formed in at least one of the end surfaces or end faces at the end of the rotor having the first oil supply groove and located radially exteriorly of the first oil supply groove so as to encircle the first oil supply groove, for producing a hydrodynamic effect which produces a hydrodynamic seal between said one of said end surfaces and the corresponding end face of said rotor to maintain a uniform gap therebetween, when the rotor is rotated.

4,402,654

FLUID-OPERATED GEAR MACHINE

Wilhelm Dworak, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 241,741
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009570
Int. Cl.³ F04C *15/00*; F01C *19/08*
U.S. Cl. 418—131 **10 Claims**



1. A fluid-operated gear machine, comprising a housing having a chamber; a drive shaft positioned in said chamber and having a portion extending outwardly of said housing; a pair of meshing gears located in said chamber, one of said gears being mounted on said drive shaft; bearing means surrouding said drive shaft for supporting said shaft within said housing, said bearing means being positioned within said chamber with a radial play; a cover sealingly closing said housing and having a bore through which said drive shaft passes, said cover having

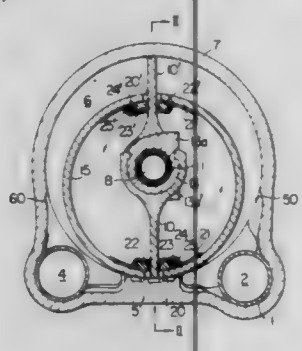
a side facing toward said bearing means; and means for aligning said drive shaft to said cover, said aligning means including a centering plate disposed between said cover and said bearing means and connected to said side and having an opening receiving and centering said drive shaft when said cover is placed in a position in which it sealingly closes said housing.

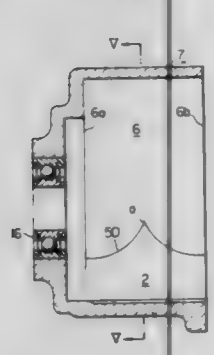
4,402,655

VANE PUMP WITH SYMMETRICAL INCLINED FLUID CONFINEMENT INITIATING LINE

Akio Nara; Hideaki Susaya, both of Okazaki; Shigeru Takagi, Anjo, and Takao Mitsui, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 25, 1980, Ser. No. 172,195
Claims priority, application Japan, Jul. 30, 1979, 54-96984
Int. Cl.³ F04C *18/00, 29/00*
U.S. Cl. 418—137 **9 Claims**





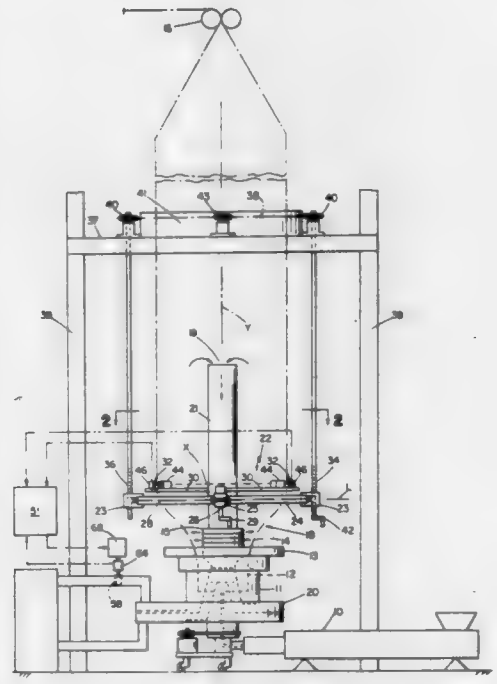
1. A vane type pump comprising a housing formed with an inlet chamber and an outlet chamber and having a cylinder portion, a cylindrical rotor mounted for eccentric rotation in said cylinder portion, and a plurality of vanes mounted for concentric rotation in said cylinder portion, said rotor being formed with slots through which said vanes extend into a space defined between the inner peripheral wall of said cylinder portion and the outer peripheral wall of said rotor so as to divide said space to define a working chamber variable in volume for pumping effect, said inlet chamber being associated with said cylinder portion to define a fluid confinement initiating line at which said working chamber begins to be isolated from said inlet chamber so as to initiate confining of a fluid in said working chamber when the forward end of one of said vanes passes said line, said fluid confinement initiating line being in a symmetrical configuration such that said line is generally symmetrical with respect to the widthwise center line of said cylinder portion and at least portions of said line are inclined with respect to the longitudinal axis of said cylinder portion beginning at opposite ends of said cylinder portion, and said fluid confinement initiating line being shaped such that the rate of change in the area of an opening defined by the fluid confinement initiating line and the forward end of one of said vanes moving therealong becomes smaller as said one vane approaches completion of closing of said opening.

4,402,656

CONTROL OF TUBULAR FILM SIZE

Charles M. Schott, Jr., Atkinson, N.H., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.

Continuation-in-part of Ser. No. 964,983, Nov. 30, 1978, abandoned. This application Apr. 3, 1981, Ser. No. 250,617
Int. Cl.³ B29D *23/04*
U.S. Cl. 425—140 **12 Claims**



1. Control apparatus for maintaining a desired circumference of a longitudinally extending thin-walled expanded plastic tube extruded from an annular die, comprising:

internal cooling air supply means connected to the interior of said tube for supplying a continuous flow of cooling air to said interior;

exhaust means for exhausting warmed air from said interior;

deviation sensing means for sensing the deviation in position of two or more circumferentially-spaced portions of the wall of said tube, said deviation sensing means including

two or more energy-beam sensors positioned so as not to make physical contact with said wall and

means for providing a variable electrical output for each said wall portion that is directly dependent upon the deviation in position of said portion, over a range of positions, from a predetermined set point, said output having a multiplicity of different output levels, each said level corresponding to a different said deviation in position;

control means for processing said electrical outputs to compute therefrom a difference signal representative of the change of the circumference of the tube from said desired circumference; and

said deviation sensing means and said control means including means for making said difference signal insensitive to transverse sway of said tube, said sway leaving the tube circumference unchanged,

valve means responsive to said difference signal for adjusting the open position of said valve means for controlling said continuous flow of air to the interior of said tube to reduce said difference signal, thereby to restore the circumference of the tube toward the desired value,

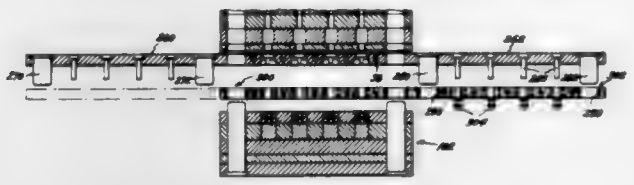
whereby the size of the tube can be precisely controlled without physical contact with the tube and in the presence of the tube sway.

4,402,657

SHUTTLE PLATE IMPROVEMENT FOR A MOLD FOR A LIQUID INJECTION MOLDING APPARATUS

Aldo A. Laghi, Saratoga, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Jun. 10, 1981, Ser. No. 272,424
Int. Cl.[3] B29F *1/14*
U.S. Cl. 425—183 18 Claims



1. A mold apparatus for a liquid injection molding apparatus for forming parts from a liquid molding composition comprising:

a frame having a forward end and a rear end;

mold plate means mounted on said frame and having a front end and a rear end;

support means mounted on said mold plate means and having a front end and support post at the rear end;

a conduit for liquid molding composition slidably mounted on the forward end of said frame and on the forward end of said mold frame means;

a first plate means having passage means therein for the passage of liquid molding composition and fixedly mounted on the end of said conduit and adapted to slide within said support post means and within mold frame means and located adjacent said forward end of said frame;

nozzle means located at the end of said passage means in said first plate means adjacent the rear end of said mold frame means away from said conduit means, said nozzle means including closing pin means slidably mounted in said mold frame means and adapted to open and close a nozzle opening means in said nozzle means;

shuttle plate means adjacent to said nozzle means which forms part of the mold cavity, said shuttle plate means adapted to automatically take a finished molded part from the mold and pass it out of the mold apparatus by providing a knock-out plate means located on both sides of said nozzle means, in the same plane as said nozzle means and substantially external to the support post means, said knock-out plate means being integral with the nozzle plate and comprising first and second knock-out plates containing knock-out pins which are adapted to fit in the mold cavities in said moving shuttle plate means so as to knock out the molded parts in the mold cavities in said moving shuttle plate means; and

mold cavity means slidably mounted on the rear end of said support part means and adapted to move toward and away from said shuttle plate means.

4,402,658

THERMOPLASTIC PIPE EXTRUSION DIE

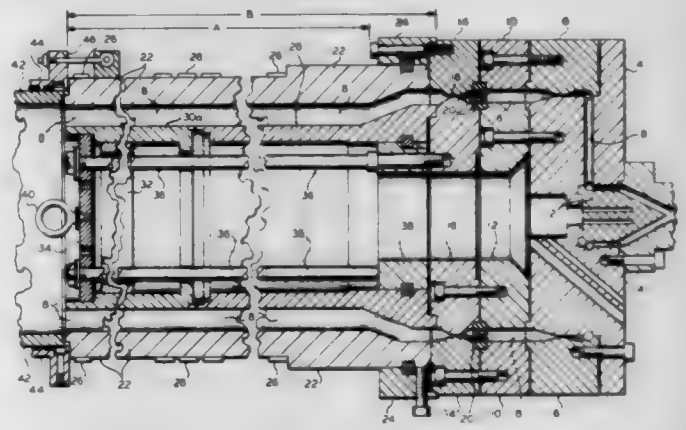
Olaf E. Larsen, Dallas, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 21, 1981, Ser. No. 304,234
Int. Cl.[3] B29D *23/00*
U.S. Cl. 425—192 R 15 Claims

1. In a die assembly for the extrusion of thermoplastic pipe from a plastic exhibiting an appreciable amount of memory and thus having an elongated, heated portion defined by an elongated outer bushing ring having an inside diameter approximately equal to the nominal outside diameter of the pipe to be produced and an inner mandrel ring having a length substantially equal to the length of said bushing ring and an outside diameter smaller than said inside diameter of said bushing ring to form an annular extrusion channel therebetween; the improvement, comprising:

(a) said bushing ring being a single bushing ring having an essentially constant inside diameter throughout substantially its entire length constituting the downstream portion thereof; and

(b) said mandrel ring being formed of two sections comprising (1) a longer upstream section fixedly mounted in said die and having an essentially constant outside diameter throughout substantially its entire length constituting the downstream portion thereof, which is opposite the constant inside diameter portion of said bushing ring and (2) at least one replacable, shorter, downstream section removably mounted in said die as an extension of said upstream mandrel section having an essentially constant outside diameter throughout substantially its entire length constituting the downstream portion thereof and differing from said outside diameter of said upstream mandrel section;



(c) the length of the constant inside diameter portion of said bushing ring and thus the constant outside diameter portion of said upstream section of said mandrel ring plus the entire length of said downstream section of said mandrel ring defining the land length of said die; and

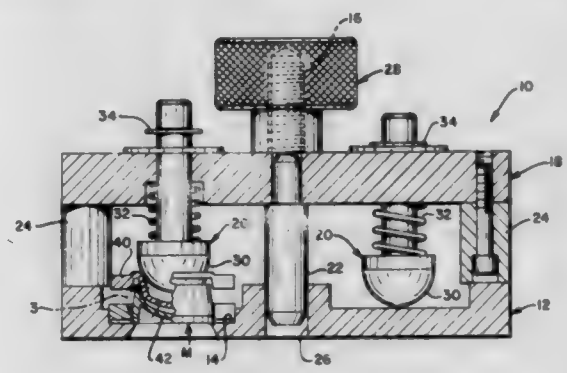
(d) the difference between said inside diameter of said bushing ring and said outside diameter of said downstream portion of said mandrel ring defining the die opening of the die.

4,402,659

MOLD CLAMPING FIXTURE

Arnold Greenbaum, Framingham, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Dec. 30, 1981, Ser. No. 335,790
Int. Cl.[3] B29D *11/00*
U.S. Cl. 425—233 8 Claims



1. In a fixture for clamping together two halves of a filled lens casting mold having annular mating surfaces, said mold having an upper mold half having a circular cupped surface, the improvement comprising:

a base plate having a mold receiving recess;

a clamping plate attachable to said base plate;

a spring loaded mold engaging plunger depending from said

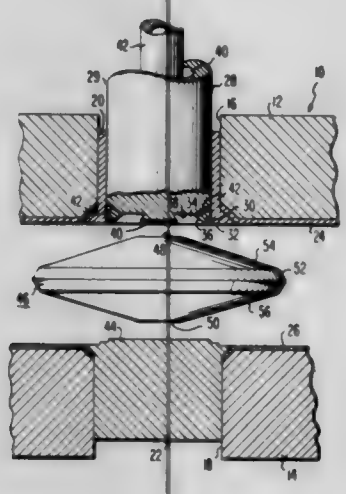
clamping plate, said plunger being substantially aligned with said recess upon application of said clamping plate to said base plate, there being a spherically curved mold engaging surface at the terminus of said plunger for making contact with said circulary cupped surface of said upper mold half of a mold placed in said recess and for clamping said mold under the force of said spring loading, said mold clamping force being applied uniformly about said annular mating surfaces of said mold as a result of the contact of said spherical plunger terminus with said upper mold half.

4,402,660

APPARATUS FOR PRODUCING DISC RECORDS WITH A MOLDED-IN CENTER HOLE

John J. Prusak, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 15, 1982, Ser. No. 398,693
Int. Cl.³ B29D *17/00*
U.S. Cl. 425—290 **7 Claims**



1. In an apparatus for molding a recorded disc from a mold material which apparatus includes a pair of mold plates adapted to form therebetween a disc mold cavity, a center hole forming pin movable in one of the mold plates toward and away from the other mold plate and a center plate in the other mold plate and aligned with the center hole forming pin, the center hole forming pin having an end surface which mates with a surface of the center plate to form the center hole in the disc, the improvement comprising,

the center hole forming pin having means therethrough for allowing the flow of some of the mold material from in front of the end surface through the center hole forming pin back into the mold cavity as the center hole forming pin moves through the mold material to form the center hole.

4,402,661

LIQUID INJECTION MOLDING MACHINE FOR UTILIZING SILICONE COMPOSITIONS

Aldo A. Laghi, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 183,620, Sep. 2, 1980, abandoned. This application Sep. 22, 1982, Ser. No. 421,690
Int. Cl.³ B29G *3/00*
U.S. Cl. 425—543 **20 Claims**

1. A plunger injection molding machine for utilizing a liquid composition comprising,

a frame,

barrel means mounted on said frame, with a rear opening and a forward nozzle said forward nozzle located so as to force a liquid composition therethrough under great pressure,

plunger means mounted on said frame such that said plunger means moves from the said rear opening in said barrel means and in said barrel; means toward said nozzle and back in the direction of the rear opening as said liquid composition is alternately introduced and forced out of said nozzle,

drive means mounted on said frame to the rear of said barrel means and connected to said barrel means, driving said plunger means,

shut off means mounted on said frame and adjacent to said forward nozzle in said barrel means adapted to close and open said nozzle,

feed means mounted on said forward end of barrel means in proximity to said forward nozzle and adapted to feed liquid composition into said barrel means, and

sealing means mounted on the forward end of said plunger means and preventing the liquid composition from going past said sealing means to the rear opening of said barrel means and thus leaking out.

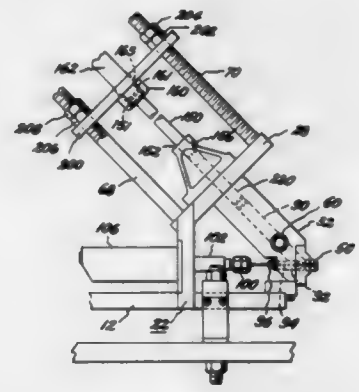
7. A plunger injection molding machine for utilizing a liquid composition comprising,

a frame,

barrel means mounted on said frame with a rear opening and a forward nozzle said forward nozzle located so as to force a liquid composition therethrough at great pressure,

plunger means mounted on said frame such that said plunger means move from the said rear opening in said barrel means and in said barrel means toward said forward nozzle and back in the direction of said rear opening so that liquid composition is alternately introduced and forced out of said forward nozzle,

first drive means mounted on said frame to the rear of said barrel means and connected to said barrel means driving said plunger means,



shut-off means mounted on said barrel and adjacent to said forward nozzle in said barrel means and adapted to close and open said nozzle,

feed means mounted on said forward end of said barrel means in proximity to said forward nozzle and adapted to feed liquid composition in said barrel means,

valve means connected to said feed means adapted to allow liquid composition to pass through said feed means or to stop said liquid composition from passing through said feed means, and second drive means adapted to open and close said valve means in synchronization with said first drive means such that when said first drive means drives said plunger means forward in said barrel means said second drive means closes said valve and when said first drive means retracts said plunger means said second drive means opens said valve.

13. A plunger injection molding machine for utilizing a liquid composition comprising,

a frame,

barrel means mounted on said frame with a rear opening and a forward nozzle said forward nozzle located so as to force a liquid composition therethrough at great pressure,

plunger means mounted on said frame such that said plunger means move from said rear opening in said barrel means and in said barrel means toward said forward nozzle and back in the direction of said rear opening as liquid composition is alternately introduced into said barrel means and forced out of said nozzle,

first drive means mounted on said frame to the rear of said barrel means and connected to said barrel means driving said plunger means,

shut-off means mounted on said frame and adjacent to said forward nozzle in said barrel means adapted to close and open said forward nozzle,

feed means mounted on the forward end of said barrel means in proximity to forward nozzle and adapted to feed liquid composition in said barrel means, and

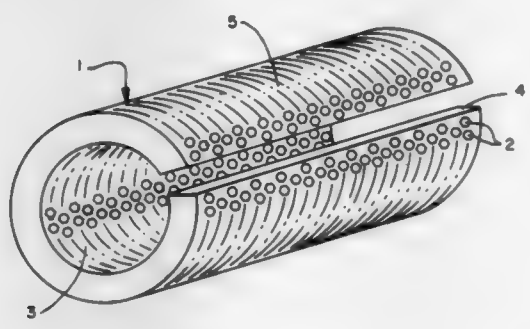
stop means mounted on frame and on said plunger means adapted to control the rear ward motion of said plunger means away from said forward nozzle in said barrel means.

4,402,662

THERMAL SHOCK RESISTANT SPLIT-CYLINDER STRUCTURES

William C. Pfefferle, Middletown, N.J., assignor to Government of the United States as represented by the Environmental Protection Agency, Washington, D.C.

Filed May 13, 1980, Ser. No. 149,542
Int. Cl.³ F23D *3/40*; F02G *7/26*
U.S. Cl. 431—7 **8 Claims**



1. A method of catalytically burning fuels which obviates the effects of thermal shock on a catalytic structure, including the steps of passing a mixture of fuel and air over a monolithic catalyst structure in the configuration of a hollow cylinder comprised of a plurality of cells having integral walls with the cells defining radially extending flow-through passages and having a slot axially extending along the length of one side of the cylinder with the slot penetrating completely through the side thickness of the cylinder, directing a flow of the mixture into and through the passages, and catalytically combusting the mixture flowing through the passages with the slot enabling the cylinder to be unrestrained to change shape under thermal expansion and contraction for minimizing thermally-generated stresses within the structure.

4. A catalytically active structure for combusting fuels to obviate the effects of thermal shock on the structure, comprising a catalytically active monolithic structure in the configuration of a hollow cylinder comprised of a plurality of cells having integral walls with the cells defining radially extending flow-through passages, means for forming a slot axially extending along the length of one side of the cylinder and penetrating completely through the side thickness of the cylinder with the slot enabling the cylinder to be unrestrained to change shape under thermal expansion and contraction during catalytic combustion of a mixture of fuel and air flowing through the passages for minimizing thermally-generated stresses within the structure.

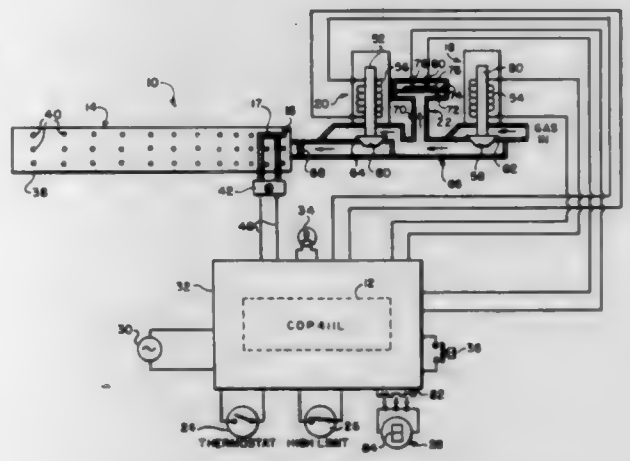
6. A combustor for catalytically burning fuels to obviate the effects of thermal shock on a catalytic structure, comprising the combustion of a catalytically active monolithic structure in the configuration of a hollow cylinder, means for forming a plurality of cells in the cylinder with the cells having integral walls which define flow-through passages radially extending through the cylinder about its periphery, means for forming a slot axially extending along the length of one side of the cylinder and penetrating completely through the side thickness of the cylinder with the slot enabling the cylinder to be unrestrained to change shape under thermal expansion and contraction during catalytic combustion of a mixture of fuel and air flowing through the passages for minimizing thermally-generated stresses within the structure.

4,402,663

AUTOMATIC IGNITION AND FLAME DETECTION SYSTEM FOR GAS FIRED DEVICES

Pat Romanelli, Harrington Park, N.J., and Kenneth Peters, Billerica, Mass., assignors to Ram Products, Inc., Northvale, N.J.

Filed Apr. 28, 1981, Ser. No. 258,388
Int. Cl.³ F23N *5/00*
U.S. Cl. 431—66 **17 Claims**



1. An improved automatic fuel ignition system for gas fired devices having a burner provided with an outlet, a power source, a first normally closed fuel valve for controlling the gas flow to said burner, and means for opening said valve, said system being of the type including a variable resistance ignition means having a particular temperature characteristic disposed in proximity to said burner outlet for igniting gas flowing therethrough when said ignition means is energized by operative connection to said power source, the improvement comprising:

detection means for repeatedly measuring the resistance of said variable resistance ignition means at predetermined intervals and for comparing said measurements; and

activating means operatively connected to said detection means and said valve opening means for activating said valve opening means to open said valve when the difference between measurements establishes that said variable resistance ignition means is in the portion of its temperature characteristic where the temperature thereof is sufficient to ignite said gas.

4,402,664

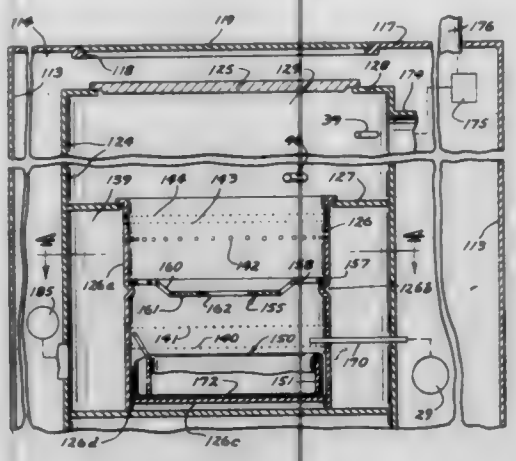
WASTE OIL HEATER

Wolfgang A. Kutrieb, P.O. Box 43, Rte. 2, Chetek, Wis. 54728

Filed May 5, 1981, Ser. No. 260,823
Int. Cl.³ F23N *5/08*
U.S. Cl. 431—79 **14 Claims**

1. Oil heater apparatus comprising means defining a combustion chamber, an oil vaporizer pan located in the combustion

chamber and means for supplying oil to the pan, the pan including a mounting ring defining a vertical wall having a lower



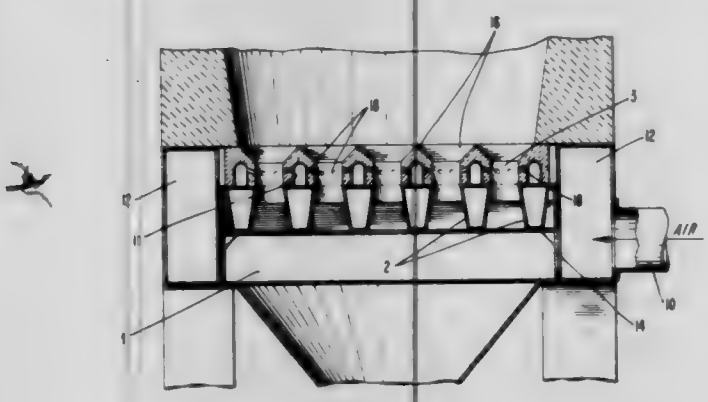
annular edge and metal foil positioned on the ring to form a pan bottom wall.

4,402,665

COMBUSTOR AIR GRID

Jakob Korenberg, York, Pa., assignor to York-Shipley, Inc., York, Pa.

Filed Aug. 7, 1980, Ser. No. 176,091
Int. Cl.³ F23D *19/02*
U.S. Cl. 431—170 **4 Claims**



1. An air bar grid for use within a fluidized bed reactor comprising:

a main air collector in fluid communication with a source of pressurized air;

a grid of primary air bars perpendicular to said main air collector, each primary air bar having an upper surface and being connected along its length for fluid communication with said main air collector;

intermediate air bars parallel to said main air collector, each intermediate air bar having an upper surface and being connected along its length for fluid communication with each primary air bar intersecting said intermediate air bars;

each primary air bar and intermediate air bar having downward convergent side walls and having air dispersion ports on the upper surface; and

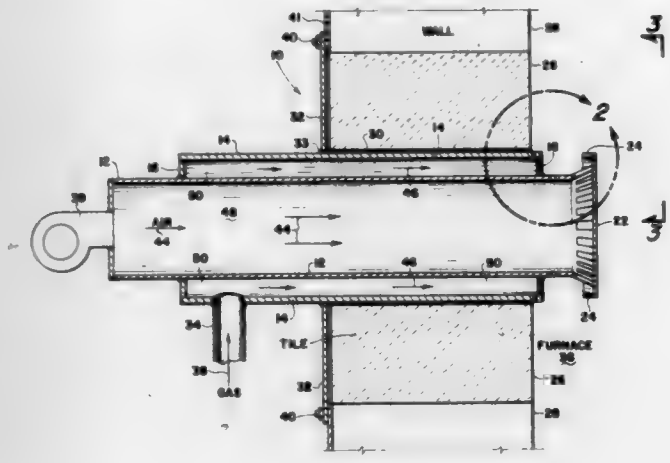
said primary air bars and intermediate air bars having a refractory covering on the upper surface, said covering having a central air conduit and air injectors.

4,402,666

FORCED DRAFT RADIANT WALL FUEL BURNER

Horst M. Glomm, Frankfurt am Main; Klaus E. Sawatzki, Niddatal, and Dieter Fischer, Bischofsheim, all of Fed. Rep. of Germany, assignors to John Zink Company, Tulsa, Okla.

Filed Dec. 9, 1980, Ser. No. 214,589
Int. Cl.³ F23C *5/08*
U.S. Cl. 431—177 **6 Claims**



1. A forced draft, gaseous fuel burner for a radiant-walled furnace space, comprising:

(a) an inner air pipe for the flow of combustion air, having a forward end inserted into the furnace space;

(b) an outer coaxial pipe, supported to the furnace wall and to said inner pipe by a rearward wall and a forward wall to form a closed annular chamber, with its forward end inserted a selected short distance into the furnace space;

means to supply gaseous fuel to the annular chamber;

(c) the forward end of the inner pipe extending forwardly beyond the front end of the outer coaxial pipe, and flared out in a conical form, a plurality of circumferentially-spaced slots in the flared out portion; the front of the inner pipe closed with a circular plate larger in diameter than the end of the flared-out portion; a rearwardly-directed cylindrical wall whereby the air flowing from the slots is directed rearwardly for greater gas-air turbulent mixing;

(d) a first plurality of circumferentially spaced orifices drilled longitudinally in said forward wall of the annular chamber; and a second plurality of orifices drilled radially at the forward end of the outer pipe;

(e) a third plurality of radial orifices drilled in the wall of the inner pipe between the forward end of said annular chamber and the flared-out portion of the inner pipe.

4,402,667

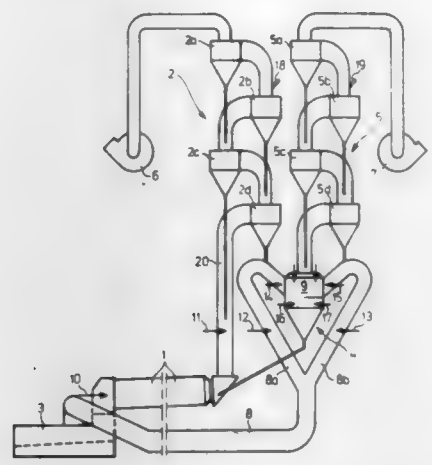
PROCESS AND AN INSTALLATION FOR THE HEAT-TREATMENT OF FINE-GRAINED MATERIAL

Wolf Goldmann, Beckum, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,496
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1980, 3000494
Int. Cl.³ F27B *15/06, 7/02*; C04B *7/02*
U.S. Cl. 432—14 **12 Claims**

1. In a process of heat treating fine-grained material such as raw cement metal wherein first and second partial quantities of such material are passed to first and second preheating zones, respectively, then delivered to and combined in a precalcining zone in which fuel is combusted, then discharged to a calcining zone, and thence delivered to a cooling zone, and wherein exhaust gases from said calcining zone are delivered to one of said preheating zones, and gases from said cooling zone are delivered to said precalcining zone and thence to the other of said preheating zones, the improvement comprising dividing the gases from said cooling zone into two streams prior to the delivery thereof to said precalcining zone; introducing the

partial quantity of material from said one of said preheating zones into one of said streams and the partial quantity of material from said other of said preheating zones into the other of said streams; and introducing a quantity of fuel into each of



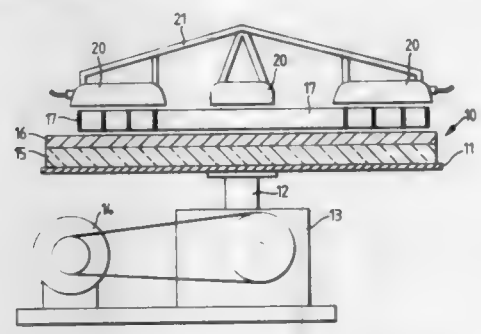
said streams, the introduction of the partial quantities of material and the fuel to the respective streams occurring prior to the combining of said partial quantities of material in said precalcining zone.

4,402,668

CONVEYOR FURNACE

Ian D. Cameron, Dundee, Scotland, assignor to Delta Capillary Products Limited, Dundee, Great Britain

Filed Mar. 10, 1981, Ser. No. 240,303
Int. Cl.³ F27B *9/16*
U.S. Cl. 432—138 **4 Claims**



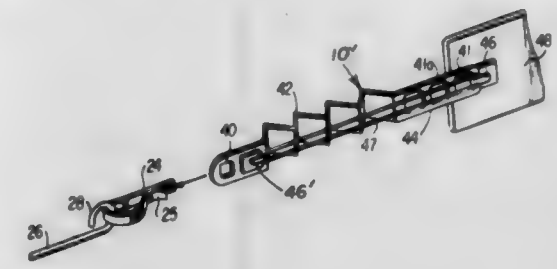
1. A conveyor furnace comprising heating means for providing a hot zone, means defining an input station for receiving articles to be heat treated, means defining an output station for discharging heat treated articles, means defining a carrier mounted for rotation about an upright axis and defining generally circular paths centered on said axis each path lying in said hot zone, and a stationary guide means extending obliquely across the said circular paths for guiding articles when the latter are on the carrier from the input station to the output station, the said heating means comprising a bank of mutually independent radiant heaters, means defining a support common to said heaters and carrying said heaters, said support means together with said heaters being shiftable independently of said carrier and of said stationary guide means between a first position in which said heaters are directed towards the carrier and are disposed adjacent the stationary guide means and a second position in which the heaters are disposed clear of the stationary guide means giving access thereto.

4,402,669

ORTHODONTIC SAFETY HEADGEAR

Paul D. Frazier, Rockville, Md., assignor to Northwest Orthodontics, Inc., Seattle, Wash.

Continuation of Ser. No. 703,828, Jul. 9, 1976, Pat. No. 4,215,983. This application Sep. 25, 1979, Ser. No. 78,686
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—5 **12 Claims**



1. Orthodontic headgear apparatus for interconnection between an intraoral orthodontic device and a head or neck engageable strap and having means on at least one end thereof suitable for engaging the intraoral orthodontic device, comprising:

limiting means having a first end connected to said strap for limiting the relative displacement between the intraoral orthodontic device and the strap, said limiting means further having a second end and including a further strap having accordian folds between said first and second ends, said further strap being nonstretchable when said folds are full expanded; and

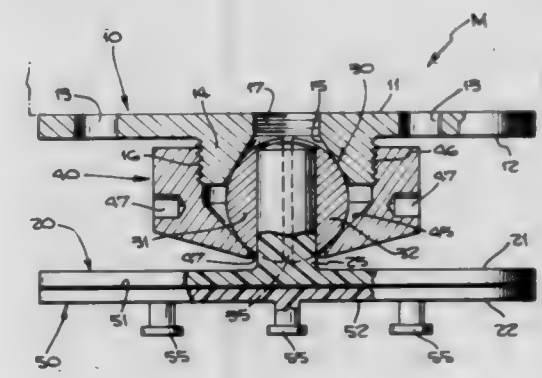
resilient fastening means securely engaging the intraoral orthodontic device and including means for resiliently engaging the second end of said limiting means and for releasing said second end when a predetermined relative displacement is exceeded.

4,402,670

THREE-DIMENSIONALLY ADJUSTABLE SUPPORTING AND LOCKING MECHANISM

Tsung-Li Lee, 245 W. Garvey Ave., Monterey Park, Calif. 91754

Filed Aug. 24, 1981, Ser. No. 295,378
Int. Cl.³ A61C *11/00*
U.S. Cl. 433—61 **3 Claims**



1. An adjustable support mechanism comprising, in combination:

a first support member having a conically shaped, inwardly tapering recess and having a threaded cylindrical exterior surface which is substantially concentric to said recess;

a second support member having a projecting cylindrical post whose diameter is substantially smaller than the outer end of said recess;

a gripping ring adapted to fit about said post, said gripping ring consisting of a plurality of radially arranged sphere segments, said gripping ring having at least one radial gap therein between adjacent segments; and

a locking ring adapted to fit about said gripping ring, having an interiorly threaded end adapted to engage the threaded outer surface of said first support member, and also having a conical interior wall adapted to cooperate with said

conical recess for squeezing respective sides of said gripping ring;

whereby said post may be slid longitudinally within said gripping ring to position said second support member a desired distance from said first support member, said second member may be twisted as desired relative to said first support member resulting in a corresponding rotation of said gripping ring within said conical wall and conical recess, and then said locking member may be tightened upon said first support member;

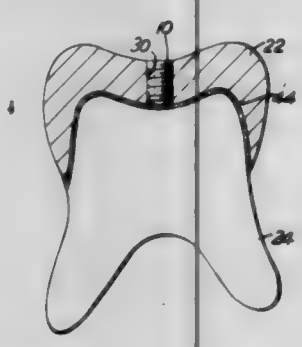
thereby locking said two support members in their desired position of adjustment.

4,402,671

METHOD AND APPARATUS FOR DENTAL CROWN REMOVAL

Robert D. Westerman, 7931 Jefferson Hwy., Baton Rouge, La. 70809

Filed May 17, 1982, Ser. No. 379,259
Int. Cl.³ A61C *5/08, 3/08*
U.S. Cl. 433—218 **14 Claims**



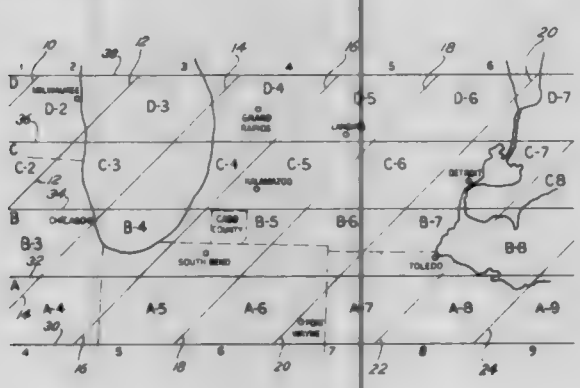
1. A removable dental crown adapted to be secured by a layer of bonding material to a tooth, said crown having a removable key threadedly secured in a channel formed directly in the top portion of the crown and said key forming an integral part of the crown during actual usage of the crown, said key having a recess therein for receiving a tool for the removal of said key thereby leaving a threaded channel in said crown for threadably receiving an extractor tool therein for engagingly breaking said bonding layer and forcing the crown away from the tooth.

4,402,672

METHOD FOR PLOTTING AND DISSEMINATING INFORMATION ON THE PATHS OF VIOLENT STORMS

Henry E. Lowe, Jr., 21725 Allegheny St., Cassopolis, Mich. 49031

Filed Nov. 12, 1981, Ser. No. 320,303
Int. Cl.³ G09B *19/00, 29/00*
U.S. Cl. 434—217 **6 Claims**



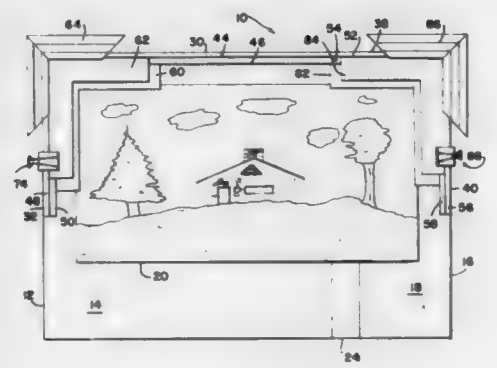
1. A method for plotting and disseminating information on the paths of potentially dangerous meteorological conditions, including the steps of preparing a map of a given geographic region, superimposing on the map a grid system including generally horizontal lines and generally parallel, angular lines intersecting said generally horizontal lines and corresponding to the angle of the typical path of dangerous meteorological conditions in a selected region, dividing the map into subregions, identifying each subregion with a designation different from all other subregions of the map, plotting the location and path of a dangerous meteorological condition on the map, determining the subregions included therein, and announcing the existence and path of a said dangerous meteorological condition by identifying the subregions involved.

4,402,673

DISPLAY HOLDER

Ronald J. Nash, Arlington, Va., assignor to Veronica F. Nash, Arlington, Va.

Filed Sep. 15, 1981, Ser. No. 302,283
Int. Cl.³ G09B *25/00*
U.S. Cl. 434—365 **19 Claims**



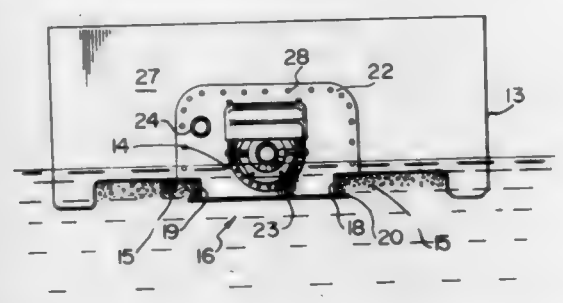
1. Apparatus for displaying pictures, mats and frames comprising a mounting member having a relatively flat surface for receiving at least a corner of a picture, and at least one ledge member connected to the flat surface of the mounting member, said ledge member having a pair of arm portions extending across said surface at right angles to each other, one or more step-like offsets being formed on the inward surfaces of said arm portions for matingly receiving the outward edges of mat corners aligned with the corner of the picture received by the mounting member.

4,402,674

AIR ASPIRATION PREVENTION PAN

David Roberts, North Vancouver, Canada, assignor to Versatech Products Inc., North Vancouver, Canada and Versatech Products Inc., North Vancouver, Canada

Filed Mar. 2, 1982, Ser. No. 353,823
Int. Cl.³ B63H *11/00*
U.S. Cl. 440—38 **18 Claims**



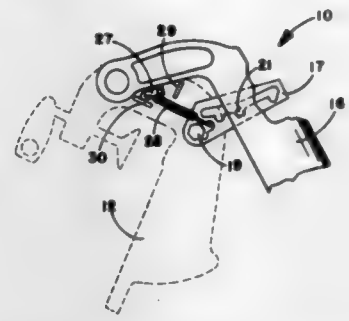
1. An air aspiration prevention pan adapted for use on the hull of a water jet powered water craft, said pan comprising mounting means adapted to mount on the underside and rearwardly of said hull, sidewalls extending downwardly from said mounting means, a lower lip on the bottom of said sidewalls extending outwardly therefrom, a bottom plate joining the bottom of said sidewalls and extending therebetween and an intake opening in said bottom plate, said sidewalls and said lower lip acting to confine aerated water under said boat hull when under operating conditions and to substantially prevent said aerated water from entering said intake opening.

4,402,675

OUTBOARD MOTOR TILT MECHANISM

Charles H. Eichinger, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed May 29, 1981, Ser. No. 268,227
Int. Cl.³ B63H 21/26
U.S. Cl. 440—53 5 Claims



1. A tilt mechanism for a marine propulsion device comprising:

(A) A transom bracket for attachment to a boat;

(B) A swivel bracket pivotally connected to said transom bracket for pivotal movement about a first generally horizontal tilt axis;

(C) A support arm pivotally attached to rotate about a pivot axis on said transom bracket and having an elongated slot, said slot including a first locking recess offset to one side of said slot;

(D) A locking pin on said swivel bracket, said pin slidably engaging said slot;

(E) A first spring means attached to said support arm to selectively force said locking recess into engagement with said locking pin;

(F) A control lever mounted on said transom bracket and attached to said first spring means to selectively move said first spring means between a first position permitting said first spring means to force said locking recess into engagement with said locking pin and a second position preventing engagement of said locking pin and said locking recess; and

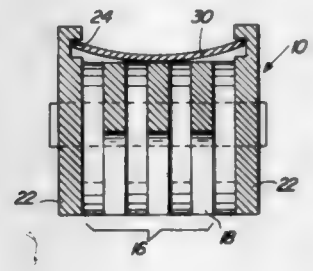
(G) A second spring means attached to said transom bracket and said support arm to provide a force in a direction opposing engagement of said locking recess with said locking pin.

4,402,676

LINK CHAIN STIFFENER

Arthur M. McIntosh, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 11, 1981, Ser. No. 262,268
Int. Cl.³ F16G 51/80, 13/02; F16H 7/08
U.S. Cl. 474—100 5 Claims



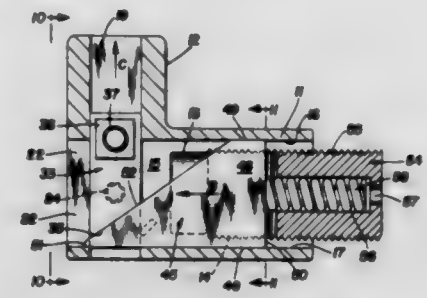
1. A stiffening arrangement for an endless chain constructed of a plurality of joined body links and flanking side links, said side links each having portions extending radially, and outwardly of said body link, means comprising an inwardly facing longitudinal groove in each side link to define a channel with said body links, and an elongated stiffening member in said channel with its edges in said grooves, said stiffening member having a length substantially the same as that of said chain.

4,402,677

BELT TENSIONER

Mijo Radocaj, Massillon, Ohio, assignor to Dyneer Corporation, Canton, Ohio

Filed Jan. 23, 1981, Ser. No. 227,586
Int. Cl.³ G01F 3/14
U.S. Cl. 474—138 11 Claims



1. An improved belt tensioner construction for tensioning an endless drive belt of the drive system for vehicle accessories, said construction including:

(a) a housing adapted to be mounted in a fixed position adjacent the drive belt;

(b) the housing having walls forming first and second passages which communicate with each other at the intersection of their axes which extend at an angle to one another;

(c) first slot means formed in a housing wall communicating with said first passage and extending to the exterior of the housing and throughout the length of said first passage;

(d) first cam means slidably mounted in said first passage;

(e) second cam means slidably mounted in said second passage and engageable with said first cam means;

(f) spring means biasing the second cam means into camming engagement with said first cam means to slide said first cam means in a belt tensioning direction along said first passage;

(g) shaft means mounted on said first cam means and projecting through said first slot means and having an end located outside of said housing; and

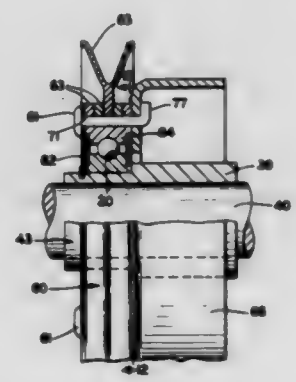
(h) an idler pulley journaled on said shaft end for tensioning engagement with the exterior of the drive belt when the shaft means is moved in belt tensioning direction when said first cam means slidingly moves in belt tensioning direction, whereby the idler pulley engages and tensions the drive belt.

4,402,678

CLUTCH HOUSING AND PULLEY ASSEMBLY

Richard C. St. John, North Canton, Ohio, assignor to Dyneer Corporation, Canton, Ohio

Division of Ser. No. 957,706, Nov. 6, 1978, Pat. No. 4,254,541.
This application Oct. 8, 1980, Ser. No. 195,012
Int. Cl.³ F16H 55/36, 7/20
U.S. Cl. 474—171 1 Claim



1. Clutch housing and pulley assembly including:

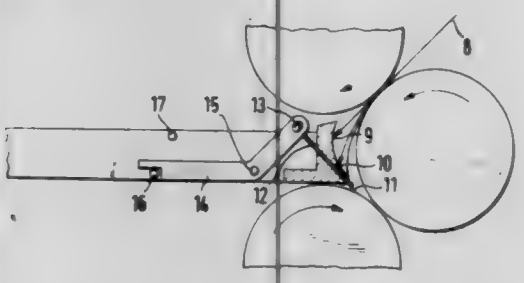
(a) a pulley member having a radially extending base terminating in peripheral groove means;
(b) a central opening formed in the base of the pulley member;
(c) bearing means mounted in the base opening and adapted to receive a drive shaft therein;
(d) a plurality of discs, each being formed with a central opening, said discs being mounted concentrically on the pulley member base with the disc openings being axially aligned with the pulley member base opening;
(e) clutch housing means having a radially extending base and an axially extending cylindrical-shaped side wall;
(f) pin means mounting the discs and the clutch housing means on the pulley member base with the clutch housing means base being in abutting relationship with at least one of the discs to space the clutch housing means from the pulley member;
(g) central opening means formed in the clutch housing means base and axially aligned with the disc openings and the pulley member base opening for receiving a drive shaft therethrough;
(h) a plurality of noncircular notches formed in the pulley member base and discs adjacent and communicating with the central openings in said base and discs, respectively; and
(i) the pin means having a cross-sectional configuration complementary to the shape of said notches and extending through said notches to mount the discs on the pulley member.

4,402,679

SHEET DEFLECTOR FOR NOISE REDUCTION IN MULTI-STAGE FOLDING MACHINES

Fritz Heina, Murrhardt, Fed. Rep. of Germany, assignor to Maschinenbau Oppenweiler Binder GmbH & Co., Fed. Rep. of Germany

Filed Oct. 30, 1981, Ser. No. 316,850
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2949387
Int. Cl.³ B65H *45/14*
U.S. Cl. 493—420 **6 Claims**



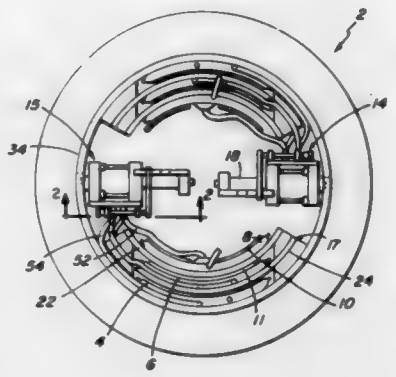
1. Sheet deflector for noise reduction in multi-stage folding machines having first and second folding rollers (1,3) with a clearance space (5) between them, with said space (5) being in the path of a sheet (8) to be folded, a third roller tangentially positioned adjacent said first and second rollers wherein said clearance space is bracketed by the three rollers, comprising a sheet deflector (4) insertable between said first and second rollers and having a curved guide surface (20) approximating the curvature of and facing the third roller for deflecting the sheet about the third roller, at least one slot-shaped opening in the sheet deflector (4) extending in a direction toward a nip region between said second (3) and third folding rollers (2) and a blade-shaped slide (12) which can be moved through and guided by said slot-shaped opening to project beyond the curved guide surface towards the nip region when the sheet deflector (4) is inserted between said first and second rollers (1,3).

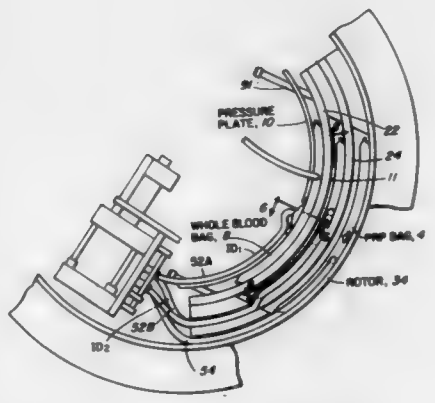
4,402,680

APPARATUS AND METHOD FOR SEPARATING FLUID INTO COMPONENTS THEREOF

Donald W. Schoendorfer, Brookline, Mass., assignor to Haemonetics Corporation, Braintree, Mass.

Filed Jul. 9, 1981, Ser. No. 281,649
Int. Cl.³ B04B *5/02*
U.S. Cl. 494—3 **25 Claims**





1. Apparatus for use in the centrifugal separation of blood into at least a first blood component and a second blood component, comprising, in combination:
a. a flexible blood processing bag having an inlet port and an outlet port;
b. blood-compatible tubing providing fluid communication between the inlet port of said flexible blood processing bag and connection means for connecting said blood compatible tubing to a source of blood to be separated;
c. a receiver-container for receiving first blood component separated in said flexible blood processing bag;
d. blood-compatible tubing providing a fluid communication path between the outlet port of said flexible blood processing bag and said receiver container; and
e. valve means for preventing fluid communication between said flexible blood processing bag and said receiver container in response to the difference between the specific gravities of separated first and second blood components.

4,402,681

ARTIFICIAL IMPLANT VALVE FOR THE REGULATION OF INTRAOCULAR PRESSURE

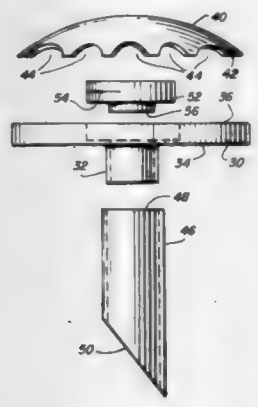
Joseph S. Haas, 124 Green-Leaf Ave., Evanston, Ill. 60202, and Gholam A. Peyman, 535 N. Michigan Ave., Apt. 3001, Chicago, Ill. 60601

Continuation-in-part of Ser. No. 143,000, Aug. 23, 1980, abandoned. This application Sep. 10, 1981, Ser. No. 300,936
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—9 **6 Claims**

1. An ophthalmic valve implant apparatus whereby elevated intraocular pressure is relieved by regulating the drainage of intraocular fluid from the eye of a mammal comprising:
a hollow needle for insertion into the eye;
a generally disk-shaped valve housing means having an outer facing side, an inner facing side, a receiving means in

the outer facing side, a hollow stem projecting outwardly from said inner facing side, said housing means having a fluid passage extending from said receiving means into said hollow stem, said hollow stem being concentrically interlocked to said hollow needle;

a unidirectional, pressure dependent slit valve means fixedly located within said receiving means of said valve housing means whereby intraocular fluid drains from the eye, when the intraocular pressure becomes elevated, through said hollow needle, through said hollow stem, and through said slit valve means to exit said slit valve means



proximate to said outer facing side of said valve housing means; and,

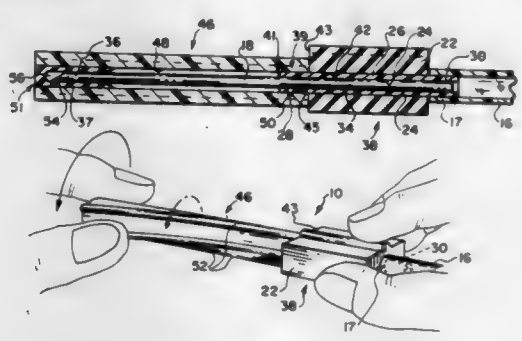
a generally hollow crown having a substantially circular base and a dome substantially conforming to the natural curvature of the eye, said base being affixed to said outer facing side of said valve housing means, whereby a cavity intermediate said crown and said outer facing side of said valve housing means is formed, said generally hollow crown having at least one perforation therein at the juncture of said base and said outer facing side of said valve housing means for drainage of intraocular fluid.

4,402,682

TAMPER-PROOF CANNULA SUPPORT ASSEMBLY

Edward B. Garver, Sr., Lindenhurst, and Kenneth D. Zabielski, McHenry, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 2, 1981, Ser. No. 326,737
Int. Cl.³ A61M *5/32, 5/14*
U.S. Cl. 604—111 **23 Claims**



1. An assembly for supporting a cannula having an operative end portion, said assembly comprising

hub means for supporting the cannula with the operative end portion thereof extending axially beyond one end of said hub means, said hub means including a post portion which projects outwardly from said one end and concentrically surrounds an adjacent section of the operative cannula end portion,

cover means having an open end portion which fits concentrically about said post portion and an interior chamber which extends from said open end portion and encloses the operative cannula end portion when said open end portion is fitted about said post portion, and

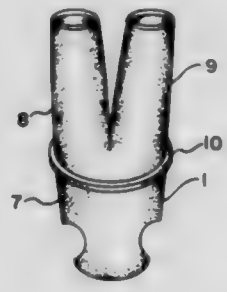
means operatively associated with said post portion and said cover means end portion for forming therebetween a generally fluid-tight connection which normally secures said cover means to said hub means, which is breakable to afford the separation of said cover means from said hub means in response to the application of a predetermined force upon said cover means relative to the axis of said post portion, and which, after said breakage of said connection and said separation of said cover means from said hub means, permits the return of said cover means end portion to said post portion and accommodates the subsequent separation of said cover means in response to a force which is less than said predetermined force.

4,402,683

CANNULA INTRODUCER

Ercument A. Kopman, 9814 Greenery La., Olivette, Mo. 63132

Filed Dec. 28, 1981, Ser. No. 335,243
Int. Cl.³ A61M *25/02*
U.S. Cl. 604—175 **4 Claims**



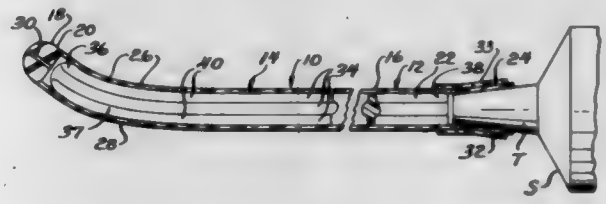
1. A cannula introducer for use during open heart surgery and related surgical operations, comprising, a cylindrical member, guide means integrally formed at one end of said cylindrical member and having dimensions of a size at least to accept the introduction of a pair of cannulae therein, said guide means comprising a pair of tubular-like members integrally formed with the cylindrical member, each said tubular-like member adapted for initially receiving one of the cannula therein during their introduction, the opposite end of the cylindrical member being formed into confinement, a pair of apertures formed through the confined end of the cylindrical member and capable of each receiving a cannula there through during their introduction and retention within the heart during surgery, said apertures provided through the confined end of the cylindrical member being angulated with respect to the longitudinal axis of the cylindrical member so that they are aligned and oriented towards the particular hearts arteries and veins for guiding the cannulae thereto and for their select insertion therein in preparation for a surgical operation.

4,402,684

CANNULA WITH SOFT TIP

James L. Jessup, Elk Grove Village, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Sep. 16, 1981, Ser. No. 302,875
Int. Cl.³ A61M *19/00, 25/00, 31/00*
U.S. Cl. 604—264 **2 Claims**



1. A cannula for application of a topical anesthetic to the laryngotracheal area of a patient prior to an endotracheal intubation procedure, comprising: an elongated catheter of soft, elastic material and having an integral, relatively soft distal tip, an integral proximal end, a lumen extending from the tip to the proximal end of the catheter, and means defining a plurality of openings in a distal end portion of the catheter

communicating between the lumen and the outside of the catheter; and an elongated, rigid, shape-retaining, solid stylet snugly interfitted within the catheter lumen and extending substantially but somewhat less than the full length of the catheter, the distal end portion of the stylet being permanently curved, the stylet distal end portion being spaced from the distal tip of the catheter, the stylet having an X configuration in cross section, the webs of the X configured stylet being of substantial thickness with respect to the diameter of the stylet, the outer peripheries of the webs being curved so as to snugly interfit with and permanently engage the inner wall of the catheter, thus to define a plurality of fluid passageways between the stylet and the catheter, said rigid stylet engaging against and being permanently retained within the catheter, the stylet having a proximal end which is recessed from the proximal end of the catheter, the proximal end of the catheter being configured to receive a syringe tip, whereby, when the cannula is assembled with a syringe tip, the stylet proximal end is spaced from the syringe tip, and whereby, in use, the cannula may be inserted into the laryngotracheal area of a patient without trauma, due to the elastic structure of the catheter, and a topical anesthetic may be applied in the laryngotracheal area, the anesthetic passing from a syringe connected to the proximal end of the catheter, through the passageways defined by the stylet channels and the catheter, to and through the openings in the distal end portion of the catheter, and thus to the laryngotracheal area of a patient.

4,402,685

DIVIDABLE CATHETER

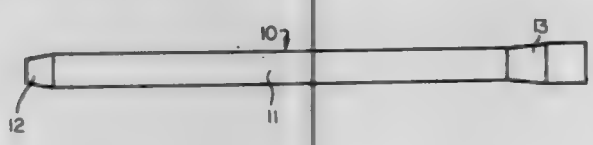
Wolfgang Bühler, Melsungen; Franz W. Brunner, Felsberg, and Bodo Schacht, Malsfeld, all of Fed. Rep. of Germany, assignors to Intermedicat GmbH, Emmenbrucke, Switzerland

Filed Jun. 24, 1980, Ser. No. 162,621

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2926572

Int. Cl.³ A61M *25/00*

U.S. Cl. 604—280 **21 Claims**



12. A short catheter tube dividable longitudinally by tearing comprising a tube wall made of a base polymer and having at least two longitudinal strips of modifying polymer that extend the length thereof, wherein said base polymer and said modifying polymer are incompatible and inert to human blood and tissue whereby said catheter tube is dividable along said longitudinal strips.

4,402,686

PINCHED NERVE INSTRUMENT

Gonzalo A. Medel, Box 622, Round Rock, Tex. 78664

Filed Jul. 9, 1981, Ser. No. 281,679

Int. Cl.³ A61M *35/00*

U.S. Cl. 604—311 **1 Claim**

1. An instrument to relieve pinched nerves, comprising, in combination, a glass bell, a tubular, cylindrically-shaped metal sleeve, said bell being tubular, with one end thereof having a wide mouth, while an opposite end thereof forms a narrow neck frictionally secured inside one end of said sleeve; a threaded rod inserted through an opposite end of said sleeve, a rubber ball fitted on one end of said rod that is inside said sleeve, said ball being of a size so as to frictionally slide inside said sleeve when said rod is axially moved relative to said sleeve, a rubber washer on said rod and adjacent one side of said ball, a pair of nut fasteners engaged on said rod, one said nut fastener being adjacent an opposite side of said ball while the other said nut fastener is adjacent said washer; a hook formed on an opposite end of said rod and a wooden handle inserted in said hook, a plurality of other nut fasteners engaged in spaced-apart relation along an intermediate portion of said rod forming a plurality of adjustable spaces therebetween and a spring clamp engaging said rod in selected of said spaces



formed between said other nut fasteners, said spring clamp extending transversely a greater distance than a width of said sleeve so as to abut against said opposite end thereof.

4,402,687

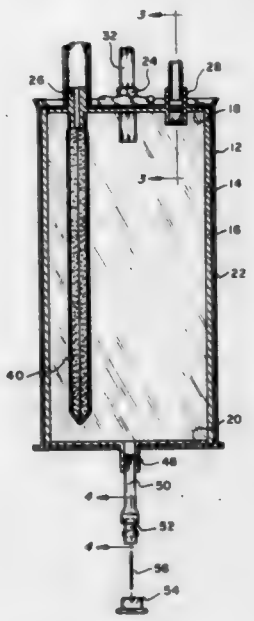
SUCTION COLLECTION SYSTEM

Stephen C. Denty, 550 Cooper Ctr. W., Pennsauken, N.J. 08109, and John Meserko, 5523 Hudson Dr., Hudson, Ohio 44236

Filed Apr. 2, 1982, Ser. No. 364,874

Int. Cl.³ A61M *1/00*

U.S. Cl. 604—319 **3 Claims**



1. A suction collection system comprising:

a rigid substantially cylindrically shaped canister including a cylindrical wall and top and bottom disc-shaped end walls;

a thin flexible plastic sheet material covering the entire outer surface of said canister so as to make an airtight receptacle;

first and second ports adjacent the top end of said canister and being adapted to provide communication between the exterior and the interior of said receptacle;

a vacuum source and means for connecting the same to said first port;

an aspirator means and means for connecting the same to said second port;

a filter within said receptacle and being connected to said

second port whereby fluid from said aspirator passes through said second port and then through said filter into said receptacle;

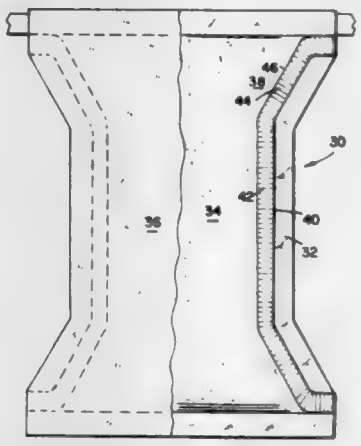
a normally closed outlet port adjacent the bottom of said canister and being adapted to provide communication between the interior of said receptacle and the exterior thereof.

4,402,688

DISPOSABLE DIAPER WITH CONTOURED ELASTIC

Jean Julemont, Stembert, Belgium, assignor to Colgate-Palmolive, New York, N.Y.

Filed Oct. 27, 1981, Ser. No. 315,387
Int. Cl.³ A41B *13/02*
U.S. Cl. 604—385 **10 Claims**



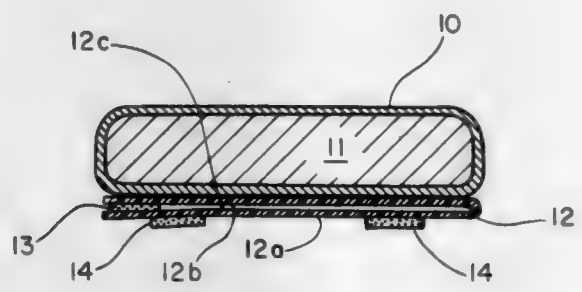
1. A disposable diaper comprising a backing sheet, an absorbent pad on said backing sheet, a top sheet overlying said absorbent pad and secured to said backing sheet, said absorbent pad being of an hour-glass shape defining a central crotch area and ears spaced from said crotch area, said ears including contoured portions extending outwardly and towards the ends of said diaper, opposed side elastic members secured to said backing sheet along two opposite side edges thereof and extending substantially parallel to said crotch area and parallel to said contoured portions and extending outwardly along said ears and to said ends of said diaper for facilitating securement of the diaper on an infant.

4,402,689

SANITARY NAPKIN WITH DISPOSAL MEANS

Pamela F. Baum, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jul. 20, 1981, Ser. No. 284,678
Int. Cl.³ A61F *13/16*
U.S. Cl. 604—387 **3 Claims**



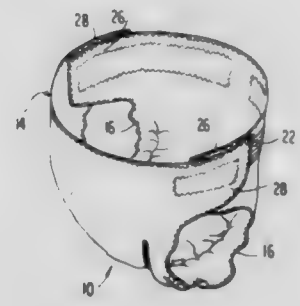
1. A sanitary napkin with a body facing surface and a garment facing surface having, in combination, an absorbent layer, a fluid permeable wrap overlying the absorbent layer at least on its body facing surface and a fluid impermeable baffle providing said garment facing surface, said baffle being of sufficient transverse dimension to overwrap said body facing surface, said baffle being folded upon itself with said folds being adhesively secured in place and said baffle also having adhesive attachment means on said garment facing surface for attaching the napkin to a garment.

4,402,690

HIGH ABSORBENCY, CONTOURED, REUSABLE DIAPER

Robin Redfern, 6737 W. Costa Brave Rd., Las Vegas, Nev. 89102

Filed Oct. 21, 1980, Ser. No. 199,279
Int. Cl.³ A41B *13/02*
U.S. Cl. 604—391 **12 Claims**



1. A reusable diaper for children comprising:

a main body having inwardly and outwardly facing surfaces, a first longitudinal end, a second longitudinal end, a first side edge and a second side edge;

a first pair of oppositely directed laterally extending wings formed on said first end;

a second pair of oppositely directed laterally extending wings formed on said second end and adapted to overlap said first pair of wings;

hook and pile fastener means connected to said first and second pairs of wings and comprising a hook section and a pile section for maintaining said wings in overlapped disposition to form said diaper to the torso of an infant;

wherein said hook section is disposed on said outwardly facing surface of said first pair of wings and said pile section is disposed on said inwardly facing surface of said second pair of wings; and

elastic stretch means attached longitudinally of said body for gathering portions of said body about the legs of an infant;

wherein said hook section is substantially greater in length than said pile section, and

wherein said elastic stretch means comprises two elastic strips attached to the outer surface of said main body in a position substantially parallel to and spaced laterally from said first and second side edges for providing padding on both sides of each elastic strip.

4,402,691

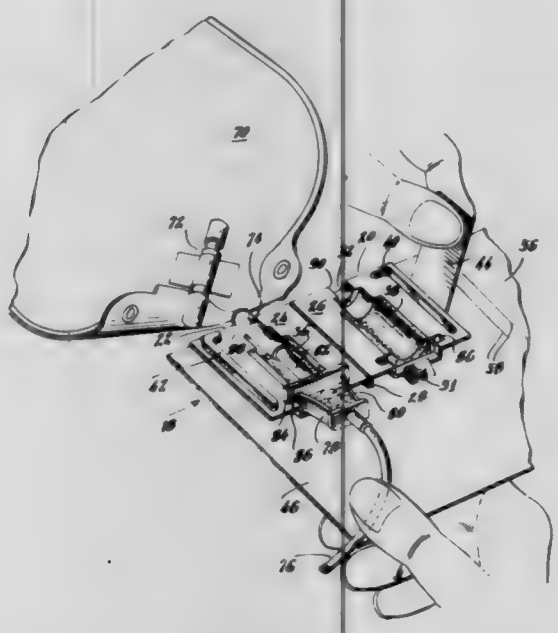
ASEPTIC CONNECTION BARRIER SYSTEM AND METHOD

Arthur L. Rosenthal, Guilford, and Bruce H. Wilson, Madison, both of Conn., assignors to The Clinipad Corporation, Guilford, Conn.

Filed Jul. 24, 1981, Ser. No. 286,474
Int. Cl.³ A61M *3/00*
U.S. Cl. 604—411 **5 Claims**

1. An aseptic connection barrier device for surrounding a connection site formed in conduit used for administering sterile medical fluids comprising a self-supporting, sheet-like body member divided into two halves by a flexible hinge formed therein, the two halves being capable of abutting one another when the member is folded about its hinge, each of the halves having a contoured cavity formed therein such that the cavities align with one another to form a housing capable of surrounding the conduit connection site when the member halves are folded into abutting relationship, the cavities in the member being each contoured to matingly approximate the configuration of the conduit connection so that the housing formed by

alignment of the cavities provides a close fitting aligning and mating engagement with the conduit connection site, compressible absorbent means located in each of the cavities for holding an antiseptic medium, the absorbent means being positioned such that, when the cavities are aligned to form the housing surrounding the connection site, the conduit connection contacts and compresses the absorbent means, means including recesses formed in the member to receive portions of the conduit connection for providing a fluid seal on the body



member exteriorly of the housing when surrounding the connection site and further comprising reservoir channels formed in the member to accommodate leakage and a ridge formed in one half of the member and a channel formed in the other half of the member to receive the ridge in mating engagement when the halves abut one another, the ridge and channel being formed on that portion of the member apart from the hinge and means for securely maintaining the member halves in abutting relationship.

4,402,692

MEDICAMENT CAPSULES FOR RECTAL APPLICATION

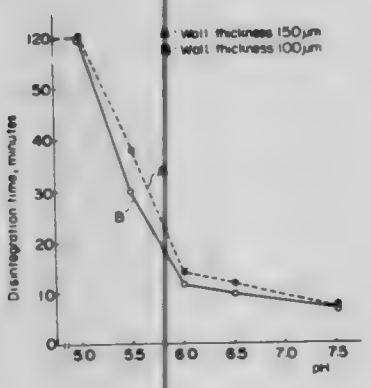
Yasushi Takagishi, Nishinomiya; Yoshio Doi, Ibaraki; Kanji Aita, Minoo, and Noboru Hoshi, Higashi-Kurume, all of Japan, assignors to Shionogi & Co., Ltd., Osaka and Shin-Etsu Chemical Co., Ltd., Tokyo, both of, Japan

Filed Jun. 2, 1981, Ser. No. 269,706

Claims priority, application Japan, Jun. 5, 1980, 55-76264

Int. Cl.³ A61M *7/00*

U.S. Cl. 604—890 **7 Claims**



1. A medicament capsule for rectal application which comprises

(a) a hard capsule shell made of a mixed ester of a cellulose ether selected from the group consisting of alkylcelluloses, hydroxyalkylcelluloses and hydroxyalkyl alkylcelluloses and esterified with aliphatic monoacyl groups and acidic succinyl groups, and

(b) a therapeutically effective ingredient capable of being rectally absorbed and encapsulated in the daid hard capsule shell.

4,402,693

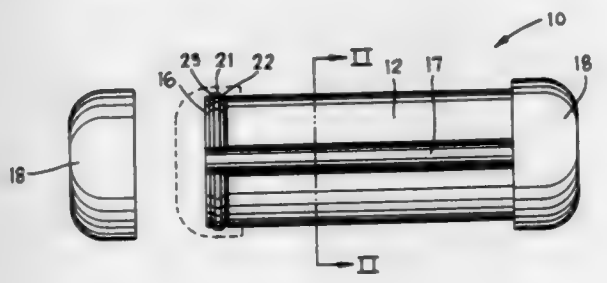
MEDICATED DEVICE HOLDER

Theodore J. Roseman; Glenford R. Derr, both of Portage, Mich., and Gilbert Schwartzman, Mamaroneck, N.Y., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 261,337, May 7, 1981, abandoned. This application May 10, 1982, Ser. No. 376,798

Int. Cl.³ A61F *13/20*

U.S. Cl. 604—890 **12 Claims**



12. A medicated device adapted for rate-controlled vaginal or rectal administration of a therapeutic drug comprising:

an elongated body member;

a piece of sheet material extending around said body member and having adjacent first edge portions extending lengthwise of said body member and second edge portions close to the opposite axial ends of said body member, said sheet material including a drug-bearing film, a rate-control film and adhesive means for securing said rate-control film to the outer surface of said drug-bearing film, one of said body member and the inner side of said sheet material being impervious to said drug;

clamp means for securing said first edge portions of said sheet material with respect to the body member and for protecting said first edge portions from exposure externally of said device; and

cap means engageable with the ends of said body member for securing said second edge portions of said sheet material with respect to said body member and for protecting said second edge portions from exposure externally of said device.

4,402,694

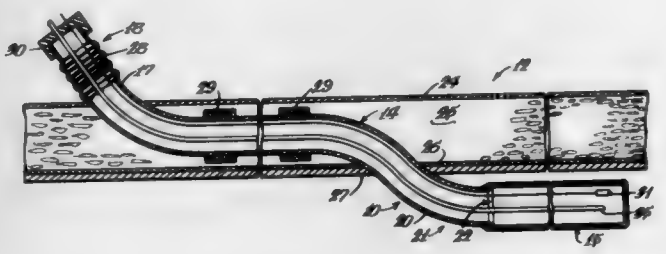
BODY CAVITY ACCESS DEVICE CONTAINING A HORMONE SOURCE

Stephen R. Ash, Lafayette, Ind., and Marvin P. Loeb, Chicago, Ill., assignors to Biotek, Inc., Arlington Heights, Ill.

Filed Jul. 16, 1981, Ser. No. 284,076

Int. Cl.³ A61M *7/00*

U.S. Cl. 604—891 **20 Claims**



1. An implantable device for providing safe access to a patient's body cavity comprising:

(a) a housing constituted by a sack and a hollow stem; the sack having at least one access opening and being con-

structed of a semipermeable membrane compatible with body tissue and permeable to peritoneal fluid but substantially impermeable to bacteria; the hollow stem having a distal end defining an extracorporeal segment and a proximal end defining a subcutaneous segment, the stem being compatible with body tissue and impermeable to body fluids; the sack access opening being sealingly coupled with the proximal end of the stem and together with the stem defining an access passageway to the sack, the housing being adapted to be implanted in the patient with the extracorporeal segment extending outside the body of the patient;

(b) a plug to seal the distal end of the stem; and

(c) a sensor to measure properties of body fluid located within the sack, the sensor having a transmission line extending outside the housing, and including a cannula extending into the housing to deliver medication into the sack.

4,402,695

DEVICE FOR DELIVERING AGENT IN VAGINA

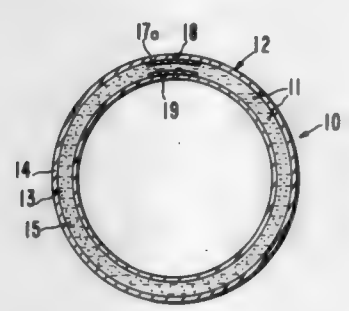
Patrick S. Wong, Hayward, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 113,499, Jan. 21, 1980, Pat. No. 4,286,587, which is a continuation-in-part of Ser. No. 950,454, Oct. 11, 1978, Pat. No. 4,215,691, which is a division of Ser. No. 775,718, Mar. 9, 1977, abandoned. This application Mar. 30, 1981, Ser. No. 249,005

The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.

Int. Cl.³ A61M 7/00

U.S. Cl. 604—892 **38 Claims**



28. A vaginal device adapted and sized for easy insertion and comfortable retention in a vagina, the device comprising: a shaped tube formed of microporous polymer and joined by a coupling inserted into the ends of the tube to form a device with an internal reservoir, said reservoir containing a drug and a carrier for the drug, which drug is released by the device at a controlled rate and in a therapeutically effective amount over a prolonged period of time.

4,402,696

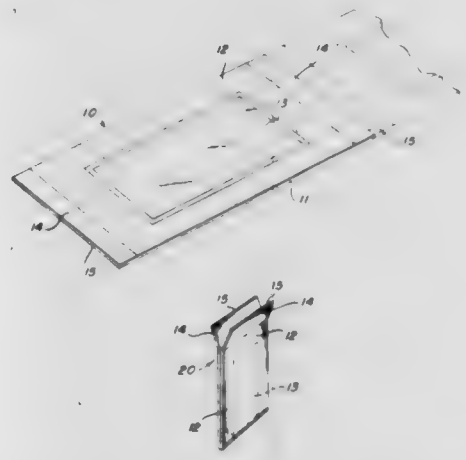
FOLDED APPLICATOR

Bruce N. Gulko, 1835 Arcola Ave., Silver Spring, Md. 20902

Filed Oct. 15, 1979, Ser. No. 84,567

Int. Cl.³ A61M 7/00

U.S. Cl. 604—897 **7 Claims**



1. An applicator for applying an active agent to a living surface comprising a strip of film having a peripheral portion on one side thereof coated with pressure sensitive adhesive, said adhesive surrounding a central portion carrying a liquid containing an active agent, said strip being folded upon itself and held in said folded position by said pressure sensitive adhesive to confine said active agent and prevent its contamination, and said film having flaps uncoated with pressure sensitive adhesive extending beyond the portion thereof which is coated with said adhesive at both ends of said strip remote from the fold therein to facilitate opening said folded strip, and said strip, when unfolded, may be grasped by said uncoated flaps and adhesively attached to said living surface with said pressure sensitive adhesive.

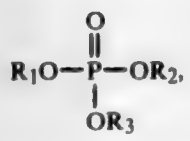
4,402,697

METHOD FOR INHIBITING MINERALIZATION OF NATURAL TISSUE DURING IMPLANTATION

Elisabeth M. Pollock, Sandy, and David J. Lentz, Salt Lake City, both of Utah, assignors to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Filed Aug. 25, 1982, Ser. No. 411,191
Int. Cl.[3] A61F *1/22*
U.S. Cl. 8—94.11 26 Claims

1. A method for inhibiting the mineralization of fixed natural tissue after implantation in a living body comprising contacting fixed natural tissue intended for implantation with an aqueous solution of a water soluble phosphate ester having the formula



wherein at least one of R_1, R_2 and R_3 is an alkyl group having from 7 to 15 carbon atoms.

4,402,698

HAIR-DYEING PROCESS INVOLVING PROTECTION OF THE SCALP

Gregoire Kalopissis, Neuilly-sur-Seine; Jacqueline Gallien, Aulnay-sous-Boi; Bernard Jacquet, Antony; Daniel Bauer, Le Raincy, and Jean P. Chalaye, Maisons Alfort, all of France, assignors to L'Oreal, Paris, France

Filed Dec. 9, 1980, Ser. No. 214,864
Claims priority, application Luxembourg, Dec. 13, 1979, 81994; Jul. 3, 1980, 82581
Int. Cl.[3] A61K *7/13*; D06P *3/04*
U.S. Cl. 8—405 23 Claims

1. In the process for coloring human living hair which comprises, in a first stage, applying to the skin a protective composition and thereafter, in a second stage, applying on the hair one or more dye or coloring compositions, the improvement for preventing contact between said skin and the dyestuff and/or dyestuff precursors wherein a composition containing a member selected from the group consisting of charcoal, carrageenate, a cosmetically acceptable polymer derived from polystyrene sulphonic acid having a molecular weight of 50,000 to 500,000, alumina, clay or aluminum phosphate or mixtures thereof in suspension or in solution in water, ethanol, isopropanol, polyethylene glycol, glycerol or their mixtures, said composition having a viscosity of 80 to 8,000 cps suitable for application on the scalp, or being in the form of a powder, said composition being applied in said first stage in a scalp protective effective amount, and in said second stage, applying on the hair one or more compositions, at least one of which contains either at least one oxidizable hair dye which is a dyestuff precursor of the ortho or para type, or a mixture thereof, a dyestuff precursor of the ortho or para type associated with a coupler which is a monophenol derivative, meta-dihydroxy benzene, meta-aminophenol, meta-diamine, heterocyclic compound derived from pyridine or from morpholine, pyrazolone or diketone compound or their salts, a diphenylamine or a rapid oxidation dyestuff capable of developing on contact with the hair, or a direct dyestuff which is a nitrobenzene derivative, an azo dyestuff, an anthraquinone dyestuff, an indophenol, indamine or indoaniline, said composition applied in the second stage remaining in contact with the hair during 10 to 40 minutes, and subsequently rinsing or rinsing and shampooing the treated hair.

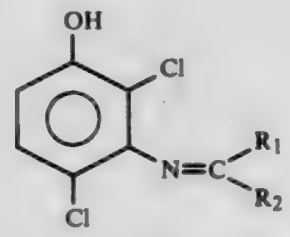
4,402,699

COUPLER COMPONENTS FOR THE OXIDATION OF HAIR DYES AND THEIR USE, AS WELL AS HAIR DYEING AGENTS CONTAINING THEM

David Rose, Hilden, and Norbert Maak, Neuss, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Apr. 28, 1981, Ser. No. 258,523
Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016906
Int. Cl.[3] A61K *7/13*; C07C *119/06*
U.S. Cl. 8—412 15 Claims

1. 2,4-dichloro-3-alkylidene-aminophenol having the formula:



wherein R_1 is hydrogen or an alkyl radical having 1 to 6 carbon atoms and R_2 is an alkyl radical having 1 to 6 carbon atoms, or a salt thereof with an organic acid or inorganic acid.

7. Hair dyeing agent based upon oxidation hair dyes comprising at least one 2,4-dichloro-3-alkylidene-aminophenol, or salt thereof with an inorganic or organic acid, as claimed in claim 1, as the coupler component, and the developer components of oxidation hair dyes.

11. Process of preparing an oxidation hair dye which comprises mixing at least one 2,4-dichloro-3-alkylidene-aminophenol, or salt thereof with an organic or inorganic acid, as claimed in claim 1, as the coupler component, and the developer components of oxidation hair dyes.

13. Process of dyeing hair using the oxidation hair dye of claim 7.

4,402,700

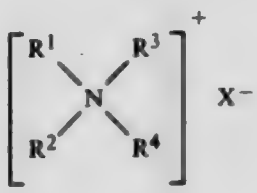
COMPOSITION FOR COLORING HAIR CONTAINING AN OXIDIZING AGENT AND CERTAIN QUATERNARY AMINES

Raymond Feinland, Stamford, Conn.; Stanley Pohl, New Rochelle, and Michael Hnatchenko, Bronx, both of N.Y., assignors to Clairol Incorporated, New York, N.Y.

Division of Ser. No. 796,115, May 11, 1977, Pat. No. 4,119,399, which is a continuation-in-part of Ser. No. 656,503, Feb. 9, 1976, Pat. No. 4,096,243. This application Jun. 5, 1978, Ser. No. 912,795
The portion of the term of this patent subsequent to Oct. 10, 1995, has been disclaimed.
Int. Cl.[3] A61K *7/13*
U.S. Cl. 8—416 51 Claims

1. A two part composition comprising an aqueous base formulation component containing an alkalizing agent, one or more oxidation hair dye intermediates, and a quaternary amine as a first part and an oxidizing solution component as a second part, said first and second part to be mixed just before use and cooperating to give a composition that simultaneously colors and conditions hair and contains:

(a) from about 0.05 to 5% by weight of a quaternary amine in active form of formula:



(I)

in which:

R^1 and R^2 are long chain aliphatic hydrocarbon radicals having about 10 to 26 carbons;
R^3 and R^4 are lower akyl radicals having about 1 to 5 carbons; and
X is an anion;
(b) sufficient oxidizing agent to develop said oxidation hair dye intermediates;
(c) sufficient alkalizing agent to give said composition a pH in the range of from about 8 to 11; and
(d) said composition containing no additives having large anionic groups that tend to deactivate said quaternary amine compound.

4,402,701

LEATHER DYEING AGENTS AND THEIR PREPARATION: MEMBRAME SEPARATION OF DYE MOTHER LIQUOR

Harald Gleinig, Odenthal; Hans-Heinz Mölls, Leverkusen; Jochen Koll, Odenthal; Gottfried Dick, Leverkusen; Reinhold Hörnle, Cologne, and Friedrich Kunert, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 21, 1981, Ser. No. 304,239

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1980, 3038393

Int. Cl.³ C09B *67/54;* D06P *3/32*

U.S. Cl. 8—436 **15 Claims**

1. Leather dyeing agents, which can be obtained by concentrating, by means of a membrane separation process, the mother liquors, which are produced in the salting-out process in the preparation of organic dyestuffs which are water-soluble or which contain groups imparting water-solubility, the mother liquors having an extinction in the absorption maximum which is ≧500, with a layer thickness of 10 cm, and by drying the concentrate.

4,402,702

LOW-DUST DYESTUFF FORMULATIONS

Vaclav Kaspar, Cologne; Klaus Walz; Hans-Heinz Mölls, both of Leverkusen; Reinhold Hörnle, and Rainer Skerhut, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

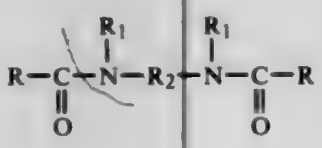
Filed Dec. 16, 1981, Ser. No. 331,334

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1981, 3100353

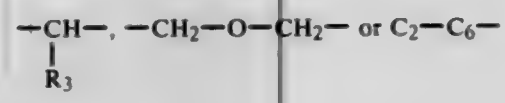
Int. Cl.³ C09B *67/24, 67/06, 67/32, 67/38*

U.S. Cl. 8—524 **9 Claims**

1. A solid composition comprising (A) an organic dyestuff and (B) an anti-dusting agent, the antidusting agent comprising about 0.2 to 15% by weight and comprising a mixture of
(a) 70–90% by weight of a mineral oil.
(b) 0.5–10% by weight of an amide of the formula



in which
R represents C_{10}–C_{22}-alkyl or -alkenyl,
R_1 represents H or C_1–C_4-alkyl, or the two R_1's together represent a 1,2-ethylene bridge and
R_2 represents



alkylene, and
R_3 represents H, C_1–C_6-alkyl or phenyl,
(c) 0.5–15% by weight of a non-ionic surface-active agent and
(d) 0–8% by weight of a cationic or anionic surface-active agent.

4,402,703

BLEED RESISTANT COLORED CREPE PAPER AND THE METHOD OF ITS PREPARATION

Joseph S. Panto, Dover, and Ernest R. Kaswell, Waban, both of Mass., assignors to Albany International Corp., Albany, N.Y.

Filed Jan. 6, 1982, Ser. No. 337,464

Int. Cl.³ D21H *1/46;* D06P *1/382*

U.S. Cl. 8—541 **3 Claims**

1. A method of coloring a crepe type paper, which comprises;
(a) providing a reactive dye;
(b) mixing said dye with a sufficient proportion of a cross-linker, to partially cross-link a portion of the dye molecules, said proportion being insufficient to cross-link all of the dye molecules;
(c) partially cross-linking the portion of dye molecules;
(d) adding additional cross-linker to the mixture of partially cross-linked reactive dye;
(e) applying the product of step (d) above to the paper; and
(f) chemically cross-linking said product to the paper.

4,402,704

PROCESS FOR TRICHROMATIC DYEING OR PRINTING

Helmut Raisin, Riehen; Dieter Mäusezahl, Biel-Benken, both of Switzerland, and Harry Schaetzer, Wehr, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

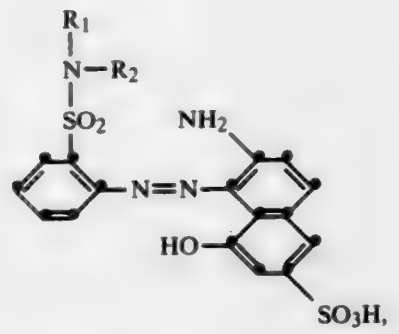
Filed Feb. 8, 1982, Ser. No. 346,978

Claims priority, application Switzerland, Dec. 29, 1981, 8344/81

Int. Cl.³ C09B *1/00, 29/00*

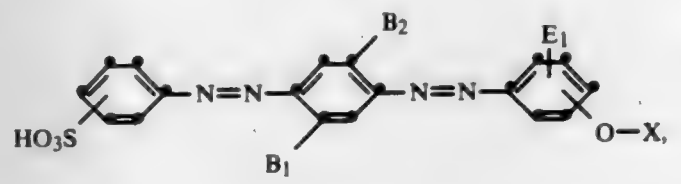
U.S. Cl. 8—641 **24 Claims**

1. A process for the trichromatic dyeing or printing of natural and synthetic polyamide materials with dye mixtures, in which process there is used a dye of the formula



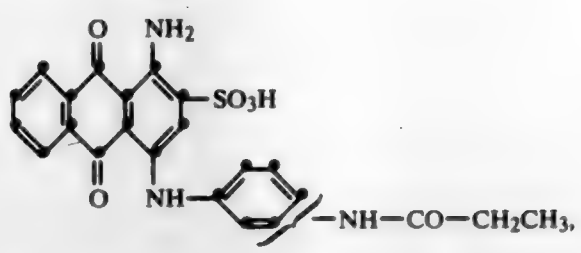
(1)

wherein R_1 is methyl or ethyl, and R_2 is cyclohexyl or phenyl, together with at least one dye of the formula



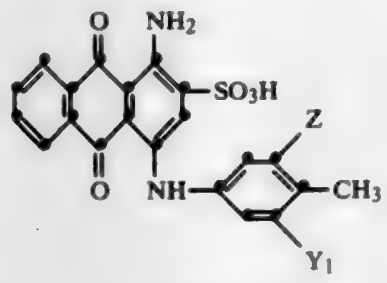
(2)

wherein B_1, B_2 and E_1 are hydrogen, C_1–C_4-alkyl or C_1–C_4-alkoxy, and X is straight-chain or branched-chain C_1–C_4-alkyl, or straight-chain or branched-chain C_2–C_4-hydroxyalkyl, and a dye of the formula



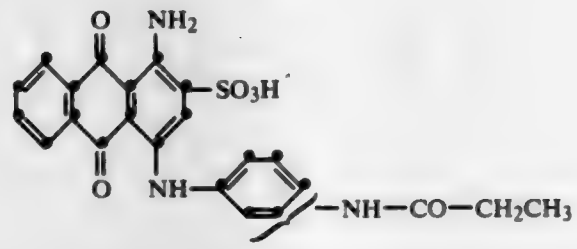
(6)

or with a mixture of the dyes of the formulae



(4)

and



(6)

wherein Y_1 in the formula (4) is C_2–C_4-hydroxyalkylsulfamoyl, and Z is hydrogen or methyl, Z in the formula (4) being hydrogen when the propionylamino group in the formula (6) is bound in the m-position with respect to the NH group.

4,402,705

INCENDIARY COMPOSITION CONTAINING A GROUP IVB METALLIC FUEL

Eduard Daume, Richterswil, and Jürg Sarbach, Jona, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Filed Oct. 13, 1981, Ser. No. 310,588

Claims priority, application Switzerland, Oct. 31, 1980, 8116/80

Int. Cl.³ C10L *5/00*

U.S. Cl. 44—1 R **1 Claim**

1. A compressible incendiary composition essentially consisting of:

a metallic fuel selected from Group IVB of the periodic table of the elements;

polyvinyl acetate as an organic binder free of halogen;

said metallic fuel consisting of a metal powder having a mean grain size in the order of 15–20 μm; and

the proportion of polyvinyl acetate being smaller than 2%-by-weight.

4,402,706

METHOD AND APPARATUS FOR OXIDIZING DRIED LOW RANK COAL

Donald K. Wunderlich, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 21, 1981, Ser. No. 333,143

Int. Cl.³ C10L *5/24*; F26B *17/10*

U.S. Cl. 44—1 G **6 Claims**

1. An apparatus for partially oxidizing a dried particulate low rank coal to reduce the tendency of said dried particulate low rank coal to spontaneously ignite, said apparatus comprising:

a. an oxidizer vessel, having an upper and a lower end;

b. a particulate coal inlet in said upper end of said oxidizer vessel;

c. a distributor means positioned in said vessel to distribute said particulate coal from said particulate coal inlet uniformly in said vessel;

d. a grate means positioned in said lower end of said vessel for supporting said particulate coal in said vessel; and removing controlled quantities of oxidized particulate coal from said lower end of said vessel so that said particulate coal moves relatively uniformly downwardly through said oxidizer vessel;

f. an air inlet means positioned in said lower end of said vessel for the injection of air into said particulate coal; and,

g. an air outlet means positioned in said upper end of said vessel.

5. A method for partially oxidizing a particulate low rank coal selected from the group consisting of sub-bituminous, lignite and brown coals to reduce the tendency of said particulate low rank coal to spontaneously ignite, said method consisting essentially of:

a. drying said particulate low rank coal to a water content from about 1 to about 5 weight percent greater than the water content desired in the dried oxidized low rank coal to produce a partially dried coal;

b. charging said partially dried coal to a coal oxidation zone;

c. contacting said partially dried coal with a free-oxygen containing gas in said coal oxidation zone at a temperature from about 175° to about 225° F. for a time sufficient to result in the reaction of from about 6 to about 25 lbs. of oxygen per ton of partially dried coal with said partially dried coal to produce a dried, oxidized coal; and,

d. recovering said dried oxidized coal.

4,402,707

DEACTIVATING DRIED COAL WITH A SPECIAL OIL COMPOSITION

Donald K. Wunderlich, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 21, 1981, Ser. No. 333,137

Int. Cl.³ C10L *9/10*

U.S. Cl. 44—6 **6 Claims**

1. In a method for producing a dried particulate coal fuel having a reduced tendency to spontaneously ignite wherein crushed mined coal is heated in a drying zone with a hot gas to vaporize water from the coal and dry the coal to a moisture content of less than about 20 percent by weight of water and wherein the dried coal is removed from said drying zone, the improvement comprising spraying and intimately mixing said removed dried coal particles with virgin vacuum reduced crude with a 5% point in excess of 900° F., a characterization factor at least as high as 10.8, and a flash point at least as high as 400° F., whereby dried coal particles are contacted with deactivating oil composition to produce a coal product which has a reduced tendency to spontaneously ignite under normal storage and transportation conditions.

4,402,708

DIALKYL AMINE DERIVATIVES OF PHTHALIC ACID

Alexis A. Oswald, Mountainside, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

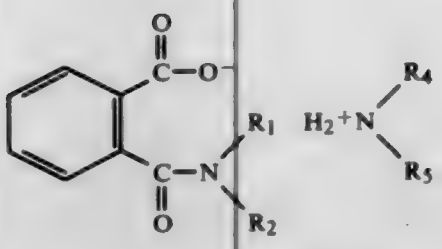
Filed Nov. 18, 1980, Ser. No. 207,846

Int. Cl.³ C10L *1/22, 1/18*

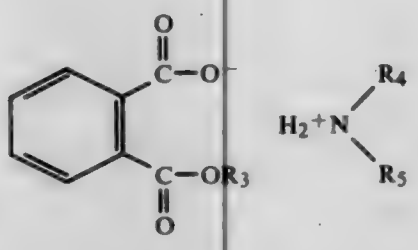
U.S. Cl. 44—66 **18 Claims**

1. The oil soluble reaction product of phthalic anhydride or a C_{16}–C_{40} alkyl monoester of orthophthalic acid, with 2 or 1 moles of a secondary dialkyl amine, respectively; wherein the alkyl groups are C_{16} to C_{40} alkyl groups of which at least one is straight chain and wherein said reaction product consists essentially of compounds selected from the group consisting of:

a. tetraalkyl ammonium phthalamate having the formula

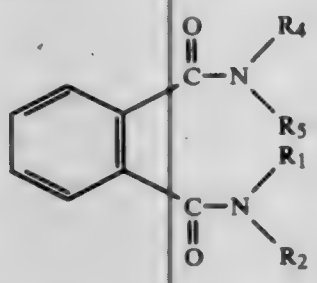


b. dialkyl ammonium monoalkyl phthalate having the formula



and

c. tetraalkyl phthalamide having the formula



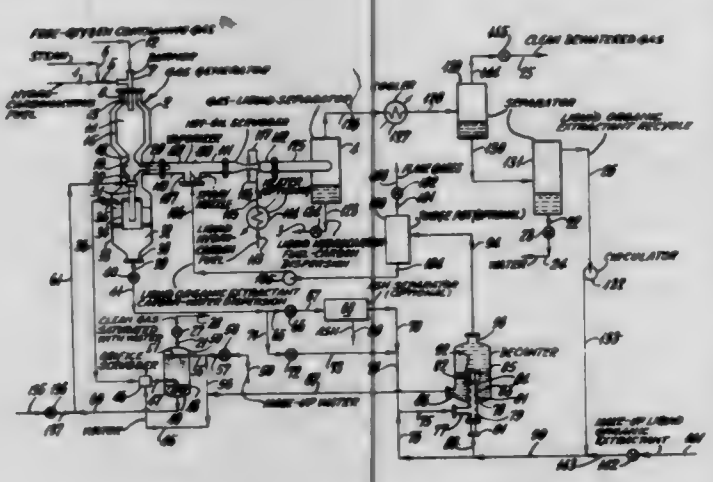
and wherein R_1, R_2, R_3, R_4, R_5 are C_{16} to C_{40} alkyl groups.

4,402,709

SIMULTANEOUS PRODUCTION OF CLEAN, DEWATERED AND CLEAN SATURATED STREAMS OF SYNTHESIS GAS

Robert J. Stellaccio, Spring, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 27, 1982, Ser. No. 372,420
Int. Cl.³ C10J 3/46, 3/84
U.S. Cl. 48—197 R **16 Claims**



1. In a process for the partial oxidation of a hydrocarbonaceous feedstock with a free oxygen-containing gas in the reaction zone of a free-flow noncatalytic partial oxidation gas generator at a temperature in the range of about 1700° F. to 3500° F. and a pressure in the range of about 5 to 300 atmospheres in the presence of a temperature moderator to produce a hot raw effluent gas stream comprising H_2, CO, CO_2, entrained particulate carbon and at least one material from the group H_2O, N_2, Ar, H_2S, COS, CH_4, and ash; and cooling and cleaning the process gas stream; the improved method for simultaneously producing a clean dewatered gas stream and a clean gas stream saturated with H_2O, and for recovering the particulate carbon from said effluent gas stream comprising;

(1) splitting all of the hot raw effluent gas stream leaving the reaction zone into first and second hot raw gas streams wherein the first hot raw gas stream comprises in the range of about 5 to 50 volume percent of all of the effluent gas stream and the second hot raw gas stream comprises the remainder;

(2) cooling and cleaning the second hot raw gas stream from (1) by direct contact with water thereby removing the solid particles entrained therein, and producing a carbon-water dispersion;

(3) mixing the carbon-water dispersion from (2) with a liquid organic extractant, and separating in a decanting zone a stream of liquid organic extractant-carbon-water dispersion at a temperature in the range of about 180° F. to 650° F. and a pressure in the range of about 75 to 4500 psig., and a stream of clarified water;

(4) scrubbing the gas stream from (2) with water comprising at least a portion of the clarified water from (3) to produce a clean gas stream saturated with H_2O;

(5) introducing into a vaporizing zone the first hot raw gas stream from (1) at substantially the same temperature and pressure as that in the reaction zone of the gas generator less ordinary losses of temperature and pressure in the lines; directly contacting and mixing in said vaporizing zone at substantially the same pressure as that in the reaction zone of the gas generator less ordinary pressure drop in the lines said first hot raw gas stream and the stream of liquid organic extractant-carbon-water dispersion from (3); vaporizing in said vaporizing zone substantially all of the liquid organic extractant and water in said dispersion to produce a gaseous stream comprising said first raw gas stream, vaporized liquid organic extractant, H_2O, and entrained particulate solids;

(6) contacting said gaseous stream leaving the vaporizng zone in (5) with a liquid hydrocarbon fuel scrubbing fluid in liquid phase in a gas scrubbing zone thereby coating the carbon particles with said liquid hydrocarbon fuel scrubbing fluid;

(7) separating by gravity in a separating zone a liquid phase dispersion of particulate carbon and liquid hydrocarbon fuel scrubbing fluid from said gaseous stream; and

(8) cooling the gaseous stream leaving said separating zone in (7) to a temperature below the dew point of said H_2O and said vaporized liquid organic extractant, whichever is lower, and in a separating zone separating from each other water, liquid organic extractant, and a clean dewatered gas stream.

4,402,710

CARBON RECOVERY PROCESS

Robert J. Stellaccio, Spring, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 27, 1982, Ser. No. 372,421
Int. Cl.³ C10J 3/46, 3/84
U.S. Cl. 48—197 R **17 Claims**

1. In a process for the partial oxidation of a hydrocarbonaceous feedstock with a free oxygen-containing gas in the reaction zone of a free-flow noncatalytic partial oxidation gas generator at a temperature in the range of about 1700° F. to 3500° F. and a pressure in the range of about 5 to 300 atmospheres in the presence of a temperature moderator to produce a hot raw effluent gas stream comprising H_2, CO, CO_2, entrained particulate carbon and at least one material from the group H_2O, N_2, Ar, H_2S, COS, CH_4, and ash; and cooling and cleaning the process gas stream; the improved method for simultaneously producing a clean dewatered gas stream and a clean gas stream saturated with H_2O, and for recovering the particulate carbon from said effluent gas stream comprising;

(1) splitting all of the hot raw effluent gas stream leaving the reaction zone into first and second hot raw gas streams wherein the first hot raw gas stream comprises in the

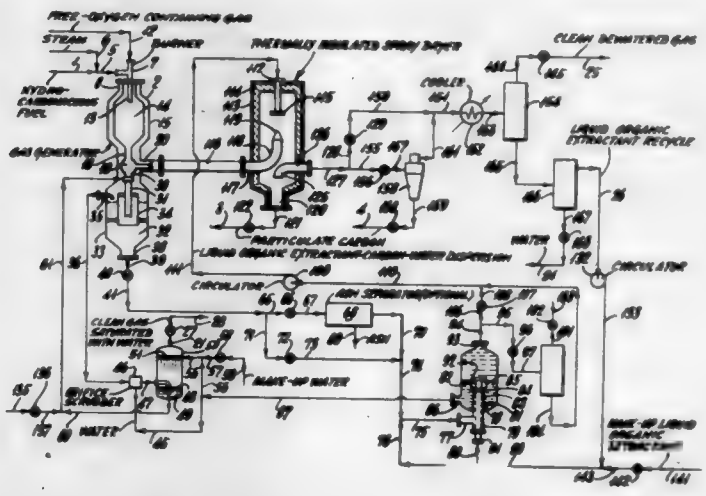
range of about 5 to 50 volume percent of all of the effluent gas stream and the second hot raw gas stream comprises the remainder;

(2) cooling and cleaning the second hot raw gas stream from (1) by direct contact with water thereby removing the solid particles entrained therein, and producing a carbon-water dispersion;

(3) mixing the carbon-water dispersion from (2) with a liquid organic extractant, and separating in a decanting zone a stream of liquid organic extractant-carbon-water dispersion at a temperature in the range of about 180° F. to 650° F. and a pressure in the range of about 5 to 300 atmospheres, and a stream of clarified water;

(4) scrubbing the gas stream from (2) with water comprising at least a portion of the clarified water from (3) to produce a clean gas stream saturated with H_2O;

(5) spraying and atomizing the liquid organic extractant-carbon-water dispersion from (3) in a spray drying zone to produce droplets; directly contacting said droplets in the spray drying zone with all of the first hot raw gas stream from (1); vaporizing in said spray drying zone substantially all of the liquid organic extractant and water in said dispersion to produce a gaseous stream comprising said first raw gas stream, vaporized liquid organic extractant, H_2O, and entrained particulate solids; separating clean, dry particulate solids from said gaseous stream in the spray drying zone; and separately removing the gaseous stream and particulate solids from the spray drying zone; and



(6) cooling the aqueous stream leaving the spray drying zone in (5) to a temperature below the dew point of said H_2O and said liquid organic extractant, whichever is lower, and in a separating zone separating from each other water, liquid organic extractant, and a clean dewatered gas stream.

4,402,711

PARTIAL OXIDATION PROCESS WITH EXTRACTANT PURIFICATION

Robert J. Stellaccio, Spring, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 27, 1982, Ser. No. 372,422

Int. Cl.³ C10J *3/46, 3/84*

U.S. Cl. 48—197 R **8 Claims**

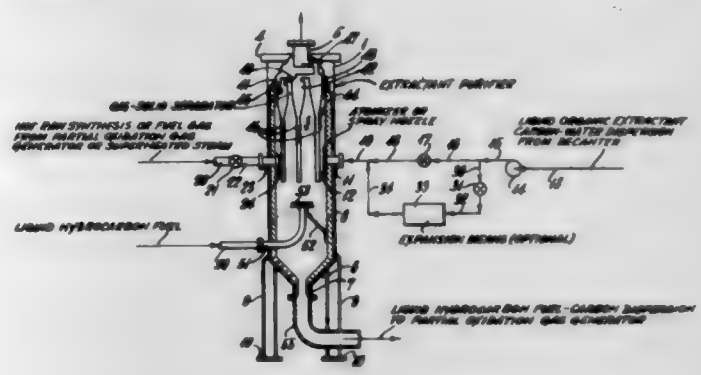
1. A process for removing entrained particulate carbon in a stream of normally liquid organic extractant-carbon-water dispersion as separated from a carbon-water dispersion in a decanting zone comprising:

(1) introducing into a closed vertical cylindrical thermally insulated pressure vessel near the middle, an atomized or an at least partially vaporized stream of normally liquid organic extractant-carbon-water dispersion;

(2) introducing into said vessel near the middle a stream of hot raw synthesis of fuel gas or superheated steam when an atomized or a partially vaporized stream of liquid organic extractant-carbon-water dispersion is introduced in (1);

(3) atomizing and spraying into said vessel near the lower end a stream of liquid hydrocarbon fuel scrubbing fluid;

(4) completely vaporizing said normally liquid organic extractant-carbon-water dispersion and separating the entrained particulate carbon from said vapors in a gas-solids separation means located within the upper portion of said vessel;



(5) discharging the vaporized liquid organic extractant and water separated in (4) from said vessel;

(6) discharging the particulate carbon separated in (4) into the spray of liquid hydrocarbon fuel scrubbing fluid in (3) to produce a liquid hydrocarbon fuel-carbon liquid phase dispersion; and

(7) discharging the liquid phase dispersion produced in (6) from the vessel.

4,402,712

SYSTEM FOR TREATMENT OF PLURAL CRUDE GASES IN SINGLE ADSORPTION PLANT

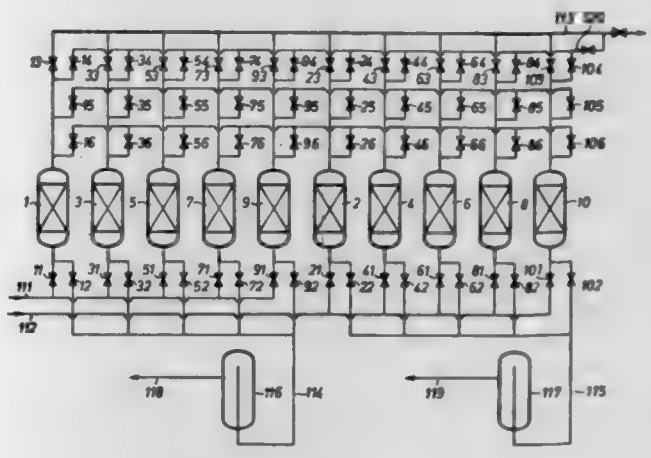
Christian Benkmann, Graefelfing, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 329,120, Dec. 9, 1981, abandoned. This application Dec. 10, 1981, Ser. No. 329,476

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1980, 3046267; Dec. 9, 1980, 3046268

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—26 **15 Claims**



1. In a process for the separation of at least two crude gas streams of differing composition in a single pressure swing adsorption plant operated with several cyclically reversible adsorbers passing respectively through an adsorption phase, and a regeneration phase comprising stages of expansion, purging, and pressure buildup, the improvement wherein said pressure swing adsorption plant comprises a plurality of groups of adsorbers, said groups communicating only via outlet sides thereof, and wherein each crude gas stream is associated with a single group of adsorbers through which the respective crude gas stream is conducted in a cyclically reversible fashion and

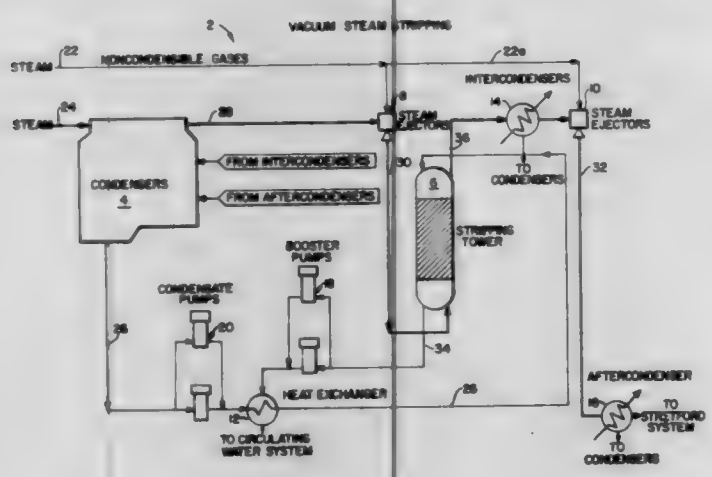
separated therein, and that expansion gas obtained at least during one stage of the expansion in one group of adsorbers is conducted into an adsorber of another group, the latter adsorber being in a regenerating phase.

4,402,713

PROCESS FOR REMOVING HYDROGEN SULFIDE FROM FLUIDS

George Domahidy, Englewood, Colo., assignor to Stone & Webster Engineering Corp., Boston, Mass.

Filed May 27, 1981, Ser. No. 267,501
Int. Cl.[3] B01D *19/00*
U.S. Cl. 55—53 5 Claims



1. A process for removing hydrogen sulfide from spent geothermal steam, said spent geothermal steam comprising hydrogen sulfide and carbon dioxide, said process comprising the steps of:

a. delivering the spent geothermal steam to a condenser;

b. cooling the spent geothermal steam in the condenser to generate a condensate rich in hydrogen sulfide and a non-condensed vapor rich in carbon dioxide;

c. delivering the condensate rich in hydrogen sulfide to a stripping tower;

d. delivering the vapor rich in carbon dioxide to the stripping tower;

e. passing the condensate rich in hydrogen sulfide concurrently with the vapor rich in carbon dioxide in the stripping tower, such that the vapor rich in carbon dioxide removes the hydrogen sulfide from the condensate; and

f. removing the resultant carbon dioxide and hydrogen sulfide rich vapor from the stripping tower.

4,402,714

METHOD FOR RETARDING CORROSION IN MUFFLERS

Walter P. Fethke, Monroe, N.Y.; Stephen R. Dunne, Danbury, Conn., and Joseph P. Ausikaitis, White Plains, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 8, 1982, Ser. No. 366,769
Int. Cl.[3] B01D *53/16*
U.S. Cl. 55—35 7 Claims

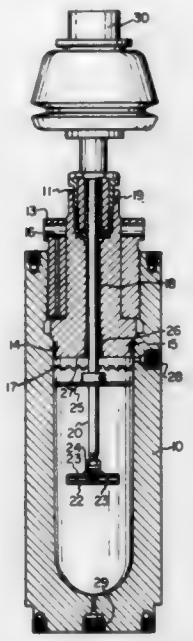
1. Method for inhibiting the corrosion of metal parts of a muffler used in conjunction with an internal combustion engine which comprises inserting in the internal space of said muffler an adsorbent mass selected from the group consisting of crystalline zeolite molecular sieves and activated alumina, said adsorbent mass being in contact with any gases entering said muffler from the internal combustion engine and the ambient atmosphere, said adsorbent mass having a sufficient capacity for the adsorption of water vapor and being present in sufficient amount to prevent condensation of water vapor within the muffler chamber.

4,402,715

GAS/OIL SEPARATOR

Robert F. Ruyak, Erie, and Charles W. Smith, Jr., Fairview, both of Pa., assignors to Autoclave Engineers, Inc., Erie, Pa.

Filed Dec. 23, 1981, Ser. No. 333,649
Int. Cl.[3] B01D *50/00, 45/14*
U.S. Cl. 55—317 4 Claims



1. An apparatus for separating oil and gas at high pressures comprising:

a pressure vessel having an open end;

a cover closing the open end of said pressure vessel, said cover having an elongate non-magnetic hollow extension;

a hollow driven shaft journaled in said elongate non-magnetic hollow extension, said shaft extending downwardly into the pressure vessel;

a plug with an inlet opening for an oil/gas mixture fixed in an end of said extension which is positioned in said cover, said opening being in communication with the interior of the hollow shaft;

impeller means at the end of the hollow shaft within said vessel for throwing the oil/gas mixture against the sides of the vessel so as to separate oil from gas;

magnetic means for driving the hollow driven shaft in the elongate non-magnetic hollow extension; and

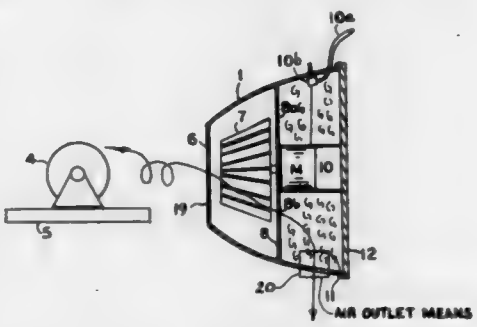
an outlet port for the purified gas.

4,402,716

WEARABLE VACUUM PROTECTIVE DEVICE

Vincent Chiaramonte, 75 Farmers Ave., Lindenhurst, N.Y. 11757

Continuation-in-part of Ser. No. 187,356, Sep. 15, 1980, abandoned. This application Jan. 4, 1982, Ser. No. 336,564
Int. Cl.[3] B01D *46/10;* B24B *55/00*
U.S. Cl. 55—356 3 Claims



1. A light weight vacuum protective device having a size and weight to be wearable directly on the chest of the user of a grinding wheel in proximity to the grinding wheel, leaving no obstruction on the face of the individual leaving him free to see and talk readily comprising:

a hollow bowl shape housing shaped and sized to allow the user movement and comfort while grinding in either a sitting or standing position and having air inlet means and air outlet means,

a vacuum fan mounted in the housing designed to run silently and fast enough to deflect particles away from the user's eyes, nose and mouth and into the air inlet means and out the air outlet means,

a removable filter mounted on the housing, so as to filter the air and so as to be easily removed and discarded along with the debris so that a new filter can be easily substituted,

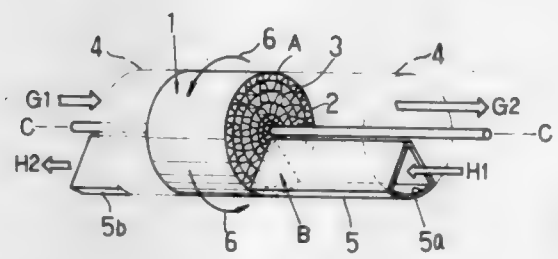
an adjustable first strap connected to the housing, the strap being arranged to fit around the neck of the user, to raise or lower the vacuum device thereby locating the device in such a way as to prevent the particles from reaching the user's face, a second adjustable strap connected to the housing and arranged to fit around the body of the user, to hold the housing against the user's chest.

4,402,717

APPARATUS FOR REMOVING MOISTURE AND ODORS

Masanori Izumo, Neyagawa; Kenji Mikami, Takatsuki, and Keiichiro Kametani, Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Japan

Filed May 22, 1980, Ser. No. 152,481
Int. Cl.³ B01D *53/06*
U.S. Cl. 55—388 **2 Claims**



1. An apparatus for removing moisture and odors comprising a cylindrical honeycomb structure made by corrugation from paper uniformly containing active carbon therein, including a multiplicity of parallel gas passageways and having deposited thereon a water absorbent at least at one side thereof serving as an outlet for the gas to be treated, a number of the gas passageways being separated as a dehumidifying and deodorizing zone from the other passageways serving as a regenerating zone, the dehumidifying and deodorizing zone being continuously shiftable throughout the entire honeycomb structure circumferentially thereof to render the honeycomb structure serviceable, from portion to portion, as the dehumidifying and deodorizing zone provided by the number of passageways, said water absorbent comprising lithium chloride.

4,402,718

METHOD AND APPARATUS FOR FORMING GLASS FIBERS

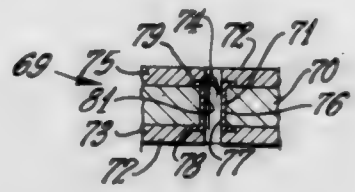
Mohinder S. Bhatti, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 200,651, Oct. 27, 1980, abandoned.
This application Mar. 3, 1982, Ser. No. 354,264
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—1 **33 Claims**

1. A laminated wall for a feeder for supplying streams of molten glass to be attenuated into filaments comprising:

a refractory metal core having an oxygen impervious, precious metal sheath intimately bonded thereto by hot isostatic pressing to form a laminate, said laminate having at least one aperture therethrough;

an element located in said aperture to prevent the oxidation of said core at elevated temperatures, said element having a flange at each end thereof sealed to said sheath, each flange being located intermediate said sheath and said



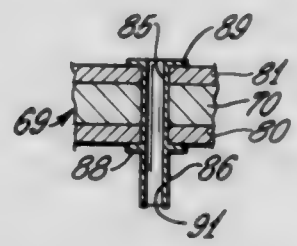
core, said element being adapted to permit said molten material to flow therethrough.

4,402,719

METHOD AND APPARATUS FOR FORMING GLASS FIBERS

Mohinder S. Bhatti, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 200,647, Oct. 27, 1980, abandoned.
This application May 17, 1982, Ser. No. 378,663
Int. Cl.³ C03B *37/025*
U.S. Cl. 65—1 **30 Claims**



1. A laminated wall for a feeder for supplying molten streams of glass to be attenuated into filaments comprising:

a refractory metal core having an oxygen impervious, precious metal sheath intimately bonded therein by hot isostatically pressing to form a laminate,

said laminate having at least one aperture extending therethrough; and

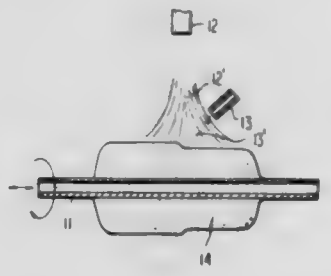
a tubular member having a sleeve having a projection extending beyond a first flange located intermediate said first flange and a second flange, said tubular member being sealed to said laminate to prevent the oxidization of said core at elevated temperatures.

4,402,720

PROCESS FOR PREPARING GLASS PREFORM FOR OPTICAL FIBER

Takao Edahiro, Mito; Shiro Kurosaki, and Minoru Watanabe, both of Kanagawa, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Sumitomo Electric Industries Ltd., Osaka, both of, Japan

Filed Dec. 16, 1980, Ser. No. 217,075
Claims priority, application Japan, Jan. 22, 1980, 55-6633; Feb. 22, 1980, 55-20624
Int. Cl.³ C03B *19/06, 37/075*
U.S. Cl. 65—3.12 **15 Claims**



1. A process for producing a glass preform for optical trans-

mission fibers comprised of a substantially fluorine-free nitrogen-doped silica glass core and a surrounding fluorine-doped or undoped silica glass cladding layer, which comprises forming the cladding layer of the preform by depositing said fluorine-doped or undoped silica glass on said core in the molten state or depositing said fluorine-doped or undoped silica glass on said core in finely divided form and then sintering the same to yield said cladding layer, and which comprises forming the core of the preform by supplying a gaseous silicon compound, ammonia or a gaseous nitrogen compound, and an oxygen-containing gas as starting gases into a high temperature zone to produce fine particles of SiO_xN_y glass and depositing said fine particles in the form of a soot or a transparent glass on a starting member to produce nitrogen-doped silica glass.

4,402,721

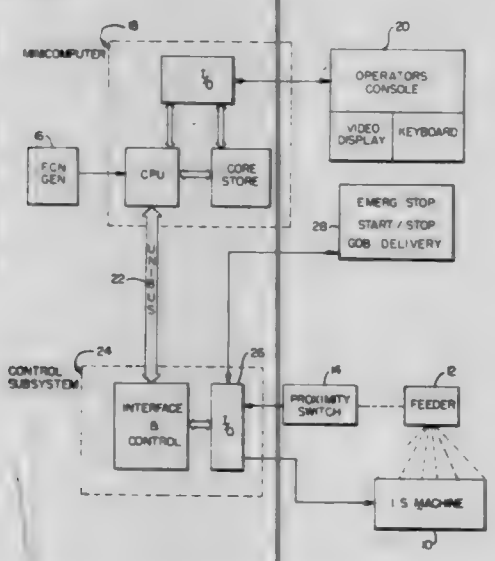
COMPUTER CONTROL FOR GLASSWARE FORMING MACHINE

Nathaniel H. Ericson, Windsor, and Robert J. Japenga, Wentogue, both of Conn., assignors to Emhart Industries, Inc., Farmington, Conn.

Continuation of Ser. No. 893,965, Apr. 6, 1978, abandoned, which is a continuation of Ser. No. 761,943, Jan. 24, 1977, abandoned. This application Jun. 28, 1979, Ser. No. 53,059

Int. Cl.³ C03B *9/40*

U.S. Cl. 65—29 **5 Claims**



1. In a glassware forming machine having at least one section, which section includes a set of components controlled by an associated set of two-state (on/off) devices switchable between their on and off states in accordance with a cyclically repeated sequential program of switching events to cause said set of components to form a gob of glass into an article during each repeat of said program, and a feeder with a cyclically movable part which feeder provides a gob of glass to said one section during each cycle of said feeder part, the improvement comprising: means for producing a reference pulse once per cycle of said feeder part which reference pulse occurs at one point in the cyclic movement of said feeder part and is absent throughout the remainder of each cycle of said part so that the time elapsing between successive ones of said pulses is a measure of the time consumed by said part in undergoing one cycle of its movement, means receiving said reference pulses and providing therefrom a factor Q which represents the amount of cycle degrees said feeder part moves in a given increment of time (e.g., Q=degrees of feeder part movement each millisecond), a memory means storing a plurality of elements defining a sequential program of switching events such as aforesaid, each of said elements including a cycle angle word indicating the cycle angle at which an event defined by the element is to occur, means for adding said factor Q to a memory store upon the lapse of each of said given time increments to provide an updated store content, and means for comparing said cycle angle words of said stored elements to said updated store content to control the occurrence of said switching events.

5. A method for controlling a glassware forming machine having at least one section including a set of components controlled by an associated set of two-state (on/off) devices switchable between their on and off states in accordance with a cyclically repeated sequential program in switching events to cause said set of components to form a gob of glass into an article during each repeat of said program, and a feeder which provides a gob of glass to said one section during each cycle of operation of said section, said method comprising the steps of: producing repetitive reference pulses at a rate of one pulse per desired cycle of said switching events so that the time elapsing between successive ones of said pulses is a measure of the time to be consumed by said components in undergoing one cycle of section operation, processing said reference pulses to provide a factor Q which represents the amount of section cycle degrees corresponding to a given increment of time (e.g., Q=cycle degrees each millisecond), storing a plurality of elements defining a sequential program of switching events such as aforesaid and each of which elements includes a cycle angle word indicating the cycle angle at which an event defined by the element is to occur, adding said factor Q to a memory store upon the lapse of each of said given time increments to provide an updated store content, and comparing said cycle angle words of said stored elements to said updated store content to control the occurrence of said switching events.

4,402,722

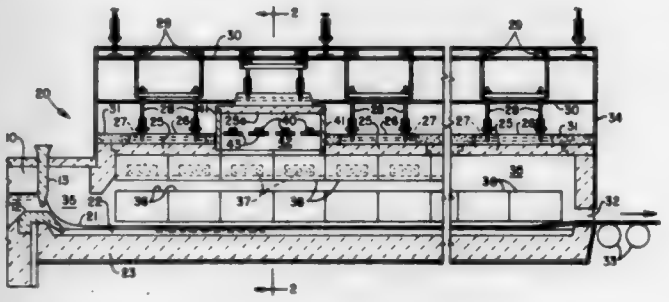
COOLING ARRANGEMENT AND METHOD FOR FORMING FLOAT GLASS

Charles K. Edge, Sarver, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 1, 1982, Ser. No. 344,421

Int. Cl.³ C03B *18/18*

U.S. Cl. 65—99.3 **14 Claims**



1. Apparatus for forming flat glass while supported on a pool of molten metal comprising: an enclosed forming chamber adapted to contain a pool of molten metal; means for delivering a stream of molten glass onto the molten metal in a delivery section of the forming chamber; the forming chamber downstream of the delivery section comprising an elongated main forming section adapted to pass a ribbon of glass being formed, the main forming section having in a major portion thereof a first generally horizontal interior roof elevation, and in a minor portion thereof, a second generally horizontal roof elevation higher than the first elevation overlying the path taken by the glass ribbon; a plurality of heating means within the main forming section above the molten metal pool and below the first roof elevation; and cooling means in the minor portion of the forming chamber above the first roof elevation at an elevation sufficiently spaced above the glass ribbon to diffuse the cooling effect relatively uniformly over the glass ribbon.

9. A method of forming flat glass wherein molten glass is supported on a pool of molten metal in an enclosed forming chamber as it is formed into a ribbon of glass, comprising: delivering a stream of molten glass to a delivery section of a forming chamber; passing the glass from the delivery section to an elongated main forming section of the forming chamber; in the main forming section modulating the temperature of the glass ribbon being formed by a plurality of heating means above the glass ribbon and below the major roof elevation of the main forming section, and by cooling means in a minor portion of the main forming chamber at an elevation above the

major roof elevation and spaced sufficiently above the glass ribbon to diffuse the cooling effect relatively uniformly over the glass ribbon.

4,402,723

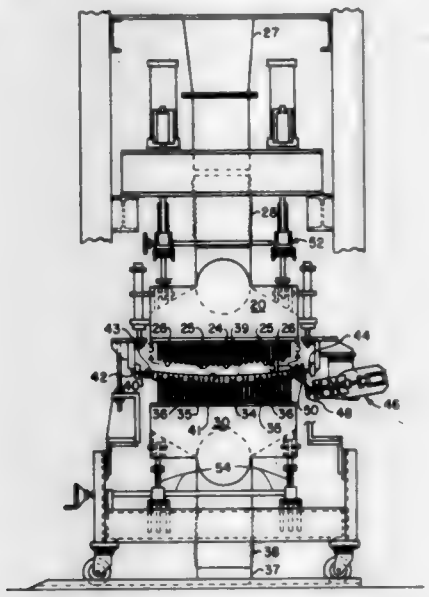
NOZZLE ARRANGEMENT FOR PASS-THROUGH GLASS SHEET TEMPERING APPARATUS

Stephen J. Schultz, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 28, 1982, Ser. No. 343,655

Int. Cl.³ C03B *27/04*

U.S. Cl. 65—114 **15 Claims**



1. Apparatus for tempering glass sheets comprising:

a first and a second array of nozzles for directing streams of tempering medium toward a glass sheet wherein the nozzles of said first array are spaced from and directed toward the nozzles of said second array;

means to convey a glass sheet along a continuous unidirectional movement path between said first and said second array of nozzles wherein the situs of the nozzles is defined by said movement path having a center and an edge area; and

wherein the relative spacing between nozzles in both first and second arrays in a transverse direction to said movement path decreases toward said center area and increases toward said edge area.

8. A method of imparting at least a partial temper to a glass sheet heated to an elevated temperature range sufficient for tempering comprising:

continuously moving said glass sheet in a unidirectional path while at said elevated temperature range through a cooling zone;

applying a plurality of flows of cold tempering medium from opposite sets of nozzles extending toward the opposite surfaces of said glass sheet as said glass sheet passes between said sets of nozzles characterized by applying a greater density of flows of cold tempering medium toward the central portion of said glass sheet, a lesser density of flows from cold tempering medium toward the transverse side portions of said glass sheet and intermediate density of flows of cold tempering medium against the transverse portions of said glass sheet intermediate said central portion and said transverse side portions as said sheet is conveyed along a longitudinal path of glass sheet travel between said sets in a longitudinal direction thereof without stopping.

4,402,724

METHOD AND APPARATUS FOR DISCHARGING GLASS FROM A MELTING FURNACE

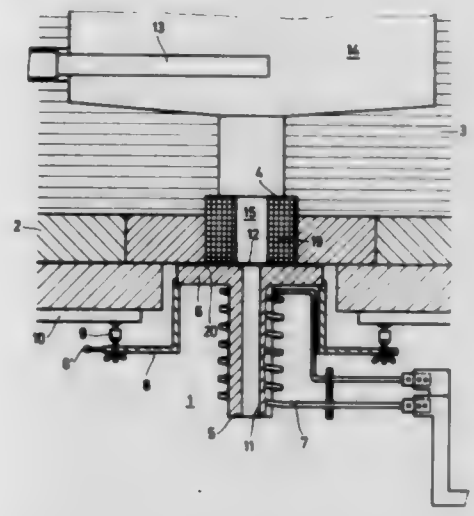
Siegfried Weisenburger, Au; Hartmut Seiffert, Karlsruhe, and Fred Holl, Schwetzingen, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Sep. 27, 1979, Ser. No. 79,881

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842505

Int. Cl.³ C03B *5/26, 7/08*

U.S. Cl. 65—128 **8 Claims**



1. In a method for periodically discharging batches of a glass melt from a ceramic glass melting furnace in which localized heating energy limitable in time is supplied to the glass melt by means of electrodes in the furnace, the furnace being provided at its bottom with an induction heatable outlet member of ceramic material presenting a vertically oriented outlet passage for discharge of such batches, means defining a resistance heating region extending between the furnace electrodes and the bottom of the outlet member, and an induction heating source generating induction heat in a region located below the outlet member and below the resistance heating region, the furnace being operated to cause the outlet passage to be closed by a plug of the glass when no discharge is to take place, the improvement comprising melting such plug for discharging a batch of the glass melt via the outlet passage by the steps of:

(a) preheating the outlet member and the glass plug by induction heating produced by said source up to a preheating temperature which is below the melting temperature of the glass and above which the rate of increase of the electrical conductivity of the glass plug as a function of increasing temperature is greater than that of the ceramic material of the outlet member; and

(b) then further, heating the plug, while retaining the induction heating power, by means of resistance heating in said resistance heating region in which only the glass plug and the melt in the furnace serve as resistances, until the plug becomes almost liquid and molten and is suddenly pushed out of the outlet passage by the hydrostatic pressure of the glass melt thereabove.

5. Apparatus for periodically discharging batches of a glass melt from a ceramic glass melting furnace in which localized heating energy limitable in time is supplied to the glass melt by means of electrodes in the furnace, the furnace being provided at its bottom with an induction heatable outlet member of ceramic material presenting a vertically oriented outlet passage for discharge of such batches, and the furnace being operated to cause the outlet passage to be closed by a plug of the glass when no discharge is to take place, said apparatus comprising: a replaceable, metallic short length of pipe provided at its upper end with a compression flange constructed to constitute an electrode, said pipe being disposed beneath said outlet member to present a vertical discharge passage aligned with said outlet passage and having a diameter smaller than that of said

outlet passage; electrical current supply means connected to said electrode constituted by said flange to define a resistance heating path the lowermost point of which is said electrode constituted by said flange and which extends upwardly therefrom through glass in said outlet passage and in said furnace; and heating means disposed below said resistance heating path in heat transfer relationship with said pipe for heating said pipe and, in turn, said outlet member.

4,402,725

FERTILIZERS

Harold Heller; Dietmar Schäpel; Claus Hentschel, all of Cologne, and Manfred Dahm, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 6, 1981, Ser. No. 241,325

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1980, 3031893

Int. Cl.³ C05G *3/00*

U.S. Cl. 71—27 **22 Claims**

1. A fertiliser based on a hydrogel containing plant nutrients comprising a covalently crosslinked polyurethane-polyurea containing hydrogel or a modified polyurethane-polyurea containing hydrogel in which are embedded ion exchangers which are laden with plant nutrients, said polyurethane-polyurea prepared from a reaction mixture comprising prepolymer and/or semi-prepolymer gel-forming substances containing isocyanate groups, and cross-linking agents.

4,402,726

COMPOSITION FOR PLANT GROWTH REGULATION

Reinhard Rusch, and Friedrich Arndt, both of Berlin, Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 112,412, Dec. 31, 1979, abandoned, which is a division of Ser. No. 15,281, Feb. 26, 1979, Pat. No. 4,261,726, which is a continuation of Ser. No. 842,365, Oct. 14, 1977, abandoned. This application Jun. 30, 1981, Ser. No. 279,040

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1976, 2646712

Int. Cl.³ A01N *43/02, 43/08*

U.S. Cl. 71—73 **3 Claims**

1. A plant defoliating composition, consisting essentially of, in combination,

(a) 1-phenyl-3-(1,2,3-thiadiazole-5-yl)-urea; and

(b) gibberellic acid A_3, which compound in combination with the compound (a) results in a synergistic effect with respect to defoliant properties, said compounds (a) and (b) being present in effective amounts and having a ratio of (a):(b) of between 1:4.5 and 10:1.

4,402,727

SUBSTITUTED AZOLYLALKYL PHENOXYPHENOXYALKANE-CARBOXYLATES AS HERBICIDES AND PLANT GROWTH REGULATORS

Heinz Förster, Wuppertal; Ludwig Eue, Leverkusen; Robert Schmidt, and Klaus Lürssen, both of Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

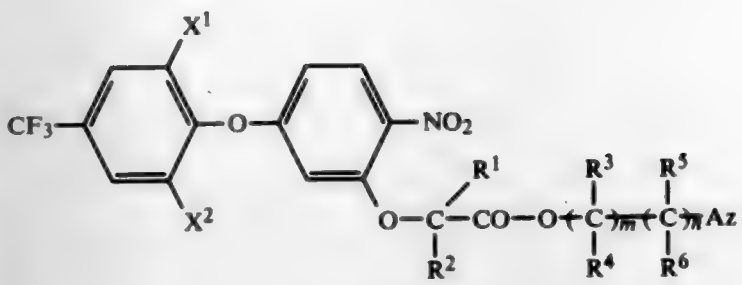
Filed May 13, 1982, Ser. No. 377,879

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1981, 3122175; Mar. 2, 1982, 3207484

Int. Cl.³ A01N *43/50, 43/56*; C07O *231/12, 233/60*

U.S. Cl. 71—74 **13 Claims**

1. A substituted azolylalkyl phenoxyphenoxyalkanecarboxylate of the formula



in which

X^1 and X^2 each independently is a hydrogen or halogen atom,

R^1, R^2, R^3, R^4, R^5 and R^6 each independently is hydrogen or an alkyl group having 1 to 4 carbon atoms,

m is 1 or 2,

n is 0 or 1, and

Az represents an optionally substituted azolyl radical,

or an addition product thereof with an acid, metal salt or quaternary-forming alkylating agent.

10. A herbicidal defoliating or desicating composition comprising an effective amount of a compound or addition product according to claim 1 in association with a carrier or diluent.

4,402,728

HETEROCYCLIC ANILINES

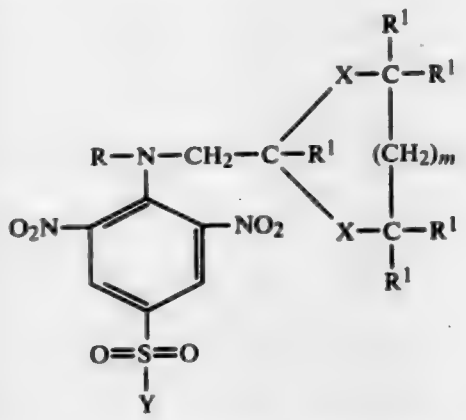
Leonard J. Stach, Riverside, and Sun M. Chen, River Forest, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Apr. 28, 1982, Ser. No. 372,515

Int. Cl.³ A01N *43/00*; C07D *317/10*

U.S. Cl. 71—88 **10 Claims**

1. A compound of the formula:



wherein each X is independently selected from the group consisting of oxygen and sulfur; m is 0; R is alkyl; each R^1 is independently selected from the group consisting of hydrogen and alkyl and Y is selected from the group consisting of alkyl and



wherein each Z is independently selected from the group consisting of hydrogen and alkyl.

8. The compound of claim 1, N-[(1,3-Dioxolan-2-yl-methyl]-N-ethyl-4-amidosulfonyl-2,6-dinitroaniline.

9. A herbicidal composition comprising an inert carrier and, as an essential ingredient in a quantity toxic to weeds, a compound of claim 1.

10. A method of controlling weeds, which comprises contacting said weeds with the herbicidal composition of claim 8.

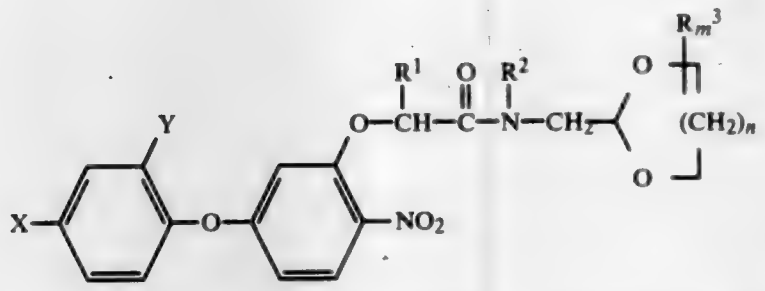
4,402,729
HETEROCYCLIC AMIDES OF PHENOXYPHENOXYALKANOIC ACIDS

Takeo Hokama, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed May 7, 1982, Ser. No. 376,097
Int. Cl.³ A01N *43/00;* C07D *317/10*
U.S. Cl. 71—88 10 Claims

1. A compound of the formula:

(I)



wherein X is halogen or trifluoromethyl; Y is selected from the group consisting of hydrogen, halogen, nitro and cyano; R^1 is alkyl; R^2 is selected from the group consisting of hydrogen, alkyl, alkenyl and alkynyl; and R^3 is selected from the group consisting of alkyl and halogen; m is an integer from 0 to 3; and n is the integer 0.

9. A herbicidal composition comprising an inert carrier and, in a quantity toxic to weeds a compound of claim 1.

10. A method of controlling weeds which comprises contacting said weeds or the locus of said weeds with a herbicidal composition of claim 9.

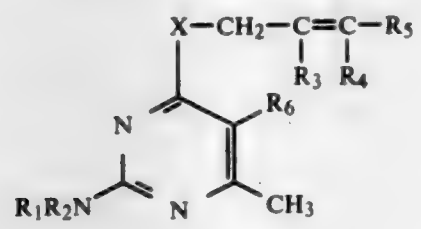
4,402,730
PYRIMIDINE DERIVATIVES AND THEIR USE AS HERBICIDES

Karlheinz Milzner, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Jan. 14, 1981, Ser. No. 225,046
Claims priority, application United Kingdom, Jan. 25, 1980, 8002573
Int. Cl.³ A01N *43/54;* C07D *239/24*
U.S. Cl. 71—92 18 Claims

1. A compound of formula I,

I



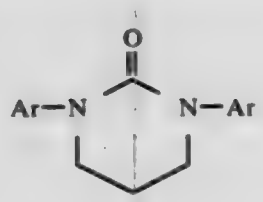
wherein
X is O or S
either
R_1 is C_1-C_{18}alkyl; C_1-C_{18}alkyl substituted by up to 2 substituents selected from C_1-C_4alkoxy or 2-tetrahydrofuryl; C_3-C_8cycloalkyl or C_3-C_8cycloalkyl-C_1-C_5alkyl unsubstituted or substituted by up to 2 halogens having an atomic weight of 9 to 35; or is C_1-C_{18}alkenyl and
R_2 is H or C_1-C_5alkyl,
or
R_1 and R_2 together are a C_4-C_6alkylene chain,
R_3 and R_4 and R_5 are each, independently H, Cl, Br or C_1-C_4alkyl and
R_6 is H or C_1-C_5alkyl,
with the proviso that at least one of R_3, R_4 and R_5 is halogen.

4,402,731
HERBICIDALLY ACTIVE NOVEL SUBSTITUTED TETRAHYDROPYRIMIDINONES

Masahiro Aya; Junichi Saito; Kazuomi Yasui, all of Tokyo, and Kozo Shiokawa, Kanagawa, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

Filed Jan. 20, 1982, Ser. No. 340,949
Claims priority, application Japan, Feb. 20, 1981, 56-23122
Int. Cl.³ C07D *239/10;* A01N *43/54*
U.S. Cl. 71—92 8 Claims

1. A substituted tetrahydropyrimidinone of the formula



in which
Ar each independently is an α-naphthyl group or a group of the formula,



X is halogen, lower alkyl, lower alkoxy, nitro, cyano, lower alkylcarbonyl, lower alkoxycarbonyl, trifluoromethyl or phenoxy, and
n is 0, 1, 2 or 3.

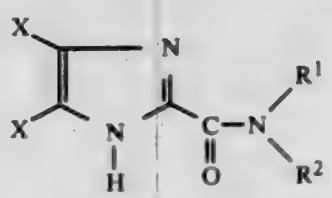
7. A method of combating weeds which comprises applying to the weeds, or to a habitat thereof, a herbicidally effective amount of a compound according to claim 1.

4,402,732
HERBICIDALLY ACTIVE DIHALOGENATED IMIDAZOLECARBOXYLIC ACID AMIDES, COMPOSITIONS AND USE

Gunther Beck; Bernd Baasner; Ludwig Eue, all of Leverkusen, and Robert Schmidt, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 20, 1982, Ser. No. 341,038
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1981, 3104759
Int. Cl.³ A01N *43/50;* C07D *233/04*
U.S. Cl. 71—92 13 Claims

1. A dihalo-imidazolecarboxylic acid amide of the formula



in which
X each independently is chlorine or bromine,
R^1 is fluoroalkyl or fluorochloroalkyl, and
R^2 is hydrogen or alkyl.

9. A herbicidal composition comprising a herbicidally effective amount of a compound according to claim 1 in admixture with a diluent.

4,402,733

HERBICIDALLY ACTIVE 1,2,4-TRIAZIN-5-ONE DERIVATIVES

Georg Pissiotas, Lörrach, Fed. Rep. of Germany; Willy Meyer, Riehen, Switzerland; Werner Schwarze, Frankfurt, Fed. Rep. of Germany; Herbert Klenk, Hanau, Fed. Rep. of Germany, and Wolfgang Leuchtenberg, Bruchköbel, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y. and Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 56,671, Jul. 11, 1979, abandoned, which is a continuation-in-part of Ser. No. 925,063, Jul. 17, 1978, abandoned. This application Apr. 20, 1981, Ser. No. 255,517

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1977, 2732797

Int. Cl.[3] A01N *43/64*; C07D *253/06*

U.S. Cl. 71—93 6 Claims

1. A 1,2,4-triazin-5-one derivative selected from the group consisting of 4-amino-6-(1-methylcyclopropyl)-3-methylthio-1,2,4-triazin-5-one, 4-amino-6-(1-ethylcyclopropyl)3-methylthio-1,2,4-triazin-5-one and 4-amino-6-(1-n-propylcyclopropyl)-3-methylthio-1,2,4-triazin-5-one.

4,402,734

HERBICIDIAL COMPOSITION AND METHOD

Keiichiro Akiba, Ikeda; Takeo Satomi, Amagasaki; Akira Fujinami, Ashiya; Yasuhisa Asano, Minoo; Nobuyuki Kameda, Takarazuka; Akihiko Mine; Naganori Hino, both of Toyonaka, and Kohshi Tateishi, Minoo, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

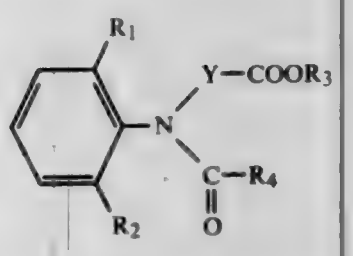
Division of Ser. No. 235,044, Mar. 15, 1972, Pat. No. 3,780,090. This application Oct. 17, 1973, Ser. No. 407,359

Claims priority, application Japan, Mar. 15, 1971, 46-14609

Int. Cl.[3] A01N *37/46*

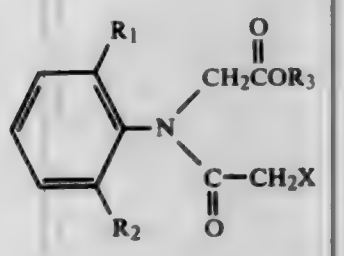
U.S. Cl. 71—111 11 Claims

1. A herbicidal composition comprising a herbicidally effective amount of N-halogenoacylanolino-fatty acid or the ester derivative thereof represented by the general formula:



wherein R_1 and R_2 each represents C_1–C_4 alkyl, R_3 represents a hydrogen atom, alkyl having up to 10 carbon atoms, C_3–C_4 alkenyl, propargyl or cyclohexyl, R_4 represents C_1–C_3 alkyl substituted by 1–4 halogen atoms and Y represents C_1–C_3 alkylene, as an effective ingredient, and a herbicidally acceptable inert carrier.

7. A method for controlling the growth of undesirable weeds which comprises applying a herbicidally effective amount of a compound of the formula:



wherein R_1, R_2 and R_3 individually are methyl or ethyl and x is chlorine.

4,402,735

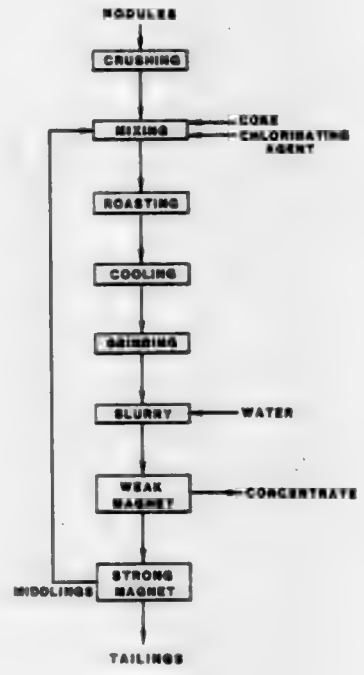
TREATING DEEP SEA NODULES BY SEGREGATION ROASTING

Tage L. B. Jepsen, Gabbs, Nev., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 20, 1982, Ser. No. 380,177

Int. Cl.[3] C22B *1/02, 5/10*

U.S. Cl. 75—1 R 3 Claims



1. A process for recovering a concentrate upgraded in the content of at least one nonferrous metal value selected from the group consisting of nickel, copper and cobalt from deep sea nodules comprising the steps of:

a. producing a feed material comprising mixing:
   i. 100 parts by weight of said nodules;
   ii. 40 to 60 parts by weight of middlings as defined in step (f) (ii);
   iii. 30 to 60 parts by weight of a chloridizing agent comprising a mixture of sodium chloride and a calcium compound selected from the group consisting of calcium carbonate and calcium hydroxide in the ratio of about 1 mole of calcium compound to 2 moles of sodium chloride; and
   iv. 2 to 10 parts by weight of a carbonaceous reductant;
b. roasting said feed material in a non-oxidizing atmosphere wherein said feed material is heated to a temperature above 850° C.;
c. cooling said roasted material in a non-oxidizing atmosphere;
d. grinding said cooled roasted material to at least minus 270 mesh;
e. forming a slurry of said ground material; and
f. separating from said slurry by magnetic separation:
   i. a material having relatively high magnetic properties and concentrated in said non-ferrous metal values;
   ii. a middlings material having lower magnetic properties and less concentrated in said non-ferrous metal values; and
   iii. a non-magnetic tailings material low in said nonferrous metal values.

4,402,736

COLD BONDING MINERAL PELLETIZATION

Roderick K. Graham, Oyster Bay, Australia, assignor to N. B. Love Industries Pty. Limited, New South Wales, Australia

PCT No. PCT/AU80/00089, § 371 Date Jul. 15, 1981, § 102(e) Date Jul. 15, 1981, PCT Pub. No. WO81/01421, PCT Pub. Date May 28, 1981
PCT Filed Nov. 17, 1980, Ser. No. 285,082
Claims priority, application Australia, Nov. 23, 1979, PE1456
Int. Cl.³ C22B *7/244*
U.S. Cl. 75—0.5 R 10 Claims

1. A method for agglomerating mineral fines comprising the steps of:

(a) pelletizing a mixture consisting of mineral fines and an effective amount of raw starch,

(b) subsequently treating the pellets to substantially gelatinize the starch, and

(c) drying the pellets gelatinization at a temperature substantially below firing temperature.

4,402,737

METHOD OF PRODUCING TUNGSTEN AND TUNGSTEN CARBIDE POWDER

Christopher A. Kronenwetter, Towanda; Geoffrey L. Harris, Monroeton, and Edward R. Kimmel, Sayer, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 1, 1982, Ser. No. 413,906
Int. Cl.³ B22F *9/00*
U.S. Cl. 75—0.5 BB 11 Claims

1. A method of producing large size tungsten powder from tungsten oxide comprising doping a tungsten oxide powder with a high melting lithium compound, and reducing said tungsten oxide powder with hydrogen gas at a temperature higher than the decomposition or melting temperature of the lithium compound for a sufficient period of time to convert substantially all of said tungsten oxide powder to tungsten powder, said lithium compound being present in an amount sufficient to result in a tungsten powder after reduction having increased particle size as compared to tungsten powder reduced without said dopant.

4,402,738

METHOD AND APPARATUS FOR INCINERATING SELF-BURNING WASTES

Harida Akio, Toyama, Japan, assignor to Y. Ichinose, Tokyo, Japan

Filed Feb. 25, 1982, Ser. No. 352,194
Claims priority, application Japan, Mar. 6, 1981, 56-31701
Int. Cl.³ C22B *1/248;* F23B *5/00*
U.S. Cl. 75—44 S 3 Claims

1. The method of incinerating oxidizable materials comprising:

(a) placing said oxidizable materials in an enclosed first chamber;

(b) heating said oxidizable materials while forcing air into said first chamber until said materials are ignited;

(c) venting the gas produced by partial combustion of materials in said first chamber into an elongated substantially horizontally extending tube connected with a second chamber;

(d) limiting the amount of air admitted to said first chamber to control the rate of combustion of said materials thereby producing partially unoxidized gas;

(e) mixing air with said partially unoxidized gas as said partially unoxidized gas passes through said elongated tube;

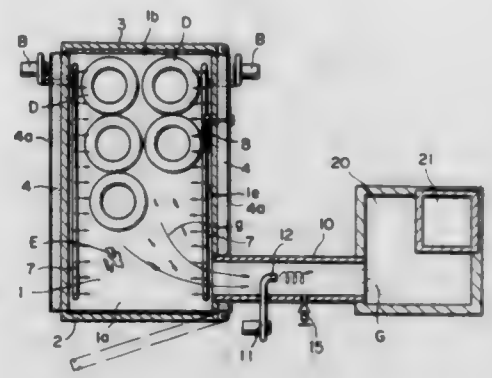
(f) maintaining the temperature of said partially unoxidized gas in said elongated tube at least about 700° C.;

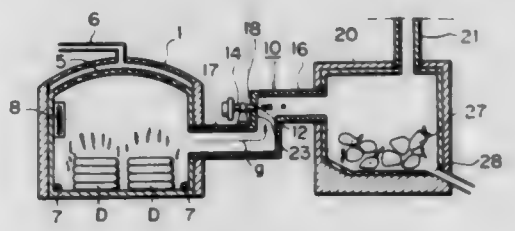
(g) directing the flow of gas from said elongated tube into said second chamber;

(h) venting oxidized gas from said second chamber;

(i) placing materials containing metals in said second chamber;

(j) recovering molten metal from said second chamber; and





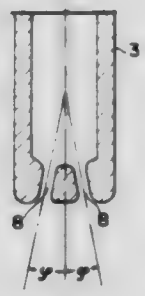
(k) directing a flame into said elongated tube to ignite the gasses therein.

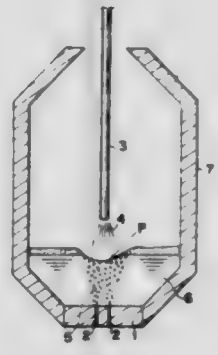
4,402,739

METHOD OF OPERATION OF A TOP-AND-BOTTOM BLOWN CONVERTER

Kyoji Nakanishi, Chiba; Kenichiro Suzuki, Kurashiki; Michio Tanaka, Kurashiki; Jun-ichi Matsuno, Kurashiki; Hisashi Ohmori, Kurashiki, and Tsutomu Nozaki, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Jul. 13, 1982, Ser. No. 397,859
Int. Cl.³ C21C *5/32, 5/34*
U.S. Cl. 75—60 5 Claims





1. A method of operating a top-and-bottom converter of the type including a converter housing containing a molten metal bath, a plurality of tuyeres arranged in the bottom of said housing for blowing a gas into said molten metal, and a multi-

nozzle lance inserted through a top opening of said housing for blowing plural jets oxygen gas onto a surface of said molten metal, said method comprising:

injecting said gas through said tuyeres such that bubbles of said gas rise upwardly through said molten metal and reach said surface within a bubbling region thereof; and

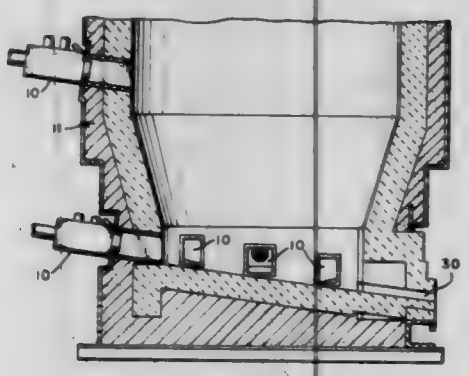
directing said jets of oxygen gas against said surface such that the center of a hot spot created on said surface by each said jet is positioned outside said bubbling region.

4,402,740

DUAL FUEL BURNER FOR METAL MELTING FURNACES

David F. Arp, Carroll, Ga., and Ronald L. Pariani, Escambia, Fla., assignors to Southwire Company, Carrollton, Ga.

Division of Ser. No. 173,790, Jul. 30, 1980, Pat. No. 4,326,700.
This application Nov. 23, 1981, Ser. No. 324,171
Int. Cl.³ C22B *15/00*
U.S. Cl. 75—65 R **2 Claims**



1. An improved method of operating a vertical shaft metal melting furnace of the type having a multiplicity of high velocity dual fuel burners located near the bottom of, and communicating with the interior of said furnace through a refractory combustion chamber, said burners adapted to be fired with a fuel selected from the group consisting of gaseous and liquid fuel and combinations thereof in order to melt pieces of copper by injecting heat resulting from combusting said fuel and air in said combustion chamber communicating with said furnace,

wherein the improvement comprises the steps of;

introducing copper pieces to be melted into the top of said shaft furnace;

premixing natural gas fuel with air;

flowing a first stream of gaseous fuel to said burner;

supplying an additional amount of air, necessary to combust said gaseous fuel, to said burner;

injecting the streams of premixed gas and air and additional air in a substantially uniform pattern into said combustion chamber;

mixing, igniting, and burning said first stream of gaseous fuel and said air to supply heat to said combustion chamber then injecting said heat into said furnace;

after heating said combustion chamber, then flowing a liquid fuel oil to said burner;

increasing the flow of air to said burner to the amount necessary to combust said liquid fuel;

maintaining at least a continuous pilot flame in the combustion chamber by burning some gaseous fuel while reducing the flow of said gaseous fuel to the burner;

mixing and burning said liquid fuel and said air in the presence of said pilot flame to supply heat into said furnace;

continuously directing the hot products of combustion toward said pieces of copper to melt said copper; and

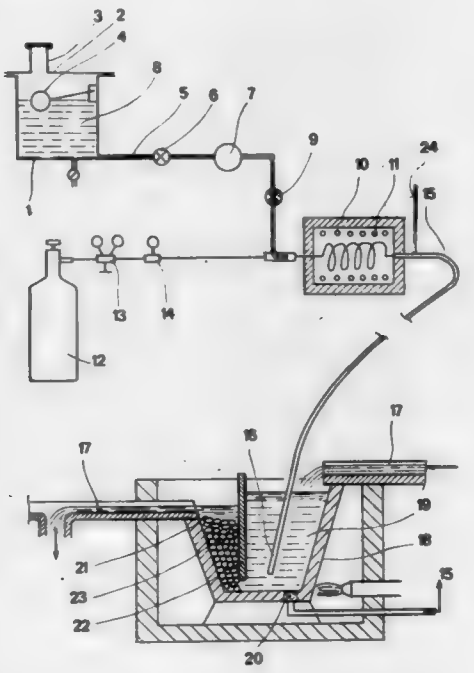
continuously discharging molten copper from the bottom of said shaft furnace without contaminating the molten copper with uncombusted liquid fuel oil.

4,402,741

PROCESS FOR THE PRECISE AND CONTINUOUS INJECTION OF A HALOGENATED DERIVATIVE IN THE GASEOUS STATE INTO A LIQUID METAL

Gilbert Pollet, La Ravoire; Pierre du Manoir, Cognin, and Pierre Guerit, Chambery, all of France, assignors to Servimetal, Paris, France

Filed Mar. 19, 1982, Ser. No. 359,766
Claims priority, application France, Mar. 23, 1981, 81 06134
Int. Cl.³ C22B *21/06*
U.S. Cl. 75—93 E **8 Claims**



1. A process for the continuous injection of a precise volume of a halogenated substance into a stream of liquid metal, said substance being liquid at ambient temperature and selected from the group consisting of perchloroethylene, hexachloroethane, carbon tetrachloride CCl_3F, $CCl_3—CF_3$, $CCl_2F—CClF_2$, $CCl_3—CClF_2$, $CCl_2F—CCl_2F$, and $CCl_3—CCl_2F$, comprising withdrawing the halogenated substance from a reservoir, introducing a predetermined volume of the substance under pressure through a metering pump into a vaporizer maintained at a temperature at least equal to the vaporization temperature of the substance, and entraining the substance in the vapor state within an inert gas stream for passage through an injection means in communication with the liquid metal.

4,402,742

IRON-NICKEL BASE BRAZING FILLER METAL

Surya Pattanaik, San Jose, Calif., assignor to GET Products Corporation, Stamford, Conn.

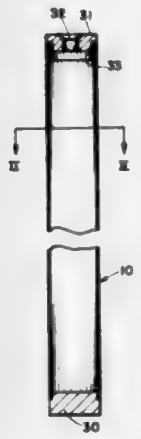
Filed Oct. 29, 1981, Ser. No. 316,258
Int. Cl.³ C22C *38/54, 30/00*
U.S. Cl. 75—123 B **3 Claims**

1. A iron nickel base brazing filler metal, consisting essentially of, by weight percent, about 1 to 5 percent boron, 3 to 6 percent silicon, 0 to 12 percent chromium, 1 to 45 percent nickel and balance essentially iron, having a liquidus temperature below about 1130° C.

4,402,743
CONSUMABLE MOLDING PROCESS FOR SUPER ALLOYS

Steve F. Morykwas, Muskegon, Mich., assignor to Cannon-Muskegon Corporation, Muskegon, Mich.

Continuation-in-part of Ser. No. 143,746, Apr. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 32,246, Apr. 23, 1979, abandoned. This application May 15, 1981, Ser. No. 263,983
Int. Cl.³ C21C 7/00; C22B 9/12
U.S. Cl. 75—129 16 Claims



1. The method of preparing a solid one-piece charge of super alloy material of a very precise composition for use in casting including the steps of selecting one of the elements or alloys to be included in the charge composition and providing a hollow tube of uniform wall thickness and cross-sectional dimension throughout its length and made of said element or alloy; closing one end of said tube; providing a core portion of the charge by introducing in molten condition under a vacuum condition the remaining elements required to form the alloy of the final charge to entirely fill the interior of the tube to the exclusion of gases and voids while maintaining the temperature of the charge and tube in a range in which the tube will maintain its geometric integrity while maintaining the vacuum; permitting the tube and molten material to cool and solidify to form a product of uniform composition throughout its length in which the core and tube are intimately locked together.

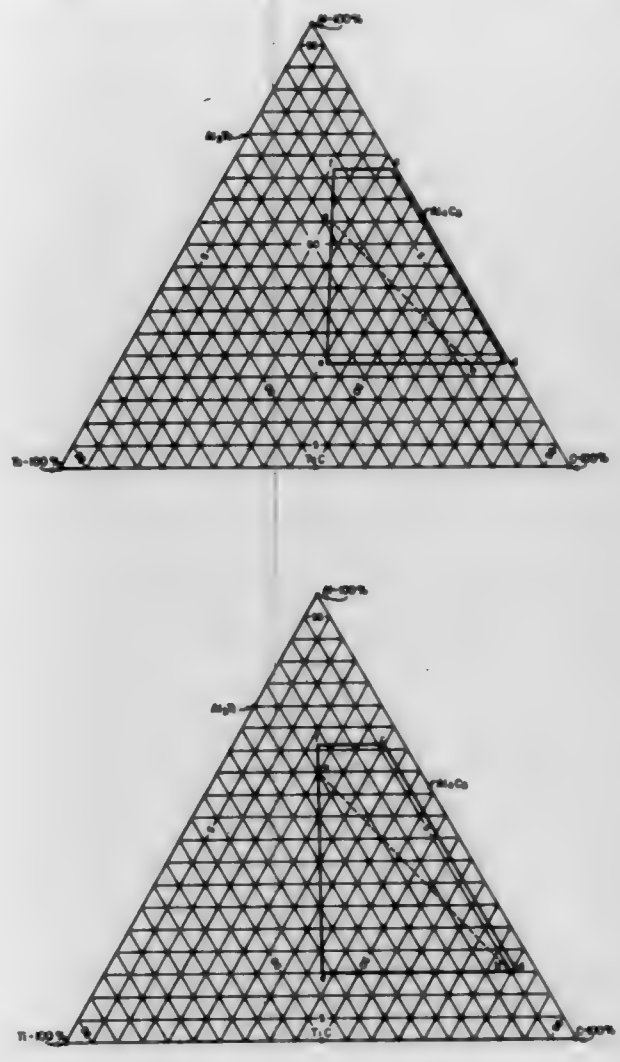
4,402,744
CHEMICALLY BONDED ALUMINUM COATING FOR CARBON VIA MONOCARBIDES

Raymond V. Sara, North Olmsted, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 874,366, Jan. 1, 1978, Pat. No. 4,252,856, which is a division of Ser. No. 697,611, Jun. 18, 1976, Pat. No. 4,104,417, which is a continuation-in-part of Ser. No. 444,556, Feb. 21, 1974, abandoned, which is a continuation-in-part of Ser. No. 340,287, Mar. 12, 1973, abandoned. This application Aug. 29, 1980, Ser. No. 182,493
Int. Cl.³ C22C 21/00, 29/00
U.S. Cl. 75—239 6 Claims

1. A composite material having carbon distributed in an aluminum matrix via an interfacial bond of tantalum carbide, said interfacial bond of tantalum carbide being substantially free of any aluminum carbide formed therein, wherein the atomic weight proportion of the aluminum, tantalum and carbon lies approximately within the trapezoidal area identified as c-d-e-f of the ternary constitution diagram of the aluminum-tantalum-carbon system shown in FIG. 1 of the drawings.

4. A composite material having carbon distributed in an aluminum matrix via an interfacial bond of titanium carbide, said interfacial bond of titanium carbide being substantially free of any aluminum carbide formed therein, wherein the atomic weight proportions of the aluminum (—), titanium and carbon lies approximately within the trapezoidal area identified as c-d-e-f of the ternary constitution diagram of the aluminum-titanium-carbon system shown in FIG. 2 of the drawings.



4,402,745
NEW IRON-ALUMINUM-COPPER ALLOYS WHICH CONTAIN BORON AND HAVE BEEN PROCESSED BY RAPID SOLIDIFICATION PROCESS AND METHOD

Ranjan Ray, Waltham; Viswanathan Panchanathan, Billerica, and Bill C. Giessen, Cambridge, all of Mass., assignors to Marko Materials, Inc., N. Billerica, Mass.

Filed Apr. 27, 1981, Ser. No. 257,912
Int. Cl.³ B22F 1/00
U.S. Cl. 75—251 8 Claims

1. A metastable crystalline solid solution alloy of the composition $Fe_a Al_b Cu_c M_d Si_e B_f$ wherein M is at least one element selected from the group consisting of nickel, molybdenum, wherein the subscripts represent atom percent having the following values; a=45–65, b=5–20, c=10–25, d=0–20, e=0–5, and f=5–12 with the provisos that the sum of b+c may not exceed 40, the sum of b+c+d may not exceed 50, the molybdenum content may not exceed 10, the sum of e+f may not exceed 15 and the sum of a+b+c+d+e+f is 100, wherein the said alloy is being prepared by the method comprising the steps:

a. forming a melt of said alloy

b. depositing said melt against a rapidly moving quench surface adapted to quench said melt at a rate in the range approximately $10^{5°}$ to $10^{7°}$ C./sec and form thereby a rapidly solidified brittle strip and

c. comminuting said strip into powders.

4,402,746

ALUMINA-YTTRIA MIXED OXIDES IN DISPERSION STRENGTHENED HIGH TEMPERATURE ALLOYS

Trikur A. Ramanarayanan, Somerset; Ruzica Petkovic-Luton, Englewood, both of N.J., and Raghavan Ayer, Stamford, Conn., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Mar. 31, 1982, Ser. No. 363,898
Int. Cl.³ C22C *1/05*
U.S. Cl. 75—252 22 Claims

1. In a method for producing an oxide dispersion strengthened high temperature alloy from a metal powder mixture which contains about 0 to 30 wt.% chromium, about 0 to 3 wt.% titanium, about 0.3 wt.% to 10 wt.% aluminum, about 0.3 wt.% to 10 wt.% oxide dispersoid particles having a negative free energy of formation at 1000° C. of at least as great as that of aluminum oxide, and as a major component a metal selected from the group consisting of iron, nickel and cobalt, which method comprises the steps of, (a) mechanically alloying the metal powder mixture, and, (b) hot consolidating the mechanically alloyed mixture; the improvement which comprises the replacement of all or a fraction of the dispersoid particles with one or more alumina-yttria mixed-oxides selected from the group consisting of $Al_2O_3.2Y_2O_3$, Al_2O_3. $.Y_2O_3$, and $5Al_2O_3.3Y_2O_3$.

4,402,747

RUST INHIBITING FOR STEEL

James E. Bird, Murrysville, and Edward J. Helwig, Frazer Township, Allegheny County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed May 15, 1981, Ser. No. 263,834
Int. Cl.³ C04B *9/02*; C23F *11/14*
U.S. Cl. 106—14.42 4 Claims

2. Method of inhibiting corrosion of ferrous metal container stock comprising applying thereto about 0.05 to about 1.0 g/bb of a composition comprising dioctyl sebacate, oleoyl sarcosine in an amount from about 1% to about 50% by weight of the dioctyl sebacate, and sodium benzoate in an amount from about 0.5% to about 3% by weight of the total of dioctyl sebacate and oleoyl sarcosine.

4. Method of inhibiting corrosion of ferrous metal container stock comprising applying thereto about 0.05 to about 1.0 g/bb of a composition comprising acetyl tributyl citrate, oleoyl sarcosine in an amount from about 1% to about 50% by weight of the acetyl tributyl citrate, and sodium benzoate in an amount from about 0.5% to about 3% by weight of the total of acetyl tributyl citrate and oleoyl sarcosine.

4,402,748

INK FORMULATIONS CONTAINING A CURABLE AMMONIUM POLYAMIDOAMINE AS A FIXING AGENT

George R. Killat, and Larry R. Wilson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 1, 1982, Ser. No. 383,905
Int. Cl.³ C09D *11/10*
U.S. Cl. 106—20 10 Claims

1. An ink formulation comprising (1) an aqueous medium having a dye, a pigment or a combination of a dye and a pigment dispersed therein and (2) a fixing amount of a water-soluble curable ammonium polyamidoamine.

4,402,749

CEMENTITIOUS COMPOSITIONS WITH EARLY HIGH STRENGTH DEVELOPMENT AND METHODS FOR CONTROLLING SETTING RATE

Wm. Cornelius Hall, Central Valley, and J. Merriam Peterson, Rock Tavern, both of N.Y., assignors to Chemtree Corporation, Central Valley, N.Y.

Filed Aug. 10, 1979, Ser. No. 65,618
Int. Cl.³ C04B *7/35*
U.S. Cl. 106—76 1 Claim

1. A composition comprising a portland type cement, a metallic fluosilicate, and a sodium silicate composition, said sodium silicate composition being characterized by a SiO_2-Na_2O molar ratio ranging from approximately 0.5 to approximately 3.0 and being in a concentration range of from 0.5 to 15 percent by weight of the total composition.

4,402,750

BUILDING MATERIALS AND METHOD FOR MANUFACTURING SAME

Tatsuro Okamura, 4-1, Kusae, Ube-shi, Yamaguchi-ken, Japan, and Hideki Irifune, Ube, Japan, assignors to Tatsuro Okamura and Yoshida Kogyo K.K., both of Tokyo, Japan

Filed Dec. 3, 1981, Ser. No. 327,021
Claims priority, application Japan, Dec. 15, 1980, 55-178211
Int. Cl.³ C04B *43/18*
U.S. Cl. 106—85 8 Claims

1. A method for manufacturing a light-weight building material which comprises the steps of:

(a) alkalizing a gel-type, difficultly filtrable aluminum hydroxide sludge of the type produced in the anodizing of aluminum and containing at least about 70% water by the addition of an alkali to give an alkaline solution of an alkali aluminate dissolved therein,

(b) admixing the alkaline solution with a disintegrated fibrous material to form a slurried mixture,

(c) neutralizing the slurried mixture to a neutral to weakly acidic condition by the addition of phosphoric acid to produce insoluble aluminum phosphate deposited on said fibrous material,

(d) admixing the slurried mixture with a coagulating agent to give a mixture of a coagulated mass and a liquid portion,

(e) separating the coagulated mass from the liquid portion in the mixture, and

(f) drying the coagulated mass.

4,402,751

BUILDING MATERIAL AND METHOD OF MANUFACTURING SAME

Bryce B. Wilde, Rte. 7, Box 62, Muskogee, Okla. 74401

Filed Nov. 24, 1981, Ser. No. 324,612
Int. Cl.³ C04B *7/353*
U.S. Cl. 106—93 12 Claims

1. A method of manufacturing a building material which comprises the steps of initially combining a predetermined ratio of lime to fluid to provide a whitewash fluid, mixing fibrous material with the whitewash fluid to provide a limed mixture, curing the limed mixture through a predetermined time period to produce a resultant aggregate for use in the construction of the building material.

4,402,752

DRY-SET MORTAR COMPOSITION HAVING ENHANCED BONDING CHARACTERISTICS

Joseph J. Chesney, Jr., Plainsboro, N.J., assignor to Tile Council of America, Inc., Princeton, N.J.

Continuation of Ser. No. 243,561, Mar. 13, 1981, abandoned, which is a continuation-in-part of Ser. No. 198,155, Oct. 17, 1980, abandoned. This application Apr. 20, 1982, Ser. No. 370,082

Int. Cl.³ C04B 7/353

U.S. Cl. 106—93 5 Claims

1. In a dry-set mortar composition adapted to be mixed with water having in the dry state a composition of sand, Portland cement and a cellulose ether, the improvement which provides improved sag resistance and skinning properties, comprising the inclusion of 0.0070 to 0.0150 parts by weight anionic polyacrylamide and between 0.3–0.8 parts by weight sodium Bentonite Clay.

4,402,753

COMPOSITION AND METHOD FOR CURING CONCRETE

Louis J. Amara, Hartford; Peitro Paoletti, and Benito J. Tavana, both of Wethersfield, all of Conn., assignors to Invictus Unlimited, Inc., East Hartford, Conn.

Filed Jul. 30, 1981, Ser. No. 288,577

Int. Cl.³ C04B 7/354

U.S. Cl. 106—94 10 Claims

1. A composition for the treatment of freshly mixed concrete comprising a liquid mixture concentrate of a petroleum oil derivative which is diesel oil and a natural rosin dispersed in the petroleum oil derivative, whereby when said composition impregnates the freshly mixed concrete the concrete is rapidly converted to a gel-like consistency which consistency is achieved in much less than if the said composition is not used.

4,402,754

PROCESS OF PRODUCING CEMENT CLINKER

Hans-Werner Schmidt, Frankfurt am Main; Hans Beisswenger, Bad Soden; Lothar Reh, Frankfurt am Main, all of Fed. Rep. of Germany; Albert Folliot, 8, rue Darcel, F 92100 Boulogne, and Maurice P. Iard, Chalon-sur-Saone, both of France, assignors to Creusot-Loire Enterprises, Suresnes; Lafarge Coppee, Paris; Albert Folliot, Boulogne, all of, France and Metallgesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 349,878

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1981, 3107711

Int. Cl.³ C04B 7/44

U.S. Cl. 106—100 10 Claims

1. In a process of producing cement clinker comprising preheating the raw cement powder in a suspension-type heat exchanger, de-acidifying in a precalcining system, clinkering in a fluidized bed, and subsequently cooling the clinker, the improvement comprising

(A) de-acidifying said raw cement powder at a temperature above 850° C. to a degree of at least 95% in a de-acidification circulation system comprising a de-acidification fluidized bed reactor, a cyclone separator and a recycling duct;

(B) feeding at least 65% relative to the total heat requirement, of the fuel required for the calcining and clinkering processes to the de-acidifying fluidized bed reactor and at least 10%, related to the total heat requirement, to the clinkering fluidized bed reactor;

(C) near stoichiometrically burning the fuel supplied to the de-acidifying fluidized bed reactor in at least two combustion stages with at least two partial streams of oxygen-containing gas, one of said stream being supplied as fluidizing gas and the other being supplied on a higher level as secondary gas, the ratio of the rates and volumes of fluidizing gas to secondary gas being maintained in the range from 1:1 to 1:10 so that a mean suspension density of 100 to 300 kg/m^3 is maintained in the zone between the inlet for fluidizing gas and the inlet for secondary gas; and

(D) maintaining a mean suspension density of 5 to 30 kg/m^3 above the inlet for secondary gas.

4,402,755

GELATIN HARDENING METHOD AND AGENTS THEREFOR

Morio Kobayashi, and Takashi Sasaki, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

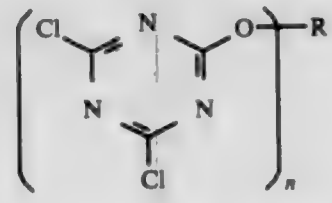
Continuation of Ser. No. 177,370, Aug. 12, 1980, abandoned. This application Sep. 3, 1982, Ser. No. 414,916

Claims priority, application Japan, Aug. 14, 1979, 54-102814

Int. Cl.³ C09D 3/04

U.S. Cl. 106—125 5 Claims

1. A method for hardening a gelatin comprising reacting the gelatin with a partially hydrolyzed product of dichloro-s-triazine derivative represented by the following formula



wherein, n is an integer of two or more, R represents a n-valent organic group.

4,402,756

GRANULAR-FILLER MATERIAL AND ITS METHOD OF PREPARATION FROM PHOSPHATIC CLAYS

Robert G. Prine, Bartow, Fla., assignor to Chesley B. Maddox, Lakeland, Fla., a part interest

Filed Oct. 5, 1981, Ser. No. 308,808

Int. Cl.³ C09C 1/02, 1/42, 3/00

U.S. Cl. 106—288 B 4 Claims

1. A method for obtaining a granular carrier-filler material from phosphatic clays wherein said material is water-degradable and is suitable for use as a fertilizer carrier-filler, an insecticide carrier-filler, an oil absorbent, and a litter base, said method comprising the steps of:

a. selecting a source of phosphatic clays which has settled and dried naturally to a physical state capable of supporting the weight of mining machinery, said clays consisting essentially of 9–17% P_2O_5; 31–46% SiO_2; 3–7% Fe_2O_3; 6–18% Al_2O_3; 14–23% CaO; 1–2% MgO; trace–1% CO; trace–1% Fluorine; 9–16% loss on ignition at 1,000° C.; 19–37% BPL;

b. tilling said source to obtain clods;

c. drying said clods to a non-agglomerating physical state;

d. crushing said dried clods to obtain granules;

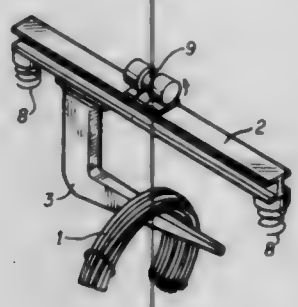
e. heating said granules at a temperature of about 450° F. to about 1,000° F. to remove mechanically bound water only to obtain said granular-filler material having a moisture content of no more than about 15%, by weight.

4. A water-degradable granular-filler material of the type primarily intended for use as a filler and absorbent material obtained according to the method of claim 1.

4,402,757
METHOD OF VIBRATING COILED WIRES

Heijiro Kawakami; Katsumasa Tanaka; Seiichi Kamamoto, and Kazuo Sato, all of Hyogo, Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Continuation of Ser. No. 142,479, Apr. 21, 1980, abandoned.
This application Nov. 10, 1981, Ser. No. 319,901
Claims priority, application Japan, Feb. 18, 1980, 55-19344
Int. Cl.³ B08B 3/12
U.S. Cl. 134—1 7 Claims



1. A method of vibrating coiled wires in a circumferential motion in a solution bath, comprising the steps of:

suspending a wire coil from a hook whose supporting portion extends parallel to the length of a beam and which is secured to said beam, said coil having a natural frequency of bending, said beam being supported on resilient members; and

vibrating said coil and rotating said coil along the circumferential direction of said coil in said solution bath by:

vibrating said beam and said hook by at least one rotary vibrator whose rotating shaft is placed parallel to the length of said beam and whose direction of vibration varies continually and cyclically in a plane perpendicular to said beam,

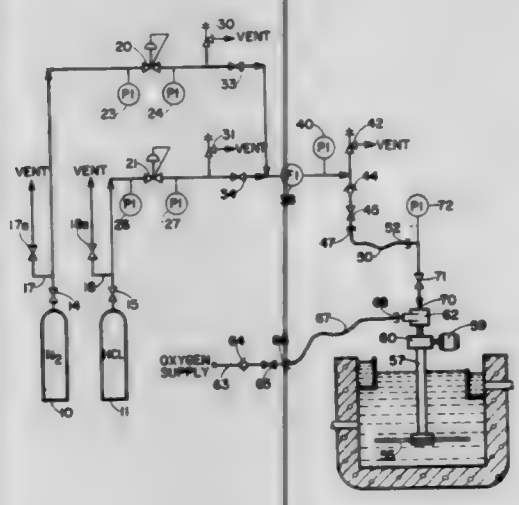
transmitting the vibration of said rotary vibrator to said coil through said hook so that said coil suspended from said hook is vibrated and rotated, and

continually and cyclically varying the frequency of vibration of said beam within a range including said natural frequency of bending.

4,402,758
METHOD FOR REMOVING SCALE FROM POROUS DIFFUSION TILES

Millice F. Hobbs, Monte Sereno, Calif., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 186,085, Sep. 11, 1980, abandoned. This application Feb. 16, 1982, Ser. No. 348,681
Claims priority, application European Pat. Off., Sep. 7, 1981, 1107032.5
Int. Cl.³ B08B 5/00
U.S. Cl. 134—3 7 Claims



1. A method for removing scale from porous diffusion tiles, said tiles being part of a system for distributing a flow of fine bubbles of oxygen or an oxygen-containing gas to a water body, said method comprising the following steps:

stopping the flow of said gas to said tiles, and injecting a nonoxidizing gas into said distribution system in order to purge substantially all oxygen from said system,

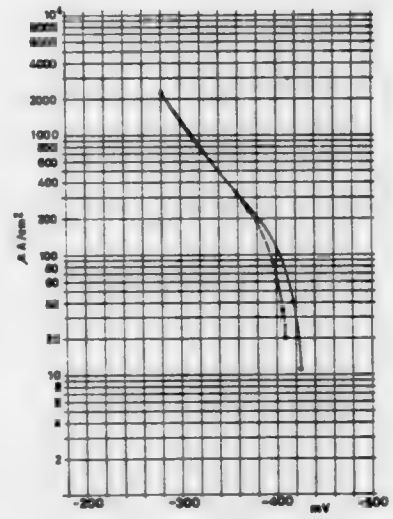
injecting substantially pure HCl gas to the tiles so that said HCl gas infiltrates the pores of the diffusion tiles and reacts with the scale, thereby dissolving said scale, and

injecting a nonoxidizing gas into said distribution system whereby substantially all HCl gas is purged from said system prior to resuming the flow of said oxygen or oxygen-containing gas therethrough.

4,402,759
PROCESS FOR INHIBITING THE CORROSION OF A METAL INSTALLATION IN CONTACT WITH AN ACID BATH

Daniel Tytgat, Brussels, Belgium, assignor to Solvay & Cie. (Societe Anonyme), Brussels, Belgium

Filed Sep. 4, 1980, Ser. No. 184,052
Claims priority, application France, Sep. 17, 1979, 79 23283
Int. Cl.³ C23G 1/06
U.S. Cl. 134—3 11 Claims



1. Process for inhibiting the corrosion, of an installation in contact with an aqueous bath containing a mineral acid and an alkylpyridinium chloride, the installation being made of a metal which is less noble than hydrogen in the bath or of an alloy containing a metal of this type, wherein ferric ions are formed in the bath, comprising: treating the installation by adding to the bath a soluble cyanide complex, which is capable of forming an insoluble compound by reacting with ferric ions in the bath, measuring the concentration of ferric ions in the bath, and adjusting the amount of said soluble cyanide complex added to the bath during the treating so as to permanently keep, in the bath in contact with the installation, a concentration of ferric ions between 30 mg/kg and a zero concentration, and that with a zero concentration the adjusted amount of the soluble cyanide complex added is that which is strictly necessary to obtain a zero concentration of ferric ions therein.

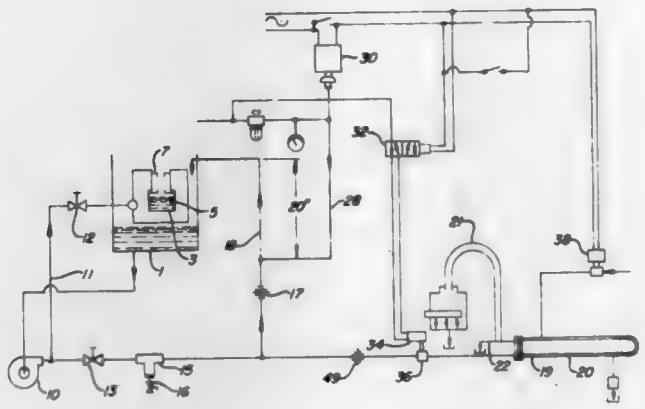
11. In a process for treating an installation made of metal which is less noble than hydrogen or of an alloy containing a metal of this type, by contacting the installation with an aqueous bath containing a mineral acid and alkylpyridinium chloride, wherein ferric ions are formed in the bath, the improvement comprising: adding to the bath a soluble cyanide complex which is capable of forming an insoluble compound by reacting with ferric ions in the bath, measuring the concentration of ferric ions in the bath, and adjusting the amount of said soluble cyanide complex added to the bath during the treating in order to keep the amount of ferric ions in the bath permanently between 0.1 and 30 mg/kg.

4,402,760

SALT RECOVERY SYSTEM FOR A LIQUID CURING MEDIUM

Grant F. Strong, Wabash, Ind., assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Jun. 10, 1981, Ser. No. 272,158
Int. Cl.³ B08B *7/04*
U.S. Cl. 134—10 **2 Claims**



1. A method for maintaining a salt concentration at less than a preselected level in a balanced recirculating aqueous system wherein salt adhering to a continuously extruded work piece which has passed through a molten salt bath is removed from said work piece by spraying said work piece with water thereby producing salt containing water, a portion of which is removed from the system and the salt content thereof concentrated and thereafter added to said balanced recirculating aqueous system, which comprises:

continuously removing a portion of said salt containing water from said system,

dividing said removed portion into a major and a minor stream,

returning said major stream through sprayheads to spray said extruded salt adhered work piece,

passing said minor portion through a strainer to obtain a strained portion,

passing said strained portion into a stand pipe and returning it to said system,

monioring the salt concentration by pumping air at a predetermined pressure through salt containing water in said stand pipe,

flowing a predetermined amount of salt containing water, from said strained portion into a heat exchange system when said air at said predetermined pressure will not flow through said stand pipe and activating said heat exchange system to remove water from said predetermined amount to obtain a molten salt system,

removing said molten said system as a separate stream from said heat exchange system, and

adding said molten salt system to said molten salt bath.

4,402,761

METHOD OF MAKING SELF-ALIGNED GATE MOS DEVICE HAVING SMALL CHANNEL LENGTHS

Wolfgang M. Feist, Burlington, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 969,906, Dec. 15, 1978, abandoned.
This application Jan. 26, 1982, Ser. No. 342,861
Int. Cl.³ H01L *21/302, 21/26, 29/78*
U.S. Cl. 148—1.5 **7 Claims**

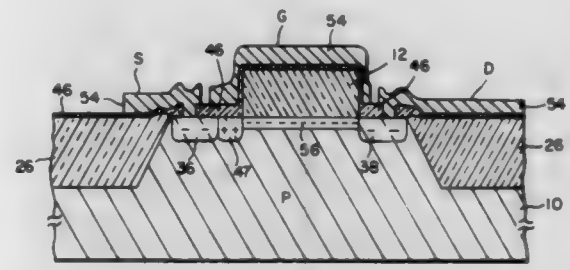
1. A method of forming a semiconductor structure comprising the steps of:

(a) forming an insulating layer and a masking layer over a surface of the insulating layer, such insulating layer and masking layer covering a portion of a surface of a semiconductor having a first type conductivity, such insulating layer and masking layer masking such portion of the semiconductor;

(b) forming a region of opposite type conductivity in a portion of the semiconductor layer unmasked by the insulating layer and the masking layer;

(c) bringing a chemical etchant into contact with the insulating layer and the masking layer, selectively etching only side portions of the insulating layer, such masking layer inhibiting exposure of the surface of the insulating layer to the chemical etchant, reducing the area of the semiconductor masked by the insulating layer;

(d) ion implanting particles capable of establishing a first type conductivity in the semiconductor into a portion of



the semiconductor exposed by the chemically etched insulating layer forming a region of first type conductivity contiguous to both the first formed region of opposite type conductivity and a region of the semiconductor masked by remaining portions of the chemically etched insulating layer; and

(e) forming an electrode over remaining portions of the chemically etched insulating layer and over the portion of the semiconductor exposed by the chemically etched insulating layer and having formed therein the ion implanted region.

4,402,762

METHOD OF MAKING HIGHLY STABLE MODIFIED AMORPHOUS SILICON AND GERMANIUM FILMS

Puthenveetil K. John, 214 Wychwood Park, London, Ontario, Canada (N6G 1S3); Bok Y. Tong, 2 Milford Crescent, London, Ontario, Canada N5X 1A8; Sau K. Wong, 673 Cranbrook Rd., London, Ontario, Canada N6K 1W8, and Kin P. Chik, 154 Argyle St., Block 5, 14th Flr., Flat E, Kowloon, Hong Kong

Filed Jun. 2, 1981, Ser. No. 269,741
Int. Cl.³ H01L *21/203, 21/263*
U.S. Cl. 148—1.5 **2 Claims**

1. A method of modifying amorphous films of Group IV elements such as silicon and germanium and alloys thereof with carbon by the addition of Group I elements hydrogen and/or Group VII elements fluorine and chlorine comprising the steps of:

(a) vacuum deposition of the amorphous film of said Group IV elements or alloys thereof on a substrate at a temperature equal to or slightly above room temperature at a partial vacuum in the range of between about 10^{-5} Torr and 10^{-7} Torr;

(b) annealing said film in an inert gas or in a vacuum at a temperature between 450° C. and 600° C. for silicon and between 300° C. and 500° C. for germanium and;

(c) modifying said annealed film by bombardment with an energetic and directional current of ions or atoms of said Group I and/or said Group VII elements by means of a plasma gun or ion gun, the energy of the ions and/or atoms of which is some discrete value between 0.5 Kev and 25 Kev and the current density is in the range of 0.1 to 100 A/cm^2, characteristics similar to a thetatron.

4,402,763

HIGH CONDUCTIVE HEAT-RESISTANT ALUMINUM ALLOY

Kenichi Sato; Kazuhisa Yamauchi; Yasumasa Hanaki; Takasi Kondo, and Minoru Yokota, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 8, 1981, Ser. No. 252,017
Claims priority, application Japan, Apr. 14, 1980, 55-49446
Int. Cl.³ C22F *1/04*
U.S. Cl. 148—2 10 Claims

1. A process for producing an aluminum alloy having an electrical conductivity in excess of 58% IACS and a 10% softening temperature of at least 400° C., which process comprises providing a molten Al-Zr alloy consisting essentially of 0.23–0.35% Zr and the balance consisting essentially of aluminum, casting the molten Al-Zr alloy, hot rolling the cast alloy at a starting temperature of at least 530° C., cold working the rolled alloy, and ageing the cold worked alloy at 310°–390° C. for 50–400 hours.

4,402,764

METHOD FOR PRODUCING ABRASION AND EROSION RESISTANT ARTICLES

Clark, Eugene V., Northridge, and George K. Sievers, Burbank, both of Calif., assignors to Turbine Metal Technology, Inc., Burbank, Calif.

Continuation-in-part of Ser. No. 240,861, Mar. 5, 1981, abandoned. This application Feb. 26, 1982, Ser. No. 351,341
Int. Cl.³ C23C *11/00*
U.S. Cl. 148—6 20 Claims

1. Method for the fabrication of very hard, abrasion and erosion resistant surfaces on refractory metal carbide structures, which includes surface decomposing the refractory metal carbide by reaction first with titanium and reacting the decomposition products and titanium with subsequently added boron to form said surface.

4,402,765

METHOD AND APPARATUS FOR TREATING STEEL SHEET STRUCTURES

Issei Goto, Funabashi; Kuniaki Tanabe, Higashimurayama, and Hiroshi Okita, Yokosuka, all of Japan, assignors to Nihon Parkerizing Co., Ltd., Japan

Filed Jan. 18, 1982, Ser. No. 340,102
Int. Cl.³ C23F *7/10*
U.S. Cl. 148—6.15 R 9 Claims



1. In phosphate immersion treating of a steel sheet plate structure a method for immersion treating a surface of the steel sheet structure comprising the steps of: in a treatment solution held in a phosphate treatment tank, spraying the treatment solution below a surface level of the treatment solution toward a feeding side of the phosphate treatment tank to form small waves in the treatment solution and to cause a flow of treatment solution along the tank; submerging the structure completely in the treatment solution; relatively moving the treatment solution and the submerged structure along the tank so that the relative speed during contact between the surface of the structure and the treatment solution in the phosphate treatment tank is within a range of 2 to 10 m/min; and inclining the structure upward and downward at least once to exhaust oil, reaction gases and air collected inside the structure.

4,402,766

PROCESS OF MANUFACTURING OF ALUMINIUM WIRE RODS

Leo Cloostermans-Huwaert, Maarkedal, Belgium, assignor to Lamitref Aluminium, Hemiksem, Belgium

Filed Mar. 12, 1982, Ser. No. 357,634
Claims priority, application Luxembourg, Mar. 23, 1981, 82349
Int. Cl.³ C22F *1/04*
U.S. Cl. 148—11.5 A 12 Claims

1. A continuous process of manufacturing wire rods of Al-Mg-Si alloy suitable for electrical conductor wire, the process comprising

(a) continuously quenching in an exclusively thermic step a continuous bar of said aluminium alloy to a quenching temperature whereby a restored structure is obtained with the alloying elements in supersaturated solution;

(b) continuously rolling said bar at an aging temperature, in the same continuous operation downstream the quenching and

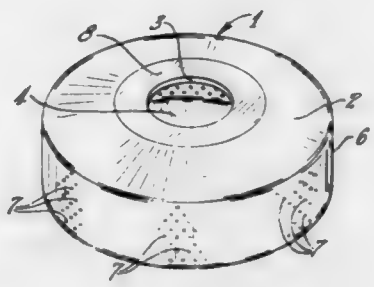
(c) before any subsequent working, aging the so obtained wire rods.

4,402,767

FABRICATION OF ALLOYS

Jay W. Hinze, Newark, Ohio; Mark L. Robinson, Warwick, N.Y., and Richard D. Lawson, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 27, 1982, Ser. No. 453,632
Int. Cl.³ C21D *8/00*
U.S. Cl. 148—11.5 P 13 Claims



1. A process for producing an article of manufacture for glass making from a mechanically alloyed or oxide dispersion strengthened alloy including the steps of:

warm working the alloy at temperatures below its recrystallization temperature;

annealing the warm worked article to recrystallize the alloy to a coarse grain structure; and

hot forming the article of manufacture for glass making.

4,402,768

METHOD FOR PRODUCING SUPERCONDUCTIVE WIRES OF MULTIFILAMENTS WHICH ARE ENCASED IN COPPER OR A COPPER ALLOY AND CONTAIN NIOBIUM AND ALUMINUM

Rene Flükiger, Karlsruhe-Waldstadt, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,573
Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019980
Int. Cl.³ H01L *39/00*
U.S. Cl. 148—11.5 F 16 Claims

1. A method for producing a superconductive wire of multifilaments having components comprising niobium and aluminum encased in copper or a copper alloy, wherein the multifilament configuration and the formation of a superconductive A15 phase are positively developed from the components disposed in a copper or copper alloy tube having an interior

metallic coating serving as a diffusion barrier, by cold forming and subsequent heat treatment, comprising the steps of:

(a) mixing to form a powder mixture, niobium powder and aluminum powder, each havng a grain diameter between 1 and 400 microns, in proportions suitable to form an A15 compound of the composition x% by weight Al and (100-x)% by weight Nb, wherein $5 \leqq x \leqq 20$;

(b) pressing said powder mixture into a tube formed of copper or a copper alloy having a greater hardness and higher mechanical tensile strength than copper, the interior of the tube having a diffusion barrier in the form of a coating of Ta or Ni of a thickness which is about 0.1 to 0.25 times the thickness of the tube, to form a filled tube;

(c) cold forming the filled tube into wire comprising niobium filaments by swaging and drawing into wire, or by hydrostatic extrusion, swaging, and drawing into fine wire, wherein the cold forming takes place until the diameter D of the niobium filaments produced during cold forming is 0.1 microns $\leqq D \leqq 1$ micron; and

(d) annealing the wire at a temperature between 923° and 1173° K. to form the A15 phase.

4,402,769

METHOD FOR IMPROVING THE DUCTILITY OF AUTOGENOUS WELDS IN UNSTABILIZED, FERRITIC STAINLESS STEEL COILS

Jack M. Beigay, Buffalo Township, Allegheny County, and Paul T. Lovejoy, Penn Hills, both of Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Dec. 10, 1982, Ser. No. 448,868
Int. Cl.³ C21D *9/50*
U.S. Cl. 148—12 EA **3 Claims**

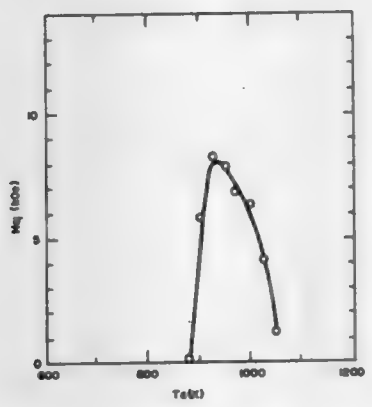
1. A method for improving the ductility of an autogenous weld in hot band of straight-chromium ferritic stainless steel to permit cold rolling to final gauge without weld cracking, said method comprising heating said weld to a temperature within the range of about 1325° to 1515° F. for at least about 2 minutes and water quenching from elevated temperatures of at least 1200° F. to room temperature.

4,402,770

HARD MAGNETIC ALLOYS OF A TRANSITION METAL AND LANTHANIDE

Norman C. Koon, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 23, 1981, Ser. No. 314,325
Int. Cl.³ C04B *35/00*
U.S. Cl. 148—31.57 **22 Claims**



1. An alloy represented by the formula:

$$(M_wX_xB_{1-w-x})_{1-y}(R_zLa_{1-z})_y$$

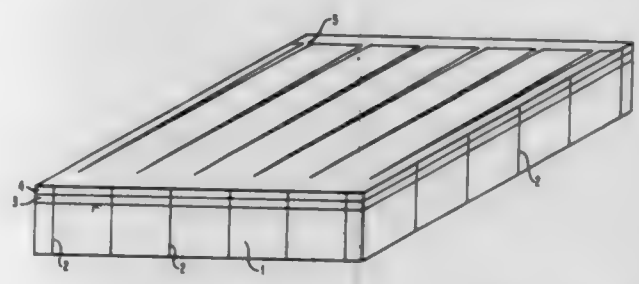
wherein w is from about 0.7 to about 0.9; x is from 0 to about 0.05; y is from about 0.05 to about 0.15; z is from 0 to about 0.95; M is selected from the class consisting of iron, cobalt, an iron-cobalt alloy, an iron-manganese alloy having at least 50 atomic percent iron, an iron-cobalt-manganese alloy having at least 50 atomic percent iron and cobalt, X is an auxillary glass former selected from the class consisting of phosphorous, silicon, aluminum, arsenic, germanium, indium, antimony, bismuth, tin, and mixtures thereof, and R is a lanthanide, said alloy having a polycrystalline, multiphase, single-domain-particle microstructure wherein the average crystal-grain size does not exceed 400 Å.

4,402,771

SUBSTRATE FOR SILICON SOLAR CELLS

Donald E. Thomas, Mt. Lebanon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 16,766, Mar. 2, 1979, Pat. No. 4,343,963. This application Mar. 15, 1982, Ser. No. 358,072
Int. Cl.³ H01C *31/06*
U.S. Cl. 148—174 **11 Claims**



1. A method of making a substrate comprising depositing an epitaxial layer of doped silicon on an epitaxial layer of tungsten on a sheet of large grained silicon steel.

4,402,772

SUPERALLOY SINGLE CRYSTAL ARTICLES

David N. Duhl, Newington, and Alan D. Cetel, West Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 14, 1981, Ser. No. 301,801
Int. Cl.³ C22C *19/05*
U.S. Cl. 148—404 **6 Claims**

1. A heat treated nickel base single crystal superalloy article suited for use at elevated temperatures having a composition consisting essentially of:

a. from about 3.5 to about 7% tantalum,
b. from about 7.5 to about 11% chromium,
c. from about 4 to about 6% cobalt,
d. from about 0.6 to about 1.8% titanium,
e. from about 0 to about 2.5% molybdenum,
f. from about 6 to about 12% tungsten,
g. from about 4.5 to about 6.0% aluminum,
h. from about 0.05 to about 0.5% hafnium
i. balance essentially nickel, said article being free from intentional additions of carbon, boron and zirconium, and said article being free from internal grain boundaries and having an average gamma prime particle size of less than about 0.5 micron and an incipient melting temperature in excess of about 2350° F.

4,402,773

REMOTE AUTOMATIC MAKE-UP STAB-IN SEALING SYSTEM

Charles D. Morrill, Bellaire, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Division of Ser. No. 833,553, Sep. 15, 1977. This application Nov. 6, 1978, Ser. No. 958,314
The portion of the term of this patent subsequent to Nov. 1, 1994, has been disclaimed.
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—25 **7 Claims**

1. A seal assembly disposed in a channel groove on the external periphery of a tubular member slidingly received within a bore of another member for providing a metal-to-metal seal between the tubular member and the internal wall of

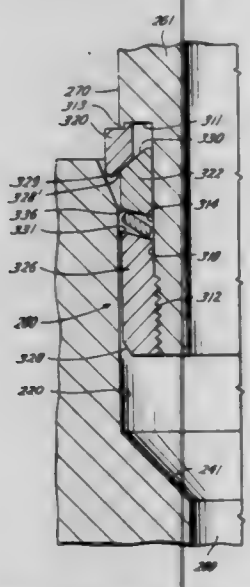
the bore, the channel groove having a bottom and two sides comprising

a frustoconical shaped metal gasket disposed around the channel groove of the tubular member,

an annular shoulder mounted on one side of the channel groove of the tubular member,

an annular member reciprocally disposed around the channel groove of the tubular member, said annular shoulder and said annular member having correlative, oppositely disposed surfaces engaging said gasket upon sealing engagement,

said gasket, annular shoulder, and annular member having an outer diameter smaller than the diameter of the bore and being received by the bore,



an actuator member having an outer diameter greater than the diameter of the bore prior to the tubular member being received by the bore and having means engageable with the bore wall for compressing the actuator member to a smaller diameter than the bore when the tubular member is inserted into the bore,

actuation means for applying an axial force on said actuator member when undergoing said compression causing said actuator member to engage said annular member compressing said gasket between said annular shoulder and annular member and move the inner and outer edges of said gasket into metal-to-metal sealing engagement with the tubular member and the internal wall of the bore, respectively.

4,402,774

PYROTECHNIC COMPOSITION

Donald E. Olander, Huntington Beach, and Donald W. Petersen, Tehachapi, both of Calif., assignors to Hi-Shear Corporation, Torrance, Calif.

Filed Nov. 20, 1981, Ser. No. 323,436

Int. Cl.³ C06B *45/10*

U.S. Cl. 149—19.3 **7 Claims**

1. A pyrotechnic composition consisting essentially of, by weight, between about 40% and about 70% of finely divided magnesium metal, between about 5% to about 20% of a binder selected from the group consisting of polybutadiene, teflon, and mixtures thereof, and between about 7.5% and about 60% of silicon dioxide to make 100%, said magnesium and silicon dioxide being fully divided and mixed into said binder.

4,402,775

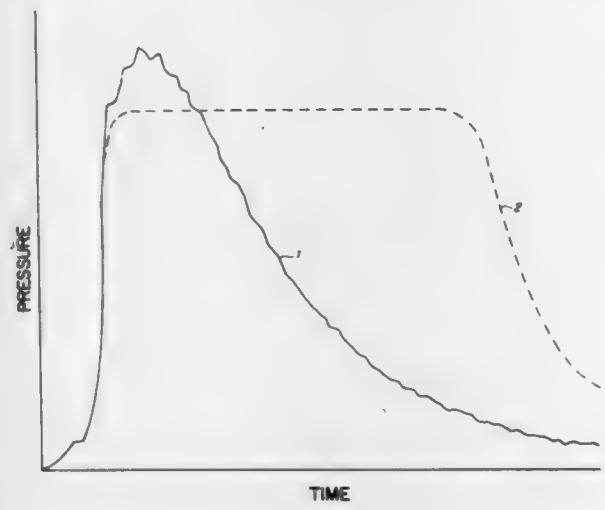
HYBRID GUN PROPELLANT

Stanley E. Wood, Inyokern, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 24, 1982, Ser. No. 391,268

Int. Cl.³ C06B *31/52*

U.S. Cl. 149—49 **8 Claims**



1. A gun propellant composition comprising:

an oxidizer rich liquid selected from the group consisting of a hydroxylammonium nitrate and water admixture and a hydroxylammonium nitrate, ammonium nitrate and water admixture; and

an oxidizer deficient single based solid propellant.

4,402,776

SILICON-CONTAINING COMPOSITIONS FOR SELF-SUSTAINED INTERMETALLIC REACTIONS

Patrick A. Whipps, Tuscon, Ariz., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Aug. 22, 1980, Ser. No. 180,270

Int. Cl.³ C06B *43/00*

U.S. Cl. 149—108.2 **3 Claims**

1. An improved composition capable of generating an exothermic reaction in the condensed state consisting essentially of (a) about 67 to 79 weight percent titanium, about 13 to 30 weight percent boron carbide, up to about 10 weight percent carbon, and up to about 10 weight percent boron plus (b) about 1 to 20 weight percent silicon, based on the total composition.

4,402,777

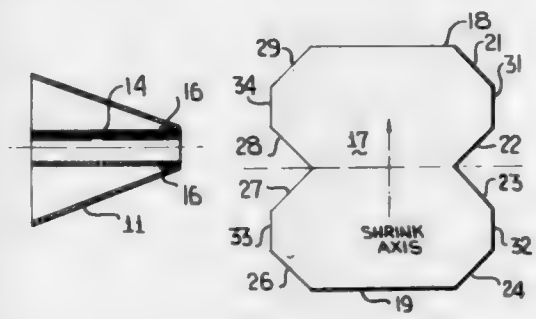
SLEEVE AND COVERING FOR TUBING

Rodney L. Derbyshire, Northport, N.Y., assignor to Radiation Dynamics, Inc., Melville, N.Y.

Continuation of Ser. No. 197,857, Oct. 17, 1980, abandoned, which is a continuation of Ser. No. 38,067, May 11, 1979, abandoned. This application Jul. 28, 1981, Ser. No. 287,669

Int. Cl.³ H01B *13/06*; B65H *69/02*; B32B *31/00*

U.S. Cl. 156—86 **2 Claims**



1. A method of wrapping and sealing an elongated item in a covering material, the steps comprising

forming a film of said covering material into a hollow truncated conical member whose end openings are larger than the cross-sectional dimension of the item to be covered, said conical member when so formed comprising a heat shrinkable, heat sealable material,

said hollow truncated conical member being formed by (a) providing a flat truncated cone having two arcuate concentric ends between which are disposed two divergent side edges, (b) overlapping the side edges of said flat truncated cone, and (c) heat sealing the overlapped edges thereby to form said hollow truncated conical member,

said flat truncated cone being cut from a uniformly stretched sheet thereby to provide a greater force at the smaller diameters than at larger diameters during heat shrinking,

locating said elongated item within said conical member such that the longitudinal axis of said item and conical member are substantially concentric,

applying a flowable sealant material between the conical member and said elongated item,

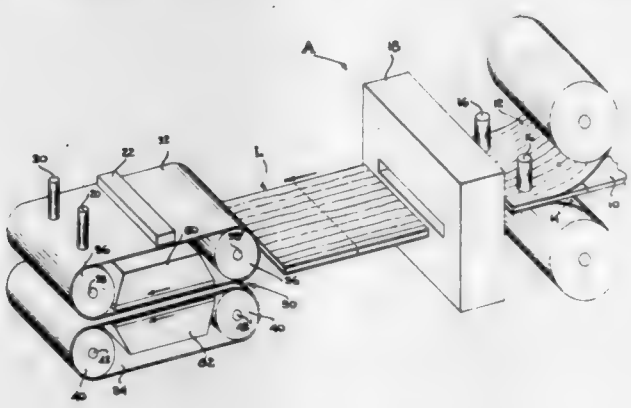
heat shrinking the conical member such that the smaller diameters of the truncated cone contact the elongated item first progressively spreading the sealant material toward the direction of the larger diameters of the truncated cone along the surface of said elongated item, thereby to progressively seal the covering material to the elongated item.

4,402,778

METHOD FOR PRODUCING FIBER-REINFORCED PLASTIC SHEET STRUCTURES

William B. Goldsworthy, Palos Verdes Estates, Calif., assignor to Goldsworthy Engineering, Inc., Torrance, Calif.

Filed Aug. 5, 1981, Ser. No. 290,357
Int. Cl.³ B32B *31/06, 31/20*
U.S. Cl. 156—172 **45 Claims**



1. A method for producing a fiber reinforced plastic sheet laminate structure comprised of at least two laminable members, said method comprising:

(a) impregnating a first member comprised of fiber reinforcing material with a hardenable binder to form a first laminable member,

(b) bringing the first laminable member comprised of the fiber reinforcing material into contact with a relatively flat surface of a second laminable member comprised of a relatively rigid member,

(c) passing the pair of laminable members in contact with each other into a gap formed between a pair of spaced apart belts and which belts have first surfaces facing away from each other and second surfaces facing each other and spaced apart to form said gap,

(d) moving the laminable members between the opposed second surfaces of said belts and with each of said belts disposed about a separate housing with each housing having a plenum chamber and a wall facing the first surface of the belt surrounding that housing, each housing also having a continuous seal on said wall of that housing and extending toward and engaging said first surface of the belt surrounding that housing to create a gas receiving area formed by said wall of said housing and said first surface of said belt surrounding that housing and said continuous seal on that housing,

(e) introducing a gas under pressure to form a body of gas in said gas receiving area to bear against the first surface of each said belt to urge said second surface of each said belt into contact with one of said laminable members with relatively uniform pressure in the gas receiving area to cause contact of opposed surfaces of said laminable members, with relatively uniform pressure and thereby enable a curing of a hardenable binder impregnated in said reinforcing material and relatively uniform lamination of said laminable members, and

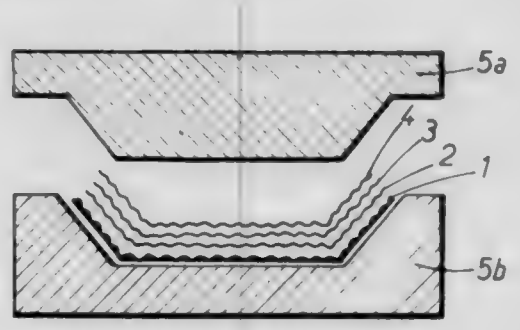
(f) imparting a driving force directly to said laminable members for driving said laminable members through said opening between said belts without any driving force created by said belts so that the laminable members passing through said opening engage and impart a driving force to said belts, but which belts nevetheless apply a laminating pressure to the laminable members therebetween, and thereby also permitting each belt to be essentially floatable about the associated housing.

4,402,779

METHOD FOR AT LEAST PARTLY METALIZING THE SURFACE OF A LAMINATED COMPONENT

Fernand J. Levy, La Defense, France, assignor to Avions Marcel Dassault-Breguet Aviation, Vaucresson, France

Filed Jul. 17, 1981, Ser. No. 284,224
Claims priority, application France, Jul. 17, 1980, 80 15816
Int. Cl.³ B29C *13/00;* B05D *5/12;* B32B *31/12, 27/00*
U.S. Cl. 156—245 **2 Claims**



1. A method for manufacturing a laminated component comprising the successive steps of:

(a) at least partly metalizing only one surface of a component consisting essentially of metal-free fibrous material by projecting thereon particles of molten metal so that said particles strongly adhere to the surface fibres of said fibrous material and form a regular, electrically-conducting surface layer,

(b) cutting at least one flat piece in said metalized fibrous material,

(c) cutting a plurality of flat pieces in another component consisting essentially of metal-free fibrous material;

(d) coating the metalized and non-metalized components with a polymerizable resin;

(e) superposing in a moulding die said metalized and non-metalized coated components so as to form a stack having an exposable top surface and an exposable bottom surface, at least one of said top and bottom exposable surfaces of said stack consisting of the metalized surface of a metalized component and the remainder of said stack consisting essentially of said components of metal-free fibrous material; and

(f) moulding the stack of flat pieces formed in said die by the action of pressure-generating means so that said stack is polymerized.

4,402,780

PROCESS FOR PREPARING LAMINATES WITH THERMOPLASTIC RESINS

Hiroyuki Ogoe, 5-1-402, 26 Sayamadai 3-chome, Sayama-shi, Saitama-ken, and Hiroshi Ohta, 9-8 Kyoei-cho, Numazu-shi, Shizuoka-ken, both of Japan

Filed Apr. 27, 1981, Ser. No. 257,770
Int. Cl.³ B29C *19/02*
U.S. Cl. 156—308.2 3 Claims

1. A process for preparing a laminate article with a thermoplastic synthetic resin impregnated thereinto or adhered thereto comprising:

(a) immersing a plurality of sheets of basic material of paper or cloth into a solution of a thermoplastic synthetic resin dissolved in an organic volatile solvent thereby impregnating or adhering said thermoplastic synthetic resin into or onto said plurality of sheets of basic material, the concentration of the resin in said solution being in the range of 10 to 30% by weight and the viscosity of the solution being lower than 1000 cps, said thermoplastic synthetic resin being selected from the group consisting of polystyrene, copolymers of styrene and acrylonitrile, polymers of esters of methacrylic acid, polyacrylate, polycarbonate, polyvinyl chloride, copolymers of vinyl chloride and vinyl acetate, polyvinyl acetate, polyvinyl butyral and cellulose acetate,

(b) drying the thus obtained impregnated sheets of basic material, thereby producing sheets of basic material containing thermoplastic synthetic resin impregnated therein or adhered thereto in an amount of 20 to 65%, based on the weight of the sheets,

(c) laminating together a plurality of the thus dried sheets of basic material,

(d) pressing the laminated sheets under a pressure of higher than 20 kg/cm³ at a temperature of higher by 50° to 100° C. than the melting point of said thermoplastic synthetic resin, and

(e) cooling said laminated sheets,

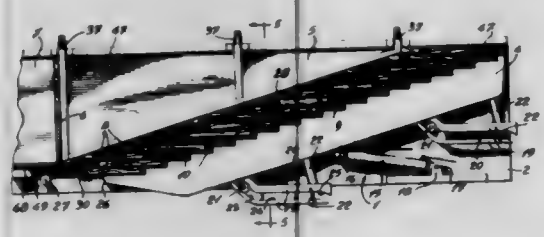
thereby obtaining a laminate article comprising firmly fixed sheets of the basic material impregnated with or having adhered thereto said thermoplastic synthetic resin.

4,402,781

CONTINUOUS SOLID WOOD LAMINATED PANELS

Joachim Couture, R.R. 3, Sayabec, Quebec, Canada G0J 3K0, and Raymond Couture, 1935 Places Nightingale, St. Bruno, Canada (J3V 4P6)

Filed Mar. 30, 1982, Ser. No. 363,726
Int. Cl.³ B32B *31/04, 31/20*
U.S. Cl. 156—274.6 17 Claims



1. A method of obtaining a continuous laminated panel made of individual solid wood blocks glued together, arranged in longitudinal rows and offset from row to row transversely of the panel, said method comprising the steps of successively positioning groups of such blocks glue coated along at least two adjacent edges at a feeding station at the rear end portion of an elongated table, the blocks of each group disposed side by side in a number equal to the number of said longitudinal rows and each aligned longitudinally of said table, the blocks of each group offset one from the other longitudinally of the table, successively pushing each group of so-positioned blocks along said table transversely and forwardly of said table to abut the blocks of a succeeding group against the blocks of a preceding group, said pushing step being effected on a given group of blocks while the preceding groups of blocks are positively retained against movement transversely of said table and while they are braked in their forward movement longitudinally of said table, to press the blocks together and to form close joints between the blocks, and heat curing the glue of the assembled and pressed blocks.

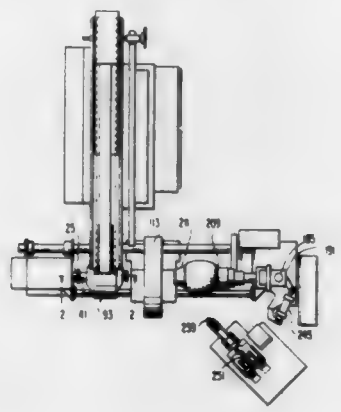
8. An apparatus for making a continuous wood-laminated panel from separate wooden blocks, of uniform size and glue coated along at least two adjacent edges, said apparatus comprising an elongated table, a ram member disposed over one end portion of said table and having a stepped pushing edge with each step arranged transversely of said table, power means for reciprocating said ram member to effect a forward pushing stroke and a backward retracting stroke, guide means for guiding said ram member during its forward and retracting strokes to maintain said ram member parallel to itself and to cause movement of said ram member transversely and forwardly of the table during its forward stroke, said table having a longitudinal abutment shoulder along its edge opposite the ram member, pressing overlying said table to press against said table the blocks successively pushed by said ram member underneath said pressing plates, one of said pressing plates having means to cure the glue.

4,402,782

TIRE BUILDING MACHINE

Karl W. Klose, Findlay, and Gary H. Benjamin, Ada, both of Ohio, assignors to Cooper Tire & Rubber Company, Findlay, Ohio

Filed Dec. 16, 1981, Ser. No. 331,263
Int. Cl.³ B29H *17/20*
U.S. Cl. 156—414 14 Claims



1. A tire building machine having a base member with an expansible and contractable drum mounted on one end thereof and a final stage assembly mounted on the other end with a transfer ring interposed therebetween and axially movable towards and away from said ends, said final stage assembly comprising a vertical support member, a pair of horizontally disposed coaxial shafts supported by said support member, a disc member mounted on a common end of said shaft with said disc members being freely rotatable with respect to said shafts, said disc members receiving and supporting a first stage tire carcass having bead areas, means connected to said shaft for moving said disc members into engagement with the bead areas of said carcass.

4,402,783

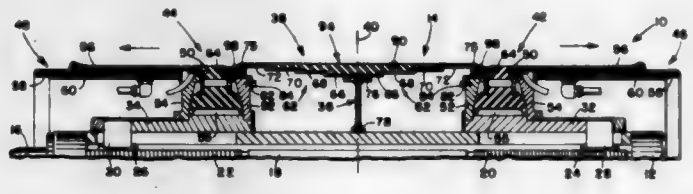
AXIALLY COLLAPSIBLE AND EXPANDABLE TIRE BUILDING DRUM

George E. Enders, Salem, Ohio, assignor to NRM Corporation, Akron, Ohio

Filed Apr. 30, 1981, Ser. No. 259,062
Int. Cl.³ B29H *17/16*
U.S. Cl. 156—415 26 Claims

1. In a tire building machine including an axially contractible and expandable drum, the improvement comprising a center deck for the drum having a rigid, axially continuous, generally

cylindrical deck surface, said deck comprising end supports movable toward and away from each other collapse and expand the deck axially, and at least five axially telescoping, circumferentially continuous rings extending axially between said end supports, said telescoping rings being expandable as said end supports move away from each other to form such rigid, axially continuous, generally cylindrical deck surface and collapsible into or upon one another as said end supports move together.



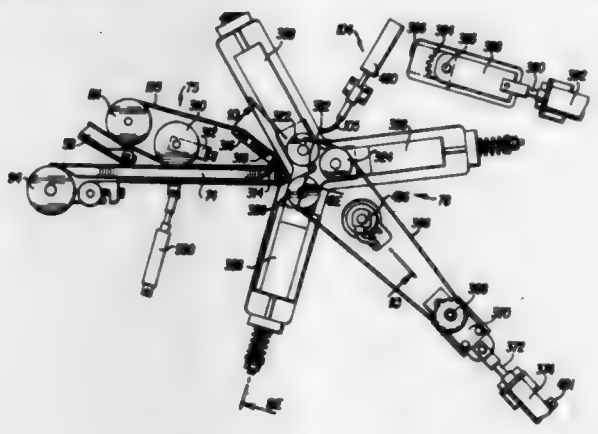
19. In a tire building machine including an axially contractible and expandable drum, the improvement comprising a center deck for the drum having a rigid, axially continuous center deck, said center deck comprising end supports, a center support, and a pair of symmetrically arranged sets of telescoping rings respectively extending between said center support and said end supports, each set including a center ring supported on and secured to said center support, an end ring supported on and secured to the corresponding one of said end supports, and at least one intermediate ring interconnected between said center and end rings.

4,402,784

ROLL WINDING APPARATUS AND METHOD

Antonio L. Romero-Medrano, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Mar. 6, 1981, Ser. No. 241,334
Int. Cl.³ B65C *3/12*
U.S. Cl. 156—446 **14 Claims**



2. An improved apparatus for winding an elongated element into a spiral roll, said apparatus comprising:

means for conveying said element, said means having an outfeed end;

a freely rotatable winding arbor situated adjacent said outfeed end;

a plurality of winding rollers positioned about said arbor;

means for rotating at least one of said winding rollers;

means for permitting radial movement of said winding rollers away from said arbor as a spiral roll is formed between said winding rollers and said arbor;

means for guiding the leading edge of said element at least partially around said arbor between said arbor and said winding rollers, said means for guiding comprising at least one guide belt threaded at least partially around the side of said arbor opposite said outfeed end and means for maintaining tension on said guide belt;

means for constraining said winding rollers to radial movement at a predetermined rate and for stopping radial movement of said winding rollers at a predetermined distance from said arbor, thereby fixing the final diameter of the spiral roll; and

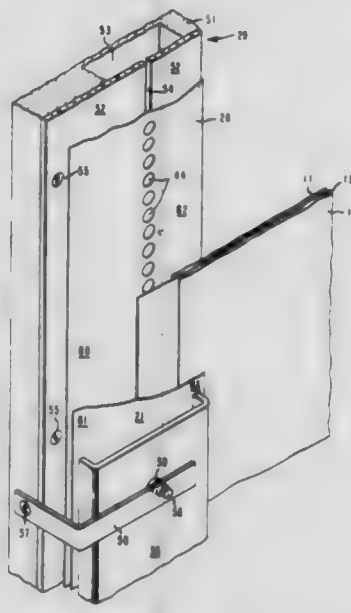
means responsive to changes in the tension of said guide belt for actuating said means for constraining.

4,402,785

APPARATUS FOR MAKING A WEB-SUPPORTED MEMBRANE

Michael S. Withers, Landenberg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 304,105, Sep. 21, 1981, which is a division of Ser. No. 121,461, Feb. 14, 1980, Pat. No. 4,324,606, which is a continuation-in-part of Ser. No. 107,521, Dec. 27, 1979, abandoned. This application Sep. 10, 1982, Ser. No. 416,564
Int. Cl.³ B32B *31/22*
U.S. Cl. 156—499 **4 Claims**



1. Apparatus for making a reinforced membrane, comprising,

(1) a frame, and mounted on said frame,

(2) means for guiding at least two continuous webs of film and a continuous web of reinforcing material into face-to-face contact such that proximate surfaces of two of said webs of film contact opposite sides of said web of reinforcing material,

(3) two sets of flexible endless belts which cooperate to engage opposite sides of the resulting assembly of said webs at the edge portions thereof and to transport said assembly, each set consisting of two belts, one belt of each set having a series of perforations along its entire length, each set of belts extending beyond an edge of said assembly, and guide means for said belts,

(4) vacuum means including two vacuum manifolds, one manifold adjacent each said perforated belt, for removing air from between said films of said assembly at the edge portions thereof through said perforations,

(5) two banks of heaters, one bank adjacent each exposed film surface, each bank consisting of a plurality of heaters disposed for heating first the center portion of said assembly and then progressively toward and including the edges thereof as said assembly is transported therebetween, to fuse said assembly into a reinforced membrane,

(6) means for guiding said assembly between said banks of heaters,

(7) a wind-up for collecting said reinforced membrane, and

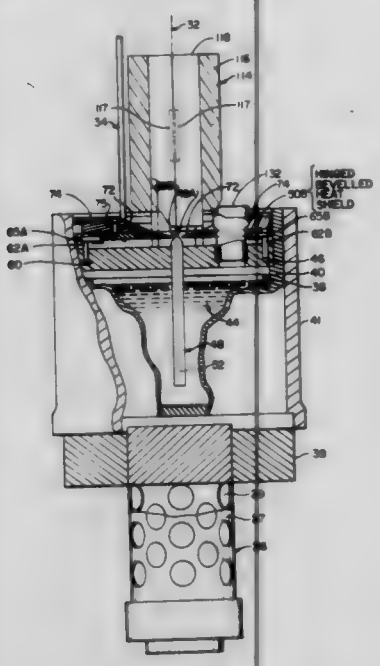
(8) means for driving said wind-up.

4,402,786

ADJUSTABLE HEAT SHIELD ASSEMBLY

William Little, Bolton, Mass., assignor to Mobil Solar Energy Corporation, Waltham, Mass.

Filed Sep. 1, 1981, Ser. No. 298,525
Int. Cl.³ C30B 15/34
U.S. Cl. 156—608 18 Claims



1. Apparatus for growth a crystalline ribbon-like body from a melt comprising:

a furnace enclosure;

a crucible located in the furnace for containing a melt,

means for applying heat to the crucible to maintain the melt,

a capillary die extending into the crucible such that the melt in the crucible may be supplied to a melt meniscus formed between the capillary die and a growing crystalline body, and

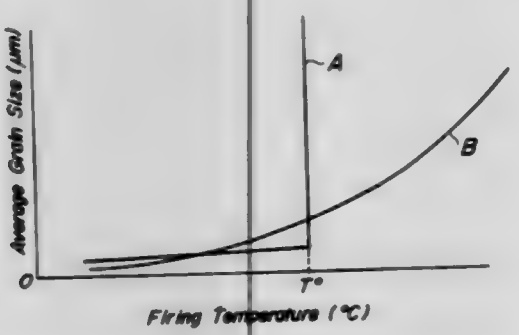
a heat shield assembly surrounding the upper end of the capillary die and extending transversely of the die, said heat shield assembly comprising at least two heat shield members arranged for movement relative to one another so that at least a portion of one or more of said heat shield members may be raised or lowered relative to the upper end of said capillary die and the effect of movement of each heat shield member on the thermal gradient around the upper end of the die is greatest at the outer edge of said each heat shield member.

4,402,787

METHOD FOR PRODUCING A SINGLE CRYSTAL

Soichiro Matsuzawa, Toyoake, and Syunzo Mase, Tobishima, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed May 20, 1980, Ser. No. 151,605
Claims priority, application Japan, May 31, 1979, 54-67893; Aug. 2, 1979, 54-98055
Int. Cl.³ C30B 7/04
U.S. Cl. 156—621 13 Claims



1. A method for producing a single crystal, which comprises contacting a polycrystal having the property of a discontinuous crystal grain growth which noticeably increases the crystal growing rate at a temperature T° C. in the course of heating to a seed single crystal having substantially the same crystal structure as the polycrystal and heating the contacted crystals at a temperature (t° C.) lower than the temperature T° C. to cause a solid phase reaction at an interface between microcrystal grains composing the polycrystal and the seed single crystal, wherein a solution of an organic or inorganic acid salt containing a metal element comprising the polycrystal or seed single crystal and a solution partially dissolving the polycrystal or seed single crystal is applied to each contacting surface of the polycrystal and seed single crystal and then the polycrystal and the seed single crystal are contacted to bond the polycrystal and the seed single crystal whereby the microcrystal grains in the polycrystal are integrated to the seed single crystal to grow the single crystal.

4,402,788

PROCESS FOR BLEACHING WOOD PULP WITH HYDROGEN PEROXIDE

George Paulose, Federal Way, Wash.; Raman Ambady, Fairfield, Ohio; James R. Kidd, Decatur, Ala., and Hector Ferguson, Hamilton, Ohio, assignors to Champion International Corporation, Stamford, Conn.

Filed Apr. 26, 1982, Ser. No. 372,233
Int. Cl.³ D21C 9/16
U.S. Cl. 162—78 4 Claims

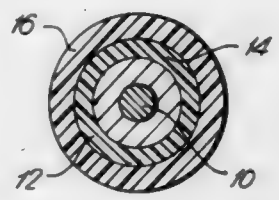
1. In a multi-stage process for bleaching wood pulp which comprises a first stage of chlorination, a second stage of extraction with sodium hydroxide, and subsequent stages of oxidation, to obtain a bleached wood pulp with a GE brightness level of 70 to 88, the improvement which comprises subjecting the pulp from the second stage to a third stage of oxidation with peroxide in an amount sufficient to attain a GE brightness level of 35 to 50, whereby the amounts of oxidizing agents required in the subsequent stages are substantially identical to the amount of oxidizing agents required when said third stage is oxidation with hypochlorite to a GE brightness level of 60 to 70.

4,402,789

METHOD OF COATING AN INSULATED ELECTRICAL CONDUCTOR

Gavriel L. Vexler, Montreal West, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 18, 1981, Ser. No. 303,218
Int. Cl.³ B05D 5/12
U.S. Cl. 162—106 3 Claims



1. A method of producing an insulated electrical conductor comprising:

providing a layer of dried pulp insulation upon a conductor by applying wet pulp and drying it to expand it before adding any further layers of any material; and

forming a surrounding protection for the insulation layer by:

(i) providing a first or inner protective layer for the dried pulp by depositing a polymeric based composition upon the pulp by a process which avoids the use of crushing forces upon the pulp;

(ii) heating the first or inner layer to cause it to harden and, then directly in tandem with the hardening treatment and with the inner layer retained in a heated state;

(iii) applying a second or outer layer of a polymeric com-

position to the inner layer by extruding it onto the first layer, the hardened inner layer serving to absorb and protect the, pulp from crushing forces created by extrusion.

4,402,790

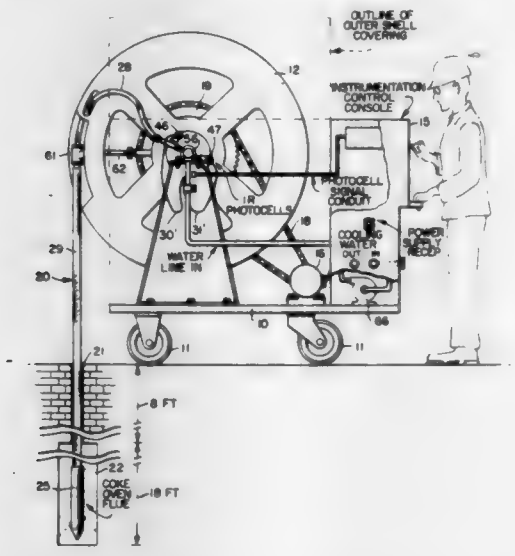
COKE OVEN FLUE TEMPERATURE MEASURING PROCESS AND PROBE MACHINE

James B. Lynn, and George E. Kisner, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed May 4, 1982, Ser. No. 374,822

Int. Cl.³ C10B *21/00, 45/00;* G01J *5/04;* G01K *1/12*

U.S. Cl. 201—1 **12 Claims**



1. A temperature measuring probe machine for measurement of high temperatures found in an enclosure as in a coke oven flue comprising

a sensing probe means to enter the enclosure to measure the temperatures within the enclosure at selected heights in the enclosure, said sensing probe means including a probe terminal head, inner and outer flexible hoses attached to said probe terminal head, and fiber optic cables connected to said probe terminal head through said inner flexible hose,

reel means attached to, and around which is wound, said sensing probe means to insert and withdraw said sensing probe means from the enclosure,

cooling means to protect said sensing probe means from the high temperatures in the enclosure forming an internal portion of said sensing probe means,

carriage means to carry said reel means,

instrumentation and control means mounted on said carriage means in operative connection with said sensing probe means and said reel means, and

means to supply power to said reel means, said cooling means, and said instrumentation and control means.

4,402,791

APPARATUS FOR PYROLYZING SHREDDED TIRES

John C. Brewer, 2529 Village Cir., Salt Lake City, Utah 84108

Filed Aug. 10, 1981, Ser. No. 291,164

The portion of the term of this patent subsequent to Aug. 30, 2000, has been disclaimed.

Int. Cl.³ C10B *1/06, 27/00, 45/00*

U.S. Cl. 202—97 **23 Claims**

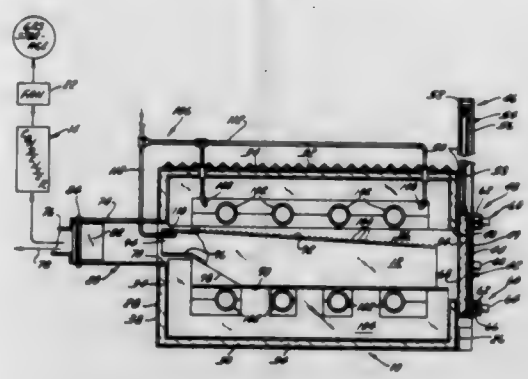
1. An apparatus for pyrolyzing shredded pieces of tires comprising a closed chamber having a door at one end and a gas discharge outlet at the other end,

a number of radiant heating members at the top and bottom of said chamber,

a container for holding the shredded pieces of tires,

said container including a discharge snout corresponding to the discharge outlet in said chamber,

said container being adapted to be placed in said chamber between the heating members with the discharge snout of the container aligned within the discharge outlet at the other end of the chamber and means for heating said



radiant heating members to a temperature sufficient to pyrolyze the shredded pieces of tires located in said container.

4,402,792

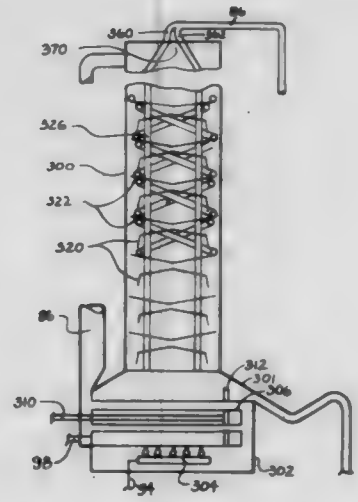
APPARATUS FOR PRODUCING ALCOHOL FUEL

Floyd E. Horst, R.D. 1, Box 165, Newmanstown, Pa. 17073, and Robert M. Krieder, Rte. 1, Box 2180, Jonestown, Pa. 17038

Filed Jul. 25, 1980, Ser. No. 173,193

Int. Cl.³ B01D *3/24*

U.S. Cl. 202—159 **3 Claims**

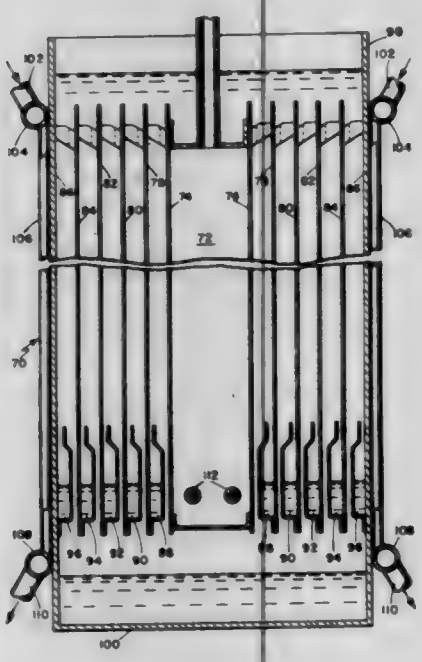


1. A reflux column for use with continuous operating apparatus for producing alcohol fuel from feed stock, comprising a column housing adapted to be positioned above and in liquid and vapor communication with a heat generator, a plurality of interleaven spreader plates and concentrator plates located in said column housing, said adjacent spreader and concentrator plates being spaced apart, a plurality of spacers separating said spreader and concentrator plates, each of said spreader plates being dish shaped and oriented to have its convex side facing upwardly for causing flow of liquid to its periphery, having a downwardly extending sawtooth portion about its periphery for inducing the formation of droplets, and inwardly of its periphery having a plurality of openings for passage of vapors therethrough, each of said concentrator plates being dish shaped and oriented to have its convex side facing downwardly for causing flow of liquid to its interior, and having a radial-like opening at its center with plurality of leaves extending outwardly toward its periphery for permitting passage of vapors while concentrating liquids toward the center, whereby the rising vapors and the descending liquids are effectively and efficiently brought in contact with each other allowing latent heat transfer between the vapors and liquids for various operating capacities of the column.

4,402,793
MULTIPLE EFFECT THIN FILM DISTILLATION SYSTEM AND PROCESS

John P. Petrek, 235 Green Ave., Escondido, Calif. 92025, and Clifford M. Cantrell, 606 Coast Ave., Richland, Wash. 99352

Division of Ser. No. 122,243, Feb. 19, 1980, Pat. No. 4,329,204.
This application Nov. 9, 1981, Ser. No. 319,724
Int. Cl.[3] B01D *3/02*
U.S. Cl. 202—174 20 Claims



1. A multiple effect distillation unit, said unit comprising:

a plurality of heat conducting plates including a primary heat input plate and a heat output plate, and at least one intermediate plate, said heat input plate having an evaporation surface and said heat output plate having a condensing surface, said intermediate plate having both evaporation surfaces and condensing surfaces, said plates being disposed in a closely spaced parallel face to face arrangement of one-half inch or less apart having alternately evaporating and condensing faces in opposed face to face relation defining a vapor chamber therebetween,

said plates disposed substantially vertically for defining an upper end and a lower end for enabling gravity flow of a liquid from said upper end to said lower end,

means for introducing a liquid feedstock onto the evaporator surfaces at the upper end thereof at a controlled rate for establishing a thin film flow of said liquid along said evaporator face from the upper end to the lower end, and

means for establishing a heat flow from said heat input plate through the intermediate plate to the heat output plate, and

means for separately collecting the distillate at the lower end of said plates.

13. A process for the distillation liquid comprising the steps of:

arranging heat transfer plates vertically in opposed parallel face to face relationship having a spacing of one-half inch or less therebetween,

establishing a heat differential between said plates,

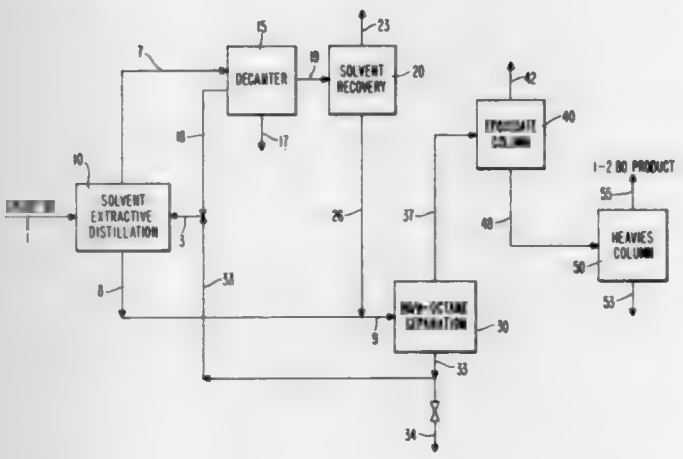
flowing a thin film of a liquid down the face of the higher temperature plates thereby evaporating part of said liquid film, and

condensing the resultant vapor onto the opposed face of the adjacent plate and separately collecting and recovering the distillate at the lower end of said plates.

4,402,794
PURIFICATION OF BUTYLENE OXIDES BY EXTRACTIVE DISTILLATION WITH SELECTED EXTRACTIVE DISTILLATION SOLVENTS

Margaret I. Nemet-Mavrodin, Robbinsville; Yon-Li Shangkuan, Edison, and Richard L. Bobeck, Princeton Junction, all of N.J., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 24, 1982, Ser. No. 381,121
Int. Cl.[3] B01D *3/40;* C07D *301/12, 301/32*
U.S. Cl. 203—14 12 Claims

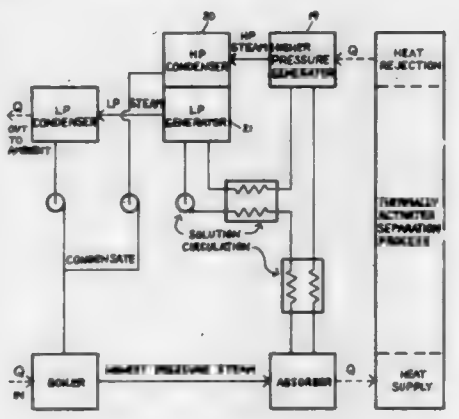


1. A process for removing water from crude butylene oxides which process comprises extractively distilling a water-containing, crude butylene oxide stream with an added extractive distillation solvent consisting essentially of acyclic, paraffinic hydrocarbons having from 7 to 9 carbon atoms to remove water as distillate and in recovering a bottoms liquid stream comprising butylene oxide and solvent.

4,402,795
REVERSE ABSORPTION HEAT PUMP AUGMENTED DISTILLATION PROCESS

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed Sep. 18, 1980, Ser. No. 188,527
Int. Cl.[3] B01D *3/14;* F25B *15/06*
U.S. Cl. 203—25 10 Claims



1. A fractional distillation process comprising feeding a multicomponent mixture to a fractionating apparatus comprising at least one fractionating column, reboiler, and reflux condenser; supplying heat at a first temperature to said reboiler; rejecting heat at a second temperature lower than said first temperature from said reflux condenser; and withdrawing at least bottom and overhead products from said apparatus; wherein the improvement comprises:

(a) absorbing a gaseous working fluid at a first pressure into an absorbent solution which is in indirect heat exchange contact with said reboiler, thereby transferring at least part of said heat at a first temperature from said absorbent solution to said reboiler;

(b) regenerating said absorbent solution for recycle to step (a) by:
(i) lowering the pressure to a second pressure no more than 70% of said first pressure;
(ii) supplying heat to said absorbent solution thereby causing gaseous working fluid at said second pressure to desorb from said absorbent solution;
(iii) increasing the pressure of said absorbent solution to approximately said first pressure;
(c) providing said gaseous working fluid at the first pressure for recycle to step (a) by:
(i) condensing said gaseous working fluid at the second pressure;
(ii) increasing the pressure of the condensed working fluid to approximately the first pressure;
(iii) supplying heat to boil the working fluid at approximately the first pressure;
(d) providing said rejected heat at a second temperature via indirect heat exchange as the source of at least one of the heat supplies required in steps (b) (ii) and (c) (iii).

4,402,796

SEPARATION OF CHLOROSILANES BY LIQUID EXTRACTION

Ollie W. Marko, and Stefan F. Rentsch, both of Carrollton, Ky., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sep. 20, 1982, Ser. No. 419,855
Int. Cl.³ C07F *7/20*
U.S. Cl. 203—43 **8 Claims**

1. A process for effecting the separation of chlorosilanes from a first mixture of close-boiling chlorosilanes employing the principles of liquid extraction, said process comprising the steps of
(1) initimately contacting said first mixture of close-boiling chlorosilanes with sulfolane and a hydrocarbon solvent, whereby a second mixture containing the close-boiling chlorosilanes, sulfolane, and hydrocarbon solvent is formed, where said hydrocarbon solvent is substantially immiscible with said sulfolane and where said hydrocarbon solvent is present in sufficient amounts in said second mixture to insure the formation of a two-phase liquid system in said second mixture,
(2) allowing said second mixture to form two liquid phases where the relative amounts of the close-boiling chlorosilanes in each of said liquid phases is different from the relative amounts of the close-boiling chlorosilanes in said first mixture, and
(3) separating said two liquid phases.

4,402,797

SEPARATION OF CHLOROSILANES BY EXTRACTIVE DISTILLATION

Roland L. Halm, Madison, Ind., and Stefan F. Rentsch, Carrollton, Ky., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sep. 20, 1982, Ser. No. 419,856
Int. Cl.³ B01D *3/40*; C07F *7/20*
U.S. Cl. 203—58 **10 Claims**

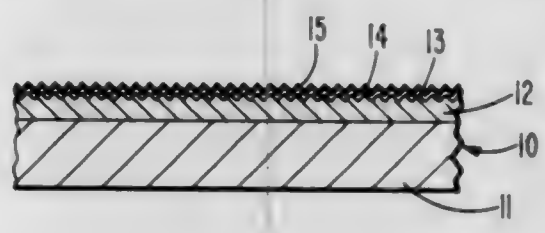
1. In a method of separating close-boiling chlorosilanes which comprises the removal of the lower-boiling chlorosilane from a mixture of close-boiling chlorosilanes by extractive distillation using sulfolane as the extractive solvent and thereafter separating the sulfolane and the higher-boiling chlorosilane, the improvement comprising of separating the sulfolane and the higher-boiling chlorosilane by distilling the higher-boiling chlorosilane from a mixture of the sulfolane and the higher-boiling chlorosilane to which has been added a hydrocarbon solvent where the boiling point of the hydrocarbon solvent at atmospheric pressure is between 10° C. above the boiling point of the higher-boiling chlorosilane and 175° C. and where the solubility of the hydrocabon solvent in sulfolane is less than about 5% by weight at about 30° C. and where the hydrocarbon solvent is added to the mixture of sulfolane and higher-boiling chlorosilane in an amount exceeding the solubility of the hydrocarbon solvent in sulfolane at the operating temperature of the distillation such that two liquid phases are present; and thereafter separating the sulfolane and the hydrocarbon solvent.

4,402,798

METHOD FOR THE MANUFACTURE OF A METALLIC RECORDING SUBSTRATE FOR A CAPACITANCE ELECTRONIC DISC AND THE RECORDING SUBSTRATE OBTAINED THEREBY

Istvan Gorog, Princeton, and Leonard P. Fox, Cherry Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 16, 1982, Ser. No. 348,677
Int. Cl.³ C25D *1/10, 1/20*
U.S. Cl. 204—5 **11 Claims**



1. In the method for manufacture of a capacitance electronic disc wherein a recording substrate having a metal layer on a surface thereof is recorded in said metal layer with an information track containing video and audio signal information and said recording substrate is thereafter used as a matrix on which to electroform masters for said capacitance electronic discs, the improvement which comprises non-electrolytically applying an about 200 to about 400 angstroms thick continuous adherent conformal layer of a material selected from the group consisting of chromium, chromium oxide and a mixture thereof to the recorded metal surface prior to electroforming a master thereon, thereby reducing the losses in carrier-to-noise ratio of the video and audio signal information as a result of replication of masters on the recording substrate.

4,402,799

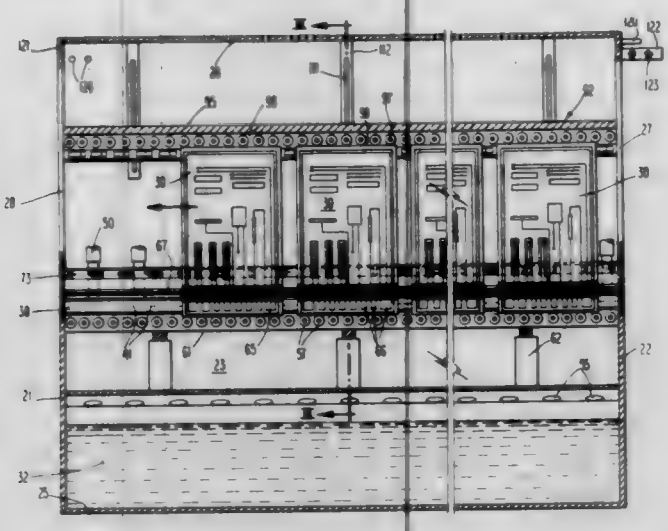
APPARATUS AND METHOD OF TREATING TABS OF PRINTED CIRCUIT BOARDS AND THE LIKE

James J. Ash, Centre Hall; Joseph M. Brady, Huntingdon, both of Pa.; Daniel L. Goffredo, Riverton, N.J., and Conrad D. Shakley, Spring Mills, Pa., assignors to Chemcut Corporation, State College, Pa.

Filed Oct. 2, 1981, Ser. No. 307,687
Int. Cl.³ C25D *5/02, 17/06, 17/28*
U.S. Cl. 204—15 **20 Claims**

1. Apparatus for localized electroplating of tabs of printed circuit boards and the like, comprising:
means defining a bath zone of electrolyte;
conveying means for conveying printed circuit boards such that tabs on lower ends thereof are carried through the bath zone, with the boards in generally upright disposition along a predetermined generally vertical path;
delivery means for delivering a sufficient flow of electrolyte to the bath zone, to maintain a bath depth of a predetermined desired level;
means disposed above said predetermined level, for wiping the printed circuit boards against electrolyte contact above the level of said wiping means;
means automatically and serially engaging portions of the boards that are out of solution and making continuous electrical contact therewith as boards are conveyed through the solution, whereby the immersed board tabs function as electrodes;
said delivery means including a bank of electrolyte delivery nozzles along said path;

means making electrical connection with said nozzles, whereby said nozzles function as immersed electrodes;



means for generating an electrical potential between said electrodes.

4,402,800

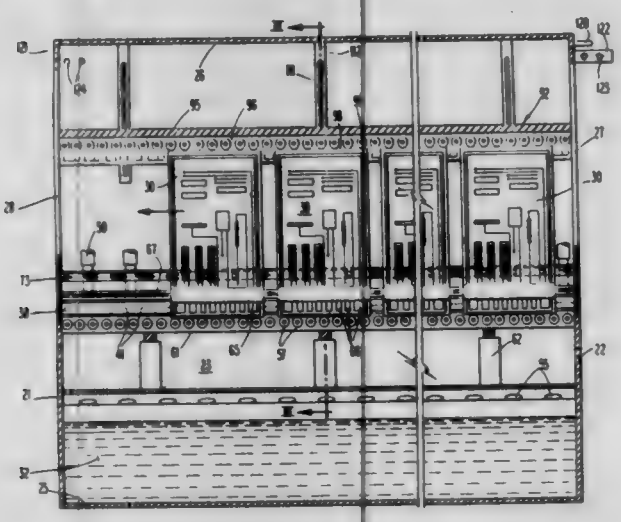
APPARATUS AND METHOD OF TREATING TABS OF PRINTED CIRCUIT BOARDS AND THE LIKE

James J. Ash, 105 N. Schaeffer Ave., Centre Hall, Pa. 16828; Joseph M. Brady, Box 8, Star Route, Huntingdon (Huntingdon County), Pa. 16652; Daniel L. Goffredo, 104 Main St., Riverton, N.J. 08077, and Conrad D. Shakley, R.D. #1, Spring Mills, Pa. 16875

Continuation-in-part of Ser. No. 307,687, Oct. 2, 1981. This application Apr. 16, 1982, Ser. No. 369,242

Int. Cl.³ C25D *5/02, 17/06, 17/28*

U.S. Cl. 204—15 **11 Claims**



1. Apparatus for localized electroplating of tabs of printed circuit boards and the like, comprising:

means defining a treatment zone of electrolyte;

conveying means for conveying printed circuit boards such that tabs on lower ends thereof are carried through the treatment zone, with the boards in generally upright disposition along a predetermined generally vertical path;

delivery means for delivering a flow of electrolyte to the treatment zone,

means automatically and serially engaging portions of the boards and making continuous electrical contact therewith as the boards are conveyed, whereby the board tabs function as electrodes;

wherein said conveying means comprises a plurality of opposed roller pairs serially disposed along said path, with one roller of each said pair being mounted on each side of the path, for board engagement therebetween;

wherein the rollers in each said pair are in resilient biased-together engagement for resiliently engaging boards in sandwiched relation therebetween.

4,402,801

METHOD FOR MANUFACTURING THIN FILM MAGNETIC HEAD

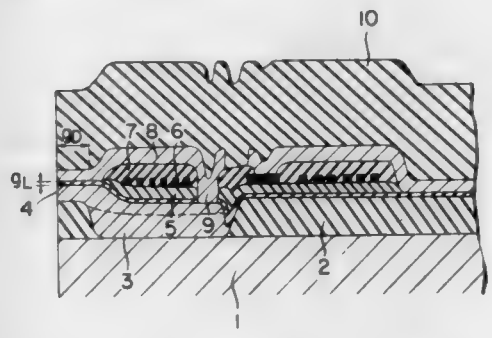
Yuji Omata, Ibaraki; Nobuyuki Kaminaka; Kenji Kanai, both of Neyagawa, and Noboru Nomura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 4, 1982, Ser. No. 405,059

Claims priority, application Japan, Aug. 4, 1981, 56-121423

Int. Cl.³ C25D *5/02*

U.S. Cl. 204—15 **6 Claims**



1. A method for manufacturing a thin film magnetic head having a first nonmagnetic insulating layer, a lower magnetic layer, a nonmagnetic insulating layer of a thickness corresponding to a gap length, a second nonmagnetic insulating layer, a conductive layer which constitutes a coil, a third nonmagnetic insulating layer, and an upper magnetic layer, each of which is sequentially formed on a nonmagnetic conductive substrate in the order named, comprising the steps of:

(a) forming said first nonmagnetic insulating layer on said nonmagnetic conductive substrate, forming a recess whose bottom surface corresponds to an upper surface of said nonmagnetic conductive substrate, and forming an electrode conductive layer in said recess;

(b) performing electroplating to form a yoke portion of said lower magnetic layer in said recess by using said electrode conductive layer as an electrode and by applying a voltage to a portion, excluding a thin film formation surface, of said nonmagnetic conductive substrate; and

(c) forming a magnetic layer of a predetermined thickness on said yoke portion and in the vicinity thereof, so that said magnetic layer of a predetermined thickness causes a thickness of said yoke portion to increase, and that said magnetic layer of a predetermined thickness comprises in the vicinity of said yoke portion a distal end pole piece portion of said lower magnetic layer.

4,402,802

ELECTROLYTIC BATH FOR THE DEPOSITION OF RHODIUM COATINGS

Erika Kreuter; Werner Kuhn, both Rodenbach, and Wolfgang Zilske, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jan. 15, 1982, Ser. No. 339,310

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 31000997

Int. Cl.³ C25D *3/52*

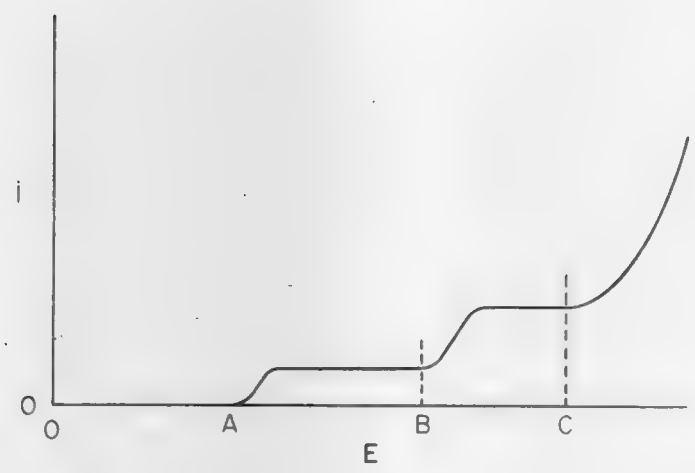
U.S. Cl. 204—47 **13 Claims**

1. An electrolytic bath suitable for the deposition of haze-free, glossy rhodium coatings comprising rhodium sulfate, rhodium phosphate, or a mixture thereof, sulfuric acid, phosphoric acid or a mixture of sulfuric acid and phosphoric acid and a pyridine sulfonic acid.

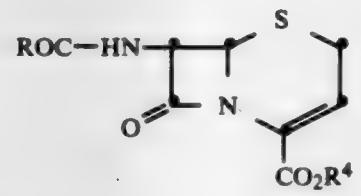
4,402,803
PROCESS FOR 3-HYDROGEN CEPHEMS

David A. Hall, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 14, 1981, Ser. No. 301,602
Int. Cl.³ C25B 3/04
U.S. Cl. 204—73 R 12 Claims



1. A process for preparing cephems of the formula



wherein

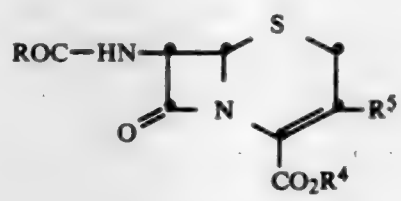
R is C_1–C_3 alkyl, phenyl, phenyl substituted with 1 or 2 hydroxy, protected hydroxy or C_1–C_4 alkoxy groups, $—CH_2R^2$, or $—CHR^2R^3$;

R^1 is thienyl, tetrazolyl, phenyl, phenoxy, or phenyl or phenoxy substituted with 1 or 2 hydroxy or protected hydroxy groups;

R^2 is protected amino, carboxy, protected carboxy, hydroxy or protected hydroxy;

R^3 is 1,4-cyclohexadienyl, phenyl, thienyl, or phenyl substituted with 1 or 2 hydroxy or protected hydroxy groups;

R^4 is hydrogen or a carboxy-protecting group; which process comprises reducing a cephem of the formula



wherein

R, R^1, R^2, R^3 and R^4 are as defined above, and

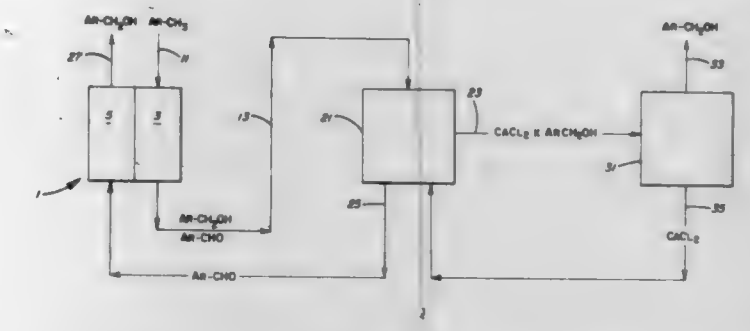
R^5 is chloro, C_1–C_3 alkanesulfonyloxy or toluenesulfonyloxy;

which process comprises electrolytically reducing a compound of the above formula in an aqueous liquid medium at a pH from about 5 to about 8 in the presence of an electrolyte at the working electrode of an electrolytic cell, said working electrode substantially comprising mercury, lead or zinc, at a temperature from about 0° to about 75°, at a potential in a range from about the potential of the initial onset of current flow of the first reduction to about the potential of the initial onset of current flow of the second reduction.

4,402,804
ELECTROLYTIC SYNTHESIS OF ARYL ALCOHOLS, ARYL ALDEHYDES, AND ARYL ACIDS

Patricia J. Jackson, Barberton, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 17, 1982, Ser. No. 379,219
Int. Cl.³ C25B 3/02, 3/04
U.S. Cl. 204—73 R 12 Claims



1. A method of synthesizing compounds chosen from the group consisting of benzyl alcohol, benzaldehyde, benzoic acid, mixtures thereof, phenoxy benzyl alcohol, phenoxy benzaldehyde, phenoxy benzoic acid, and mixtures thereof comprising:

(a) providing a composition comprising a current carrying component chosen from the group consisting of tetrafluoroborate salts and tetraethylammonium salts, a solvent, and a methyl aryl chosen from the group consisting of toluene and phenoxy toluene in contact with an anode and a cathode;

(b) reducing the solvent at the cathode; and

(c) oxidizing the methyl substituted aryl at the anode whereby to form product.

4,402,805
ELECTROCHEMICAL PROCESS TO PREPARE P-HYDROXYMETHYLBENZOIC ACID WITH A LOW LEVEL OF 4-CBA

John A. Donohue, Elmhurst, Ill., assignor to Standard Oil Company Indiana, Chicago, Ill.

Filed Mar. 15, 1982, Ser. No. 358,222
Int. Cl.³ C25B 3/04
U.S. Cl. 204—75 20 Claims

1. A process for preparation of p-hydroxymethylbenzoic acid by conversion of terephthalic acid wherein 4-carboxybenzaldehyde content is decreased to low levels which comprises electrochemical reduction of terephthalic acid in a two-compartment electrolysis cell with a suitable membrane in which (a) the cathode is solid and metal with a mercury overlay as an amalgam surface and has a hydrogen overvoltage which is greater than the potential for the reduction of terephthalic acid to p-hydroxymethylbenzoic acid, (b) sufficient mercury is added as a mercury compound to maintain the process, (c) the reduction of terephthalic acid to p-hydroxymethylbenzoic acid is performed at a voltage of about at least 6 volts with current efficiency being maintained at a level of at least 80%, and (d) reduction of 4-carboxybenzaldehyde is performed at a voltage not greater than 4 volts.

4,402,806
MULTI LAYER ION EXCHANGING MEMBRANE WITH PROTECTED INTERIOR HYDROXYL ION REJECTION LAYER

Thomas G. Coker, Lexington; Anthony B. LaConti, Lynnfield, and Edward N. Balko, Wilmington, all of Mass., assignors to General Electric Company, Wilmington, Mass.

Filed Mar. 4, 1982, Ser. No. 354,854
Int. Cl.³ C25B 1/34, 9/04
U.S. Cl. 204—98 18 Claims

1. A multi-layer ion-transporting membrane having at least two outer and an interior layer, said outer layers adapted to be

exposed to electrolysis products and anolyte and catholyte solutions to protect said interior layer from electrolysis products and anolyte and catholyte solutions, all of said layers being permselective to the passage of ions of one kind and rejecting ions of the opposite kind, the capacity of the protected interior layer to reject ions of the other kind exceeding that of the other layers in said membrane.

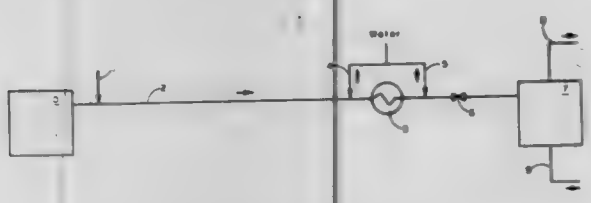
15. In the process of generating an alkali metal hydroxide by electrolyzing an aqueous alkali metal compound between an anode and cathode separated by the multi-layer cation exchange membrane according to claim **1** having at least the cathode at which said alkali metal hydroxide is generated bonded to one surface of the membrane, said multi-layer membrane comprising at least two outer layers and a interior layer having a higher capacity for rejecting hydroxyl ions than the outer layers whereby said hydroxyl ion rejecting interior layer is not directly exposed to the alkali metal hydroxide form at said cathode.

4,402,807

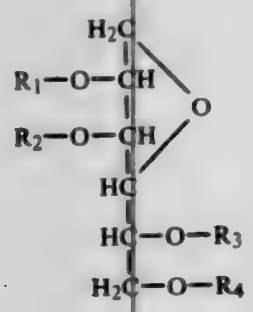
PROCESS FOR DEDUSTING SOLIDS-CONTAINING HYDROCARBON OILS

Philip Merchant, Jr., Houston, Tex., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 24, 1981, Ser. No. 295,794
Int. Cl.[3] **B01D** *17/06*
U.S. Cl. 204—190 **12 Claims**



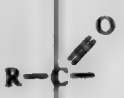
1. In a process for dedusting oils characterized as unconventional whole heavy petroleum crudes, heavy petroleum crude fractions and residua, syncrudes and syncrude fractions which contain finely divided solids, water being admixed with said oil and the water and oil emulsified, and the emulsion then separated in an electrostatic coalescer to produce a solids-containing aqueous phase, and a clean oil phase which is drawn off and recovered, the improvement which comprises admixing with said oil and water to form said emulsion from about 10 parts to about 5000 parts, per million parts by volume of oil, of a compound useful as a surfactant, which comprises an ester characterized as follows:



where R_1, R_2, R_3, and R_4 are selected from

(a) ethoxy or propoxy groups, or mixed ethoxy and propoxy groups, and

(b) the dehydroxylated residue of a fatty acid molecule, or moiety represented by the formula



where R is a straight-chain hydrocarbon moiety which can be substituted or unsubstituted, saturated or unsaturated, and where unsaturated can contain conjugated or unconjugated double bonds, and

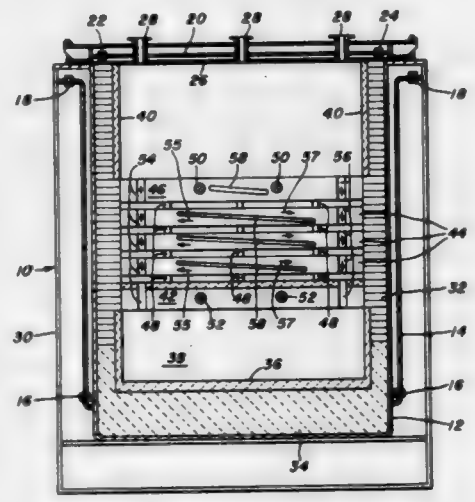
at least one and up to three of R_1, R_2, R_3, and R_4 is ethoxy, propoxy, or mixed ethoxy and propoxy groups.

4,402,808

GASKET FOR SEALING JOINTS BETWEEN ELECTRODES AND ADJACENT CELL LINING AND FOR IMPROVING BATH CIRCULATION IN ELECTROLYSIS CELLS

Matthew J. McMonigle, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jul. 30, 1982, Ser. No. 404,346
Int. Cl.[3] **C25C** *3/08, 3/34, 7/04*
U.S. Cl. 204—247 **8 Claims**



1. A cell for producing metal by electrolytic reduction of a metal halide in a molten bath comprising the metal halide dissolved in at least one molten halide of higher electrodecomposition potential than the metal halide comprising:

(a) an inner refractory lining;

(b) a plurality of electrodes, disposed horizontally and arranged in at least one vertical stack, the electrodes in each stack being:

(i) located adjacent to and in abutment with the inner refractory lining;

(ii) located beneath the upper level of the bath; and

(iii) arranged in a superimposed, spaced relationship defining inter-electrode spaces between each pair of adjacent electrodes;

(c) a vertical gas-lift passage associated with each stack of electrodes which is in fluid communication with each inter-electrode space in the stack;

(d) a vertical bath-supply passage associated, with each stack of electrodes which is in fluid communication with each inter-electrode space in the stack; and

(e) inclined carbon felt gaskets located in at least some of the joints of abutment between the electrodes and the adjacent inner refractory lining for sealing of said joints in order to minimize the harmful effects of dislocation of the electrodes and for conducting halogen gas produced during operation of the cell from the inter-electrode spaces of a stack to the gas-lift passage associated with that stack;

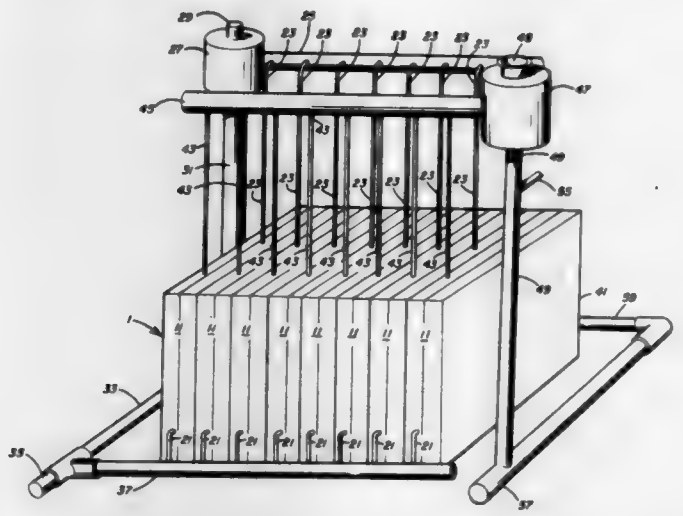
whereby halogen gas produced during operation of the cell in the inter-electrode spaces of a stack is conducted along the carbon felt gaskets into and upwardly through the gas-lift passage of said stack and a flow of bath will be induced out of the inter-electrode spaces of the stack, into and upwardly through the gas-lift passage of the stack, across the top of the stack, into and downwardly through the bath-supply passage of the stack, and into the inter-electrode spaces of the stack.

4,402,809

BIPOLAR ELECTROLYZER

Colonel R. Dilmore, Portland, and Carl W. Raetzsch, Jr., Corpus Christi, both of Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 3, 1981, Ser. No. 299,247
Int. Cl.³ C25B 9/00, 9/04
U.S. Cl. 204—254 24 Claims



1. A bipolar electrolyzer having a plurality of individual bipolar elements electrically in series, each of the bipolar elements comprising a cathodic first compartment having peripheral walls and a base, and an anodic second compartment having peripheral walls and a base, said cathodic compartment and said anodic compartment being arrayed in base-to-base configuration, and electrically and mechanically in series with electrical conductor means therebetween, said base of the cathodic first compartment having an aperture therein, the electrical conductor means passing therethrough;

(a) said cathodic, first compartment having:

(i) cathode support means extending substantially perpendicularly outward from said base;

(ii) cathode means bonded to the cathode support means, parallel to and spaced from the cathode compartment base, said cathode means being substantially planar and permeable to electrolyte and gases;

(b) said anodic, second compartment having:

(i) anode support means extending substantially perpendicularly outward from said base;

(ii) anode means bonded to the anode support means, parallel to and spaced from the anode compartment base, said anode means comprising an electrolyte and gas permeable electroconductive substrate, with an electrocatalytic coating thereon;

(c) each of said electrical conductor means passing from a cathode support means, through the base of the cathodic first compartment, and to the base of the anodic second compartment to a corresponding anodic support means; said electrical conductor means comprising:

(i) a hollow metal cylinder welded to the cathodic facing side of the cathodic base member around an aperture therein, and having an apertured top remote from the cathode base member;

(ii) a hollow, internally threaded nut welded to the cathode facing side of the anodic base member and concentrically arrayed within the hollow metal cylinder; and

(iii) a bolt, the head of the bolt compressively bearing upon the apertured top of the hollow metal cylinder, the bolt passing through the aperture in the top of the metal cylinder, and threadably engaging the nut; and

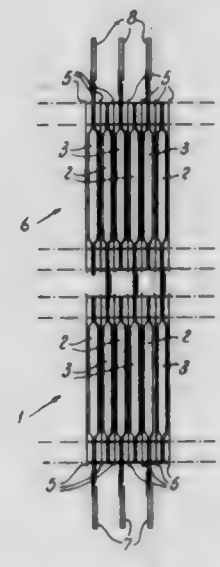
(d) wherein the anodic compartment of one bipolar element and the cathodic compartment of the next adjacent bipolar element form an electrolytic cell, said anodic and cathodic elements being separated by a permionic membrane, with the anode means contacting one surface of the permionic membrane, and the cathode means contacting the opposite surface thereof.

4,402,810

BIPOLARLY CONNECTED ELECTROLYTIC CELLS OF THE FILTER PRESS TYPE

Thomas W. Boulton, and Brian J. Darwent, both of Frodsham, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 14, 1981, Ser. No. 263,738
Claims priority, application United Kingdom, May 15, 1980, 8016023
Int. Cl.³ C25B 9/04, 13/08, 11/03
U.S. Cl. 204—255 13 Claims



1. An electrolytic cell comprising a plurality of adjacently positioned monopolar cell units of the filter press type, each unit including a plurality of substantially vertical electrodes of alternating opposite polarity, said alternating electrodes being anodes and cathodes, each anode being partitioned from the adjacent cathode or cathodes by a separator to form in each cell unit a plurality of anode compartments and cathode compartments, characterized in that two or more cell units are mounted one above the other, the electrodes of like polarity in the uppermost cell unit being attached to electrical conductors for connection to a first bus bar, the electrodes in the lowermost cell unit which are of opposite polarity to the just-mentioned electrodes in the uppermost cell unit being attached to conductors for connection to a second bus bar, and the electrodes of adjacent cell units which are not attached to said electrical conductors being connected to each other by means of bipolar electrical connections.

4,402,811

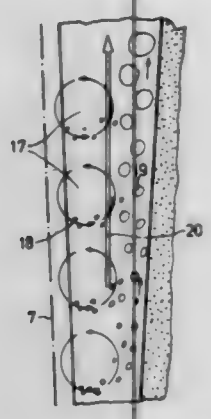
HYDROCHLORIC ACID ELECTROLYTIC CELL FOR THE PREPARATION OF CHLORINE AND HYDROGEN

Helmut Klotz, Bergisch-Gladbach; Ernst Tepe, Leugerich, and Lothar Sesterhenn, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 19, 1981, Ser. No. 313,080
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041897
Int. Cl.³ C25B 9/00, 11/02
U.S. Cl. 204—256 5 Claims

1. In an electrolytic cell for the production of chlorine and hydrogen from hydrochloric acid, the cell comprising a plurality of spaced bipolar electrodes each provided with vertical grooves for the passage of gas, and a plurality of diaphragms each subdividing the space between adjacent electrodes, the

improvement which comprises providing the grooves with a depth of about 18 to 35 mm at least in the upper part of the



electrodes and with a depth of about 12 to 15 mm at their bottoms.

4,402,812

ELECTROLYTIC CELL

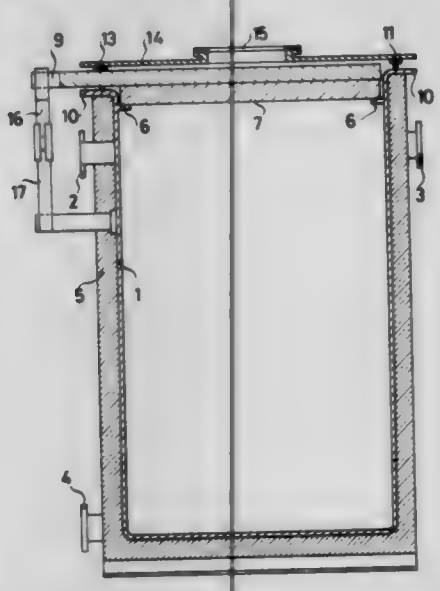
Herbert Panter, Hürth-Alstädten; Hermann Klein, Hürth; Gerhard Nolte; Eberhard Preisler, both of Erftstadt; Hans-Werner Stephan, Cologne, and Günter Reichert, Bornheim-Merten, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 18, 1982, Ser. No. 359,502

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1981, 3111628

Int. Cl.³ C25C *3/04, 3/16*

U.S. Cl. 204—275 **7 Claims**



1. An electrolytic cell sealed in gas-tight and liquid-tight fashion comprising a box-shaped cell tank open at its top and provided with at least one intake duct, at least one overflow duct and at least one discharge duct; a cover being placed on the cell tank; two opposed flanges receiving electrode supporting frames being secured to the inside of the cell tank near the upper end thereof; a chemically resistant and electrically insulating coating being applied to the inside of the cover and cell tank; a plurality of semi-circular recessed grooves spaced apart from each other being formed in the upper rim portion of at least one of the side walls of the cell tank, the recessed grooves receiving semi-circular current beams projecting outwardly; a first elastic packing structurally conformed to the upper rim portion of the cell tank including the recessed grooves being placed thereon; a second elastic packing arranged at the underside of the cover co-operating with the upper side of the current beam and the first elastic packing whereby the electrolytic cell becomes gas-tightly sealed; a main current rail running outside the cell tank laterally with respect thereto and being spaced therefrom, the rail providing large contact areas supporting the projecting ends of the current beams; and the electrode supporting frames and the current beams being electrically conducting inside the electrolytic cell.

4,402,813

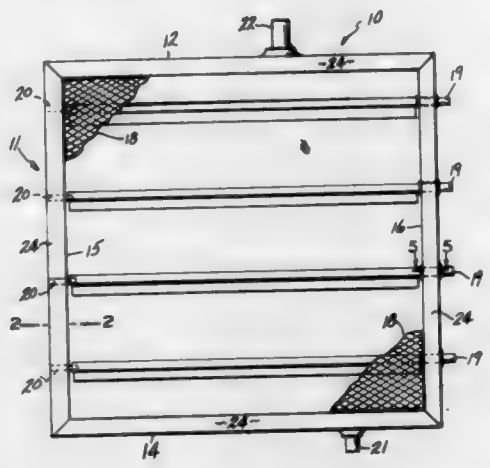
COMPOSITE FIBER REINFORCED PLASTIC ELECTRODE FRAME

Morton S. Kircher, Clearwater, Fla., and Geoffrey B. Wood, Prospect, Ky., assignors to Olin Corporation, New Haven, Conn.

Filed Jul. 26, 1982, Ser. No. 402,390

Int. Cl.³ C25B *9/00, 11/02, 11/04*

U.S. Cl. 204—279 **28 Claims**



1. A composite fiber reinforced plastic frame for use with a pair of opposing electrode surfaces, comprising in combination:

(a) generally parallel top and bottom members of predetermined length interconnected by opposing, generally parallel, vertically positioned first and second side members of predetermined length to form a generally rectangularly shaped frame structure, the top and bottom members and the first and second side members further being generally rectangular in cross section with four faces to form a hollow center section into which the opposing electrode surfaces fit;

(b) thermoplastic corrosion resistant liner material covering three of the four faces having an inner surface and an outer surface; and

(c) core material formed at least partially from glass fiber roving impregnated with catalyzed thermosetting resin in roved layers that is cured with a compressive force exerted on the fourth uncovered face.

4,402,814

METHOD OF DEPOSITING AN ASBESTOS DIAPHRAGM AND THE DIAPHRAGM PREPARED THEREBY

Thomas A. Rechlicz, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 154,707, May 30, 1980, Pat. No. 4,339,313, which is a continuation-in-part of Ser. No. 127,291, Mar. 5, 1980, abandoned. This application Jan. 15, 1982, Ser. No. 339,268

Int. Cl.³ C25B *11/03, 13/02*

U.S. Cl. 204—283 **21 Claims**

1. In a method of preparing a cathode-diaphragm assembly for an electrolytic cell, wherein the diaphragm comprises entangled fibers, which method comprises depositing fibers of asbestos material on the cathode to form an entangled fibrous web, the improvement comprising first depositing a sacrificial material atop the cathode that is substantially resistant to removal during deposition of the diaphragm fibers and formation of the fibrous entanglement, and substantially removable subsequently whereby to expose the cathode while maintaining the diaphragm intact, thereafter depositing the diaphragm and forming the fibrous entanglement whereby to form a diaphragm that is self adherent, conforming to and spaced from

the cathode, and removable therefrom without damage to the cathode, and thereafter removing sacrificial material.

4,402,815

ELECTRODES CONTAINING NICKEL ALLOYS AS ELECTROCATALYSTS

David E. Brown, Weybridge; Mahmood N. Mahmood, Walton-on-Thames; Alan K. Turner, Southend-on-Sea, and Dermott Wood, Sunbury-on-Thames, all of England, assignors to The British Petroleum Company p.l.c., London, England

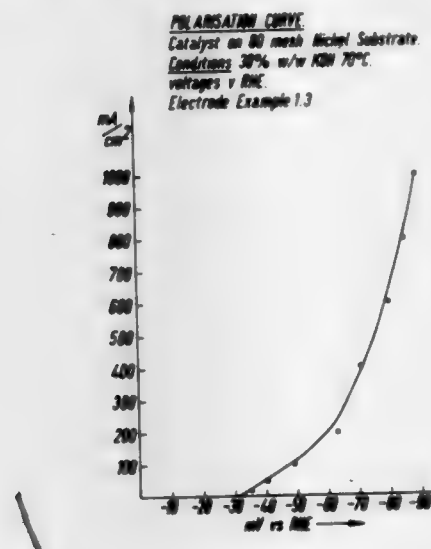
PCT No. PCT/GB79/00154, § 371 Date May 1, 1980, § 102(e) Date May 1, 1980, PCT Pub. No. WO80/00715, PCT Pub. Date Apr. 17, 1980

PCT Filed Sep. 21, 1979, Ser. No. 194,293

Claims priority, application United Kingdom, Sep. 21, 1978, 37556/78

Int. Cl.³ C25B *11/06*

U.S. Cl. 204—290 R 3 Claims



1. An electrode having an electrocatalyst applied thereon, said electrocatalyst comprising a face-centered cubic alloy of nickel and from about 5 and 30 atom percent based on the alloy of at least one other metal selected from the group consisting of molybdenum and tungsten.

4,402,816

DIAPHRAGM STRUCTURE FOR ELECTROLYTIC CELLS FOR THE ELECTROLYSIS OF AQUEOUS SALT SOLUTIONS

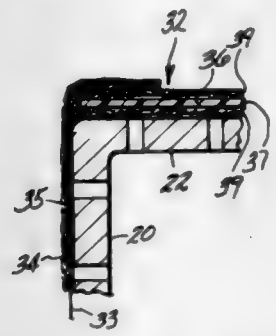
Igor V. Kadija, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 99,047, Nov. 30, 1979, Pat. No. 4,289,601, and Ser. No. 269,093, Jun. 2, 1981, abandoned. This application Sep. 15, 1981, Ser. No. 302,012

The portion of the term of this patent subsequent to Sep. 15, 1998, has been disclaimed.

Int. Cl.³ C25B *13/08, 13/06*

U.S. Cl. 204—296 16 Claims



1. A diaphragm for electrolytic cells for the electrolysis of aqueous salt solutions which comprises an electrochemically active porous portion comprised of asbestos fibers attached to an electrochemically inactive substantially fluid impervious portion, said electrochemically inactive substantially fluid impervious portion being comprised of a fabric layer attached to a fluid impervious film layer.

4,402,817

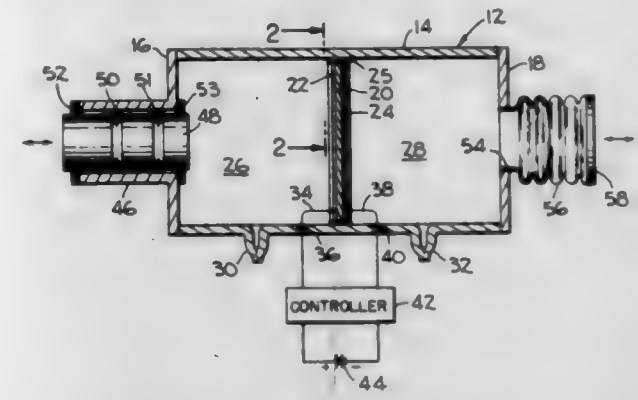
ELECTROCHEMICAL PRIME MOVER

Henri J. R. Maget, 80 Arbuelo Way, Los Altos, Calif. 94022

Filed Nov. 12, 1981, Ser. No. 320,552

Int. Cl.³ B01D *13/02*

U.S. Cl. 204—301 13 Claims



1. A prime mover comprising means defining a gas-tight chamber, an electrolytic membrane disposed in said chamber, said membrane having a first surface and a second surface spaced from said first surface in substantial parallelism thereto, said membrane being fixed within said chamber so as to form a first compartment bounded in part by said first surface and a second compartment bounded in part by said second surface, a first material pervious electrode disposed on said first membrane surface and a second material pervious electrode disposed on said second membrane surface, said compartments containing an electrochemically active material capable of existing in a gaseous phase and being electrochemically reversibly active so as to enter into a reduction/oxidation reaction at said electrodes and produce ions that are transportable through said membrane, means connected to said electrodes for inducing unidirectional current flow between said electrodes through said membranes so as to ionize said electrochemically active material at one said electrode and transport ions through said membrane from said first compartment to said second compartment thereby effecting a pressure increase in one of said compartments and a pressure reduction in the other said compartment, means operatively associated with at least one of said compartments for converting the pressure change therein to mechanical motion, and means for periodically reversing the polarity of said current flow inducing means to periodically reverse the direction of ion transportation through said membrane.

4,402,818

ELECTROFILTRATION SYSTEM FOR PURIFYING ORGANIC LIQUIDS

Serafin B. Oberton, Missouri City, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Continuation of Ser. No. 721,140, Sep. 7, 1976, abandoned, which is a division of Ser. No. 636,261, Nov. 28, 1975, Pat. No. 4,040,926. This application Apr. 11, 1980, Ser. No. 139,614

Int. Cl.³ B03C *5/02;* C10G *33/02*

U.S. Cl. 204—302 20 Claims

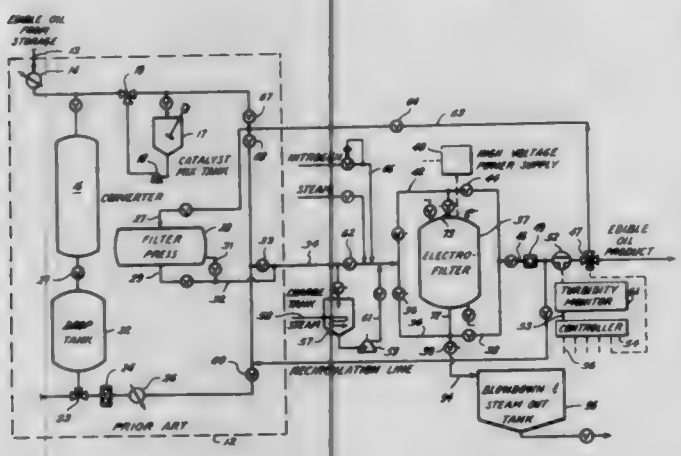
1. An electrofilter for removing solids from an organic liquid stream of high resistivity comprising:

(a) a vessel having an internal flow path extending between inlet and outlet means for passing the organic liquid stream through said vessel;

(b) said vessel containing in said internal flow path a bed of chemically inert, hard granular particles of a rigid, substantially incompressible material, said particles being nonspheroidal with a relatively discontinuous surface

configuration and a dielectric constant not in excess of about 7;

(c) means for establishing a d.c. electrical field within said bed of an intensity sufficient for removing solids from the organic liquid stream by electrically induced adhesion of the solids on said particles and providing a purified organic liquid stream to said outlet means; and



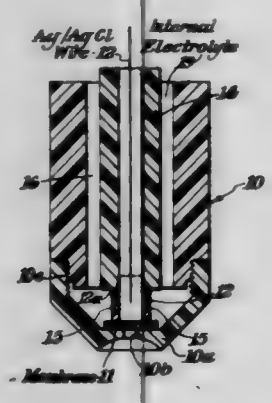
(d) means for selectively cleaning at least a portion of said particles of adhering solids comprising means for interrupting said electrical field, passing a cleaning liquid through said bed at a rate of flow insufficient to cause turbulence in said bed, to remove adhering solids from said particles without disruption of the particles, and removing the cleaning liquid with the removed solids from said particles being cleaned.

4,402,819

ANTIBODY-SELECTIVE MEMBRANE ELECTRODES

Garry A. Rechnitz, and Robert L. Solsky, both of Newark, Del., assignors to University of Delaware, Newark, Del.

Continuation of Ser. No. 131,384, Mar. 17, 1980, abandoned.
This application Oct. 21, 1981, Ser. No. 313,587
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—418 8 Claims



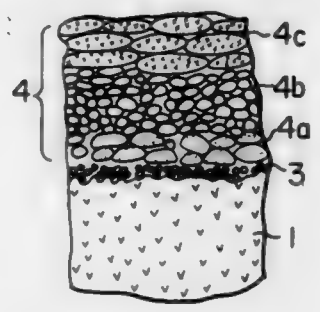
1. In an antibody-selective membrane electrode useful for the detection of an antibody specific for a preselected hapten or antigen, said membrane electrode having a water-insoluble membrane for separating a test electrolyte from an internal electrolyte, the improvement comprising using as the separating membrane a plasticized water-insoluble solid organic polymer having dispersed therein a cation-selective crown-ether to which the hapten or antigen is covalently bound, wherein said antibody is capable of binding to said antigen or said hapten thereby producing a change in the cation selectivity of said membrane.

4,402,820

OXYGEN ANALYZER

Hiromi Sano, Nagoya; Masatoshi Suzuki, Anjo; Masaya Fujimoto; Mitihiro Yamakawa, both of Kariya, and Toshitaka Saito, Toyohashi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 29, 1982, Ser. No. 403,045
Claims priority, application Japan, Aug. 5, 1981, 56-123373
Int. Cl.³ G01N *27/56, 27/58*
U.S. Cl. 204—425 4 Claims



1. A limiting current type oxygen analyzer designed for detecting oxygen concentration in a gas to be analyzed, comprising a solid electrolyte element made from an oxygen ion conductive metal oxide and a pair of porous film electrodes provided on the inner and outer sides of said element respectively, at least one of said electrodes being coated with a gas-diffusive resistive layer made from a porous insulating metal oxide, wherein the oxygen ions in the gas to which said element is exposed are caused to diffuse in the inside of said solid electrolyte element by applying a given voltage across said both electrodes and the limiting current corresponding to the concentration of said diffused oxygen ions is measured to determine the oxygen concentration in the gas to be analyzed, further characterized in that said gas-diffusive resistive layer is composed of a three-layer structure consisting of the first, second and third layers counted from the electrode side, said first layer having a porosity of 11–15%, the second layer 6–8% and the third layer 15–20%.

4,402,821

PROCESS FOR LIQUEFACTION OF COAL

Tsoung-Yuan Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 13, 1981, Ser. No. 321,135
Int. Cl.³ C10G *1/00, 1/06*
U.S. Cl. 208—8 LE 7 Claims

1. An improved coal liquefaction process comprising the steps of (1) dissolving and liquefying the coal material in a dissolution stage and a liquefaction stage under dissolution and liquefaction conditions in the presence of a process-derived liquefaction solvent, (2) passing the liquefied coal to an extraction phase wherein dissolved heavy coal constituents rich in hydrogen are extracted with an extraction solvent, and wherein ash and undissolved coal constituents are removed, and (3) distilling, the improvement which comprises (1) recovery of coal liquid by means of extraction with solvent at supercritical temperature and pressure for that solvent, (2) separation of the coal liquid from the extract phase by decreasing temperature and pressure of the system without subjecting it to vacuum distillation and recovery of the said coal liquid as the ovehead product and (3) fractionation of the coal liquid into solvent refined coal and high quality liquids.

4,402,822

METHOD OF EFFECTING HIGHLY EXOTHERMIC REACTIONS

Ullrich Hildebrandt, Pullach; Udo Lang, Munich; Berndt Hörner, Munich, and Walter Schramm, Munich, all of Fed. Rep. of Germany, assignors to Linde AG, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 6, 1980, Ser. No. 204,534

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945353

Int. Cl.³ C10G *1/06*

U.S. Cl. 208—10 4 Claims

1. A method of effecting a highly exothermic reaction at an elevated pressure and temperature, comprising the steps of:

forming a suspension in a liquid vehicle of at least one reaction participant and solid catalyst particles capable of inducing exothermic reaction thereof;

pumping said suspension into the preheating zone of a reaction vessel subdivided vertically into said preheating zone and a reaction zone communicating with and below said preheating zone and receiving preheated suspension therefrom, the pumping of said suspension into the preheating zone of said reaction vessel generating said pressure therein;

preheating said suspension in said preheating zone of said vessel by direct heat exchange with at least partially gaseous reaction products of said reaction from said reaction zone at said elevated temperature in said vessel followed by separation of the gaseous reaction products from the preheated suspension, the separation of the gaseous reaction products from the preheated suspension being effected in said preheating zone; and

feeding the preheated suspension into said reaction zone and causing said exothermic reaction in said preheated suspension to produce said reaction products substantially exclusively in said reaction zone whereby light reaction products produced in said reaction zone rise therein, are separated from the suspension in the reaction zone and are passed directly into said preheating zone to heat the suspension introduced thereto.

4,402,823

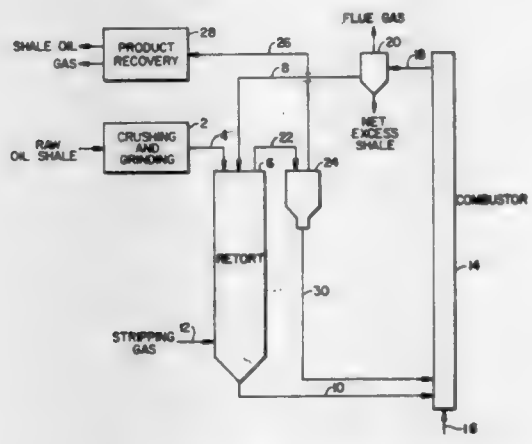
SUPPLEMENTAL PYROLYSIS AND FINES REMOVAL IN A PROCESS FOR PYROLYZING A HYDROCARBON-CONTAINING SOLID

Corey A. Bertelsen, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 29, 1981, Ser. No. 288,095

Int. Cl.³ C10G *1/00;* C10B *53/06*

U.S. Cl. 208—11 R 5 Claims



1. A process for pyrolyzing a particulate hydrocarbonaceous solid containing a fraction of fine particles of entrainable size and a fraction of coarse particles having a particle size too large to be entrained which comprises:

(a) heating the hydrocarbonaceous solid to a pyrolyzing temperature in a first pyrolysis zone by mixing the hydrocarbonaceous solid with a hot particulate heat transfer material of non-entrainable size in a dense phase bed through which a stripping gas is passed at a superficial velocity sufficient to carry away product vapors and to entrain said minor fraction of fine particles but insufficient to entrain the fraction of coarse particles;

(b) separating at least some of said fine particles from the product vapors;

(c) pyrolyzing the separated fine particles in a second pyrolysis zone containing a bed of fine particles substantially free of coarse particles, said bed of fines being fluidized by a hot non-oxidizing gas; and

(d) recovering separately from the second pyrolysis zone additional product vapors and pyrolyzed fine solids.

4,402,824

PROCESS FOR REFINING COAL-BASED HEAVY OILS

Yoshihiko Sunami; Keiichi Sasaki, and Tohru Iwahashi, all of Amagasaki, Japan, assignors to Sumitomo Metal Industries, Limited, Osaka, Japan

Filed Mar. 25, 1981, Ser. No. 247,332

Int. Cl.³ C10C *1/18, 3/00;* C10G *21/16*

U.S. Cl. 208—45 9 Claims

1. A process for refining coal-based heavy oils which consists essentially of

(a) providing a residual coal-based heavy oil which has been freed of volatile components having boiling points up to at least 200° C. and not more than 270° C.,

(b) mixing the residual coal-based heavy oil of step (a) with a solvent to form an insoluble precipitate and a supernatent, said solvent consisting of a ketone-type solvent having a boiling point of less than 200° C., said ketone-type solvent consisting of hydrocarbon compounds having carbonyl groups in their molecular structures, said ketone-type solvent being used in an amount of from 10 to 60% by weight of the total weight of ketone-type solvent and residual coal-based heavy oil, and said insoluble precipitate being in the form of coarse particles which have quinoline insolubles from the coal-based heavy oil adhered thereto,

(c) separating the insoluble precipitate of step (b) from the supernatent,

(d) treating the supernatent of step (c) to remove the ketone-type solvent, thereby leaving a hydrocarbon mixture which can be vacuum distilled to provide a hydrocarbon product suitable for making high-quality carbon stocks.

4,402,825

METHOD FOR THE REMOVAL OF METAL ALKARYL SULFONATE FROM HYDROCARBONS

Lee Hilfman, Mt. Prospect; Thomas P. Malloy, Lake Zurich, and Russell W. Johnson, Villa Park, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Feb. 1, 1982, Ser. No. 344,445

Int. Cl.³ C10G *29/10, 29/04*

U.S. Cl. 208—237 7 Claims

1. A method for the removal of metal alkaryl sulfonate from a hydrocarbon solution containing the same, which method comprises:

(a) contacting a hydrocarbon solution of metal alkaryl sulfonate with solid basic anion-exchange resin; and

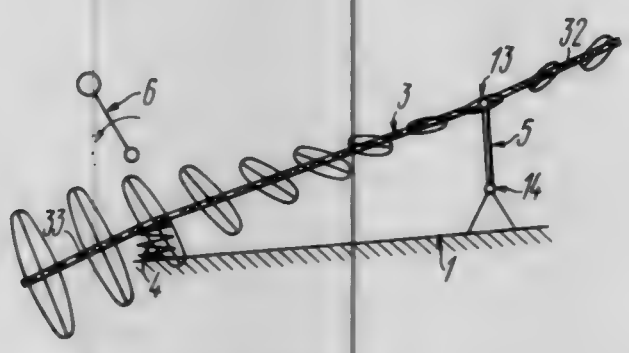
(b) recovering a hydrocarbon having a reduced concentration of metal alkaryl sulfonate.

4,402,826

VIBRATING SCREEN

Alexandr D. Uchitel; Evgeny A. Zelov; Leonid J. Brener; Evgeny G. Baturov; Anatoly G. Derbas; Kim D. Ivchenko; Jury K. Kuevda, and Ivan T. Khomich, all of Krivoi Rog, U.S.S.R., assignors to Nauchno-Issledovatelsky I Proektny Institut Po Obogascheniju I**, U.S.S.R.

Filed Nov. 6, 1981, Ser. No. 318,972
Int. Cl.³ B07B 1/34
U.S. Cl. 209—366.5 5 Claims



1. A vibrating screen, comprising

a frame;

a bearing damper;

bearing levers provided with hinges at both ends thereof;

a box having at least one screen member and hingedly connected to said frame by said bearing damper and said bearing levers, said levers being substantially perpendicular to the central axis of inertia of said box and hingedly adjoining said box at a region of one center of oscillation of said box; and

an oscillation driver connected to said box and adjoining said box at a region of another center of oscillation of said box, and disposed relative to said screen member of said box in an opposite relationship to said bearing damper; the positional arrangement of said oscillation driver, levers, and damper causes, with operation of said driver, said screen to vibrate with a non-uniform vibration field such that said screen vibrates in the region of said one center of oscillation with a substantially tangential trajectory with respect to its plane, and vibrates in the region of said another center of oscillation with a substantially perpendicular trajectory with respect to its plane.

5. A vibrating screen, comprising

a frame;

a bearing damper;

bearing levers provided with hinges at both ends thereof;

a box having at least one screen member and hingedly connected to said frame by said bearing damper and said bearing levers, said screen member being inclined to the horizontal at a portion between the centers of oscillation of said box and having an inlet portion and an outlet portion, said portions being at corresponding angles of inclination to the horizon greater than the angle of inclination to the horizon of said screen member, said bearing levers being substantially perpendicular to the central axis of inertia of said box and hingedly adjoining said box so that axes of rotation of the hinges of said levers coincide with one center of oscillation of said box; and

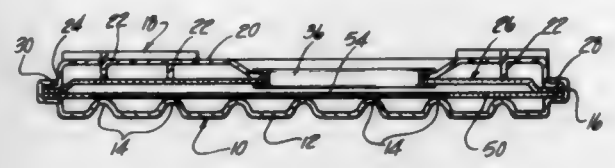
an oscillation driver consisting of an inertial vibrator mounted directly on said box at a portion of another center of oscillation of said box, and disposed relative to said screen member of said box in an opposite relationship to said bearing damper; the positional arrangement of said oscillation driver, levers, and damper causes, with operation of said driver, said screen to vibrate with a non-uniform vibration field such that said screen vibrates in the region of said one center of oscillation with a substantially tangential trajectory with respect to its plane, and vibrates in the region of said another center of oscillation with a substantially perpendicular trajectory with respect to its plane.

4,402,827

TRANSMISSION FLUID FILTER

A. David Joseph, North Muskegon, Mich., assignor to Sealed Power Corporation, Muskegon, Mich.

Continuation of Ser. No. 167,698, Jul. 11, 1980, abandoned. This application Jul. 20, 1981, Ser. No. 284,931
Int. Cl.³ B01D 39/08
U.S. Cl. 210—314 2 Claims



1. A transmission fluid filter comprising a pair of generally rectangular cup-shaped pan members having peripheral edges fastened in opposed relation and respective generally flat base walls spaced from each other to form an enclosed volume, spacer means integral with each of said pan member base walls and projecting into said volume, one of said pan members having an inlet opening formed in the associated said base wall,

a filter element comprising a generally rectangular sheet of resin-impregnated felt having uniform thickness and a 60 micron nominal minimum particle retention capability, said sheet being folded upon itself with three non-folded edges sealingly captured between three said opposed peripheral edges of said pan members such that the folded edge of said sheet is disposed within said volume and spaced from the opposed fourth peripheral edges of said pan members, with facing sections of said folded sheet being supported in generally planar orientation by said spacer means to define spaced cavities between said sheet sections and opposing base walls of said pan members,

said sheet having a first through opening sealingly fastened surrounding said inlet opening to admit fluid to within said folded sheet between said opposing sheet portions, said sheet slso having a second through opening,

said filter element further comprising a section of monofilament woven screen having a 120×120 mesh size and a 130 micron nominal minimum particle size retention capability, said screen section being secured over said second through opening in said sheet to provide separate and distinct parallel and continuous flow paths for passage of fluid from within said folded sheet to said spaced cavities respectively through said felt sheet and said screen section, with fluid that flows through said screen section bypassing said felt sheet, and

outlet means carried by said pan members and opening into the space between said folded edge of said sheet and said opposed fourth peripheral edges of said pan members, said outlet means being in fluid communication with said spaced cavities.

4,402,828

PRESSURE FILTER VESSEL

Jeffrey I. Edens, 17649 Jacquelyn La., Huntington Beach, Calif. 92647

Filed Jun. 14, 1982, Ser. No. 387,795
Int. Cl.³ B01D 29/42
U.S. Cl. 210—323.2 12 Claims

1. A pressure filter vessel comprising:

a cylindrical housing,

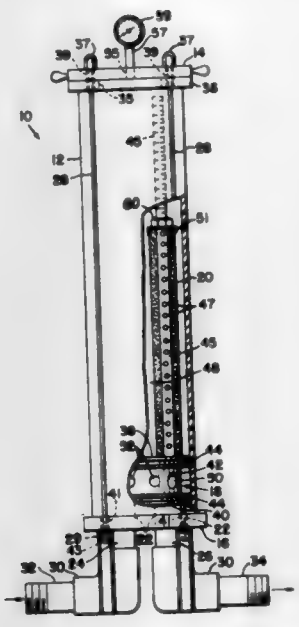
an end cap at each end of the housing,

a flow block in the lower end portion of said vessel and having a reduced central portion and upper and lower flanges,

sealing means on each of said flanges to provide fluid pressure sealing between said cylindrical housing and each of the flanges, said flanges cooperating with the cylindrical housing and flow block reduced portion to define an annular chamber, said upper flange cooperating with the

cylindrical housing and the upper end cap to define an upper chamber,

an inlet means connected with the flow block for fluid flow through an opening in the flow block to the upper chamber,



at least one filter cartridge mounted in an aperture in the flow block and extending into the upper chamber,

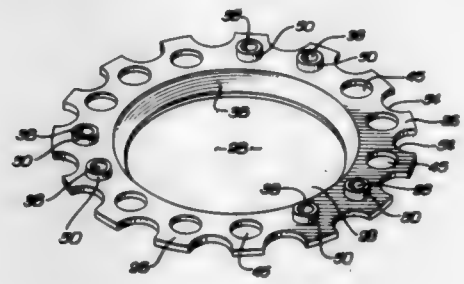
said flow block defining passage means communicating between said aperture and the annular chamber, and

outlet means for fluid flow from the annular chamber.

4,402,829
DISC-TYPE FILTER

Paul M. Cordua, Lindsay, Calif., assignor to R & G Sloane Manufacturing Company, Inc., Sun Valley, Calif.

Filed Jan. 4, 1982, Ser. No. 336,960
Int. Cl.³ B01D *25/18*
U.S. Cl. 210—333.01 41 Claims



1. A filter for use in the filtration of fluids, comprising:

a filter housing, said housing having first and second flow ports;

a plurality of stacked substantially parallel filter plates positioned within said housing in the path of fluid flow between said first and second ports, said plates being spaced apart to provide fluid communicating passages therebetween for filtration, and said plates being moveable to increase said spacing for cleaning of said passages;

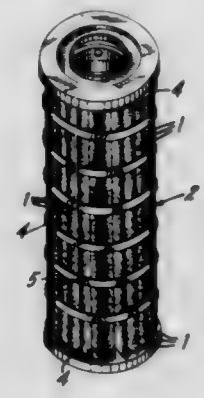
means interconnecting said plates for providing a predetermined and limited spacing between each adjacent pair of plates in the stack when said plates are moved apart for cleaning; and

at least one control member for selectively moving said interconnected plates apart for cleaning.

4,402,830
CORRUGATED FILTER ELEMENT WITH EXTERNAL SPIRAL TAPE SUPPORT

David B. Pall, Roslyn Estates, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Jan. 13, 1982, Ser. No. 339,264
Int. Cl.³ B01D *27/06*
U.S. Cl. 210—457 14 Claims



1. A corrugated cylindrical filter element comprising a corrugated filter sheet material in the form of a cylinder and having an end cap at each end of the cylinder sealingly bonded to the filter sheet material at that end, the corrugations of the filter sheet material having a tendency to become distorted and displaced with respect to each other under the conditions to which the material is subjected in use; and a relatively narrow strip of continuous high modulus fiber-reinforced tape of synthetic plastic material spirally wound around the cylinder, spanning the corrugations and extending between each end and bonded to the end cap and to the tips of the corrugations in a manner to prevent distortion and displacement thereof.

4,402,831
EFFLUENT TREATMENT

Andrew J. Beardsmore, Guisborough, and Keith A. Powell, Yarm, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Mar. 10, 1982, Ser. No. 356,805
Claims priority, application United Kingdom, Mar. 20, 1981, #108774
Int. Cl.³ C02F *3/34*
U.S. Cl. 210—606 6 Claims

1. A process for the degradation of inorganic cyanides in effluents comprising contacting an effluent containing cyanide ions at a concentration of at least 50 mM with a fungal mycelium, that has been immobilised by flocculation or entrapment and in which cyanide hydratase has been induced, for sufficient time to degrade at least 95% of the cyanide ions in the effluent, said fungal mycelium being a mycelium of a fungus selected from *Stemphylium loti, Mycoleptodiscus terrestris, Fusarium moniliforme, Helminthosporium sorghicola,* and *Gloecercospora sorghi.*

4,402,832
HIGH EFFICIENCY CONTINUOUS SEPARATION PROCESS

Clarence G. Gerhold, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 12, 1982, Ser. No. 407,680
Int. Cl.³ B01A *15/03*
U.S. Cl. 210—659 11 Claims

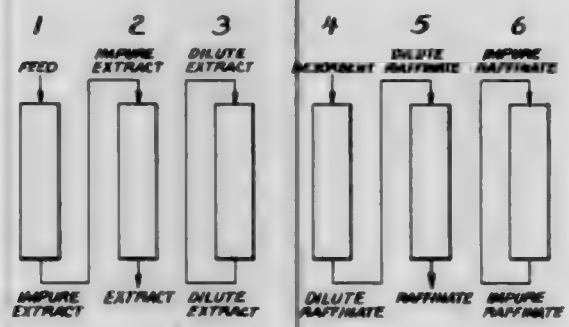
1. A process for separating an extract component from a raffinate component contained in a feed mixture comprising the steps of:

(a) maintaining a unidirectional fluid flow system through a series of separating units in which said components have differential rates of travel due to selective retardation or acceleration of each of said components in each of said

units, each of said units having a fluid inlet and a fluid outlet;

(b) passing said feed mixture into one of said fluid inlets and a displacement fluid into another of said fluid inlets, said displacement fluid being capable of displacing said components from said separating units;

(c) establishing within a system comprising said fluid flow system a component concentration distribution, zones of which comprise, sequentially, the highest purity displacement fluid (zone I), extract component diluted with displacement fluid (zone II), concentrated extract component (zone III), extract and raffinate component mixture with the extract component being the major component (zone IV), extract and raffinate component mixture with the raffinate component being the major component (zone V), concentrated raffinate component (zone VI), and displacement fluid diluted with raffinate component (zone VII), each of said zones II, IV, V and VII having associated with it one of said fluid inlets and one of said fluid outlets, zone I having the fluid inlet for displacement fluid associated with it and each of zones III and VI having associated with it a fluid outlet, said feed mixture being passed through a fluid inlet the locus of which is at least proximate to the point on said component concentration of distribution where the relative proportions of the extract and raffinate components are the same as that occurring in the feed mixture;



(d) withdrawing an extract stream comprising the entire flow from the fluid outlet of zone III, and withdrawing a raffinate stream comprising the entire flow from the fluid outlet of zone VI;

(e) passing the entire stream from each of the fluid outlets of said zones II, IV, V and VII to a corresponding fluid inlet, the locuses of each said outlet and corresponding inlet being within the same zone of said component concentration distribution; and

(f) periodically simultaneously effecting the following shifting of said inlets and outlets: the feed mixture fluid inlet to what prior to the shift was the inlet of zone V, the inlet of zone V to what had been the inlet of zone VII, the inlet of zone VII to what had been the inlet of zone I, the inlet of zone I to what had been the inlet of zone II, the inlet of zone II to what had been the inlet of zone IV, the inlet of zone IV to what had been the feed mixture inlet, the outlet of zone II to what had been the outlet of zone III, the outlet of zone III to what had been the outlet of zone IV, the outlet of zone IV to what had been the outlet of zone V, the outlet of zone V to what had been the outlet of zone VI, and the outlet of zone VI to what had been the outlet of zone VII, and the outlet of zone VII to what had been the outlet of zone II, said shifting being effected prior to the progression through said units of said component concentration distribution to the extent that the composition of the inlet or outlet streams to or from any zone becomes inconsistent with the desired composition of that zone.

4,402,833

WASTE WATER TREATMENT SYSTEM FOR ELEMENTAL PHOSPHOROUS REMOVAL

W. Clark Bennett, and Theodore T. Garrett, both of Columbia, Tenn., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation of Ser. No. 102,717, Dec. 13, 1979, abandoned. This application Feb. 24, 1981, Ser. No. 237,806

Int. Cl.³ C02F *1/58*

U.S. Cl. 210—667 **1 Claim**

1. A process for the preparation of essentially elemental phosphorus-free water from industrial waste water comprising the steps of: (a) treating the industrial waste water with lime at a pH of from about 9 to about 10 to precipitate soluble phosphates, (b) aerating the mixture with air, (c) removing the precipitate by filtration, and (d) passing the filtrate through a bed of activated carbon to produce water which can be discarded without deleterious effects to the environment.

4,402,834

METHOD FOR DEWATERING SLUDGE-TYPE MATERIAL

Wendel Bastgen, Betzdorf; Helmut Schreiber, Bottenberg, and Eugen Grumbel, Niederfischbach, all of Fed. Rep. of Germany, assignors to Albert Klein KG, Nieder-fischbach, Fed. Rep. of Germany

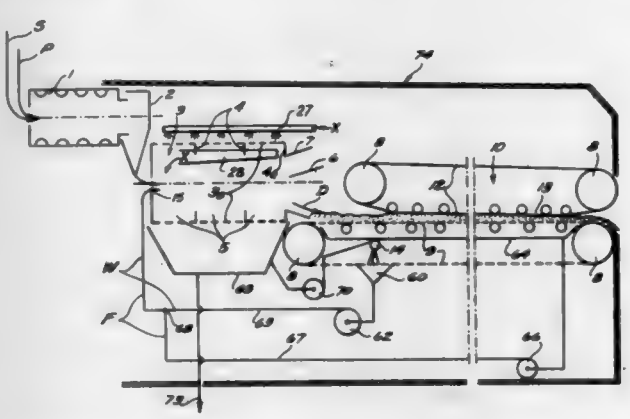
Continuation of Ser. No. 574,290, May 5, 1975, abandoned, continuation of Ser. No. 812,568, Jul. 5, 1977, Pat. No. 4,192,743, continuation of Ser. No. 29,751, Apr. 13, 1979, abandoned. This application Apr. 6, 1981, Ser. No. 250,945

Claims priority, application Fed. Rep. of Germany, May 8, 1974, 2422208

The portion of the term of this patent subsequent to Mar. 11, 1997, has been disclaimed.

Int. Cl.³ C02C *1/22*

U.S. Cl. 210—712 **8 Claims**



1. A process for continuous dewatering of sludge-type material containing solid particles comprising the steps of:

receiving, from an outside process stream, material to be dewatered;

adding the material to be dewatered into a mixing means,

adding flocculant into said mixing means,

mixing the material to be dewatered with said flocculant in said mixing means;

passing the thus flocculated material through a reactor-thickener means in which water is separated therefrom through a filter surface of the reactor-thickener means while dewatered flocculated material remains on said filter surface,

collecting the water separated from the flocculated material in the reactor-thickener means,

axially advancing said dewatered flocculated material along said filter surface to an outlet end of said reactor-thickener means for discharge thereat, the flocculated material being progressively dewatered as it travels axially along said filter surface towards said outlet end,

subjecting the thus dewatered flocculated material received from said reactor-thickener means as a solids mass to the action of a filtering means to extract filtrate from the

material thereby causing solids from the material to form a sludge cake;

discharging the cake;

washing the filtering means with wash water obtained from the water collected from the reactor-thickener means to wash solids inclusive of flocculated solids from the filtering means; said wash water now containing said solids;

returning at least part of said wash water with the flocculated solids contained therein after passage through the filtering means to the material to be dewatered for passage through the reactor-thickener means with the flocculated material received from the mixing means;

the wash water and said flocculated material in said reactor-thickener means undergoing reaction on said filter surface for causing free water to be separated from the solids in the flocculated material and causing solids in the wash water to be captured by reaction with the flocculated solids in the flocculated material; and

discharging clean free water from the reactor-thickener means as a discharged product from the process.

4,402,835

PROCESS FOR REMOVING SOLUBLE BORON COMPOUNDS FROM AQUEOUS EFFLUENTS

Adriano Mattera; Marino Quaglino, both of Novara; Pasqualino Spighi, Ancona, and Massimo Stolfi, Milan, all of Italy, assignors to Istituto Guido Donegani S.p.A., Novara, Italy

Filed Nov. 10, 1981, Ser. No. 319,923

Claims priority, application Italy, Nov. 13, 1980, 25941 A/80; Oct. 15, 1981, 24503 A/81

Int. Cl.³ C02F *1/52*

U.S. Cl. 210—724 **7 Claims**

1. A process for removing soluble boron compounds from an aqueous effluent comprising:

contacting the aqueous effluent, while stirring, with effective amounts of a divalent metal sulphate, Me_ISO_4, and a divalent metal hydroxide, $Me_{II}(OH)_2$, couple so that the divalent metal sulphate, Me_ISO_4, and the divalent metal hydroxide, $Me_{II}(OH)_2$, react with each other and form a precipitate containing a sulphate, $Me_{II}SO_4$, a hydroxide, $Me_I(OH)_2$, and said soluble boron compounds, said $Me_{II}(OH)_2$ is added in amounts which are at least stoichiometric with the amount of Me_ISO_4, said sulphate-hydroxide couple is selected from the group consisting of $BeSO_4$—$Ba(OH)_2$, $BeSO_4$—$Sr(OH)_2$, $BeSO_4$—$Ca(OH)_2$, $MgSO_4$—$Ba(OH)_2$, $MgSO_4$—$Ca(OH)_2$, $CaSO_4$—$Ba(OH)_2$, $CaSO_4$—$Sr(OH)_2$, $SrSO_4$—$Ba(OH)_2$, $ZnSO_4$—$Ba(OH)_2$, $ZnSO_4$—$Sr(OH)_2$, $ZnSO_4$—$Ca(OH)_2$, $CdSO_4$—$Ba(OH)_2$, $CdSO_4$—$Sr(OH)_2$, and $CdSO_4$—$Ca(OH)_2$, and said precipitate is formed at a pH ranging from 7 to 10 when Me_ISO_4 is $ZnSO_4$ and from 10 to 13 when Me_ISO_4 is selected from the group consisting of $BeSO_4$, $MgSO_4$, $CaSO_4$, $SrSO_4$, and $CdSO_4$;

allowing the effluent to decant after precipitation; and

filtering or centrifuging the effluent to separate the boron-containing precipitate and produce a purified effluent.

4,402,836

METHOD FOR TREATING CONTAMINATED WASTEWATER

Edward G. Fochtman, Elmhurst, Ill.; Roger L. Koch, Miami, Fla., and Forrest S. Forbes, Lancaster, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 1, 1982, Ser. No. 445,886

Int. Cl.³ C02F *1/32*

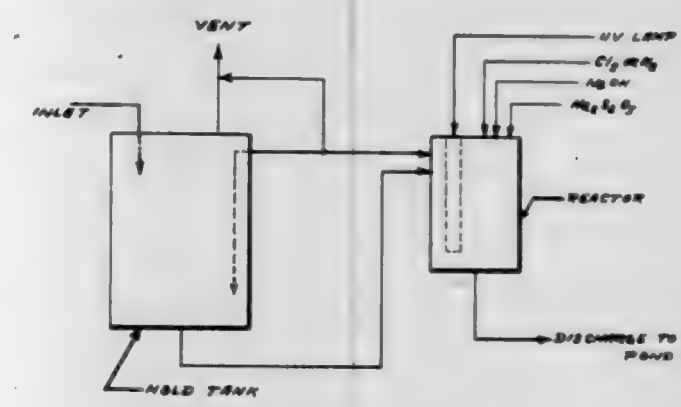
U.S. Cl. 210—748 **7 Claims**

1. A method for treating fuel-contaminated wastewater containing hydrazine, monomethyl hydrazine, unsymmetrical dimethyl hydrazine and dimethylnitrosamine pollutants which comprises the steps of:

(A) agitating said contaminated wastewater;

(B) adjusting and maintaining said agitated wastewater at a predetermined temperature and pH;

(C) passing chlorine gas through said agitated wastewater while simultaneously irradiating said chlorine-treated wastewater for a period of time and at a chlorine flow rate and degree of irradiation sufficient to effect the decomposition of said pollutants;



(D) reducing the residual chlorine concentration of said chlorine-treated wastewater;

(E) dechlorinating said chlorine-treated wastewater to remove any residual chlorine therefrom; and

(F) adjusting the pH of said chlorine-treated wastewater to a neutral pH followed by disposal of the decontaminated wastewater.

4,402,837

PROCESS FOR TREATMENT OF A LIQUID CONTAINING A NICKEL CYANIDE COMPOUND

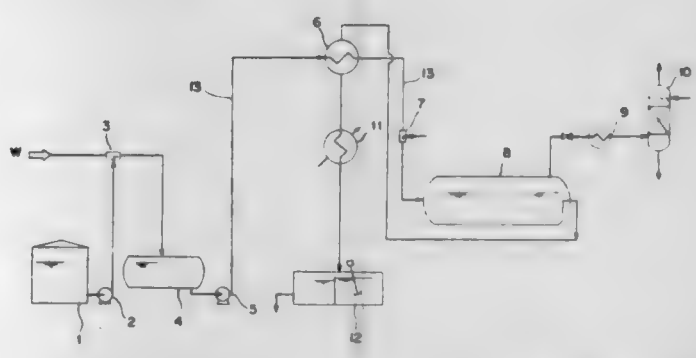
Michihide Okugawa, Amagasaki, Japan, assignor to Dainichi-Nippon Cables, Ltd., Hyogo, Japan

Filed May 21, 1981, Ser. No. 266,010

Claims priority, application Japan, May 22, 1980, 55-68672

Int. Cl.³ C02F *1/58*

U.S. Cl. 210—758 **7 Claims**



1. A process for continuous treatment of a liquid containing a nickel cyanide compound which comprises (1) incorporating the liquid with a water-soluble metal hydroxide so as to adjust the amount of the water-soluble metal hydroxide to be not less than 0.5 mol per mol of the nickel cyanide compound, (2) continuously supplying the liquid to a continuous reactor through a supply pipe, the liquid being heated to a temperature of 175° to 200° C. prior to the supply to the reactor by introducing steam into the supply pipe, (3) passing the liquid through the reactor with a retention time of not less than 10 minutes while maintaining the liquid within the said temperature range, and (4) discharging from the reactor the liquid having a CN content of not more than 1 ppm.

4,402,838

LUBRICANT COMPOSITIONS FOR FORGING OR EXTRUSION

Kiyohisa Eguchi, Kawanishi; Norio Kitamura, Itami; George Ohta, Ikoma; Terumasa Okamura, Kashiwa, and Seizi Yamada, Toyohashi, all of Japan, assignors to Agen. of Ind. Sci & Tech., Tokyo; Hanano Commercial Co., Kobe; Taihei Chem. Inc., Osaka and Gosei Kagaku KKK., Tokyo, all of Japan

Filed Sep. 11, 1981, Ser. No. 301,226
Claims priority, application Japan, Sep. 19, 1980, 55-131335
Int. Cl.³ C10M *1/50*
U.S. Cl. 252—28 4 Claims

1. A lubricant composition for forging or extrusion comprising a mixture of:

(A) at least one compound selected from the group consisting of phosphoric acid and sodium and potassium salts thereof,

(B) at least one compound selected from the group consisting of boric acid and sodium and potassium salts thereof,

(C) at least one compound selected from the group consisting of carbonates, nitrates, sulfates and hydroxides of sodium and potassium, and

(D) a phyllosilicate, the mixture containing the compounds (A) to (C) in amounts, calculated as oxides, of 40 to 44 mole % of P_2O_5, up to 9 mole % of B_2O_3 and 30 to 60 mole % of M_2O wherein M is an alkali metal, respectively.

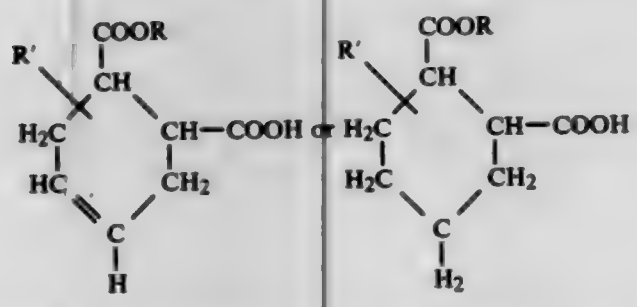
4,402,839

METAL WORKING LUBRICANT CONTAINING AN ALKANOLAMINE AND A CYCLOALIPHATIC ACID

Robert H. Davis, Pitman, and Alfred B. Piotrowski, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 11, 1981, Ser. No. 262,166
The portion of the term of this patent subsequent to Mar. 31, 1998, has been disclaimed.
Int. Cl.³ C10M *1/32*
U.S. Cl. 252—34.7 11 Claims

1. An improved water-soluble composition suitable for preparing an aqueous lubricant, said composition comprising an alkanolamine said alkanolamine comprising from about 5% up to about 50% by weight, and an organic acid, said organic acid comprising from about 1% up to about 30% by weight, the improvement wherein the organic acid has the formula



wherein R is a cyclohexyl or benzyl group or substituted members thereof and R′ is a lower alkyl group having up to 6 carbon atoms.

4,402,840

ANTIOXIDANT COMBINATIONS OF MOLYBDENUM COMPLEXES AND ORGANIC SULFUR COMPOUNDS FOR LUBRICATING OILS

Louis deVries, Greenbrae, and John M. King, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jul. 1, 1981, Ser. No. 279,294
The portion of the term of this patent subsequent to Aug. 11, 1998, has been disclaimed.
Int. Cl.³ C10M *1/32, 1/38, 1/54*
U.S. Cl. 252—45 11 Claims

1. A lubricating oil additive comprising a combination of

(a) an oil soluble sulfur containing molybdenum complex prepared by (1) reacting an ammonium tetrathiomolybdate and a basic nitrogen compound selected from the group consisting of a Mannich base, phosphonamide, thiophosphonamide, phosphoramide, dispersant viscosity index improvers, or mixtures thereof to form a molybdenum complex wherein from 0.01 to 2 atoms of molybdenum are present per basic nitrogen atom, and

(b) an oil soluble organic sulfur compound or mixtures thereof, wherein the organic sulfur compound of component (b) is present in an amount of from 0.02 to 10 parts by weight per part by weight of the sulfur containing molybdenum complex of component (a).

4,402,841

EXTENDED SERVICE 5W-40 MOTOR OIL

Richard D. Schieman, Rocky River, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Feb. 16, 1982, Ser. No. 348,896
Int. Cl.³ C10G *71/00;* C10M *1/48, 3/42*
U.S. Cl. 252—46.6 36 Claims

1. A base oil blend suitable for producing a natural petroleum motor oil with 5W-40 characteristics, the blend comprising fractions (A) and (B) wherein:

(A) is at least 30 weight percent of the blend and is a high refractory petroleum fraction comprising at least 5 volume percent of a hydrocracker distillate bottoms obtained by distilling the effluent of a hydrocracker using a catalyst capable of reducing the sulfur and nitrogen content, and withdrawing the bottoms having an initial boiling point between 400° to 400° F., and

(B) is present in an amount up to 70 weight percent of the blend and is an SEN oil fraction consisting of at least one SEN oil.

4,402,842

FRICTION REDUCING ADDITIVES AND COMPOSITIONS THEREOF

Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Mullica Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 7, 1981, Ser. No. 291,005
Int. Cl.³ C10M *1/38*
U.S. Cl. 252—47.5 25 Claims

1. A reaction product produced by reacting an alkyl, alkenyl, cycloalkyl or cycloalkenyl mono or diamine having 10 to 30 carbon atoms or a polyamine of the formula

$$RNH(R^1NH)_xH$$

wherein R is hydrogen or a C_1 to C_{20} alkyl or alkenyl group, R^1 is a C_2 to C_5 alkylene group and x is 1 to 10, with a mercaptan having the formula

$$R^3SH$$

wherein R^3 is a hydrocarbyl group containing from 8 to 30 carbon atoms and an aldehyde of the formula

$$R^2CHO$$

wherein R^2 is hydrogen or a C_1 to C_8 alkyl group, the reaction employing the respective reactants in molar ratios of from about 1:0.5:1 to about 1:1:1 and temperatures of from about 80° C. to about 160° C.

9. A composition comprising a major proportion of an oil of lubricating viscosity, greases prepared from oils of lubricating viscosity, liquid hydrocarbon fuels, alcoholic fuels or mixtures of such fuels and an antifriction amount of the reaction product produced by reacting an alkyl, alkenyl, cycloalkyl or cycloalkenyl mono- or diamine having 10 to 30 carbon atoms or a polyalkylene-polyamine of the formula

$RNH(R^1NH)xH$

wherein R is hydrogen or a C_1 to C_{20} alkyl or alkenyl group, R^1 is a C_2 to C_5 alkenyl group and x is 1 to 10, with a mercaptan having the formula

R^3SH

wherein R^3 is a hydrocarbyl group containing from 8 to 30 carbon atoms and an aldehyde having the formula

R^2CHO

wherein R^2 is hydrogen or a C_1 to C_8 alkyl group, the reaction employing the respective reactants in molar ratios of from about 1:0.5:1 to about 1:1:1 and temperatures of from about 80° C. to about 160° C.

4,402,843

VISCOSITY INDEX IMPROVERS WITH DISPERSANT PROPERTIES PREPARED BY REACTION OF LITHIATED HYDROGENATED COPOLYMERS WITH 4-SUBSTITUTED AMINOPYRIDINES

William J. Trepka, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 23, 1981, Ser. No. 314,296
Int. Cl.³ C10M *1/32*; C08F *255/02*
U.S. Cl. 252—50 **34 Claims**

1. Shear-stable, oil-based composition, comprising a major amount of an oil selected from mineral oils and synthetic oils, and a minor effective viscosity index improving amount of an oil soluble organo nitrogen compound grafted hydrogenated conjugated diene/monovinylarene copolymer dissolved therein,

said copolymer prepared by the pro cess which comprises lithiating a hydrogenated conjugated diene hydrocarbon/monovinylarene hydrocarbon copolymer, and reacting the resulting lithiated hydrogenated copolymer with effective amounts of a 4-substituted aminopyridine, thereby preparing said grafted copolymer.

4,402,844

VISCOSITY INDEX IMPROVERS WITH DISPERSANT PROPERTIES PREPARED BY REACTION OF LITHIATED HYDROGENATED COPOLYMERS WITH SUBSTITUTED AMINOLACTAMS

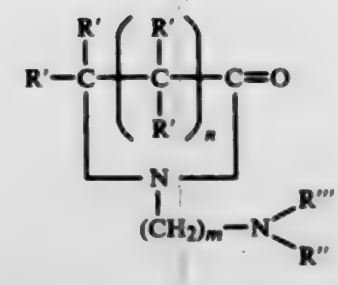
William J. Trepka, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 23, 1981, Ser. No. 314,297
Int. Cl.³ C10M *1/54*; C08F *8/30*
U.S. Cl. 252—51.5 A **22 Claims**

1. Shear-stable, oil-based composition, comprising a major amount of an oil selected from mineral oils and synthetic oils, and a minor effective viscosity index improving amount of an oil soluble organo-substituted aminolactam grafted hydrogenated conjugated diene/monovinylarene copolymer dissolved therein;

said copolymer prepared by the process which comprises a lithiating a hydrogenated conjugated diene hydrocarbon/monobinylarene hydrocarbon copolymer, and reacting the resulting lithiated hydrogenated copolymer with an effective amount of a substituted aminolactam, thereby preparing said grafted copolymer;

wherein said substituted aminolactam is represented by



wherein each R′ represents hydrogen or an aliphatic, cycloaliphatic, aromatic radical, or combinations thereof; each R″ represents an aliphatic, cycloaliphatic, or aromatic radical, or combinations thereof; n is an integer of 1 to 5 inclusive; m is an integer of 1 to 12; and the total number of carbon atoms in R′ and R″ substituents is 1 to 12.

4,402,845

PROCESS FOR IMPROVING THE SPREADABILITY OF MARINE DIESEL CYLINDER OILS

Benjamin H. Zoleski, Beacon, and Rodney L. Sung, Fishkill, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed May 26, 1981, Ser. No. 267,158
Int. Cl.³ C10M *1/20*
U.S. Cl. 252—52 A **8 Claims**

1. In a process for improving the spreadability of a diesel engine cylinder lubricant having a total base number ranging from about 50 to about 100, the improvement consisting in blending with said lubricant an effective, spreadability improving amount of at least one polyethylene glycol ether of the formula:

$RCH_2O\text{-}(CH_2CH_2O)_nH$

wherein n is an integer ranging from 15 to 25 and R is an alkyl group containing 11 to 15 carbon atoms.

4. In a diesel engine cylinder lubricant comprising a major amount of an oil having an SAE viscosity of about 50 and a total base number ranging from about 50 to about 100, the improvement consisting in the presence therein of an effective, spreadability improving amount of at least one nonionic polyethylene glycol ether of the formula:

$RCH_2O\text{-}(CH_2CH_2O)_nH$

wherein n is an integer ranging from 15 to 25 and R is an alkyl group containing 11 to 15 carbon atoms.

8. In a diesel engine cylinder lubricant comprising a major amount of an oil having an SAE viscosity of about 50 and a total base number ranging from about 50 to about 100, the improvement consisting in the presence therein of an effective, spreadability improving amount of at least one nonionic polyethylene glycol ether of the formula:

$RCH_2O\text{-}(CH_2CH_2O)_nH$

wherein n is 40 and R is an alkyl group containing 11 to 15 carbon atoms.

4,402,846

HYDRATED $MG(NO_3)_2/MGCL_2$ REVERSIBLE PHASE CHANGE COMPOSITIONS

George A. Lane, and Harold E. Rossow, both of Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich.

Continuation of Ser. No. 219,009, Dec. 22, 1980, Pat. No. 4,329,242. This application Oct. 28, 1981, Ser. No. 315,902
Int. Cl.³ C09K *5/06*; F24H *7/00*
U.S. Cl. 252—70 **9 Claims**

1. A reversible liquid/solid phase change composition comprising hydrated $Mg(NO_3)_2/MgCl_2$ and as a nucleating additive, one or more of $Sr(OH)_2$, or BaO, added to the composi-

tion in an amount effective to suppress average supercooling of the $Mg(NO_3)_2/MgCl_2$ liquid phase to about 2° C. or less.

4,402,847

HIGH LEAD SOLDER CORROSION INHIBITORS

Joe C. Wilson, Woodhaven, and Stanley T. Hirozawa, Birmingham, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed May 19, 1982, Ser. No. 379,641
Int. Cl.³ C09K *5/00;* C23F *11/10, 11/12, 11/14*
U.S. Cl. 252—75 17 Claims

1. A composition for inhibiting mineral scale and the corrosion of metals in the presence of an aqueous liquid and particularly the corrosion of high lead solder and the cavitation-erosion corrosion of aluminum, comprising:

A. an effective metal corrosion inhibiting amount of a siloxane-silicate copolymer containing about 0.1 to about 99.9 parts by weight, per 100 parts by weight of said copolymer, of (a) at least one siloxane group represented by the formula:

$$RSiO_{1.5}$$

wherein R is selected from the group consisting of a monovalent aliphatic hydrocarbon having 1 to about 18 carbon atoms, a phenyl group, and a vinyl group and 0.1 to 99.9 parts by weight, per 100 parts by weight of said copolymer, of (b) at least one silicate group represented by the formula:

$$\left[\frac{M}{d}O\right]_e SiO_{\frac{4-e}{2}}$$

wherein M is a cation which forms a water-soluble silicate, d is the valence of the cation represented by M and has a value of at least 1 and e has a value of 1 to 3 and

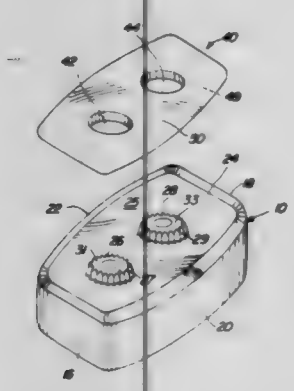
B. an effective metal corrosion inhibiting amount of an azole.

4,402,848

BAR OF SOAP

Alex T. Brewer, 1506 Amarillo Dr., Carpentersville, Ill. 60110

Filed Jun. 7, 1982, Ser. No. 385,925
Int. Cl.³ C11D *17/00*
U.S. Cl. 252—134 13 Claims



1. A bar of soap having spaced apart faces on opposite sides of the bar,

(a) a recess defined by a depressed surface formed in one of said faces,

(b) at least one projection extending outwardly from said recessed surface, within said recess,

(c) said bar defining at least one aperture extending inwardly of said bar from said face opposite said face having said recess, with said at least one aperture in alignment with said projection.

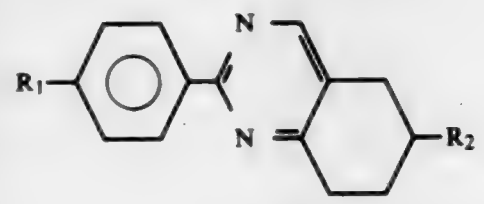
4,402,849

LIQUID-CRYSTALLINE TETRAHYDROQUINAZOLINES

Joachim Krause, Dieburg, and Ludwig Pohl, Darmstadt, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Dec. 19, 1980, Ser. No. 218,239
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951099
Int. Cl.³ C09K *3/34;* G02F *1/13;* C07D *239/74*
U.S. Cl. 252—299.61 7 Claims

1. A tetrahydroquinazoline of the formula



wherein R_1 is alkyl, alkoxy, alkanoyloxy or alkoxycarbonyloxy of up to 8 carbon atoms in each case, CN, CF_3, F, Cl, Br or NO_2; and R_2 is alkyl of up to 10 carbon atoms.

5. In a liquid-crystalline dielectric comprising a mixture of liquid-crystalline components, the improvement whrein at least one component is a tetrahydroquinazoline of claim 1.

4,402,850

METHOD OF PRODUCING A LIQUID AGENT FOR IMPROVING THE QUALITY OF CONTAMINATED WATER

Karl P. Schörghuber, Linz/Zaubertal, Lärchenau 11, Austria

Filed Nov. 3, 1981, Ser. No. 317,812
Int. Cl.³ C02F *5/02, 5/08*
U.S. Cl. 252—175 12 Claims

1. A method of producing a liquid agent for improving the quality of contaminated water, particularly water in pools, natural bodies of water and waste waters, characterized by introducing with agitation comminuted rock-salt clay or a mixture thereof with rock-salt deads into an aqueous solution or suspension of an inorganic base, stirring the resultant mixture for 2 to 5 hours, thereupon adjusting the pH of the resultant solution to a value of between 7.5 and 10.5 by means of the addition of acid or alkali, and removing undissolved portions from the solution.

4,402,851

PUMPABLE COMPOSITION FOR WATER-PURIFYING PURPOSE CONTAINING IRON (II) SULPHATE, AND A METHOD FOR PRODUCING THE SAME

Gertrud M. Lindahl, Helsingborg, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed Jan. 8, 1982, Ser. No. 338,067
Claims priority, application Sweden, Jan. 13, 1981, 8100161
Int. Cl.³ C02F *5/10*
U.S. Cl. 252—181 10 Claims

1. A dispersion of a water-purifying composition wherein solid iron(II)sulphate is dispersed in an aqueous phase with a dispersion agent comprising an alkaline earth metal and a basic anion.

4,402,852

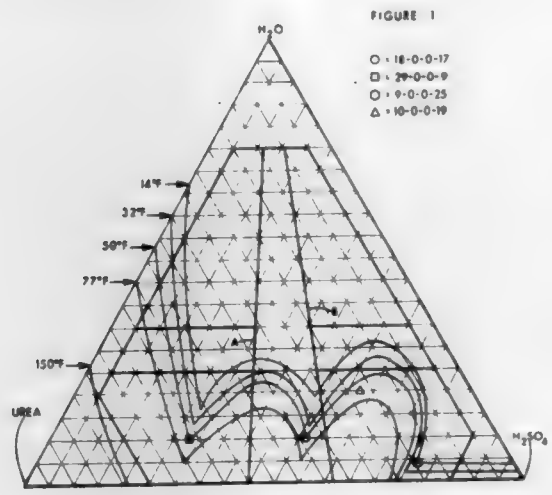
NONCORROSIVE UREA-SULFURIC ACID COMPOSITIONS

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 15, 1981, Ser. No. 331,001
Int. Cl.³ C05C *9/00;* C23F *11/16, 11/18*
U.S. Cl. 252—182 6 Claims

1. A composition of matter comprising about 5 to about 75

weight percent urea, about 5 to about 85 weight percent sulfuric acid, and about 0 to about 75 weight percent water in which (i) the urea/sulfuric acid molar ratio is greater than 2 or less than 1, (ii) said urea and sulfuric acid, in combination, constitute at least about 25 weight percent of said composition, and



(iii) a portion of said urea and sulfuric acid are present as a member selected from the group consisting of monourea sulfate, diurea sulfate, and combinations thereof, containing a corrosion inhibiting amount of a dialkylthiourea in which each alkyl group has from one to about four carbon atoms, sufficient to reduce the corrosivity of said composition to carbon steel.

4,402,853

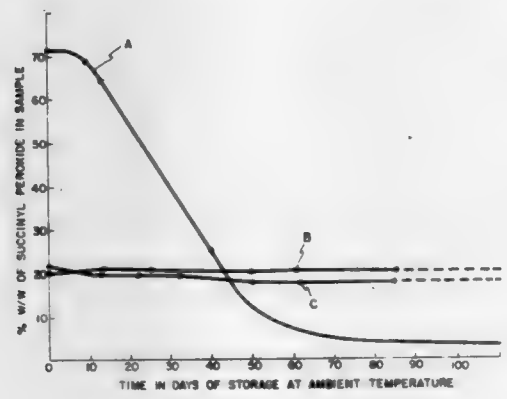
STABLE PEROXIDE COMPOSITION AND METHOD OF PREPARATION THEREOF

Peter Brocklehurst, Chappletown Nr. Sheffield, and Angus S. Ferguson, Sheffield, both of England, assignors to Sterling Drug Inc., New York, N.Y.

Filed Apr. 5, 1982, Ser. No. 365,248

Int. Cl.³ C07C *179/00*; C11D *3/39*

U.S. Cl. 252—186.26 **33 Claims**



1. A stable succinyl peroxide composition comprising in particulate solid form a mixture of succinyl peroxide, a water-soluble dehydrating agent which is unreactive to succinyl peroxide, and water, the water being bound to the dehydrating agent as water of hydration.

4,402,854

LIQUID CRYSTALS HAVING PLEOCHROIC DYES

Alexander Möeller, and Günther Scherowsky, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

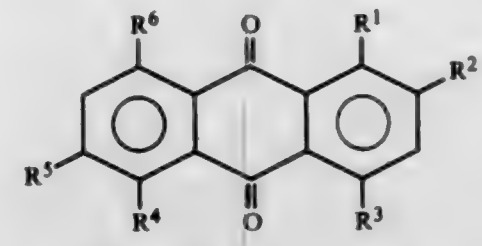
Division of Ser. No. 231,483, Feb. 4, 1981, Pat. No. 4,363,743. This application Sep. 27, 1982, Ser. No. 424,624

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 3007198

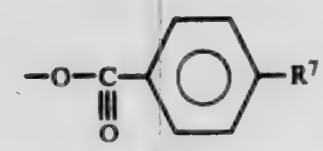
Int. Cl.³ C09K *3/34*; G02F *1/13*

U.S. Cl. 252—299.1 **4 Claims**

1. A liquid crystal composition containing a pleochroic dye wherein the pleochroic dye is an anthraquinone dye having the general formula:



wherein R^1, R^3, R^4 and R^6 are selected from the group consisting of H, OH, OCH_3, NO_2, NH_2 and $NHCH_3$; and R^2 and R^5 are each



wherein R^7 is selected from the group consisting of alkyl-, aryl-, amino-, alkylamino-, dialkylamino-, arylamino-, alkyloxy-, and aryloxy radicals.

4,402,855

TYPE A SMECTIC LIQUID CRYSTAL HAVING A POSITIVE DIELECTRIC ANISOTROPY

Annie Zann, and Jean-Claude Dubois, both of Paris, France, assignors to Thomson-CSF, Paris, France

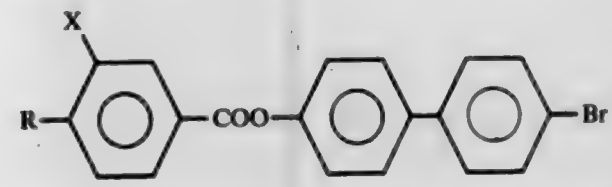
Filed Jul. 15, 1981, Ser. No. 283,740

Claims priority, application France, Jul. 18, 1980, 80 15904

Int. Cl.³ C09K *3/34*; G02F *1/13*; C07C *121/60, 69/62*

U.S. Cl. 252—299.65 **10 Claims**

1. A liquid crystal, having type A smectic phase, of the formula



wherein R represents C_nH_{2n+1} or $C_nH_{2n+1}O$ with $1 \leqq n \leqq 15$; and

X represents Br or CN.

4,402,856

MICROCAPSULES WITH A DEFINED OPENING TEMPERATURE, A PROCESS FOR THEIR PRODUCTION AND THEIR USE

Hildegard Schnoring, Wuppertal; Bruno Bömer, and Manfred Dahm, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 6, 1981, Ser. No. 251,673

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1980, 3016170

Int. Cl.³ B01J *13/02*

U.S. Cl. 428—402.22 **18 Claims**

1. In microcapsules of the type wherein a shell wall encloses a core material, the improvement comprising said shell wall being formed of gelatin mixed with carboxymethylcellulose and anionic polymers, which polymers consists of (a) a copolymer, the structural units of which consist to the extent of 65 to 90 mole %, relative to the polymer, of randomly distributed radicals of acrylamide and to the extent of 10 to 35 mole % of radicals of maleic acid or maleic anhydride, and which have an intrinsic viscosity of 0.05 to 1.0, and (b) a copolymer, the structural units of which consist of randomly distributed poly-

merized radicals of acrylamide, arylic acid and maleic acid, the maleic acid radicals being at least partly present in salt form, and which has an intrinsic viscosity of 0.05 to 1.5 and contains a total of 65 to 90 mole %, relative to the polymer, of radicals of acrylamide and of acrylic acid, and 10 to 35 mole % of radicals of maleic acid, the weight ratio of a:b being 1:2 to 20:1, and said wall material being hardened with a natural or synthetic tanning agent, or a mixture thereof and glutarodialdehyde for a period of time sufficient to raise the opening temperature to a predetermined desired temperature, to form a microcapsule with a defined release temperature.

10. A process for the production of microcapsules according to claim 1, comprising the steps of

(a) coacervating gelatin in an aqueous medium in the presence of core material;

(b) pre-hardening the shells of the microcapsules thereby formed with a tanning agent in an acid medium and hardening with glutarodialdehyde in a weakly acid or basic medium under predetermined hardening conditions to correspond to the desired release temperature; and

(c) drying the hardened microcapsules.

4,402,857

DEMULSIFIER FOR PRODUCED OIL-IN-WATER EMULSIONS CONTAINING SPENT MUD ACIDS

Rae A. Royle, Huston, Tex., assignor to Texaco, Inc., White Plains, N.Y.

Filed Oct. 26, 1979, Ser. No. 88,492

Int. Cl.³ B01D *17/04*

U.S. Cl. 252—342 **5 Claims**

1. In a conventional demulsification process for treating fluids produced from oil wells containing stable emulsions comprising oil, water and spent mud acids, the improvement wherein an effective amount of a demulsifier selected from the group consisting of sorbitan monolaurate, sorbitan monopalmitate, sorbitan monooleate, and mixtures thereof is added to the produced fluids.

4,402,858

HYDROLYTICALLY STABLE ANTIOXIDANT COMPOSITION

Janet D. Capolupo, Thomaston, and Elmar H. Jancis, Naugatuck, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Apr. 14, 1982, Ser. No. 368,332

Int. Cl.³ C08K *5/52, 5/09*

U.S. Cl. 252—400 A **3 Claims**

1. A stabilizing composition having improved hydrolytic stability comprising a phosphite having the structural formula $P(OR)_3$, wherein the R groups may be the same or different and are linear or branched C_6–C_{18} alkyl, C_6–C_{10} aryl or phenyl substituted with one or two linear or branched C_1–C_{18} alkyl radicals; and an organic metal salt having the structural formula $M(OOCR^1)_n$, wherein R^1 is C_6–C_{26} alkyl or alkenyl, M is selected from lithium, sodium, postassium, calcium, magnesium, zinc, barium, manganese, copper, nickel, iron, tellurium and cadmium, and n represents the valence of M, the molar P/M ratio being from 78/1 to 900/1.

4,402,859

PROCESS FOR PRODUCING DIARYLAMINE ANTIOXIDANTS IN GLOBULAR FORM

Takashi Tamura, Kobe, and Yoichi Kojima, Kashihara, both of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Mar. 16, 1982, Ser. No. 358,790

Claims priority, application Japan, Mar. 24, 1981, 56-43546; Jun. 5, 1981, 56-87128; Oct. 29, 1981, 56-174044; Dec. 8, 1981, 56-196033

Int. Cl.³ C09K *15/16*

U.S. Cl. 252—401 **13 Claims**

1. A process for producing a diarylamine antioxidant in globular form which comprises adding a diarylamine antioxidant in a molten state to an aqueous solution of a surface-active agent, stirring the solution and solidifying the antioxidant by cooling, wherein the concentration of the surface-active agent in the aqueous solution is 0.001 to 5 weight % and the ratio by weight of the diarylamine antioxidant to the aqueous solution of the surface active agent is from 5 to 40 weight % as a slurry concentration of the generated globular product, said aqueous solution having a pH in the range of 5 to 13 and wherein the temperature of the aqueous solution is below the solidification point of the added diarylamine antioxidant.

4,402,860

PROCESS FOR DEMETALLIZING PRIMARY PRODUCTS OF THE OXO SYNTHESIS

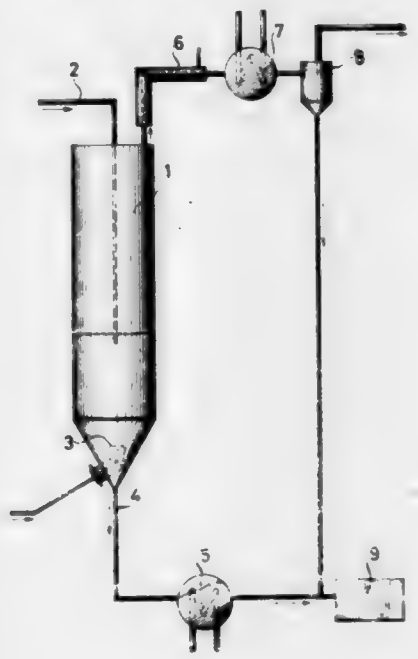
Josef Meis; Volkmar Schmidt; Hans Tummes, and Joachim Much, all of Oberhausen, Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

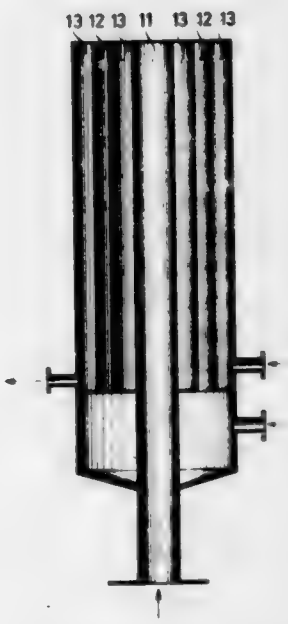
Filed Aug. 25, 1981, Ser. No. 296,042

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1980, 3032252

Int. Cl.³ B01J *31/40;* C22B *23/00;* C07C *45/50, 27/22*

U.S. Cl. 252—420 **2 Claims**





1. In a process for decomposing the cobalt carbonyl compounds dissolved in the primary reaction product of the oxo synthesis into solid cobalt-containing products, largely into cobalt metal, by intimately mixing the primary reaction prod-

uct with steam at 100° to 200° C. and at 5 to 25 bars in a cylindrical vessel without built-in fitments and directly reusing the cobalt products separated from the reaction products for the oxo synthesis, the improvement wherein the cylindrical reaction vessel has a conical base, the steam is led continuously from below through a cooled nozzle located at ⅛ to ⅓ the height of the conical base whereby the steam forms a flowing cone, thence flows upwardly at a rate of 50 to 150 m/second, coaxially to the cylindrical reaction vessel and thereby comes into contact, immediately after exiting, with the cobalt carbonyl-containing oxo product introduced into said flowing cone, the liquid level is maintained at a height corresponding to 1 to 2 times the diameter of the cylindrical reaction vessel by continuously removing the reaction product at the lowest point of the conical base in the cylindrical reaction vessel.

2. A process according to claim 1 wherein the steam is caused to flow upwardly at a rate of 80 to 120 m/second.

4,402,861

POLYMERIZATION CATALYST AND METHOD

Raymond E. Hoff, Palatine, Ill., assignor to Chemplex Company, Rolling Meadows, Ill.

Filed May 5, 1981, Ser. No. 260,802
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B **30 Claims**

1. A dry, granular and solid olefin polymerization and copolymerization catalyst active in a particle form process in the presence of an organic cocatalyst prepared by reacting, in the presence of a solvent, reactive materials comprising dry particles or an inorganic oxide having active surface hydroxyl or oxide groups and chosen from the group consisting of silica, alumina and silica-alumina, said particles having been preactivated by heating at between about 200° C. and 900° C., and an alcohol containing only carbon, hydrogen and oxygen atoms and no aromatic ring bonded directly to the alcohol hydroxyl grup and an organomagnesium compound comprising a magnesium alkyl or a complex of the general formula $(MgR_2)_m(AlR_3')_n$ where R and R′ are the same or different alkyl groups of 2–10 carbon atoms each and m/n is between about 0.5 and 10, inclusive, to form a reaction mixture of said solvent and a hydrocarbon insoluble first reaction product, the molar ratio of said alcohol to said organomagnesium compound being 0.1–10 mixing said reaction mixture with a halide, oxyhalide or alkoxyhalide of a metal chosen from the group consisting of titanium, vanadium and zirconium to form a second reaction product, and removing the solvent from said second reaction product to form said dry, granular and solid catalyst.

4,402,862

STABILIZATION OF HYGROSCOPIC SALTS

James H. Clark, Heslington, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 190,854, filed as PCT/GB79/00122, Jul. 19, 1979, published as WO80/00313 Mar. 7, 1980, abandoned. This application May 20, 1982, Ser. No. 380,448
Int. Cl.³ B01J *31/24, 31/18, 27/12*; C07C *45/45*
U.S. Cl. 252—426 **10 Claims**

1. An anhydrous adduct of a first substance, which is a particulate support material having a plurality of surface groups respectively capable of hydrogen bonding a salt anion, with a second substance, which consists essentially of a hygroscopic salt of a species of formula $R^1R^2R^3R^4N$, $R^1R^2R^3R^4P$, $R^1R^2R^3R^4As$, wherein R^1–R^4 which may be identical or different represent alkyl or aryl groups, the salt anion being fluoride, chloride, bromide, sulphate, nitrate, nitrite, cyanate, thiocyanate, peroxide, hydroxide, acetate, formate or comprises phosphorous and oxygen; the second substance being coated on the support material, thereby rendering said second substance less hygroscopic by said hydrogen bonding wherein the quantities of support and salt are chosen such that there are present at least as many surface active groups on the support material capable of hydrogen bonding as there are anions of said salt.

2. An adduct according to claim 1, in which the salt is of $R^1R^2R^3R^4N$.

3. An adduct according to claim 1, in which the salt anion is fluoride, chloride, bromide or hydroxide.

4,402,863

MAGNESIUM-CONTAINING SOLID

Makoto Miyazaki; Takeshi Nomura, both of Ooi; Chihiro Imai, Yokohama, and Makoto Yoda, Kawagoe, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1981, Ser. No. 320,165
Claims priority, application Japan, Nov. 12, 1981, 55-166735
Int. Cl.³ C08F *4/02, 4/64*
U.S. Cl. 252—429 B **15 Claims**

1. A magnesium-containing solid obtained by contacting the reaction product of (1):

(a) metallic magnesium;

(b) a halogenated hydrocarbon of the general formula RX in which R stands for an alkyl, aryl or cycloalkyl group having 1 to 20 carbon atoms, and X stands for a halogen atom; and

(c) an alkoxy compound of the general formula $X'_mC(OR')_{4-m}$ in which X′ stands for a hydrogen or halogen atom, or an alkyl, aryl or cycloalkyl group having 1 to 10 carbon atoms, R′ stands for an alkyl, aryl or cycloalkyl group having 1 to 20 carbon atoms, and m is 0, 1 or 2, with (2) an organic aluminum compound.

4,402,864

CATALYST SUPPORT TREATED WITH TITANIUM POLYMER

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 14, 1981, Ser. No. 292,962
Int. Cl.³ C08F *4/24*
U.S. Cl. 252—430 **9 Claims**

1. A process for producing a catalyst comprising combining an inorganic support with a titanium polymer, said support having a chromium compound combined therewith either before, during or after said titanium polymer and said support are combined; and activating the resulting support-titanium-chromium composition in an oxygen-containing atmosphere at a temperature within the range of 500°–1000° C., said titanium polymer being present in an amount sufficient to give 2 to 30 weight percent titanium based on the weight of the thus activated composition.

4,402,865

METHOD FOR COMULLING METALS WITHOUT CRYSTAL FORMATION

Donald W. Blakely, deceased, late of Oakland, Calif. (by Robert L. Jacobson, administrator), assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 4, 1981, Ser. No. 318,229
Int. Cl.³ B01J *21/02, 21/04, 21/08, 23/88*
U.S. Cl. 252—432 **5 Claims**

1. A method for the preparation of molybdenum-containing hydroprocessing catalysts comprising:

(a) peptizing a prewashed refractory inorganic base in the presence of a polyprotic acid while mulling;

(b) adding a Group VIII metal compound while mulling;

(c) neutralizing the polyprotic acid;

(d) adding a molybdenum compound while mulling;

(e) shaping, drying, and calcining catalyst particles from said comulled refractory inorganic oxide catalyst base, said catalyst particles characterized by the substantial absence

of crystals of Group VIII metal compounds containing $MoO_4^=$ ions.

4,402,866

AGING RESISTANCE SHAPE SELECTIVE CATALYST WITH ENHANCED ACTIVITY

David S. Shihabi, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 16, 1981, Ser. No. 331,117
Int. Cl.[3] B01J *29/06, 37/10*
U.S. Cl. 252—455 Z 20 Claims

1. A catalyst composition obtained from the process which comprises steaming a precursor crystalline aluminosilicate in the hydrogen or ammonium form having a silica-alumina ratio greater than 12, a constraint index between about 1 and about 12 and an alpha value greater than about 20 in the presence of ammonia to provide a crystalline aluminosilicate having an alpha value of from about 10 to about 150 and thereafter ion-exchanging the steamed precursor with an alkali metal cation under conditions effective to further reduce the alpha value of the crystalline aluminosilicate to less than about 10.

2. The catalyst composition of claim 1 wherein said precursor is ZSM-5 in the hydrogen or ammonium form.

3. The catalyst composition of claim 1 wherein said alkali metal cation is sodium or lithium.

4,402,867

SILICA-MODIFIED ZEOLITE CATALYSTS

Paul G. Rodewald, Rocky Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 22, 1981, Ser. No. 333,365
Int. Cl.[3] B01J *29/28*
U.S. Cl. 252—455 Z 17 Claims

10. A composition prepared by the method comprising contacting a crystalline zeolite, characterized by a silica to alumina mole ratio of at least about 12, a constraint index within the approximate range of 1 to 12 and, after heating at 540° C. for 1 hour in an inert atmosphere, an intracrystalline sorption capacity for normal hexane which is greater than that for water, with an aqueous emulsion of a silicon-containing compound selected from the group consisting of silanes and silicones, said silicon-containing compound having molecular dimensions such that it enters the pores of said zeolite, at a temperature of from about 10° C. to about 200° C. for a time sufficient to permit sorption into the pores of said zeolite of sufficient aqueous emulsion to provide at least about 0.3 weight percent amorphous silica within its interior crystalline structure upon calcination in an oxygen-containing atmosphere at a temperature of from about 300° C. to about 700° C.

11. The composition of claim 10 wherein said crystalline zeolite has the structure of ZSM-5, ZSM-11, ZSM-12, ZSM-23, ZSM-35, ZSM-38 or ZSM-48.

4,402,868

CATALYST FOR THE PRODUCTION OF METHANE-RICH GAS

Roger G. Duranleau, Georgetown, Tex., and Walter C. Gates, Jr., Carmel, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 214,377, Dec. 8, 1980, Pat. No. 4,341,531.
This application Oct. 26, 1981, Ser. No. 315,128
Int. Cl.[3] B01J *23/12, 23/78*
U.S. Cl. 252—470 8 Claims

1. A catalyst composition consisting essentially of an alkali-metal promoted partially reduced mixture of at least one nickel uranate selected from the group consisting of $NiUO_4$ and NiU_3O_{10} and at least one oxide of nickel selected from the group consisting of NiO and Ni_3O_4; and wherein the total weight of uranium present in the partially reduced catalyst composition based on the total weight of said catalyst composition is in the range of over 50 to about 90 weight percent, the weight ratio U/Ni in the catalyst is in the range of about 7–1; and at least 30 to about 80 weight percent of the nickel in the catalyst is in the metallic state.

4,402,869

GROUP VIII METALS ON MANGANESE-CONTAINING OXIDE SUPPORTS WHICH EXHIBIT STRONG METAL SUPPORT INTERACTIONS

Samuel J. Tauster, Englishtown, and Shun C. Fung, Edison, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 19,494, Mar. 12, 1979, abandoned. This application Feb. 19, 1981, Ser. No. 235,795
Int. Cl.[3] B01J *21/04, 21/08, 23/64, 23/84*
U.S. Cl. 252—471 13 Claims

1. Improved catalytic compositions comprising catalytic metal selected from the group consisting of iron, nickel, cobalt and mixtures thereof supported on a manganese-containing oxide support, the improvement comprising as a final step before use, contacting said catalyst composition with a reducing atmosphere at a temperature of at least about 300° C. to produce a catalyst composition which exhibits suppressed hydrogen chemisorption.

4,402,870

CATALYST CARRIER

Jacques Schurmans, Rue Theodore de Cuyper 157, 1200 Brussels, Belgium

Filed Oct. 30, 1981, Ser. No. 316,638
Claims priority, application Belgium, Nov. 26, 1980, 202946; European Pat. Off., Aug. 24, 1981, 200933.0
Int. Cl.[3] B01J *35/02*
U.S. Cl. 252—477 R 8 Claims

1. A solid shaped ceramic carrier, having a specific surface in the range of from 1–4 m^2/gm, and having walls containing between 5 and 15 grooves, said grooves being aligned parallel to each other and forming teeth T, the depth P of said teeth, bearing a ratio to the external diameter D of said carrier in the range of from 0.1:1 and 0.15:1 (P:D), the distance between consecutive teeth Lc bearing a ratio to the width of the crown of the individual teeth Ld in the range of from 0.8:1 and 1.05:1 (Lc:Ld) and the height H to the diameter D ratio of said carrier lying between 0.3:1 to 1.5:1 (H:D).

4,402,871

METAL CATALYST SUPPORT HAVING HONEYCOMB STRUCTURE AND METHOD OF MAKING SAME

William B. Retallick, 1432 Johnny's Way, West Chester, Pa. 19380

Continuation-in-part of Ser. No. 223,641, Jan. 9, 1981, abandoned. This application Apr. 12, 1982, Ser. No. 367,473
Int. Cl.[3] B01J *35/04*
U.S. Cl. 252—477 R 14 Claims

1. A method of making a metal catalyst support, comprising the steps of:

(a) folding a strip of metal back and forth upon itself, while

(b) impressing first and second patterns of indentations on opposite sides of the strip, the indentations being of uniform height so that the spacing between layers is equal to this height, the spacing between the indentations in the first and second patterns being different so that the indentations in successive layers cannot coincide and nest together.

4,402,872

PROTEIN AND PROCESS FOR ISOLATING IT

Hans Bohn, Marburg an der Lahn, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

Filed Mar. 11, 1982, Ser. No. 357,077

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1981, 3109629

Int. Cl.³ C07G *7/00*; A61K *35/42, 35/50, 39/395*

U.S. Cl. 260—112 R 6 Claims

1. An isolated tissue protein, PP_{16}, obtainable by fractionating an aqueous organ extract, the amino acid composition of said tissue protein being:

Amino Acid	Mole %	Variation Coefficient (%)
Lysine	5.80	9.58
Histidine	2.66	9.26
Arginine	4.35	10.18
Aspartic acid	12.64	4.27
Threonine	4.00	9.01
Serine	6.04	5.16
Glutamic acid	12.54	2.42
Proline	5.37	1.57
Glycine	5.76	6.12
Alanine	6.09	6.44
Cystine/2	2.34	3.57
Valine	5.48	6.16
Methionine	2.25	12.44
Isoleucine	5.68	0.61
Leucine	7.78	3.89
Tyrosine	4.17	3.79
Phenylalanine	5.93	3.96
Tryptophan	1.05	11.42

said tissue protein further having

(a) a carbohydrate content of 4.3±1.6%, comprising 3.4±1.2% of hexoses, 0.24±0.07% of hexosamines, 0.06±0.03% of fucose, and 0.6±0.3% of neuraminic acid;

(b) a sedimentation coefficient $S_{20,w}{}^{0}$ of 4.6±0.4 S;

(c) a molecular weight, determined in a polyacrylamide gel containing sodium dodecyl-sulfate, of 46,000±3,000;

(d) an extinction coefficient $E_{1\ cm}{}^{1\%}$ (280 nm) of 8.82±0.5;

(e) an electrophoretic mobility in the range of albumin; and

(f) an isoelectric point of 4.7±0.2.

4,402,873

EXTRACTION OF PROTEIN FROM PORK BONES

Arthur N. Vollmer, and Richard G. Rosenfield, both of Canton, Ohio, assignors to Sugardale Foods Incorporated, Canton, Ohio

Filed Sep. 23, 1982, Ser. No. 421,807

Int. Cl.³ A23J *1/10*; C09H *3/00*

U.S. Cl. 260—118 10 Claims

1. In a method of extracting protein from animal bones of the type in which crushed bone fragments having a maximum dimension of up to ½" are heated in an aqueous mixture of approximately equal amounts by weight of said bone fragments and water, to which mixture are added papain base proteolytic enzymes of the class consisting of Tona-300 and Papain 90L enzymes in the amount by weight of bone fragments of about 3½% Tona-300 enzymes or 1/10th of 1% Papain 90L enzymes; and in which the aqueous bone-enzyme mixture is heated and agitated during a heating cycle at about at least 135° F. but not exceeding about 155° F. for approximtely 3 to 3½ hours with NaCl in the amount of 2% by weight of the bone fragments being added at the end of the second hour of heating; and in which the aqueous bone-enzyme-NaCl mixture following said 3 to 3½ hour heating then is heated at step-up temperatures with a final heating temperature at but not above 195° F. for ½ hour to inactivate the enzymes, followed by filtering and screening the solids from the liquids in the cooked mixture to separate the bone fragments, and then centrifuging the separated liquids to obtain grease products and an aqueous 4% to 7% by weight protein broth; wherein in the extraction of protein from pork bones, the improvement comprises the steps of heating the aqueous bone-enzyme-NaCl mixture, following heating for 3 to 3½ hours at 135° F. to 145° F., rapidly in about 10 minutes to 195° F., then heating at but not above 195° F. for ½ hour, and then extremely rapidly chilling the cooked soup stock down to 150° F. as quickly as possible after said heating at 195° F.

4,402,874

PROCESS FOR THE PREPARATION OF PROTEIN ISOLATES OF IMPROVED QUALITY FROM VEGETABLE PROTEIN SOURCES USING ALKALI METAL BOROHYDRIDES

Lawrence A. Johnson, College Station, Tex., and Hwei-mei Wen, Taipei, Taiwan, assignors to Thiokol Corporation, Chicago, Ill.

Filed Jan. 10, 1983, Ser. No. 456,667

Int. Cl.³ A23J *1/14*

U.S. Cl. 260—123.5 9 Claims

1. An improved process for the preparation of protein isolates from a vegetable protein source, comprising the steps of:

a. extracting said vegetable protein source with alkali in the presence of an alkali metal borohydride to produce a spent vegetable protein source phase and an aqueous protein extract phase, said alkali metal borohydride being present in an amount sufficient to improve the color, palatibility and/or nutritional characteristics of the resulting protein isolate;

b. acid precipitating protein from said aqueous protein extract phase; and

c. recovering the precipitated protein of step (b) in the form of a protein isolate.

4,402,875

SUBSTITUTED TETRASELENAFULVALENES AND HIGH PRESSURE SYNTHESIS THEREOF

Yoshiyuki Okamoto, Ft. Lee, N.J., and Piotr S. Wojciechowski, Lodz, Poland, assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Sep. 18, 1981, Ser. No. 303,542

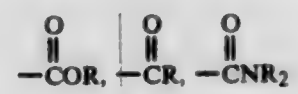
Int. Cl.³ C07D *345/00*

U.S. Cl. 260—239 R 19 Claims

1. A process for preparing a fulvalene compound, said process comprising the step of subjecting a mixture of reactants to a pressure of at least about 1,000 atmospheres, for a time and at a temperature sufficient to form said fulvalene compound, said reactants consisting essentially of carbon diselenide and an acetylenic compound of the formula

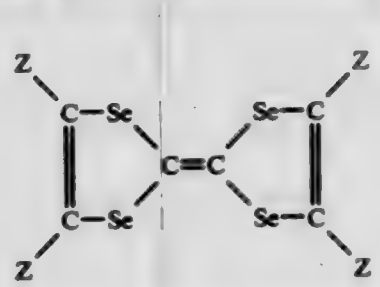
ZC≡CZ

wherein one of the Z substituents is a member selected from



and the remaining Z substituent is the same or hydrogen; wherein R is selected from hydrogen and normal alkyl, of up to 12 carbon atoms.

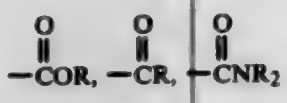
13. A substituted tetraselenafulvalene having the formula



prepared by a process comprising the step of reacting carbon diselenide with a compound having the formula

ZC=CZ

wherein one of the Z substituents is a member selected from



and the remaining Z substituent is the same or hydrogen; wherein R is selected from hydrogen and normal alkyl, having up to 12 carbon atoms; said reacting step performed under a pressure of at least about 1000 atmospheres and for a time and temperature sufficient to form said substituted tetraselenafulvalene.

4,402,876

PRODUCTION OF 2-BENZAZEPINES

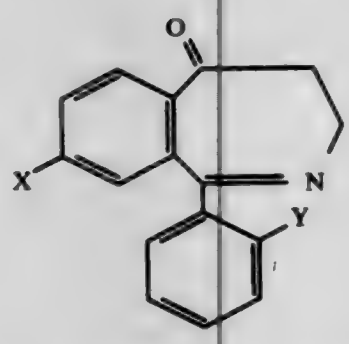
Eugene J. Trybulski, Parsippany, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 150,509, May 16, 1980, Pat. No. 4,318,854, which is a continuation-in-part of Ser. No. 10,118, Feb. 7, 1979, abandoned. This application Nov. 23, 1981, Ser. No. 324,209

Int. Cl.³ C07D *223/16*

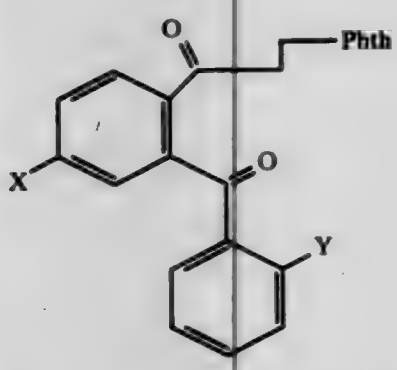
U.S. Cl. 260—239 BB 1 Claim

1. A process to produce a compound of the formula



wherein X and Y are selected from the group consisting of hydrogen, halogen and trifluoromethyl,

which consists essentially of the reaction of a compound of the formula



wherein X and Y are as above and Phth is phthalimido, with a catalytic amount of a primary C_1 to C_4 alkyl amine in a C_1 to C_4 alcohol solvent at from about 0° C. to room temperature.

4,402,877

ADSORPTION AND RECOVERY OF RIFAMYCIN B AND RIFAMYCIN S USING BASIC ION EXCHANGE RESINS

Jo Ann Gilpin; Patrick J. Oriel, and Roger A. Briggs, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 9, 1982, Ser. No. 406,659

Int. Cl.³ C07D *491/18, 491/08*

U.S. Cl. 260—239.3 P 12 Claims

1. A process for separating rifamycin B or rifamycin S from a solution containing from about 0.0001 percent to about 10 percent weight/volume of rifamycin B or rifamycin S which comprises the sequential steps of:

(a) contacting said solution with a macroreticular resin under conditions at which at least a portion of the rifamycin B or rifamycin S available is adsorbed by the macroreticular resin without appreciable decomposition of the rifamycin B or rifamycin S, and

(b) recovering the rifamycin B or rifamycin S by contacting the macroreticular resin containing the rifamycin B or rifamycin S with a desorbing solvent system under conditions at which the rifamycin B or rifamycin S is desorbed without appreciable decomposition of the rifamycin B or rifamycin S.

4,402,878

ADDITION PRODUCTS OF DI-ACETYLENE-TERMINATED POLYIMIDE DERIVATIVES WITH A POLYIMIDE HAVING TERMINAL NON-CONJUGATED ACETYLENE GROUPS

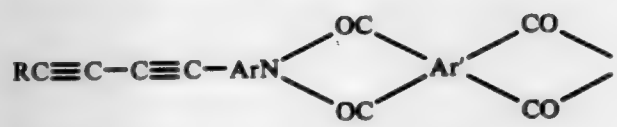
Gaetano F. D'Alelio, deceased, late of South Bend, Ind. (by St. Joseph Bank and Trust Company, executor), and Phillip A. Waitkus, Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

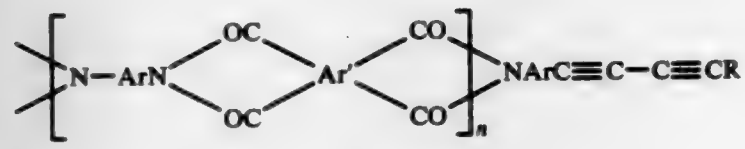
Continuation-in-part of Ser. No. 199,612, Oct. 22, 1980, abandoned. This application Mar. 2, 1982, Ser. No. 353,867

Int. Cl.³ C07D *209/34, 471/00;* C08F *22/40*

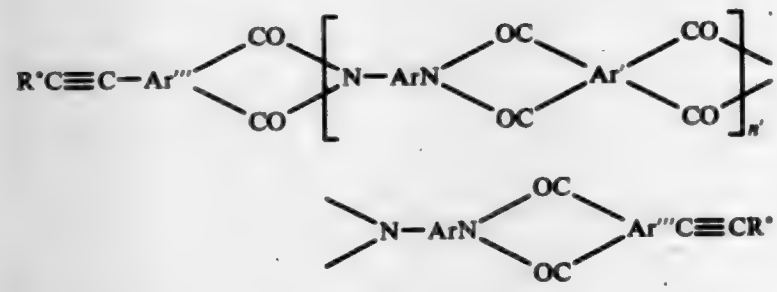
U.S. Cl. 548—421 22 Claims

1. The Diels-Alder addition product of a composition of matter comprising a polyimide of the formula:





and a dienophile of the formula:



wherein:

Ar′ is a tetravalent aromatic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms in Ar′ except in the case of Ar′ being a naphthalene radical, one or both pairs of the carbonyl groups may be attached to peri-carbon atoms;

Ar is a divalent aromatic radical;

R is hydrogen or an organic moiety containing 1 to 21 carbon atoms;

n is zero or an integer having a value of one to 20;

R° has the same definition as R;

n′ is zero or an integer having a value of one to 20; and

Ar′′′ is a trivalent aromatic radical containing 6 to 12 carbon atoms to which the attached pair of carbonyl groups is attached to adjacent or peri carbon atoms in said Ar′′′ radical.

4,402,879

ADDITION PRODUCTS OF A DI-ACETYLENE-TERMINATED POLYIMIDE DERIVATIVES AND A DIENOPHILE HAVING A NON-CONJUGATED ACETYLENIC GROUP

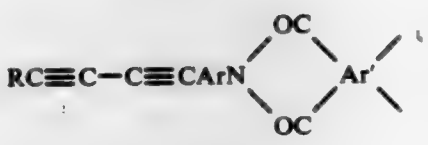
Gaetano F. D'Alelio, deceased, late of South Bend, Ind. (by St. Joseph Bank and Trust Company, executor), and Phillip A. Waitkus, Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

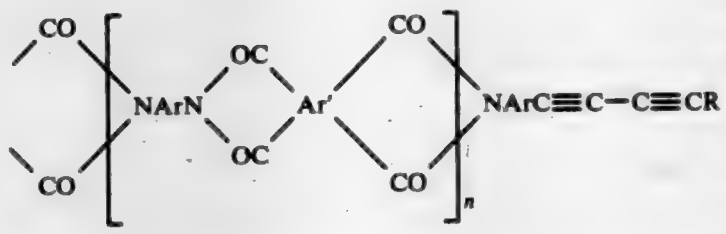
Continuation-in-part of Ser. No. 199,611, Oct. 22, 1980, abandoned. This application Mar. 2, 1982, Ser. No. 353,866

Int. Cl.³ C07D *209/34, 471/00;* C08F *22/40*

U.S. Cl. 548—421 45 Claims

1. The Diels-Alder addition product of (1) a conjugated diacetylene compound having the formula:





wherein:

Ar′ is a tetravalent aromatic organic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to the adjacent carbon atoms in Ar′ except in the case of Ar′ being a naphthalene radical, one or both pairs of the carbonyl groups may be attached to peri-carbon atoms;

Ar is a divalent aromatic organic radical;

n is zero or an integer having a value of one to 20;

R is hydrogen or an organic moiety containing 1 to 21 carbon atoms;

and (2) a dienophile containing at least one acceptor moiety having the formula R°C≡C— wherein R° is as defined above for R and the R°C≡C— is a non-conjugated acetylenic group.

4,402,880

DIALKYLZINC COMPOSITIONS HAVING IMPROVED THERMAL STABILITY

Alfred K. Jung, Queens, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 30, 1981, Ser. No. 316,600

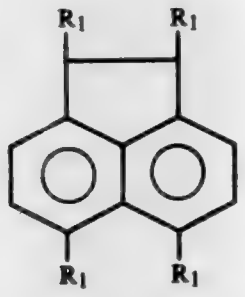
Int. Cl.³ C07F *3/06*

U.S. Cl. 260—429.9 8 Claims

1. A dialkylzinc composition having improved stability against thermal decomposition comprising a dialkylzinc compound represented by the formula

R—Zn—R

wherein R represents an alkyl radical having from 1 to about 8 carbon atoms, in admixture with an acenaphthene compound represented by the formula



wherein each R^1 independently represents an alkyl radical, an olefin radical (conjugated with the aromatic moiety), an aryl radical or a substituted aryl radical, each having from 1 to about 12 carbon atoms, or hydrogen; said acenaphthene compound being present in an amount sufficient to reduce the thermal decomposition rate of said dialkylzinc compound.

4,402,881

METHOD OF MAKING ORGANOPHILIC CLAYS

George R. Alther, Ferndale, Mich., assignor to International Minerals & Chem. Corp., Terre Haute, Ind.

Filed Nov. 12, 1980, Ser. No. 206,196

Int. Cl.³ B01J *13/00;* C07F *7/02*

U.S. Cl. 260—448 C 1 Claim

1. A substantially dry process for making an organophilic clay from a smectite clay comprising first adding to said smectite clay 1–10% by weight of an activator substance having a hydrophobic radical and being selected from the group consisting of aliphatic and alicyclic amine acid-addition and quaternary ammonium salts, said smectite clay having a maximum moisture content of about 12% by weight, thoroughly mixing said activator substance with said clay, and then compacting said clay activator substance mixture into a compacted mass having an apparent density of from about 60–94% of the apparent density of the clay before it is ground, whereby the organophilic properties of said treated clay are substantially improved.

4,402,882

PROCESS FOR THE PRODUCTION OF DIPHOSPHASPIRO COMPOUNDS

Jürg Kiefer, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 21, 1981, Ser. No. 295,170

Claims priority, application Switzerland, Sep. 2, 1980, 6605/80

Int. Cl.³ C07F *9/40*

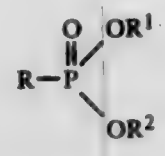
U.S. Cl. 260—980 4 Claims

1. A process for the production of a diphosphaspiro compound of the formula



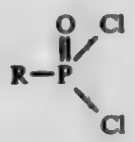
(I)

wherein each R independently is alkyl of 1 to 6 carbon atoms, phenyl, benzyl or cyclohexyl, which process comprises reacting a phosphonic acid or a phosphonic acid ester of the formula II



(II)

wherein R has the same meaning as in formula I and each of R^1 R^2 is a hydrogen atom, methyl or ethyl, with a phosphonic acid dichloride of the formula III



(III)

wherein R has the same meaning as in formula I, in equimolar amounts, in an inert organic solvent or using an excess of phosphonic acid ester of the formula II, in the temperature range from 50° to 120° C., to give ½ of the equimolar amount of

reactant (II) or reactant III of a phosphonic anhydride of the formula IV

$$(R-\overset{\overset{O}{\|}}{P}=O)_3, \qquad \text{(IV)}$$

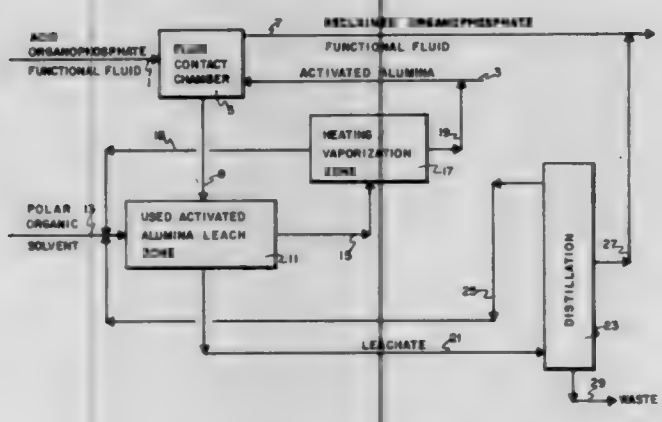
and subsequently reacting the anhydride of the formula IV with pentaerythritol, in the temperature range from 60° to 120° C., to a compound of the formula I, the molar ratio of anhydride of the formula IV to pentaerythritol being about 2:1.

4,402,883

RECLAMATION OF ORGANOPHOSPHATE FLUIDS

Joseph F. Anzenberger, Sr., New City, N.Y., assignor to Stauffer Chemical Co., Westport, Conn.

Filed Oct. 8, 1981, Ser. No. 309,652
Int. Cl.³ C07F 9/09
U.S. Cl. 260—990 **8 Claims**



1. A method of reducing the acidity of used organophosphate functional fluids by contact with activated alumina, directly returning said activated alumina contacted fluid for reuse, and subsequently regenerating the acid-reducing alumina which comprises the sequential steps of:

(A) contacting said used organophosphate with an acid reducing amount of acid reducing agent consisting essentially of activated alumina,

(B) separating the alumina of step (A) from the organophosphate

(C) leaching the alumina of step (B) with a polar organic solvent,

(D) separating the alumina of step (C) from the leachate and thereafter heating the alumina at a temperature of less than 160° C.

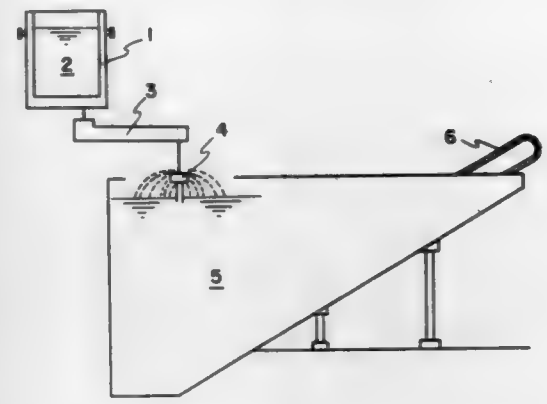
4,402,884

METHOD FOR PRODUCING FERRO-NICKEL SHOTS

Shinkichi Koike; Akira Kimura; Toru Hikage, and Sadao Sugiura, all of Hachinoheshi, Japan, assignors to Pacific Metals Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 81,815, Oct. 4, 1979, abandoned. This application Jun. 2, 1981, Ser. No. 269,659
Claims priority, application Japan, Oct. 4, 1978, 53-121436
Int. Cl.³ B22C 23/00
U.S. Cl. 264—8 **2 Claims**

1. A method for producing ferro-nickel shots which comprises pouring a molten metal alloy consisting essentially of molten ferro-nickel containing 0.2 to 1.5% of Mn, 0.8% or more of C and 0.1% or more of Si onto a rotating disc to divide and granulate the molten ferro-nickel stream, and cooling the granules thus-produced in water to obtain smooth ferro-nickel shots of a flat-disc or granular shape containing substantially no water, said stream of molten ferro-nickel falling at a rate between 500 and 2000 kg/min, and wherein the rotational speed of the rotating disc is between 100 and 1500 r.p.m., and wherein the kinetic energy of the falling stream and the centrifugal force of the rotating disc combine to form shots of a desired and substantially uniform diameter.

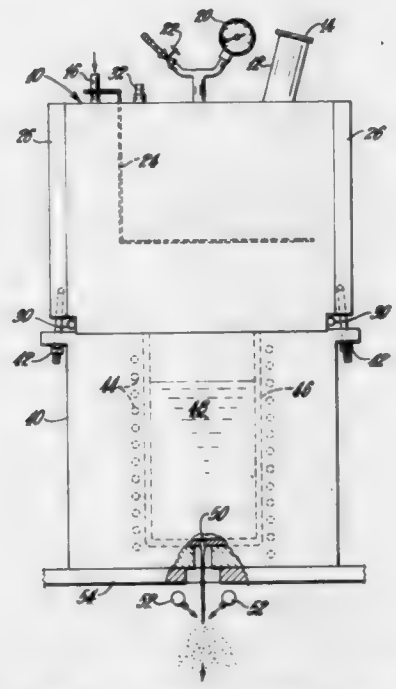


4,402,885

PROCESS FOR PRODUCING ATOMIZED POWDERED METAL OR ALLOY

Frederick K. Roehrig, Columbus, and Dennis L. McGarry, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 30, 1982, Ser. No. 373,464
Int. Cl.³ B01J 2/02
U.S. Cl. 264—11 **5 Claims**



1. A process for producing atomized powdered metal or alloy including the steps of

providing a container containing molten metal or alloy;

placing the molten metal or alloy under a head of gas pressure;

flowing liquid streams of molten metal or alloy through orifices in the container whose openings are so small that the surface tension of the molten metal or alloy without the applied head of inert gas pressure would prevent the flow of molten metal or alloy through the orifices; and

impinging the streams of molten metal or alloy from the openings with streams of pressurized gas or liquid to form atomized, powdered metal or alloy.

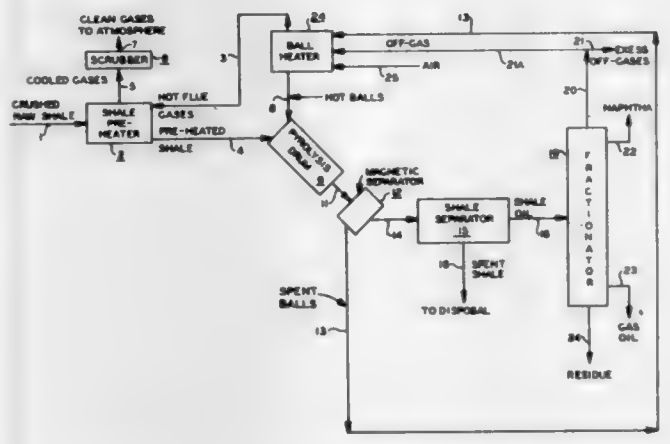
4,402,886
TRON-CONTAINING REFRACTORY BALLS FOR RETORTING OIL SHALE

Lyle W. Pollock, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 209,926, Nov. 24, 1980, Pat. No. 4,371,481, which is a division of Ser. No. 9,627, Feb. 6, 1979, Pat. No. 4,360,565, which is a division of Ser. No. 837,130, Sep. 28, 1977, Pat. No. 4,160,719. This application Sep. 30, 1982, Ser. No. 431,442

Int. Cl.³ B01J 2/00

U.S. Cl. 264—15 5 Claims



1. A process for preparing iron-containing ceramic balls, containing about 10 to 90 weight percent iron and the balance a high refractory alumina, which comprises:

(a) contacting a finely divided powdered alumina, water, and iron particles in mixer means, thereby forming an extrudable mixture,

(b) extruding said extrudable mixture to form cylinders,

(c) tumbling said cylinders to provide balls,

(d) heating said balls to a temperature in the range of about 2800° F. to 3400° F. for a time sufficient to convert the balls to said iron-containing ceramic balls, and

(e) cooling said fired ceramic balls in the substantial absence of molecular oxygen,

wherein said fired ceramic balls contain iron particles substantially uniformly dispersed in a matrix of ceramic alumina.

4,402,887
SHEET-LIKE ARTICLES OF POLYVINYL CHLORIDE

Kazuya Kuriyama, Chiba; Shigeru Murakami, Ichihara; Ryozo Sugawara, Sodegawara, and Kiyoshi Honda, Hirakata, all of Japan, assignors to Dainippon Ink and Chemicals Inc., Tokyo, Japan

Filed Jul. 30, 1979, Ser. No. 61,858

Claims priority, application Japan, Mar. 14, 1978, 53-28237; Apr. 20, 1979, 54-48031

Int. Cl.³ H05B 1/00; B29D 7/14; C08F 11/00; C08K 5/57

U.S. Cl. 264—22 5 Claims



1. A process for preparing a sheet-like article of polyvinyl chloride, which comprises calendering a composition comprising polyvinyl chloride, a reactive plasticizer, a photosensitzer, a stabilizer and a polymerization inhibitor under heat without causing the reaction of the reactive plasticizer, and then irradiating the product with ultraviolet rays to cause the reaction of the reactive plasticizer.

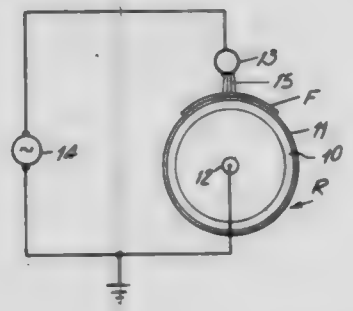
4,402,888
CORONA DISCHARGE TREATMENT ROLL

Walter A. Runck, Holmdel, N.J., assignor to Pamarco Incorporated, Roselle, N.J.

Filed Sep. 14, 1981, Ser. No. 302,059

Int. Cl.³ B21B 27/00

U.S. Cl. 264—22 4 Claims



1. The process of rendering a polymeric film receptive to surface printing which comprises the steps of continuously advancing said polymeric film in the gap defined between a treater roll having a conductive metallic substrate and an electrode disposed in spaced parallel relation to said roll while maintaining between said substrate and said electrode an alternating current potential sufficient to create a corona discharge in said gap, characterized in that said roll includes a substantially even dielectric coating of a thickness in the range of from about 0.02" to about 0.05" or more comprised of porous refractory oxides having a density in the range of from about 85 to 95%, the pores within said oxide coating being substantially completely filled with polymeric material having high dielectric strength.

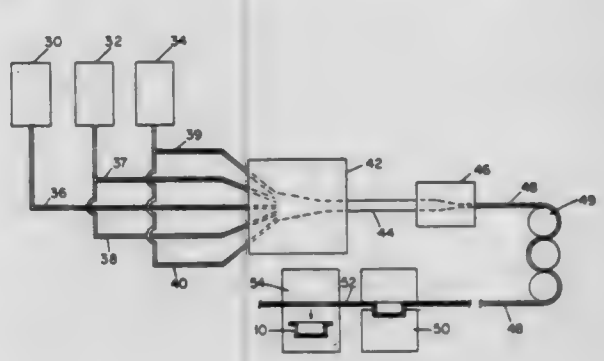
4,402,889
MAKING SHEET WITH MOISTURE BARRIER PROPERTIES COEXTRUDED FROM SCRAP MATERIALS

Laszlo J. Bonis, Swampscott, Mass., assignor to Composite Container Corporation, Medford, Mass.

Filed Feb. 4, 1982, Ser. No. 345,932

Int. Cl.³ B29C 29/00

U.S. Cl. 264—37 10 Claims



1. A method of making an inexpensive multilayered sheet structure comprising coextruding by

separately heating qualified scrap material and unqualified scrap material having sufficient polyolefin content to provide a moisture barrier,

supplying said heated material to a coextrusion block to form a multilayer stream with

outer layers of said qualified scrap material, and

a central layer of said unqualified scrap having sufficient polyolefin content to provide a moisture barrier, and

flattening said multilayer stream in a coextrusion die to produce a multilayer sheet.

4,402,890

METHOD OF MANUFACTURING CEMENT BONDED BOARDS

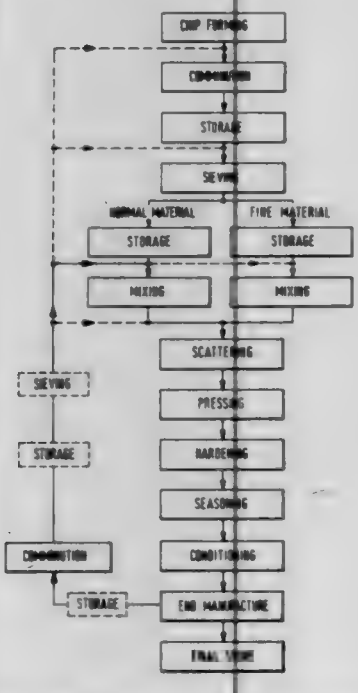
Rainer Offenhausen, and Hans G. Schwarz, both of Springe, Fed. Rep. of Germany, assignors to Bison-Werke Bahre & Greten GmbH & Co. KG, Fed. Rep. of Germany

Filed Dec. 14, 1981, Ser. No. 330,523

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048412

Int. Cl.³ B29M *19/00*

U.S. Cl. 264—37 **11 Claims**



1. In a method of manufacturing cement bonded boards, including the steps of

(a) mixing chip material, cement, additives, and water in predetermined proportions;

(b) forming the mixture into a mat;

(c) sectioning the mat into board blanks;

(d) pressing, hardening, and seasoning the blanks;

(e) conditioning the blanks to achieve moisture acclimitization; and

(f) edge preparation and final finishing of the blanks;

the improvement comprising:

trimming the blanks to the desired nominal size during the edge preparation step, thereby protecting the board edges up until the edge preparation step and also producing waste material; and

comminuting and adding at least some of the waste material to the chip material prior to a subsequent mat forming step, thereby making economical use of the waste material.

4,402,891

METHOD OF PROCESSING WASTE CEMENT KILN DUST TO MAKE A SOIL TREATMENT COMPOSITION

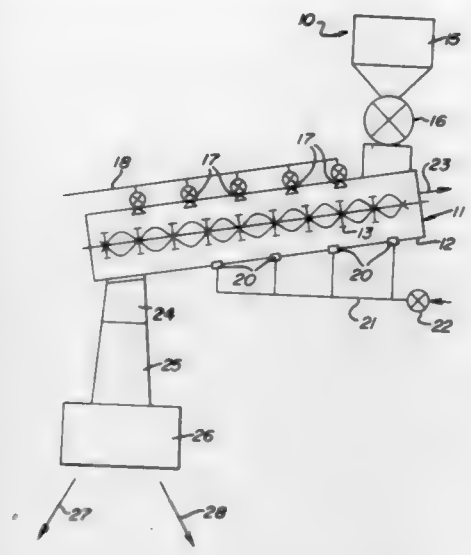
Joseph L. Kachinski, Jr., 3510 Glenarm Ave., Baltimore, Md. 21206

Filed Nov. 4, 1981, Ser. No. 318,033

Int. Cl.³ B01J *2/12*

U.S. Cl. 264—40.1 **8 Claims**

1. In the method of processing waste cement kiln dust to make a soil treatment composition, the steps which comprise: gradually introducing water to the kiln dust; providing a carbon dioxide-containing atmosphere for the dust and water; reacting the water and dust with the carbon dioxide-containing atmosphere for reducing the alkalinity of the water and dust measured as a pH; and mixing, kneading and agitating the dust



and water in said atmosphere to form granules of the reduced pH mixture.

4,402,892

METHOD FOR MAKING XONOTLITE INSULATION BY FOAMING AN AQUEOUS SLURRY OF CALCAREOUS AND SILICEOUS REACTANTS AND CELLULOSIC AND GLASS FIBERS

Jerry L. Helser, Hebron, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 15, 1980, Ser. No. 197,298

Int. Cl.³ B28B *1/26*

U.S. Cl. 264—42 **7 Claims**

1. A method for making a rigid cellular asbestos-free body of hydrous calcium silicate thermal insulation comprising the steps of:

(a) aerating an aqueous cementitious slurry comprising calcareous and siliceous materials mutually reactable to yield hydrous calcium silicate predominantly in the form of xonotlite, cellulosic fibers and glass fibers to form a fluent foamed slurry;

(b) charging at least a portion of said foamed slurry into a mold cavity; and

(c) indurating the foamed slurry in said mold cavity under conditions of temperature and steam pressure effective to transform said calcareous and siliceous materials into cellular hydrous calcium silicate predominantly in the form of xonotlite.

4,402,893

METHOD FOR THE PREPARATION OF A CELLULAR FOAMED BODY OF A VINYL CHLORIDE-BASED RESIN

Hajime Kitamura, Ichihara; Kiyoshi Imada, Omiya, and Yoshitugu Eguchi, Ibaraki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1980, Ser. No. 144,988

Claims priority, application Japan, May 11, 1979, 54-57917; May 16, 1979, 54-59924

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—53 **6 Claims**

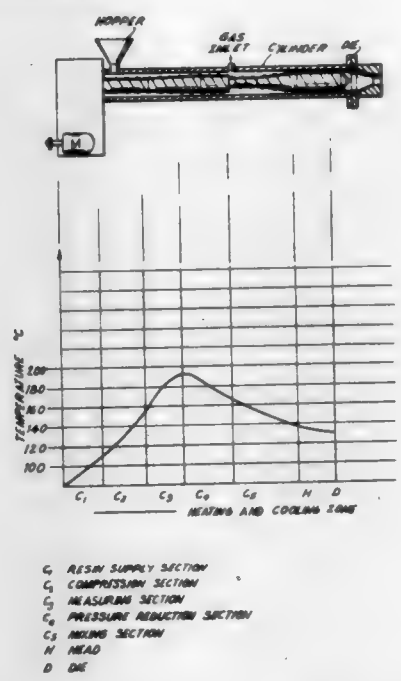
1. A method for the preparation of a cellular foamed body of a vinyl chloride based resin which comprises

(a) blending 100 parts by weight of a vinyl chloride based resin with at least 0.01 part by weight of a nucleating agent and from 0.5 to 30 parts by weight of a foam conditioning resin selected from the group consisting of acrylic resins and styrene based resins into a resin composition,

(b) heating the resin composition at a temperature in the range from 60° to 250° C. under a superatmospheric pres-

sure so that the resin composition is converted into an at least partly gelled mass,

(c) pressurizing a volatilizable foaming agent which is an organic solvent having a boiling point not exceeding 90° C. and injecting it into the thus at least partly gelled mass of the resin composition under the pressure so that the resin composition is impregnated uniformly with the volatilizable foaming agent,



(d) adjusting the temperature of the resin composition to a value at least 30° C. higher than the flex or softening temperature of the resin composition but not greater than the apparent gelation temperature of the resin composition, and

(e) bringing the resin composition thus impregnated with the volatilizable foaming agent and completely gelled under a reduced pressure with simultaneous cooling so that the resin composition is expanded with the gas produced from the foaming agent into a cellular body.

4,402,894

PRODUCTION OF A CERAMIC RESISTOR

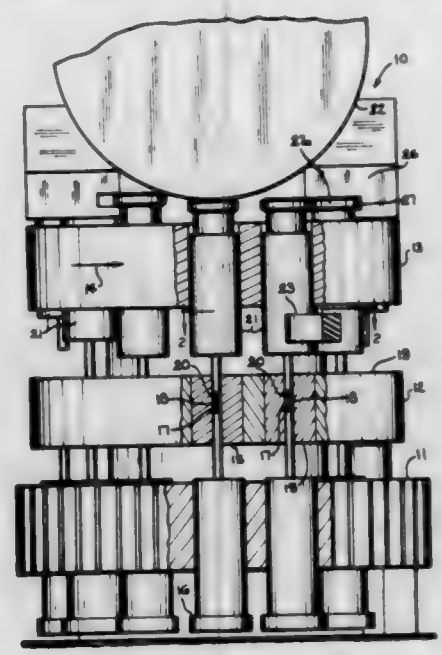
Joseph Nemeth, Detroit, and Frank J. Russell, Yale, both of Mich., assignors to Champion Spark Plug Company, Toledo, Ohio

Continuation-in-part of Ser. No. 159,885, Jun. 16, 1980, abandoned, which is a division of Ser. No. 942,375, Sep. 14, 1978, abandoned. This application Jan. 5, 1982, Ser. No. 337,188

Int. Cl.³ C04B *33/32*

U.S. Cl. 264—56 **1 Claim**

1. In a method for producing a ceramic resistor which method comprises charging ceramic resistor batch into a longitudinally extending die, pressing the ceramic resistor batch in the die between opposing plungers, removing a first plunger to form a blank from the die, moving a second plunger to eject the blank from the die and firing the blank, the improvement of imparting rotational motion to the first plunger as the applied pressure thereon is being released preparatory to removing the first plunger from the die, whereby the surface



of the first plunger is rotated relative to the blank and separates therefrom without sticking.

4,402,895

PROCESS FOR THE PRODUCTION OF CARBURIZING AGENTS AND PRODUCTS

Peter Courvoisier, Willich, and Dieter Stadie, Essen, both of Fed. Rep. of Germany, assignors to Verkaufsgesellschaft für Teererzeugnisse (VfT) mbH, Essen, Fed. Rep. of Germany

Filed Dec. 23, 1981, Ser. No. 333,589

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1981, 3100727

Int. Cl.³ C04B *15/14*; C08L *1/08*; C09C *1/56*

U.S. Cl. 264—109 **9 Claims**

1. A process for the production of carburizing agents comprising compacting carbon dust having a particle diameter of less than 2 mm with a binder, wherein the binder used is from 0.5 to 2% by weight, related to carbon dust, of hydroxyethyl cellulose, which, prior to compacting with carbon dust is homogenized from 5 to 20 minutes, with addition of from 10 to 25% by weight of water and auxiliary gelling agent, said compacting being carried out by extrusion, briquetting or pelleting to thereby obtain molded bodies, having a size of from 3 to 15 mm, and subsequently drying said bodies for 5 to 20 hours at 80° to 180° C.

4,402,896

BLOW LINE ADDITION OF THERMOSETTABLE BINDER IN FIBERBOARD MANUFACTURE UTILIZING COOLED NOZZLE

William E. Betzner, St. Petersburg, and Richard K. Holtman, Largo, both of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed Apr. 26, 1982, Ser. No. 371,895

Int. Cl.³ D04H *3/16*

U.S. Cl. 264—115 **21 Claims**

1. In a process of producing a synthetic board from cellulosic material and a binder wherein

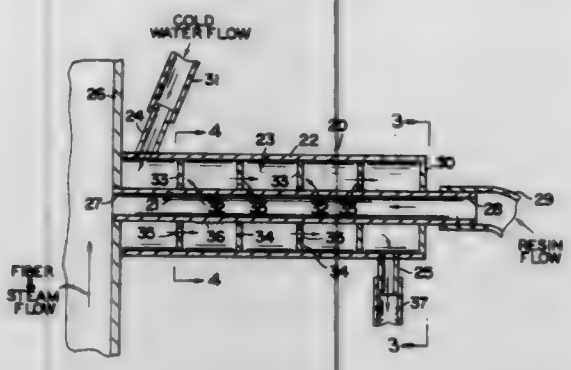
(a) said cellulosic material is subjected to the action of steam under pressure and refined to hot and wet fibers in a pressurized digester-refiner apparatus having a blow line for discharge of said hot and wet fibers from said apparatus,

(b) said hot and wet fibers after discharge from said apparatus are partially dewatered,

(c) said partially dewatered fibers are formed into a mat, and

(d) said mat is subjected to heat and pressure to form said synthetic board, the improvement comprising applying a

thermosettable resin binder to said hot and wet fibers in said blow line by feeding said thermosettable resin



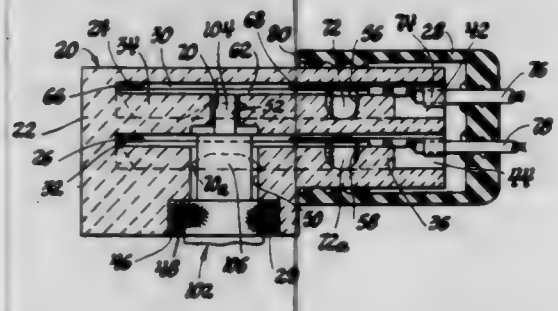
through a cooled nozzle secured on and communicating with the interior of said blow line.

4,402,897

MOLDING AND MACHINING OF ONE PIECE ELECTRICAL SOCKET CONNECTOR

William E. Cross, Brookfield, and Charles R. Nestor, Niles, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 113,335, Jan. 18, 1980, abandoned. This application Mar. 8, 1982, Ser. No. 355,484
Int. Cl.[3] B29C *17/10*
U.S. Cl. 264—118 3 Claims



1. A method of making a one-piece dielectric connector body having a longitudinal cavity for receiving a channel-shaped contact terminal and a vertical socket opening into the cavity for receiving a post terminal to mate with the channel-shaped contact terminal comprising the steps of,

shaping in a die cavity or mold, a machineable connector body preform having a blind-ended longitudinal cavity which includes a central vertical rib which extends longitudinally from a front wall of the preform which completely closes the blind end of the cavity,

machining a vertical circular hole in the connector body preform which extends vertically through the central vertical rib to provide at least a portion of the vertical socket and which extends laterally through the central vertical rib to provide chordwise slots in opposite side walls thereof, and

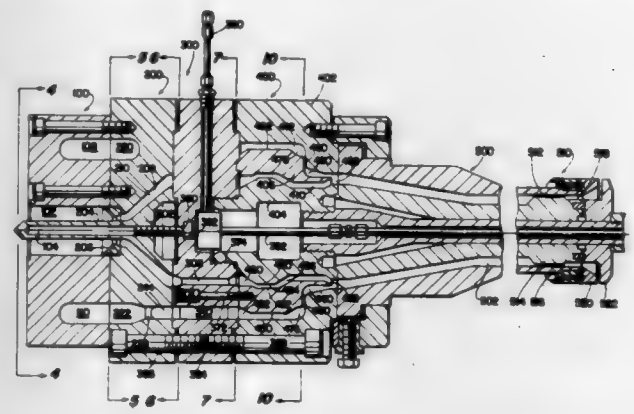
machining a lateral circular access hole through a side wall of the connector body preform and a corresponding part-circular cut through the central vertical rib in the lateral direction to provide an internal terminal retention shoulder in the cavity facing toward the front wall of the preform.

4,402,898

COEXTRUSION DIE ASSEMBLY

Larry A. Rosenbaum, Findlay, Ohio, assignor to Hancor, Inc., Findlay, Ohio

Filed Sep. 28, 1981, Ser. No. 306,468
Int. Cl.[3] B29F *3/10*
U.S. Cl. 264—173 33 Claims



1. An extrusion die assembly for extruding multi-layered tubular products, the die assembly comprising:

a spider structure having an upstream side, a downstream side, a first plurality of apertures extending between the upstream and downstream side generally surrounding a longitudinal axis and a second plurality of apertures extending between the upstream and downstream sides generally surrounding the longitudinal axis, each aperture of the second spider structure apertures being defined by a discrete opening adjacent the ustream side and fanning toward a substantially continuous annulus generally adjacent the downstream side;

a first inlet means for defining a first inlet;

a second inlet means for defining a second inlet;

a manifold means for connecting the first inlet means with the upstream side of the first spider structure apertures and for connecting the second inlet means with the upstream side of the second spider structure apertures;

a first tubular passage means for defining a first tubular passage, the first tubular passage means being operatively connected with the downstream side of the first spider structure apertures;

a second tubular passage means for defining a second tubular passage, the second tubular passage means being operatively connected at downstream side of the second spider structure apertures; and,

a tubular outlet passage operatively connected with downstream ends of the first and second tubular passage means, the first and second tubular passage means downstream ends being concentrically disposed.

30. A process of extruding multi-layered tubular products, the process comprising:

receiving a flow of a first plasticized material;

receiving a flow of a second plasticized material;

shaping the first material flow into a substantially tubular first material flow;

dividing the second material flow into a plurality of second material flow portions;

dividing the first material flow among a first plurality of apertures and causing a first material flow portion to flow through each of the apertures;

causing each of the second material flow portions to flow through a second plurality of apertures;

slowing the velocity of the first material flow downstream from the first plurality of apertures such that peripheral components are introduced into the velocity and the first material flow comes back together into a tubular first material flow;

slowing the velocity of the second material flow downstream from the second plurality of apertures such that peripheral components are introduced causing the second

material flow portions to merge together into a single tubular second material flow, the second material flow having a higher velocity in peripheral regions in longitudinal alignment with each of the second plurality of apertures and a lower velocity in peripheral regions therebetween;

restricting the second material flow in regions longitudinally aligned with each of the second plurality of apertures to a greater extent then regions not longitudinally aligned with the second plurality of apertures such that the peripheral gradients in the velocity of the second material flow tend to be equalized; and,

bringing the first and second tubular flows contiguous with each other to form a layered tubular flow.

4,402,899

ZINC-FREE PREPARATION OF RAYON FIBERS

Peter J. Hartmann, Dover, and Albin F. Turbak, Convent Station, both of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 13, 1981, Ser. No. 283,069
Int. Cl.³ D01F *2/06*
U.S. Cl. 264—188 **5 Claims**



1. A process for producing rayon fibers having a C-shaped crossection, a wet modulus of more than 0.2 g/d and a caustic solubility in 6.5% caustic of less than 30% comprising

preparing an unmodified viscose spinning solution from cellulose having a degree of polymerization of less than 650, said solution having a salt index of below 14,

spinning said viscose solution into a zinc-free coagulation bath while said bath is at a temperature from about 40° to 100° C., said bath comprising at least 100 g/l of Na_2SO_4, at least 175 g/l of $(NH_4)_2SO_4$ and more than 100 g/l of H_2SO_4 when said salt index is no more than 10 and more than 110 g/l of H_2SO_4 when said salt index is above 10 and

stretching the resulting coagulated filament in a secondary bath while said secondary bath is at a temperature from about 70° to 100° C.

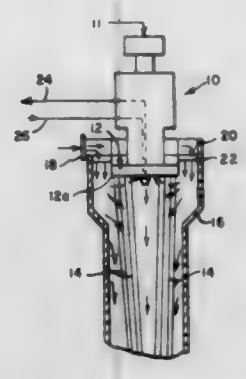
4,402,900

DRY SPINNING PROCESS WITH A GAS FLOW AMPLIFIER

Walter C. Berry, Jr., Staunton, Va., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Nov. 1, 1982, Ser. No. 438,372
Int. Cl.³ D01F *7/00*
U.S. Cl. 264—205 **2 Claims**

1. In a spinning process that includes the steps of extruding a solution of polymer through a spinneret having orifices arranged in a pattern to form a hollow bundle of filaments and passing a first flow of heated inert gas downwardly around and inwardly through the bundle toward its hollow center to treat the filaments, the improvement comprising: introducing a second flow of inert gas along a Coanda surface centrally located within the bundle near the spinneret whereby a portion



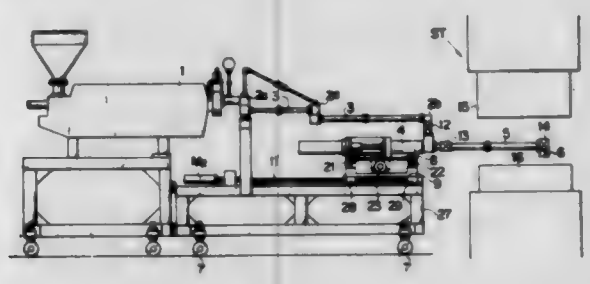
of said first flow of gas is entrained downwardly with said second flow of gas.

4,402,901

METHOD OF PRESS FORMING OF PLASTIC MATERIAL

Koji Emura; Tuneo Suzaki; Koji Takai, and Hidemichi Kazama, all of Fuji, Japan, assignors to Yamakawa Industrial Co., Ltd., Shizuoka, Japan

Filed Apr. 2, 1981, Ser. No. 250,300
Claims priority, application Japan, Apr. 16, 1980, 55-50052
Int. Cl.³ B29B *3/02, 5/06*
U.S. Cl. 264—294 **1 Claim**



1. A method of press forming a plastic material by means of a press having an upper mould and a lower mould, which comprises the steps of:

(a) extruding a plastic melt from an extruder into a first movable hollow arm which communicates with said extruder,

(b) introducing said plastic melt from said first arm into a metering chamber which comprises an accumulator cylinder and which communicates with said first arm, to accumulate said plastic melt in said metering chamber,

(c) extruding and supplying a predetermined metered amount of the accumulated plastic melt from said metering chamber into a second movable hollow arm provided with an outlet and which communicates with said metering chamber,

(d) repeating the steps (b) and (c),

(e) moving said first and second arms in at least two dimensions, the movement of said first and second arms cooperating with the step (c) to move said outlet of said second arm to a plurality of positions over the surface of said lower mould in accordance with a predetermined charge pattern corresponding to a desired article to be press formed, the step (e) being conducted intermittently each time the step (c) is conducted so as to successively move said outlet of said second arm from one position to another over the surface of said lower mould,

(f) injecting said predetermined metered amount of said accumulated plastic melt from said outlet of said second arm directly onto said lower mould while continuing the movement of said outlet of said second arm, the step (f) being conducted each time said outlet of said second arm is moved from one position to another over the surface of said lower mould, the step (e) and the step (f) cooperating

to dispense said plastic melt onto said lower mould to continue said plastic melt between the respective adjacent positions of said plurality of positions into a parapet or pillow shape, thereby forming as a whole said charge pattern of said plastic melt corresponding to said desired article to be press formed, the movement of said first and second arms for moving said outlet of said second arm being controlled in accordance with data of said desired charge pattern programmed in advance by a microcomputer, the control of the moving position, direction and distance of said second arm by said programmed data thereby setting respective distances between said plurality of positions of said outlet of said second arm, the control of both the moving speed of said second arm by said programmed data and the amount of said plastic melt in the step (c) setting a dispensing amount and a dispensing rate for said plastic melt injected over said respective distances, thereby forming said desired charge pattern of said plastic melt on said lower mould in accordance with said set dispensing amount and rate,

(g) moving said second arm, upon completion of the formation of said charge pattern, so as to move said outlet of said second arm away from the surface area of said lower mould to permit press forming said plastic melt in said desired charge pattern, and

(h) closing said upper and lower moulds together to press form said plastic material.

4,402,902

METHOD FOR MOLDING GLASS-FILLED THERMOPLASTIC RESINS

John C. Falk, Chicago, and Klementina F. Khait, Skokie, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 7, 1981, Ser. No. 328,160
Int. Cl.³ B29B *1/10*
U.S. Cl. 264—349 8 Claims

1. A method for producing improved glass-filled thermoplastic resin articles comprising the steps of:

providing a dry blend composition comprising a rigid thermoplastic monovinylidene resin, a glass reinforcing fiber and a copolymer of at least monovinylidene monomer selected from the group consisting of monovinyl aromatic compounds and acrylic compounds and from 1 to 20 wt.% of at least one ethylenically unsaturated monomer containing at least one functional radical selected from the group consisting of carbonyl radicals and epoxy radicals; and

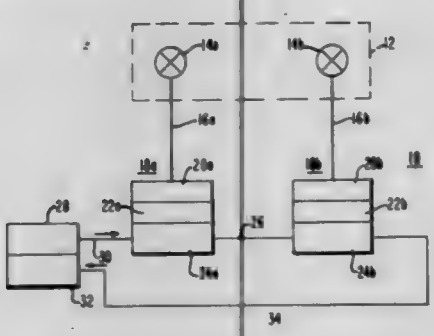
melt-processing said composition in screw-fed means for resin processing at a back pressure of from 0 to 100 psi.

4,402,903

CONTROL SYSTEM FOR COUPLING REDUNDANT LOGIC CHANNELS

Bruce N. Lenderking, Glen Burnie, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 4, 1981, Ser. No. 299,458
Int. Cl.³ G21C *7/00*
U.S. Cl. 376—245 2 Claims



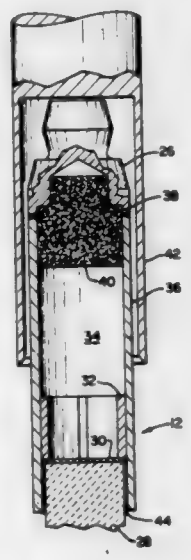
1. In a nuclear reactor electrical control system wherein redundant logic channels are maintained electrically isolated and physically separated with a serial fiber optic light transmissive link between the logic channels, and a plurality of independent reactor condition sensor means are electrically connected to respective electro-optic channel coupling means which are coupled to respective logic channels, which electro-optic channel coupling means includes an electro-optic channel coupling means includes an electro-optical modulatable medium the light transmission characteristic of which is variable in response to reactor condition electrical signals from the respective sensor means, and wherein fiber optic input and output cables connect the channel coupling means to a light input source and a light output detector means from which a reactor control signal is generated in response to predetermined reactor system conditions as indicated by the sensor means, and wherein when all of the plural sensor means generate equal signals of a value indicative of normal reactor operating condition the light transmission to the detector means is maximized, and wherein when the plural sensor means generate unequal signals which result is reduced light transmission to the detector means this is indicative of a possible out of tolerance reactor condition, and wherein when all of the plural sensor means generate an equal signal of a value which is indicative of an out of tolerance reactor condition the light transmission to the detector means is reduced to a value indicating a confirmed by plural sensor means out of tolerance reactor condition.

4,402,904

METHOD FOR DETERMINING CLAD INTEGRITY OF A NUCLEAR FUEL ROD

Andrew J. Anthony, Tariffville, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 18, 1980, Ser. No. 217,713
Int. Cl.³ G21C *17/06*
U.S. Cl. 376—251 2 Claims



1. A method for testing the clad integrity of a nuclear fuel rod comprising the steps of:

(a) fabricating a sealed nuclear fuel rod with a cap seal at one end, the cap having a cavity therein, said cavity having connected therewithin a wad of fibrous zirconium or zirconium ferrite;

(b) externally scanning the rod with an eddy current probe at the location of the wad to establish a probe output signal characteristic of the moisture-free rod;

(c) placing the rod in a water environment in which the external water pressure is greater than the internal pressure of the rod;

(d) externally scanning the rod with an eddy current probe at the location of the wad;

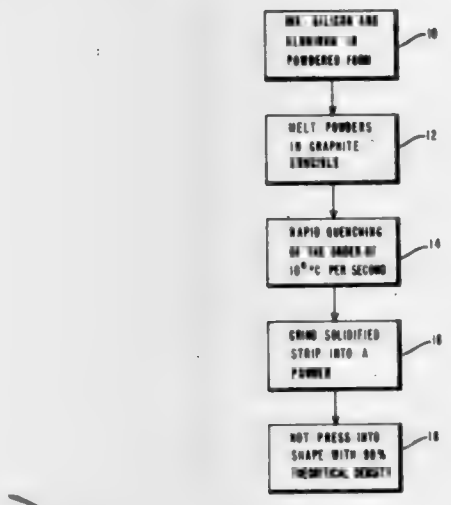
(e) comparing the probe output signals of steps (b) and (d) to determine whether the conductivity of the wad has changed, indicating the ingress of water through the clad.

4,402,905

PRODUCTION OF A POLYCRYSTALLINE SILICON ALUMINUM ALLOY BY A HOT PRESSING TECHNIQUE

Michael A. Burke, Pittsburgh, and Robert E. Gainer, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 5, 1982, Ser. No. 355,071
Int. Cl.³ B22F 1/00, 3/14, 9/04
U.S. Cl. 419—10 2 Claims



1. A process for forming a hot pressed member comprised of polysilicon and aluminum, consisting of: forming an admixture of powdered silicon and aluminum, said admixture consisting of from 2% to 8%, by weight aluminum, remainder silicon, melting said powder admixture, rapidly quenching said melt at a rate of the order of 10^6° C. per second, to form a solid, grinding said solid to a powder having fragment sizes up to 30 mesh and hot pressing said powder, at a temperature of from 1350° C. to 1450° C. and at a pressure of from 3750 psi to 4250 psi, into a predetermined shape having a density equal to 90% of theoritical density.

4,402,906

METALLIC MATERIAL PROOF AGAINST ATTACHMENT OF MARINE ORGANISMS

Shoji Ueda; Takashi Daikoku; Masato Zama; Shintaro Matsuo; Masshiro Saito, and Hidejiro Kinoshita, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1981, Ser. No. 272,526
Claims priority, application Japan, Jun. 16, 1980, 55-80117
Int. Cl.³ C22C 9/05
U.S. Cl. 420—493 1 Claim

1. A metallic alloy containing Mn in an amount of from 5 to 12.31 weight percent, at least one member selected from the group consisting of Sn in an amount of not more than 5 weight percent, Al in an amount of not more than 8.5 weight percent, Zn in an amount of not more than 7 weight percent, Fe in an amount of not more than 2.5 weight percent, and Ni in an amount of not more than 2.5 weight percent, and the balance to make up 100 weight percent of Cu plus normally entrained impurities and which is characterized by metallographically possessing an α-(face-centered cubic lattice) single-phase structure.

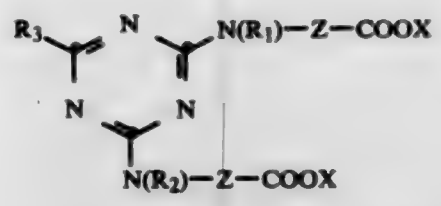
4,402,907

TRIAZINE CARBOXYLIC ACIDS AS CORROSION INHIBITORS FOR AQUEOUS SYSTEMS

David R. Clark, Sale, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 3, 1981, Ser. No. 289,583
Claims priority, application United Kingdom, Aug. 13, 1980, 8026311
Int. Cl.³ C23F 11/00
U.S. Cl. 422—7 9 Claims

1. A method of inhibiting the corrosion of a ferrous metal in contact with an aqueous system which comprises incorporating in the aqueous system an effective corrosion inhibiting amount of a compound having the formula:



I

wherein Z is a straight- or branched chain 1–11C alkylene group, a 2–3C alkenylene group, a 5–12C cycloalkylene group or an arylene group, having 6–10 ring carbon atoms, the said aliphatic or cycloaliphatic groups Z being optionally substituted by one or more OH, SH or 1–4C carboxyalkyl groups and/or interrupted by one or more O or S atoms or



or >N—R′ groups, wherein R′ is H, 1–4C alkyl or 1–4C carboxyalkyl, and said aromatic groups Z being optionally substituted by one or more 1–4C alkyl groups, OH, 1–4C alkoxy groups, SH, 1–4C alkylthio, carboxylic or sulphonic acid groups; X is H, an alkali metal, an alkaline earth metal, NH_4^+, or a 1–12C primary-, secondary- or tertiary ammonium residue optionally substituted with one or more OH groups; R_1 and R_2 are the same or different and each is H, 1–4C alkyl or a group —Z—COOX wherein Z and X have their previous significance or when Z is alkylene, or alkenylene, R_1 or R_2, with Z and the nitrogen atom to which they are attached, can form a 5- or 6-membered heterocyclic ring; R_3 is 1–12C alkyl, phenyl or a group of formula —NR_4R_5, —OR_6, or —SR_6 in which R_4 and R_5, independently, are H, 1–12C alkyl optionally substituted by an OH group, a cyclohexyl group, an aryl group having from 6 to 10 carbon atoms, optionally substituted by one or more 1–4C alkyl groups, OH, 1–4C alkoxy, thio, 1–4C alkylthio, carboxylic or sulphonic acid groups, a group —Z—COOX wherein Z and X have their previous significance or R_4, R_5 and the N atom to which they are attached can form a 5–7 membered heterocyclic ring optionally interrupted by other hetero atoms and R_6 is H, 1–12C alkyl group or an aryl group having from 6 to 10 ring carbon atoms.

4,402,908

METHOD FOR REDUCING HEAT LOSS FROM CONTAINED BODIES OF WATER USING POLYSILOXANE FOAMS

Chi-Long Lee, and James A. Rabe, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 25, 1982, Ser. No. 392,420
Int. Cl.³ B01J 19/16
U.S. Cl. 422—43 26 Claims

1. A method for reducing evaporation and heat loss from a contained body of water by (1) depositing on the surface thereof a substantially coherent layer containing an amount equal to at least 0.3 gram per square centimeter of water surface of a foamable and curable liquid composition comprising (a) a liquid organohydrogenpolysiloxane containing an average of at least 5 silicon-bonded hydrogen atoms per molecule and no more than one hydrogen atom bonded to any silicon atom, wherein the organic groups bonded to silicon are selected from the group consisting of alkyl containing from 1 to 6 carbon atoms, fluoroalkyl containing from 1 to 3 carbon atoms, cycloalkyl and phenyl, and (b) an amount of a catalyst sufficient to cause the reaction of said organohydrogenpolysiloxane with water to proceed at a rate that will yield a cured foam at the temperature of said body of water and (2) thereafter allowing said composition to form a cured foam on

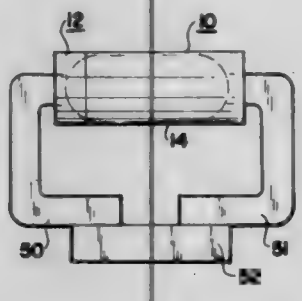
the surface of said body of water, wherein the minimum concentration of silicon-bonded hydrogen atoms in said composition is 0.7% based on the weight of said composition when the viscosity of said composition is 0.05 Pa·s or less, as measured at 25° C., and decreases from 0.7% to 0.35% as the viscosity of said composition increases from 0.05 to 5 Pa·s, and is 0.35% when the viscosity equals or exceeds 5 Pa·s, with the proviso that when the viscosity of said composition is less than about 0.15 Pa·s any polysiloxane component of said composition that constitutes more than 5% by weight of the composition and exhibits a viscosity lower than 0.05 Pa·s contains at least three silicon-bonded species per molecule, said species being selected from the group consisting of hydrogen, hydroxyl and vinyl.

4,402,909

VIALS FOR COMMINUTING AND BLENDING SAMPLES FOR SPECTROCHEMICAL ANALYSIS

Michael C. Solazzi, Eastchester, N.Y., assignor to Chemplex Industries, Inc., Eastchester, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,727
Int. Cl.³ G01N *35/00*; B01L *9/00*; B02C *17/04*; G01N *1/00*
U.S. Cl. 422—50 **1 Claim**



1. A sample vial for use in comminuting and blending material samples for preparing the same for spectrochemical analysis, comprising in combination:

(a) a micronizing mill having a right and left jaw said left jaw having a depression, with said right jaw having a depression which jaws undergo oscillatory motion due to vibration of said jaws by said mill,

(b) a vial body section of a longitudinal tubular configuration of a given length having a closed recessed bottom end with the closed recessed end having an upstanding central projection for providing a keyed insertion for said circular depression of said left jaw, said body section having an opened top end with an inner flange surrounding said opened top end, with the internal hollow of said section having a concave semi-spherical bottom surface continuous with inner sidewalls to provide a continuously smooth uninterrupted hollow for said body section,

(c) a cover member section of a longitudinal tubular configuration of a smaller length than said given length having a closed recessed top with said top having a raised circular projection with extending flanges differentiating said top from said top of said body section and adapted for being accommodated by said depression of said right jaw of said mill, with the inner surface of the hollow of said cover member having a concave semi-spherical surface of the same shape and dimensions as said bottom surface of said vial body, said cover member having an inner peripheral flange for insertion into the opened top end of said vial body section to provide a sealed friction fit closure while forming a continuously smooth uninterrupted inner hollow surface with said vial body section and said cover member when emplaced thereon with both semi-spherical surfaces of said vial body section and said cover member section forming top and bottom surfaces for said internal hollow with the major outer surface of said cover member section and said vial body section being a continuously smooth uninterrupted surface,

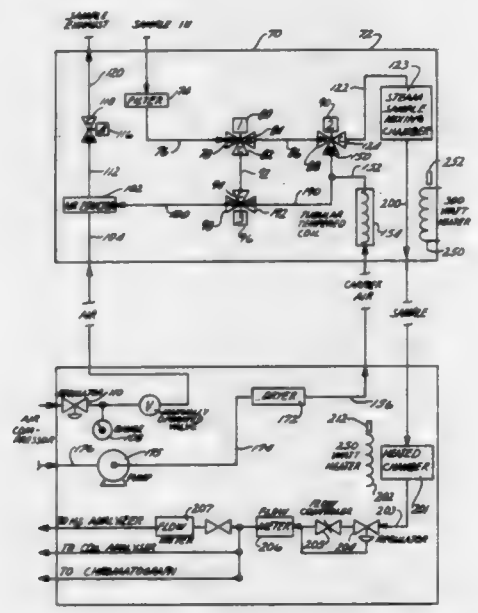
a pestle contained in said internal hollow and caused to traverse a semi-elliptical path as determined by said shape of said internal hollow and according to the oscillatory motion of said mill, with said pestle traversing said path between said top and bottom semi-spherical surfaces of said vial body and cover member sections.

4,402,910

GAS SAMPLING SYSTEM

Robert F. Smith, Long Beach, and Dwight E. Walters, Cobb, both of Calif., assignors to Exlog Smith, Sacramento, Calif.

Division of Ser. No. 273,951, Jun. 15, 1981, Pat. No. 4,355,997, which is a continuation-in-part of Ser. No. 80,684, Oct. 1, 1979, abandoned. This application Jul. 1, 1982, Ser. No. 393,886
Int. Cl.³ G01N *33/24*, *33/18*
U.S. Cl. 422—83 **7 Claims**



1. Apparatus for continuously analyzing the level of a first gas in a gaseous stream of water vapor and the first gas, the apparatus comprising:

a thermally-insulated housing;

means for maintaining the temperature in the housing above the dew point of the gaseous stream;

a sampling conduit in the housing having a fixed predetermined volume;

means for flowing the gaseous stream through the sampling circuit;

a gas analyzer for detecting the presence of the first gas, the analyzer having an inlet and an outlet;

a transport conduit in the housing, the transport conduit having an inlet and an outlet;

means for flowing a second gas through the transport conduit from its inlet to its outlet, said second gas being substantially free of waper vapor and having a dew point below that of said gaseous stream,

means connecting the transport conduit outlet to the inlet of the gas analyzer; and

means for periodically transferring the fixed volume of the gaseous stream in the sampling conduit into the second gas as it flows through the transport conduit.

4,402,911

APPARATUS AND METHOD FOR STORING GAS SAMPLES

John P. Walters, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 24, 1981, Ser. No. 286,311
Int. Cl.³ B01L *3/00*
U.S. Cl. 422—102 **4 Claims**

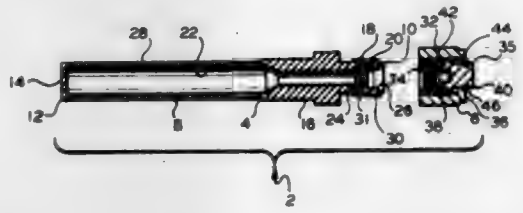
1. Apparatus comprising:

(a) a one piece tubular member having a closed end, an open end, an interior surface and an exterior surface, wherein the tubular member has a longitudinal axis and a generally annular cross section in a plane normal to the longitudinal

axis so that it defines a longitudinal passageway extending from the closed end to the open end, the interior surface of the tubular member having a generally annular shoulder facing the open end and positioned near the open end, a generally frustoconical surface diverging toward the open end positioned between the shoulder and the open end, the exterior surface of the tubular member being provided with threads adjacent its open end;

(b) a resiliently pierceable septum positioned against the annular shoulder and forming a partition across the interior surface of the tubular member;

(c) means for maintaining said pierceable septum in position;



(d) a drawdown nut threadably connected to the open end of the tubular member, said drawdown nut having a flange at least partially across its interior surface defining a generally circular opening;

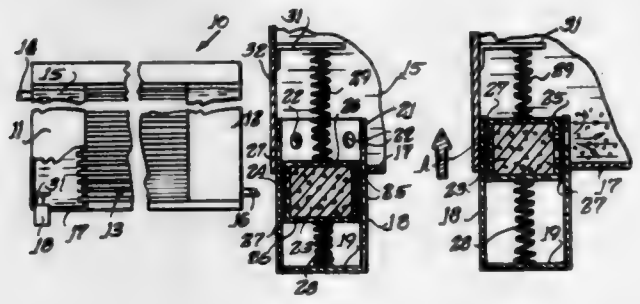
(e) a plug having a generally circular cross section, a first end and a second end and an exterior surface which defines a flange and a frustoconical surface which tapers toward the first end of the plug and is positioned against the frustoconical surface of the tubular member to seal the inside of the tubular member from the outside, the flange facing the second end of the plug and positioned against the flange of the drawdown nut.

4,402,912

DEVICE TO AUTOMATICALLY ADD A CONTROLLED AMOUNT OF CORROSION INHIBITOR WITH A CHANGE IN SPRING LOADING

Robert H. Krueger, Palatine, and John L. Zambrow, Lincolnshire, both of Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 23, 1981, Ser. No. 333,967
Int. Cl.³ G05D *3/00*; B01J *4/02*; C23F *11/08*
U.S. Cl. 422—107 **15 Claims**



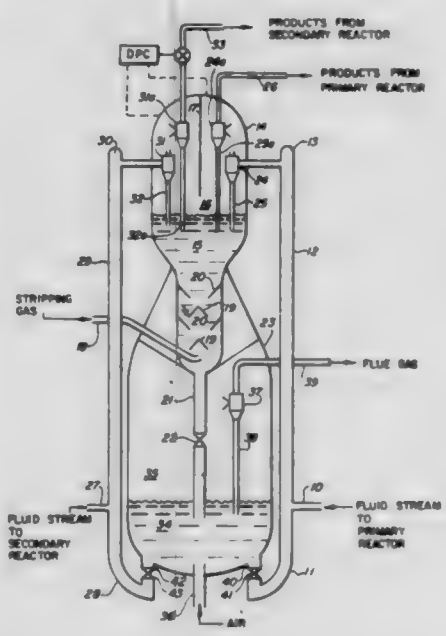
1. A device for the automatic addition of a chemical corrosion inhibiting additive to a solution requiring treatment, comprising a tank or reservoir for a solution circulating through a fluid system, a container positioned in a wall of the tank with an open end opening into the tank wall, a package movably mounted in the container and containing solid chemical corrosion inhibiting additive, said package being in sliding sealing contact with said container, an abutment in said tank above the open container end, a first spring within said container engaging the lower end of said additive package, a second spring located between and engaging the upper end of said package and said abutment within said solution, said second spring being constructed of a material which is corridible by a corrosive solution, such that said package remains out of contact with the solution until the inhibitor level is insufficient to protect said second spring against corrosion, at which time the second spring decreases in force due to corrosion thereof so that the force of the first spring overcomes the second spring to raise the package and additive into contact with said solution for dissolution thereof.

4,402,913

APPARATUS FOR THE FLUIDIZED CATALYTIC CRACKING OF HYDROCARBON FEEDSTOCKS

Claude O. McKinney, Munster, Ind., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 30, 1981, Ser. No. 306,961
Int. Cl.³ F27B *15/08*
U.S. Cl. 422—110 **5 Claims**



1. An apparatus for the fluidized catalytic cracking of hydrocarbon feedstocks, the apparatus comprising:

(a) one disengaging vessel having a dense phase and a dilute phase of cracking catalyst, the vessel further having means for the introduction of a stripping gas in its lower portion;

(b) one spent catalyst regenerator having means for the introduction of air in its lower portion;

(c) a primary riser reactor having means as its upstream end for the introduction of the catalyst and a fluid stream, the riser reactor further having a downstream end communicating with the interior of the vessel;

(d) a primary cyclone separation system for separating the fluid stream from the catalyst, the system located within the vessel and having; (i) an inlet; (ii) an outlet communicating with the dense phase for discharging the catalyst; and (iii) a product outlet line connected to vent the fluid stream outside the vessel;

(e) a secondary riser reactor having means at its upstream end for the introduction of the catalyst and a fluid stream, the riser reactor further having a downstream end communicating with the interior of the vessel;

(f) a secondary cyclone separation system for separating the fluid stream from the catalyst, the system located within the vessel and having: (i) an inlet; (ii) an outlet communicating with the dense phase for discharging the catalyst; and (iii) a product outlet line connected to vent the fluid stream outside the vessel;

(g) a partition extending downwardly from the top of the disengaging vessel occupying from about 60 to 98 percent of the vertical cross-sectional area of the dilute phase and from about 0 to 95 percent of the vertical cross-sectional area of the dense phase, the partition being so positioned as to separate the dilute phase into two regions, the first region containing the downstream end of the primary riser reactor and the primary cyclone separation system, the second region containing the downstream end of the

secondary riser reactor and the secondary cyclone separation system;

(h) a control system for controlling the relative volume of flow from each of the two dilute phase regions; and

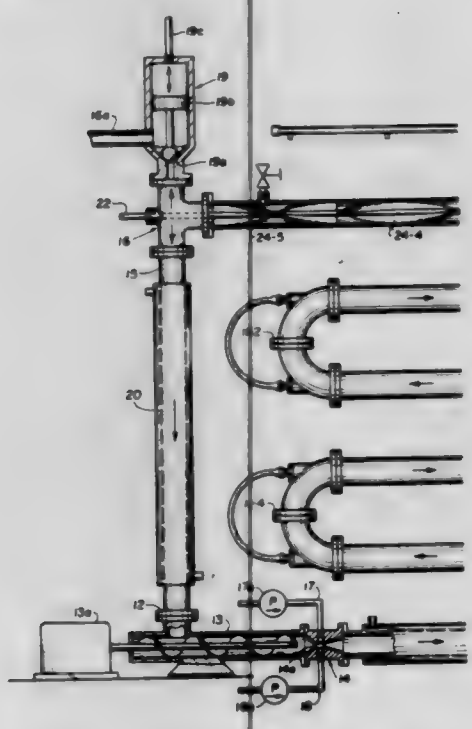
(i) means for transmitting pressure signals from said two regions to said control system.

4,402,914

APPARATUS FOR CONTINUOUS PRODUCTION OF EMULSIONS

Paul S. Eckhoff, Oyster Bay Cove, N.Y.

Filed Jul. 10, 1981, Ser. No. 282,252
Int. Cl.³ B01J *14/00, 19/24*
U.S. Cl. 422—132 **2 Claims**



1. A temperature controlled continuous throughput reactor for polymerizing monomers in an aqueous mixture comprising an elongated material conveying conduit for exothermal reactions connected in an endless loop, including a plurality of straight sections respectively joined head to tail by curved detachable end sections, raw material inlet means and polymer output means at spaced points in the loop including variable volume pressure sensitive discharge control means to vary the polymer output, a coolant line passing internally throughout at least a substantial portion of the conduit, vanes secured to the outside of the cooling line within the conduit to thermally couple the coolant medium to the material within the conduit, said vanes being helically disposed and periodically reversed along the length of the conduit to induce rotation of the mixture flowing in the conduit, input feed and recirculating pump means in the loop, a shunt line connecting a section of the conduit which is remote from the inlet means back to a point near the input means and means operable independently of the coolant line to impart supplemental heat to the reactor.

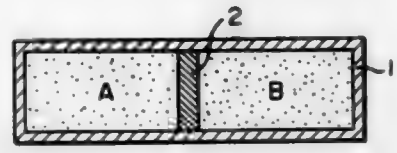
4,402,915

METAL HYDRIDE REACTOR

Tomoyoshi Nishizaki, Suita; Kanzi Oguma, Higashimurayama; Katsuyoshi Sakagami, Osaka, and Ken Yoshida, Ibaragi, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 30, 1981, Ser. No. 259,051
Int. Cl.³ F28D *7/00*
U.S. Cl. 422—202 **27 Claims**

14. A metal hydride reactor for heating and/or cooling comprising a sealed chamber wall surrounding a sealed chamber; a partitioning wall dividing said sealed chamber into two compartments, said partitioning wall being made of a material permeable to hydrogen gas and impermeable to metal hydrides, said two compartments containing different metal hydrides; and means for effecting temperature changes in said



two compartments such that the temperatures of said two compartments differ from each other.

4,402,916

DILUTION APPARATUS AND METHOD

Wayne E. Luetzelschwab, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Jun. 30, 1981, Ser. No. 279,027
Int. Cl.³ B01D *12/00*
U.S. Cl. 422—256 **6 Claims**

1. Apparatus for diluting polymer solutions having a gel-like consistency to provide a polymer solution having a substantially non-gel-like consistency while at the same time minimizing polymer degradation as the polymer solution is undergoing a physical change from a gel-like consistency to a substantially non-gel-like consistency, comprising: an elongated chamber having an inlet for introducing a polymer solution having a gel-like consistency into the chamber and an outlet for removing the polymer solution in a substantially non-gel-like form from the chamber; polymer solution distributor means within the chamber at the inlet thereof for initially dispersing and increasing the surface area of the gel-like polymer solution as it is introduced into the chamber; conduit means at the inlet of the chamber for introducing a fluid diluent to be absorbed by the gel-like polymer solution; at least three polymer solution dispersing stations positioned in longitudinally spaced relation to one another along the length of the chamber, each of the stations in the chamber including at least two perforated members, each member of a station having a plurality of small openings of substantially the same size therethrough, the openings in the perforated members of the station adjacent the inlet of the chamber being larger than the openings in the perforated members of the other stations in the chamber; flow control elements positioned in the chamber between each of the polymer solution dispersing stations, said flow control elements acting to substantially eliminate shear forces which may tend to degrade the polymer comprising the polymer solution, the perforated members of each station being arranged with respect to each other and with respect to the perforated members of each of the other stations and with respect to the flow control elements to provide an uninterrupted, continuous, non-turbulent flow of the polymer solution from one station to the next station, the size of the perforations in the perforated members at each station being such that the surface area of the gel-like polymer solution exposed to the fluid diluent will be progressively increased at each successive station to enable larger volumes of the fluid diluent to be absorbed by the gel-like polymer solution until the polymer solution is in a substantially non-gel like form when it exits from the chamber and the polymer will have undergone essentially no degradation.

4,402,917

EXTRACTION OF URANIUM FROM PHOSPHORIC ACID USING SUPPORTED EXTRACTANTS

Theodore Largman, Morristown, and Stylianos Sifniades, Madison, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Sep. 5, 1980, Ser. No. 184,589
Int. Cl.³ C01G *43/00*
U.S. Cl. 423—7 **5 Claims**

1. A process which comprises contacting aqueous phosphoric acid of between about 5 and about 8 molar concentra-

tion and containing 1 to 500 mg/L uranium with a polyacrylate macroreticular resin resistant to phosphoric acid and of high surface area on which is supported an organophosphorus extractant selected from the group consisting of mono and dialkylphenyl esters of phosphoric acid;

uranium in the aqueous phosphoric acid being predominantly in tetravalent form and any iron in the aqueous phosphoric acid being substantially all in the divalent form.

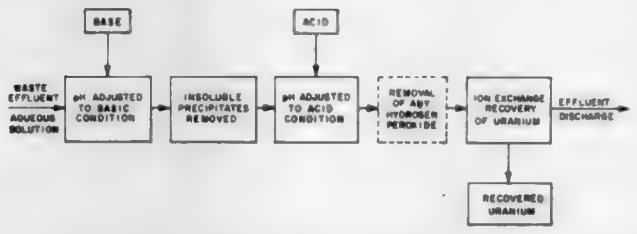
4. The process of claim 1 further comprising stripping absorbed uranium from the polymeric material with a liquid containing an oxidant.

4,402,918

RECLAMATION PROCESS FOR WATER-BORNE URANIUM

Henry H. Elliott, Pleasanton, Calif., assignor to General Electric Company, San Jose, Calif.

Filed Dec. 22, 1980, Ser. No. 219,376
Int. Cl.³ C01G *43/00*
U.S. Cl. 423—7 **28 Claims**



26. A process for treating an aqueous solution including ammonium nitrate, fluoride compounds and uranium compounds, and recovering uranium therefrom, consisting essentially of the steps of:

(a) adjusting the pH of the aqueous solution with its contents to a basic condition of higher than about 8 by the addition thereto of calcium hydroxide to thereby precipitate out fluorides as insoluble calcium fluoride and any iron as an insoluble hydroxide, and removing from the solution insolubles including the precipitated calcium fluoride and any hydroxide of iron;

(b) acidifying the basic solution with its contents of remaining solubles to a pH of about 5 to about 4 with nitric acid to thereby convert the uranium to uranyl nitrate;

(c) contacting the acidified solution and its contents including the uranyl nitrate with a chelating ion exchange material having at least one amidoxime group thereon and charged with ammonia cations, and thereby removing from the acidified soluton and retaining on said ion exchange material the uranyl ions from the uranyl nitrate; and

(d) recovering uranyl ions from the ion exchange material by contacting said material with nitric acid.

4,402,919

PROCESS FOR THE REGENERATION OF MINERAL ACIDS USED TO SOLUBILIZE PHOSPHATE ORES

Dale Denham, Boulder, and Roland Schmidt, Wheat Ridge, both of Colo., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Mar. 19, 1981, Ser. No. 245,386
Int. Cl.³ C01G *43/00*; C01B *25/16, 17/72*; B01D *11/00*
U.S. Cl. 423—8 **18 Claims**

1. A process for the regeneration of mineral acid used to solubilize phosphate ore comprising:

contacting an ore comprising aluminum, phosphorus and other values including uranium with a leach solution comprising a mineral acid selected from the group consisting of phosphoric acid and sulfuric acid to solubilize at least a portion thereof and form a solution of spent mineral acid and solubilized values in association with any non-solubilized values, said solubilized values including aluminum, phosphorus and uranium;

introducing said solution of spent mineral acid and solubilized values into a reaction zone; and

heating said solution to said reaction zone to a temperature in excess of 100° C. while maintaining the pressure level at least equal to the autogenic pressure of said solution to cause a substantially uranium-free precipitate of crystalline aluminum phosphate to form and to regenerate at least a portion of said spent mineral acid to form regenerated leach solution containing solubilized uranium values.

4,402,920

HUMIC FLOTATION OF WET PROCESS PHOSPHORIC ACID AS A PRETREATMENT STEP IN THE RECOVERY OF URANIUM

Jose G. Lopez, and Victor J. Barnhart, both of Lakeland, Fla., assignors to Wyoming Mineral Corporation, Lakewood, Colo.

Filed Mar. 27, 1981, Ser. No. 248,125
Int. Cl.³ B01D *11/00*; C01G *56/00, 57/00*; C01B *25/16*
U.S. Cl. 423—8 **8 Claims**

1. A method of purifying a wet process phosphoric acid feed solution containing uranium values and also containing humic acid impurities, as a pretreatment in recovering uranium from wet process phosphoric acid, comprising the steps of:

(1) contacting humic acid containing phosphoric acid feed solution with a separate stream of a gas in a volume of from about 1 cubic foot to about 100 cubic feet of gas per 1,000 gallons of acidic solution at a pressure effective to dissolve and disperse the gas in the acidic solution, in association with addition of additives consisting of anionic, hydrolyzed polyacrylamide having a molecular weight of over about 6 million, as a flocculating agent, and liquid organic wetting agent for the humic impurities, in a volume ratio of acidic solution having gas dissolved and dispersed therethrough: flocculating agent:wetting agent, of 1,000:0.002 to 0.10:0.0 to 1.0, wherein humic acid impurities are flocculated, to form a pressurized mixture of phosphoric acid solution containing dissolved dispersed gas, and flocculated hydrophobic masses; and then

(2) feeding the pressurized mixture into and dissolved in the acid forms gas bubbles which are released at or drawn to the flocculated masses, to provide a bottom, purified, aqueous acid phase containing uranium values and a top, gas containing, flocculated humic acid impurities froth phase; and then

(3) removing the humic acid froth phase, to provide a purified acidic phase containing uranium values; and then

(4) feeding the purified acidic phase into a clarifier means, and then into an extractor means of a uranium recovery process.

4,402,921

AMMONIUM CARBONATE AND/OR BICARBONATE PLUS ALKALINE CHLORATE OXIDANT FOR RECOVERY OF URANIUM VALUES

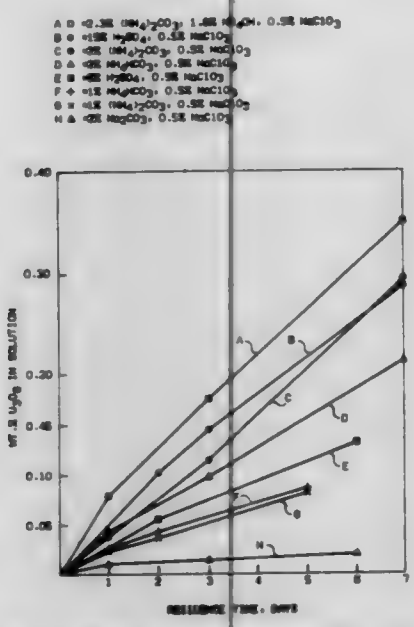
Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 20, 1980, Ser. No. 208,716
Int. Cl.³ C22B *60/02*
U.S. Cl. 423—17 **14 Claims**

1. A method for extracting uranium values from a solid material containing uranium in valence states lower than its hexavalent state comprising:

contacting said solid material containing uranium with an aqueous alkaline leach solution selected from the group consisting of solutions of ammonium carbonate, ammo-

nium bicarbonate and mixtures thereof and an alkaline chlorate in an amount sufficient to oxidize at least a por-



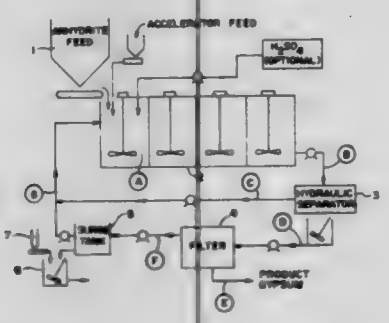
tion of said uranium in valence states lower than its hexavalent state to its hexavalent state.

4,402,922

PROCESS FOR RAPID CONVERSION OF FLUOROANHYDRITE TO GYPSUM

John C. Gaynor, Des Plaines, Ill., and Jay W. Palmer, Temple Terrace, Fla., assignors to United States Gypsum Company, Chicago, Ill.

Filed Dec. 14, 1981, Ser. No. 330,611
The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.
Int. Cl.[3] C01F *5/14, 11/46;* C04B *11/00*
U.S. Cl. 423—164 11 Claims



FLOW DIAGRAM CONVERSION OF ANHYDRITE TO GYPSUM

1. A process for rapid conversion of fluoroanhydrite to purified gypsum product comprising the steps of:

forming an aqueous slurry of small gypsum particles having a particle size of about 5–60 micrometers and about 0.5–20 weight % soluble sulfate;

adding to the aqueous slurry fluoroanhydrite in an amount not more than the amount of the small gypsum particles in the slurry to form a slurry of about 20–60 weight % suspended solids;

hydrating at least a portion but less than all of the anhydrite to coarse purified gypsum particles of reduced fluoroaluminum impurities;

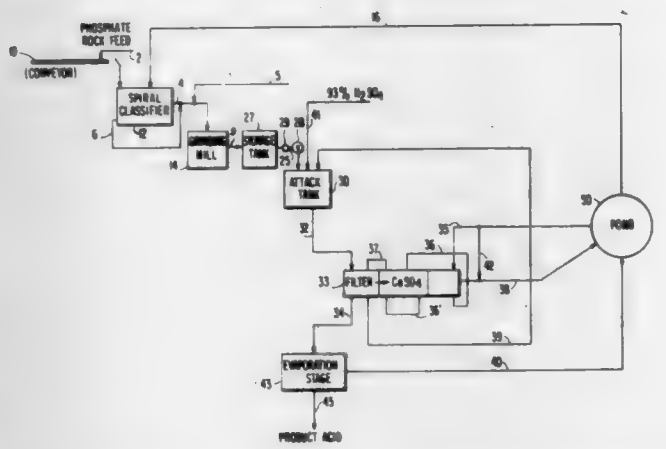
and separating the coarse purified gypsum particles having an average particle size larger than the average particle size of the small gypsum particles from the slurry.

4,402,923

PROCESS FOR MAKING PHOSPHORIC ACID

Warren H. Lang, Bartow, Fla., assignor to Davy McKee Corporation, Lakeland, Fla.

Continuation-in-part of Ser. No. 198,352, Oct. 20, 1980, abandoned, which is a continuation-in-part of Ser. No. 72,677, Sep. 5, 1979, abandoned. This application Sep. 2, 1981, Ser. No. 298,653
Int. Cl.[3] C01B *25/16*
U.S. Cl. 423—166 60 Claims



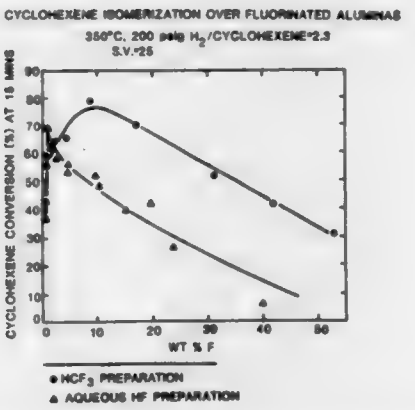
1. A method of manufacturing wet process phosphoric acid from phosphate rock comprising the steps of (i) contacting phosphate rock containing base-forming constituents with mineral acid waste water to at least partially neutralize said acid waste water; (ii) feeding the at least partially neutralized mineral acid waste water to a grinder; (iii) grinding a mixture including phosphate rock and the at least partially neutralized mineral acid waste water in the grinder to form a slurry of ground rock; (iv) reacting ground rock of said slurry with sulfuric acid and wash water effluent of step (vi) to yield a product slurry of crystalline hydrated calcium sulfate and phosphoric acid; (v) separating crystalline hydrated calcium sulfate and phosphoric acid from the product slurry to provide phosphoric acid and crystalline hydrated calcium sulfate; and (vi) washing the crystalline hydrated calcium sulfate with an aqueous medium to obtain a wash water effluent that is passed to step (iv).

4,402,924

PREPARATION OF HIGH SURFACE AREA METAL FLUORIDES AND METAL OXYFLUORIDES, ESPECIALLY ALUMINUM FLUORIDE EXTRUDATES

Gary B. McVicker, Westfield, and Joseph J. Eggert, Rahway, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Division of Ser. No. 869,776, Jan. 16, 1978, Pat. No. 4,275,046. This application Nov. 3, 1980, Ser. No. 204,246
Int. Cl.[3] C01G *43/06*
U.S. Cl. 423—258 16 Claims



1. A process for the preparation of metal oxyfluorides of the formula:

$MO_{z-y}F_y$

wherein M is a metal selected from the group consisting of sodium, potassium, lithium, cesium, magnesium, calcium, barium, strontium, tin, antimony, bismuth, titanium, zirconium, vanadium, chromium, manganese, iron, cobalt, rhodium, mercury, nickel, copper, silver, zinc, cadmium, lead, uranium, europium, indium, lutetium, neodymium, thallium, silicon, niobium, hafnium, tantalum, molybdenum, rhenium, tungsten, osmium, iridium, lanthanum, technetium and ruthenium and mixtures thereof, z is a number satisfying the valence requirements of the metal and y is a number satisfying the valence requirements of the metal, which comprises reacting a metal oxide selected from the group consisting of the oxides of the metals recited above with a fluorocarbon selected from the group consisting of $CH_{4-Q}F_Q$ wherein Q is 1 to 3 and partially and totally fluoridated C_2–C_6 alkanes, alkenes, alkynes and C_5–C_6 cyclic alkenes wherein the metal oxide and the fluorocarbon are contacted at a temperature of from about 300° to about 800° C. at a fluorocarbon partial pressure of from about 0.001 to about 1 atmosphere for a time sufficient to effect the desired degree of conversion of the metal oxide into the metal oxyfluoride.

4,402,925

POROUS FREE STANDING PYROLYTIC BORON NITRIDE ARTICLES

Julius S. Shinko, and Thomas C. Keyes, both of Bay Village, Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 28, 1981, Ser. No. 306,385
Int. Cl.³ C01B *21/06*
U.S. Cl. 423—290 22 Claims



1. A method of making an open-pored article of pyrolytic boron nitride (PBN) article which comprises:

(a) forming an open-pored porous substrate in the shape desired for the PBN article,

(b) placing said substrate in a reaction chamber and maintaining said reaction chamber at a reaction temperature of from 1700° to 2000° C. and at a reduced reaction pressure between about 0.2 and 0.5 Torr while introducing into said reaction chamber ammonia vapor diluted with a non-oxidizing gas and a gaseous boron halide diluted with a non-oxidizing gas,

(c) maintaining said reaction chamber at said reaction temperature and reaction pressure while continuing to admit said diluted ammonia vapor and diluted gaseous boron halide and while venting spent diluent gas to maintain said reaction pressure until the desired amount of PBN has been deposited on and in said substrate,

(d) allowing said reaction chamber to cool to ambient temperature while maintaining a non-oxidizing atmosphere in said chamber, and a pressure between about 0.01 to 0.1 Torr, and

(e) removing the PBN coating from a portion of the surface of said substrate to expose said substrate and then removing said substrate to leave the desired porous article of PBN.

4,402,926

PROCESS FOR PRODUCING CHLORINATED TRISODIUM PHOSPHATE

Chung Y. Shen, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Sep. 28, 1981, Ser. No. 306,104
Int. Cl.³ C01B *25/16*
U.S. Cl. 423—300 5 Claims

1. A process for producing chlorinated trisodium phosphate, comprising:

(a) producing a hot sodium phosphate liquor having an overall Na/P mole ratio from about 2 to about 3 at a temperature sufficient to produce a complete solution of the components;

(b) adding sodium hypochlorite solution;

(c) mixing the components to form a chlorinated trisodium phosphate melt; and

(d) cooling the chlorinated trisodium phosphate melt by evaporative cooling under reduced pressure with continued mixing without allowing the water content to be reduced to less than 51 percent by weight which results in formation of crystalline chlorinated trisodium phosphate.

4,402,927

SILICA AEROGEL

Guy von Dardel, Gyllenkroks Alle 19, S-222 24 Lund; Sten A. Henning, Herdevägen 2, and Leif O. G. Svensson, Dekanvägen 7, both of S-240 10 Dalby, all of Sweden

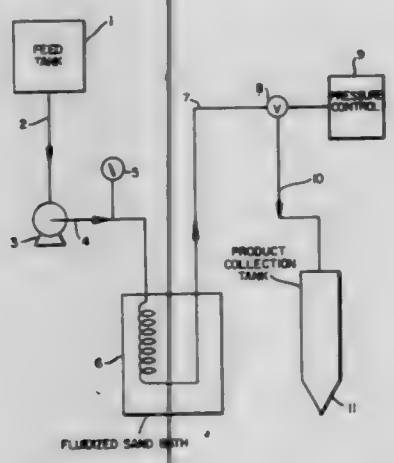
Continuation of Ser. No. 142,812, Apr. 22, 1980, Pat. No. 4,327,065. This application Jul. 6, 1981, Ser. No. 280,537
The portion of the term of this patent subsequent to Apr. 27, 1999, has been disclaimed.
Int. Cl.³ C01B *33/158*
U.S. Cl. 423—335 1 Claim

1. A product comprising silica aerogel in the form of a moulded, substantially crack-free block with a volume of at least 1 dm^3, a thickness of at least 1 cm and having pores of approximately 100 A in size, prepared by a method comprising hydrolyzing a silicic acid ester dissolved in an alcohol with water added thereto, in a mould adapted to the desired dimensions, to form a silica alcogel, said hydrolysis being carried out at or below room temperature, washing and aging the alcogel for a period of 2 to 20 days, said washing being performed with an alcohol to remove water from said alcogel, then converting said alcogel to an aerogel by placing it in a closed pressure vessel with alcohol in an amount to at least reach the critical temperature and pressure thereof, subjecting the alcogel-alcohol mixture to a treatment consisting of heating the mixture above the critical point of the alcohol at a mean rate not exceeding 25° C./hr., releasing the alcohol vapor from said vessel to reduce the pressure isothermally at a mean rate not exceeding 10 bars/hr. to atmospheric pressure and then lowering the temperature in said vessel at a mean rate not exceeding 75° C./hr. to ambient temperature, wherein the duration of the treatment in said pressure vessel is at least 24 hours, said silica aerogel block exhibiting a higher transparency than a corresponding block prepared according to said method absent said washing and aging for 2 to 20 days.

4,402,928
CARBON FIBER PRODUCTION USING HIGH PRESSURE TREATMENT OF A PRECURSOR MATERIAL

Irwin C. Lewis, Strongsville, and Arthur W. Moore, North Olmstead, both of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 27, 1981, Ser. No. 248,269
Int. Cl.[3] D01F *9/14;* C10C *3/00*
U.S. Cl. 423—447.1 31 Claims



1. A process for producing carbon fiber, comprising the steps of:

selecting a precursor material from the group consisting of ethylene tars, ethylene tar distillates, gas oils derived from petroleum refining, gas oils derived from petroleum coking, and aromatic hydrocarbons;

subjecting the material to a thermal-pressure treatment as a batch treatment at a temperature from about 400° C. to about 475° C. and at a pressure from about 750 psig to about 1500 psig to obtain a precursor pitch, the soaking volume factor of said treatment being at least 0.4.

solvent extracting the precursor pitch until there is obtained an insoluble portion having a molecular weight distribution wherein at least about 75% of the molecules have a molecular weight in the range of from about 600 to about 1300, less than about 10% of the molecules have a molecular weight less than about 600, and less than about 15% of the molecules have a molecular weight of more than about 1300;

whereby the insoluble portion is a mesophase pitch containing at least 70% by weight mesophase;

spinning the mesophase pitch into at least one pitch fiber; and converting the pitch fiber into the carbon fiber.

4,402,929
METHOD FOR PRODUCING A HIGH DPG CARBON BLACK

Harold R. Hunt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 118,720, Feb. 5, 1980, Pat. No. 4,320,090, which is a continuation-in-part of Ser. No. 853,716, Nov. 21, 1977, abandoned. This application Dec. 30, 1981, Ser. No. 335,784
Int. Cl.[3] C01B *31/02;* C09C *1/48*
U.S. Cl. 423—456 5 Claims

1. A method for producing carbon black comprising:

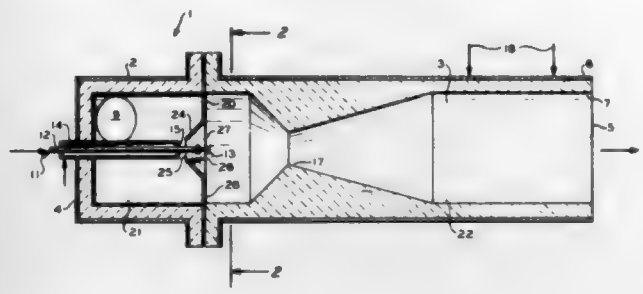
(a) introducing a combustible mixture of gases into a carbon black reactor in a generally tangential direction relative to a flow passage in the reactor;

(b) flowing the combustible mixture of gases along the flow passage to a partition positioned at least partially across the flow passage;

(c) dividing the combustible mixture of gases into a first stream and at least one second stream;

(d) flowing the first stream along a first flow path extending from an upstream side to a downstream side of the partition, said first flow path diverging in a downstream direction;

(e) flowing the at least one second stream along an at least one second flow path extending from the upstream side to the downstrean side of the partition, said second flow path positioned between the first flow path and an interior surface of the carbon black reactor;



(f) combusting the combustible mixture of gases downstream of the partition to form combustion gases; and

(g) introducing a carbonaceous feed into the combustion gases to form carbon black.

4,402,930
SULFUR RECOVERY PROCESS

Zaida Diaz, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 267,201, May 26, 1981. This application Mar. 1, 1982, Ser. No. 353,559
Int. Cl.[3] C01B *17/04;* B01D *53/34*
U.S. Cl. 423—573 G 39 Claims

1. A process for the removal of H_2S from a sour gaseous stream comprising:

(a) contacting the sour gaseous stream in a contacting zone with an aqueous reactant mixture at a temperature below the melting point of sulfur, the mixture comprising an effective amount of an oxidizing polyvalent metal chelate compound and less than 6 percent by weight, based on the weight of the aqueous reactant mixture, of a modifier selected from compounds having the formula $C_nH_{2n+1}OH$, wherein n is a number from 4 through 18, and mixtures thereof, and producing a sweet gas stream and an aqueous admixture containing crystalline sulfur and a reduced reactant;

(b) removing at least a portion of the crystalline sulfur from the aqueous mixture;

(c) regenerating the aqueous admixture in a regeneration zone with oxygen to produce an aqueous reaction mixture containing a regenerated reactant;

(d) returning aqueous reaction mixture from the regeneration zone to the contacting zone.

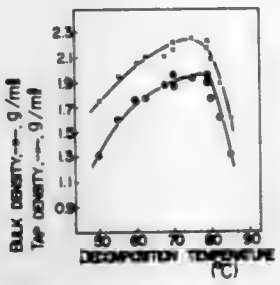
4,402,931
PROCESS FOR PRODUCING MANGANESE DIOXIDE

Isao Tanabe, 150, Higashihagiocho, Ohmuta-shi; Ryoichi Nagata, Ohmuta; Toru Watanabe, and Nobuaki Miyamoto, both of Arao, all of Japan, assignors to Isao Tanabe, Ohmuta and Mitsui Mining & Smelting Co., Ltd., Tokyo, both of, Japan

Continuation of Ser. No. 192,545, Sep. 30, 1980, abandoned. This application May 28, 1982, Ser. No. 383,332
Claims priority, application Japan, Oct. 4, 1979, 54-128408
Int. Cl.[3] C01G *45/00, 45/02;* C01B *31/24*
U.S. Cl. 423—605 6 Claims

1. A process for producing manganese dioxide characterized by heating and decomposing a solution of an ammonio complex of manganese (manganese.ammonium.carbamate) at a

temperature of 68° to 80° C., and then roasting the resulting manganese carbonate in air containing 15–85% of steam and



then in oxygen containing 15–85% of steam at a temperature of 275° to 375° C.

4,402,932

THERMAL DECOMPOSITION OF ALUMINUM CHLORIDE HEXAHYDRATE

Eugene Miller, Incline Village, Nev., and Gerald B. McSweeney, DuPont, Wash., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed May 7, 1982, Ser. No. 376,066
Int. Cl.³ C01F *7/30*
U.S. Cl. 423—625 **2 Claims**

1. A process for thermal decomposition of aluminum chloride hexahydrate crystals to alumina consisting of:

(1) treating the aluminum chloride hexahydrate in the form of a dense fluidized bed in a first decomposer at a temperature of about 200° to 400° C. for a period of about 20 to 40 minutes to decompose about 90 to 95 percent of the aluminum chloride hexahydrate to alumina, wherein the gases employed for fluidization of the aluminum chloride hexahydrate in said first decomposer after startup consist of steam and hydrogen chloride from the decomposition of the aluminum chloride hexahydrate in said first decomposer, and

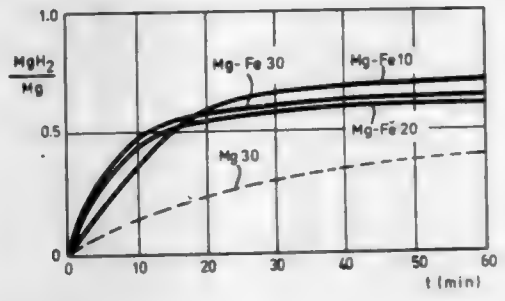
(2) treating the solid product resulting from step (1), in the form of a dense fluidized bed, in a second decomposer at a temperature of about 900° to 1100° C. for a period of about 5 to 10 minutes to essentially complete decomposition of the aluminum chloride hexahydrate to alumina and recovering said alumina from said fluidized bed.

4,402,933

METHOD OF STORING HYDROGEN

Olivier de Pous, Geneva, Switzerland, assignor to Batelle Memorial Institute, Carouge, Switzerland

Division of Ser. No. 92,657, Nov. 9, 1979, Pat. No. 4,368,143. This application Apr. 27, 1981, Ser. No. 257,402
Claims priority, application Switzerland, Nov. 14, 1978, 11673/78
Int. Cl.³ C01B *6/24*
U.S. Cl. 423—648 R **5 Claims**



1. A method of storing hydrogen which comprises the steps of:

(a) grinding contemporaneously and together magnesium powder and a powder of a separator agent present in an amount of 1 to 20% by volume of the magnesium powder to form an intimate mixture of the magnesium powder and the separator-agent powder, said separator agent powder being composed of at least one metal selected from the group which consists of manganese, iron, cobalt, nickel and copper and alloys thereof, or at least one oxide, carbide or nitride of magnesium, calcium, boron, aluminum, silicon, titanium, zirconium, vanadium, chromium, manganese or iron or a mixture thereof;

(b) contacting said mixture of said magnesium powder and said separator-agent powder with hydrogen at a temperature of substantially 300° to 400° C. at a superatmospheric pressure for a period sufficient to transform at least most of the magnesium to magnesium hydride;

(c) storing the magnesium hydride;

(d) thermally decomposing the stored magnesium hydride, thereby generating gaseous hydrogen; and

(e) repeating steps (b) through (d) for a plurality of hydrogen absorption and desorption cycles.

4,402,934

DIAGNOSTIC TECHNIQUE FOR RHEUMATOID ARTHRITIS

Marius C. Teodorescu, 10547 Essex, Westchester, Ill. 60153; John L. Skosey, 4932 S. Kimbark, Chicago, Ill. 60615, and Jin-Lai Chang, 1648 Gilberto Dr., Glendale Heights, Ill. 60137

Filed Oct. 30, 1980, Ser. No. 202,117
Int. Cl.³ G01N *33/48, 33/58;* C12N *5/02*
U.S. Cl. 424—1 **10 Claims**

1. A method for diagnosing rheumatoid arthritis and related diseases in a human patient, comprising the steps of:

(a) providing a lymphocyte population, comprising B-cells, suspended in a culture medium;

(b) adding to the B-cell suspension with mixing a portion of serum taken from said patient;

(c) cultivating in vitro the resulting mixture of serum and B-cell suspension; and

(d) determining the extent of polyclonal lymphocyte activation exhibited by the B-cells in said mixture.

4,402,935

MOISTURIZING NAIL POLISH COMPOSITION

Harry W. Gordon, Wantagh, and Herbert R. Farrell, Hempstead, both of N.Y., assignors to Del Laboratories, Inc., Farmingdale, N.Y.

Continuation of Ser. No. 254,731, Apr. 16, 1981. This application Apr. 19, 1982, Ser. No. 369,591
Int. Cl.³ A61K *7/04*
U.S. Cl. 424—61 **5 Claims**

1. An improved nail polish composition for application to human nails, the composition consisting essentially of a conventional nail polish composition containing:

Ingredient		Quantity by Weight in %'s of the conventional nail polish composition
Ethyl acetate	(solvent system)	36.7%
Isopropyl alcohol		24.2%
Butyl acetate		9.9%
Butyl alcohol		1.4%
Toluene		7.4%
Toluene sulfonamide/formaldehyde resin (hardener)		14.4%
Camphor	(plasticizers)	0.9%
Dibutyl phthalate		1.2%
Nitrocellulose (film former)		3.6%
to which is added an improvement containing:		
Water		6%
Urea		0.1%
Polyvinyl butyral resin		2.2%

4,402,936

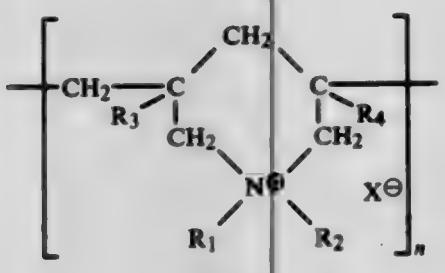
PRESHAMPOO-TYPE HAIR-TREATING COMPOSITION

Takeo Okumura, Sakura, and Hiroshi Ando, Funabashi, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 235,066
Claims priority, application Japan, Feb. 26, 1980, 55/23151
Int. Cl.³ A61K *7/06*; C08F *20/70*
U.S. Cl. 424—70 7 Claims

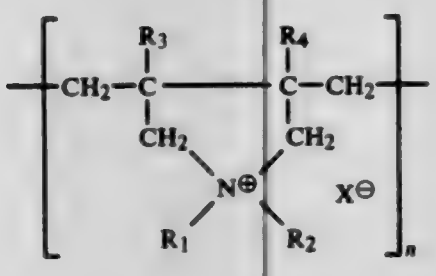
1. A preshampoo-type, hair-treating composition consisting essentially of from 0.1 to 5% by weight of a polymer selected from the group consisting of

1. polymers having the formulas



(1)

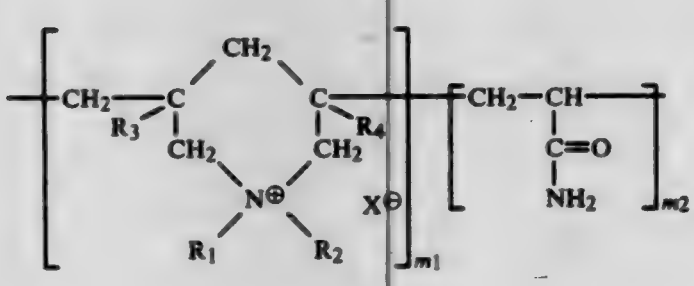
and



(2)

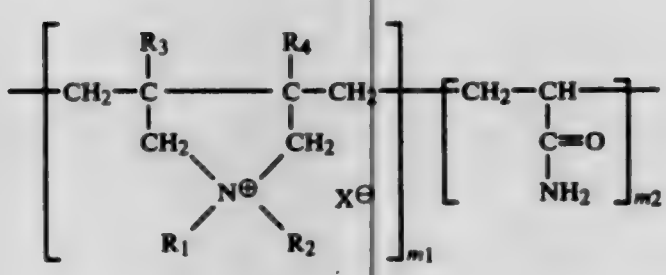
wherein R_1 and R_2, which are the same or different, are hydrogen or alkyl having 1 to 18 carbon atoms; R_3 and R_4, which are the same or different, are hydrogen, alkyl having 1 to 3 carbon atoms or phenyl, $X^{\ominus}$ is an anionic group, and n is a number such that the molecular weight of the polymer is from 10,000 to 1,000,000,

2. copolymers having the formulas



(3)

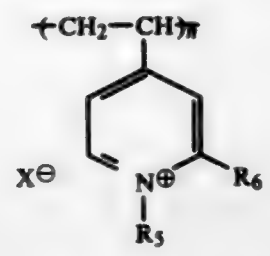
and



(4)

wherein R_1, R_2, R_3, R_4 and $X^{\ominus}$ have the same meanings as defined above and m_1 and m_2 are numbers such that the molecular weight of the polymer is from 10,000 to 1,000,000,

3. polymers having the formula



(5)

wherein R_5 and R_6, which are the same or different, are hydrogen, alkyl having 1 to 6 carbon atoms or phenyl, and n and $X^{\ominus}$ have the same meanings as defined above,

from 0.1 to 5% by weight of a peptide prepared by enzymatically decomposing hair protein, skin protein, collagen or gelatin, and then hydrolyzing the resulting relatively low-molecular-weight product, said peptide having a molecular weight of from 300 to 10,000, and the balance is essentially water, said composition being free of anionic and amphoteric surface active agents.

4,402,937

PREPARATION OF PVP-IODINE

Walter Denzinger, Speyer; Heinrich Hartmann, Limburgerhof, and Wolfgang Schwarz, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 19, 1980, Ser. No. 188,908
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942179
Int. Cl.³ A61K *31/79, 33/18*
U.S. Cl. 424—80 3 Claims

1. A process for the preparation of PVP-iodine having an iodine: iodide ratio of about 2:1, a partition coefficient of 180–250 and an iodine content of from about 5 to 20% by weight based on the weight of the solids which comprises: reacting PVP having a K value of from 10 to 35 with elementary iodine in the presence of formic acid, oxalic acid or an ammonium salt or amide of carbonic acid, formic acid or oxalic acid, said reaction being carried out in aqueous solution.

4,402,938

FOOD AND THE METHOD OF EXTRACTING THE SAME FROM COLOSTRUM AND MILK

Mary E. Collins, and Robert A. Collins, both of Waukon, Iowa, assignors to Impro Products, Inc., Waukon, Iowa

Continuation-in-part of Ser. No. 154,502, May 29, 1980, abandoned. This application Jun. 22, 1981, Ser. No. 276,230
Int. Cl.³ A61K *39/00*
U.S. Cl. 424—85 6 Claims

1. The method of producing a food product, comprising the steps of:

A. introducing pre-partum into the udder of an ungulate a specific antigen-like material selected from the group consisting of pollen, bacteria, virus, mold, allergens, blood from sick animals, sperm and toxins;

B. removing secretory fluid from the udder of the ungulate thus treated;

C. removing the fat and solids from said secretory fluid so that only whey remains;

D. and passing said whey through a filter having a pore size of about 0.2 microns to effect separation from said whey of large molecules to produce a purified whey a portion of which consists of a food factor resulting from the introduction of said antigen-like material and having a molecular weight on the order of 1200 or less.

4,402,939

VACCINATING GLYCOPEPTIDIC ANTIGENIC FRACTION WITH A VERY HIGH LEVEL OF IMMUNOGENICITY, ISOLATED FROM CULTURES OF PATHOGENIC GERMS, PROCESSES FOR ISOLATING SAID FRACTION AND VACCINES CONTAINING SAID FRACTION

Jean-Michel Fournier, Paris, France, assignor to Institut Pasteur, Paris, France

Filed Jun. 26, 1980, Ser. No. 163,076
Claims priority, application France, Jun. 29, 1979, 79 16851
Int. Cl.³ A61K *39/02, 37/02*
U.S. Cl. 424—92 17 Claims

1. A process for extracting and purifying a vaccinating antigenic fraction, comprising:

extracting a bacterial deposit one to several times, with very vigorous agitation, by a suitable buffer with a pH-value of close to 6, said bacteria being a pathogenic germ which neither secretes nor excretes toxins, and which contains a protective antigen defined by a line of precipitation centered on the antigen well, in immunodiffusion in gelose, when opposed to an immune-serum from an animal treated by a culture of the same pathogenic germ;

concentrating the supernatant obtained containing the crude surface constituents by ultra-filtration, collecting only the particles whose molecular weight is more than 10,000;

treating the ultrafiltrate produced with sodium deoxycholate (DOC) in a suitable buffer with a pH-value of close to 8;

precipitating the treated ultra-filtrate with absolute ethanol;

dissolving the precipitate produced with the same buffer with a pH-value of close to 8 with the addition of 2% of DOC;

dializing the obtained solution against the buffer Tris-HCl with a pH-value of 8; adsorbing on DEAE-cellulose;

eluting the antigen with the same buffer used with increasing molarity; and then

concentrating by ultra-filtration.

4,402,940

METHOD FOR TREATING BLOOD PLASMA EMPLOYING A HOLLOW FIBER MEMBRANE

Yukihiko Nose, Cleveland; Koji Kayashima, Mayfield; Akinori Sueoka, South Euclid, all of Ohio; Yoshihiro Asanuma, Sendai, Japan; Shigeru Shinagawa; James Smith, both of Cleveland, Ohio; Andrej Werynski, Warsaw, Poland, and Paul S. Malchesky, Painesville Township, Lake County, Ohio, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Sep. 17, 1982, Ser. No. 418,551
Claims priority, application Japan, Mar. 12, 1982, 57-39696
Int. Cl.³ A61K *35/14*
U.S. Cl. 424—101 8 Claims

1. A method for treating the blood plasma to selectively reduce the amount of a disease factor therein comprising fractionating the plasma with a hollow fiber membrane comprising a skin layer on at least one surface of said membrane and a porous layer inside said membrane with average pore size of micropores of said skin layer in the range of 50 to 450 A, that of micropores of the porous layer ranging from 500 to 15,000 Å, void volume of said membrane at a level of 50 to 85% and water permeability at a level of 80 $ml/m^2.hr.mmHg$ or higher, such that the amount of the disease factor in one of the fractions produced is decreased.

4,402,941

VETERINARY COMPOSITION FOR PREVENTING FELINE UROLOGICAL SYNDROME AND LITTER PRODUCT CONTAINING THE COMPOSITION

Marc Vaillancourt, 1408 11th Rang, St-Valerien, Quebec, Canada (J0H 2B0)

Filed Sep. 15, 1981, Ser. No. 302,685
Int. Cl.³ A61K *33/14, 33/00*
U.S. Cl. 424—153 16 Claims

1. A veterinary composition suitable for application to a substrate and for preventing feline urological syndrome in cats, comprising from 25 to 75% by weight of green plant powder, from 15 to 45% of a urine acidifying agent, from 9.5 to 28.5% by weight of a soft diuretic agent and from 0.5 to 1.5% of a calcium chelating agent, based on the total weight of the composition.

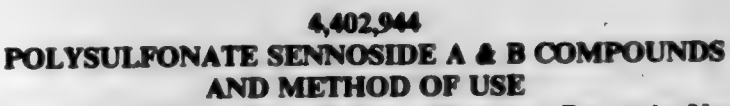
4,402,942

OXYTOCIN DERIVATIVES

Per O. R. Melin, Malmö, Sweden, assignor to Ferring AB, Malmö, Sweden

Filed Feb. 27, 1981, Ser. No. 238,715
Claims priority, application Sweden, Mar. 24, 1980, 8002222
Int. Cl.³ A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 14 Claims

1. Oxytocin derivative of the formula



wherein Mpa is a 3-mercaptopropionyl residue and X is an alkyl group having 2-4 carbon atoms which substitute the hydrogen in the hydroxyl group of the tyrosine.

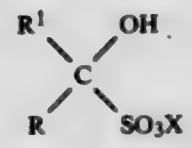
4,402,943

ANTIHYPERTENSION TREATMENT

Ralph B. Thompson, Oak Brook, Ill., assignor to T & R Chemicals, Inc., Clint, Tex.

Filed Jan. 5, 1982, Ser. No. 337,114
Int. Cl.³ A61K *31/70, 31/095, 31/115*
U.S. Cl. 424—180 6 Claims

1. A method of treating hypertension in a human suffering from said condition comprising introducing into said human an antihypertensively effective amount of at least one compound of the formula:



where:

R is a radical selected from the group consisting of hydrogen and hydroxymethyl,

R^1 is a radical selected from the group consisting of hydrogen and straight chain alkyl radicals each containing a total of 2, 3, 4, or 5 hydroxylated carbon atoms, and a residue from a polysaccharide capable of reducing Fehling's solution, and

X is selected from the group consisting of alkali metals and ammonium.

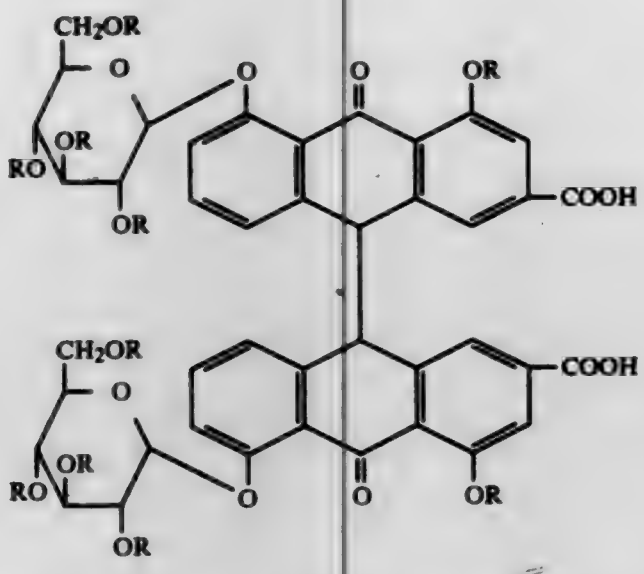
4,402,944

POLYSULFONATE SENNOSIDE A & B COMPOUNDS AND METHOD OF USE

Francis M. Callahan, Stony Point, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 1, 1982, Ser. No. 383,911
Int. Cl.³ A61K *31/71*
U.S. Cl. 424—180 12 Claims

1. A compound selected from those of the formula:



wherein R is —SO_3A; and A is a nontoxic pharmaceutically acceptable salt cation, wherein the salt forming moiety is selected from the group consisting of alkali metal, alkaline earth metal, ammonia and substituted ammonia selected from the group consisting of trialkylamine (C_1–C_6), piperidine, pyrazine, alkanolamine (C_2–C_6) and cycloalkylamine (C_3–C_6); and the compounds may be either the R*,R* or R*,S* isomers.

5. A method of inhibiting the complement system in a warm-blooded animal which comprises administering to said warm-blooded animal an effective complement inhibiting amount of a compound of the formula of claim 1.

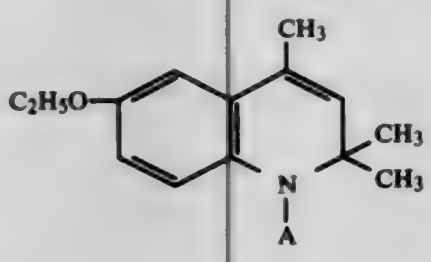
4,402,945

GLYCOSIDE DERIVATIVES OF 6-ETHOXY-1,2-DIHYDRO-2,2,4-TRIMETHYLQUINOLINE AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

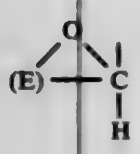
Emil Menachemoff, Tel-Aviv; Oded Awerbuch, and Raphael R. G. Haber, both of Givatayim, all of Israel, assignors to Abic Ltd., Israel

Continuation-in-part of Ser. No. 871,455, Jan. 23, 1978, Pat. No. 4,305,932. This application May 6, 1981, Ser. No. 261,243
Claims priority, application Israel, Jan. 27, 1977, 51342
The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.
Int. Cl.³ A61K *31/70*; C07H *19/04*
U.S. Cl. 424—180 **4 Claims**

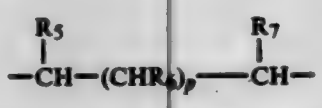
1. A compound of the formula:



wherein A is



wherein E stands for



wherein R_5, R_6 and R_7 stands for OH, CH_2OH, O-lower carboxyacyl, CH_2O-lower carboxyacyl, NH-lower carboxyacyl, COOH, COO-lower alkyl, $COHN_2$, CONH (lower alkyl) and CON (lower alkyl)$_2$, and wherein p=1 or 2.

2. A pharmaceutical composition for use in the treatment of Vitamin E-deficient animals, comprising an inert carrier, a Vitamin E deficiency treatment effective amount of the compound of claim 1 and iron dextran.

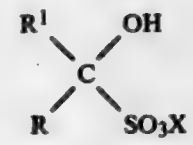
4,402,946

ANTITHROMBOTIC TREATMENT

Ralph B. Thompson, Oak Brook, Ill., assignor to T & R Chemicals, Inc., Clint, Tex.

Continuation-in-part of Ser. No. 271,851, Jun. 16, 1981, abandoned, which is a continuation-in-part of Ser. No. 218,413, Dec. 22, 1980, abandoned. This application Jan. 5, 1982, Ser. No. 337,175
Int. Cl.³ A61K *31/70, 31/715, 31/095, 31/115*
U.S. Cl. 424—180 **20 Claims**

1. A method for treating a thrombotic condition in a mammal comprising adminstering to such mammal an antithrombotically effective amount of at least one compound of the formula:



where:

R is a radical selected from the group consisting of hydrogen and hydroxymethyl,

R^1 is a radical selected from the group consisting of hydrogen and straight chain alkyl radicals each containing a total of 2, 3, 4, or 5 hydroxylated carbon atoms, and a residue from a polysaccharide capable of reducing Fehling's solution, and

X is selected from the group consisting of alkali metals and ammonium.

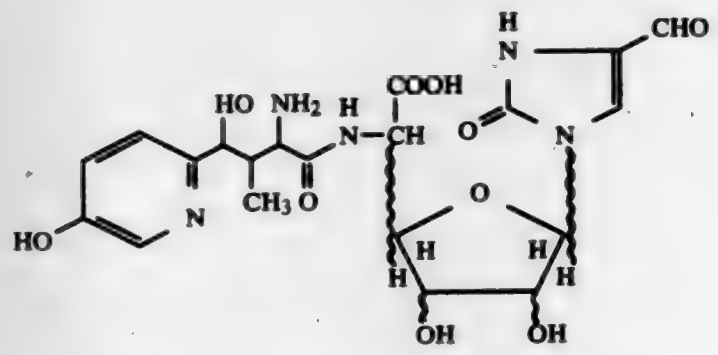
4,402,947

PESTICIDALLY ACTIVE NIKKOMICIN HEAVY METAL SALTS

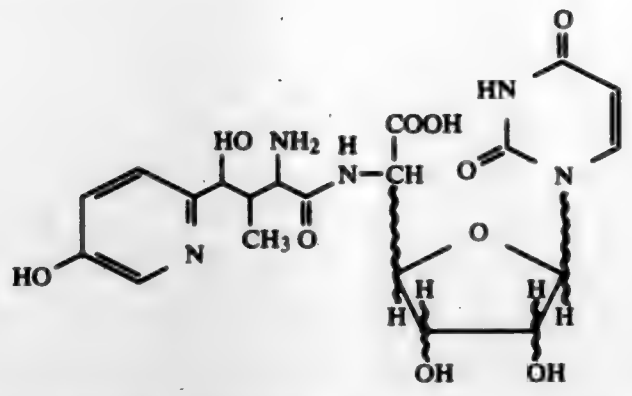
Heinrich F. Moeschler, Cologne; Klaus Saese, Bergisch-Gladbach; Peter M. Lange, Leverkusen; Christian Gölker, Wuppertal; Gerhard Zoebelein, Leverkusen, and Otto Telle, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 5, 1981, Ser. No. 308,725
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1980, 3040293
Int. Cl.³ A61K *31/71*; C07H *19/16, 19/18*
U.S. Cl. 424—181 **5 Claims**

1. A heavy metal salt of nikkomicin (X) of the formula



or nikkomicin (Z) of the formula



wherein the heavy metal salt is selected from the group consisting of Cr, Fe, Co, Ni, Cu and Zn.

4. A method of combating arthropods and fungi which comprises applying to the arthropods or fungi, or to a habitat thereof, an arthropodicidally or fungicidally effective amount of a compound according to claim 1.

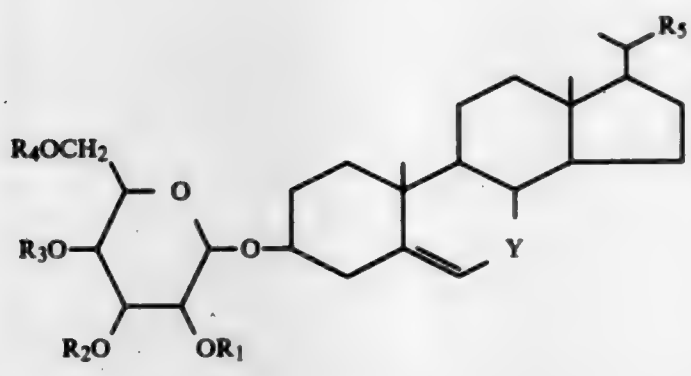
4,402,948

STEROID GLYCOSIDE COMPOUNDS AND METHODS OF USE

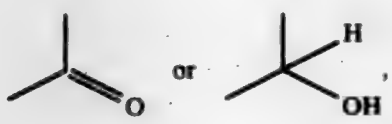
Shingo Matsumura, Kyoto; Hiroshi Enomoto, Nagaokakyo; Koji Kitaguchi; Masakuni Ozaki, both of Joyo; Masahiko Kitano, Sakyo; Toshihiro Okamura, Makishimacho, and Haruo Tanaka, Hikone, all of Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

Filed Jan. 23, 1981, Ser. No. 227,764
Claims priority, application Japan, Feb. 8, 1980, 55-15308
Int. Cl.³ A61K *31/705*; C07J *9/00, 17/00*
U.S. Cl. 424—182 73 Claims

1. An oxygenated sterylglycoside derivative of the formula (I):

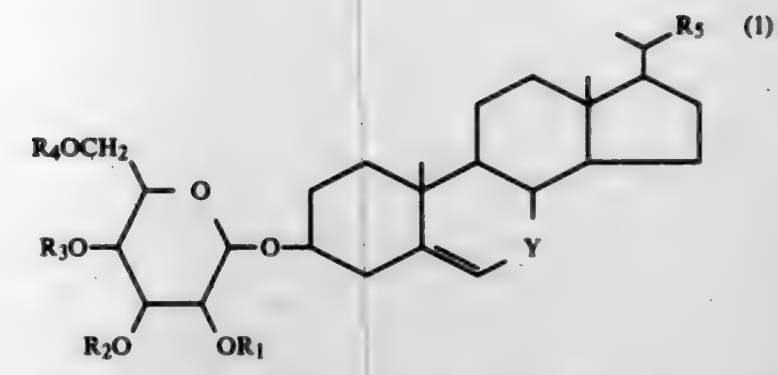


wherein R_1, R_2, R_3 and R_4 are the same or different and each is hydrogen or lower alkanoyl, Y is

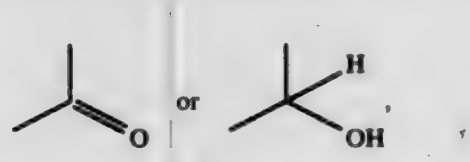


and R_5 is 4-methylpentyl, 3-ethyl-4-methylpentyl or 3-ethyl-4-methyl-1-pentenyl.

25. A method useful for effecting hemostatic or capillary stabilizing effects which comprises administering to one in need thereof, a hemostatically effective amount or a capillary stabilizing effective amount of a compound of the formula (I):



wherein R_1, R_2, R_3 and R_4 are the same or different and each is hydrogen or lower alkanoyl, Y is



and R_5 is 4-methylpentyl, 3-ethyl-4-methylpentyl or 3-ethyl-4-methyl-1-pentenyl, in combination with a pharmaceutically acceptable carrier.

4,402,949

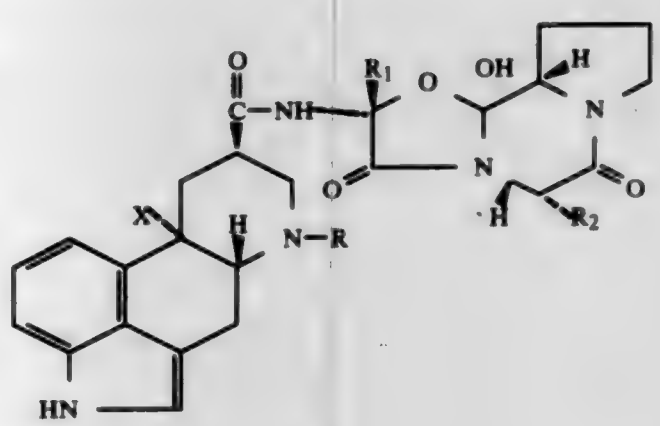
STABLE SOLUTIONS OF HYDROGENATED ERGOTALKALOIDS

Volker Hartmann, Nuremberg; Karl-Heinz Otto, Kastl/Opf., and Ludwig Patt, Nuremberg, all of Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 298,504, Sep. 1, 1981, abandoned, which is a continuation of Ser. No. 206,529, Nov. 12, 1980, abandoned. This application Nov. 2, 1981, Ser. No. 317,660
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1979, 2945636
Int. Cl.³ A61K *31/725, 31/48*
U.S. Cl. 424—183 39 Claims

1. A pharmaceutical composition in stable solution form comprising as active ingredient a combination of

(a) a compound of formula I,



wherein

R is hydrogen or C_{1-4}alkyl,

R_1 is methyl, ethyl or isopropyl,

R_2 is isopropyl, sec.-butyl, isobutyl or benzyl, and

X is hydrogen or methoxy,

or a pharmaceutically acceptable acid addition salt thereof; and

(b) heparin or a pharmaceutically acceptable salt thereof, and a carrier medium comprising

(c) water;

(d) a pharmaceutically acceptable mono- or poly-alcohol; and

(e) urea or a pharmaceutically acceptable calcium or magnesium salt of ethylenediaminetetraacetic acid, or combinations thereof.

4,402,950

PROCESS AND PREPARATION FOR DEACTIVATING VIRUSES

Erich Wolf, Overath; Andreas Lembke, Eitin-Sielbeck, and Rolf Deininger, Cologne, all of Fed. Rep. of Germany, assignors to Chimiceau GmbH, Chur, Switzerland

Continuation of Ser. No. 5,764, Jan. 23, 1979, abandoned. This application Sep. 4, 1980, Ser. No. 184,135

Claims priority, application Luxembourg, Jan. 27, 1978, 78955

Int. Cl.³ A01N *65/00*

U.S. Cl. 424—195 13 Claims

1. A process for deactivating viruses inside living human and animal organisms infected with said viruses comprising administering to one of said organisms a terpene selected from the group consisting of black pepper oil, cinnamon flower oil, cardamon oil, linallyl acetate, cinnamic aldehyde, carvon, and cis/trans citral, in a dosage amount effective to deactivate said viruses but ineffective to cause toxic effects on living cells of the living organism.

4,402,951

INSECTICIDAL COMPOSITION

Shizuo Wakita, Kawaguchi, and Tokuko Umino, Kasukabe, both of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1981, Ser. No. 252,839

Claims priority, application Japan, Apr. 25, 1980, 55-54228

Int. Cl.³ A01N *57/00, 57/26, 37/34*

U.S. Cl. 424—200 5 Claims

1. An insecticidal composition comprising insecticidally effective amount of 3-phenoxy-α-cyanobenzyl-1-(4-ethoxyphenyl)-2,2-dichlorocyclopropane carboxylate and O,O-diethyl-O-2-isopropyl-6-methylpyrimidin-4-yl phosphorothioate in a weight ratio of 1:0.2–1:5.0 and an adjuvant therefor.

4,402,952

FUNGICIDAL AND INSECTICIDAL 2-THIOHALOALKENYL-4-DIALKOXYPHOSPHINOTHIOYLOXY-6-ALKYL-1,3-PYRIMIDINES

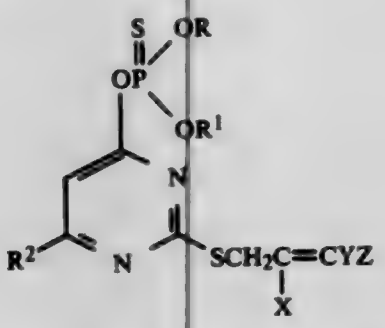
Laroy H. Edwards, 1765 Silverado Trail, Napa, Calif. 94558

Filed Oct. 22, 1981, Ser. No. 313,547

Int. Cl.³ A01N *57/16*; C07F *9/65*

U.S. Cl. 424—200 12 Claims

1. A compound of the formula:



wherein R and R^1 are independently lower alkyl; R^2 is hydrogen, lower alkyl or lower alkoxy; and X, Y and Z are independently hydrogen or halogen atoms with at least one of X, Y and Z being halogen.

5. A method of controlling fungi comprising contacting said fungi or their growth environment with a fungicidally effective amount of a compound of the formula defined in claim 1 with the proviso that when R and R^1 are ethyl, X and Z are chloro and Y is hydrogen, R^2 is not n-propyl; and with the further proviso that when R and R^1 are ethyl, Z is chloro and X and Y are hydrogen, R^2 is not hydrogen.

11. A method of killing insects comprising contacting said insects or their habitat with an insecticidally effective amount of a compound of the formula defined in claim 1 with the proviso that when X is chloro, Y and Z are hydrogen and R and R^1 are methyl, R^2 is not n-propyl.

4,402,953

FUNGICIDAL N-(MORPHOLINOACETYL)-ANILINES, COMPOSITIONS AND USE

Adolf Hubele, Magden; Walter Kunz, Oberwil, both of Switzerland, and Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

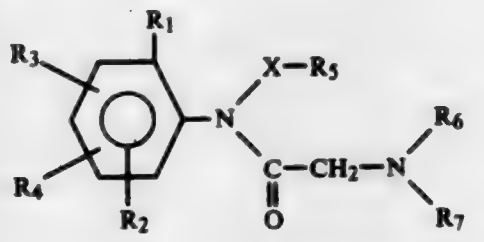
Division of Ser. No. 39,012, May 14, 1979, Pat. No. 4,244,926, which is a division of Ser. No. 905,312, May 12, 1978, Pat. No. 4,165,381, which is a division of Ser. No. 726,320, Sep. 24, 1976, Pat. No. 4,098,895. This application Nov. 10, 1980, Ser. No. 205,356

Claims priority, application Switzerland, Sep. 30, 1975, 12650/75; Sep. 30, 1975, 12651/75

Int. Cl.³ A01N *43/84*; C07D *295/14*

U.S. Cl. 424—248.54 8 Claims

1. A compound of the formula



(I)

wherein

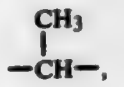
R_1 represents a C_1–C_4-alkyl group, a C_1–C_4-alkoxy group or a halogen atom,

R_2 represents a hydrogen atom, a C_1–C_3-alkyl group, a C_1–C_4-alkoxy group or a halogen atom,

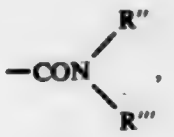
R_3 represents a hydrogen atom, a C_1–C_3-alkyl group or a halogen atom,

R_4 represents a hydrogen atom or a methyl group, with the proviso that the total number of carbon atoms contained by the substituents R_1, R_2, R_3 and R_4 in the phenyl ring does not exceed 8, and

X represents $-CH_2-$ or



R_5 represents —COOR′, —COSR′ or



wherein each of R′, R″ and R‴ independently represents a methyl or ethyl group,

R_6 and R_7 together with the nitrogen atom to which they are attached represent morpholine, or salts of the compounds of the formula I with an inorganic or organic acid.

5. A fungicidal composition which contains as active component a fungicidally effective amount of of compound of the formula I according to claim 1, together with a suitable carrier therefor.

4,402,954

SYNERGISTIC PESTICIDAL COMPOSITIONS COMPRISING N-(2-METHYL-4-CHLOROPHENYL)-N',N'-DIMETHYL-THIOUREA AND 2,4-DIAMINO-6-CYCLOPROPYLAMINO-2-TRIAZINE OR 2,4-DIAMINO-6-ISOPROPYLAMINO-2-TRIAZINE

Verena Laanio, Ariadorf; Marcus von Orelli, Münchenstein, and Walter Hänsermann, Monthey, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

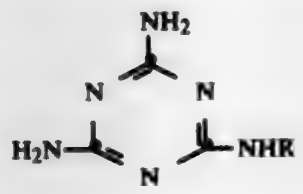
Filed Nov. 16, 1981, Ser. No. 321,842

Claims priority, application Switzerland, Nov. 24, 1980, 8706/80

Int. Cl.³ A01N *43/64, 47/28*

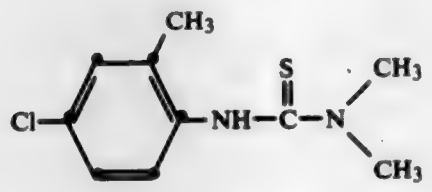
U.S. Cl. 424—249 6 Claims

1. A synergistic composition for controlling insects of the order Diptera and mites of the order Acarina, which composition comprises as active ingredient a combination consisting of a compound of the formula I



(I)

in which R is cyclopropyl or isopropyl, and N-(2-methyl-4-chlorophenyl)-N',N'-dimethylthiourea of the formula II



(II)

in which the ratio by weight of a compound of formula I to the compound of formula II is from 10:1 to 1:10.

4,402,955

DIOXIMINO CEPHALOSPORIN ANTIBIOTICS

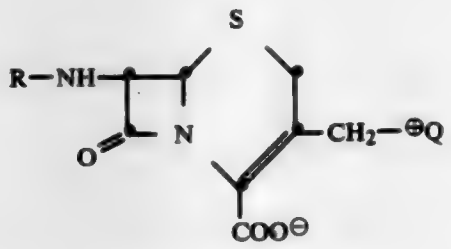
William H. W. Lunn, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 2, 1981, Ser. No. 307,983

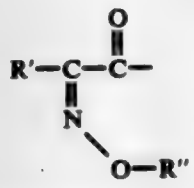
Int. Cl.³ C07D *501/38;* A61K *31/545*

U.S. Cl. 424—246 25 Claims

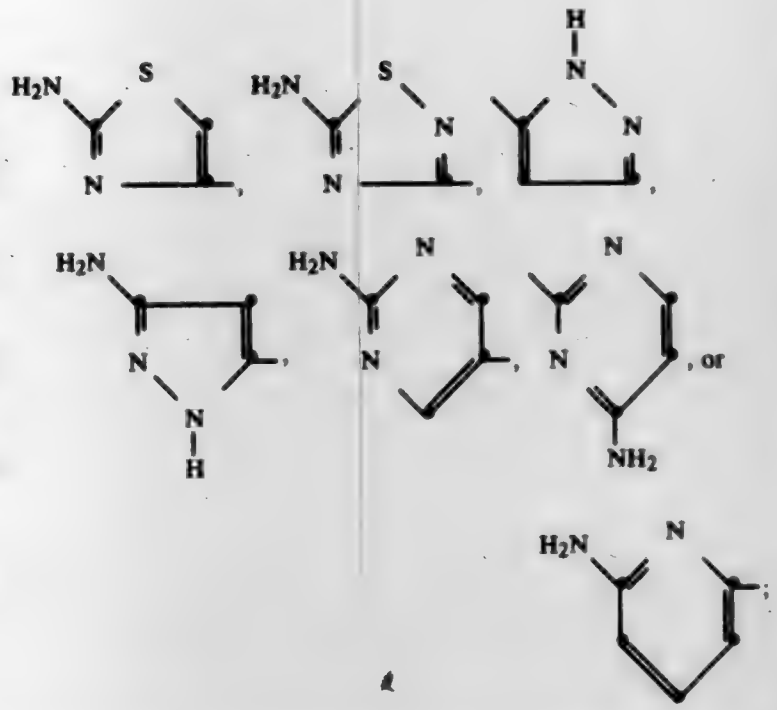
1. A compound of the formula



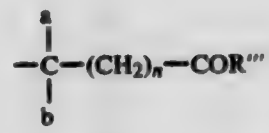
wherein R is an acyl group of the formula



wherein R' is an amino-substituted 5- or 6-membered heterocyclic ring of the formulas

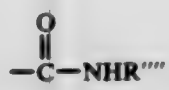


R'' is hydrogen, C_1–C_4 alkyl, a carboxy-substituted alkyl or a carboxy-substituted cycloalkyl group of the formula



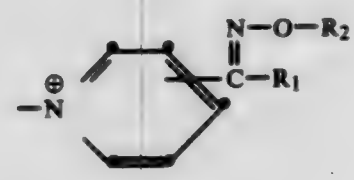
wherein a and b when taken separately are independently hydrogen or C_1–C_3 alkyl, and when taken together with the carbon atom to which they are attached form a C_3–C_7 carbocyclic ring, n is 0–3, and R''' is hydroxy, C_1–C_4 alkoxy, amino, or —OR° wherein R° is a carboxy-protecting group;

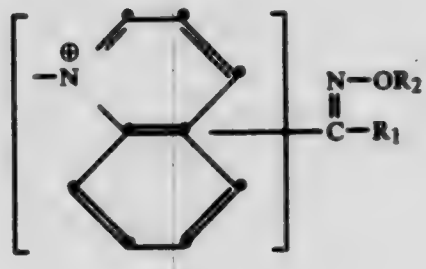
or R'' is a carbamoyl group of the formula



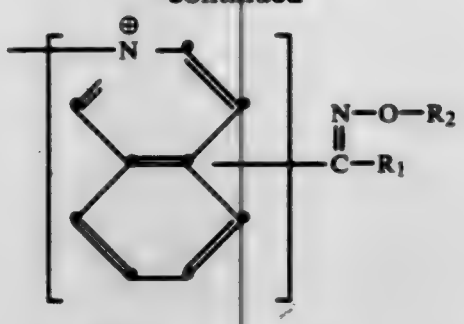
wherein R'''' is C_1–C_4 alkyl, phenyl, or C_1–C_3 alkyl substituted by phenyl;

Q is an oximino substituted pyridinium, quinolinium or isoquinolinium group of the formulas





-continued



wherein R_1 is hydrogen or C_1–C_3 alkyl; R_2 is hydrogen or C_1–C_3 alkyl; and the pharmaceutically acceptable non-toxic salts thereof.

4,402,956

2-[3-[4-(3-CHLORO-4-FLUOROPHENYL)-1-PIPERAZINYL]PROPYL]-1,2,4-TRIAZOLO[4,3-a]PYRIDIN-3(2H)-ONE

Bruno Silvestrini, and Leandro Baiocchi, both of Rome, Italy, assignors to Aziende Chimiche Riunite Angelini Francesco ACRAF SpA, Rome, Italy

Filed Feb. 12, 1981, Ser. No. 234,065

Claims priority, application Italy, Apr. 9, 1980, 21246 A/80

Int. Cl.³ C07D *403/00;* A61K *31/495*

U.S. Cl. 424—250 **2 Claims**

1. 2-[3-[4-(3-Chloro-4-fluorophenyl)-1-piperazinyl]propyl]-1,2,4-triazolo[4,3-a]pyridin-3(2H)-one and its non-toxic pharmaceutically acceptable salts.

4,402,957

HETEROCYCLIC DERIVATIVES OF [4-(PIPERAZIN-1-YLPHENYLOXYMETHYL)-1,3-DIOXOLAN-2-YLMETHYL]-1H-IMIDAZOLES AND 1H-1,2,4-TRIAZOLES

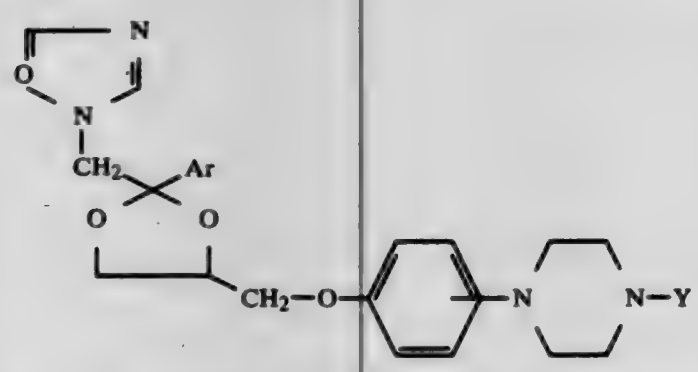
Jan Heeres, Vosselaar, and Robert Hendrickx, Beerse, both of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 27,178, Apr. 4, 1979, Pat. No. 4,287,195, which is a continuation-in-part of Ser. No. 924,765, Jul. 14, 1978, abandoned. This application May 7, 1981, Ser. No. 261,420

Int. Cl.³ C07D *419/14;* A61K *31/52*

U.S. Cl. 424—250 **2 Claims**

1. A chemical compound selected from the group consisting of an azole derivative having the formula:



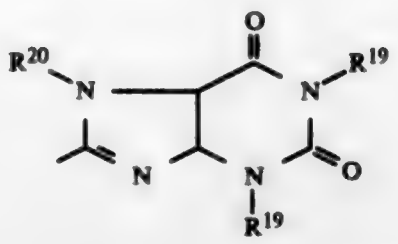
and the pharmaceutically acceptable acid addition salts and stereochemically isomeric forms thereof, wherein:

Q is a member selected from the group consisting of CH and N;

Ar is a member selected from the group consisting of phenyl, thienyl, halothienyl and substituted phenyl, said substituted phenyl having from 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy and trifluoromethyl; and

the radical Y is an optionally substituted mono- or binuclear nitrogen-containing heteroaromatic radical selected from the group consisting of:

a radical of formula



(g)

wherein R^{19} and R^{20} are each independently selected from the group consisting of hydrogen, lower alkyl and aryllower alkyl.

4,402,958

NOVEL (SUBSTITUTED PHENYL)-1,2,4-TRIAZOLO (4,3-A)PYRAZINES AND NOVEL 2-HYDRAZINO-(SUBSTITUTED PHENYL)PYRAZINE INTERMEDIATES

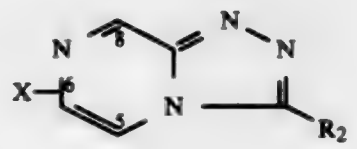
Patrick T. Izzo, Pearl River, N.Y., and Robert A. Hardy, Jr., Ridgewood, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 19, 1981, Ser. No. 323,109

Int. Cl.³ A61K *31/415;* C07D *487/22*

U.S. Cl. 424—250 **54 Claims**

1. A compound of the formula:

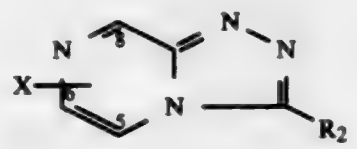


wherein X is



located on the 5, 6 or 8 carbon of said compound and R_1 is selected from the group consisting of hydrogen, fluoro, chloro, trifluoromethyl and C_1–C_3 alkoxy and wherein R_2 is hydrogen or C_1–C_4 alkyl.

36. A method of treating anxiety in warm-blooded animals comprising administering to said animals an effective amount of a compound of the formula:



wherein X is



located on the 5, 6 or 8 carbon of said compound and R_1 is selected from the group consisting of hydrogen, fluoro, chloro, trifluoromethyl, and C_1–C_3 alkoxy and wherein R_2 is hydrogen or C_1–C_4 alkyl.

4,402,959

ANTIMICROBIAL COMPOSITIONS

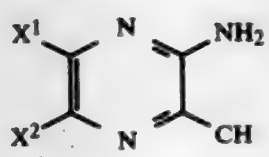
Richard A. Dybas, Piscataway, and Bruce E. Witzel, Rahway, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 155,331, Jun. 2, 1980, abandoned. This application Nov. 25, 1981, Ser. No. 325,090

Int. Cl.³ A01N *43/48*

U.S. Cl. 424—250 3 Claims

1. A method for protecting soil, seeds, plants and crops against destructive fungi and bacteria which comprises applying there an antifungal and antibacterial quantity of a composition comprising an agricultural carrier and 5 to 95 percent of a bactericidally and fungicidally effective compound of the formula:



where X^1 and X^2 are halo.

4,402,960

ANTIINFLAMMATORY IMIDAZOLE DERIVATIVES

Ulrich Niedballa, and Irmgard Böttcher, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

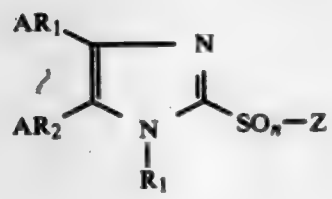
Filed Jul. 2, 1981, Ser. No. 280,163

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1980, 3025484

Int. Cl.³ A61K *31/505*; C07D *403/12, 417/12*

U.S. Cl. 424—251 71 Claims

1. An imidazole compound of the formula



wherein

AR_1 and AR_2 are each independently is phenyl, phenyl substituted by halogen, C_{1-4}-alkyl, C_{1-4}-alkoxy, or di-C_{1-4}-alkylamino; 2-, 3- or 4-pyridyl; 2-or 3-furyl; or 2- or 3-thienyl;

R_1 is hydrogen; alkyl of 1–6 carbon atoms; C_{1-6}-alkyl substituted by hydroxy, C_{1-6}-alkoxy or C_{1-6}-alkanoyloxy; benzyl; tetrahydropyran-2-yl; or tetrahydrofuran-2-yl;

n is 0, 1 or 2; and

Z is phenyl substituted by bromine, pentafluoro, C_{2-4}-alkyl, amino, C_{1-6}-alkanoylamino or trifluoromethyl; 2-, 3- or 4-pyridyl; 2-, 3- or 4-N-oxypyridyl; 2- , 3- or 4-pyrimidinyl; 2- or 3-thiazolyl; or 2- or 3-thienyl; or a physiologically acceptable salt thereof with an acid.

71. A method of treating inflammation in a patient in need of such treatment comprising administering an antiinflammatorily effective amount of a compound of claim 1 to the patient.

4,402,961

DERIVATIVES OF 1-(2-,3- OR 4-QUINOLYL)-2- OR -3-(2- OR 3-PIPERIDYL OR -PYRROLIDINYL) ETHANONE OR PROPANONE, AND THEIR UTILIZATION AS ANTIARRHYTHMICS, ANTICONVULSIVANTS AND FOR THE TREATMENT OF ANXIETY

Marie-Christine Dubroeucq, Enghien-les-Bains; Claude G. A. Gueremy, Houilles; Gerard R. Le Fur, Plessis Robinson, and Jacques Mizoule, Villeneuve la Garenne, all of France, assignors to Pharmindustrie, Gennevilliers, France

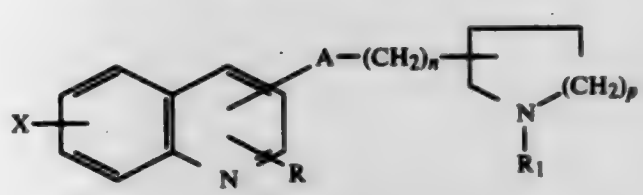
Filed Jun. 9, 1981, Ser. No. 271,877

Claims priority, application France, Jun. 20, 1980, 80 13698

Int. Cl.³ A61K *31/47*; C07D *401/06*

U.S. Cl. 424—258 16 Claims

1. Compounds of the formula:



(I)

in which R is fixed in position 2 or 4 on the cycle of the quinoline and represents a phenyl, pyridyl or thienyl group, or a phenyl group substituted by one or two substituents selected from the halogen atoms, the alkyl, alkoxy and alkylthio groups having 1 to 4 carbon atoms and the trifluoromethyl group,

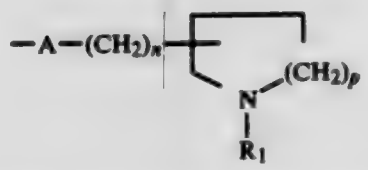
X is fixed in position 5, 6, 7 or 8 on the cycle of the quinoline and represents a hydrogen or halogen atom, an alkyl, alkoxy or alkylthio group having 1 to 4 carbon atoms or the trifluoromethyl group,

R_1 represents a hydrogen atom, an alkyl group containing from 1 to 4 carbon atoms, an alkenyl group containing 3 or 4 carbon atoms or an arylalkyl group of which the alkyl part contains 1 to 3 carbon atoms,

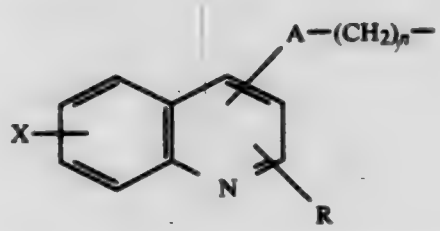
A represents a CO, CHOH or CH_2 group,

n is a whole number equal to 1 or 2, p is a whole number equal to 1 or 2,

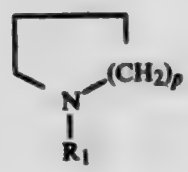
the group:



is fixed in position 4 or 2 on the cycle of the quinoline, and the group



is fixed in position 2 or 3 on the nitrogen heterocycle:



their diastereoisomers, racemic and enantiomers, and their salts of addition with mineral or organic acids.

4. A medicament, useful as an antiarrhythmic, hypnotic, anticonvulsivant and for the treatment of states of anxiety and various psychoneurotic states, which contains a pharmaceuti-

cally acceptable carrier and, as the active principle, 1 to 50 mg per unit dose of a compound corresponding to formula (I) of claim 1 or a salt of such a compound with a pharmaceutically acceptable acid.

6. A process for treating a human suffering from anxiety, which comprises orally administering to said human 5 to 250 mg per day of a compound corresponding to formula (I) of claim 1 or a salt thereof with a pharmaceutically acceptable acid.

4,402,962

ANALGESIC MIXTURE OF NALBUPHINE AND 4,5-BIS(4-METHOXYPHENYL)-2-(TRIFLUOROMETHYL-SULFONYL)-1H-IMIDAZOLE

William K. Schmidt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1982, Ser. No. 393,806
Int. Cl.³ A61K *31/415, 31/485*
U.S. Cl. 424—260 16 Claims

1. A pharmaceutical composition comprising a combination of (a) nalbuphine, or a pharmaceutically acceptable salt thereof, and (b) 4,5-bis(4-methoxyphenyl)-2-(trifluoromethyl-sulfonyl)-1H-imidazole, or a pharmaceutically suitable salt thereof, in which the weight ratio of (a):(b) is from about 1:0.000245 to about 1:4.6.

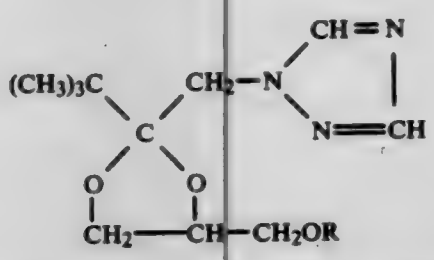
4,402,963

MICROBICIDAL DIOXOLANYLALKYLTRIAZOLE COMPOSITIONS

Elmar Sturm, Aesch, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 7, 1981, Ser. No. 327,880
Claims priority, application Switzerland, Dec. 10, 1980, 9102/80
Int. Cl.³ A01N *43/64*; C07D *405/06, 405/14*
U.S. Cl. 424—269 13 Claims

1. A compound selected from the group consisting of a 1,3-dioxolane of the formula:



wherein R is phenyl or phenyl substituted with from one to four substituents selected from the group consisting of chloro and trifluoromethyl, the nonphytotoxic acid addition salts thereof and the nonphytotoxic metal complexes thereof.

10. The method of combatting microorganisms which comprises applying an effective amount of a compound according to claim 1 to the locus of said microorganism.

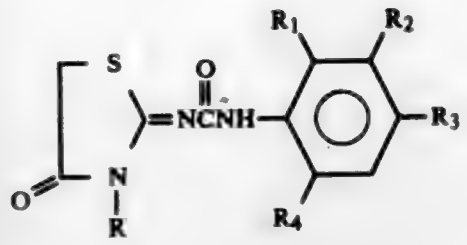
4,402,964

N-ARYL-N'-(3-METHYL OR ETHYL-4-OXOTHIAZOLIDINYLIDENE)UREAS USEFUL FOR THE TREATMENT OF EPILEPSY

Chris R. Rasmussen, Ambler, Pa., assignor to McNeilab, Inc., Spring House, Pa.

Filed Nov. 16, 1981, Ser. No. 321,669
Int. Cl.³ A61K *31/425*; C07D *277/14*
U.S. Cl. 424—270 15 Claims

1. An N-aryl-N'-(1-methyl or ethyl)-4-oxothiazolidinylidene)urea derivative having the formula



(I)

wherein
R is CH_3 or C_2H_5;
R_1 is chosen from F, Cl, Br, CH_3, C_2H_5, OCH_3 and CF_3;
R_2 is H or CH_3;
R_3 is H or F;
R_4 is chosen from F, Cl, Br, CH_3, C_2H_5, OCH_3 and CF_3.

11. A pharmaceutical composition useful for the treatment of the symptoms of epilepsy comprising as the active ingredient, a compound of claim 1, together with a pharmaceutically acceptable carrier.

4,402,965

TREATMENT OF RHEUMATOID ARTHRITIS AND RELATED DISEASES

Roger Wyburn-Mason, Richmond, England, assignor to John R. A. Simoons, Durham, N.C.

Filed Aug. 5, 1982, Ser. No. 405,438
Int. Cl.³ A61K *31/42*
U.S. Cl. 424—272 4 Claims

1. A method for producing remission in patients suffering from active rheumatoid arthritis which comprises administering orally to such a patient an affective amount of furazolidone.

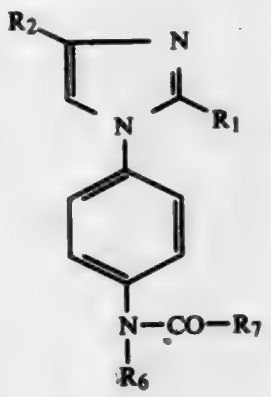
4,402,966

ACYLAMINOPHENYL IMIDAZOLES AND ANTI-DEPRESSING AGENT CONTAINING THE SAME

Motosuke Yamanaka, Abiko; Isao Saito, Chofu; Kiyomi Yamatsu, Kamakura, and Takako Fujimoto, Yokohama, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 93,469, Nov. 13, 1979, Pat. No. 4,301,169.
This application Apr. 9, 1981, Ser. No. 252,674
Claims priority, application Japan, Nov. 14, 1978, 53-139325; Nov. 21, 1978, 53-142813
Int. Cl.³ A61K *31/415*; C07D *233/61*
U.S. Cl. 424—273 R 11 Claims

1. A compound having the formula



in which R_1 is lower alkyl; R_2 is hydrogen or lower alkyl; R_6 is hydrogen, lower alkyl or lower alkylsulfonyl; R_7 is lower alkyl, halogenated lower alkyl, mono- or di-lower alkylamino, mono- or di-lower alkylminoalkyl, phenyl, phenyl substituted with halogen, lower alkyl, lower alkoxy or trifluoromethyl, phenylamino, phenylamino substituted with halogen, lower alkyl, lower alkoxy or trifluoromethyl; or a pharmaceutically acceptable acid addition salt thereof.

11. A pharmaceutical composition for treating depression and depressive states, comprising a therapeutically effective amount of a compound as claimed in claim 1 or claim 3, and a pharmaceutical carrier.

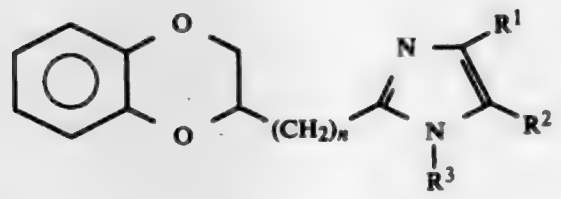
4,402,967

METHOD FOR LOWERING INTRAOCULAR PRESSURE

L. David Waterbury, Cupertino, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Apr. 23, 1981, Ser. No. 256,623
Int. Cl.³ A61K *31/415*
U.S. Cl. 424—273 R 8 Claims

1. A method for lowering intraocular pressure in the mammalian eye which comprises administering directly to the eye of a subject in need of such treatment a therapeutically effective amount of, or a pharmaceutical composition containing a therapeutically effective amount of, a compound of the formula



(I)

wherein

R^1 and R^2 are each independently selected from the group consisting of hydrogen, lower alkyl, optionally substituted phenyl, and optionally substituted phenyl lower alkyl; or wherein R^1 and R^2 taken together form an optionally substituted benzo;

R^3 is hydrogen, alkyl, or optionally substituted phenyl lower alkyl;

n is an integer equal to 0, 1 or 2; or a pharmaceutically acceptable acid addition salt thereof.

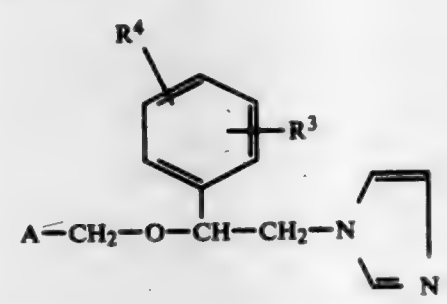
4,402,968

ANTIFUNGAL BENZOFURANYL IMIDAZOLE COMPOUNDS

Joseph A. Martin, Harpenden, England, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

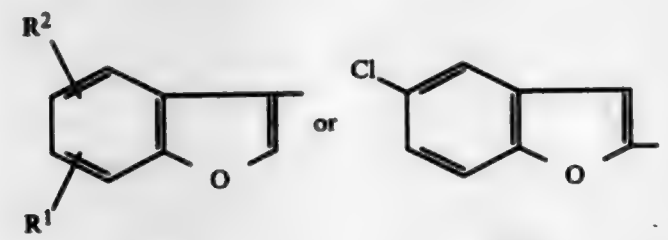
Filed May 29, 1981, Ser. No. 268,304
Claims priority, application United Kingdom, Jun. 6, 1980, 8018691; Mar. 2, 1981, 8106459
Int. Cl.³ A61K *31/415*; C07D *405/12*
U.S. Cl. 424—273 R 18 Claims

14. A method for the treatment of fungal infections which comprises administering to a host requiring such treatment an amount effective therefor of a compound of the formula



I

wherein A is a group of the formula



(a) (b)

and R^1,R^2,R^3 and R^4 are each a hydrogen or halogen atom, or a pharmaceutically acceptable acid addition salt thereof.

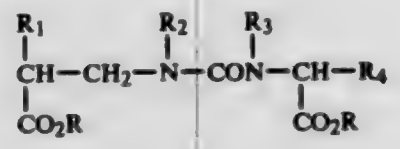
4,402,969

ANTIHYPERTENSIVE PROLINE DERIVATIVES

William J. Greenlee, Teaneck; David G. Hangauer, Jr., Fanwood, and Arthur A. Patchett, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 246,491, Mar. 23, 1981, abandoned. This application Jan. 21, 1982, Ser. No. 340,241
Int. Cl.³ A61K *31/40*; C07D *207/16*
U.S. Cl. 424—274 27 Claims

1. A compound of the formula:



wherein:

R is the same or different and is hydrogen, loweralkyl, aralkyl;

R_1 is alkyl of from one to ten carbon atoms which include branched, cyclic, and unsaturated alkenyl and alkynyl groups;

substituted alkyl of from one to six carbon atoms and the substituent is amino, arylthio, aryloxy, hydroxy, arylamino, loweralkanoylamino, and aroylamino;

aralkyl optionally substituted by halo, loweralkyl, hydroxy, alkoxy, and amino groups wherein the alkyl groups contain from one to six carbon atoms;

R_2 is hydrogen, alkyl of from one to six carbon atoms optionally substituted by amino, loweralkylamino, arylamino, loweralkanoylamino, aroylamino, or aryl groups;

R_3 and R_4 may be connected together to form a proline moiety; and,

a pharmaceutically acceptable salt thereof.

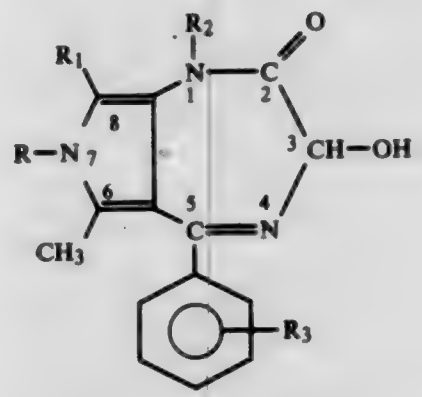
4,402,970

1,7-DIHYDRO-PYRROLO[3,4-e][1,4]DIAZEPIN-2(1H)-ONE DERIVATIVES

Luigi Mariani, and Giorgio Tarzia, both of Milan, Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Filed May 24, 1982, Ser. No. 381,272
Claims priority, application United Kingdom, Jul. 4, 1981, 8117184
Int. Cl.³ A61K *31/55*; C07D *487/04*
U.S. Cl. 424—274 13 Claims

1. A pyrrolo[3,4-e][1,4]diazepin of the formula



(I)

wherein R represents methyl, ethyl, propyl, 1-methylethyl, butyl, 1-methylpropyl, 2-methylpropyl, and 1,1-dimethylethyl, R_1 stands for hydrogen, methyl, ethyl, or phenyl, R_2 is hydrogen, methyl, ethyl, propyl, 1-methylethyl, butyl, 1-methylpropyl, 2-methylpropyl, and 1,1-dimethylethyl, and R_3 represents hydrogen, chloro, fluoro, bromo, trifluoromethyl and methoxy.

7. An anti-convulsant or anti-anxiety pharmaceutical composition consisting essentially of an inert pharmaceutical carrier and an effective anti-convulsant or anti-anxiety amount of a compound of claim 1.

4,402,971

PARA-ANISOLE-CONTAINING BIOCIDE AND METHOD FOR ISOLATING IT AND USING IT

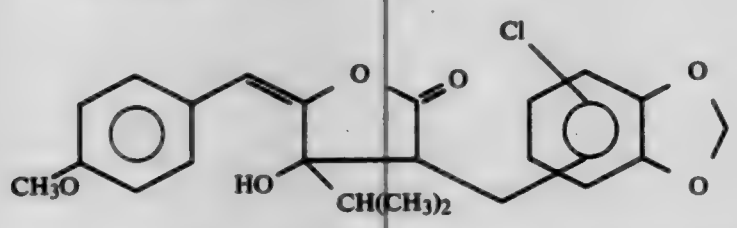
Kent R. Edwards, Mendota Heights, Minn., assignor to H. B. Fuller Company, St. Paul, Minn.

Filed Dec. 19, 1980, Ser. No. 218,290
Int. Cl.[3] A01N *43/08*; C07D *317/48*
U.S. Cl. 424—279 5 Claims

1. The substantially pure, nonsteroidal, diethylether-soluble biocidal compound $C_{23}H_{23}O_6Cl$ having a molecular weight of 430 and a melting point within the range of 48° to 55° C., and containing at least the following functional groupings:

(a) a para-linked anisole group,
(b) a saturated gamma-lactone,
(c) an aliphatic hydroxyl group,
(d) a methylene bridge,
(e) a chlorine atom substituted on a C_6 aromatic nucleus, and
(f) an isopropyl substituent in an asymmetric environment.

3. The compound



4. A composition suitable for use as a blue-green algae biocide, said composition comprising a biocidal amount of the compound of claim 1 combined with a biocidally inactive extender.

5. A method for inhibiting the growth of blue-green algae comprising the step of exposing the algae to the composition of claim 4 in a growth-inhibiting effective amount.

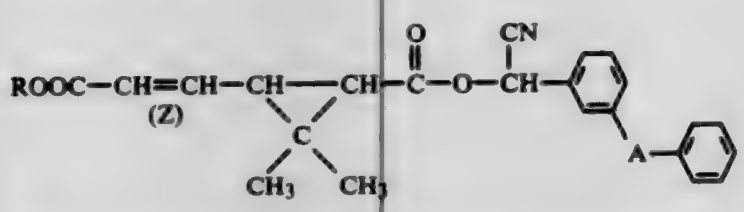
4,402,972

CYCLOPROPANE CARBOXYLIC ACID DERIVATIVES

Jacques Martel, Bondy; Jean Tessier, Vincennes, and Andre Teche, Paris, all of France, assignors to Roussel Uclaf, Paris, France

Filed Apr. 15, 1981, Ser. No. 254,537
Claims priority, application France, Apr. 16, 1980, 80 08491; Sep. 24, 1980, 80 20478
Int. Cl.[3] A61K *31/275*; C07C *121/66*
U.S. Cl. 424—304 51 Claims

1. A compound of (1R,cis) cyclopropane carboxylic acid derivatives of the formula



wherein A is —O—, R is selected from the group consisting of alkyl of 1 to 8 carbon atoms, alkenyl and alkynyl of 2 to 8 carbon atoms and optionally unsaturated cycloalkyl and cycloalkylalkyl of 3 to 8 carbon atoms optionally substituted with at least one alkyl group and the double bond in the 3-side chain has the Z geometry.

11. A pesticidal composition comprising a pesticidally effective amount of at least one compound of claim 1 and an inert carrier.

16. An insecticidal composition comprising a insecticidally effective amount of at least one compound of claim 1 and an inert carrier.

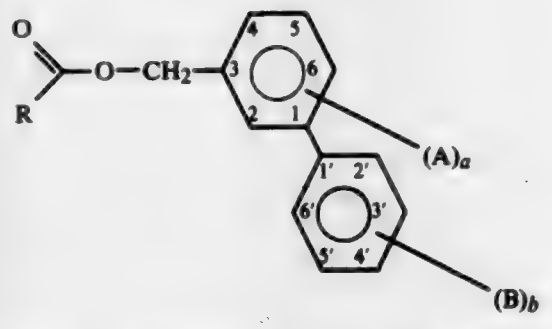
4,402,973

INSECTICIDAL (1,1'-BIPHENYL)-3-YLMETHYL ESTERS

Ernest L. Plummer, North Tonawanda, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 193,056, Oct. 2, 1980, Pat. No. 4,329,518, which is a continuation-in-part of Ser. No. 76,636, Sep. 18, 1979, abandoned, which is a division of Ser. No. 966,405, Dec. 4, 1978, Pat. No. 4,214,004. This application May 21, 1981, Ser. No. 265,940
The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.
Int. Cl.[3] C07C *69/743, 69/747*; A01N *53/00*
U.S. Cl. 424—305 22 Claims

1. A substituted [1,1'-biphenyl]-3-ylmethyl-2,2-dimethylcyclopropanecarboxylate of the formula



wherein b is 0, A is fluoro, a is 3 or 4 and R is selected from 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropyl, 3-(2,2-dibromoethenyl)-2,2-dimethylcyclopropyl, 3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropyl, and 3-(3-chloro-2,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropyl.

14. An insecticidal or acaricidal composition comprising an insecticidally or acaricidally effective amount of at least one compound of claim 1 in admixture with an agriculturally acceptable carrier.

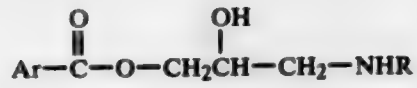
4,402,974

METHOD FOR TREATING GLAUCOMA BY THE TOPICAL ADMINISTRATION OF SELECTIVELY METABOLIZED BETA-BLOCKING AGENTS

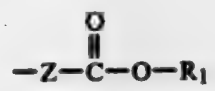
William L. Matier, Liberty, and Sheung-Tsam Kam, Vernon Hills, both of Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Jun. 23, 1981, Ser. No. 276,657
Int. Cl.[3] C07C *69/76*; A01N *37/10*; A61K *31/235*
U.S. Cl. 424—308 15 Claims

1. A method for treating glaucoma or for lowering intraocular pressure in a mammal, which comprises topically applying to the eye of such mammal an intraocular pressure-lowering effective amount of a compound represented by the formula:



wherein R represents lower alkyl of straight or branched carbon chains from 1 to about 10 carbon atoms; cycloalkyl of from 3 to about 7 carbon atoms; alkenyl of from about 2 to about 10 carbon atoms; alkynyl of from 3 to about 10 carbon atoms; hydroxyalkyl of from 2 to about 7 carbon atoms; aralkyl, wherein the alkyl portion contains from about 1 to about 5 carbon atoms, and the aryl portion represents substituted or unsubstituted monocyclic or polycyclic aromatic of from 6 to about 10 carbon atoms; a group of the formula



wherein Z represents lower alkylene of straight or branched carbon chains from 1 to about 10 carbon atoms, and R_1 is lower

alkyl of from 1 to about 5 carbon atoms; and Ar represents substituted or unsubstituted aromatic; or a pharmaceutically acceptable salt thereof.

4,402,975

AMINOCARBOXYLIC ACIDS, AMINO ALCOHOLS, OR THE DERIVATIVES THEREOF, PROCESSES FOR PRODUCTION THEREOF, AND PHARMACEUTICAL USES THEREOF

Toru Takeshita, Hino; Kenji Hoshina, Yokohama; Akira Ohtsu, and Tatsuyuki Naruchi, both of Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

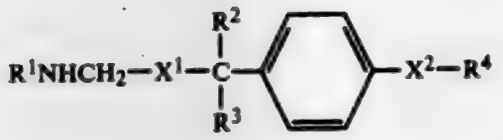
Filed Jul. 17, 1981, Ser. No. 284,562

Claims priority, application Japan, Jul. 21, 1980, 55-98636; Aug. 20, 1980, 55-113366; Nov. 21, 1980, 55-163231; Feb. 17, 1981, 56-20820

Int. Cl.³ A61K *31/24*; C07C *101/34*

U.S. Cl. 424—309 38 Claims

1. A compound represented by the following formula



wherein R^1 represents a hydrogen atom an acyl group or an alkoxycarbonyl group; X^1 represents an alkylene group having 3 to 6 carbon atoms, a 1,4-cyclohexylene group, or a 1,4-phenylene group, the alkylene group may be substituted by an alkyl group having 1 to 6 carbon atoms, and the 1,4-phenylene group may be substituted by 1 or 2 substituents selected from halogen atoms and alkoxy groups having 1 to 6 carbon atoms; R^2 represents a hydrogen atom or a hydroxyl group and R^3 represents hydrogen atom, or R^2 and R^3 together may form an oxo group (=O), and when X^1 is other than the 1,4-phenylene group, R^2 represents a hydrogen atom and R^3 represents a bond between the carbon atom to which R^3 is bonded and that carbon atom of X^1 which is adjacent to said carbon atom; X^2 represents an alkylene group having 1 to 5 carbon atoms which may be substituted by an alkyl group having 1 to 6 carbon atoms or an amino group; and R^4 represents the group $-COOR^5$, $-CH_2OR^6$ or $-CONR^7R^8$ in which R^5 represents a hydrogen atom or an alkyl group having 1 to 6 carbon atoms, R^6 represents a hydrogen atom or an acyl group having 1 to 6 carbon atoms, and R^7 and R^8 are identical or different and represent a hydrogen atom or an alkyl group having 1 to 6 carbon atoms or taken together may form a 5- or 6-membered ring; or an acid addition salts of said compound wherein R^1 represents a hydrogen atom or X^2 represents an alkylene group having an amino group, or a salts of said compound wherein R^5 represents a hydrogen atom.

33. An antiulcer composition comprising an antiulcer effective amount of the compound of claim 1 or its pharmaceutically acceptable acid addition salt or pharmaceutically acceptable salt as an active component and a pharmaceutically acceptable carrier or adjuvant.

4,402,976

METHOD FOR TREATING GLAUCOMA WITH SYSTEMIC NADOLOL COMPOSITIONS

John G. Muir, Pennington, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 24, 1981, Ser. No. 257,453

Int. Cl.³ A61K *31/22, 31/135*

U.S. Cl. 424—311 8 Claims

1. A method for treating glaucoma or lowering intraocular pressure in a mammalian species, which comprises systemically administering once a day an effective amount of nadolol or an ester thereof or a pharmaceutically acceptable acid-addition salt of said nadolol or ester thereof.

4,402,977

COMPOSITION FOR THE TREATMENT OF KERATIN FIBRES, BASED ON AMPHOTERIC POLYMERS AND ANIONIC POLYMERS

Jean F. Grollier; Claire Fiquet; Chantal Fourcadier, all of Paris; Claude Dubief, Versailles, and Daniele Canwet, Crosne, all of France, assignors to L'Oreal, Paris, France

Filed Nov. 26, 1980, Ser. No. 210,837

Claims priority, application France, Nov. 28, 1979, 79 29319

Int. Cl.³ A61K *7/09, 7/11*

U.S. Cl. 424—70 21 Claims

1. A composition suitable for application to hair fibres which comprises, in a suitable carrier or diluent:

(a) at least one anionic polymer containing one or more carboxylic or sulphonic groups, said anionic polymer having a molecular weight of from about 500 to 5 million; and

(b) at least one amphoteric polymer containing units A and B distributed in the polymer chain, where A denotes a unit derived from a monomer containing at least one basic nitrogen atom and B denotes a unit derived from an acid monomer containing one or more carboxyl or sulphonyl groups, or A and B denote a group derived from a zwitterionic carboxybetaine monomer, or A and B denote a cationic polymer chain containing secondary amine groups, tertiary amine groups other than a piperazinyl group, or quaternary ammonium groups, in which chain at least one of the amine groups carries a carboxyl or sulphonyl group joined via a hydrocarbon radical, or A and B form part of a polymer with alpha, beta-dicarboxyethylene units, in which one of the carboxyl groups has been reacted with a polyamine containing one or more primary, secondary or tertiary amine groups, with the proviso that when A and B form a polymer chain comprising polyaminoamide units in which at least one of the amino groups is substituted by a sulphonic or carboxylic acid group via an intermediate hydrocarbon radical, the anionic polymer is not a vinyl acetate/crotonic acid copolymer, said amphoteric polymer having a molecular weight of from about 500 to 2 million, said anionic and said amphoteric polymers each being present in an amount from about 0.01 to about 10% by weight, and with the further proviso that the composition does not contain a cationic polymer.

4,402,978

GASTRO-PROTECTING ACTIVITY OF SUBSTITUTED DERIVATIVES OF 4-PHENYL-4-OXO-2-HYDROXY-BUTANOIC ACID

Yani Christidis; Robert Fournex, both of Paris, and Colette Tournemine, Livry-Gargan, all of France, assignors to Roussel-Uclaf, Romainville, France

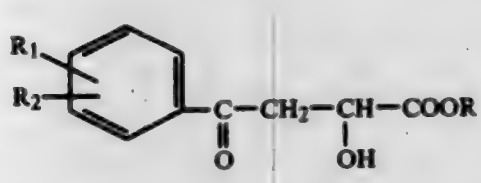
Filed Apr. 23, 1981, Ser. No. 256,911

Claims priority, application France, Apr. 24, 1980, 80 09215

Int. Cl.³ A61K *31/19, 31/235, 31/24*

U.S. Cl. 424—317 20 Claims

1. A pharmaceutical composition comprising as the active ingredient a gastric acid secretion inhibiting and cytoprotecting effective amount of a compound selected from the group consisting of a substituted derivative of 4-phenyl-4-oxo-2-hydroxy-butanoic acid of the formula (I)



(I)

in which R represents hydrogen or alkyl group containing 1 to 5 carbon atoms and R_1 and R_2, identical or different, both represent alkoxy containing 1 to 3 carbon atoms, or both represent halogen, or R_1 represents hydrogen and R_2 represents

halogen, nitro or trifluoromethyl, or R_1 and R_2 form a methylenedioxy group at adjacent carbon atoms, in their racemic or optically active forms, and pharmaceutically acceptable salts of said acid and a pharmaceutically acceptable carrier.

4,402,979

OPHTHALMIC FORMULATIONS OF 5-FLUORO-2-METHYL-1-(P-METHYLTHIOBENZYLIDENE)-3-INDENYLACETIC ACID

Tsung-Ying Shen, Westfield, N.J.; Philippe Conquet, Riom, and Jean-Claude Le Douarec, Chamalieres, both of France, assignors to Merck & Co., Inc. & Laboratories, Rahway, N.J. and Merck, Sharp & Dohme-Chibret, Paris, France

Continuation of Ser. No. 132,574, Mar. 21, 1980, abandoned. This application Oct. 28, 1981, Ser. No. 315,769

Int. Cl.³ A61K *31/19*

U.S. Cl. 424—317 **9 Claims**

1. An ophthalmic composition for reducing ocular inflammation comprising from 0.1 to 15% by weight of 5-fluoro-2-methyl-1-(p-methylthiobenzylidene)-3-indenylacetic acid or an ophthalmologically acceptable salt thereof together with an ophthamologically acceptable carrier for topical application to an affected eye.

4,402,980

SULPHONIC ACID CYCLOALKYLAMIDES AND THEIR USE AS MICROBICIDES

Engelbert Kühle, Bergisch-Gladbach; Wilfried Paulus; Hermann Genth, both of Krefeld, and Erich Klauke, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

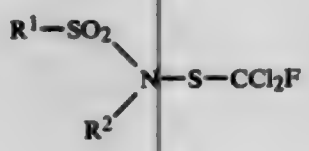
Filed Oct. 8, 1980, Ser. No. 195,023

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1979, 2942677

Int. Cl.³ A01N *9/16*; C07C *143/72, 143/84*

U.S. Cl. 424—321 **8 Claims**

1. A N-sulphenylated sulphonic acid cycloalkyl amide of the formula

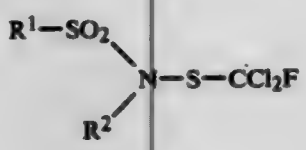


wherein

R^1 denotes lower alkyl, chloroalkyl or dialkylamino and

R^2 denotes a cycloalkyl radical which is optionally substituted by lower alkyl.

4. A microbidical agent comprising a compound of the formula



wherein

R^1 denotes lower alkyl, chloroalkyl or dialkyl amino and

R^2 denotes a cycloalkyl radical which is optionally substituted by lower alkyl and a diluent.

4,402,981

N_1-ACYL-N_2-PHENYL-DIAMINOPROPANOLS AND PHARMACEUTICAL COMPOSITIONS THEREOF AND PROCESSES FOR THEIR PREPARATION

Hans Liepmann; Rolf Hueschens, both of Hanover; Wolfgang Milkowski, Burgdorf; Horst Zeugner; Heuning Heinemann, both of Hanover; Klaus-Ulrich Wolf, Haenigsen; Ines Heil, and Reinhard Hempel, both of Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma, GmbH, Hanover, Fed. Rep. of Germany

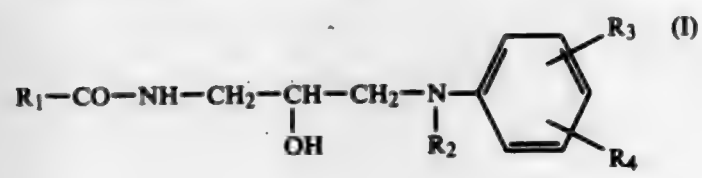
Continuation of Ser. No. 67,715, Aug. 17, 1979, abandoned, which is a division of Ser. No. 900,998, Apr. 28, 1978, Pat. No. 4,191,770. This application Mar. 16, 1981, Ser. No. 243,746

Claims priority, application Fed. Rep. of Germany, May 10, 1977, 2720915; May 10, 1977, 2720968

Int. Cl.³ C07C *103/38, 103/78;* A61K *31/165*

U.S. Cl. 424—324 **47 Claims**

1. A compound selected from the group of N_1-acyl-N_2-phenyl-1,3-diaminopropan-2-ols having the Formula I



(I)

wherein

the acyl group R_1CO is selected from the group consisting of acetyl, propionyl, butyryl, isobutyryl, valeryl, hexanoyl, 3,3-dimethylacryloyl, 2,2-dimethylpropionyl, isovaleryl, heptanoyl, capryloyl, 2-ethyl-hexanoyl, nonanoyl, hexadecanoyl, octadecanoyl, 6-heptenoyl, 2,4-hexendienoyl, 3-hexenoyl, cyclopropylcarbonyl, cyclobutylcarbonyl, cyclopentylcarbonyl, cyclohexylcarbonyl, 1-methylcyclohexylcarbonyl, cyclohexylacetyl, 3-cyclohexen-1-yl-carbonyl, cycloheptylcarbonyl, 1-adamantylcarbonyl, 1-adamantylacetyl, styoylcarbonyl and 3,4-dimethoxycinnamoyl;

R_2 represents hydrogen, alkyl containing 1 to 3 carbon atoms, or methoxyethyl, and

R_3 and R_4 are the same or different from each other and each represent hydrogen, fluorine, chlorine, bromine, iodine, alkyl containing 1 to 3 carbon atoms, or alkoxy containing 1 to 3 carbon atoms; and pharmaceutically acceptable acid addition salts thereof.

46. A method of treating disorders which are connected with the formation of ulcers in larger mammals, which comprises the step of administering to a larger mammal an ulcer-inhibiting effective amount of at least one compound, as defined in claim 1.

4,402,982

ANTIHYPERTENSION TREATMENT AND COMPOSITION THEREFOR

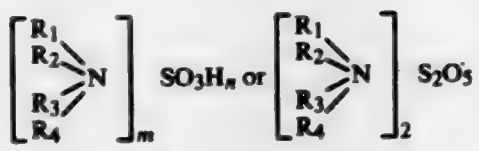
Jose A. A. Alvarez, Carpatos, Mexico, and Ralph B. Thompson, Oak Brook, Ill., assignors to T & R Chemicals, Inc., Clint, Tex.

Filed Jan. 5, 1982, Ser. No. 337,104

Int. Cl.³ A61K *31/14, 31/095*

U.S. Cl. 424—329 **7 Claims**

1. A method of treating hypertension in a human suffering from said condition comprising introducing into said human an antihypertensively effective amount of at least one compound of the formulas:

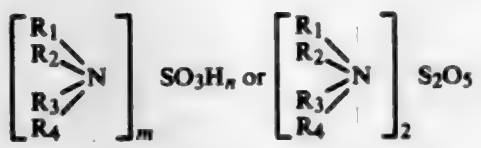


wherein:

R_1, R_2, R_3, R_4 are each independently lower alkyl groups, and

m and n are each an integer whose combined sum is equal to 2, and m is 0 or 1.

5. A pharmaceutical composition for the treatment of hypertension consisting essentially of an antihypertensive-effective amount of a compound of the formula:



wherein:

R_1, R_2, R_3, R_4 are each independently lower alkyl groups, and

m and n are each an integer whose combined sum is equal to 2, and m is 0 or 1,

together with a pharmaceutically acceptable carrier or diluent.

4,402,983
POWDER COATING COMPOSITION FOR AUTOMOTIVE TOPCOAT

James M. Craven, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 188,878, Sep. 19, 1980, abandoned. This application Jul. 22, 1982, Ser. No. 400,950

Int. Cl.[3] C08K *5/34*

U.S. Cl. 428—335 13 Claims

1. A thermosetting powder coating composition of finely divided particles having a particle size of about 1 to 100 microns, wherein the particles are an intimately mixed blend consisting essentially of:

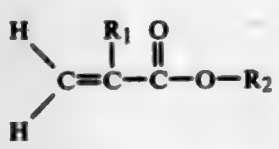
A. an acrylic copolymer having 3 to 10 carboxylic acid groups per polymer chain and consisting essentially of

(1) about 5 to 30 percent by weight, based on the weight of the copolymer, of methacrylic acid, and

(2) about 70 to 95 percent by weight, based on the weight of the copolymer, of other monoethylenically unsaturated monomers which are selected from or a mixture of the following:

(a) up to 25% by weight, based on the weight of the copolymer, of styrene or α-methylstyrene, and

(b) at least one ester of acrylic or methacrylic acid having the formula



where R_1 is selected from the group consisting of hydrogen and the methyl radical, and R_2 is selected from the group consisting of C_1–C_{20} aliphatic hydrocarbon radicals, wherein the copolymer has a number average molecular weight of about 2,000 to 8,000, a weight average molecular weight of about 4,000 to 16,000, and glass transition temperature of about 40° C. to 100° C.;

B. a crosslinking agent capable of reacting with carboxylc acid groups of the copolymer, said crosslinking agent being present in an amount sufficient to provide 0.7 to 1.5 carboxyl-reactive functional groups for each carboxylic acid group originally in the copolymer, said crosslinking agent further being selected from the group consisting of hydantoin epoxides containing 2 to 4 epoxide groups, and disubstituted and trisubstituted oxazolines;

C. agents capable of preventing the degradation of the coating by ultraviolet light consisting essentially of about 0.3 to 5 percent by weight, based on the weight of the acrylic copolymer, of an ultraviolet screener and about 0.3 to 5 percent by weight, based on the weight of the acrylic copolymer, of a hindered amine light stabilizer, said agents having a weight average molecular weight greater than 400 and a particle size of less than 20 microns and

D. about 0.05 to 2.0 percent by weight, based on the weight of the powder coating compositions, of a flow control agent.

12. A substrate coated with a pigmented liquid coating composition and subsequently coated with a transparent powder coating composition according to claim 1 to form a clear coat/color coat finish.

13. The coated article of claim 12 wherein the thickness of the cured powder coating composition is about 1.2 to 3 mils.

4,402,984
PREPARATION OF 1-HYDROPENTADECAFLUOROADAMANTANE AND PERFLUOROADAMANTANE

Robert E. Moore, Wilmington, Del., assignor to Sun Tech, Inc., Philadelphia, Pa.

Division of Ser. No. 165,902, Jul. 3, 1980, abandoned. This application Mar. 16, 1982, Ser. No. 358,559

Int. Cl.[3] A61K *31/025*

U.S. Cl. 424—352 9 Claims

1. A liquid composition, useful as a synthetic blood substitute or a perfusion medium, comprising a normally solid component selected from perfluoroadamantane, 1-hydropentadecafluoroadamantane and a mixture thereof and which solid component is dissolved in a suitable liquid perfluorocarbon.

4,402,985
FLAVORING WITH CYCLIC CARBONATE

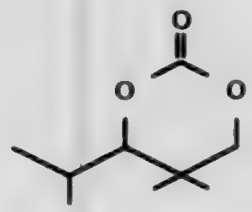
Richard M. Boden, Monmouth Beach, and Michael Licciardello, Farmingdale, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 329,212, Dec. 10, 1981, abandoned. This application Jul. 8, 1982, Ser. No. 396,249

Int. Cl.[3] A23L *1/226*

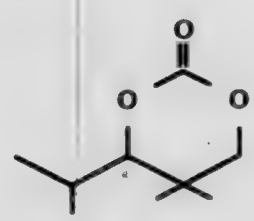
U.S. Cl. 426—3 3 Claims

1. A process for augmenting or enhancing the aroma or taste of a foodstuff or chewing gum comprising the step of adding to a foodstuff base or a chewing gum composition, from 0.10 parts per million up to about 50 parts per million by weight based on the total composition of a cyclic carbonate defined according to the structure:



and, in addition, from 5 up to 100 ppm of 3-phenyl-4-pentenal dimethyl acetal.

2. A composition of matter comprising from 5 to 100 parts by weight of 3-phenyl-4-pentenal dimethyl acetal and from 0.1 up to about 50 parts by weight of the cyclic carbonate defined according to the structure:



4,402,986

BULK STARTER MEDIA

Brian A. Sinkoff, Oak Park, and Robert H. Bundus, Rochester, both of Mich., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 23, 1981, Ser. No. 286,088
Int. Cl.[3] A23C *21/02, 9/12;* C12N *1/20*
U.S. Cl. 426—41 33 Claims

1. A bulk starter base comprising:

(a) a carbohydrate source:

(b) an effective amount of a nitrogen containing growth stimulant;

(c) an alkali metal tripolyphosphate phage control agent;

(d) and sufficient ammonium ion, phosphate ion, and magnesium ion to provide magnesium ammonium phosphate sufficient to maintain the pH of the cultured bulk starter medium above at least pH 5 for at least 20 hours;

the initial pH prior to fermentation being from 6 to about 7.5, said magnesium ammonium phosphate being less than 50% soluble at said initial pH.

4,402,987

NUTRITIONALLY ENRICHED AND STABILIZED MEAT PRODUCTS AND METHOD OF PRODUCING SUCH PRODUCTS

Wolf A. von Lersner, Cherry Hill, N.J., and Barron M. Unger, Manchester, England, assignors to Campbell Soup Company, Camden, N.J.

Filed Sep. 9, 1981, Ser. No. 300,623
Int. Cl.[3] A23L *1/31, 1/30, 1/01;* A22C *17/00*
U.S. Cl. 426—281 20 Claims

1. A method for treating a solid animal meat mass to provide a meat product which exhibits enhanced nutritional values and stability upon cooking, said method comprising introducing into the tissue structure of said meat mass from about 10% to about 200% by weight based on the weight of said meat mass of an aqueous colloidal dispersion comprising insoluble animal protein particles obtained by comminuting animal tissue, and a binder selected from the group consisting of heat coagulatable soluble proteins, starches, pectins and gums which binder sets sufficiently at cooking temperatures to reduce losses associated with cooking.

4,402,988

FRUIT JUICE IMPREGNATED PLANTAINS

George B. Macfie, Jr., Oviedo, Fla., assignor to A. Duda & Sons, Inc., Oviedo, Fla.

Filed Mar. 23, 1982, Ser. No. 361,038
Int. Cl.[3] A23L *3/00, 1/00*
U.S. Cl. 426—335 15 Claims

1. The process of impregnating plantains with fruit juice comprising:

selecting plantains having a sugar content derived from at least a 70% conversion of starch to sugar,

peeling said plantains,

applying at least a 29 inch vacuum to said plantains for at least 10 seconds,

immersing said vacuum treated plantains in a solution of fruit juice for a time sufficient to initiate impregnation of said plantains with said fruit juice,

releasing said vacuum and thereafter holding said plantains immersed within said solution for a dwell time of at least 10 seconds,

removing said fruit juice impregnated plantain from said immersion, and

freezing the juice impregnated plantain.

4,402,989

MICROBIOLOGICAL TRANSFORMATION PRODUCTS OF BETA-IONONE AS OLFACTORY AGENTS

Victor Krasnobajew, Küsnacht, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 96,111, Nov. 20, 1979, Pat. No. 4,311,360.
This application Aug. 31, 1981, Ser. No. 297,893
Claims priority, application Switzerland, Nov. 24, 1978, 12045/78
Int. Cl.[3] A23L *1/226;* C12P *7/26, 7/02*
U.S. Cl. 426—536 13 Claims

1. A fragrance composition comprising an olfactorily effective amount of the product obtained by fermenting β-ionone with a fungus selected from the group consisting of the genera Botryodiplodia, Botryosphaeria and Lasiodiplodia under aerobic conditions wherein

(i) the pH is between 3 and 8;

(ii) the temperature is between 15° C. and 35° C.,

(iii) the fermentation time is between 18 and 216 hours,

(iv) the concentration of the substrate is from 0.5 grams per liter to 20 grams per liter

(v) the fermentation product is separated from the culture by extraction,

(vi) the product is characterized by the presence of at least one of the compounds 2-(3-hydroxy-2,6,6-trimethylcyclohex-1-en-1-yl)ethanol or 2-(3-keto-2,6,6-trimethylcyclohex-1-en-1-yl)ethanol,

and at least one other fragrance material.

2. A flavor composition comprising a flavor imparting amount of the product obtained by fermenting β-ionone with a fungus selected from the group consisting of the genera Botryodiplodia, Botryosphaeria and Lasiodiplodia under aerobic conditions wherein

(i) the pH is between 3 and 8;

(ii) the temperature is between 15° C. and 35° C.,

(iii) the fermentation time is between 18 and 216 hours,

(iv) the concentration of the substrate is from 0.5 grams per liter to 20 grams per liter

(v) the fermentation product is separated from the culture by extraction,

(vi) the product is characterized by the presence of at least one of the compounds 2-(3-hydroxy-2,6,6-trimethylcyclohex-1-en-1-yl)ethanol or 2-(3-keto-2,6,6-trimethylcyclohex-1-en-1-yl)ethanol,

and at least one other flavor material.

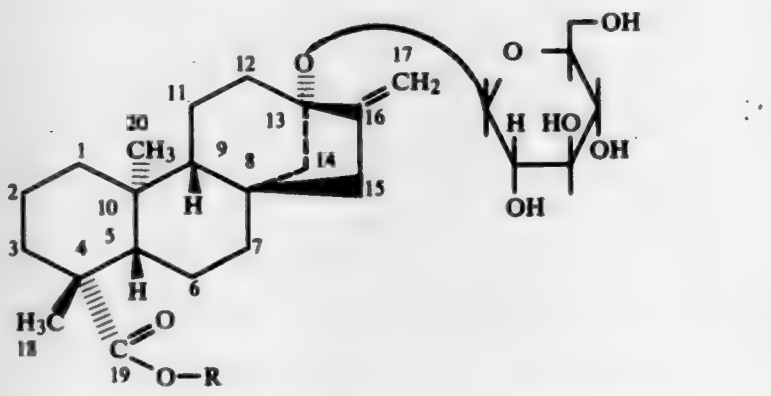
4,402,990

STEVIOLMONOSIDE ANALOGS

Grant E. DuBois, Palo Alto, Calif., assignor to Dynapol, Palo Alto, Calif.

Filed Aug. 26, 1981, Ser. No. 296,568
Int. Cl.[3] C07H *15/24;* A23L *1/236*
U.S. Cl. 426—658 17 Claims

1. A stevioside analog compound having the structure



wherein R is a physiologically acceptable noncarbohydrate polar organic group.

4,402,991
PROCESS AND APPARATUS FOR ELECTROSTATICALLY COATING OBJECTS

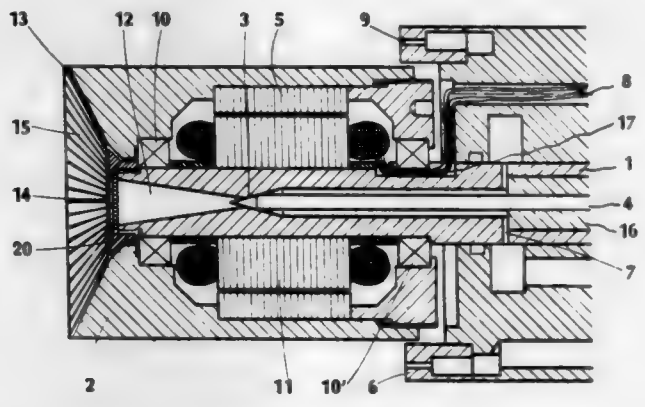
Roland A. Meisner, Schorndorf, Fed. Rep. of Germany, assignor to BASF Farben & Fasern A.G., Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 234,189, Feb. 13, 1981, abandoned. This application Aug. 20, 1982, Ser. No. 409,948

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005677

Int. Cl.[3] B05D *1/04, 1/06, 5/00;* B05B *5/04*

U.S. Cl. 427—31 12 Claims



1. In a process for electrostatically coating objects with a fluid comprising paint by applying a high voltage to a spray bell and by feeding the fluid to a revolving, driven spray bell having a center and a rim, the improvement comprising:

(a) supplying said fluid to said center of the spray bell, said spray bell not having an atomizing hub;

(b) decelerating said fluid to approximately zero in the axial direction as it enters said spray bell;

(c) subjecting said fluid to a toroidal disturbance in the free space of said spray bell;

(d) increasing the flow rate of said fluid from approximately zero by accelerating said spray bell to 15,000 to 60,000 rpm; and

(e) centrifuging said fluid off said spray bell rim and guiding said fluid to an object being coated.

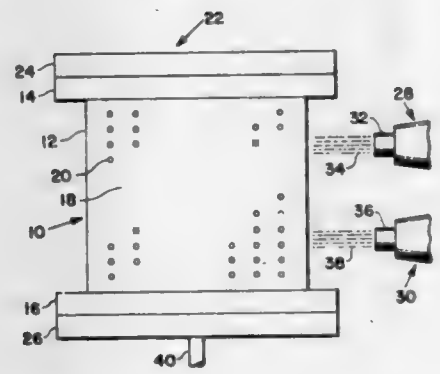
4,402,992
COVERING SOLID, FILM COOLED SURFACES WITH A DUPLEX THERMAL BARRIER COATING

Curt H. Liebert, Middleburg Heights, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 7, 1981, Ser. No. 328,760

Int. Cl.[3] B05D *1/08*

U.S. Cl. 427—34 13 Claims



1. A method of applying a thermal barrier coating system to a member having a plurality of passages therein extending from a surface thereof to a plenum chamber to accommodate an outward flow of fluid to provide film cooling in a high temperature environment comprising the steps of

supplying a fluid under pressure to said plenum chamber whereby said fluid flows outward through said passages,

plasma spraying a metal bond coat onto said surface having the passages therein while said fluid flows through said passages, and

depositing a thermal barrier coating material on said metal bond coat while said fluid flows through said passages whereby entry of said coating material into said passages is prevented thereby inhibiting blockage thereof and reducing base metal oxidation.

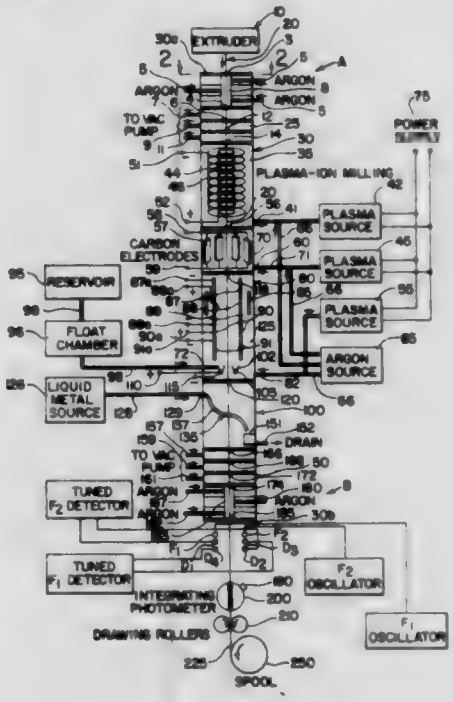
4,402,993
PROCESS FOR COATING OPTICAL FIBERS

Sol Aisenberg, Natick, and Martin L. Stein, Bedford, both of Mass., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Mar. 20, 1981, Ser. No. 245,937

Int. Cl.[3] G02B *5/14, 1/10, 1/12*

U.S. Cl. 427—38 12 Claims



1. A process for the application of at least one imprevious film of elemental coating material continuously about the outer surface of a moving vitreous optical fiber, which process comprises the steps of:

(a) substantially evacuating the ambient oxygen from the surrounding inert gas about said moving fiber;

(b) plasma ion milling the outer surface of said moving fiber while said fiber is in the substantial vacuum caused by said evacuation step; and

(c) thereafter, depositing a film of between about five to less than one thousand Angstroms in thickness of elemental material evenly about the outer surface of said fiber while maintaining said reduced atmospheric pressure, said film depositing step through high energy plasma transfer of ions of said elemental material in said substantially oxygen-free created vacuum.

4,402,994
HIGHLY HARD MATERIAL COATED ARTICLES

Mitsunori Kobayashi, and Yoshihiko Doi, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 258,550, Apr. 29, 1981. This application Aug. 24, 1982, Ser. No. 410,919

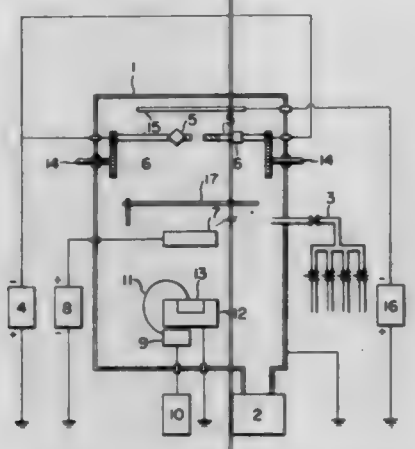
Claims priority, application Japan, May 2, 1980, 55/57770

Int. Cl.[3] B05D *1/00;* B32B *15/04;* C23C *15/00*

U.S. Cl. 427—38 1 Claim

1. A process for the production of a highly hard material coated article, which comprises coating a substrate of tool or part consisting of cermet, cemented carbide tool steel or stain-

less steel. with at least one highly hard material selected from the group consisting of carbidea, nitrides and carbonitrides of at least one of titanium, zirconium and hafnium and solid solutions thereof and those in which oxygen is dissolved with a



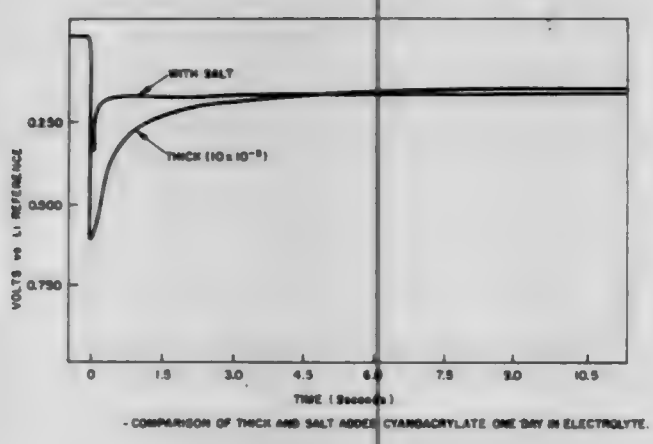
thickness of 1 to 20 microns by an ion plating method comprising applying an accelerating voltage of 0.5 to 5 KV to the substrate at the initial period, followed by lowering the accelerating voltage to 0.1 to 0.5 KV after the passage of about 5 to 10 minutes, in a reactive gas.

4,402,995

TREATMENT OF LITHIUM ANODES

Niles A. Fleischer, Madison, Wis., assignor to Ray-O-Vac Corporation, Madison, Wis.

Filed Jan. 28, 1982, Ser. No. 343,490
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—58 **2 Claims**



- COMPARISON OF THICK AND SALT ADDED CYANOACRYLATE ONE DAY IN ELECTROLYTE.

1. The method for reducing passivation of a lithium electrode used in a cell having a thionyl chloride liquid cathode which comprises coating said lithium electrode before assembly into said cell with a solution of an alkyl 2-cyanoacrylate, a solvent and lithium perchlorate.

4,402,996

ELECTRODE COATING WITH PLATINUM-GROUP METAL CATALYST AND SEMI-CONDUCTING POLYMER

Jurgen F. Ganger; Jean M. Hinden, and Michael Katz, all of Geneva, Switzerland, assignors to Diamond Shamrock Corporation, Dallas, Tex.

PCT No. PCT/US80/01353, § 371 Date May 21, 1981, § 102(e) Date May 21, 1981, PCT Pub. No. WO81/00973, PCT Pub. Date Apr. 16, 1981
PCT Filed Oct. 14, 1980, Ser. No. 282,182
Claims priority, application United Kingdom, Oct. 10, 1979, 7935463
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—86 **30 Claims**

1. A method of manufacturing an electrocatalytic coating comprising at least one platinum group metal catalyst and a polymer material applied to an electroconductive substrate characterized in that:

(a) a uniform liquid mixture containing an inorganic salt compound of a platinum group metal which can be thermally converted to said catalyst, and further comprising at least one polymer which can be thermally converted to a semi-conducting insoluble polymer, is successively applied in several layers to the substrate, each layer being dried before the next layer is applied; and

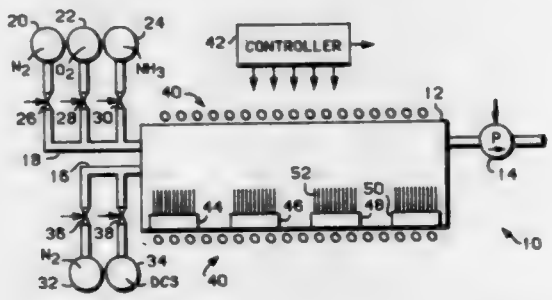
(b) subjecting the resulting dried layers to heat treatment so as to form the platinum group metal catalyst together with said semi-conducting insoluble polymer and to thereby produce a coating consisting of a uniform solid mixture wherein the platinum group metal catalyst is finely dispersed in a matrix of said semi-conducting insoluble polymer.

4,402,997

PROCESS FOR IMPROVING NITRIDE DEPOSITION ON A SEMICONDUCTOR WAFER BY PURGING DEPOSITION TUBE WITH OXYGEN

Richard H. Hogan, and Jonathan C. Dahm, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 17, 1982, Ser. No. 378,927
Int. Cl.³ H01L *21/318*
U.S. Cl. 427—94 **4 Claims**



1. In a manufacturing process for depositing nitride on a semiconductor wafer, comprising the steps of:

placing the wafer in a heated tube;

introducing ammonia and dichlorosilane into the tube to deposit nitride on said wafer;

clearing the ammonia and dichlorosilane from the tube; and

removing the wafer from the tube;

the improvement comprising the additional step of:

purging the tube with oxygen before placing the wafer in the heated tube.

4,402,998

METHOD FOR PROVIDING AN ADHERENT ELECTROLESS METAL COATING ON AN EPOXY SURFACE

Henry Y. Kumagai, Lower Macungie Township, Lehigh County, Pa.; Daniel J. Shanefield, Princeton Township, Mercer County, and Fred W. Verdi, Lawrence Township, Mercer County, both of N.J., assignors to Western Electric Co., Inc., New York, N.Y.

Continuation-in-part of Ser. No. 337,055, Jan. 4, 1982, abandoned. This application Sep. 24, 1982, Ser. No. 422,788
Int. Cl.³ H05K *3/18, 3/42*
U.S. Cl. 427—97 **10 Claims**

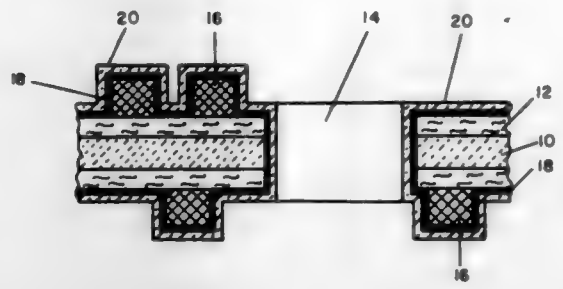
1. A method of forming an adherent electrolessly deposited film on a rubber-modified epoxy resin surface or a surface comprising an epoxy resin having a high degree of unsaturation excluding aromatic unsaturation, comprises the steps of:

(a) baking the substrate so as to degas the surface, and while still warm subjecting the substrate to a vacuum;

(b) while evacuated, sputter etching at least 50 A. from the surface of the substrate;

(c) vacuum metallizing an adherent thin metallic chromium film over the substrate;

(d) depositing a second metallic layer which is catalytic to a subsequent electroless deposition over the adherent metal film; and



(e) electrolessly plating a thick metallic layer over the metallized portions of the substrate.

4,402,999

METHOD OF PREPARATION OF SUBSTRATES FOR LIQUID CRYSTAL DISPLAY DEVICES

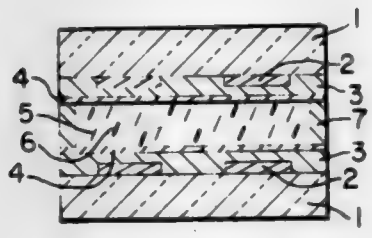
Toshio Tatsumichi, Ando, and Hiroshi Kawarada, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 21, 1981, Ser. No. 266,053

Claims priority, application Japan, May 22, 1980, 55-68609; May 22, 1980, 55-68610; May 27, 1980, 55-71049

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—126.3 **4 Claims**



1. In the method for the preparation of an electrode substrate for use in a liquid display device utilizing perpendicular alignment of liquid crystal and dichroic dye molecules, the improvement wherein a base substrate bearing an electrode film is coated with an insulating film on the surface which contacts the liquid crystal, rubbing the insulating film with cloth in a fixed direction and, following the rubbing treatment, treating the rubbed surface with a silane surfactant so that when the electrode substrate is employed in a liquid crystal display device the liquid crystal and dye molecules are arranged in the direction of the major axes thereof in substantially perpendicular orientation at constant tilt angles greater than 0° but less than 5° in the same direction on the interface with said electrode substrate.

4,403,000

METHOD OF FORMING A COHESIVE DISPLAY OBJECT

Victor Gates, 1342 Harvard, Santa Monica, Calif. 90404

Continuation of Ser. No. 168,550, Jul. 14, 1980, abandoned. This application Oct. 19, 1981, Ser. No. 312,417

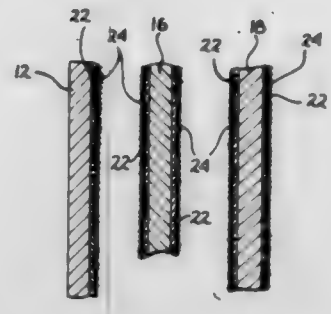
Int. Cl.³ B05D *1/16*

U.S. Cl. 427—206 **7 Claims**

1. A method for forming a display object having at least a first surface at least partially coated with a powdered fiberous material, and display items having at least a first surface at least partially coated with said powdered fiberous material, wherein said first surface of said display object is disposed against said first surface of said display items to form a display, comprising the steps of:

(a) coating at least a portion of said first surface of said display object and at least a portion of said first surface of said display items with a thin layer of a non-drying adhesive, said non-drying adhesive consisting of: 1,1,1 Trichlorethane; acrylic resin, a terpene resin blend; a phthalate plasticizer; and a propane-isobutane blend;

(b) covering at least said coated portion of said first surface of



said first surface of said display items with a powdered fiberous material such that only a portion of said fiberous material is coated with said non-drying adhesive;

whereby said display items may be removably displayed on said display object.

4,403,001

ELECTROLESS APPLICATION OF A SILVER COATING TO DIAMOND PARTICLES

John W. Grenier, Bad-Soden, Fed. Rep. of Germany, assignor to General Electric Company, Worthington, Ohio

Filed May 18, 1981, Ser. No. 264,733

Int. Cl.³ B05D *7/00*

U.S. Cl. 427—217 **2 Claims**



1. In a method for applying a coating of elemental silver on the exterior surfaces of diamond particles wherein an aqueous ammoniacal silver solution is mixed with an aqueous reducing solution and said diamond particles contacted with said mixture, the improvement comprising:

(a) using an ammoniacal silver solution and a reducing solution which are formulated from the following ingredients:

Ingredient	Concentration
AMMONIACAL SILVER SOLUTION	
$AgNO_3$	0.3 g-moles/l
KOH	0.3 g-moles/l
NH_4OH	0.66 g-moles/l
INVERT SUGAR REDUCING SOLUTION	
Sugar	0.26 g-moles/l
HNO_3	4 ml/90 g of sugar

(b) agitating said ammoniacal solution containing said diamond particles sufficiently to suspend said particles therein; and

(c) adding the reducing solution to said agitated ammoniacal silver solution at a metered rate adequate to produce a continuous, grainy elemental silver coating on said diamond particles, which for 50 g batches of said diamond particles is about 20 to 125 drops/min.

4,403,002
VACUUM EVAPORATING APPARATUS

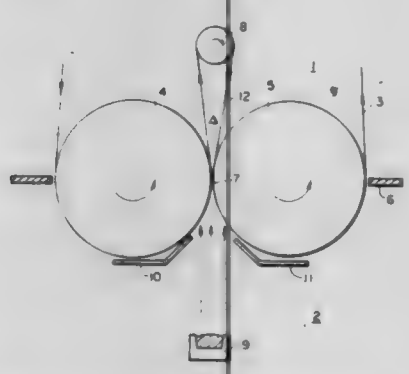
Goro Akashi, and Ryuji Shirahata, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 213,130, Dec. 4, 1980, abandoned. This application Nov. 23, 1982, Ser. No. 443,996

Claims priority, application Japan, Dec. 10, 1979, 54-160102; Dec. 10, 1979, 54-160103

Int. Cl.³ C23C *11/00;* B23K *9/00*

U.S. Cl. 427—255.5 9 Claims



1. A method for vacuum evaporation onto a tape-shaped base comprising the steps of:

providing at least two parallel cylindrical cans with a narrow gap between said cans to maintain a vacuum degree difference between upper and lower sides of the cans;

providing a vacuum around said cans wherein a higher vacuum is provided below said cans than above said cans;

rotating said cans in the same direction so as to transfer the tape-shaped base through said gap; and

vacuum evaporating a vapor material into said gap and depositing it onto said tape-shaped base solely in a predetermined area on both sides of said gap as said tape-shaped base passes therethrough.

4,403,003
ARTICLE HAVING BASECOAT/CLEARCOAT AND PROCESS FOR COATING

Alan J. Backhouse, South Ascot, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 31, 1981, Ser. No. 249,634

Claims priority, application United Kingdom, Apr. 14, 1980, 8012199

Int. Cl.³ B05D *3/02, 1/36*

U.S. Cl. 427—407.1 14 Claims

1. A process for the production of a multi-layer protective and/or decorative coating upon a substrate surface, which comprises the steps of:

(1) applying to the surface a basecoat composition comprising (a) a film-forming material, (b) a volatile liquid medium for the said material and (c) pigment particles dispersed in the said liquid medium;

(2) forming a polymer film upon the surface from the composition applied in step (1);

(3) applying to the basecoat film so obtained a transparent topcoat composition comprising (d) a film-forming polymer and (e) a volatile carrier liquid for the said polymer;

(4) forming a second polymer film upon the basecoat film from the composition applied in step (3); and

(5) curing the polymer film from steps (2) and (4),

characterised in that the constituents (a) and (b) of the basecoat composition are provided by a dispersion in an aqueous medium of crosslinked polymer microparticles which have a diameter in the range 0.01 to 10 microns, are insoluble in the said aqueous medium and are stable towards gross flocculation, the dispersion having a pseudoplastic or thixotropic character.

4,403,004
SANDWICH METALIZED RESIN LAMINATE

Harry A. Parker, Murray Hill, and Joseph Greenman, Plainfield, both of N.J., assignors to Transfer Print Foils, Inc., East Brunswick, N.J.

Filed Oct. 23, 1981, Ser. No. 314,314

Int. Cl.³ B60R *13/00;* B29C *19/00;* C09J *7/02*

U.S. Cl. 428—31 18 Claims



1. A decorative metallized laminate having improved brilliance, reflectance and weatherability, comprising:

A. a base layer prepared from a thermo-formable resin film, both surfaces of said base layer having a thin, adherent reflective metal coating thereon;

B. an outer, protective capping layer prepared from a film having at least one surface thereof treated for receptivity to adhesive bonding, and to resist attack by ultra-violet radiation, said capping layer adhesively bonded to one of the surfaces of said base layer; and

C. a pressure and heat sensitive elastomeric adhesive coating resistant to attack by ultra-violet radiation and harmless to said metal coatings, disposed intermediate the adjacent metallized surface of said base layer and said capping layer.

2. The laminate of claim 1 further including at least one thermo-formable, compatible resinous backing layer laminated to the free metallized surface of said base layer.

3. An automotive trim strip comprising the laminate of claim 2 in combination with a substrate layer in the shape of said trim strip bonded to said backing layer.

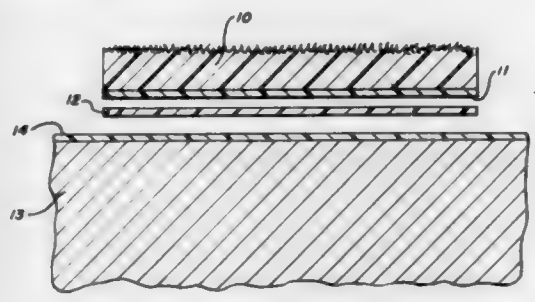
4,403,005
SYSTEMS FOR PROTECTING STEEL

Norman Nevins, Dayton, and Robert L. McVay, Cincinnati, both of Ohio, assignors to Protective Treatments, Inc., Dayton, Ohio

Filed Feb. 17, 1981, Ser. No. 234,909

Int. Cl.³ B32B *3/14;* E04F *13/08*

U.S. Cl. 428—48 16 Claims



1. A steel bridge deck surfaced with plastic tiles, said tiles being bonded to said bridge deck by means of a bonding layer having a Shore 00 hardness of from 78 to 90 and comprising an elastomer compounded with a stiffening filler in an amount at least equal to half the weight of the elastomer, and low volatile liquid plasticizer in an amount to provide the stated hardness.

4,403,006

SAG-RESISTANT GYPSUM BOARD CONTAINING COAL FLY ASH AND METHOD FOR MAKING SAME

Robert B. Bruce, Burlington, and Richard A. Kuntze, Mississauga, both of Canada, assignors to United States Gypsum Company, Chicago, Ill.

Filed Mar. 13, 1980, Ser. No. 129,870
Claims priority, application Canada, Oct. 1, 1980, 343439
Int. Cl.[3] B32B *1/04, 5/18, 13/04, 31/00*
U.S. Cl. 428—70 10 Claims

1. A sag resistant gypsum board consisting essentially of a monolithic cellular core of set gypsum solids from an aqueous stucco slurry and having a fibrous cover sheet encasement, with the gypsum core having incorporated therein a small amount of coal fly ash included in the slurry, the fly ash having a particle size ranging between about 0.5 and 200 microns and a BET surface area ranging between about 0.1 and 10 square meters per gram.

4,403,007

FILLED THERMOPLASTIC COMPOSITIONS BASED ON ETHYLENE INTERPOLYMERS AND POLYESTER, POLYETHER AND POLYETHER ESTER PLASTICIZERS

Michael C. Coughlin, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 176,781, Aug. 11, 1980, abandoned. This application Jun. 15, 1981, Ser. No. 273,419
Int. Cl.[3] C08K *5/06, 5/10;* B32B *27/36, 27/32*
U.S. Cl. 428—95 23 Claims

1. A composition consisting essentially of (a) from about 5 to about 55% by weight of at least one copolymer of ethylene with at least one comonomer selected from the group consisting of vinyl esters of saturated carboxylic acids wherein the acid moiety has up to 4 carbon atoms, unsaturated mono- or dicarboxylic acids of 3 to 5 carbon atoms, salts of said unsaturated acids, and esters of said unsaturated acids wherein the alcohol moiety has 1 to 8 carbon atoms, the ethylene content of said copolymer being from about 40 to about 95% by weight, the comonomer content of said copolymer being from about 5 to about 60% by weight, and the melt index of said copolymer being from about 0.1 to about 150, provided that when said copolymer of ethylene is an ethylene/vinyl ester or ethylene/unsaturated mono- or dicarboxylic acid ester copolymer said copolymer can contain up to about 15 percent by weight of carbon monoxide or sulfur dioxide; (b) from about 1 to about 15 percent by weight of at least one plasticizer selected from the group consisting of polyesters, polyethers, polyether esters, and combinations thereof with processing oil, wherein said polyester is a liquid condensation product of (α) dibasic acid selected from the group consisting of saturated aliphatic dibasic acids and aromatic dibasic acids and (β) polyol selected from the group consisting of aliphatic polyols and polyoxyalkylene polyols; (c) from about 40 to about 90% by weight of filler; (d) from 0 to about 27.5% by weight of unvulcanized elastomeric polymer; and (e) from 0 to about 44% by weight of olefin polymer selected from the group consisting of low density branched polyethylene, high density linear polyethylene, linear copolymers of ethylene and another olefin comonomer, polypropylene and copolymers of propylene and ethylene where the ethylene content is up to 20% by weight.

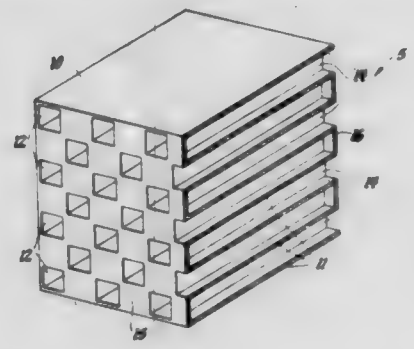
4,403,008

FLEXIBLE CELL PLUGGING MASK FOR USE IN FABRICATING PARTICULATE FILTERS

James R. Factor, Durand, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 8, 1982, Ser. No. 356,174
Int. Cl.[3] B32B *3/12*
U.S. Cl. 428—117 2 Claims

1. A mask for use in applying a filler material to plug alternate openings in an extruded ceramic monolith element during the fabrication of a particulate filter, the monolith element being of the type having a continuous outer wall internally interconnected by a large number of interlaced thin porous internal walls defining parallel passages extending longitudinally through the ceramic monolith element from opposite end faces thereof with the passages being of substantially uniform cross section and arranged in vertical and horizontal rows when viewed in elevation of a said end face thereof to define a honeycomb matrix; said mask, of flexible elastomeric material, includes a flat base member of a size and shape complementary to a said end face whereby it can be placed in abutment thereagainst, said base member having a plurality of flexible pins



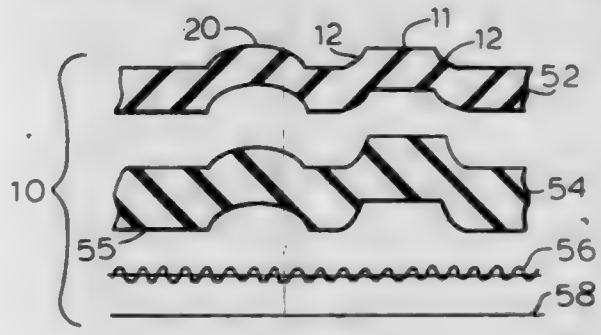
extending outward from one face thereof with said pins arranged in a checkerboard configuration, said pins being of a size and shape for insertion into alternate said passages, and having a plurality of apertures extending therethrough with said apertures arranged in a checkerboard configuration but offset relative to said pins, said apertures being of a size and shape corresponding substantially to the cross section of said passages whereby a filler material can be extruded therethrough into the associate aligned alternate passages of the monolith element whereby to effect blocking of that end of said passages.

4,403,009

SKID RESISTANT RESILIENT FLOOR COVERING

Dale G. Onderak, Munroe Falls, and David L. Pangallo, Ravenna, both of Ohio, assignors to Becton Dickinson and Company, Paramus, N.J.

Filed Nov. 24, 1982, Ser. No. 444,409
Int. Cl.[3] B32B *3/00;* B29C *17/00*
U.S. Cl. 428—159 18 Claims



1. A laminate for skid resistant floor coverings, characterized by

(a) a wear layer of a thermoplastic material with a wear surface and a backside surface;

(b) a foam layer of a thermoplastic material adhered to the backside surface of said wear layer to form therewith a mat;

(c) a scrim layer adhered to the surface of said mat on the side of said foam layer opposite said wear layer;

(d) a barrier film adhered to said scrim layer on the side thereof opposite said foam layer;

(e) said mat having impressed therein a plurality of juxtaposed sections;

(f) each said section bounded by a dam for containing liquids in individual sections; and

(g) each said section having a plurality of raised cells in spaced apart relation to each other over the surface thereof.

4,403,010

METAL-PLASTIC LAMINATE FOIL

Werner Festag, Schaffhausen; Hans U. Müller, Löhningen; Hans P. Breitler, and Max Bolliger, both of Kreuzlingen, all of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jul. 23, 1981, Ser. No. 286,366

Claims priority, application Switzerland, Aug. 18, 1980, 6207/80

Int. Cl.³ B32B *3/00*; C09J *7/02*

U.S. Cl. 428—200 9 Claims



1. Metal-plastic composite foil having a plastic core and on both sides of same outer layers of metal thin strip, said composite foil being cold formable by deep drawing or by deep drawing with elongation of the foil into relatively large light-weight containers which have a full weight of up to about 30 kg and can be closed or fitted together by known sealing methods, wherein the composite foil includes a plastically formable, stretched or oriented plastic core having an elongation at fracture of 40–180%, an adhesively bonding intermediate layer with a shear strength of at least 0.3 N/mm^2 on both sides of the plastic core, and metal thin strips on top of the adhesive intermediate layers, wherein the two layers of thin metal strip are securely attached to said plastic core layer with the aid of the said adhesive intermediate layers, and wherein the choice of ductility of the plastically formable plastic core is in a range of 40–180% such that, when the composite foil is elongated, the load borne by the plastic core is greater than that borne by each of the layers of thin metal strip.

8. Metal-plastic composite foil according to claim 1 wherein a hot-melt is deposited on one side of the composite foil.

9. Metal-plastic composite foil according to claim 8 wherein the hot-melt is deposited partially on one side of the composite foil.

4,403,011

PROCESS FOR THE TREATMENT OF WOOL CONTAINING MATERIAL

James K. Skelly, and George C. Philpott, both of Wilmslow, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 9, 1981, Ser. No. 328,886

Claims priority, application United Kingdom, Dec. 18, 1980, 8040566

Int. Cl.³ B32B *7/00*; B05D *3/02*

U.S. Cl. 428—264 11 Claims

1. Process for treating wool containing material which comprises applying to the material in a first step an aqueous composition containing a total amount of

0.25 to 6 percent by weight of a first polymer which is

(A) a dialkyl polysiloxane diol containing aminoalkyl groups or

(B) a poly(alkylene oxide) polythiol,

and in a second step an aqueous composition containing a total amount of

0.1 to 4 percent by weight of a second polymer which is different from the first polymer and which is

(A) a dialkyl polysiloxane diol containing aminoalkyl groups, or

(C) a polyamide resin,

the indicated percentages being related to the solids content of the polymers in the compositions in relation to the weight of the material to be treated.

10. Wool containing material treated by the process according to claim 1.

4,403,012

BALLISTIC-RESISTANT ARTICLE

Gary A. Harpell, Morristown; Sheldon Kavesh, Whippany; Igor Palley, Madison, and Dusan C. Prevorsek, Morristown, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Mar. 19, 1982, Ser. No. 359,975

Int. Cl.³ B32B *27/00*

U.S. Cl. 428—290 11 Claims

1. A ballistic-resistant article of manufacture comprising a network of polyolefin fibers having, in the case of polyethylene fibers, a weight average molecular weight of at least about 500,000, a tensile modulus of at least about 300 g/denier and a tenacity of at least about 15 g/denier, and in the case of polypropylene fibers, a weight average molecular weight of at least about 750,000, a tensile modulus of at least about 160 g/denier and a tenacity of at least about 8 g/denier, said fibers being formed into a network of sufficient thickness to absorb the energy of a projectile.

4,403,013

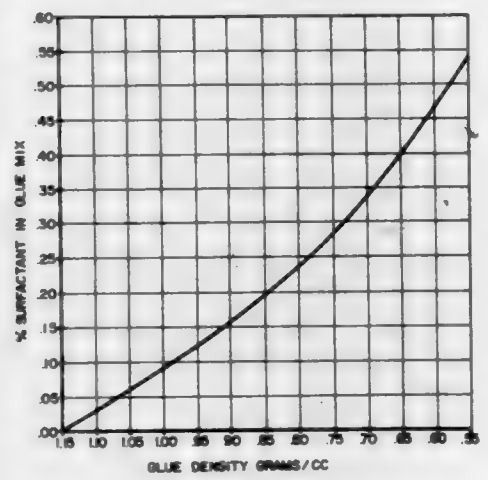
THERMOSETTING RESIN GLUES FOAMABLE TO HIGH DENSITY

Paul Robitschek, and Jeffrey B. Stone, both of Eugene, Oreg., assignors to Chembond Corporation, Springfield, Oreg.

Continuation of Ser. No. 127,931, Mar. 7, 1980, abandoned. This application May 6, 1982, Ser. No. 375,533

Int. Cl.³ B32B *3/26*

U.S. Cl. 428—318.4 14 Claims



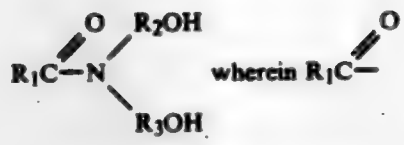
1. Combination of components for use in formulating foamable wood lamination glue to maintain a desired high density during and after mechanical foaming with a non-reactant gas comprising

an aqueous alkaline thermosetting resin selected from the group consisting of phenol-formaldehyde-resin, urea-formaldehyde-resin, urea-melamine-formaldehyde-resin, and resorcinal-formaldehyde-resin,

such resins having resin solids content in the range of about 40% to 65% by weight, and

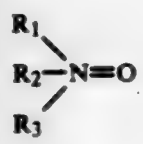
a surfactant selected from the group consisting of

fatty acid amides of the alkanol-amines having the following structure



is a fatty acid radical of 8 to 18 carbon atoms, and R_2 and R_3 are lower alkyl radicals, and

tertiary amine oxides having the following structure



wherein R_1 is an alkyl radical of 8 to 18 carbon atoms and R_2 and R_3 are lower alkyl radicals,

such surfactant being incorporated and mixed in an amount between about 0.1% and about 5% by weight of such resin to control mechanical foaming with a non-reactant gas by maintaining a density of at least 0.5 g/cc during such mechanical foaming and extending thereafter for a period of about twenty-four hours, such density being measured at 25° C.

4,403,014

PROCESS OF DEPOSITING A HARD COATING OF A GOLD COMPOUND ON A SUBSTRATE FOR COATING JEWELRY AND THE LIKE

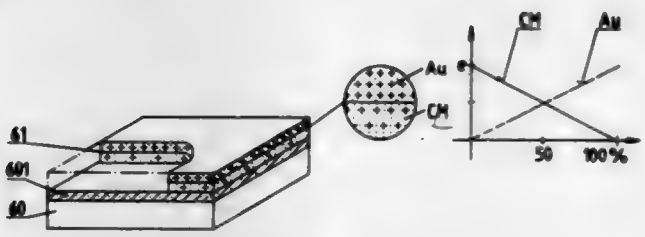
Erich Bergmann, Bienne, Switzerland, assignor to ASU Composants S.A., Les Ponts-de-Martel, Switzerland

Filed Mar. 25, 1981, Ser. No. 247,373

Claims priority, application Switzerland, Apr. 10, 1980, 2750/80

Int. Cl.³ B32B *15/04*; C22C *1/04, 1/05*

U.S. Cl. 428—546 **10 Claims**



1. An article of jewelry comprising a solid substrate, and a coating on said substrate, said coating comprising a gold composite consisting essentially of at least one member of the group consisting of gold, silver, rhodium, palladium, platinum, iridium and osmium and at least one nitride, carbide or boride of a metal selected from the group consisting of the Group IV b elements and tantalum, said coating containing, depending upon its thickness, an opposite gradient of concentration by volume of said at least one member and said at least one nitride, carbide or boride.

4,403,015

COMPOUND SINTERED COMPACT FOR USE IN A TOOL AND THE METHOD FOR PRODUCING THE SAME

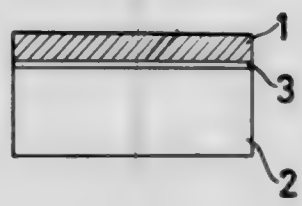
Tetsuo Nakai; Shuji Yazu, and Akio Hara, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 21, 1981, Ser. No. 227,787

Claims priority, application Japan, Oct. 6, 1979, 54-129127; Oct. 9, 1979, 54-130215

Int. Cl.³ B22F *3/14, 7/08*

U.S. Cl. 428—565 **13 Claims**



1. A compound sintered compact for use in a tool characterized in that a hard sintered compact containing diamond or cubic boron nitride in an amount in excess of 20 volume % is bonded to a cemented carbide substrate with interposition of of an intermediate bonding layer less than 2 mm in thickness comprising cubic boron nitride in an amount effective to ensure rigid bonding between the hard sintered compact and the cemented carbide substrate but not exceeding 70 volume %, the residual part consisting essentially of a compound selected from the group consisting of carbides, nitrides, carbonitrides or borides of *4a, 5a, 6a* transition metals of the periodic table, an admixture thereof, or a mutual solid solution compound thereof.

4,403,016

GOLD-COLORED SILVER-CADMIUM-NICKEL ALLOY FOR ELECTRODEPOSITED DUPLEX COATING

Charles Ausbrooks, Sheridan, Ark., assignor to Timex Corporation, Waterbury, Conn.

Division of Ser. No. 213,138, Dec. 4, 1980, abandoned. This application Sep. 13, 1982, Ser. No. 417,806

Int. Cl.³ B32B *15/00*

U.S. Cl. 428—672 **3 Claims**

1. A coated article having thereon a duplex coating comprising a substrate with a first gold-colored coating consisting essentially of, by weight, about 85 to 90% silver, about 0.5 to 1% nickel, about 6 to 10% cadmium and up to about 2% indium and a second coating deposited on said first coating, said second coating being a gold containing alloy.

4,403,017

LOW THERMAL EXPANSION MODIFIED CORDIERITES

Jean-Marie Bind, Ville d'Azray, France, assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Nov. 30, 1981, Ser. No. 325,959

Int. Cl.³ B32B *9/04, 17/00, 13/04*

U.S. Cl. 428—702 **8 Claims**

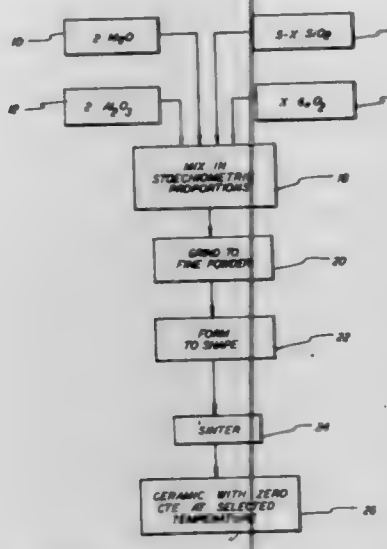
1. A polycrystalline sintered ceramic single phase structure having improved thermal expansion and sintering characteristics, having the cordierite structure and the composition, on a molecular basis of: about 2 moles magnesium oxide, about 2 moles aluminum oxide, and about 5 moles divided between silicon dioxide and germanium oxide.

3. The method of manufacturing ceramic single phase structures having improved thermal expansion and sintering characteristics which comprises the steps of:

providing, on a molecular basis, a mixture of about 2 moles magnesium oxide, about 2 moles aluminum oxide, and about 5 moles divided between silicon dioxide and germanium oxide;

milling said mixture until finely divided and thoroughly mixed;

forming said mixture into a desired shape;
gradually heating said shape to a temperature at which



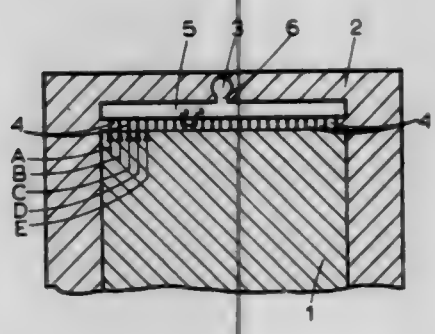
sintering occurs and a cordierite type structure is formed; and
gradually cooling said structure.

4,403,018

APPARATUS FOR SUPPLYING OR DRAINING A FLUID TO OR FROM THE MARGINAL PORTION OF A FLAT FUEL CELL ELECTRODE AND AN ELECTRODE ELEMENT AND A FUEL CELL PROVIDED WITH SUCH AN APPARATUS

Marinus Alfenaar, Schinnen; Joannes J. P. Leijen, Sittard, and Willem J. Schlösser, Kerkrade, all of Netherlands, assignors to Electrochemische Energieconversie, N.V., Bol, Belgium

Filed May 29, 1981, Ser. No. 268,250
Claims priority, application Netherlands, May 31, 1980, 8003193
Int. Cl.³ H01M 8/04
U.S. Cl. 429—34 5 Claims



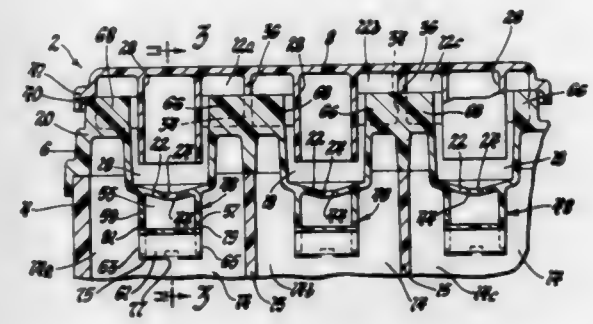
1. Apparatus for supplying or draining a fluid to or from a marginal portion of a flat cell electrode, which electrode is mounted in a frame thus forming with this frame and apparatus an electrode-element, which apparatus consists of at least a supply or drainage device for the fluid, wherein said supply or drainage device is in communication with a collecting chamber which runs in a plane parallel to the longitudinal plane of the frame and runs substantially parallel to said marginal portion of the fuel cell electrode and which is in further communication with a number of substantially equidistantly spaced points of this marginal portion via micro-channels, which micro-channels run in a plane parallel to the longitudinal plane of the frame and are open at the upper side, which side is situated in one of the two outer planes of the frame that are parallel to the longitudinal plane of the said frame, when the electrode-element is not assembled and have substantially identical dimensions and a width b that is smaller than their depth d.

4,403,019

VENTING SYSTEM FOR ELECTRIC STORAGE BATTERY

David T. Poe, Yorktown, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 29, 1982, Ser. No. 362,749
Int. Cl.³ H01M 2/12
U.S. Cl. 429—53 1 Claim



1. In an electric storage battery having a venting system for relieving gases from the innards of the battery including an electrolyte trapping chamber defined in part by a floor sloping toward an electrolyte drainage aperture at the low point of the floor, and means integrally molded to, and depending from, the underside of said floor beneath said aperture for reducing electrolyte invasion of said aperture directly from said innards, said means comprising:

a first wall depending substantially vertically from the underside of said floor on one side of said aperture, said wall having an upper edge rooted at said floor and a lower distal edge remote from the rooted edge;

lateral walls rooted at, and depending substantially vertically from, the underside of said floor on opposite sides of said aperture, said lateral walls each having a substantially vertical edge adjoining said first wall and an angling edge declining from said floor at an acute angle toward said distal edge;

a closure wall resiliently rooted at the underside of said floor on the side of said aperture opposite said one side and extending beneath said aperture, said closure wall being defined by lateral edges each adjacent one of said angling edges and a drip edge adjacent said distal edge, and serving to provide a protective shield between said aperture and said innards to substantially prevent invasion of said aperture by electrolyte splashing within said innards, said resilient rooting being such that said closure wall deflects sufficiently to permit withdrawal of a coring element following molding and return after said elements are withdrawn;

a drainage opening at said distal and drip edges to permit return of trapped electrolyte to said innards; and

a gap between said angling edges and said closure wall for relieving said gases from said innards when the electrolyte level therein is above said drainage opening.

4,403,020

ELECTROCHEMICAL CELL

Frederick W. Dampier, Waltham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 3, 1982, Ser. No. 354,274
Int. Cl.³ H01M 6/14
U.S. Cl. 429—91 11 Claims

1. A primary electrochemical cell comprising

an outer case;

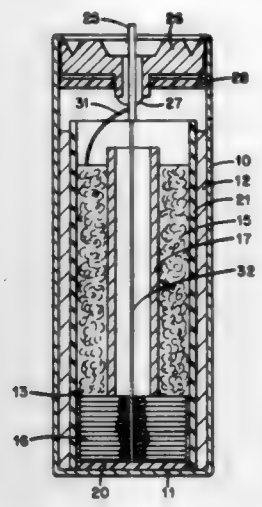
an anode disposed within the outer case;

a cathode current collector disposed within the outer case and encircled by the anode;

a separator of non-conductive material interposed between the anode and the cathode current collector; and

an electrolytic solution, in contact with the anode and cathode current collector, comprising a reducible liquid cathode material and an electrolyte solute dissolved therein;

the cathode current collector including a first catalyst of porous carbon material for reducing the liquid cathode



material and a second catalyst of porous nickel material for reducing the liquid cathode material.

4,403,021

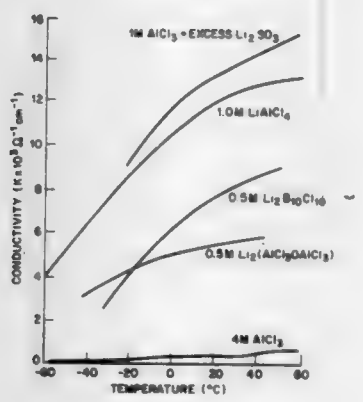
ELECTROCHEMICAL CELL AND ELECTROLYTIC SOLUTION THEREFOR

Michael J. Domeniconi, Santa Clara, Calif.; Carl R. Schlaikjer, Winchester, and Clifton A. Young, Bedford, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Continuation of Ser. No. 147,985, May 8, 1980, abandoned. This application Dec. 6, 1982, Ser. No. 447,049

Int. Cl.³ H01M *6/16*

U.S. Cl. 429—101 **11 Claims**



1. An electrochemical cell comprising

an oxidizable anode material;

a cathode current collector; and

an electrolytic solution, in contact with the anode material and the cathode current collector, comprising a reducible liquid cathode material and an electrolyte solute consisting of the reaction products of lithium sulfite and a Lewis acid dissolved in the liquid cathode material.

4,403,022

CHEMICALLY MODIFIED PHOTOELECTROCHEMICAL CELL

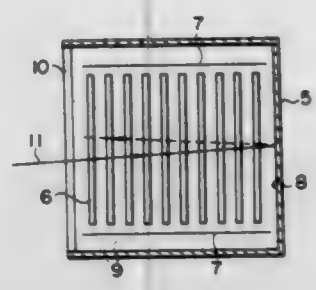
Tetsuo Osa, and Masamichi Fujihira, both of Sendai, Japan, assignors to The President of Tohoku University, Miyagi, Japan

Filed Jan. 2, 1981, Ser. No. 221,977

Int. Cl.³ H01M *6/36*

U.S. Cl. 429—111 **4 Claims**

1. A chemically modified wet-type photoelectrochemical cell comprising a light-admitting container, a plurality of anodes and at least one cathode in an electrolyte solution in said container, said anodes comprising light-transmitting flat substrates of n-type semiconductor chemically modified by having fixed thereon through covalent bonds molecules of a plurality of different kinds of sensitizer dyes having different absorption



wavelengths, said anodes being disposed parallel to each other in the form of layers in said electrolyte solution.

4,403,023

THERMAL INSULATION

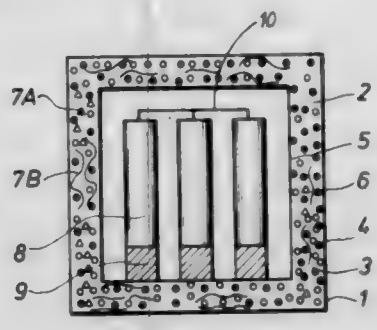
Harald Reiss, Leimen, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed Oct. 6, 1981, Ser. No. 309,068

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1980, 3038142

Int. Cl.³ H01M *10/50*

U.S. Cl. 429—120 **10 Claims**



1. Thermal insulation comprising at least one cavity containing insulating material closed off by walls, with said cavity having at most a residual pressure of 1–10 mbar and containing a first and a second powdered infrared optical opacifiers wherein the first opacifier is titanium dioxide and the second is magnetite, said first opacifier having a primary particle diameter of at most 0.01 to 0.03 μm and the second opacifier having a primary particle diameter of at least 0.2 μm and both opacifiers having a high index of refraction in the infrared range.

4,403,024

BATTERY SEPARATOR

Geoffrey H. Gordon, Medford, and John H. Gillespie, Stow, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

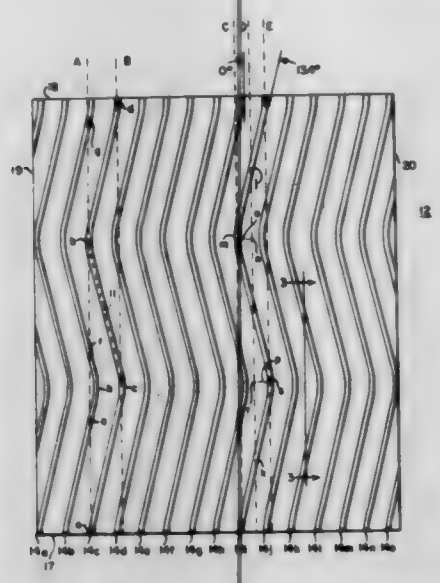
Filed Jan. 11, 1982, Ser. No. 338,381

Int. Cl.³ H01M *2/18*

U.S. Cl. 429—146 **8 Claims**

1. A battery separator comprising a substantially planar back web having two opposed faces, each of said faces having a top edge and a bottom edge and a plurality of ribs on at least one of said faces being sinusoidal like in configuration, at least 75% continuous in extending from said bottom edge to said top edge of said battery separator face and isolated on said back web from one another wherein no line can be drawn vertically from the bottom edge to the top edge of said face having said sinusoidal like ribs without crossing at least one of said ribs at least twice and not passing through more than 4 ribs and wherein said ribs have no more than one complete wave per 45 millime-

ters in vertical distance, and have a deflection from the vertical of about 5° to about 25° and a total horizontal deflection distance of about 3 to about 50 millimeters wherein at least some of said ribs are nested with an adjacent rib.

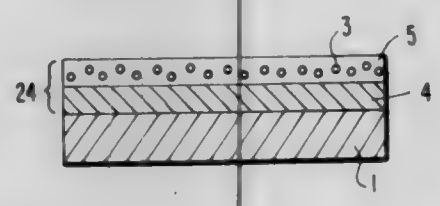


4,403,025

ELECTROPHOTOGRAPHIC PHOTORECEPTOR

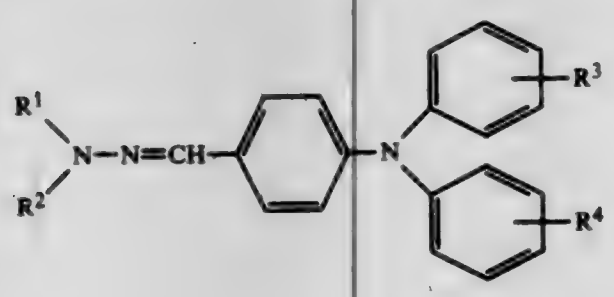
Seiji Horie; Masayoshi Nagata; Junji Nakano, and Hideo Sato, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 24, 1981, Ser. No. 276,745
Claims priority, application Japan, Jun. 24, 1980, 55/85495
Int. Cl.³ G03G 5/04
U.S. Cl. 430—59 10 Claims

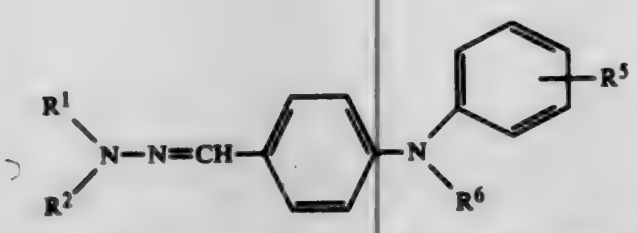


1. An electrophotographic photoreceptor comprising a conductive support with a light-sensitive layer thereon containing a hydrazone compound represented by formula (I) or, (II):

(I)



(II)



wherein X represents O, S or $>N-R^6$; R^1 and R^2 each represents a non-substituted or a substituted straight or branched chain alkyl group containing from 1 to 12 carbon atoms, a non-substituted or a substituted straight or branched chain aralkyl group containing from 7 to 20 carbon atoms, or a non-substituted or a substituted aryl group, the aryl group including monovalent residues of monocyclic aromatic rings and condensed polycyclic aromatic rings having from 2 to 4 rings therein; R^3, R^4 and R^5 each represents hydrogen, a non-substituted or a substituted straight or branched chain alkyl group containing from 1 to 12 carbon atoms, a non-substituted or a substituted straight or branched chain aralkyl group containing from 7 to 20 carbon atoms, a straight or a branched chain alkoxy group containing from 1 to 4 carbon atoms, an aryloxy group containing from 6 to 10 carbon atoms, an acyl group containing from 2 to 8 carbon atoms, and alkoxycarbonyl group containing from 2 to 5 carbon atoms, a halogen atom, a nitro group, a monoalkylamino group whose alkyl moiety contains from 1 to 4 carbon atoms, a dialkylamino group whose alkyl moiety contains from 1 to 4 carbon atoms, or an amido group containing from 2 to 8 carbon atoms; and R^6 represents a non-substituted or a substituted straight or branched chain alkyl group containing from 1 to 12 carbon atoms, or a non-substituted or a substituted straight or branched chain aralkyl group containing from 1 to 12 carbon atoms.

5. An electrophotographic photoreceptor as in claim 1, 2, or 3, wherein said light-sensitive layer is formed of (1) a charge transport layer containing said hydrazone compound and (2) a charge generating layer.

4,403,026

PHOTOCONDUCTIVE MEMBER HAVING AN ELECTRICALLY INSULATING OXIDE LAYER

Isamu Shimizu, Yokohama; Shigeru Shirai, Yamato, and Eiichi Inoue, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1981, Ser. No. 310,481
Claims priority, application Japan, Oct. 14, 1980, 55-143451; Oct. 14, 1980, 55-143452
Int. Cl.³ G03G 5/082
U.S. Cl. 430—65 34 Claims

1. A photoconductive member, comprising a support, a photoconductive layer comprising an amorphous material containing hydrogen atoms or halogen atoms in a matrix of silicon atoms, and an intermediate layer comprising an electrically insulating oxide having a layer thickness of 30 to 1000 Å, which is provided between said support and said photoconductive layer.

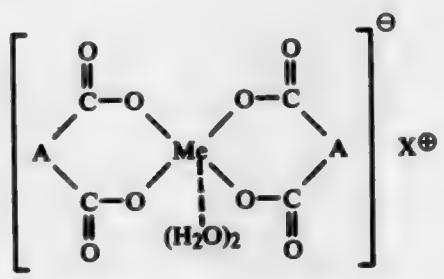
4,403,027

TONER COMPLEXES FOR DEVELOPING ELECTROSTATIC IMAGES

Kazuhiro Ishikawa, Nara; Yoji Kawagishi, Yawata, and Yukihiko Ishida, Neyagawa, all of Japan, assignors to Orient Chemical Industries, Ltd., Japan

Filed Dec. 18, 1981, Ser. No. 332,186
Claims priority, application Japan, Dec. 27, 1980, 55-186993
Int. Cl.³ G03G 9/08
U.S. Cl. 430—110 35 Claims

1. A toner for developing electrostatic images comprising a metal complex of an aromatic dicarboxylic acid which such acid is capable of forming its corresponding acid anhydride, the metal complex being substantially thermally stable at elevated temperatures below about 350° C. and being represented by the formula



wherein A is an aromatic moiety which corresponds to the dicarboxylic acid contemplated, and which may optionally

contain one or more substituents thereon, Me is Cr, Co or Fe, and X is a counter ion.

4,403,028

LIGHT SENSITIVE DIAZONIUM SALTS AND DIAZOTYPE MATERIALS

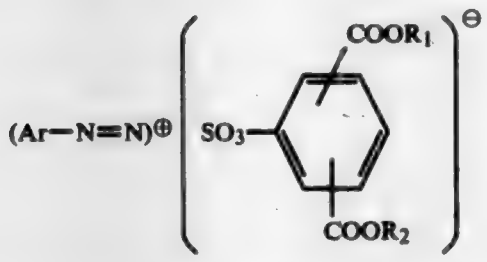
Henry Mustacchi, Port Washington, N.Y.; Arthur Gusmano, Wanaque, N.J., and Peter Muller, Port Washington, N.Y., assignors to Andrews Paper & Chemical Co., Inc., Port Washington, N.Y.

Continuation-in-part of Ser. No. 228,084, Jan. 26, 1981, abandoned. This application Aug. 11, 1982, Ser. No. 408,177

Int. Cl.³ G03C *1/54, 1/60;* G07C *113/04*

U.S. Cl. 430—178 **16 Claims**

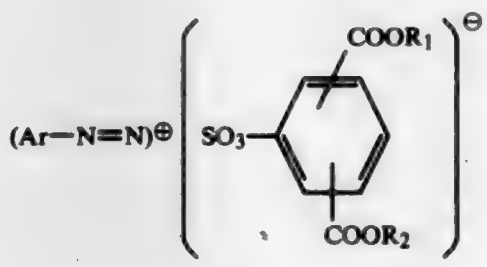
1. A light-sensitive diazonium salt of the formula:



wherein Ar represents aryl or substituted aryl; R_1 and R_2 are each selected from the group consisting of hydrogen and alkyl.

13. A light-sensitive diazo coating composition, which comprises;

a diazonium compound of the formula:



wherein Ar represents aryl or substituted aryl; R_1 and R_2 are each selected from the group consisting of hydrogen and alkyl; and

and acid stabilizer.

4,403,029

STRIPPING COMPOSITIONS AND METHODS OF STRIPPING RESISTS

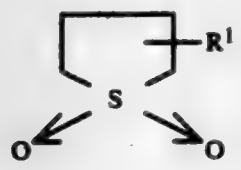
Irl E. Ward, Jr.; Lisa G. Hallquist, and Thomas J. Hurley, all of Easton, Pa., assignors to J. T. Baker Chemical Company, Phillipsburg, N.J.

Filed Sep. 2, 1982, Ser. No. 413,995

Int. Cl.³ G03C *5/30;* B08B *7/00;* C11D *1/18;* B01F *1/00*

U.S. Cl. 430—258 **28 Claims**

1. A stripping composition comprising from about 30 to about 90 weight percent of a compound selected from the group consisting of dimethylacetamide, dimethylformamide and mixtures thereof, and from about 10 to about 70 weight percent of a tetrahydrothiophene-1,1-dioxide compound of the formula



wherein R^1 is selected from the group consisting of hydrogen, methyl or ethyl.

4,403,030

PHOTOSENSITIVE LITHOGRAPHIC PRINTING PLATE MATERIAL

Konoe Miura, Yokohama; Shin-ichi Tanaka; Hiroshi Kojima, both of Hasaki; Takeshi Tanaka, Hachioji, and Osamu Matsushita, Mishima, all of Japan, assignors to Mitsubishi Chemical Industries Limited and Konishiroku Photo Industry Co., Ltd., both of Tokyo, Japan

Filed Dec. 2, 1981, Ser. No. 326,759

Claims priority, application Japan, Dec. 11, 1980, 55-175121

Int. Cl.³ G03C *1/90*

U.S. Cl. 430—273 **3 Claims**

1. A photosensitive lithographic printing plate material comprising a photosensitive layer having a slip sheet laid on the surface thereof, said slip sheet comprising natural pulp, 5 to 50% by weight of polyolefinic synthetic pulp and 0.2 to 2.0% by weight of an alkali metal halide.

4,403,031

METHOD FOR PROVIDING OPTICAL PATTERNS IN GLASS

Nicholas F. Borrelli, Elmira, and David L. Morse, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 25, 1981, Ser. No. 277,089

Int. Cl.³ G03C *5/24*

U.S. Cl. 430—332 **38 Claims**

1. A method for producing an optical pattern in glass which comprises the steps of:

(a) impregnating a porous glass article with a photolyzable organometallic compound selected from the group consisting of transition metal carbonyl, metal alkyl, and metal-aryl; and

(b) exposing said article to a patterning source of photolyzing light to photolytically convert at least some of the organometallic compound in exposed areas of said glass to photolyzed intermediates which are stable against migration in the glass.

2. A method for producing an optical pattern in glass which comprises the steps of:

(a) impregnating a porous glass article with a photolyzable organometallic compound selected from the group consisting of transition metal carbonyl, metal alkyl, and metal-aryl;

(b) exposing said article to a patterning source of photolyzing light to photolytically convert at least some of the organometallic compound in exposed areas of the glass to photolyzed intermediates which are stable against migration in the glass; and

(c) at least partially removing from the glass organometallic compound not photolytically converted.

4,403,032

CONTINUOUS SPECTROPHOTOMETRIC ASSAY OF MICROBIAL CELLULASE

Joseph G. Zeikus, Madison, Wis., and Thomas K. Ng, Macau, Portugal, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 139,281, Apr. 11, 1980, abandoned. This application Jan. 25, 1982, Ser. No. 342,352

Int. Cl.³ C12Q *1/34*

U.S. Cl. 435—18 **8 Claims**

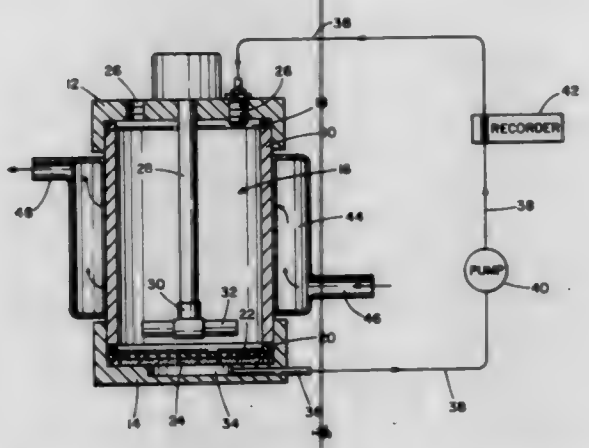
1. A method of assaying cellulase activity comprising:

(a) contacting a dyed crystalline cellulose which represents the structure of native cellulose with either a bacterial culture or an enzyme preparation to form a medium which contains cellulase to hydrolyze the cellulose and form dyed reaction products, the portion of the cellulose that is hydrolyzed being uniformly dyed;

(b) separating the dyed reaction products from the medium; and

(c) determining the concentration of said dyed reaction

products as a measure of the cellulose activity in said medium containing the bacterial culture or enzyme prepa-



ration whereby the concentration of dyed reaction products correlates directly with the activity of the cellulase.

4,403,033

METHOD FOR PRODUCING L-PHENYLALANINE BY FERMENTATION

Eiji Goto, Kawasaki; Masaru Ishihara, Yokohama; Shoji Sakurai, Kawasaki; Hitoshi Enei, Zushi, and Koichi Takinami, Yokohama, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Oct. 27, 1980, Ser. No. 201,369

Claims priority, application Japan, Oct. 31, 1979, 54-140583

Int. Cl.³ C12P *13/22*; C12N *15/00*; C12R *1/13, 1/15*

U.S. Cl. 435—108 **8 Claims**

1. A method for producing L-phenylalanine which comprises culturing a mutant belonging to the genus Brevibacterium or Corynebacterium, sensitive to decoyinine and capable of producing L-phenylalanine, and recovering the L-phenylalanine accumulated in the culture medium.

4,403,034

ETHANOL PRODUCTION

Peter L. Rogers, Northwood, and David E. Tribe, Maroubra, both of Australia, assignors to Unisearch Limited, Kensington, Australia

Filed Mar. 3, 1981, Ser. No. 240,099

Claims priority, application Australia, Mar. 5, 1980, PE2655; May 15, 1980, PE3561

Int. Cl.³ C12P *7/06*

U.S. Cl. 435—161 **10 Claims**

1. A process for the production of ethanol from a medium containing a fermentable carbohydrate substrate comprising culturing in the medium a strain of *Zymomonas mobilis* selected from the group consisting of CP4, ZM481, mutants thereof and mixtures thereof and which: has a specific ethanol productivity at 30° C., pH5 and in a medium containing 200 g/l glucose of at least 4.0 g/g/h; a specific rate of glucose uptake at 30° C., pH5 and in a medium containing 200 g/l of glucose of at least 8.0 g/g/h; and an ethanol tolerance level at 30° C., pH5 and in a medium containing 300 g/l of glucose of at least 120 g/l ethanol in a batch culture, or at 30° C., pH5 and in a medium containing 150 g/l of glucose of at least 60 g/l ethanol in a continuous culture, and recovering the ethanol so produced.

4,403,035

IN VITRO DNA-PROTEIN VIRAL ASSEMBLY AND GENE CLONING SYSTEM

Dwight L. Anderson, and Bernard E. Reilly, both of Minneapolis, Minn., assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Jun. 19, 1981, Ser. No. 275,242

Int. Cl.³ C12N *15/00, 1/00*; C12P *21/00*

U.S. Cl. 435—172 **13 Claims**

1. A method of encapsidating genetic material for use in gene transfer, which method comprises:

(A) selecting ϕ29 a virus whose linear DNA has protein 5' termini,

(B) selecting an organism having a metabolic or synthetic function desired to be transferred,

(C) extracting and cleaving the ϕ29 DNA, retaining at least one protein 5' terminus and genes specifying DNA replication,

(D) extracting and cleaving the DNA of the organism to be transferred, retaining the exogenous genes specifying the function desired to be transferred,

(E) fusing said exogenous genes in the cleaved ϕ29 DNA to produce replicating hybrid linear ϕ29 DNA having at least one protein 5' terminus, and

(F) providing in a cell-free in vitro medium a source of viral capsid precursor structures (proheads), accessory viral structural and packaging proteins and said hybrid ϕ29 DNA to assemble a hybrid virus encapsidating said hybrid DNA.

4,403,036

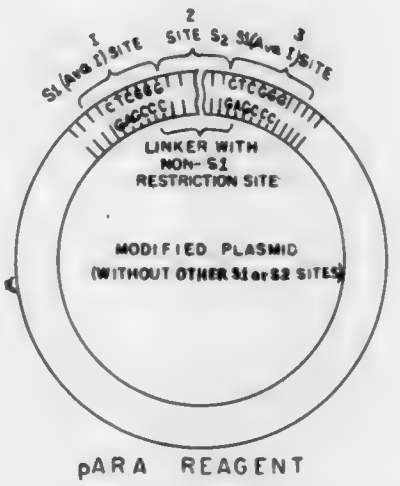
GENETIC REAGENTS FOR GENERATING PLASMIDS CONTAINING MULTIPLE COPIES OF DNA SEGMENTS

James L. Hartley, and Tamara J. Gregori, both of Iowa City, Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa

Filed Dec. 2, 1980, Ser. No. 212,254

Int. Cl.³ C12N *1/00*; C12P *21/00, 21/04, 19/34*

U.S. Cl. 435—317 **5 Claims**



1. A genetic reagent for generating plasmids containing multiple copies of DNA segments, comprising a plasmid in circular form capable of being cloned in an appropriate bacterial host, said plasmid being characterized by containing a sequence, at least a part of said sequence being foreign DNA, the total sequence providing three contiguous restriction endonuclease cleavage sites in which the first and third sites are identical and in the same orientation, and the second site is different from the first and third sites, said first and third sites being comprised of non-symmetrically arranged base pairs, which when cleaved by a restriction endonuclease yield sticky ends which are not rotationally equivalent, said plasmid containing no other sites cleavable by the same restriction endonucleases as said three sites.

4,403,037

ERYTHROCYTE PREPARATIONS AND USE THEREOF IN HEMAGGLUTINATION TESTS

Stephen R. Coates, Leucadia, Calif., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Oct. 10, 1980, Ser. No. 195,864
Int. Cl.³ C12Q *1/00, 1/70;* G01N *33/48, 33/54*
U.S. Cl. 436—521 15 Claims

1. A method of producing a stabilized, antigen coated erythrocyte preparation, which method comprises:

(a) providing a suspension of erythrocytes in buffered saline;

(b) treating said erythrocyte suspension with a specific hemagglutinating virus antigen to obtain erythrocytes having antigen coating the surface thereof;

(c) stabilizing said antigen coated erythrocyte suspension by treating said antigen coated erythrocyte suspension with a cross-linking agent for a period of time sufficient to reduce the hemagglutinating activity of said antigen coated erythrocyte suspension to prevent spontaneous agglutination thereof; and

(d) treating said stabilized, antigen coated erythrocyte suspension with a blocking agent to eliminate unreacted functional groups associated with treatment of said antigen coated erythrocytes with a cross-linking agent.

9. A method for determining antibody to a hemagglutinating virus antigen in a biological fluid suspected of containing said antibody, which comprises:

(i) contacting a sample of said fluid with a buffered aqueous suspension of stabilized, antigen coated erythrocytes wherein said erythrocytes have been prepared by:

(a) providing a suspension of erythrocytes in buffered saline;

(b) treating said erythrocyte suspension with a specific hemagglutinating virus antigen to obtain erythrocytes having antigen coating the surface thereof;

(c) stabilizing said antigen coated erythrocyte suspension by treating said antigen coated erythrocyte suspension with a cross linking agent for a period of time sufficient to reduce the hemagglutinating activity of said antigen coated erythrocyte suspension to prevent spontaneous agglutination thereof; and

(d) treating said stabilized, antigen coated erythrocyte suspension with a blocking agent to eliminate unreacted functional groups associated with treatment of said antigen coated erythrocytes with a cross-linking agent; and

(ii) incubating said sample with said stabilized, antigen coated erythrocyte suspension whereby the presence in the fluid sample of antibody to said hemagglutinating virus antigen effects agglutination of the antigen coated erythrocytes.

4,403,038

BUFFERED SERUM SUBSTITUTE FOR BLOOD OXYGEN ANALYZER

Toshio Asakura, 301 Maple Ave., Drexel Hill, Pa. 19026, and Horst K. Blume, 3375 Hillcroft Rd., Huntingdon Valley, Pa. 19006

Division of Ser. No. 28,790, Apr. 11, 1979, Pat. No. 4,304,488, which is a continuation-in-part of Ser. No. 845,686, Oct. 26, 1977, abandoned. This application Sep. 3, 1981, Ser. No. 298,974
Int. Cl.³ C09K *3/00;* G01N *33/96, 33/50*
U.S. Cl. 436—16 2 Claims

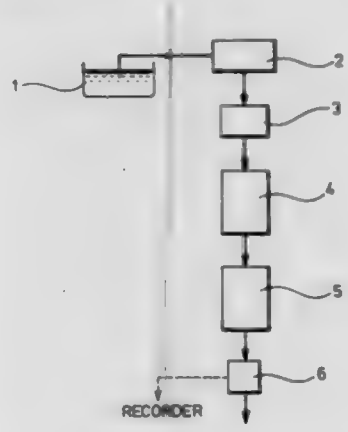
1. A buffered serum substitute for receiving a blood sample, said serum substitute comprising a 0.9% saline solution containing 5 millimolar of sodium phosphate, sodium chloride, imidazole, potassium chloride, and glucose, to form a physiologically balanced medium.

4,403,039

METHOD AND APPARATUS FOR ANALYSIS OF IONIC SPECIES

Tsuyoshi Ban; Takeshi Murayama; Setsuo Muramoto, and Yuzuru Hanaoka, all of Musashino, Japan, assignors to Yokogawa Hokushin Electric Works, Tokyo, Japan

Filed Oct. 9, 1981, Ser. No. 309,905
Claims priority, application Japan, Oct. 29, 1980, 80-151554; Oct. 29, 1980, 80-151555
Int. Cl.³ G01N *31/04, 31/06, 33/20*
U.S. Cl. 436—150 8 Claims



1. In a method for the chromatographic quantitative analysis of a sample solution containing at least one ionic species of interest paired with at least one ionic species of the opposite sign, said method including transporting a prescribed quantity of said sample solution with an eluant solution, introducing said solution into a separation column packed with an ion exchange resin to separate said ionic species of interest from said ionic species of the opposite sign, deionizing an eluate from said column and said eluant solution to remove said ionic species of the opposite sign therefrom, and measuring the electric conductivity of said eluate to thereby determine the concentration of said ionic species of interest in said sample solution, the improvement which comprises introducing said eluate into an inner passage of a deionizer having a single concentric double tubular construction, while a scavenger solution is introduced into an outer passage of said deionizer in a direction of flow opposite to that of said eluate in said inner passage, said inner passage being defined by a first tube of an ion exchange composition and provided with an inlet and an outlet for said eluate, said outer passage being defined by a second tube of a liquid-tight material other than an ion exchange composition encircling said first tube in radially spaced apart relation therefrom, and provided with an inlet and an outlet for said scavenger solution, said inner and outer passages being arranged independently of each other and said inlets and outlets of each of said inner and outer passage communicating with the outside, fluidally connecting said outlet of said inner passage to a conductive meter, whereby said ionic species of the opposite sign is removed from said inner passage into said scavenger solution in said outer passage through the wall of said first tube without impairing the peak form of said ionic species of interest separated by said column.

4,403,040

DIAGNOSTIC TEST FOR THE DETECTION OF A SPECIFIC TUMOR ANTIGEN WITH COA-SPC

Morgan D. Van Aken, 8771 B Gilman Dr., La Jolla, Calif. 92037

Filed Feb. 25, 1982, Ser. No. 350,801
Int. Cl.³ G01N *33/50, 33/68*
U.S. Cl. 436—501 14 Claims

8. A method for direct or indirect agglutination detection of tumor antigens in human serum, comprising mixing a measured quantity of a solution of the serum to be tested in normal saline solution with an aqueous suspension of CoA-SPC bonded to human or animal erythrocytes or to latex particles, and allowing the mixture to stand for reaction and agglutination of the

erythrocytes- or particle- bonded CoA-SPC with any tumor antigen present in said serum.

4,403,041

DIAGNOSIS OF ATHEROSCLEROSIS

Robert R. Bürk, Bottmingen; Peter Clopath, Basel, and Klaus Müller, Ettingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 10, 1980, Ser. No. 128,744
Claims priority, application Switzerland, Mar. 15, 1979, 2454/79
Int. Cl.³ G01N *13/00, 33/48;* C12N *5/00, 5/02*
U.S. Cl. 436—501 11 Claims

1. A method of diagnosis of atherosclerosis, which method comprises comparing the migration of endothelial cells or of cells of endothelium-like morphology in vitro, in the presence of serum from the person being examined, with the migration of identical cells in the presence of serum from healthy persons or of other standard sera; and interpreting a reduced migration in the presence of serum of the person being examined as being an indication of the possible existence of atherosclerosis in this person.

4,403,042

DETECTION OF CELL MEMBRANE ANTIGENS AND CORRESPONDING ANTIBODIES

Wayne M. Henry, Elkhart, Ind.; Frank J. Mannuzza, Peotone, and Makram M. Girgis, Bradley, both of Ill., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Aug. 19, 1982, Ser. No. 409,456
Int. Cl.³ G01N *33/54, 33/80*
U.S. Cl. 436—519 4 Claims

1. In a method for detecting weakly expressed cell membrane antigens or antibodies thereto which includes the steps of adding suspended cells in a suitable medium to a body fluid which may or may not contain antibodies corresponding to said antigens and determining the presence or absence of said antigens or antibodies thereto as a means for detecting the presence of said antigens or antibodies thereto, the improvement which comprises the step of contacting said suspended cells with a lipoprotein substance substantially free of heteroagglutins and isoagglutins, containing cholesterol and phospholipid, said lipoprotein substance being obtained from animal plasma.

4,403,043

GLASS FOR PHOTOETCHING MASK

Kenji Nakagaqa, Tokorozawa, and Isao Masuda, Tokyo, both of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Aug. 31, 1982, Ser. No. 413,316
Claims priority, application Japan, Aug. 31, 1981, 56-135594
Int. Cl.³ C03C *3/04, 3/10*
U.S. Cl. 501—70 2 Claims

1. A glass for a photoetching mask, consisting essentially of, 55 to 70% SiO_2, 7 to 13% Al_2O_3, 7 to 20% CaO, 3 to 13% MgO, 3 to 13% ZnO, 0.5 to 3% K_2O or Na_2O, 0 to 11% PbO and 0 to 3% ZrO, wherein all percents are molar.

4,403,044

PROCESS FOR CARRYING OUT CATALYTIC CONVERSIONS

Martin F. M. Post, and Swan T. Sie, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 20, 1981, Ser. No. 236,383
Claims priority, application Netherlands, Mar. 6, 1980, 8001342
Int. Cl.³ C07C *1/04, 1/20, 3/00*
U.S. Cl. 518—714 14 Claims

1. An aromatization process for preparing a hydrocarbon mixture of pentanes and higher and containing aromatics, which comprises contacting a feed selected from (1) gaseous mixtures containing carbon monoxide and hydrogen, (2) acyclic organic compounds selected from the group consisting of alcohols, ethers, olefins, diolefins, paraffins, aldehydes, ketones and esters, (3) aliphatic and/or cycloaliphatic hydrocarbon compounds and (4) mixtures of these in a contact zone at aromatization conversion conditions with a catalyst comprising as the sole siliceous component essentially alumina-free silicalite, and recovering a hydrocarbon product comprising aromatic compounds from said contact zone.

4,403,045

ALKALI METAL BOROHYDRIDE CONCENTRATE

Robert C. Wade, Ipswich, Mass., assignor to Thiokol Corporation, Chicago, Ill.

Division of Ser. No. 398,056, Jul. 14, 1982, which is a division of Ser. No. 272,867, Jun. 12, 1981. This application Dec. 29, 1982, Ser. No. 454,505
Int. Cl.³ C08J *9/06*
U.S. Cl. 521—82 5 Claims

1. A method for making a cellular resinous article comprising:

contacting alkali metal borohydride and a resinous polymer with an effective amount of a finely divided high surface area silica activating agent having a surface pH of less than 7 and having a proton source adsorbed on its surface so as to cause said alkali metal borohydride to hydrolyze, thereby creating foam and thereby causing said resinous polymer to have a cellular structure, said hydrolyzing occurring while the resinous polymer is in the molten condition.

4,403,046

BINDER COMPOSITIONS AND PROCESS FOR PREPARING SAID COMPOSITIONS

Hugh C. Anderson, Barrington; James E. Doyle, Carpentersville, and Russell B. Lembke, Crystal Lake, all of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Division of Ser. No. 217,449, Dec. 17, 1980, Pat. No. 4,320,042. This application Oct. 5, 1981, Ser. No. 308,412
Int. Cl.³ B22C *11/22*
U.S. Cl. 523—144 6 Claims

1. A binder composition comprising the product prepared by reacting in furfuryl alcohol under alkaline conditions paraformaldehyde, phenol and acetophenone.

4,403,047

ASBESTOS-FREE FRICTION MATERIAL

Clarence C. Albertson, Villa Park, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 29, 1980, Ser. No. 182,736
Int. Cl.³ C08L *61/10*
U.S. Cl. 523—153 10 Claims

1. An asbestos-free friction mateial comprising in combination (1) an effective proportion of a fibrous glass having a Moh's hardness rating of less than about 5, (2) from about 15 to about 30 parts of a binder and (3) from about 10 to about 70 parts of a friction modifying material, all parts based on the weight of the asbestos-free friction material.

4,403,048

CORROSION-RESISTANT COATING COMPOSITION CONTAINING HOLLOW MICROBALLOONS

John Blitstein, Chicago, and Donald Kathrein, Northbrook, both of Ill., assignors to T C Manufacturing Company, Evanston, Ill.

Division of Ser. No. 271,437, Jun. 8, 1981, Pat. No. 4,374,874, which is a division of Ser. No. 176,470, Aug. 8, 1980, Pat. No. 4,307,142. This application Sep. 17, 1982, Ser. No. 419,219
Int. Cl.³ C08K *7/28*
U.S. Cl. 523—218 7 Claims

1. A composition of matter comprising a fluoroelastomer

dissolved in a solvent capable of dissolving said fluoroelastomer in an amount sufficient to provide a liquid, spreadable solution of fluoroelastomer, and a plurality of hollow microspheres having a particle size in the range of about 2 to about 300 microns in an amount of about 3 to about 50 percent based on the total volume of fluoroelastomer plus microspheres.

4,403,049

METHOD OF MANUFACTURING POLYESTER FIBERS WITH GOOD ADHESION TO RUBBER

Shigemitsu Murase; Kazushige Kudo, both of Joyo, and Shigeo Yamamoto, Uji, all of Japan, assignors to Unitika Limited, Hyogo, Japan

Filed Dec. 7, 1981, Ser. No. 327,829

Claims priority, application Japan, Jan. 29, 1981, 56-12669

Int. Cl.³ A23F *3/00*; B29H *5/02*; D01F *1/02*; D06M *13/18*

U.S. Cl. 523—455 36 Claims

1. A method of manufacturing polyester fibers with good adhesion to rubber comprising

during spinning, adding to the spin finish a composition comprising

an epoxy compound,

an ethylene urea compound, and

a catalyst for the ethylene urea compound, then

heat treating the polyester fiber wherein said heat treatment is carried out at 150°–250° C. for a period of 0.05 to several seconds, and wherein said spin finish comprises about 5–50 percent by weight epoxy compound, 3–30 percent by weight of ethylene-urea compound, 0.01–0.1 percent by weight catalyst for ethylene-urea composition, 20–70 percent by weight lubricant, and 10–50 percent by weight emulsifier.

15. A spin finish for use during spinning of polyester fibers comprising

a lubricant

an emulsifier

an epoxy compound

an ethylene urea compound, and

a catalyst for the ethylene urea compound

wherein said spin finish comprises about 5–50 percent by weight epoxy compound, 3–30 percent by weight of ethylene urea compound, 0.01–0.1 percent by weight catalyst for the ethylene urea compound, 20–70 percent by weight lubricant, and 10–50 percent by weight emulsifier.

4,403,050

CATHODICALLY DEPOSITABLE ESTER-CONTAINING COATING COMPOSITIONS

Georgios Pampouchidis; Wolfgang Daimer, and Heiner Verdino, all of Graz, Austria, assignors to Vianova Kunstharz, A. G., Vienna, Austria

Filed Dec. 19, 1977, Ser. No. 860,131

Int. Cl.³ C08L *67/08*

U.S. Cl. 523—501 13 Claims

1. Thermosetting aqueous binders for cathodically depositable coatings comprising the reaction product of (A) a hydroxyl group containing polycondensate having a hydroxyl number of at least about 40 mg KOH/g, and an average maximum molecular weight of about 5000; and (B) compounds carrying per molecule an average of from about 0.8 to 1.5 free isocyanate groups and at least one basic tertiary aliphatically bound nitrogen atom, neutralized with inorganic or organic acids.

4,403,051

MICROCAPSULE DISPERSIONS

Tomoyuki Okimoto, Amagasaki; Shunsuke Shioi, Daito; Takio Kuroda, Amagasaki; Shigeo Okamoto, Saita, and Tomoharu Shiozaki, Amagasaki, all of Japan, assignors to Kanzaki Paper Manufacturing Company, Limited, Japan

Filed Jan. 9, 1980, Ser. No. 157,537

Claims priority, application Japan, Jun. 8, 1979, 54-72833; Jul. 13, 1979, 54-89427; Jul. 17, 1979, 54-91286

Int. Cl.³ C08L *1/26*; C09D *11/00*; B01J *13/02*

U.S. Cl. 524—45 5 Claims

1. In an aqueous microcapsule dispersion used for preparing pressure sensitive manifold papers, said dispersion containing auxiliary materials of a polyvinyl alcohol and pulp, the improvement comprising said pulp being present in an amount of about 5 to about 45 parts by weight per 100 parts by weight of the capsules and being a finely divided pulp up to 80μ in weighted average fiber length, so as to substantially inhibit an increase in viscosity of said dispersion.

3. In an aqueous microcapsule dispersion used for preparing pressure sensitive manifold papers, said dispersion containing auxiliary materials of a polyvinyl alcohol and pulp, the improvement comprising said pulp being present in an amount of about 5 to about 45 parts by weight per 100 parts by weight of the capsules and being a finely divided pulp not less than 20μ in weighted average fiber length, and said dispersion further containing at least one compound selected from the group consisting of periodic acid or a salt thereof, each in an amount of 0.001 to 0.05 mole/l, and carboxymethyl cellulose in an amount of 0.1 to 10 g/l, so as to substantially inhibit the increase in viscosity of said dispersion.

4,403,052

INJECTION MOLDABLE POLY(ETHYLENE TEREPHTHALATE)

Theodore Largman, Morristown; Bruce Van Buskirk, Randolph; Shaul M. Aharoni, Morris Plains, all of N.J., and Ian C. Twilley, Chester, Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 30, 1982, Ser. No. 412,473

Int. Cl.³ C08K *3/08, 3/16, 3/34*

U.S. Cl. 524—80 9 Claims

1. An improved, flame retarded polymer composition comprising:

a. a saturated linear polyester of an aromatic dicarboxylic acid and an aliphatic or cycloaliphatic diol,

b. red phosphorus as a flame retardant, and

c. an effective amount of metal iodide as phosphine suppressant.

4,403,053

STABILIZED OLEFIN POLYMERS

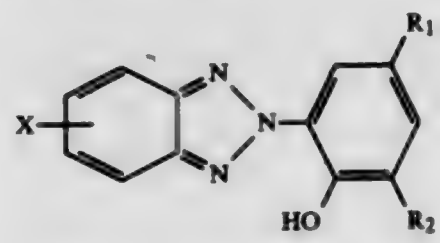
Elyse B. Lewis, Williamstown, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 7, 1982, Ser. No. 375,947

Int. Cl.³ C08K *5/34, 5/52*

U.S. Cl. 524—91 8 Claims

1. A polymer composition stabilized against deterioration in the presence of ultraviolet radiation comprising an olefin polymer and stabilizing amounts of (1) a hydroxyphenylbenzotriazole having the structural formula



where R_1 is lower alkyl or halogen, R_2 is lower alkyl, halogen or hydrogen, and X is chlorine or hydrogen and (2) a bis-

(dialkylphenyl)pentaerythritol diphosphite where the alkyl groups each contain 3–9 carbon atoms.

4,403,054

STABILIZED POLYCARBONATE COMPOSITIONS

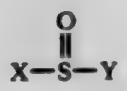
Victor Mark, Evansville, and John A. Tyrell, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Aug. 26, 1981, Ser. No. 296,555
Int. Cl.³ C08K 5/41, 5/45; C08L 69/00
U.S. Cl. 524—155 **10 Claims**

1. A composition which comprises an aromatic carbonate polymer in admixture with an effective amount of a stabilizer of the group consisting of

(a) thermal stabilizing compound of the formula

FIG. 1



wherein

X and Y are the same or different and are alkyl of one to six carbon atoms inclusive; alkenyl of two to six carbon atoms, inclusive; phenyl; phenyl substituted with one to three members of the group consisting of alkyl of one to three carbon atoms, inclusive, alkoxy of one to three carbon atoms, inclusive, chlorine and bromine; phenyl substituted alkyl of one to six carbon atoms, inclusive, the phenyl unsubstituted or substituted with one to three members of the group consisting of alkyl of one to three carbon atoms, inclusive, alkoxy of one to three carbon atoms, inclusive, chlorine and bromine; and

X and Y, when taken together with the sulfur atom to which they are attached, is alkylene of four to eight carbon atoms, inclusive; unsubstituted or substituted with benzo or one to three members of the group consisting of

alkyl of one to six carbon atoms, inclusive;

alkenyl of two to six carbon atoms, inclusive;

phenyl;

phenyl substituted with one to three members of the group consisting of alkyl of one to three carbon atoms, inclusive; alkoxy of one to three carbon atoms, inclusive, chlorine or bromine; or

(b) a thermal stabilizing polymer containing a sulfinyl group.

4,403,055

METHOD OF PREPARING A CONCENTRATED ACRYLONITRILE POLYMER SOLUTION

Gordon P. Hungerford, Palmyra, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 19, 1981, Ser. No. 322,785
Int. Cl.³ C08K 5/36
U.S. Cl. 524—173 **2 Claims**

1. The method of preparing biaxially oriented polyacrylonitrile homopolymer film comprising:

(a) preparing a uniform dispersion of finely divided polyacrylonitrile homopolymer in a solution of dimethylsulfoxide and water wherein the water content of the dimethylsulfoxide-water solution is from about 6–10% by weight;

(b) heating the dispersion to effect removal of substantially all of the water and uniformly dissolve the polyacrylonitrile in the dimethylsulfoxide;

(c) decreasing the dimethylsulfoxide content so that the solution can be formed into a self-supporting film;

(d) forming said solution into a self-supporting film and removing the dimethylsulfoxide from said film by counter-current water washing to form an aquagel film;

(e) biaxially orienting said aquagel film; and

(f) removing the water from the biaxially oriented film to form a crystal clear polyacrylonitrile film.

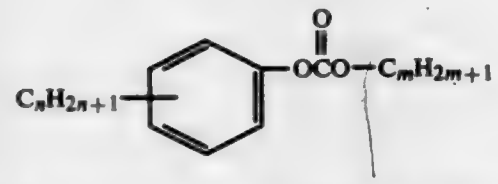
4,403,056

CARBONATE ESTERS, CARBONATE ESTER COMPOSITIONS, AND PLASTICIZED COMPOSITIONS

Silvio L. Giolito, Whitestone; Jagadish C. Goswami, New City, and Edward D. Weil, Hastings-on-Hudson, all of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 120,459, Feb. 11, 1980, abandoned. This application Jan. 30, 1981, Ser. No. 228,780
Int. Cl.³ C08K 5/10; C08L 27/06; C07C 68/00, 69/96
U.S. Cl. 524—280 **18 Claims**

1. A carbonate ester of the formula:



where n is an interger of from 0 to 4, m is an interger of from 8 to 14.

15. A plasticized vinyl chloride polymer composition comprising a vinyl chloride polymer and an effective amount for plasticization of the ester of either claim 1, 2, 3, 4, 5, 6, or 7.

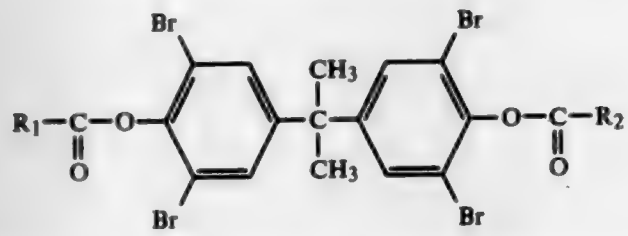
4,403,057

DIESTER OF 3,5,3′,5′-TETRABROMO-BISPHENOL A WITH HALOGENATED AROMATIC CARBOXYLIC ACID

Izumi Yamashita; Kazuo Yoshida; Yuji Kusumi, all of Yokohama; Kunio Fukuda, Chigasaki, and Kichiya Tazaki, Yokohama, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

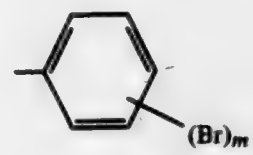
Continuation of Ser. No. 292,536, Aug. 13, 1981, abandoned, which is a continuation-in-part of Ser. No. 214,791, Dec. 9, 1980, abandoned, which is a division of Ser. No. 83,957, Oct. 11, 1979, abandoned. This application Feb. 7, 1983, Ser. No. 464,602
Int. Cl.³ C08K 5/10; C07I 69/78
U.S. Cl. 524—288 **17 Claims**

1. A compound of the formula (I):



(I)

wherein R_1 and R_2, which may be identical or different, represent the groups of the formula (II):



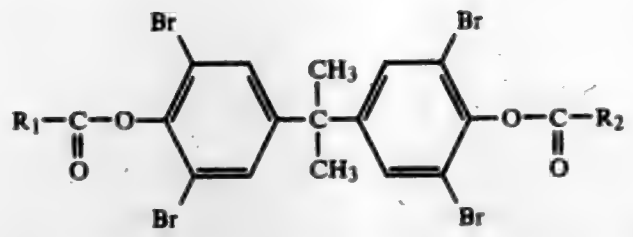
(II)

wherein m is an integer of 1 to 5.

2. A polymeric material improved in flame-retardancy, comprising:

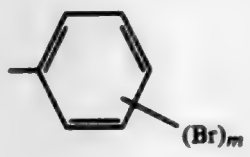
(a) at least one inflammable polymer selected from the group consisting of polystyrene, acrylonitrile-styrene resin, acrylonitrile-butadiene-styrene resin, polyphenylene oxide, polyester, polyamide, polyethylene, polypropylene, polybutadiene, polyacrylate and polycarbonate; and

(b) at least one compound of the formula (I):



(I)

wherein R_1 and R_2, which may be identical or different, represent the groups of the formula (II):



(II)

wherein m is an integer of 1 to 5.

4,403,058

TWO-PART TYPE (METH)ACRYLATE ADHESIVES HAVING EXCELLENT STORAGE STABILITIES

Hidemi Dohi; Hideki Mori, and Hideaki Matsuda, all of Kagawa, Japan, assignors to Okura Kogyo Kabushiki Kaisha, Japan

Filed Apr. 7, 1982, Ser. No. 366,181
Claims priority, application Japan, Aug. 4, 1981, 56-121451
Int. Cl.³ C08K *5/09*
U.S. Cl. 524—397 **6 Claims**

1. Two-part type adhesives having excellent storage stabilities, which are composed of the following liquid system I and liquid system II; said liquid system I is a composition comprising as the essential components thereof an acrylic monomer selected from the group consisting of a polymerizable methacrylate monomer, a polymerizable acrylate monomer, or mixtures thereof, an organic peroxide, and a metal salt as a stabilizer of which the metal is selected from an alkali metal, zinc, nickel and mixtures thereof; said liquid system II is a composition comprising as the essential components thereof an acrylic monomer selected from the group consisting of a polymerizable methacrylate monomer, a polymerizable acrylate monomer, or mixtures thereof and a curing accelerator; at least one of the liquid systems I and II further containing an elastomer.

4,403,059

STORAGE-STABLE AQUEOUS ALKALI METAL SILICATE/FILLER ADHESIVE COMPOSITIONS AND THEIR USE

Bernhard Laut, Düren; Wolfgang Friedemann, Neuss, and Gerd Krapp, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 349,830
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3110967
Int. Cl.³ C09D *1/04*; C09J *1/02*
U.S. Cl. 524—399 **14 Claims**

1. An adhesive composition based upon an aqueous solution of alkali metal silicate with a content of powdered inorganic filler, having good storage stability, which comprises an aqueous alkali metal silicate solution containing:

(a) from 10% to 40% by weight of at least one powdered inorganic filler,

(b) a suspension effective amount of at least one zinc soap of a fatty acid having from 12 to 22 carbon atoms and

(c) from 0 to about 24% by weight of a 50% by weight stable, aqueous dispersion of an alkali-resistant organic polymer, based on the weight of the total composition.

4,403,060

PLASTIC COLORED WITH TRANSPARENT IRON OXIDE SPINELS

Lowell E. Netherton, Summit, N.J., and Arvind S. Patil, Wyoming, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation-in-part of Ser. No. 115,309, Jan. 25, 1980, Pat. No. 4,292,294, and Ser. No. 144,735, Apr. 28, 1980, Pat. No. 4,289,745, each is a continuation-in-part of Ser. No. 37,567, May 9, 1979, abandoned, and Ser. No. 70,196, Aug. 27, 1979, abandoned. This application Aug. 24, 1981, Ser. No. 295,346
Int. Cl.³ C08K *3/10*
U.S. Cl. 524—413 **6 Claims**

1. In a method for making a plastic which involves incorporating a colorant into a synthetic polymer, the improvement which comprises using as the colorant a spinel in the form of acicular particles having an average length of less than 0.1 micron and which corresponds to the formulae XFe_2O_4 or YFe_5O_8 wherein X is Zn, Sn, Cu, Ca, Cd Co, Ba, Sr, Mg, Al, or Mn, and Y is Li.

4,403,061

INJECTION MOLDABLE AMIDE-IMIDE POLYMERS AND COPOLYMERS CONTAINING METAL OXIDES, CAPABLE OF FORMING HYDRATES STABLE AT TEMPERATURES IN EXCESS OF 500° F.

Gary T. Brooks, Naperville, and Ronald E. Bockrath, Oswego, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 29, 1982, Ser. No. 393,470
Int. Cl.³ C08L *79/08*
U.S. Cl. 524—433 **18 Claims**

1. A process for reducing the cure time for polyamide-imide polymers derived from trimellitic anhydride and aromatic diamines which process comprises adding about 0.1 to about 10 weight percent of a metal oxide capable of forming a metal hydrate stable at temperatures in excess of 500° F. to the polyamide-imide polymer prior to curing.

4,403,062

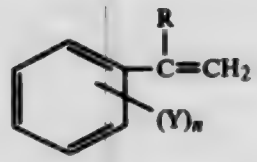
ORGANIC PIGMENTS

William W. Maslanka, London-Britain Township, Chester County, Pa., and Gavin G. Spence, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 159,743, Jun. 16, 1980, Pat. No. 4,311,809, and Ser. No. 909,606, May 25, 1978, Pat. No. 4,235,982, and a continuation-in-part of Ser. No. 803,330, Jun. 3, 1977, abandoned. This application Oct. 13, 1981, Ser. No. 310,020
Int. Cl.³ C08F *2/16*
U.S. Cl. 524—458 **8 Claims**

1. Water-insoluble graft copolymer particles consisting essentially of the free radical catalyzed graft copolymerization product of (1) at least one ethylenically unsaturated monomer (a) and at least one polyethylenically unsaturated monomer (b) in an amount at least sufficient to provide cross linked graft copolymer particles, and (2) a water-soluble cationic prepolymer having an RSV of about 0.1 to about 2.5 (1 M NaCl, 1%, 25° C.), the prepolymer moiety of the graft copolymer particles being present on the surface of the particles,

said monomer (a) being selected from the group consisting of methyl alpha-chloroacrylate, ethyl alpha-chloroacrylate, methyl methacrylate, isopropyl methacrylate, phenyl methacrylate, vinyl chloride, acrylonitrile, methacrylonitrile, and monomers having the formula



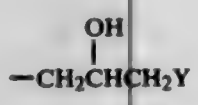
wherein R is hydrogen or methyl, Y is methyl or chlorine,

and n is 0, 1, 2, or 3, said monomer (b) being selected from the group consisting of divinylbenzene; diallyl phthalate; ethylene glycol dimethacrylate; 1,3-butylene glycol dimethacrylate; 1,6-hexanediol dimethacrylate; polyethylene glycol dimethacrylate; polypropylene glycol dimethacrylate; trivinylbenzene; divinylnaphthalene; diallyl maleate; diallyl fumarate; trimethylol propane trimethacrylate; and pentaerythritol tetraacrylate, and said prepolymer (2) being the addition polymerization product of

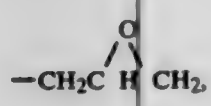
(i) about 5 mole percent to 100 mole percent of a cationic monomer having the formula



wherein n is an integer 1, 2, or 3,
R_1 is hydrogen or methyl,
R_2 is hydrogen or a C_1-C_4 alkyl,
R_3 is hydrogen, a C_1-C_4 alkyl,



where Y is selected from the group consisting of hydroxyl and halogen,



or $-CH_2CH_2O)_nH$ where n is an integer 1 or more and X^- is an anion, and

(ii) from about 95 mole percent to 0 mole percent of at least one monoethylenically unsaturated amide monomer,

the amount of prepolymer (2) employed in preparing the graft copolymer particles being from about 1 part to about 25 parts by weight for each 100 parts by weight of monomers (1) employed.

4,403,063

ORGANIC PIGMENTS

William W. Maslanka, London-Britain Township, Chester County, Pa., and Gavin G. Spence, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

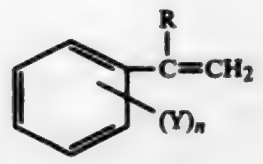
Division of Ser. No. 158,859, Jun. 12, 1980, Pat. No. 4,369,292, and Ser. No. 904,606, May 25, 1978, Pat. No. 4,235,982, and a continuation-in-part of Ser. No. 803,330, Jun. 3, 1977, abandoned. This application Jun. 30, 1982, Ser. No. 394,047

Int. Cl.³ C08F *2/16*; C08L *9/08*

U.S. Cl. 524—458 **8 Claims**

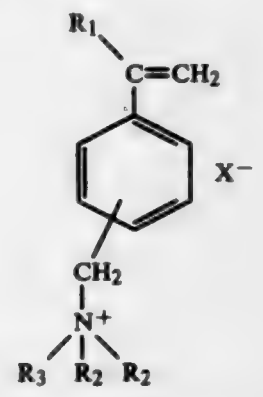
1. Water-insoluble graft copolymer particles consisting essentially of the free radical catalyzed graft copolymerization product of (1) at least one ethylenically unsaturated monomer (a) and at least one polyethylenically unsaturated monomer (b) in an amount at least sufficient to provide cross linked graft copolymer particles, and (2) a water-soluble cationic prepolymer having an RSV of about 0.1 to about 2.5 (1M NaCl, 1%, 25° C.), the prepolymer moiety of the graft copolymer particles being present on the surface of the particles,

said monomer (a) being selected from the group consisting of methyl alpha-chloroacrylate, ethyl alpha-chloroacrylate, methyl methacrylate, isopropyl methacrylate, phenyl methacrylate, vinyl chloride, acrylonitrile, methacrylonitrile, and monomers having the formula

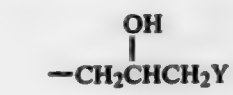


wherein R is hydrogen or methyl, Y is methyl or chlorine, and n is 0, 1, 2, or 3, said monomer (b) being selected from the group consisting of divinylbenzene; diallyl phthalate; ethylene glycol dimethacrylate; 1,3-butylene glycol dimethacrylate; 1,6-hexanediol dimethacrylate; polyethylene glycol dimethacrylate; polypropylene glycol dimethacrylate; trivinylbenzene; divinylnaphthalene; diallyl maleate; diallyl fumarate; trimethylol propane trimethacrylate; and pentaerythritol tetraacrylate, and said prepolymer (2) being the addition polymerization product of

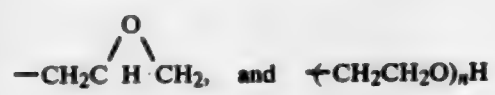
(i) about 5 mole percent to 100 mole percent of a cationic monomer having the formula



wherein R_1 is hydrogen or methyl, R_2 is hydrogen or a C_1-C_4 alkyl, R_3 is hydrogen, a C_1-C_4 alkyl,



where Y is hydroxyl or halogen,



where n is an integer 1 or more and X^- is an anion, and

(ii) from about 95 mole percent to 0 mole percent of at least one monoethylenically unsaturated amide monomer,

the amount of prepolymer (2) employed in preparing the graft copolymer particles being from about 1 part to about 25 parts by weight for each 100 parts by weight of monomers (1) employed.

4,403,064

THERMOSETTING MOLDING COMPOSITIONS, A PROCESS FOR THEIR PRODUCTION AND A PROCESS FOR THE PRODUCTION OF MOLDINGS USING THE MOLDING COMPOSITIONS

Heinrich Heine, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,527

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2928966

Int. Cl.³ C08L *61/10*; C08K *7/14*

U.S. Cl. 524—494 **10 Claims**

1. Solvent-free molding compositions comprising:

(A) from 10 to 80% by weight of a storage stable binder which may be hardened by heating to form a cross-linked polyurethane, and

(B) from 20 to 90% by weight of an inorganic filler, wherein component (A) is a reaction product of

(a) a novolak,

(b) from 0 to 75% by weight, based on (a)+(b), of a polyhydroxyl compound other than a novolak having a molecular weight of from 62 to 10,000, and

(c) polyisocyanate in an equivalent ratio of (a+b)/c of from 0.8:1 to 1.2:1,

which is tack-free at 25° C., melts below 160° C. and still contains free NCO- and OH-groups, and wherein component (B) is an inorganic fiber material.

4,403,065

POLYMERIC RESIN, AND ITS PRODUCTION AND USE

Tamotsu Yoshioka; Ryuzo Mizuguchi; Shinichi Ishikura, and Keizo Ishii, all of Neyagawa, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

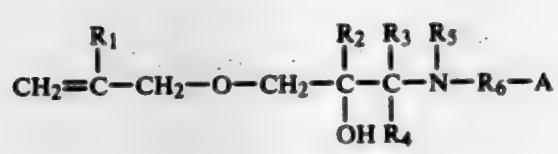
Filed Oct. 15, 1980, Ser. No. 197,322

The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.³ C08L *39/00*

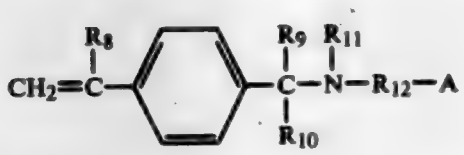
U.S. Cl. 524—816 **7 Claims**

1. An aqueous emulsion comprising water and a polymeric resin, said emulsion having a viscosity of from 10 to 50,000 cps at 25° C. and a polymeric resin content of from 2 to 65% by weight, said polymeric resin being prepared by a process which comprises polymerizing (a) at least one amino acid of either one of the formulae Ia and Ib:



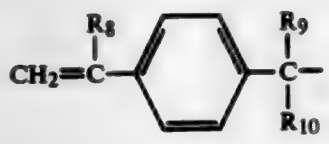
(Ia)

wherein R_1, R_2, R_3 and R_4 are each hydrogen, methyl or ethyl, R_5 is hydrogen or C_1–C_{20} alkyl optionally having at least one of —SO—, —COO— and —O— in the alkyl chain, R_6 is C_1–C_{12} alkylene optionally substituted with one or more of —OH, —SH, —SR_7 (wherein R_7 is C_1–C_4 alkyl) and C_1–C_4 alkyl, or phenylene optionally substituted with one or more of C_1–C_4 alkyl, and A is —COOH or —SO_3H;



(Ib)

wherein R_8, R_9 and R_{10} are each hydrogen or C_1–C_6 alkyl, R_{11} is hydrogen, C_1–C_{20} alkyl optionally having at least one of —SO—, —COO— and —O— in the alkyl chain, or a group of the formula



(wherein R_8, R_9 and R_{10} are each as defined above), R_{12} is C_2–C_{12} alkylene optionally substituted with one or more C_1–C_6 alkyl, or phenylene optionally substituted with one or more C_1–C_4 alkyl, and A is as defined above, with (b) at least one other polymerizable monomer, in an aqueous medium, the component (a) and at least a portion of the component (b) being introduced separately into the reaction system.

4,403,066

COMPOSITES MADE FROM LIQUID PHENOL FORMALDEHYDE RESINS

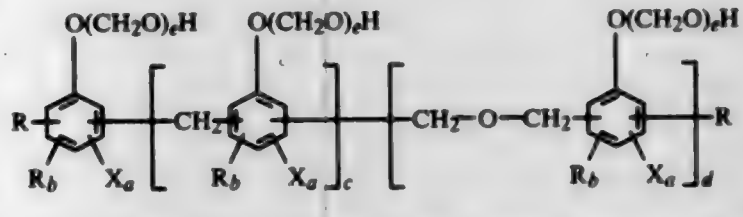
George L. Brode; Sui-Wu Chow, and Warren F. Hale, all of Bridgewater Township, Somerset County, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jan. 20, 1982, Ser. No. 340,855

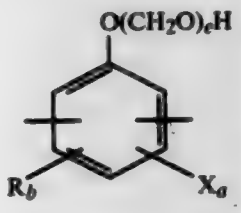
Int. Cl.³ C08L *61/06*

U.S. Cl. 524—876 **4 Claims**

1. A reinforced cured composite made by a liquid injection molding process, said composite comprising from about 20 to about 70 weight percent, based on the weight of the cured composite, of a reinforcing material, and about 30 to about 80 weight percent, based on the weight of the cured composite, of a crosslinked phenol-formaldehyde solid resin derived from a curable liquid phenol-formaldehyde resole resin having a viscosity of less than about 10,000 centipoise at 25° C., and containing less than about 5 weight percent, based on the weight of the liquid resin, of unbound water and volatile organic compounds and having the general formula

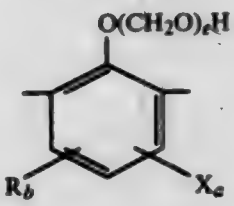


wherein a is from 0 to 3, b is 0 to 1, the sum of a and b does not exceed 3, the sum of c and d is from 2 to about 20, the mole fraction d/(c+d) is 0.4 to 0.9, preferably 0.6 to 0.8, e is 0 to about 5, R is —$CH_2O(CH_2O)_eH$, X is a monovalent radical, wherein for at least one of the R or $O(CH_2O)_eH$ groups e is at least 1, wherein at least 50 mole percent of the



units

are



units.

4,403,067

CHEMICALLY MODIFIED ASPHALT JOINT SEALING COMPOSITIONS

William E. Uffner, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 247,565, Mar. 25, 1981, Pat. No. 4,347,171. This application Apr. 12, 1982, Ser. No. 367,207

The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.

Int. Cl.³ C08L *95/00*

U.S. Cl. 525—54.5 **1 Claim**

1. A highway joint sealing composition, said composition having a recovery of at least 60 percent for the resilience test of ASTM D 3405-75T and having at least five cycles for the bond test of Federal Specification SS-S-164 and consisting essentially of the reaction product of a reactable mixture of asphalt flux, styrene monomer and a vulcanizable rubber selected from the group consisting of butadiene rubber, a styrene-butadiene rubber, and mixtures thereof, said reactable mixture (based on the weight of flux, styrene and rubber), being about 69.4 to about 73.8% of said flux, and, on a theoretical basis, about 15.1 to about 17.1% of styrene moiety and

about 11.1 to about 13.7% of butadiene moiety, the weight ratio of said styrene to said flux being at least 0.1.

4,403,068

PROCESS FOR SUPPRESSING THE FORMATION OF OVERSIZED PARTICLES OF THERMOPLASTIC RESIN PRODUCED BY AN AQUEOUS DISPERSION PROCEDURE

Dorothee M. McClain, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Feb. 12, 1982, Ser. No. 348,559
Int. Cl.[3] C08F *6/24, 8/12*
U.S. Cl. 525—62 24 Claims

1. A process for obtaining particles of thermoplastic resin which comprises agitating said resin in the molten state in an aqueous dispersion system comprising a resin-dispersing amount of an alkali metal soap wherein the weight ratio of said alkali metal soap to resin is within the range of from about 0.01 to about 0.30, and an oversize particle formation-suppressing amount of an alkaline earth metal soap wherein the weight ratio of said alkaline earth metal soap is within the range of from about 0.1 to about 2.0 parts per hundred parts of resin, and cooling the resulting dispersion to obtain said resin as finely divided particles of which no more than about 5 weight percent of the total exceeds an average diameter of about 420 microns.

4,403,069

FORMATION OF POLYMERIC FIBERS BY A SEEDING TECHNIQUE

L. Brian Keller, Palos Verdes Estates; Robert K. Jenkins, Huntington Beach, and Gary Luster, Newbury Park, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Continuation of Ser. No. 973,403, Dec. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 707,585, Jul. 22, 1976, abandoned. This application Jun. 5, 1981, Ser. No. 270,719
Int. Cl.[3] C08L *23/06, 27/14*
U.S. Cl. 525—197 9 Claims

1. An improved process for precipitating fibers from solutions of non-crystalline organic polymers comprising:

(a) first providing a polymer-solvent solution by dissolving in a heated solvent a non-crystalline polymer and a linear isotactic crystalline polyalkene seeding polymer thereby forming a hot mixed polymer solvent solution, said solvent, when heated, being capable of dissolving both said non-crystalline polymer and said seeding polymer, and the ratio of said seeding polymer to said non-crystalline polymer being within the range of 1 to 90 percent of the weight of said polymers in said solutuion;

(b) subjecting said solution to vigorous agitation having a cyclic frequency within the range of 20 to 20,000 hertz; and

(c) allowing said solution to slowly cool under said agitation whereby fibers precipitate therefrom.

4,403,070

COSMETIC COMPOSITIONS FOR LACQUERS AND WAVE-SETTING LOTIONS, NEW COPOLYMERS AND PROCESS FOR PREPARING THEM

Annie Madrange nee Dermain, 4, rue du Prieuré, 78 Saint-Germain-en-Laye, and Christos Papantoniou, 12, avenue Questroy, (93) Epinay-sur-Seine, both of France

Continuation of Ser. No. 629,415, Nov. 6, 1975, abandoned, Division of Ser. No. 287,845, Sep. 11, 1972, Pat. No. 3,934,595. This application Jan. 4, 1979, Ser. No. 806
Claims priority, application Luxembourg, Sep. 13, 1971, 63896
Int. Cl.[3] C08F *220/14, 220/36, 8/30, 8/32*
U.S. Cl. 525—330.4 6 Claims

1. An ethyl alcohol soluble cross-linked copolymer having tertiary amine groups and an average molecular weight of 10,000 and 1,500,000 and comprising (i) 16–43% by weight of methyl methacrylate, (ii) 25–54% by weight of dimethyl-amino-ethyl methacrylate, (iii) 12–52% by weight of octadecyl methacrylate and up to 0.15 part by weight of ethylene glycol dimethacrylate per 100 parts of (i)+(ii)+(iii), the average molecular weight being determined by the Light scattering method.

2. The copolymer of claim 1 wherein 47 to 100 percent of the tertiary amine groups are quaternized by a quaternizing agent selected from the group consisting of dimethyl sulphate, lower alkyl halides with 1 to 3 carbon atoms, 2-bromoethanol, β-propiolactone, 1,3-propane-sultone and benzyl chloride.

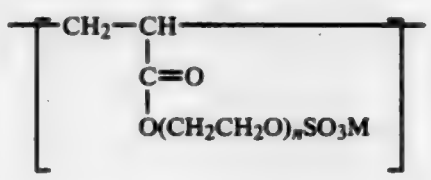
4,403,071

SULFATED ETHOXYLATED ACRYLIC ACID POLYMER PRODUCT

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Division of Ser. No. 231,646, Feb. 5, 1981, Pat. No. 4,341,647, which is a division of Ser. No. 75,635, Sep. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 916,985, Jun. 19, 1978, abandoned. This application Mar. 5, 1982, Ser. No. 355,037
Int. Cl.[3] C08F *8/36, 20/04, 20/38*
U.S. Cl. 525—330.4 3 Claims

1. A sulfated, ethoxylated acrylic acid polymer having recurring units of the formula:



wherein n is an integer of from 1 to 5 and M is selected from the group consisting of hydrogen, sodium, potassium and ammonium.

4,403,072

ALKOXYETHANOLS AS SOLVENTS FOR COUPLING SULFONYL HALIDES TO POLYMERIC AMINES

Leonard A. Bunes, San Carlos, Calif., assignor to Dynapol, Palo Alto, Calif.

Filed Sep. 9, 1981, Ser. No. 300,619
Int. Cl.[3] C08F *8/34, 8/12*
U.S. Cl. 525—353 8 Claims

1. In the process wherein an aromatic sulfonyl halide is reacted with primary alkyl amine groups present on a polymeric alkyl amine under basic conditions in a liquid reaction medium, the improvement that comprises employing as said liquid reaction medium a mixture comprising water and from 40 to 90% of an alkoxyethanol selected from 2-methoxyethanol and 2-ethoxyethanol.

4,403,073

CURABLE RESIN COMPOSITION

Nobuyuki Ikeguchi, Tokyo, Japan, assignor to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed May 6, 1981, Ser. No. 260,982
Claims priority, application Japan, May 6, 1980, 55-59631; Jun. 9, 1980, 55-77384; Feb. 28, 1981, 56-28973; Mar. 19, 1981, 56-39832
Int. Cl.[3] C08F *8/30*
U.S. Cl. 525—374 13 Claims

1. A curable resin composition comprising:

(a) at least one cyanate ester compound selected from the group consisting of:

(1) a polyfunctional aromatic cyanate ester monomer having the formula:



wherein m is 2 to 5 and R is an aromatic organic group, the cyanate groups being bonded to an aromatic ring of said aromatic organic group,

(2) a prepolymer of (1), and

(3) a coprepolymer of (1) and an amine; and

(b) at least one polymeric material selected from the group consisting of:

(1) a polybutadiene having a molecular weight of 500 to 1,000,000,

(2) a reaction product of (1) and a compound selected from the group consisting of an isocyanate compound, an acrylate, a methacrylate and an unsaturated acid anhydride, and

(3) the product formed by modifying (1) by introducing a methacryloyl group, an acryloyl group or an acid anhydride moiety thereinto,

said composition including a mixture of components (a) and (b), a preliminary reaction product of components (a) and (b), or the combination of said mixture and said preliminary reaction product.

4,403,074

CLEAR HAZE-FREE IMPACT-RESISTANT RESINOUS POLYMERS

George A. Moczygemba, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 13, 1982, Ser. No. 339,221

Int. Cl.³ C08F *8/06, 8/10*

U.S. Cl. 525—386 **16 Claims**

1. A process for the preparation of a resinous copolymer of at least one hydrocarbon conjugated diene and at least one hydrocarbon monovinylarene, which comprises copolymerizing at least one hydrocarbon conjugated diene and at least one monovinylarene employing hydrocarbon solvent, alkali metal initiator, and solution polymerization conditions, thereby producing an alkali metal-terminated copolymer, coupling with a multifunctional coupling agent to produce a coupled polymer in said solvent, wherein the improvement comprises treating the coupled copolymer in said solvent with an effective amount of at least one linear alkane dicarboxylic acid selected from the group consisting of C_2, C_3, and C_5 to C_{16} saturated aliphatic diacids, thereby producing said resinous copolymer.

4,403,075

FLAME RESISTANT COMPOSITION CONTAINING POLYMERIC PHOSPHORYLATED AMIDES

Norman R. Byrd, Villa Park, and Daniel C. Peek, Long Beach, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

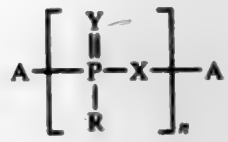
Filed Sep. 25, 1980, Ser. No. 190,742

Int. Cl.³ C08L *85/02, 79/00, 63/02*

U.S. Cl. 525—418 **63 Claims**

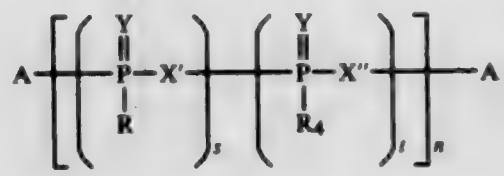
37. A fire resistant composition having low thermal conductivity, comprising a cured mixture of a resin and a polymeric phosphorylated amide as an additive produced by reaction of said resin and said amide at elevated temperature; and which resin is selected so that it has the following properties and characteristics: (1) the additive is soluble in the resin prior to curing and (2) when reacted with the additive such resin will form a stable resin char when heated to an elevated temperature of about 2000° F. and (3) the fire resistance of the resin is increased and its thermal conductivity is decreased when reacted with the additive and so heated; said resin and additive being capable of forming a homogenous composition and of being permanently bonded to a structural substrate to improve char characteristics and provide low thermal conductivity thereto and to permit such substrate to maintain structural integrity thereof when employed in an amount sufficient to form said stable resin char and when heated to an elevated temperature of about 2,000 degrees F.; said polymeric phosphorylated amide being selected from the group consisting of homopolymers and copolymers having the following general formulas, respectively:

(a)

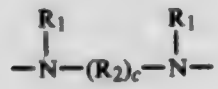


and

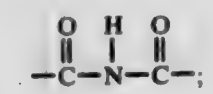
(b)



where Y is O or S; and R is selected from the group consisting of H, alkyl containing from about 1 to about 6 carbon atoms, cycloalkyl containing from about 5 to about 7 carbon atoms, aryl containing from about 6 to about 14 carbon atoms, the corresponding halogenated alkyl and aryl groups, nitroaryl containing about 6 to about 14 carbon atoms, heterocyclic containing 5 to 6 members in the heterocyclic nucleus, and O,N or S as hetero atoms, amino, alkylamino containing from about 1 to about 8 carbon atoms in the alkyl group, arylamino containing from about 6 to about 14 carbon atoms, oxyalkyl containing from about 1 to about 4 carbon atoms, and oxyaryl containing about 6 to about 14 carbon atoms; X is selected from the group consisting of —HN— and



where R_1 is selected from the group consisting of H, alkyl with straight chain or branched chain and having from about 1 to about 6 carbon atoms, cycloalkyl having from about 5 to about 7 carbon atoms, and aryl having from about 6 to about 14 carbon atoms, acyl containing about 1 to about 7 carbon atoms, and aroyl containing about 7 to about 11 carbon atoms; R_2 is selected from the group consisting of divalent carbonyl and divalent thiocarbonyl, =C=NH, and



c is from 0 to 2; n is 2 to about 1,000; A is $—NR_1R_3$, where R_3 has the same values as R_1, and R_1 and R_3 can be the same or different; R_4 has the same values as R, and R and R_4 can be the same or different, X′ and X″ have the same values as X, and X′ and X″ can be the same or different, and where the relationship between R and R_4, and X′ and X″ is such that when R and R_4 are different, X′ and X″ are the same, and when R and R_4 are the same, X′ and X″ are different; and s and t are from about 1 to 10, and s and t can be the same or different.

4,403,076

FAST CURING NOVOLAC RESIN AND SHELL MOLDING COMPOSITION AND METHODS FOR PRODUCING THE SAME

Roderick A. McDonald, Bothell, Wash., assignor to Pacific Resins & Chemicals, Inc., Tacoma, Wash.

Division of Ser. No. 168,622, Jul. 14, 1980, which is a division of Ser. No. 43,051, May 29, 1979, abandoned, which is a continuation-in-part of Ser. No. 892,412, Mar. 31, 1978, abandoned. This application Mar. 5, 1982, Ser. No. 355,239

Int. Cl.³ C08G *8/10*; C08L *61/10*

U.S. Cl. 525—501 **16 Claims**

1. A method for producing a fast curing novolac resin for use in coating refractory granules comprising the steps of:

(a) initially reacting x moles of phenol with y moles of form-

aldehyde in the presence of an acid catalyst to form an intermediate resin,

(b) adjusting the pH of the intermediate resin to within the range of about 3.0 to about 7.0,

(c) thereafter reacting w moles of phenol with z moles of formaldehyde in the presence of said intermediate resin and in the presence of an ortho-directing catalyst to produce a hybrid, fast curing resin, wherein $x>y$, $w>z$, and $(x+w)>(y+z)$.

4,403,077

ANIONIC COMPOUNDS BASED ON MODIFIED NOVOLAK OXYALKYLATES, THEIR PREPARATION, AND THEIR USE AS FOAM-FREE SURFACE-ACTIVE AGENTS

Heinz Uhrig, Steinbach; Joachim Weide, Kelkheim, and Reinhold Deubel, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

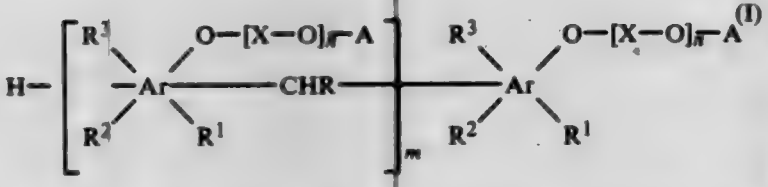
Filed May 21, 1982, Ser. No. 380,995

Claims priority, application Fed. Rep. of Germany, May 23, 1981, 3120697

Int. Cl.³ C08G *8/30*; C08F *283/00*

U.S. Cl. 525—502 **13 Claims**

1. Compound of the formula I



(I)

in which Ar denotes benzene or naphthalene, X denotes $-CH_2-CH_2-$ and/or $-CH_2-CH(CH_3)-$, 0 to (m−1) of the radicals A denote hydrogen, 1 to m of the radicals A denote benzoyl and/or naphthoyl, 1 to m of the radicals A are $-CO-CH=CH-COOM$ and/or $-CO-CH_2-CH(SO_3M-)-COOM$, in which M represents a cation, R^1, R^2 and R^3 denote hydrogen or alkyl having 1 to 14 C atoms, R denotes hydrogen and/or alkyl having 1 to 9 C atoms, n denotes a number from 1 to 150 and m denotes a number from 2 to 12.

6. A process for preparing a compound as claimed in claims 1 or 5, which process comprises treating a compound of the formula I in which A is hydrogen with 1 to m moles of an O-acylating compound which introduces the benzoyl and/or naphthoyl radical and with 1 to m moles of maleic anhydride and, if appropriate, 1 to m moles of sulfite or hydrogen sulfite or 0.5 to 0.5 m moles of disulfite and neutralizing any free acid group present with a base which introduces the radical M.

4,403,078

EPOXY RESIN COMPOSITION

David R. McCoy, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

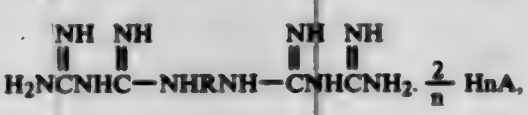
Filed Sep. 7, 1982, Ser. No. 414,767

Int. Cl.³ C08G *59/50*

U.S. Cl. 525—504 **6 Claims**

1. An epoxy resin composition comprising:

a vicinal polyepoxide having an average of at least 1.8 reactive 1,2-epoxy groups per molecule, and an effective amount of a curing agent consisting of a polyoxyalkylenediamine biguanide salt of the formula:



wherein C is carbon, N is nitrogen, H is hydrogen, n is an integer of from 1 to 3, A is an anion selected from the group consisting of chloride, bromide, sulfate and phosphate and R is a radical selected from the group consisting of:

$-CH(CH_3)CH_2(OCH_2CH(CH_3))_x-$ and

$-[CH(CH_3)CH_2O]_y(CH_2CH_2O)_z[CH_2CH(CH_3)O]_{y-1}CH_2CH(CH_3))-$

wherein x is an integer of from 5 to 45, y is an integer of 1 to 5, and z is an integer of from 5 to 50.

4,403,079

ANIONIC SURFACE-ACTIVE COMPOUNDS BASED ON OXYALKYLATED NAPHTHOL NOVOLACS AND THEIR USE

Heinz Uhrig, Steinbach, and Klaus Ehl, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

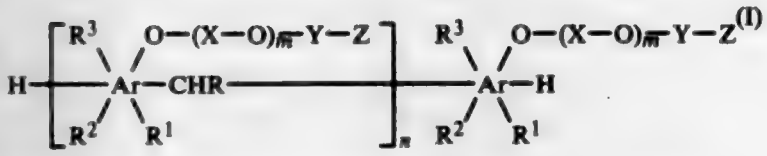
Filed Feb. 10, 1982, Ser. No. 347,485

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3104991

Int. Cl.³ C08F *283/00*; C08G *8/28*

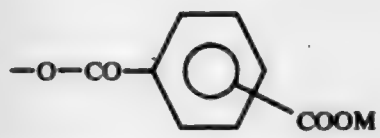
U.S. Cl. 525—507 **10 Claims**

1. A compound of the formula I



(I)

in which Ar denotes naphthalene, X denotes $-CH_2-CH_2-$ and/or $-CH_2-CH(CH_3)-$, Y denotes identical or different radicals of the formulae $-CH_2-CH_2-$, $-CH_2-CH(CH_3)-$ and $-CH_2-CHOH-CH_2-$, Z denotes identical or different radicals of the formulae $-OH$, $-O-CO-CH=CH-COOM$, $-O-CO-CH_2-CH(SO_3M)-COOM$,



and $-SO_3M$, in which M represents a cation, with the proviso that at least one radical Z is different from OH, R^1, R^2 and R^3 denote hydrogen or alkyl having 1 to 14 C atoms, R denotes hydrogen or alkyl having 1 to 9 C atoms, m denotes a number from 1 to 150 and n denotes a number from 1 to 9.

6. A process for reducing the surface tension of an aqueous system which comprises adding to said system an effective amount of a compound as claimed in claim 1.

4,403,080

ISOMERIZATION AND POLYMERIZATION OF HYDROCARBON RESINS

Vincent L. Hughes, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 226,039, Jan. 19, 1981, Pat. No. 4,358,574. This application Aug. 19, 1982, Ser. No. 409,664

Int. Cl.³ C08F *4/14*

U.S. Cl. 526—76 **4 Claims**

1. A method for the preparation of hydrocarbon resins having a softening point of from 90° C. to 100° C. comprising the steps of:

(a) isomerizing the 2-methylbutene-1 component of a branched olefin modifier stream to provide a branched olefin modifier stream enriched in the 2-methylbutene-2 component;

(b) admixing said enriched modifier stream and a piperylene rich feed stream to form a feedstock for resinification;

(c) thereafter catalytically polymerizing said feedstock in the presence of an aluminum halide catalyst; and
(d) recovering the resulting hydrocarbon resins.

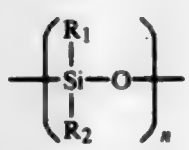
4,403,081

METHOD FOR PRODUCING α-OLEFIN POLYMERS

Masato Harada, Kisarazushi; Akihiro Sato, Chibaken; Sadahiko Yamada, Ichiharashi; Kazutsune Kikuta, Ichiharashi; Atsushi Suzuki, Ichiharashi; Hiroshi Shimizu, Chibaken; Jun Masuda, Ichiharashi; Tadamitsu Hamasaki, Ichiharashi, and Atsuyuki Kachi, Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Feb. 21, 1979, Ser. No. 13,522
Claims priority, application Japan, Feb. 25, 1978, 53-21246; Feb. 25, 1978, 53-21247; May 11, 1978, 53-55757
Int. Cl.³ C08F 4/02, 10/00
U.S. Cl. 526—115 9 Claims

1. In the method for producing α-olefin polymers employing a catalyst obtained by
reacting a trivalent metal halide with a divalent metal compound, forming a solid product (I); thereafter
reacting a siloxane polymer with said solid product (I); thereafter
reacting a compound of transion metal with the thus obtained product, forming a final solid product; and then
combining an organoaluminum compound with said final product,
the improvement which is characterized in that said final product is obtained by
reacting aluminum trichloride (anhydrous) or ferric chloride (anhydrous) with a hydroxide, an oxide or a carbonate of Mg, Ca, Zn or Mn^{II}, a double oxide containing oxide of Mg, Ca, Zn, or Mn^{II}, a halogenated hydrate of Mg, Mn, Sn or Ni, a hydrate of double salts containing an oxide and a halide of Mg, Ca, Zn or Mn^{II}, a hydrate of double salts containing an oxide of Mg, Ca, Zn or Mn^{II}, a hydrate of double salts of a carbonate with a hydroxide both of Mg, Ca, Zn or Mn^{II}, a hydrate of a hydroxide-carbonate containing Mg, Ca, Zn or Mn^{II}, the mixing proportion being 0.1–20 as expressed by an atomic ratio of the latter to the former, the reaction temperature being 20° C.–500° C., thus obtaining the solid product (I); thereafter
mixing (A) said solid product (I), (B) a chain or cyclic siloxane polymer expressed by the general formula



(wherein n represents 3–10,000, and R_1 and R_2 represent same or different kinds of hydrogen, alkyl group, aryl group, halogen, alkoxy group, aryloxy group, or fatty acid residual group), and (C) a halide, an oxyhalide, an alcoholate, an alkoxyhalide or an acetoxyhalide, of titanium or vanadium (hereinafter referred to as compound of transition metal), by dissolving or dispersing one or two or the total of the above-mentioned (A), (B) or (C) in a solvent in advance, and then
reacting (A) with (B) and (C) in the coexistence of (B) said siloxane polymer and (C) said compound of transition metal at a temperature of 50° C.–300° C.,
the proportion of these (A), (B) and (C) employed being 10–10,000 g of (B) said siloxane polymer based on 100 g of (A) said solid product (I), and 1–1,000 g of (C) said compound of transition metal based on 100 g of (A) said solid product (I), and 10–5,000 g of (C) said compound of transition metal based on 100 g of (B) said siloxane polymer, thus forming a solid product (II).

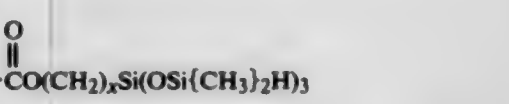
4,403,082

SILOXANE CROSSLINKERS

Ollie W. Marko, Carrollton, Ky., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 295,411, Aug. 24, 1981, Pat. No. 4,360,687. This application Aug. 5, 1982, Ser. No. 405,656
Int. Cl.³ C08G 77/06
U.S. Cl. 528—15 4 Claims

1. A method of curing polyorganosiloxanes wherein at least two of the silicon atoms have attached radicals containing aliphatic unsaturation said method comprising: reacting said polyorganosiloxane in the presence of a catalyst with a compound having the formula:



wherein R is selected from the group consisting of alkyl having 1 to 4 carbon atoms, trifluoromethyl and phenyl, and x is an integer of 2 to 4.

4. The method according to claim 1 wherein the catalyst is a platinum complex.

4,403,083

PREPARATION OF SOLID POLYURETHANE PARTICLES

Nelson S. Marans, and Clifton L. Kehr, both of Silver Spring, Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 44,808, Jun. 1, 1979, abandoned. This application Aug. 31, 1982, Ser. No. 413,294
Int. Cl.³ C08G 18/48, 18/10
U.S. Cl. 528—44 3 Claims

1. A process for forming solid, discrete, hydrophilic, crosslinked polyurea-urethane particles having an average diameter in the range 0.1–100 mils consisting of adding a droplet form and in the absence of an emulsifying agent
(a) a hydrophilic prepolymer comprising an isocyanate-capped polyol or mixtures thereof wherein said polyol or mixture of polyol has a reaction functionality greater than two, the total of said polyol present having an ethylene oxide content of at least 40 weight percent before capping, to
(b) an agitated water reactant, the volume ratio of (b):(a) being at least 2:1 and thereafter recovering the thus formed polyurea-urethane particles therefrom.

4,403,084

CRYSTALLINE, GRINDABLE POLYURETHANE PREPOLYMERS

Charles W. McGary, Jr.; Delmer R. Rhodes, both of Centerville, and Vincent J. Pascarella, Dayton, all of Ohio, assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 15, 1982, Ser. No. 357,914
Int. Cl.³ C08G 18/80
U.S. Cl. 528—45 30 Claims

1. A crystalline, grindable, end-blocked prepolymer comprising the reaction product of an organic polyisocyanate, a crystalline long chain diol having an average molecular weight of approximately 500 to 5000, a polyhydroxy crosslinking agent and an end blocking agent, wherein the resulting polyurethane elastomer has a 100% modulus less than approximately 250 psi, a 300% modulus between 200 and 450 psi and tensile of about 3500 to 6500 psi.

4,403,085

POLYURETHANE CROSSLINKERS, AND THE PROCESS FOR PREPARING AND USING THE SAME

Roger M. Christenson, and Thomas h. Hockswender, both of Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 14, 1981, Ser. No. 330,290
Int. Cl.[3] C08G *18/81, 18/32, 18/60*
U.S. Cl. 528—45 21 Claims

1. A polyurethane crosslinker which comprises a blocked isocyanate-terminated reaction product derived from:

(1) a polyisocyanate,

(2) a blocking agent,

(3) a polyol having a molecular weight of 400 to 3000, and

(4) another polyol containing a carboxyl group, and having a molecular weight of 100 to 500.

4,403,086

COATING COMPOSITION COMPRISING CHAIN-EXTENDABLE CROSSLINKABLE POLYOL AND DIBLOCKED DIISOCYANATE

Joseph W. Holubka, Livonia, and Ray A. Dickie, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 28, 1981, Ser. No. 334,795
Int. Cl.[3] C08G *18/32, 18/80;* C08L *63/00*
U.S. Cl. 528—45 9 Claims

1. A resin composition comprising:

chain-extendable, crosslinkable polyol of molecular weight about 100 to about 1000, having at least three hydroxyl group, selected from polyhydroxy functional straight or branched chain saturated or unsaturated hydrocarbons, optionally comprising one or more oxy or ester moieties and optionally comprising one or more heterocyclic atoms, aromatic and/or heterocyclic rings, the heterocyclic atom(s) being selected from N, O and S; and

chain-extendable, diblocked diisocyanate of molecular weight about 200 to 2000, wherein said diblocked diisocyanate is the reaction product of an organic diisocyanate with a monofunctional blocking agent selected from alcohol, amide, ketoxime, phenol and a mixture of any of them, in molar ratio of about 1:2, respectively, the blocking group of which diblocked diisocyanate has a de-blocking temperature of about 100° C. to about 190° C.; and

crosslinking agent reactive with the hydroxy functinality of said polyol and substantially unreactive with de-blocked isocyanate functionality of said diblocked diisoycanate, wherein said crosslinking agent and said polyol are present in a molar equivalent ratio of about 1:1 to about 1:15, respectively.

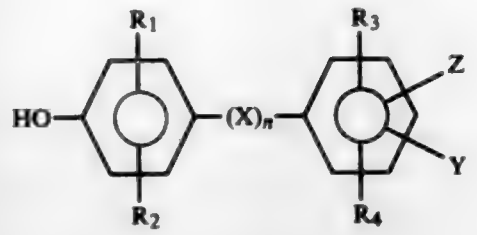
4,403,087

POLYCARBONATES CHAIN TERMINATED WITH SULFONIC ACID SALT CONTAINING PHENOLS

Victor Mark, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Sep. 28, 1981, Ser. No. 306,186
Int. Cl.[3] C08G *63/62*
U.S. Cl. 528—196 6 Claims

1. A composition which comprises an endcapped aromatic carbonate polymer resin derived solely from bisphenol-A and at least partially encapped end-capped with a flame retardant imparting quantity of a moiety derived from a compound of the formula



wherein

X is O; S; SO; CO; alkylene of one to four carbon atoms, inclusive; CR_5R_6 wherein R_5 and R_6 are the same or different and are hydrogen or alkyl of one to three carbon atoms, inclusive; $C{=}CR_7R_8$ wherein R_7 and R_8 are the same or different and are hydrogen, chlorine or bromine;

n is 0 or 1;

Y is hydrogen;

Z is $SO_3{-}R$ wherein R is a metal cation of oxidation number +1 or +2; and

R_1, R_2, R_3 and R_4 are the same or different and are hydrogen, alkyl of one to three carbon atoms, inclusive, chlorine or bromine.

4,403,088

PLASTIC RESIN PREPARED FROM META OR PARA-DIISOPROPENYLBENZENE AND METHOD OF PREPARATION

Robert A. Smith, and Dennis B. Patterson, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 5, 1982, Ser. No. 405,468
Int. Cl.[3] C08G *61/12, 65/00, 85/00*
U.S. Cl. 528—205 18 Claims

1. A plastic resin comprised of repeat unit prepared by reacting (1) at least one member selected from the group consisting of meta-diisopropenylbenzene and p-diisopropenylbenzene and (2) at least one member selected from the group consisting of (a) m-dialkoxybenzene, wherein said alkoxy moieties contain from 1 to 10 carbon atoms, (b) 1-mercapto-3-alkoxybenzene, wherein said alkoxy moieties contain from 1 to 10 carbon atoms, (c) diaralkoxybenzene, wherein said aralkoxy moieties contain from 7 to 12 carbon atoms and (d) 1,2,3-trialkoxybenzene, wherein said alkoxy moieties contain from 1 to 10 carbon atoms.

4,403,089

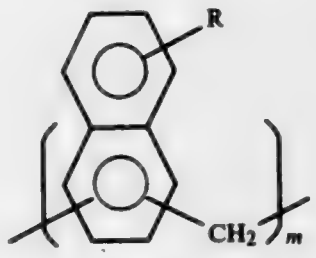
CARBOXYLATED NAPHTHALENE FORMALDEHYDE CONDENSATION POLYMERS AS DENTAL PLAQUE BARRIERS

Carl J. Buck, Berkeley Heights, N.J., assignor to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Division of Ser. No. 172,494, Jul. 25, 1980, Pat. No. 4,362,712.
This application Aug. 17, 1982, Ser. No. 408,588
Int. Cl.[3] C08G *10/02, 16/02*
U.S. Cl. 528—247 1 Claim

1. A condensation polymer of formaldehyde with a naphthalene compound, wherein the repeating unit of said polymer having the structure (A),

(A)



wherein R is selected from the group consisting of —COOM and —CH_2COOM and M is selected from the group consisting of hydrogen, lithium, sodium and potassium.

4,403,090

POLYISOPHTHALATES AND COPOLYMERS THEREOF HAVING HIGH BARRIER PROPERTIES

Richard R. Smith, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 7, 1982, Ser. No. 415,210
Int. Cl.³ C08G 63/02, 63/16
U.S. Cl. 528—272 26 Claims

1. As a composition of matter, a polyester suitable for use as a packaging material, comprising:

polyisophthalates or copolymers thereof having a glass transition temperature of 70° C. or less;

said polyisophthalates being the reaction product of an isophthalic compound and a diol having from 2 to 12 carbon atoms, said isophthalic compound selected from the group consisting of isophthalic acid, an alkyl ester of isophthalic acid having from 10 to 20 carbon atoms, said diol being ethylene glycol and containing from 0 to 60 mole percent of one or more compounds selected from the group consisting of a diol having from 3 to 12 carbon atoms, a glycol ether having from 4 to 12 carbon atoms, and combinations thereof;

said copolymer being the reaction product of said isophthalic compound, said diol, and up to 50 mole percent of a dicarboxylic acid or ester thereof having from 4 to 40 carbon atoms based upon said isophthalic compound and said dicarboxylic acid or said ester thereof, said dicarboxylic acid or ester thereof being other than said isophthalic compound.

4,403,091

UNGELLED HYDROXY GROUP-CONTAINING OLIGOMERS

Marvis E. Hartman, Pittsburgh; Barbara A. Greigger, Allison Park, and Rostyslaw Dowbenko, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 28, 1982, Ser. No. 425,754
Int. Cl.³ C08G 63/44, 69/44
U.S. Cl. 528—288 25 Claims

1. A process for preparing an ungelled hydroxyl-containing oligomer comprising:

(A) reacting a 1,2-dicarboxylic acid anhydride with a polyol under conditions sufficient to form a half-ester with substantially no polyesterification product,

(B) reacting the half-ester with an organic isocyanate under conditions sufficient to form an intermediate reaction product containing carboxylic acid groups,

(C) reacting said intermediate reaction product containing carboxylic acid groups with an epoxide under conditions sufficient to form the ungelled hydroxyl-containing oligomers.

10. An ungelled hydroxyl-containing oligomer having the following structure:

$$Z—X—Y)_m$$

where Z is the residue of an organic isocyanate remaining after reaction with X; X is the residue of a half-ester after reaction with an organic isocyanate and with an epoxide, said half-ester being formed from reacting a 1,2-dicarboxylic acid anhydride with a polyol; Y is the residue of an epoxide after ring opening with a carboxylic acid group of X; and m corresponds to the number of isocyanate groups reacted with X.

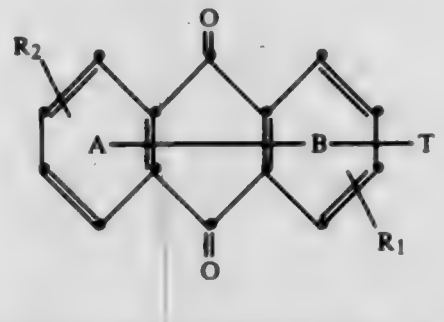
4,403,092

POLYESTERS CONTAINING COPOLYMERIZED, ANTHRAQUINONE COLORANT COMPOUNDS CONTAINING SULFONAMIDO GROUPS

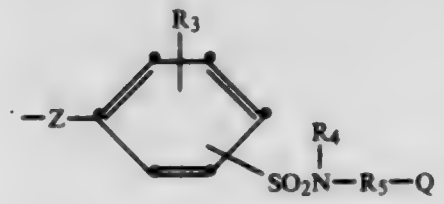
Thomas G. Davis; Max A. Weaver, and Ralph R. Giles, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 22, 1982, Ser. No. 443,784
Int. Cl.³ C08G 63/68
U.S. Cl. 528—290 9 Claims

1. A colored polyester composition comprising a linear thermoplastic, or unsaturated cross-linkable polyester containing a coloring amount of one or more copolymerized dyes of the formula



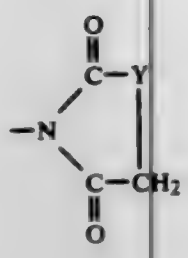
wherein R_1 and R_2 each represents hydrogen or 1–3 substituents depending on the number of T substituents present, and independently selected from alkyl, alkoxy, alkylamino, alkylsulfonyl, alkylsulfonylamino, alkanoylamino, aroylamino, alkylthio, arylamino, amino, cycloalkylamino, alkanoyl, aroyl, arylsulfonyl, CF_3, arylsulfamoyl, cyano, halogen, hydroxy, nitro, sulfamoyl, alkylsulfamoyl, dialkylsulfamoyl, carbamoyl, alkylcarbamoyl and dialkylcarbamoyl; and T is 1–4 independently selected substituents of the formula



in any positions on rings A and/or B, wherein each Z is a divalent linking group independently selected from —NH—, —S—, —O—, —NHR—, —SR—, —SRS—, —SRO—, —SR-SR—, —NHRO—, —NHRORO—, —NHRS—, —NHR-SR—, —NHRN(COR)—, —NHRN(SO_2R)—, —ORO—, —OR—, —ORORO—, —ORORO—, —ORSR—, and —ORN-(COR)RO—, wherein R is alkylene, arylene or cycloalkylene;

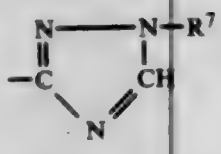
R_3 represents hydrogen or 1–3 substituents independently selected from alkyl, alkoxy, cyano, alkanoylamino, halogen, and alkylthio; each R_4 is independently selected from hydrogen, alkyl, cycloalkyl, and aryl; each R_5 is independently selected from alkylene, arylene, cycloalkylene, arylenealkylene, aryleneoxyalkylene, arylenethioalkylene, alkylenethioalkylene, alkyleneoxyalkylene, arylenedialkylene, and cyclohexylenedialkylene; each Q represents 1–3 groups independently selected from hydroxy, carboxy, —COO—alkyl, —COO—aryl, and —COO—cycloalkyl;

and wherein the alkyl, alkylene, cycloalkyl, cycloalkylene, aryl, and arylene moieties or segments of the above R_1–R_5 groups are unsubstituted or substituted with 1–3 of the following: hydroxy; halogen; cyano; amino; alkoxy; alkoxycarbonyl; aroyloxy; alkoxyalkoxy; hydroxyalkoxy; succinimido; glutarimido; phthalimido; phthalimidino; 2-pyrrolidono; cyclohexyl; phenoxy; phenyl; phenyl substituted with alkyl, alkoxy, alkoxycarbonyl, halogen, alkanoylamino or cyano; acrylamido; alkenyl; benzoylsulfonicimido; groups of the formula



wherein Y is —NH—,

—O—, —S—, >CHOH, or —CH_2—O—; —S—R^6 wherein R^6 is selected from alkyl, alkyl substituted with 1-3 of halogen, hydroxy, phenoxy, aryl, cyano, cycloalkyl, alkylsulfonyl, alkylthio, alkanoyloxy, or alkoxy, phenyl, phenyl substituted with one or more of halogen, alkyl, alkoxy, alkanoylamino, cyano or alkoxycarbonyl, pyridyl, pyrimidinyl, 2-benzoxazolyl, 2-benzimidazolyl, 2-benzothiazolyl or



;

—SO_2R^8; —$COOR^8$; —OXR^8; —NH—X—R^8; —$CONR^7R^7$; —$SO_2NR^7R^7$; wherein X is —CO—, —COO—, or —SO_2; R^8 is selected from alkyl, aryl, cycloalkyl, and each of these groups substituted as appropriate with 1-3 substituents independently selected from halogen, hydroxy, phenoxy, aryl, alkyl, cyano, cycloalkyl, alkylsulfonyl, alkylthio, alkanoyloxy, and alkoxy, and when X is —CO—, R^8 is further selected from hydrogen, amino, alkenyl, alkylamino, dialkylamino, arylamino and furyl; R^7 is selected from hydrogen, alkyl, aryl, alkoxysubstituted aryl, cycloalkyl, amino, alkylamino, dialkylamino, arylamino, furyl, and alkyl substituted with 1-3 of halogen, hydroxy, phenoxy, aryl, cyano, cycloalkyl, alkylsulfonyl, alkylthio, alkanoyloxy, or alkoxy; alkoxy substituted with 1-3 of hydroxy, cyano or alkanoyloxy; alkoxyalkoxy substituted with 1-3 of hydroxy, cyano, alkanoyloxy or alkoxy; and phenoxy substituted with 1-3 of alkyl, alkoxy or halogen.

4,403,093

POLYESTERS

Marvis E. Hartman, Pittsburgh; Barbara A. Greigger, Allison Park, and Rostyslaw Dowbenko, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

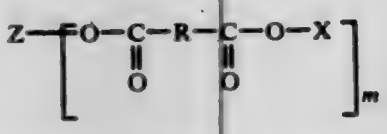
Filed Sep. 28, 1982, Ser. No. 425,759
Int. Cl.³ C08G *63/42*
U.S. Cl. 528—297 **18 Claims**

1. A process for preparing an ungelled polyester oligomer which comprises:

(A) reacting a 1,2-dicarboxylic acid anhydride with a polyol under conditions sufficient to form a half-ester with substantially no polyesterification product, and

(B) reacting said half-ester with a polyepoxide under conditions sufficient to form said ungelled polyester oligomer.

5. An ungelled polyester oligomer having the following structural formula:



where Z is the residue of a polyepoxide after ring opening with a carboxylic acid group; R is an aliphatic or an aromatic group; X is the residue of a polyol after reaction with a carboxylic acid anhydride and m corresponds to the number of epoxy groups of the polyepoxide ring opened with carboxylic acid groups.

4,403,094

DEEP-DYEABLE POLYESTER FIBER

Yoshiyuki Sasaki, Takatsuki; Mitsuo Kuwabara, and Masayuki Tani, both of Ibaraki, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jun. 4, 1981, Ser. No. 270,360
Claims priority, application Japan, Jun. 13, 1980, 55-79099
Int. Cl.³ C08G *63/16*
U.S. Cl. 528—308.2 **4 Claims**

1. A deep-dyeable polyester fiber comprising recurring units consisting primarily of ethylene terephthalate and —SO_3M groups in which M is an alkali metal, and having a degree of crystallinity X_p of from 30 to 55%, a degree of orientation Δn of from 0.06 to 0.12 and $X_p/\Delta n$ of from 350 to 550, prepared by the process comprising:

melt-spinning a fiber-forming polyester containing recurring units consisting mainly of ethylene terephthalate through a spinneret to form a slightly oriented filament having a double refraction index Δn of from 0.02 to 0.08;

heat treating said filament at an elevated temperature without applying a positive tension or drawing thereto to obtain a highly crystallized filament having a degree of crystallinity X_p of from 30 to 55%; and

drawing said highly crystallized filament at a low temperature at a draw ratio of an increased ratio in denier during said heat treatment of from 1.0 to 1.7.

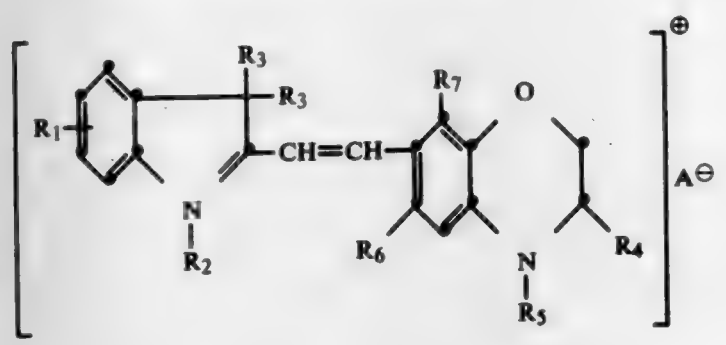
4,403,095

METHINE COMPOUNDS

Rudolf Zink, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 11, 1981, Ser. No. 242,793
Claims priority, application Switzerland, Mar. 21, 1980, 2241/80
Int. Cl.³ C07D *413/06*
U.S. Cl. 542—466 **17 Claims**

1. A methine compound of the formula



wherein

R_1 is hydrogen, NO_2, halogen, C_1-C_4-alkyl, halo-C_1-C_4-alkyl, C_1-C_4-alkyloxy-C_1-C_4-alkyl or C_1-C_4-alkoxy,

R_2 is C_1-C_4-alkyl, or C_1-C_4-alkyl substituted by halogen, cyano, carbamoyl, hydroxyl, phenyl or C_1-C_4-alkoxy,

R_3 independently of one another are each C_1-C_4-alkyl,

R_4 is hydrogen C_1-C_4-alkyl, cyano-C_1-C_4-alkyl, aryl, halo-aryl, cyano-aryl, C_1-C_4-alkylaryl, or C_1-C_4-alkoxyaryl,

R_5 is C_3-C_4-alkenyl, C_1-C_4-alkyl, or C_1-C_4-alkyl substituted by phenyl, acetoxy, cyano, halogen, hydroxy, or C_1-C_4-alkoxy,

R_6 and R_7 independently of one another are each hydrogen, C_1-C_4-alkyl, C_1-C_4-alkoxy or halogen, and

A is an anion.

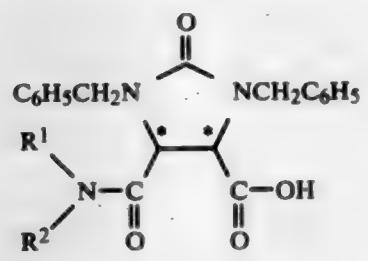
4,403,096

OPTICALLY ACTIVE IMIDAZOLIDIN-2-ONE DERIVATIVES

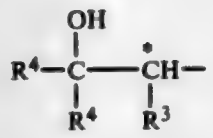
Motoo Hazama, Kyoto; Tadatoshi Aratani, Nishinomiya; Gohu Suzukamo, Ibaraki, and Takeo Takahashi, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 29, 1981, Ser. No. 278,350
Claims priority, application Japan, Jul. 10, 1980, 55-95818
Int. Cl.³ C07D *233/34*
U.S. Cl. 548—321 7 Claims

1. An optically active cis-4,5-disubstituted imidazolidin-2-one derivative of the formula:



wherein R^1 is a C_1–C_4 alkyl group or benzyl and R^2 is a group of the formula:



wherein the carbon atom accompanied with an asterisk (*) is an asymmetric carbon atom, R^3 is a C_1–C_4 alkyl group, phenyl or benzyl and R^4 is a benzyl or phenyl group optionally substituted with at least one C_1–C_4 alkyl or C_1–C_4 alkoxy group.

4,403,097

5-(3-TRIFLUOROMETHYLPHENYL)-2-FURANCARBOXYLIC ACID 2-(1-METHYLETHYLIDENE)HYDRAZIDE

Stanford S. Pelosi, Jr., and Chia-Nien Yu, both of Norwich, N.Y., assignors to Norwich Eaton Pharmaceuticals, Inc., Norwich, N.Y.

Filed Jun. 4, 1982, Ser. No. 384,870
Int. Cl.³ C07D *307/68*
U.S. Cl. 549—487 1 Claim

1. The compound 5-(3-trifluoromethylphenyl)-2-furancarboxylic acid 2-(1-methylethylidene)hydrazide.

4,403,098

PROCESS FOR PRODUCING A 3,3-DIMETHYL-2-ALKOXYOXIRANE FROM A 1-ALKOXY-2-METHYLPROPENE

Rudolf Brockhaus, Marl, and Hans-Jürgen Franke, Dorsten, both of Fed. Rep. of Germany, assignors to Chemische Werke Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Mar. 11, 1982, Ser. No. 357,126
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1981, 3109439
Int. Cl.³ C07D *301/06*
U.S. Cl. 549—532 13 Claims

1. A process for producing a 3,3-dimethyl-2-alkoxyoxirane from a 1-alkoxy-2-methylpropene, comprising contacting a 1-alkoxy-2-methylpropene with molecular oxygen, in the liquid phase, at a temperature of 25°–70° C.

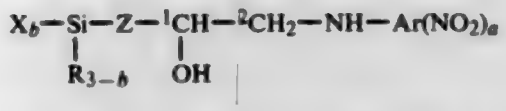
4,403,099

SILICON-CONTAINING NITRO DYES AND PROCESS FOR MAKING THE SAME

Bodo Hirsch, Graupa; Gunter Horn, Nuenchritz, and Hellmut Reuther, Dresden, all of German Democratic Rep., assignors to VEB Chemiewerk Nünchritz, Radebeul, German Democratic Rep.

Continuation of Ser. No. 27,265, Apr. 5, 1979, abandoned. This application Feb. 26, 1982, Ser. No. 352,830
Claims priority, application German Democratic Rep., Apr. 5, 1978, 204587
Int. Cl.³ C07F *7/10*
U.S. Cl. 556—422 5 Claims

1. Silicon-containing nitro dyes having the following formula:



wherein the coloring component is bonded with a Si-atom by homopolar bonds and wherein

X represents same or different hydrolyzable groups or a silicone radical;

Z is a bivalent alkylene radical with 2 to 10 C-atoms, which may be interrupted by oxygen and may also contain cyclic radicals, and wherein ^1C and ^2C may be parts of a cycloalkyl ring;

R is a monovalent organic radical;

Ar is a substituted or unsubstituted aryl radical;

a and b are integers from 1–3.

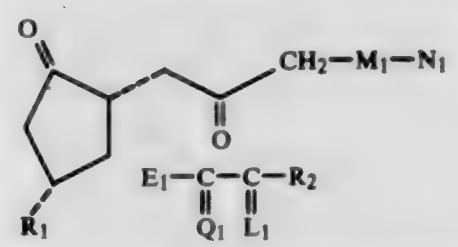
4,403,100

(11R)-11-DEOXY-11-ALKYL-6-OXO-PROSTAGLANDINS

Douglas R. Morton, Jr., Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 30, 1981, Ser. No. 316,480
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—121 16 Claims

1. A compound of the formula I,



I

or an enantiomer or a racemic mixture of enantiomers thereof;

wherein M_1 is:

(1) $—(CH_2)_d—C(R_3)_2—$;
(2) $—CH_2—O—CH_2—Y_1—$;
(3) cis-$CH_2—CH=CH—$; or
(4) trans-$CH_2—CH=CH—$;

wherein N_1 is

(1) $—COOR_4$;
(2) $—CH_2OR_8$;
(3) $—CH_2NR_5R_6$;
(4) $—CO—NR_5R_6$;
(5) —CN;
(6) $—COR_1$; or
(7) $—COCH_2OH$;

wherein E_1 is

(1) trans-$CH=CH—$;
(2) cis-$CH=CH—$;
(3) $—C\equiv C—$; or
(4) $—CH_2—CH_2—$;

wherein Q_1 is

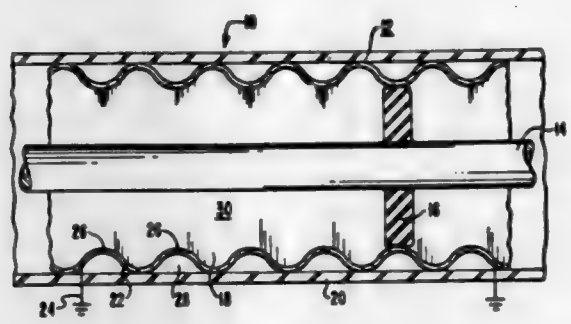
(1) α-OR_8:β-R_7;
(2) α-R_{17}:β-OR_8;
(3) oxo; or

(4) α-H:β-H;
wherein L_1 is
(1) α-R_9:β-R_{10}; or
(2) α-R_{10}:β-R_9;
wherein R_1 is (C_1–C_4)alkyl;
wherein R_2 is
(1) —O—(PhX);
(2) —C_pH_{2p}—(PhX);
(3) —C_mH_{2m}—(DZ);
(4) —C_pH_{2p}+1;
(5) —CH_2—CH_2—CH=$C(CH_3)_2$;
(6) —C_aH_{2a}—O—C_bH_{2b}+1;
(7) —O—(T); or
(8) —C_pH_{2p}—(Py);
wherein (PhX) is phenyl substituted by zero to 3 of the following:
(1) (C_1–C_4)alkyl;
(2) chloro;
(3) fluoro;
(4) bromo;
(5) nitro;
(6) trifluoromethyl; or
(7) OR_8;
wherein DZ is a (C_3–C_6) cycloaliphatic substituted by zero to 3 of the following:
(1) (C_1–C_4)alkyl;
(2) chloro;
(3) fluoro;
(4) bromo;
(5) nitro;
(6) trifluoromethyl; or
(7) OR_8;
wherein T is 3-thienyl;
wherein Py is 2, 3, or 4-pyridinyl;
wherein R_3 is
(1) hydrogen;
(2) fluoro; or
(3) methyl;
wherein R_4 is
(1) hydrogen;
(2) (C_1–C_{12})alkyl;
(3) (C_3–C_{10})cycloalkyl;
(4) (C_7–C_{12})aralkyl;
(5) phenyl;
(6) phenyl, mono-, di-, or trisubstituted by chloro or alkyl of from one to 3 carbon atoms; or
(7) a pharmacologically acceptable cation, or
(8) phenyl para-substituted by
(a) —NHCO—R_{25};
(b) —O—CO—R_{26};
(c) —O—CO—R_{24};
(d) —O—CO—(p-Ph)—R_{27}; or
(e) —CH=N—NH—CO—NH_2;
wherein R_{24} is phenyl or acetamidophenyl; R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or amino, R_{26} is methyl, amino or methoxy; R_{27} is hydrogen or acetamido; and (p-Ph) is 1,4-phenylene, wherein R_5 and R_6 are the same or different and are
(1) hydrogen;
(2) (C_1–C_4)alkyl;
(3) (C_6–C_{12})aryl; or
(4) (C_7–C_{14})aralkyl;
wherein R_7 is
(1) hydrogen; or
(2) C_1–C_4 alkyl;
wherein each occurrence of R_8 is the same or different and is
(1) hydrogen;
(2) (C_1–C_4)alkyl; or
(3) —COR_{13};
wherein R_9 and R_{10} are the same or different and are
(1) hydrogen;
(2) (C_1–C_4)alkyl; or
(3) fluoro;
wherein R_{13} is
(1) hydrogen;
(2) (C_1–C_{12})alkyl;
(3) (C_3–C_{10})cycloalkyl;
(4) (C_7–C_{12})aralkyl;
(5) phenyl; or
(6) substituted phenyl;
wherein R_{17} is (C_1–C_4)alkyl;
wherein Y_1 is
(1) a valence bond; or
(2) —$(CH_2)_r$—;
wherein d is an integer from 0–5;
wherein p is an integer from 0–8;
wherein m is an integer from 0–3;
wherein q is an integer from 3–6;
wherein a is an integer from 0–2;
wherein b is an integer from 1–5; and
wherein r is an integer from 1–2.

4,403,101
GAS-INSULATED TRANSMISSION LINE HAVING IMPROVED OUTER ENCLOSURE

Alan H. Cookson, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 206,917, Nov. 14, 1980, abandoned. This application Feb. 17, 1982, Ser. No. 349,510
Int. Cl.³ H01B 9/06; H02G 5/06
U.S. Cl. 174—14 R **3 Claims**

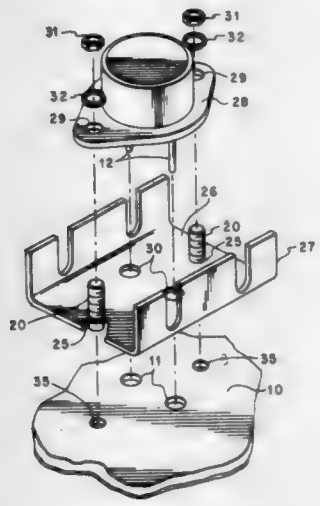


1. A gas-insulated transmission line comprising:
a gas-tight, non-metallic, cylindrical hollow pressure pipe;
a thin-walled, corrugated, cylindrical grounded electrically conducting tube disposed within said pressure pipe;
an inner conductor insulatably supported within said tube; and
a pressurized insulating gas filling the interior of said pressure pipe.

4,403,102
HEAT SINK MOUNTING

William D. Jordan, Dallas; Roger C. Hundt, Carrollton, and James D. Pritchett, Garland, all of Tex., assignors to Thermalloy Incorporated, Dallas, Tex.

Continuation of Ser. No. 93,281, Nov. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 8,032, Jan. 31, 1979, abandoned. This application Oct. 23, 1981, Ser. No. 314,202
Int. Cl.³ H01B 7/34; H05K 3/34
U.S. Cl. 174—16 HS **8 Claims**



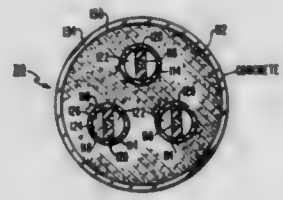
1. In combination:
(a) a heat sink including a substantially flat base portion;
(b) at least one mounting stud comprising an elongated shaft with a radially enlarged flange extending radially therefrom near one end thereof defining a shaft with a longer portion on one side of said flange and a shorter portion on the opposite side of said flange, the longer portion of said shaft extending through said flat base portion and at least the end portion of the shorter portion of said stud being tin-plated; and
(c) a circuit board with said end portion of the shorter portion of said stud fitted within a hole in said circuit board and soldered to said circuit board.

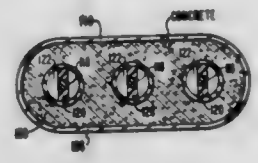
6. The method of mounting a semiconductor case and heat sink on a circuit board comprising the steps of:
(a) attaching said semiconductor case to said heat sink with a stud passing through said heat sink, said stud comprising a cylindrical shaft with a radially enlarged flange extending therefrom intermediate the ends thereof, the portion of said shaft extending in the first direction from said flange passing through said heat sink and attached to said semiconductor case, and at least the end portion of the portion of said shaft extending in the opposite direction from said flange being tin-plated;
(b) inserting said end portion of said shaft extending in the opposite direction from said flange in a hole in said circuit board; and
(c) soldering said end portion of said shaft extending in the opposite direction from said flange to said circuit board.

4,403,103
GAS-INSULATED TRANSMISSION LINE HAVING IMPROVED OUTER ENCLOSURE

Alan H. Cookson, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 206,917, Nov. 14, 1980, abandoned. This application Feb. 17, 1982, Ser. No. 349,569
Int. Cl.³ H01B 9/06; H02G 5/06
U.S. Cl. 174—28 **6 Claims**





1. A gas-insulated transmission line comprising:
an elongated, solid, electrically insulating outer casing having a longitudinal opening therethrough;
a non-metallic, elongated tubular hollow pipe disposed in said outer casing opening, said outer casing reinforcing said pipe;
an inner conductor insulatably supported in said pipe; and
an insulating gas disposed within said pipe.

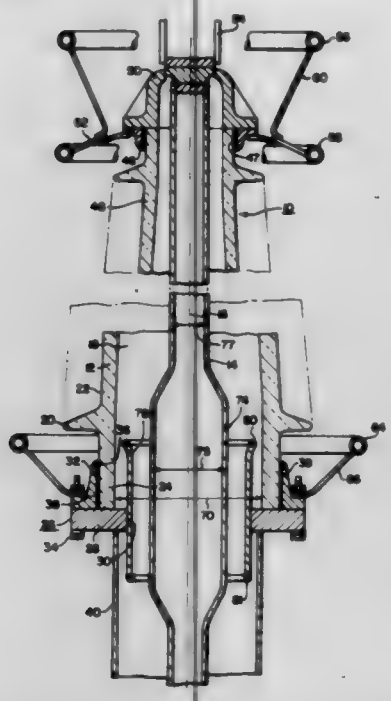
4,403,104
GAS-INSULATED BUSHING HAVING MINIMIZED THROAT DIAMETER

Steinar J. Dale, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 15, 1982, Ser. No. 368,557
Int. Cl.³ H01B 17/26
U.S. Cl. 174—31 R **7 Claims**

1. A low-pressure gas-insulated bushing comprising:
an elongated, hollow insulating shell having a terminal end and a throat end with an opening therethrough;
electrical terminal means secured to said shell terminal end;
a tubular electric conductor disposed in said shell and extending outwardly therefrom through said throat end opening, said conductor electrically contacting said terminal means, said conductor having a first diameter section along its longitudinal length in the vicinity of a said shell throat end and a second diameter section having a second

diameter less than said first diameter along the remainder of its longitudinal length; and



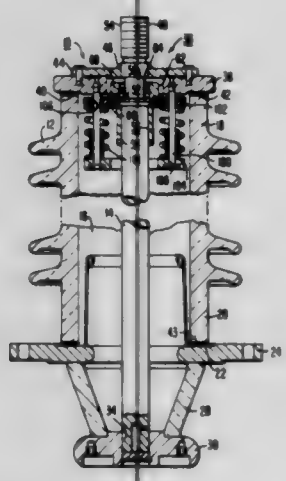
an insulating gas at low pressure disposed within said shell and electrically insulating said conductor from said shell.

4,403,105

GAS-INSULATED BUSHING HAVING FINGER CONTACT EXPANSION JOINT

Robert L. Hess, North Versailles, and Zeno Neri, Wilkins Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 30, 1982, Ser. No. 373,751
Int. Cl.³ H01B *17/26*
U.S. Cl. 174—31 R **5 Claims**



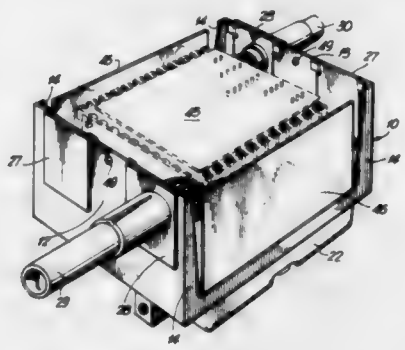
1. A gas-insulated bushing comprising:
an elongated, hollow insulating shell having first and second ends;
an elongated electric conductor disposed within, and spaced-apart from, said insulating shell;
means for supporting said conductor in said insulating shell;
an insulating gas disposed within said insulating shell and electrically insulating said conductor from said insulating shell;
terminal means sealingly secured to said insulating shell first end preventing the escape of said insulating gas from within said insulating shell, said terminal means including an electrical connector external to said shell and extending inwardly inside said shell, said electrical connector being aligned with, but spaced-apart from, said electric conductor; and
means electrically connecting said electric conductor with said electrical connector, said electrical connecting means comprising a conductor adapter secured to said electric conductor and extending outwardly therefrom to adjacent said electrical connector in an overlapping relationship therewith, said adapter having a recess therein, and a contact finger disposed in said adapter recess and extending outwardly therefrom to slidingly contact said electrical connector.

4,403,106

TERMINAL ENCLOSURE FOR CABLE STUBS, WITH VARIABLE ENTRY POSITIONS

Zygmunt Lask, Montreal, and Harold Johnston, Lachine, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 21, 1981, Ser. No. 303,831
Int. Cl.³ H02G *3/08*
U.S. Cl. 174—59 **16 Claims**



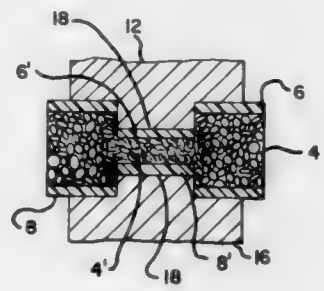
1. A terminal enclosure for stubbed cables comprising a housing and a cover, said enclosure having a base and upturned ends extending perpendicular to the base;
said cover having a top web and sides extending down from said web and perpendicular thereto;
two rectangular apertures in each end of said housing, said apertures extending down from top edges of said ends towards said base;
blanking members in two of said apertures and cable sleeve members in the other two apertures;
said sides of said cover fitting between said ends of said housing and means retaining said cover in position on said housing, the cover retaining said blanking members and said cable sleeve members in position in said apertures.

4,403,107

STAMPED CIRCUIT BOARD

Norman E. Hoffman, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 15, 1980, Ser. No. 216,573
Int. Cl.³ H05K *1/02*; B32B *31/00*; B05D *1/12*; B32B *3/12*
U.S. Cl. 174—68.5 **4 Claims**



1. A circuit board of the type comprising a dielectric substrate and a layer of metal bonded to at least one surface thereof with portions of said metal layer being recessed as metal portions into said substrate characterized in that:
said substrate comprising a cellular material formed either from a polymer matrix having fracturable bubbles therein

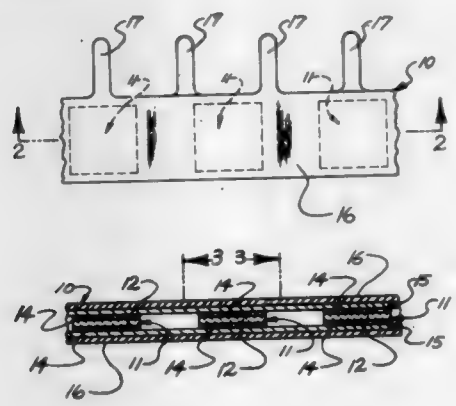
or a blown polymeric foam which volumetrically compacts to receive said recessed metal portions therein as stable indented portions separated from said metal layer without resultant protrusions corresponding to said recessed metal portions occurring at the other surface of said substrate.

4,403,108

MINIATURIZED BUS BAR WITH CAPACITORS AND ASSEMBLY TECHNIQUE

Donald H. DeVries, Mesa, Ariz., assignor to Rogers Corporation, Rogers, Conn.

Filed Mar. 31, 1981, Ser. No. 249,686
Int. Cl.[3] H01B 7/00, 13/00
U.S. Cl. 174—72 B 22 Claims



1. A high capacitance bus bar assembly comprising:

a pair of spatially separated elongated bus bar conductors, said conductors having inwardly facing planar surfaces;

at least a first wafer means, said wafer means being positioned between said conductors, said wafer means having two opposed planar surfaces which respectively face said conductor inwardly facing planar surfaces, said wafer means being comprised of a dielectric material; and

at least two polymeric coat means, said coat means being free of conductive fillers, said coat means comprising a thin layer in intimate contact with respective of said planar surfaces of said wafer means, said coat means also being in intimate contact with the inwardly facing planar surfaces of said conductors which face said wafer means, said coat means having a low resistivity, said coat means bonding said opposed surfaces of said wafer means to respective ones of said conductor inwardly facing planar surfaces, said coat means being sufficiently thin to minimize the electrical resistance between said wafer means and said conductors.

12. A method of forming a high capacitance bus bar assembly comprising the steps of:

choosing at least a first wafer with two opposed planar surfaces and comprising a dielectric material;

selecting a polymeric adhesive with a low resistivity;

applying a thin coating of said polymeric adhesive to said two opposed planar surfaces of said wafer;

positioning said coated wafer between a pair of bus bar conductors; and

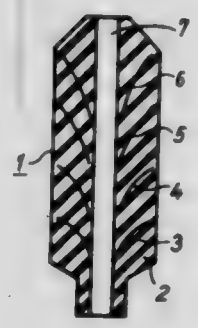
curing said polymeric adhesive.

4,403,109

CONTROL ELEMENT FOR HIGH-VOLTAGE APPARATUS AND METHOD FOR THE MANUFACTURE OF A CONTROL ELEMENT

Hans Lehri, and Reinhard Schroth, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 22, 1980, Ser. No. 199,688
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1979, 2944121
Int. Cl.[3] H01B 3/00; B29H 9/06; B29C 17/00
U.S. Cl. 174—73 R 6 Claims



1. A method of manufacturing a control element to be slipped onto a bare or insulated conductor and elastically expanded, for controlling the electric field in high voltage apparatus, especially in fittings for high voltage cables, including a plurality of elastic insulators attached to each other and provided with funnel-shaped end faces and electrically conductive parts of likewise elastic material associated with said plurality of insulators and forming therewith a capacitive control, comprising:

(a) first, making a first insulator of cross-linkable or vulcanizable material with a funnel-shaped end face and at least partially cross-linking or vulcanizing said insulator;

(b) coating the funnel-shaped end face of said first insulator at least partly with an electrically conductive dispersion of a carbon black-enriched cross-linkable or vulcanizable polymer plastic;

(c) forming a further insulator with a funnel-shaped end face onto said electrically conductive dispersion and at least partially cross-linking or vulcanizing said further insulator;

(d) coating the funnel-shaped end face of said further insulator at least partly with a last coating of an electrically conductive dispersion of a carbon black-enriched cross-linkable or vulcanizable polymer plastic;

(e) forming a last insulator onto said last coating; and

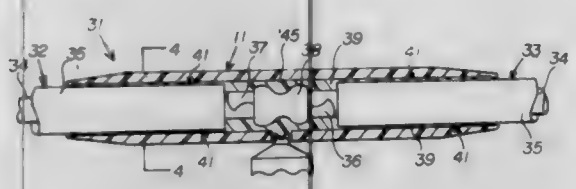
(f) fully vulcanizing or cross-linking the plurality of insulators and electrically conductive coatings.

2. A prefabricated control element to be slipped onto a bare or insulated conductor and elastically expanded, for controlling the electric field in high voltage apparatus, especially in fittings for high voltage cables, including a plurality of elastic insulators attached to each other and provided with funnel-shaped end faces and electrically conductive parts of elastic material associated with said plurality of insulators and forming therewith a capacitive control, each electrically conducting part forming a layer 0.005 to 0.5 milimeters thick arranged between at least a part of the funnel-shaped end faces of two insulators connected to each other with a material bond, made according to the method of claim 1.

4,403,110
ELECTRICAL CABLE SPLICE

Milton J. Morrisette, Ashland, Mass., assignor to Walter Kidde and Company, Inc., Clifton, N.J.

Filed May 15, 1981, Ser. No. 263,982
Int. Cl.[3] H02G 15/18
U.S. Cl. 174—84 R 9 Claims



1. A splice assembly comprising:

a pair of cable sections having cable ends joined in a splice;

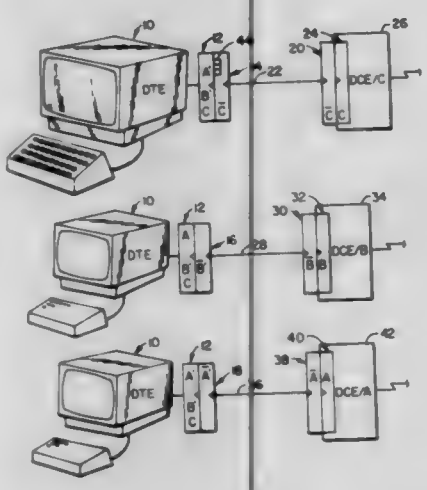
an elongated sheath enclosing said cable ends and defining a centrally located fill opening, said sheath comprising inwardly projecting lips that define opposite end openings, each of said end openings receiving one of said cable sections and having a perimeter substantially conforming to the outer surface thereof, said sheath having an interior that defines contact surfaces engaging and positioning certain portions of said outer surfaces of said cable sections, said interior further defining volumes juxtaposed other portions of said outer surfaces; and

a filler material filling said volumes and bonding said sheath to said outer cable section surfaces.

4,403,111
APPARATUS FOR INTERCONNECTING DATA COMMUNICATION EQUIPMENT AND DATA TERMINAL EQUIPMENT

Bruce Kelly, Weimar, Calif., assignor to ICOT Corporation, Mountain View, Calif.

Filed Jul. 15, 1981, Ser. No. 283,415
Int. Cl.[3] H04L 25/02; H04M 1/74, 3/06
U.S. Cl. 178—69 R 13 Claims



1. An apparatus for interconnecting data terminal equipment (DTE) to data communication equipment (DCE), wherein a multiple terminal electrical connector is mounted to said DCE (herein designated second mounted connector) and wherein means (designated second coupling means) are incorporated in said DCE for coupling specified digital input and output signals between a selected terminal set (herein designated second terminal set) of said second mounted connector and said DCE as standardized transmission and reception signals (herein designated second signals), said apparatus comprising:

a first multiple terminal electrical connector mounted to said DTE;

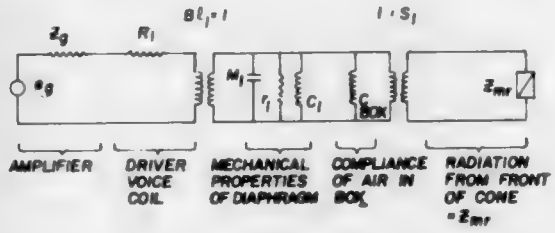
first means incorporated in said DTE for coupling specified digital input and output signals through a first terminal set of said first mounted connector as first standardized transmission and reception signals, said first coupling means being configured to support signals through at least three different signal standards, including said second signals, without switches; and

a multiple conductor cable having a first termination for connecting to said first mounted connector and a second termination for connecting to said second mounted connector, said first termination having conduit position assignments to said first terminal set which match said first terminal set to one of at least three different configurations of said second terminal set of standardized transmission and reception signals.

4,403,112
PHASE SHIFT LOW FREQUENCY LOUDSPEAKER SYSTEM

Richard Modafferi, Vestal, N.Y., assignor to Modafferi Acoustical Systems, Ltd., Baldwin, N.Y.

Filed May 18, 1981, Ser. No. 265,045
Int. Cl.[3] H04R 1/28
U.S. Cl. 179—1 E 28 Claims



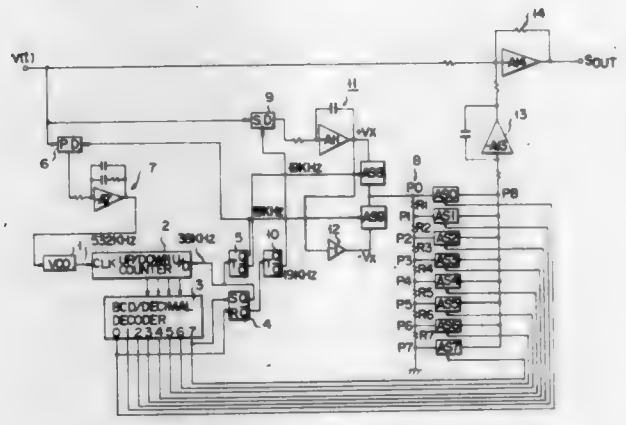
1. A method of enhancing the fidelity of response of audio loudspeaker systems in the bass acoustic range, which audio loudspeaker systems includes the usual bass loudspeaker system driver complement consisting of a single bass driver or woofer operating to reproduce sounds in the bass acoustic range, comprising the steps of replacing the usual single bass driver by a plurality of bass drivers having a total diaphragm area substantially equal to that of the usual single bass driver, housing and acoustically coupling the plurality of bass drivers in a cabinet common to them with their diaphragm front surfaces open to the exterior of the cabinet and their diaphragm rear surfaces facing the interior of the cabinet, and energizing the plurality of bass drivers from an electrical drive signal that is representative of the sound to be reproduced, the energization of at least one of the plurality of bass drivers being directly from the electrical drive signal and the energization of the remainder of the plurality of bass drivers being by the drive signal after passing said drive signal through an electrical phase shift network, thereby dividing the plurality of bass drivers into two sets, one set consisting of at least one driver receiving its energization directly from the electrical drive signal, the other set consisting of the remainder of the plurality of bass drivers receiving its energization from the electrical drive signal as modified by the phase shift network the parameters of which phase shift network are selected such that the electrical drive signals to the aforementioned sets in the plurality of bass drivers become in phase at very low frequencies so that effectively both sets in the plurality of bass drivers are then connected for operation substantially in parallel with the electrical drive signals to the aforementioned sets in the plurality of bass drivers becoming increasingly out of phase as the frequency is increased in the bass acoustic range.

4,403,113

CIRCUIT FOR CANCELLING SINUSOIDAL PILOT SIGNAL CONTAINED IN COMPOSITE SIGNAL

Minoru Ogita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 24, 1981, Ser. No. 324,604
Claims priority, application Japan, Dec. 1, 1980, 55-170101
Int. Cl.[3] H04H *5/00*; H03B *19/00*
U.S. Cl. 179—1 GC 5 Claims



1. A pilot signal removing circuit for removing a pilot signal from a composite signal which contains the sine-wave pilot signal comprising:

pilot signal-to-DC voltage converting circuit means responsive to the pilot signal in the composite signal for generating a DC voltage having a magnitude proportional to the amplitude level of the pilot signal;

sine-wavelike staircase signal generating circuit means responsive to the DC voltage from said converting circuit means and the pilot signal in the composite signal for generating a sine-wavelike staircase signal in synchronism with the pilot signal, said sine-wavelike staircase signal having an amplitude proportional to the DC voltage and a fundamental frequency the same as that of the pilot signal;

smoothing circuit means connected to said sine-wavelike staircase signal generating circuit means for smoothing the sine-wavelike staircase signal to produce a sine-wave signal; and

cancelling circuit means for combining the composite signal with the sine-wave signal to cancel the pilot signal from the composite signal.

4,403,114

SPEAKER RECOGNIZER IN WHICH A SIGNIFICANT PART OF A PRESELECTED ONE OF INPUT AND REFERENCE PATTERNS IS PATTERN MATCHED TO A TIME NORMALIZED PART OF THE OTHER

Hiroaki Sakoe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1981, Ser. No. 279,277
Claims priority, application Japan, Jul. 15, 1980, 55-96712
Int. Cl.[3] G10L *1/00*
U.S. Cl. 179—1.5 D 4 Claims

1. A speaker recognizing system comprising:

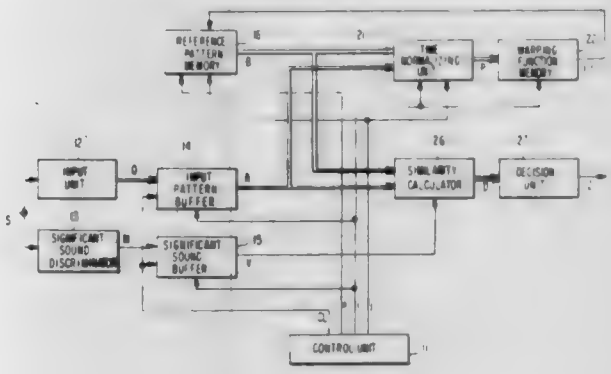
input time sequence producing means responsive to an input speech sound, spoken by a speaker to be recognized and comprising a significant sound of a predetermined nature informative of said speaker, for producing an input time sequence of feature vectors representative of said input speech sound;

significant sound specifying means responsive to said input speech sound for producing a sound nature signal which comprises a significant sound signal specifying said significant sound;

specific time sequence producing means for producing a specific time sequence of feature vectors representative of a specific speech sound spoken by a specific speaker, said specific speech sound comprising a significant sound informative of said specific speaker;

time normalizing means for time normalizing said input time sequence and said specific time sequences relative to each other to derive first and second normalized time sequences of feature vectors from said input time sequence and said specific time sequence, respectively;

similarity measure calculating means responsive to said sound nature signal and said first and said second normalized time sequences for calculating a similarity measure



between those feature vectors of said normalized time sequences of feature vectors which are selected from said first and said second normalized time sequences in compliance with said significant sound signal, respectively, said similarity measure calculating means producing a similarity measure signal representative of the calculated similarity measure; and

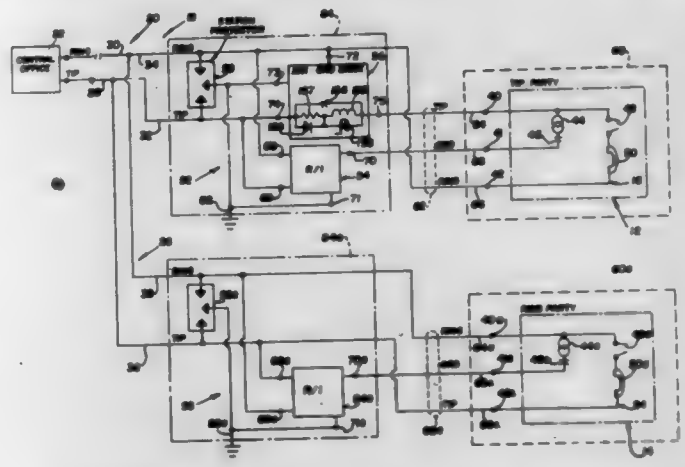
means responsive to said similarity measure signal for recognizing whether or not the speaker to be recognized is said specific speaker.

4,403,115

STATION IDENTIFICATION CIRCUIT ARRANGEMENT

Frank L. Simokat, Babylon, N.Y., assignor to TII Industries Inc., Copiague, N.Y.

Division of Ser. No. 143,137, Apr. 23, 1980. This application Oct. 5, 1981, Ser. No. 308,276
Int. Cl.[3] H04M *15/36*
U.S. Cl. 179—17 A 15 Claims



1. A universal station identification circuit arrangement for use with central office equipment utilizing either differential or longitudinal detection methods for identifying a preselected one of two parties on a two-party line in a telephone system when a call is initiated from the preselected party's telephone, comprising:

(a) first means for providing a first ground mark which is normally disconnected from said line when sand preselected party's telephone is on-hook;

(b) second means responsive to the normal flow of loop current that is established by lifting the preselected party's telephone off-hook for causing said first means to apply

said first ground mark to both the tip and ring conductors of said line;

(c) third means for providing a second ground mark which is normally disconnected from said line when said preselected party's telephone is on hook; and

(d) fourth means responsive to any momentary interruption of loop current that occurs after the flow of loop current is established by lifting the preselected party's telephone off hook for causing said third means to apply said second mark to the tip conductor of said line.

4,403,116

TELEPHONE APPARATUS

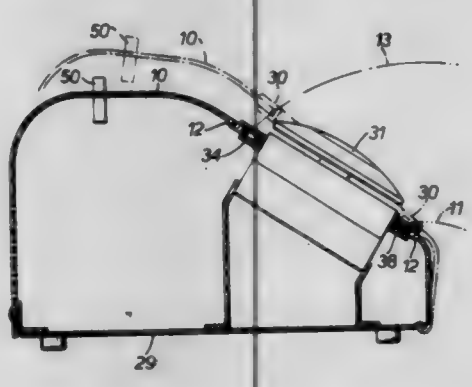
Eric Prince, Chilwell; Walter P. Greenslade, Gedling, and David J. Hickling, Chilwell, all of England, assignors to Plessey Overseas Limited, Ilford, England

Filed Jul. 7, 1980, Ser. No. 166,325

Claims priority, application United Kingdom, Jul. 10, 1979, 7924063

Int. Cl.³ H04M *1/02*

U.S. Cl. 179—100 D **8 Claims**



1. A telephone apparatus comprising a telephone subset, the telephone subset comprising fixed dialling means secured within the subset for permitting the operator to dial a number to be called, and a removable cover which is pivoted along one side of the subset, the cover having an orifice which is elongated in a direction perpendicular to the pivot axis of the cover and through which orifice the dialling means projects, the cover also being provided with plate means closely surrounding the dialling means for covering the gap between the orifice and the dialling means, said plate means being movable relative to the cover, whereby, when the cover is pivoted relative to the subset, the plate means moves along the elongated orifice, and the cover can be removed from the dialling means without the plate means fouling the dialling means.

4,403,117

SONIC TRANSDUCER HAVING DIAPHRAGM TENSIONING SPRING DIRECTLY ATTACHED TO DIAPHRAGM

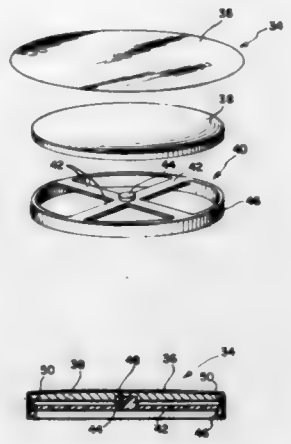
Richard Paglia, Carlisle, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 4, 1981, Ser. No. 270,400

Int. Cl.³ H04R *19/00*

U.S. Cl. 179—111 R **17 Claims**

1. An electroacoustical transducer assembly comprising a backplate having opposed major surfaces, a thin diaphragm having opposed electrically conductive and nonconductive surfaces, said diaphragm extending across one major surface and around the perimeter of said backplate with its non-conducting surface in adjoining relation to said backplate, and a spring member positioned in engagement with the other surface of said backplate, said spring member having a peripheral portion directly affixed to said diaphragm so as to urge said one



major surface of said backplate into engagement with said diaphragm.

4,403,118

METHOD FOR GENERATING ACOUSTICAL SPEECH SIGNALS WHICH CAN BE UNDERSTOOD BY PERSONS EXTREMELY HARD OF HEARING AND A DEVICE FOR THE IMPLEMENTATION OF SAID METHOD

Manfred Zollner; Christian Hoffmann, both of Munich, and Eberhard Zwicker, Icking, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich

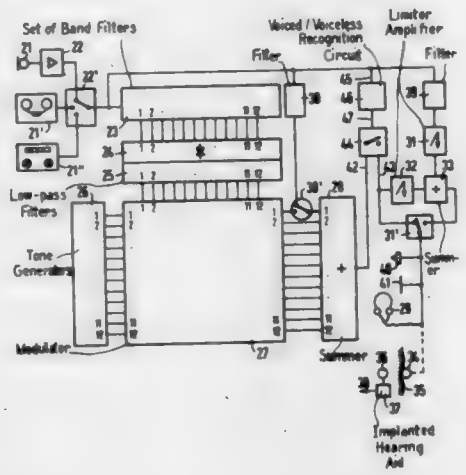
Filed Mar. 20, 1981, Ser. No. 245,914

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3016128

The portion of the term of this patent subsequent to Sep. 15, 1998, has been disclaimed.

Int. Cl.³ H04R *25/00*

U.S. Cl. 179—107 FD **32 Claims**

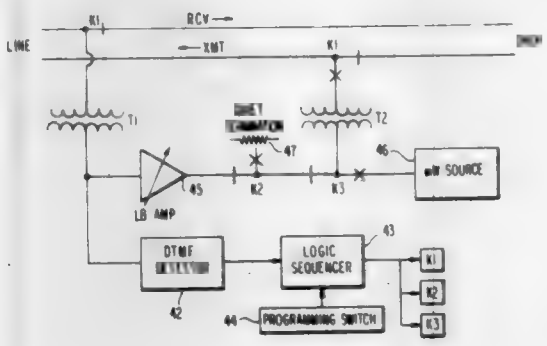


1. A method for generating acoustical speech signals which are comprehensible to persons who are extremely hard of hearing, in which acoustical signals to be transmitted have been converted into electrical signals representing original tones, said method comprising dividing the electrical signals into a plurality of frequency bands by means of filters, forming envelope signals from the outputs of the filters, modulating respective tone signals in accordance with the envelope signals to provide modulated tone signals, supplying the modulated tone signals together with the electrical signals representing original tones for transmission to a hearing-impaired individual, and setting the ratio of the volume of the modulated tone signals to that of the original tones, and the overall volume, to a level which is comfortable for the hearing-impaired person, characterized in at least partially interrupting the supply of the modulated tones to the hearing-impaired person for voiced sounds.

4,403,119
DTMF ACTIVATED REMOTE TELEPHONE LINE SWITCHING AND TESTING

Charles E. Conklin, Pleasant Valley, and Duncan Bruce, Rhinebeck, both of N.Y., assignors to Conklin Instrument Corporation, Pleasant Valley, N.Y.

Filed Jun. 25, 1981, Ser. No. 277,080
The portion of the term of thin patent subsequent to Mar. 24, 1998, has been disclaimed.
Int. Cl.³ H04B 3/46; H04M 3/26
U.S. Cl. 179—175.3 R 13 Claims



6. A remote telephone line switching and testing circuit for a four-wire communication system of the type wherein two wires are used for transmission and two wires are used for reception, said system providing communication between equipment at a first location and equipment at at least a second remote location, said remote telephone line switching and testing circuit comprising:

DTMF detecting and control means adapted to be connected to the two wires used for reception at said second remote location and responsive to tones of predetermined frequencies for providing first and second control signals in response to corresponding DTMF signals; and

switching means responsive to said first control signal for disconnecting the equipment at said second location from the four-wire line and providing a quiet termination for each of the two wires used for reception and the two wires used for transmission which are disconnected from said equipment, said switching means further being responsive to said second control signal for reconnecting the equipment at said second location to the four-wire line.

4,403,120
EARPHONE

Toshikazu Yoshimi, Tokorozawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 29, 1981, Ser. No. 278,036
Claims priority, application Japan, Jun. 30, 1980, 55-87936; Jul. 4, 1980, 55-90521; Jul. 4, 1980, 55-90522; Jun. 30, 1980, 55-90547[U]
Int. Cl.³ H04R 1/10
U.S. Cl. 179—182 R 10 Claims

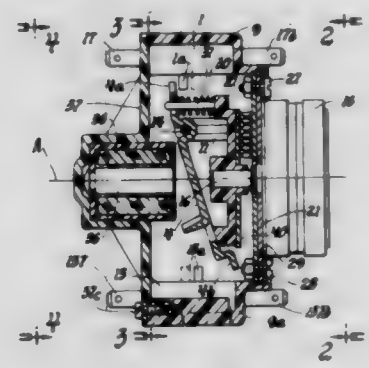


1. An earphone comprising a case of circular cross-section having a diameter permitting said case to be frictionally held within a human ear cavity between the tragus and an opposing projection of the pinna and a speaker unit located within said case, said case having one end having at least one sound opening adapted to extend over the auditory meatus without extending therein and said case having a diameter adjacent said one end substantially equal to the diameter of the case adjacent a middle portion thereof with the diameter of the case adjacent the other end being gradually reduced.

4,403,121
REMOTE CONTROL UNIT

Gerald O. Huntzinger; Raymond O. Butler, Jr.; Lewis R. Hetzler, and John Delaplane, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 3, 1981, Ser. No. 289,787
Int. Cl.³ H01H 9/00
U.S. Cl. 200—1 R 8 Claims



1. A remote control unit comprising:

a plurality of individual switches each having an operating tab extending toward a central axis to define a circle substantially normal to and concentric with said central axis, each said operating tab being movable in substantially the direction of said central axis between a common pair of planes substantially normal to said central axis to establish, respectively, one circuit condition or another circuit condition of the corresponding said switch;

a rotor supported for rotation substantially about said central axis in a plane substantially normal to said central axis and carrying an arm that extends across the diameter of said circle in radially overlapping relation to said tabs, said arm being tiltable about an axis substantially normal to said central axis and inboard of said circle and having ends circumferentially offset from each other so that said ends of said arm registers with each said tab at two angular positions of said rotor;

means for tilting said arm to a position out of engagement with said tabs in advance of rotor rotation, means for rotating said rotor to a position wherein an end of said arm registers with respective ones of said tabs and means for tilting said arm in an opposite direction to cause an end of the arm to engage and move a tab.

4,403,122
MEMBRANE SWITCH ASSEMBLY WITH MODULAR SWITCH AND SPACER PORTIONS

Hiram J. Wise, III, Cedarburg, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Oct. 26, 1981, Ser. No. 314,539
Int. Cl.³ H01H 13/04
U.S. Cl. 200—5 A 4 Claims

1. A membrane switch assembly comprising

at least two modular switch portions,

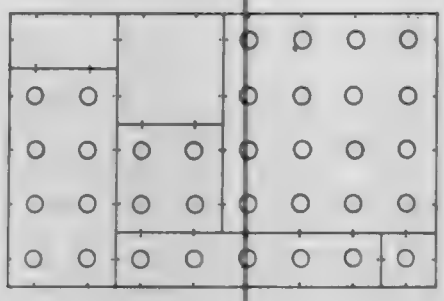
each said modular switch portion comprising upper and lower plastic layers, paired, opposing electrical contacts adhered to said layers at switching zones, and a spacer element between said layers,

each said modular switch portion having at least one column of switching zones, the center-to-center distance between said switching zones being X,

each said modular switch portion having an edge at a distance of X/2 from said column of switching zones in

a direction transverse to an axis passing through said one column of zones, and

a modular spacer portion between said two modular switch portions,



said modular spacer portion having a dimension that is an integer multiplied by X in said direction,

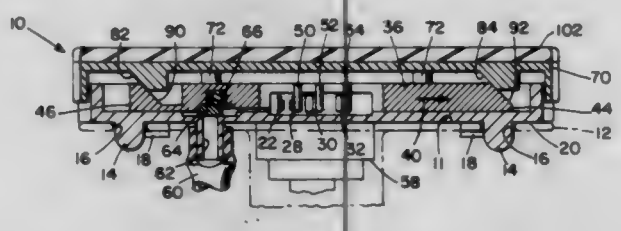
whereby said modular switch portions can be remote from each other in said assembly while spacing is maintained between switching zones in different switch portions.

4,403,123

PEDAL MOUNTED SWITCHING ASSEMBLY

Thompson Shek, Newton, Mass., assignor to Ark-Les Corporation, Watertown, Mass.

Filed Jan. 5, 1982, Ser. No. 337,147
Int. Cl.³ H01H *3/14*
U.S. Cl. 200—61.89 **3 Claims**



1. A switching assembly for mounting on the face of a pedal to effect switching when said pedal is pressed comprising:

a generally flat base adapted for attachment to a pedal,

a plurality of movable switching elements supported ultimately on said base, each of said switching elements arranged to assume a plurality of positions to implement distinct switch settings,

a generally flat shaped actuator supported on said base and constrained to move backward and forward with a single degree of freedom in a plane parallel to said pedal face, said actuator having actuating means arranged for moving said movable switching elements as said actuator moves forward and releasing said switching elements as said actuator moves backward, said actuator having a cam surface positioned and arranged so that pressing thereon urges said actuator to move forward,

a resilient element arranged to urge said actuator backward,

a generally flat pressure member supported on said base in a manner permitting motion of the pressure member toward and away from said pedal face while constraining motion parallel to said pedal, said pressure member being adapted for receiving control pressure applied by an operator to said pedal and having cam surface positioned and arranged so that when control pressure is applied to said pressure member by an operator said pressure member cam surface presses on said actuator cam surface to urge said actuator forward,

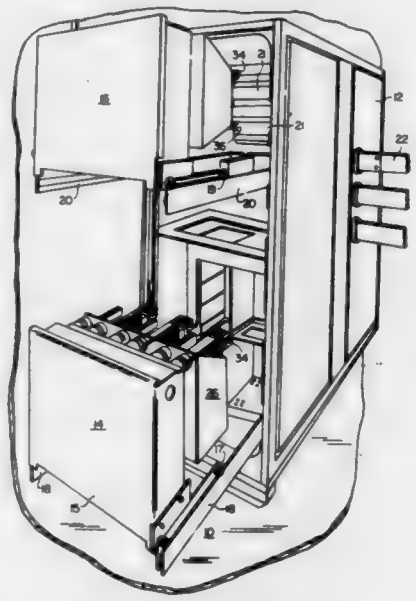
said switching assembly being effective in changing switch settings of said plurality of switching elements in a predetermined order as said pedal is pressed irrespective of the point of application of control pressure on said pressure member.

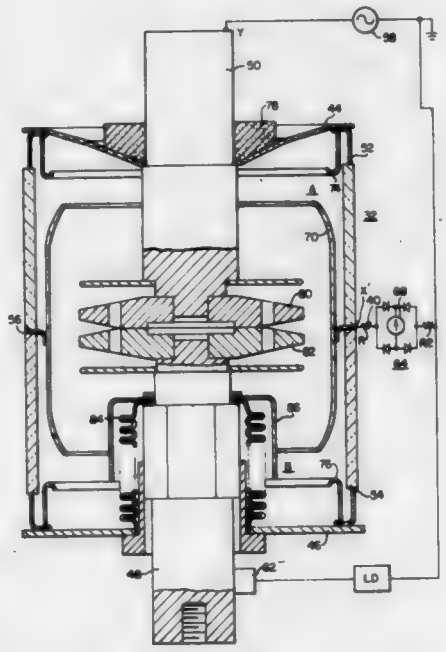
4,403,124

VACUUM CIRCUIT INTERRUPTER WITH INSULATED VACUUM MONITOR RESISTOR

John F. Perkins, Churchill Borough, and Norman Davies, Levelgreen, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 19, 1981, Ser. No. 226,332
Int. Cl.³ H01H *33/00*
U.S. Cl. 200—144 B **16 Claims**





1. A vacuum circuit interrupter, comprising:

(a) a circuit interrupter frame;

(b) enclosure means defining a substantially evacuated volume disposed upon said frame;

(c) external voltage source means;

(d) relatively movable contact means electrically interconnected with said voltage source means and disposed to interrupt electrical current within said evacuated volume;

(e) first and second spaced electrically conductive vapor deposition shield means disposed within said enclosure means for protecting internal portions of said enclosure means from metal vapor products associated with the interruption of said electrical current within said evacuated volume, said first and second spaced electrically conductive vapor deposition shield means forming therebetween an annular subvolume, said first of said shield means being electrically interconnected with one potential of said external voltage source means, said second of said shield means communicating electrically with an electrical conductor on the outer portion of said enclosure means;

(f) a voltage dropping encapsulated resistor means insulat-

ingly disposed upon said frame, said resistor means having a contact portion, said contact portion making electrical contact with said electrical conductor on the outer portion of said enclosure means; and

(g) generally lower voltage relative to said shield means current measurement means disposed outside of said enclosure means in circuit relationship with the other end of said resistor means and a lower potential of said voltage source means so that an electric field of sufficient magnitude is present in said annular subvolume to cause electrons to move from the region of one of said first or said second shield means, said electrons interacting with gas molecules in said subvolume to form gas ions which in turn interact with one of said shield means to thus cause electrical current to flow through said current measurement means to thus give an indication of the amount of gas present in said substantially evacuated volume.

4,403,125

GAS-INSULATED DISCONNECTING SWITCH

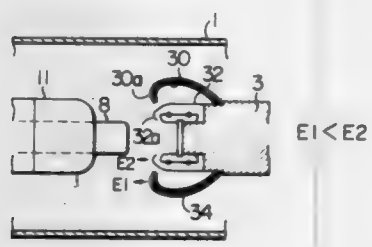
Yukinori Yamaoka, Hitachi; Seizo Nakano, Mito; Sigetaka Takeuchi, Hitachi; Kazuaki Oishi, Hitachi, and Koji Sasaki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 13, 1981, Ser. No. 234,406

Claims priority, application Japan, Feb. 16, 1980, 55-18252; Feb. 16, 1980, 55-18253

Int. Cl.³ H01H *9/30*

U.S. Cl. 200—144 R **20 Claims**



1. A gas-insulated disconnecting switch comprising a metallic casing filled with an insulating gas in a hermetically sealed manner, a stationary electrode and a movable electrode disposed within said casing and electrically insuated from said casing, said electrodes being electrically connectable to an external power line for selectively opening or closing the power line, and guiding means being provided for at least one of said electrodes, at an end portion facing toward an end portion of the other electrode, for guiding a dielectric breakdown which may occur from the end portion of said movable electrode toward said stationary electrode, when said movable electrode is separated from said stationary electrode, in a manner causing the dielectric breakdown to be directed initially to a center portion of the end portion of said stationary electrode.

4,403,126

DUAL-INLINE SCREW-SWITCH ASSEMBLY

Lon DeHaitre, Arlington Heights, Ill., assignor to Abbott-Interfast Corporation, Wheeling, Ill.

Filed Dec. 16, 1981, Ser. No. 331,235

Int. Cl.³ H01H *1/20*

U.S. Cl. 200—158 **30 Claims**

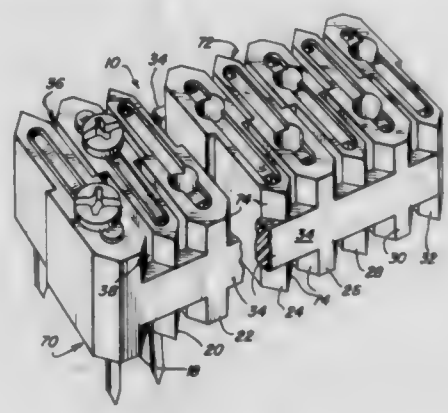
23. A dual-inline-package switch assembly comprising:

(a) a unitary body of electrically insulative material comprised of a plurality of spaced apart, like segments including separable means only joining the segments one to another in side-by-side alignment, and each segment having a top surface and two opposed ends;

(b) a pair of conductive members in each segment having connection ends extending beyond the segment adapted for connection to a circuit and contact ends opposite said connection ends spaced one from the other to form two poles of a switch;

(c) each segment having a vertical socket opening to said top surface;

(d) an electrically conductive fastener having a threaded shank engaged in said socket and having a head adapted to be selectively moved into and out of engagement with said



contact ends for closing and opening an electrical circuit respectively, and

(e) there being a pair of such separable means joining each pair of side-by-side segments, said means being located adjacent the said two opposed ends and constructed and arranged to enable selective separation of the unitary body into individual blocks of any desired number of segments.

4,403,127

TOGGLE SWITCH HAVING PRESSURE CONTACT

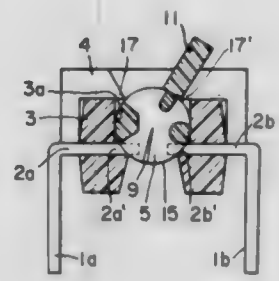
Yasutaka Senoo, Yokohama, Japan, assignor to New Ohto Co., Ltd., Yokohami, Japan

Filed Apr. 23, 1982, Ser. No. 371,227

Claims priority, application Japan, May 14, 1981, 56-73324; Feb. 1, 1982, 57-12665[U]; Feb. 1, 1982, 57-12666[U]

Int. Cl.³ H01H *1/50, 1/36*

U.S. Cl. 200—260 **4 Claims**



1. A switch comprising:

an insulating base having a cavity;

a plurality of terminals supported on said insulating base and having end portions projecting into said cavity; and

a movable conductive contact in the form of a part-spherical plate having a current-breaking recess in a peripheral marginal edge thereof, said movable conductive contact being pressed in said cavity with said peripheral marginal edge being resiliently pressed against surfaces of said end portions; and of said terminals, said movable conductive contact being slidably angularly movable to angularly move said peripheral marginal edge in a plane defined jointly by said sides for displacing said current-breaking recess into or out of engagement with one of said sides for breaking or making electrical connection between said terminals.

4,403,128

MICROWAVE OVEN WITH A CAPABILITY OF FUNCTIONING AS AN ELECTRIC HEATING OVEN

Yutaka Takagi, Sakai, and Munemitsu Toyoda, Higashisumiyoshi, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 52,752, Jun. 28, 1979, Pat. No. 4,308,444, which is a continuation of Ser. No. 776,358, Mar. 10, 1977, abandoned. This application Jul. 31, 1981, Ser. No. 288,796

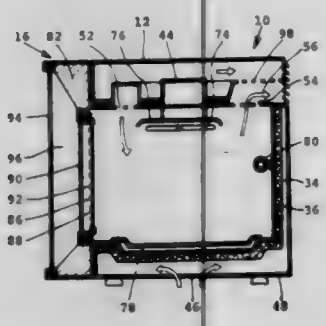
Claims priority, application Japan, Mar. 11, 1976, 51-26705; Mar. 29, 1976, 51-34749; Mar. 31, 1976, 51-39990[U]; Apr. 1, 1976, 51-40504[U]; Apr. 9, 1976, 51-44481[U]

The portion of the term of this patent subsequent to Dec. 29, 1998, has been disclaimed.

Int. Cl.³ H05B 6/64

U.S. Cl. 219—10.55 B

8 Claims



1. A combined microwave/electric heating oven comprising:

an outer housing;

an oven wall defining an oven cavity disposed within said outer housing and defining therebetween an air cavity;

an oven door being operatively connected for providing a closure for said oven cavity;

fan means communicating with said air cavity for circulating ambient air therethrough;

a microwave generating means disposed adjacent to the oven cavity;

a waveguide means operatively associated with the microwave generating means for introducing microwave energy generated from the microwave generating means into the oven cavity;

heating means disposed within the oven cavity for cooking by means of electric heating and being capable of heating said oven cavity to an elevated, high temperature;

a selection means for selectively energizing the microwave generating means or the electric heating means;

a damper means operable by said selection means to selectively direct ambient air circulated by said fan means either into said oven cavity when said selection means is energizing the microwave generating means or to bypass said oven cavity when said selection means is energizing the electric heating means;

a heating insulating member disposed adjacent to said oven wall for preventing the leakage of heat energy therethrough and to protect said microwave generating means when said electric heating means is energized to cook by means of electric heating;

said air cavity being in communication with an inlet means disposed in the outer housing, upstream of said fan means, wherein ambient air is drawn into said air cavity by said fan means to first cool the exterior surface of said heat insulating member and said oven cavity being in communication with an inlet air duct having a plurality of openings directly exposed to the interior of said oven cavity, said damper means being positioned upstream of the portion of said inlet air duct having said plurality of openings and being displaced away from direct exposure to the interior of said oven cavity so as to ensure stable operation of said damper means; and

said damper means being disposed within a passageway in communication with said air cavity to selectively direct said ambient air into said oven cavity or to circulate said ambient air through said air cavity.

4,403,129

FLUID ACTUATED ELECTRODE CLAMP

George E. Baker, Melton Mowbray, England, assignor to Amchem Company Limited, Sileby, England

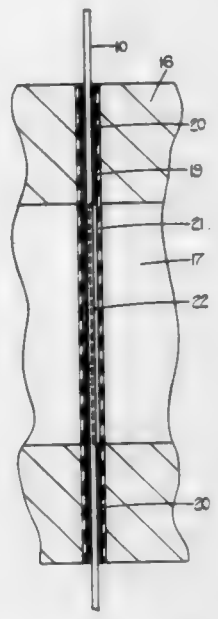
Filed Feb. 27, 1981, Ser. No. 238,745

Claims priority, application United Kingdom, Mar. 6, 1980, 8007603

Int. Cl.³ B23K 1/08

U.S. Cl. 219—69 E

8 Claims



1. A clamping device comprising a body defining therein a chamber in which a fluid is disposed, a plurality of separate through passages in said body for receipt of respective elements to be clamped, each said through passages having a portion which passes through the chamber and which is defined by the interior of a respective tube which completely surrounds said passage, one such tube being provided for each said element to be clamped and at least a part of said tube within said chamber being flexible, and means operative to pressurise said fluid whereby said part of each said tube is deflected inwardly to clamp said respective element therein.

4,403,130

POSITION DETECTOR AND MACHINING APPARATUS INCLUDING SAME

George E. Baker, 27 Gartree Dr., Melton Mowbray, Leicestershire, England

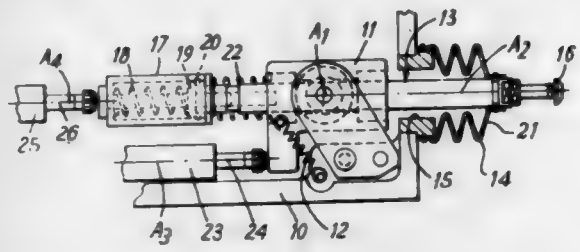
Filed Mar. 23, 1981, Ser. No. 246,179

Claims priority, application United Kingdom, Apr. 29, 1980, 8014103

Int. Cl.³ B23P 1/08

U.S. Cl. 219—69 G

9 Claims



9. Machining apparatus for machining a workpiece, comprising:

(a) a machine tool;

(b) moving means operative to move said machine tool between co-ordinates of a Cartesian co-ordinate system;

(c) a position detector comprising a body, a holder mounted on said body for pivotal movement relative thereto about

a first axis, a probe adapted for engagement with the workiece, said probe being mounted on said holder for rectilinear movement relative thereto along a second axis which is generally perpendicular to and which passes through said first axis, a first sensor operative to measure a pivotal displacement of said holder relative to said body about said first axis and to produce a first output signal in accordance therewith, and a second sensor operative to measure a translational displacement of said probe relative to said holder along said second axis and to produce a second output signal in accordance therewith; and

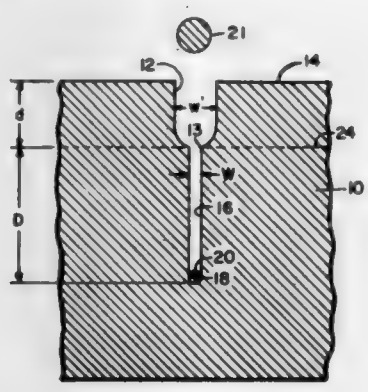
(d) a numerical control system responsive to said first and second output signals and programmed to correct said signals into co-ordinate values in said Cartesian co-ordinate system, said moving means operating in accordance with the thus converted co-ordinate values.

4,403,131

ELECTRICAL DISCHARGE MACHINING UTILIZING A COUNTER SLOT

George M. Cunningham, Horseheads, and Peter J. Majestic, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jul. 30, 1981, Ser. No. 288,391
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 W 6 Claims



1. A method of forming a slot in a workpiece utilizing a wire cutting electrical discharge machining process which comprises, initially cutting by wire electrical discharge machining a counter slot in the surface of an electrically conductive workpiece having a width at least 1.5 times the width of a desired slot to be formed in the said workpiece, machining said counter slot to a depth greater than about 0.030", wire electrical discharge machining a desired slot in said workpiece beginning at the bottom of said counter slot utilizing dielectric fluid, and utilizing said counter slot to facilitate the flushing out with said fluid of eroded particles from within said desired slot produced during the electrical discharge machining of the same so as to improve the obtainable cutting rate and depth of such slot.

4,403,132

INDUCTION COMPENSATING METHOD AND APPARATUS FOR WELD NUGGET RESISTANCE SENSING LEADS OF SPOT WELDERS

Nobuo Sugimoto, Yokohama, Japan, assignor to Aro Machinery Company, Ltd., London, England

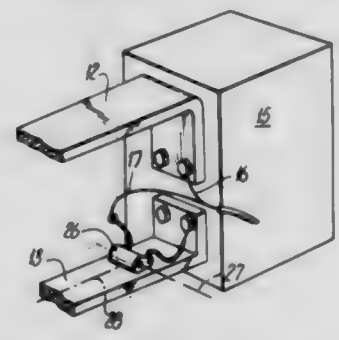
Filed Jul. 20, 1981, Ser. No. 284,874
Claims priority, application United Kingdom, Jul. 31, 1980, 8025054
Int. Cl.³ B23K *11/24*
U.S. Cl. 219—109 9 Claims

1. In an electrical spot-welding machine having a welding head including a pair of relatively movable electrodes for gripping the work to be welded and main welding current conductors, a method of compensating for inductive coupling between the main welding current conductors and the electrical sensor leads that monitor weld nugget resistance across the work to be welded, said method comprising the steps of:

(a) temporarily connecting the sensor leads to the welding electrodes and positioning said sensor leads along paths away from said current conductors so that there is no inductive coupling therebetween;

(b) performing a welding cycle and recording the instant during the cycle at which the weld nugget voltage drop as represented by the sensor lead signal indicates the weld termination point, when there is no inductive coupling between the sensor leads and the current conductors;

(c) re-positioning the sensor leads so that they are connected to the current conductors at desired final points of connection and laid along desired final paths such as are appropriate when the machine is in commercial use;



(d) connecting into one of said leads an inductive compensating coil that is mounted on the welding head close to at least one main current conductor in an angularly adjustable manner; and

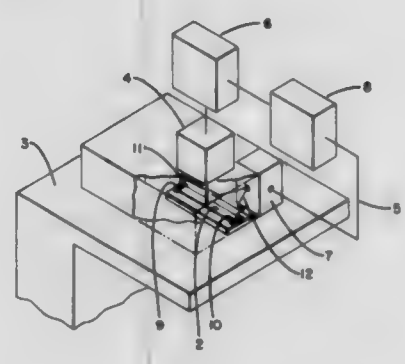
(e) performing welding cycles and adjusting the angular position of the compensating coil until an angular orientation of the coil is achieved at which the weld termination point as indicated by the sensor lead signal representing weld nugget voltage drop occurs at the same instant in a welding cycle when said sensor leads are repositioned as when said sensor leads are temporarily positioned along paths away from said conductors.

4,403,133

METHOD OF TRIMMING A RESISTANCE ELEMENT

Bradley D. Turner, Covina, and Richard E. Riley, Riverside, both of Calif., assignors to Spectrol Electronics Corp., City of Industry, Calif.

Filed Dec. 2, 1981, Ser. No. 326,784
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LJ 3 Claims



1. A method of trimming a resistance element which comprises:

measuring the total resistance between the ends of the resistance element to determine the percent deviation of the measured resistance from a nominal, desired resistance value;

cutting into one side of the resistance element to form a first transverse cut generally perpendicular to the resistance path formed by the element;

measuring the total resistance between the ends of the resis-

tance element as the first transverse cut is made in the element;

terminating the first transverse cut when the measured total resistance increases by an amount which is a fraction 1/N of the percent deviation of the measured total resistance from the nominal, desired resistance, said number N approximately equal to the number obtained by dividing the width of the first transverse cut into the length of the resistance path;

cutting along the resistance path at a distance, approximately equal to the length of the first transverse cut, from the edge of the resistance element having the first transverse cut, to isolate a portion of the resistance element whereby the total resistance of the isolated portion approximately equals the nominal, desired resistance value.

4,403,134

METHOD AND APPARATUS FOR CUTTING BY MEANS OF A LASER BEAM

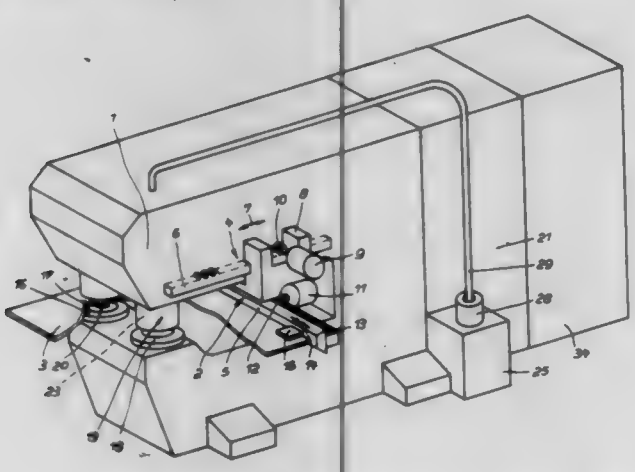
Hans Klingel, Möglingen, Fed. Rep. of Germany, assignor to Trumpf GmbH & Co., Fed. Rep. of Germany

Filed Mar. 17, 1982, Ser. No. 359,069

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1981, 3110235

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LG **8 Claims**



1. A device for cutting workpieces in particular metal sheets comprising a work station over which the workpiece is movable, a laser device mounted over said work station and positioned for directing a laser beam at the workpiece at the station, means for directing a fluid coolant against the workpiece adjacent the laser beam, said means including a nozzle for directing a jet of coolant to the workpiece near a spot of the laser beam on the workpiece adjacent at least one of an entrance and exit point of said laser beam, control means for controlling the pressure and amount of the coolant supplied to the workpiece, means for shifting the workpiece, longitudinally and laterally relative to the laser beam, and workpiece movement control means for varying the movement of the workpiece so as to obtain a maximum displacement relative to the laser beam in accordance with the curvature and movement of the line to be cut, said control means being operable to vary the amount of fluid coolant in accordance with the type of cut which is being made by said workpiece movement control means.

4,403,135

PULSE WIDTH MODULATED PULSED DC ARC WELDING

Ross A. Moyer, Lafayette, and Dale E. Jackson, Clay, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 9, 1981, Ser. No. 252,568

Int. Cl.³ B23K *9/09*

U.S. Cl. 219—137 PS **6 Claims**

1. A method of arc welding of work pieces which comprises:

positioning an electrode and the work pieces relative to each other to form an arc gap;

providing inert gas continuously at the arc gap;

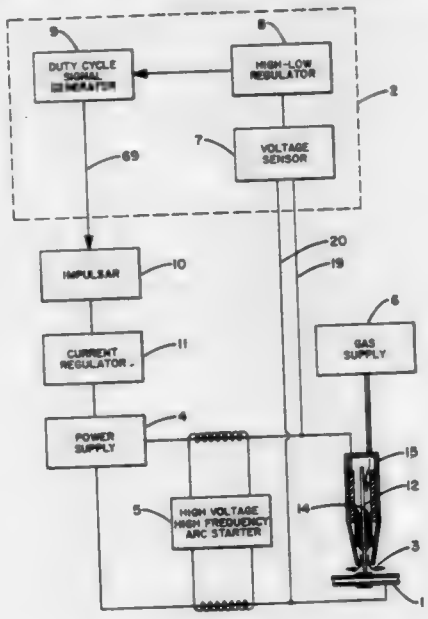
applying across the arc gap an arc starter voltage having a magnitude sufficient to ionize the inert gas and initiate current flow across the arc gap;

discontinuing the arc starter voltage;

providing a maintenance current flow across the arc gap which is sufficient to sustain a minimum current flow across the arc gap throughout the arc welding process, said maintenance current providing a power flow which is insufficient to increase the temperature of the work pieces to the melting temperature of the work pieces;

increasing the magnitude of the current flowing across the arc gap to a peak value which can provide sufficient power flow to melt the work pieces and which is of sufficient magnitude that a power flow is provided which is capable of dissipating oxides on the surfaces of the work pieces during the time interval in which the increase in current flow occurs;

holding the current flow across the arc gap at substantially the increased value for a duration of time sufficient to provide



enough energy to heat the work pieces to their melting temperature;

decreasing the magnitude of the current flowing across the arc gap to substantially the maintenance current value to allow the temperature of the work pieces to decrease to a temperature below their melting temperature whereby the work pieces are welded together;

periodically cycling the current flow across the arc gap by repeating the steps of increasing, holding and decreasing the current flow to vary the magnitude of the current flowing across the arc gap between the maintenance current value and the peak current value to form a periodic series of current pulses which are applied to the work pieces;

continuously sensing the resistance at the arc gap;

adjusting the duration of time at which the current flow across the arc gap is held at substantially the increased value in response to the resistance sensed at the arc gap to provide a constant time-averaged power flow to the pieces; and

changing the relative position of the electrode and the work pieces to direct each current pulse to a selected porton of the work pieces.

4,403,136

ARC WELDING GUN WITH HANDLE ASSEMBLY

William H. Colman, Cape Girardeau, Mo., assignor to Lenco, Inc., Jackson, Mo.

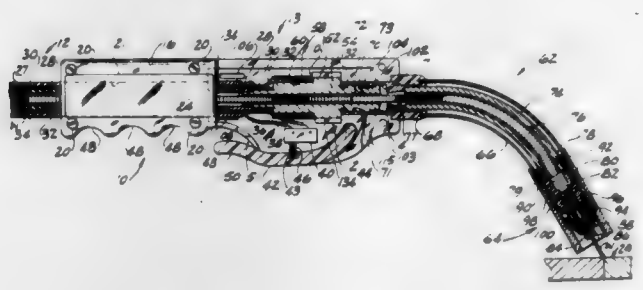
Filed Mar. 17, 1981, Ser. No. 244,767

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—137.31 **6 Claims**

1. A handle assembly in a welding gun comprising a housing having spaced opposite side walls and connected first and

second housing portions, a removable access panel to at least one of the housing portions, first connection means at one end of the housing for receiving one end of a supply cable having means therein for the passage of a consumable welding electrode, shielding gas, and electrical power, second connection means at the opposite end of the housing, a nozzle assembly having a first end for connecting to the connection means at said opposite end and a free end defining a welding location, means for feeding and directing the consumable welding electrode, the shielding gas, and electrical power through said supply cable, said housing and the nozzle assembly to the welding locations, switch means in said first housing portion having a trigger member pivotally mounted thereon with a portion protruding therefrom for operation to control the feeding and directing of the consumable welding electrode, the shielding gas and electrical power to the welding location, said second housing portion having a handle portion extending thereon to adjacent the protruding portion of said trigger member to be grasped by the hand of an operator such that at least one of the operator's fingers extends over the projecting



portion of said trigger member, and a thumb rest member attached to the housing in position to provide support for the operator's thumb, said thumb rest member and said housing on each opposite side thereof having cooperatively engageable means which enable the thumb rest member to be detached from one side for mounting on the opposite side of the housing depending on whether the operator is right or left handed, said cooperatively engageable means including a hole in the thumb rest member and a hole through each opposite side wall of the housing in position to register with the hole in the thumb rest member when positioned thereagainst, threaded means cooperatively engageable with the hole in a selected one of the side walls of the housing and with the hole in the thumb rest member, and other cooperatively engageable means on the thumb rest member and on each opposite side of the housing in position to become engaged with each other when the threaded means are drawn tight, and vent openings through the spaced housing walls communicating the space in the first housing portion to ambient air to allow air to circulate through the first housing portion.

4,403,137

METHOD OF HEATING A BODY OF LIQUID AND A WATER HEATING UNIT FOR TANKS UTILIZING SUCH METHOD

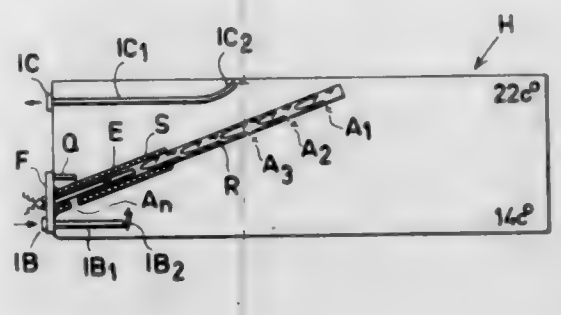
Yitzhak Glazer, 31 Kaplansky St., Rishon-Lezion, Israel

Filed Nov. 27, 1981, Ser. No. 325,341
Claims priority, application Israel, Dec. 11, 1980, 61694
Int. Cl.³ F24H *1/18*; H05B *3/78*
U.S. Cl. 219—306 **10 Claims**

1. A method of heating a body of liquid more intensively at a higher region than at a lower region thereof comprising the steps of:

immersing in the body of liquid an elongated hollow tube, extending at an angle with respect to the vertical, the tube having an open top located at the upper region of the body of the liquid, a closed bottom, and a series of openings formed along the lowermost generatrix line of the tube communicating between the liquid exterior of the tube and the interior thereof; and

heating the liquid contained at the lower region of the tube so that thermal circulation is generated wherein warmed liquid flows upwards along the uppermost generatrix and



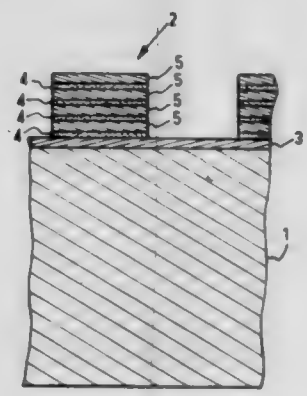
cold liquid flows through the openings and downwards along the lower generatrix of the tube.

4,403,138

HEAT-DESTRUCTIBLE MAGNETIC MEMORY ELEMENT

Claude Battarel, Magagnosc; Brigitte Bedene, Nice, and Robert Morille, Saint-Paul-de-Vence, all of France, assignors to Crouzet, France

Filed May 15, 1981, Ser. No. 263,926
Claims priority, application France, May 21, 1980, 80 11320
Int. Cl.³ G06K *19/06*
U.S. Cl. 235—493 **7 Claims**



1. A magnetic memory element, comprising a support, at least one ferromagnetic layer on said support containing at least one piece of information recorded therein and at least one layer of a non-magnetic diffuser in contact with said ferromagnetic layer, each said diffuser layer being operable, when heated, to diffuse said non-magnetic diffuser from a said diffuser layer into a said ferromagnetic layer associated therewith and thus irreversibly destroy the magnetism of said associated ferromagnetic layer.

4,403,139

REDUNDANT LIGHT SOURCE CIRCUIT

Bernard C. De Loach, Jr., Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 20, 1981, Ser. No. 255,452
Int. Cl.³ G01J *1/32*
U.S. Cl. 250—205 **9 Claims**

1. A redundant light source circuit comprising

a first circuit branch including

a normally closed first switch having a first control electrode for opening said first switch,

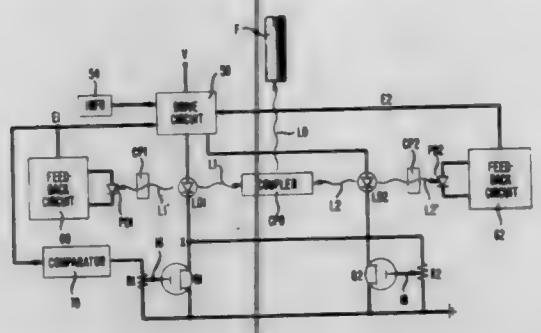
a first light source in series with said first switch for generating radiation within a prescribed range of a predetermined parameter level,

a second circuit branch, in parallel with said first branch, including

a normally open second switch having a second control electrode for closing said second switch,

a second light source in series with said second switch for generating radiation when said second switch is closed,

feedback means responsive to a portion of the radiation of said first source for generating voltage coupled to said first control electrode so that said first switch remains closed while the radiation of said first source is within said



prescribed range and is opened when the radiation of said first source is outside said prescribed range, thereby turning off said first source, and

means responsive to the switching of said first switch from closed to open for applying voltage to said second control electrode effective to close said second switch and cause said second source to emit radiation.

4,403,140

ELECTRON-BEAM SHUTTER AND SHUTTER TUBE

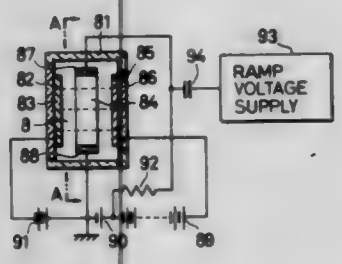
Yutaka Tsuchiya, Hamamatsu, Japan, assignor to Hamamatsu TV Co., Ltd., Hamamatsu, Japan

Filed Jun. 4, 1981, Ser. No. 270,393

Claims priority, application Japan, Aug. 22, 1980, 55-116241

Int. Cl.³ H01J *31/50*

U.S. Cl. 250—213 VT **2 Claims**



1. An electron-beam shutter for use in an optoelectronic device forming an image of a luminous event changing at high speed on a screen, which comprises:

a shutter plate disposed so that the surface thereof lies perpendicular to electron beams, the shutter plate having a multitude of through holes extending perpendicular to the surface thereof and a pair of electrodes disposed at opposite edges thereof and spaced away from each other in a direction perpendicular to the axis of the through holes; and

a ramp voltage source connected to said electrodes and having a polarity that changes in a reversing manner, the ramp voltage generated thereby develops an electric field that crosses the axis of the through holes in the shutter plate to control the passage of the electron beams from a photocathode through the through holes.

4,403,141

METHOD AND APPARATUS FOR BINARY CODING OF SENSOR SIGNALS FROM OPTOELECTRONIC SENSOR ELEMENTS

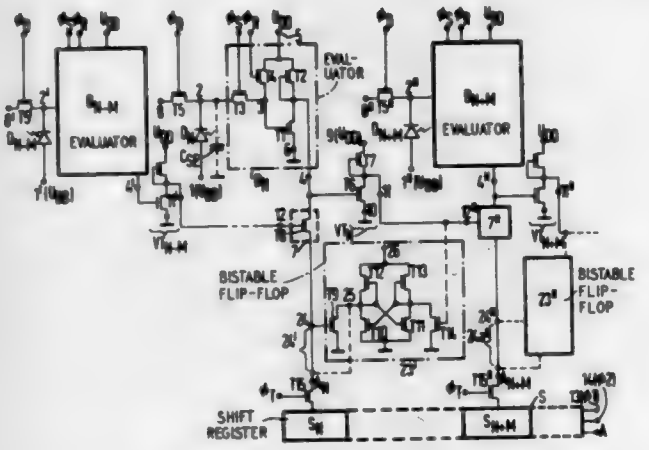
Hans P. Graasl, Zorneding; Heiner Herbst, and Frank Endlicher, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 15, 1981, Ser. No. 330,946

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1981, 3103154

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—214 R **18 Claims**



1. A circuit for binary coding of sensor signals received from a plurality of optoelectronic sensor elements comprising:

a plurality of evaluators respectively associated with said optoelectronic sensor elements for generating a binary output signal representing the quantity of optically generated charges generated in the optoelectronic sensor element associated therewith during a specified time period, each evaluator including

a switching transistor and a load element connected in series therewith for operating as a converter and having a converter input,

a barrier transistor interconnected between an output of one of said optoelectronic sensor elements and said converter input, and

a reset transistor for periodically connecting said converter input to a constant voltage source for resetting said evaluator; and

an electronic switch having an input connected to the output of one of said evaluators and a control input connected to another of said evaluators such that said evaluators connected to said electronic switch are associated with closely-disposed optoelectronic sensor elements, and having a switch output which serves as a circuit output,

whereby said electronic switch conducts the output of said one of said evaluators to said circuit output until said switch is switched to a non-conducting state by a signal from said evaluator connected to said control input for undertaking a quantity comparison of the optically generated charges of the two sensor elements respectively associated with said evaluators connected to said electronic switch.

4,403,142

MOVING OBJECT DETECTING APPARATUS

Mikio Kondo, Tsu, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed May 14, 1981, Ser. No. 263,425

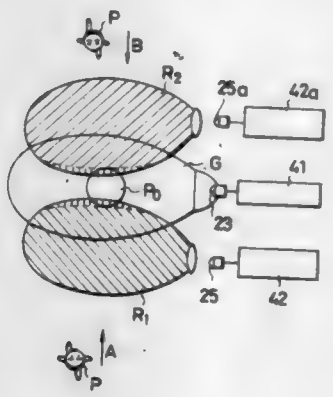
Claims priority, application Japan, May 20, 1980, 55-67507

Int. Cl.³ H01J *39/00*

U.S. Cl. 250—221 **10 Claims**

1. A moving object detecting apparatus for detecting variations in the amount of received light corresponding to movements of an object larger than a predetermined size to be detected and for discriminating and indicating the direction of movement of said object, said apparatus comprising a casing

having a transparent plate fitted to the front surface of said casing, means including a light emitting element irradiating modulated light through said transparent plate, a plurality of light receiving means respectively including a light receiving element for receiving through said transparent plate irradiated modulated light reflected from said object within an independent light receiving zone that is exclusive of the light receiving zone of the other light receiving element, from which respective said receiving elements can separately receive the light when the object passes through a detecting zone defined by the



receiving zones of said light receiving means together with the zone of irradiation of said light emitting means and simultaneously receive reflected light when the object is larger than said predetermined size, a circuit for processing a signal from respective said light receiving means for detecting the sequence of light received at the respective means, discriminating said direction of movement of the object and generating different signals in response to the direction of movement of the object, and means for making an indication in response to said different signals from said signal processing circuit.

4,403,143

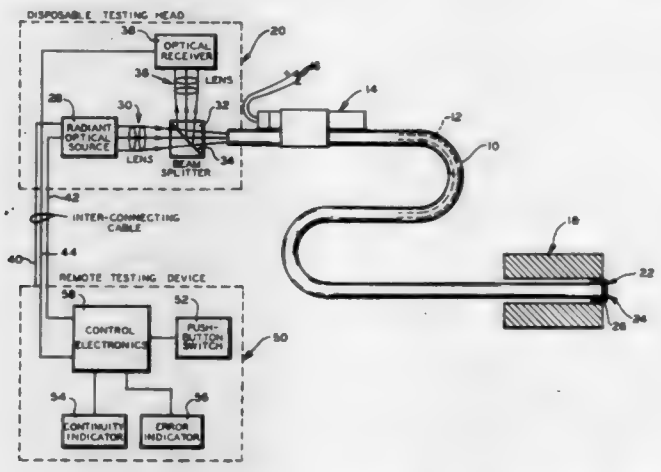
DETONATING CORD AND CONTINUITY VERIFICATION SYSTEM

Richard E. Walker, Cadiz; James D. Heckelman, Norwalk, and Robert A. Ziemke, Sandusky, all of Ohio, assignors to Research Energy of Ohio, Inc., Cadiz, Ohio

Continuation of Ser. No. 957,438, Nov. 3, 1978, abandoned. This application Jan. 19, 1981, Ser. No. 226,449

Int. Cl.³ G01N *21/00*; G02B *5/14*; C06C *5/04*

U.S. Cl. 250—227 **7 Claims**



6. A method of checking continuity of a frangible signal conductor, comprising: binding a single frangible fiber optic cord to said frangible signal conductor in side by side relationship and in such manner that an external force sufficient to break said frangible signal conductor must also disrupt said frangible fiber optic cord, providing light responsive means at one end of said fiber optic cord for delivering light to said fiber optic cord over an extended period of time after termination of a activating light signal received from the other end of said fiber optic cord, sending a light signal from said other end over said fiber optic cord to activate said light responsive means, terminating the light signal, and determining if light is received at said other end of said fiber optic cord after termination of said signal.

4,403,144

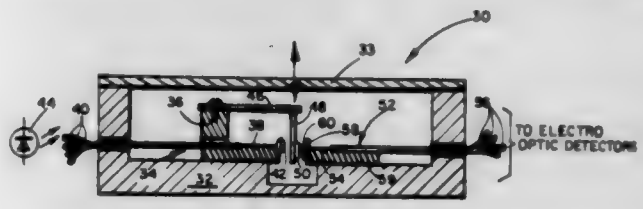
FIBER OPTIC ACCELEROMETER

Virgil H. Strahan, Orange; Kenneth A. James, Corona Del Mar, and William H. Quick, La Habra Heights, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 928,222, Jul. 26, 1978, Pat. No. 4,239,963. This application Jun. 9, 1980, Ser. No. 157,694

Int. Cl.³ G01D *5/34*

U.S. Cl. 250—231 R **14 Claims**



1. An optical accelerometer comprising:

movable grid means adapted to move in response to an input mechanical force applied thereto, said movable grid means including an array of rows, each of said rows having therein a pattern of alternating transparent and opaque areas,

first light transmission means to transmit incident light signals from a source thereof to each of the rows of said movable grid means,

stationary grid means fixedly positioned adjacent said movable grid means for receiving light signals that are transmitted through the transparent areas thereof, said stationary grid means including an array of rows, each of said rows having therein a pattern of alternating transparent and opaque areas, and

detector means positioned to receive output light signals that are transmitted through transparent areas of said movable and stationary grid means, the intensity of the output light signals received by said detector means being indicative of the position of said movable grid means and the magnitude of the mechanical force being applied thereto,

the transparent and opaque areas that form the patterns of at least some of the rows of each of said movable and stationary grid means having a respective dimension which varies from row to row relative to one another.

4,403,145

CALIBRATION WITH DOUBLE-PASS MEASUREMENTS AND COMPUTATIONAL PEAK FINDING

William M. Stevens, Loveland; William E. Atkinson, and William J. Dirr, Jr., both of Cincinnati, all of Ohio, assignors to Randam Electronics, Inc., Cincinnati, Ohio

Filed Oct. 27, 1980, Ser. No. 200,887

Int. Cl.³ G01B *18/00*; G01T *1/20*

U.S. Cl. 250—252.1 **20 Claims**

1. A method of calibrating an analytical instrument having detector means for determining the magnitude of a property of a sample at a predetermined value of a physical parameter upon which said property depends, adjusting means, coupled to said detector means, for varying the value of said parameter at which said detector means will determine said magnitude of said property, and output means, coupled to said detector means, for indicating said magnitude of said property at various predetermined values of said parameter, said method comprising:

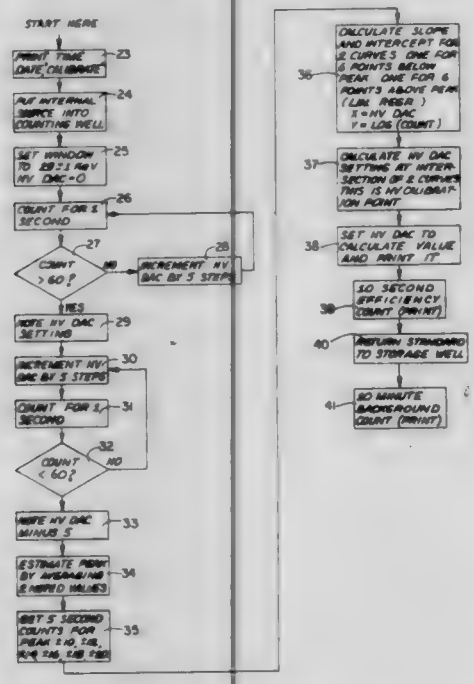
(A) determining at one setting of said value of said parameter, with said detector means, the magnitude of said property of a known sample having a known, nonzero magnitude of said property at a first predetermined value of said parameter;

(B) varying, with said adjusting means, said value of said parameter to further settings;

(C) determining, at said further settings of said value, the magnitude of said property;

(D) continuing to vary said value of said parameter and determining the magnitude of said property of said known sample until said magnitude has been determined at settings of said value extending across the range of said value of said parameter over which the magnitude of said property exceeds a predetermined magnitude;

(E) curve-fitting a first line to a first set of measured magnitudes of said property, the values of said parameter for said



first set of measured magnitudes falling within a first portion of said range, curve fitting a second line to a second set of measured magnitudes of said property, the values of said parameter for said second set of measured magnitudes falling within a second portion of said range separate from said first portion, and extending said first and second lines until they intersect at a second value of said physical parameter; and

(F) placing, with said adjusting means, said value of said parameter to a desired value of said parameter by varying with said adjusting means the value of said parameter to a third value which differs from said second value by an amount by which said desired value differs from said first value.

4,403,146

EVALUATION OF THE INTERACTION WITH RADIANT ENERGY OF SUBSTANCES TRAVERSED BY A BORE HOLE

Jacob Neufeld, Oak Ridge, Tenn., assignor to Halliburton Company, Duncan, Okla.

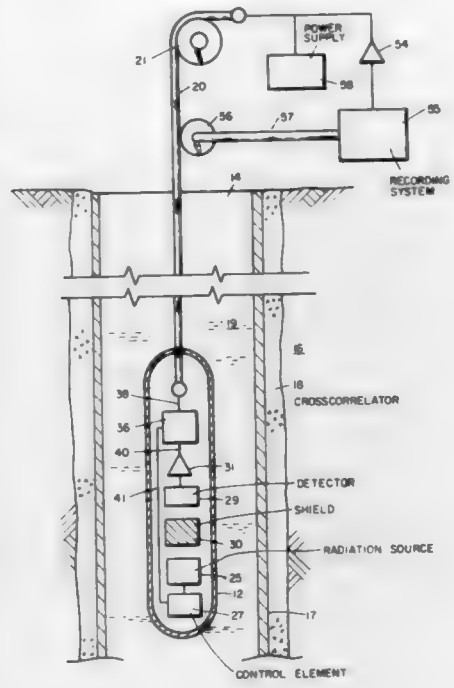
Division of Ser. No. 149,276, May 12, 1980, Pat. No. 4,326,129.
This application Sep. 14, 1981, Ser. No. 301,653
Int. Cl.³ G01V 5/00
U.S. Cl. 250—262 **2 Claims**

1. A method of making measurements in a bore hole traversing subterranean formations that comprises:

(a) generating discrete bursts of radiant energy in the neighborhood of said formations whereby said bursts interact with substances traversed by said bore hole,

(b) detecting radiations resulting from said interactions,

(c) developing an impulse response function characterizing said substances, said function increasing with time at a relatively rapid rate and then decreasing at a relatively slower rate, and



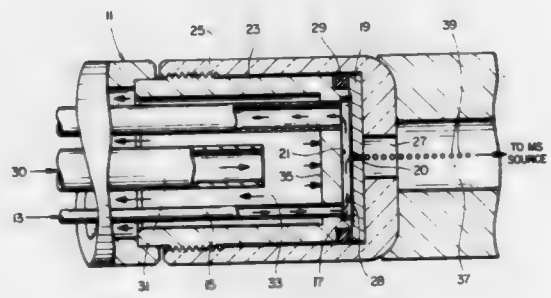
(d) determining the amount of increase of said impulse response function with respect to time.

4,403,147

APPARATUS FOR ANALYZING LIQUID SAMPLES WITH A MASS SPECTROMETER

Attilio Melera, Los Altos, and Armand Neukermans, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 215,787, Dec. 12, 1980, abandoned, which is a continuation of Ser. No. 42,477, May 25, 1979, abandoned.
This application Feb. 12, 1982, Ser. No. 348,129
Int. Cl.³ H01J 49/30
U.S. Cl. 250—288 **14 Claims**



1. Apparatus for introducing a liquid solution of a solute dissolved in a solvent into the source region of a mass spectrometer, comprising:

probe means for forming a stream of liquid droplets of said solution and expelling said stream from said probe means;

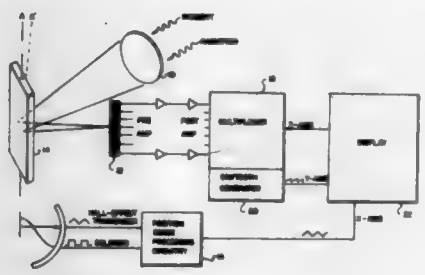
vaporization means positioned between said probe means and the source region of said mass spectrometer for evaporating the solute and solvent in said droplets after said droplets have been expelled from said probe means, and directing at least some of the evaporated materials into said source region of the mass specctrometer; and

temperature control means for maintaining the temperature in said probe means below the boiling point of said liquid solution in said probe means, to insure that said solution does not evaporate in or near said probe means and thereby plug said probe means.

4,403,148
ELECTRO-OPTICAL SCANNING AND DISPLAY SYSTEM

Bryan H. Coon, Plano; Wallace A. Kluck, Richardson, and Billy W. Radke, Garland, all of Tex., assignors to Optic-Electronic Corporation, Dallas, Tex.

Filed May 7, 1981, Ser. No. 261,491
Int. Cl.[3] H01J *31/50*
U.S. Cl. 250—332 31 Claims

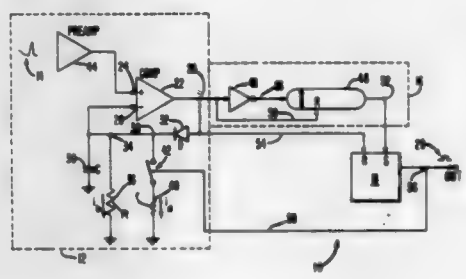


1. An electro-optical system comprising:
an array of radiation detecting elements;
a rotatable scanning means arranged to scan radiation across said array, including means for generating an analog signal indicative of the rotation thereof;
an electronic multiplexer for sequentially sampling the outputs of the detecting elements in said array; and
a visual display system including a scanned raster device having a spot intensity modulator coupled to the output of said multiplexer and at least one sweep circuit driven by said analog signal.

4,403,149
PULSE PROCESSOR

Johan A. Govaert, Peabody, Mass., assignor to Baird Corporation, Bedford, Mass.

Filed Jan. 9, 1981, Ser. No. 223,735
Int. Cl.[3] G01T *1/20*
U.S. Cl. 250—369 11 Claims



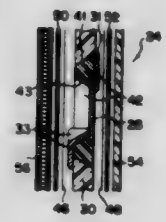
1. A pulse processor comprising:
(a) means for receiving detected scintillations; including a comparator, and a capacitor and a diode connected in a feedback loop of said comparator;
(b) a member parallel coupled to the output of said comparator, said member including a resettable delay line and an inverter;
(c) bistable means parallel coupled to the output of said comparator and coupled to the output of said member for generating coded digital signals responsive to said detected scintillations.

4,403,150
SEMICONDUCTOR RADIATION SENSOR ARRANGEMENT FOR AN AUTOMATIC X-RAY EXPOSURE CONTROL APPARATUS

Tetsuro Kurihara, and Kosaku Nishio, both of Otawara, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 18, 1981, Ser. No. 236,133
Claims priority, application Japan, Feb. 27, 1980, 55-23706
Int. Cl.[3] G01T *1/24*
U.S. Cl. 250—370 9 Claims

1. A semiconductor radiation sensor arrangement for an automatic X-ray exposure control apparatus disposed between an object and an X-ray film to be exposed to X-rays which comprises:
a substrate having a perforation therethrough;
a mount bored with a tapering penetrating hole, and securely engaged in said perforation, the peripheral walls of said mount and said perforation having mating surfaces tapered in cross section in complementary form;
a semiconductor radiation sensor fixed in said penetrating hole of said mount and having sufficient thinness to cause the X-rays to be attenuated to less than 800 microns of aluminum equivalent thickness, said sensor having electrodes;

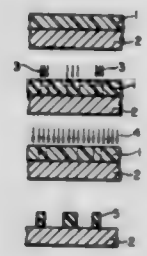


leads formed of an aluminum layer with a thinness of less than 80 microns and connected to said electrodes o said semiconductor radiation sensor; and
means for providing both reinforcement for said semiconductor radiation sensor arrangement and scattered x-ray elimination, said means comprising
at least one scattered X-ray eliminating grid disposed in parallel with said substrate and said semiconductor radiation sensor.

4,403,151
METHOD OF FORMING PATTERNS

Kozo Mochiji, Tachikawa; Yozi Maruyama, Hachioji; Shinji Okazaki, Urawa, and Fumio Murai, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 2, 1981, Ser. No. 250,217
Claims priority, application Japan, Apr. 2, 1980, 55/42021; Jun. 27, 1980, 55/86626
Int. Cl.[3] H05K *3/06*
U.S. Cl. 250—492.2 12 Claims



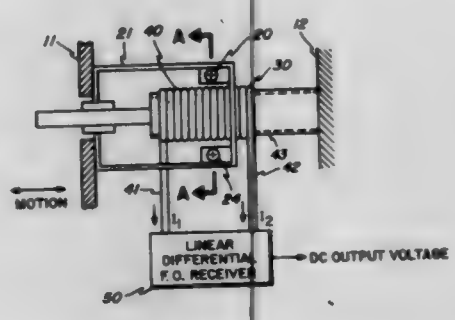
1. A method of forming patterns comprising:
(1) a step of adhering a positive-type photoresist film onto a layer that is to be processed;
(2) a step for irradiating predetermined regions of said positive-type photoresist film with an electron beam, said electron beam having a sufficient intensity to destroy the photosensitive radicals of said positive-type photoresist film in the predetermined regions, whereby said predetermined regions are rendered insensitive to ultraviolet light;
(3) a step for irradiating regions of the photoresist film with ultraviolet light, said regions including at least the regions of said positive-type photoresist film irradiated with the electron beam;
(4) a step for developing said positive-type photoresist film, and removing the regions irradiated with ultraviolet light only, to form a resist pattern;
(5) a step for removing the exposed portions of said layer that is to be processed by the etching using said resist patterns as masks; and
(6) a step for removing said resist patterns.

4,403,152

OPTICAL FIBER POSITION SENSOR

Hermann Schmid, Binghamton, and Robert C. Wells, Endwell, both of N.Y., assignors to General Electric Company, Binghamton, N.Y.

Filed May 18, 1981, Ser. No. 264,283
Int. Cl.³ G02B 5/16
U.S. Cl. 250—551 10 Claims



1. Apparatus for determining the position of a first element relative to a second element, one of said first and second elements being linearly movable relative the the other, comprising:

a source of electromagnetic radiation, the source being adapted to be fixedly secured to the first element; and

an optical fiber cable formed in the shape of a single layer, generally cylindrical coil having a termination at either end outside the coil, the optical fiber coil being adapted to be fixedly secured to said second element and arranged to receive radiation from said source by injection into at least one loop of the coil;

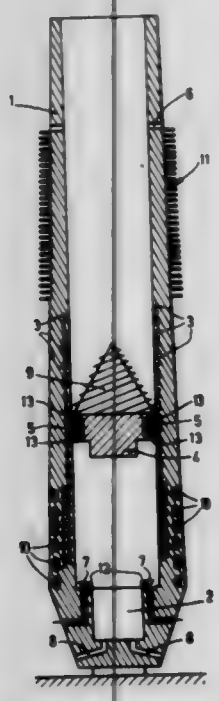
one of said source and said cable being linearly movable with respect to the other as a function of linear motion of the element to which it is secured relative to the other element; whereby radiation being transmitted within said cable is attenuated proportional to the distance travelled within said cable, the relative intensity of radiation exiting from the respective coil end terminations being representative of the position of one of said source and said cable relative to the other.

4,403,153

FREE-PISTON ELECTRIC CURRENT GENERATOR

Roger Vallon, 3, rue des Pleins Champs, 76000 Rouen, France

Filed Apr. 1, 1982, Ser. No. 364,265
Claims priority, application France, Apr. 3, 1981, 81 06759
Int. Cl.³ F02B 71/00; F02D 39/10
U.S. Cl. 290—1 R 12 Claims



1. A medium-power, free-piston electric current generator apparatus, in which said free-piston is slidable in and in sealing contact with the internal wall of a cylinder, said generator apparatus comprising:

said cylinder being vertically oriented and open at its upper end and having a combustion chamber at its lower end, induction coils being provided along at least part of the length of said cylinder, means for feeding a fuel-and-combustion supporting gas mixture into said cylinder;

said free piston being made at least in part of magnetic material, and being movable within the cylinder from a lowermost rest position to an uppermost top dead center position in normal operation, the return stroke of said free piston being effected by the force of gravity;

valves for exhausting combustion gases being provided in the lower part of said cylinder, and means for synchronizing the opening and closing of said valves with movement of said piston;

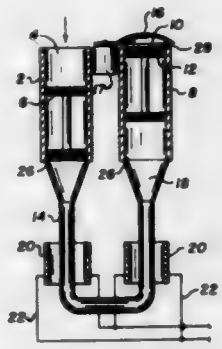
ports located in the upper part of said cylinder above said top dead center position of said piston in normal operation, and means for cooling said cylinder and said piston.

4,403,154

APPARATUS TO GENERATE ELECTRICITY

Lucio V. Reale, 1371 Lake Ontario Dr., SE., Lake Bonavista, Calgary, Alberta, and William R. McKay, 2700 Carlton St., SW., Calgary, Alberta, both of Canada

Filed Dec. 17, 1981, Ser. No. 331,734
Int. Cl.³ F03B 13/12; F03D 9/00
U.S. Cl. 290—53 23 Claims



1. An apparatus to generate electricity comprising:

a first cylinder having an open end;

a first piston in the first cylinder;

a second cylinder having an open end;

a second piston in the second cylinder;

a pipe communicating the two cylinders at the ends remote from their open ends;

closure means to close and open the open end of each cylinder in sequence;

the system being adapted to receive a liquid contained between that part of the apparatus defined by the cylinders and the pipe, between the two pistons;

electrical generating means adapted to be operated by movement of the liquid in the apparatus to generate electricity;

whereby fluid pressure acting on the first piston in the first cylinder, with the second cylinder closed by the closure means, moves the first piston inwardly, moving the liquid to the second piston through the pipe;

movement of the piston and thus of the liquid acting to operate electrical generating means,

movement of the closure means to close the first cylinder and open the second cylinder, allowing the fluid pressure to act on the second piston to move the first piston back to its start position, electricity also being generated by movement of the second piston inwardly.

4,403,155

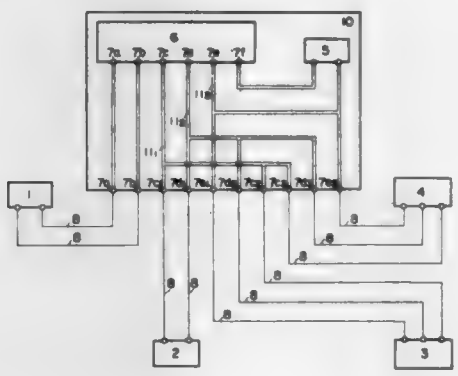
WIRING SYSTEM FOR AUTOMOTIVE VEHICLES

Hideto Aoki; Tomoyuki Hirano; Mitsugu Watanabe; Toshiyuki Kamano; Mitsunori Tsunoda; Toshikazu Akiyama; Mitsuyasu Kanehiro; Mitsuji Kubota, and Masayuki Sato, all of Kosai, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 112,859, Jan. 17, 1980, abandoned. This application Jan. 25, 1982, Ser. No. 342,430

Int. Cl.³ H02G *3/00*

U.S. Cl. 307—10 R **3 Claims**



1. A wiring system for a motor vehicle having a battery in a front portion of an engine compartment, comprising:

a plurality of connector boxes including main and auxilliary connector boxes; a plurality of conductors; each connector box having a plurality of bus bars, at least one selected bus bar providing branched conductive paths and the remaining bus bars providing straight conductive paths; at least one of said plurality of connector boxes having therein a plurality of circuit elements, and said plurality of circuit elements being connected to the bus bars in said at least one connector box; said main and auxilliary connector boxes providing connectors in a one-to-one correspondence between members of a first selected group of said branched and straight conductive paths to each other, and said plurality of connectors and said plurality of connector boxes providing connections in a one-to-one correspondence between said connectors and members of a second selected group of said branched and straight conductive paths in each connector box; a first member of said plurality of connector boxes being positioned in the vicinity of said battery, and a member of a third selected group of said branched and straight conductive paths of said first connector box being connected to said battery, and said circuit elements in said first box of said plurality of connector boxes providing a load circuit connection within said front portion of the engine compartment; and members of said first selected group of said plurality of connectors being connected via a second of said connector boxes to switches in an instrument panel of said motor vehicle; whereby a minimum number of wires are employed in interconnecting the circuitry on one portion of said motor vehicle with the circuitry in another portion thereof, and whereby the wires conducting large current are arranged away from the vehicles' driver for optimum safety.

4,403,156

FREQUENCY CONVERSION CIRCUIT

Masaharu Sakamoto, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 7, 1981, Ser. No. 251,803

Int. Cl.³ H03B *5/24, 21/00*

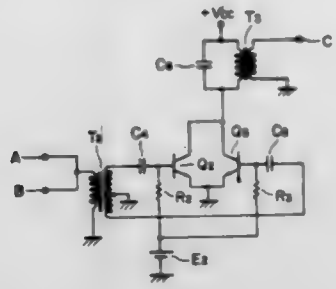
U.S. Cl. 307—219.1 **6 Claims**

1. A frequency conversion circuit comprising:

a differential pair of active semiconductive elements having outputs coupled together;

means for biasing said active elements only into non-linear operating regions thereof;

means for applying, in opposite phases, a superposition signal composed of signals of first and second frequencies to respective control inputs of said active elements; and



a common load for differential outputs of said active elements, a frequency-converted signal of said first and second signals produced by non-linear operation of said active elements being present across said load.

4,403,157

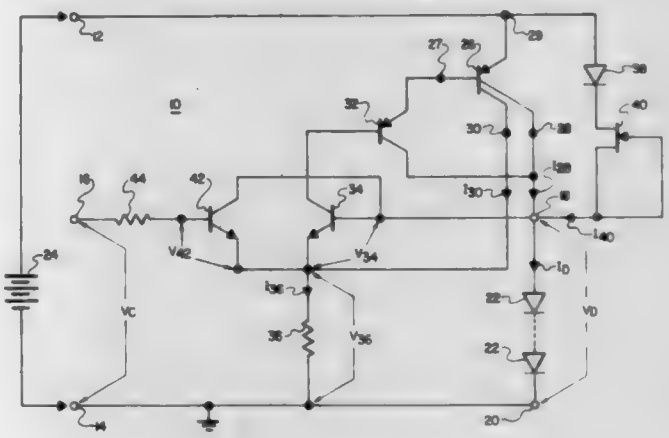
CONTROL CIRCUIT FOR LIGHT EMITTING DIODE

Ciro Guajardo, Harbor City, and Dennis B. Chabala, Huntington Beach, both of Calif., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Feb. 8, 1982, Ser. No. 346,615

Int. Cl.³ H03F *3/45, 3/345;* H03L *5/00*

U.S. Cl. 307—297 **8 Claims**



1. A control circuit comprising:

a first transistor having base, emitter, and first and second collector terminals;

second, third, and fourth transistors each having base, emitter, and collector terminals;

a resistor;

means for connecting the emitter terminal of the first transistor to a first input terminal;

means for connecting the first collector terminal of the first transistor to a first output terminal;

means for connecting the base terminal of the first transistor to the emitter terminal of the second transistor;

means for connecting the base terminal of the third transistor to the first output terminal;

means for connecting the collector terminal of the second transistor to the first collector terminal of the first transistor;

means for connecting the base terminal of the second transistor to the collector terminal of the third transistor;

means for connecting the second collector terminal of the first transistor to the emitter terminal of the third transistor;

means for connecting the resistor between the emitter terminal of the third transistor and a second input terminal;

means for connecting the collector and emitter terminals of the fourth transistor to the base and emitter terminals, respectively, of the third transistor;

means for connecting the base terminal of the fourth transistor to a control terminal; and

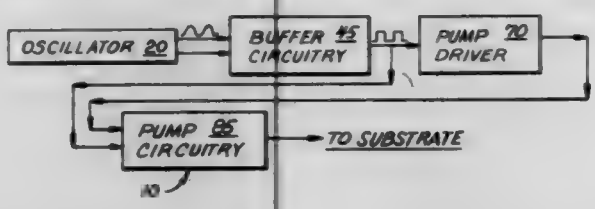
means for biasing the third transistor into conduction.

4,403,158

TWO-WAY REGULATED SUBSTRATE BIAS GENERATOR

William C. Slemmer, Colorado Springs, Colo., assignor to Inmos Corporation, Colorado Springs, Colo.

Filed May 15, 1981, Ser. No. 264,375
Int. Cl.[3] H03L 5/00; H03K 17/687
U.S. Cl. 307—297 7 Claims



1. A substrate bias generator for generating a regulated substrate voltage for an MOS integrated circuit which includes a power supply voltage and MOS devices having inherent threshold voltage conduction points, said generator comprising:

means for generating first and second trains of periodic pulses such that said first train of pulses and said second train of pulses are approximately phase opposite;

means for generating a target reference voltage;

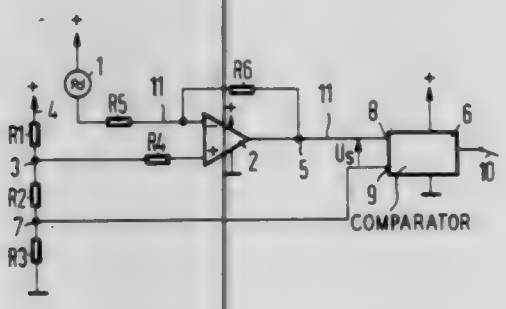
and pumping means receiving said first and said second trains of pulses and said target voltage for initially transferring a charge into the substrate to raise the substrate voltage and thereafter transferring charge out of the substrate to reduce the substrate voltage, the charge transferred out of the substrate being greater than the charge transferred into the substrate when the absolute value of the potential on the substrate is less than the target voltage, the charge transferred out of the substrate being less than the charge transferred into the substrate when the absolute value of the potential on the substrate is greater than the target voltage, whereby the absolute value of the potential on the substrate is driven towards the target voltage.

4,403,159

CIRCUIT FOR EVALUATING SIGNALS

Jan Goerne, and Wilfried Traulsen, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 31, 1981, Ser. No. 297,788
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1980, 3043053
Int. Cl.[3] H03K 5/153, 5/24
U.S. Cl. 307—362 2 Claims



1. A circuit for evaluating signals comprising:

a comparator having a signal input connected to a signal line for receiving signals to be evaluated from a signal source and having a reference input, said comparator being supplied by a voltage source which has one side thereof grounded;

an ohmic voltage divider consisting of three resistors connected across said voltage source, one of said three resistors being a center resistor and having a first voltage divider tap disposed on a side thereof farther from ground and a second voltage divider tap disposed on a side thereof closer to ground, said center resistor having a resistance value which is substantially less than the total resistance value of said voltage divider, said reference input of said comparator being connected to said second voltage divider tap for fixing the threshold voltage of said comparator; and

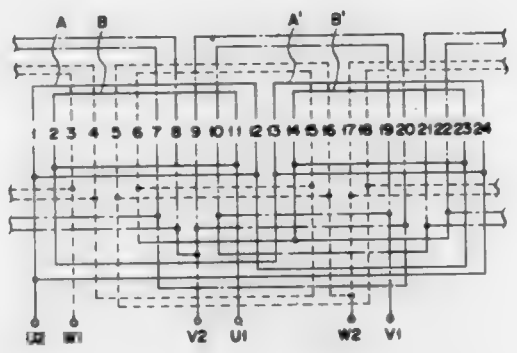
an operational amplifier supplied by said voltage source and having an output connected to said signal input of said comparator and an inverting input connected to said signal source and a non-inverting input connected to said first voltage divider tap for providing a stable reference potential for said comparator.

4,403,160

POLE CHANGE TYPE MOTOR

Sadayoshi Hibino, Suzuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 16, 1981, Ser. No. 331,271
Claims priority, application Japan, Dec. 25, 1980, 55-184235; Mar. 17, 1981, 56-38550
Int. Cl.[3] H02K 3/00
U.S. Cl. 310—184 9 Claims



1. A pole change type motor comprising:

armature windings wound around an iron core in a coaxial fashion with a P number of poles for a high speed operation, which armature windings provide a Q number of poles for a low speed operation by changing the external connections of said windings; and

each phase coil of said armature windings being segmented into N portions, a one-pole portion of each phase coil being comprised of a plurality of coils;

said plurality of coils including one or more first coils of which the polarity is changed by changing the external connections of said armature coils and one or more second coils alternately disposed with respect to said first coils, of which the polarity is left unchanged by changing the external connections.

4,403,161

PERMANENT MAGNET ROTOR

Kunio Miyashita, Hitachi; Seizi Yamashita, Katsuta; Hiroshi Watanabe, Hitachi, and Shoji Tanabe, Sakura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 915,139, Jun. 13, 1978, abandoned.
This application Sep. 17, 1980, Ser. No. 188,098
Claims priority, application Japan, Jun. 24, 1977, 52-74388
Int. Cl.[3] H02K 21/12
U.S. Cl. 310—156 12 Claims

1. A permanent magnet rotor comprising:

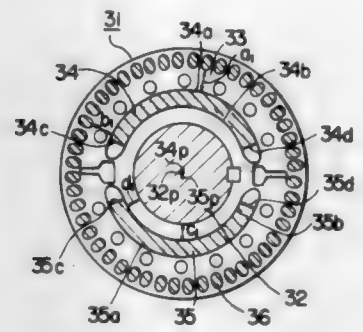
a hollow rotor core made of laminated iron stack having at least two slots formed therein;

a shaft disposed at the center of said rotor core and extending axially thereof;

a plurality of axially extending conductor bars disposed

within said rotor core and arranged along a circle coaxial with said shaft, for forming a squirrel cage on said rotor core;

arc-shaped permanent magnets disposed within said slots of said rotor core and extending axially of said rotor core and said shaft, a width of a portion of said rotor core which is



interposed between said shaft and each of said arc-shaped permanent magnets being no longer at the end of the arc shape of said magnet than at the center of the arc shape of said magnet; and

axially extending slits formed between the ends of said permanent magnets to prevent short circuiting of magnetic flux.

4,403,162

INSULATING ELEMENT FOR ELECTRIC MOTOR WINDINGS, AND MOTOR PROVIDED WITH SUCH ELEMENTS

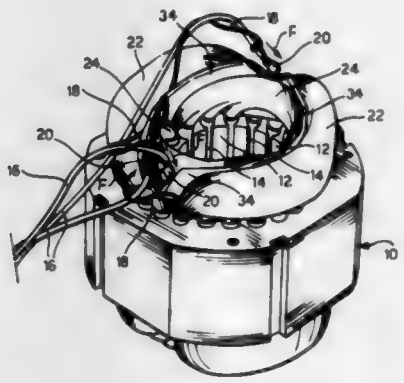
Gino Pallaro, Chieri, Italy, assignor to Aspera S.p.A., Castelnuovo Don Bosco, Italy

Filed Nov. 12, 1981, Ser. No. 320,897

Claims priority, application Italy, Nov. 19, 1980, 68765 A/80

Int. Cl.³ H02K *3/34*

U.S. Cl. 310—194 **2 Claims**



1. An electric motor, particularly an asynchronous motor including two stator windings having curved end portions, respectively a running winding and a starter winding, separated by insulating elements of die-cut sheet material, wherein at least one such insulating element comprises a pair of end panels each of which is inserted between two adjacent curved end portions of said running winding and said starter winding at opposite ends of the motor, and a series of parallel strips inter-connecting the end panels and each of which extends along one of the stator slots, and wherein one of the end panels has, extending from its edge opposite that from which the strips extend, at least two consecutive flaps one of which is connected to the panel by means of a fold line coincident with the said edge and which are connected together by a fold line parallel to the preceding one, in such a way that the flaps are folded over one another in the form of a sleeve which receives a join between the conductors of at least one winding and one of the supply leads of the same winding, said one end panel having a curvature imparted thereto by said curved end portions between which it is inserted whereby the form of the sleeve is preserved while preventing the flaps from unrolling and unfolding.

4,403,163

CONDUCTOR BAR FOR ELECTRIC MACHINES AND METHOD OF MANUFACTURE THEREOF

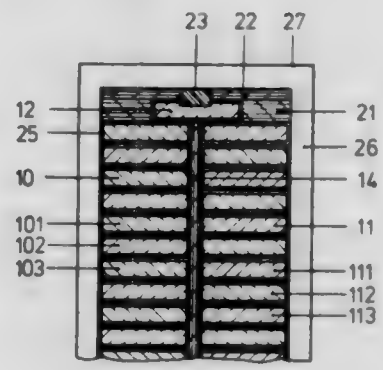
Rainer Armerding, Ludwigshafen; Rupert Helmling, St. Leon-Rot; Waldemar Köpp, Mannheim; Harry Wagner, Weinheim; Peter Ehrt, Einhausen, and Emil Böser, Mannheim, all of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,150

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1980, 3031866

Int. Cl.³ H02K *3/14*

U.S. Cl. 310—213 **5 Claims**



1. Conductor bar for electric machines operating at high voltage, comprising at least two subconductor packets being disposed side by side and being formed of mutually insulated subconductors, said subconductors being intertwined in such a manner that each subconductor occupies each possible physical position in at least one location within the conductor bar, an insulating sleeve, a semiconductor layer applied to said insulating sleeve, a further semiconductor layer disposed between said subconductor packets and said insulating sleeve, the conductor bar having a straight portion and narrow sides having a given width, a narrow-side subconductor bar crossing from one subconductor packet to another, said narrow-side subconductor bar being disposed at a given height filling a portion of the given width of the narrow side leaving a remaining width, hardenable cement layers being disposed substantially at said given height flanking said narrow-side conductor bar in the vicinity of the crossing and filling the remaining width, said hardenable cement layers being extended over the entirety of the straight portion on each narrow side of said subconductor packets, conducting strips disposed on said cement layers, said conducting strips and insulation of said insulated subconductors therebelow having holes formed therethrough, and conducting cement being filled into said holes.

4,403,164

SLIDING CONTACT ASSEMBLIES FOR ROTARY ELECTRIC MACHINES

Kenneth Preece, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jan. 8, 1982, Ser. No. 338,148

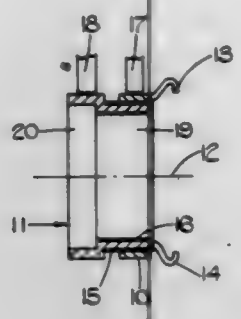
Claims priority, application United Kingdom, Jan. 15, 1981, 8101199

Int. Cl.³ H01R *39/08*

U.S. Cl. 310—232 **12 Claims**

1. A sliding contact assembly comprising a first cylindrical electrically conductive ring having a radially outer surface, a second cylindrical electrically conductive ring having a radially outer surface and an axial cylindrical portion which is concentrically surrounded and enclosed by said first cylindrical ring so that said rings are in overlapping relationship with each other to form an annular section, said first and second rings being co-axial with respect to an axis about which they

are rotatable, means located in the annular section electrically insulating said first and second rings from each other, and a



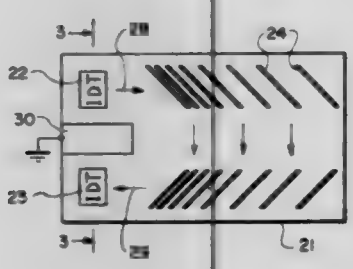
pair of brushes in sliding contact with said radially outer surfaces of said first and second rings, respectively.

4,403,165

TRANSDUCER ISOLATION IN SURFACE ACOUSTIC WAVE PROCESSOR

Arthur D. Ballato, Long Branch, and Elio A. Mariani, Hamilton Square, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 7, 1982, Ser. No. 375,895
Int. Cl.³ H03H *9/25*
U.S. Cl. 310—313 D **3 Claims**



1. A reflective Surface Acoustic Wave Device comprising:
piezoelectric means for acting as a base for mounting components and for transmitting surface acoustic waves between points on a surface thereof;
at least two transducer means mounted on one end of said surface in parallel relationship with each other and with an axis defined by said base for converting signals between electric and acoustic;
signal conditioning means for manipulating acoustic signals present on said surface, said means distributed on said surface away from said one end;
signal blocking means defining a groove having a depth between one and ten acoustic wave lengths in said substrate for signals of interest located between said transducer means for blocking signals travelling a straight path from one transducer toward another.

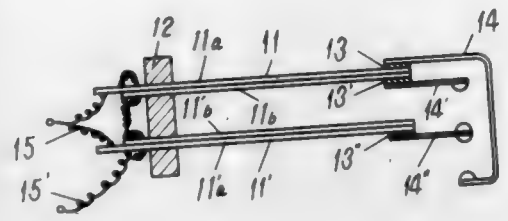
4,403,166

PIEZOELECTRIC RELAY WITH OPPOSITELY BENDING BIMORPHS

Fumio Tanaka, Hirakata; Kenroku Tani, Katano, and Hideo Mifune, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP81/00389, § 371 Date Aug. 19, 1982, § 102(e) Date Aug. 19, 1982, PCT Pub. No. WO82/02282, PCT Pub. Date Jul. 8, 1982
PCT Filed Dec. 16, 1981, Ser. No. 413,338
Claims priority, application Japan, Dec. 19, 1980, 55-183730
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—332 **3 Claims**

1. A piezoelectric relay comprising first and second flexible members each of which supports piezoelectric porcelain plates of a bimorph structure, and relay contacts which are turned on/off by a displacement of said first and second flexible members, characterized in that said relay contacts comprise first, second and third relay contacts which are electrically independent of each other and which are displaced in opposite directions upon application of an electric field to said first and second flexible members, such that said first and second relay



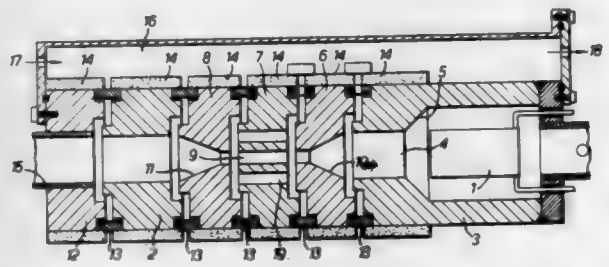
contacts are displaced in the same direction within a single plane upon a displacement of said first flexible member, and said third relay contact is displaced in a direction opposite to said same direction in the plane of displacement of said first and second relay contacts upon a displacement of said second flexible members.

4,403,167

SEGMENTED DISCHARGE TUBE DEVICES

Arthur Maitland, St. Andrews, Scotland; Hugh Menown, Writtle, and Ian A. Strudwick, Chelmsford, both of England, assignors to English Electric Valve Company Limited, Chelmsford, England

Filed Jan. 13, 1981, Ser. No. 224,644
Claims priority, application United Kingdom, Jan. 15, 1980, 8001240
Int. Cl.³ H01J *17/00*
U.S. Cl. 313—632 **15 Claims**



1. A segmented discharge tube device comprising a plurality of electrically isolated metal segments presenting a passage through which plasma may pass, said segments being located in a heat conductive tube with heat conductive, electrically insulating material between the outer surfaces of said segments and adjacent inner surface areas of said tube, said material contacting said inner surface areas, and anode means and cathode means at opposite ends of said plurality of segments.

4,403,168

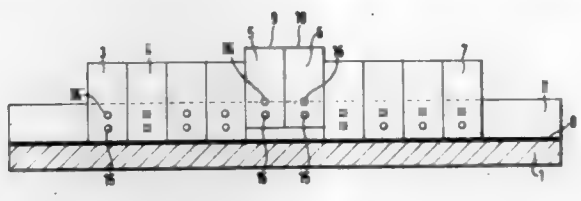
HIGH-VOLTAGE ELECTRODE CONSISTING OF A PLURALITY OF SERIES-CONNECTED SINGLE ELECTRODES FOR A SPARK-DISCHARGE DEVICE

Peter van Leeuwen, Rudolf-Diesel-Strasse 4, 8060 Dachau, Fed. Rep. of Germany

Filed Aug. 21, 1981, Ser. No. 295,148
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1980, 8022613
Int. Cl.³ H01J *1/16*
U.S. Cl. 313—336 **2 Claims**

1. A high voltage electrode consisting of a plurality of series-connected single electrodes for a spark-discharge device for roughening sheet-like plastic layers, having the form of a knife electrode which faces a counterelectrode consisting of a roller or a plane, characterized in that said single electrodes are designed as a multiplicity of separate individual platelets and

are combined into a row, with the platelets arranged edgewise in such a manner as to fall essentially into one plane, a holder



for holding said platelets in said row normally in a retracted, inoperative position, but with selected platelets in extended operative position.

4,403,169

CATHODE SUSPENSION MEANS FOR CATHODE RAY TUBE ELECTRON GUN

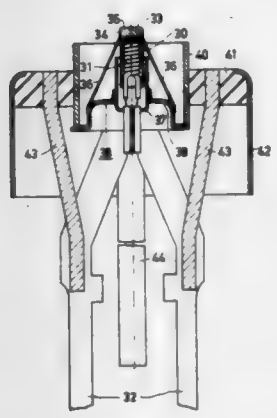
Jacob Blanken, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 22, 1981, Ser. No. 256,348

Claims priority, application Netherlands, Apr. 23, 1980, 8002343

Int. Cl.³ H01J *29/46*

U.S. Cl. 313—446 **8 Claims**



1. An electron gun for generating an electron beam, comprising a cathode unit including a cylindrical cathode shaft having an end which forms an emissive surface, said cathode shaft being surrounded at least an end remote from the emissive surface by a cylindrical metal heat reflection screen which extends beyond said remote end of the cathode shaft, said cathode shaft and heat reflection screen being secured in a cathode support, characterized in that the cathode shaft is suspended in the heat reflection screen by means of metal strips or wires which are secured to the cathode shaft near the emissive surface and to the cathode support.

4,403,170

COLOR PICTURE TUBES

Masayoshi Misono, Choseimura; Masatoshi Akiyama, Yotsukaidomachi, and Shigemi Hirasawa, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

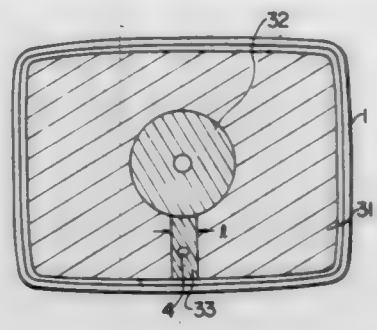
Filed Sep. 19, 1980, Ser. No. 188,747

Claims priority, application Japan, Sep. 21, 1979, 54-120675

Int. Cl.³ H01J *29/88*

U.S. Cl. 313—479 **10 Claims**

1. In a color picture tube comprising inner and outer conductive films respectively formed on inner and outer surfaces of a glass bulb of the color picture tube, and a conduction path formed in the inner conductive film which extends from an anode terminal provided for the outer surface of the glass bulb to an electron gun for applying thereto an anode high voltage, the improvement wherein the conduction path extending from the anode terminal to the electron gun has a resistance which



is smaller than the average resistance of a portion of the inner conductive film excepting the conduction path.

4,403,171

PHOSPHOR, PROCESS FOR PREPARATION THEREOF AND LAMP CONTAINING THE SAME

Masaki Nakano, Hamura, and Shinkichi Tanimizu, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 31, 1981, Ser. No. 336,098

Claims priority, application Japan, Jan. 9, 1981, 56-1240

Int. Cl.³ C09K *11/475*

U.S. Cl. 313—486 **23 Claims**

1. A phosphor represented by the following general formula:

$$M_{3-x}Tb_xBO_6$$

wherein M stands for at least one element selected from the group consisting of La, Gd and Y, and x is a number of $0.1 \leqq x \leqq 0.8$.

4,403,172

VEHICLE INTERIOR LIGHT CONTROL SYSTEM

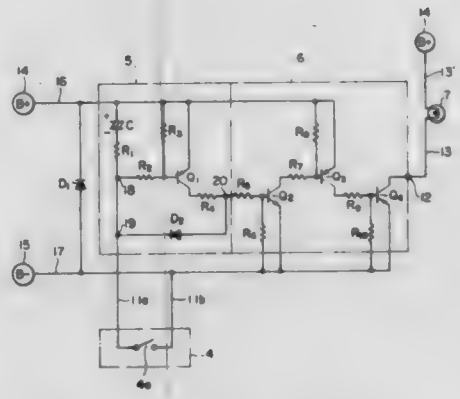
Ichiro Sasaki, and Hirotoshi Namazue, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Kokusan Kinzoku Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Jan. 26, 1981, Ser. No. 228,566

Claims priority, application Japan, Feb. 27, 1980, 55-22662

Int. Cl.³ B60Q *7/00*

U.S. Cl. 315—77 **4 Claims**



1. A vehicle light control system, comprising

an outside door handle for manually opening and closing the vehicle door,

a door handle switch operable by said door handle operation in accordance with normal position of said door handle and operated position thereof,

timer circuit responsive to said door handle switch being closed in its operated position of said door handle

means for turning on the vehicle light for a predetermined time period defined by said timer circuit upon the door

handle switch being returned to be off in its normal position of said door handle.

4,403,173

IGNITER CIRCUIT FOR HIGH-PRESSURE METAL VAPOR DISCHARGE LAMP

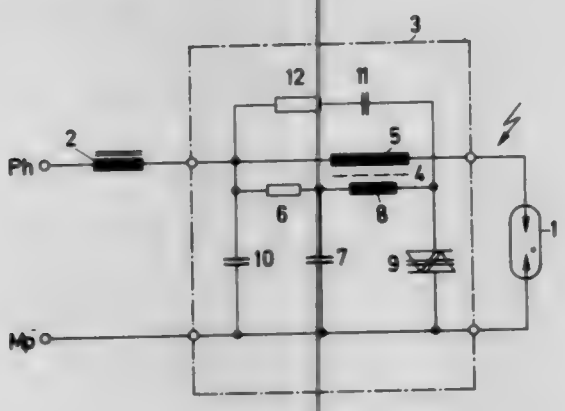
Walter Mayer, Taufkirchen, Fed. Rep. of Germany, assignor to Patent-Treuhand-Gesellschaft für Glühlampen mbH, Munich, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 350,043

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1981, 3108548

Int. Cl.³ H05B *37/00, 39/00, 41/14*

U.S. Cl. 315—289 **8 Claims**



1. Ignition or starter circuit for a high-pressure metal vapor discharge lamp (1) adapted for connection to two terminals (Ph, Mp) of an electrical current supply source, having

a ballast choke (2);

a pulse transformer (4, 13) and a pulse capacitor (7) connected in an ignition starting pulse superimposition circuit;

a series circuit including an auxiliary capacitor (11) and a damping resistor (12);

and a switching element (9) serially connected with said series circuit for disconnection of the series circuit after ignition of the lamp,

wherein, in accordance with the invention,

the series circuit of the auxiliary capacitor (11) and the damping resistor (12) is integrated in the circuit of the ignition pulse superimposition circuit and forms, together with said ballast choke, a series oscillatory circuit connected to the primary (8, 15) of the pulse transformer (4, 13) which, upon oscillation of said oscillatory circuit, increases the voltage applied to the lamp upon starting at sequential oscillatory undulations to thereby reliably insure starting of the lamp.

4,403,174

COMMUTATORLESS DC MOTOR DRIVE DEVICE

Kiyoshi Miyazaki, Komagane, and Jinichi Ito, Ina, both of Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seiksakusho, Nagano, Japan

Filed Aug. 17, 1981, Ser. No. 293,060

Claims priority, application Japan, Aug. 20, 1980, 55-113390

Int. Cl.³ H02K *29/00*

U.S. Cl. 318—254 **10 Claims**

1. A commutatorless DC motor drive device comprising:

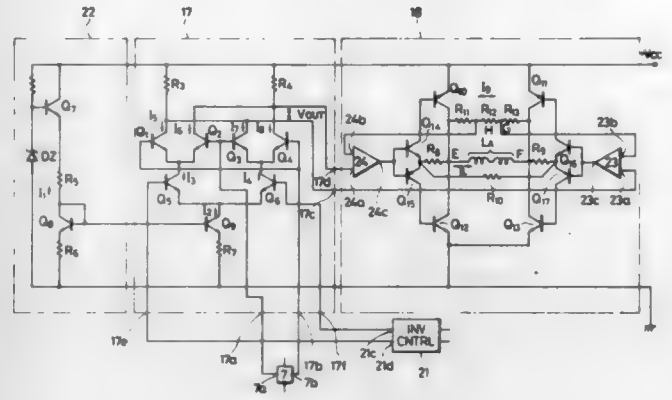
a rotor magnet magnetized to have a plurality of magnetic poles;

a plurality of stator coils arranged in correspondence with said rotor magnet;

magnetic sensitive elements for detecting positions of said magnetic poles of said rotor magnet and for producing output signals having output signal waveforms;

means for amplifying the output signal of each magnetic sensitive element;

means for producing signals each having a current waveform substantially the same as the output signal waveform of a respective one of said magnetic sensitive elements, said signal producing means having a resistor to which an output of said means for amplifying is applied; and



means for delivering current signals to said stator coils said current signals having the same waveform as the current flowing through said resistor.

4,403,175

CONTROL SYSTEM, MORE PARTICULARLY FOR DRIVING MOTORS FOR A VEHICLE FOR THE DISABLED

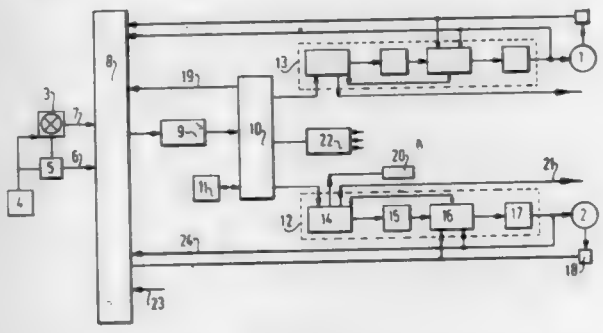
Geurt J. Ruumpol, Wilp, Netherlands, assignor to Inductive Control Systems, B.V., Ede, Netherlands

Filed May 20, 1981, Ser. No. 265,364

Claims priority, application Netherlands, May 21, 1980, 8002952

Int. Cl.³ H02P *7/68*

U.S. Cl. 318—53 **17 Claims**



1. A control system, more particularly for the electric motors driving a vehicle for the disabled, comprising a control member for delivering a required speed signal which varies linearly with the position of the control member, a feed back control circuit for each motor, and a power supply for the motor and the control circuits, characterised by a circuit for comparing the linear speed signal with a signal selected, on the basis of the instantaneous speed of the motor, from a number of signals stored in a memory, and for forming a control signal which does not vary linearly with the speed signal, and for feeding said control signal to the motor control circuit.

4,403,176

CIRCUIT FOR DRIVING AN ULTRASONIC DENTAL TOOL AT ITS RESONANT FREQUENCY

Dale O. Cranston, Lawrence, Kans., assignor to California Technics, Ltd., Olathe, Kans.

Continuation of Ser. No. 903,888, May 8, 1978, abandoned. This application Aug. 13, 1979, Ser. No. 66,470

Int. Cl.³ H02K *33/00*

U.S. Cl. 318—114 **9 Claims**

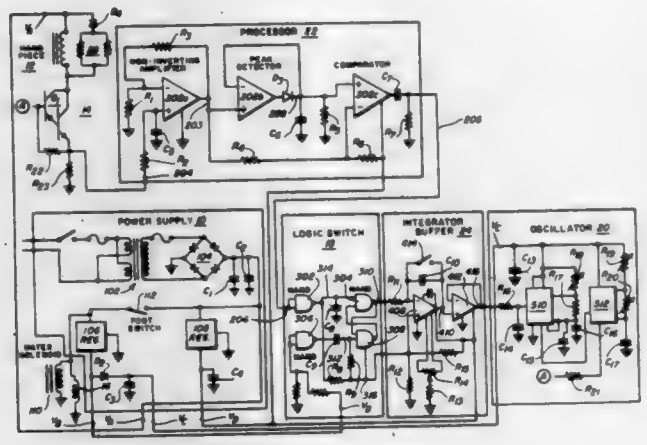
1. For use with a dental handpiece of the type adapted to hold a work tool and including

a transducer assembly for receiving the tool as part of the assembly and which in turn includes means for producing a vibratory motion in the tool in response to an electrical signal of alternating polarity, and

an electrical circuit for driving the transducer assembly at essentially the resonant frequency of the assembly and comprising:

variable-frequency oscillator means responsive to a control signal to produce the alternating signal at a selected frequency within a range of frequencies;

current-sensing means for producing a feedback signal indicative of the magnitude of current flow through the motion-producing means;



slope-detecting means responsive to the zero-crossing of the feedback signal derivative for producing a latching signal; and

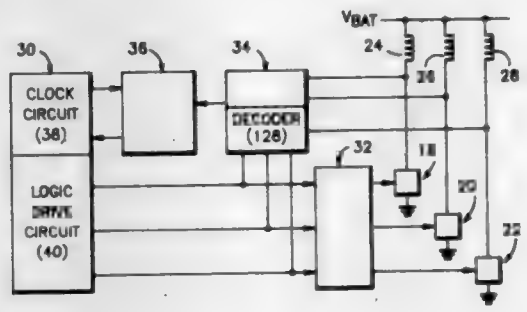
means for applying a variable control signal to the oscillator means to sweep the oscillator means through a spectrum of frequencies, and including means responsive to the latching signal to stop the sweep at the frequency producing maximum current flow through the motion-producing means.

4,403,177

BRUSHLESS THREE PHASE DIRECT CURRENT MOTOR CONTROL CIRCUIT

Howard F. Weber, Scottsdale, Ariz., and Jack R. Morgan, West Bloomfield, Mich., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 17, 1981, Ser. No. 293,811
Int. Cl.³ H02K *29/00*
U.S. Cl. 318—254 **9 Claims**



1. A control circuit for providing switching drive signals to establish synchronous phase current drive through the stator windings of a brushless direct current motor which is coupled to the control circuit, comprising:

increment drive circuit means responsive to trigger signals supplied thereto when the motor is in a run mode for producing clock pulses as well as cyclical, sequential output signals at a plurality of outputs therefrom;

switching circuit means having a plurality of inputs and outputs, each output being coupled to a respective stator winding at an output of the control circuit, said inputs being coupled with respective ones of said plurality of outputs of said increment drive circuit means, said switching circuit means being responsive to said cyclical and sequential output signals for producing the switching drive signals such that phase current is establish in a cyclical and sequential manner through the stator windings in timed relationship with the operation of the motor;

trigger circuit means which is responsive to enabling signals supplied thereto at an input thereof for producing said triggering signals, said triggering signals being supplied to an input of said increment drive circuit means; and

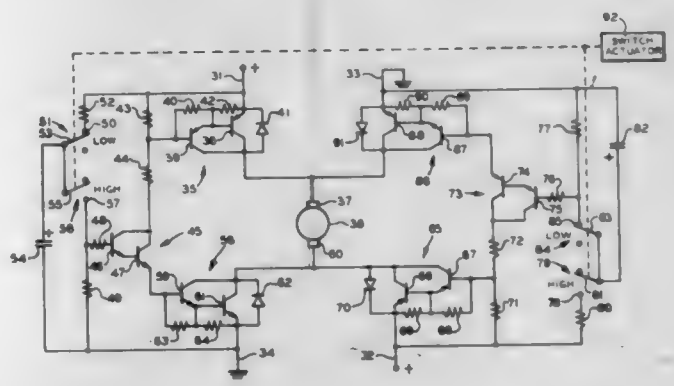
feedback circuit means coupled between said plurality of outputs of said increment drive circuit means and each stator winding which is responsive to said sequential output signals and the EMF voltage established across the stator windings for producing said enabling signals in synchronism with the operation of the motor such that the phase current drive is established in the next succeeding stator winding in correct timed relationship.

4,403,178

APPARATUS FOR CONTROLLING A TWO-SPEED AXLE SHIFT MOTOR

David C. Kaminski, Sylvania, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Jan. 19, 1981, Ser. No. 226,163
Int. Cl.³ H01H *7/00*
U.S. Cl. 318—484 **15 Claims**



1. In an electrically actuated shift apparatus for a multi-speed axle including an electric power source and an electric motor coupled to actuate means for shifting the axle, a control means comprising:

means for generating a shift signal;

means responsive to said shift signal for generating a control signal for a predetermined time; and

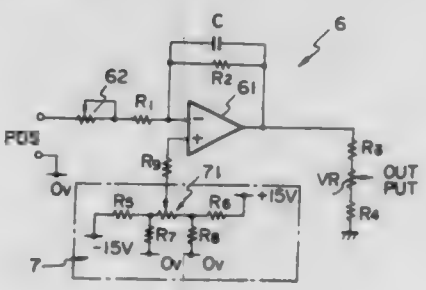
means responsive to said control signal for connecting the power source to the motor for said predetermined time to shift the axle from one speed to another speed.

4,403,179

CONTROL SYSTEM FOR STOPPING SPINDLE AT PREDETERMINED ROTATIONAL POSITION

Yoshinori Kobzai; Yoshiki Fujioka, and Naoto Ota, all of Hino, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Dec. 15, 1980, Ser. No. 216,835
Claims priority, application Japan, Dec. 31, 1979, 54/172682
Int. Cl.³ G05D *23/275*
U.S. Cl. 318—632 **5 Claims**



1. A control system for stopping a spindle at a predetermined rotational position, comprising:

a position sensor, coupled to the spindle, for generating an

output signal having a predetermined level when a specified point on the spindle arrives at the predetermined rotational position and for generating a voltage which is positive or negative with respect to said predetermined level when the specified point on the spindle is within a predetermined range of the predetermined rotational position on either side thereof;

an orientation control circuit, operatively connected to the spindle drive motor, for stopping the spindle drive motor when the output signal output by said position sensor attains said predetermined level, thereby stopping the specified point on the spindle at the predetermined rotational position; and

a position adjustment circuit, operatively connected between said sensor and said orientation control circuit, for adjusting the position, of the specified point on the spindle, at which the output signal output by said position sensor crosses said predetermined level.

4,403,180

POSITION CONTROLLING DEVICE

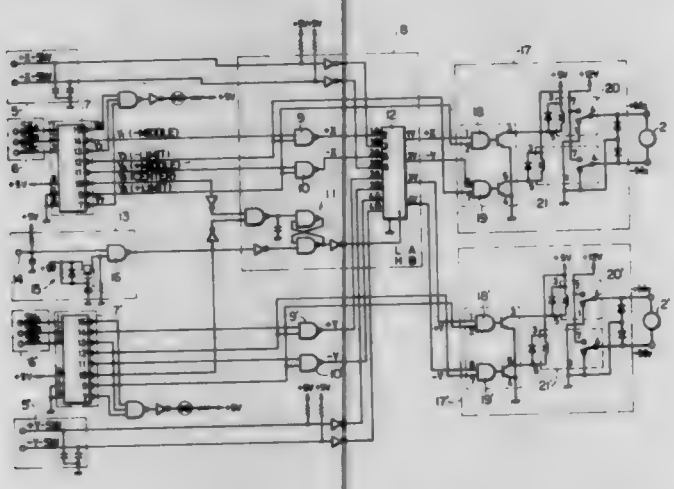
Kosaku Tsuboshima, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1981, Ser. No. 312,916

Claims priority, application Japan, Oct. 20, 1980, 55-145740

Int. Cl.³ G05B *1/06*

U.S. Cl. 318—640 **7 Claims**



1. A position controlling device comprising a first means for detecting the position of a movable member, an encoder which is connected to said first means and can convert an input signal from said first means to a predetermined output signal, a second means which is connected to said encoder and can control the drive of a motor for moving said movable member, a first switch means which is connected to said second means and can remote-control the rotating direction of said motor and a second switch means which is connected to said second means and can automatically return said movable member to the center position of its moving range, said motor being made inoperative by the operation of said first and second means when said movable member is in the limit position of its moving range.

4,403,181

CONTROL SYSTEM FOR STOPPING SPINDLE AT PREDETERMINED ROTATIONAL POSITION

Yoshinori Kohzai; Yoshiki Fujioka, and Naoto Ota, all of Hino, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Dec. 15, 1980, Ser. No. 216,837

Claims priority, application Japan, Dec. 31, 1979, 54-172680

Int. Cl.³ G05B *1/06*

U.S. Cl. 318—664 **4 Claims**

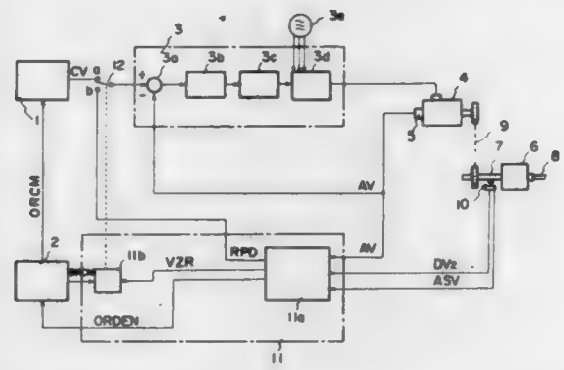
1. A control system for stopping a spindle at a predetermined rotational position, for driving a spindle in such a manner that a positional deviation between a present rotational position of a specified point on the spindle and the predetermined rotational position at which the specified point is to be stopped, is reduced to zero, thereby stopping the specified point on the spindle at the predetermined rotational position, said control system comprising:

detection means for detecting the direction of spindle rotation;

DC voltage generating means, operatively connected to said detection means, for generating a DC voltage having a first level or a second level in dependence upon the direction of spindle rotation as detected by said detection means; and

means, operatively connected to the spindle, for generating a rotational position deviation signal including:

means, operatively connected to said DC voltage generating means, for generating a coarse rotational position deviation signal in dependence upon the first level or the second level DC voltage from said DC voltage generating means, the coarse rotational position deviation signal having such a polarity that the spindle is capable of being stopped at the predetermined rotational position regardless of



whether the spindle is rotating in the forward or reverse direction; and

a sensor, coupled to the spindle, for sensing the position of the spindle, for generating an output signal of zero when the specified point on the spindle arrives at the predetermined rotational position, for generating a first or second output signal when the specified point on the spindle is within a predetermined range of the predetermined rotational position to the left or right thereof, and for generating a fine rotational position deviation signal which crosses a zero volt level, whereby the coarse rotational position deviation signal from said means for generating the same is output as the rotational position deviation signal until the specified point on the spindle is within the predetermined range of the predetermined rotational position, and the fine rotational position deviation signal from said sensor is output as the rotational position deviation signal after the specified point on the spindle is within the predetermined range of the predetermined rotational position.

4,403,182

DRY-CELL HOLDERS

Warner S. Yeh, Kowloon, Hong Kong, assignor to Sonca Industries Limited, Hong Kong, Hong Kong

Filed Oct. 21, 1981, Ser. No. 313,999

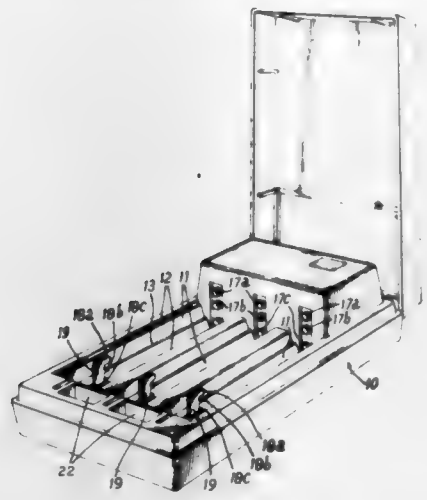
Claims priority, application United Kingdom, Nov. 6, 1980, 8035650

Int. Cl.³ H01M *10/46*

U.S. Cl. 320—2 **8 Claims**

1. A dry-cell holder comprising means for locating a dry-cell or a line of coaxially disposed dry-cells and at least one first and at least one second contact element for respectively engaging the base and central electrode of the dry-cell or, where there is a plurality of coaxially disposed dry-cells, the base of one end dry-cell and the central electrode of the other end dry-cell, the first contact element being offset radially with respect to the second contact element and the central axis of a

dry-cell or line of dry-cells supported in the locating means, whereby the first contact element fails to make contact with



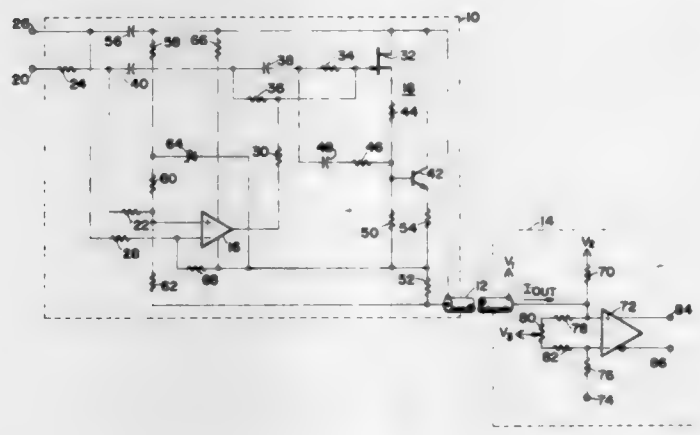
the central electrode of an adjoining dry-cell placed the wrong way about in the locating means.

4,403,183

ACTIVE VOLTAGE PROBE

Jonathan C. Lueker, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 10, 1981, Ser. No. 252,749
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—72.5 7 Claims



1. An active voltage probe, comprising:

a probe head including a differential amplifier with inputs connected to input and reference terminals through DC paths, and follower amplifier means with an input connected to said input terminal through an AC path;

a coaxial cable including an inner conductor for transmitting output currents from said differential amplifier and said follower amplifier means, and an outer conductor for applying a DC power voltage to said differential amplifier and said follower amplifier means; and

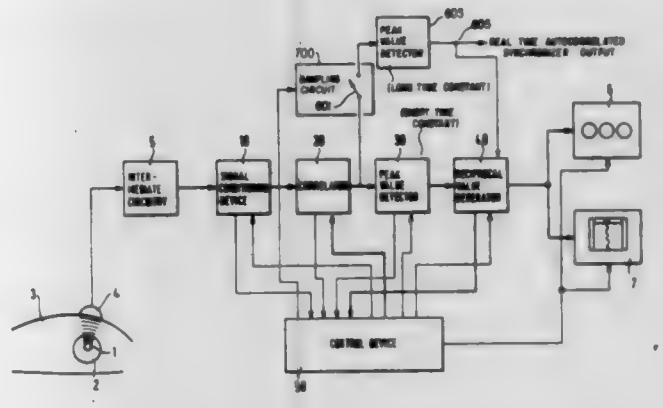
an output circuit connected to the opposite end of said coaxial cable, wherein said outer conductor is connected to a DC power voltage source and said inner conductor is connected to a termination resistor.

4,403,184

AUTOCORRELATION APPARATUS AND METHOD FOR APPROXIMATING THE OCCURRENCE OF A GENERALLY PERIODIC BUT UNKNOWN SIGNAL

Rüdiger Witt, Holzgerlingen, and Erich Courtin, Herrenberg-Gültstein, both of Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 20,768, Mar. 15, 1979, abandoned. This application Mar. 18, 1982, Ser. No. 359,393
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1978, 2818768
Int. Cl.³ G01R *23/02, 19/04;* A61B *5/02*
U.S. Cl. 324—78 R 4 Claims



1. Apparatus for approximating in real time by autocorrelation the consecutive occurrences of a generally periodic but unknown signal from a signal source, the apparatus comprising:

signal collection and conditioning means for acquiring the unknown signal from the signal source and enhancing selected spectral components thereof to produce a conditioned signal;

autocorrelation means coupled to the conditioned signal for repetitively producing compressed time scale sequences of autocorrelation amplitude values describing a plurality of cyclic variations, each sequence corresponding to at least one period of the unknown signal and including both an initial peak value for an initial cyclic variation whose amplitude is the highest amplitude within the sequence and a consecutive next peak value for a subsequent cyclic variation of amplitude less than the initial cyclic variation and wherein the amount of separation in the compressed time scale between the initial and next peaks corresponds to the period of the unknown signal; and

peak value detection means coupled to the sequences of autocorrelation amplitude values for detecting within first periods each at least as long as the actual period of the unknown signal a periodic occurrence, among all the sequences, of a next peak value of amplitude greater than a selected percentage of the previously detected next peak value within the previous first period and for producing an output indicative thereof, the selected percentage chosen to allow detection of only one next peak value during each first period, whereby a real time approximate indication of a transition in the unknown signal is obtained.

4,403,185

PROCESS AND DEVICE FOR DETECTING FREQUENCY VARIATIONS

Donald E. Charles, Lake Zurich, IL, assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jun. 9, 1982, Ser. No. 386,719
Int. Cl.³ G01R *23/02*
U.S. Cl. 324—78 D 1 Claim

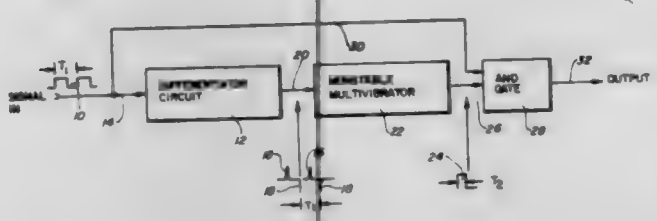
1. A device for detecting frequency variations which comprises:

means for sensing a rectangular waveform, the frequency variation of which is to be detected;

a differentiator circuit for providing a spike corresponding to each occurrence of the negative transition of the sensed rectangular waveform;

a monostable multivibrator for initiating a rectangular measuring pulse upon each occurrence of said spike, said measuring pulse being different in duration than the low portion of the sensed waveform;

an AND gate;



means for transmitting the sensed waveform to one input of the AND gate and for transmitting the measuring pulse to another input of the AND gate;

said AND gate being operable for providing a train of pulses at its output indicating that the frequency of the sensed rectangular wave has varied by more than a predetermined amount.

4,403,186

SURFACE PRESSURE MEASUREMENT TYPE MAGNETIC ANALYZER FOR PARAMAGNETIC GASES UTILIZING A MAGNETIC FIELD GENERATED ALTERNATIVELY BETWEEN PLURAL PAIRS OF MAGNETIC POLE PIECES

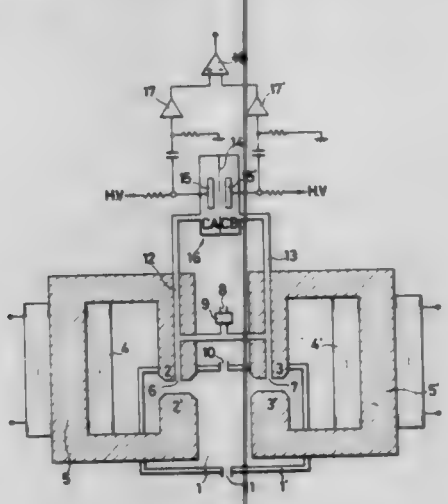
Haruo Kotani, Takatsuki, and Tomoyuki Haga, Kyoto, both of Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Feb. 8, 1980, Ser. No. 119,651

Claims priority, application Japan, Feb. 10, 1979, 54-15576

Int. Cl.³ G01N *27/74;* G01R *33/12*

U.S. Cl. 324—204 **12 Claims**



1. A magnetic paramagnetic gas analyzer including a measuring chamber for containing a gas to be measured and a comparison gas, wherein the concentration of paramagnetic gas in the gas to be measured is detected from a surface-pressure generated within the measuring chamber between the gas to be measured and the comparison gas, said surface-pressure being due to a difference of magnetizing coefficients of the gas to be measured and the comparison gas passing through magnetic fields generated alternatively between first and second pairs of magnetic pole pieces located within said measuring chamber, and wherein said surface-pressure is detected by a condenser-microphone coupled by first and second pressure introducing passageways to the measuring chamber, said condenser-microphone comprising a condenser-film and a pair of fixed poles located such that one of said pair of fixed poles is coupled to said measuring chamber by the first pressure introducing passageway and is on one side of said condenser-film, and the other of said pair of fixed poles is coupled to said measuring chamber by the second pressure introducing passageway and is on the other side of said condenser-film, so that said surface-pressure is detected using said pair of fixed poles, said detection being performed on the basis of a differential pressure between the two pairs of magnetic pole pieces when a magnetic field is generated alternatively between the two pairs of magnetic pole pieces.

4,403,187

MAGNETIC HEAD FOR SENSING THE POSITION OF A MOVING MEMBER

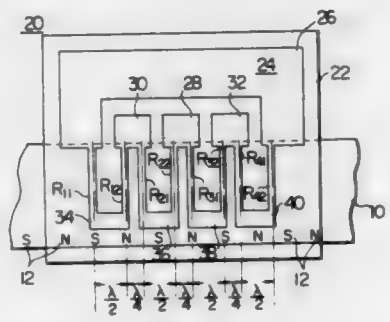
Tadashi Takahashi, Hitachi; Hiroshi Hayashida, Mito, and Kunio Miyashita, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 11, 1980, Ser. No. 215,330

Claims priority, application Japan, Dec. 19, 1979, 54-164116

Int. Cl.³ G01B *7/14;* G01R *33/06*

U.S. Cl. 324—208 **6 Claims**



1. In a position encoder comprising a magnetic recording medium carrying records provided by a plurality of unit magnets arrayed on the surface of a moving member with a predetermined constant pitch λ, which unit magnets move along with the moving member in the direction of movement and retain said predetermined constant pitch λ during said movement, and a magnetic head disposed adjacently opposite to said magnetic recording medium, an arrangement of the magnetic head comprising:

(a) a bridge circuit including four arms;

(b) one pair of external power supply connection terminals formed on one of the two pairs of the opposite junctions in said bridge circuit respectively;

(c) one pair of output terminals formed on the other of the two pairs of the opposite junctions in said bridge circuit respectively; and

(d) each of said four arms including one pair of magnetoresistive elements fixedly supported opposite to and extending across a portion of said magnetic recording medium and electrically connected to each other at one end thereof to form a U-like configuration, the longitudinal axes of said magnetoresistive elements in each pair being spaced apart from each other by an interval of $(\lambda/2)(1+n)$ in the moving direction of said magnetic recording medium, where n is zero or any suitable positive integer.

4,403,188

POSITIVELY ACTUATED BRAKE FOR MANUALLY OPERABLE MAGNETIC THICKNESS GAUGES

Hans F. Nix, Cologne, Fed. Rep. of Germany, assignor to Elektro-Physik Hans Nix & Dr. Ing. E. Steingroever, K.G., Cologne, Fed. Rep. of Germany

Filed Mar. 25, 1981, Ser. No. 247,240

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1980, 3013596

Int. Cl.³ G01B *7/06;* G01R *33/12*

U.S. Cl. 324—230 **6 Claims**

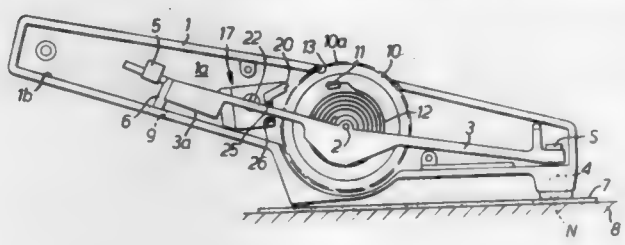
1. In a layer-thickness meter for measuring the thickness of a non-magnetic layer upon a ferromagnetic substrate wherein the force required to raise from the layer to be measured a permanent magnet carried in a balanced lever arm is measured by means of a spring and taken as a measure of the layer thickness, the spring being stressed by rotation of a scale disc gradu-

ated in terms of layer thickness and co-operating with an index mark upon a housing of the meter, the circumferential edge of said disc being serrated or indented for engagement by a pawl so as to lock the disc in response to detachment of the permanent magnet from the layer surface, the improvement which comprises:

a bearing plate including catch means for one-way locking engagement with the serated edge of said scale disc;

said bearing plate being tiltably mounted in the housing for movement of the catch means into, and out of, said one-way locking engagement;

said bearing plate including two spaced rigid stop elements transversely with respect to the direction of movement of



the balanced lever arm and having opposed surfaces between which said arm is loosely embraced;

said bearing plate being tilted in one direction to positively move and maintain the catch means out of said one-way locking engagement with the scale disc edge by contact between one of the stop elements and the balanced arm when the magnet is in contact with a layer surface;

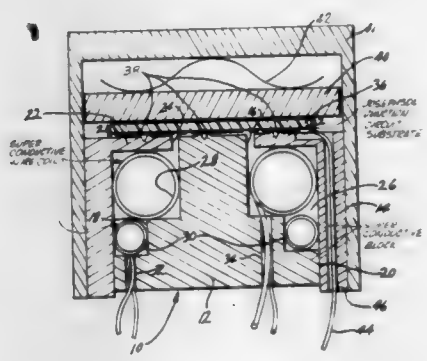
said bearing plate being positively tilted in the opposite direction to immediately move and maintain the catch means into said one-way locking engagement with the scale disc edge by contact between the other of the stop elements and the balanced arm when the magnet becomes detached from said surface.

4,403,189

SUPERCONDUCTING QUANTUM INTERFERENCE DEVICE HAVING THIN FILM JOSEPHSON JUNCTIONS

Michael B. Simmonds, Del Mar, Calif., assignor to S.H.E. Corporation, San Diego, Calif.

Filed Aug. 25, 1980, Ser. No. 180,690
Int. Cl.³ G01R *33/035*
U.S. Cl. 324—248 **6 Claims**



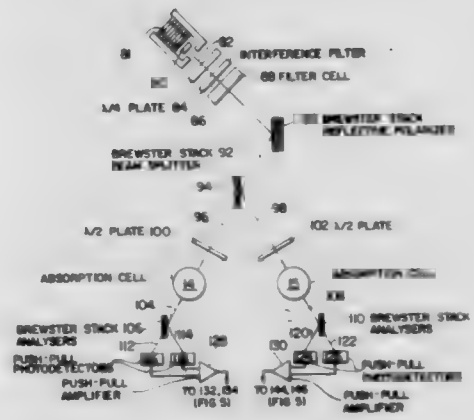
5. A SQUID comprising: a block of conducting material having an open toroidal cavity surrounding a central post, the post and open cavity forming an annular opening in one side of the block, thin film junction means including a non-conductive substrate having first and second superconductive regions formed on the substrate and thin film Josephson junction means connecting the two regions, the substrate overlying said one side of the block, one of said superconductive regions being in electrical contact with the central post and the other superconductive region being in contact with the block adjacent the outer edge of the annular opening, and a toroidal conductive coil extending around the post in said cavity, the coil having a pair of terminals extending outside the block.

4,403,190

MAGNETIC RESONANCE GYROSCOPE WITH SPECTRAL CONTROL

Ivan A. Greenwood, Stamford, Conn., assignor to The Singer Company, Little Falls, N.J.

Filed Mar. 20, 1981, Ser. No. 245,826
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—304 **5 Claims**



1. In a magnetic resonance gyro having at least two resonance cells, a pump beam generator comprising:

a pump lamp including the isotope ^{199}Hg therein;

reflective means for linearly polarizing light from the lamp and positioned downbeam of the lamp;

means for splitting the polarized beam into two beams of substantially equal intensity for transmission into the absorption cells;

a readout lamp including at least one Hg isotope therein;

means for polarizing the light from the readout lamp;

means transmitting the polarized light through the absorption cells; and

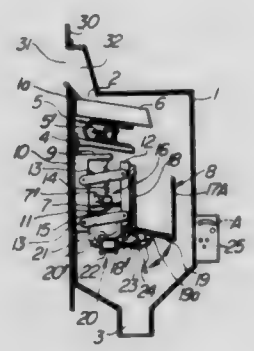
differential push-pull means for detecting the light readout from the cells.

4,403,191

CEREAL GRAIN MOISTURE CONTENT MEASURING APPARATUS

Toshihiko Satake, Higashihiroshima, Japan, assignor to Satake Engineering Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1981, Ser. No. 233,846
Claims priority, application Japan, Feb. 14, 1980, 55-17362
Int. Cl.³ G01N *27/60*
U.S. Cl. 324—452 **4 Claims**



1. A cereal grain moisture content measuring apparatus comprising: a vibratory feeding trough through which cereal grains are laterally advanced to finally freely drop from one end thereof, a measuring vessel located beneath said feeding trough and provided with a sensor mounted on an inside wall surface of said vessel and connected to an electrostatic capacity measuring circuit and with a bottom wall capable of opening and closing, a weighing mechanism connected to said vessel and including a weight measuring circuit, and a control circuit connected to said electrostatic capacity measuring

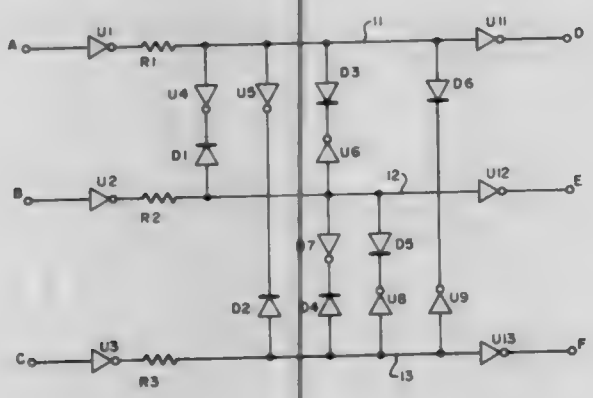
circuit and said weight measuring circuit for correcting the value of electrostatic capacity measured at said vessel by the weight of the grains measured by the weighing mechanism, whereby the moisture content of cereal grains filled to overflow said vessel in a spill flow manner is measured.

4,403,192

PRIORITY CIRCUIT FOR SERVICE REQUEST SIGNALS

Glenn S. Williman, Ocean, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 8, 1980, Ser. No. 214,367
Int. Cl.³ G06F *9/46*; H04Q *3/00*
U.S. Cl. 328—152 **3 Claims**



3. An N-input, N-output digital logic circuit consisting of:

N-input circuit means for conditioning a desired input logic signal for transmission to an associated one output means;

N-output circuit means for receiving a logic signal from an associated input means for conditioning a desired output logic signal; and

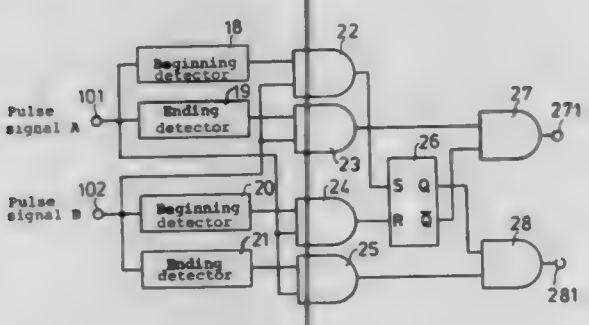
intermediate circuit means for interconnecting each said associated N-input and N-output circuit means for preventing any other associated input and output circuit means from transmitting and conditioning a signal of the desired logic level during the period of time when the desired logic level has individually appeared at the input of one of said input circuit means and comprising an inverter means for conditioning the output of each respective input circuit means, said inverter means serially connected to respective diode means for clamping the other of said associated input and output circuit means when said one input circuit means is transmitting said desired logic level.

4,403,193

PULSE DETECTION CIRCUIT

Takehide Takemura, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 19, 1981, Ser. No. 265,322
Int. Cl.³ H03K *5/26*; H03D *13/00*
U.S. Cl. 328—109 **3 Claims**



1. A pulse detection circuit which comprises;

first and second input terminals, each for receiving either one of encoder output signals containing a succession of pulses being shifted in phase with each other;

first and second beginning detectors for detecting the leading edges of the pulses received by said first and second input terminals;

first and second ending detectors for detecting the trailing edges of said pulses;

a set-reset flip-flop connected to said beginning detectors for being set to its set state by an output signal received from said first beginning detector on the basis of the signal level at said second input terminal, and reset to its reset state by an output signal received from said second beginning detector on the basis of the signal level at said first input terminal;

means including a first output terminal for producing an output signal based on a logical relation among an output signal produced by said first ending detector, the signal level at said second input terminal and the state of said flip-flop; and

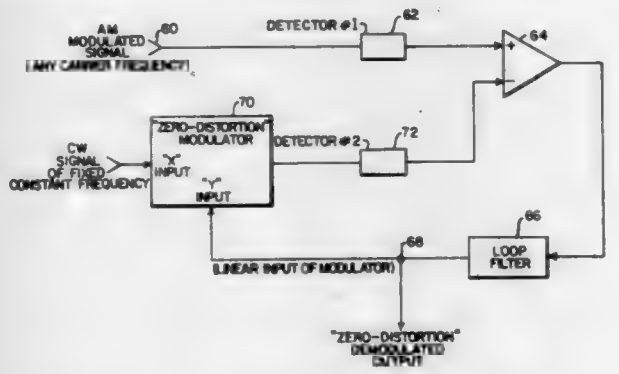
means including a second output terminal for producing an output signal based on a logical relation among an output signal produced by said second ending detector, the signal level at said first input terminal and the state of said flip-flop.

4,403,194

CLOSED LOOP AMPLITUDE DEMODULATOR

Daniel B. Talbot, 1 Dean St., Hudson, Mass. 01749

Filed Mar. 11, 1981, Ser. No. 242,571
Int. Cl.³ H03D *1/06, 1/10*
U.S. Cl. 329—146 **16 Claims**



1. Apparatus for demodulating an amplitude modulated signal having an envelope component and a carrier component, said apparatus comprising:

first detection means for detecting the amplitude modulated signal and for generating a first signal representative of at least a portion of the amplitude modulated signal;

comparison means having first and second input terminals and an output terminal for comparing the amplitudes of signals respectively applied to said input terminals and for generating a signal responsively to such comparison, said first input terminal being coupled to said first detection means so as to receive said first signal; and

feedback means for coupling the output terminal of said comparison means with its second input terminal and comprising

(1) modulating means including a pair of inputs and an output, one of said inputs being coupled to the output of said comparison means, and the other of said inputs being adapted to receive a continous wave signal so that a second amplitude modulated signal is generated at the output of said modulating means representative of the product of the output of said comparison means and said continuous wave signal; and

(2) second detection means coupled between the output of said modulating means and said second input terminal of said comparison means for detecting the second amplitude modulated signal and for generating a second

signal representative of the second amplitude modulated signal;

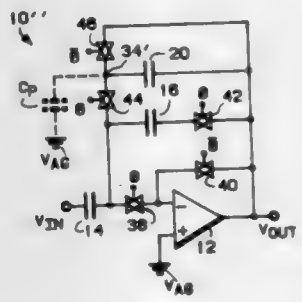
wherein said second amplitude modulated signal is substantially undistorted and said first and second detection means are substantially matched for their nonlinear amplitude transfer functions so that the output signal of said comparison means is representative of a substantially undistorted form of said envelope component.

4,403,195

PARASITIC INSENSITIVE SWITCHED CAPACITOR OPERATIONAL AMPLIFIER CIRCUIT

Henry Wurzburg, Round Rock, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 26, 1981, Ser. No. 314,818
Int. Cl.³ H03F *1/02*
U.S. Cl. 330—9 **3 Claims**



1. A parasitic insensitive switched capacitor inverting operational amplifier circuit, comprising:

operational amplifier means having a first input coupled to a reference voltage, a second input and an output, for developing an output voltage proportional to the difference in voltages applied to the inputs thereof;

first switching means coupled to said second input and output, for providing a unity gain amplifier;

first feedback capacitance means having first and second terminals;

second switching means for coupling said second input to the first terminal of said first feedback capacitance means;

third switching means for coupling said output to the second terminal of said first feedback capacitance means;

second feedback capacitance means having a first terminal coupled to said output and a second terminal, for providing additional stability to said amplifier circuit;

fourth switching means for coupling the second terminal of said second feedback capacitance means to both the first terminal of said first feedback capacitance means and the second switching means; and

fifth switching means for selectively discharging the second feedback capacitance means when the operational amplifier is switched to a unity gain amplifier.

4,403,196

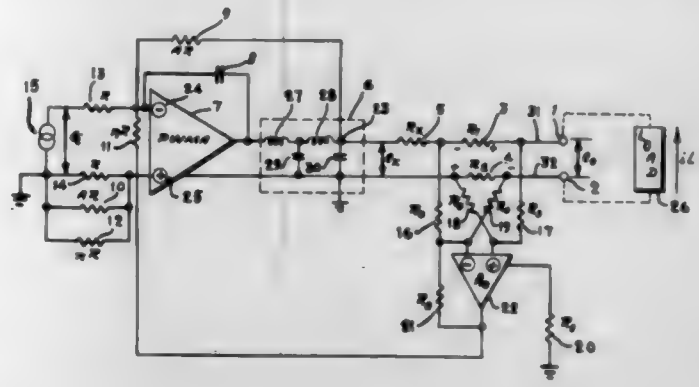
PULSE WIDTH MODULATED POWER AMPLIFIER WITH DIFFERENTIAL CONNECTING LINE VOLTAGE DROP COMPARATORS

Paul E. Grandmont, Bloomfield, N.J., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 22, 1981, Ser. No. 256,373
Int. Cl.³ H03F *3/38*
U.S. Cl. 330—10 **5 Claims**

1. In a pulse width modulated power amplifier circuit having a power amplifier with positive and negative inputs and first and second outputs, said inputs connected to a grounded power source, filter means connected to said first and second power amplifier outputs, a first connecting line having a line resistance R_1 and a second connecting line having a line resistance R_2 each connected between said filter means and an output terminal, and a power amplifier feedback having a feedback resistor connected between an output of said filter means and the negative power amplifier input, the improvement residing in a connecting line voltage drop compensator, said connecting line voltage drop compensator comprising:

dual input differential amplifier means having inputs sensing



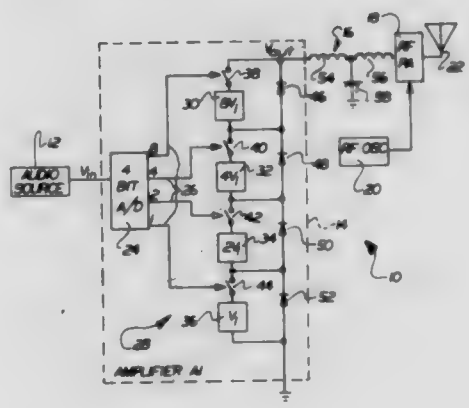
the line voltage drop across resistor R_1 of said first connecting line, and inputs sensing the line voltage drop across resistance R_2 of said second connecting line, the output of said differential amplifier means being applied across the inputs of said power amplifier.

4,403,197

AMPLIFIER EMPLOYING DIGITAL MODULATOR CIRCUIT

Hilmer I. Swanson, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 98,749, Nov. 30, 1979, abandoned. This application Oct. 26, 1981, Ser. No. 314,863
Int. Cl.³ H03F *3/38*
U.S. Cl. 330—10 **48 Claims**



1. A high power amplifier comprising means responsive to an amplitude and frequency varying input signal to provide a digital representation thereof, a plurality of signal sources each providing an associated power signal, said signal sources providing independent said signals such that desired combinations of said power signals can be combined to form a combined signal, and means for combining selected ones of said associated signals in accordance with said digital representation to provide a first combined signal which varies in accordance with said input signal.

4,403,198

BIASING CIRCUIT FOR MOSFET POWER AMPLIFIERS

Otward Müller, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Mar. 27, 1981, Ser. No. 248,286
Int. Cl.³ H03F *3/30*
U.S. Cl. 330—264 **17 Claims**

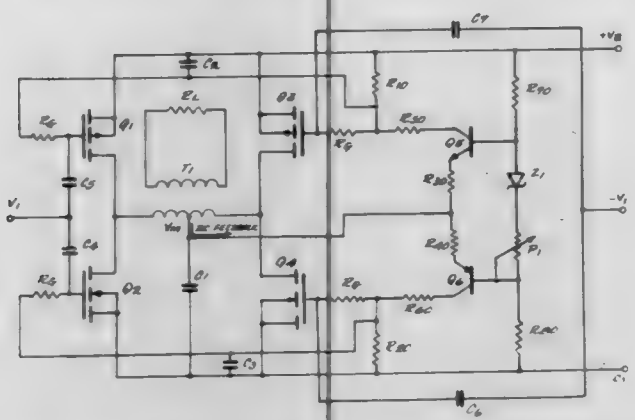
1. An amplifier circuit comprising:

a complementary pair of MOSFET amplifier elements arranged in push-pull configuration;

an output transformer having a center-tapped primary wind-

ing coupled to said MOSFET elements and a secondary winding for driving a load coupled thereto; and

an active feedback circuit, respponsive to a signal at the



center tap of said primary winding, for controlling DC bias levels of said MOSFET amplifier elements, thereby preventing substantial fluctuation of the signal level at the center tap.

4,403,199

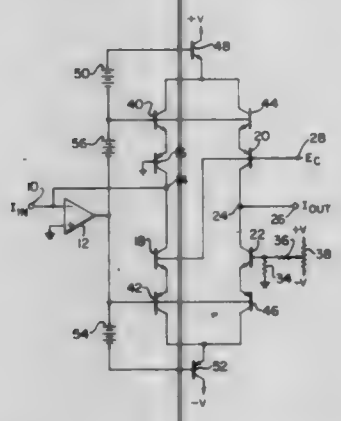
GAIN CONTROL SYSTEMS

David E. Blackmer, Wilton, N.H., assignor to DBX, Inc., Newton, Mass.

Continuation-in-part of Ser. No. 131,220, Mar. 17, 1980, abandoned. This application Mar. 26, 1981, Ser. No. 247,829

Int. Cl.³ H03G *3/10*; G06G *7/12*

U.S. Cl. 330—278 **23 Claims**



1. A gain control circuit for controlling the signal gain of an input signal in response to a control signal, said circuit comprising:

a pair of logarithmic-antilogarithmic transmission paths, one path for the signal portion of each representation of said input signal, each of said paths including (a) first signal converting means including first and second transistors for providing a first output signal as a logarithmic function of the respective portion of said input signal (b) second signal converting means including primary and secondary transistor for providing a second output signal as an antilogarithmic function of the sum of said first output signal and said gain control signal;

means for generating a quiescent biasing current through said first and second signal converting means of each of said paths at levels below the maximum expected levels of the input signal and said second output signal of each of said paths; and

means connected to said second and secondary transistors of each path for setting said biasing currents through the first and second signal converting means of each of said paths so that said circuit operates as a Class AB amplifier.

4,403,200

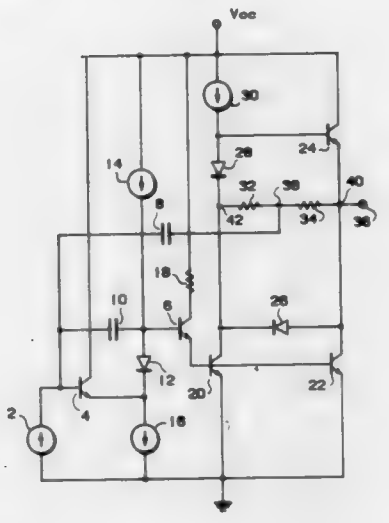
OUTPUT STAGE FOR OPERATIONAL AMPLIFIER

William F. Davis, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 24, 1981, Ser. No. 295,880

Int. Cl.³ H03F *1/34, 3/14*

U.S. Cl. 330—294 **9 Claims**



1. An operational amplifier for providing load current to an output terminal comprising:

an input stage;

an output stage including first, second and third NPN output transistors each having base, emitter and collector terminals, said first NPN output transistor having emitter coupled to said output terminal for conducting load current thereto and said second and third NPN output transistors having collectors coupled to said output terminal for sinking load current therefrom, said output stage including first and second series coupled resistors coupled between said output terminal and the collector terminal of said second NPN output transistor;

at least a first emitter follower transistor coupled between the output of said input stage and the base of said second NPN output transistor;

a first capacitor coupled between the output of said input stage and the junction of said first and second series coupled resistors, said first capacitor for frequency stabilizing said amplifier.

4,403,201

BANDPASS FILTER CIRCUIT

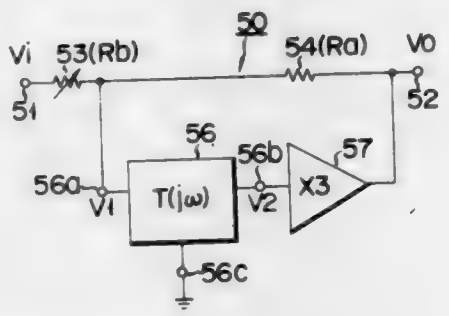
Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

Filed Mar. 18, 1981, Ser. No. 245,073

Claims priority, application Japan, Mar. 24, 1980, 55/37297

Int. Cl.³ H03G *5/14*

U.S. Cl. 330—304 **4 Claims**



1. A filter circuit having input and output terminals and a common terminal, comprising:

a first combination circuit having first and second resistors connected in series between said input and output terminals;

a second combination circuit having a third resistor and a first capacitor connected in series between two terminals, said second combination circuit being connected to the connection point of said first and second resistors at one of said two terminals;

a third combination circuit having a fourth resistor and a second capacitor connected in parallel between the common terminal of said filter circuit and the other terminal of said second combination circuit; and

a non-inverting amplifier having input and output and a gain of three, said input of said amplifier being connected to an output of said second and third combination circuits, and said output of said amplifier being connected to said output terminal of said filter circuit; wherein

an output signal of said second and third combination circuits is applied to an input side of said amplifier to be non-inverting amplified with a gain of three, an output signal of said amplifier which has a same phase with and a magnitude three-times as great as that of the output signal of said second and third combination circuits is applied to said output terminal of said filter circuit, and a divided output voltage which is obtained by dividing a voltage between an input signal voltage which is applied to said input terminal of said filter circuit and the output signal voltage which is derived at the output terminal of said filter circuit and has the same phase as that of the output signal of said second and third combination circuits is applied to an input side of said second and third combination circuits; and wherein

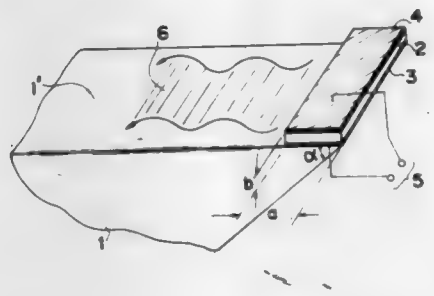
the quality factor of said filter circuit is determined by a ratio of a resistance value of said first resistor to a resistance value of said second resistor, and the gain of said filter circuit is always unity at a resonance frequency of said second and third combination circuits.

4,403,202

SURFACE ACOUSTIC WAVE DEVICE AND METHOD FOR PRODUCING THE SAME

Shoichi Minagawa, Toda, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1981, Ser. No. 248,112
Claims priority, application Japan, Mar. 28, 1980, 55-39079
Int. Cl.³ H03H *9/145, 9/42*
U.S. Cl. 333—150 **15 Claims**



1. A surface acoustic wave device, comprising:

an elastic member having a first surface, a surface acoustic wave propagation path extending along said first surface, and a second surface which extends at an acute angle with respect to said first surface;

a laminated structure provided on said first surface of said elastic member at a location along said surface acoustic wave propagation path, said laminated structure including a piezoelectric member and two metal electrodes which are provided on opposite sides of said piezoelectric member, one of said electrodes being disposed against said first surface; and

means for applying an electric signal to said electrodes;

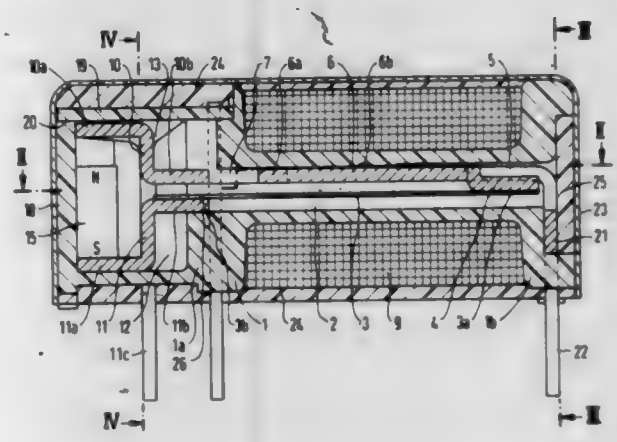
said laminated structure generating a first wave in said elastic member traveling away from said first surface approximately normal thereto in response to application of said electric signal, said first wave being reflected by said second surface to provide a second wave traveling in said elastic member approximately parallel to said surface acoustic wave propagation path, said second wave producing a surface acoustic wave traveling along said surface acoustic wave propagation path at said first surface of said elastic member.

4,403,203

POLARIZED ELECTROMAGNETIC RELAY

Helmut Schedele, Diessen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 20, 1981, Ser. No. 323,444
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1981, 3100817
Int. Cl.³ H01H *51/22*
U.S. Cl. 335—78 **10 Claims**



1. A polarized electromagnetic relay comprising:

a one-piece coil core body with an electromagnetic coil wound thereabout and having a hollow interior along a longitudinal axis thereof;

a movable ferromagnetic contact element disposed in said interior of said coil core body substantially parallel to said longitudinal axis, said movable contact element having a fixed end and a movable free end with contact surfaces thereon;

a permanent magnet and a pair of pole plates associated therewith, said pole plates having contact surfaces disposed on opposite sides of said free end of said movable contact element for making and breaking with said contact surfaces carried thereon;

a carrier seated in at least two aligned longitudinal grooves in said interior of said coil core body, said carrier having said fixed end of said movable contact element fastened thereto and said carrier having at least one flux guidance plate in registry with and extending substantially up to said pole plates;

a chamber integrally formed in said coil core body in which said pole plates are mounted, said chamber having an open top and being otherwise closed and having guidance grooves for receiving said pole plates, said pole plates each having a terminal pin and said chamber having a pair of passages at a bottom thereof for receiving said terminal pins, said chamber further having an orbital rim at said top thereof; and

a planar cover seated on said orbital rim for closing said chamber.

4,403,204

TORQUE MOTOR

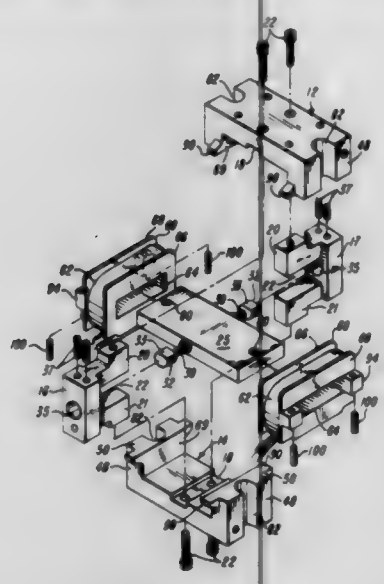
James R. Crawshaw, Trotwood, and David W. Mossbarger, Xenia, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Jan. 15, 1982, Ser. No. 339,354
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—229 **4 Claims**

1. In a torque motor having spaced poles defining an arma-

ture gap therebetween and an armature normally centered in the space between the poles, the improvement comprising:

means on each of said poles defining spaced ledge portions extending outwardly of the poles away from said gap and



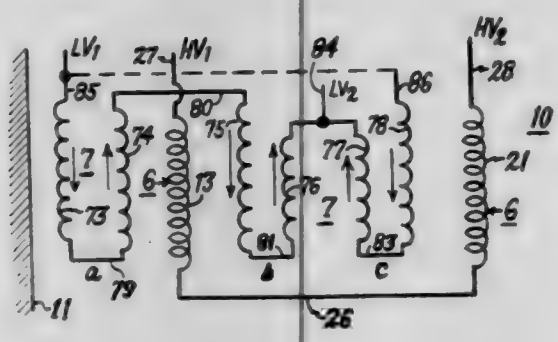
small rigid spacer means of precise length extending between said ledge portions adjacent said armature for maintaining said gap at a fixed dimension upon the application of a magnetic flux to said poles.

4,403,205

CIRCUIT ARRANGEMENT FOR CONTROLLING TRANSFORMER CURRENT

George E. Leibinger, and Albert Rowe, both of Pittsfield, Mass., assignors to General Electric Company, New York, N.Y.

Division of Ser. No. 151,201, May 19, 1980, Pat. No. 4,300,112.
This application Jun. 8, 1981, Ser. No. 271,465
Int. Cl.[3] H01F *27/28*
U.S. Cl. 336—180 8 Claims



1. A winding arrangement for controlling transformer current comprising:

a core 11;

a first 6 and a second 7 winding in electromagnetic relation with said core 11;

a first part 73–74 of a second winding 7 arranged around said core 11;

an inner part 13 of a first winding 6 arranged around said first part 73,74 of said second winding 7;

a second part 75,76 and a third part 77,78 of said second winding 7 arranged between said inner part 13 of said first winding 7 and an outer part 21 of said first winding 6, said inner part 13, and said outer part 21 of said first winding 6 being electrically connected in series, said first part 73–74 and said second part 75,76 of said second winding 7 being electrically connected in series; and

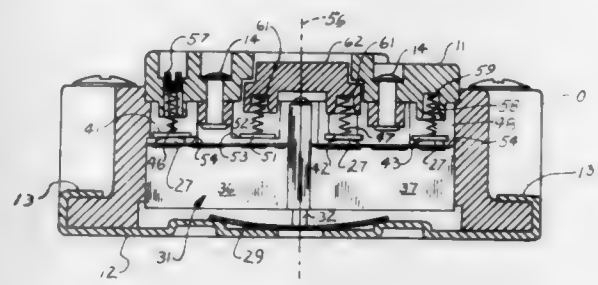
said first part 73,74 and said second part 75, 76 of said second winding 7 having a plurality of wire turns equal to a corresponding number of wire turns within said third parts 77,78 of said second winding 7 for distributing transformer current within said second winding 7.

4,403,206

BALANCED SWITCH FOR THERMOSTATS OR THE LIKE

Richard M. Anderson, Shelby, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Dec. 21, 1981, Ser. No. 332,603
Int. Cl.[3] H01H *37/70*
U.S. Cl. 337—348 5 Claims



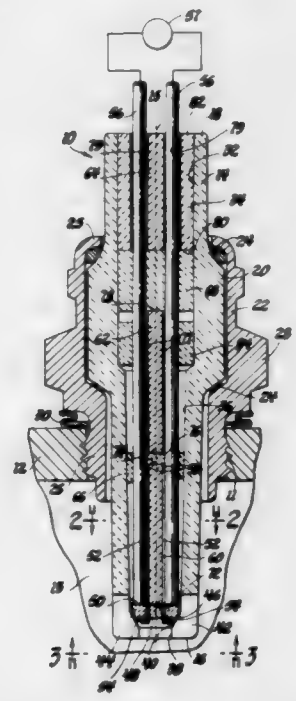
1. A condition-sensing switch comprising a body, a condition-sensing actuator mounted on said body operable to produce switch operating movement along the line of action, an odd number of resiliently-biased active switch elements mounted on said body on opposite sides of said line of action, with a number of switch elements on one side of said line of action exceeding the number of switch elements on the other side thereof, an operator operable to simultaneously move said switch elements in response to the operation of said condition-sensing actuator, an at least one resiliently-biased dummy element mounted on said body on said other side of said line of action and cooperating with said active switch elements to provide a symmetrical arrangement of elements with respect to said line of action, said dummy element and switch elements cooperating to cause the resilient forces on said operator to be balanced in all positions of said actuator.

4,403,207

DURABLE TITANIA EXHAUST GAS SENSOR

Michael P. Murphy, Flint, and James S. Hoffman, Grand Blanc, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 26, 1981, Ser. No. 314,756
Int. Cl.[3] H01L *7/00*
U.S. Cl. 338—34 3 Claims



1. A durable oxygen gas sensor having a unified construction and comprising:

a ceramic tubular body defining an elongated bore comprising an end opening for communicating with a gas for detecting oxygen therein and a terminal-receiving longitu-

dinal portion remote from the gas opening, said body forming a beveled shoulder about the bore facing the terminal-receiving portion and sized and shaped to support a body in said portion against displacement toward said gas opening,

an oxygen-sensitive titania pellet within the bore supported by the shoulder and exposed to gas through the gas opening,

at least two terminal rods suitable for electrically connecting the pellet to an external circuit for measuring an electrical resistance of the pellet, said terminal rods extending through the terminal-receiving bore portion and each rod having an end abutting the pellet and pressing the pellet in the direction of the gas opening,

a ceramic spacer member electrically isolating the terminal rods within the terminal-receiving bore portion, said spacer member abutting and pressing the pellet in the direction of the gas opening, and

means for bonding the terminal rods, spacer member and body together at a location within the bore spaced apart from the pellet, whereby the pellet is securely held against the shoulder by the terminal rods and the spacer member.

4,403,208

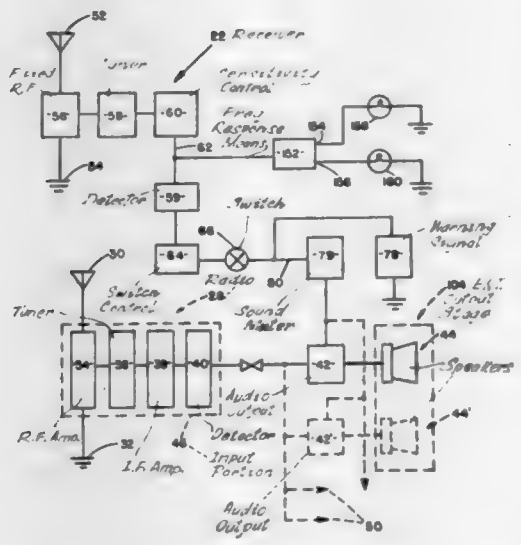
WARNING-SIGNAL-PRODUCING SYSTEM FOR A MOTOR VEHICLE RESPONSIVE TO A VEHICLE-PRESENCE-INDICATING RADIO WAVE SIGNAL EMITTED BY ANOTHER VEHICLE AND INDICATIVE OF ITS PRESENCE

R. W. Hodgson, 1680 N. Vine St. #204, Hollywood, Calif. 90028, and Frank L. Dahl, 5248 W. 119th Pl., Inglewood, Calif. 90304

Continuation-in-part of Ser. No. 624,875, Oct. 23, 1975, abandoned. This application Apr. 13, 1979, Ser. No. 29,738

Int. Cl.³ G08G *1/00*

U.S. Cl. 340—33 **5 Claims**



1. Warning-signal-producing apparatus for a motor vehicle responsive to a vehicle-presence-indicating radio-frequency signal emitted by a second vehicle and indicative of its presence, comprising: a vehicle-presence-indicating radio-frequency-signal-receiving means adapted to be carried by a first motor vehicle and provided with tuning means effectively tuning same so as to receive a vehicle-presence-indicating radio-frequency-transmitted signal adapted to be transmitted by and from the second vehicle, said vehicle-presence-indicating radio-frequency-signal-receiving means effectively including, a first vehicle warning signal input means adapted to produce a first vehicle input warning signal from said radio-frequency-signal-receiving means in response to receipt of a vehicle-presence-indicating radio-frequency-transmitted signal emanating from such a second vehicle; perceptible warning-signal-producing means adapted to be carried by such a first motor vehicle and switching means controlling the activation and inactivation thereof; and first vehicle input-warning-signal-responsive switching means control means responsive to receipt of said signal from said warning-signal input means for correspondingly activating and inactivating said switching means for correspondingly controlling the activation and inactivation of said perceptible warning-signal-producing means; said switching means being effectively coupled to and controlled by said input-warning-signal-responsive switching means control means in a manner causing the operation of said switching means and the activation of said perceptible warning-signal-producing-means only when a predetermined type of vehicle-presence-indicating radio-frequency-transmitted signal has been received by said radio-frequency-signal-receiving means adapted to be carried by such a first vehicle; said radio-frequency-signal-receiving means, said tuning means thereof, and said effectively included first vehicle warning signal input means being together effectively provided with controllably adjustable and precisely distance-calibrated limiter and effective gate means, with said first vehicle warning signal input means being effectively operable by reason of said controllably adjustable precisely distance-calibrated limiter and gate means, to cause said effective coupling of said first vehicle warning signal input means to said switching means and the consequent operation of said switching means to cause said activation of said perceptible warning-signal-producing means by operating the effectively positively reject all signals below a predetermined and fully controllably adjustable and precisely distance-calibrated magnitude and to positively pass all signals in excess of said controllably adjustable and precisely distance-calibrated magnitude corresponding to the reception of said vehicle-presence-indicating radio-frequency transmitted signal emanating from such a second vehicle which is physically spaced from such a first vehicle by a distance within, or less than, a precisely predetermined maximum distance; and a radio-frequency-signal-transmitting means and tuner means therefor, tuning the output thereof to a precisely desired type of radio-frequency-transmitted signal, said transmitting means being adapted to be carried by a second vehicle for vehicle-presence-indicating purposes with respect to such a first vehicle, said radio-frequency-signal-transmitting means being further provided with controllably adjustable and precisely distance-calibrated transmitted signal power-controlling-and-limiting means for controllably adjustably and distance-calibratably limiting the output power of the emitted radio-frequency transmitted signal to a precisely distance-calibrated predetermined maximum radiated power corresponding to a precisely predetermined distance from said radio-frequency-signal-receiving means adapted to be carried by such a first vehicle whereby, together with said limiter and gate means of said first vehicle warning signal input means to effectively comprise precisely adjustable and precisely distance-calibrated range control and determining means such as to only activate said perceptible warning-signal-producing means adapted to be carried by such a first vehicle when such a transmitting second vehicle is within a precisely calibratably predetermined distance from such a first vehicle; said radio-frequency-signal-receiving means, and said tuner therefor, being effectively provided with frequency-responsive means responsive to apparent received frequency deviations from a predetermined transmitted normal frequency for correspondingly sensing the approaching or receding movement of such a transmitting second vehicle relative to such a receiving first vehicle.

4,403,209

CARBURANT CONSUMPTION INDICATOR DEVICE FOR AUTOMOBILES

Jean-Claude Boudeville, Guyancourt, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Dec. 16, 1980, Ser. No. 217,190

Claims priority, application France, Jan. 3, 1980, 80 0053

Int. Cl.³ G08B *21/00*

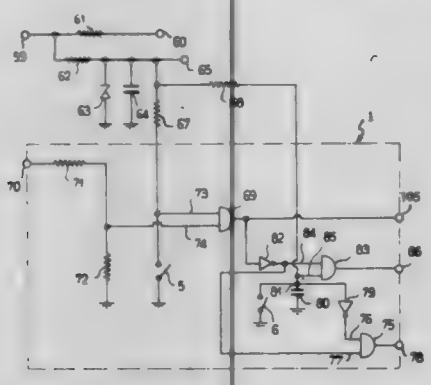
U.S. Cl. 340—52 R **5 Claims**

1. Carburant consumption indicator device for automobiles which monitors such information as the motor operating conditions, the reading of the selected gear ratio and the degree of gas butterfly valve opening, with said information being pro-

cessed in an electronic interface circuit (1) in order to inform the driver by means of different dashboard mounted signal indicators of the economical operation of the vehicle wherein said interface circuit (1) comprises:

a first AND logic gate (69) having an input (74) for receiving motor operation information and whose output (105) supples a first indicator (106) which lights up when the motor operating conditions exceed an authorized trigger maximum;

a second AND logic gate (75) having a first input (77) for



receiving the output of said first gate (69), and a second input (76) for receiving butterfly valve opening information and whose output (78) supplies a second indicator (109) which lights up when the butterfly valve opening exceeds an authorized trigger maximum; and

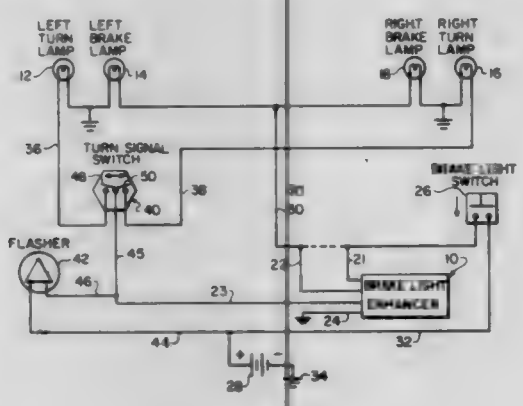
a third AND logic gate (83) whose inputs (84, 85) are connected in parallel with those of the second gate and whose output (86) supplies a third indicator (87) which lights up when the motor operating conditions and the butterfly valve opening each remain below their respective trigger maximums.

4,403,210

BRAKE LIGHT ENHANCER CIRCUIT

Patrick O. Sullivan, Oceanside, Calif., assignor to P. Sully Co., Oceanside, Calif.

Filed Jan. 29, 1982, Ser. No. 343,843
Int. Cl.³ B60Q *1/44*
U.S. Cl. 340—72 **4 Claims**



1. In a motor vehicle signal system,

a pair of brake lamps;

a pair of turn signal lamps;

a battery;

a brake light switch connected between the brake lamps and the battery;

a flasher connected between the turn signal lamps and the battery;

a turn signal switch connected between the turn signal lamps and the flasher, the turn signal switch being actuable from a neutral position to left and right turn positions; and

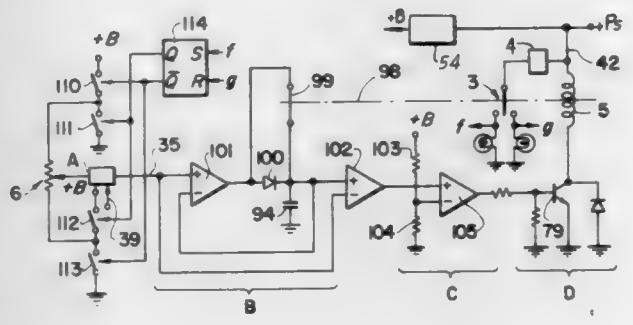
brake light enhancer means connected between the brake lamps, the brake light switch, the flasher and the turn signal switch for causing the brake lamps to flash intermittently and then remain steadily illuminated when the turn signal switch is in its neutral position and the brake light switch is closed, and for causing the brake lamps to remain continuously illuminated when the brake lamps have flashed on and off a predetermined number of times or the turn signal switch is actuated to its left or right turn position.

4,403,211

AUTOMATIC TURN-SIGNAL CANCELLING SYSTEM

Yasuo Shibata, Kawagoe; Yukio Miyamaru, Tokyo; Shigeo Kawada, Wako, and Kaoru Hatanaka, Kamifukuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1981, Ser. No. 312,340
Claims priority, application Japan, Nov. 26, 1980, 55-166352
Int. Cl.³ B60Q *1/42*
U.S. Cl. 340—73 **11 Claims**



1. A turn signal system for vehicles wherein the turn signal is automatically cancelled when a steering device of the vehicle returns to a given position, comprising

turn signal means including indicators for indicating turn directions of a vehicle and switch means operable for selecting one of said indicators when a turn is to be indicated,

sensing means for sensing the steering angle of the vehicle and providing a steering angle signal,

storage means responsive to said steering angle signal for storing an electrical signal which is a function of a predetermined deviation from a normal steering angle of a vehicle when a turn has been selected,

comparator means responsive to the signal stored by the storage means and responsive to a signal which is a function of instantaneous steering angle for providing an output control signal when a steering device of the vehicle has been returned to a steering angle near its normal position, and

output means connected to the turn signal means for cancelling the turn indication in response to said control signal.

4,403,212

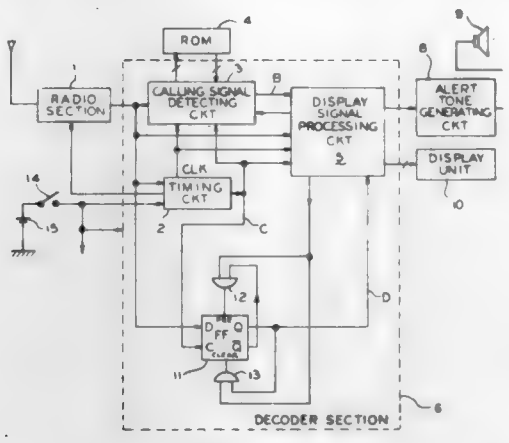
DIGITAL RADIO PAGING COMMUNICATION SYSTEM

Masaru Masaki, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1980, Ser. No. 194,262
Claims priority, application Japan, Oct. 9, 1979, 54-129385
Int. Cl.³ G08B *5/22*; H04Q *1/30*
U.S. Cl. 340—311.1 **9 Claims**

1. A paging communication receiver comprising first means for receiving a carrier wave modulated with a sequence of signals comprising a calling signal, a display information signal, and a discriminating signal immediately preceding each of said calling signal and display information signal; second means for demodulating the modulated carrier wave into said sequence of signals; third means for detecting said sequence of signals as said calling signal to provide a detection signal, when said discriminating signal identifies said calling signal; fourth means responsive to said detection signal for decoding said sequence

of signals as said display information signal to provide a decoded signal, when said discriminating signal identifies said



display information signal; and fifth means for displaying said decoded signal.

4,403,213

POWER SUPPLY DIAGNOSTIC SYSTEM

Ishwar S. Khamare, Fern Park, and Rodney V. Hamilton, Orlando, both of Fla., assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 11, 1981, Ser. No. 242,520
Int. Cl.³ G08B *21/00*; H02H *3/04*
U.S. Cl. 340—517 **11 Claims**

1. In a power supply comprising an input circuit, an output circuit and switching means coupling the input and output circuits, means for determining the occurrence and location of a fault in the power supply including:

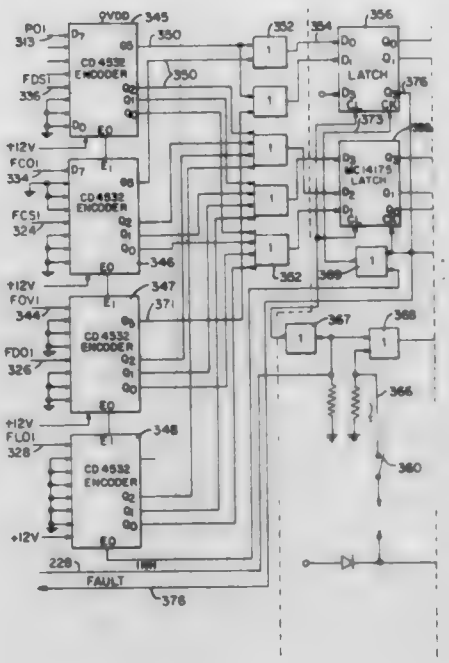
means connected to various elements of the power supply for outputting a voltage level signal representing the operating condition of the elements;

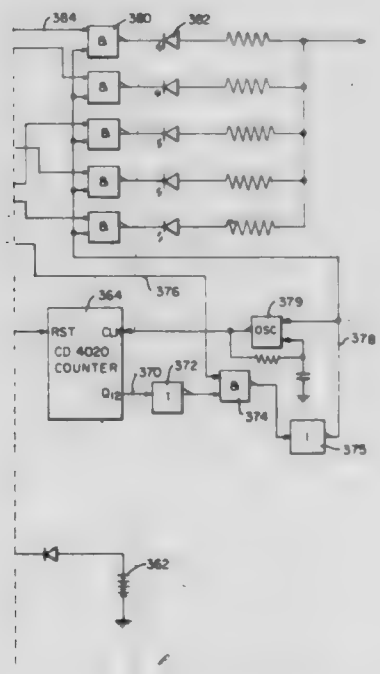
comparator means connected to each of said outputting means for comparing the voltage level signal outputted by said outputting means with a reference voltage level signal, each of said comparator means outputting first control signals representing the extent the voltage level signal varies with the reference voltage level signal;

logic circuit means connected to each of said comparator means for receiving said first control signals enabling said logic circuit means to output second control signals indicating the power supply element which has failed after a predetermined time period has elapsed;

priority encoding means connected to said logic circuit means for receiving a plurality of said second control signals, said encoding means outputting a signal pattern representing the element having the highest priority which has failed in response to receiving said second control signals;

means for displaying the signal pattern upon the outputting of the signal pattern by said encoding means;





and means for enabling said displaying means to display said signal pattern after the outputting of said signal pattern has occurred.

4,403,214

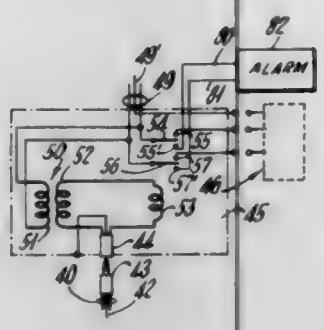
PROTECTIVE DEVICE FOR ATTACHMENTS AFFIXED TO ELECTRICALLY OPERATED BEDS

William Wolar, 59 Fremont Rd., North Tarrytown, N.Y. 10591

Continuation-in-part of Ser. No. 200,990, Oct. 27, 1980, Pat. No. 4,325,062. This application Oct. 8, 1981, Ser. No. 309,591
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—540 **10 Claims**

1. A protective device for use with an attachment to be carried by a bed having electrically operated elevating means to interrupt elevation of the bed should the attachment encounter an obstacle and wherein said elevating means includes a control switch, comprising switch means interconnected with and overriding said control switch and means resiliently retaining said attachment in a normal raised position, said attachment

being movable to a second depressed position upon engagement of an obstacle, said attachment upon movement to said depressed position activating said switch means to override said control switch and interrupt elevation of said bed.



4,403,215

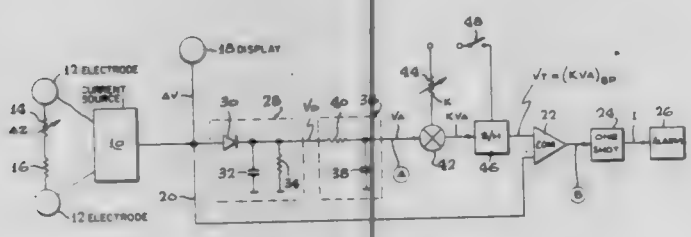
APPARATUS FOR AUTOMATICALLY MONITORING BODY FUNCTIONS

Gerhard Hofmann, Freiburg, and Hermann Taaks, Stegen, both of Fed. Rep. of Germany, assignors to Hellige, GmbH, Freiburg im Breisgau, Fed. Rep. of Germany

Continuation of Ser. No. 864,908, Dec. 27, 1977, abandoned. This application Apr. 17, 1981, Ser. No. 255,147

Int. Cl.³ G08B *23/00*; A61B *5/04*

U.S. Cl. 340—573 **21 Claims**



1. A respiration indicator comprising:

operator-actuated switch means having at least two states;

impedance pneumograph means for determining an impedance signal related to changes in impedance of a living subject;

threshold means responsive to the operator-actuated switch means for producing a signal indicative of the average value of the impedance signal during a base period interval; and

comparator means for indicating an inspiration when the ratio between the threshold value signal and the impedance signal exceeds a predetermined proportionality factor.

4,403,216

DISPLAY

Gunpei Yokoi, Kyoto, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan

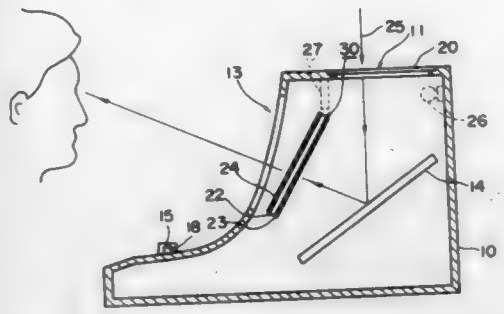
Filed Apr. 22, 1981, Ser. No. 256,257

Claims priority, application Japan, Dec. 11, 1980, 55-178636[U]; Dec. 29, 1980, 55-187780[U]; Feb. 28, 1981, 56-27825[U]

Int. Cl.³ G06F *3/14*; A63F *9/00*

U.S. Cl. 340—705 **16 Claims**

1. A display for displaying at least two characters in different colors, comprising: a liquid crystal plate including a laminated structure of a transparent electrode layer having at least two segment electrodes associated with said at least two characters, and a liquid crystal layer substantially transparent in a portion corresponding to said segment electrodes for displaying said characters, said liquid crystal plate being adapted for receiving light on one surface of said liquid crystal plate and for emitting light from the other surface of said liquid crystal plate, and color filter means located to face one surface of said liquid crystal plate, said color filter means including at least two colored regions of different colors respectively opposite said at least two segment electrodes.



4,403,217

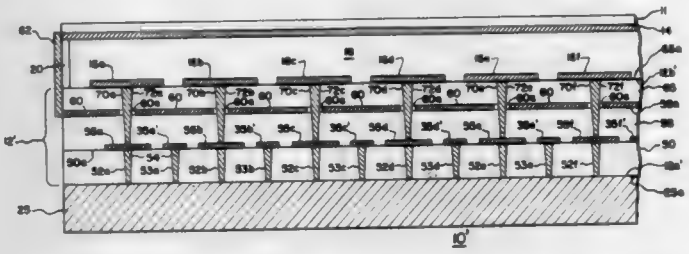
MULTIPLEXED VARISTOR-CONTROLLED LIQUID CRYSTAL DISPLAY

Charles A. Becker; Donald E. Castleberry, both of Schenectady, and Mark S. Logan, Utica, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 18, 1981, Ser. No. 274,849

Int. Cl.³ G09G *3/34*

U.S. Cl. 340—718 **10 Claims**



1. In a multiplexible matrix display of the type having a plurality of substantially parallel and transparent column electrodes elongated in a first direction in a first plane; a plurality of co-planar rear cell electrodes arranged in a matrix which extends in both the first direction and in a second direction, substantially perpendicular to the first direction, in a second plane parallel to and spaced behind the first plane; a plurality of substantially parallel row electrodes extending in the second direction and with only one of the row electrodes associated with each row in the second direction of the rear cell electrodes; a member of a non-linear material positioned substantially parallel to said first and second planes and having a matrix of positions defined thereon, with each position forming a non-linear resistance element in correspondence to each of the multiplicity of display cells each defined by one of the rear cell electrodes in said matrix, said non-linear material having a preselected break-down voltage below which break-down voltage substantially no current flows through said material and above which break-down voltage substantial amounts of current can flow therethrough and with a voltage drop across said member being substantially equal to said break-down voltage; means for coupling each matrix position of the member between that one of the rear cell electrodes defining a particular matrix cell and the row electrode associated with that matrix cell; a layer of optically-active material positioned between the first and second planes and having a matrix of display cells each defined therein by the registration of one of the column electrodes and one of the rear cell electrodes and with the optically-active material respectively absorbing and transmitting light entering each cell responsive to the magnitude of the voltage between the portions of the column and rear cell electrodes defining that cell being respectively less than and at least equal to a preselected voltage magnitude, so that each matrix cell absorbs light incident thereon if the magnitude of a total driving voltage coupled between the column and row electrodes defining that cell is less than the sum of the

break-down voltage of the non-linear material and the preselected voltage magnitude for the optically-active material layer and with each matrix cell reflecting light incident thereon if the magnitude of the total driving voltage is greater than the sum of said break-down voltage and the preselected voltage magnitude of the optically active material layer; and a plurality of auxiliary electrodes arranged spaced each from the other in the first direction and each in registration with and electrically connected to an associated column electrode, the improvement comprising:

the plurality of auxiliary electrodes being spaced from the member of non-linear material;

at least one thick-film dielectric layer interposed, with a first thickness, between the plurality of auxiliary electrodes and the non-linear material member; and

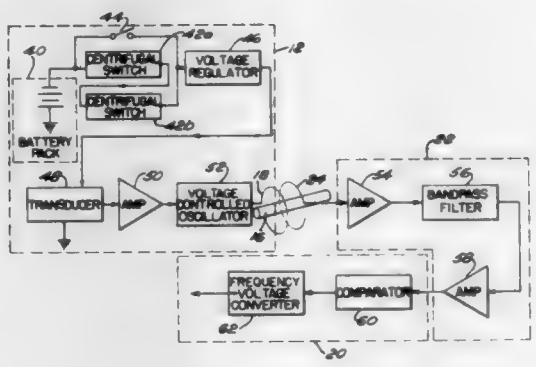
a thin-film dielectric layer interposed between the plurality of auxiliary electrodes and all of the associated rear cell electrodes and providing each of a plurality of individual capacitances between each individual one of the auxiliary electrodes and each of the rear cell electrodes associated with that individual auxiliary electrode.

4,403,218

PORTABLE INSTRUMENTATION TELEMETRY DEVICE

Terrence E. Beal, and Richard W. Boeglin, both of Portsmouth, R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 19, 1981, Ser. No. 294,263
Int. Cl.³ G08C *19/16, 19/06, 19/12*
U.S. Cl. 340—870.18 **7 Claims**



1. A portable instrumentation telemetry device for receiving D.C. voltage output signals from a remote sensor adapted to respond to local environmental parameter changes such that the output voltage thereof varies in proportion thereto, said sensor being mounted on a rotatable shaft and for transmitting said sensor output signals to a stationary receiving station, said device comprising:

sending unit means further comprising a cylindrical, severable housing fixedly attachable to said rotatable shaft; battery means, mounted within said housing, for providing D.C. power to said sending unit means; centrifugal switch means connected to said battery means for transmitting said D.C. power from said battery means only when said rotatable shaft is turning; voltage regulator means connected to said centrifugal switch means and said sensor for receiving said D.C. power from said centrifugal switch means, regulating the voltage level thereof and transmitting said regulated D.C. power from said voltage-regulator means to said shaft mounted sensor whereupon said sensor modulates said D.C. voltage in proportion to said environmental parameter changes to be measured; first amplifier means, connected to said remote sensor, for receiving and amplifying the modulated D.C. voltage output of said remote sensor; voltage-controlled oscillator means, connected to said first amplifier means, for receiving the modulated voltage output of said first amplifier means and converting said amplifier output to a proportional direct FM signal voltage output; and first loop antenna means, connected to said oscillator means, for transmitting said output of said voltage-controlled oscillator means as said direct FM signal, said sending unit means being fixedly attached to and dynamically balanced about the primary axis of said rotatable shaft, and connected to said sensor, for receiving said sensor output signals and transmitting direct FM signals proportional to said sensor output signals;

preamplifier means, being generally stationary and located in close proximity to said sending unit means, for receiving, amplifying and bandpass filtering said direct FM signal from said sending unit means in such a way as to produce an FM signal proportional to said sensor output signal; and

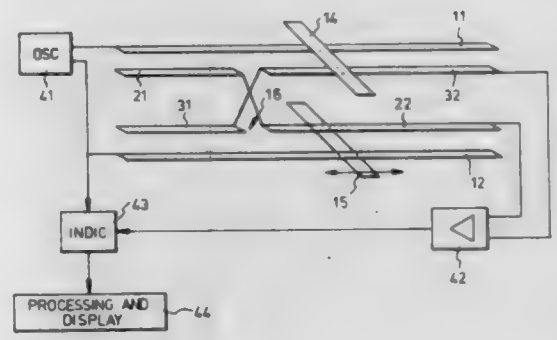
receiver means, connected to said preamplifier means, for receiving said proportional FM signal from said preamplifier means and converting said proportional FM signal to a D.C. voltage equivalent of said sensor output D.C. voltage.

4,403,219

DIFFERENTIAL CAPACITIVE POSITION INDICATOR

Pauli Järvinen, Vantaa, Finland, assignor to Eflab Oy, Finland

Filed Jun. 19, 1981, Ser. No. 275,244
Claims priority, application Finland, Jul. 11, 1980, 802222
Int. Cl.³ G08C *21/00*
U.S. Cl. 340—870.37 **4 Claims**



1. A capacitive position indicating device comprising:

(a) oscillator means for providing an AC voltage;

(b) first and second spaced transmitter strips connected to said oscillator means;

(c) first and second receiver strips, each of said first and second receiver strips having first and second sections, said first and second sections being electrically connected, said first section of first receiver strip being disposed proximate to said first transmitter strip, said second section of said first strip being disposed proximate said second transmitter strip, said first section of said second receiver strip being disposed proximate to said second transmitter strip, said second section of said second receiver strip being disposed proximate to said first transmitter strip, the point at which said first and second sections of said first and second receiver strips are connected forming an indicator point;

(d) a differential amplifier connected to said first and second receiver strips;

(e) first and second mobile plates moveably disposed on said device, said first mobile plate being disposed proximate to and alternatively capacitively coupling said first transmitter strip to said first section of said first receiver strip at predetermined positions and said second section of said second receiver strip at other predetermined positions, said second mobile plate being disposed proximate to and alternatively capacitively coupling said second transmitter strip to said first section of said second receiver strip at predetermined positions and said second section of said first receiver strip at other predetermined positions, said mobile plate reversing the capacitive connection between the transmitter and receiver strips as said mobile plate passes said indicator point; and

(f) indicator means connected to said oscillator means and said differential amplifier to detect the movement of said mobile plates across said indicator point.

4,403,220

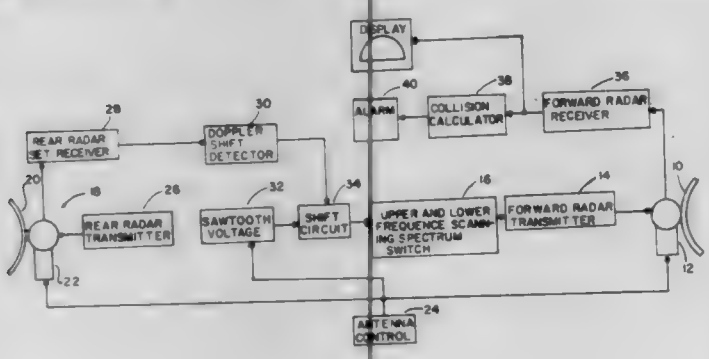
RADAR SYSTEM FOR COLLISION AVOIDANCE

John S. Donovan, 16503 Santa Rosa, Detroit, Mich. 48221

Continuation-in-part of Ser. No. 118,704, Feb. 5, 1980, abandoned, which is a continuation-in-part of Ser. No. 84,011, Oct. 11, 1979, abandoned. This application Apr. 17, 1980, Ser. No. 142,288

Int. Cl.³ G01S *13/60*

U.S. Cl. 343—6 R **6 Claims**



1. A craft borne radar system for determination of relative velocity between said craft and relatively moving objects to be detected, said system comprising:

a radar antenna means mounted to said craft;

radar transmitter means causing a sequence of beamed pulses of radio frequency to be transmitted from said radar antenna means, each of said pulses in sequence being of a differing frequency, varying over a scanning frequency spectrum;

receiver means tuned to a narrow frequency band width related to said scanning frequency spectrum such as to correspond to a Doppler shifting of said transmitted frequencies reflected from a detected object moving at a relative velocity such as to shift one or more of said pulse transmission frequencies into said receiver means frequency band width; and

said radar transmitter means causing transmission of a pair of scanning frequency spectrum bands from said antenna means, said bands together constituting said scanning frequency spectrum, each band consisting of sequential pulses each of a frequency varying through a range of frequencies; said bands being separated by a narrow range of frequencies corresponding to a ground echo signal of a frequency in said receiver means frequency band which would otherwise be reflected from the ground at said receiver means frequency band if transmitted from said radar transmitter means at said narrow band of frequencies for a given groundspeed of said craft;

means for detecting said ground echo signal frequency of said craft as said craft moves at varing groundspeeds;

means for shifting said scanning frequency spectrum of said radar transmitter means in correspondence with the groundspeed of said craft to thereby shift said narrow band of frequencies separating said scanning frequence spectrum bands with varying groundspeed of said radar-carrying craft.

4,403,221

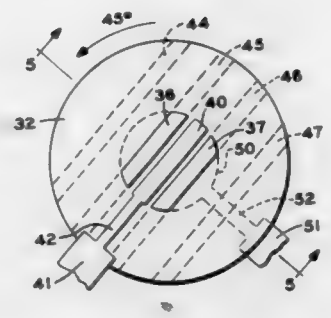
MILLIMETER WAVE MICROSTRIP ANTENNA

John R. Lamberg, Minnetonka, Minn., and Joseph E. Ferris, Saline, Mich., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 10, 1981, Ser. No. 291,542

Int. Cl.³ H01Q *1/38*

U.S. Cl. 343—700 MS **9 Claims**



1. An orthogonally-polarized microstrip patch radiator feed structure comprising, in combination:

a cavity of circular cross section;

a microstrip radiation emitter including a first ground plane at the bottom of said cavity, a first non-conductive substrate overlying said first ground plane, a circular conductive transmit patch on said first substrate, and a first input line on said first substrate extending radially to said transmit patch;

and a microstrip radiation receiver, including a second non-conducting substrate overlying and spaced from said first substrate, a second ground plane on the inner surface of said second substrate in the form of a first array of spaced parallel conductive bars orthogonal to the radius of said first input line, a circular receive patch on the outer surface of said second substrate in the form of a second array of spaced parallel conductive bars aligned with the bars of said first array, and a second input line on said second substrate connected to said receive patch and extending radially in a direction orthogonal to said first input line, so that the radiation from said transmit patch is emitted through the spaces between the bars of said arrays.

4,403,222

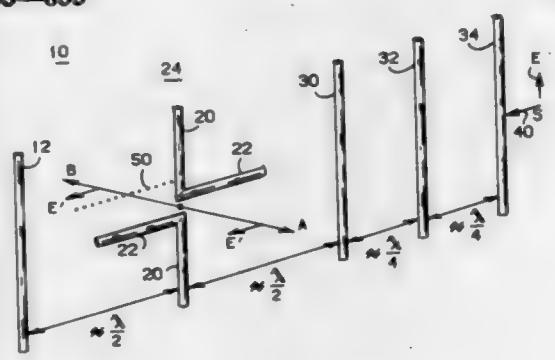
PASSIVE RF PATH DIVERTER

Charles R. Bitter, Jr., Scottsdale, and Raymond M. Cripps, Phoenix, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Feb. 23, 1981, Ser. No. 237,003

Int. Cl.³ H01Q *19/00*

U.S. Cl. 343—833 **8 Claims**



4. A passive RF path diverter comprising:

at least one reflector element;

at least one director element; and

a cross-dipole element, all said elements being substantially coplanar, said cross-dipole element being disposed between said at least one reflector element and said at least one director element.

4,403,223

INK-ON-DEMAND TYPE INK-JET PRINTER

Mitsuo Tsuzuki, and Michihisa Suga, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

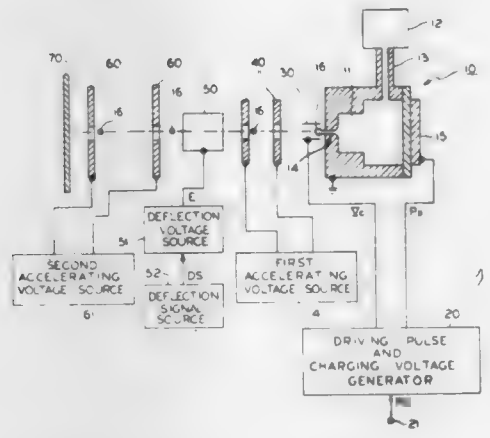
Continuation of Ser. No. 120,579, Feb. 11, 1980, Pat. No. 4,281,333. This application Feb. 17, 1981, Ser. No. 234,784

Claims priority, application Japan, Feb. 14, 1979, 54-16652; Feb. 14, 1979, 54-16653; Feb. 22, 1979, 54-20425; Mar. 22, 1979, 54-33746; Apr. 11, 1979, 54-44020; Apr. 12, 1979, 54-44651; May 4, 1979, 54-55023; May 4, 1979, 54-55024; May 4, 1979, 54-55025

The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—1.1 **15 Claims**



1. An ink-jet printer for recording with droplets of conductive ink on a recording medium in response to an information signal, said printer comprising:

a. an ink chamber means filled with said conductive ink, said chamber driving said droplets out of a nozzle in said chamber in response to driving pulses acting directly upon said chamber, the size of said droplets being responsive to the energy content of said driving pulse as they act directly upon the chamber;

b. means for charging said droplets with a charging voltage after they are driven out of said nozzle; and

c. means for generating said driving pulse and said charging voltage, said charging voltage and said energy content of said driving pulse having a relationship responsive to said information signal.

4,403,224

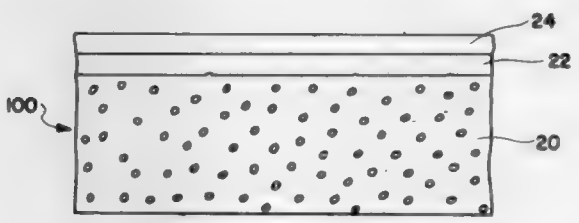
SMUDGE-FREE ELECTROSENSITIVE RECORDING MEDIUM AND METHOD OF INHIBITING SMUDGE FORMATION ON SAID MEDIUM

Richard C. Wirnowski, Longwood, Fla., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 22, 1982, Ser. No. 341,675

Int. Cl.³ G01D *15/24, 9/00*

U.S. Cl. 346—1.1 **16 Claims**



1. In a front grounding or back grounding electrosensitive recording medium having a surface recording layer, said surface recording layer comprising a resin binder, a pigment dispersed throughout said binder and an effective amount of at least one particulate smudge inhibitor selected from the group consisting of divalent metal stearates, divalent metal palmitates, N,N'-ethylene bis-stearamide, and mixtures thereof, that forms at least a part of the surface of said recording layer so as to inhibit the formation of smudge produced by the destructive action of an electronic recording means to produce the desired recording on the surface of the recording medium during a recording operation.

4,403,225

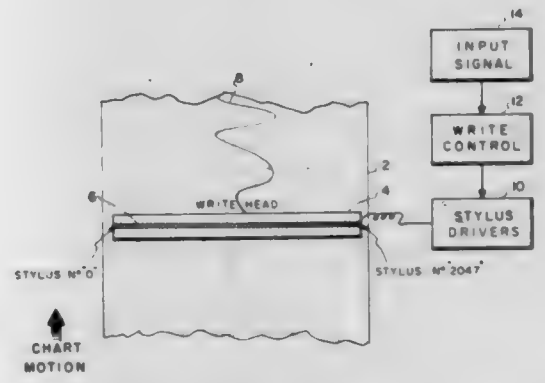
MULTISTYLUS RECORDING SYSTEM

Edward R. Bade, Evergreen, and Paul A. Diddens, Denver, both of Colo., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed May 24, 1982, Ser. No. 381,597

Int. Cl.³ G01D *9/12*

U.S. Cl. 346—35 **9 Claims**



1. A multistylus recorder comprising a multistylus recording head means having a plurality of recording styli arranged along a recording line,

a recording medium transport means for moving a recording means past said head means,

analog-to-digital converter means for producing digitized representations of an analog signal to be recorded,

means for converting said digitized representations into digital addresses of one of said styli to be energized

wherein said means for converting includes means for storing the highest one of said digitized representations, means for storing the lowest one of said digitized representations, means for comparing each of said digitized representations to said highest one and to said lowest one and means for substituting a new one of said digital representations for said highest one if said comparison indicates that said new one is higher and forsaid lowest one if said comparison indicates that said new one is lower and

trace segment generator means for energizing said styli in response to said digital address to produce a recorded segment between and including the highest and lowest ones of said digital addresses.

4,403,226

THERMAL MAGNETIC TAPE DUPLICATION METHOD EMPLOYING A REFLEX IMAGING MEMBER

Stephen L. Gaudioso, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 30, 1981, Ser. No. 248,137

Int. Cl.³ G01D *15/12*

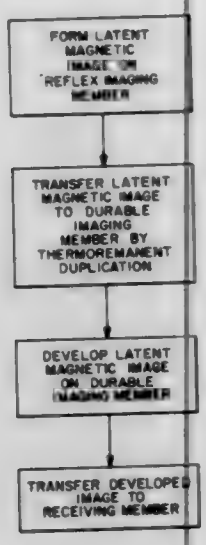
U.S. Cl. 346—74.4 **10 Claims**

1. A magnetic imaging method comprising the steps of:

(a) creating a latent magnetic image on a reflex imaging member;

(b) transferring said latent magnetic image by thermoremanent duplication to a durable magnetic imaging member;

(c) developing said latent magnetic image on said durable magnetic imaging member; and



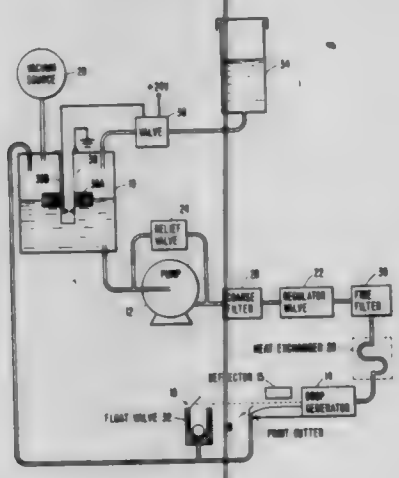
(d) transferring the developed image from said durable magnetic imaging member to a receiving member.

4,403,227

METHOD AND APPARATUS FOR MINIMIZING EVAPORATION IN AN INK RECIRCULATION SYSTEM

John R. Bertschy, and Walter E. Broom, Jr., both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 8, 1981, Ser. No. 309,871
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **10 Claims**



1. In an ink recirculation system for a continuous flow ink jet printer, said system having an ink reservoir, a pump for pumping ink from the reservoir to a print head, a pressure regulator between the pump and the print head, an ink replenishment supply, a return ink conduit between the gutter at the print head and the reservoir, and a vacuum source to reduce the air pressure in the reservoir below atmospheric pressure, improved apparatus for reducing the evaporation rate of ink solvents from the system, said apparatus comprising:

means for minimizing the passage of heat from the pump to ink at the print head and in the ink reservoir;

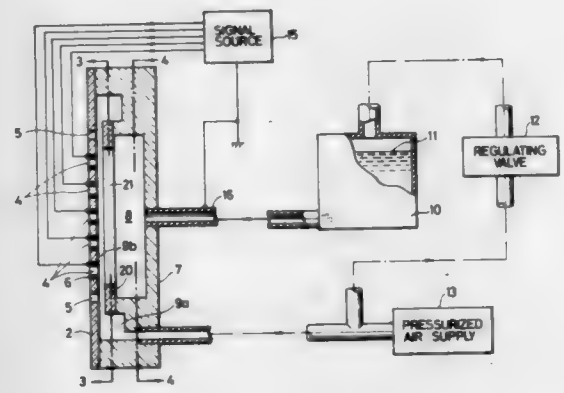
said return conduit between the gutter and the reservoir having a low resistance to ink flow and said vacuum source reducing the air pressure in the reservoir only slightly below atmospheric pressure in order to reduce air flow through the reservoir whereby the evaporation rate of solvents in the ink is maintained at a low level.

4,403,228

INK JET PRINTING HEAD HAVING A PLURALITY OF NOZZLES

Masayoshi Miura, Kawasaki, and Hiroshi Naito, Machida, both of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Mar. 18, 1982, Ser. No. 359,352
Claims priority, application Japan, Mar. 19, 1981, 56-41195; Apr. 24, 1981, 56-62876; Dec. 25, 1981, 56-213473; Dec. 29, 1981, 56-212865
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **16 Claims**



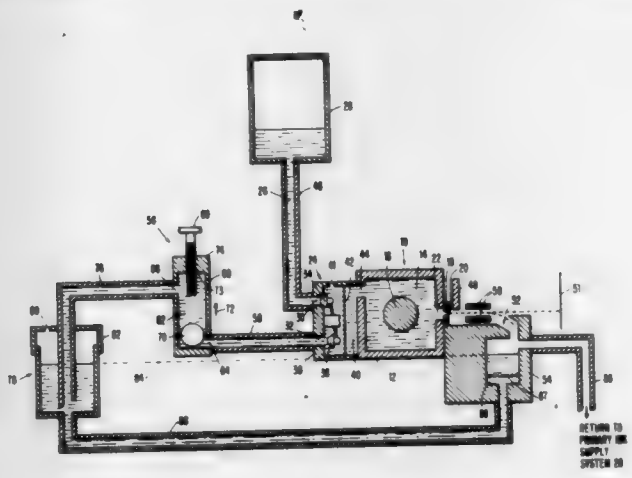
1. An ink jet printing head comprising a nozzle plate having a plurality of nozzles successively arranged in a row, an airflow chamber communicating with said nozzles for discharging air and ink therethrough and connected to a source of pressurized air for allowing an airstream to make sharp turns at the entry into said nozzles creating a plurality of sharp pressure gradients, a liquid chamber connected to a source of ink, meniscus forming means located between said chambers for causing the ink to form at least one meniscus over an area extending parallel with said row of nozzles, said meniscus having a plurality of surface portions convexed toward said nozzles under the influence of said pressure gradients, and means for selectively establishing a plurality of electric fields between said nozzles and the corresponding convexed surface portions for causing said surface portions to extend toward the corresponding nozzles to be torn apart into droplets and discharged through said nozzles.

4,403,229

MAINTENANCE SYSTEM TO PRIME AND TO EXCLUDE AIR FROM INK JET HEADS

Joseph C. Barteck, Tucson, Ariz., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1981, Ser. No. 316,479
Int. Cl.³ G01D *5/42*
U.S. Cl. 346—75 **8 Claims**



1. In an ink jet printing device wherein pressurized ink is supplied to a print head cavity having a supply chamber and settling chamber and ink is expelled through one or more

minute openings in the supply chamber to print indicia on a recording surface, an apparatus for preventing the entry of air into the supply chamber, said apparatus comprising:

an inlet port and an outlet port in the settling chamber;

a valve assembly means for opening said inlet port to convey pressurized ink into the cavity and for opening said outlet port to convey pressurized ink out of the cavity;

a rapid decompression regulator having an entry port and an exit port, said entry port coupled to the outlet port of the settling chamber;

said decompression regulator operable to control ink flow out of the cavity so that the head cavity decompressed first at a rapid rate and subsequently at a slower controlled rate; and

an ink reservoir vented to atmospheric pressure, coupled to the exit port of said regulator and operable to draw ink from the cavity when said valve assembly means opens said outlet port and closes said inlet port; the ink being drawn out of the cavity until ink in the cavity is near atmospheric pressure and capillary action establishes a volume of ink in each opening thereby blocking air from entering the cavity.

4,403,230

INSPECTION OF CASTINGS

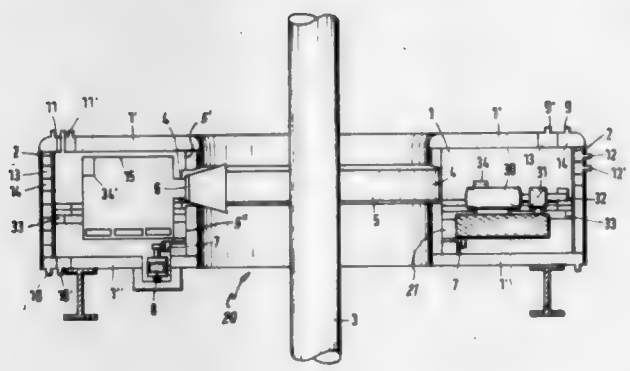
Hans Gruner, Duisburg; Hans Schrewe, Düsseldorf; Lothar Parschat, Essen, and Fritz-Peter Pleschiutschnigg, Duisburg, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 10, 1982, Ser. No. 356,325

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1981, 3113120

Int. Cl.³ G01N *21/88*; G01D *9/42*

U.S. Cl. 346—107 R **2 Claims**



1. An apparatus for inspecting the surface of a casting after having emerged from a mold in a machine for continuous casting and moving along an axis, the apparatus including a basically ring-shaped housing having an inside wall facing the casting passing centrally through the space surrounded by the ring, the wall having an annular gap; sheet means movably disposed in the housing for closing the gap, except for a small gap portion; a line scan camera in the housing connected to the sheet means and revolving therewith about said axis, the camera oriented in such a way that a narrow increment on the casting is inspected for each line scan, the improvement comprising:

an annular rack on the inside of the housing;

pinion means meshing the rack;

an electric generator mounted for revolving about axis together with said camera and said sheet means, the generator provided for powering the camera; and

means for coupling a rotational input of the generator to the pinion means so that the pinion means drives the generator as the sheet means, the camera, and the generator revolve about the housing.

4,403,231

DATA RECORDING MEDIUM

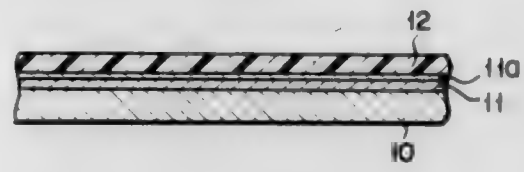
Hideo Ando, Hino, and Toshiharu Nakagawa, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 29, 1982, Ser. No. 343,983

Claims priority, application Japan, Feb. 5, 1981, 56-14979

Int. Cl.³ G01D *15/34*

U.S. Cl. 346—135.1 **5 Claims**



1. A data recording medium comprising:

a disc-shaped substrate;

a radiation-sensitive recording layer formed on one surface of said substrate;

an oxide layer formed by oxidizing a surface of said recording layer; and

a protective layer formed on said oxide layer.

4,403,232

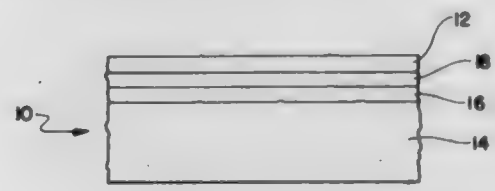
ELECTROSENSITIVE RECORDING PAPER HAVING IMPROVED RECORDING DENSITY

Joseph M. Kropac, Maitland, Fla., assignor to Exxon Research and Engineering Co., Florham, N.J.

Filed Feb. 3, 1982, Ser. No. 345,426

Int. Cl.³ G01D *15/34, 15/08*

U.S. Cl. 346—135.1 **18 Claims**



1. An electrosensitive recording member comprising;

(a) a base support;

(b) a conductive polyester layer on said support, comprising a polyester resin matrix, a conductive pigment dispersed in said matrix and an effective amount of a multivalent metal salt of an organic acid containing up to 13 carbon atoms to improve the image density of recording member; and

(c) a contrasting surface recording layer with respect to said polyester layer, said recording surface layer being vaporizable at the temperature developed during passage of marking current through said medium to selectively reveal the underlying contrasting polyester layer.

4,403,233

INK JET APPARATUS

Koji Terasawa, Mitaka; Shigemitsu Tazaki, Matsudo, and Shigeru Okamura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1982, Ser. No. 339,519

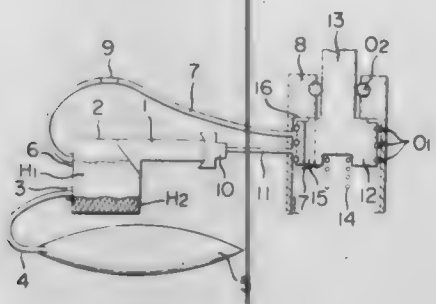
Claims priority, application Japan, Feb. 6, 1981, 56-5601

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **4 Claims**

1. An ink jet apparatus comprising an ink jet nozzle, a cap capable of fitting said ink jet nozzle, and a suction means for supplying negative pressure to the ink jet nozzle and an ink-storage vessel in communication with said ink jet nozzle, wherein said suction means is provided with at least two inde-

pendent suction chambers with at least one of the suction chambers being in communication with the ink-storage vessel,



and with at least the other suction chamber being in communication with said cap.

4,403,234

INK JET PRINTING HEAD UTILIZING PRESSURE AND POTENTIAL GRADIENTS

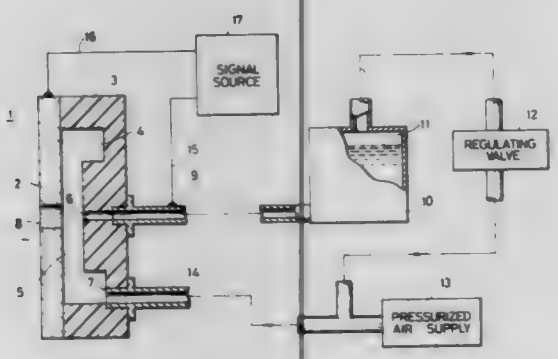
Masayoshi Miura, Kawasaki, and Hiroshi Naito, Machida, both of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Jan. 20, 1982, Ser. No. 341,199

Claims priority, application Japan, Jan. 21, 1981, 56-8428; Mar. 11, 1981, 56-35711; Mar. 11, 1981, 56-35713; Dec. 9, 1981, 56-199292; Dec. 29, 1981, 56-212867

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **34 Claims**



1. An ink jet printing head comprising a laminar airflow chamber having a front channel, a rear channel axially aligned with said front channel connected to a source of liquid and an air intake channel connected to a source of pressurized air for directing an airstream to a point between said front and rear channels so that the airstream makes a sharp turn at the entry into said front channel creating a sharp pressure gradient along a path between the exit ends of said rear and front channels, and means for establishing an electric field between said front channel and the meniscus of the liquid at the exit end of said rear channel to cause said meniscus to extend toward said front channel and to be torn apart into a droplet expelled through said front channel.

4,403,235

OPTICAL SCANNING AND IMAGING SYSTEM UTILIZING LASER DIODE

Richard C. Fedder, Longwood; George C. Schafner, and William M. Ward, both of Orlando, all of Fla., assignors to Burroughs Corporation, Orlando, Fla.

Filed Jun. 23, 1981, Ser. No. 276,260

Int. Cl.³ G01D *15/14*

U.S. Cl. 346—160 **10 Claims**

1. Optical scanning and imaging system utilizing lased diode light generation comprising:

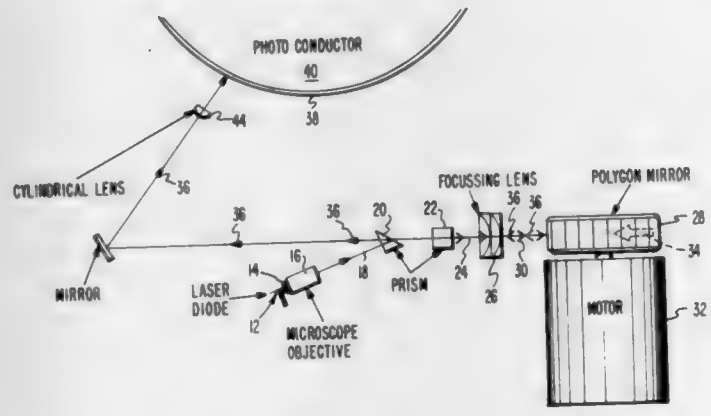
a solid state laser light generating device producing a divergent electromagnetic visible emission;

means for collecting and collimating said divergent emission into a beam of light;

first optical means is the path of said beam for optically shaping said beam effectively reducing the vertical dimension thereof, second optical means in the path of said beam for expanding the horizontal dimension of said beam;

a rotatable polygon mirror assembly in the path of said light beam and having a plurality of flat mirror facets disposed around the periphey thereof;

optical focussing means in the path of said beam for bringing said beam into sharp focus on a single facet of said rotatable polygon mirror assembly;



an angularly disposed adjustably positionable mirror assembly arranged adjacent to said polygon mirror assembly;

a photoconductive drum rotatably disposed adjacent to said adjustably positionable mirror assembly, and

an elongated focussing lens interposed between said polygon mirror assembly and said adjustable mirror for bringing said beam into focus on said drum as said beam is moved by said polygon mirror assembly across the surface of said rotatable drum effectively causing said beam to scan said drum from side to side.

4,403,236

BOUNDARY LAYER TYPE SEMICONDUCTING CERAMIC CAPACITORS WITH HIGH CAPACITANCE

Haruhumi Mandai, Nagaokakyo; Kunitaro Nishimura, Youkaichi, and Masami Yamaguchi, Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 2, 1980, Ser. No. 193,400

Claims priority, application Japan, Oct. 9, 1979, 54-130523; Oct. 9, 1979, 54-130524

Int. Cl.³ H01L *29/12*

U.S. Cl. 357—10 **14 Claims**

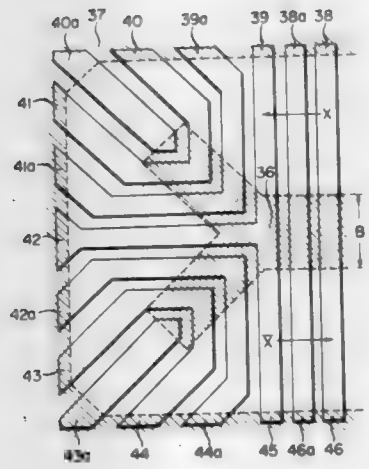
1. A boundary layer type semiconducting ceramic capacitor comprising a semiconducting ceramic body in which grain boundaries on crystal grans of the semiconducting ceramic body are insulated, characterized in that said semiconducting ceramic body has a composition consisting essentially of 98.1 to 99.9 mole % of a main component $(Sr_{1-x}Ba_x)TiO_3$ or $(Sr_{1-x}Ba_x)TiO_3$ modified with not more than 10 mole % of calcium titanate and/or barium zirconate, wherein x is a mole fraction of Ba from 0.30 to 0.50, and 0.1 to 1.0 mole % of at least one semiconductorizing agent selected from the group consisting of a rare earth element, Nb, Ta and W, and that said grain boundaries of the crystal grains are insulated by at least one insulating agent selected from the group consisting of Mn, Bi, Cu, Pb, B and Si, and that the maximum crystal grain present in the semiconducting ceramic body has a grain size ranging from 100μ to 250μ.

4,403,237

CHARGE TRANSFER DEVICE HAVING A BENT CHARGE TRANSFER CHANNEL

Yoshio Ohkubo, Takatsuki; Tadashi Aoki, Ohtsu, and Hiroshi Ohishi, Suita, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Continuation of Ser. No. 89,204, Oct. 29, 1979. This application Sep. 23, 1981, Ser. No. 304,952
Claims priority, application Japan, Oct. 30, 1978, 53-134374
Int. Cl.[3] H01L *29/78*; G11C *19/28*
U.S. Cl. 357—24 3 Claims



1. A charge transfer device having a bent charge transfer channel, comprising:

a semiconductor substrate;

an insulating layer disposed on a major surface of said substrate, said charge transfer channel being disposed in said substrate adjacent said major surface;

an input stage of said channel comprising at least one gate electrode disposed on said insulating layer;

a second series of adjacent gate electrodes linearly disposed on said insulating layer and comprising a straight line intermediate state of said channel extending in a given charge transfer direction;

a third series of adjacent gate electrodes disposed on said insulating layer and including at least two juxtaposed electrodes for providing a bend in said channel to change said charge transfer direction by an integral multiple of 45 degrees,

each of said juxtaposed electrodes having (i) a first part adjacent the inside of said bend and extending substantially orthogonal to said charge transfer direction, and (ii) a second part contiguous with one end of said first part adjacent the outside of said bend and extending at an angle of substantially 45 degrees with respect to said charge transfer direction, both parts of one of said juxtaposed electrodes being adjacent said one gate electrode of said input stage and operatively coupled thereto for charge transfer therebetween; and

an output stage of said channel comprising at least one gate electrode disposed on said insulating layer, both parts of another of said juxtaposed electrodes being adjacent said one gate electrode of said output stage and operatively coupled thereto for charge transfer therebetween,

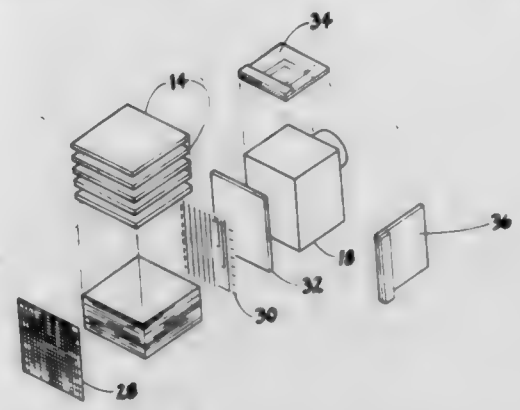
said intermediate stage and said bend being disposed seriatim between said input and output stages for providing a bent channel charge transfer device.

4,403,238

DETECTOR ARRAY FOCAL PLANE CONFIGURATION

Stewart A. Clark, Huntington Beach, Calif., assignor to Irvine Sensors Corporation, Costa Mesa, Calif.

Filed Dec. 8, 1980, Ser. No. 213,933
Int. Cl.[3] H01L *27/14*
U.S. Cl. 357—30 10 Claims



1. A focal plane photo-detector array structure comprising:

a plurality of stacked layers secured together and extending in parallel planes perpendicular to the focal plane, each layer providing a multiplicity of spaced electrical contact points at the focal plane; and

a multiplicity of photo-detectors arranged in parallel rows and secured to the focal plane ends of the stacked layers, each photo-detector being in electrical contact with a single electrical contact point;

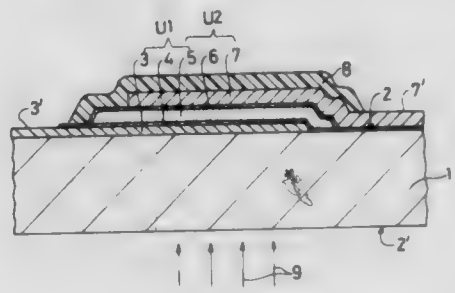
said photo-detectors each being substantially square and so oriented that one of the diagonals of the square is substantially parallel to, and the other is substantially perpendicular to, the planes in which the stacked layers extend, the thickness of each layer being substantially equal to the diagonal of a square having a side equal to the distance between the centers of adjacent detectors.

4,403,239

MIS TYPE SEMICONDUCTOR PHOTOELECTRIC CONVERSION DEVICE

Shunpei Yamazaki, 21-21 Kitakarasuyama 7-chome, Setagaya-ku, Tokyo, Japan

Filed Dec. 22, 1980, Ser. No. 218,722
Claims priority, application Japan, Dec. 26, 1979, 54/169941
Int. Cl.[3] H01L *27/14, 29/78, 45/00, 49/02*
U.S. Cl. 357—30 1 Claim



1. An MIS type semiconductor photoelectric conversion device comprising:

a supporting member;

a first electrode formed on the supporting member;

a first insulating or semi-insulating layer permitting the passage therethrough of a tunnel current and formed as a first barrier on the first electrode;

a semiconductor layer formed on the first insulating or semi-insulating layer;

a second insulating or semi-insulating layer permitting the passage therethrough of the tunnel current and formed as a second barrier on the semiconductor layer; and

a second electrode formed on the second insulating or semi-insulating layer;

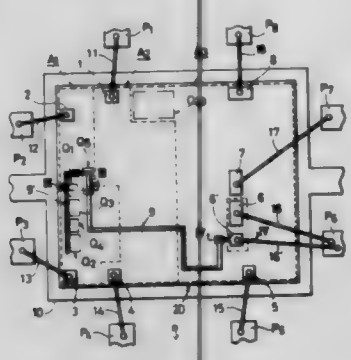
wherein the first electrode, the first insulating or semi-insulating layer and the semiconductor layer constitute a first MIS structure; the semiconductor layer, the second insulating or semi-insulating layer and the second electrode constitute a second MIS structure; and the first and second MIS structures are formed of the supporting member one over the other mechanically and connected in series with each other electrically.

4,403,240

INTEGRATED CIRCUIT WITH AT LEAST THREE GROUND PADS

Kunio Seki, Hinode, and Ritsuji Takeshita, Hino, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 24, 1980, Ser. No. 200,459
Claims priority, application Japan, Oct. 26, 1979, 54-137645
Int. Cl.³ H01L *27/04, 23/50*
U.S. Cl. 357—48 **15 Claims**



1. In a semiconductor integrated circuit device for audio amplifier circuits including a semiconductor substrate, first and second semiconductor island regions formed on said semiconductor substrate, an input amplifier circuit formed in said first semiconductor island region, an output amplifier circuit formed in said second semiconductor island region, a first wire bonding pad which is formed on said semiconductor substrate for grounding said input amplifier circuit and a first externally connecting terminal which is provided being separated away from said semiconductor substrate and which is electrically connected to said first wire bonding pad via a first metal wire to ground said input amplifier circuit, the improvement comprising a second wire bonding pad which is formed on said semiconductor substrate being separated away from said first wire bonding pad for grounding said output amplifier circuit, a second externally connecting terminal which is provided being separated away from said semiconductor substrate and which is electrically connected to said second wire bonding pad via a second metal wire to ground said output amplifier circuit, a third wire bonding pad which is formed in the vicinity of the second semiconductor island region on said semiconductor substrate being separated away from said first and second wire bonding pads for grounding said semiconductor substrate, and a third metal wire which electrically connects said third wire bonding pad to said second externally connecting terminal to ground said semiconductor substrate.

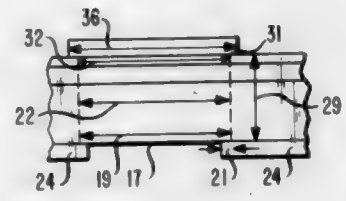
4,403,241

METHOD FOR ETCHING III-V SEMICONDUCTORS AND DEVICES MADE BY THIS METHOD

Alexander D. Butherus, Lebanon, and Lucian A. D'Asaro, Madison, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 22, 1980, Ser. No. 180,358
Int. Cl.³ H01L *29/06, 29/80*
U.S. Cl. 357—55 **3 Claims**

1. A semiconductor device comprising an active region supported by a substrate, said device having a region of metallic conductivity in intimate contact with the exposed surface of said active region, the extent of said region of metallic conductivity being defined by a boundary of said region of metallic conductivity, and wherein electrical contact to said region of metallic conductivity is made through a void starting at the exposed surface of said substrate and continuing through said substrate and through said active region to said region of metallic conductivity, said void including a sidewall which encompasses said void, and a bottom adjacent said region of metallic conductivity, characterized in that said active region



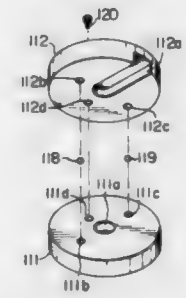
comprises a III–V semiconductor material, the angle between a normal to the plane of the exposed surface of said substrate and an imaginary line drawn from the point of intersection of the sidewall with the exposed surface of the substrate to the midpoint of the sidewall is no larger than ±10 degrees, the bottom of said void does not extend beyond the boundary of said region of metallic conductivity, and the ratio of the depth of said void to the width at the midpoint of said void is greater than 0.5.

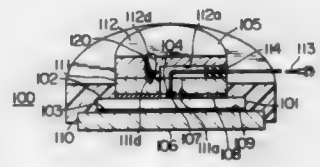
4,403,242

SEMICONDUCTOR DEVICE HAVING A METAL-FIBER COMPOSITE MATERIAL ELECTRODE

Masao Tsuruoka, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 29, 1980, Ser. No. 154,470
Claims priority, application Japan, May 31, 1979, 54-66785
Int. Cl.³ H01L *23/48, 29/52*
U.S. Cl. 357—71 **8 Claims**





1. A semiconductor device comprising:

(a) a semiconductor substrate having a pair of major surfaces and at least three semiconductor layers sequentially adjoining to said pair of major surfaces, two of said semiconductor layers exposing to one of said pair of major surfaces, said two semiconductor layers being of opposite conductivity types to form a p-n junction therebetween;

(b) a groove formed at the exposed end of said p-n junction on said one major surface, said groove being filled with a passivation glass;

(c) a first main electrode ohmic contacted to the other of said pair of major surfaces of said semiconductor substrate;

(d) a control electrode ohmic contacted to said one major surface of said semiconductor substrate at the center thereof, said control electrode having a lead wire;

(e) a second main electrode including a lower piece and an upper piece, said lower piece being made of metal-fiber composite material and having a center opening to allow

the passage of said lead wire of said control electrode, said lower piece being ohmic contacted to said one major surface of said semiconductor substrate to surround said control electrode, said upper piece abutting against said lower piece, said upper piece when abutted against said lower piece defining a space connecting to said opening of said lower piece to allow the passage of said lead wire of said control electrode therethrough; and

(f) coating material made of synthetic resin, said coating material molding the periphery of said semiconductor substrate across said first main electrode and said second main electrode,

wherein said lower piece and said upper piece of said second main electrode each has at least two holes on the interfacing surface thereof, and balls are accommodated in the spaces defined by said holes of said lower piece and said upper piece.

4,403,243

SEMI-CONDUCTOR LASER APPARATUS WITH SUPPORT AND SOLDERING MEANS FOR LIGHT-TRANSMITTING MEMBER

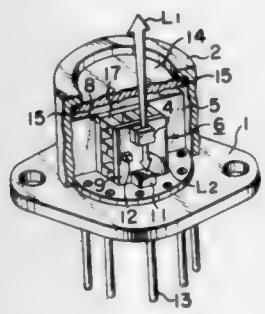
Isao Hakamada, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 907, Jan. 4, 1979, abandoned. This application Apr. 30, 1981, Ser. No. 259,157

Claims priority, application Japan, Jan. 10, 1978, 53-1348

Int. Cl.³ H01L *23/02, 23/12, 33/00*

U.S. Cl. 357—74 **32 Claims**



1. A semi-conductor laser apparatus, comprising a semi-conductor laser element for generating a laser light;

a light-transmitting member of an oxide for transmitting therethrough the laser light generated by said semi-conductor laser element;

a metallic support member for supporting said light-transmitting member; and

a soft metal solder for fixing said light-transmitting member to said metallic support member and joining the two together by being chemically bonded with oxygen in said light-transmitting member to thereby be directly bonded to said light-transmitting member when said metal solder, in a molten state, is subjected to ultrasonic wave vibration.

4,403,244

APPARATUS FOR CORRECTING A VARIATION IN THE TIME BASE OF A REPRODUCED VIDEO SIGNAL

Tooru Fujishima, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 5, 1981, Ser. No. 231,924

Claims priority, application Japan, Feb. 6, 1980, 55-12439

Int. Cl.³ H04N *5/785*

U.S. Cl. 358—19 **6 Claims**

1. An apparatus for correcting a variation in the time base of a reproduced video signal for use in a system for reproducing a video signal recorded on a recording medium, comprising:

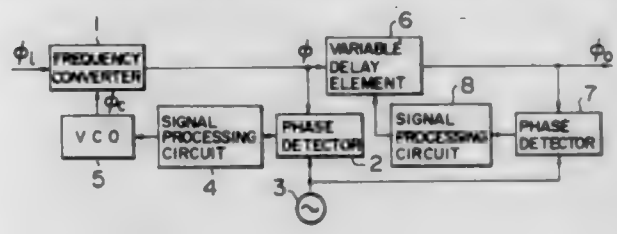
frequency converting means responsive to a frequency converting signal for effecting frequency conversion of a signal read out from said recording medium;

a voltage controlled oscillator for supplying said frequency converting signal to said frequency converting means, the frequency of said frequency converting signal being adapted to be controlled by a first control signal;

reference signal generator means for producing a reference signal of a fixed frequency;

phase comparator means for phase comparing a reproduced signal derived from said frequency converting means with said reference signal to thereby produce an error signal;

means for supplying said first control signal to said voltage controlled oscillator in dependence on said error signal;



variable delay means for passing therethrough said reproduced signal derived from said frequency converting means, said variable delay means having a delay time controlled by a second control signal; and

means for supplying the second control signal to said variable delay means in dependence on the phase difference between the output of said variable delay means and said reference signal.

4,403,245

METHOD AND CIRCUIT FOR TIME-CORRECTION OF DIGITAL SWITCHING SIGNALS

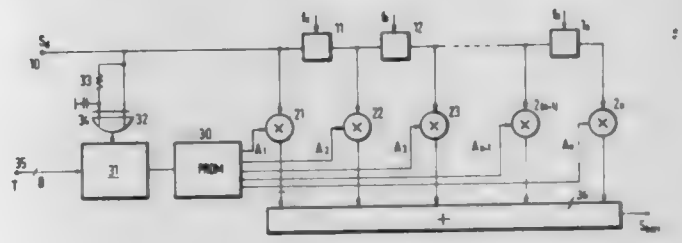
Gerhard Wischermann, Darmstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 1, 1981, Ser. No. 307,483

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1980, 3037778

Int. Cl.³ H04N *9/535;* **H03K** *5/06;* **H03H** *15/02*

U.S. Cl. 358—22 **10 Claims**



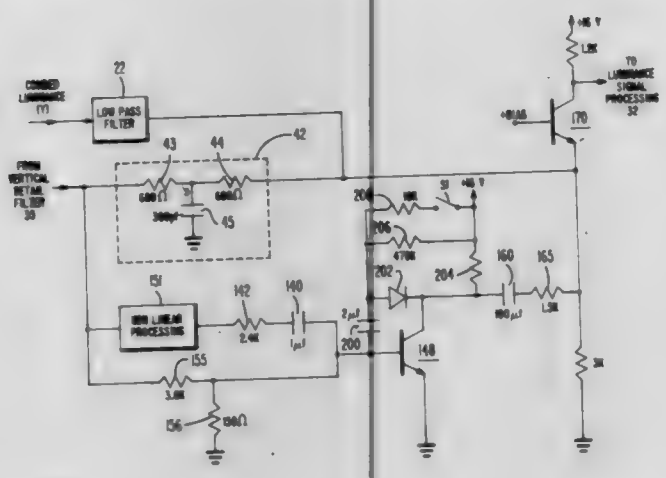
1. A method for the time-correction of digital switching signals which can occur only at discrete times as a consequence of the sampling process by which the digital signal to be switched is derived and which is therefore delayed relative to its desired time of occurrence, the method comprising deriving a time correction signal whose value is dependent upon the amount by which the digital switching signal is delayed relative to the desired time, and generating a set of control signals at the sampling frequency of the digital signal and having values determined by the value of the time correction signal, the control signals collectively constituting the time-corrected switching signal and being effective to produce a progressive switching of the digital signal over a plurality of sampling periods, the time correction signal for each digital switching signal being stored and, immediately upon the occurrence of the next following digital switching signal, being replaced in storage by the time correction signal corresponding to that next digital switching signal whereby a fresh set of control signals are produced irrespective of whether the set corresponding to the previous digital switching signal are completed.

4,403,246

VERTICAL DETAIL ENHANCEMENT ON/OFF SWITCH

Gerald E. Thornberry, El Paso, Tex., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 13, 1981, Ser. No. 321,327
Int. Cl.[3] H04N 9/535
U.S. Cl. 358—37 9 Claims



9. In a color TV receiver apparatus having a signal path for providing a vertical detail enhancement signal, a user activated circuit for substantially reducing the amplitude of said vertical detail enhancement signal, said circuit comprising:

a transistor having base, emitter, and collector electrodes;

means for supplying said enhancement signal to said base electrode;

means for connecting said emitter electrode to a point of reference potential;

means providing a vertical detail enhancement signal utilization circuit connected to said collector electrode;

said transistor being biased to provide an amplified version of said enhancement signal at the collector electrode;

a feedback path including a capacitor and a diode connected in series in the order named between the base and collector electrodes with the cathode of said diode connected to said collector electrode;

a source of supply potential coupled to said collector electrode via a first resistor;

the series combination of a normally open switch and a second resistor connected between said source and the junction between said capacitor and said diode;

a third resistor connected between said source and said junction;

the value of said second resistor being substantially smaller than the value of said third resistor;

said third resistor providing a charging path for said capacitor and having a value such that said diode is just forward biased when said switch is opened;

said amplified version of said enhancement signal being substantially reduced when said switch is closed and said junction remaining at substantially the same D.C. level during transitions of said switch from said normally open to said closed position.

4,403,247

SOLID STATE COLOR IMAGING APPARATUS

Yoshiaki Sone, Toyonaka; Susumu Hashimoto, Moriyama; Kiyotsugu Ishikawa, Takatsuki, and Takao Kunii, Amagasaki, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma, Japan

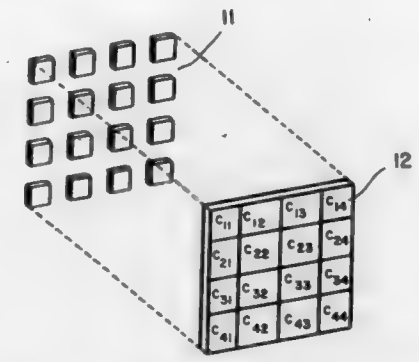
Filed Feb. 17, 1981, Ser. No. 235,428
Claims priority, application Japan, Feb. 18, 1980, 55-19497
Int. Cl.[3] H04N 9/07
U.S. Cl. 358—44 11 Claims

1. A solid state color imaging apparatus comprising

a solid state photoelectric device having an array of picture elements and output signals,

a color filter fixed in front of said solid state photoelectric device, and having filter elements of a first complementary color, and filter elements of a second complementary color and substantially transparent parts,

a separation circuit for analyzing said output signals of said



solid state photoelectric device into a quasi-luminance signal and a color signal,

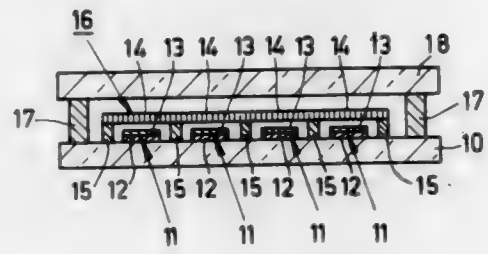
a composing circuit for adding said color signal to said quasi-luminance signal thereby to furnish a luminance signal without line crawling.

4,403,248

DISPLAY DEVICE WITH DEFORMABLE REFLECTIVE MEDIUM

Ties S. Te Velde, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 4, 1981, Ser. No. 240,540
Claims priority, application Netherlands, Mar. 4, 1980, 8001281
Int. Cl.[3] H04N 9/12
U.S. Cl. 358—62 21 Claims



1. A display device comprising

a transparent first supporting plate,

a partially reflective layer separately spaced from and relatively movable to said first plate to promote optical interference,

a pattern of a plurality of resiliently connected electrodes of said partially reflective layer, and

a plurality of transflective regions on said supporting plate, said transflective regions being spaced from and common for at least one of said resiliently connected electrodes, and said partially reflective layer reflecting to substantially the same extent as said transflective regions.

4,403,249

APPARATUS FOR MIXING IMAGE SIGNALS TO OBTAIN A PRINTING MASTER

Hans-Georg Knop, Heikendorf, and Ingo Hoffrichter, Kiel, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH., Kiel, Fed. Rep. of Germany

Continuation of Ser. No. 879,596, Feb. 21, 1978, Pat. No. 4,255,761. This application Jun. 6, 1980, Ser. No. 156,931
The portion of the term of this patent subsequent to Mar. 10, 1998, has been disclaimed.
Int. Cl.[3] G03F 3/08; H04N 1/40
U.S. Cl. 358—80 20 Claims

1. In a process of inserting at least one image area of a first image into a second image to yield a composite image with the

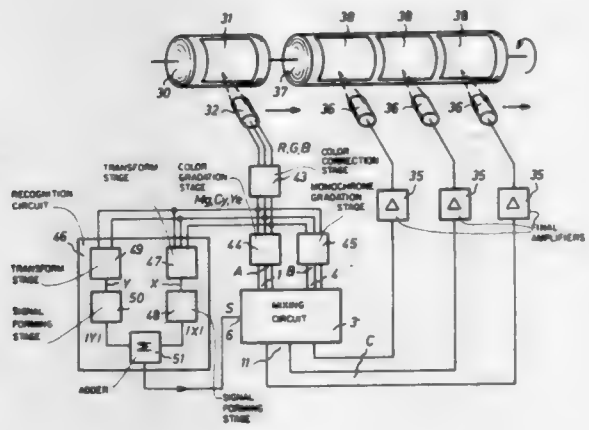
said of a control mask, said composite image having a soft edge transition between said inserted image area and said second image within a transition zone surrounding the area,

the steps comprising:

scanning said first and second images opto-electronically pont by point so as to obtain first and second image signals,

scanning said control mask opto-electronically point by point, said control mask including at least one mask area corresponding to said image area but having image values different from the remainder of said control mask,

generating a control signal by evaluating points of said control mask which correspond in size to the scanned points of said first and second images, and of other points surrounding said points of said control mask, said control signal having a first level during scanning of said mask



area, a second level during scanning of the remainder of said control mask and a gradual change-over between the levels during the scanning of the contours of said mask area;

modulating one of the image signals to be mixed with the control signal and the other signal with the amplitude-inverted control signal,

combining the modulated image signals so as to compensate any delay due to the modulating step by the control signal by another delay due to the modulating step of the amplitude-inverted control signal so as to obtain a mixed image signal, wherein the change-over time of the control signal defines said transition zone, and its change-over shape the mixing characteristic within said transition zone, and

producing a printing master from said mixed image signal, said printing master having the composite image thereon.

4,403,250

PROCESSING OF T.V. PICTURES FOR SUBSEQUENT STOP MODE REPRODUCTION

Paul R. N. Kellar, Newbury, England, assignor to Micro Consultants Limited, Berkshire, England

Filed Mar. 9, 1981, Ser. No. 241,978

Claims priority, application United Kingdom, Mar. 18, 1980, 8009054

Int. Cl.³ H04N *7/02, 5/76*

U.S. Cl. 358—105 **11 Claims**

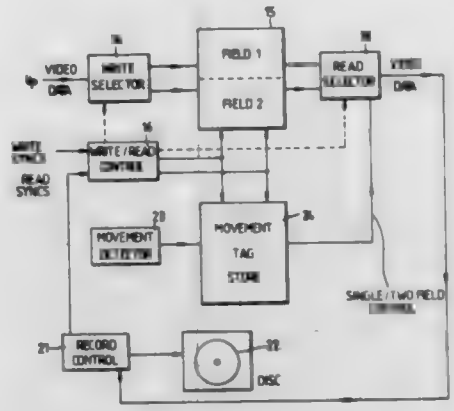
1. A processing system for manipulating data of a moving picture sequence comprising:

frame storage means for holding incoming video data;

movement detector means for detecting picture movement during any portion of the video frame;

movement data storage means for storing information on detected movement from said detector means;

selector means for controlling the output from the frame storage means whereby the data read out from said frame storage means is derived from a single field of the frame during those portions of each picture of the moving picture sequence where movement occurred as detected by said detecting means and in dependence on the information available from said data storage means, and from both fields in the frame when no picture movement has occurred in that portion of that picture of the moving picture



sequence; and recording means for recording said video data from said selector means.

4,403,251

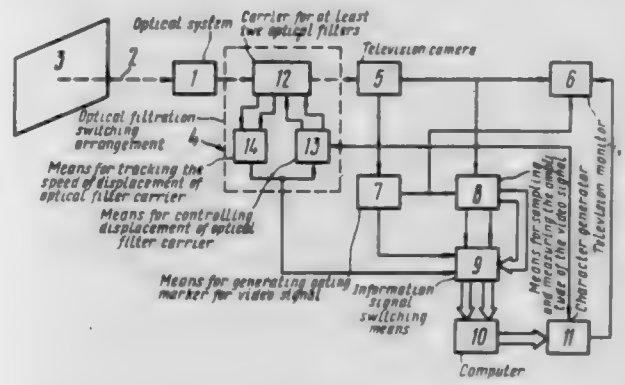
THERMOVISION PYROMETER FOR REMOTE MEASUREMENT OF TEMPERATURE OF AN OBJECT

Nikolai I. Domarenok, ulitsa Skriganova, 5, kv. 49; Anatoly P. Dostanko, Leninsky prospekt, 143, korpus 1, kv. 14; Igor G. Moroz, ulitsa V.Khoruzhei, 42, kv. 18, all of Minsk; Alexei S. Kanevsky, ploschad Lenina, 2/1, kv. 22, Kievskaya oblast, Belaya Tserkov, and Vsevolod A. Vasiliev, ulitsa Uralskaya, 7, kv. 12, Minsk, all of U.S.S.R.

Filed Jun. 17, 1981, Ser. No. 274,506

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—107 **8 Claims**



1. A thermovision pyrometer for remote measurement of the temperature of an object under investigation comprising:

an optical system for focusing the thermal radiation flux from the object under investigation;

an optical filtration switching means for alternately passing the spectral components of the thermal radiation flux from the object under investigation focused by said optical system, the components lying in at least two different regions of the spectrum, having an input and an output;

a television camera sensing the components of the thermal radiation flux for generation of a video signal proportional to the density of the thermal radiation flux from the object under investigation, having an output, a synchronizing output, said synchronizing output being connected to said input of said optical filtration switching means;

a first gating marker generating means for the video signal proportional to the density of the thermal radiation flux from the object under investigation, having an input, a first output, and a second output, said input being connected to said synchronizing output of said television camera;

a first means for sampling and measuring the amplitude of the video signal proportional to the density of the thermal radiation flux from the object under investigation, having a signal input, a control input, an information input, a first output, a second output, said signal input being connected to said

output of said television camera, said control input being connected to said first output of said first means for generating the gating marker for the video signal proportional to the density of the thermal radiation flux from the object under investigation;

an information signal switching means having a first control input, a second control input, a third control input, a fourth control input, an information input, a first output, a second output, said first control input being connected to said output of said optical filtration switching means, said second control input being connected to said second output of said first gating marker pulse generating means for the video signal proportional to the density of the thermal radiation flux from the object under investigation, said third and fourth control inputs being connected to said first and second outputs, respectively, of said first means for sampling and measuring the amplitude of the video signal proportional to the density of the thermal radiation flux from the object under investigation, said information input being connected to said information output of said first means for sampling and measuring the amplitude of the video signal;

a computer having a first input, a second input, and an output, said first and second inputs being connected to said first and second outputs, respectively, of said information signal switching means;

a character generator having a synchronizing input, an input, and an output, said synchronizing input being connected to said synchronizing output of said television camera, said input being connected to said output of said computer;

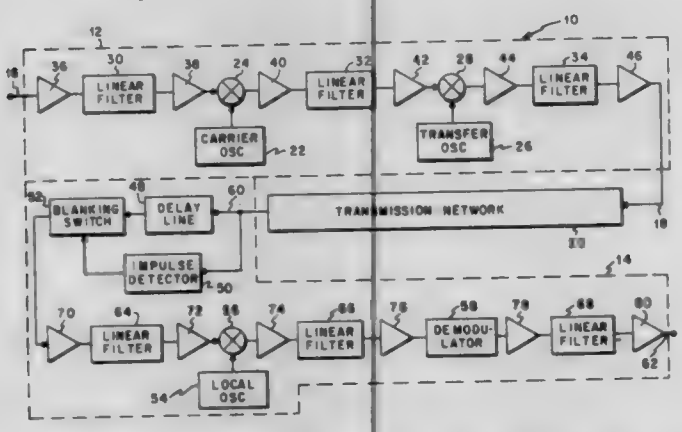
a television monitor having an input, a first information input, a second information input, said input being connected to said output of said television camera, said first information input being connected to said first output, of said first gating marker generating means, said second information input being connected to said output of said character generator.

4,403,252

TELEVISION SCRAMBLING AND UNSCRAMBLING METHOD AND APPARATUS

Lawrence H. Ragan, and Clinton S. Hartmann, both of Dallas, Tex., assignors to R F Monolithics, Inc., Dallas, Tex.

Continuation of Ser. No. 153,164, May 27, 1980, abandoned.
This application Feb. 26, 1982, Ser. No. 352,773
Int. Cl.[3] H04N *7/16*; H04K *1/00*
U.S. Cl. 358—114 23 Claims



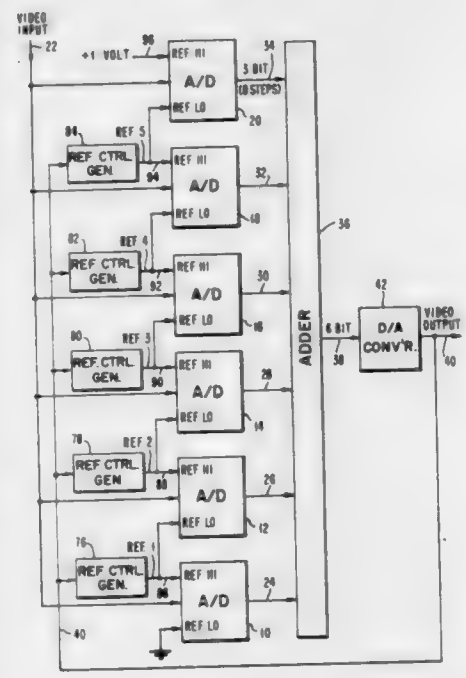
1. A method for preventing a television signal from being acceptably received by an unauthorized television receiver while maintaining the television signal recoverable by an authorized receiver having a linear filter in the signal path of the type which produces multiple time delayed signals, the method comprising passing the television signal through at least one linear filter of the type that produces multiple time delayed signals of differing time delays, each time delayed signal representative of the original television signal wherein the original television signal is scrambled by adding the multiple time delayed signals which would be displayed to an unauthorized receiver so that display of an acceptable picture is impossible without descrambling the multiple time delayed signals and wherein the phase and amplitude response of the linear filter is substantially complementary over a predetermined information band to the phase and amplitude response of the linear filter of the authorized receiver.

4,403,253

UNIFORM DISTRIBUTION VIDEO PROCESSOR WITH CONTROLLED REFERENCE VOLTAGES

Edwin E. Morris, Clinton, and Richard L. Kies, Chadwicks, both of N.Y., assignors to General Electric Company, Utica, N.Y.

Filed Dec. 28, 1981, Ser. No. 335,013
Int. Cl.[3] H04N *5/14*
U.S. Cl. 358—160 8 Claims



1. A system for processing input video signals representing a plurality of levels or shades of gray over a spectrum ranging from black to white, comprising:

amplifier means for receiving the input video signals, said amplifier means comprising a number of sections each of which is assigned to operate in the range of voltage levels representing shades of gray, each said amplifier section including an analog-to-digital A/D converter having an input range defined by a high reference level and a low reference level defining the input break points for each corresponding non-linear transfer function of said amplifier means, said A/D converters having their high and low reference levels connected in a totem pole configuration with the high reference level of a first of said sections providing the low reference level of a second of said sections, and so on; and

a plurality of reference control generators associated individually with each of said A/D converters for continuously adjusting each of those of the reference levels which are applied to each of adjacent converters to pre-stretch the input video signal from the high reference level applied to the last A/D converter to the low reference level applied to the first A/D converter, each of said reference control generators comprising:

means for comparing the video output signal of said system with a pre-determined reference voltage defining the output range of occurrence of the shades of gray assigned to a given one of said A/D converters; and

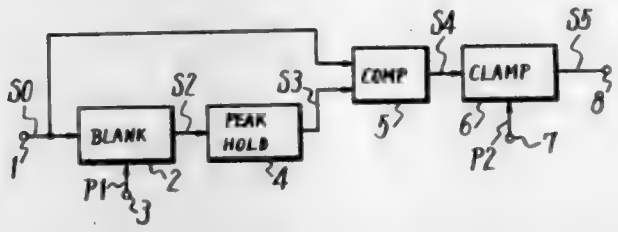
means responsive to said comparing means for adjusting that one of the reference levels assigned to a respective one of said A/D converters, whereby to provide for uniform distribution of shades of gray to the input video signals in accordance with their probability of occurrence.

4,403,254

VIDEO SIGNAL PROCESSING CIRCUIT

Takashi Okada, and Atsushi Matsuzaki, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 13, 1980, Ser. No. 177,574
Claims priority, application Japan, Aug. 17, 1979, 54-104615; Aug. 17, 1979, 54-104616
Int. Cl.³ H04N 5/16
U.S. Cl. 358—171 11 Claims



1. A video signal processing circuit for an input video signal representing a video picture and having a D.C. level, a pedestal level, and a blanking period, said processing circuit comprising:

a wave-forming means operative during at least said blanking period for establishing the amplitude level of said input video signal during the operating period thereof to be equal to a predetermined first D.C. level, which is higher than said pedestal level of said input video signal, and producing a waveformed signal;

peak-hold circuit means for detecting and holding that level of the wave-formed signal representing the darkest level of the video picture, and producing a peak-hold output signal; and

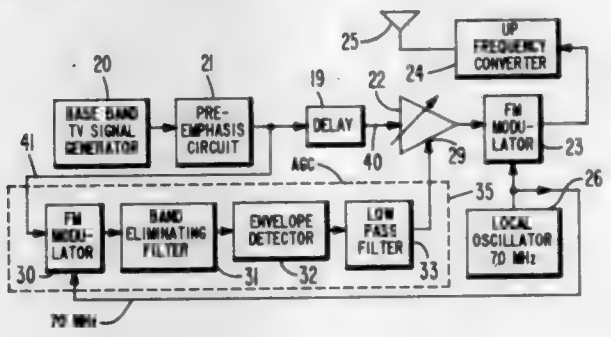
black level control means responsive to said peak-hold output signal for setting the D.C. level of said input video signal at such a level that the level of said input video signal representing said darkest level of the video picture coincides with a predetermined second D.C. level.

4,403,255

FM/TV AUTOMATIC GAIN CONTROL SYSTEM

Leonard N. Schiff, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 24, 1981, Ser. No. 324,584
Int. Cl.³ H04N 5/38
U.S. Cl. 358—186 10 Claims



1. In a frequency modulated television (FM/TV) system, a transmitter for transmitting an FM/TV signal over a transmission path having a certain frequency bandwidth and comprising means at the transmitter for generating an FM/TV signal, a variable gain amplifier responsive to said FM/TV signal to produce an amplifier video signal, and means for up-converting said amplified FM/TV signal for transmission thereof, an improved automatic gain control system comprising:

means responsive to said FM/TV signal for producing a first control signal whose amplitude reflects the particular energy content of that portion of said up-converted FM/TV signal lying outside a given percentage of said certain frequency bandwidth; and

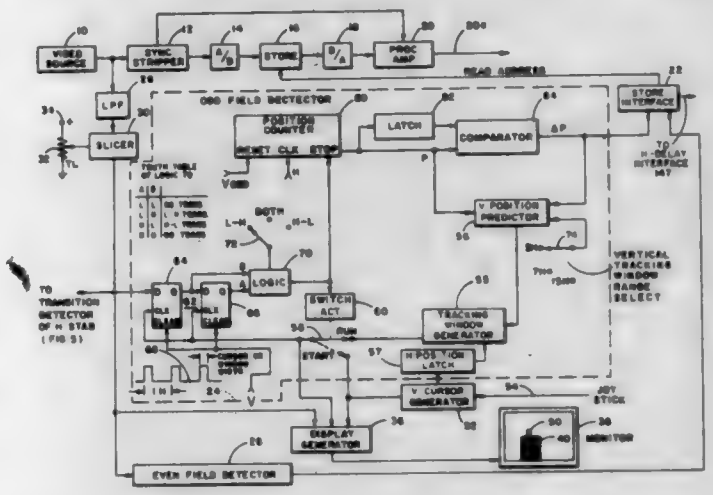
said variable gain amplifier responsive to said first control signal to vary its gain substantially inversely as said particular energy content varies.

4,403,256

TELEVISION PICTURE STABILIZING SYSTEM

Richard R. Green, Hamden; Henry W. Mahler, Newtown, and John E. Siau, Darien, all of Conn., assignors to CBS Inc., New York, N.Y.

Filed Nov. 10, 1981, Ser. No. 319,845
Int. Cl.³ H04N 5/21
U.S. Cl. 358—222 28 Claims



1. System for processing and producing from an input video signal exhibiting unsteadiness due to having been produced by an unsteady television camera, a corrected video signal essentially free of such unsteadiness, said system comprising, in combination:

means receiving said input video signal and for selecting therefrom a reference object within the camera field of view, which reference object but for said camera unsteadiness would normally be stationary, against which to measure picture motion;

means for measuring motion of said selected reference object and for producing a correction signal representative of such measured motion; and

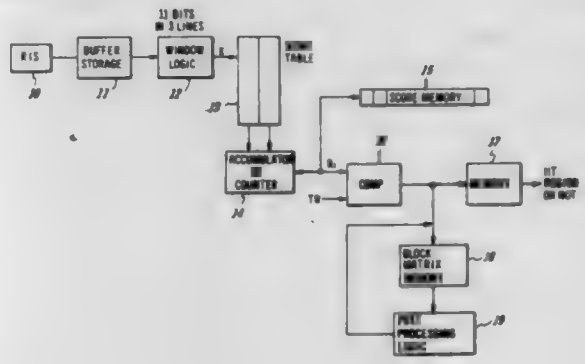
means operative responsively to said correction signal for making the necessary corrections to the overall television picture represented by said input video signal to eliminate picture unsteadiness.

4,403,257

HALFTONE DETECTION AND DELINEATION

Robert C. Hsieh, Rancho Palos Verdes, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 19, 1982, Ser. No. 359,965
Int. Cl.³ H04N 1/40
U.S. Cl. 358—283 9 Claims



7. The method of detecting halftone areas of an original comprising the steps of:

raster input scanning an original to produce a series of lines of image data bits,

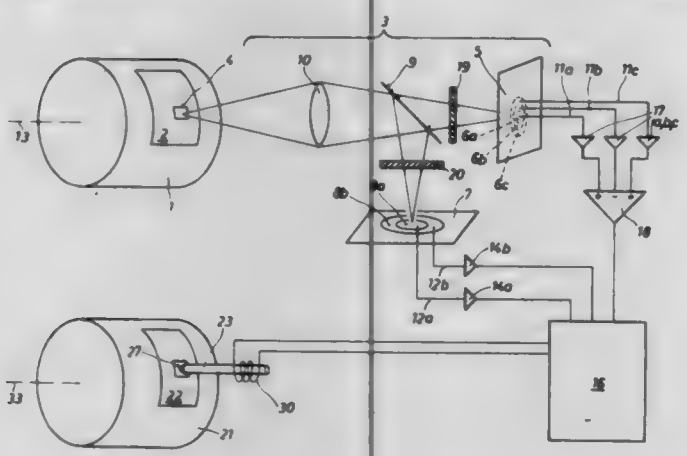
first storing said image data,
selecting a predetermined number of bits from a window comprising a plurality of rows and columns of said data,
constructing an address from the values of each of said selected bits,
addressing a score table with said constructed address to output a number which is a function of the probability that the window is positioned over a halftone area of said original,
creating a sum of output numbers for each block of image data, said block being formed from a plurality of window locations comprising a plurality of rows and columns of said image data, and
comparing each sum to a predetermined number to determine whether said associated image data block is halftone.

4,403,258

METHOD AND DEVICE FOR SEQUENTIALLY IMAGING AN ORIGINAL

Angelo Balzan, Mühlethal, and Hans Stroppel, Therwil, both of Switzerland, assignors to Ringier & Co., AG., Zofingen, Switzerland

Filed Oct. 27, 1981, Ser. No. 315,580
Claims priority, application Switzerland, Nov. 7, 1980, 8290/80
Int. Cl.³ H04N *1/24, 1/40*
U.S. Cl. 358—284 **11 Claims**



1. Device for optically scanning a sequence of regions within an original and for generating an electrical signal dependent both upon the light intensity and upon its distribution within the region currently scanned, where a sequence of such signals is used for generating a discrete image of the original, characterized by an optional scanning head arranged so as to sequentially scan all regions, means between said scanning head and said photo-sensors for variably restricting the light impinging on said sensors, imaging each region on at least two photo-sensors, the outputs of which are connected to an inverting and to a noninverting input, respectively, of an adding circuit which generates the difference of the primary signals.

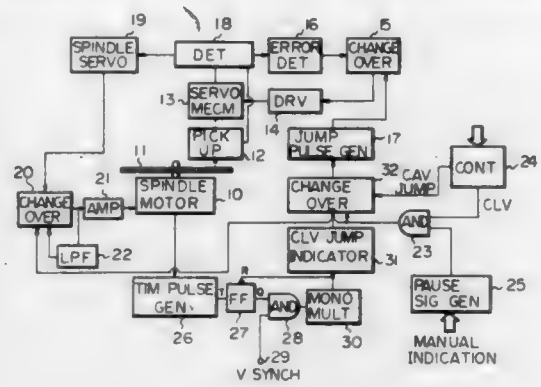
4,403,259

APPARATUS FOR READING INFORMATION FROM AN INFORMATION RECORDING DISC

Keiji Masaki, Tokorozawa, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

Filed Sep. 28, 1981, Ser. No. 306,400
Int. Cl.³ H04N *5/76*; G11B *17/22, 7/00*
U.S. Cl. 358—342 **4 Claims**

1. An apparatus for reading information from an information recording disc in which the information is recorded successively in the circumferential direction, which comprises:
a pick-up transducer having a detecting spot which is to be aligned on a portion of said recording disc and for reading the information from said portion,
recording disc drive means for rotating said recording disc in the vicinity of said pick-up transducer at a rotational speed which is variable with the radial position of said pick-up transducer with respect to said recording disc;
pause signal generating means for producing a pause signal;
timing pulse signal generating means for consecutively generating a timing pulse signals at a predetermined rate proportional to the rotational speed of said recording disc;



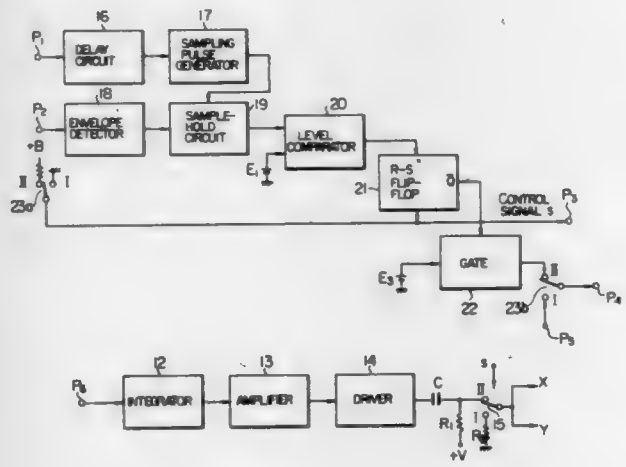
jump pulse generating means for generating a jump pulse in synchronism with said timing pulse signals during a time period when said pause signal is present; and
pick-up transducer positioning means connected to said pick-up transducer, for driving said pick-up transducer so that said detecting spot jumps by a predetermined radial distance on said recording disc in response to said jump pulse.

4,403,260

AUTOMATIC TAPE STOP DEVICE FOR VIDEO SIGNAL RECORDING AND REPRODUCING APPARATUS

Kotaro Kawamura, Katsuta, and Shinji Ozaki, Funabashi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 13, 1981, Ser. No. 234,440
Claims priority, application Japan, Feb. 15, 1980, 55-16607; Feb. 15, 1980, 55-16608; Feb. 19, 1980, 55-18477
Int. Cl.³ H04N *5/78*
U.S. Cl. 360—10.2 **16 Claims**



1. In a helical scan type video signal recording and reproducing apparatus having at least one rotary video head, an automatic tape stop device for stopping a magnetic tape to produce a still image reproduction signal, comprising:
means for displacing said video head transversely to the direction of scan in response to a predetermined signal;
means responsive to an instruction for a still image reproduction mode to change the velocity of said magnetic tape to a velocity lower than that in a normal reproduction mode;
detection means for detecting the level of the reproduced signal read from said magnetic tape by said video head;
tape stopping means for stopping the movement of said magnetic tape when said level detected by said detection means meets a predetermined condition; and
control means for controlling the start of the operation of

said means for displacing said video head transversely to the direction of scan.

11. In a helical scan type video signal recording and reproducing apparatus having at least one rotary video head, an automatic tape stop device for stopping a magnetic tape to produce a still image reproduction signal, comprising:

means responsive to an instruction for a still image reproduction mode to change the velocity of said magnetic tape to a velocity lower than that in a normal reproduction mode;

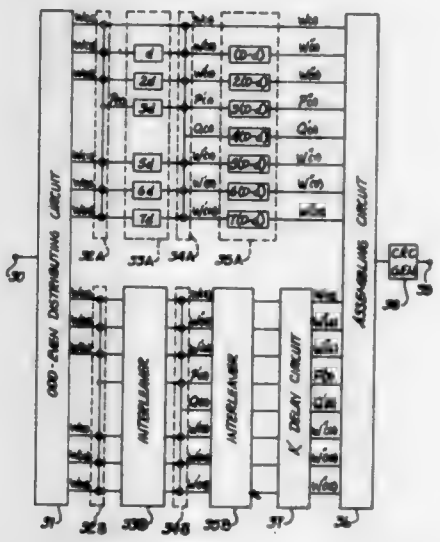
detection means for detecting the level of the reproduced signal read from said magnetic tape by said video head; and

tape stopping means for stopping the movement of said magnetic tape when said level detected by said detection means meets a predetermined condition, including means for comparing said detected level with a predetermined reference voltage to stop the drive of said magnetic tape when said detected level reaches said reference voltage.

4,403,261
METHOD AND APPARATUS FOR EDITING DIGITAL SIGNAL

Masato Tanaka, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 28, 1981, Ser. No. 297,252
Claims priority, application Japan, Aug. 28, 1980, 55-118858
Int. Cl.³ G11B *27/02, 5/00*
U.S. Cl. 360—13 13 Claims



1. A method of editing digital signals recorded on a record medium, wherein said recorded digital signals have been encoded for correction of multiple error by processing the signals, prior to recording, as a sequence of error correcting blocks formed of a plurality of sequences of digital information words, at least one sequence of error correction words being inserted therein, generating elements of which are formed of words of the respective information word sequences, interleaving the sequences of information and error correction words by imparting different respective delays thereto which are integral multiples of a predetermined delay amount, and forming recording blocks of the interleaved words so that each word of said at least one error correction word sequence and the words constituting the generating elements thereof are spaced from nearest ones thereof by a predetermined number of such recording blocks; comprising the steps of

reproducing said recorded digital signal from said record medium;

providing an additional digital signal to be edited;

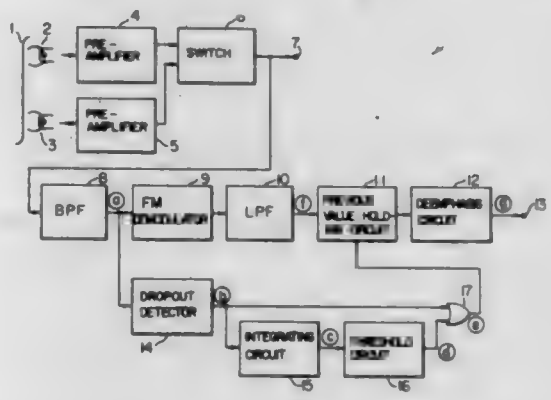
mixing the reproduced digital signal and the additional digital signal to provide an edited digital signal; and

recording the edited digital signal on said record medium; wherein the step of recording includes commencing and ending the recording of the edited digital signal at predetermined points selected so that if multiple editing is carried out, fewer than (m+1) errors will be generated.

4,403,262
AUDIO SIGNAL MUTING CIRCUIT FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS

Shigeyuki Ito, Yokohama, and Yoshizumi Watatani, Fujisawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 1, 1981, Ser. No. 298,347
Claims priority, application Japan, Sep. 3, 1980, 55-121055
Int. Cl.³ G11B *15/02, 5/04*
U.S. Cl. 360—19.1 3 Claims



1. A reproduction audio signal muting circuit for a magnetic recording and reproducing apparatus which records and reproduces a frequency modulated video signal and a frequency modulated audio signal on the frequency multiplex basis onto a magnetic recording medium comprising:

dropout detection means for detecting the amplitude of a frequency modulated audio signal reproduced from a magnetic recording medium, and producing a signal which represents a period in which said amplitude is lower than a predetermined level;

means for integrating the output signal of said dropout detection means, and producing a signal which represents a period in which the integrated output is higher than a predetermined level;

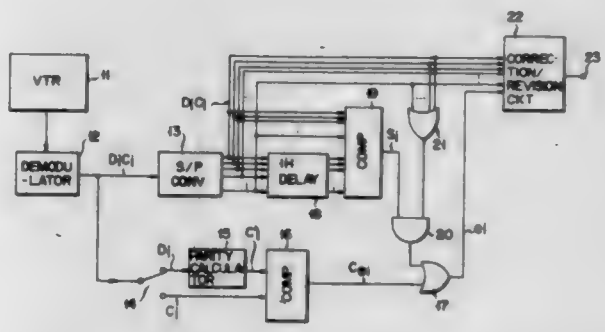
means for demodulating the frequency modulated audio signal reproduced from said magnetic recording medium; and

means for conducting the audio signal from said demodulation means, and blocking the audio signal from said demodulation means from being outputted externally of said apparatus when at least one of said dropout detection means and said signal producing means produces an output signal.

4,403,263
SYSTEM FOR PROCESSING AUDIO PCM DIGITAL SIGNALS

Satoshi Kageyama, Yokohama; Tadashi Kojima, Yokosuka, and Shigeru Todokoro, Fujisawa, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 14, 1980, Ser. No. 206,833
Claims priority, application Japan, Nov. 16, 1979, 54-147663
Int. Cl.³ G11B *5/00, 5/09*
U.S. Cl. 360—32 4 Claims



1. A reproduced digital audio information signal processing system used with a reproducing system having a dropout compensation circuit for reproducing audio information sig-

nals recorded on a recording medium in the form of digital data words through said dropout compensation circuit comprising:

dropout compensation detecting means for detecting whether a reproduced digital signal is dropout-compensated or not; and

means responsive to said dropout compensation detecting means to add an error pointer signal to said reproduced digital signal when said reproduced digital signal is detected as being dropout-compensated.

4,403,264

PICTURE SIGNAL AMPLIFYING CIRCUIT FOR MAGNETIC VIDEO RECORDING AND REPRODUCING APPARATUS

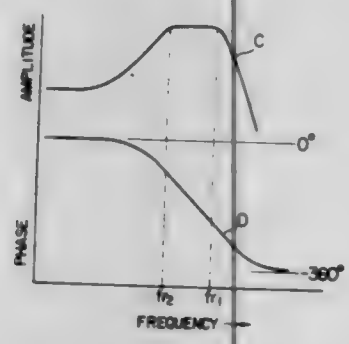
Yoshizumi Watatani, and Atsushi Yoshioka, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 24, 1981, Ser. No. 237,849

Claims priority, application Japan, Feb. 25, 1980, 55-21680

Int. Cl.³ H04N *5/785*

U.S. Cl. 360—33.1 **2 Claims**



1. A picture signal amplifying circuit for a magnetic picture signal recording and reproducing apparatus in which a carrier signal is frequency-modulated in dependence on a picture signal after a high frequency band of the picture signal is emphasized in a pre-emphasis circuit and then recorded on a recording medium for being reproduced, said amplifying circuit comprising a first resonance circuit having a first resonance frequency in the vicinity of the frequency of the frequency-modulated carrier signal corresponding to a white peak level of said picture signal which has been emphasized by said pre-emphasis circuit, and a second resonance circuit connected in cascade to said first resonance circuit and having a second resonance frequency in the vicinity of the frequency of said carrier signal corresponding to an average level of said picture signal, wherein a combined frequency-amplitude characteristic of said first and second resonance circuits is so set as to be substantially flat in a frequency band between said first resonance frequency and said second resonance frequency.

4,403,265

POWER LOADING/UNLOADING MECHANISM FOR TAPE RECORD/PLAYBACK APPARATUS

Hitoshi Okada; Kazuki Takai, and Katsumi Yamaguchi, all of Toda, Japan, assignors to Clarion Company, Ltd., Tokyo, Japan

Filed Apr. 9, 1981, Ser. No. 252,678

Claims priority, application Japan, Apr. 9, 1980, 55-47069[U]

Int. Cl.³ G11B *17/00, 15/18, 15/00*

U.S. Cl. 360—96.5 **3 Claims**

1. A power loading/unloading mechanism for a tape record/playback apparatus which comprises:

a first gear member driven by a motor;

a second gear member engageable with said first gear member;

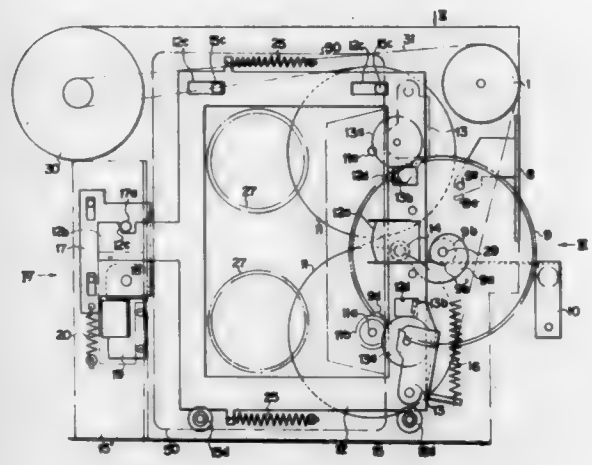
a rack member engaged with said second gear member for setting a tape pack inserted into said apparatus to a play position therein;

an engaging means for engaging said second gear member with said first gear member to move said rack member so as to set the tape pack to the play position and then disengaging said second gear member from said first gear member;

a third gear member driven by said motor;

a partly cut-out gear member disposed so as to engage with the third gear member;

a cam member interlocked with said partly cut-out gear member for advancing a head plate;



a keep means for keeping the third gear from engagement with the teeth of the partly cut-out gear; and

an engagement operating means responsive to completion of tape pack loading by said engaging means for putting said third gear member into mesh with the teeth of the partly cut-out gear so that said cam member advances the head plate to the tape pack.

4,403,266

CASSETTE TAPE PLAYER

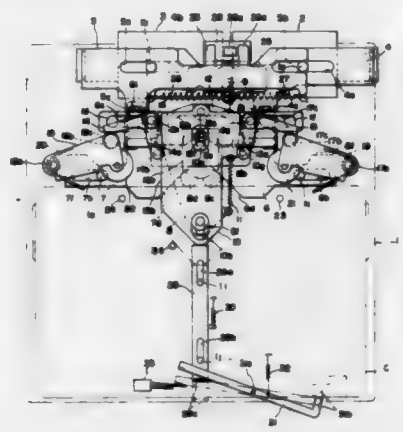
Teturo Kamimura, and Masahiro Komatsubara, both of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 19, 1981, Ser. No. 245,217

Claims priority, application Japan, Mar. 31, 1980, 55-41504; Mar. 31, 1980, 50-41505

Int. Cl.³ G11B *5/54, 21/22, 21/12*

U.S. Cl. 360—105 **6 Claims**



1. A cassette tape player comprising:

a chassis;

a pair of slide plates each adapted to be driven relative to said chassis;

a switch plate means positioned between said slide plates and having a pair of spaced switch elements, said respective switch elements being biased toward the respective slide plates by a normally equal force thereon;

contact means extending between said spaced switch elements for switching said player to a playback mode by means of said spaced switch elements;

a pair of transmission plates operatively connected to said respective pair of slide plates, wherein said slide plates

slideably move each of said transmission plates to an operative position;

a head base carrying a head thereon and driven to advance the head to a playback position for tape contact upon said sliding movement to the operative position of either one of said transmission plates; and

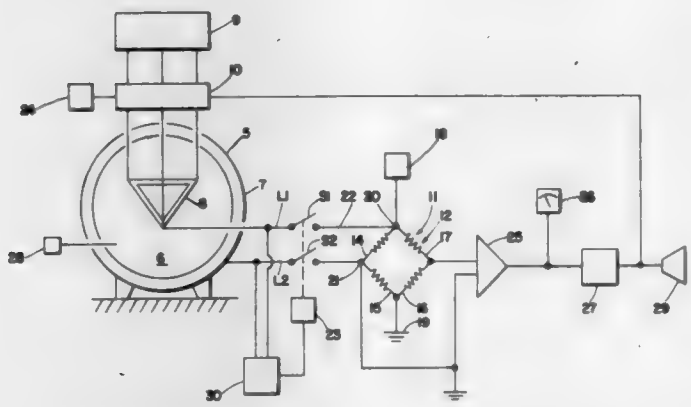
blank area detecting means for slightly retracting the head base while maintaining the tape in contact with the head upon the sliding movement to the operative position of the other of said transmission plates.

4,403,267

ELECTRICALLY HEATED VACUUM FURNACE WITH A FAULT DETECTION SYSTEM

Steven H. Verhoff, and David A. Krieger, both of Toledo, Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed May 14, 1982, Ser. No. 378,078
Int. Cl.³ H02H *3/16*
U.S. Cl. 361—42 **15 Claims**



1. A device for detecting in a electrically heated furnace, a fault, such as a short caused by breakage of an electric heating element operable by AC, comprising:

(a) a bridge, including four resistance legs which are in electrical communication with a source of DC which is balanced by the resistance of the legs, so that no DC flows from the bridge;

(b) a main electrical circuit including one of the resistance legs in series with an electric heating element and casing of the furnace, the bridge becoming unbalanced when a fault occurs so that DC will leak therefrom; the circuit including a switching mechanism which maintains the circuit in a normally open condition;

(c) means for detecting leakage of DC from the bridge;

(d) means for periodically shuting off AC to the heating element; and

(e) means for operating the switching mechanism to close the circuit when the circuit is free of AC.

4,403,268

PROTECTIVE RELAY HAVING AN IMPROVED CHARACTERISTIC ANGLE ADJUSTMENT CIRCUIT

Marvin F. Keeney, Jr., Springfield, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Jan. 28, 1982, Ser. No. 343,616
Int. Cl.³ H02H *3/00*
U.S. Cl. 361—80 **4 Claims**

1. A protective relay having means for selecting a plurality of characteristic angles while maintaining the reach function of the protective relay at a substantially constant magnitude, said means for selecting being adapted to be coupled to a transmission line by one or more transactors and a clamping means, said one or more transactors being respectively coupled to one or more phases of the transmission line by current coupling means and each current coupling means developing a signal respectively representative of the current flowing within the coupled phase of said transmission line, each of said one or more transactors having a primary winding connected to said coupling means, a secondary winding, a predetermined turns ratio between said windings, and a loading resistor coupled across said secondary winding, the turns ratio and the loading resistor being chosen so as to develop a first output signal across said loading resistor upon which the reach function of the protective relay depends, said clamping means being interposed between each of the one or more transactors and said means for selecting, each of the clamping means developing a second output signal, each of said clamping means limiting said first output signal to within a predetermined range of voltages;

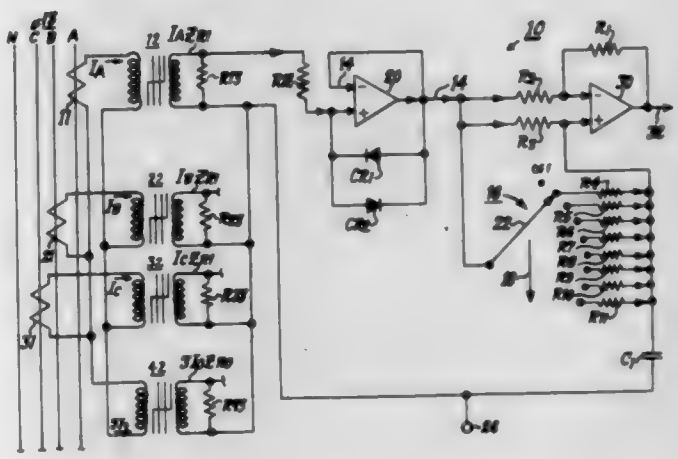
said means for selecting a plurality of characteristic angles comprising: a differential means, selectable means, a capacitor and a plurality of resistors;

said differential means comprising an inverting input, a non-inverting input, and output, and means for developing at said output a signal proportional to the difference between the signals applied to said inputs;

a resistor R1 coupling said inverting input to said output of the differential means, a resistor R2 coupling said second output signal to said inverting input, a resistor R3 coupling said second output signal to said non-inverting input,

means for coupling said non-inverting input to one side of each of said plurality of resistors and means for coupling said one side of the resistors to one side of said capacitor;

said selectable means having an arm, said arm having a first end coupled to said second output signal and a second end



selectably connected to the other side of each of said plurality of resistors;

said capacitor having a second side coupled to one side of the secondary of each of said one or more transactors;

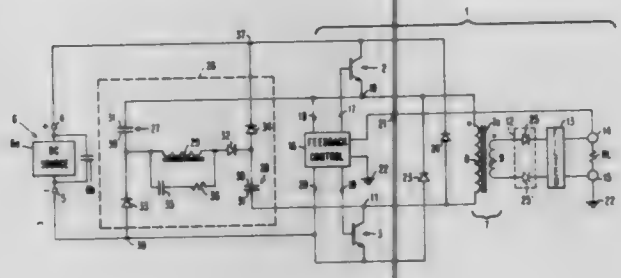
said plurality of resistors and said capacitor having values selected in combination with the predetermined turns ratio and loading resistor of each of said transactors so as to establish a predetermined time constant for each of said plurality of resistors, each of said predetermined time constants being selected to establish the desired characteristic angle of said protective relay, each of said predetermined time constants causing said second output signal applied to said non-inverting input to be phase shifted relative to said second output signal applied to said inverting input so as to cause said differential means to develop an output representative of its phase shifted inputs, each of the predetermined time constants being selected to cause the output signal of the differential means to have a phase shift value relative to the input of the associated transactor which is the characteristic angle of the protective relay, said developed output signal providing said characteristic angle for said protective relay and having a magnitude which remains substantially constant for each of the plurality of resistors coupled to said differential means by said selectable means.

4,403,269

NON-DISSIPATIVE SNUBBER CIRCUIT APPARATUS

Lawrence B. Carroll, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 5, 1982, Ser. No. 354,984
Int. Cl.[3] H02H 7/20
U.S. Cl. 361—91 10 Claims



1. In dual-switch transformer-coupled switching regulator circuit apparatus, said regulator circuit apparatus having:

a pair of first and second semiconductor switch means operable in phase,

transformer means having an input winding coupled in series between said first and second switch means at predetermined first and second junctions, respectively,

said series coupled pair of switch means and input winding being adapted for series connection between the positive and negative terminal means of a predetermined dc supply at predetermined third and fourth junctions, respectively, and third and fourth semiconductor switch means,

said third switch means being coupled between said first junction and said fourth junction, and said fourth switch means being coupled between said second junction and said third junction,

the combination therewith of non-dissipative snubber circuit apparatus, said snubber circuit apparatus comprising:

first and second capacitor means, each of said capacitor means having a pair of first and second electrodes, said second electrode of said first capacitor means being coupled to said first junction, and said second electrode of said second capacitor means being coupled to said second junction,

inductor means,

first diode means for coupling said inductor means between said first electrodes of said first and second capacitor means,

second diode means for coupling said first electrode of said first capacitor means to said fourth junction, and

third diode means for coupling said first electrode of said second capacitor means to said third junction.

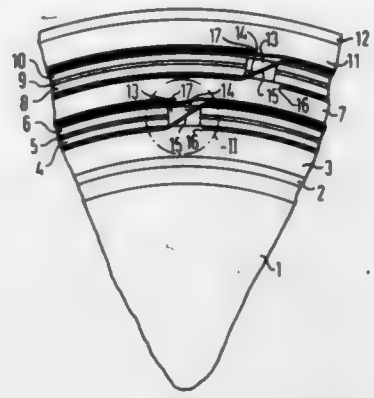
4,403,270

LAYER CAPACITORS, AND METHOD FOR THE MANUFACTURE THEREOF

Hartmut Kessler, Regensburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 14, 1981, Ser. No. 254,194
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1980, 3015678
Int. Cl.[3] H01G 4/18, 4/30
U.S. Cl. 361—328 9 Claims

1. Method for the manufacture of layer capacitors, which comprises winding a plurality of mother capacitors wound from at least one capacitor foil on a drum on top of each other, winding a turn of a cover foil packet formed of cover foils and a separating foil on each mother capacitor and having a gap between the beginning and the end of the turn of the cover foil packet, winding a value foil through the gap and toward the mother capacitor on top of the gap, winding a holding foil with increased winding tension into at least the last wound value foil layer to place the cover foil packet under the holding foil with circumferential displacement therebetween, continuing to



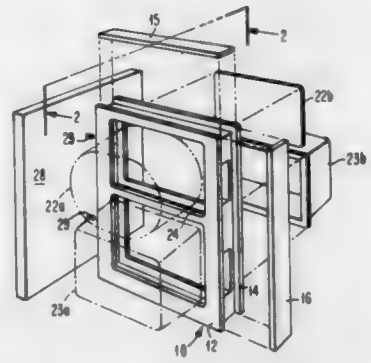
wind the holding foil with the value foil through the gap for more than one turn, and cutting off the holding foil.

4,403,271

APPARATUS FOR MOUNTING AND PACKAGING DATA PROCESSING DEVICES

Charles D. Flanigan, San Jose, and Edward R. Wiener, Monte Sereno, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,583
Int. Cl.[3] H05K 7/20
U.S. Cl. 361—383 5 Claims



1. Data processing apparatus comprising:

a housing means comprising a hollow wall-like structure having at least two pairs of apertures, those of each pair being coaxially aligned and of substantially identical configuration with those of every other pair,

a plurality of data processing devices, at least two of which are of different size and configuration,

means removably securing each such device to the structure in accommodating relation to at least one of the apertures of any selectable one of said pairs, such that at least one portion of each device projects outwardly of the structure,

removable covers for each such device, those for each such different device being differently configured to suit the uniquely different configuration of the projecting portion of that specific device, but each such cover having a peripheral dimension that is larger than that of one of the identical apertures of each pair,

said structure having therein in identical surrounding relation to each aperture a series of mounting holes,

means including at least some of said mounting holes removably mounting each cover to enclose a corresponding projecting portion of such specific device but allow access to such device and to the corresponding securing means, and

an upstanding support member disposed at right angles to said structure and secured to said structure to create a stable assemblage, whereby each device is selectably mountable in any of a plurality of locations in a standard-

ized stable structure and readily removable so as to facilitate accessibility for servicing and/or field replacement of defective devices as distinct entities.

4,403,272

MEMBRANE SWITCH INTERCONNECT TAIL AND PRINTED CIRCUIT BOARD CONNECTION

Willis A. Larson; David A. Christensen, and Anthony J. VanZeeland, all of Crystal Lake, Ill., assignors to Oak Industries Inc., Rancho Bernardo, Calif.

Filed Jun. 2, 1980, Ser. No. 155,562
Int. Cl.³ H05K 1/00
U.S. Cl. 361—398 **6 Claims**



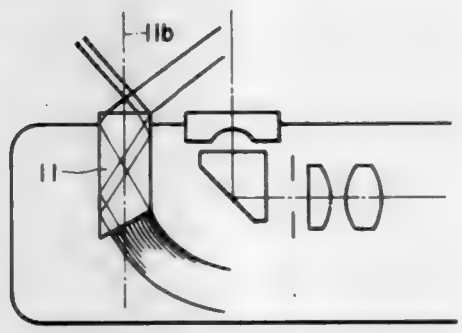
1. Means for interconnecting electrical conductors useful in membrane switch technology including a tail element, conductive trace means formed on said tail elements, adhesive means for securing said tail element to separate electrical means having electrical conductors thereon, said tail element including an upraised portion with the conductive trace means, at least in part, being positioned on said upraised portion, whereby the upraised portion positions the conductive trace means, at least in part, above said adhesive means to insure positive contact between said conductive trace means on the tail element and the electrical conductors on said separate electrical means.

4,403,273

ILLUMINATING SYSTEM FOR ENDOSCOPES

Kimihiko Nishioka, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1982, Ser. No. 342,425
Claims priority, application Japan, Jan. 26, 1981, 56-9933
Int. Cl.³ F21V 7/04
U.S. Cl. 362—32 **9 Claims**



1. An illuminating system for endoscopes comprising a light guide means formed of a light transmitting fiber bundle and a bar-shaped reflecting means arranged in front of said light guide means, said light guide means and bar-shaped reflecting means being so arranged that the optical axis of at least one of said light guide means and bar-shaped reflecting means do not intersect at right angles with at least one of the exit end face of said light guide means and the entrance end face of said bar-shaped reflecting means.

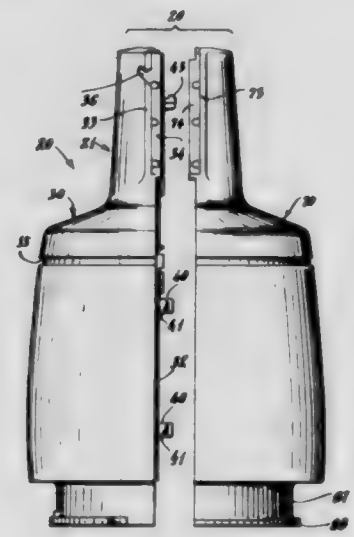
4,403,274

PORTABLE LAMP

Arthur H. Moore, Fairfield, Conn., assignor to The Bridgeport Metal Goods Mfg. Co., Bridgeport, Conn.

Filed Jan. 6, 1981, Ser. No. 222,932
Int. Cl.³ F21L 7/00, 19/00
U.S. Cl. 362—186 **9 Claims**

1. A portable lamp comprising a base including two molded plastic housing halves secured together along generally vertical joints by snap action engagement of headed projections extending from one of the housing halves over flanges deployed to receive the headed projections on the other of the housing halves, a molded plastic bottom cap removably mounted to the assembled housing halves, the base adapted for removably receiving a battery with access via said removable bottom cap. The base integrally defining a bulb socket adapted for removably receiving a bulb, each of the housing halves defining one L-shaped groove portion of a bayonet mount for



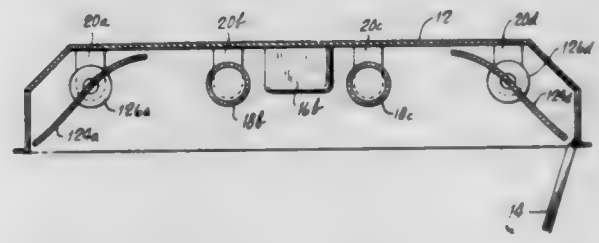
the bulb wherein the L-shaped grooves are positioned for bayonet mounting of the bulb when the housing halves are assembled together, a bulb received in the bulb socket and a battery received in the base, and conductive means for supplying current from the battery to the bulb including switch means operable from the exterior of the base, and a bulb-to-battery metal conductor strip and a bulb-to-switch metal conductor strip, said metal conductor strips extending into the bulb socket to make contact with the bulb therein, and to bias the bulb into firm engagement with the bayonet mount.

4,403,275

WATTLESS LAMP ASSEMBLY

Neil J. Oser, Pleasantville, N.Y., assignor to FAO, Inc., Hawthorne, N.Y.

Filed Mar. 16, 1981, Ser. No. 244,275
Int. Cl.³ F21S 3/00
U.S. Cl. 362—220 **13 Claims**



1. A multi-lamp fixture accommodating at least two fluorescent lamps comprising:

lamp holding means adapted to receive said lamps;

circuit means connected to said holding means for supplying electrical power to said lamps;

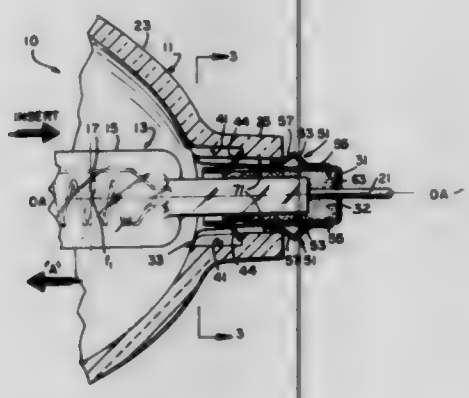
reflecting means introduced into said fixture and having longitudinally spaced ends received by the portion of said holding means adapted to hold a fluorescent lamp in place of a removed fluorescent lamp, configured to reflect outwardly from said fixture to the intended areas to be illuminated a substantial portion of the illumination received from the lamp or lamps remaining therein which would otherwise be absorbed within the fixture.

4,403,276

FRONT LOADING PROJECTION UNIT WITH SNAP IN CAPSULE

Ronald G. Blaisdell, Saugus, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 3, 1980, Ser. No. 212,470
Int. Cl.[3] H01R *33/00*
U.S. Cl. 362—226 6 Claims



1. In a projection unit including a glass reflector having a front concave reflecting portion and a rear neck portion having a substantially rectangular opening therein, an incandescent lamp including an envelope portion and a sealed end adjacent said envelope portion, first retention means of a substantially boxlike configuration secured to said sealed end of said lamp for retaining said lamp therein and aligning said lamp within said reflector whereby said envelope portion will be positioned substantially within said front concave reflecting portion and said sealed end will be positioned substantially within said substantially rectangular opening within said rear neck portion, said substantially boxlike first retention means removably positioned within said opening and adapted for being removed through said front concave reflecting portion of said reflector, and second retention means for retaining said first retention means within said substantially rectangular opening of said reflector and permitting removal thereof through said front concave reflecting portion, the improvement where said substantially rectangular opening includes a longitudinal slot within a surface thereof and said second retention means comprises at least one depressible, cantilever spring secured at one end thereof to said substantially boxlike first retention means, said cantilever spring including an angular engaging portion for moving within said longitudinal slot during insertion and removal of said first retention means and capable of being depressed to a first position to enable said insertion and removal, said cantilever spring releasing to a second, expanded position such that said angular engaging portion engages an edge of said rear neck portion of said reflector when said first retention means is fully inserted within said substantially rectangular opening to effect said retention of said first retention means within said opening.

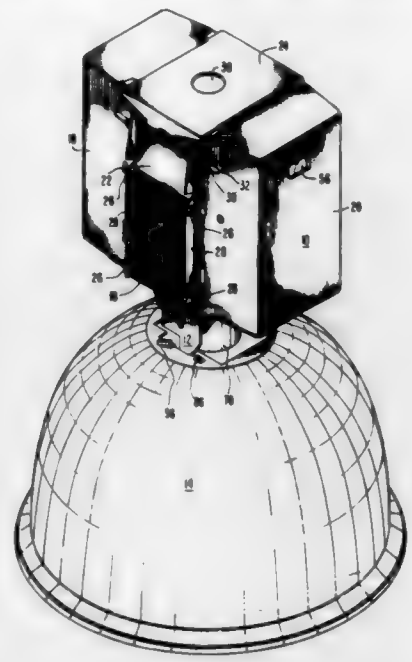
4,403,277

INDUSTRIAL LIGHTING ILLUMINATION

William R. Eargle, Jr., and Winfried N. Westermann, both of Vicksburg, Miss., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Jan. 30, 1981, Ser. No. 229,897
Int. Cl.[3] F21V *7/00; 17/00, 19/02*
U.S. Cl. 362—263 8 Claims

1. An industrial lighting luminaire comprising in combination, a ballast housing, a reflector and a reflector support securing said reflector to said ballast housing, said ballast housing including a transformer and a pair of side housing compartments secured to said transformer, said transformer forming a



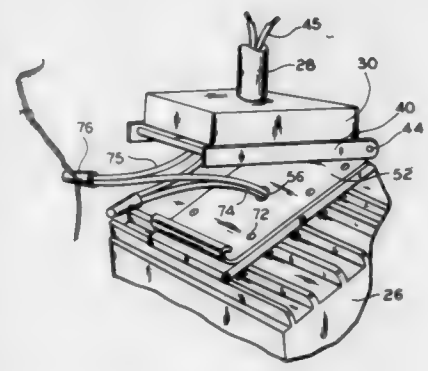
part of the front and rear exterior surfaces of said ballast housing.

4,403,278

MOUNTING SYSTEM FOR SUSPENDED LIGHTING FIXTURES

Thomas W. Flood, Hanover Park, Ill., assignor to Harvstone Manufacturing Corporation, Elk Grove Village, Ill.

Filed Nov. 25, 1981, Ser. No. 324,642
Int. Cl.[3] F21V *21/00*
U.S. Cl. 362—396 13 Claims



1. A mounting system for suspending fixtures from overhead structures, the system comprising:

(a) support means having an open side with first and second opposing ends at the open side;

(b) plate means dimensioned to cover and conceal the open side of the support means with its first and second opposing ends covered by correspondingly opposing ends on said plate means;

(c) disengageable pivot means adjacent the first ends of said open side and said plate means for disengageable interconnection of the support and plate means, said disengageable pivot requiring a predetermined sequence of horizontal and vertical movements of said plate relative to said support means in order to disengage said plate means from said support means;

(d) hooking means adjacent the second ends of said open side and plate means for latching said plate over said open side, said relationships being such that said plate hangs, but does not fall, from said support if said hooking means is accidentally unlatched;

(e) means for attaching a light fixture to the mounting system before said disengageable pivot means is engaged; and

(f) means for attaching the mounting system to an overhead structure;

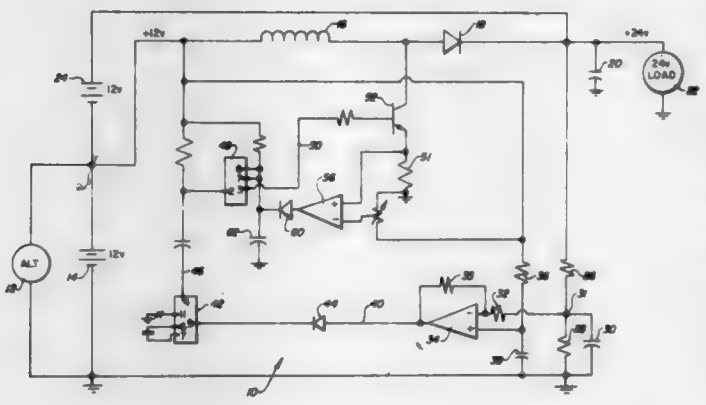
whereby the plate means and support means may be attached to each other at the disengageable pivot means without danger that said fixture may fall before the plate is closed against the open side, whereby after the pivot is engaged the plate may swing on the pivot and be secured by said hooking means against the open side, and whereby the lighting fixture must be lifted and shifted in order to disengage it from the support means.

4,403,279

VEHICULAR PLURAL VOLTAGE SYSTEM

Arthur E. Hirsch, and Donnell L. Dunn, both of Terre Haute, Ind., assignors to J. I. Case Company, Racine, Wis.

Filed Nov. 2, 1981, Ser. No. 317,169
Int. Cl.³ H02M *7/25*
U.S. Cl. 363—60 **3 Claims**



1. A vehicular electrical system for producing an output voltage having a selected value greater than the value of a source voltage comprising:

first circuit means connected to said source voltage and capable of producing an output voltage having a selected value greater than the value of said source voltage;

means for sensing the value of said output voltage and for producing a feedback signal having a characteristic which varies as a function of the difference between the sensed value of said output voltage and the selected value thereof;

said sensing means including comparison means for comparing the sensed value of said output voltage to a reference value, said comparison means producing said feedback signal having a magnitude which varies as a function of the difference between the sensed value of the output voltage and said reference value, said reference value being said source voltage and said sensed value of said output voltage being a fraction thereof;

control circuit means connected to said first circuit means for controlling the operation thereof in response to said feedback signal for varying the value of said output voltage as a function of said characteristic of said feedback signal to maintain said output voltage substantially at said selected value; and

circuit means connected to said output voltage for producing a sensing voltage which is substantially equal to one half of said output voltage;

said comparison means being connected to said circuit means for comparing said sensing voltage to said source voltage;

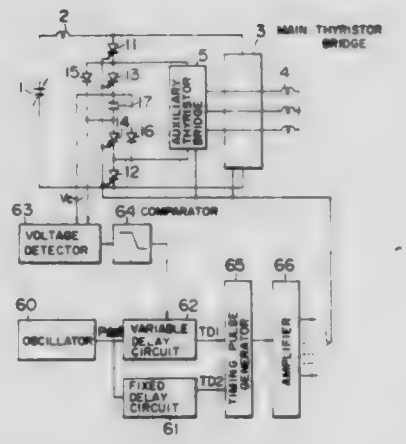
whereby the selected value of said output voltage is substantially double the value of said source voltage.

4,403,280

COMMUTATION CONTROL DEVICE FOR CURRENT TYPE INVERTERS

Chihiro Okado, Fuchu, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed May 4, 1982, Ser. No. 374,746
Claims priority, application Japan, May 12, 1981, 56-71255
Int. Cl.³ H02P *13/18*; H02M *1/06*
U.S. Cl. 363—96 **6 Claims**



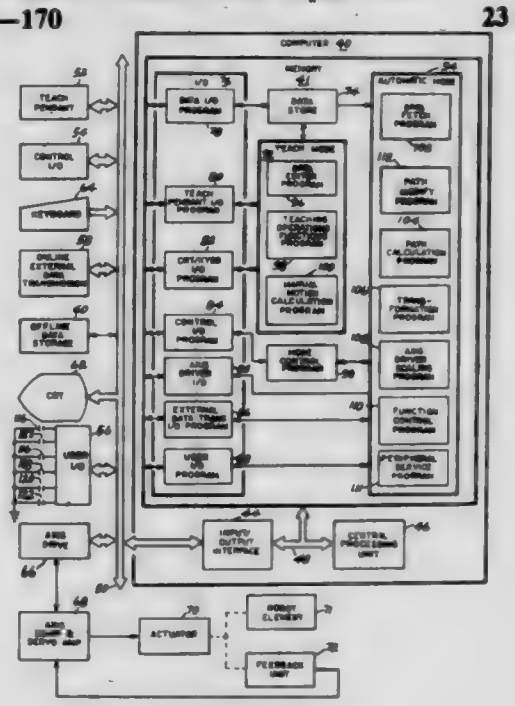
1. In a commutation control device for a current type inverter of the type wherein commutation energy of a load of the inverter is stored in a capacitor, and subsequent commutation is effected utilizing discharge of said capacitor, the improvement comprising means for detecting a voltage across said capacitor when it is charged and means for controlling a length of discharge interval of said capacitor during said subsequent commutation depending on the detected capacitor voltage so as to maintain the capacitor voltage at a substantially constant value.

4,403,281

APPARATUS FOR DYNAMICALLY CONTROLLING THE TOOL CENTERPOINT OF A ROBOT ARM OFF A PREDETERMINED PATH

John G. Holmes, and Brian J. Resnick, both of Cincinnati, Ohio, assignors to Cincinnati Milacron Industries, Inc., Cincinnati, Ohio

Filed Apr. 3, 1981, Ser. No. 250,908
Int. Cl.³ G06F *15/46*; G05B *19/24*
U.S. Cl. 364—170 **23 Claims**



1. An apparatus for modifying the motion of a tool centerpoint associated with a function element, the motion being along predetermined paths between programmed points and

being defined by input signals representing positions and path velocities therebetween relative to a rectangular coordinate system, the apparatus comprising

(a) a robot arm including means associated with the tool centerpoint for providing a plurality of axes of motion to move the tool centerpoint along predetermined paths, the plurality of axes of motion defining a generalized coordinate system and the arm including a plurality of actuators for effecting motion;

(b) means for producing a deviation signal during motion between programmed points to command a change in position of the tool centerpoint off the predetermined paths;

(c) a control including means for storing the input signals and a servomechanism circuit connected to the actuators to move the tool centerpoint along the predetermined paths, the control further including;

(1) means for recalling first input signals representing first and second program points and a path velocity therebetween

(2) means for iteratively producing sets of individual control signals representing generalized coordinate values relative to the generalized coordinate system of points along a path offset from the predetermined path, the means for producing sets of individual control signals further including;

(a) means for producing in response to first input signals, a set of intermediate signals representing intermediate coordinate values relative to the rectangular coordinate axes of an intermediate point located an incremental distance from the first programmed point along the predetermined path,

(b) means for modifying the set of intermediate signals and the recalled program point signals in response to the deviation signal to produce modified intermediate signals and recalled programmed point signals representing offset points displaced from points along the predetermined path, and

(c) means for generating in response to the modified sets of intermediate signals and recalled programmed point signals, a set of individual control signals representing generalized coordinate values relative to the generalized coordinate system of an offset point; and

(3) means for iteratively applying the sets of individual control signals to the servo mechanism circuit to operate the actuators in a coordinated manner to move the tool centerpoint through offset paths displaced from the predetermined paths.

4,403,282

DATA PROCESSING SYSTEM USING A HIGH SPEED DATA CHANNEL FOR PROVIDING DIRECT MEMORY ACCESS FOR BLOCK DATA TRANSFERS

Kenneth D. Holberger, Marlboro, and Joseph E. Samson, Framingham, both of Mass., assignors to Data General Corporation, Westboro, Mass.

Continuation of Ser. No. 871,690, Jan. 23, 1978, abandoned. This application Apr. 29, 1980, Ser. No. 144,884

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **17 Claims**

1. A data processing system comprising a central processor unit and a memory, said system further including

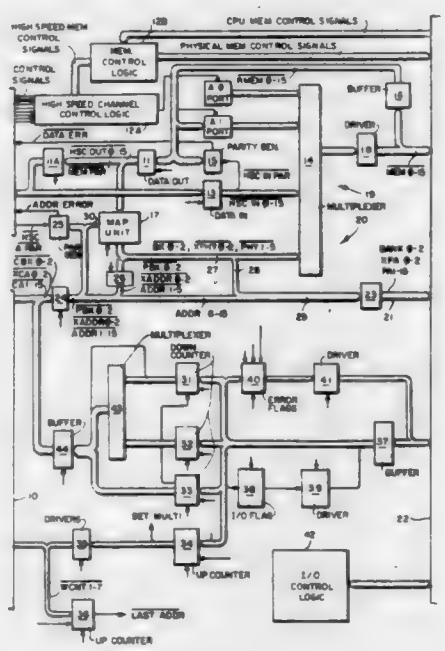
channel means separate from said central processor unit for permitting direct access to said memory by input/output devices external to said central processor unit, said channel means including

memory allocation means capable of translating logical addresses from a selected input/output device into physical addresses for said memory in response to a request therefor from said selected input/output device;

data transfer means for providing a direct transfer of a block of one or more data words directly between a selected input/output device and said memory upon request from said input/output device and for providing a direct transfer of memory allocation information between said memory allocation means and said memory upon request from said central processor unit;

address transfer means capable of transferring to said memory physical addresses which have been translated from logical addresses received from said selected input/output device and further capable of transferring to said memory physical addresses which have been received from said selected input/output device; and

control means being responsive to a request signal from a



selected input/output device for a transfer of a block of one or more data words and being further responsive substantially at the time of said request to an input signal from said input/output device identifying the direction of transfer of said block of data words and to another input signal identifying whether said transfer requires a memory address translation by said memory allocation means, said control means supplying control signals to said address transfer means, to said data transfer means, and to said memory allocation means for controlling the operations thereof.

4,403,283

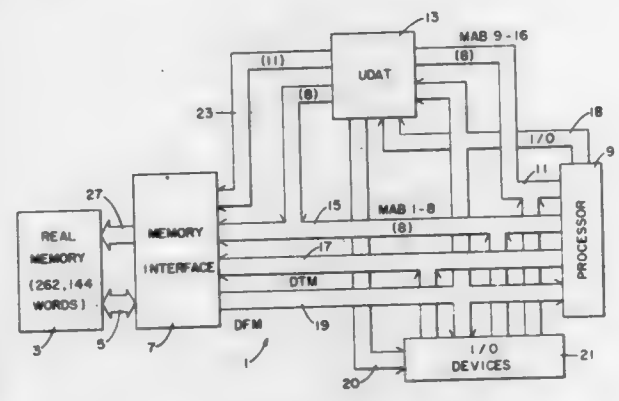
EXTENDED MEMORY SYSTEM AND METHOD

Jon N. Myntti, Martinsville, Ind.; Kirk P. Anderson, Phoenix, Ariz., and Jay R. Hosler, Santa Cruz, Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Jul. 28, 1980, Ser. No. 173,208

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—200 **12 Claims**



1. A method for operating an expanded memory computing system, said method comprising the steps of:

(a) allocating a first portion of a first memory for execution of a first user program;

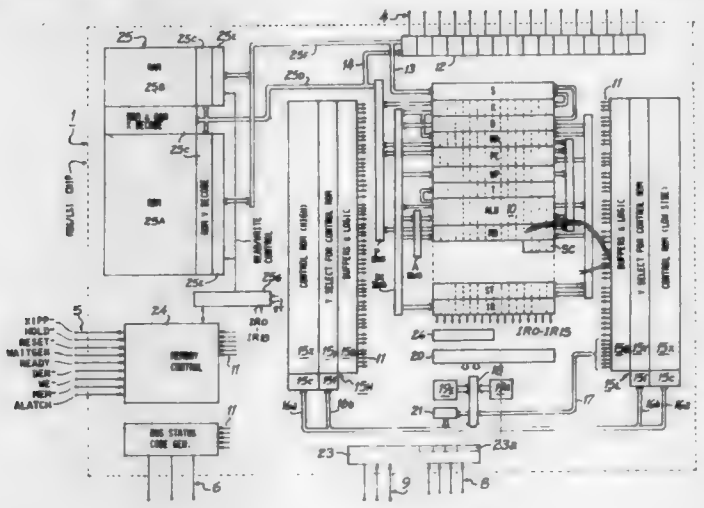
(b) loading said first user program into said first portion of said first memory;
(c) loading a first group of real addresses of said first portion of said first memory into a second memory;
(d) executing each instruction of said first user program by utilizing a processor to produce a logical address for that instruction, utilizing that logical address to fetch a real address of said first group from said second memory, and utilizing that real address to access a location in said first portion of said first memory;
(e) allocating a second portion of said first memory for execution of a second user program, said first and second portions being mutually exclusive;
(f) loading said second user program into said second portion of said first memory;
(g) loading a second group of real addresses of said second portion of said first memory into said second memory; and
(h) executing each instruction of said second user program by utilizing said processor to produce a logical address for that instruction, utilizing that logical address to fetch a real address of said second group from said second memory and utilizing that real address to access a location in said second portion of said first memory;
said allocating step (a) comprising the steps of:
(i) requesting a first amount of said first memory to be allocated for execution of said first user program; and
(j) determining the amount of said first memory which is unallocated to any user programs and allocating said first amount for execution of said first user program only if said unallocated amount is greater than or equal to said requested first amount; and
said allocating step (e) comprising the steps of:
(k) requesting a second amount of said first memory to be allocated for execution of said second user program; and
(l) determining the amount of said first memory which is unallocated to any user programs and allocating said second amount for execution of said second user program only if said unallocated amount is greater than or equal to said requested second amount.

4,403,284

MICROPROCESSOR WHICH DETECTS LEADING 1 BIT OF INSTRUCTION TO OBTAIN MICROCODE ENTRY POINT ADDRESS

Stephen P. Sacarisen, and Karl M. Guttag, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 24, 1980, Ser. No. 210,105
Int. Cl.³ G06F *9/26*
U.S. Cl. 364—200 **3 Claims**



1. A microprocessor device comprising:
an arithmetic logic unit having inputs and an output for performing operations on data supplied to said inputs to produce a result at said output according to sets of control signals,
register means for storing data,
input/output means for transferring data and addresses to or from devices external to the device,
interconnecting means for coupling data and addresses to or from the inputs and output of the arithmetic logic unit, said register means, and said input/output means according to said sets of control signals, and
control means for generating the sets of control signals in response to instruction words supplied to the control means by said interconnecting means and input/output means, the control signals functioning to cause the device to execute such instruction words in a plurality of microcode states with each state being defined by one of the sets of control signals,
said instruction words defining a set of instruction words, each instruction word being a plurality of bits of binary 1 or 0, said set including a plurality of different groups, each group having a different number of leading 0 bits followed by a leading 1 bit and then an operation-defining field,
the instruction words of at least a first of said groups containing two operand address fields and two address mode defining fields following said operation-defining field,
the instruction words of a second of said groups containing a constant following said operation-defining field,
the instruction words of a third of said groups containing one operand address field and an address mode defining field following said operation-defining field,
the instruction words of a fourth of said groups containing a displacement address following said operation-defining field,
the instructions words of a fifth of said groups containing no significant bits following said operation-defining fields;
the control means having:
a control ROM with an address input and producing one set of control signals at an output for each unique address input to thereby define a microcode state,
addressing means for generating an entry point address and applying such entry point address to said address input, said addressing means receiving each said instruction word and detecting the position of said leading binary 1 bit in the instruction word and applying a representation of said operation-defining field of such instruction word to said address input as the entry point address, the position of the field being determined by the position of said leading binary 1, said addressing means receiving a microaddress output from the control ROM for each microcode state following said entry point address and applying said microaddress output to said address input.

4,403,285

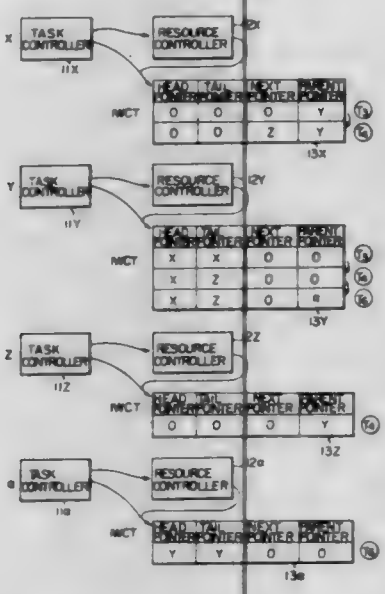
SYSTEM FOR AUTOMATICALLY RELEASING A DEAD LOCK STATE IN A DATA PROCESSING SYSTEM

Ryoichi Kikuchi, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 937,601, Aug. 28, 1978, abandoned. This application Dec. 8, 1980, Ser. No. 214,201
Claims priority, application Japan, Sep. 13, 1977, 52-110238
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **13 Claims**

2. A method for automatically releasing a dead lock state in a data processing system having a CPU for performing tasks, and having a memory, including resources commonly used by the tasks, a waiting task control table and a before image data buffer, comprising the steps of:
(a) storing waiting state information in the waiting task control table to indicate which of the tasks are in a waiting state due to the occupation of one of the resources by the other tasks;
(b) storing before image data in the storing before image data buffer every time the contents of one of the resources is to be modified by one of the tasks;
(c) examining, for a selected task most recently placed in a waiting state, the waiting state information for the other tasks, by reading the contents of the waiting task control table;

(d) determining whether the waiting state information for the other tasks indicates that the waiting state of at least one of the other tasks is due to the occupation of a resource by the selected task;



(e) releasing the resource occupied by the selected task when said determining step (d) indicates that at least one of the other tasks is in a waiting state due to the occupation of a resource by the selected task; and

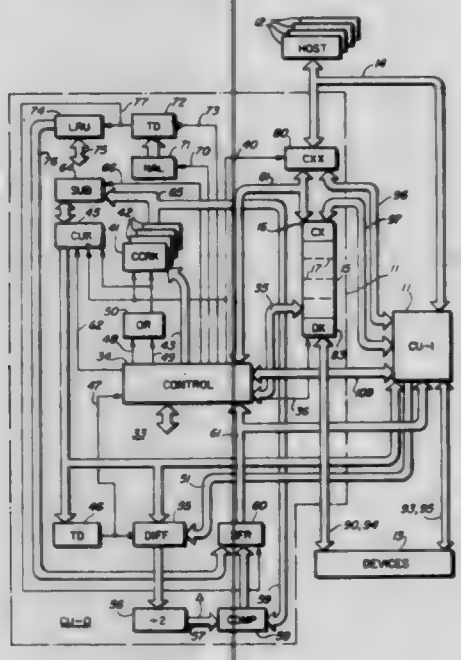
(f) processing the at least one of the other tasks in accordance with the contents of the before image data buffer.

4,403,286

BALANCING DATA-PROCESSING WORK LOADS

Scott M. Fry; Harry O. Hempy, both of Tucson, Ariz., and Bruce E. Kittinger, Fort Collins, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,175
Int. Cl.³ G06F *15/16, 15/20*
U.S. Cl. 364—200 23 Claims



8. The machine-implemented method of balancing workloads between two parallel data processing paths, the automatic machine steps of:

segmenting the data processing in each path into work allocations;

separately tabulating undesired delays in data processing for each of said work allocations;

totaling said tabulations for each of said data processing paths;

independently comparing the total tabulations for each path with a first threshold of such undesired delay tabulations;

when one of said total tabulations for a given one of said data processing paths exceeds said first threshold, then determining the difference in the total delay tabulations between said paths; when the difference between the totals of delay tabulations exceeds a predetermined value, then transfer a one work allocation of said given one data processing path to a second data processing path; selecting said one work allocation to have an average number of all said separate undesired delay tabulations in the one data processing path with respect to said difference of said total delay tabulations; and

each time said first threshold is exceeded in either one of said paths, recalibrating said separate and total tabulations for all of said data processing paths and without affecting said determining step and said selecting step.

9. A machine-implemented method of operating a data processing system having a plurality of independent, program controlled, data processors for regulating the flow of tasks to said data processors from a plurality of sources to facilitate the processing of the tasks with a minimal delay, comprising the automatic machine steps of:

assigning said tasks to said data processors, each task being assigned to but one data processor, monitoring and totaling, individually for each task and collectively for each data processor for each data processor, the number of time delay occurrences in each of said data processors resulting from tasks then being performed by them, the totaling of said time delays being substantially concurrent with the occurrence of the respective time delays;

selecting a separate upper limit value for a total number of task delay occurrence for each said data processor;

diverting a task having a mean number of occurrences of said task delay occurrences of all task delay occurrences in a one of said data processors and assigned to one of said data processors to another of said data processors upon a determination that the difference between task delay occurrence totals of said data processors exceeds a given difference limit value; and

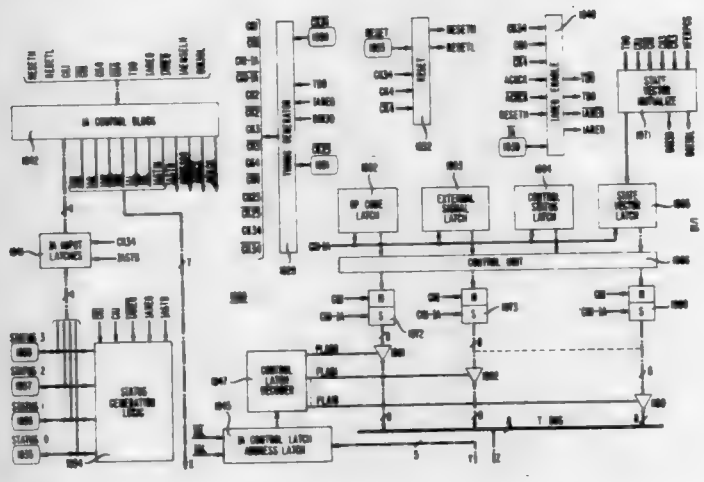
processing said diverted task in said another data processor.

4,403,287

MICROPROCESSOR ARCHITECTURE HAVING INTERNAL ACCESS MEANS

Donald E. Blahut, Holmdel; Jonathan A. Fields, Aberdeen; Victor K. Huang, Gillette; Charles M. Lee, New Providence, and Masakazu Shoji, Warren, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 24, 1981, Ser. No. 295,857
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—200 10 Claims



1. A single-chip processor for executing a program of instructions, the processor comprising:

means for receiving instructions;

a plurality of internal registers;

control means responsive to a current instruction for providing control signals governing the execution of a processor operation specified by the current instruction, including

register control signals governing the reading and/or writing of the internal registers;

characterized in that the internal registers include ones which are assigned test addresses and addressable thereby, and there are included:

means for receiving a test command signal;

means responsive to the test command signal for providing a test enable signal;

means responsive to the test enable signal for suspending the execution of instructions;

means for receiving test addresses;

means for storing a current test address specifying an internal register;

means for receiving test control codes specifying reading or writing of the specified internal register;

means for storing a current test control code;

test control means responsive to the current test control code for providing test control signals governing the reading or writing of the specified internal register;

test address decoding means responsive to the current test address for providing a selection signal corresponding to the specified internal register;

control signal multiplexer means receiving the register control signals and the test control signals and responsive to the selection signal and to the test enable signal for providing appropriate ones of the test control signals to the specified internal register;

means for receiving data to be stored in the specified internal register when writing is specified by the current test control code; and

means for providing data stored in the specified internal register when reading is specified by the current test control code.

4,403,288

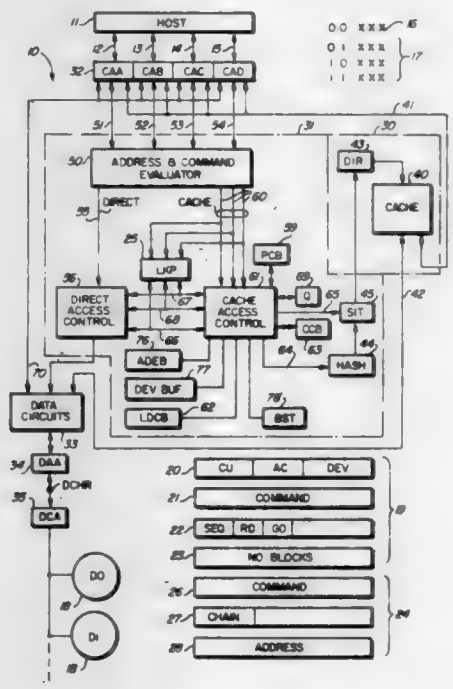
METHODS AND APPARATUS FOR RESETTING PERIPHERAL DEVICES ADDRESSABLE AS A PLURALITY OF LOGICAL DEVICES

John H. Christian; Arthur H. Nolta; David G. Reed; Richard E. Rieck; Gerald E. Tayler; Terrell N. Truan, and John S. Williams, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,011

Int. Cl.³ G06F *11/00*

U.S. Cl. 364—200 **5 Claims**



5. The machine-implemented method of operating a peripheral system having a plurality of addressable storage devices, each said storage device being addressable via any one of a plurality of addresses as a plurality of individual independent logical devices; a cache coupled to all of said devices for relaying signals between any of said addressable devices addressed as a logical device and any one of a plurality of input-output connections of a host means, each said device and cache having a plurality of addressable segments of like data storage capacity;

the steps of:

independently receiving data storage commands from said input-output connections for said logical devices;

combining said received commands into separate work queues for said storage devices, respectively, such that data transfers between said cache and said storage devices are independent of said logical devices;

resetting one of said logical devices including terminating any data transfer currently occurring between said cache and a one of said storage devices accessible via said one logical device;

examining all others of said logical devices for possible data transfers, for each such possible data transfer from said one device to said cache indicate said possible data transfer as being complete and indicate no data from said possible data transfer as being in said cache, and

removing all indicated data transfers from the work queue for said one device.

4,403,289

METHOD AND DEVICE FOR COMPUTED TOMOGRAPHY

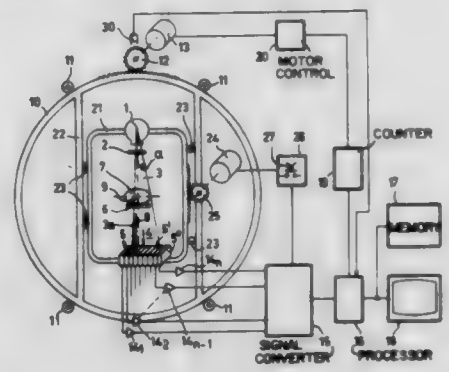
Peter W. Lux, Friedrichshafen, Fed. Rep. of Germany; Hendrikus F. Van Leiden, and Johannes C. A. Op De Beek, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 24, 1980, Ser. No. 209,768

Claims priority, application Netherlands, Nov. 23, 1979, 7908545

Int. Cl.³ G06F *15/42*

U.S. Cl. 364—414 **4 Claims**



1. A computed tomography device for determining a radiation absorption distribution in a plane of a body, comprising:

radiation source means for generating a flat, fan-shaped beam of radiation which is situated in the plane and irradiates the body;

detector means, which are rigidly connected to the source means, for detecting radiation from the source which has passed through the body and for supplying measuring signals which correspond to the intensity distribution of that radiation over a group of measuring paths which extend in a fan-like geometry from the radiation source;

drive means which rotate the radiation source and the detector device around a center of rotation for irradiating the body from a multitude of radiation source positions, the center of rotation being asymmetically situated with respect to the two extreme measuring paths at opposite edges of the group of measuring paths so that a first of the extreme paths is nearer to the center of rotation and the second extreme path is more distant from the center of rotation; and

processing means for calculating, from the measuring signals, radiation absorption values associated with elements distributed as a matrix over the plane of the body; which

include means for multiplying signals representative of radiation measured along a first group of radiation paths which are bounded by the radiation path passing through the center of rotation and the first extreme radiation path by factors f, the factor f having a value of 0.5 for the signal associated with the path passing through the center of rotation, having a value of 0 for the signal associated with the first extreme radiation path, and having values which decrease monotonically from the path passing through the center of rotation to the first extreme path and multiplying signals associated with paths which are symmetrically situated, about the center of rotation, from said first group of paths by corresponding complementary factors (1-f).

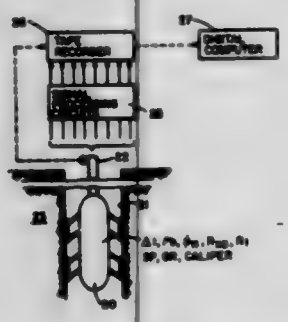
4,403,290
MACHINE METHOD FOR DETERMINING THE PRESENCE AND LOCATION OF HYDROCARBON DEPOSITS WITHIN A SUBSURFACE EARTH FORMATION

Christian M. Clavier, and Alberto Khatchikian, both of Ridgefield, Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 188,951, Oct. 31, 1971, abandoned. This application Mar. 12, 1979, Ser. No. 19,493

Int. Cl.³ G06F *15/20*; G01V *1/28*

U.S. Cl. 364—422 **31 Claims**



1. A machine method for exploring subsurface earth formations to determine the presence and location of hydrocarbon deposits within the earth formation surrounding a borehole formed in the earth formation by probing a plurality of depth levels of such subsurface earth formation with one or more signals produced in an investigating device adapted to be suspended in said borehole and acquiring and analyzing signals responsive to said probing signals, comprising the steps of:

(a) providing a first plurality of electrical signals representative of characteristics of the formation over a plurality of depth levels of the borehole derived from signals responsive to the reaction of the subsurface earth formation to a plurality of probing signals emitted into the formation from a source of such probing signals located in said investigating device;

(b) combining said first electrical signals to produce first output electrical signals representative of formation characteristics for a plurality of formation depth levels;

(c) adjusting the first electrical signals to produce second electrical signals;

(d) combining said second electrical signals to produce second output electrical signals representative of formation characteristics; and

(e) comparing said first and second output electrical signals to produce a record which extends over a plurality of depth levels of further electrical signals representative of the reliability of the first output electrical signals for a plurality of depth levels of the formation, whereby said further electrical signals can be further combined to produce other electrical signals from which the presence and location of hydrocarbon deposits in the earth formation for a plurality of depth levels can be accurately determined.

4,403,291
SELF-SUFFICIENT NAVIGATION DEVICE FOR STREET VEHICLES

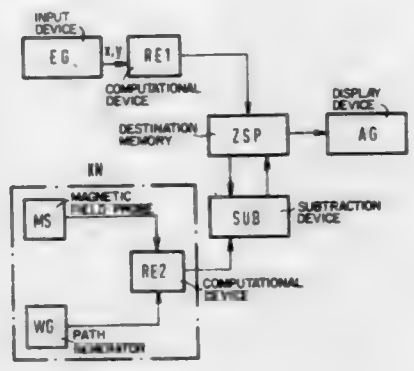
Romuald Von Tomkewitsch, Ebenhausen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 7, 1980, Ser. No. 194,913

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1979, 2941331

Int. Cl.³ G06F *15/50*

U.S. Cl. 364—424 **9 Claims**



6. A self-sufficient navigation apparatus for a vehicle, comprising:

a dead reckoning means including distance measuring means for measuring and providing distance data of the path traveled by the vehicle, angle measuring means for measuring and providing angular data of the path traveled by the vehicle, and first computational means connected to said distance measuring means and said angle measuring means and operable to provide travel vector data in response to the distance data and angular data;

input means for providing destination data on a coordinate basis, including keyboard means manually operable for generating the designation data;

second computational means connected to said input means and operable to convert said destination data into destination vector data;

destination memory means connected to said second computational means for storing destination vector data;

subtraction means connected to said destination memory means and to said first computational means and operable to subtract said travel vector data from said destination vector data and store the resulting data in said destination memory means; and

display means connected to said destination memory means for displaying the resulting data, including distance display means and direction display means, said distance display means comprising a digital display and said direction display means comprising a compass-type display.

4,403,292
CONTROL FOR AN ELECTRICAL GENERATING AND DISTRIBUTION SYSTEM, AND METHOD OF OPERATION

Richard P. Ejzak, Rockford; James B. Thom, Rock City; William J. Peterson, and Timothy F. Glennon, both of Rockford, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Continuation of Ser. No. 43,804, May 30, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,776

Int. Cl.³ G05B *15/02*; G06F *15/56*

U.S. Cl. 364—492 **9 Claims**

1. In an electrical generation and distribution system having at least two generators (15, 16) each having an output circuit and having for at least one of the generators a load circuit (20) and a generator circuit breaker (18) connecting the load circuit with the generator, an electrical bus (22) and a bus tie breaker (26) connecting the load circuit through said bus with the other of such generator, an improved control, comprising:

a microprocessor generator control unit (30, 31) for each of

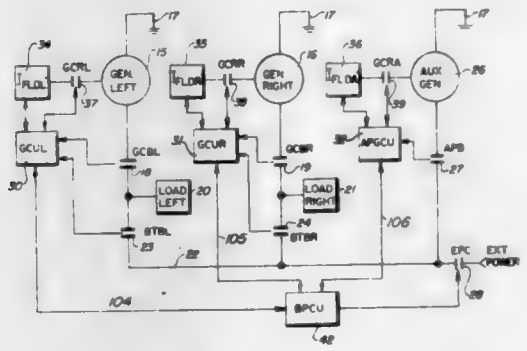
said generators, said generator control units having inputs and outputs;

a microprocessor bus power control unit (**42**) having inputs and outputs;

means connecting the output circuit of each of said generators with inputs of the generator control unit associated therewith for the generator control unit to respond to generator conditions;

means connecting outputs of said generator control units with said generator to establish operation thereof;

means connecting inputs of said bus power control unit with the electrical distribution system for the bus power control unit to respond to distribution system conditions;



serial data links (**104, 105, 106**) interconnecting said bus power control unit (**42**) with each of said generator control units (**30, 31**) to transmit generator and distribution system condition information and control unit outputs among the control units to correlate operation of the control units; and

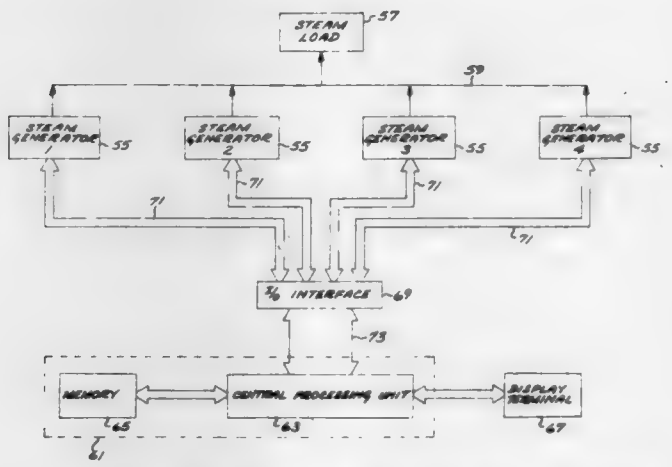
means connecting the generator circuit and bus tie breakers (**18, 26**) to respond to the outputs circuit and bus tie breakers (**18, 26**) to respond to the outputs of said control units (**30, 31, 42**) to connect the load circuit with one of said generators.

4,403,293

CONTROL APPARATUS FOR USE IN MULTIPLE STEAM GENERATOR OR MULTIPLE HOT WATER GENERATOR INSTALLATIONS

Willy A. Bradt, Boom, and Norbert J. F. Wilssens, Kruibeke, both of Belgium, assignors to Clayton Manufacturing Company, Calif.

Filed Mar. 6, 1981, Ser. No. 241,351
Int. Cl.³ G05B *15/02*; F01D *17/02*
U.S. Cl. 364—494 **24 Claims**
MICROFICHE APPENDIX INCLUDED
(7 Microfiche, 193 Pages)



1. A control apparatus for controlling the generators of a multiple steam generator or a multiple hot water generator installation, said control apparatus comprising:

modulating control means for controlling the firing rate of each of said generators in response to the actual measured steam or hot water load of the installation;

load data means for providing predicted load data which corresponds to predicted steam or hot water loads for said installation; and

burner command means for limiting the firing rate of each of said generators to one of at least two different maximum firing rate levels in response to said predicted load data,

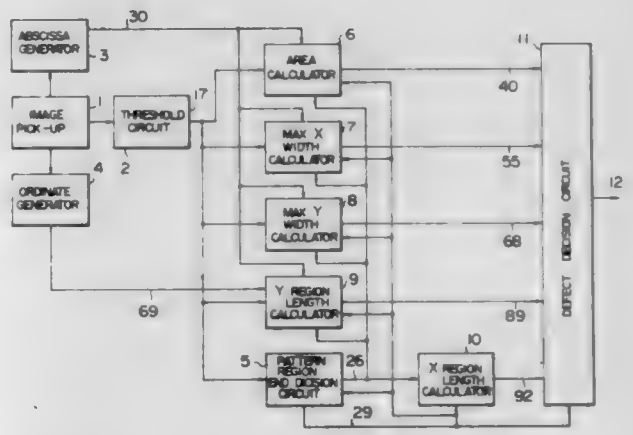
whereby the actual firing rate of each of said generators may be controlled so as to optimize efficiency of the installation.

4,403,294

SURFACE DEFECT INSPECTION SYSTEM

Toshimitsu Hamada; Hiroshi Makihira; Yasuo Nakagawa, all of Yokohama, and Makoto Udaka, Yokosuka, all of Japan, assignors to Hitachi, Ltd. and Japan Nuclear Fuel Co., Ltd., both of Tokyo, Japan

Filed Nov. 28, 1980, Ser. No. 211,113
Claims priority, application Japan, Nov. 30, 1979, 54-154413
Int. Cl.³ G01N *21/48*
U.S. Cl. 364—507 **12 Claims**



1. A surface defect inspection system comprising:

an image pick-up means for picking up an image by sequentially raster scanning the surface of an object two-dimensionally in abscissa and ordinate directions;

threshold means for quantizing an image signal produced from said image pick-up means as a binary signal in accordance with a predetermined threshold and sampling the quantized signal;

register means having a storage capacity corresponding to at least one raster scan line for sequentially and temporarily storing the sampled quantized signal delivered from said threshold means;

holding means for, when the sampled quantized signal corresponding to a defect pattern is delivered from said threshold means

for the first time at a certain abscissa in a certain ordinate corresponding to a certain raster scan line, holding the sampled quantized signal corresponding to the defect pattern at a portion corresponding to the abscissa of the corresponding defect pattern in said register means during succeeding scanning operations in the ordinate direction as long as the sampled quantized signal delivered from said threshold means includes at least one quantized signal corresponding to a defect pattern in an abscissa area having an abscissa of the defect pattern where said register means includes quantized signals corresponding to a defect pattern continuously in the abscissa direction, in each of succeeding raster scan lines;

pattern region end decision means for deciding that the defect pattern region has ended in the ordinate direction when the sampled quantized signal delivered from said threshold means includes no quantized signal corresponding to a defect pattern in the abscissa area having an abscissa of the defect pattern in a succeeding raster scan line;

pattern feature extracting means for extracting features of

the defect pattern in accordance with the sampled quantized signal delivered from said threshold means in synchronism with the scanning in the abscissa direction;

memory means having a storage capacity corresponding to at least one raster scan line for temporarily and sequentially storing the result of the calculation delivered from said pattern feature extracting means to a storage area corresponding to the abscissa where the defect pattern exists;

reading means for, when said pattern region end decision means decides that the defect pattern region has ended in the ordinate direction, reading the features of the defect pattern from the storage area of said memory means corresponding to the abscissa where the defect pattern exists; and

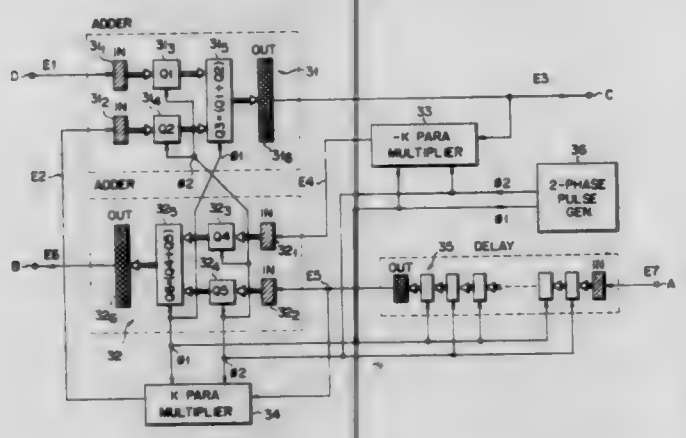
defect decision means for comparing the features of each of the defect patterns separately read out of said reading means with a predetermined reference to thereby decide whether the defect pattern is acceptable or not.

4,403,295

SIGNAL SYNTHESIZER APPARATUS

Seigo Suzuki, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 30, 1981, Ser. No. 249,207
Claims priority, application Japan, Apr. 3, 1980, 55-43868
Int. Cl.³ G06G *7/16*
U.S. Cl. 364—513 **16 Claims**



1. A signal synthesizer apparatus including a parameter dependent multiplier which comprises:

input means for receiving an input signal and storing an input charge corresponding to said input signal;

transmission means coupled to said input means for selectively transferring discrete charges corresponding to predetermined portions of said input charge, the selectivity of said transmission means being dependent on a prescribed parameter;

intermediate means for storing said discrete charges transferred by said transmission means; and

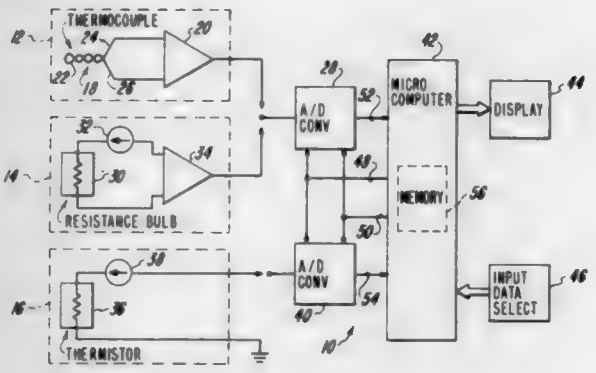
output means coupled to said intermediate means for combining said discrete charges stored by said intermediate means and providing an output signal corresponding to the combined charges.

4,403,296

MEASURING AND DETERMINATION DEVICE FOR CALCULATING AN OUTPUT DETERMINATION BASED ON A MATHEMATICAL RELATIONSHIP BETWEEN MULTIPLE DIFFERENT INPUT RESPONSIVE TRANSDUCERS

Howard S. Prosky, Englewood, Colo., assignor to Electromedics, Inc., Englewood, Colo.

Filed Dec. 18, 1980, Ser. No. 217,656
Int. Cl.³ G01K *7/16*; G06F *15/353*
U.S. Cl. 364—573 **21 Claims**



1. An electronic measuring device, comprising:

first transducer means for supplying a first signal having a first predetermined relationship to a first input variable sensed by said first transducer means;

second transducer means for supplying a second signal having a second predetermined relationship to a second input variable sensed by said second transducer means;

computer means including memory means containing linearizing information stored therein related to the first and second predetermined relationships;

means for selectively conducting the first and second signals from said first and second transducer means, respectively, to said computer means; and

said computer means operatively (a) calculating a first linearized signal utilizing the first signal and the stored linearizing information relating to the first predetermined relationship, and (b) calculating a second linearized signal utilizing the second signal and the stored linearizing information relating to the second predetermined relationship, and (c) calculating an output signal following a predetermined mathematical relationship of both the first and second linearized signals.

4,403,297

PROCESS CONTROL SYSTEM PROVER

Vincent V. Tivy, Chagrin Falls, Ohio, assignor to Loveland Controls Company, Loveland, Colo.

Filed Jan. 2, 1981, Ser. No. 222,280
Int. Cl.³ G06F *11/00, 15/20*
U.S. Cl. 364—579 **20 Claims**

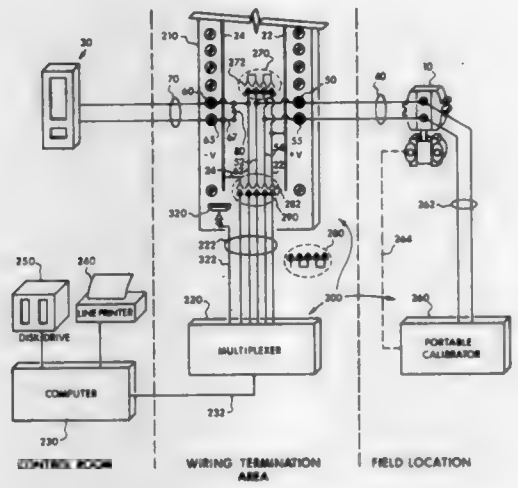
1. A prover system for a plurality of control room instruments, a plurality of remotely located field equipment, said field equipment including measuring devices, actuators, and controllers, and a termination base; each of said field equipment being connected over a loop to terminals at said termination base, each of said control room instruments being connected over a loop to terminals at said termination base, said field equipment terminals and said control room instrumentation terminals being interconnected with each other at said termination base so that an electrical circuit is established between a given piece of field equipment and an associated control room instrument, said prover system comprising:

means connected to a predetermined number of control room instrumentation and field equipment loops at said termination base for outputting connections to the control room instrumentation terminals and to the field equipment terminals of each of said predetermined number of loops,

first means removably mating said output means for provid-

ing an electrical connection for each of said predetermined number of loops so that the control room instrumentation terminals and the field equipment terminals are interconnected to preserve said electrical circuits when said first mating means engages said output means, said electrical circuits being disconnected when said first mating means is removed,

second means removably mating said output means for extending the electrical connections from said control room instrumentation terminals and said field equipment terminals for each of said predetermined number of loops when said second mating means engages said output means,



means receptive of said extended electrical connections for selectively providing access to one of said predetermined number of control room instrumentation and field equipment loops,

means interconnected with said providing means for selectively applying at least one measurement test to said one loop, and

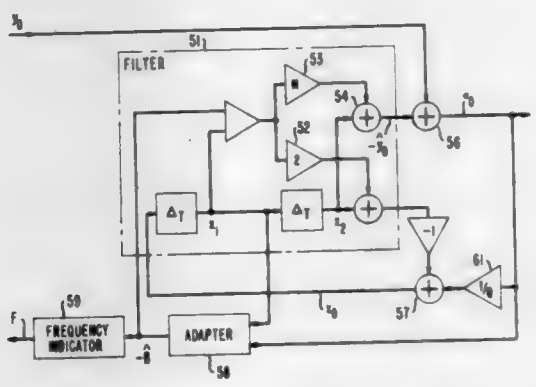
means interconnected with said providing means and said applying means for controlling said selective provision of access to said one loop and for controlling the application of said at least one measurement test.

4,403,298

ADAPTIVE TECHNIQUES FOR AUTOMATIC FREQUENCY DETERMINATION AND MEASUREMENT

Carl J. May, Jr., Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 15, 1981, Ser. No. 273,611
Int. Cl.³ G06F *15/31*
U.S. Cl. 364—724 **9 Claims**



1. Apparatus capable of determining the frequency of a signal component in a digital signal in the form of code groups constituting encoded amplitude values of a signal, the apparatus comprising:

first means configured to receive the digital signal and a variable, for producing a prediction of each code group and the error in the prediction, the first means retaining previous code groups and combining same in weighted fashion using the variable to form the prediction and subtracting it from the current code group to indicate the error of the prediction, and

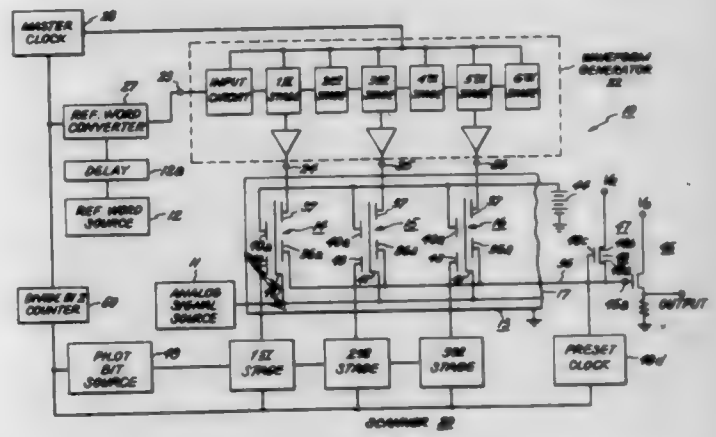
second means, configured to receive the error and previous code groups, for generating the variable from one of the previous code groups and the error, the variable having a prescribed relationship to the frequency of the signal component and controlling said first means to minimize the error.

4,403,299

SURFACE CHARGE CORRELATOR

William E. Engeler, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 25, 1981, Ser. No. 237,825
Int. Cl.³ G06G *7/19*; G11C *11/40*
U.S. Cl. 364—824 **7 Claims**



1. Signal processing apparatus comprising:

a substrate of semiconductor material having a major surface,

first means forming a plurality of first charge storage regions adjacent said major surface of said substrate,

second means forming a plurality of second charge storage regions adjacent said major surface of said substrate, each separated from a respective first charge storage region by a respective intermediate region and forming a respective charge storage cell therewith,

said first means including a plurality of first electrodes, each first electrode insulatingly overlying a respective first charge storage region, said first electrodes being interconnected,

said second means including a plurality of second electrodes, each insulatingly overlying a respective second charge storage region,

means for developing a series of voltage waveforms, each of said waveforms including a series of cycles, each cycle having a duration equal to the sum of first and second periods, each period constituted of first and second subperiods, each waveform of said series being the same as the preceding voltage waveform of said series except delayed by one cycle,

means for introducing quantities of charge into selected ones of said first charge storage regions of said cells during selected first subperiods of first periods of said waveforms, each quantity of charge being proportional to a respective sample of a time-varying analog signal and introduced into a respective first charge storage region,

means for applying each of said waveforms to a respective one of the second electrodes of said cells, a high absolute level of a waveform applied to a second electrode of a cell causing charge in the first storage region thereof to transfer to the second storage region thereof and a low absolute level of said waveform applied to a second electrode of a cell causing charge in the second storage region thereof to transfer to the first storage region thereof, each of said waveforms having a low absolute level during a first subperiod and an absolute level which is either high or

low during a succeeding second subperiod in response to a respective reference signal, whereby charge in each cell is transferred between said first and second charge storage regions thereof in a time sequence determined by a respective reference signal,

means connected in circuit with said first storage electrodes for sensing the total net charge transferred to and from said first charge storage regions during a common period of said voltage waveforms.

4,403,300

METHOD AND SYSTEM OF OPERATION OF AN ADDRESSABLE MEMORY PERMITTING THE IDENTIFICATION OF PARTICULAR ADDRESSES

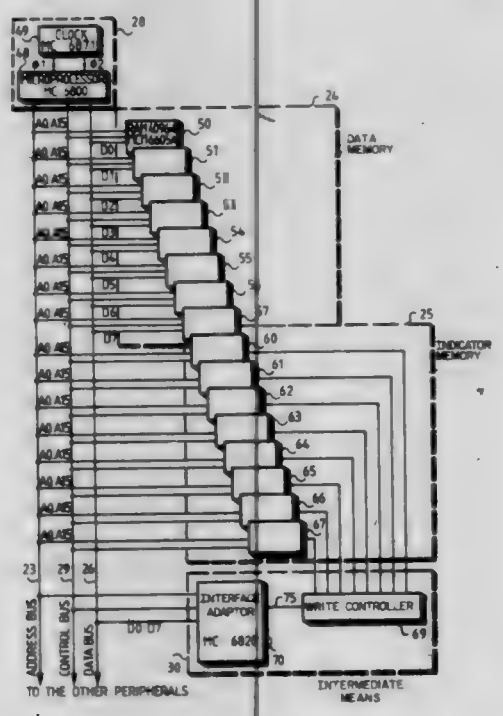
Robert J. A. Bavoux, Rueil Malmaison; Francis R. J. M. Lemaire, and Pierre Salkazanov, both of Plaisir, all of France, assignors to Compagnie International pour l'Informatique, Societe Anonyme, Paris, France

Filed Mar. 28, 1980, Ser. No. 135,097

Claims priority, application France, Apr. 6, 1979, 79 08716

Int. Cl.³ G06F *13/06*

U.S. Cl. 364—900 **20 Claims**



1. A data processing system comprising: a processor, an addressable data memory, and an indicator storage means operatively interconnected by a control bus, a data bus, an address bus and an indicator bus, said indicator storage means including a plurality of memory locations for storing a plurality of indicators generated by said processor, each stored indicator being associated with at least one of a plurality of corresponding predetermined memory locations whithin said addressable memory, and said storage means further including indicator detection means for detecting the outputting of an indicator from said indicator storage means, said outputting of an indicator corresponding to the presence of an indicator associated with the address memory locations called by the processor.

4,403,301

WORD PROCESSOR ADAPTED FOR FILLING IN BLANKS ON PREPRINTED FORMS

Rudolf Fessel, Jever, Fed. Rep. of Germany, assignor to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Jul. 2, 1980, Ser. No. 164,516

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1979, 2926669

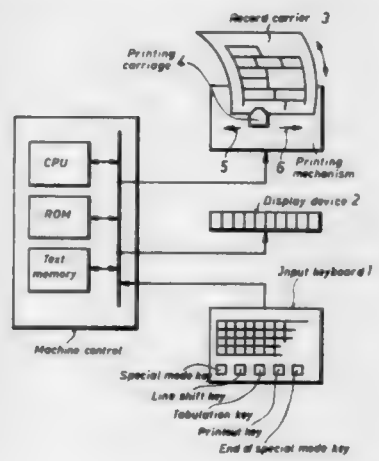
Int. Cl.³ G06F *15/20, 15/21*

U.S. Cl. 364—900 **7 Claims**

1. In a method of operating a word processing machine, which is of the type having an input keyboard, a display device for displaying characters fed into the machine via the keyboard, a text memory, and a printing mechanism including a printing carriage which is moveable relative to a record carrier along a line of print, said method having a normal mode of operation including the steps of feeding desired characters into the machine by actuating associated keys of the keyboard, displaying the characters fed in via the keyboard on the display, storing the characters fed in via the keyboard and the associated positions and control information for the carriage in the memory but without moving the carriage, and printing out the stored characters on the record carrier at a later time; the improvement comprising:

providing a special mode of operation for the filling out of the fields of a printed form type of record carrier upon actuation of a special mode key on the keyboard; and during said special mode of operation

(a) upon actuation of a character key during said step of



feeding, moving the carriage from left to right relative to the desired field of the record carrier corresponding to the carriage movement associated with the particular character key actuated but without printing the character in the fields of said printed form;

(b) carrying out said step of printing in the fields of the form with the characters stored in the memory only upon receipt of a separate instruction signal; and

(c) said step of printing includes reading out the character and associated position and control information for the carriage stored in the memory, and causing the carriage to repeat the stored carriage movements under control of the memory so as to print, in the fields of said printed form, the stored characters in the associated positions along the line of print occupied by the carriage during said step of feeding, whereby the position of characters relative to the fields of the printed form may be directly observed during feeding in of the characters.

4,403,302

AUTOMATIC RESETTING OF CONTROL SYSTEM FOR LOSS OF TIME REFERENCE

Glen C. Young, and Michael B. Durant, both of Fort Wayne, Ind., assignors to Essex Group Inc., Fort Wayne, Ind.

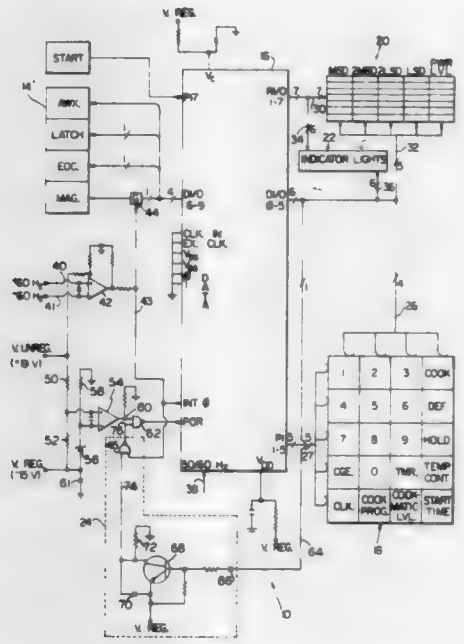
Filed Oct. 30, 1980, Ser. No. 202,104

Int. Cl.³ G06F *15/20, 11/30;* H05B *1/02*

U.S. Cl. 364—900 **14 Claims**

1. In an appliance control system for controlling the operation of electrical control signal responsive means associated with an appliance, the control system including input means for entering functional electrical commands, electrical signal processing means connected to the control signal responsive means and receiving input commands from the input means, the signal processing means containing a programmed memory for storing instruction words which define operating sequences for the control signal responsive means, the signal processing means further including logic means for sequentially executing the instruction words to provide control signals to operate the

control signal responsive means in response to commands from the input means, means for supplying to the signal processing means a normally repetitive first signal to provide a timing reference therefor, the signal processing means being programmed to provide a recurring event, said event normally recurring substantially independently of but with a time relationship to the first signal, said time relationship being within a known limited range, and the signal processing means also including means responsive to a reset command extended



thereto or setting the execution of the programmed instruction words to a predetermined initial point in the programmed sequence from which a predetermined sequence of initializing operations is automatically initiated, the improvement comprising:

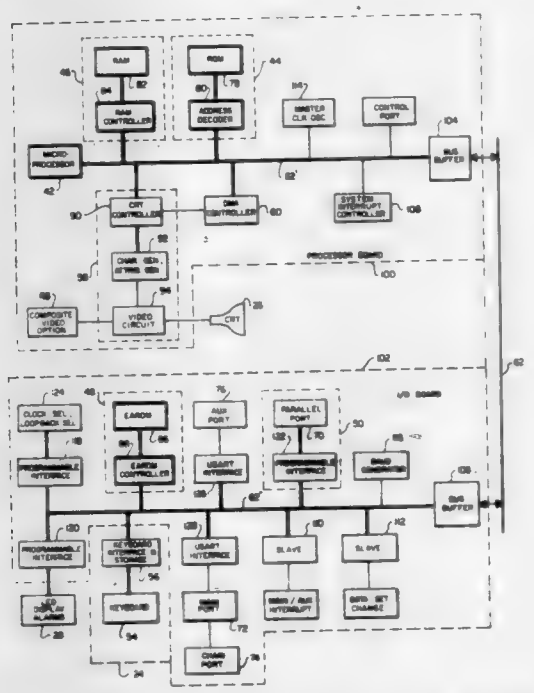
means automatically responsive to said first signal failing to occur within a certain measuring interval determined by said event for providing a reset command and extending said reset command to said means for setting the execution of the programmed instruction words to said initial point.

4,403,303

TERMINAL CONFIGURATION MANAGER

Ralph E. Howes, Sandy; John E. Benson, Salt Lake City, and Ruben S. Longwell, Provo, all of Utah, assignors to Beehive International, Salt Lake City, Utah

Filed May 15, 1981, Ser. No. 264,466
Int. Cl.³ G06F *3/023, 3/153, 13/00*
U.S. Cl. 364—900 **28 Claims**



1. A terminal configuration manager for use in a microprocessor based computer terminal, said terminal including a microprocessor, a display screen, a keyboard, memory, and appropriate hardware and firmware for allowing said microprocessor to interact with said display screen and keyboard, said terminal configuration manager comprising:

a plurality of configuration registers, selected bits of each of which are adapted to store configuration data that defines a particular configuration parameter within said terminal;

non-volatile read only storage means for storing a set of standard configuration data;

non-volatile read/write storage means for storing a set of long term configuration data;

first transfer means for transferring said set of standard configuration data from said non-volatile read only storage means to said non-volatile read/write storage means, whereby said long term configuration data becomes the same as said standard configuration data;

second transfer means for transferring said long term configuration data from said non-volatile read/write storage means to said configuration registers;

verification means for verifying the data transfer performed by said second transfer means and for declaring an error condition whenever said data transfer cannot be verified;

configuration management means for selectively modifying the configuration data stored in said configuration registers;

means for displaying on said display screen a table that summarizes said configuration parameters defined by the configuration data stored in said configuration registers; and

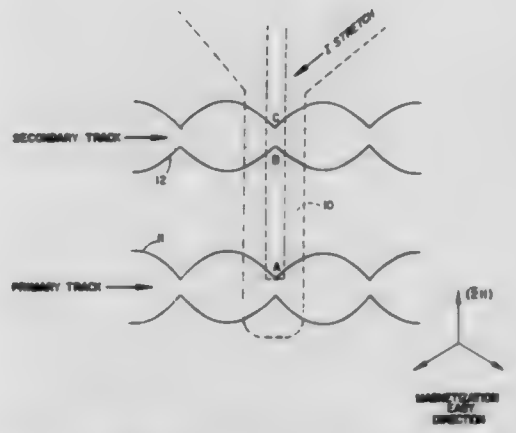
third transfer means for transferring said configuration data from said configuration register to said non-volatile read/-write storage means after said data has been modified by said configuration management means, whereby said long term configuration data becomes the same as said modified configuration data.

4,403,304

REPLICATOR FOR ION-IMPLANTED BUBBLE DOMAIN DEVICES

Isoris S. Gergis, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 2, 1981, Ser. No. 239,233
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—12 **9 Claims**



1. A magnetic bubble domain device comprising:

a planar layer of magnetic material in which magnetic bubble domains can be propagated;

a first bubble domain guide structure coupled to said layer and defining a first bubble domain propagation path for guiding the movement of said bubble domains in said layer in response to a cyclical change in the orientation of a re-orienting magnetic field within the plane of said layer;

a second bubble domain guide structure coupled to said layer, and defining a second propagation path for guiding the movement of said bubble domains in said layer in

response to the cyclical change in orientation of said reorienting magnetic field in the plane of said layer;

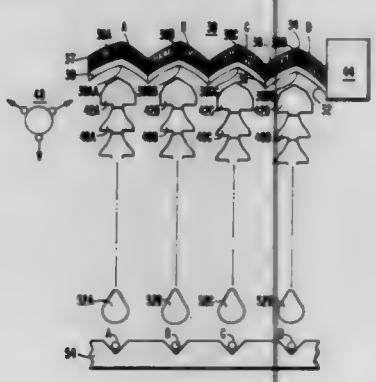
a replicate bubble domain guide structure coupled to said layer and functioning to replicate a bubble domain travelling along said first bubble propagation path onto said second bubble propagation path in response to an activating signal, characterized in that said replicate guide structure includes two attractive cusp positions and one repulsive cusp position, the repulsive charged wall formed at said repulsive cusp position functioning to sever a stretched bubble domain formed by said activating signal.

4,403,305

NON-DATA REVERSING BUBBLE TRANSFER SWITCH FOR CONTIGUOUS DISKS

George E. Keefe, Montrose, N.Y., and Ian L. Sanders, Sunnyvale, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1980, Ser. No. 218,989
Int. Cl.[3] G11C *19/08*
U.S. Cl. 365—16 6 Claims



1. A combination suitable for one-way switching in a contiguous disk bubble device comprising

a major loop having a plurality of scallops therein, said scallops having a concave portion,

a conductive having edge portions substantially concentric with the edge of said major loop, and

at least one minor loop extending in a direction substantially transversely to the direction of said major loop, said minor loop having a tip portion positioned substantially in line with the center of said scalloped concave portion, said minor loop positioned in spaced relation with said conductor.

4,403,306

SEMICONDUCTOR MEMORY OPERABLE AS STATIC RAM OR EAROM

Kaoru Tokushige, Yokohama, and Masayoshi Nakane, Ayase, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

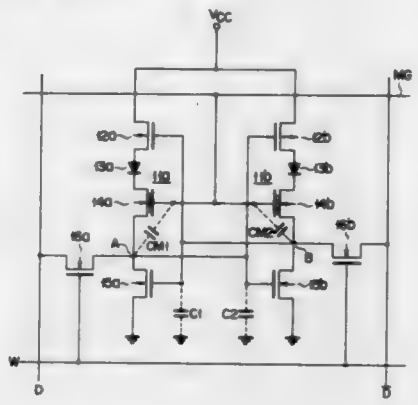
Filed Oct. 16, 1981, Ser. No. 311,923
Claims priority, application Japan, Oct. 22, 1980, 55-147904; Oct. 22, 1980, 55-147910; Oct. 22, 1980, 55-147911; Oct. 22, 1980, 55-147912; Oct. 22, 1980, 55-147913
Int. Cl.[3] G11C *11/40*
U.S. Cl. 365—156 3 Claims

1. A semiconductor memory comprising:

a first series circuit and a second series circuit which are connected in parallel across a power supply, said first series circuit having a first MOS transistor of P-channel type, a first diode which is poled in the forward direction with respect to the polarity of a power supply voltage, a first MNOS transistor of N-channel type and a second MOS transistor of N-channel type which are connected in series, said second series circuit having a third MOS transistor of P-channel type, a second diode which is poled in the forward direction with respect to the polarity of the power supply voltage, a second MNOS transistor of N-channel type and a fourth MOS transistor of N-channel type which are connected in series, a connection point between said first MNOS transistor and said second MOS transistor being connected to gates of said third and fourth MOS transistors and a connection point between said second MNOS transistor and said fourth MOS transistor being connected to gates of said first and second MOS transistors;

first and second digit lines;

a word selection line;



a fifth MOS transistor of N-channel type connected between said first digit line and said connection point between said first MNOS transistor and said second MOS transistor and having its gate connected to said word selection line;

a sixth MOS transistor of N-channel type connected between said second digit line and said connection point between said second MNOS transistor and said fourth MOS transitsor and having its gate connected to said word selection line; and

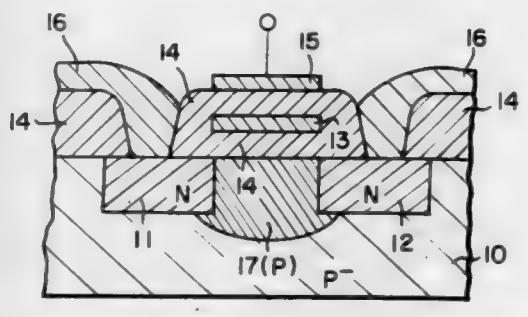
a control signal line connected to gates of said first and second MNOS transistors.

4,403,307

SEMICONDUCTOR MEMORY DEVICE

Koh-ichi Maeda, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP80/00276, § 371 Date Jul. 2, 1981, § 102(e) Date Jul. 2, 1981, PCT Pub. No. WO81/01484, PCT Pub. Date May 28, 1981
PCT Filed Nov. 6, 1980, Ser. No. 280,008
Claims priority, application Japan, Nov. 12, 1979, 54-146167
Int. Cl.[3] G11C *11/40;* H01L *29/78*
U.S. Cl. 365—174 11 Claims



1. A semiconductor memory device, comprising: a substrate having a first conductivity type; a charge injection (write) transistor and a read transistor fabricated on the substrate, each transistor including source and drain regions which are formed in isolation on the substrate and which have a second conductivity type, a conductive floating gate between said source region and drain region and spaced apart from the substrate, a control gate spaced apart from said floating gate, and insulator means for mutually insulating the substrate, floating gate, and control gate; means for electrically connecting said floating gates of said charge injection transistor and said read transistor; means for connecting said control gates of said charge injec-

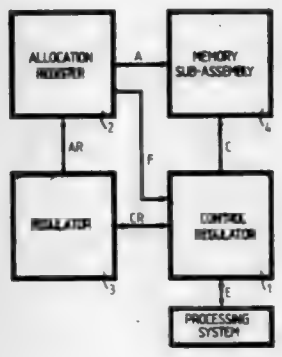
tion transistor and said read transistor in common to a first signal line; means for respectively connecting said drains of said charge injection transistor and said read transistor to different second and third signal lines; and means for connecting the sources of the charge injection transistor and the read transistor.

4,403,308

APPARATUS FOR AND METHOD OF REFRESHING MOS MEMORY

Paul M. Girard, Versailles, France, assignor to CII Honeywell Bull, Paris, France

Filed Jan. 19, 1981, Ser. No. 226,245
Claims priority, application France, Jan. 17, 1980, 80 01031
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—222 **25 Claims**



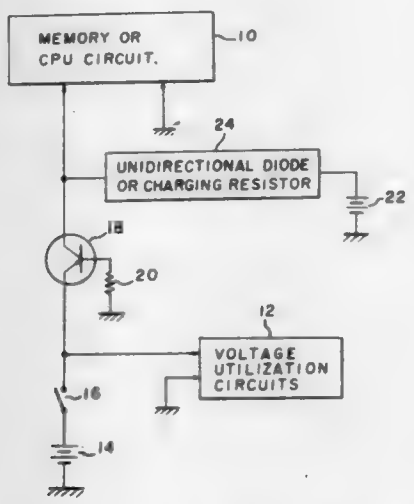
1. A method of refreshing a random access memory requiring refreshing, said memory writing data signals from a data processor into specified memory addresses and reading data signals from the data processor from specified memory addresses during useful phases of operating cycles of the memory, the memory being refreshed during refresh phases of operating cycles of the memory, comprising initiating a selection phase concurrently with a useful phase at the beginning of each cycle, during the selection phase determining if the memory is to enter a refresh phase during the cycle, and initiating the refresh phase during the cycle in response to the determination during the selection phase indicating that the memory is to enter the refresh phase.

4,403,309

AUTOMATIC BACK-UP CIRCUIT

Masao Nakano, Tokyo, Japan, assignor to General Research of Electronics, Inc., Tokyo, Japan

Filed Jun. 1, 1981, Ser. No. 268,658
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—229 **6 Claims**



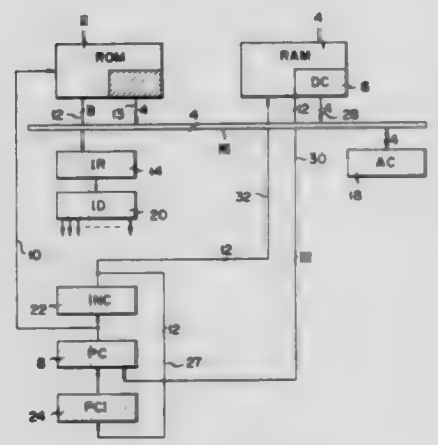
1. An automatic back-up circuit for use with a main power supply for a memory circuit or the like comprising: a switching mode transistor connected between said main power supply and said memory circuit, means biasing said transistor to turn on when said transistor receives an operative current from said main power supply and means coupled to the path between said transistor and said memory circuit for connecting a back-up voltage to said memory circuit in response to turning off of said transistor.

4,403,310

FIXED DATA READING SYSTEM

Munehiro Minami, Hachioji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 25, 1981, Ser. No. 305,799
Claims priority, application Japan, Sep. 30, 1980, 55-136561
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—230 **2 Claims**



1. A fixed data reading system comprising:
A. a first memory for addressably storing program data and fixed data;
B. a first register connected to said first memory for storing a first address designating a location in said first memory;
C. an incrementer connected to said first register for incrementing the first address stored in said first register;
D. a second register connected to said incrementer and said first register for receiving the output from said incrementer and feeding said output to said first register at a predetermined timing;
E. an instruction regster for holding an instruction read out of said first memory;
F. an instruction decoder for decoding the instruction fed from said instruction register; and
G. a second memory for addressably storing non-program data and including a data counter area for storing a second address so that the second address of the location in which the fixed data is stored is fed to said first register when an instruction for reading the fixed data stored in said first memory is decoded by the instruction decoder.

4,403,311

ACOUSTIC IMAGING SYSTEM

Pierre Tournois, Paris, France, assignor to Thomson-CSF, Paris, France

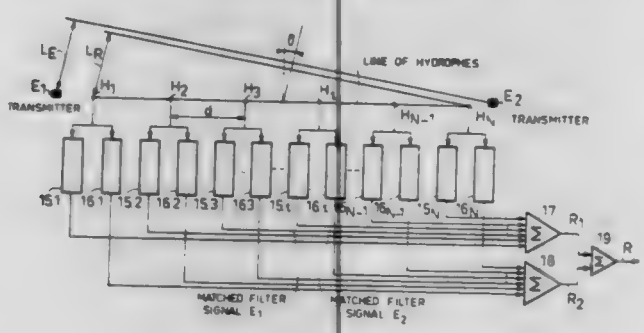
Filed Mar. 17, 1981, Ser. No. 244,715
Claims priority, application France, Mar. 21, 1980, 80 06404
Int. Cl.³ G01S *15/89*
U.S. Cl. 367—11 **4 Claims**

1. An acoustic imaging system comprising:
a transmission rectangular array of M transmitting transducers such as E_K, where $1 \leqq k \leqq M$;
a receiving rectangular array having N lines of P hydrophones $H_{i,j}$, where $1 \leqq i \leqq P$ and $1 \leqq j \leqq N$, said lines being parallel to the lines of said transmission array of M transmitting transducers, the distances between adjacent hydrophones in the lines and in the columns being respectively d_1 and d_2, wherein the distances between adjacent said transmitting transducers are Nd_1 and Pd_2 respectively

in the lines and in the columns in said transmission rectangular array;

energizing circuit means for energizing said transmitting transducers by supplying code modulated signals with the same central frequency, each said transmitting transducer E_k transmitting with a different code, said codes being orthogonal one to the other;

M processing circuits receiving the output of said hydrophones and including a correlation means receiving and decoding said code modulated signals in order to provide decoded signals and outputting signals $X_{i,j,l} \ldots X_{i,j,k} \ldots$



$X_{i,j,M}$ and $Y_{i,j,l} \ldots Y_{i,j,k} \ldots Y_{i,j,m}$ for respectively the real and imaginary components of each of said decoded signals ;

multiplexing means for receiving said decoded signals and multiplexing separately said real and imaginary components, and providing a multiplexing sequence of signals corresponding to the signals of a hydrophone line j in succession, for the transmitters of the same line 1; and

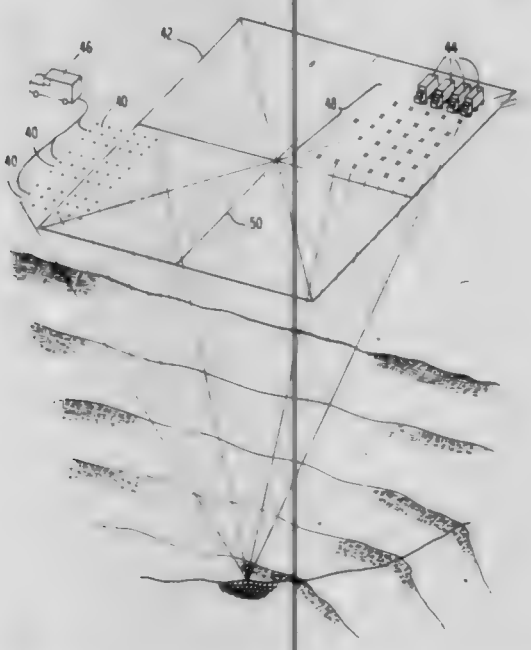
a carrier being supplied with said multiplexing sequences of signals and outputting signals $U_{j,i}$ which are applied to a two-dimensional Fourier transform analog device.

4,403,312

THREE-DIMENSIONAL SEISMIC DATA GATHERING METHOD

Herman B. Thomason, Plano, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1980, Ser. No. 221,600
Int. Cl.³ G01V *1/04, 1/20*
U.S. Cl. 367—56 **10 Claims**



1. A method for three-dimensional seismic exploration of the subterranean structure of the earth, comprising the steps of:

arranging a plurality of sources of acoustic energy in a first predetermined subarray;

arranging a plurality of detectors of acoustic energy in a plurality of arrays of detection positions, each array being substantially identical, said arrays being spaced from one another along a line of exploration, the outputs of all of the detectors in each of said arrays being connected in common to means for recording said outputs;

operating said sources of acoustic energy simultaneously and in phase with one another to transmit an acoustic wave into the earth;

detecting the reflection of said wave from an interface between subterranean layers of rock at said detectors;

moving said sources of acoustic energy to other subarrays in an array of source positions spaced from other such arrays above a second line of exploration for transmission of acoustic energy to the earth;

repeating said step of transmitting energy into the earth;

detecting reflection of said energy at said detectors;

summing the outputs of said detectors made with respect to all sources of acoustic energy within a given array;

moving said sources of acoustic energy to points in a first subarray within a differing array of source positions and repeating said steps of generating acoustic energy, detecting rflection of said energy, moving said sources to points in another subarray of said differing array, and summing the outputs of said detectors; and

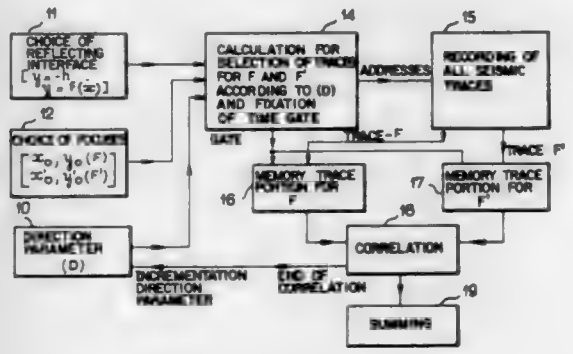
correlating the records thus formed corresponding to each array with one another with respect to reflection from common depth points on said interface to yield a representation of the shape of said interface having an improved signal-to-noise ratio.

4,403,313

PROCESS AND AN APPARATUS FOR SEISMIC GEOPHYSICS WITH PROCESSING BY FOCUSES

Robert J. Garotta, Chatenay Malabry, France, assignor to Compagnie Generale de Geophysique, Massy, France

Filed Dec. 17, 1980, Ser. No. 217,248
Claims priority, application France, Dec. 17, 1979, 79 30851
Int. Cl.³ G01V *1/36*
U.S. Cl. 367—61 **30 Claims**



1. A method for seismic prospecting of a subsurface, comprising the steps of:

(a) arranging seismic shock sources and seismic sensors on a surface along a predetermined array situated approximately in a single vertical plane;

(b) energizing the seismic sources one by one, while selectively recording the seismic trace received by each sensor subsequent to the energization of each seismic source, each seismic trace thus being associated to a respective source-sensor pair;

(c) performing static and dynamic corrections of the seismic traces to accommodate any variation in the arrangement of the sensors and sources from said vertical plane;

(d) determining at least one reflecting interface in the subsurface;

(e) selecting, in the subsurface, at least two adjacent focuses and a predetermined direction, said two focuses being situated between the surface and said reflecting interface;

(f) for each focus:

(f1) selecting a source-sensor pair which corresponds to a propagation path having a forward section starting from the source to a reflection at a reflecting interface and a

return section starting from the reflecting interface to the sensor, as least one section of said propagation path having substantially said predetermined direction;

(f2) selecting a seismic trace corresponding to said source-sensor pair;

(f3) extracting from said selected seismic trace a trace portion comprising a reflection signal due to the reflecting interface;

(g) determining a correlation function between trace portions corresponding to said at least two focuses;

(h) repeating steps (e) to (g) while changing the predetermined direction for each repetition; and

(i) determining the average of the correlation functions obtained for each of the predetermined directions, thereby assessing any differences in seismic properties of the subsurface in respective areas of said at least two focuses.

4,403,314

ACTIVE DETECTION SYSTEM USING SIMULTANEOUS MULTIPLE TRANSMISSIONS

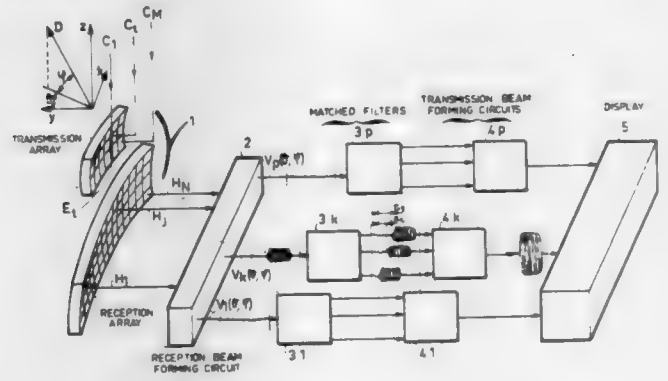
Pierre Tournois, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 17, 1981, Ser. No. 244,714

Claims priority, application France, Mar. 18, 1980, 80 06043

Int. Cl.³ G01S *15/42*

U.S. Cl. 367—100 **6 Claims**



1. A system for detection of an echo comprising:

a transmission array formed by M simultaneously transmitting sources $E_1, \ldots E_m$;

a reception array formed by N sources, $H_1, \ldots H_N$;

first signal processing means for receiving the output of said reception array sources for forming P reception channels having signals $V_1(\theta,\Phi), \ldots V_P(\theta,\Phi)$, where θ,Φ are spherical angles defining the receiving direction, wherein said M transmitting sources $E_1, \ldots E_m$ transmit simultaneously wave signals with a duration T, said transmitted signals being different and separable;

a second signal processing means receiving said P reception channel signals and outputting for each channel M at least one of decoded and filtered delayed signals, corresponding to said N transmitted signals, the delays of said signals corresponding to the geometry of said transmission sources and to the angles θ,Φ of the channel direction;

adder means for adding said delayed signals; and

display means for receiving the output of said adder means.

4,403,315

ELECTRONIC TIMEPIECE ASSEMBLY

Motoyuki Saito, and Hideo Hatanaka, both of Tokyo, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

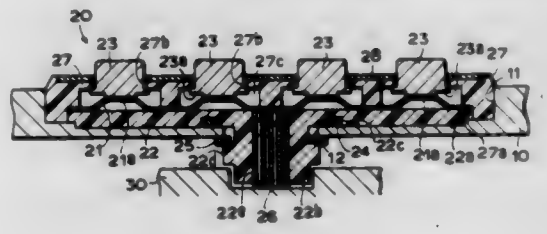
Filed Jun. 13, 1980, Ser. No. 159,446

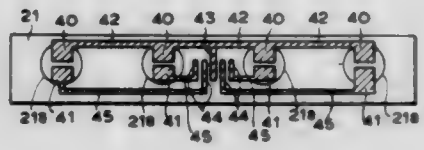
Claims priority, application Japan, Jul. 23, 1979, 54-92621; Jul. 23, 1979, 54-100605[U]; Jul. 23, 1979, 54-100606[U]; Jul. 26, 1979, 54-95928

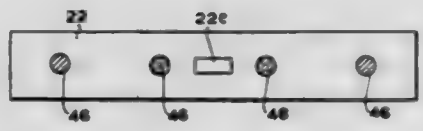
Int. Cl.³ G04B *29/00*

U.S. Cl. 368—321 **2 Claims**

1. An electronic timepiece assembly comprising a switch upper plate having a contact pattern formed on the lower surface thereof, said contact pattern including a plurality of spaced terminals, a single laminated connection rubber having a plurality of spaced electrical conductors resiliently engaging said terminals at the upper ends of said conductors and adapted to resiliently engage a module at the lower ends of said conductors, said switch upper plate contact pattern further including a plurality of spaced terminal portions, a switch lower base having a plurality of spaced electrically conductive elements on the upper surface thereof, each of said conductive elements being disposed in alignment with a corresponding pair of said terminal portions on said switch upper plate, and a plurality of projections operable from the outside so as to be resiliently deformed and bring a selected pair of said spaced terminal portions and a corresponding one of said conductive elements into engagement to complete a selected circuit, said contact pattern on said switch upper plate including a common electri-







cally conductive portion connected to one of said spaced terminals and to one of each pair of spaced terminal portions and further including a plurality of individual electrically conductive portions each connected to one of the remaining of said terminals at one end and to one of a corresponding pair of said terminal portions at the other end, whereby deformation of a selected one of said projections completes a circuit between said one of said spaced terminals and a selected one of said remaining terminals, said one of said spaced terminals being centrally positioned to engage the central one of said spaced electrical conductors of said connection rubber and said remaining terminals being positioned on opposite sides of said centrally positioned terminal to engage corresponding electrical conductors of said connection rubber positioned on opposite sides of said central electrical conductor.

4,403,316

SWING-ARM DEVICE FOR AN OPTICAL SCANNING UNIT

Johannes T. A. van de Veerdonk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,848

Claims priority, application Netherlands, Aug. 26, 1981, 8103960

Int. Cl.³ G11B *3/10, 7/00*

U.S. Cl. 369—44 **7 Claims**

1. A swing-arm device for writing and/or reading recording tracks in a recording surface of a rotary optical disk by means of a radiation beam (13) which is concentrated to form a radiation spot (14), which device comprises:

a stationary frame (15),

an optical scanning unit (6) comprising a lens system (10) which is movable along an optical axis (9),

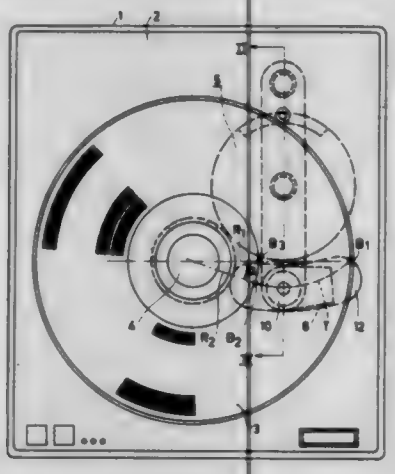
a swing arm (16) having a first end provided with means for

securing the scanning unit (6) and having a second end opposite the first end,

a swing-arm bearing arrangement (20–26) for mounting the swing arm so as to be pivotable about a pivotal axis (8) between the two ends (16, 17),

coil means (27, 28) connected to the swing arm for exerting electromagnetic pivotal forces in a plane perpendicular to the pivotal axis (8), and

a permanent-magnetic stator comprising permanent stator-magnet means (29, 30) secured to the frame, which means co-operate with the coil means via an air gap, characterized in that



the mass centre (Z) of the pivotal assembly, comprising the swing arm (16) with the optical scanning unit (6), is disposed on the pivotal axis (8),

the coil means (27, 28) comprise first and second coil means which are each disposed on one side of and at equal distances from the pivotal axis (8), diametrically opposite each other, and which exert equal first and second pivotal forces (K_1), and

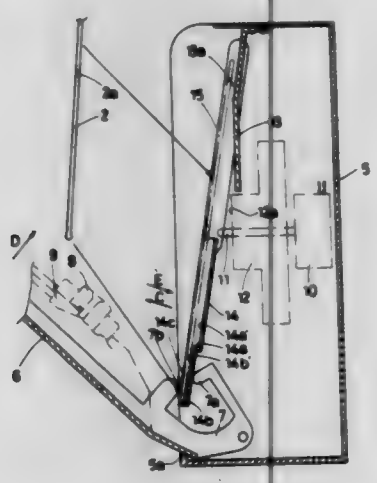
the first and second pivotal forces (K_1) act in one plane perpendicular to the pivotal axis.

4,403,317

AUTOMATED DISK MOUNT ASSEMBLY

Hiroyuki Suzuki; Masayuki Taoka, and Kiyoshi Watanabe, all of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 21, 1981, Ser. No. 256,112
Claims priority, application Japan, Apr. 22, 1981, 56-2811
Int. Cl.³ G11B *1/00, 17/04*
U.S. Cl. 369—75 **9 Claims**



1. A disk mount assembly for use with a turntable having a spindle for positioning a playable disk on the turntable relative to a pickup comprising:

a housing having an open end for containing said turntable and said pickup;

a closure cover pivotally mounted relative to said housing and being adapted to close said open end; and

a disk mount pivotally mounted relative to said housing and being disposed within the open end of said housing for selectively positioning a playable disk on said spindle for ensuring accurate positioning relative to said spindle;

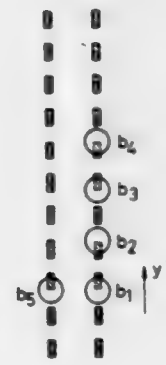
said closure cover being pivotable in a first direction to an open position and in a second direction to a closed position, said cover includes protrusions engageable with said disk mount for imparting a pivoting rotation to said disk mount in said second direction to disengage a playable disk from said spindle as said closure cover is pivoted in said first direction to said open position and said protrusions imparting a pivoting rotation to said disk mount in said first direction to automatically accurately position a playable disk on said spindle as said closure cover is pivoted in said second direction to said closed position.

4,403,318

APPARATUS AND METHOD FOR RECORDING, REPRODUCING AND ERASING ON OPTICAL RECORDING DISCS

Michiyoshi Nagashima, Hirakata; Tomio Yoshida, Katano, and Takeo Ohta, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 22, 1981, Ser. No. 256,660
Claims priority, application Japan, Apr. 23, 1980, 55-54506
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—100 **12 Claims**



1. A method of erasing information optically recorded in a thin recording film in the form of a distribution of thermally denatured regions therein comprising the steps of:

producing at least two light beams,

focusing said at least two light beams to form at least two focused light beams on said thin recording film,

sweeping said at least two focused light beams successively along one track of recording on said thin recording film, and

applying said at least two focused light beams on said thin recording film so as to successively result in a higher heated part and later a less heated part along said one track.

6. An apparatus for recording, reproducing and erasing for an optical recording disc, at least the surface of which changes its structure from a first state to a second state which is optically different from said first state by heating followed by quick cooling, and restores to said first state by heating followed by slow cooling, the apparatus comprising:

at least two light sources for producing light beams including a first light beam and irradiating selected localized parts on a single recording track on said recording disc,

at least one light detecting means for detecting a light beam from said recording disc by reflection or transmission due to said first light beam,

an optical means for focusing and sweeping said light beams along said recording track, based upon output signals of the light detecting means,

a controlling means for selectively switching the operation of the apparatus among the following operations:

(i) for recording information data on said recording disc, a selected light beam from said light sources and modulated by information is irradiated on said recording disc,

(ii) for reproducing information data from said recording disc, said first light beam having a lower intensity level and a shorter wavelength than that for said recording is irradiated onto said recording disc, and

(iii) for erasing information data from said recording disc, at least two of said light beams, one of them having a higher intensity level than that for said reproducing, are successively irradiated onto said recording disc.

4,403,319

DEVICE FOR CENTERING AND CLAMPING A FLEXIBLE FOIL

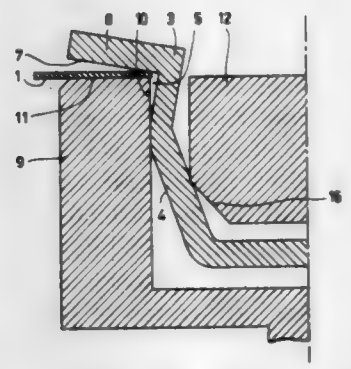
Manfred Adamek, Freusburg, and Peter Schattmann, Siegen, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 14, 1981, Ser. No. 301,901

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034633

Int. Cl.³ G11B *5/16, 3/62*

U.S. Cl. 369—261 **6 Claims**



1. A device for centering and clamping a flexible foil having a round opening, comprising a bell-shaped hub which rotates the foil in the plane of its major surface, which hub has a cylindrical inner bore whose diameter is slightly greater than the diameter of the opening in the foil, and also has an end surface on which the foil is positioned, the opening in the foil permitting the insertion of an expanding mandril having a conical surface and a cylindrical portion insertable into the inner bore of the hub, thereby keeping the foil positioned on the end surface of the hub with a flange having a contact surface which is parallel to said end surface, and after the device further comprising an expanding cone, which can be inserted into the expanding mandril, for expanding the expanding mandril so far that the cylindrical portion of the expanding mandril is urged against the wall of the cylindrical inner bore of the hub, thereby enlarging the opening in the foil to the diameter of the inner bore, characterized in that the expanding cone (12) expands the expanding mandril (3) via at least one resilient element (6), the force that can be transmitted to the expanding mandril (3) by the resilient element (6) at the location of the transition between the conical (4) and cylindrical portion (5) of said mandril being greater than the force required for widening the opening in the foil (1) but smaller than the force necessary for a substantial elastic deformation of the expanding mandril (3) beyond the cylindrical inner bore of the hub (9), which bore terminates at the end surface (11), and that the expanding cone (12) comprises a cone flange (14) which presses the flange of the expanding mandril (3) onto the foil (1), thereby pressing said foil onto the end surface (11) of the hub (9) with a force which suffices to transmit the driving torque for the foil.

4,403,320

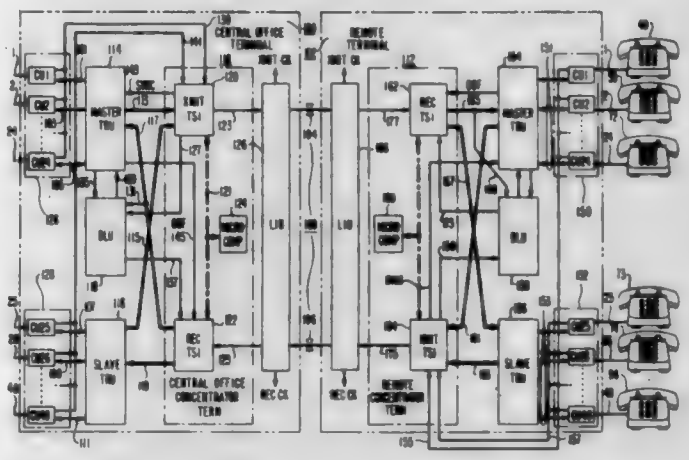
LINE STATUS DETECTION IN A DIGITAL CONCENTRATOR SYSTEM

Ronald J. Canniff, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 12, 1980, Ser. No. 186,620

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—56 **10 Claims**



4. A method of identifying the class of service of a line (1,2,3 . . . 48) connected to a channel unit (1,2,3 . . . 96) CHARACTERIZED BY THE STEPS OF

combining the class of service bits from two of said channel units (1,2,3 . . . 96) to form a code, and

interpreting said code to determine the class of service for each or both of said channel units (1,2,3 . . . 96).

4,403,321

SWITCHING NETWORK

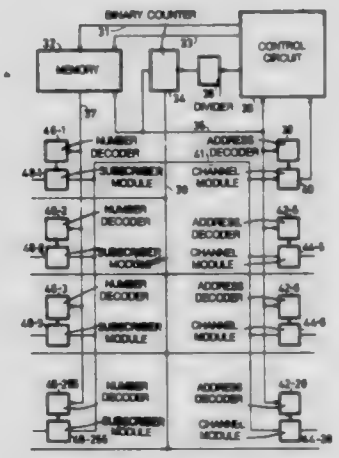
Johann Krüger, Quickborn, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 15, 1981, Ser. No. 254,569

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 3022497

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—56 **9 Claims**



1. A switching network for optionally connecting a number of channel modules to each one of a subscriber's module out of a larger number of subscriber's modules and number decoder modules via an internal time-division multiplex line which forms an interconnection between all the channel modules and all the subscriber's modules, particularly for use as a concentrator, characterized in that a memory is provided having a number of memory locations at least equal to the number of channel modules, each channel module having one single memory location fixedly assigned to it, that an addressing device addresses in a cyclic sequence and repeatedly all the memory locations and connects in parallel therewith each assigned channel module to the internal time-division multiplex line, the

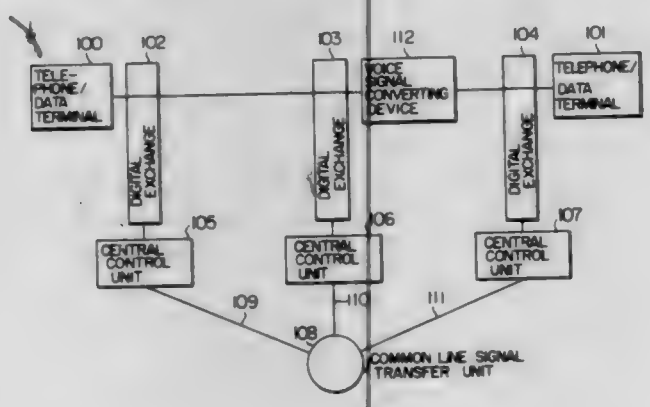
address cycle being equal to the sampling period of the signals of the subscriber's modules, that the output of the memory is connected in parallel to each one of the number decoders for each subscriber's module which decodes the numbers which are different for different subscriber's modules, a number decoder which decodes its number connecting the associated subscriber's module to the internal time-division multiplex line and that in order to establish a connection between a subscriber's module and a channel module a control arrangement writes the number of the number decoder associated with the subscriber's module into the memory location assigned to this channel module.

4,403,322

VOICE SIGNAL CONVERTING DEVICE

Takao Kato, Yokohama; Tetsuo Takemura, Kamakura; Akira Horiki, and Noboru Watanabe, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 2, 1981, Ser. No. 279,813
Claims priority, application Japan, Jul. 2, 1980, 55/89204
Int. Cl.³ H04J *3/12*
U.S. Cl. 370—110.1 **10 Claims**



1. A voice signal converting device adapted for a digital communication network which handles digitized voice signals and data signals simultaneously comprising:

means for detecting a discrimination bit from a signal coming to an incoming digital communication path, said discrimination bit being set in a digital signal channel for discriminating whether a bit group corresponding to that discrimination bit represents a voice signal or a data signal;

means for converting the bit group in the digital signal channel coming to said incoming digital communication path into a predeterminedly correlated bit group; and

means responsive to results of detection by said detecting means so that when the bit group corresponding to the discrimination bit represents the voice signal, the correlated bit group resulting from the conversion by said converting means is selected and delivered to an outgoing digital communication path and when the bit group corresponding to the discrimination bit represents the data signal, this bit group in its original form is selected and delivered out.

4,403,323

OPTICAL TRANSISTOR

Van O. Nicolai, 206 Apple Blossom Ct., Vienna, Va. 22180

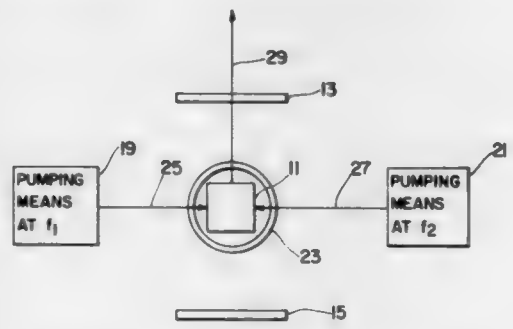
Filed Dec. 2, 1980, Ser. No. 212,174
Int. Cl.³ H01S *3/17*
U.S. Cl. 372—40 **3 Claims**

1. An optical transistor wherein a large output light power is controlled by a smaller input light power comprising:

a lasing material constituting a host single crystal disposed in a resonant laser cavity, said host single crystal being doped with optically active ions so as to have the characteristics of a lower energy state E_1, an intermediate energy state E_2, and an upper energy state E_3, said host single crystal containing said optically active ions being capable of omitting optical radiation;

first pumping means disposed on a first axis adjacent to said host crystal and being optically coupled thereto so as to provide a light pulse of frequency f_1 thereto for raising said optically active ions from the lower energy state E_1 to the intermediate energy state E_2, wherein the light pulses of frequency f_1 correspond to the energy difference between the lower energy state E_1 and the intermediate energy state E_2;

second pumping means disposed on the first axis adjacent to said host single crystal so that it is disposed between said first and second pumping means on the first axis, said second pumping means being optically coupled to said host single crystal so as to provide a light pulse of frequency f_2 thereto for raising said optically active ions from the intermediate energy state E_2 to the upper energy



state E_3, wherein the light pulses of frequency f_2 correspond to the energy difference between the intermediate energy state E_2 and the upper energy state E_3; and

regeneration means configured to form the resonant laser cavity for said host single crystal, said regeneration means including first and second reflectors disposed opposite each other on a second axis orthogonal to the first axis with said host single crystal disposed therebetween on the second axis at the intersection of the first axis, said first and second reflectors exhibiting reflectance at a laser output of frequency f_3 which corresponds to the energy difference between the upper energy state E_1 and the intermediate energy state E_2 so as to enhance the stimulated emission of light from said host single crystal, said first reflector being partially reflecting so as to pass the light from said host single crystal in the form of a coherent light beam and said second reflector being highly reflective.

4,403,324

DYE LASER HAVING A DYE JET NOZZLE WHICH FORMS A WELL-DEFINED DYE STREAM, AND ITS METHOD OF MANUFACTURE

Ludger H. Wöste, Ecublens, Switzerland, assignor to Lexel Corporation, Palo Alto, Calif.

Filed May 26, 1981, Ser. No. 266,989
Int. Cl.³ H01S *3/20*
U.S. Cl. 372—54 **21 Claims**

1. In a process of forming a dye laser and manufacturing a dye jet nozzle therefore, the steps of:

A. furnishing an optical resonator structure for a dye laser;

B. furnishing means for providing at a selected location contiguous to said optical resonator structure, a liquid dye capable of lasing;

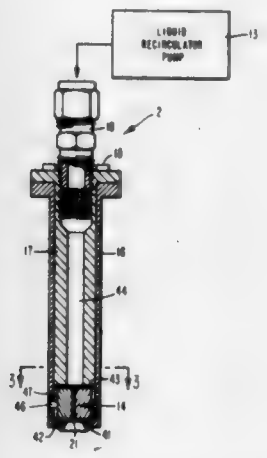
C. furnishing means for focusing to said selected location, a beam of pumping radiation capable of creating a population inversion in said dye; and

D. furnishing a means mounted on a first base plate positioning a pair of optical reflectors respectively on opposite sides of said location to reflect optical radiation emitted by said liquid dye; said step of furnishing means for providing a liquid dye at said selected location including the steps of;

a. furnishing a first block of material having an edge de-

fined by the intersection of first and second faces of said block, for forming a portion of the exit aperture of said nozzle;

b. positioning said first block of material against a supporting block with said first face thereof generally coplanar with a corresponding first face of said supporting block and said edge in contact with said supporting block; and



c. simultaneously removing material from said first face and said corresponding first face of said supporting block while overlapping said edge whereby said edge is fully supported during said removal to become a sharp edge having a minimum of imperfections.

4,403,325

GASDYNAMIC CO_2 LASER AND METHOD FOR OPERATING SUCH A LASER

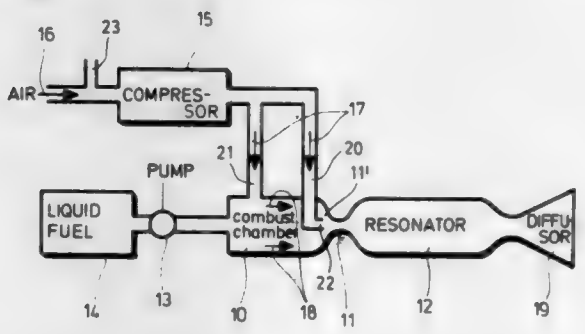
Gunthard Born, and Konrad Altmann, both of Munich, Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 240,620

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1980, 3012091

Int. Cl.³ H01S *3/09*

U.S. Cl. 372—90 **6 Claims**



1. A gasdynamic CO_2 laser, comprising combustion chamber means for combusting a fuel gas, resonator means including resonant cavity means for a laser action, nozzle means operatively interconnecting said combustion chamber means to said resonator means for expanding a hot gas into said resonator means, fuel supply means operatively connected to said combustion chamber means for supplying a fuel into said combustion chamber means, air compressor means for compressing air, duct means operatively connecting said air compressor means to said combustion chamber means for supplying compressed cold air at a pressure within the range of 1 to 10 bar into said combustion chamber means for mixing with a hot fuel gas in said combustion chamber means, and wherein said duct means for supplying cold air into said combustion chamber means comprise a first branch (**21**) connecting the air compressor means to the combustion chamber means and a second branch (**20**) supplying compressed cold air into a combustion chamber zone directly adjacent to and upstream of said nozzle means to cause said mixing simultaneously with the production of an inversion of said hot gas.

4,403,326

ELECTRIC ARC FURNACE WITH CONTROLLED OPERATION

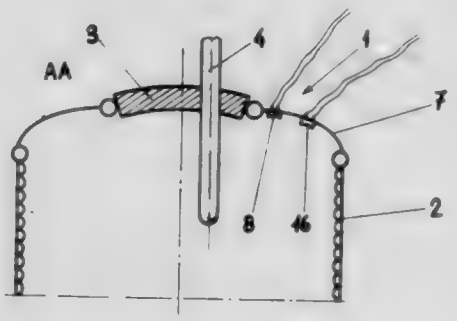
Jean Davene, Villars, France, assignor to Clesid S.A., Saint-Chamond, France

Filed Jun. 24, 1981, Ser. No. 276,860

Claims priority, application France, Jul. 1, 1980, 80 14639

Int. Cl.³ F27D *19/00*

U.S. Cl. 373—71 **2 Claims**



1. Electric arc furnace with metal side walls and an at least partly metallic roof, equipped with heat flow transducers (**8**) fixed to the intrados of said roof (**1**) at its metallic part (**7**), each of said transducers having an end part projecting with respect to the inner surface of said metallic part of said roof, the end surface (**16**) of each of said transducers directed towards the interior of said furnace being concave.

4,403,327

ARC FURNACE CHARGE-PREHEATING POWER SUPPLY SYSTEM

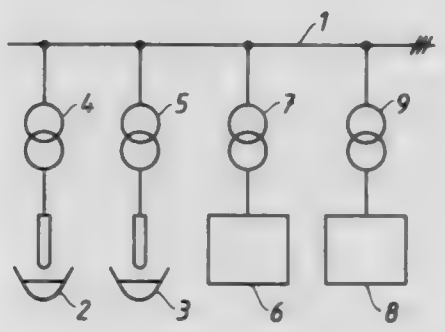
Staffan Granström, and Sven Ivner, both of Västeras, Sweden, assignors to ASEA AB, Västeras, Sweden

Filed Apr. 21, 1981, Ser. No. 256,139

Claims priority, application Sweden, Apr. 25, 1980, 8003140; Jul. 3, 1980, 8004925

Int. Cl.³ F27D *13/00*

U.S. Cl. 373—80 **10 Claims**

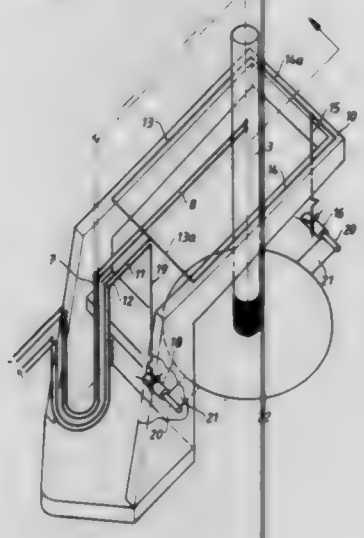


1. An arc furnace charge-preheating power supply system comprising an AC network for supplying electrical power, at least one arc furnace connected to said network, at least one induction furnace and a controllable alternating current convertor connecting said induction furnace to said network, said induction furnace being adapted to be charged with cold scrap so as to preheat the scrap prior to charging said scrap in said arc furnace, said convertor being adjustable so as to compensate for active power fluctuations from said arc furnace and to maintain a substantially constant total active power supplied by said AC network.

4,403,328
DC ARC FURNACE POWER CONNECTION SYSTEM

Erik Lassander, Viken, and Sven-Einar Stenkvist, Västeras, both of Sweden, assignors to ASEA AB, Västeras, Sweden

Filed Feb. 17, 1982, Ser. No. 349,602
Claims priority, application Sweden, Feb. 26, 1981, 8101251
Int. Cl.³ H05B 7/11
U.S. Cl. 373—103 2 Claims

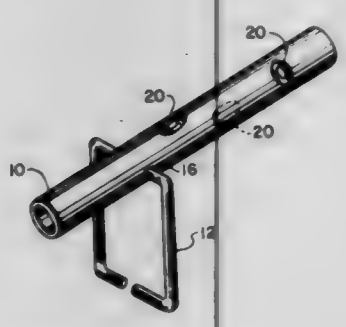


1. A DC arc furnace having a removable roof through which an arcing electrode depends via a horizontal electrode arm extending over the roof from a location offset from the roof, roof-removing equipment including a horizontal frame having an end at said location and extending over the roof to an end beyond the opposite side of the roof via frame sides spaced on either side of said electrode, and a melt connection having terminals extending from the bottom of the furnace below the frame's ends; wherein the improvement comprises positive and negative DC power lines extending together to said location, the negative line connecting with a first conductor extending from said location straight to connection with said electrode via said electrode arm, and the positive line connecting with a second conductor extending downwardly from said location to connection with the one of said terminals therebelow and with a third conductor forming a closed loop around said electrode via the ends and sides of said frame, the loop having one end with which the positive line directly connects at said location and an opposite end from which a fourth conductor extends downwardly to connection with the one of said terminals therebelow.

4,403,329
SUPPORT SYSTEM FOR ELECTRICAL RESISTANCE ELEMENT

Ewald R. Werych, Elm Grove, Wis., assignor to General Signal Corporation, Stamford, Conn.

Filed Jul. 6, 1981, Ser. No. 280,745
Int. Cl.³ H05B 3/06; F27D 1/10
U.S. Cl. 373—130 9 Claims



1. A support device for an electrical resistance heating element having a reverse bend loop therein, said heating element being adapted to be mounted on a ceramic fiber insulation module covering the inner vertical walls of furnace shells, said support device comprising:

a pin for insertion into said module downwardly at an acute angle from the horizontal;

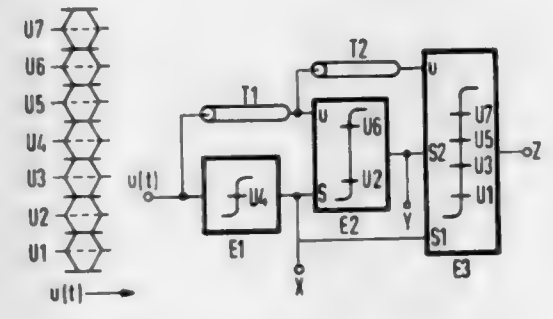
a retaining wire held within an opening in said pin, said retaining wire surrounding the legs defining the reverse bend loop in said resistance element so as to retain the element in position with respect to the module, the reverse bend loop extending over said pin;

means for securely retaining said pin within said module.

4,403,330
REGENERATIVE REPEATER FOR MULTI-STAGE DIGITAL SIGNALS

Fritz Meyer, Germering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,904
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1980, 3030172
Int. Cl.³ H04L 25/66
U.S. Cl. 375—4 5 Claims



1. A regenerative repeater for regenerating an n-level digital signal, comprising:

a signal input for receiving an n-level digital signal;

an output;

a clocked D flip-flop including a clock input, a D input, and a Q output connected to said output;

a multi-emitter first transistor including a collector connected to a reference potential, a base connected to said signal input and n−1 emitters;

a first resistor connected to the reference potential and to said D input;

n−1 second transistors each including a collector connected to said first resistor and to said D input,

a base connected to a respective different threshold potential, and an emitter connected to a respective one of the n−1 emitters and forming therewith n−1 respective amplitude decision differential amplifiers for the input signal;

a second resistor connected to an operating potential; and control means including at least one binary control signal differential amplifier connected to the emitters of the transistors of said n−1 differential amplifiers in an hierarchal circuit arrangement, at least one control reference input and at least one control signal input for each control signal differential amplifier, the number of control signal differential amplifiers connected to amplitude decision differential amplifiers being (n−1)/2, the number of control signal differential amplifiers of the next-lower hierarchy stage being (n−1)/4 and decreasing correspondingly until the lowest hierarchy stage contains a single control signal differential amplifier, each of said control signal differential amplifiers including a pair of third transistors each including a base, for receiving the control and control reference signals, respectively, and an emitter connected to the like emitter of the other and a collector,

said collectors of said transistors of said control signal differential amplifier of the lower hierarchy stage being respec-

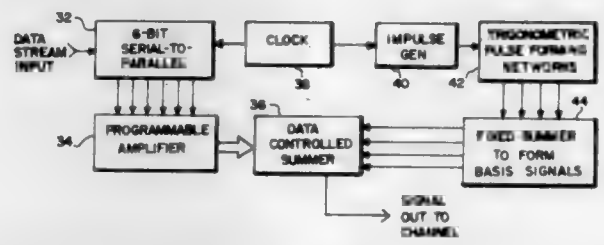
tively connected with the emitters of said transistors of the control signal differential amplifier of the next-higher hierarchy stage,

the collectors of the differential amplifier activated by the highest order control signal respectively connected to the emitters of the amplitude decision differential amplifiers and the emitters of the control differential amplifier activated by the lowest order control signal connected to the operating potential via said second resistor.

4,403,331
METHOD AND APPARATUS FOR TRANSMITTING DATA OVER LIMITED BANDWIDTH CHANNELS

Peter H. Halpern, Longwood, and Peter E. Mallory, Edgewater, both of Fla., assignors to Microdyne Corporation, Ocala, Fla.

Filed May 1, 1981, Ser. No. 259,442
Int. Cl.³ H03K *13/11*
U.S. Cl. 375—37 **17 Claims**



1. The method of transferring digital data over a bandwidth limited channel comprising the steps of:

generating, at the transmitting end of the channel, a set of n mutually orthogonal equal length basis signals in which the energy of each of the basis signals within such limited bandwidth is maximized and the length of the set represents a baud;

storing the n basis signals in a selected order;

generating a set of n coefficients in which the minimum difference energy between any pair of coefficients is maximized;

storing a set of $2^{1.5n}$ code combinations of the n coefficients;

designating a different one of said code combinations for each different one of the possible combinations of 1.5n bits;

assembling successive bytes of 1.5n bits of digital data to be transmitted;

selecting the designated code combination for each successive digital data byte;

weighting the respective n stored basis signals of the set by the code combination for each successive byte;

summing the n weighted basis signals for each byte to form successive composite signals representative of the successive data bytes; and

transmitting the successive composite signals over the bandwidth limited channel at a selected baud rate.

4,403,332
SIGNAL LEVEL TO PULSE RATE CONVERSION METHOD AND APPARATUS

Harold J. Weber, P.O. Box 315, 20 Whitney Dr., Sherborn, Mass. 01770

Filed Jan. 12, 1981, Ser. No. 224,392
Int. Cl.³ H03K *11/00*
U.S. Cl. 375—94 **14 Claims**

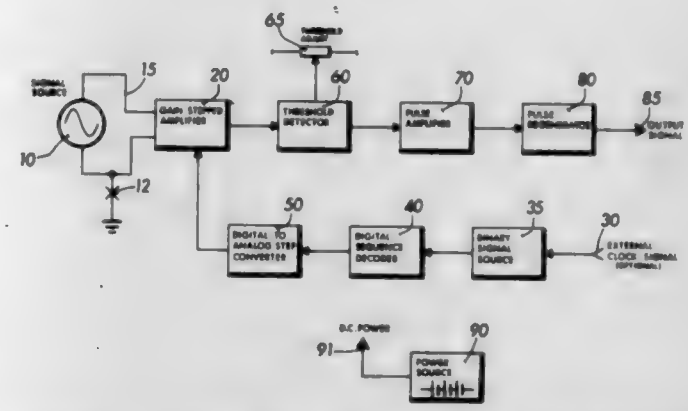
1. Translator method effective for:

a. receiving a first signal coupled from a separate unmodulated source, said first signal having a received value effectively proportional to the signal level of the source and the efficacity of coupling between the said source and translator;

b. producing therefrom a repetative pattern variate amplitude second signal pulse train having at least several different instant values substantially proportional to said first signal value;

c. predetermining said pattern to effectively comprise a combination of several pulse trains each having different and preferably synchronous recurrence frequencies, wherein the relatively lower recurrence frequency pulses comprising said combination obtain greater effective signal amplitude;

d. predetermining a threshold value;



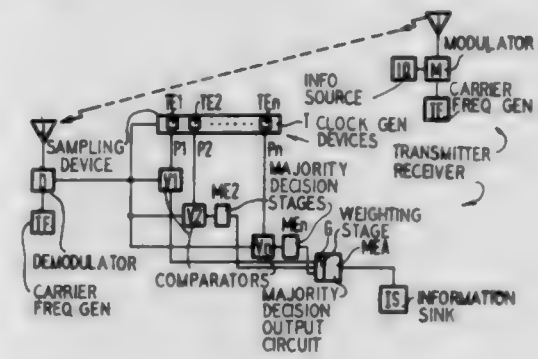
e. detecting second signal pulses exceeding said threshold level; and,

f. producing a pulsed third signal having a frequency proportional to the frequency of the said second signal pulses that exceed said threshold and are detected.

4,403,333
METHOD FOR RECOGNIZING DIGITAL INFORMATION IN TRANSMISSION IN MOBILE RADIO COMMUNICATIONS SYSTEMS

Probodh D. Gupta, Germering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 27, 1981, Ser. No. 296,972
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036655
Int. Cl.³ H04L *1/22*
U.S. Cl. 375—94 **2 Claims**



1. A method for recognizing digital information of a digital information element in a clocked digital information transmission, comprising the steps of:

first, sampling the information element at a first multiple of the information clock frequency to derive a first sampling result representing the content of the information element at a time in which the information element is assumed to be in its quasi-stationary state;

then, sampling the information element at least one more time at a respective different multiple of the information clock frequency within the assumed quasi-stationary state of the information element to obtain a respective additional sampling result;

conducting a first majority decision for each of the additional sampling results;

weighting the first sampling result and the majority decision results; and

conducting a second majority decision for the weighted results to obtain a signal representative of the content of the sampled information element.

4,403,334
MONOLITHICALLY INTEGRABLE SEMICONDUCTOR CIRCUIT

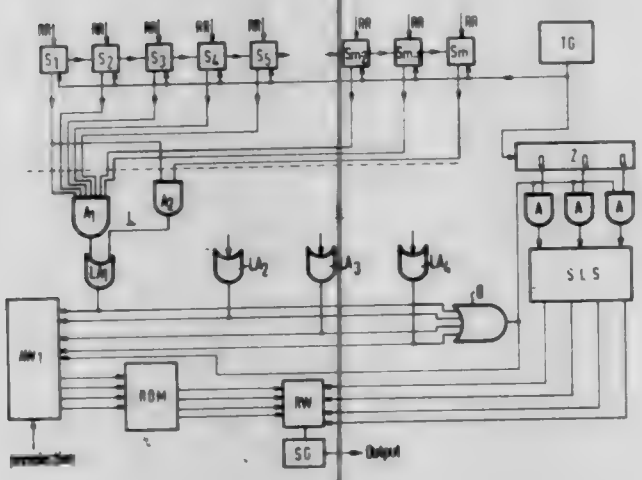
Helmut Röaler, Munich, and Reinhard Gafert, Penzberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 4, 1980, Ser. No. 137,380

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1979, 2914518

Int. Cl.³ H03K *23/00*

U.S. Cl. 377—44 21 Claims



1. A monolithically integrable semiconductor circuit having an input section into which respective electrical signals which are to be evaluated and which have been provided by groups of binary pulses are serially feedable, comprising a clock-controlled shift register in the input section having a plurality of register cells corresponding in number at least to the number of binary digits of the groups of binary pulses, a logic circuit, at least two of said register cells having an output operatively connected to said logic circuit for controlling said logic circuit, said shift register being operatable by shift pulses from the controlling clock thereof, a pulse counter driven by said shift pulses as counting pulses, said logic circuit having an output operatively connected to said pulse counter for latching the count thereof, and at least one other circuit component controllable by the count of said pulse counter respectively latched by control of said logic circuit, said input section further comprising an input circuit including a clock-controlled ring shift register as principal component and having an input to which information in the form of one of the digital pulse groups is applicable, said information being transferable seriatly from said input to said ring shift register as well as in parallel from said ring shift register to said first-mentioned shift register operatively connected to said logic circuit for controlling the said logic circuit, said ring-shift register in said input circuit having a plurality of register cells, the number of which as well as the number of register cells in said first-mentioned shift register operatively connected to said logic circuit corresponding, respectively, at least to the maximum number of digital places of the signals being evaluated, said register cells of said ring-shift register in said input circuit being serially connected in a chain thereof and having respective outputs, and including a logic gate, the output of at least one of said register cells of said ring-shift register being connected through said logic gate to one of the inputs to the respective register cells located ahead of the output of said at least one register cell in said chain of register cells.

4,403,335
ARRANGEMENT FOR THE SELF-WIPING OF CONTACTS IN MULTIDIGIT INTERROGATING COUNTERS

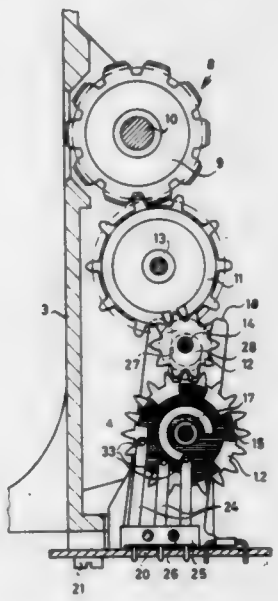
Hans-Joachim Wendt, Villingen Schwenningen, and Helmut Müller, St. Georgen, both of Fed. Rep. of Germany, assignors to Kienzle Apparate GmbH, Villingen, Fed. Rep. of Germany

Filed Nov. 13, 1980, Ser. No. 206,355

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1979, 2946254

Int. Cl.³ H01H *1/60*

U.S. Cl. 377—87 4 Claims



1. In an arrangement for the self-wiping of contacts in multidigit interrogating counters, in which the counter reading data are preferably read through coding wheels to contact wheels and to mechanical sliding contacts which sense the contact wheels, the improvement comprising:

rotatably-mounted contact wheels (1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3) being mounted, independently from the frictional effect caused by the counting procedure during rotation, on a movable shaft;

said contact wheels having a number of contact regions corresponding to different numbers;

eccentrics for controlling movement of said movable shaft in a direction perpendicular to its length, said eccentrics making it possible to move said shaft and said contact wheels (1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3) in an oscillating manner; and

contact springs against which said contact wheels operate in said oscillating manner for sensing individual ones of the different numbers, said contact wheels being arranged to be moved by said eccentrics so that said contact springs remain within those contact regions of said contact wheels which regions correspond to the numbers being read by the counter.

4,403,336
X-RAY EXPOSURE APPARATUS

Motoya Taniguchi; Minoru Ikeda, and Nobuyuki Akiyama, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 13, 1982, Ser. No. 367,996

Claims priority, application Japan, Apr. 13, 1981, 56-54429

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—035 5 Claims

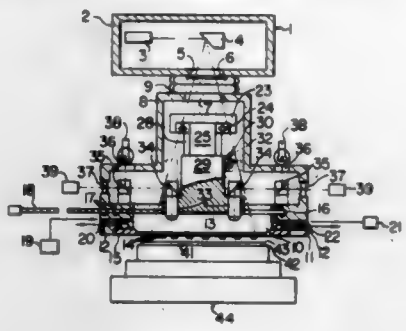
1. An x-ray exposure apparatus for replicating a pattern formed in a mask onto a wafer using a soft X-ray, characterized by comprising:

an X-ray generating means having an X-ray window and adapted to emit an X-ray through said X-ray window;

an atmospheric chamber having holes formed in the surface thereof connected to said X-ray generating means and in the surface opposing to said surface, said atmospheric

chamber being charged with a gas having a high permeability to X-ray;

a mask attached to said atmospheric chamber in such a manner as to seal in an airtight manner the X-ray emitting hole of said atmospheric chamber; and



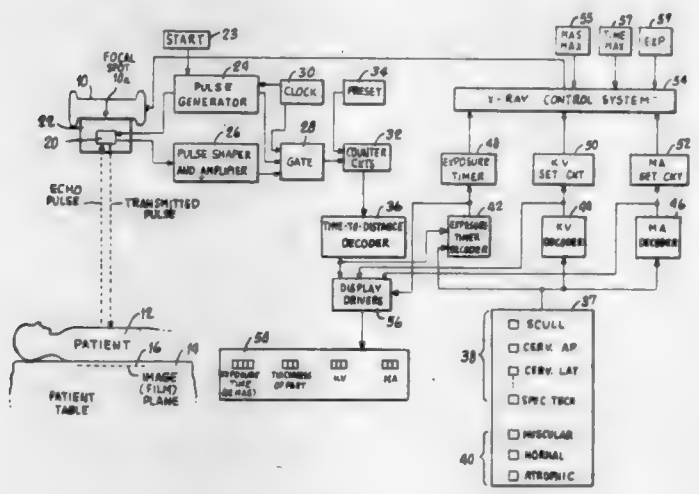
an alignment means including an alignment state adapted to locate said wafer at a position opposing to said mask attached to said atmospheric chamber, said alignment means further including an alignment optical system at least an objective lens of which being disposed in said atmospheric chamber.

4,403,337

AUTOMATED SETTING OF TECHNIC FACTORS FOR X-RAY EXAMINATIONS

Bennett Kleinman, Amityville, N.Y., assignor to Bennett X-Ray Corp., Copiague, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,522
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—95 **3 Claims**



3. A medical x-ray examination method comprising:

positioning a patient against an image receptor, with the patient part to be imaged facing an x-ray source, and utilizing a sonic transducer which is at a known distance from the image receptor to send a sonic signal from the direction of the source and to receive the reflection thereof from the patient part facing the source; and

automatically setting the x-ray exposure time at least in part on the basis of the travel time of said sonic signal.

4,403,338

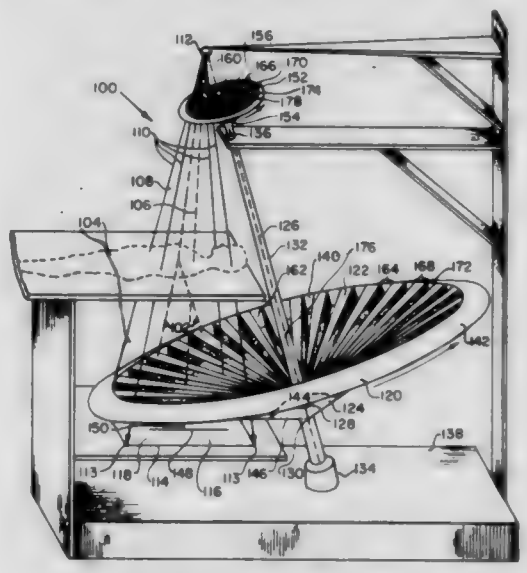
PROCESS AND APPARATUS FOR SCATTER REDUCTION IN RADIOGRAPHY

Stephen Rudin, 133 Old Farm Cir., Williamsville, N.Y. 14221; Daniel R. Bednarek, 24 Woodell Ave., Cheektowaga, N.Y. 14211, and Roland Wong, 268 Windermere Blvd., Amherst, N.Y. 14226

Filed Nov. 14, 1980, Ser. No. 206,698
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—146 **20 Claims**

19. A process for reducing detection of radiation scatter from an object by a radiation detection means having a detecting surface which receives high energy radiation within a flux pyramid through the object from a radiation source, which process comprises:

(a) interposing at least a first radiation shield between the object and the detecting surface, said shield having front and rear curvilinear surfaces; each of said curvilinear surfaces, being circularly symmetrical about a central axis and said curvilinear surface or a projected continuation thereof intersecting said axis at at least one and not more than two apexes, the central axis of each of the front and rear surfaces being the same, said shield being sufficiently dense and thick between the front and rear surfaces to absorb essentially all radiation from the source which



strikes the shield, the front surface facing the source and facing the central axis and at least a portion of the rear surface facing the detecting surface, said shield being provided with openings, narrower than the object, passing through the shield from the front to the rear surface;

(b) aligning said shield so that the central axis is on a straight line from the source to the apexes of the surfaces and so that all radiation passing from the source through the object must pass once through the shield, when the shield, is in motion about the axis, before striking the detecting surface; and

(c) moving the shield about the central axis.

4,403,339

METHOD AND APPARATUS FOR THE IDENTIFICATION OF OBJECTS

Klaus Wevelsiep, Kriftel, and Hans Scholze, Dreieich, both of Fed. Rep. of Germany, assignors to Scranton GmbH & Co., Elektronische Lesegerate KG, Fed. Rep. of Germany

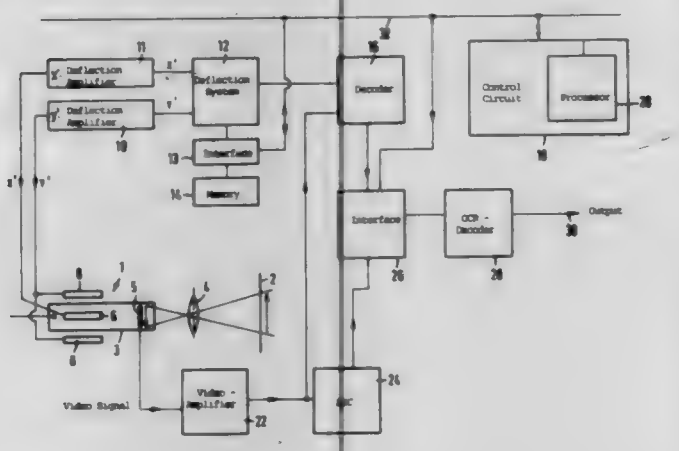
Filed Oct. 21, 1980, Ser. No. 198,983
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1979, 2942747; Apr. 15, 1980, 3014350
Int. Cl.³ G06K *9/32*
U.S. Cl. 382—44 **10 Claims**

1. In a method for identifying objects appearing at random positions, in random orientations, and at random times on an image window and having, on a surface facing the image window, an identification in the form of a data field which includes on at least one data track contrasting symbols and one or more contrasting line patterns identifying the position and orientation of the data track, the line pattern being defined by a plurality of lines with variable spacing and/or line widths, wherein the window is opto-electronically scanned line-by-line to generate a video signal which corresponds to a scanned contrast sequence appearing at the window, the method including, as a first step, detection scanning the image window in a raster having relatively widely spaced raster lines at different detection angles α until the contrasting line pattern has been intersected by the raster lines at least twice during the last scan; as a second step determining the position and orientation of the data track relative to the image window; and, as a third, read-

ing step, readout scanning the data field in direction of the data track in a reading raster having a relatively narrow line spacing to read and decode the symbols on the data track, the improvement comprising:

(a) scanning the raster lines point by point;

(b) during the scanning step continuously counting already scanned raster lines and already scanned points on the raster lines currently being scanned to thereby form first and second numerical values which define the numerical coordinates (x, y) of the raster point currently being scanned in a corresponding raster-constant numerical coordinate system;



(c) during the last raster scan of the first step and upon simultaneous identification of a contrasting line pattern storing the selected detection angle (α_l) and the numerical coordinates (x_p, y_p) of the point of intersection between raster lines and contrasting line pattern,

(d) during the second step, determining an angle of intersection β between the raster lines of the last detection scanning step and the data track from the stored numerical coordinates (x_p, y_p), and

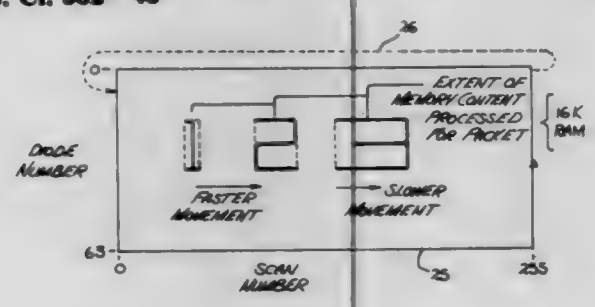
(e) during the third step, scanning through the reading raster at an angle equal to the sum of the determined angle of intersection β and the last selected detection angle (α_l), and reading the contrasting symbols on the data track.

4,403,340

OCR MATRIX EXTRACTOR

Richard E. Kumpf, San Jose, and William R. Smith, Mountain View, both of Calif., assignors to Caere Corporation, Los Gatos, Calif.

Filed Jan. 6, 1981, Ser. No. 223,002
Int. Cl.³ G06K 9/36
U.S. Cl. 382—48 **15 Claims**



1. In the processing of scanned images for character recognition, a method for isolating areas of the scanned medium for recognition processing comprising the steps of:

storing representations of said scanned images in a memory;

scanning said memory in a first direction so as to detect the end of a packet of data in said memory;

sensing the location of said end of said packet in said memory;

back-scanning said memory through said packet in a second direction, opposite to said first direction so as to detect the end of said packet in said second direction;

recording the extent of said packet in memory in the direction perpendicular to said first and second directions during said back-scanning;

sensing the location of the end of said packet in said second direction;

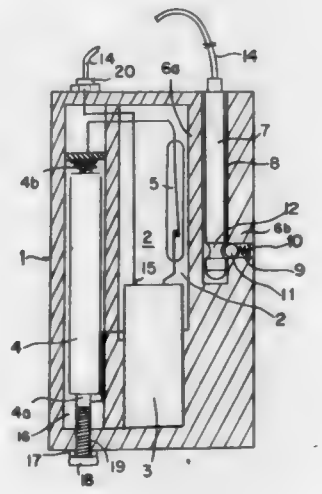
whereby data in memory is isolated which can be removed to recognition processing.

4,403,341

EMERGENCY INFORMATION COMMUNICATING DEVICE

Kiyoshi Hata, 4-16, Uenodori 4-chome, Nada-ku, Kobe-shi, Hyogo-ken, Japan

Filed Feb. 26, 1982, Ser. No. 352,584
Claims priority, application Japan, Feb. 26, 1981, 56/27123; Apr. 1, 1981, 56/49699
Int. Cl.³ H04B 1/034
U.S. Cl. 455—100 **7 Claims**



1. An emergency information communicating device which comprises:

a waterproof case body enclosing a high-frequency transmission circuit, a battery for supplying a DC power source to the transmission circuit, and switch means operable by a magnetic field, said switch means being connected between the battery and the transmission circuit;

a slot defined in the case body close to the switch means, said slot and switch means being separated by a partition wall member;

a permanent magnet for inserting into a predetermined position of said slot to apply a magnetic field for operating the switch means; and

an elongated electric conducting member, one end of which is connected with an end portion of said permanent magnet and the other end connected with an output terminal of said transmission circuit, said switch means being turned off when said permanent magnet is inserted in the predetermined position in said slot and being turned on when the permanent magnet is displaced from the predetermined position, thereby starting the transmission circuit to radiate an electromagnetic wave from said electric conducting member.

4,403,342

ZONE SWITCHING SYSTEM FOR A FREQUENCY SYNTHESIZED TRANSCEIVER

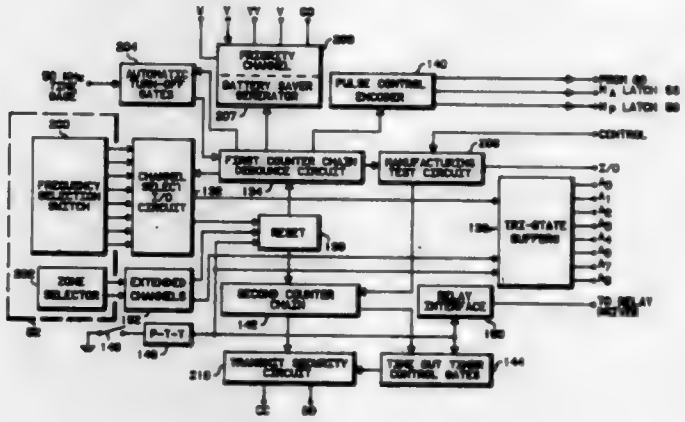
Jaime A. Borras, Hialeah; Ruben J. Gonzalez, Miami, both of Fla.; Daniel M. Smith, Schaumburg, Ill., and Alfred B. Wieczorek, Plantation, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 6, 1981, Ser. No. 251,644
Int. Cl.³ H04B 1/40
U.S. Cl. 455—76 **7 Claims**

1. In a radio transceiver including a digital frequency synthesizer and a multiposition switch, addressing frequency channel information stored at a plurality of locations in a memory, for

causing the frequency synthesizer to tune to various communication channels, a zone selecting apparatus comprising:

zone selecting means coupled to said memory and establishing at least two distinct and contiguous zones of addressable locations in said memory, all of the locations in a selected zone being addressable by a corresponding number of positions on said multiposition switch,



said zone selecting means operating to alter the correspondence for each successive zone between the positions on said multiposition switch and the corresponding addresses of the memory locations, whereby predetermined channel frequency information may be arbitrarily grouped and stored in any zone of said memory.

4,403,343

DIVERSITY RECEIVER

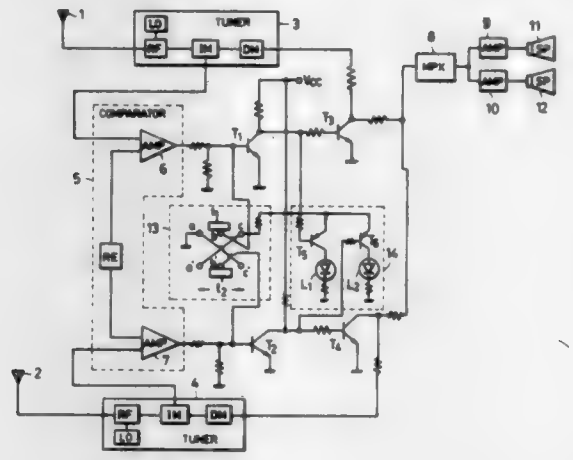
Masanori Hamada, Toda, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1981, Ser. No. 306,565

Claims priority, application Japan, Sep. 30, 1980, 55-138842[U]

Int. Cl.³ H04B *1/16, 7/08*

U.S. Cl. 455—134 **3 Claims**



1. A diversity receiver, which comprises:

two antennas;

two tuner circuits, each connected to a respective said antenna and each producing an output signal derived from a received signal and an intensity signal proportional to the electric field intensity of said received signal;

comparator means for comparing said intensity signal from said tuner circuits to a reference signal;

signal switching circuit means responsive to said comparator means for supplying said output signal of each said tuner circuit to a further circuit in response to a comparison signal from said comparator means which is a function of the intensity of the corresponding intensity signal;

antenna switching circuit means cooperable with said signal switching circuit means for selectively causing said signal switching circuit means to supply only a selected one of said output signals to said further circuit independently of said comparison signals from said comparator means;

antenna indicating circuit means connected to said signal switching circuit means and said antenna switching circuit means and having two indicators, each said indicator being associated with a respective said tuner circuit and being energized when said output signal of such tuner circuit is being supplied by said signal-switching circuit means to said further circuit.

4,403,344

RECEIVER HAVING PROGRAM RESERVING FUNCTION

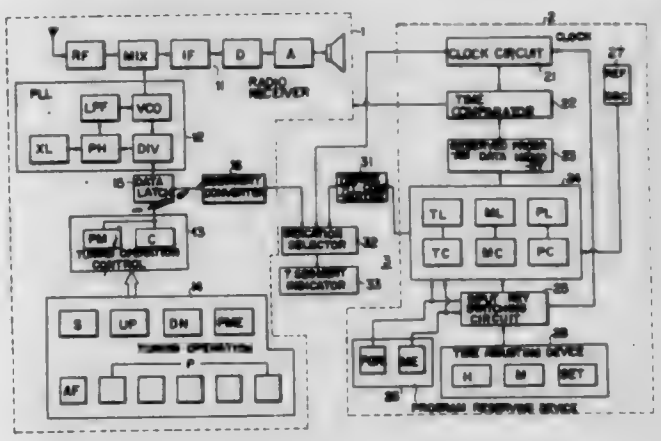
Shigeru Yamada; Kazuo Watanabe, and Mitsuo Aramaki, all of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jun. 18, 1981, Ser. No. 274,925

Claims priority, application Japan, Jun. 18, 1980, 55-81396

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—181 **1 Claim**



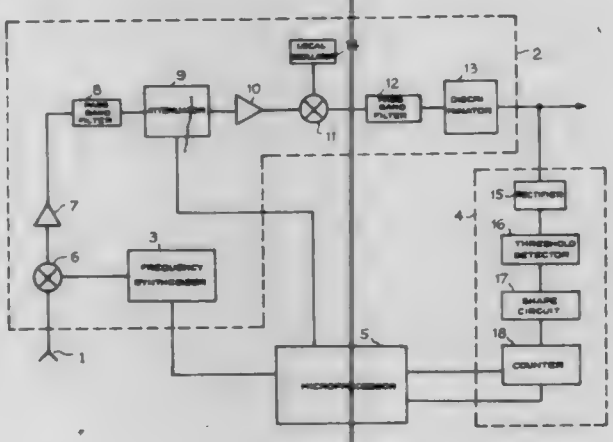
1. A receiver having a program reserving function, comprising a memory for storing a reserved time and a corresponding reserved program number, a clock circuit, a comparator and a synthesizer-type radio receiver, said comparator comparing the reserved time in said memory to the actual time in said clock circuit and causing said receiver to receive radio waves of the program corresponding to the reserved time and number when the reserved time and the actual time coincide, said receiver further including time adjusting means for adjusting the time in said clock circuit, program reserving means, and setting means for causing a reserved time and a corresponding reserved program number defined by the outputs of said time adjusting means to be stored in said memory in response to operation of said program reserving means, said time adjusting means including first, second and third time adjusting buttons and said program reserving means including a program button and a memory button, said first, second and third time adjusting buttons being adapted to respectively adjust hours, minutes and seconds in said clock circuit, said setting means including reference clock signal generating means, a latch, counter means and input key switching means, said input key switching means being responsive to the operation of said program button for causing said counter means, under the control of said time adjusting buttons, to count the clock signals from said reference clock signal generating means and for causing said latch to latch the output of said counter means, said counter means output in said latch being stored in said memory by said setting means in response to operation of said memory button, whereby desired program reserving data can be preset in said receiver.

4,403,345

DEVICE FOR DETECTING THE TUNING FREQUENCY OF A FREQUENCY MODULATION RADIO RECEIVER

Roger Granek; Jean Hybre, and Michel Drobecq, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 15, 1981, Ser. No. 302,675
Claims priority, application France, Sep. 16, 1980, 80 019918
Int. Cl.[3] H04B *1/16*
U.S. Cl. 455—182 4 Claims



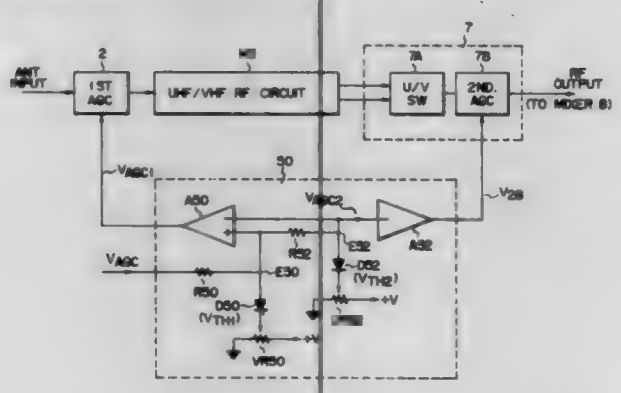
1. A device for detecting the tuning frequency of a frequency-modulation radio receiver which is moving in relation to transmitting stations transmitting at different frequencies, comprising: a demodulator equipped with means for synthesizing different tuning frequencies corresponding to the different transmitting frequencies, said device further comprising counting means for counting the number of noise pulses at the demodulator output, for each tuning frequency over a period of time T, and identifying means connected to said counting means for identifying the tuning frequency at which there is the minimum number of such noise pulses, this being the correct tuning frequency, said identifying means supplying a control signal for tuning said means for synthesizing the different tuning frequencies at the correct tuning frequency.

4,403,346

AGC SYSTEM FOR WIDE BAND TUNER

Shigeo Ogawa, Kawaguchi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 12, 1981, Ser. No. 320,437
Claims priority, application Japan, Nov. 19, 1980, 55-162779
Int. Cl.[3] H04B *1/26*
U.S. Cl. 455—189 13 Claims



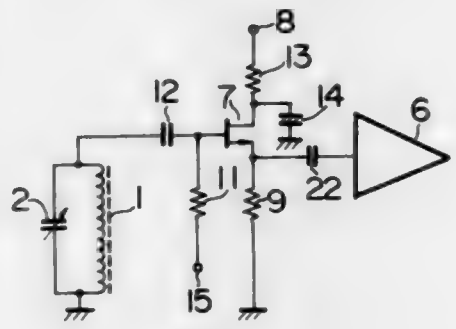
1. An AGC system for a wide band tuner comprising:
(a) AGC means for passing an input signal with a first given gain to provide a level-controlled signal, said level-controlled signal including a first signal in a first frequency band and a second signal in a second frequency band;
(b) circuit means coupled to said AGC means for signal-processing said level-controlled signal to provide a third signal and a fourth signal, said third signal including components in said first frequency band and said fourth signal including components in to said second frequency band;
(c) selection/AGC means coupled to said circuit means for selecting either one of said third signal and said fourth signal and providing the selected signal as an output signal with a second given gain, said output signal selectively including components in said first frequency band or said second frequency band;
(d) control signal source means coupled to said AGC means and said selection/AGC means for governing said first and second given gains in accordance with the level of said output signal; and
(e) tuning means coupled to said selection/AGC means to provide an intermediate frequency signal in response to said output signal.

4,403,347

ANTENNA TUNING CIRCUIT FOR AM RADIO RECEIVER

Yoshimi Iso; Eijiro Oshitani, both of Toyokawa; Shin-ichi Ohashi, Chigasaki, and Shigeki Inoue, Toyokawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 6, 1981, Ser. No. 232,005
Claims priority, application Japan, Feb. 8, 1980, 55/13719
Int. Cl.[3] H04B *1/18*
U.S. Cl. 455—193 4 Claims



1. An antenna tuning circuit for a long wave and a medium wave AM radio receiver comprising:
a tuning resonator having a tuning coil wound around a ferrite core to have an antenna function and a variable capacitor connected in parallel with said tuning coil, the output from said tuning reasonator being coupled to a high frequency amplifier;
a source follower field effect transistor (FET), one end of said tuning coil being connected to the gate electrode of said FET, the other end of said tuning coil being grounded, and an output signal of said antenna tuning circuit being taken out from the source electrode of said FET;
a first resistor connected between the drain electrode of said FET and an external power source;
a second resistor connected between the source electrode of said FET and ground; and
a bypass capacitor connected between the drain electrode of said FET and ground, wherein
a forward AGC voltage is supplied to the gate electrode of said FET.

4,403,348

SINGLE SIDEBAND RECEIVER WITH INTERSYLLABIC GAIN CORRECTION LIMIT CONTROL

Kenneth W. Leland, Howell, and Nelson R. Sollenberger, Ocean, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

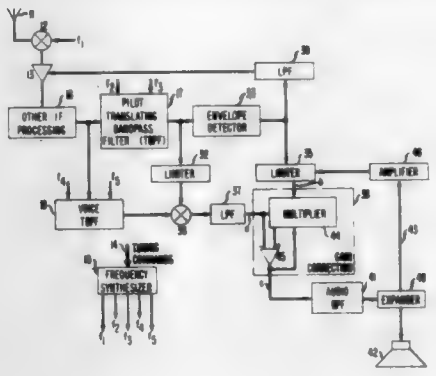
Filed Sep. 21, 1981, Ser. No. 304,206
Int. Cl.[3] H04B *1/68, 1/16*
U.S. Cl. 455—203 13 Claims

1. In a radio receiver for extracting audio signal information in a predetermined amplitude range, including speech signals, from a channel of received radio frequency signals, said audio signal information also including from time to time noise and cochannel interference,

means, responsive to a part of said received signals, for adjusting the gain of said receiver to compensate for amplitude fading in said received signals,

said adjusting means including means for limiting adjustments to be no more than a predetermined maximum amount.

means, responsive to compensated audio signals from said



adjusting means, for producing a substantially constant high signal output for intersyllabic relatively quiet times and a substantially constant low signal output for active speech syllables, and

means, responsive to an output of said producing means, for controlling operation of said limiting means to reduce said maximum amount during said intersyllabic quiet times in said speech signals.

4,403,349

INTERMEDIATE FREQUENCY DETECTION CIRCUIT

Kazuo Takayama, Kobe, Japan, assignor to Fujitsu Ten Limited, Hyogo, Japan

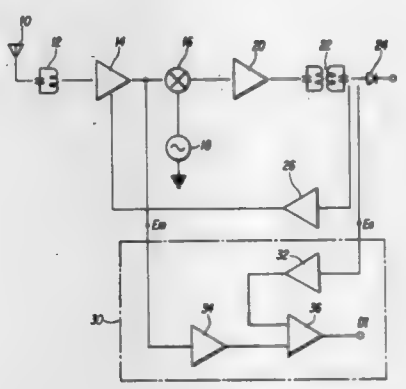
PCT No. PCT/JP79/00083, § 371 Date Dec. 5, 1979, § 102(e) Date Dec. 5, 1979, PCT Pub. No. WO79/00937, PCT Pub. Date Nov. 15, 1979

PCT Filed Apr. 4, 1979, Ser. No. 179,288

Claims priority, application Japan, Apr. 17, 1978, 53-45149

Int. Cl.³ H04B *1/10, 1/26*

U.S. Cl. 455—219 **4 Claims**



1. An intermediate frequency detection circuit for generating an intermediate frequency detection output indicating the reception of a broadcasting wave in a superheterodyne type radio receiver having an intermediate frequency stage and a high frequency stage, said detection circuit comprises:

a first circuit for producing a signal indicating the output level of said intermediate frequency stage of said radio receiver;

a second circuit for producing a signal indicating the output level of said high frequency stage in said radio receiver; and

a logic circuit whose input is connected to the output of said first and second circuits, said logic circuit having an output to provide said detection output when the output of said intermediate frequency stage is high and the output of said high frequency stage is low.

4,403,350

INTERFERENCE AVOIDANCE ELECTRONIC SYSTEM FOR AN AUTOMOTIVE VEHICLE

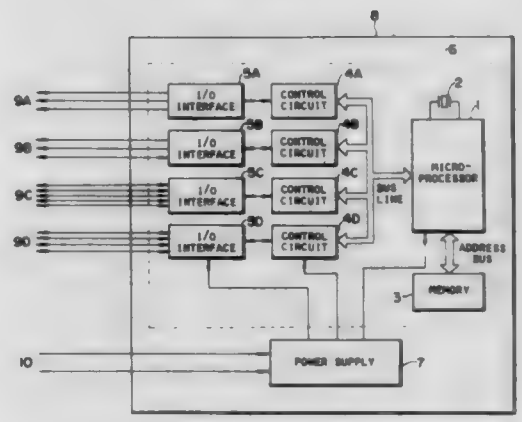
Iwao Imai, Yokosuka, and Masazumi Sone, Tokyo, both of Japan, assignors to Nissan Motor Company Limited, Yokohama, Japan

Filed Apr. 20, 1981, Ser. No. 255,488

Claims priority, application Japan, Apr. 24, 1980, 55-53606

Int. Cl.³ H04B *1/10*

U.S. Cl. 455—297 **14 Claims**



1. An interference noise avoidance system for use where a plurality of digital processing units are operated in a broadcast receiver environment which is subject to noise interference; said processing units being operated in synchronization with clock pulses, comprising:

a plurality of clock pulse generating means adapted to operate within said receiver environment for generating said clock pulses, each of said plurality of clock pulse generating means being connected to at least one of said digital processing units and being operable to generate distinctly different clocking frequencies for said clock pulses; each of said clocking frequencies being preselected such that when two or more processing units operate simultaneously, any harmonics within a broadcast band of the receiver which are caused by clock pulses of one generating means have a frequency difference of at least 10 KHz from the harmonics within the broadcast band caused by clock pulses of any other generating means;

whereby interference resulting from any frequency difference of less than 10 KHz within said broadcast receiver environment is avoided.

4,403,351

METHOD AND APPARATUS FOR DISTINGUISHING BETWEEN MINIMUM AND NON-MINIMUM PHASE FADES

Peter D. Karabinis, Atkinson, N.H., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 7, 1981, Ser. No. 328,121

Int. Cl.³ H04B *1/10*

U.S. Cl. 455—304 **16 Claims**

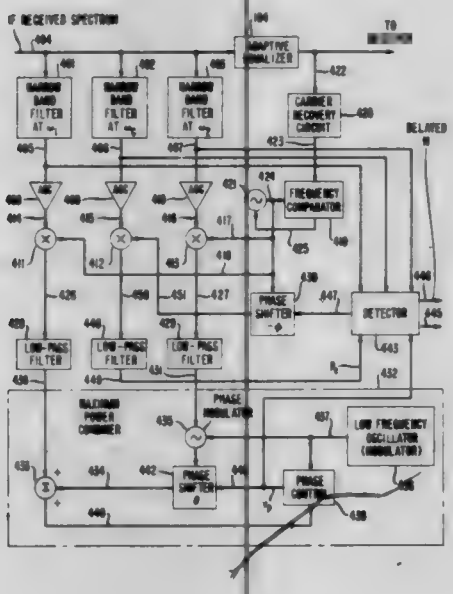
1. In apparatus for receiving a fade susceptible phase-coherent double-sideband signal having maximum amplitude distortion during fading at a fade notch frequency, a fade character detector characterized by

means (e.g. **401**, **403**, **411**, **413**, **419**, **420**, **421** or **801**, **802**, **803**, **805**, **811**) for respectively forming a first signal and a second signal from first and second spectral components of said double-sideband signal symmetrically disposed about the center of the double-sideband frequency spectrum, said forming means shifting said first and second spectral components in frequency so that each of said first and second signals have a fundamental component at a common frequency,

means (e.g. **622**, **623**, **624**, **6238**, **630**, **632**, **634**, **636**, **639**, **640**, **641** or **821**, **822**, **823**, **824**) for determining the location of

the fade notch frequency relative to the center of the double-sideband signal frequency spectrum,

means (e.g. **428**, **429**, **432**, **601**, **604**, **605**, **608**, **610**, **611**, **612**, **615** or **809**, **814**, **816**) for determining the phase between said fundamental component of said first signal and said fundamental component of said second signal, and



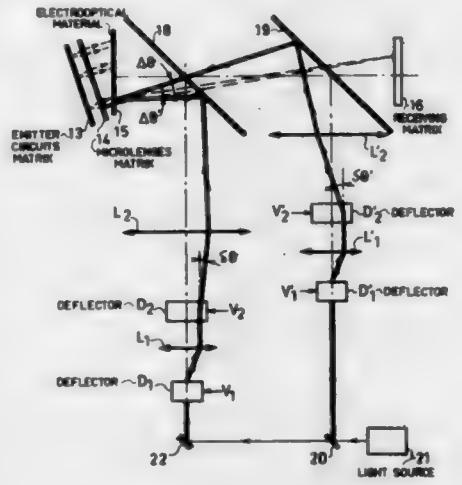
means (e.g. **620**, **621**, **634**, **644**, **645**, **646**, **647** and **648** or **818**, **826**, **827**) responsive to the determined fade notch location and the determined phase for detecting when the fade is minimum phase fade and when the fade is non-minimum phase fade.

4,403,352

SWITCHING DEVICE FOR OPTICAL BEAMS AND TELEPHONE EXCHANGE INCORPORATING SUCH A DEVICE

Jean-Pierre Huignard, and Pierre Leclerc, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 2, 1981, Ser. No. 326,556
Claims priority, application France, Dec. 5, 1980, 80 25910
Int. Cl.³ H04Q *3/00*
U.S. Cl. 455—601 **11 Claims**



1. A switching device for optical beams for optically connecting at least one of the circuits of a group of photoemitter circuits to at least one circuit of a group of photoreceiver circuits, comprising means for the deflection of the radiation emitter by the photoemitter circuit rendered parallel beforehand by a collimating means, said deflection means making it possible to direct the radiation onto the active part of the corresponding photoreceiver circuit, the deflection means comprising a diffraction grating written in a photosensitive medium obtained by the interference by two light beams, the said two light beams creating the diffraction grating in the photosensitive medium having a wavelength differing from that of the beams from the photoemitter circuits, the wavelength of the radiation emitted by the photoemitter circuit not being in the spectral sensitivity range of the photosensitive medium, the latter being continuously recyclable and in it the diffraction grating is a space lattice of fringes.

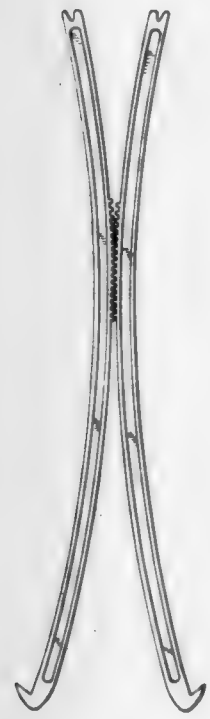
DESIGNS

SEPTEMBER 6, 1983

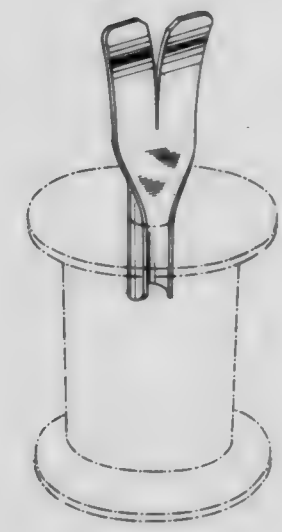
270,394
BRASSIERE OR THE LIKE
Toshiko Taniyama, White Plains, N.Y., assignor to International Playtex, Inc., Stamford, Conn.
Filed May 18, 1981, Ser. No. 264,874
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24



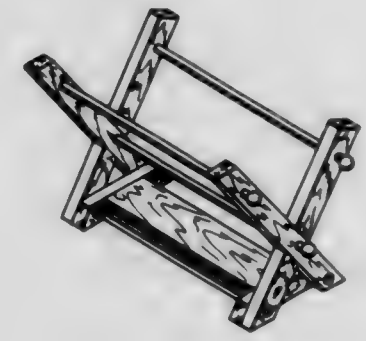
270,395
SOCK DONNING TOOL
Kenneth H. McCullough, 3822 N. Stratford Rd., Atlanta, Ga. 30342
Filed May 7, 1981, Ser. No. 261,671
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—378



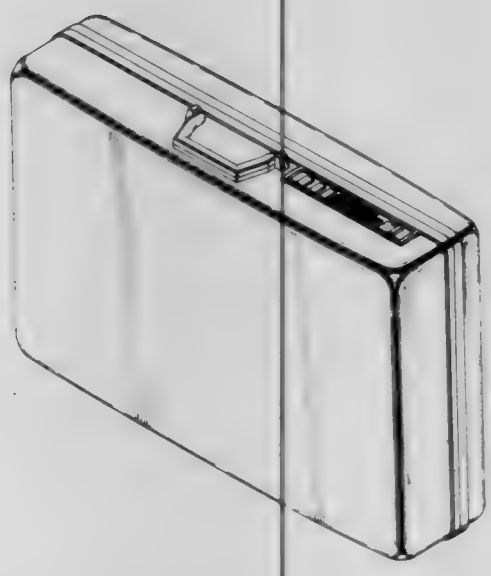
270,396
SPOOL THREAD CUTTER
Thomas O. Blair, 8026 SE. Powell Blvd., Portland, Oreg. 97206
Filed Apr. 9, 1981, Ser. No. 252,623
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D3—18



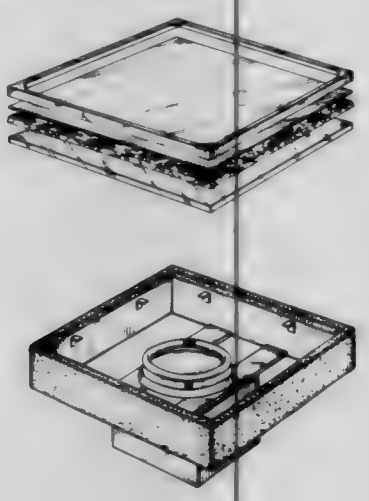
270,397
YARN HOLDER
Richard L. Zelmer, P.O. Box 611, Castroville, Tex. 78009
Filed Nov. 24, 1980, Ser. No. 209,462
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D3—23



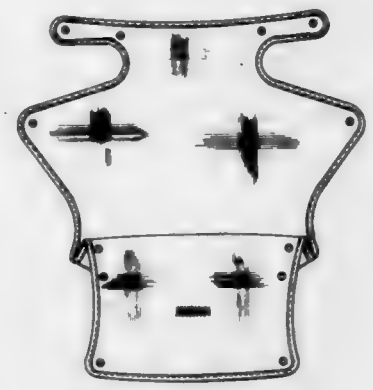
270,398
LUGGAGE CASE
Edward M. Stolarz, Yorktown Heights, N.Y., assignor to Presto Lock, Inc., Garfield, N.J.
Filed Oct. 9, 1980, Ser. No. 195,361
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—76



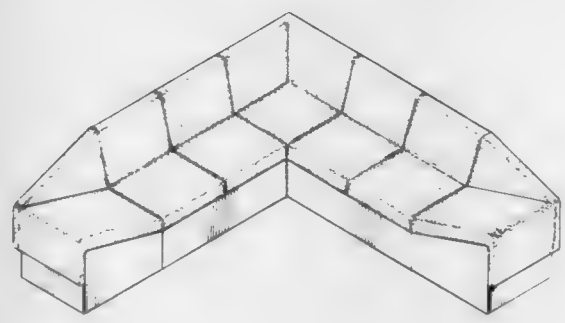
270,399
TABLE WITH AN ILLUMINATED TOP
Thomas Miller, 3 Woodland Pl., White Plains, N.Y. 10606
Filed Apr. 6, 1981, Ser. No. 251,252
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—27



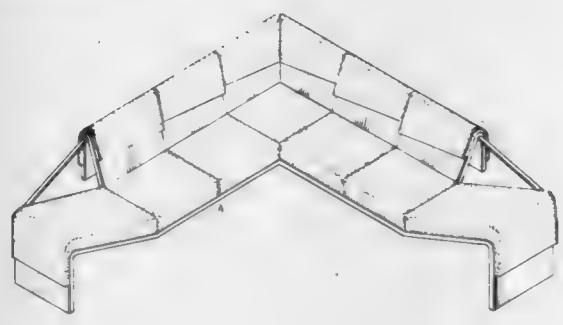
270,400
COVER FOR COLLAPSIBLE INFANT STROLLER
Bernard R. Schutz, New York, N.Y., assignor to Fine Art Pillow & Specialties Corp., New York, N.Y.
Filed Jun. 8, 1981, Ser. No. 271,642
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—48



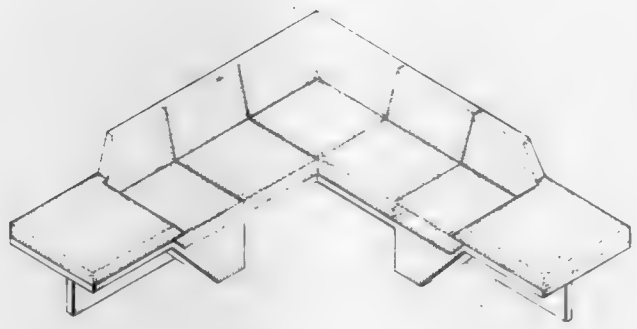
270,401
SOFA
Jan H. Matthias, Monaco, Monaco, assignor to Casa Bella Imports, Inc., Miami, Fla.
Filed Aug. 17, 1981, Ser. No. 293,399
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—61



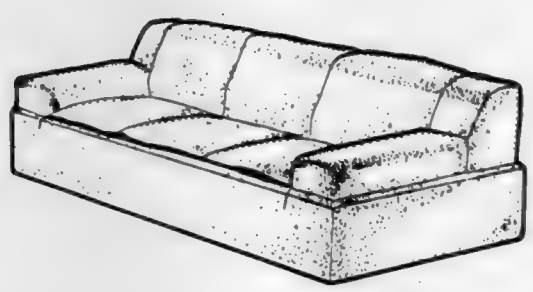
270,402
SOFA
Jan H. Matthias, Monaco, Monaco, assignor to Casa Bella Imports, Inc., Miami, Fla.
Filed Aug. 17, 1981, Ser. No. 293,400
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—61



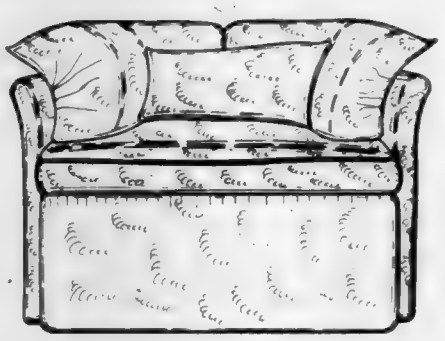
270,403
SOFA
Jan H. Matthias, Monaco, Monaco, assignor to Casa Bella Imports, Inc., Miami, Fla.
Filed Aug. 17, 1981, Ser. No. 293,499
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—61



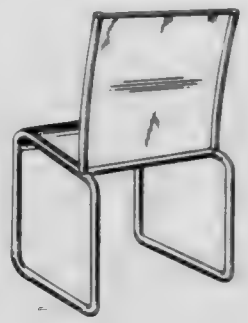
270,404
SOFA
Giorgio Saporiti, Besnate, Italy
Filed Apr. 30, 1979, Ser. No. 34,487
Claims priority, application Italy, Feb. 28, 1979, 60906/79[U]
The portion of the term of this patent subsequent to Apr. 6, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



270,405
SEAT
Ernesto Radaelli, Gallarate, Italy, assignor to Fratelli Saporiti Industria Arredamenti di Saporiti Sergio E. Giorgio S.N.C., Besnate, Italy
Filed Mar. 19, 1980, Ser. No. 131,649
Claims priority, application Italy, Sep. 19, 1979, 60942/79[U]
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71



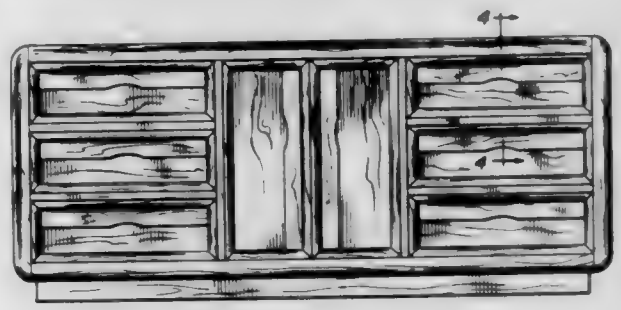
270,406
CHAIR
Moses R. Schultz, Barto, Pa., assignor to Knoll International, Inc., New York, N.Y.
Filed Jun. 9, 1981, Ser. No. 272,046
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75



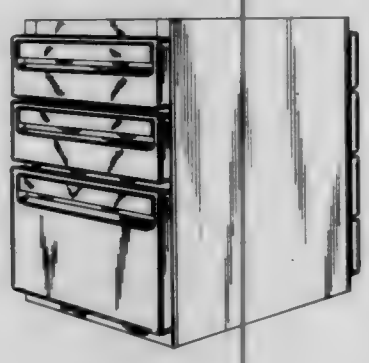
270,407
COMBINED TOOTHBRUSH AND TOOTHPASTE HOLDER
Richard Ochwat, 385 Schmale Rd., Carol Stream, Ill. 60187
Filed Sep. 29, 1980, Ser. No. 192,058
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—92



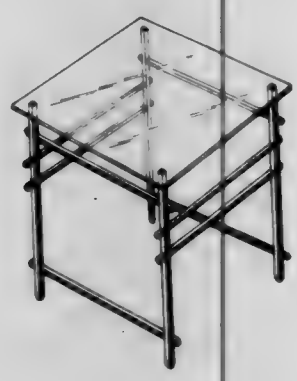
270,408
TRIPLE DRESSER OR THE LIKE
Hilco Woudstra, 1123 Forest Hills Dr., High Point, N.C. 27262
Filed Feb. 11, 1981, Ser. No. 233,440
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—164



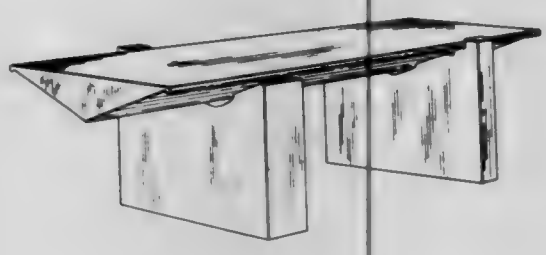
270,409
STORAGE MODULE
Bruce R. Hannah, Cold Spring, N.Y., assignor to Knoll International, Inc., New York, N.Y.
Filed May 28, 1980, Ser. No. 153,870
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—165



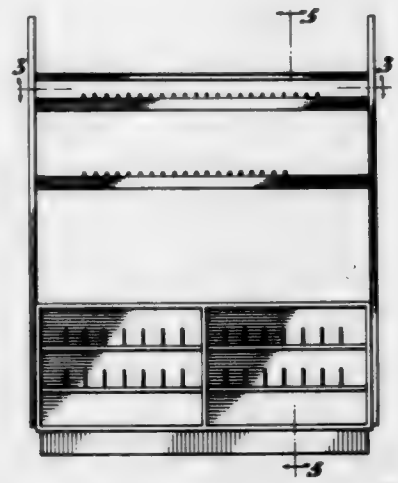
270,410
TABLE
Kaloust P. Sogoian, 21820 W. 8 Mile, Southfield, Mich. 48075
Filed Jul. 6, 1981, Ser. No. 280,410
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—175



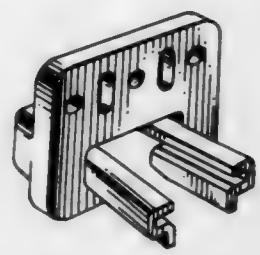
270,411
TABLE
Alessandro DeGregori, 106 Gladstone Rd., Pittsburgh, Pa. 15217
Filed May 4, 1981, Ser. No. 260,278
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



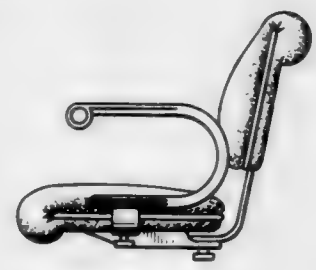
270,412
CARPET SHOWCASE
Arthur Bieler, 7145 W. 20th Ave., Hialeah, Fla. 33014
Filed Mar. 30, 1981, Ser. No. 248,702
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—188



270,413
FITTING FOR DRAWER SLIDE ASSEMBLY
Kenneth H. Gutner, 3285 Dato, Highland Park, Ill. 60035, and Jay S. Waxman, Skokie, Ill., assignors to Kenneth H. Gutner, Highland Park, Ill.
Filed Apr. 16, 1981, Ser. No. 254,892
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—191



270,414
COMBINED SEAT AND BACKREST FOR A CHAIR
William I. Stephens, Emmaus, Pa., assignor to Knoll International, Inc., New York, N.Y.
Division of Ser. No. 38,124, May 11, 1979. This application Nov. 30, 1981, Ser. No. 325,997
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—191



270,415

GOBLET OR SIMILAR ARTICLE

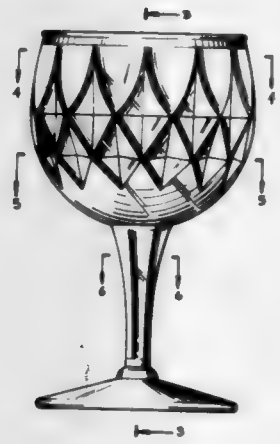
James L. Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

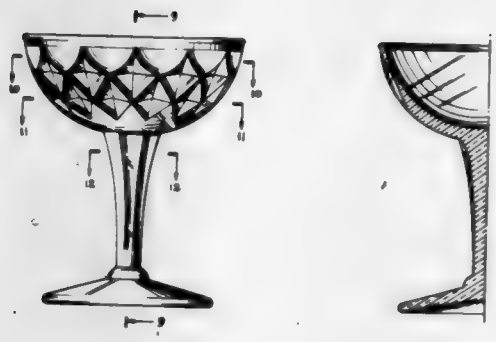
Division of Ser. No. 140,180, Apr. 14, 1980, Pat. No. Des. 267,697. This application Apr. 19, 1982, Ser. No. 369,924

Term of patent 14 years

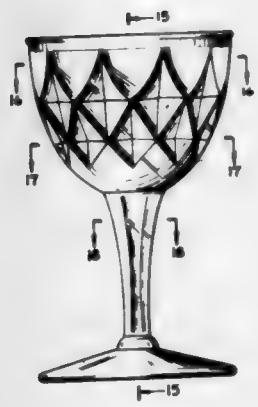
Int. Cl. D07—*01*

U.S. Cl. D7—11









270,416

PLATE OR SIMILAR ARTICLE

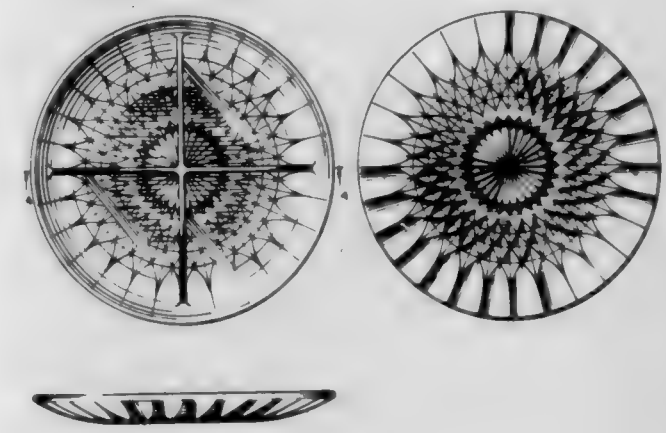
James L. Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

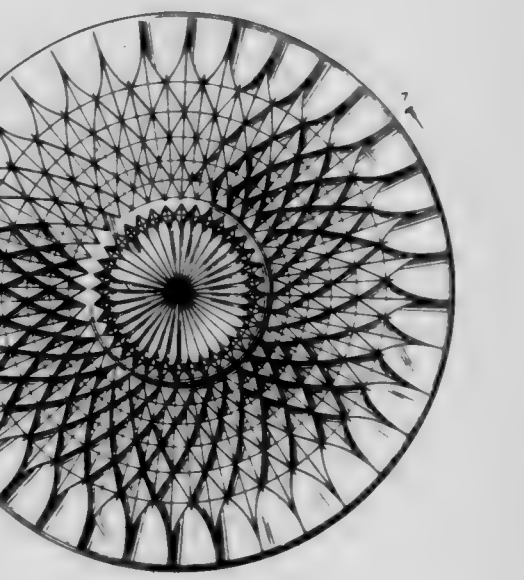
Division of Ser. No. 140,180, Apr. 14, 1980, Pat. No. Des. 267,697. This application May 27, 1982, Ser. No. 382,470

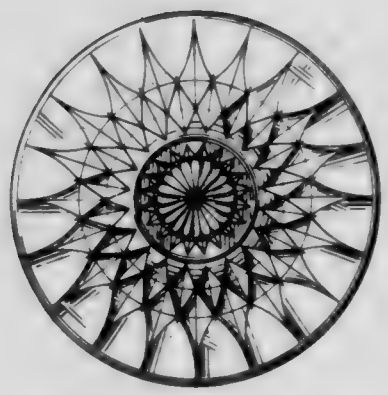
Term of patent 14 years

Int. Cl. D07—*01*

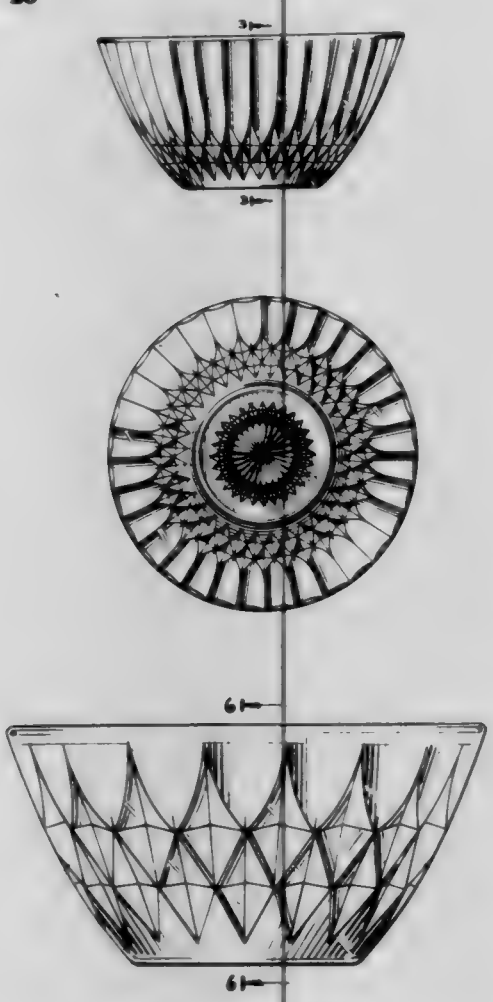
U.S. Cl. D7—27



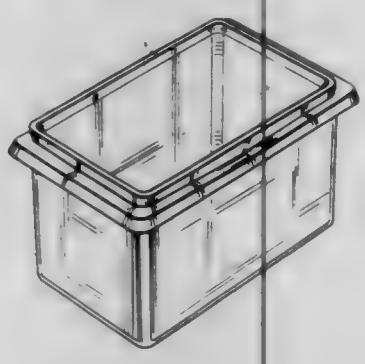




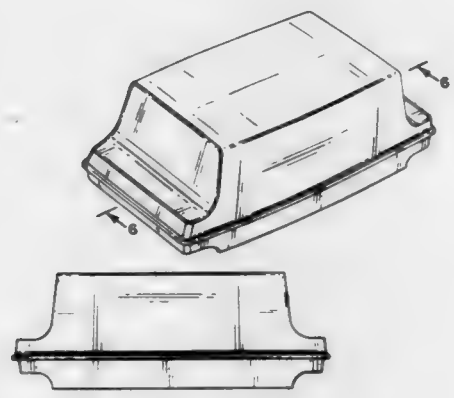
270,417
RECEPTACLE OR SIMILAR ARTICLE
James L. Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 140,180, Apr. 14, 1980, Pat. No. Des. 267,697. This application May 24, 1982, Ser. No. 381,018
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—28



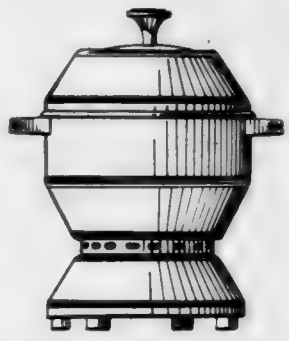
270,418
FOOD STORAGE CONTAINER OR THE LIKE
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Jan. 16, 1980, Ser. No. 112,661
Term of patent 14 years
Int. Cl. D7—*01, 07*
U.S. Cl. D7—76



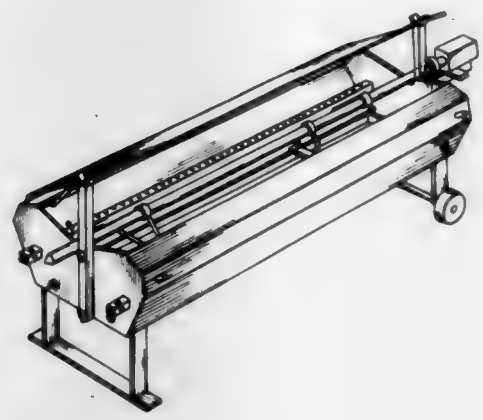
270,419
BUTTER DISH OR THE LIKE
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Jun. 18, 1981, Ser. No. 274,950
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—84



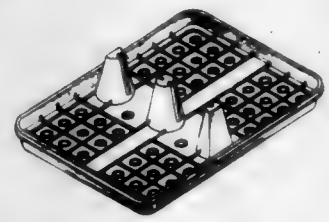
270,420
PORTABLE BARBECUE GRILL
Benjamin C. Baugh, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.
Filed Sep. 11, 1981, Ser. No. 301,145
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—337



270,421
BARBECUE SPIT WITH REMOVABLE COVERS
Lawrence P. Whelan, Queenscliff, Australia, assignor to Laurie Whelan Industries Pty. Limited, Newton, Australia
Filed Nov. 14, 1980, Ser. No. 206,743
Claims priority, application Australia, May 21, 1980, 81,005
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—338

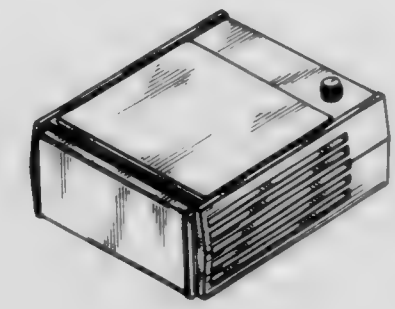


270,422
CONVECTIVE HEATING TRAY
Nabil A. El-Hag, Lake Peekskill; Kenneth D. Bixler, Huntington, and Robert E. Ralphs, Katonah, all of N.Y., assignors to General Foods Corporation, White Plains and Diamond International Corp., New York, both of, N.Y.
Filed Mar. 27, 1981, Ser. No. 248,598
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—357

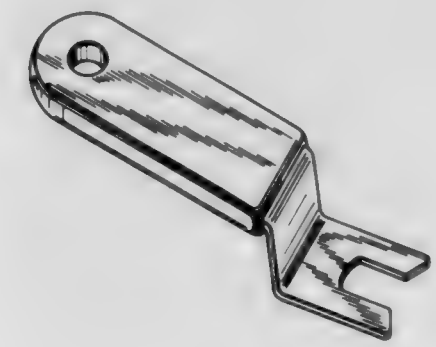




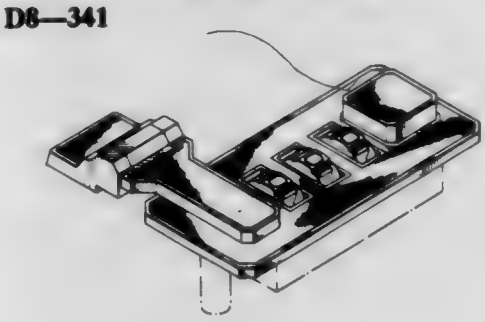
270,423
FOOD DEHYDRATOR
Roger Orton, 2274 W. La Loma, Rancho Cordova, Calif. 95670
Filed Feb. 24, 1981, Ser. No. 237,717
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D7—368



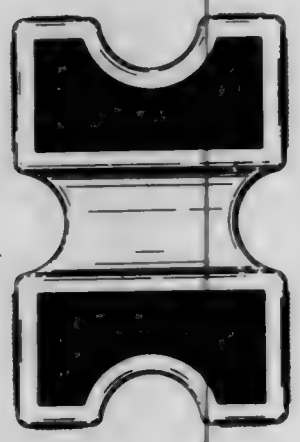
270,424
TOOL OPERATOR FOR TOOL-OPERATED LOCKS
Lee S. Weinerman, Strongsville, Ohio, assignor to The Eastern Company, Cleveland, Ohio
Filed Oct. 22, 1980, Ser. No. 199,547
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—21



270,425
CONTROL PANEL ASSEMBLY FOR A COMBINATION LOCK AND THE LIKE
Edward M. Stolarz, Yorktown Heights, N.Y., assignor to Presto Lock, Inc., Garfield, N.J.
Filed Dec. 24, 1980, Ser. No. 219,957
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—341



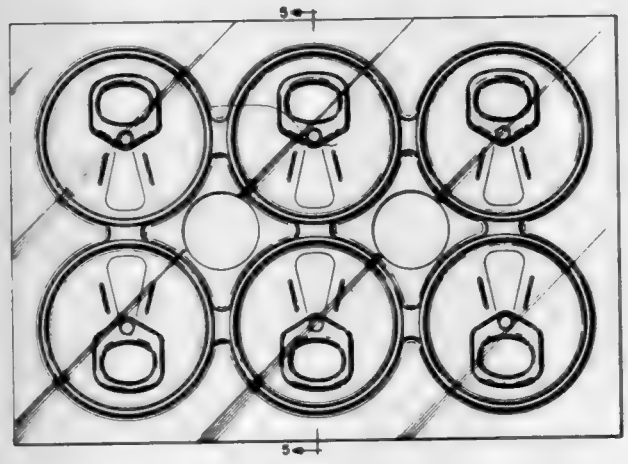
270,426
BLOCK FOR USE IN SUPPORTING THE POLE OF AN EQUESTRIAN FENCE
Harry J. Hamilton, Amalurra, Newtownmountkennedy, County Wicklow, and Peter Richards, Ballinaclash, Rathdrum, County Wicklow, both of Ireland
Filed Jun. 3, 1981, Ser. No. 269,781
Claims priority, application Ireland, Dec. 4, 1980, 286/80
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—380



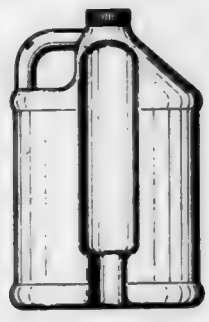
270,427
COMBINATION HAIRBRUSH AND PUMP SPRAYER
Jeri K. Henington, 7421 SE. 87th Ave., Portland, Oreg. 97216
Filed Sep. 17, 1981, Ser. No. 303,007
Term of patent 14 years
Int. Cl. D9—*01*; D4—*02*
U.S. Cl. D9—300



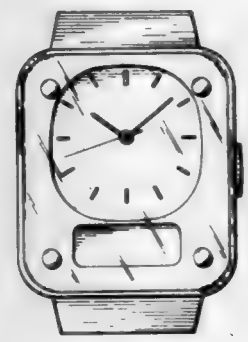
270,428
CAN CARRIER
Horst F. W. Arfert, Midlothian, Va., assignor to Reynolds Metals Company, Richmond, Va.
Division of Ser. No. 130,745, Mar. 17, 1980. This application Nov. 16, 1981, Ser. No. 321,415
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—344



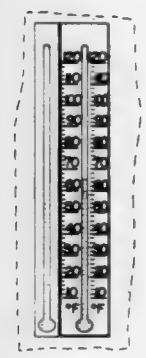
270,429
LIQUID DISPENSING CONTAINER
Donald R. Anderson; Roger L. Huisinga, and Iven R. Norstrud, all of Britt, Iowa, assignors to Britt Tech Corporation, Britt, Iowa
Filed Jul. 2, 1981, Ser. No. 279,797
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—347



270,430
WRISTWATCH
Fumiko Fukuoka, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan
Filed Aug. 14, 1981, Ser. No. 292,829
Claims priority, application Japan, Feb. 25, 1981, 56-7357
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39



270,431
INDOOR-OUTDOOR THERMOMETER
William Polson, 213 Nagle Ave., Apt. 4L, New York, N.Y. 10034
Filed Apr. 28, 1981, Ser. No. 258,540
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—58



270,432
RING
Marina Bulgari, Athens, Greece, assignor to Zoldia Anstalt, Vaduz, Liechtenstein
Filed Nov. 20, 1981, Ser. No. 323,406
Claims priority, application Italy, May 21, 1981, 35820/81[U]
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—34





270,433
ORNAMENT
George C. Sun, 530 Rohde Island Ave., Cherry Hill, N.J. 08002
Filed Nov. 24, 1981, Ser. No. 324,564
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—129





270,434
ORNAMENT

George C. Sun, 530 Rhode Island Ave., Cherry Hill, N.J. 08002

Filed Nov. 24, 1981, Ser. No. 324,667
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—129

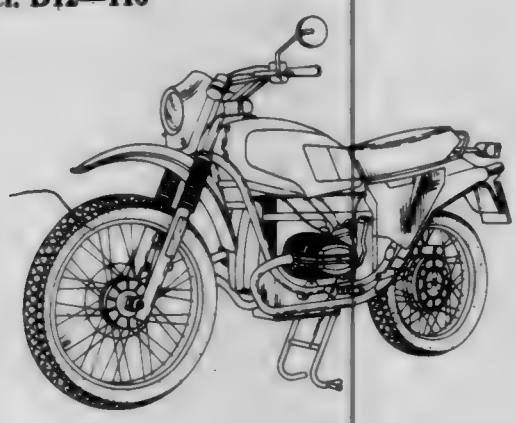




270,435
MOTORCYCLE

Klaus V. Gevert, Munich, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

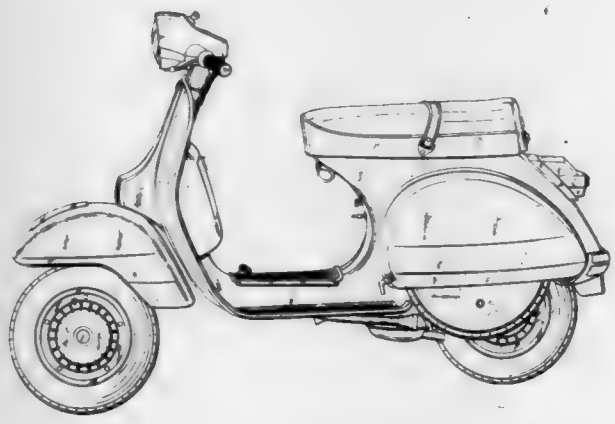
Filed Dec. 23, 1980, Ser. No. 220,243
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1980, MR 12182
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110



270,436
MOTORCYCLE

Bruno Gaddi, Pisa, Italy, assignor to Piaggio & C. S.p.A., Genoa, Italy

Continuation of Ser. No. 214,627, Dec. 10, 1980, abandoned, which is a continuation of Ser. No. 119,463, Feb. 7, 1980, abandoned, which is a continuation of Ser. No. 895,501, Apr. 11, 1978, abandoned. This application Nov. 3, 1981, Ser. No. 317,890
Claims priority, application Italy, Oct. 18, 1977, 22521/77[U]
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110



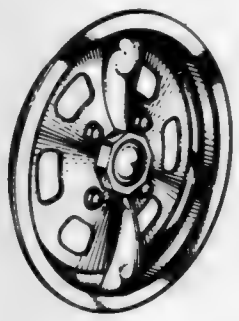
270,437
REAR VIEW MIRROR

Bernard C. Sharp, White Plains, N.Y., assignor to Parker-Hannifin Corporation, Shelton, Conn.

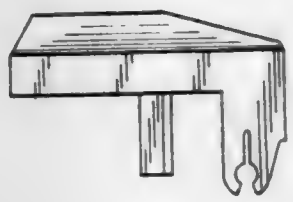
Filed Dec. 22, 1980, Ser. No. 218,959
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—187



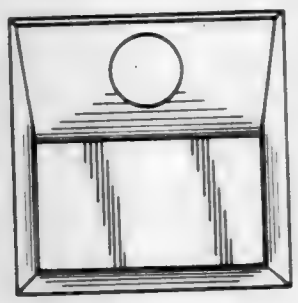
270,438
AUTOMOTIVE WHEEL COVER
Charles W. Lombard, 1116 Belle Meadows Way, Salt Lake City, Utah 84121
Division of Ser. No. 224,214, Jan. 12, 1981, Pat. No. Des. 267,941. This application Sep. 30, 1982, Ser. No. 430,877
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—209



270,439
OPERATING MEMBER FOR AN ELECTRICAL SWITCH
Wilfred Hunter, Keighley, England, assignor to Lucas Industries Limited, Birmingham, England
Filed Oct. 29, 1980, Ser. No. 201,740
Claims priority, application United Kingdom, Apr. 29, 1980, 994681
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—37



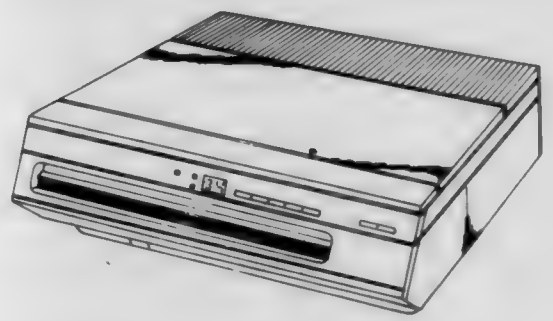
270,440
OPERATING MEMBER FOR AN ELECTRICAL SWITCH
Wilfred Hunter, Keighley, England, assignor to Lucas Industries, Limited, Birmingham, England
Filed Oct. 29, 1980, Ser. No. 201,741
Claims priority, application United Kingdom, Apr. 29, 1980, 994685
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—37



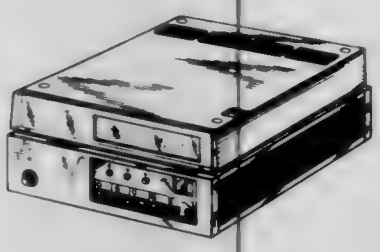
270,441
ELECTRICAL SWITCH
David W. Moldenhauer, Wayne County, N.C., assignor to Joy Manufacturing Company, Pittsburgh, Pa.
Filed Jun. 6, 1980, Ser. No. 157,294
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—38

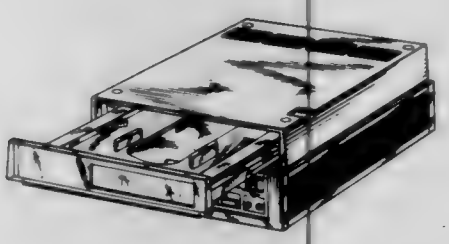


270,442
VIDEO DISC PLAYER
Donald B. O'Leary, and Grant D. Ross, Jr., both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.
Filed Jun. 22, 1981, Ser. No. 276,323
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—1

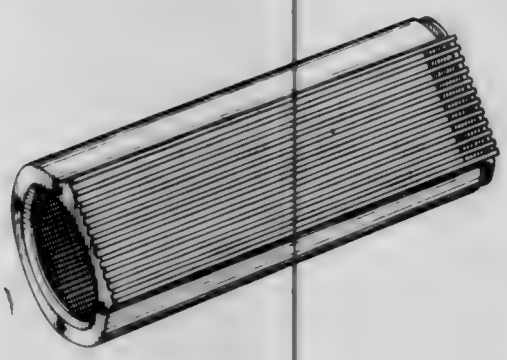


270,443
DIGITAL AUDIO COMPACT DISK PLAYER
Daiji Nagatomo, Chigasaki, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 25, 1981, Ser. No. 247,616
Claims priority, application Japan, Sep. 27, 1980, 55-040334
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—14



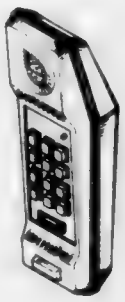


270,444
LOUDSPEAKER
Hari Matsuda, Skokie, and Keith F. Urban, Elk Grove Village, both of Ill., assignors to International Jensen Incorporated, Schiller Park, Ill.
Filed May 18, 1981, Ser. No. 264,435
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33

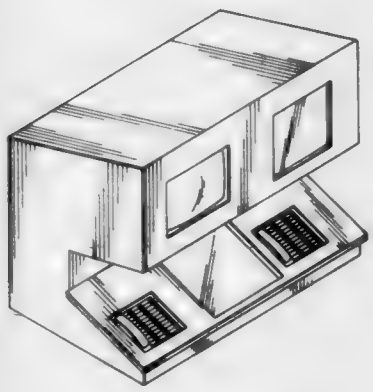




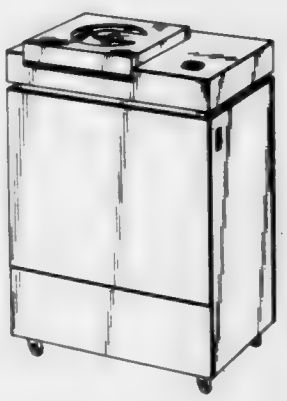
270,445
TELEPHONE SET
Tung-Sing Chen, 9th Floor, No. 57, Chang-Chuan Rd., Taipei, Taiwan
Filed Apr. 14, 1981, Ser. No. 254,042
Term of patent 14 years
Int. Cl. D14—*03, 63;64;53;52;57*
U.S. Cl. D14—64



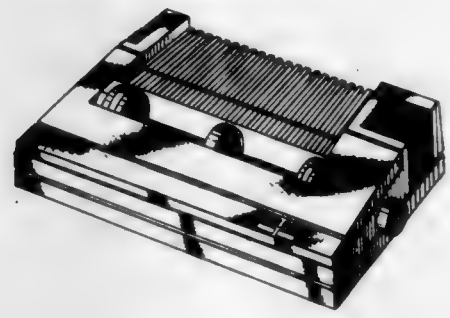
270,446
AUTOMATIC INFORMATION CENTER OR THE LIKE
Alexander M. Rudman, and Raymond G. Sinder, both of Dallas, Tex., assignors to Tele-Touch International, Inc., Dallas, Tex.
Filed Jul. 6, 1981, Ser. No. 280,209
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—106



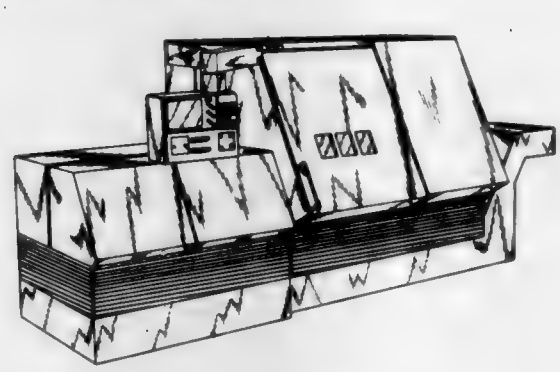
270,447
PICTURE IMAGE MEMORY UNIT OR THE LIKE
Kunio Hara, Chiba, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Jun. 11, 1981, Ser. No. 272,650
Claims priority, application Japan, Dec. 17, 1980, 55-52358
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—107



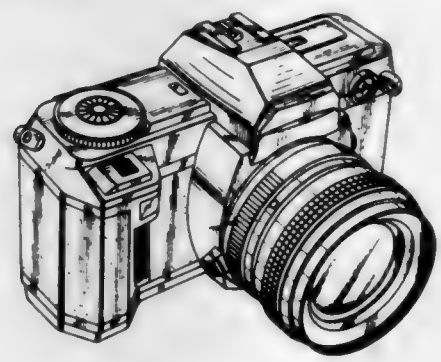
270,448
PRINTER
Kazuhiko Ashihara, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Aug. 12, 1981, Ser. No. 292,262
Claims priority, application Japan, Feb. 14, 1981, 56-5800
Term of patent 14 years
Int. Cl. D14—*02*; D18—*02*
U.S. Cl. D14—111



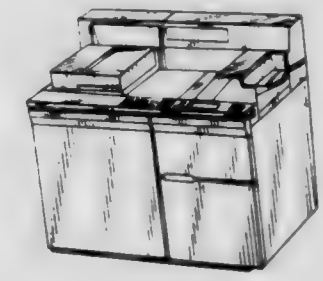
270,449
TURNING MACHINE
Carl J. Myers, Mentor, and Rainer B. Teufel, Columbus, both of Ohio, assignors to The Warner & Swasey Company, Cleveland, Ohio
Filed Oct. 6, 1980, Ser. No. 194,063
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—130



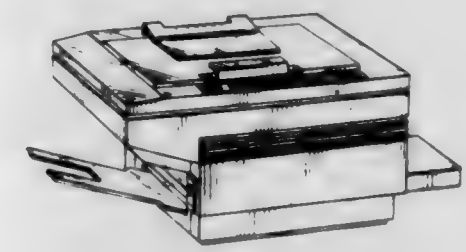
270,450
CAMERA
Takaharu Kato, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Mar. 2, 1981, Ser. No. 239,494
Claims priority, application Japan, Sep. 1, 1980, 55-036039
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—8



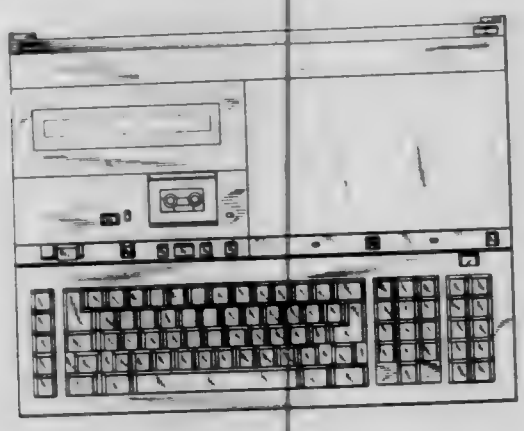
270,451
ELECTROPHOTOGRAPHIC COPYING MACHINE
Hiroyuki Tokuda, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 6, 1981, Ser. No. 251,092
Claims priority, application Japan, Oct. 9, 1980, 55-42196
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—30

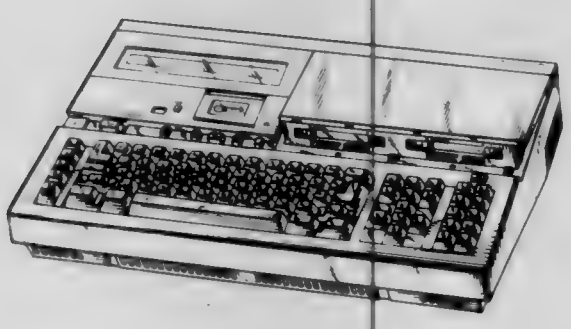


270,452
ELECTROPHOTOGRAPHIC COPYING MACHINE
Mitsuru Sakurai, Musashino, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 6, 1981, Ser. No. 250,946
Claims priority, application Japan, Oct. 9, 1980, 55-42194
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



270,453
WORD PROCESSOR
Masahiro Takahashi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jun. 5, 1981, Ser. No. 270,836
Claims priority, application Japan, Dec. 8, 1980, 55-051178
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—2





270,454
PRINT FONT
Bruce N. Blackburn, Pelham, N.Y., assignor to Champion International Corporation, Stamford, Conn.
Filed Jan. 22, 1981, Ser. No. 227,145
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—24

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270,455
PRINT FONT
Bruce N. Blackburn, Pelham, N.Y., assignor to Champion International Corporation, Stamford, Conn.
Filed Jan. 22, 1981, Ser. No. 227,205
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—24

ABCDEFGHI
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STUVWXYZ

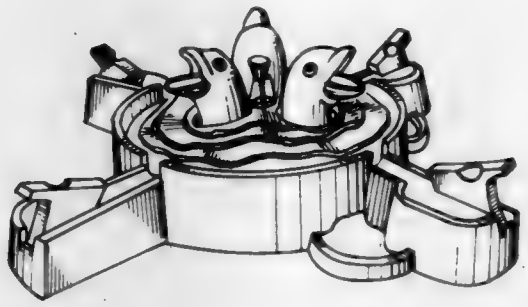
270,456
PRINT FONT
Bruce N. Blackburn, Pelham, N.Y., assignor to Champion International Corporation, Stamford, Conn.
Filed Jan. 22, 1981, Ser. No. 227,208
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D18—24

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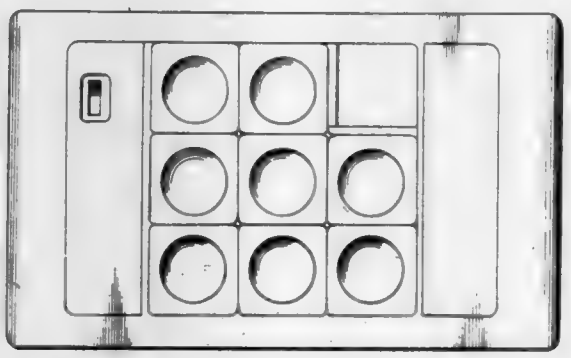
270,457
NOTE PAD HOLDER
Joe Bury, 726 Long Dr., Sheridan, Wyo. 82801
Filed Jun. 26, 1981, Ser. No. 277,867
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—90



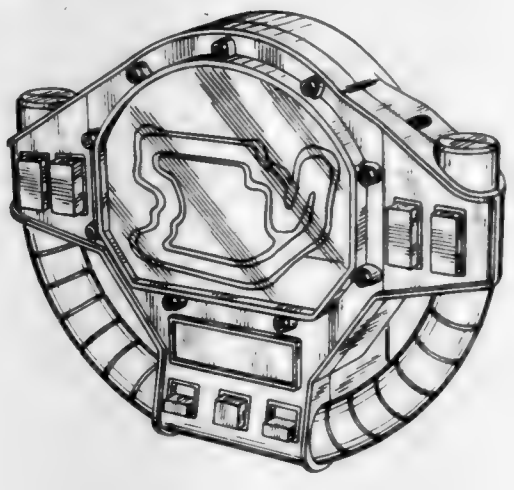
270,458
BALL GAME BOARD
Donald H. Samuels, Eagan, Minn., assignor to Milton Bradley International, Inc., Springfield, Mass.
Filed Apr. 9, 1981, Ser. No. 252,587
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—2



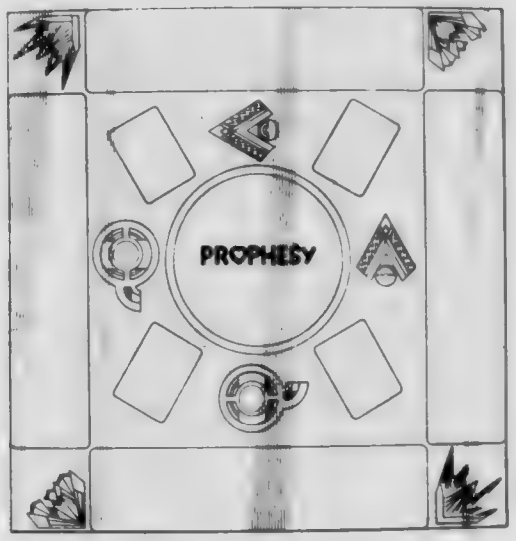
270,459
ELECTRONIC GAME HOUSING
Giovanni Pino, Northampton, Mass., assignor to Milton Bradley International, Inc., Springfield, Mass.
Filed Apr. 9, 1981, Ser. No. 252,371
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



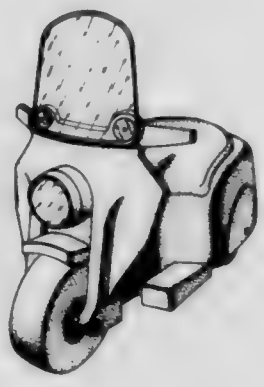
270,460
ELECTRONIC ROAD RACING TOY
William K. Burtoft; Dale I. Goldberg, and Thomas P. Osborne, all of Cincinnati, Ohio, assignors to CPG Products Corp., Minneapolis, Minn.
Filed Sep. 14, 1981, Ser. No. 301,702
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



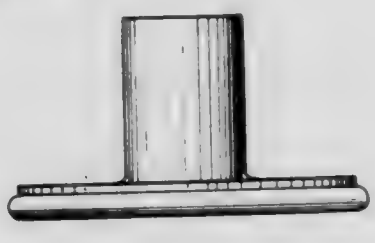
270,461
BOARD FOR USE WITH FORTUNE TELLING CARDS
Robert W. Young, Jr., 101 W. 55th St., New York, N.Y. 10019, and Martha Everds, 249 E. 48th St., New York, N.Y. 10028
Filed Feb. 10, 1981, Ser. No. 233,214
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—34



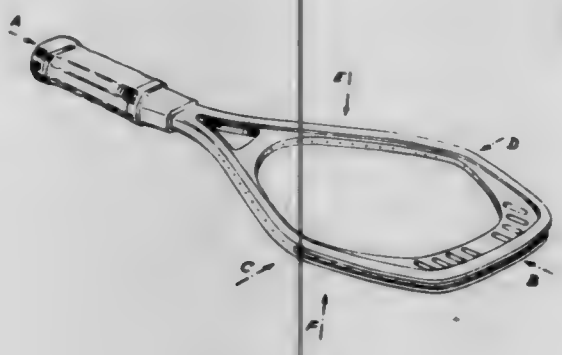
270,462
TOY MOTORCYCLE
James F. Mariol, 481 Dean View Dr., Cincinnati, Ohio 45224
Filed Sep. 21, 1981, Ser. No. 303,768
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—80



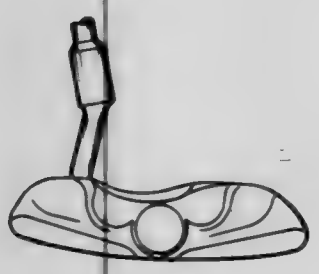
270,463
GOLF TEE
Peter L. Minotti, R.D. #1, Box 75, Easton, Pa. 18042
Filed Nov. 19, 1980, Ser. No. 208,199
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—208



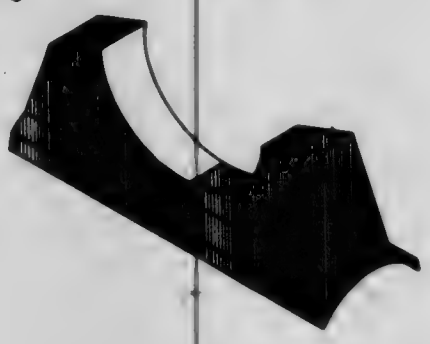
270,464
RACQUET
Neville D. Wills, Brighton, and Sigmund Kwiatkowski, Seacombe Heights, both of Australia, assignors to Half Court Tennis Pty. Limited, Blackwood, Australia
Filed Jan. 23, 1981, Ser. No. 227,854
Claims priority, application Australia, Aug. 8, 1980, 81750
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—212



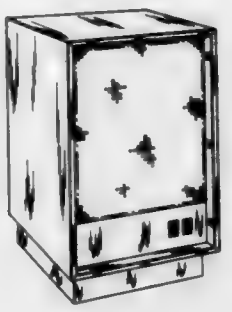
270,465
GOLF PUTTER
Dan D. Bizovi, 8171 New Bradford, Sterling Heights, Mich. 48077
Filed May 19, 1981, Ser. No. 265,178
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—217



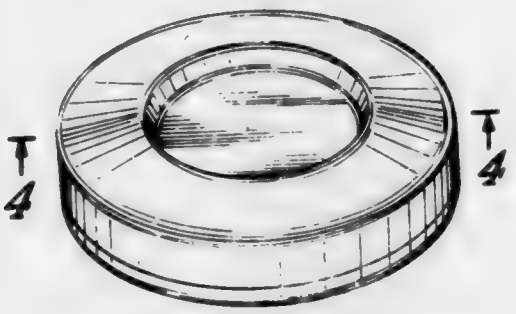
270,466
FRONT GUN SIGHT
Richard F. Clark, Bettendorf, Iowa, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Nov. 30, 1981, Ser. No. 326,124
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—8



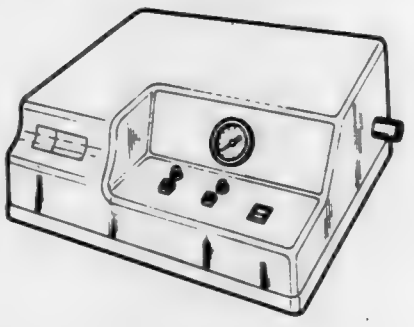
270,467
ELECTRONIC AIR CLEANER
James M. Fowler, Jr., Houston, Tex., and Peter J. Pirsch, Bloomfield, Mich., assignors to Masco Corporation, Taylor, Mich.
Filed Jul. 23, 1981, Ser. No. 286,266
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—149



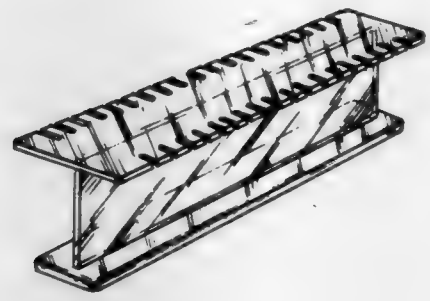
270,468
DISPENSER FOR AIR TREATING MATERIAL
Earl Hoyt, Franklin Lakes, N.J., assignor to Airwick Industries, Inc., Carlstadt, N.J.
Filed May 1, 1981, Ser. No. 259,392
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



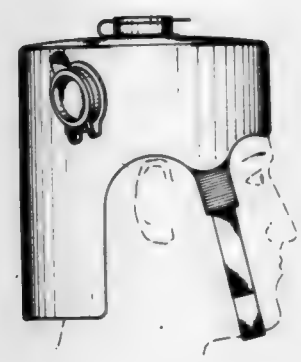
270,469
RESPIRATORY CHECKING DEVICE
Barry E. Horne, 26680 N. River Park Dr., Inkster, Mich. 48141, assignor to Barry E. Horne, Inkster, Mich.
Filed Sep. 29, 1980, Ser. No. 192,053
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17



270,470
PHARMACEUTICAL RACK
Richard D. Levy, 10793 Riesling Dr., San Diego, Calif. 92131
Filed Dec. 4, 1980, Ser. No. 213,111
Term of patent 14 years
Int. Cl. D6—*05;* D24—*99*
U.S. Cl. D24—31



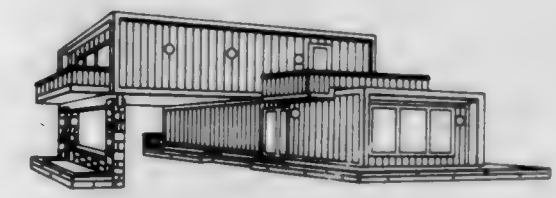
270,471
SCALP HYPOTHERMIA CAP
Ronald R. Rhyce, and Donald L. Crisp, both of Chicago, Ill., assignors to Scholl, Inc., Memphis, Tenn.
Filed May 14, 1981, Ser. No. 263,548
Term of patent 14 years
Int. Cl. D24—*04;* D2—*03*
U.S. Cl. D24—43



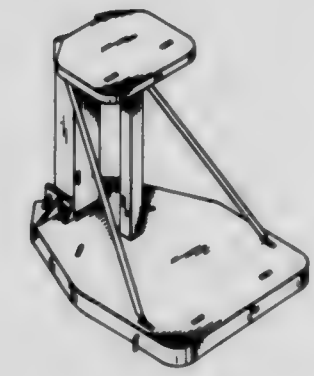
270,472
UTILITY SHELTER
Robert D. Gramprie, 5968 W. Shore Dr., Oscoda, Mich. 48750
Filed Sep. 17, 1981, Ser. No. 303,085
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—1



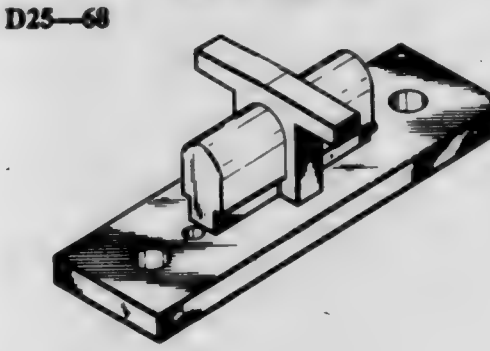
270,473
BUILDING OR SIMILAR STRUCTURE
Benny O. Ransakka, 10431 Fair Oaks, Columbia, Md. 21044, and Alfred Evans, 6176 Miller Rd., Swartz Creek, Mich. 48473
Filed Mar. 23, 1981, Ser. No. 246,881
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—33



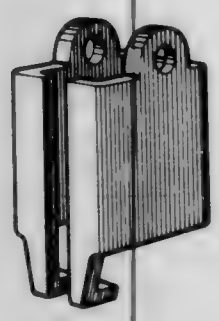
270,474
TREE STAND FOR HUNTERS
Gerald L. Haines; Richard A. Havenar, both of Piqua, and Ralph H. Herolzer, Cincinnati, all of Ohio, assignors to The Coleman Company, Inc., Wichita, Kans.
Filed Aug. 24, 1981, Ser. No. 295,507
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—62



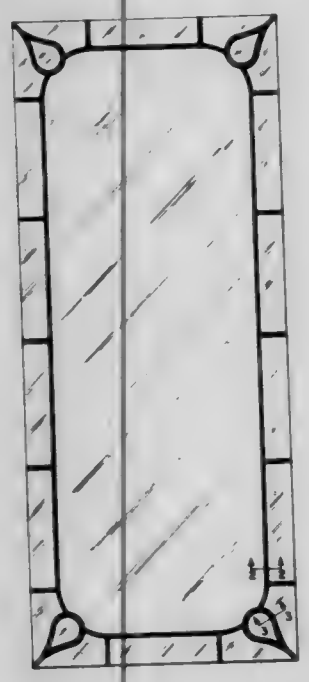
270,475
SPLICE ELEMENT FOR A LADDER SAFETY RAIL
Gary W. Havener, Mineral Wells, Tex., assignor to DHV, Inc., Mineral Wells, Tex.
Filed Jun. 8, 1981, Ser. No. 271,518
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—68



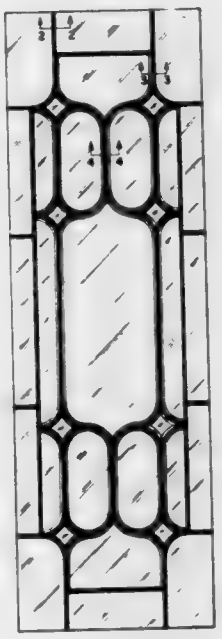
270,476
SCAFFOLD ANCHORAGE SOCKET
Allan N. Black, New South Wales, Australia, assignor to Guest Keen & Nettlefolds (Aust) Limited, Melbourne, Australia
Filed Aug. 20, 1981, Ser. No. 294,454
Claims priority, application United Kingdom, Mar. 7, 1981, 999280
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—68



270,477
DECORATIVE COMPOSITE GLASS PANEL FOR INSTALLATION IN A STORM DOOR
David S. Taylor, Columbus, Ohio, assignor to Pease Company, Fairfield, Ohio
Filed Oct. 19, 1981, Ser. No. 312,595
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—72



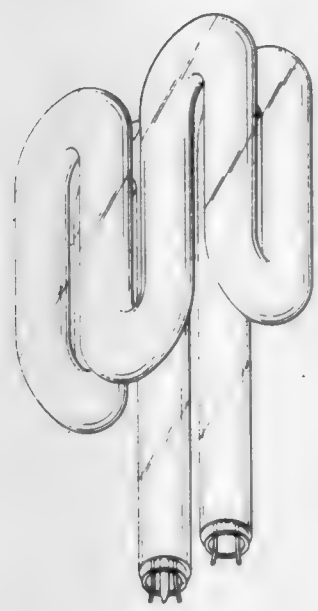
270,478
DECORATIVE COMPOSITE GLASS PANEL FOR INSTALLATION IN A DOOR OR WINDOW
David S. Taylor, Columbus, Ohio, assignor to Pease Company, Fairfield, Ohio
Filed Oct. 26, 1981, Ser. No. 314,894
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—72



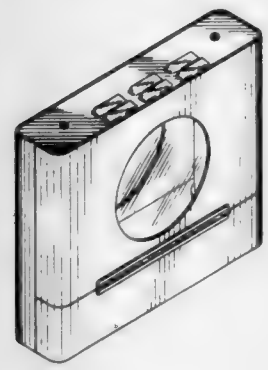
270,479
EDGE MEMBER FOR MOVABLE PARTITION
C. Richard Braswell, Plano, Tex., assignor to Design Partition Company, Inc., Plano, Tex.
Filed Sep. 28, 1981, Ser. No. 306,516
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



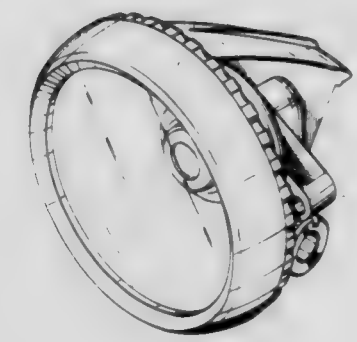
270,480
COMPACT FLUORESCENT LAMP OR SIMILAR ARTICLE FOR A LIGHTING UNIT
Robert G. Young, Nutley, N.J., assignor to North American Philips Electric Corp., New York, N.Y.
Filed Nov. 26, 1979, Ser. No. 97,280
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—3



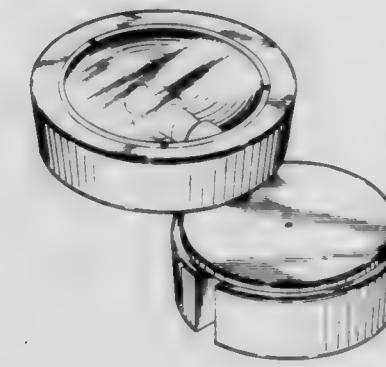
270,481
LIGHT PROJECTOR
Kenyon C. Whitright, 5422 Southwestern, Dallas, Tex. 75209
Filed Jun. 5, 1981, Ser. No. 270,819
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D26—24



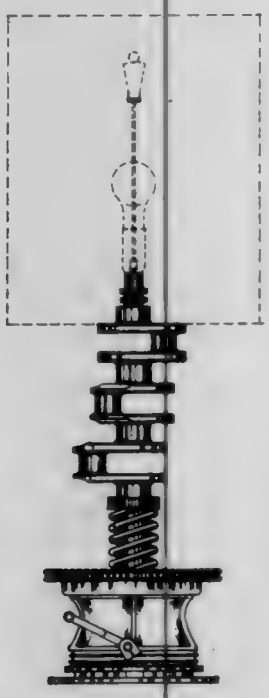
270,482
ELECTRIC LAMP
Donald Jones, Plaxtol, Near Sevenoaks, England, assignor to Chloride Group Limited, London, England
Filed Jun. 12, 1981, Ser. No. 272,984
Claims priority, application United Kingdom, Dec. 22, 1980, 998,184
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—37



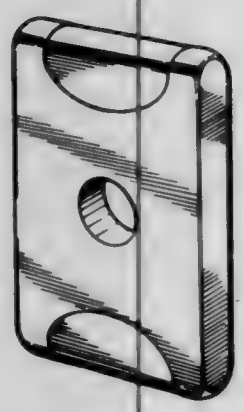
270,483
PORTABLE INDIRECT LIGHTING FIXTURE
Robert C. Gardner, Hackensack, and Ashok C. Shah, Livingston, both of N.J., assignors to Slater Electric Inc., Glen Cove, N.Y.
Filed Apr. 20, 1981, Ser. No. 255,939
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—63



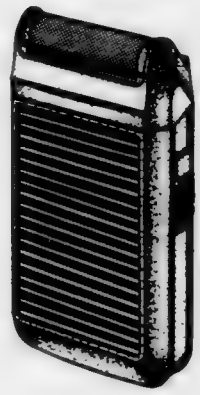
270,484
LAMP BASE
Todd M. White, 2734 Creekwood Manor La., St. Louis, Mo. 63125
Filed Mar. 26, 1981, Ser. No. 247,988
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—94

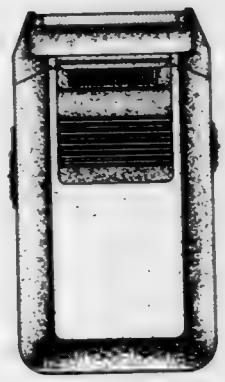


270,485
CIGAR AND CIGARETTE FILTER PERFORATOR
Rafael T. Cervantes, Malaga, Spain, assignor to The Westbury Foundation and Sociedad de Dispositivos Reductores de Tabaco, S.A., both of Andorra, Spain, a part interest
Filed Jun. 29, 1981, Ser. No. 278,378
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—51



270,486
DRY SHAVER
Petrus J. J. Nagelkerke, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 25, 1981, Ser. No. 247,569
Claims priority, application Benelux, Sep. 29, 1980, 55062-00
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—49







270,487

DRY SHAVER

Petrus Jacobus J. Nagelkerke, and Klaas T. Oord, both of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

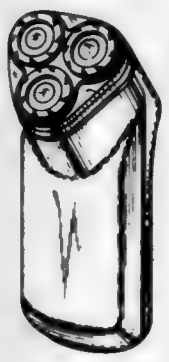
Filed Aug. 31, 1981, Ser. No. 297,657

Claims priority, application Benelux, Mar. 10, 1981, 55545-01; Mar. 10, 1981, 55545-02; Mar. 10, 1981, 55545-03

Term of patent 14 years

Int. Cl. D28—*03*

U.S. Cl. D28—50









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ANIMAL COLLAR

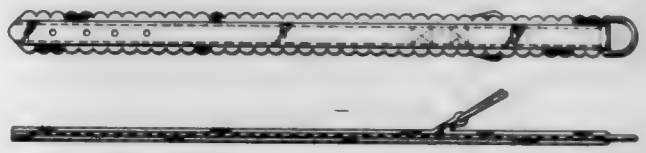
Lois M. Erdmann, P.O. Box 1063, Minot, N. Dak. 58701

Filed Jul. 2, 1981, Ser. No. 279,772

Term of patent 14 years

Int. Cl. D30—*04*

U.S. Cl. D30—38



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TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF SEPTEMBER, 1983

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Macfie, George B., Jr., 4,402,988, Cl. 426-335.000.

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Kretschmer, Stephen L., 4,402,648, Cl. 415-121.00B.

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Hellgren, Leif A., 4,402,436, Cl. 222-561.000.

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DeHaitre, Lon, 4,403,126, Cl. 200-158.000.

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Arai, Fuminao; Kodama, Hisashi; and Okabe, Yoshio, 4,402,285, Cl. 123-90.580.
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Takagishi, Yasushi; Doi, Yoshio; Aita, Kanji; and Hoshi, Noboru, 4,402,692, Cl. 604-890.000.

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Gustavsson, Olle; and Sundmar, Goran, 4,402,253, Cl. 89-46.000.

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Largman, Theodore; and Sifniades, Stylianos, 4,402,917, Cl. 423-7.000.

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Hawkins, Ronald G.; Davoy, Edward J.; Hooker, Robert M.; and Muniak, John E., 4,402,122, Cl. 29-243.560.
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Kerns, Victor L.; and Sager, David A., 4,402,443, Cl. 225-103.000.

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Hyodo, Motoaki; and Anma, Soichi, 4,402,297, Cl. 123-591.000.

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Hazama, Motoo; Aratani, Tadatoshi; Suzukamo, Gohu; and Takahashi, Takeo, 4,403,096, Cl. 548-321.000.

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Rusch, Reinhard; and Arndt, Friedrich, 4,402,726, Cl. 71-73.000.

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Atimichuk, Stan W., to Green, Morgan, a part interest. Folding bed chair with detachable cushions. 4,402,096, Cl. 5-17.000.

Atkinson, William E.: *See*—
Stevens, William M.; Atkinson, William E.; and Dirr, William J., Jr., 4,403,145, Cl. 250-252.100.

Atlantic Richfield Company: *See*—
Airhart, Tom P., 4,402,381, Cl. 181-114.000.
Nemet-Mavrodin, Margaret I.; Shangkuan, Yon-Li; and Bobeck, Richard L., 4,402,794, Cl. 203-14.000.
Perkins, Thomas K.; and McBride, Edward J., 4,402,226, Cl. 73-708.000.
Wunderlich, Donald K., 4,402,706, Cl. 44-1.00G.
Wunderlich, Donald K., 4,402,707, Cl. 44-6.000.

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Huetsch, Larry C., 4,402,526, Cl. 280-766.100.

Aubert, Lawrence J.: *See*—
Muskovin, Alfred J.; Green, Paul J.; and Aubert, Lawrence J., 4,402,427, Cl. 222-47.000.

Audi Nsu Auto Union AG: *See*—
Pagel, Ernst-Olav; and Euringer, Robert, 4,402,286, Cl. 123-179.00B.

Ausbrooks, Charles, to Timex Corporation. Gold-colored silver-cadmium-nickel alloy for electrodeposited duplex coating. 4,403,016, Cl. 428-672.000.

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Fethke, Walter P.; Dunne, Stephen R.; and Ausikaitis, Joseph P., 4,402,714, Cl. 55-35.000.

Autoclave Engineers, Inc.: *See*—
Ruyak, Robert F.; and Smith, Charles W., Jr., 4,402,715, Cl. 55-317.000.

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Ratsko, Istvan; Ivony, Jozsef; and Liptai, Nandor, 4,402,522, Cl. 280-432.000.

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Menachemoff, Emil; Awerbuch, Oded; and Haber, Raphael R. G., 4,402,945, Cl. 424-180.000.

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Silvestrini, Bruno; and Baiocchi, Leandro, 4,402,956, Cl. 424-250.000.

Baasch, Hans-Friedrich, to Hollandse Signaalapparaten B.V. Automatic correction of aiming in firing at moving targets. 4,402,250, Cl. 89-41.0AA.

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Beck, Gunther; Baasner, Bernd; Eue, Ludwig; and Schmidt, Robert, 4,402,732, Cl. 71-92.000.

Back, Gunter: *See*—
Schon, Klaus-Peter; and Back, Gunter, 4,402,592, Cl. 355-3.00R.

Backhouse, Alan J., to Imperial Chemical Industries Limited. Article having basecoat/clearcoat and process for coating. 4,403,003, Cl. 427-407.100.

Bade, Edward R.; and Diddens, Paul A., to Honeywell, Inc. Multistylus recording system. 4,403,225, Cl. 346-35.000.

Bailey, Edward A., to Joy Manufacturing Company. Drill motor enclosure. 4,402,383, Cl. 181-202.000.

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Baird Corporation: *See*—
Govaert, Johan A., 4,403,149, Cl. 250-369.000.

Baker, George E., to Amchem Company Limited. Fluid actuated electrode clamp. 4,403,129, Cl. 219-69.00E.

Baker, George E. Position detector and machining apparatus including same. 4,403,130, Cl. 219-69.00G.
Baker, Richard D. Flow responsive closure device. 4,402,434, Cl. 222-492.000.
Balko, Edward N.: *See*—
Coker, Thomas G.; LaConti, Anthony B.; and Balko, Edward N., 4,402,806, Cl. 204-98.000.
Ballato, Arthur D.; and Mariani, Elio A., to United States of America, Army. Transducer isolation in surface acoustic wave processor. 4,403,165, Cl. 310-313.00D.
Balmer, Oskar: *See*—
Focke, Heinz; and Balmer, Oskar, 4,402,403, Cl. 206-245.000.
Balzan, Angelo; and Stroppel, Hans, to Ringier & Co., AG. Method and device for sequentially imaging an original. 4,403,258, Cl. 358-284.000.
Ban, Tsuyoshi; Murayama, Takeshi; Muramoto, Setsuo; and Hanaoka, Yuzuru, to Yokogawa Hokushin Electric Works. Method and apparatus for analysis of ionic species. 4,403,039, Cl. 436-150.000.
Barchard, John, to Spyder Sales & Service, Inc. Power operated fork extensions and pallet unloading attachment for a fork lift truck. 4,402,644, Cl. 414-417.000.
Barmag Barmer Maschinenfabrik AG: *See*—
Dammann, Peter; and Frank, Benno, 4,402,179, Cl. 57-336.000.
Barnhart, Victor J.: *See*—
Lopez, Jose G.; and Barnhart, Victor J., 4,402,920, Cl. 423-8.000.
Baron, Walter J.; and Cleaver, Laird C., to Water Services of America, Inc. Retainer for heat exchanger cleaning elements. 4,402,360, Cl. 165-76.000.
Barr & Stroud Limited: *See*—
Bow, Charles R.; and Burston, Ronald J., 4,402,569, Cl. 350-96.260.
Barteck, Joseph C., to International Business Machines Corporation. Maintenance system to prime and to exclude air from ink jet heads. 4,403,229, Cl. 346-75.000.
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Denzinger, Walter; Hartmann, Heinrich; and Schwarz, Wolfgang, 4,402,937, Cl. 424-80.000.
Engert, Gerd-Juergen; de Haas, Klaus; Magin, Rudolf; Nenninger, Franz; and Schauer, Horst, 4,402,349, Cl. 141-9.000.
BASF Farben & Fasern A.G.: *See*—
Meisner, Roland A., 4,402,991, Cl. 427-31.000.
BASF Wyandotte Corporation: *See*—
Netherton, Lowell E.; and Patil, Arvind S., 4,403,060, Cl. 524-413.000.
Wilson, Joe C.; and Hirozawa, Stanley T., 4,402,847, Cl. 252-75.000.
Bass, Dan M.; and Wang, Fun-Den, to United States of America, Interior. Open surface flotation method for extracted crude oil. 4,402,552, Cl. 299-7.000.
Bastgen, Wendel; Schreiber, Helmut; and Grumbel, Eugen, to Albert Klein KG. Method for dewatering sludge-type material. 4,402,834, Cl. 210-712.000.
Batelle Memorial Institute: *See*—
de Pous, Olivier, 4,402,933, Cl. 423-648.00R.
Battarel, Claude; Bedene, Brigitte; and Morille, Robert, to Crouzet. Heat-destructible magnetic memory element. 4,403,138, Cl. 235-493.000.
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Lierke, Ernst-Guenter; Heide, Wolfgang; Grossbach, Rudolf; Floegel, Karl; and Erdmann, Hartmut, 4,402,458, Cl. 239-102.000.
Battelle Memorial Institute: *See*—
Groult, Alain; Porta, Augusto; and Tournier, Herve, 4,402,197, Cl. 68-12.00R.
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Uchitel, Alexandr D.; Zelov, Evgeny A.; Brener, Leonid J.; Baturov, Evgeny G.; Derbas, Anatoly G.; Ivchenko, Kim D.; Kuevda, Jury K.; and Khomich, Ivan T., 4,402,826, Cl. 209-366.500.
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Kalopissis, Gregoire; Gallien, Jacqueline; Jacquet, Bernard; Bauer, Daniel; and Chalaye, Jean P., 4,402,698, Cl. 8-405.000.
Bauer, Fritz. Claw feed mechanism. 4,402,581, Cl. 352-192.000.
Baum, Pamela F., to Kimberly-Clark Corporation. Sanitary napkin with disposal means. 4,402,689, Cl. 604-387.000.
Bavoux, Robert J. A.; Lemaire, Francis R. J. M.; and Salkazanov, Pierre, to Compagnie International pour l'Informatique, Societe Anonyme. Method and system of operation of an addressable memory permitting the identification of particular addresses. 4,403,300, Cl. 364-900.000.
Baxter, Gideon W.: *See*—
Biche, Michael R.; and Baxter, Gideon W., 4,402,623, Cl. 400-618.000.
Baxter Travenol Laboratories, Inc.: *See*—
Charles, Donald E., 4,403,185, Cl. 324-78.00D.
Corrigan, William C., Jr.; Fowles, Thomas A.; and Gibbons, Nicholas, 4,402,417, Cl. 215-232.000.
Bayer Aktiengesellschaft: *See*—
Beck, Gunther; Baasner, Bernd; Eue, Ludwig; and Schmidt, Robert, 4,402,732, Cl. 71-92.000.
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Gleinig, Harald; Molls, Hans-Heinz; Koll, Jochen; Dick, Gottfried; Hornle, Reinhold; and Kunert, Friedrich, 4,402,701, Cl. 8-436.000.
Heine, Heinrich, 4,403,064, Cl. 524-494.000.
Heller, Harold; Schapel, Dietmar; Hentschel, Claus; and Dahm, Manfred, 4,402,725, Cl. 71-27.000.
Kaspar, Vaclay; Walz, Klaus; Molls, Hans-Heinz; Hornle, Reinhold; and Skerhut, Rainer, 4,402,702, Cl. 8-524.000.
Klotz, Helmut; Tepe, Ernst; and Sesterhenn, Lothar, 4,402,811, Cl. 204-256.000.
Kuhle, Engelbert; Paulus, Wilfried; Genth, Hermann; and Klauke, Erich, 4,402,980, Cl. 424-321.000.
Moeschler, Heinrich F.; Sasse, Klaus; Lange, Peter M.; Golker, Christian; Zoebelein, Gerhard; and Telle, Otto, 4,402,947, Cl. 424-181.000.
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Beach Manufacturing Corporation: *See*—
Pickard, John E., 4,402,265, Cl. 101-382.0MV.
Beal, Terrence E.; and Boeglin, Richard W., to United States of America, Navy. Portable instrumentation telemetry device. 4,403,218, Cl. 340-870.180.
Beardsmore, Andrew J.; and Powell, Keith A., to Imperial Chemical Industries PLC. Effluent treatment. 4,402,831, Cl. 210-606.000.
Beck, Gunther; Baasner, Bernd; Eue, Ludwig; and Schmidt, Robert, to Bayer Aktiengesellschaft. Herbicidally active dihalogenated imidazolecarboxylic acid amides, compositions and use. 4,402,732, Cl. 71-92.000.
Becker, Charles A.; Castleberry, Donald E.; and Logan, Mark S., to General Electric Company. Multiplexed varistor-controlled liquid crystal display. 4,403,217, Cl. 340-718.000.
Becker, Kunibert: *See*—
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Becker, Thomas P.: *See*—
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Becton Dickinson and Company: *See*—
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Bedene, Brigitte: *See*—
Battarel, Claude; Bedene, Brigitte; and Morille, Robert, 4,403,138, Cl. 235-493.000.
Bednarek, Daniel R.: *See*—
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Beehive International: *See*—
Howes, Ralph E.; Benson, John E.; and Longwell, Ruben S., 4,403,303, Cl. 364-900.000.
Behringwerke Aktiengesellschaft: *See*—
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Beigay, Jack M.; and Lovejoy, Paul T., to Allegheny Ludlum Steel Corporation. Method for improving the ductility of autogenous welds in unstabilized, ferritic stainless steel coils. 4,402,769, Cl. 148-12.0EA.
Beisswenger, Hans: *See*—
Schmidt, Hans-Werner; Beisswenger, Hans; Reh, Lothar; Folliot, Albert; and Iard, Maurice P., 4,402,754, Cl. 106-100.000.
Belart, Juan, to ITT Industries, Inc. Pressure control device for a pressure accumulator. 4,402,554, Cl. 303-10.000.
Bell & Howell Company: *See*—
Jacobs, John H., 4,402,575, Cl. 350-486.000.
Bell Telephone Laboratories, Incorporated: *See*—
Blahut, Donald E.; Fields, Jonathan A.; Huang, Victor K.; Lee, Charles M.; and Shoji, Masakazu, 4,403,287, Cl. 364-200.000.
Butherus, Alexander D.; and D'Asaro, Lucian A., 4,403,241, Cl. 357-55.000.
Canniff, Ronald J., 4,403,320, Cl. 370-56.000.
De Loach, Bernard C., Jr., 4,403,139, Cl. 250-205.000.
Karabinis, Peter D., 4,403,351, Cl. 455-304.000.
Leland, Kenneth W.; and Sollenberger, Nelson R., 4,403,348, Cl. 455-203.000.
May, Carl J., Jr., 4,403,298, Cl. 364-724.000.
Bendel, Gunther; and Loffler, Siegfried, to Zahnradfabrik Friedrichshafen A.G. Gearshift device. 4,402,235, Cl. 74-473.00R.
Bendix Corporation, The: *See*—
Schneider, Michael J., 4,402,456, Cl. 239-90.000.
Walter, Richard P., 4,402,457, Cl. 239-91.000.
Benedetti, Nicholas M., to USM Corporation. Clip for securing a panel to a support. 4,402,118, Cl. 24-289.000.
Benjamin, Gary H.: *See*—
Klose, Karl W.; and Benjamin, Gary H., 4,402,782, Cl. 156-414.000.
Benkmann, Christian, to Linde Aktiengesellschaft. System for treatment of plural crude gases in single adsorption plant. 4,402,712, Cl. 55-26.000.
Bennett, W. Clark; and Garrett, Theodore T., to Occidental Chemical Corporation. Waste water treatment system for elemental phosphorous removal. 4,402,833, Cl. 210-667.000.
Bennett X-Ray Corp.: *See*—
Kleinman, Bennett, 4,403,337, Cl. 378-95.000.
Benson, John E.: *See*—
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Beppu, Tadashi: *See*—
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Berg, Marie-Louise. Comforter. 4,402,321, Cl. 128-359.000.

Berger, Meinhard: *See*—
Fortner, Walter; Misera, Erich; Landerl, Franz; Robiczek, Gunther; and Berger, Meinhard, 4,402,437, Cl. 222-607.000.

Bergmann, Erich, to ASU Composants S.A. Process of depositing a hard coating of a gold compound on a substrate for coating jewelry and the like. 4,403,014, Cl. 428-546.000.

Bergsoe, Svend, to Paul Bergsoe & Sons A/S. Apparatus for reclaiming lead and other metals. 4,402,491, Cl. 266-144.000.

Bergwerksverband GmbH: *See*—
Schulz, Peter; Vaupel, Knut; and Klein, Jurgen, 4,402,143, Cl. 34-57.00R.

Berkovitz, Harry, to Westinghouse Electric Corp. Sheave. 4,402,488, Cl. 254-371.000.

Bernard, Richard A.; Nagarsheth, Pushpavadan S.; and Edelman, Peter G., to Pittney Bowes Inc. Grounding device for moving photoconductor web. 4,402,593, Cl. 355-3.0BE.

Bernstein, Seymour: *See*—
Callahan, Francis M.; and Bernstein, Seymour, 4,402,944, Cl. 424-180.000.

Berry, Arnold R. Spray gun reciprocating device. 4,402,459, Cl. 239-186.000.

Berry, Walter C., Jr., to Du Pont de Nemours, E. I., and Company. Dry spinning process with a gas flow amplifier. 4,402,900, Cl. 264-205.000.

Bertelsen, Corey A., to Chevron Research Company. Supplemental pyrolysis and fines removal in a process for pyrolyzing a hydrocarbon-containing solid. 4,402,823, Cl. 208-11.00R.

Bertschy, John R.; and Broom, Walter E., Jr., to International Business Machines Corporation. Method and apparatus for minimizing evaporation in an ink recirculation system. 4,403,227, Cl. 346-75.000.

Bethlehem Steel Corporation: *See*—
Lynn, James B.; and Kisner, George E., 4,402,790, Cl. 201-1.000.

Betzner, William E.; and Holtman, Richard K., to Celotex Corporation, The. Blow line addition of thermosettable binder in fiberboard manufacture utilizing cooled nozzle. 4,402,896, Cl. 264-115.000.

Beyer, Herbert: *See*—
Merten, Gerhard; Schlusener, Horst; Becker, Kunibert; and Beyer, Herbert, 4,402,634, Cl. 405-299.000.

Bhatti, Mohinder S., to Owens-Corning Fiberglas Corporation. Method and apparatus for forming glass fibers. 4,402,718, Cl. 65-1.000.

Bhatti, Mohinder S., to Owens-Corning Fiberglas Corporation. Method and apparatus for forming glass fibers. 4,402,719, Cl. 65-1.000.

Biche, Michael R.; and Baxter, Gideon W., to Qume Corporation. Apparatus for dynamically adjusting paper tension in a linear manner. 4,402,623, Cl. 400-618.000.

Biehrer, Horst: *See*—
Fetzer, Gunter; and Biehrer, Horst, 4,402,609, Cl. 356-387.000.

Bind, Jean-Marie, to Perkin-Elmer Corporation, The. Low thermal expansion modified cordierites. 4,403,017, Cl. 428-702.000.

Bione, Angelo A., to Marmon Group Inc., The. Integrated circuit generating keying envelope signals. 4,402,247, Cl. 84-1.260.

Biotek, Inc.: *See*—
Ash, Stephen R.; and Loeb, Marvin P., 4,402,694, Cl. 604-891.000.

Bird, James E.; and Helwig, Edward J., to United States Steel Corporation. Rust Inhibiting for steel. 4,402,747, Cl. 106-14.420.

Bison-Werke Bahre & Greten GmbH & Co. KG: *See*—
Offenhausen, Rainer; and Schwarz, Hans G., 4,402,890, Cl. 264-37.000.

Bitter, Charles R., Jr.; and Cripps, Raymond M., to Motorola Inc. Passive RF path diverter. 4,403,222, Cl. 343-833.000.

Black & Decker Inc.: *See*—
Moores, Robert G., Jr., 4,402,241, Cl. 83-478.000.

Black, Harold W.: *See*—
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Blackmer, David E., to DBX, Inc. Gain control systems. 4,403,199, Cl. 330-278.000.

Blackstone, Scott C., to RCA Corporation. Method of forming closely spaced lines or contacts in semiconductor devices. 4,402,128, Cl. 29-591.000.

Blahut, Donald E.; Fields, Jonathan A.; Huang, Victor K.; Lee, Charles M.; and Shoji, Masakazu, to Bell Telephone Laboratories, Incorporated. Microprocessor architecture having internal access means. 4,403,287, Cl. 364-200.000.

Blaisdell, Ronald G., to GTE Products Corporation. Front loading projection unit with snap in capsule. 4,403,276, Cl. 362-226.000.

Blakely, Donald W., deceased (by Jacobson, Robert L., administrator), to Chevron Research Company. Method for comulling metals without crystal formation. 4,402,865, Cl. 252-432.000.

Blakely, Stephen W.; and Hager, Stephen F. Method of manufacturing heat absorbing elements. 4,402,121, Cl. 29-157.30A.

Blanken, Jacob, to U.S. Philips Corporation. Cathode suspension means for cathode ray tube electron gun. 4,403,169, Cl. 313-446.000.

Blitstein, John; and Kathrein, Donald, to T C Manufacturing Company. Corrosion-resistant coating composition containing hollow microballoons. 4,403,048, Cl. 523-218.000.

Bloom Eng. Co., Inc.: *See*—
Twort, Thomas J., 4,402,345, Cl. 138-149.000.

Blume, Horst K.: *See*—
Asakura, Toshio; and Blume, Horst K., 4,403,038, Cl. 436-16.000.

Bobeck, Richard L.: *See*—
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Bockrath, Ronald E.: *See*—
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Boden, Richard M.; and Licciardello, Michael, to International Flavors & Fragrances Inc. Flavoring with cyclic carbonate. 4,402,985, Cl. 426-3.000.

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Beal, Terrence E.; and Boeglin, Richard W., 4,403,218, Cl. 340-870.180.

Bohn, Hans, to Behringwerke Aktiengesellschaft. Protein and process for isolating it. 4,402,872, Cl. 260-112.00R.

Boise Cascade Corporation: *See*—
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Bolliger, Max: *See*—
Festag, Werner; Muller, Hans U.; Breitler, Hans P.; and Bolliger, Max, 4,403,010, Cl. 428-200.000.

Bomberger, Arthur L.; and Johnson, Claris E., Jr., to Butler Manufacturing Company. Movable load bar with automatic hooks. 4,402,541, Cl. 294-81.00R.

Bomer, Bruno: *See*—
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Bonis, Laszlo J., to Composite Container Corporation. Making sheet with moisture barrier properties coextruded from scrap materials. 4,402,889, Cl. 264-37.000.

Boone, Jerry C., to Allis-Chalmers Corporation. Sickle drive with resonant spring on the nondriven end of the sickle. 4,402,174, Cl. 56-306.000.

Borg-Warner Corporation: *See*—
Albertson, Clarence C., 4,403,047, Cl. 523-153.000.
Falk, John C.; and Khait, Klementina F., 4,402,902, Cl. 264-349.000.
Krueger, Robert H.; and Zambrow, John L., 4,402,912, Cl. 422-107.000.
Lewis, Elyse B., 4,403,053, Cl. 524-91.000.
McIntosh, Arthur M., 4,402,676, Cl. 474-100.000.

Borgardt, Frank G.: *See*—
Gans, Werner A.; Borgardt, Frank G.; and Lo, George A., 4,402,516, Cl. 277-26.000.

Born, Gunthard; and Altmann, Konrad, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Gasdynamic CO_2 laser and method for operating such a laser. 4,403,325, Cl. 372-90.000.

Borras, Jaime A.; Gonzalez, Ruben J.; Smith, Daniel M.; and Wieczorek, Alfred B., to Motorola, Inc. Zone switching system for a frequency synthesized transceiver. 4,403,342, Cl. 455-76.000.

Borrelli, Nicholas F.; and Morse, David L., to Corning Glass Works. Method for providing optical patterns in glass. 4,403,031, Cl. 430-332.000.

Boser, Emil: *See*—
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Bottcher, Irmgard: *See*—
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Boudeville, Jean-Claude, to Regie Nationale des Usines Renault. Carburant consumption indicator device for automobiles. 4,403,209, Cl. 340-52.00R.

Boulton, Thomas W.; and Darwent, Brian J., to Imperial Chemical Industries Limited. Bipolarly connected electrolytic cells of the filter press type. 4,402,810, Cl. 204-255.000.

Boutielle, Daniel: *See*—
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Bow, Charles R.; and Burston, Ronald J., to Barr & Stroud Limited. Optical fibre light guides for use with lasers. 4,402,569, Cl. 350-96.260.

Bradshaw, Franklin C.: *See*—
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Bradshaw, Norman F.; and Schrubba, Gerald P., to Haden Schweitzer Corporation. Apparatus for heat energy recovery from escaping steam. 4,402,332, Cl. 134-104.000.

Bradt, Willy A.; and Wilssens, Norbert J. F., to Clayton Manufacturing Company. Control apparatus for use in multiple steam generator or multiple hot water generator installations. 4,403,293, Cl. 364-494.000.

Brady, Joseph M.: *See*—
Ash, James J.; Brady, Joseph M.; Goffredo, Daniel L.; and Shakley, Conrad D., 4,402,799, Cl. 204-15.000.
Ash, James J.; Brady, Joseph M.; Goffredo, Daniel L.; and Shakley, Conrad D., 4,402,800, Cl. 204-15.000.

Brandenstein, Manfred: *See*—
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Braun Aktiengesellschaft: *See*—
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Breitler, Hans P.: *See*—
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Brener, Leonid J.: *See*—
Uchitel, Alexandr D.; Zelov, Evgeny A.; Brener, Leonid J.; Baturov, Evgeny G.; Derbas, Anatoly G.; Ivchenko, Kim D.; Kuevda, Jury K.; and Khomich, Ivan T., 4,402,826, Cl. 209-366.500.

Brewer, Alex T. Bar of soap. 4,402,848, Cl. 252-134.000.

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Bridgeport Metal Goods Mfg. Co., The: *See*—
Moore, Arthur H., 4,403,274, Cl. 362-186.000.
Bridges, Charles D., to Combustion Engineering, Inc. Adjustable backing arrangement for pipe suspending slips. 4,402,535, Cl. 285-145.000.
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Gilpin, Jo Ann; Oriel, Patrick J.; and Briggs, Roger A., 4,402,877, Cl. 260-239.30P.
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Buche, Peter J. Folding step. 4,402,385, Cl. 182-91.000.
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Cameron, Ian D., to Delta Capillary Products Limited. Conveyor furnace. 4,402,668, Cl. 432-138.000.
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Ogawa, Hiroshi; Nagaoka, Tateki; and Tohyama, Yoshikuni, 4,402,595, Cl. 355-8.000.
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Carroll, Richard R.; and Papp, Alan M., to Litton Industrial Products, Inc. Machining center. 4,402,125, Cl. 29-568.000.
Cartier, Roger J., to Whirlpool Corporation. Water pumping agitator for automatic washers. 4,402,198, Cl. 68-18.0FA.
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Cavazza, Gilbert J., to Kerma Societe A Responsabilite Limitee. Ski pole for mountain skiing. 4,402,529, Cl. 280-816.000.
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Cheetham, Ivan C.; Lowe, Jack M.; and Redmond, Glyn H., to Dunlop Limited. Crude oil pipe having layers of graduated permeability to hydrogen sulfide. 4,402,346, Cl. 138-129.000.
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Clark, Eugene V.; and Sievers, George K., to Turbine Metal Technology, Inc. Method for producing abrasion and erosion resistant articles. 4,402,764, Cl. 148-6.000.
Clark, James H., to National Research Development Corporation. Stabilization of hygroscopic salts. 4,402,862, Cl. 252-426.000.
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Coker, Thomas G.; LaConti, Anthony B.; and Balko, Edward N., to General Electric Company. Multi layer ion exchanging membrane with protected interior hydroxyl ion rejection layer. 4,402,806, Cl. 204-98.000.
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Comeau, Perry J. Blood loss analyzer. 4,402,373, Cl. 177-1.000.
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Corey, Jan M. Sulfur melting apparatus and method. 4,402,304, Cl. 126-343.50A.
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Cunningham, George M.; and Majestic, Peter J., 4,403,131, Cl. 219-69.00W.
Corrigan, William C., Jr.; Fowles, Thomas A.; and Gibbons, Nicholas, to Baxter Travenol Laboratories, Inc. Bottle opening ring having shock absorbing means. 4,402,417, Cl. 215-232.000.
Corsette, Douglas F. Leak-proof dispensing pump. 4,402,432, Cl. 222-321.000.
Coughlin, Michael C., to Du Pont de Nemours, E. I., and Company. Filled thermoplastic compositions based on ethylene interpolymers and polyester, polyether and polyether ester plasticizers. 4,403,007, Cl. 428-95.000.
Courtin, Erich: *See—*
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Courvoisier, Peter; and Stadie, Dieter, to Verkaufsgesellschaft fur Teererzeugnisse (VfT) mbH. Process for the production of carburizing agents and products. 4,402,895, Cl. 264-109.000.
Couser, Chester F. Folding tool beam and lift assembly. 4,402,367, Cl. 172-456.000.
Couture, Joachim; and Couture, Raymond. Continuous solid wood laminated panels. 4,402,781, Cl. 156-274.600.
Couture, Raymond: *See—*
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Cowan, James J.; Gerber, Arthur M.; and Slafer, Warren D., to Polaroid Corporation. Method for producing a surface relief pattern. 4,402,571, Cl. 350-162.170.
Craft, James A.: *See—*
Abell, William A., Jr.; Craft, James A.; and Morris, Michael L., 4,402,621, Cl. 400-208.000.
Craig, Robert D. Differential case. 4,402,238, Cl. 74-710.000.
Cranston, Dale O., to California Technics, Ltd. Circuit for driving an ultrasonic dental tool at its resonant frequency. 4,403,176, Cl. 318-114.000.
Craven, James M., to Du Pont de Nemours, E. I., and Company. Powder coating composition for automotive topcoat. 4,402,983, Cl. 428-335.000.
Crawshaw, James R.; and Mossbarger, David W., to TRW Inc. Torque motor. 4,403,204, Cl. 335-229.000.
Creative Technology Inc.: *See—*
Tuten, William J.; Crosby, Kennith D.; and Black, Harold W., 4,402,391, Cl. 194-4.00C.
Creusot-Loire Enterprises: *See—*
Schmidt, Hans-Werner; Beisswenger, Hans; Reh, Lothar; Folliot, Albert; and Iard, Maurice P., 4,402,754, Cl. 106-100.000.
Cribbs, Doyle E.; and Weckerly, James R., to GTE Products Corporation. Contact puller. 4,402,133, Cl. 29-739.000.
Cripps, Raymond M.: *See—*
Bitter, Charles R., Jr.; and Cripps, Raymond M., 4,403,222, Cl. 343-833.000.
Crosby, Kennith D.: *See—*
Tuten, William J.; Crosby, Kennith D.; and Black, Harold W., 4,402,391, Cl. 194-4.00C.
Cross, William E.; and Nestor, Charles R., to General Motors Corporation. Molding and machining of one piece electrical socket connector. 4,402,897, Cl. 264-118.000.
Crouzet: *See—*
Battarel, Claude; Bedene, Brigitte; and Morille, Robert, 4,403,138, Cl. 235-493.000.
Crowley, Kevin J.: *See—*
Parracho, Rui M.; and Crowley, Kevin J., 4,402,146, Cl. 36-129.000.
Crown Cork & Seal Company, Inc.: *See—*
Ruemer, John, Jr., 4,402,421, Cl. 220-269.000.
Cunningham, George M.; and Majestic, Peter J., to Corning Glass Works. Electrical discharge machining utilizing a counter slot. 4,403,131, Cl. 219-69.00W.
Cupler, John A., II. Convertible machining center. 4,402,636, Cl. 408-14.000.
CXA Ltd/CXA LTEE: *See—*
McCaffrey, Francis H. G., 4,402,270, Cl. 102-275.300.
D. Swarovski & Co.: *See—*
Schwab, Kurt; and Unterberger, Gerhard, 4,402,627, Cl. 404-15.000.
Daguerre, Gerard. File folder with clips. 4,402,530, Cl. 281-45.000.
Dahl, Frank L.: *See—*
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Dahm, Jonathan C.: *See—*
Hogan, Richard H.; and Dahm, Jonathan C., 4,402,997, Cl. 427-94.000.
Dahm, Manfred: *See—*
Heller, Harold; Schapel, Dietmar; Hentschel, Claus; and Dahm, Manfred, 4,402,725, Cl. 71-27.000.
Schnoring, Hildegard; Bomer, Bruno; and Dahm, Manfred, 4,402,856, Cl. 428-402.220.
Daikin Kogyo Co., Ltd.: *See—*
Izumo, Masanori; Mikami, Kenji; and Kametani, Keiichiro, 4,402,717, Cl. 55-388.000.
Daikoku, Takashi: *See—*
Ueda, Shoji; Daikoku, Takashi; Zama, Masato; Matsuo, Shintaro; Saito, Masahiro; and Kinoshita, Hidejiro, 4,402,906, Cl. 420-493.000.
Daimer, Wolfgang: *See—*
Pampouchidis, Georgios; Daimer, Wolfgang; and Verdino, Heiner, 4,403,050, Cl. 523-501.000.
Daimler-Benz Aktiengesellschaft: *See—*
Gallitzendorfer, Joseph; Pfeiffer, Peter; and Tomforde, Johann, 4,402,537, Cl. 293-149.000.
Dainichi-Nippon Cables, Ltd.: *See—*
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Dainippon Ink and Chemicals Inc.: *See—*
Kuriyama, Kazuya; Murakami, Shigeru; Sugawara, Ryozo; and Honda, Kiyoshi, 4,402,887, Cl. 264-22.000.
Dale, Steinar J., to Westinghouse Electric Corp. Gas-insulated bushing having minimized throat diameter. 4,403,104, Cl. 174-31.00R.
D'Alelio, Gaetano F., deceased (by St. Joseph Bank and Trust Company, executor); and Waitkus, Phillip A., to Plastics Engineering Company. Addition products of di-acetylene-terminated polyimide derivatives with a polyimide having terminal non-conjugated acetylene groups. 4,402,878, Cl. 548-421.000.
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Daly, John K.; and Terry, Malvin D., to Advanced Semiconductor Materials America. Surface inspection system. 4,402,613, Cl. 356-446.000.

Dammann, Peter; and Frank, Benno, to Barmag Barmer Maschinenfabrik AG. Yarn false twisting apparatus having improved thread-up capability. 4,402,179, Cl. 57-336.000.
Dampier, Frederick W., to GTE Laboratories Incorporated. Electrochemical cell. 4,403,020, Cl. 429-91.000.
Dana Corporation: *See*—
Kaminski, David C., 4,403,178, Cl. 318-484.000.
Dankel, Douglas D., to Roper Corporation. Soil tilling machine. 4,402,366, Cl. 172-43.000.
Dansk Gartneri-Teknik A/S: *See*—
Jensen, Niels T., 4,402,165, Cl. 52-72.000.
D'Antonio, Nicholas F.; Polt, Dieter; and Eibl, Volker, to Marker-Patentverwertungsgesellschaft mbH. Battery-charging generator for electronic ski binding. 4,402,524, Cl. 280-612.000.
Danuvia Kozponti Szerszam es Keszulekgyar: *See*—
Kalmanczhelyi, Gabor; and Kiss, Pal, 4,402,336, Cl. 137-101.000.
Dareing, Donald W.: *See*—
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D'Asaro, Lucian A.: *See*—
Butherus, Alexander D.; and D'Asaro, Lucian A., 4,403,241, Cl. 357-55.000.
Dassler, Armin A., to PUMA-Sportschuhfabriken Rudolf Dassler KG. Tread sole for athletic shoe consisting of rubber or another material having rubber-elastic properties. 4,402,145, Cl. 36-32.00R.
Data General Corporation: *See*—
Holberger, Kenneth D.; and Samson, Joseph E., 4,403,282, Cl. 364-200.000.
Datascope Corp.: *See*—
Hanson, Bruce L.; and Wolvek, Sidney, 4,402,307, Cl. 128-1.00D.
Daume, Eduard; and Sarbach, Jurg, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Incendiary composition containing a group IVB metallic fuel. 4,402,705, Cl. 44-1.00R.
Davene, Jean, to Clesid S.A. Electric arc furnace with controlled operation. 4,403,326, Cl. 373-71.000.
Davies, Norman: *See*—
Perkins, John F.; and Davies, Norman, 4,403,124, Cl. 200-144.00B.
Davis, Robert H.; and Piotrowski, Alfred B., to Mobil Oil Corporation. Metal working lubricant containing an alkanolamine and a cycloaliphatic acid. 4,402,839, Cl. 252-34.700.
Davis, Thomas G.; Weaver, Max A.; and Giles, Ralph R., to Eastman Kodak Company. Polyesters containing copolymerized, anthraquinone colorant compounds containing sulfonamido groups. 4,403,092, Cl. 528-290.000.
Davis, William F., to Motorola, Inc. Output stage for operational amplifier. 4,403,200, Cl. 330-294.000.
Davoy, Edward J.: *See*—
Hawkins, Ronald G.; Davoy, Edward J.; Hooker, Robert M.; and Muniak, John E., 4,402,122, Cl. 29-243.560.
Davy McKee Corporation: *See*—
Lang, Warren H., 4,402,923, Cl. 423-166.000.
DBX, Inc.: *See*—
Blackmer, David E., 4,403,199, Cl. 330-278.000.
Deere & Company: *See*—
Broderick, Ross T.; and Munns, Dennis L., 4,402,645, Cl. 414-685.000.
Viaud, Jean, 4,402,259, Cl. 100-5.000.
DeFalco, Joseph: *See*—
Grenier, Wilfred J.; Zuckerman, Lee B.; Ferris, John P.; and DeFalco, Joseph, 4,402,628, Cl. 404-16.000.
Deforeit, Christian J. Synthesizer circuit for electronic musical instrument. 4,402,243, Cl. 84-1.010.
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DeHaitre, Lon, to Abbott-Interfast Corporation. Dual-inline screw-switch assembly. 4,403,126, Cl. 200-158.000.
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Del Laboratories, Inc.: *See*—
Gordon, Harry W.; and Farrell, Herbert R., 4,402,935, Cl. 424-61.000.
Delaplane, John: *See*—
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De Loach, Bernard C., Jr., to Bell Telephone Laboratories, Incorporated. Redundant light source circuit. 4,403,139, Cl. 250-205.000.
Delta Capillary Products Limited: *See*—
Cameron, Ian D., 4,402,668, Cl. 432-138.000.
Delta Manufacturing and Sales, Inc.: *See*—
Taldo, Terry J.; and Jackson, Kenneth R., 4,402,331, Cl. 134-58.00R.
DeMoore, Howard W., to Printing Research Corporation. Method and apparatus for handling printed sheet material. 4,402,267, Cl. 101-419.000.
Denham, Dale; and Schmidt, Roland, to Kerr-McGee Corporation. Process for the regeneration of mineral acids used to solubilize phosphate ores. 4,402,919, Cl. 423-8.000.
Dennis, Norman G., to United States of America, Navy. Reusable cable termination. 4,402,539, Cl. 294-78.00R.
Denty, Stephen C.; and Meserko, John. Suction collection system. 4,402,687, Cl. 604-319.000.
Denucci, John F., to Vollrath Company, The. Panel fastening structure. 4,402,167, Cl. 52-426.000.
Denzinger, Walter; Hartmann, Heinrich; and Schwarz, Wolfgang, to BASF Aktiengesellschaft. Preparation of PVP-iodine. 4,402,937, Cl. 424-80.000.
de Pous, Olivier, to Batelle Memorial Institute. Method of storing hydrogen. 4,402,933, Cl. 423-648.00R.
Dequssa Aktiengesellschaft: *See*—
Kreuter, Erika; Kuhn, Werner; and Zilske, Wolfgang, 4,402,802, Cl. 204-47.000.
Derbas, Anatoly G.: *See*—
Uchitel, Alexandr D.; Zelov, Evgeny A.; Brener, Leonid J.; Baturov, Evgeny G.; Derbas, Anatoly G.; Ivchenko, Kim D.; Kuevda, Jury K.; and Khomich, Ivan T., 4,402,826, Cl. 209-366.500.
Derbyshire, Rodney L., to Radiation Dynamics, Inc. Sleeve and covering for tubing. 4,402,777, Cl. 156-86.000.
Derr, Glenford R.: *See*—
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Derrien, Michel: *See*—
Turiot, Andre; and Derrien, Michel, 4,402,477, Cl. 214-102.00R.
Dersher, Charles L. Dice throwing craps game computer. 4,402,509, Cl. 273-148.00R.
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Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
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DeVries, Donald H., to Rogers Corporation. Miniaturized bus bar with capacitors and assembly technique. 4,403,108, Cl. 174-72.00B.
deVries, Louis; and King, John M., to Chevron Research Company. Antioxidant combinations of molybdenum complexes and organic sulfur compounds for lubricating oils. 4,402,840, Cl. 252-45.000.
Diamond Shamrock Corporation: *See*—
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Dick, Gottfried: *See*—
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Diddens, Paul A.: *See*—
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Di Domenico, Italo, to Qualitrol Corporation. Liquid level float gauge calibration means. 4,402,209, Cl. 73-1.00H.
Dikta, Gerd, to Mannesmann Aktiengesellschaft. Movable sound and dust insulating wall portion for a metallurgical mill. 4,402,490, Cl. 266-142.000.
Dilmore, Colonel R.; and Raetzsch, Carl W., Jr., to PPG Industries, Inc. Bipolar electrolyzer. 4,402,809, Cl. 204-254.000.
DiMatteo, Paul; and Rademacher, Paul, to Solid Photography Inc. Room scanning system using multiple camera and projector sensors. 4,402,608, Cl. 356-375.000.
Dimitroff, Vladimir T.; Silva, Darrell M.; and Taber, Bruce D., to General Electric Company. Sliding pressure flash tank. 4,402,183, Cl. 60-660.000.
Dinsmore, Robert C. Electronic compass for automotive vehicles. 4,402,142, Cl. 33-348.000.
Dirr, William J., Jr.: *See*—
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Dr. Ing. Rudolf Hell GmbH.: *See*—
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Dohi, Hidemi; Mori, Hideki; and Matsuda, Hideaki, to Okura Kogyo Kabushiki Kaisha. Two-part type (meth)acrylate adhesives having excellent storage stabilities. 4,403,058, Cl. 524-397.000.
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Kobayashi, Mitsunori; and Doi, Yoshihiko, 4,402,994, Cl. 427-38.000.
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Domagalski, James A., to Kelley Company, Inc. Traffic door. 4,402,159, Cl. 49-9.000.
Domahidy, George, to Stone & Webster Engineering Corp. Process for removing hydrogen sulfide from fluids. 4,402,713, Cl. 55-53.000.
Domarenok, Nikolai I.; Dostanko, Anatoly P.; Moroz, Igor G.; Kanevsky, Alexei S.; and Vasiliev, Vsevolod A. Thermovision pyrometer for remote measurement of temperature of an object. 4,403,251, Cl. 358-107.000.
Domeniconi, Michael J.; Schlaikjer, Carl R.; and Young, Clifton A., to GTE Laboratories Incorporated. Electrochemical cell and electrolytic solution therefor. 4,403,021, Cl. 429-101.000.
Dominguez, Aurelio D., to Inquimet Sociedad Anonima Industrial Comercial Y Agraria. Heat exchanger. 4,402,361, Cl. 165-156.000.

Donald L. Morton & Associates: *See—*
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Donnelly, Raymond C. Jack for lifting unbalanced loads. 4,402,487, Cl. 254-133.00R.
Donohue, John A., to Standard Oil Company Indiana. Electrochemical process to prepare p-hydroxymethylbenzoic acid with a low level of 4-CBA. 4,402,805, Cl. 204-75.000.
Donoian, Gary S.: *See—*
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Donovan, John S. Radar system for collision avoidance. 4,403,220, Cl. 343-6.00R.
Doring, Carl, to Telectronics Pty. Limited. Crista terminalis atrial electrode lead. 4,402,328, Cl. 128-785.000.
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Dow Chemical Company, The: *See—*
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Killat, George R.; and Wilson, Larry R., 4,402,748, Cl. 106-20.000.
Lane, George A.; and Rossow, Harold E., 4,402,846, Cl. 252-70.000.
Dow Corning Corporation: *See—*
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Lee, Chi-Long; and Rabe, James A., 4,402,908, Cl. 422-43.000.
Marko, Ollie W.; and Rentsch, Stefan F., 4,402,796, Cl. 203-43.000.
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Hartman, Marvis E.; Greigger, Barbara A.; and Dowbenko, Rostyslaw, 4,403,093, Cl. 528-297.000.
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DuBois, Grant E., to Dynapol. Steviolmonoside analogs. 4,402,990, Cl. 426-658.000.
Dubois, Jean-Claude: *See—*
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DuBois, Richard, to Edison International, Inc. Method of making an integrated display device. 4,402,134, Cl. 29-832.000.
DuBois, Russell E., Sr. Method of making an expandable mandrel having a thin cylindrical sleeve and a pair of thick wall arcular ends. 4,402,449, Cl. 228-165.000.
Dubroeucq, Marie-Christine; Gueremy, Claude G. A.; Le Fur, Gerard R.; and Mizoule, Jacques, to Pharmindustrie. Derivatives of 1-(2-,3- or 4-quinolyl)-2- or -3-(2- or 3-piperidyl or -pyrrolidinyl) ethanone or propanone, and their utilization as antiarrhythmics, anticonvulsivants and for the treatment of anxiety. 4,402,961, Cl. 424-258.000.
Dubrovsky, Evgeny V. Plate heat exchanger. 4,402,362, Cl. 165-166.000.
Duffy, James F.: *See—*
Rhodes, William A., 4,402,582, Cl. 353-3.000.
Duggan, Stephen R., to Medtronic, Inc. Pacer output circuit. 4,402,322, Cl. 128-419.0PG.
Duhl, David N.; and Cetel, Alan D., to United Technologies Corporation. Superalloy single crystal articles. 4,402,772, Cl. 148-404.000.
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Dumke, Jean A. Silicone milk bath unit. 4,402,144, Cl. 34-192.000.
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Du Pont de Nemours, E. I., and Company: *See—*
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Craven, James M., 4,402,983, Cl. 428-335.000.
Schmidt, William K., 4,402,962, Cl. 424-260.000.
Withers, Michael S., 4,402,785, Cl. 156-499.000.
Duranleau, Roger G.; and Gates, Walter C., Jr., to Texaco Inc. Catalyst for the production of methane-rich gas. 4,402,868, Cl. 252-470.000.
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Dworak, Wilhelm, to Robert Bosch GmbH. Fluid-operated gear machine. 4,402,654, Cl. 418-131.000.
Dybas, Richard A.; and Witzel, Bruce E., to Merck & Co., Inc. Antimicrobial compositions. 4,402,959, Cl. 424-250.000.
Dyer, Billy F., to Hughes Tool Company. Drill string shock absorber with pressurized lubricant system. 4,402,495, Cl. 267-125.000.
Dynapol: *See—*
Bunes, Leonard A., 4,403,072, Cl. 525-353.000.
DuBois, Grant E., 4,402,990, Cl. 426-658.000.
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St. John, Richard C., 4,402,678, Cl. 474-171.000.
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Eastman Kodak Company: *See—*
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Eberle, William J., to General Battery Corporation. Apparatus and method for testing the hardness of battery components. 4,402,228, Cl. 73-849.000.
Eckel Manufacturing Company, Inc.: *See—*
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Eckhoff, Paul S. Apparatus for continuous production of emulsions. 4,402,914, Cl. 422-132.000.
Edahiro, Takao; Kurosaki, Shiro; and Watanabe, Minoru, to Nippon Telegraph & Telephone Public Corporation; and Sumitomo Electric Industries Ltd. Process for preparing glass preform for optical fiber. 4,402,720, Cl. 65-3.120.
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Bernard, Richard A.; Nagarsheth, Pushpavadan S.; and Edelman, Peter G., 4,402,593, Cl. 355-3.0BE.
Edens, Jeffrey I. Pressure filter vessel. 4,402,828, Cl. 210-323.200.
Edge, Charles K., to PPG Industries, Inc. Cooling arrangement and method for forming float glass. 4,402,722, Cl. 65-99.300.
Edison International, Inc.: *See—*
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Edwards, Kent R., to H. B. Fuller Company. Para-anisole-containing biocide and method for isolating it and using it. 4,402,971, Cl. 424-279.000.
Edwards, Laroy H. Fungicidal and insecticidal 2-thiohaloalkenyl-4-dialkoxyphosphino-thioyloxy-6-alkyl-1,3-pyrimidines. 4,402,952, Cl. 424-200.000.
Effenberger, Udo E. Viscosity impeller. 4,402,647, Cl. 415-90.000.
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Eggert, Joseph J.: *See—*
McVicker, Gary B.; and Eggert, Joseph J., 4,402,924, Cl. 423-258.000.
Eguchi, Kiyohisa; Kitamura, Norio; Ohta, George; Okamura, Terumasa; and Yamada, Seizi, to Gosei Kagaku KKK; Hanano Commercial Co.; Taihei Chem. Inc.; and Gosei Kagaku KKK. Lubricant compositions for forging or extrusion. 4,402,838, Cl. 252-28.000.
Eguchi, Yoshitugu: *See—*
Kitamura, Hajime; Imada, Kiyoshi; and Eguchi, Yoshitugu, 4,402,893, Cl. 264-53.000.
Egusa, Takashi: *See—*
Hayashi, Kazuhiko; Tanigawa, Kou; and Egusa, Takashi, 4,402,376, Cl. 180-179.000.
Ehiro, Takashi: *See—*
Yanazawa, Tadaaki; Tanaka, Teruaki; Yamashita, Masashi; Ehiro, Takashi; Okumura, Hiroshi; Saito, Shinzo; and Kusaba, Takashi, 4,402,206, Cl. 72-221.000.
Ehl, Klaus: *See—*
Uhrig, Heinz; and Ehl, Klaus, 4,403,079, Cl. 525-507.000.
Ehret, Thomas M.; and Ovieve, Gerard E., to FMC Corporation. System for the control of a marine loading arm. 4,402,350, Cl. 141-94.000.
Ehrt, Peter: *See—*
Armerding, Rainer; Helmling, Rupert; Kopp, Waldemar; Wagner, Harry; Ehrt, Peter; and Boser, Emil, 4,403,163, Cl. 310-213.000.
Eibl, Volker: *See—*
D'Antonio, Nicholas F.; Polt, Dieter; and Eibl, Volker, 4,402,524, Cl. 280-612.000.
Eichinger, Charles H., to Brunswick Corporation. Outboard motor tilt mechanism. 4,402,675, Cl. 440-53.000.
Eisai Co., Ltd.: *See—*
Yamanaka, Motosuke; Saito, Isao; Yamatsu, Kiyomi; and Fujimoto, Takako, 4,402,966, Cl. 424-273.00R.
Ejzak, Richard P.; Thom, James B.; Peterson, William J.; and Glennon, Timothy F., to Sundstrand Corporation. Control for an electrical generating and distribution system, and method of operation. 4,403,292, Cl. 364-492.000.
Ekstrand, Arne, to Aimpoint AB. Firearms sighting instrument. 4,402,605, Cl. 356-252.000.
Elder, Arthur L.; Ostergaard, Mack R.; Smith, Dennis R.; and Warner, Reed H., to United States Steel Corporation. Burner apparatus for molten metal fume suppression. 4,402,492, Cl. 266-196.000.
Electro Mechanical Industries, Inc.: *See—*
Khait, George; and Fish, William R., 4,402,588, Cl. 354-106.000.
Electrochemische Energieconversie, N.V.: *See—*
Alfenaar, Marinus; Leijen, Joannes J. P.; and Schlosser, Willem J., 4,403,018, Cl. 429-34.000.
Electromedics, Inc.: *See—*
Prosky, Howard S., 4,403,296, Cl. 364-573.000.

Elektro-Physik Hans Nix & Dr. Ing. E. Steingroever, K.G.: *See*—
Nix, Hans F., 4,403,188, Cl. 324-230.000.
Eli Lilly and Company: *See*—
Hall, David A., 4,402,803, Cl. 204-73.00R.
Lunn, William H. W., 4,402,955, Cl. 424-246.000.
Elkins, Johnny C. Unitary rack with latch means. 4,402,164, Cl. 52-27.000.
Elliott, Henry H., to General Electric Company. Reclamation process for water-borne uranium. 4,402,918, Cl. 423-7.000.
Ellis, Ralla S.: *See*—
Ellis, William D.; and Ellis, Ralla S., 4,402,091, Cl. 4-217.000.
Ellis, William D.; and Ellis, Ralla S. Toilet evacuation device. 4,402,091, Cl. 4-217.000.
Emerson Electric Co.: *See*—
Skowronski, Roman L.; and Szekeres, John M., 4,402,423, Cl. 220-345.000.
Emhart Industries, Inc.: *See*—
Ericson, Nathaniel H.; and Japenga, Robert J., 4,402,721, Cl. 65-29.000.
Henry, James, 4,402,192, Cl. 62-256.000.
Emura, Koji; Suzaki, Tuneo; Takai, Koji; and Kazama, Hidemichi, to Yamakawa Industrial Co., Ltd. Method of press forming of plastic material. 4,402,901, Cl. 264-294.000.
Enders, George E., to NRM Corporation. Axially collapsible and expandable tire building drum. 4,402,783, Cl. 156-415.000.
Endlicher, Frank: *See*—
Graasl, Hans P.; Herbst, Heiner; and Endlicher, Frank, 4,403,141, Cl. 250-214.00R.
Enei, Hitoshi: *See*—
Goto, Eiji; Ishihara, Masaru; Sakurai, Shoji; Enei, Hitoshi; and Takinami, Koichi, 4,403,033, Cl. 435-108.000.
Energy Conversion Devices, Inc.: *See*—
McCormick-Goodhart, Mark H., 4,402,597, Cl. 355-64.000.
Engel, Jean, to Goodyear Tire & Rubber Company, The. Method and apparatus for sidewall bulge and valley detection. 4,402,218, Cl. 73-146.000.
Engeler, William E., to General Electric Company. Surface charge correlator. 4,403,299, Cl. 364-824.000.
Engert, Gerd-Juergen; de Haas, Klaus; Magin, Rudolf; Nenninger, Franz; and Schauer, Horst, to BASF Aktiengesellschaft. Process and apparatus for charging tubular reactors with granular solids, more particularly catalysts. 4,402,349, Cl. 141-9.000.
English Electric Valve Company Limited: *See*—
Maitland, Arthur; Menown, Hugh; and Strudwick, Ian A., 4,403,167, Cl. 313-632.000.
Enomoto, Hiroshi: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Kitaguchi, Koji; Ozaki, Masakuni; Kitano, Masahiko; Okamura, Toshihiro; and Tanaka, Haruo, 4,402,948, Cl. 424-182.000.
Erdmann, Hartmut: *See*—
Lierke, Ernst-Guenter; Heide, Wolfgang; Grossbach, Rudolf; Floegel, Karl; and Erdmann, Hartmut, 4,402,458, Cl. 239-102.000.
Erickson, Donald C. Reverse absorption heat pump augmented distillation process. 4,402,795, Cl. 203-25.000.
Ericson, Nathaniel H.; and Japenga, Robert J., to Emhart Industries, Inc. Computer control for glassware forming machine. 4,402,721, Cl. 65-29.000.
Ernst Leitz Wetzlar GmbH: *See*—
Stahl, Werner; Frobose, Walter; and Lisfeld, Robert, 4,402,576, Cl. 350-531.000.
Erwin Sick GmbH Optik-Elektronik: *See*—
Fetzer, Gunter; and Biehrer, Horst, 4,402,609, Cl. 356-387.000.
Escher Wyss GmbH: *See*—
Kahmann, Albrecht; and Meisenberg, Rainer, 4,402,463, Cl. 241-37.000.
Essex Group Inc.: *See*—
Young, Glen C.; and Durant, Michael B., 4,403,302, Cl. 364-900.000.
Essilor International, cie Generale d'Optique: *See*—
Minart, Francois, 4,402,577, Cl. 351-125.000.
Minart, Francois, 4,402,578, Cl. 351-140.000.
Etablissements Francois Salomom et Fils Chemin de la Prairie Prolonge: *See*—
Salomon, Georges P. J., 4,402,525, Cl. 280-628.000.
Ethyl Products Company: *See*—
Ostrowsky, Efrem M., 4,402,418, Cl. 215-252.000.
Eue, Ludwig: *See*—
Beck, Gunther; Baasner, Bernd; Eue, Ludwig; and Schmidt, Robert, 4,402,732, Cl. 71-92.000.
Forster, Heinz; Eue, Ludwig; Schmidt, Robert; and Lurssen, Klaus, 4,402,727, Cl. 71-74.000.
Euringer, Robert: *See*—
Pagel, Ernst-Olav; and Euringer, Robert, 4,402,286, Cl. 123-179.00B.
Exlog Smith: *See*—
Smith, Robert F.; and Walters, Dwight E., 4,402,910, Cl. 422-83.000.
Extracorporeal Medical Specialties, Inc.: *See*—
Chernack, Milton P., 4,402,420, Cl. 220-266.000.
Pollock, Elisabeth M.; and Lentz, David J., 4,402,697, Cl. 8-94.110.
Exxon Production Rsearch Co.: *See*—
Ortloff, John E., 4,402,533, Cl. 285-18.000.
Exxon Research & Engineering Co.: *See*—
Hughes, Vincent L., 4,403,080, Cl. 526-76.000.
Kropac, Joseph M., 4,403,232, Cl. 346-135.100.
McVicker, Gary B.; and Eggert, Joseph J., 4,402,924, Cl. 423-258.000.
Merchant, Philip, Jr., 4,402,807, Cl. 204-190.000.
Oswald, Alexis A., 4,402,708, Cl. 44-66.000.
Ramanarayanan, Trikur A.; Petkovic-Luton, Ruzica; and Ayer, Raghavan, 4,402,746, Cl. 75-252.000.
Tauster, Samuel J.; and Fung, Shun C., 4,402,869, Cl. 252-471.000.
Wirnowski, Richard C., 4,403,224, Cl. 346-1.100.
Fabian, Horst; and Thus, Heinz, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Portable belt conveyor, particularly a plate belt conveyor for crushing plants. 4,402,392, Cl. 198-311.000.
Facet Enterprises, Inc.: *See*—
Morgan, Morgan H.; and Anders, Pamela T., 4,402,214, Cl. 73-40.700.
Factor, James R., to General Motors Corporation. Flexible cell plugging mask for use in fabricating particulate filters. 4,403,008, Cl. 428-117.000.
Fagerlund, Allen C., to Fisher Controls Company, Inc. Eccentrically nested tube gas line silencer. 4,402,485, Cl. 251-118.000.
Falk, John C.; and Khait, Klementina F., to Borg-Warner Corporation. Method for molding glass-filled thermoplastic resins. 4,402,902, Cl. 264-349.000.
FAO, Inc.: *See*—.
Oser, Neil J., 4,403,275, Cl. 362-220.000.
Farrell, Herbert R.: *See*—
Gordon, Harry W.; and Farrell, Herbert R., 4,402,935, Cl. 424-61.000.
Faulkner, Keith; and Appleford, David E., to Portionmat (Engineering) Limited. Weighing and dispensing unit. 4,402,426, Cl. 222-56.000.
Faulkner, Robie L.; and Ogborne, Graham E., to International Harvester Company. Gas turbine engines. 4,402,184, Cl. 60-739.000.
Fedder, Richard C.; Schafner, George C.; and Ward, William M., to Burroughs Corporation. Optical scanning and imaging system utilizing laser diode. 4,403,235, Cl. 346-160.000.
Feeney, Alvan H., to Stilson Division of Stocker & Yale, Inc. Conveyor roll. 4,402,390, Cl. 193-37.000.
Fegley, Charles R.: *See*—
Abraham, Bruce C.; and Fegley, Charles R., 4,402,450, Cl. 228-180.00A.
Fehr, Alex: *See*—
Fink, Willy; and Fehr, Alex, 4,402,255, Cl. 91-234.000.
Feinland, Raymond; Pohl, Stanley; and Hnatchenko, Michael, to Clairol Incorporated. Composition for coloring hair containing an oxidizing agent and certain quaternary amines. 4,402,700, Cl. 8-416.000.
Feist, Wolfgang M., to Raytheon Company. Method of making self-aligned gate MOS device having small channel lengths. 4,402,761, Cl. 148-1.500.
Felt Products Mfg. Co.: *See*—
Locacius, Robert F., 4,402,518, Cl. 277-166.000.
Ferguson, Angus S.: *See*—
Brocklehurst, Peter; and Ferguson, Angus S., 4,402,853, Cl. 252-186.260.
Ferguson, Hector: *See*—
Paulose, George; Ambady, Raman; Kidd, James R.; and Ferguson, Hector, 4,402,788, Cl. 162-78.000.
Ferring AB: *See*—
Melin, Per O. R., 4,402,942, Cl. 424-177.000.
Ferris, John P.: *See*—
Grenier, Wilfred J.; Zuckerman, Lee B.; Ferris, John P.; and DeFalco, Joseph, 4,402,628, Cl. 404-16.000.
Ferris, Joseph E.: *See*—
Lamberg, John R.; and Ferris, Joseph E., 4,403,221, Cl. 343-700.0MS.
Fessel, Rudolf, to Olympia Werke AG. Word processor adapted for filling in blanks on preprinted forms. 4,403,301, Cl. 364-900.000.
Festag, Werner; Muller, Hans U.; Breitler, Hans P.; and Bolliger, Max, to Swiss Aluminium Ltd. Metal-plastic laminate foil. 4,403,010, Cl. 428-200.000.
Fethke, Walter P.; Dunne, Stephen R.; and Ausikaitis, Joseph P., to Union Carbide Corporation. Method for retarding corrosion in mufflers. 4,402,714, Cl. 55-35.000.
Fetzer, Gunter; and Biehrer, Horst, to Erwin Sick GmbH Optik-Elektronik. Light curtain apparatus. 4,402,609, Cl. 356-387.000.
Feustel, Helmut; and Moeres, Rainer, to Gartemann & Hollmann GmbH. Stirling heating pump. 4,402,186, Cl. 62-6.000.
Ficheux, Rene; and Pavoz, Marcel, to Otis Elevator Company. Self-powered elevator using a linear electric motor as counterweight. 4,402,386, Cl. 187-29.00R.
Fields, Jonathan A.: *See*—
Blahut, Donald E.; Fields, Jonathan A.; Huang, Victor K.; Lee, Charles M.; and Shoji, Masakazu, 4,403,287, Cl. 364-200.000.
Filipin, Nikolai A.: *See*—
Alexander, Jury V.; Viktorov, Viktor D.; Zuev, Vladimir K.; Orlov, Gennady S.; Filipin, Nikolai A.; and Khunafin, Fedor S., 4,402,612, Cl. 356-427.000.
Filmer, David B., to Agri Plastics International Pty. Limited. Animal ear tag applicators. 4,402,320, Cl. 128-330.000.
Fink, Willy; and Fehr, Alex, to Fink, Willy. Compressed-air vibrator with reciprocating piston. 4,402,255, Cl. 91-234.000.
Fiquet, Claire: *See*—
Grollier, Jean F.; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,402,977, Cl. 424-70.000.
Fischer, Dieter: *See*—
Glomm, Horst M.; Sawatzki, Klaus E.; and Fischer, Dieter, 4,402,666, Cl. 431-177.000.

Fischer & Porter Company: *See—*
Ryan, Matthew C., 4,402,231, Cl. 73-861.270.
Fish, William R.: *See—*
Khait, George; and Fish, William R., 4,402,588, Cl. 354-106.000.
Fisher Controls Company, Inc.: *See—*
Fagerlund, Allen C., 4,402,485, Cl. 251-118.000.
Flanigan, Charles D.; and Wiener, Edward R., to International Business Machines Corporation. Apparatus for mounting and packaging data processing devices. 4,403,271, Cl. 361-383.000.
Fleischer, Niles A., to Ray-O-Vac Corporation. Treatment of lithium anodes. 4,402,995, Cl. 427-58.000.
Floegel, Karl: *See—*
Lierke, Ernst-Guenter; Heide, Wolfgang; Grossbach, Rudolf; Floegel, Karl; and Erdmann, Hartmut, 4,402,458, Cl. 239-102.000.
Flood, Thomas W., to Harvstone Manufacturing Corporation. Mounting system for suspended lighting fixtures. 4,403,278, Cl. 362-396.000.
Flukiger, Rene, to Kernforschungszentrum Karlsruhe GmbH. Method for producing superconductive wires of multifilaments which are encased in copper or a copper alloy and contain niobium and aluminum. 4,402,768, Cl. 148-11.50F.
FMC Corporation: *See—*
Ehret, Thomas M.; and Ovieve, Gerard E., 4,402,350, Cl. 141-94.000.
Lill, Melvin H., 4,402,603, Cl. 356-152.000.
Plummer, Ernest L., 4,402,973, Cl. 424-305.000.
Fochtman, Edward G.; Koch, Roger L.; and Forbes, Forrest S., to United States of America, Air Force. Method for treating contaminated wastewater. 4,402,836, Cl. 210-748.000.
Focke & Co.: *See—*
Focke, Heinz; and Balmer, Oskar, 4,402,403, Cl. 206-245.000.
Focke, Heinz; and Balmer, Oskar, to Focke & Co. Gusseted pouch, especially for receiving cut tobacco. 4,402,403, Cl. 206-245.000.
Fohl, Artur, to REPA Feinstanzwerk GmbH. Deflection fitting for a safety belt. 4,402,528, Cl. 280-808.000.
Folliot, Albert: *See—*
Schmidt, Hans-Werner; Beisswenger, Hans; Reh, Lothar; Folliot, Albert; and Iard, Maurice P., 4,402,754, Cl. 106-100.000.
Forbes, Forrest S.: *See—*
Fochtman, Edward G.; Koch, Roger L.; and Forbes, Forrest S., 4,402,836, Cl. 210-748.000.
Ford Motor Company: *See—*
Holubka, Joseph W.; and Dickie, Ray A., 4,403,086, Cl. 528-45.000.
Forrest Redi-Mix Co.: *See—*
Steidinger, Ronald L., 4,402,282, Cl. 119-28.000.
Forster, Heinz; Eue, Ludwig; Schmidt, Robert; and Lurssen, Klaus, to Bayer Aktiengesellschaft. Substituted azolylalkyl phenoxyphenoxyalkane-carboxylates as herbicides and plant growth regulators. 4,402,727, Cl. 71-74.000.
Fortmann, William E.; Mrazek, James A.; Telakowski, Robert; and Sherman, Robert, to United Technologies Corporation. High speed rotary machine bearing mount structure. 4,402,618, Cl. 384-107.000.
Fortner, Walter; Misera, Erich; Landerl, Franz; Robiczek, Gunther; and Berger, Meinhard, to Voest-Alpine Aktiengesellschaft. Protection arrangement for a casting jet emerging from a metallurgical vessel. 4,402,437, Cl. 222-607.000.
Fourcadier, Chantal: *See—*
Grollier, Jean F.; Fiquet, Claire; Fourcadier, Chantal; Dubief, Claude; and Cauwet, Daniele, 4,402,977, Cl. 424-70.000.
Fournex, Robert: *See—*
Christidis, Yani; Fournex, Robert; and Tournemine, Colette, 4,402,978, Cl. 424-317.000.
Fournier, Jean-Michel, to Institut Pasteur. Vaccinating glycopeptidic antigenic fraction with a very high level of immunogenicity, isolated from cultures of pathogenic germs, processes for isolating said fraction and vaccines containing said fraction. 4,402,939, Cl. 424-92.000.
Fowles, Thomas A.: *See—*
Corrigan, William C., Jr.; Fowles, Thomas A.; and Gibbons, Nicholas, 4,402,417, Cl. 215-232.000.
Fox, Leonard P.: *See—*
Gorog, Istvan; and Fox, Leonard P., 4,402,798, Cl. 204-5.000.
Fox, Mitchell; and Washburn, Alfred F., to Washburn, Alfred F. Mechanism for dispensing chemicals from a pressurized container. 4,402,430, Cl. 222-183.000.
Frank, Benno: *See—*
Dammann, Peter; and Frank, Benno, 4,402,179, Cl. 57-336.000.
Franke, Hans-Jurgen: *See—*
Brockhaus, Rudolf; and Franke, Hans-Jurgen, 4,403,098, Cl. 549-532.000.
Frantz Filters, Inc.: *See—*
Cochran, Clarence L., 4,402,287, Cl. 123-196.00A.
Frantz, Robert H., to AMP Incorporated. Locking flat flexible cable to circuit board connector. 4,402,564, Cl. 339-91.00R.
Frazier, Paul D., to Northwest Orthodontics, Inc. Orthodontic safety headgear. 4,402,669, Cl. 433-5.000.
Frick Company: *See—*
Schaeffer, Bruce S., 4,402,189, Cl. 62-79.000.
Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Fabian, Horst; and Thus, Heinz, 4,402,392, Cl. 198-311.000.
Friedemann, Wolfgang: *See—*
Laut, Bernhard; Friedemann, Wolfgang; and Krapp, Gerd, 4,403,059, Cl. 524-399.000.
Friess, Wolfgang. System for the storage of coins and the like. 4,402,399, Cl. 206-0.830.
Frister, Manfred: *See—*
Kreuzer, Helmut; and Frister, Manfred, 4,402,129, Cl. 29-596.000.
Frizzell, Joseph C.: *See—*
Frizzell, Leon E.; and Frizzell, Joseph C., 4,402,333, Cl. 134-138.000.
Frizzell, Leon E.; and Frizzell, Joseph C. Paint roller cleaning device. 4,402,333, Cl. 134-138.000.
Frobose, Walter: *See—*
Stahl, Werner; Frobose, Walter; and Lisfeld, Robert, 4,402,576, Cl. 350-531.000.
Fry, Scott M.; Hempy, Harry O.; and Kittinger, Bruce E., to International Business Machines Corporation. Balancing data-processing work loads. 4,403,286, Cl. 364-200.000.
Fuji Jukogyo Kabushiki Kaisha: *See—*
Ohgami, Masaaki; Shikata, Makoto; and Hara, Kazuo, 4,402,288, Cl. 123-339.000.
Ohgami, Masaaki; and Matsui, Fujio, 4,402,292, Cl. 123-440.000.
Ohgami, Masaaki, 4,402,293, Cl. 123-440.000.
Fuji Photo Film Co., Ltd.: *See—*
Akashi, Goro; and Shirahata, Ryuji, 4,403,002, Cl. 427-255.500.
Horie, Seiji; Nagata, Masayoshi; Nakano, Junji; and Sato, Hideo, 4,403,025, Cl. 430-59.000.
Fujihira, Masamichi: *See—*
Osa, Tetsuo; and Fujihira, Masamichi, 4,403,022, Cl. 429-111.000.
Fujii, Takumi: *See—*
Miura, Mituo; Kukino, Yoshinori; Fujii, Takumi; Sugiyama, Kazunori; Inoue, Takashi; and Ogishima, Mamoru, 4,402,630, Cl. 405-266.000.
Fujii, Tuneo. Impact guard for declutching snow thrower. 4,402,149, Cl. 37-245.000.
Fujimoto, Masaya: *See—*
Sano, Hiromi; Suzuki, Masatoshi; Fujimoto, Masaya; Yamakawa Mitihiro; and Saito, Toshitaka, 4,402,820, Cl. 204-425.000.
Fujimoto, Takako: *See—*
Yamanaka, Motosuke; Saito, Isao; Yamatsu, Kiyomi; and Fujimoto, Takako, 4,402,966, Cl. 424-273.00R.
Fujinami, Akira: *See—*
Akiba, Keiichiro; Satomi, Takeo; Fujinami, Akira; Asano, Yasuhisa; Kameda, Nobuyuki; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 4,402,734, Cl. 71-111.000.
Fujioka, Yoshiki: *See—*
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,403,179, Cl. 318-632.000.
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,403,181, Cl. 318-664.000.
Fujishima, Tooru, to Hitachi, Ltd. Apparatus for correcting a variation in the time base of a reproduced video signal. 4,403,244, Cl. 358-19.000.
Fujita, Takafumi: *See—*
Kurabayashi, Hiroshi; Sakaba, Kozo; and Fujita, Takafumi, 4,402,483, Cl. 248-636.000.
Fujitsu Fanuc Limited: *See—*
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,403,179, Cl. 318-632.000.
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,403,181, Cl. 318-664.000.
Fujitsu Limited: *See—*
Araihara, Satoshi, 4,402,600, Cl. 355-125.000.
Kikuchi, Ryoichi, 4,403,285, Cl. 364-200.000.
Maeda, Koh-ichi, 4,403,307, Cl. 365-174.000.
Fujitsu Ten Limited: *See—*
Hayashi, Kazuhiko; Tanigawa, Kou; and Egusa, Takashi, 4,402,376, Cl. 180-179.000.
Takayama, Kazuo, 4,403,349, Cl. 455-219.000.
Fujiwara, Yoshitaka: *See—*
Kuwako, Tomohisa; and Fujiwara, Yoshitaka, 4,402,194, Cl. 62-353.000.
Fukuda, Kunio: *See—*
Yamashita, Izumi; Yoshida, Kazuo; Kusumi, Yuji; Fukuda, Kunio; and Tazaki, Kichiya, 4,403,057, Cl. 524-288.000.
Fukushima, Tomio, to Kabushiki Kaisha Meidensha. Pressure responsive monitoring device for vacuum circuit interrupters. 4,402,224, Cl. 73-705.000.
Fullalove, Ronald M. Pictorial phonorecord mat. 4,402,405, Cl. 369-271.000.
Fung, Shun C.: *See—*
Tauster, Samuel J.; and Fung, Shun C., 4,402,869, Cl. 252-471.000.
Furuichi, Shuhei: *See—*
Okano, Michiaki; and Furuichi, Shuhei, 4,402,326, Cl. 128-774.000.
Gadberry, Donald L., to U.S.D. Corp. Breathing gas mask. 4,402,316, Cl. 128-201.150.
Gafert, Reinhard: *See—*
Rosler, Helmut; and Gafert, Reinhard, 4,403,334, Cl. 377-44.000.
Gainer, Robert E.: *See—*
Burke, Michael A.; and Gainer, Robert E., 4,402,905, Cl. 419-10.000.
Galbierz, Richard T., to Perfection Manufacturing Company, The. Exercise bicycle. 4,402,503, Cl. 272-73.000.
Gallien, Jacqueline: *See—*
Kalopissis, Gregoire; Gallien, Jacqueline; Jacquet, Bernard; Bauer, Daniel; and Chalaye, Jean P., 4,402,698, Cl. 8-405.000.
Gallitzendorfer, Joseph; Pfeiffer, Peter; and Tomforde, Johann, to Daimler-Benz Aktiengesellschaft. Bumper for motor vehicles. 4,402,537, Cl. 293-149.000.
Galyean, Rodney P. Tunnel with off-center shaft therein having further shafts slideable therethrough. 4,402,499, Cl. 272-1.00R.
Gamet, Lucien: *See—*
Willem, Michel; and Gamet, Lucien, 4,402,540, Cl. 294-19.00R.

Gans, Werner A.; Borgardt, Frank G.; and Lo, George A., to United States of America, Navy. Fully consumable remotely operated seal. 4,402,516, Cl. 277-26.000.
Garbacik, Thomas J. Vacuum cleaner attachment. 4,402,105, Cl. 15-398.000.
Gardlund, Goran W., to Minnesota Mining & Manufacturing Company. Envelope for transparencies for overhead projectors and like projecting apparatuses. 4,402,585, Cl. 353-120.000.
Gardner, Robert B.: *See—*
Weathers, Douglas W.; and Gardner, Robert B., 4,402,406, Cl. 206-326.000.
Garotta, Robert J., to Compagnie Generale de Geophysique. Process and an apparatus for seismic geophysics with processing by focuses. 4,403,313, Cl. 367-61.000.
Garrett, Theodore T.: *See—*
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McVay, Lance; and Lilienfeld, Pedro, 4,402,607, Cl. 356-338.000.
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Laghi, Aldo A., 4,402,657, Cl. 425-183.000.
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Cross, William E.; and Nestor, Charles R., 4,402,897, Cl. 264-118.000.
Factor, James R., 4,403,008, Cl. 428-117.000.
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Selby, Donald A.; and Silk, Leonard P., 4,402,111, Cl. 16-308.000.
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Giolito, Silvio L.; Goswami, Jagadish C.; and Weil, Edward D., to Stauffer Chemical Company. Carbonate esters, carbonate ester compositions, and plasticized compositions. 4,403,056, Cl. 524-280.000.
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Goto, Issei; Tanabe, Kuniaki; and Okita, Hiroshi, to Nihon Parkerizing Co., Ltd. Method and apparatus for treating steel sheet structures. 4,402,765, Cl. 148-6.15R.

Govaert, Johan A., to Baird Corporation. Pulse processor. 4,403,149, Cl. 250-369.000.

Graasl, Hans P.; Herbst, Heiner; and Endlicher, Frank, to Siemens Aktiengesellschaft. Method and apparatus for binary coding of sensor signals from optoelectronic sensor elements. 4,403,141, Cl. 250-214.00R.

Grabbe, Dimitry G.; and Korsunsky, Iosif, to AMP Incorporated. Socket for integrated circuit package with extended leads. 4,402,561, Cl. 339-17.0CF.

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Graham, Roderick K., to N. B. Love Industries Pty. Limited. Cold bonding mineral pelletization. 4,402,736, Cl. 75-0.50R.

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Granryd, Thorvald G. Lightweight traction intensifying means for agricultural wheeled tractors and the like. 4,402,357, Cl. 152-216.000.

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Green, David T., to United States Surgical Corporation. Surgical fastener and means for applying same. 4,402,445, Cl. 227-19.000.

Green, Hal; and Sorensen, Norman L., to American Sunroof Corporation. Sunroof latching mechanism. 4,402,536, Cl. 292-113.000.

Green, Morgan: *See*—
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Grenier, Wilfred J.; Zuckerman, Lee B.; Ferris, John P.; and DeFalco, Joseph, to General Industries, Inc. Pavement marker. 4,402,628, Cl. 404-16.000.

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Kronenwetter, Christopher A.; Harris, Geoffrey L.; and Kimmel, Edward R., 4,402,737, Cl. 75-0.5BB.
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Guastavino, Thomas G., to United States of America, America. Rheological testing method. 4,402,215, Cl. 73-55.000.

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Gulko, Bruce N. Folded applicator. 4,402,696, Cl. 604-897.000.

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Gustavsson, Olle; and Sundmar, Goran, to Aktiebolaget Bofors. Loading pendulum. 4,402,253, Cl. 89-46.000.

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Haas, Joseph S.; and Peyman, Gholam A. Artificial implant valve for the regulation of intraocular pressure. 4,402,681, Cl. 604-9.000.

Habegger, Willy. Rail-transportation system. 4,402,272, Cl. 104-178.000.

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Hall, Wm. Cornelius; and Peterson, J. Merriam, to Chemtree Corporation. Cementitious compositions with early high strength development and methods for controlling setting rate. 4,402,749, Cl. 106-76.000.
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Halm, Roland L.; and Rentsch, Stefan F., to Dow Corning Corporation. Separation of chlorosilanes by extractive distillation. 4,402,797, Cl. 203-58.000.
Halpern, Judith. Sharpener for cosmetic pencils. 4,402,354, Cl. 145-3.500.
Halpern, Peter H.; and Mallory, Peter E., to Microdyne Corporation. Method and apparatus for transmitting data over limited bandwidth channels. 4,403,331, Cl. 375-37.000.
Hamada, Masanori, to Clarion Co., Ltd. Diversity receiver. 4,403,343, Cl. 455-134.000.
Hamada, Toshimitsu; Makihira, Hiroshi; Nakagawa, Yasuo; and Udaka, Makoto, to Hitachi, Ltd.; and Japan Nuclear Fuel Co., Ltd. Surface defect inspection system. 4,403,294, Cl. 364-507.000.
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Handforth, John A., to Imperial Chemical Industries PLC. Printing process and printing compositions. 4,402,262, Cl. 101-129.000.
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Hanson, Bruce L.; and Wolvek, Sidney, to Datascope Corp. Balloon catheter with rotatable energy storing support member. 4,402,307, Cl. 128-1.00D.
Hara, Akio: *See*—
Nakai, Tetsuo; Yazu, Shuji; and Hara, Akio, 4,403,015, Cl. 428-565.000.
Hara, Kazuo: *See*—
Ohgami, Masaaki; Shikata, Makoto; and Hara, Kazuo, 4,402,288, Cl. 123-339.000.
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Maruyama, Teruo; Hara, Masao; and Morikawa, Yoshiyuki, 4,402,653, Cl. 418-76.000.
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Harbaugh, Steven K.; and Mitchell, Frank R., to American Hoechst Corporation. Precision traveling optical table assembly. 4,402,482, Cl. 248-466.000.
Hardison, Leslie C.: *See*—
Nagl, Gary J.; and Hardison, Leslie C., 4,402,273, Cl. 110-229.000.
Hardy, Robert A., Jr.: *See*—
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Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., to Allied Corporation. Ballistic-resistant article. 4,403,012, Cl. 428-290.000.
Harrel, Jack D.: *See*—
Price, Ralph E.; and Harrel, Jack D., 4,402,161, Cl. 51-101.00R.
Harris Corporation: *See*—
Swanson, Hilmer I., 4,403,197, Cl. 330-10.000.
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Kronenwetter, Christopher A.; Harris, Geoffrey L.; and Kimmel, Edward R., 4,402,737, Cl. 75-0.5BB.
Harris & Thrush Manufacturing Company: *See*—
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Flood, Thomas W., 4,403,278, Cl. 362-396.000.
Hashimoto, Kunio, to Haruo Okazaki. Method and device for preventing a flexible tubular belt from twisting for use in a tubular belt conveyer. 4,402,395, Cl. 198-807.000.
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Sone, Yoshiaki; Hashimoto, Susumu; Ishikawa, Kiyotsugu; and Kunii, Takao, 4,403,247, Cl. 358-44.000.
Hata, Kiyoshi. Emergency information communicating device. 4,403,341, Cl. 455-100.000.
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Hattori, Shinichiro, to Olympus Optical Co., Ltd. Endoscope for medical treatment. 4,402,311, Cl. 128-4.000.
Hausermann, Walter: *See*—
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Hawkins, Ronald G.; Davoy, Edward J.; Hooker, Robert M.; and Muniak, John E., to Aluminum Company of America. Tool for installing metal clips. 4,402,122, Cl. 29-243.560.
Hayashi, Kazuhiko; Tanigawa, Kou; and Egusa, Takashi, to Toyota Jidosha K.K.; and Fujitsu Ten Limited. Vehicle speed control apparatus. 4,402,376, Cl. 180-179.000.
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Haygood, Jerry, to Reed Tubular Products Company. Apparatus for rethreading tubular members. 4,402,120, Cl. 29-40.000.
Hazama, Motoo; Aratani, Tadatoshi; Suzukamo, Gohu; and Takahashi, Takeo, to Sumitomo Chemical Company, Limited. Optically active imidazolidin-2-one derivatives. 4,403,096, Cl. 548-321.000.
Head, Robert M. Word card game. 4,402,513, Cl. 273-296.000.
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Acker, Alvin W.; and Headrick, Clyde R., 4,402,181, Cl. 60-427.000.
Heath, Rodney T.: *See*—
Gerlach, Charles R.; and Heath, Rodney T., 4,402,652, Cl. 417-404.000.
Heckelman, James D.: *See*—
Walker, Richard E.; Heckelman, James D.; and Ziemke, Robert A., 4,403,143, Cl. 250-227.000.

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Arnold, John; Groeneveld, Wilbur E.; Heckley, Warner; Kluver, Leroy M.; and Kunkle, Richard W., 4,402,176, Cl. 56-341.000.

Heed, Bjorn: *See*—
Witte, Stefan H.; and Heed, Bjorn, 4,402,279, Cl. 118-326.000.

Heeres, Jan; and Hendrickx, Robert, to Janssen Pharmaceutica N.V. Heterocyclic derivatives of [4-(piperazin-1-ylphenyloxymethyl)-1,3-dioxolan-2-ylmethyl]-1H-imidazoles and 1H-1,2,4-triazoles. 4,402,957, Cl. 424-250.000.

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Lierke, Ernst-Guenter; Heide, Wolfgang; Grossbach, Rudolf; Floegel, Karl; and Erdmann, Hartmut, 4,402,458, Cl. 239-102.000.

Heidmann, Richard; and Poisson, Jean, to Societe Europeenne De Propulsion. Anti-tank mine with wide surface of action. 4,402,271, Cl. 102-362.000.

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Heine, Heinrich, to Bayer Aktiengesellschaft. Thermosetting molding compositions, a process for their production and a process for the production of moldings using the molding compositions. 4,403,064, Cl. 524-494.000.

Heinemann, Henning: *See*—
Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Heinemann, Henning; Wolf, Klaus-Ullrich; Hell, Insa; and Hempel, Reinhard, 4,402,981, Cl. 424-324.000.

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Paasonen, Hannu I.; Salmi, Pekka M.; and Heinonen, Jarmo, 4,402,557, Cl. 308-3.900.

Hell, Insa: *See*—
Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Heinemann, Henning; Wolf, Klaus-Ullrich; Hell, Insa; and Hempel, Reinhard, 4,402,981, Cl. 424-324.000.

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Hellige, GmbH: *See*—
Hofmann, Gerhard; and Taaks, Hermann, 4,403,215, Cl. 340-573.000.

Helmling, Rupert: *See*—
Armerding, Rainer; Helmling, Rupert; Kopp, Waldemar; Wagner, Harry; Ehrt, Peter; and Boser, Emil, 4,403,163, Cl. 310-213.000.

Helser, Jerry L., to Owens-Corning Fiberglas Corporation. Method for making xonotlite insulation by foaming an aqueous slurry of calcareous and siliceous reactants and cellulosic and glass fibers. 4,402,892, Cl. 264-42.000.

Helwig, Edward J.: *See*—
Bird, James E.; and Helwig, Edward J., 4,402,747, Cl. 106-14.420.

Hempel, Reinhard: *See*—
Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Heinemann, Henning; Wolf, Klaus-Ullrich; Hell, Insa; and Hempel, Reinhard, 4,402,981, Cl. 424-324.000.

Hempy, Harry O.: *See*—
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Hendrickx, Robert: *See*—
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Henkel Kommanditgesellschaft auf Aktien: *See*—
Laut, Bernhard; Friedemann, Wolfgang; and Krapp, Gerd, 4,403,059, Cl. 524-399.000.
Rose, David; and Maak, Norbert, 4,402,699, Cl. 8-412.000.
Wiegner, Georg; and Geneschen, Peter, 4,402,431, Cl. 222-207.000.

Henn, Gunter. Detachable pipe joint. 4,402,532, Cl. 285-18.000.

Henning, Sten A.: *See*—
von Dardel, Guy; Henning, Sten A.; and Svensson, Leif O. G., 4,402,927, Cl. 423-335.000.

Henning, Walter, to Messrs. Jos. Zimmerman. Cylindrical coil carrier for receiving threads and yarns. 4,402,474, Cl. 242-118.100.

Henry, James, to Emhart Industries, Inc. Refrigerated display case having an accordion-type combined air duct and service door. 4,402,192, Cl. 62-256.000.

Henry, Wayne M.; Mannuzza, Frank J.; and Girgis, Makram M., to Miles Laboratories, Inc. Detection of cell membrane antigens and corresponding antibodies. 4,403,042, Cl. 436-519.000.

Hentschel, Claus: *See*—
Heller, Harold; Schapel, Dietmar; Hentschel, Claus; and Dahm, Manfred, 4,402,725, Cl. 71-27.000.

Herbst, Heiner: *See*—
Graasl, Hans P.; Herbst, Heiner; and Endlicher, Frank, 4,403,141, Cl. 250-214.00R.

Hercules Incorporated: *See*—
Maslanka, William W.; and Spence, Gavin G., 4,403,062, Cl. 524-458.000.
Maslanka, William W.; and Spence, Gavin G., 4,403,063, Cl. 524-458.000.

Hess, Robert L.; and Neri, Zeno, to Westinghouse Electric Corp. Gas-insulated bushing having finger contact expansion joint. 4,403,105, Cl. 174-31.00R.

Hetzler, Lewis R.: *See*—
Huntzinger, Gerald O.; Butler, Raymond O., Jr.; Hetzler, Lewis R.; and Delaplane, John, 4,403,121, Cl. 200-1.00R.

Hewlett-Packard Company: *See*—
Melera, Attilio; and Neukermans, Armand, 4,403,147, Cl. 250-288.000.
Witt, Rudiger; and Courtin, Erich, 4,403,184, Cl. 324-78.00R.

Hi-Shear Corporation: *See*—
Olander, Donald E.; and Petersen, Donald W., 4,402,774, Cl. 149-19.300.

Hibino, Sadayoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Pole change type motor. 4,403,160, Cl. 310-184.000.

Hickling, David J.: *See*—
Prince, Eric; Greenslade, Walter P.; and Hickling, David J., 4,403,116, Cl. 179-100.00D.

Higashiyama, Kazuhiro, to Nissan Motor Company, Limited. Electronic engine control system with checking unit for sensors and actuators therein. 4,402,217, Cl. 73-117.300.

Higuchi, Takashi: *See*—
Nakao, Satoshi; Taguchi, Yasuo; and Higuchi, Takashi, 4,402,299, Cl. 123-632.000.

Hikage, Toru: *See*—
Koike, Shinkichi; Kimura, Akira; Hikage, Toru; and Sugiura, Sadao, 4,402,884, Cl. 264-8.000.

Hildebrandt, Ullrich; Lang, Udo; Horner, Berndt; and Schramm, Walter, to Linde AG. Method of effecting highly exothermic reactions. 4,402,822, Cl. 208-10.000.

Hilfman, Lee; Malloy, Thomas P.; and Johnson, Russell W., to UOP Inc. Method for the removal of metal alkaryl sulfonate from hydrocarbons. 4,402,825, Cl. 208-237.000.

Hills, Richard E.: *See*—
Honath, Harold F.; Reiling, Gebhart J.; Swinderman, Robert H.; and Hills, Richard E., 4,402,422, Cl. 220-327.000.

Hilti Aktiengesellschaft: *See*—
Kessler, Jurgen, 4,402,639, Cl. 411-51.000.
Seghezzi, Hans-Dieter; and Deutschenbaur, Paul, 4,402,637, Cl. 411-31.000.

Hinden, Jean M.: *See*—
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Hini, Eugen: *See*—
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Hino, Naganori: *See*—
Akiba, Keiichiro; Satomi, Takeo; Fujinami, Akira; Asano, Yasuhisa; Kameda, Nobuyuki; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 4,402,734, Cl. 71-111.000.

Hinojosa, Domingo: *See*—
Meaden, Thomas F.; and Hinojosa, Domingo, 4,402,519, Cl. 279-76.000.

Hinze, Jay W.; Robinson, Mark L.; and Lawson, Richard D., to Owens-Corning Fiberglas Corporation. Fabrication of alloys. 4,402,767, Cl. 148-11.50P.

Hipps, Larry W. Pressure controlled electro-hydraulic brake system. 4,402,553, Cl. 303-3.000.

Hirano, Tomoyuki: *See*—
Aoki, Hideto; Hirano, Tomoyuki; Watanabe, Mitsugu; Kamano, Toshiyuki; Tsunoda, Mitsunori; Akiyama, Toshikazu; Kanehiro, Mitsuyasu; Kubota, Mitsuji; and Sato, Masayuki, 4,403,155, Cl. 307-10.00R.

Hirasawa, Shigemi: *See*—
Misono, Masayoshi; Akiyama, Masatoshi; and Hirasawa, Shigemi, 4,403,170, Cl. 313-479.000.

Hirozawa, Stanley T.: *See*—
Wilson, Joe C.; and Hirozawa, Stanley T., 4,402,847, Cl. 252-75.000.

Hirsch, Arthur E.; and Dunn, Donnell L., to J. I. Case Company. Vehicular plural voltage system. 4,403,279, Cl. 363-60.000.

Hirsch, Bodo; Horn, Gunter; and Reuther, Hellmut, to VEB Chemiewerk Nunchritz. Silicon-containing nitro dyes and process for making the same. 4,403,099, Cl. 556-422.000.

Hitachi, Ltd.: *See*—
Fujishima, Tooru, 4,403,244, Cl. 358-19.000.
Hamada, Toshimitsu; Makihira, Hiroshi; Nakagawa, Yasuo; and Udaka, Makoto, 4,403,294, Cl. 364-507.000.
Hayashi, Makoto; Sakata, Shinji; and Shimizu, Tasuku, 4,402,227, Cl. 73-812.000.
Iso, Yoshimi; Oshitani, Eijiro; Ohashi, Shin-ichi; and Inoue, Shigeki, 4,403,347, Cl. 455-193.000.
Ito, Shigeyuki; and Watatani, Yoshizumi, 4,403,262, Cl. 360-19.100.
Kakehi, Yutaka; Kasai, Kenjirou; Ierada, Katsuyuki; and Beppu, Tadashi, 4,402,527, Cl. 280-707.000.
Kato, Takao; Takemura, Tetsuo; Horiki, Akira; and Watanabe, Noboru, 4,403,322, Cl. 370-110.100.
Kawamura, Kotaro; and Ozaki, Shinji, 4,403,260, Cl. 360-10.200.
Misono, Masayoshi; Akiyama, Masatoshi; and Hirasawa, Shigemi, 4,403,170, Cl. 313-479.000.
Miyashita, Kunio; Yamashita, Seizi; Watanabe, Hiroshi; and Tanabe, Shoji, 4,403,161, Cl. 310-156.000.
Mochiji, Kozo; Maruyama, Yozi; Okazaki, Shinji; and Murai, Fumio, 4,403,151, Cl. 250-492.200.
Nakano, Masaki; and Tanimizu, Shinkichi, 4,403,171, Cl. 313-486.000.
Seki, Kunio; and Takeshita, Ritsuji, 4,403,240, Cl. 357-48.000.
Sugawara, Katuo; Ohe, Etsuo; Tani, Ichitaro; and Tsukioka, Hideo, 4,402,211, Cl. 73-19.000.
Takahashi, Tadashi; Hayashida, Hiroshi; and Miyashita, Kunio, 4,403,187, Cl. 324-208.000.

Taniguchi, Motoya; Ikeda, Minoru; and Akiyama, Nobuyuki, 4,403,336, Cl. 378-035.000.
Tsuruoka, Kazuhiro; and Kanamaru, Hisanobu, 4,402,130, Cl. 29-597.000.
Tsuruoka, Masao, 4,403,242, Cl. 357-71.000.
Watatani, Yoshizumi; and Yoshioka, Atsushi, 4,403,264, Cl. 360-33.100.
Yamaoka, Yukinori; Nakano, Seizo; Takeuchi, Sigetaka; Oishi, Kazuaki; and Sasaki, Koji, 4,403,125, Cl. 200-144.00R.

Hnatchenko, Michael: *See*—
Feinland, Raymond; Pohl, Stanley; and Hnatchenko, Michael, 4,402,700, Cl. 8-416.000.

Ho, Harry H.: *See*—
Ryan, Francis D.; and Ho, Harry H., 4,402,514, Cl. 277-22.000.

Hobbs, Millice F., to Sterling Drug Inc. Method for removing scale from porous diffusion tiles. 4,402,758, Cl. 134-3.000.

Hockswender, Thomas R.: *See*—
Christenson, Roger M.; and Hockswender, Thomas R., 4,403,085, Cl. 528-45.000.

Hodges, Hubert E. Stump cutting machine. 4,402,352, Cl. 144-2.00N.

Hodgson, R. W.; and Dahl, Frank L. Warning-signal-producing system for a motor vehicle responsive to a vehicle-presence-indicating radio wave signal emitted by another vehicle and indicative of its presence. 4,403,208, Cl. 340-33.000.

Hoechst Aktiengesellschaft: *See*—
Panter, Herbert; Klein, Hermann; Nolte, Gerhard; Preisler, Eberhard; Stephan, Hans-Werner; and Reichert, Gunter, 4,402,812, Cl. 204-275.000.
Schon, Klaus-Peter; and Back, Gunter, 4,402,592, Cl. 355-3.00R.
Uhrig, Heinz; Weide, Joachim; and Deubel, Reinhold, 4,403,077, Cl. 525-502.000.
Uhrig, Heinz; and Ehl, Klaus, 4,403,079, Cl. 525-507.000.

Hofer, Gerald, to Robert Bosch GmbH. Fuel injection pump. 4,402,290, Cl. 123-359.000.

Hoff, Raymond E., to Chemplex Company. Polymerization catalyst and method. 4,402,861, Cl. 252-429.00B.

Hoffman, James S.: *See*—
Murphy, Michael P.; and Hoffman, James S., 4,403,207, Cl. 338-34.000.

Hoffman, Norman E., to AMP Incorporated. Stamped circuit board. 4,403,107, Cl. 174-68.500.

Hoffmann, Christian: *See*—
Zollner, Manfred; Hoffmann, Christian; and Zwicker, Eberhard, 4,403,118, Cl. 179-107.0FD.

Hoffmann-La Roche Inc.: *See*—
Martin, Joseph A., 4,402,968, Cl. 424-273.00R.
Trybulski, Eugene J., 4,402,876, Cl. 260-239.0BB.

Hoffrichter, Ingo: *See*—
Knop, Hans-Georg; and Hoffrichter, Ingo, 4,403,249, Cl. 358-80.000.

Hofmann, Gerhard; and Taaks, Hermann, to Hellige, GmbH. Apparatus for automatically monitoring body functions. 4,403,215, Cl. 340-573.000.

Hogan, Richard H.; and Dahm, Jonathan C., to Motorola, Inc. Process for improving nitride deposition on a semiconductor wafer by purging deposition tube with oxygen. 4,402,997, Cl. 427-94.000.

Hogan, William M., to AGL Corporation. Method and device for detecting and locating leaks in pipelines. 4,402,213, Cl. 73-40.50R.

Hokama, Takeo, to Velsicol Chemical Corporation. Heterocyclic amides of phenoxyphenoxyalkanoic acids. 4,402,729, Cl. 71-88.000.

Holberger, Kenneth D.; and Samson, Joseph E., to Data General Corporation. Data processing system using a high speed data channel for providing direct memory access for block data transfers. 4,403,282, Cl. 364-200.000.

Holden, Barry W.: *See*—
Smith, Jack B.; Holden, Barry W.; and Tanner, Robert H., 4,402,384, Cl. 181-210.000.

Holl, Fred: *See*—
Weisenburger, Siegfried; Seiffert, Hartmut; and Holl, Fred, 4,402,724, Cl. 65-128.000.

Hollandse Signaalapparaten B.V.: *See*—
Baasch, Hans-Friedrich, 4,402,250, Cl. 89-41.0AA.

Holmes, John G.; and Resnick, Brian J., to Cincinnati Milacron Industries, Inc. Apparatus for dynamically controlling the tool centerpoint of a robot arm off a predetermined path. 4,403,281, Cl. 364-170.000.

Holtman, Richard K.: *See*—
Betzner, William E.; and Holtman, Richard K., 4,402,896, Cl. 264-115.000.

Holubka, Joseph W.; and Dickie, Ray A., to Ford Motor Company. Coating composition comprising chain-extendable crosslinkable polyol and diblocked diisocyanate. 4,403,086, Cl. 528-45.000.

Honath, Harold F.; Reiling, Gebhart J.; Swinderman, Robert H.; and Hills, Richard E., to Pittsburgh-Des Moines Corporation. Field adjustable seal. 4,402,422, Cl. 220-327.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Hoshi, Norio, 4,402,379, Cl. 180-225.000.
Shibata, Yasuo; Miyamaru, Yukio; Kawada, Shigeo; and Hatanaka, Kaoru, 4,403,211, Cl. 340-73.000.

Honda, Haruhisa: *See*—
Tomosada, Masahiro; Honda, Haruhisa; and Tanaka, Kanou, 4,402,598, Cl. 355-69.000.

Honda, Kiyoshi: *See*—
Kuriyama, Kazuya; Murakami, Shigeru; Sugawara, Ryozo; and Honda, Kiyoshi, 4,402,887, Cl. 264-22.000.

Honeywell, Inc.: *See*—
Bade, Edward R.; and Diddens, Paul A., 4,403,225, Cl. 346-35.000.
Lamberg, John R.; and Ferris, Joseph E., 4,403,221, Cl. 343-700.0MS.

Honkawa, Yoshinori, to Ryobi, Ltd. Automatic ink or water quantity adjusting device for printing machine. 4,402,263, Cl. 101-350.000.

Honma, Masayuki, to Nissan Motor Company, Ltd. Internal combustion engine rocker arm arrangement having a readily replaceable plate spring. 4,402,284, Cl. 123-90.390.

Hooker, Robert M.: *See*—
Hawkins, Ronald G.; Davoy, Edward J.; Hooker, Robert M.; and Muniak, John E., 4,402,122, Cl. 29-243.560.

Hoover Universal, Inc.: *See*—
Smith, Jack B.; Holden, Barry W.; and Tanner, Robert H., 4,402,384, Cl. 181-210.000.

Hopley, Eric T., to U. G. Closures & Plastics Limited. Integrally sealed container with cap. 4,402,415, Cl. 215-32.000.

Horiba, Ltd.: *See*—
Kotani, Haruo; and Haga, Tomoyuki, 4,403,186, Cl. 324-204.000.

Horie, Seiji; Nagata, Masayoshi; Nakano, Junji; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Electrophotographic photoreceptor. 4,403,025, Cl. 430-59.000.

Horiki, Akira: *See*—
Kato, Takao; Takemura, Tetsuo; Horiki, Akira; and Watanabe, Noboru, 4,403,322, Cl. 370-110.100.

Horino, Shigeo: *See*—
Ohba, Hiroshi; and Horino, Shigeo, 4,402,410, Cl. 209-534.000.

Horn, Gunter: *See*—
Hirsch, Bodo; Horn, Gunter; and Reuther, Hellmut, 4,403,099, Cl. 556-422.000.

Horner, Berndt: *See*—
Hildebrandt, Ullrich; Lang, Udo; Horner, Berndt; and Schramm, Walter, 4,402,822, Cl. 208-10.000.

Hornle, Reinhold: *See*—
Gleinig, Harald; Molls, Hans-Heinz; Koll, Jochen; Dick, Gottfried; Hornle, Reinhold; and Kunert, Friedrich, 4,402,701, Cl. 8-436.000.
Kaspar, Vaclay; Walz, Klaus; Molls, Hans-Heinz; Hornle, Reinhold; and Skerhut, Rainer, 4,402,702, Cl. 8-524.000.

Horodysky, Andrew G.; and Kaminski, Joan M., to Mobil Oil Corporation. Friction reducing additives and compositions thereof. 4,402,842, Cl. 252-47.500.

Horst, Floyd E.; and Krieder, Robert M. Apparatus for producing alcohol fuel. 4,402,792, Cl. 202-159.000.

Horton Manufacturing Co., Inc.: *See*—
Rechkin, Mark, 4,402,625, Cl. 403-7.000.

Hoshi, Noboru: *See*—
Takagishi, Yasushi; Doi, Yoshio; Aita, Kanji; and Hoshi, Noboru, 4,402,692, Cl. 604-890.000.

Hoshi, Norio, to Honda Giken Kogyo Kabushiki Kaisha. Air cleaner system for motorcycles. 4,402,379, Cl. 180-225.000.

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Whipps, Patrick A., 4,402,776, Cl. 149-108.200.

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Dyer, Billy F., 4,402,495, Cl. 267-125.000.

Hughes, Vincent L., to Exxon Research & Engineering Co. Isomerization and polymerization of hydrocarbon resins. 4,403,080, Cl. 526-76.000.

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Jordan, William D.; Hundt, Roger C.; and Pritchett, James D., 4,403,102, Cl. 174-16.0HS.

Hungerford, Gordon P., to Mobil Oil Corporation. Method of preparing a concentrated acrylonitrile polymer solution. 4,403,055, Cl. 524-173.000.

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Huntzinger, Gerald O.; Butler, Raymond O., Jr.; Hetzler, Lewis R.; and Delaplane, John, to General Motors Corporation. Remote control unit. 4,403,121, Cl. 200-1.00R.
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Ward, Irl E., Jr.; Hallquist, Lisa G.; and Hurley, Thomas J., 4,403,029, Cl. 430-258.000.
Hybre, Jean: *See—*
Granek, Roger; Hybre, Jean; and Drobecq, Michel, 4,403,345, Cl. 455-182.000.
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Schmidt, Hans-Werner; Beisswenger, Hans; Reh, Lothar; Folliot, Albert; and Iard, Maurice P., 4,402,754, Cl. 106-100.000.
Ichiyanagi, Toshikazu, to Canon Kabushiki Kaisha. Focusing system. 4,402,586, Cl. 354-23.00D.
ICOT Corporation: *See—*
Kelly, Bruce, 4,403,111, Cl. 178-69.00R.
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Ikeguchi, Nobuyuki, to Mitsubishi Gas Chemical Company, Inc. Curable resin composition. 4,403,073, Cl. 525-374.000.
Ikeura, Kenji, to Nissan Motor Co., Ltd. Idle speed control method and system for an internal combustion engine. 4,402,289, Cl. 123-339.000.
Illinois Tool Works Inc.: *See—*
Peterson, Francis C., 4,402,640, Cl. 411-112.000.
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Kitamura, Hajime; Imada, Kiyoshi; and Eguchi, Yoshitugu, 4,402,893, Cl. 264-53.000.
Imai, Chihiro: *See—*
Miyazaki, Makoto; Nomura, Takeshi; Imai, Chihiro; and Yoda, Makoto, 4,402,863, Cl. 252-429.00B.
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Backhouse, Alan J., 4,403,003, Cl. 427-407.100.
Boulton, Thomas W.; and Darwent, Brian J., 4,402,810, Cl. 204-255.000.
Imperial Chemical Industries PLC: *See—*
Beardsmore, Andrew J.; and Powell, Keith A., 4,402,831, Cl. 210-606.000.
Handforth, John A., 4,402,262, Cl. 101-129.000.
Impro Products, Inc.: *See—*
Collins Mary E.; and Collins, Robert A., 4,402,938, Cl. 424-85.000.
Inductive Control Systems, B.V.: *See—*
Ruumpol, Geurt J., 4,403,175, Cl. 318-53.000.
Industrial Energy Specialists, Inc.: *See—*
Peters, Gilbert E., 4,402,502, Cl. 272-73.000.
Inmos Corporation: *See—*
Slemmer, William C., 4,403,158, Cl. 307-297.000.
Inoue, Eiichi: *See—*
Shimizu, Isamu; Shirai, Shigeru; and Inoue, Eiichi, 4,403,026, Cl. 430-65.000.
Inoue, Hitoshi: *See—*
Shibata, Souichi; Inoue, Hitoshi; and Katazawa, Kenji, 4,402,559, Cl. 308-189.00R.
Inoue, Shigeki: *See—*
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Inoue, Takashi: *See—*
Miura, Mituo; Kukino, Yoshinori; Fujii, Takumi; Sugiyama, Kazunori; Inoue, Takashi; and Ogishima, Mamoru, 4,402,630, Cl. 405-266.000.
Inquimet Sociedad Anonima Industrial Comercial Y Agraria: *See—*
Dominguez, Aurelio D., 4,402,361, Cl. 165-156.000.
Institut Pasteur: *See—*
Fournier, Jean-Michel, 4,402,939, Cl. 424-92.000.
Intermedicat GmbH: *See—*
Buhler, Wolfgang; Brunner, Franz W.; and Schacht, Bodo, 4,402,685, Cl. 604-280.000.
International Business Machines Corp.: *See—*
Abell, William A., Jr.; Craft, James A.; and Morris, Michael L., 4,402,621, Cl. 400-208.000.
Barteck, Joseph C., 4,403,229, Cl. 346-75.000.
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Carroll, Lawrence B., 4,403,269, Cl. 361-91.000.
Christian, John H.; Nolta, Arthur H.; Reed, David G.; Rieck, Richard E.; Tayler, Gerald E.; Truan, Terrell N.; and Williams, John S., 4,403,288, Cl. 364-200.000.
Flanigan, Charles D.; and Wiener, Edward R., 4,403,271, Cl. 361-383.000.
Fry, Scott M.; Hempy, Harry O.; and Kittinger, Bruce E., 4,403,286, Cl. 364-200.000.
Jones, Carol R., 4,402,573, Cl. 350-357.000.
Keefe, George E.; and Sanders, Ian L., 4,403,305, Cl. 365-16.000.
Kekas, Dennis H.; McCray, Charles M.; and Grubbs, William A., 4,402,620, Cl. 400-121.000.
International Flavors & Fragrances Inc.: *See—*
Boden, Richard M.; and Licciardello, Michael, 4,402,985, Cl. 426-3.000.
International Harvester Company: *See—*
Faulkner, Robie L.; and Ogborne, Graham E., 4,402,184, Cl. 60-739.000.
Swanson, William C., 4,402,549, Cl. 298-18.000.
International Minerals & Chem. Corp.: *See—*
Alther, George R., 4,402,881, Cl. 260-448.00C.
International Telephone and Telegraph Corporation: *See—*
Hartmann, Peter J.; and Turbak, Albin F., 4,402,899, Cl. 264-188.000.
Powell, Lloyd J.; and Gerow, John B., 4,402,566, Cl. 339-103.00M.
Invictus Unlimited, Inc.: *See—*
Amara, Louis J.; Paoletti, Peitro; and Tavana, Benito J., 4,402,753, Cl. 106-94.000.
Irifune, Hideki: *See—*
Okamura, Tatsuro; and Irifune, Hideki, 4,402,750, Cl. 106-85.000.
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Clark, Stewart A., 4,403,238, Cl. 357-30.000.
Ise, Yoji. Vacuum generating device. 4,402,651, Cl. 417-182.000.
Ishida, Yukihiko: *See—*
Ishikawa, Kazuhiro; Kawagishi, Yoji; and Ishida, Yukihiko, 4,403,027, Cl. 430-110.000.
Ishihara, Masaru: *See—*
Goto, Eiji; Ishihara, Masaru; Sakurai, Shoji; Enei, Hitoshi; and Takinami, Koichi, 4,403,033, Cl. 435-108.000.
Ishii, Keizo: *See—*
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Ishikawa, Kazuhiro; Kawagishi, Yoji; and Ishida, Yukihiko, to Orient Chemical Industries, Ltd. Toner complexes for developing electrostatic images. 4,403,027, Cl. 430-110.000.
Ishikawa, Kiyotsugu: *See—*
Sone, Yoshiaki; Hashimoto, Susumu; Ishikawa, Kiyotsugu; and Kunii, Takao, 4,403,247, Cl. 358-44.000.
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Ishikura, Shinichi: *See—*
Yoshioka, Tamotsu; Mizuguchi, Ryuzo; Ishikura, Shinichi; and Ishii, Keizo, 4,403,065, Cl. 524-816.000.
Iso, Yoshimi; Oshitani, Eijiro; Ohashi, Shin-ichi; and Inoue, Shigeki, to Hitachi, Ltd. Antenna tuning circuit for AM radio receiver. 4,403,347, Cl. 455-193.000.
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Mattera, Adriano; Quaglino, Marino; Spighi, Pasqualino; and Stolfi, Massimo, 4,402,835, Cl. 210-724.000.
Ito, Jinichi: *See—*
Miyazaki, Kiyoshi; and Ito, Jinichi, 4,403,174, Cl. 318-254.000.
Ito, Shigeyuki; and Watatani, Yoshizumi, to Hitachi, Ltd. Audio signal muting circuit for magnetic recording and reproducing apparatus. 4,403,262, Cl. 360-19.100.
ITT Industries, Inc.: *See—*
Belart, Juan, 4,402,554, Cl. 303-10.000.
ITW Ateco GmbH: *See—*
Arff, Heino, 4,402,641, Cl. 411-510.000.
Ivankov, Vasily A.: *See—*
Yakovlev, Vladimir K.; Lugovoi, Elektron P.; and Ivankov, Vasily A., 4,402,205, Cl. 72-138.000.
Ivchenko, Kim D.: *See—*
Uchitel, Alexandr D.; Zelov, Evgeny A.; Brener, Leonid J.; Baturov, Evgeny G.; Derbas, Anatoly G.; Ivchenko, Kim D.; Kuevda, Jury K.; and Khomich, Ivan T., 4,402,826, Cl. 209-366.500.
Ivner, Sven: *See—*
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Ivony, Jozsef: *See—*
Ratsko, Istvan; Ivony, Jozsef; and Liptai, Nandor, 4,402,522, Cl. 280-432.000.
Iwahashi, Tohru: *See—*
Sunami, Yoshihiko; Sasaki, Keiichi; and Iwahashi, Tohru, 4,402,824, Cl. 208-45.000.
Iwanaga, Yoshiharu: *See—*
Yanagawa, Nobuyuki; Iwanaga, Yoshiharu; and Ishikawa, Toyozi, 4,402,103, Cl. 15-256.520.
Iwasaki, Makoto: *See—*
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Iwata, Hiroo: *See—*
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Izumo, Masanori; Mikami, Kenji; and Kametani, Keiichiro, to Daikin Kogyo Co., Ltd. Apparatus for removing moisture and odors. 4,402,717, Cl. 55-388.000.
Izzo, Patrick T.; and Hardy, Robert A., Jr., to American Cyanamid Company. Novel (substituted phenyl)-1,2,4-triazolo (4,3-A)pyrazines and novel 2-hydrazino-(substituted phenyl)pyrazine intermediates. 4,402,958, Cl. 424-250.000.
J. I. Case Company: *See—*
Hirsch, Arthur E.; and Dunn, Donnell L., 4,403,279, Cl. 363-60.000.
Sickler, Emory J., 4,402,413, Cl. 212-178.000.

J. T. Baker Chemical Company: *See*—
Ward, Irl E., Jr.; Hallquist, Lisa G.; and Hurley, Thomas J., 4,403,029, Cl. 430-258.000.

Jackson, Dale E.: *See*—
Moyer, Ross A.; and Jackson, Dale E., 4,403,135, Cl. 219-137.0PS.

Jackson, Kenneth R.: *See*—
Taldo, Terry J.; and Jackson, Kenneth R., 4,402,331, Cl. 134-58.00R.

Jackson Manufacturing Company: *See*—
Gregory, Ted W., 4,402,438, Cl. 222-625.000.

Jackson, Patricia J., to PPG Industries, Inc. Electrolytic synthesis of aryl alcohols, aryl aldehydes, and aryl acids. 4,402,804, Cl. 204-73.00R.

Jacobs, John H., to Bell & Howell Company. Wideband optical beam deflector. 4,402,575, Cl. 350-486.000.

Jacobson, Robert L., administrator: *See*—
Blakely, Donald W., deceased, 4,402,865, Cl. 252-432.000.

Jacquet, Bernard: *See*—
Kalopissis, Gregoire; Gallien, Jacqueline; Jacquet, Bernard; Bauer, Daniel; and Chalaye, Jean P., 4,402,698, Cl. 8-405.000.

Jacquet, Maurice A., to Valeo. Device for mounting of a shutter in a piping of a heating or air-conditioning installation of a motor vehicle. 4,402,486, Cl. 251-306.000.

James, Kenneth A.: *See*—
Strahan, Virgil H.; James, Kenneth A.; and Quick, William H., 4,403,144, Cl. 250-231.00R.

Jancis, Elmar H.: *See*—
Capolupo, Janet D.; and Jancis, Elmar H., 4,402,858, Cl. 252-400.00A.

Janssen Pharmaceutica N.V.: *See*—
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Japan Nuclear Fuel Co., Ltd.: *See*—
Hamada, Toshimitsu; Makihira, Hiroshi; Nakagawa, Yasuo; and Udaka, Makoto, 4,403,294, Cl. 364-507.000.

Japenga, Robert J.: *See*—
Ericson, Nathaniel H.; and Japenga, Robert J., 4,402,721, Cl. 65-29.000.

Jarvinen, Pauli, to Eflab Oy. Differential capacitive position indicator. 4,403,219, Cl. 340-870.370.

Jenkins, Robert K.: *See*—
Keller, L. Brian; Jenkins, Robert K.; and Luster, Gary, 4,403,069, Cl. 525-197.000.

Jensen, Niels T., to Dansk Gartneri-Teknik A/S. Rack and the use thereof in an opening and closing device for roof hatches and skylights. 4,402,165, Cl. 52-72.000.

Jensen, Warren H.: *See*—
Phipps, Joseph W., III; and Jensen, Warren H., 4,402,479, Cl. 244-116.000.

Jepsen, Tage L. B., to Combustion Engineering, Inc. Treating deep sea nodules by segregation roasting. 4,402,735, Cl. 75-1.00R.

Jessup, James L., to Kendall Company, The. Cannula with soft tip. 4,402,684, Cl. 604-264.000.

John, Puthenveetil K.; Tong, Bok Y.; Wong, Sau K.; and Chik, Kin P. Method of making highly stable modified amorphous silicon and germanium films. 4,402,762, Cl. 148-1.500.

John Zink Company: *See*—
Glomm, Horst M.; Sawatzki, Klaus E.; and Fischer, Dieter, 4,402,666, Cl. 431-177.000.

Johnson, Claris E., Jr.: *See*—
Bomberger, Arthur L.; and Johnson, Claris E., Jr., 4,402,541, Cl. 294-81.00R.

Johnson, Don R., to Harris & Thrush Manufacturing Company. Hydraulic packer safety latch. 4,402,260, Cl. 100-35.000.

Johnson, James J., to General Motors Corporation. Slide lock seat back adjuster. 4,402,546, Cl. 297-374.000.

Johnson & Johnson Products, Inc.: *See*—
Buck, Carl J., 4,403,089, Cl. 528-247.000.

Johnson, Lawrence A.; and Wen, Hwei-mei, to Thiokol Corporation. Process for the preparation of protein isolates of improved quality from vegetable protein sources using alkali metal borohydrides. 4,402,874, Cl. 260-123.500.

Johnson, Russell W.: *See*—
Hilfman, Lee; Malloy, Thomas P.; and Johnson, Russell W., 4,402,825, Cl. 208-237.000.

Johnston, Harold: *See*—
Lask, Zygmunt; and Johnston, Harold, 4,403,106, Cl. 174-59.000.

Jones, Carol R., to International Business Machines Corporation. Materials for electrochromic display devices. 4,402,573, Cl. 350-357.000.

Jones, Jerry R. Vertical axis rotor. 4,402,650, Cl. 416-87.000.

Jones, Russell S.; and Casavant, Albert R. Musical instrument carrier. 4,402,441, Cl. 224-265.000.

Jones, William C. Body-exercise device. 4,402,506, Cl. 272-132.000.

Jordan, William D.; Hundt, Roger C.; and Pritchett, James D., to Thermalloy Incorporated. Heat sink mounting. 4,403,102, Cl. 174-16.0HS.

Joseph, A. David, to Sealed Power Corporation. Transmission fluid filter. 4,402,827, Cl. 210-314.000.

Joseph, John. Game playing method. 4,402,512, Cl. 273-273.000.

Joy Manufacturing Company: *See*—
Bailey, Edward A., 4,402,383, Cl. 181-202.000.
Peterson, Harley G.; and Sidaway, Reginald, 4,402,119, Cl. 24-370.000.

Julemont, Jean, to Colgate-Palmolive. Disposable diaper with contoured elastic. 4,402,688, Cl. 604-385.000.

Jung, Alfred K., to Stauffer Chemical Company. Dialkylzinc compositions having improved thermal stability. 4,402,880, Cl. 260-429.900.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Ogaki, Koji; Tamura, Yukio; Kaminishi, Masashi; and Takata, Yoshinori, 4,402,555, Cl. 305-11.000.

Kabushiki Kaisha Meidensha: *See*—
Fukushima, Tomio, 4,402,224, Cl. 73-705.000.

Kabushiki Kaisha Morita Seisakusho: *See*—
Okano, Michiaki; and Furuichi, Shuhei, 4,402,326, Cl. 128-774.000.

Kabushiki Kaisha Sankyo Seiki Seiksakusho: *See*—
Miyazaki, Kiyoshi; and Ito, Jinichi, 4,403,174, Cl. 318-254.000.

Kabushiki Kaisha Shikishima Chipton: *See*—
Kobayashi, Hisamine, 4,402,162, Cl. 51-163.200.

Kabushiki Kaisha Suwa Seikosha: *See*—
Ohtsuki, Chihiro; and Mikoshiba, Hitoshi, 4,402,261, Cl. 101-93.290.

Kabushiki-Kaisha, Tokai-Rika-Denki-Seisakusho: *See*—
Kubota, Tatsushi; and Katsuno, Mitsuaki, 4,402,473, Cl. 242-107.40A.
Kuwako, Tomohisa; and Fujiwara, Yoshitaka, 4,402,194, Cl. 62-353.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Kimbara, Masahiko; and Kobayashi, Noboru, 4,402,348, Cl. 139-110.000.

Kachi, Atsuyuki: *See*—
Harada, Masato; Sato, Akihiro; Yamada, Sadahiko; Kikuta, Kazutsune; Suzuki, Atsushi; Shimizu, Hiroshi; Masuda, Jun; Hamasaki, Tadamitsu; and Kachi, Atsuyuki, 4,403,081, Cl. 526-115.000.

Kachinski, Joseph L., Jr. Method of processing waste cement kiln dust to make a soil treatment composition. 4,402,891, Cl. 264-40.100.

Kadija, Igor V., to Olin Corporation. Diaphragm structure for electrolytic cells for the electrolysis of aqueous salt solutions. 4,402,816, Cl. 204-296.000.

Kageyama, Satoshi; Kojima, Tadashi; and Todokoro, Shigeru, to Tokyo Shibaura Denki Kabushiki Kaisha. System for processing audio PCM digital signals. 4,403,263, Cl. 360-32.000.

Kahmann, Albrecht; and Meisenberg, Rainer, to Escher Wyss GmbH. Grinding apparatus for a suspension of fibres for paper manufacturing. 4,402,463, Cl. 241-37.000.

Kakehi, Yutaka; Kasai, Kenjirou; Ierada, Katsuyuki; and Beppu, Tadashi, to Hitachi, Ltd. Vehicle body vibration control apparatus. 4,402,527, Cl. 280-707.000.

Kali-Chemie Pharma, GmbH: *See*—
Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Heinemann, Henning; Wolf, Klaus-Ullrich; Hell, Insa; and Hempel, Reinhard, 4,402,981, Cl. 424-324.000.

Kalmanczhelyi, Gabor; and Kiss, Pal, to Danuvia Kozponti Szerszam es Keszulekgyar. Hydraulic flow dividing and integrating equipment. 4,402,336, Cl. 137-101.000.

Kalopissis, Gregoire; Gallien, Jacqueline; Jacquet, Bernard; Bauer, Daniel; and Chalaye, Jean P., to L'Oreal. Hair-dyeing process involving protection of the scalp. 4,402,698, Cl. 8-405.000.

Kam, Sheung-Tsam: *See*—
Matier, William L.; and Kam, Sheung-Tsam, 4,402,974, Cl. 424-308.000.

Kamamoto, Seiichi: *See*—
Kawakami, Heijiro; Tanaka, Katsumasa; Kamamoto, Seiichi; and Sato, Kazuo, 4,402,757, Cl. 134-1.000.

Kamano, Toshiyuki: *See*—
Aoki, Hideto; Hirano, Tomoyuki; Watanabe, Mitsugu; Kamano, Toshiyuki; Tsunoda, Mitsunori; Akiyama, Toshikazu; Kanehiro, Mitsuyasu; Kubota, Mitsuji; and Sato, Masayuki, 4,403,155, Cl. 307-10.00R.

Kameda, Nobuyuki: *See*—
Akiba, Keiichiro; Satomi, Takeo; Fujinami, Akira; Asano, Yasuhisa; Kameda, Nobuyuki; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 4,402,734, Cl. 71-111.000.

Kametani, Keiichiro: *See*—
Izumo, Masanori; Mikami, Kenji; and Kametani, Keiichiro, 4,402,717, Cl. 55-388.000.

Kamimura, Teturo; and Komatsubara, Masahiro, to Pioneer Electronic Corporation. Cassette tape player. 4,403,266, Cl. 360-105.000.

Kaminaka, Nobuyuki: *See*—
Omata, Yuji; Kaminaka, Nobuyuki; Kanai, Kenji; and Nomura, Noboru, 4,402,801, Cl. 204-15.000.

Kaminishi, Masashi: *See*—
Ogaki, Koji; Tamura, Yukio; Kaminishi, Masashi; and Takata, Yoshinori, 4,402,555, Cl. 305-11.000.

Kaminski, David C., to Dana Corporation. Apparatus for controlling a two-speed axle shift motor. 4,403,178, Cl. 318-484.000.

Kaminski, Joan M.: *See*—
Horodysky, Andrew G.; and Kaminski, Joan M., 4,402,842, Cl. 252-47.500.

Kamohara, Toshiyuki: *See*—
Tsuji, Shintaro; and Kamohara, Toshiyuki, 4,402,387, Cl. 187-29.00R.

Kanai, Kenji: *See*—
Omata, Yuji; Kaminaka, Nobuyuki; Kanai, Kenji; and Nomura, Noboru, 4,402,801, Cl. 204-15.000.

Kanamaru, Hisanobu: *See*—
Tsuruoka, Kazuhiro; and Kanamaru, Hisanobu, 4,402,130, Cl. 29-597.000.

Kanatani, Fujio, to Nippon Kogaku K.K. Projection type exposure device. 4,402,596, Cl. 355-43.000.

Kanda, Atsushi: *See*—
Momura, Kazuhiko; Sato, Toshiyuki; Kanda, Atsushi; and Kanno, Nobuyuki, 4,402,351, Cl. 141-98.000.

Kanehiro, Mitsuyasu: *See—*
Aoki, Hideto; Hirano, Tomoyuki; Watanabe, Mitsugu; Kamano, Toshiyuki; Tsunoda, Mitsunori; Akiyama, Toshikazu; Kanehiro, Mitsuyasu; Kubota, Mitsuji; and Sato, Masayuki, 4,403,155, Cl. 307-10.00R.

Kanevsky, Alexei S.: *See—*
Domarenok, Nikolai I.; Dostanko, Anatoly P.; Moroz, Igor G.; Kanevsky, Alexei S.; and Vasiliev, Vsevolod A., 4,403,251, Cl. 358-107.000.

Kanno, Nobuyuki: *See—*
Momura, Kazuhiko; Sato, Toshiyuki; Kanda, Atsushi; and Kanno, Nobuyuki, 4,402,351, Cl. 141-98.000.

Kanzaki Paper Manufacturing Company, Limited: *See—*
Okimoto, Tomoyuki; Shioi, Shunsuke; Kuroda, Takio; Okamoto, Shigeo; and Shiozaki, Tomoharu, 4,403,051, Cl. 524-45.000.

Kao Soap Co., Ltd.: *See—*
Okumura, Takeo; and Ando, Hiroshi, 4,402,936, Cl. 424-70.000.

Karabinis, Peter D., to Bell Telephone Laboratories, Incorporated. Method and apparatus for distinguishing between minimum and non-minimum phase fades. 4,403,351, Cl. 455-304.000.

Kasai, Kenjirou: *See—*
Kakehi, Yutaka; Kasai, Kenjirou; Ierada, Katsuyuki; and Beppu, Tadashi, 4,402,527, Cl. 280-707.000.

Kasanami, Tohru: *See—*
Senda, Atsuo; Kasanami, Tohru; and Nakagawa, Takuji, 4,402,494, Cl. 266-255.000.

Kaspar, Vaclay; Walz, Klaus; Molls, Hans-Heinz; Hornle, Reinhold; and Skerhut, Rainer, to Bayer Aktiengesellschaft. Low-dust dyestuff formulations. 4,402,702, Cl. 8-524.000.

Kaswell, Ernest R.: *See—*
Panto, Joseph S.; and Kaswell, Ernest R., 4,402,703, Cl. 8-541.000.

Kataishi, Takao; and Seo, Iwazou, to Misawa Home Company, Ltd. Molding tool device for a molding used in an architectural structure. 4,402,484, Cl. 249-129.000.

Kataoka, Hiroyuki: *See—*
Kawamura, Masaharu; Kataoka, Hiroyuki; Katsuma, Makoto; and Uchidoi, Masanori, 4,402,589, Cl. 354-128.000.

Katazawa, Kenji: *See—*
Shibata, Souichi; Inoue, Hitoshi; and Katazawa, Kenji, 4,402,559, Cl. 308-189.00R.

Kathrein, Donald: *See—*
Blitstein, John; and Kathrein, Donald, 4,403,048, Cl. 523-218.000.

Kato, Takao; Takemura, Tetsuo; Horiki, Akira; and Watanabe, Noboru, to Hitachi, Ltd. Voice signal converting device. 4,403,322, Cl. 370-110.100.

Katsuma, Makoto: *See—*
Kawamura, Masaharu; Kataoka, Hiroyuki; Katsuma, Makoto; and Uchidoi, Masanori, 4,402,589, Cl. 354-128.000.

Katsuno, Mitsuaki: *See—*
Kubota, Tatsushi; and Katsuno, Mitsuaki, 4,402,473, Cl. 242-107.40A.

Katz, Michael: *See—*
Gauger, Jurgen F.; Hinden, Jean M.; and Katz, Michael, 4,402,996, Cl. 427-86.000.

Kaufman, Glenn A.: *See—*
Olson, Gene E.; Grover, Donald D.; Stout, Christopher B.; Becker, Thomas P.; Kaufman, Glenn A.; and Kot, Norbert J., 4,402,222, Cl. 73-579.000.

Kavesh, Sheldon: *See—*
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,403,012, Cl. 428-290.000.

Kawada, Shigeo: *See—*
Shibata, Yasuo; Miyamaru, Yukio; Kawada, Shigeo; and Hatanaka, Kaoru, 4,403,211, Cl. 340-73.000.

Kawagishi, Yoji: *See—*
Ishikawa, Kazuhiro; Kawagishi, Yoji; and Ishida, Yukihiko, 4,403,027, Cl. 430-110.000.

Kawakami, Heijiro; Tanaka, Katsumasa; Kamamoto, Seiichi; and Sato, Kazuo, to Kobe Steel, Limited. Method of vibrating coiled wire. 4,402,757, Cl. 134-1.000.

Kawamura, Kotaro; and Ozaki, Shinji, to Hitachi, Ltd. Automatic tape stop device for video signal recording and reproducing apparatus. 4,403,260, Cl. 360-10.200.

Kawamura, Masaharu; Kataoka, Hiroyuki; Katsuma, Makoto; and Uchidoi, Masanori, to Canon Kabushiki Kaisha. Correct exposure annunciating device. 4,402,589, Cl. 354-128.000.

Kawarada, Hiroshi: *See—*
Tatsumichi, Toshio; and Kawarada, Hiroshi, 4,402,999, Cl. 427-126.300.

Kawasaki Steel Corporation: *See—*
Nakanishi, Kyoji; Suzuki, Kenichiro; Tanaka, Michio; Matsuno, Jun-ichi; Ohmori, Hisashi; and Nozaki, Tsutomu, 4,402,739, Cl. 75-60.000.
Yanazawa, Tadaaki; Tanaka, Teruaki; Yamashita, Masashi; Ehiro, Takashi; Okumura, Hiroshi; Saito, Shinzo; and Kusaba, Takashi, 4,402,206, Cl. 72-221.000.

Kayashima, Koji: *See—*
Nose, Yukihiko; Kayashima, Koji; Sueoka, Akinori; Asanuma, Yoshihiro; Shinagawa, Shigeru; Smith, James; Werynski, Andrej; and Malchesky, Paul S., 4,402,940, Cl. 424-101.000.

Kazama, Hidemichi: *See—*
Emura, Koji; Suzaki, Tuneo; Takai, Koji; and Kazama, Hidemichi, 4,402,901, Cl. 264-294.000.

Keefe, George E.; and Sanders, Ian L., to International Business Machines Corporation. Non-data reversing bubble transfer switch for contiguous disks. 4,403,305, Cl. 365-16.000.

Keenan, John R., to General Signal Corporation. Air hose coupling lock. 4,402,534, Cl. 285-69.000.

Keeney, Marvin F., Jr., to General Electric Company. Protective relay having an improved characteristic angle adjustment circuit. 4,403,268, Cl. 361-80.000.

Kehr, Clifton L.: *See—*
Marans, Nelson S.; and Kehr, Clifton L., 4,403,083, Cl. 528-44.000.

Keiper U. S. A., Inc.: *See—*
Weston, Allen H.; and Klueting, Bernd A., 4,402,547, Cl. 297-379.000.

Kekas, Dennis H.; McCray, Charles M.; and Grubbs, William A., to International Business Machines Corp. Compact shuttle printer mechanism. 4,402,620, Cl. 400-121.000.

Kellar, Paul R. N., to Micro Consultants Limited. Processing of T.V. pictures for subsequent stop mode reproduction. 4,403,250, Cl. 358-105.000.

Keller, L. Brian; Jenkins, Robert K.; and Luster, Gary, to Hughes Aircraft Company. Formation of polymeric fibers by a seeding technique. 4,403,069, Cl. 525-197.000.

Keller, Morris C.: *See—*
Thompson, Earl C.; Keller, Morris C.; and Rustin, Francis, 4,402,343, Cl. 137-614.200.

Keller, Richard A.: *See—*
Zalewski, Edward F.; Keller, Richard A.; and Apel, Charles T., 4,402,606, Cl. 356-315.000.

Kelley Company, Inc.: *See—*
Domagalski, James A., 4,402,159, Cl. 49-9.000.
Slusar, Randall J., 4,402,100, Cl. 14-71.300.

Kelly, Bruce, to ICOT Corporation. Apparatus for interconnecting data communication equipment and data terminal equipment. 4,403,111, Cl. 178-69.00R.

Kemmler, Lothar, to Samson Aktiengesellschaft. Damping unit for measuring and automatic control systems. 4,402,335, Cl. 137-82.000.

Kemmner, Ulrich, to Robert Bosch GmbH. Adjusting device for controlling a flowthrough cross section. 4,402,344, Cl. 137-625.330.

Kendall Company, The: *See—*
Jessup, James L., 4,402,684, Cl. 604-264.000.
Villari, Frank K.; Annis, Larry D.; and Westgaard, Goldie J., 4,402,312, Cl. 128-24.00R.

Kenki Engineering Co., Ltd.: *See—*
Nitto, Junzaburo, 4,402,414, Cl. 212-226.000.

Kennecott Corporation: *See—*
Carpenter, James H.; and Corderman, Donald G., 4,402,163, Cl. 51-435.000.

Kennedy, Harold, Jr., to American Cast Iron Pipe Company. Fire hydrant nozzle assembly. 4,402,531, Cl. 285-14.000.

Kent, William C., to Western Electric Company, Incorporated. Conveyor driven fixtures which are precisely positionable at work stations. 4,402,393, Cl. 198-345.000.

Kerma Societe A Responsabilite Limitee: *See—*
Cavazza, Gilbert J., 4,402,529, Cl. 280-816.000.

Kernforschungszentrum Karlsruhe GmbH: *See—*
Flukiger, Rene, 4,402,768, Cl. 148-11.50F.
Weisenburger, Siegfried; Seiffert, Hartmut; and Holl, Fred, 4,402,724, Cl. 65-128.000.

Kerns, Victor L.; and Sager, David A., to AMSTED Industries Incorporated. Riser removal device. 4,402,443, Cl. 225-103.000.

Kerr-McGee Corporation: *See—*
Denham, Dale; and Schmidt, Roland, 4,402,919, Cl. 423-8.000.

Kessler, Hartmut, to Siemens Aktiengesellschaft. Layer capacitors and method for the manufacture thereof. 4,403,270, Cl. 361-328.000.

Kessler, Jurgen, to Hilti Aktiengesellschaft. Anchor bolt. 4,402,639, Cl. 411-51.000.

Keyes, Thomas C.: *See—*
Shinko, Julius S.; and Keyes, Thomas C., 4,402,925, Cl. 423-290.000.

Khait, George; and Fish, William R., to Electro Mechanical Industries, Inc. Automatic photograph labeler employing camera with passive display. 4,402,588, Cl. 354-106.000.

Khait, Klementina F.: *See—*
Falk, John C.; and Khait, Klementina F., 4,402,902, Cl. 264-349.000.

Khamare, Ishwar S.; and Hamilton, Rodney V., to NCR Corporation. Power supply diagnostic system. 4,403,213, Cl. 340-517.000.

Khatchikian, Alberto: *See—*
Clavier, Christian M.; and Khatchikian, Alberto, 4,403,290, Cl. 364-422.000.

Khomich, Ivan T.: *See—*
Uchitel, Alexandr D.; Zelov, Evgeny A.; Brener, Leonid J.; Baturov, Evgeny G.; Derbas, Anatoly G.; Ivchenko, Kim D.; Kuevda, Jury K.; and Khomich, Ivan T., 4,402,826, Cl. 209-366.500.

Khunafin, Fedor S.: *See—*
Alexander, Jury V.; Viktorov, Viktor D.; Zuev, Vladimir K.; Orlov, Gennady S.; Filipin, Nikolai A.; and Khunafin, Fedor S., 4,402,612, Cl. 356-427.000.

Kidd, James R.: *See—*
Paulose, George; Ambady, Raman; Kidd, James R.; and Ferguson, Hector, 4,402,788, Cl. 162-78.000.

Kiefer, Jurg, to Ciba-Geigy Corporation. Process for the production of diphosphaspiro compounds. 4,402,882, Cl. 260-980.000.

Kienzle Apparate GmbH: *See—*
Wendt, Hans-Joachim; and Muller, Helmut, 4,403,335, Cl. 377-87.000.

Kies, Richard L.: *See—*
Morris, Edwin E.; and Kies, Richard L., 4,403,253, Cl. 358-160.000.

Kikuchi, Ryoichi, to Fujitsu Limited. System for automatically releasing a dead lock state in a data processing system. 4,403,285, Cl. 364-200.000.

Kikuta, Kazutsune: *See—*
Harada, Masato; Sato, Akihiro; Yamada, Sadahiko; Kikuta, Kazutsune; Suzuki, Atsushi; Shimizu, Hiroshi; Masuda, Jun; Hamasaki, Tadamitsu; and Kachi, Atsuyuki, 4,403,081, Cl. 526-115.000.

Killat, George R.; and Wilson, Larry R., to Dow Chemical Company, The. Ink formulations containing a curable ammonium polyamidoamine as a fixing agent. 4,402,748, Cl. 106-20.000.

Kimbara, Masahiko; and Kobayashi, Noboru, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for regulating tension in warps of a weaving machine. 4,402,348, Cl. 139-110.000.

Kimberly-Clark Corporation: *See—*
Baum, Pamela F., 4,402,689, Cl. 604-387.000.

Kimmel, Edward R.: *See—*
Kronenwetter, Christopher A.; Harris, Geoffrey L.; and Kimmel, Edward R., 4,402,737, Cl. 75-0.5BB.

Kimura, Akira: *See—*
Koike, Shinkichi; Kimura, Akira; Hikage, Toru; and Sugiura, Sadao, 4,402,884, Cl. 264-8.000.

Kimura, Tetsuya, to Olympus Optical Co., Ltd. Endoscope system. 4,402,310, Cl. 128-4.000.

King, Donald D., to Thermo King Corporation. Evaporator section for container refrigeration unit. 4,402,191, Cl. 62-239.000.

King, John M.: *See—*
deVries, Louis; and King, John M., 4,402,840, Cl. 252-45.000.

Kinoshita, Hidejiro: *See—*
Ueda, Shoji; Daikoku, Takashi; Zama, Masato; Matsuo, Shintaro; Saito, Masahiro; and Kinoshita, Hidejiro, 4,402,906, Cl. 420-493.000.

Kircher, Morton S.; and Wood, Geoffrey B., to Olin Corporation. Composite fiber reinforced plastic electrode frame. 4,402,813, Cl. 204-279.000.

Kisner, George E.: *See—*
Lynn, James B.; and Kisner, George E., 4,402,790, Cl. 201-1.000.

Kiss, Pal: *See—*
Kalmanczhelyi, Gabor; and Kiss, Pal, 4,402,336, Cl. 137-101.000.

Kitagawa, Hiroji, to Kitagawa Industries Co., Ltd. Device for fixing two plates to one another. 4,402,117, Cl. 24-221.00R.

Kitagawa Industries Co., Ltd.: *See—*
Kitagawa, Hiroji, 4,402,117, Cl. 24-221.00R.

Kitaguchi, Koji: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Kitaguchi, Koji; Ozaki, Masakuni; Kitano, Masahiko; Okamura, Toshihiro; and Tanaka, Haruo, 4,402,948, Cl. 424-182.000.

Kitamura, Hajime; Imada, Kiyoshi; and Eguchi, Yoshitugu, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of a cellular foamed body of a vinyl chloride-based resin. 4,402,893, Cl. 264-53.000.

Kitamura, Norio: *See—*
Eguchi, Kiyohisa; Kitamura, Norio; Ohta, George; Okamura, Terumasa; and Yamada, Seizi, 4,402,838, Cl. 252-28.000.

Kitano, Masahiko: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Kitaguchi, Koji; Ozaki, Masakuni; Kitano, Masahiko; Okamura, Toshihiro; and Tanaka, Haruo, 4,402,948, Cl. 424-182.000.

Kittinger, Bruce E.: *See—*
Fry, Scott M.; Hempy, Harry O.; and Kittinger, Bruce E., 4,403,286, Cl. 364-200.000.

Klancnik, Adolph V.; and Klancnik, Kenneth A., to Universal Automatic Corporation. Machine tool bar feed. 4,402,642, Cl. 414-18.000.

Klancnik, Kenneth A.: *See—*
Klancnik, Adolph V.; and Klancnik, Kenneth A., 4,402,642, Cl. 414-18.000.

Klauke, Erich: *See—*
Kuhle, Engelbert; Paulus, Wilfried; Genth, Hermann; and Klauke, Erich, 4,402,980, Cl. 424-321.000.

Klein, Hermann: *See—*
Panter, Herbert; Klein, Hermann; Nolte, Gerhard; Preisler, Eberhard; Stephan, Hans-Werner; and Reichert, Gunter, 4,402,812, Cl. 204-275.000.

Klein, Jurgen: *See—*
Schulz, Peter; Vaupel, Knut; and Klein, Jurgen, 4,402,143, Cl. 34-57.00R.

Klein, Max. Fire extinguishing method. 4,402,364, Cl. 169-47.000.

Kleinman, Bennett, to Bennett X-Ray Corp. Automated setting of technic factors for x-ray examinations. 4,403,337, Cl. 378-95.000.

Klenk, Herbert: *See—*
Pissiotas, Georg; Meyer, Willy; Schwarze, Werner; Klenk, Herbert; and Leuchtenberg, Wolfgang, 4,402,733, Cl. 71-93.000.

Klingel, Hans, to Trumpf GmbH & Co. Method and apparatus for cutting by means of a laser beam. 4,403,134, Cl. 219-121.0LG.

Klose, Karl W.; and Benjamin, Gary H., to Cooper Tire & Rubber Company. Tire building machine. 4,402,782, Cl. 156-414.000.

Klotz, Helmut; Tepe, Ernst; and Sesterhenn, Lothar, to Bayer Aktiengesellschaft. Hydrochloric acid electrolytic cell for the preparation of chlorine and hydrogen. 4,402,811, Cl. 204-256.000.

Kluck, Wallace A.: *See—*
Coon, Bryan H.; Kluck, Wallace A.; and Radke, Billy W., 4,403,148, Cl. 250-332.000.

Klueting, Bernd A.: *See—*
Weston, Allen H.; and Klueting, Bernd A., 4,402,547, Cl. 297-379.000.

Klumpp, Walter, to Rheinmetall GmbH. Weapon counter-recoil dampening mechanism for a machine cannon having a wedge type breech block. 4,402,252, Cl. 89-43.00R.

Kluver, Leroy M.: *See—*
Arnold, John; Groeneveld, Wilbur E.; Heckley, Warner; Kluver, Leroy M.; and Kunkle, Richard W., 4,402,176, Cl. 56-341.000.

Knop, Hans-Georg; and Hoffrichter, Ingo, to Dr. Ing. Rudolf Hell GmbH. Apparatus for mixing image signals to obtain a printing master. 4,403,249, Cl. 358-80.000.

Knorr-Bremse GmbH: *See—*
Wosegien, Bernd; Staltmeir, Josef; and Sander, Nils B. L., 4,402,388, Cl. 188-56.000.

Knowles, Larry F. Trailer hitch. 4,402,523, Cl. 280-446.00B.

Knur, Walter; and Winkelmann, Siegfried, to Zahnradfabrick Friedrichshafen A.G.; and Siemens Aktiengesellschaft. Individual-wheel drive for vehicles. 4,402,374, Cl. 180-65.00F.

Kobayashi, Hisamine, to Kabushiki Kaisha Shikishima Chipton. Long-travel annular vibratory barrel finishing apparatus for line-processing. 4,402,162, Cl. 51-163.200.

Kobayashi, Mitsunori; and Doi, Yoshihiko, to Sumitomo Electric Industries, Ltd. Highly hard material coated articles. 4,402,994, Cl. 427-38.000.

Kobayashi, Morio; and Sasaki, Takashi, to Konishiroku Photo Industry Co., Ltd. Gelatin hardening method and agents therefor. 4,402,755, Cl. 106-125.000.

Kobayashi, Noboru: *See—*
Kimbara, Masahiko; and Kobayashi, Noboru, 4,402,348, Cl. 139-110.000.

Kobe Steel, Limited: *See—*
Kawakami, Heijiro; Tanaka, Katsumasa; Kamamoto, Seiichi; and Sato, Kazuo, 4,402,757, Cl. 134-1.000.

Koch, Roger L.: *See—*
Fochtman, Edward G.; Koch, Roger L.; and Forbes, Forrest S., 4,402,836, Cl. 210-748.000.

Kodama, Hisashi: *See—*
Arai, Fuminao; Kodama, Hisashi; and Okabe, Yoshio, 4,402,285, Cl. 123-90.580.

Koenneman, Donald E. Fan flow control device. 4,402,303, Cl. 126-307.00A.

Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, to Fujitsu Fanuc Limited. Control system for stopping spindle at predetermined rotational position. 4,403,179, Cl. 318-632.000.

Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, to Fujitsu Fanuc Limited. Control system for stopping spindle at predetermined rotational position. 4,403,181, Cl. 318-664.000.

Koike, Shinkichi; Kimura, Akira; Hikage, Toru; and Sugiura, Sadao, to Pacific Metals Co., Ltd. Method for producing ferro-nickel shots. 4,402,884, Cl. 264-8.000.

Kojima, Hiroshi: *See—*
Miura, Konoe; Tanaka, Shin-ichi; Kojima, Hiroshi; Tanaka, Takeshi; and Matsushita, Osamu, 4,403,030, Cl. 430-273.000.

Kojima, Tadashi: *See—*
Kageyama, Satoshi; Kojima, Tadashi; and Todokoro, Shigeru, 4,403,263, Cl. 360-32.000.

Kojima, Teiryo: *See—*
Negishi, Takao; Kojima, Teiryo; and Tomiita, Kazuo, 4,402,178, Cl. 57-205.000.

Kojima, Yoichi: *See—*
Tamura, Takashi; and Kojima, Yoichi, 4,402,859, Cl. 252-401.000.

Kokusan Kinzoku Kogyo Kabushiki Kaisha: *See—*
Sasaki, Ichiro; and Namazue, Hirotoshi, 4,403,172, Cl. 315-77.000.

Koll, Jochen: *See—*
Gleinig, Harald; Molls, Hans-Heinz; Koll, Jochen; Dick, Gottfried; Hornle, Reinhold; and Kunert, Friedrich, 4,402,701, Cl. 8-436.000.

Kolt, Stanley, to Suroff, Leonard W., a part interest. Automatic fluid control assembly. 4,402,455, Cl. 236-93.00B.

Komatsubara, Masahiro: *See—*
Kamimura, Teturo; and Komatsubara, Masahiro, 4,403,266, Cl. 360-105.000.

Komori Printing Machinery Co. Ltd.: *See—*
Sugiyama, Hiroyuki, 4,402,266, Cl. 101-409.000.

Kondo, Mikio, to Matsushita Electric Works, Ltd. Moving object detecting apparatus. 4,403,142, Cl. 250-221.000.

Kondo, Takasi: *See—*
Sato, Kenichi; Yamauchi, Kazuhisa; Hanaki, Yasumasa; Kondo, Takasi; and Yokota, Minoru, 4,402,763, Cl. 148-2.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Kobayashi, Morio; and Sasaki, Takashi, 4,402,755, Cl. 106-125.000.
Miura, Konoe; Tanaka, Shin-ichi; Kojima, Hiroshi; Tanaka, Takeshi; and Matsushita, Osamu, 4,403,030, Cl. 430-273.000.
Seto, Yutaka, 4,402,599, Cl. 355-77.000.

Kontz, Robert F., to Owens-Illinois, Inc. Web handling apparatus. 4,402,467, Cl. 242-58.200.

Koon, Norman C., to United States of America, Navy. Hard magnetic alloys of a transition metal and lanthanide. 4,402,770, Cl. 148-31.570.

Kopman, Ercument A. Cannula introducer. 4,402,683, Cl. 604-175.000.

Kopp, Waldemar: *See—*
Armerding, Rainer; Helmling, Rupert; Kopp, Waldemar; Wagner, Harry; Ehrt, Peter; and Boser, Emil, 4,403,163, Cl. 310-213.000.

Koppers Company, Inc.: *See—*
Okamoto, Yoshiyuki; and Wojciechowski, Piotr S., 4,402,875, Cl. 260-239.00R.

Korenberg, Jakob, to York-Shipley, Inc. Combustor air grid. 4,402,665, Cl. 431-170.000.

Korsunsky, Iosif: *See*—
Grabbe, Dimitry G.; and Korsunsky, Iosif, 4,402,561, Cl. 339-17.0CF.

Kot, Norbert J.: *See*—
Olson, Gene E.; Grover, Donald D.; Stout, Christopher B.; Becker, Thomas P.; Kaufman, Glenn A.; and Kot, Norbert J., 4,402,222, Cl. 73-579.000.

Kotani, Haruo; and Haga, Tomoyuki, to Horiba, Ltd. Surface pressure measurement type magnetic analyzer for paramagnetic gases utilizing a magnetic field generated alternatively between plural pairs of magnetic pole pieces. 4,403,186, Cl. 324-204.000.

Kough, John K.: *See*—
Martin, Otis M.; and Kough, John K., 4,402,169, Cl. 52-540.000.

Kovach, Bruce F. Single element corn ear stripper. 4,402,137, Cl. 30-121.500.

Krapp, Gerd: *See*—
Laut, Bernhard; Friedemann, Wolfgang; and Krapp, Gerd, 4,403,059, Cl. 524-399.000.

Krasnobajew, Victor, to Givaudan Corporation. Microbiological transformation products of beta-ionone as olfactory agents. 4,402,989, Cl. 426-536.000.

Krause, Joachim; and Pohl, Ludwig, to Merck Patent Gesellschaft mit beschrankter Haftung. Liquid-crystalline tetrahydroquinazolines. 4,402,849, Cl. 252-299.610.

Kreeger, Elsmer W.; and Stahl, Edward L., to Pinckney Molded Plastics, Inc. Multilevel stacking container. 4,402,408, Cl. 206-507.000.

Kremen, Richard D. Apparatus for heating a swimming pool. 4,402,305, Cl. 126-415.000.

Kretschmer, Stephen L., to A. O. Smith Harvestore Products, Inc. Chopper pump. 4,402,648, Cl. 415-121.00B.

Kreuter, Erika; Kuhn, Werner; and Zilske, Wolfgang, to Degussa Aktiengesellschaft. Electrolytic bath for the deposition of rhodium coatings. 4,402,802, Cl. 204-47.000.

Kreutzer, Peter. Implement for carrying wheels and tires for motor vehicles. 4,402,542, Cl. 294-156.000.

Kreuzer, Helmut; and Frister, Manfred, to Robert Bosch GmbH. Method for winding the stator of a three phase generator. 4,402,129, Cl. 29-596.000.

Krieder, Robert M.: *See*—
Horst, Floyd E.; and Krieder, Robert M., 4,402,792, Cl. 202-159.000.

Krieger, David A.: *See*—
Verhoff, Steven H.; and Krieger, David A., 4,403,267, Cl. 361-42.000.

Krohn, Egon: *See*—
Waldkirch, Kurt; Seifried, Gunther; and Krohn, Egon, 4,402,278, Cl. 118-19.000.

Kronenwetter, Christopher A.; Harris, Geoffrey L.; and Kimmel, Edward R., to GTE Products Corporation. Method of producing tungsten and tungsten carbide powder. 4,402,737, Cl. 75-0.5BB.

Kropac, Joseph M., to Exxon Research and Engineering Co. Electrosensitive recording paper having improved recording density. 4,403,232, Cl. 346-135.100.

Kroy, Inc.: *See*—
Paque, Michael W.; and Bradshaw, Franklin C., 4,402,619, Cl. 400-36.000.

Krueger, Duane A., to American Can Company. Flexible packaging structure and process for making it. 4,402,172, Cl. 53-425.000.

Krueger, Guenther. Method of pressure locking an aperatured nut into a die-side hole of a metal plate. 4,402,124, Cl. 29-520.000.

Krueger, Robert H.; and Zambrow, John L., to Borg-Warner Corporation. Device to automatically add a controlled amount of corrosion inhibitor with a change in spring loading. 4,402,912, Cl. 422-107.000.

Kruger, Johann, to U.S. Philips Corporation. Switching network. 4,403,321, Cl. 370-56.000.

Krupp Polysius AG: *See*—
Goldmann, Wolf, 4,402,667, Cl. 432-14.000.
Lohnherr, Ludger, 4,402,462, Cl. 241-30.000.

Kubota, Mitsuji: *See*—
Aoki, Hideto; Hirano, Tomoyuki; Watanabe, Mitsugu; Kamano, Toshiyuki; Tsunoda, Mitsunori; Akiyama, Toshikazu; Kanehiro, Mitsuyasu; Kubota, Mitsuji; and Sato, Masayuki, 4,403,155, Cl. 307-10.00R.

Kubota, Tatsushi; and Katsuno, Mitsuaki, to Kabushiki-Kaisha, Tokai-Rika-Denki-Seisakusho. Manually operated locking device of seat belt retractor for vehicles. 4,402,473, Cl. 242-107.40A.

Kuda, Vladimir: *See*—
Rotrekl, Otto; and Kuda, Vladimir, 4,402,347, Cl. 139-99.000.

Kudo, Kazushige: *See*—
Murase, Shigemitsu; Kudo, Kazushige; and Yamamoto, Shigeo, 4,403,049, Cl. 523-455.000.

Kuevda, Jury K.: *See*—
Uchitel, Alexandr D.; Zelov, Evgeny A.; Brener, Leonid J.; Baturov, Evgeny G.; Derbas, Anatoly G.; Ivchenko, Kim D.; Kuevda, Jury K.; and Khomich, Ivan T., 4,402,826, Cl. 209-366.500.

Kuhle, Engelbert; Paulus, Wilfried; Genth, Hermann; and Klauke, Erich, to Bayer Aktiengesellschaft. Sulphonic acid cycloalkylamides and their use as microbicides. 4,402,980, Cl. 424-321.000.

Kuhlmann, Werner; and Redlinger, Werner, to Pfeiffer Geratebau GmbH. Wind direction indicator. 4,402,220, Cl. 73-188.000.

Kuhn, Werner: *See*—
Kreuter, Erika; Kuhn, Werner; and Zilske, Wolfgang, 4,402,802, Cl. 204-47.000.

Kuhnert, Gottfried, to Universal Maschinenfabrik Dr. Rudulf Schieber GmbH & Co. KG. Flat knitting machine having a stroking-in device. 4,402,196, Cl. 66-64.000.

Kukino, Yoshinori: *See*—
Miura, Mituo; Kukino, Yoshinori; Fujii, Takumi; Sugiyama, Kazunori; Inoue, Takashi; and Ogishima, Mamoru, 4,402,630, Cl. 405-266.000.

Kulich, Vaclav; Michel, Herbert; and Witte, Hans-Hermann, to Siemens Aktiengesellschaft. Method and apparatus for an optical four-gate coupler. 4,402,568, Cl. 350-96.160.

Kumagai, Henry Y.; Shanefield, Daniel J.; and Verdi, Fred W., to Western Electric Co., Inc. Method for providing an adherent electroless metal coating on an epoxy surface. 4,402,998, Cl. 427-97.000.

Kumpf, Richard E.; and Smith, William R., to Caere Corporation. OCR Matrix extractor. 4,403,340, Cl. 382-48.000.

Kunert, Friedrich: *See*—
Gleinig, Harald; Molls, Hans-Heinz; Koll, Jochen; Dick, Gottfried; Hornle, Reinhold; and Kunert, Friedrich, 4,402,701, Cl. 8-436.000.

Kunii, Takao: *See*—
Sone, Yoshiaki; Hashimoto, Susumu; Ishikawa, Kiyotsugu; and Kunii, Takao, 4,403,247, Cl. 358-44.000.

Kunkle, Richard W.: *See*—
Arnold, John; Groeneveld, Wilbur E.; Heckley, Warner; Kluver, Leroy M.; and Kunkle, Richard W., 4,402,176, Cl. 56-341.000.

Kuntze, Richard A.: *See*—
Bruce, Robert B.; and Kuntze, Richard A., 4,403,006, Cl. 428-70.000.

Kunz, Walter: *See*—
Hubele, Adolf; Kunz, Walter; and Eckhardt, Wolfgang, 4,402,953, Cl. 424-248.540.

Kupersmit, Julius B. Foldable reusable shipping carton. 4,402,452, Cl. 229-41.00R.

Kuppenheimer, John D., Jr., to Sanders Associates, Inc. Knife edge system. 4,402,602, Cl. 356-124.000.

Kurabayashi, Hiroshi; Sakaba, Kozo; and Fujita, Takafumi, to Mitsubishi Steel Mfg. Co., Ltd.; and Fujita, Takafumi. Earthquake isolation floor. 4,402,483, Cl. 248-636.000.

Kuraray Co., Ltd.: *See*—
Handa, Hajime; Yonekawa, Yasuhiro; Yamagata, Sen; Taki, Waro; Ikada, Yoshito; and Iwata, Hiroo, 4,402,319, Cl. 128-325.000.
Nose, Yukihiko; Kayashima, Koji; Sueoka, Akinori; Asanuma, Yoshihiro; Shinagawa, Shigeru; Smith, James; Werynski, Andrej; and Malchesky, Paul S., 4,402,940, Cl. 424-101.000.

Kurihara, Tetsuro; and Nishio, Kosaku, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor radiation sensor arrangement for an automatic X-ray exposure control apparatus. 4,403,150, Cl. 250-370.000.

Kuriyama, Kazuya; Murakami, Shigeru; Sugawara, Ryozo; and Honda, Kiyoshi, to Dainippon Ink and Chemicals Inc. Sheet-like articles of polyvinyl chloride. 4,402,887, Cl. 264-22.000.

Kuroda, Takio: *See*—
Okimoto, Tomoyuki; Shioi, Shunsuke; Kuroda, Takio; Okamoto, Shigeo; and Shiozaki, Tomoharu, 4,403,051, Cl. 524-45.000.

Kurosaki, Shiro: *See*—
Edahiro, Takao; Kurosaki, Shiro; and Watanabe, Minoru, 4,402,720, Cl. 65-3.120.

Kusaba, Takashi: *See*—
Yanazawa, Tadaaki; Tanaka, Teruaki; Yamashita, Masashi; Ehiro, Takashi; Okumura, Hiroshi; Saito, Shinzo; and Kusaba, Takashi, 4,402,206, Cl. 72-221.000.

Kusumi, Yuji: *See*—
Yamashita, Izumi; Yoshida, Kazuo; Kusumi, Yuji; Fukuda, Kunio; and Tazaki, Kichiya, 4,403,057, Cl. 524-288.000.

Kutrieb, Wolfgang A. Waste oil heater. 4,402,664, Cl. 431-79.000.

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Sasaki, Yoshiyuki; Kuwabara, Mitsuo; and Tani, Masayuki, 4,403,094, Cl. 528-308.200.

Kuwako, Tomohisa; and Fujiwara, Yoshitaka, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Ice making apparatus to be incorporated in refrigerators. 4,402,194, Cl. 62-353.000.

La Telemecanique Electrique: *See*—
Petrimaux, Eric; Nicolas, Michel; Prudhomme, Pierre; and Boutielle, Daniel, 4,402,254, Cl. 91-29.000.

Laanio, Verena; von Orelli, Marcus; and Hausermann, Walter, to Ciba-Geigy Corporation. Synergistic pesticidal compositions comprising N-(2-methyl-4-chlorophenyl)-N',N'-dimethylthiourea and 2,4-diamino-6-cyclopropylamino-2-triazine or 2,4-diamino-6-isopropylamino-2-triazine. 4,402,954, Cl. 424-249.000.

Lacombat, Michel, to Thomson-CSF. Optical system for the automatic alignment of two motifs comprising alignment marks of the grating type, particularly in direct photorepetition on silicon. 4,402,610, Cl. 356-400.000.

LaConti, Anthony B.: *See*—
Coker, Thomas G.; LaConti, Anthony B.; and Balko, Edward N., 4,402,806, Cl. 204-98.000.

Lafarge Coppee: *See*—
Schmidt, Hans-Werner; Beisswenger, Hans; Reh, Lothar; Folliot, Albert; and Iard, Maurice P., 4,402,754, Cl. 106-100.000.

Lafreniere, Edgar A. Apparatus for separating articles. 4,402,411, Cl. 209-617.000.

Laghi, Aldo A., to General Electric Company. Shuttle plate improvement for a mold for a liquid injection molding apparatus. 4,402,657, Cl. 425-183.000.

Laghi, Aldo A., to General Electric Company. Liquid injection molding machine for utilizing silicone compositions. 4,402,661, Cl. 425-543.000.

Lamberg, John R.; and Ferris, Joseph E., to Honeywell Inc. Millimeter wave microstrip antenna. 4,403,221, Cl. 343-700.0MS.

Lambert, E. H.; and Michael, T. A. Don. External cardiac compression alarm system. 4,402,327, Cl. 128-774.000.

Lamitref Aluminium: *See*—
Cloostermans-Huwaert, Leo, 4,402,766, Cl. 148-11.50A.

Landerl, Franz: *See*—
Fortner, Walter; Misera, Erich; Landerl, Franz; Robiczek, Gunther; and Berger, Meinhard, 4,402,437, Cl. 222-607.000.

Lane, George A.; and Rossow, Harold E., to Dow Chemical Co., The. Hydrated $Mg(NO_3)_2/MgCl_2$ reversible phase change compositions. 4,402,846, Cl. 252-70.000.

Lang, Hans-Jorg; and Schwerdtel, Ernst, to Ludwig Schwerdtel GmbH. Dosing apparatus for viscous materials. 4,402,428, Cl. 222-58.000.

Lang, Udo: *See*—
Hildebrandt, Ullrich; Lang, Udo; Horner, Berndt; and Schramm, Walter, 4,402,822, Cl. 208-10.000.

Lang, Warren H., to Davy McKee Corporation. Process for making phosphoric acid. 4,402,923, Cl. 423-166.000.

Lange, Peter M.: *See*—
Moeschler, Heinrich F.; Sasse, Klaus; Lange, Peter M.; Golker, Christian; Zoebelein, Gerhard; and Telle, Otto, 4,402,947, Cl. 424-181.000.

Largman, Theodore; and Sifniades, Stylianos, to Allied Chemical Corporation. Extraction of uranium from phosphoric acid using supported extractants. 4,402,917, Cl. 423-7.000.

Largman, Theodore; Van Buskirk, Bruce; Aharoni, Shaul M.; and Twilley, Ian C., to Allied Corpc ation. Injection moldable poly(ethylene terephthalate). 4,403,052, Cl. 524-80.000.

Larsen, Olaf E., to Phillips Petroleum Company. Thermoplastic pipe extrusion die. 4,402,658, Cl. 425-192.00R.

Larson, William C.: *See*—
Wood, Edward T.; Snyder, Robert; Larson, William C.; and Dareing, Donald W., 4,402,551, Cl. 299-5.000.

Larson, Willis A.; Christensen, David A.; and VanZeeland, Anthony J., to Oak Industries Inc. Membrane switch interconnect tail and printed circuit board connection. 4,403,272, Cl. 361-398.000.

Lask, Zygmunt; and Johnston, Harold, to Northern Telecom Limited. Terminal enclosure for cable stubs, with variable entry positions. 4,403,106, Cl. 174-59.000.

Lassander, Erik; and Stenkvist, Sven-Einar, to ASEA AB. DC Arc furnace power connection system. 4,403,328, Cl. 373-103.000.

Lauer, William L.: *See*—
Purtzer, Patricia K.; and Lauer, William L., 4,402,440, Cl. 224-160.000.

Laurel, Charles R. Ceiling fan with self-contained lighting. 4,402,649, Cl. 416-5.000.

Laut, Bernhard; Friedemann, Wolfgang; and Krapp, Gerd, to Henkel Kommanditgesellschaft auf Aktien. Storage-stable aqueous alkali metal silicate/filler adhesive compositions and their use. 4,403,059, Cl. 524-399.000.

Lawson, Richard D.: *See*—
Hinze, Jay W.; Robinson, Mark L.; and Lawson, Richard D., 4,402,767, Cl. 148-11.50P.

Layer, Heinz: *See*—
Glockle, Volker; Glockle, Rainer; Weiss, Hermann; Layer, Heinz; and Schnaithmann, Klaus, 4,402,138, Cl. 30-382.000.

Leclerc, Pierre: *See*—
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Le Douarec, Jean-Claude: *See*—
Shen, Tsung-Ying; Conquet, Philippe; and Le Douarec, Jean-Claude, 4,402,979, Cl. 424-317.000.

Lee, Charles M.: *See*—
Blahut, Donald E.; Fields, Jonathan A.; Huang, Victor K.; Lee, Charles M.; and Shoji, Masakazu, 4,403,287, Cl. 364-200.000.

Lee, Chi-Long; and Rabe, James A., to Dow Corning Corporation. Method for reducing heat loss from contained bodies of water using polysiloxane foams. 4,402,908, Cl. 422-43.000.

Lee, Mark C.; and Wang, Taylor G., to United States of America, National Aeronautics and Space Administration. Acoustic suspension system. 4,402,221, Cl. 73-505.000.

Lee, Tsung-Li. Three-dimensionally adjustable supporting and locking mechanism. 4,402,670, Cl. 433-61.000.

Le Fur, Gerard R.: *See*—
Dubroeucq, Marie-Christine; Gueremy, Claude G. A.; Le Fur, Gerard R.; and Mizoule, Jacques, 4,402,961, Cl. 424-258.000.

Lehrl, Hans; and Schroth, Reinhard, to Siemens Aktiengesellschaft. Control element for high-voltage apparatus and method for the manufacture of a control element. 4,403,109, Cl. 174-73.00R.

Leibinger, George E.; and Rowe, Albert, to General Electric Company. Circuit arrangement for controlling transformer current. 4,403,205, Cl. 336-180.000.

Leijen, Joannes J. P.: *See*—
Alfenaar, Marinus; Leijen, Joannes J. P.; and Schlosser, Willem J., 4,403,018, Cl. 429-34.000.

Leland, Kenneth W.; and Sollenberger, Nelson R., to Bell Telephone Laboratories, Incorporated. Single sideband receiver with intersyllabic gain correction limit control. 4,403,348, Cl. 455-203.000.

Lemaire, Francis R. J. M.: *See*—
Bavoux, Robert J. A.; Lemaire, Francis R. J. M.; and Salkazanov, Pierre, 4,403,300, Cl. 364-900.000.

Lembke, Andreas: *See*—
Wolf, Erich; Lembke, Andreas; and Deininger, Rolf, 4,402,950, Cl. 424-195.000.

Lembke, Russell B.: *See*—
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Lenco, Inc.: *See*—
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Lenderking, Bruce N., to Westinghouse Electric Corp. Control system for coupling redundant logic channels. 4,402,903, Cl. 376-245.000.

Leno, Lester L. Oil spout container. 4,402,401, Cl. 206-216.000.

Lentz, David J.: *See*—
Pollock, Elisabeth M.; and Lentz, David J., 4,402,697, Cl. 8-94.110.

Le Rouzo, Jean, to Regie Nationale des Usines Renault. Stabilization system for a pantographic data entry device. 4,402,646, Cl. 414-719.000.

Leuchtenberg, Wolfgang: *See*—
Pissiotas, Georg; Meyer, Willy; Schwarze, Werner; Klenk, Herbert; and Leuchtenberg, Wolfgang, 4,402,733, Cl. 71-93.000.

Leviton Manufacturing Company, Inc.: *See*—
Poliak, John M., 4,402,565, Cl. 339-103.00M.

Levy, Fernand J., to Avions Marcel Dassault-Breguet Aviation. Method for at least partly metalizing the surface of a laminated component. 4,402,779, Cl. 156-245.000.

Lewis, Elyse B., to Borg-Warner Corporation. Stabilized olefin polymers. 4,403,053, Cl. 524-91.000.

Lewis, Irwin C.; and Moore, Arthur W., to Union Carbide Corporation. Carbon fiber production using high pressure treatment of a precursor material. 4,402,928, Cl. 423-447.100.

Lexel Corporation: *See*—
Woste, Ludger H., 4,403,324, Cl. 372-54.000.

Libit, Sidney M. Dispensing type cap closure. 4,402,435, Cl. 222-556.000.

Licciardello, Michael: *See*—
Boden, Richard M.; and Licciardello, Michael, 4,402,985, Cl. 426-3.000.

Liebert, Curt H., to United States of America, National Aeronautics and Space Administration. Covering solid, film cooled surfaces with a duplex thermal barrier coating. 4,402,992, Cl. 427-34.000.

Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Heinemann, Henning; Wolf, Klaus-Ullrich; Hell, Insa; and Hempel, Reinhard, to Kali-Chemie Pharma, GmbH. N_1-Acyl-N_2-phenyl-diaminopropanols and pharmaceutical compositions thereof and processes for their preparation. 4,402,981, Cl. 424-324.000.

Lierke, Ernst-Guenter; Heide, Wolfgang; Grossbach, Rudolf; Floegel, Karl; and Erdmann, Hartmut, to Battelle-Institut e.V. Apparatus for atomizing liquids. 4,402,458, Cl. 239-102.000.

Lilienfeld, Pedro: *See*—
McVay, Lance; and Lilienfeld, Pedro, 4,402,607, Cl. 356-338.000.

Lill, Melvin H., to FMC Corporation. Four wheel alignment apparatus and method. 4,402,603, Cl. 356-152.000.

Limpach, Raymond: *See*—
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Lindahl, Gertrud M., to Boliden Aktiebolag. Pumpable composition for water-purifying purpose containing iron (II) sulphate, and a method for producing the same. 4,402,851, Cl. 252-181.000.

Linde AG: *See*—
Hildebrandt, Ullrich; Lang, Udo; Horner, Berndt; and Schramm, Walter, 4,402,822, Cl. 208-10.000.

Linde Aktiengesellschaft: *See*—
Benkmann, Christian, 4,402,712, Cl. 55-26.000.

Lindemans, Fredric W., to Medtronic, Inc. Body implantable lead. 4,402,330, Cl. 128-786.000.

Lindgren, Gunnar; Molesworth, Richard E.; and Sorwick, Jack R., to Technicare Corporation. Biopsy needle guide for sector scanner. 4,402,324, Cl. 128-660.000.

Liptai, Nandor: *See*—
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Liquipak International Inc.: *See*—
Mosse, Richard W. E.; and Vatne, Kaare B., 4,402,461, Cl. 239-453.000.

Lisfeld, Robert: *See*—
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Little, William, to Mobil Solar Energy Corporation. Adjustable heat shield assembly. 4,402,786, Cl. 156-608.000.

Litton Industrial Products, Inc.: *See*—
Carroll, Richard R.; and Papp, Alan M., 4,402,125, Cl. 29-568.000.
Price, Ralph E.; and Harrel, Jack D., 4,402,161, Cl. 51-101.00R.

Litton Resources Systems, Inc.: *See*—
Mollere, John C., 4,402,382, Cl. 181-120.000.

Lo, George A.: *See*—
Gans, Werner A.; Borgardt, Frank G.; and Lo, George A., 4,402,516, Cl. 277-26.000.

Locacius, Robert F., to Felt Products Mfg. Co. Laminated valve cover gasket assembly having sealing layers of different thicknesses and materials. 4,402,518, Cl. 277-166.000.

Lockwood, Hanford N., Jr. Pressure-responsive shut-off valve. 4,402,340, Cl. 137-493.700.

Loeb, Marvin P.: *See*—
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Loffler, Siegfried: *See*—
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Logan, Mark S.: *See—*
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Lohman, Frederick H. Suspended uneven parallel bars for competitive womens gymnastics. 4,402,501, Cl. 272-63.000.
Lohnherr, Ludger, to Krupp Polysius AG. Process for controlling a grinding installation. 4,402,462, Cl. 241-30.000.
Longwell, Ruben S.: *See—*
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Lopez, Jose G.; and Barnhart, Victor J., to Wyoming Mineral Corporation. Humic flotation of wet process phosphoric acid as a pretreatment step in the recovery of uranium. 4,402,920, Cl. 423-8.000.
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Loveland Controls Company: *See—*
Tivy, Vincent V., 4,403,297, Cl. 364-579.000.
Lowe, Henry E., Jr. Method for plotting and disseminating information on the paths of violent storms. 4,402,672, Cl. 434-217.000.
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Lucas Industries Limited: *See—*
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Lueker, Jonathan C., to Tektronix, Inc. Active voltage probe. 4,403,183, Cl. 324-72.500.
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Luker, David K.: *See—*
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Luker, Johnie D.: *See—*
Luker, Johnie N.; Luker, Johnie D.; and Luker, David K., 4,402,093, Cl. 4-427.000.
Luker, Johnie N.; Luker, Johnie D.; and Luker, David K., to Parker, James F. Emergency valve unit for preventing overflow of a toilet. 4,402,093, Cl. 4-427.000.
Lunn, William H. W., to Eli Lilly and Company. Dioximino cephalosporin antibiotics. 4,402,955, Cl. 424-246.000.
Lurssen, Klaus: *See—*
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Lux, Peter W.; Van Leiden, Hendrikus F.; and Op De Beek, Johannes C. A., to U.S. Philips Corporation. Method and device for computed tomography. 4,403,289, Cl. 364-414.000.
Lynell Medical Technology Inc.: *See—*
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Lynn, James B.; and Kisner, George E., to Bethlehem Steel Corporation. Coke oven flue temperature measuring process and probe machine. 4,402,790, Cl. 201-1.000.
Lytton, Irvin V.; and Burgin, Billy B., to PPG Industries, Inc. Catalyst loader. 4,402,643, Cl. 414-160.000.
M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
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Macfie, George B., Jr., to A. Duda & Sons, Inc. Fruit juice impregnated plantains. 4,402,988, Cl. 426-335.000.
MacPherson, William C., to Continental Group, Inc., The. Bottom wall for container. 4,402,419, Cl. 220-70.000.
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Madrange nee Dermain, Annie; and Papantoniou, Christos. Cosmetic compositions for lacquers and wave-setting lotions, new copolymers and process for preparing them. 4,403,070, Cl. 525-330.400.
Maeda, Koh-ichi, to Fujitsu Limited. Semiconductor memory device. 4,403,307, Cl. 365-174.000.
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Maier, Adolph J., Jr. Panel connection. 4,402,168, Cl. 52-478.000.
Maitland, Arthur; Menown, Hugh; and Strudwick, Ian A., to English Electric Valve Company Limited. Segmented discharge tube devices. 4,403,167, Cl. 313-632.000.
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Rasmussen, Chris R., 4,402,964, Cl. 424-270.000.
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Williams, Terrell M., 4,402,329, Cl. 128-785.000.
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Meis, Josef; Schmidt, Volkmar; Tummes, Hans; and Much, Joachim, to Ruhrchemie Aktiengesellschaft. Process for demetallizing primary products of the oxo synthesis. 4,402,860, Cl. 252-420.000.
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Dybas, Richard A.; and Witzel, Bruce E., 4,402,959, Cl. 424-250.000.
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Turiot, Andre; and Derrien, Michel, 4,402,477, Cl. 214-102.00R.

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Lambert, E. H.; and Michael, T. A. Don, 4,402,327, Cl. 128-774.000.

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Kellar, Paul R. N., 4,403,250, Cl. 358-105.000.

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Verhoff, Steven H.; and Krieger, David A., 4,403,267, Cl. 361-42.000.

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Yuasa, Yoshio, 4,402,611, Cl. 356-405.000.

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Fortner, Walter; Misera, Erich; Landerl, Franz; Robiczek, Gunther; and Berger, Meinhard, 4,402,437, Cl. 222-607.000.

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Kurabayashi, Hiroshi; Sakaba, Kozo; and Fujita, Takafumi, 4,402,483, Cl. 248-636.000.

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Tanabe, Isao; Nagata, Ryoichi; Watanabe, Toru; and Miyamoto, Nobuaki, 4,402,931, Cl. 423-605.000.

Mitsui, Takao: *See—*
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Shibata, Yasuo; Miyamaru, Yukio; Kawada, Shigeo; and Hatanaka, Kaoru, 4,403,211, Cl. 340-73.000.

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Hungerford, Gordon P., 4,403,055, Cl. 524-173.000.
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Shihabi, David S., 4,402,866, Cl. 252-455.00Z.
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Yan, Tsoung-Yuan, 4,402,821, Cl. 208-8.0LE.
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Modafferi, Richard, 4,403,112, Cl. 179-1.00E.
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Wood, Rex C., 4,402,412, Cl. 209-625.000.
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Molina, Jorge W., to Deutsch Fastener Corp. Fastener installation tool. 4,402,203, Cl. 72-114.000.
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Mooney, Tommy R., to Eckel Manufacturing Company, Inc. Back-up power tongs and method. 4,402,239, Cl. 81-57.160.
Moore, Arthur H., to Bridgeport Metal Goods Mfg. Co., The. Portable lamp. 4,403,274, Cl. 362-186.000.
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Morton, Douglas R., Jr., to Upjohn Company, The. (11R)-11-Deoxy-11-alkyl-6-oxo-prostaglandins. 4,403,100, Cl. 560-121.000.
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Mosse, Richard W. E.; and Vatne, Kaare B., to Liquipak International Inc. Fluid-handling apparatus. 4,402,461, Cl. 239-453.000.
Motorola Inc.: *See*—
Bitter, Charles R., Jr.; and Cripps, Raymond M., 4,403,222, Cl. 343-833.000.
Borras, Jaime A.; Gonzalez, Ruben J.; Smith, Daniel M.; and Wieczorek, Alfred B., 4,403,342, Cl. 455-76.000.
Davis, William F., 4,403,200, Cl. 330-294.000.
Hogan, Richard H.; and Dahm, Jonathan C., 4,402,997, Cl. 427-94.000.
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Mrazek, James A.: *See*—
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Murase, Shigemitsu; Kudo, Kazushige; and Yamamoto, Shigeo, to Unitika Limited. Method of manufacturing polyester fibers with good adhesion to rubber. 4,403,049, Cl. 523-455.000.
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Murphy, Michael P.; and Hoffman, James S., to General Motors Corporation. Durable titania exhaust gas sensor. 4,403,207, Cl. 338-34.000.

Murray, Richard C. Rope protection device. 4,402,489, Cl. 254-389.000.
Muskovin, Alfred J.; Green, Paul J.; and Aubert, Lawrence J., to Procter & Gamble Company, The. Cartridge piston with integrally molded sealing plug. 4,402,427, Cl. 222-47.000.
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Musy, Jacques, to Compagnie Generale des Etablissements Michelin. Tire for heavy transport vehicles, the crown reinforcement of which has thermocontractable circumferential cables and process for manufacturing same. 4,402,356, Cl. 152-193.000.
Myntti, Jon N.; Anderson, Kirk P.; and Hosler, Jay R., to NCR Corporation. Extended memory system and method. 4,403,283, Cl. 364-200.000.
Myrick, Alma L. Pressure transmitting apparatus. 4,402,225, Cl. 73-706.000.
N. B. Love Industries Pty. Limited: *See—*
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Naan Mechanical Works: *See—*
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Nagae, Shoichi. Telescope with compass. 4,402,140, Cl. 33-272.000.
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Nagl, Gary J.; and Hardison, Leslie C., to ARI Technologies, Inc. Reduction of nitrogen oxide emissions from calciners. 4,402,273, Cl. 110-229.000.
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Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic performance device with tempo follow-up function. 4,402,244, Cl. 84-1.030.
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Nakagawa, Takuji: *See—*
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Nakahata, Kimio, to Canon Kabushiki Kaisha. Electrophotographic apparatus. 4,402,591, Cl. 355-3.0TR.
Nakai, Tetsuo; Yazu, Shuji; and Hara, Akio, to Sumitomo Electric Industries, Ltd. Compound sintered compact for use in a tool and the method for producing the same. 4,403,015, Cl. 428-565.000.
Nakane, Masayoshi: *See—*
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Nakanishi, Kyoji; Suzuki, Kenichiro; Tanaka, Michio; Matsuno, Junichi; Ohmori, Hisashi; and Nozaki, Tsutomu, to Kawasaki Steel Corporation. Method of operation of a top-and-bottom blown converter. 4,402,739, Cl. 75-60.000.
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Nakano, Masaki; and Tanimizu, Shinkichi, to Hitachi, Ltd. Phosphor, process for preparation thereof and lamp containing the same. 4,403,171, Cl. 313-486.000.
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Nakao, Satoshi; Taguchi, Yasuo; and Higuchi, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Ignition coil energizing circuit. 4,402,299, Cl. 123-632.000.
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Nara, Akio; Sasaya, Hideaki; Takagi, Shigeru; and Mitsui, Takao, to Nippon Soken, Inc. Vane pump with symmetrical inclined fluid confinement initiating line. 4,402,655, Cl. 418-137.000.
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Nash, Paul. Method for the on-line measurement of inclusions in pulp. 4,402,604, Cl. 356-237.000.
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National Can Corporation: *See—*
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Naumann, Ted F., Jr.; Carnes, Ronald C.; and Brisken, Axel F., to General Electric Company. Ultrasonic sector scanner utilizing rotating transducer. 4,402,223, Cl. 73-625.000.
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Negishi, Takao; Kojima, Teiryo; and Tomiita, Kazuo, to Toray Industries, Inc. Textured multifilament yarn having alternating twists. 4,402,178, Cl. 57-205.000.
Nemet-Mavrodin, Margaret I.; Shangkuan, Yon-Li; and Bobeck, Richard L., to Atlantic Richfield Company. Purification of butylene oxides by extractive distillation with selected extractive distillation solvents. 4,402,794, Cl. 203-14.000.
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Netherton, Lowell E.; and Patil, Arvind S., to BASF Wyandotte Corporation. Plastic colored with transparent iron oxide spinels. 4,403,060, Cl. 524-413.000.
Neufeld, Jacob, to Halliburton Company. Evaluation of the interaction with radiant energy of substances traversed by a bore hole. 4,403,146, Cl. 250-262.000.
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Nevins, Norman; and McVay, Robert L., to Protective Treatments, Inc. Systems for protecting steel. 4,403,005, Cl. 428-48.000.
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Nicolai, Van O. Optical transistor. 4,403,323, Cl. 372-40.000.
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Niedballa, Ulrich; and Bottcher, Irmgard, to Schering Aktiengesellschaft. Antiinflammatory imidazole derivatives. 4,402,960, Cl. 424-251.000.
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Nintendo Co., Ltd.: *See—*
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Nippon Electric Co., Ltd.: *See—*
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Nippon Gakki Seizo Kabushiki Kaisha: *See—*
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Nippon Kayaku Kabushiki Kaisha: *See—*
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Nippon Kogaku K.K.: *See—*
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Nippon Paint Co., Ltd.: *See—*
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Nippon Shinyaku Co., Ltd.: *See—*
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Nippon Soken, Inc.: *See—*
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Nippon Telegraph & Telephone Public Corporation: *See—*
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Sano, Hiromi; Suzuki, Masatoshi; Fujimoto, Masaya; Yamakawa Mitihiro; and Saito, Toshitaka, 4,402,820, Cl. 204-425.000.

Nishikawa, Masumi, to Aisin Seiki Kabushiki Kaisha. Regulating apparatus for a steering wheel. 4,402,236, Cl. 74-493.000.

Nishimoto, Tetsuo, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument by time division multiplexed tone selection. 4,402,242, Cl. 84-1.010.

Nishimura, Kunitaro: *See—*
Mandai, Haruhumi; Nishimura, Kunitaro; and Yamaguchi, Masami, 4,403,236, Cl. 357-10.000.

Nishio, Kosaku: *See—*
Kurihara, Tetsuro; and Nishio, Kosaku, 4,403,150, Cl. 250-370.000.

Nishioka, Kimihiko, to Olympus Optical Co., Ltd. Illuminating system for endoscopes. 4,403,273, Cl. 362-32.000.

Nishizaki, Tomoyoshi; Oguma, Kanzi; Sakagami, Katsuyoshi; and Yoshida, Ken, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Metal hydride reactor. 4,402,915, Cl. 422-202.000.

Nissan Motor Company, Ltd.: *See—*
Aono, Shigeo, 4,402,291, Cl. 123-440.000.
Higashiyama, Kazuhiro, 4,402,217, Cl. 73-117.300.
Honma, Masayuki, 4,402,284, Cl. 123-90.390.
Ikeura, Kenji, 4,402,289, Cl. 123-339.000.
Imai, Iwao; and Sone, Masazumi, 4,403,350, Cl. 455-297.000.
Ohgami, Masaaki; Shikata, Makoto; and Hara, Kazuo, 4,402,288, Cl. 123-339.000.
Ohgami, Masaaki; and Matsui, Fujio, 4,402,292, Cl. 123-440.000.
Ohgami, Masaaki, 4,402,293, Cl. 123-440.000.
Sasaki, Ichiro; and Namazue, Hirotoshi, 4,403,172, Cl. 315-77.000.

Nisshin Flour Milling Co., Ltd.: *See—*
Maruo, Toshio, 4,402,635, Cl. 406-14.000.

Nitto, Junzaburo, to Kenki Engineering Co., Ltd. Means for distributing load uniformly to wheels. 4,402,414, Cl. 212-226.000.

Nix, Hans F., to Elektro-Physik Hans Nix & Dr. Ing. E. Steingroever, K.G. Positively actuated brake for manually operable magnetic thickness gauges. 4,403,188, Cl. 324-230.000.

Nokes, Clarence. Snap-off key. 4,402,201, Cl. 70-395.000.

Nolta, Arthur H.: *See—*
Christian, John H.; Nolta, Arthur H.; Reed, David G.; Rieck, Richard E.; Tayler, Gerald E.; Truan, Terrell N.; and Williams, John S., 4,403,288, Cl. 364-200.000.

Nolte, Gerhard: *See—*
Panter, Herbert; Klein, Hermann; Nolte, Gerhard; Preisler, Eberhard; Stephan, Hans-Werner; and Reichert, Gunter, 4,402,812, Cl. 204-275.000.

Nomura, Noboru: *See—*
Omata, Yuji; Kaminaka, Nobuyuki; Kanai, Kenji; and Nomura, Noboru, 4,402,801, Cl. 204-15.000.

Nomura, Takeshi: *See—*
Miyazaki, Makoto; Nomura, Takeshi; Imai, Chihiro; and Yoda, Makoto, 4,402,863, Cl. 252-429.00B.

Noranda Mines Limited: *See—*
Carnavos, Theodore C.; and Golymbieski, Walter J., 4,402,359, Cl. 165-70.000.

Normann, Carl N. Fly-fishing arbor. 4,402,471, Cl. 242-96.000.

Northern Telecom Limited: *See—*
Lask, Zygmunt; and Johnston, Harold, 4,403,106, Cl. 174-59.000.
Vexler, Gavriel L., 4,402,789, Cl. 162-106.000.

Northwest Orthodontics, Inc.: *See—*
Frazier, Paul D., 4,402,669, Cl. 433-5.000.

Norwich Eaton Pharmaceuticals, Inc.: *See—*
Pelosi, Stanford S., Jr.; and Yu, Chia-Nien, 4,403,097, Cl. 549-487.000.

Nose, Yukihiko; Kayashima, Koji; Sueoka, Akinori; Asanuma, Yoshihiro; Shinagawa, Shigeru; Smith, James; Werynski, Andrej; and Malchesky, Paul S., to Kuraray Co., Ltd. Method for treating blood plasma employing a hollow fiber membrane. 4,402,940, Cl. 424-101.000.

Noyes, Wesley, to National Can Corporation. Method and apparatus for detecting dome depth. 4,402,139, Cl. 33-174.00L.

Nozaki, Tsutomu: *See—*
Nakanishi, Kyoji; Suzuki, Kenichiro; Tanaka, Michio; Matsuno, Jun-ichi; Ohmori, Hisashi; and Nozaki, Tsutomu, 4,402,739, Cl. 75-60.000.

NRM Corporation: *See—*
Enders, George E., 4,402,783, Cl. 156-415.000.

NSK-Warner K.K.: *See—*
Takagi, Masayuki, 4,402,114, Cl. 24-201.00R.

Nuclepore Corporation: *See—*
Peterson, David D., 4,402,216, Cl. 73-61.400.

Nuzillat, Gerard: *See—*
Pham, Ngu T.; and Nuzillat, Gerard, 4,402,127, Cl. 29-571.000.

Oak Industries Inc.: *See—*
Larson, Willis A.; Christensen, David A.; and VanZeeland, Anthony J., 4,403,272, Cl. 361-398.000.

Oberton, Serafin B., to Petrolite Corporation. Electrofiltration system for purifying organic liquids. 4,402,818, Cl. 204-302.000.

Occidental Chemical Corporation: *See—*
Bennett, W. Clark; and Garrett, Theodore T., 4,402,833, Cl. 210-667.000.

Occidental Oil Shale, Inc.: *See—*
Ricketts, Thomas E., 4,402,550, Cl. 299-2.000.

Oexler, Rudolf: *See—*
Grimm, Eberhard; Oexler, Rudolf; and Hini, Eugen, 4,402,177, Cl. 57-88.000.

Offenhausen, Rainer; and Schwarz, Hans G., to Bison-Werke Bahre & Greten GmbH & Co. KG. Method of manufacturing cement bonded boards. 4,402,890, Cl. 264-37.000.

Ogaki, Koji; Tamura, Yukio; Kaminishi, Masashi; and Takata, Yoshinori, to Kabushiki Kaisha Komatsu Seisakusho. Track-type vehicle undercarriage. 4,402,555, Cl. 305-11.000.

Ogawa, Hiroshi; Nagaoka, Tateki; and Tohyama, Yoshikuni, to Canon Kabushiki Kaisha. Scanning type image formation apparatus. 4,402,595, Cl. 355-8.000.

Ogawa, Shigeo, to Tokyo Shibaura Denki Kabushiki Kaisha. AGC System for wide band tuner. 4,403,346, Cl. 455-189.000.

Ogborne, Graham E.: *See—*
Faulkner, Robie L.; and Ogborne, Graham E., 4,402,184, Cl. 60-739.000.

Ogishima, Mamoru: *See—*
Miura, Mituo; Kukino, Yoshinori; Fujii, Takumi; Sugiyama, Kazunori; Inoue, Takashi; and Ogishima, Mamoru, 4,402,630, Cl. 405-266.000.

Ogita, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. Circuit for cancelling sinusoidal pilot signal contained in composite signal. 4,403,113, Cl. 179-1.0GC.

Ogoe, Hiroyuki; and Ohta, Hiroshi. Process for preparing laminates with thermoplastic resins. 4,402,780, Cl. 156-308.200.

Oguma, Kanzi: *See—*
Nishizaki, Tomoyoshi; Oguma, Kanzi; Sakagami, Katsuyoshi; and Yoshida, Ken, 4,402,915, Cl. 422-202.000.

Ohashi, Shin-ichi: *See—*
Iso, Yoshimi; Oshitani, Eijiro; Ohashi, Shin-ichi; and Inoue, Shigeki, 4,403,347, Cl. 455-193.000.

Ohba, Hiroshi; and Horino, Shigeo, to Tokyo Shibaura Denki Kabushiki Kaisha. Sheet sorting apparatus. 4,402,410, Cl. 209-534.000.

Ohe, Etsuo: *See—*
Sugawara, Katuo; Ohe, Etsuo; Tani, Ichitaro; and Tsukioka, Hideo, 4,402,211, Cl. 73-19.000.

Ohgami, Masaaki; Shikata, Makoto; and Hara, Kazuo; to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. System for regulating the engine speed. 4,402,288, Cl. 123-339.000.

Ohgami, Masaaki; and Matsui, Fujio, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. Air-fuel ratio control system. 4,402,292, Cl. 123-440.000.

Ohgami, Masaaki, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. Air-fuel ratio control system. 4,402,293, Cl. 123-440.000.

Ohio Electronics Machinery, Inc.: *See—*
Mattix, Harold R., 4,402,424, Cl. 221-13.000.

Ohishi, Hiroshi: *See—*
Ohkubo, Yoshio; Aoki, Tadashi; and Ohishi, Hiroshi, 4,403,237, Cl. 357-24.000.

Ohkubo, Yoshio; Aoki, Tadashi; and Ohishi, Hiroshi, to Matsushita Electronics Corporation. Charge transfer device having a bent charge transfer channel. 4,403,237, Cl. 357-24.000.

Ohman, Thor; and Terlecke, Mark J., to Graber Industries, Inc. Traverse rod and pulley housing assembly. 4,402,109, Cl. 16-95.00D.

Ohmori, Hisashi: *See—*
Nakanishi, Kyoji; Suzuki, Kenichiro; Tanaka, Michio; Matsuno, Jun-ichi; Ohmori, Hisashi; and Nozaki, Tsutomu, 4,402,739, Cl. 75-60.000.

Ohta, George: *See—*
Eguchi, Kiyohisa; Kitamura, Norio; Ohta, George; Okamura, Terumasa; and Yamada, Seizi, 4,402,838, Cl. 252-28.000.

Ohta, Hiroshi: *See—*
Ogoe, Hiroyuki; and Ohta, Hiroshi, 4,402,780, Cl. 156-308.200.

Ohta, Takeo: *See—*
Nagashima, Michiyoshi; Yoshida, Tomio; and Ohta, Takeo, 4,403,318, Cl. 369-100.000.

Ohtsu, Akira: *See—*
Takeshita, Toru; Hoshina, Kenji; Ohtsu, Akira; and Naruchi, Tatsuyuki, 4,402,975, Cl. 424-309.000.

Ohtsuki, Chihiro; and Mikoshiba, Hitoshi, to Kabushiki Kaisha Suwa Seikosha. Small impact printer with hammer mask. 4,402,261, Cl. 101-93.290.

Oishi, Kazuaki: *See—*
Yamaoka, Yukinori; Nakano, Seizo; Takeuchi, Sigetaka; Oishi, Kazuaki; and Sasaki, Koji, 4,403,125, Cl. 200-144.00R.

Okabe, Yoshio: *See—*
Arai, Fuminao; Kodama, Hisashi; and Okabe, Yoshio, 4,402,285, Cl. 123-90.580.

Okada, Hitoshi; Takai, Kazuki; and Yamaguchi, Katsumi, to Clarion Company, Ltd. Power loading/unloading mechanism for tape record/playback apparatus. 4,403,265, Cl. 360-96.500.

Okada, Takashi; and Matsuzaki, Atsushi, to Sony Corporation. Video signal processing circuit. 4,403,254, Cl. 358-171.000.

Okado, Chihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Commutation control device for current type inverters. 4,403,280, Cl. 363-96.000.

Okamoto, Eisaku: *See*—
Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, 4,402,244, Cl. 84-1.030.

Okamoto, Shigeo: *See*—
Okimoto, Tomoyuki; Shioi, Shunsuke; Kuroda, Takio; Okamoto, Shigeo; and Shiozaki, Tomoharu, 4,403,051, Cl. 524-45.000.

Okamoto, Yoshiyuki; and Wojciechowski, Piotr S., to Koppers Company, Inc. Substituted teraselenafulvalenes and high pressure synthesis thereof. 4,402,875, Cl. 260-239.00R.

Okamura, Shigeru: *See*—
Terasawa, Koji; Tazaki, Shigemitsu; and Okamura, Shigeru, 4,403,233, Cl. 346-140.00R.

Okamura, Tatsuro; and Irifune, Hideki, to Okamura, Tatsuro; and Yoshida Kogyo K.K. Building materials and method for manufacturing same. 4,402,750, Cl. 106-85.000.

Okamura, Terumasa: *See*—
Eguchi, Kiyohisa; Kitamura, Norio; Ohta, George; Okamura, Terumasa; and Yamada, Seizi, 4,402,838, Cl. 252-28.000.

Okamura, Toshihiro: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Kitaguchi, Koji; Ozaki, Masakuni; Kitano, Masahiko; Okamura, Toshihiro; and Tanaka, Haruo, 4,402,948, Cl. 424-182.000.

Okano, Michiaki; and Furuichi, Shuhei, to Kabushiki Kaisha Morita Seisakusho. Occlusion pressure image system. 4,402,326, Cl. 128-774.000.

Okazaki, Shinji: *See*—
Mochiji, Kozo; Maruyama, Yozi; Okazaki, Shinji; and Murai, Fumio, 4,403,151, Cl. 250-492.200.

Okimoto, Tomoyuki; Shioi, Shunsuke; Kuroda, Takio; Okamoto, Shigeo; and Shiozaki, Tomoharu, to Kanzaki Paper Manufacturing Company, Limited. Microcapsule dispersions. 4,403,051, Cl. 524-45.000.

Okita, Hiroshi: *See*—
Goto, Issei; Tanabe, Kuniaki; and Okita, Hiroshi, 4,402,765, Cl. 148-6.15R.

Okugawa, Michihide, to Dainichi-Nippon Cables, Ltd. Process for treatment of a liquid containing a nickel cyanide compound. 4,402,837, Cl. 210-758.000.

Okumura, Hiroshi: *See*—
Yanazawa, Tadaaki; Tanaka, Teruaki; Yamashita, Masashi; Ehiro, Takashi; Okumura, Hiroshi; Saito, Shinzo; and Kusaba, Takashi, 4,402,206, Cl. 72-221.000.

Okumura, Takeo; and Ando, Hiroshi, to Kao Soap Co., Ltd. Preshampoo-type hair-treating composition. 4,402,936, Cl. 424-70.000.

Okura Kogyo Kabushiki Kaisha: *See*—
Dohi, Hidemi; Mori, Hideki; and Matsuda, Hideaki, 4,403,058, Cl. 524-397.000.

Olander, Donald E.; and Petersen, Donald W., to Hi-Shear Corporation. Pyrotechnic composition. 4,402,774, Cl. 149-19.300.

Olesovsky, Jaroslav; and Hanik, Frantisek, to Prvni brnenska strojirna, koncernovy podnik. Device for the surface cleaning of rotating machine elements. 4,402,104, Cl. 15-312.00R.

Olin Corporation: *See*—
Buder, Thomas E., 4,402,207, Cl. 72-241.000.
Kadija, Igor V., 4,402,816, Cl. 204-296.000.
Kircher, Morton S.; and Wood, Geoffrey B., 4,402,813, Cl. 204-279.000.

Olschewski, Armin; Brandenstein, Manfred; and Lothar, Walter, to SKF Industries, Inc. Rolling bearing. 4,402,558, Cl. 308-187.000.

Olson, Gene E.; Grover, Donald D.; Stout, Christopher B.; Becker, Thomas P.; Kaufman, Glenn A.; and Kot, Norbert J., to Snap-on Tools Corporation. Bolt load determining apparatus. 4,402,222, Cl. 73-579.000.

Olympia Werke AG: *See*—
Fessel, Rudolf, 4,403,301, Cl. 364-900.000.

Olympus Optical Co., Ltd.: *See*—
Hattori, Shinichiro, 4,402,311, Cl. 128-4.000.
Kimura, Tetsuya, 4,402,310, Cl. 128-4.000.
Nishioka, Kimihiko, 4,403,273, Cl. 362-32.000.
Tsuboshima, Kosaku, 4,403,180, Cl. 318-640.000.
Yabe, Hisao, 4,402,313, Cl. 128-6.000.
Yamasaki, Masafumi, 4,402,587, Cl. 354-31.000.

Omata, Yuji; Kaminaka, Nobuyuki; Kanai, Kenji; and Nomura, Noboru, to Matsushita Electric Industrial Co., Ltd. Method for manufacturing thin film magnetic head. 4,402,801, Cl. 204-15.000.

Onderak, Dale G.; and Pangallo, David L., to Becton Dickinson and Company. Skid resistant resilient floor covering. 4,403,009, Cl. 428-159.000.

Ono, Hironobu, to Toyota Jidosha Kabushiki Kaisha. Electronically controlled fuel injection apparatus for internal combustion engine. 4,402,295, Cl. 123-493.000.

Op De Beek, Johannes C. A.: *See*—
Lux, Peter W.; Van Leiden, Hendrikus F.; and Op De Beek, Johannes C. A., 4,403,289, Cl. 364-414.000.

Optic-Electronic Corporation: *See*—
Coon, Bryan H.; Kluck, Wallace A.; and Radke, Billy W., 4,403,148, Cl. 250-332.000.

Oriel, Patrick J.: *See*—
Gilpin, Jo Ann; Oriel, Patrick J.; and Briggs, Roger A., 4,402,877, Cl. 260-239.30P.

Orient Chemical Industries, Ltd.: *See*—
Ishikawa, Kazuhiro; Kawagishi, Yoji; and Ishida, Yukihiko, 4,403,027, Cl. 430-110.000.

Orlov, Gennady S.: *See*—
Alexander, Jury V.; Viktorov, Viktor D.; Zuev, Vladimir K.; Orlov, Gennady S.; Filipin, Nikolai A.; and Khunafin, Fedor S., 4,402,612, Cl. 356-427.000.

O'Rourke, Harold T., to Cooper Industries, Inc. Mass soldering system. 4,402,448, Cl. 228-125.000.

Ortloff, John E., to Exxon Production Research Co. Clamping mechanism for connecting members in end-to-end relation. 4,402,533, Cl. 285-18.000.

Osa, Tetsuo; and Fujihira, Masamichi, to Tohoku University, The President of. Chemically modified photoelectrochemical cell. 4,403,022, Cl. 429-111.000.

Oser, Neil J., to FAO, Inc. Wattless lamp assembly. 4,403,275, Cl. 362-220.000.

Oshitani, Eijiro: *See*—
Iso, Yoshimi; Oshitani, Eijiro; Ohashi, Shin-ichi; and Inoue, Shigeki, 4,403,347, Cl. 455-193.000.

Ostergaard, Mack R.: *See*—
Elder, Arthur L.; Ostergaard, Mack R.; Smith, Dennis R.; and Warner, Reed H., 4,402,492, Cl. 266-196.000.

Ostrowsky, Efrem M., to Ethyl Products Company. Tamperproof closure. 4,402,418, Cl. 215-252.000.

Oswald, Alexis A., to Exxon Research & Engineering Co. Dialkyl amine derivatives of phthalic acid. 4,402,708, Cl. 44-66.000.

Ota, Naoto: *See*—
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,403,179, Cl. 318-632.000.
Kohzai, Yoshinori; Fujioka, Yoshiki; and Ota, Naoto, 4,403,181, Cl. 318-664.000.

Otis Elevator Company: *See*—
Ficheux, Rene; and Pavoz, Marcel, 4,402,386, Cl. 187-29.00R.

Otto, Karl-Heinz: *See*—
Hartmann, Volker; Otto, Karl-Heinz; and Patt, Ludwig, 4,402,949, Cl. 424-183.000.

Ovaska, Juhani: *See*—
Toivonen, Pentti; and Ovaska, Juhani, 4,402,233, Cl. 74-411.000.

Ovieve, Gerard E.: *See*—
Ehret, Thomas M.; and Ovieve, Gerard E., 4,402,350, Cl. 141-94.000.

Owens, Carl H. Lockable valve for hydraulic system. 4,402,339, Cl. 137-384.600.

Owens-Corning Fiberglas Corporation: *See*—
Bhatti, Mohinder S., 4,402,718, Cl. 65-1.000.
Bhatti, Mohinder S., 4,402,719, Cl. 65-1.000.
Helser, Jerry L., 4,402,892, Cl. 264-42.000.
Hinze, Jay W.; Robinson, Mark L.; and Lawson, Richard D., 4,402,767, Cl. 148-11.50P.
Roehrig, Frederick K.; and McGarry, Dennis L., 4,402,885, Cl. 264-11.000.
Uffner, William E., 4,403,067, Cl. 525-54.500.

Owens-Illinois, Inc.: *See*—
Kontz, Robert F., 4,402,467, Cl. 242-58.200.
Mumford, George V.; and Smalley, Ned J., 4,402,416, Cl. 215-220.000.

Oy Tampella AB: *See*—
Paasonen, Hannu I.; Salmi, Pekka M.; and Heinonen, Jarmo, 4,402,557, Cl. 308-3.900.

Oya, Akiyoshi; Ubayama, Takashi; and Suzuki, Hideo, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with special tone generator. 4,402,245, Cl. 84-1.170.

Ozaki, Masakuni: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Kitaguchi, Koji; Ozaki, Masakuni; Kitano, Masahiko; Okamura, Toshihiro; and Tanaka, Haruo, 4,402,948, Cl. 424-182.000.

Ozaki, Shinji: *See*—
Kawamura, Kotaro; and Ozaki, Shinji, 4,403,260, Cl. 360-10.200.

P. Sully Co.: *See*—
Sullivan, Patrick O., 4,403,210, Cl. 340-72.000.

Paasonen, Hannu I.; Salmi, Pekka M.; and Heinonen, Jarmo, to Oy Tampella AB. Drill steel centralizer. 4,402,557, Cl. 308-3.900.

Paccar Inc.: *See*—
Strong, John R., 4,402,380, Cl. 180-292.000.

Pacific Metals Co., Ltd.: *See*—
Koike, Shinkichi; Kimura, Akira; Hikage, Toru; and Sugiura, Sadao, 4,402,884, Cl. 264-8.000.

Pacific Resins & Chemicals, Inc.: *See*—
McDonald, Roderick A., 4,403,076, Cl. 525-501.000.

Pagel, Ernst-Olav; and Euringer, Robert, to Audi Nsu Auto Union AG. Electrical control system for stopping and starting a motor-vehicle engine. 4,402,286, Cl. 123-179.00B.

Paget, Win. W. Compressor valve. 4,402,342, Cl. 137-512.150.

Paglia, Richard, to Polaroid Corporation. Sonic transducer having diaphragm tensioning spring directly attached to diaphragm. 4,403,117, Cl. 179-111.00R.

Pako Corporation: *See*—
Rubin, Barry P., 4,402,590, Cl. 354-324.000.

Pall Corporation: *See*—
Pall, David B., 4,402,830, Cl. 210-457.000.

Pall, David B., to Pall Corporation. Corrugated filter element with external spiral tape support. 4,402,830, Cl. 210-457.000.

Pallaro, Gino, to Aspera S.p.A. Insulating element for electric motor windings, and motor provided with such elements. 4,403,162, Cl. 310-194.000.

Palley, Igor: *See—*
Harpell, Gary A.; Kavesh, Sheldon; Palley, Igor; and Prevorsek, Dusan C., 4,403,012, Cl. 428-290.000.
Palmer, Jay W.: *See—*
Gaynor, John C.; and Palmer, Jay W., 4,402,922, Cl. 423-164.000.
Palmer, Morrie. Dual slide projector and tray. 4,402,584, Cl. 353-117.000.
Pamarco Incorporated: *See—*
Runck, Walter A., 4,402,888, Cl. 264-22.000.
Pampouchidis, Georgios; Daimer, Wolfgang; and Verdino, Heiner, to Vianova Kunstharz, A. G. Cathodically depositable ester-containing coating compositions. 4,403,050, Cl. 523-501.000.
Panchanathan, Viswanathan: *See—*
Ray, Ranjan; Panchanathan, Viswanathan; and Giessen, Bill C., 4,402,745, Cl. 75-251.000.
Pangallo, David L.: *See—*
Onderak, Dale G.; and Pangallo, David L., 4,403,009, Cl. 428-159.000.
Pannwitz, Hans U. Reduced static castor. 4,402,108, Cl. 16-26.000.
Panter, Herbert; Klein, Hermann; Nolte, Gerhard; Preisler, Eberhard; Stephan, Hans-Werner; and Reichert, Gunter, to Hoechst Aktiengesellschaft. Electrolytic cell. 4,402,812, Cl. 204-275.000.
Panto, Joseph S.; and Kaswell, Ernest R., to Albany International Corp. Bleed resistant colored crepe paper and the method of its preparation. 4,402,703, Cl. 8-541.000.
Paoletti, Peitro: *See—*
Amara, Louis J.; Paoletti, Peitro; and Tavana, Benito J., 4,402,753, Cl. 106-94.000.
Papantoniou, Christos: *See—*
Madrange nee Dermain, Annie; and Papantoniou, Christos, 4,403,070, Cl. 525-330.400.
Papp, Alan M.: *See—*
Carroll, Richard R.; and Papp, Alan M., 4,402,125, Cl. 29-568.000.
Paque, Michael W.; and Bradshaw, Franklin C., to Kroy, Inc. Printing apparatus and printing cartridge therefor. 4,402,619, Cl. 400-36.000.
Pariani, Ronald L.: *See—*
Arp, David F.; and Pariani, Ronald L., 4,402,740, Cl. 75-65.00R.
Parker, Harry A.; and Greenman, Joseph, to Transfer Print Foils, Inc. Sandwich metalized resin laminate. 4,403,004, Cl. 428-31.000.
Parker, James F.: *See—*
Luker, Johnie N.; Luker, Johnie D.; and Luker, David K., 4,402,093, Cl. 4-427.000.
Parracho, Rui M.; and Crowley, Kevin J., to Converse Inc. Running shoe sole with heel tabs. 4,402,146, Cl. 36-129.000.
Parschat, Lothar: *See—*
Gruner, Hans; Schrewe, Hans; Parschat, Lothar; and Pleschiutschnigg, Fritz-Peter, 4,403,230, Cl. 346-107.00R.
Pascarella, Vincent J.: *See—*
McGary, Charles W., Jr.; Rhodes, Delmer R.; and Pascarella, Vincent J., 4,403,084, Cl. 528-45.000.
Patchett, Arthur A.: *See—*
Greenlee, William J.; Hangauer, David G., Jr.; and Patchett, Arthur A., 4,402,969, Cl. 424-274.000.
Patent Technology, Inc.: *See—*
Watenpaugh, Norman H., 4,402,175, Cl. 56-327.00R.
Patent-Treuhand-Gesellschaft fur Gluhlampen mbH: *See—*
Mayer, Walter, 4,403,173, Cl. 315-289.000.
Patil, Arvind S.: *See—*
Netherton, Lowell E.; and Patil, Arvind S., 4,403,060, Cl. 524-413.000.
Patt, Ludwig: *See—*
Hartmann, Volker; Otto, Karl-Heinz; and Patt, Ludwig, 4,402,949, Cl. 424-183.000.
Pattanaik, Surya, to GET Products Corporation. Iron-nickel base brazing filler metal. 4,402,742, Cl. 75-123.00B.
Patterson, Dennis B.: *See—*
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Pelda, Frederick J.; and Wirth, Eugene A., to Pitney Bowes Inc. Fire extinguishing device for electrophotocopier. 4,402,594, Cl. 355-3.0FU.
Pelosi, Stanford S., Jr.; and Yu, Chia-Nien, to Norwich Eaton Pharmaceuticals, Inc. 5-(3-Trifluoromethylphenyl)-2-furancarboxylic acid 2-(1-methylethylidene)hydrazide. 4,403,097, Cl. 549-487.000.
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Pepper, Robert B. Ultrasonically operated water faucet. 4,402,095, Cl. 4-623.000.
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Peterson, Francis C., to Illinois Tool Works Inc. Clinch nut for plastic panels. 4,402,640, Cl. 411-112.000.
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Poliak, John M., to Leviton Manufacturing Company, Inc. Positive retention electrical connector. 4,402,565, Cl. 339-103.00M.

Pollet, Gilbert; du Manoir, Pierre; and Guerit, Pierre, to Servimetal. Process for the precise and continuous injection of a halogenated derivative in the gaseous state into a liquid metal. 4,402,741, Cl. 75-93.00E.

Pollock, Elisabeth M.; and Lentz, David J., to Extracorporeal Medical Specialties, Inc. Method for inhibiting mineralization of natural tissue during implantation. 4,402,697, Cl. 8-94.110.

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Ripkens, Hans-Gerd: *See*—
Steinki, Karl; and Ripkens, Hans-Gerd, 4,402,276, Cl. 112-262.300.
Riva, Charles E. Fundus camera-based retinal laser doppler velocimeter. 4,402,601, Cl. 356-28.500.
Robert Bosch GmbH: *See*—
Dworak, Wilhelm, 4,402,654, Cl. 418-131.000.
Hofer, Gerald, 4,402,290, Cl. 123-359.000.
Kemmner, Ulrich, 4,402,344, Cl. 137-625.330.
Kreuzer, Helmut; and Frister, Manfred, 4,402,129, Cl. 29-596.000.
Wischermann, Gerhard, 4,403,245, Cl. 358-22.000.
Roberts, David, to Versatech Products Inc.; and Versatech Products Inc. Air aspiration prevention pan. 4,402,674, Cl. 440-38.000.
Roberts, Joseph A., to Advanced Circuit Technology. Electrical switch assembly and method of manufacture. 4,402,131, Cl. 29-622.000.
Robiczek, Gunther: *See*—
Fortner, Walter; Misera, Erich; Landerl, Franz; Robiczek, Gunther; and Berger, Meinhard, 4,402,437, Cl. 222-607.000.
Robinson, Mark L.: *See*—
Hinze, Jay W.; Robinson, Mark L.; and Lawson, Richard D., 4,402,767, Cl. 148-11.50P.
Robitschek, Paul; and Stone, Jeffrey B., to Chembond Corporation. Thermosetting resin glues foamable to high density. 4,403,013, Cl. 428-318.400.
Rocchetti, Frankie. Rotatable drilling head. 4,402,371, Cl. 175-108.000.
Rockwell International Corporation: *See*—
Gergis, Isoris S., 4,403,304, Cl. 365-12.000.
Strahan, Virgil H.; James, Kenneth A.; and Quick, William H., 4,403,144, Cl. 250-231.00R.
Rodewald, Paul G., to Mobil Oil Corporation. Silica-modified zeolite catalysts. 4,402,867, Cl. 252-455.00Z.
Roehrig, Frederick K.; and McGarry, Dennis L., to Owens-Corning Fiberglas Corporation. Process for producing atomized powdered metal or alloy. 4,402,885, Cl. 264-11.000.
Rogers Corporation: *See*—
DeVries, Donald H., 4,403,108, Cl. 174-72.00B.
Rogers, Peter L.; and Tribe, David E., to Unisearch Limited. Ethanol Production. 4,403,034, Cl. 435-161.000.
Rolls-Royce Limited: *See*—
Reid, Matthew R.; and Hart, Kenneth J., 4,402,180, Cl. 60-39.080.
Roltra, S.p.A.: *See*—
Brusasco, Enzo, 4,402,160, Cl. 49-352.000.
Romanelli, Pat; and Peters, Kenneth, to Ram Products, Inc. Automatic ignition and flame detection system for gas fired devices. 4,402,663, Cl. 431-66.000.
Romero-Medrano, Antonio L., to General Electric Company. Roll winding apparatus and method. 4,402,784, Cl. 156-446.000.
Roper Corporation: *See*—
Dankel, Douglas D., 4,402,366, Cl. 172-43.000.
Goertzen, Gerold G., 4,402,365, Cl. 172-39.000.
Rose, David; and Maak, Norbert, to Henkel Kommanditgesellschaft auf Aktien. Coupler components for the oxidation of hair dyes and their use, as well as hair dyeing agents containing them. 4,402,699, Cl. 8-412.000.
Roseman, Theodore J.; Derr, Glenford R.; and Schwartzman, Gilbert, to Upjohn Company, The. Medicated device holder. 4,402,693, Cl. 604-890.000.
Rosenbaum, Larry A., to Hancor, Inc. Coextrusion die assembly. 4,402,898, Cl. 264-173.000.
Rosenfield, Richard G.: *See*—
Vollmer, Arthur N.; and Rosenfield, Richard G., 4,402,873, Cl. 260-118.000.

Rosenthal, Arthur L.; and Wilson, Bruce H., to Clinipad Corporation, The. Aseptic connection barrier system and method. 4,402,691, Cl. 604-411.000.
Rosenthal, Yuval. Subsurface irrigation. 4,402,631, Cl. 405-48.000.
Rosler, Helmut; and Gafert, Reinhard, to Siemens Aktiengesellschaft. Monolithically integrable semiconductor circuit. 4,403,334, Cl. 377-44.000.
Ross, Richard. Optical exercising device. 4,402,580, Cl. 351-203.000.
Rosso, Matthew J., Jr.: *See*—
Golben, Peter M.; and Rosso, Matthew J., Jr., 4,402,187, Cl. 62-48.000.
Rossow, Harold E.: *See*—
Lane, George A.; and Rossow, Harold E., 4,402,846, Cl. 252-70.000.
Rotrekl, Otto; and Kuda, Vladimir, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Warp let-off and its drive in a loom. 4,402,347, Cl. 139-99.000.
Roussel-Uclaf: *See*—
Christidis, Yani; Fournex, Robert; and Tournemine, Colette, 4,402,978, Cl. 424-317.000.
Martel, Jacques; Tessier, Jean; and Teche, Andre, 4,402,972, Cl. 424-304.000.
Rowe, Albert: *See*—
Leibinger, George E.; and Rowe, Albert, 4,403,205, Cl. 336-180.000.
Royle, Rae A., to Texaco, Inc. Demulsifier for produced oil-in-water emulsions containing spent mud acids. 4,402,857, Cl. 252-342.000.
Royston Manufacturing Corporation: *See*—
Adams, Richard P.; and Christian, Charles, 4,402,389, Cl. 192-134.000.
Rubin, Barry P., to Pako Corporation. Automatic replenisher control for multiprocess photographic processor. 4,402,590, Cl. 354-324.000.
Rudin, Stephen; Bednarek, Daniel R.; and Wong, Roland. Process and apparatus for scatter reduction in radiography. 4,403,338, Cl. 378-146.000.
Ruemer, John, Jr., to Crown Cork & Seal Company, Inc. Container closure having easy-opening means. 4,402,421, Cl. 220-269.000.
Ruhrchemie Aktiengesellschaft: *See*—
Meis, Josef; Schmidt, Volkmar; Tummes, Hans; and Much, Joachim, 4,402,860, Cl. 252-420.000.
Runck, Walter A., to Pamarco Incorporated. Corona discharge treatment roll. 4,402,888, Cl. 264-22.000.
Rusch, Reinhard; and Arndt, Friedrich, to Schering AG. Composition for plant growth regulation. 4,402,726, Cl. 71-73.000.
Russell, Frank J.: *See*—
Nemeth, Joseph; and Russell, Frank J., 4,402,894, Cl. 264-56.000.
Russell, Frank S.; and Simonelli, Robert J., to Sleeper & Hartley Corp. Wire coiling machine. 4,402,204, Cl. 72-131.000.
Rustin, Francis: *See*—
Thompson, Earl C.; Keller, Morris C.; and Rustin, Francis, 4,402,343, Cl. 137-614.200.
Ruumpol, Geurt J., to Inductive Control Systems, B.V. Control system, more particularly for driving motors for a vehicle for the disabled. 4,403,175, Cl. 318-53.000.
Ruyak, Robert F.; and Smith, Charles W., Jr., to Autoclave Engineers, Inc. Gas/oil separator. 4,402,715, Cl. 55-317.000.
Ryan, Francis D.; and Ho, Harry H., to General Electric Company. Fluid-cooled oil deflector. 4,402,514, Cl. 277-22.000.
Ryan, Matthew C., to Fischer & Porter Company. AGC Amplifier for ultrasonic measuring system. 4,402,231, Cl. 73-861.270.
Rykov, Nikolai A.: *See*—
Nikitin, Jury F.; Nikitin, Dmitry J.; Rykov, Nikolai A.; and Terekhov, Igor L., 4,402,369, Cl. 173-18.000.
Ryobi, Ltd.: *See*—
Honkawa, Yoshinori, 4,402,263, Cl. 101-350.000.
S.H.E. Corporation: *See*—
Simmonds, Michael B., 4,403,189, Cl. 324-248.000.
Sacarisen, Stephen P.; and Guttag, Karl M., to Texas Instruments Incorporated. Microprocessor which detects leading 1 bit of instruction to obtain microcode entry point address. 4,403,284, Cl. 364-200.000.
Sado, Ryoichi, to Shin-Etsu Polymer Co., Ltd. Interconnectors. 4,402,562, Cl. 339-61.00M.
Sager, David A.: *See*—
Kerns, Victor L.; and Sager, David A., 4,402,443, Cl. 225-103.000.
St. John, Richard C., to Dyneer Corporation. Clutch housing and pulley assembly. 4,402,678, Cl. 474-171.000.
St. Joseph Bank and Trust Company, executor: *See*—
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,402,878, Cl. 548-421.000.
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,402,879, Cl. 548-421.000.
Saito, Isao: *See*—
Yamanaka, Motosuke; Saito, Isao; Yamatsu, Kiyomi; and Fujimoto, Takako, 4,402,966, Cl. 424-273.00R.
Saito, Junichi: *See*—
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; and Shiokawa, Kozo, 4,402,731, Cl. 71-92.000.
Saito, Masahiro: *See*—
Ueda, Shoji; Daikoku, Takashi; Zama, Masato; Matsuo, Shintaro; Saito, Masahiro; and Kinoshita, Hidejiro, 4,402,906, Cl. 420-493.000.
Saito, Motoyuki; and Hatanaka, Hideo, to Citizen Watch Co., Ltd. Electronic timepiece assembly. 4,403,315, Cl. 368-321.000.
Saito, Shinzo: *See*—
Yanazawa, Tadaaki; Tanaka, Teruaki; Yamashita, Masashi; Ehiro, Takashi; Okumura, Hiroshi; Saito, Shinzo; and Kusaba, Takashi, 4,402,206, Cl. 72-221.000.
Saito, Toshitaka: *See*—
Sano, Hiromi; Suzuki, Masatoshi; Fujimoto, Masaya; Yamakawa Mitihiro; and Saito, Toshitaka, 4,402,820, Cl. 204-425.000.
Sakaba, Kozo: *See*—
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Sakagami, Katsuyoshi: *See*—
Nishizaki, Tomoyoshi; Oguma, Kanzi; Sakagami, Katsuyoshi; and Yoshida, Ken, 4,402,915, Cl. 422-202.000.
Sakamoto, Masaharu, to Pioneer Electronic Corporation. Frequency conversion circuit. 4,403,156, Cl. 307-219.100.
Sakata, Shinji: *See*—
Hayashi, Makoto; Sakata, Shinji; and Shimizu, Tasuku, 4,402,227, Cl. 73-812.000.
Sakoe, Hiroaki, to Nippon Electric Co., Ltd. Speaker recognizer in which a significant part of a preselected one of input and reference patterns is pattern matched to a time normalized part of the other. 4,403,114, Cl. 179-1.50D.
Sakurai, Shoji: *See*—
Goto, Eiji; Ishihara, Masaru; Sakurai, Shoji; Enei, Hitoshi; and Takinami, Koichi, 4,403,033, Cl. 435-108.000.
Salkazanov, Pierre: *See*—
Bavoux, Robert J. A.; Lemaire, Francis R. J. M.; and Salkazanov, Pierre, 4,403,300, Cl. 364-900.000.
Salmi, Pekka M.: *See*—
Paasonen, Hannu I.; Salmi, Pekka M.; and Heinonen, Jarmo, 4,402,557, Cl. 308-3.900.
Salomon, Georges P. J., to Etablissements Francois Salomom et Fils Chemin de la Prairie Prolonge. Ski safety binding. 4,402,525, Cl. 280-628.000.
Samson Aktiengesellschaft: *See* –
Kemmler, Lothar, 4,402,305, Cl. 137-82.000.
Samson, Joseph E.: *See*—
Holberger, Kenneth D.; and Samson, Joseph E., 4,403,282, Cl. 364-200.000.
Sander, Nils B. L.: *See*—
Wosegien, Bernd; Staltmeir, Josef; and Sander, Nils B. L., 4,402,388, Cl. 188-56.000.
Sanders Associates, Inc.: *See*—
Kuppenheimer, John D., Jr., 4,402,602, Cl. 356-124.000.
Sanders, Ian L.: *See*—
Keefe, George E.; and Sanders, Ian L., 4,403,305, Cl. 365-16.000.
Sanders, John T. Safety circulation system. 4,402,094, Cl. 4-504.000.
Sandoz Ltd.: *See*—
Hartmann, Volker; Otto, Karl-Heinz; and Patt, Ludwig, 4,402,949, Cl. 424-183.000.
Milzner, Karlheinz, 4,402,730, Cl. 71-92.000.
Sano, Hiromi; Suzuki, Masatoshi; Fujimoto, Masaya; Yamakawa Mitihiro; and Saito, Toshitaka, to Nippondenso Co., Inc. Oxygen analyzer. 4,402,820, Cl. 204-425.000.
Sara, Raymond V., to Union Carbide Corporation. Chemically bonded aluminum coating for carbon via monocarbides. 4,402,744, Cl. 75-239.000.
Sarbach, Jurg: *See*—
Daume, Eduard; and Sarbach, Jurg, 4,402,705, Cl. 44-1.00R.
Sasaki, Hiroshi, to Mitutoyo Mfg. Co., Ltd. Articulated device for service component. 4,402,481, Cl. 248-276.000.
Sasaki, Ichiro; and Namazue, Hirotoshi, to Nissan Motor Co., Ltd.; and Kokusan Kinzoku Kogyo Kabushiki Kaisha. Vehicle interior light control system. 4,403,172, Cl. 315-77.000.
Sasaki, Keiichi: *See*—
Sunami, Yoshihiko; Sasaki, Keiichi; and Iwahashi, Tohru, 4,402,824, Cl. 208-45.000.
Sasaki, Koji: *See*—
Yamaoka, Yukinori; Nakano, Seizo; Takeuchi, Sigetaka; Oishi, Kazuaki; and Sasaki, Koji, 4,403,125, Cl. 200-144.00R.
Sasaki, Takashi: *See*—
Kobayashi, Morio; and Sasaki, Takashi, 4,402,755, Cl. 106-125.000.
Sasaki, Yoshiyuki; Kuwabara, Mitsuo; and Tani, Masayuki, to Teijin Limited. Deep-dyeable polyester fiber. 4,403,094, Cl. 528-308.200.
Sasaya, Hideaki: *See*—
Nara, Akio; Sasaya, Hideaki; Takagi, Shigeru; and Mitsui, Takao, 4,402,655, Cl. 418-137.000.
Sasse, Klaus: *See*—
Moeschler, Heinrich F.; Sasse, Klaus; Lange, Peter M.; Golker, Christian; Zoebelein, Gerhard; and Telle, Otto, 4,402,947, Cl. 424-181.000.
Satake Engineering Co., Ltd.: *See*—
Satake, Toshihiko, 4,403,191, Cl. 324-452.000.
Satake, Toshihiko, to Satake Engineering Co., Ltd. Cereal grain moisture content measuring apparatus. 4,403,191, Cl. 324-452.000.
Sato, Akihiro: *See*—
Harada, Masato; Sato, Akihiro; Yamada, Sadahiko; Kikuta, Kazutsune; Suzuki, Atsushi; Shimizu, Hiroshi; Masuda, Jun; Hamasaki, Tadamitsu; and Kachi, Atsuyuki, 4,403,081, Cl. 526-115.000.
Sato, Hideo: *See*—
Horie, Seiji; Nagata, Masayoshi; Nakano, Junji; and Sato, Hideo, 4,403,025, Cl. 430-59.000.
Sato, Kazuo: *See*—
Kawakami, Heijiro; Tanaka, Katsumasa; Kamamoto, Seiichi; and Sato, Kazuo, 4,402,757, Cl. 134-1.000.

Sato, Kenichi; Yamauchi, Kazuhisa; Hanaki, Yasumasa; Kondo, Takasi; and Yokota, Minoru, to Sumitomo Electric Industries, Ltd. High conductive heat-resistant aluminum alloy. 4,402,763, Cl. 148-2.000.

Sato, Masayuki: *See*—
Aoki, Hideto; Hirano, Tomoyuki; Watanabe, Mitsugu; Kamano, Toshiyuki; Tsunoda, Mitsunori; Akiyama, Toshikazu; Kanehiro, Mitsuyasu; Kubota, Mitsuji; and Sato, Masayuki, 4,403,155, Cl. 307-10.00R.

Sato, Toshiyuki: *See*—
Momura, Kazuhiko; Sato, Toshiyuki; Kanda, Atsushi; and Kanno, Nobuyuki, 4,402,351, Cl. 141-98.000.

Satogosei Co., Ltd.: *See*—
Suzuki, Tadashi, 4,402,446, Cl. 227-67.000.

Satomi, Takeo: *See*—
Akiba, Keiichiro; Satomi, Takeo; Fujinami, Akira; Asano, Yasuhisa; Kameda, Nobuyuki; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 4,402,734, Cl. 71-111.000.

Savage, John M., Jr. Lens cap holder for attachment to circuit boards having a plastic inverted U-shaped hinge. 4,402,110, Cl. 16-225.000.

Sawa, Seija, to Minolta Camera Kabushiki Kaisha. Ophthalmic device to diagnose the eye fundus. 4,402,325, Cl. 128-666.000.

Sawatzki, Klaus E.: *See*—
Glomm, Horst M.; Sawatzki, Klaus E.; and Fischer, Dieter, 4,402,666, Cl. 431-177.000.

Schacht, Bodo: *See*—
Buhler, Wolfgang; Brunner, Franz W.; and Schacht, Bodo, 4,402,685, Cl. 604-280.000.

Schaeffer, Bruce S., to Frick Company. Refrigeration system condenser heat recovery at higher temperature than normal condensing temperature. 4,402,189, Cl. 62-79.000.

Schaetzer, Harry: *See*—
Raisin, Helmut; Mausezahl, Dieter; and Schaetzer, Harry, 4,402,704, Cl. 8-641.000.

Schafner, George C.: *See*—
Fedder, Richard C.; Schafner, George C.; and Ward, William M., 4,403,235, Cl. 346-160.000.

Schapel, Dietmar: *See*—
Heller, Harold; Schapel, Dietmar; Hentschel, Claus; and Dahm, Manfred, 4,402,725, Cl. 71-27.000.

Schattmann, Peter: *See*—
Adamek, Manfred; and Schattmann, Peter, 4,403,319, Cl. 369-261.000.

Schauer, Horst: *See*—
Engert, Gerd-Juergen; de Haas, Klaus; Magin, Rudolf; Nenninger, Franz; and Schauer, Horst, 4,402,349, Cl. 141-9.000.

Schedele, Helmut, to Siemens Aktiengesellschaft. Polarized electromagnetic relay. 4,403,203, Cl. 335-78.000.

Schenck, Alexander W. Concealed interlocking fastener. 4,402,116, Cl. 24-217.00R.

Schering AG: *See*—
Rusch, Reinhard; and Arndt, Friedrich, 4,402,726, Cl. 71-73.000.

Schering Aktiengesellschaft: *See*—
Niedballa, Ulrich; and Bottcher, Irmgard, 4,402,960, Cl. 424-251.000.

Scherowsky, Gunther: *See*—
Moeller, Alexander; and Scherowsky, Gunther, 4,402,854, Cl. 252-299.100.

Schieman, Richard D., to Standard Oil Company, The. Extended service 5W-40 motor oil. 4,402,841, Cl. 252-46.600.

Schiff, Leonard N., to RCA Corporation. FM/TV Automatic gain control system. 4,403,255, Cl. 358-186.000.

Schiffelbein, Richard A. Method of digging and transporting trees. 4,402,148, Cl. 37-195.000.

Schlaikjer, Carl R.: *See*—
Domeniconi, Michael J.; Schlaikjer, Carl R.; and Young, Clifton A., 4,403,021, Cl. 429-101.000.

Schlosser, Willem J.: *See*—
Alfenaar, Marinus; Leijen, Joannes J. P.; and Schlosser, Willem J., 4,403,018, Cl. 429-34.000.

Schlumberger Technology Corporation: *See*—
Clavier, Christian M.; and Khatchikian, Alberto, 4,403,290, Cl. 364-422.000.
Hache, Jean M., 4,402,219, Cl. 73-151.000.

Schlusener, Horst: *See*—
Merten, Gerhard; Schlusener, Horst; Becker, Kunibert; and Beyer, Herbert, 4,402,634, Cl. 405-299.000.

Schmid, Hermann; and Wells, Robert C., to General Electric Company. Optical fiber position sensor. 4,403,152, Cl. 250-551.000.

Schmidt, Hans-Werner; Beisswenger, Hans; Reh, Lothar; Folliot, Albert; and Iard, Maurice P., to Creusot-Loire Enterprises; Lafarge Coppee; Folliot, Albert; and Metallgesellschaft. Process of producing cement clinker. 4,402,754, Cl. 106-100.000.

Schmidt, Robert: *See*—
Beck, Gunther; Baasner, Bernd; Eue, Ludwig; and Schmidt, Robert, 4,402,732, Cl. 71-92.000.
Forster, Heinz; Eue, Ludwig; Schmidt, Robert; and Lurssen, Klaus, 4,402,727, Cl. 71-74.000.

Schmidt, Roland: *See*—
Denham, Dale; and Schmidt, Roland, 4,402,919, Cl. 423-8.000.

Schmidt, Volkmar: *See*—
Meis, Josef; Schmidt, Volkmar; Tummes, Hans; and Much, Joachim, 4,402,860, Cl. 252-420.000.

Schmidt, Walter, to C. Hoegger & Cie. AG. Bowl cutter and mixer for foodstuffs. 4,402,466, Cl. 241-199.700.

Schmidt, William K., to Du Pont de Nemours, E. I., and Company. Analgesic mixture of nalbuphine and 4,5-bis(4-methoxyphenyl)-2-(trifluoromethylsulfonyl)-1H-imidazole. 4,402,962, Cl. 424-260.000.

Schnaithmann, Klaus: *See*—
Glockle, Volker; Glockle, Rainer; Weiss, Hermann; Layer, Heinz; and Schnaithmann, Klaus, 4,402,138, Cl. 30-382.000.

Schneider, Michael J., to Bendix Corporation, The. Double dump single solenoid unit injector. 4,402,456, Cl. 239-90.000.

Schnoring, Hildegard; Bomer, Bruno; and Dahm, Manfred, to Bayer Aktiengesellschaft. Microcapsules with a defined opening temperature, a process for their production and their use. 4,402,856, Cl. 428-402.220.

Schoendorfer, Donald W., to Haemonetics Corporation. Apparatus and method for separating fluid into components thereof. 4,402,680, Cl. 494-3.000.

Scholze, Hans: *See*—
Wevelsiep, Klaus; and Scholze, Hans, 4,403,339, Cl. 382-44.000.

Schon, Klaus-Peter; and Back, Gunter, to Hoechst Aktiengesellschaft. Mechanism for transporting printing plates. 4,402,592, Cl. 355-3.00R.

Schorghuber, Karl P. Method of producing a liquid agent for improving the quality of contaminated water. 4,402,850, Cl. 252-175.000.

Schott, Charles M., Jr., to Gloucester Engineering Co., Inc. Control of tubular film size. 4,402,656, Cl. 425-140.000.

Schramm, Walter: *See*—
Hildebrandt, Ullrich; Lang, Udo; Horner, Berndt; and Schramm, Walter, 4,402,822, Cl. 208-10.000.

Schreiber, Helmut: *See*—
Bastgen, Wendel; Schreiber, Helmut; and Grumbel, Eugen, 4,402,834, Cl. 210-712.000.

Schrewe, Hans: *See*—
Gruner, Hans; Schrewe, Hans; Parschat, Lothar; and Pleschiutschnigg, Fritz-Peter, 4,403,230, Cl. 346-107.00R.

Schroth, Reinhard: *See*—
Lehrl, Hans; and Schroth, Reinhard, 4,403,109, Cl. 174-73.00R.

Schrubba, Gerald P.: *See*—
Bradshaw, Norman F.; and Schrubba, Gerald P., 4,402,332, Cl. 134-104.000.

Schubert & Salzer: *See*—
Grimm, Eberhard; Oexler, Rudolf; and Hini, Eugen, 4,402,177, Cl. 57-88.000.

Schultz, Stephen J., to PPG Industries, Inc. Nozzle arrangement for pass-through glass sheet tempering apparatus. 4,402,723, Cl. 65-114.000.

Schulz, Peter; Vaupel, Knut; and Klein, Jurgen, to Bergwerksverband GmbH. Bottom for fluidized bed. 4,402,143, Cl. 34-57.00R.

Schurmans, Jacques. Catalyst carrier. 4,402,870, Cl. 252-477.00R.

Schuurman, Pieter J., to Shell Oil Company. Valve provided with a thermally-actuated mechanism for pressing valve seats against a valve gate body. 4,402,337, Cl. 137-240.000.

Schwab, Kurt; and Unterberger, Gerhard, to D. Swarovski & Co. Runner to keep off snowplows. 4,402,627, Cl. 404-15.000.

Schwartzman, Gilbert: *See*—
Roseman, Theodore J.; Derr, Glenford R.; and Schwartzman, Gilbert, 4,402,693, Cl. 604-890.000.

Schwarz, Hans G.: *See*—
Offenhausen, Rainer; and Schwarz, Hans G., 4,402,890, Cl. 264-37.000.

Schwarz, Walter J. Dual fuel supply system and method for an internal combustion engine. 4,402,296, Cl. 123-575.000.

Schwarz, Wolfgang: *See*—
Denzinger, Walter; Hartmann, Heinrich; and Schwarz, Wolfgang, 4,402,937, Cl. 424-80.000.

Schwarze, Werner: *See*—
Pissiotas, Georg; Meyer, Willy; Schwarze, Werner; Klenk, Herbert; and Leuchtenberg, Wolfgang, 4,402,733, Cl. 71-93.000.

Schweingruber, Otto; and Hafner, Werner, to Braun Aktiengesellschaft. Method of forming a circuit board. 4,402,135, Cl. 29-832.000.

Schwerdtel, Ernst: *See*—
Lang, Hans-Jorg; and Schwerdtel, Ernst, 4,402,428, Cl. 222-58.000.

Schwind, Richard J., to Phillips Plastics Corporation. Roller assembly for dishwasher rack. 4,402,556, Cl. 308-3.600.

Scott, Frances M. Expandable support frame for flexible sleeping mattresses. 4,402,097, Cl. 5-181.000.

Scott, Walter P. Medical implantation device. 4,402,308, Cl. 128-1.200.

Scranton GmbH & Co., Elektronische Lesegerate KG: *See*—
Wevelsiep, Klaus; and Scholze, Hans, 4,403,339, Cl. 382-44.000.

Sealed Power Corporation: *See*—
Joseph, A. David, 4,402,827, Cl. 210-314.000.

Seghezzi, Hans-Dieter; and Deutschenbaur, Paul, to Hilti Aktiengesellschaft. Self-drilling dowel. 4,402,637, Cl. 411-31.000.

Seidner, Marc A. Millwork member of folded construction. 4,402,170, Cl. 52-631.000.

Seiffert, Hartmut: *See*—
Weisenburger, Siegfried; Seiffert, Hartmut; and Holl, Fred, 4,402,724, Cl. 65-128.000.

Seifried, Gunther: *See*—
Waldkirch, Kurt; Seifried, Gunther; and Krohn, Egon, 4,402,278, Cl. 118-19.000.

Seki, Kunio; and Takeshita, Ritsuji, to Hitachi, Ltd. Integrated circuit with at least three ground pads. 4,403,240, Cl. 357-48.000.

Seki, Yoshizo; and Watanabe, Saburo, to Tomy Corporation. Toy employing governor to control rate of movement of movable member. 4,402,158, Cl. 46-44.000.

Sekiguchi, Tomoaki, to Nippon Gakki Seizo Kabushiki Kaisha. Tone quality presetting apparatus in electronic musical instrument. 4,402,246, Cl. 84-1.190.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Nishizaki, Tomoyoshi; Oguma, Kanzi; Sakagami, Katsuyoshi; and Yoshida, Ken, 4,402,915, Cl. 422-202.000.

Selby, Donald A.; and Silk, Leonard P., to General Motors Corporation. Closure panel hinge with torsion bar. 4,402,111, Cl. 16-308.000.

Self, James M., to Tanner Chemical Company. Method of installing a rock bolt. 4,402,633, Cl. 405-261.000.

Semrad, Neal F.: *See—*
Wymore, Craig A.; and Semrad, Neal F., 4,402,355, Cl. 150-52.00R.

Senda, Atsuo; Kasanami, Tohru; and Nakagawa, Takuji, to Murata Manufacturing Co., Ltd. Process of heat treating copper film on ceramic body and heat treating apparatus therefor. 4,402,494, Cl. 266-255.000.

Senoo, Yasutaka, to New Ohto Co., Ltd. Toggle switch having pressure contact. 4,403,127, Cl. 200-260.000.

Seo, Iwazou: *See—*
Kataishi, Takao; and Seo, Iwazou, 4,402,484, Cl. 249-129.000.

Servimetal: *See—*
Pollet, Gilbert; du Manoir, Pierre; and Guerit, Pierre, 4,402,741, Cl. 75-93.00E.

Sesterhenn, Lothar: *See—*
Klotz, Helmut; Tepe, Ernst; and Sesterhenn, Lothar, 4,402,811, Cl. 204-256.000.

Seto, Yutaka, to Konishiroku Photo Industry Co., Ltd. Scanning surface cleaning method of electrostatic recording apparatus. 4,402,599, Cl. 355-77.000.

Shakley, Conrad D.: *See—*
Ash, James J.; Brady, Joseph M.; Goffredo, Daniel L.; and Shakley, Conrad D., 4,402,799, Cl. 204-15.000.
Ash, James J.; Brady, Joseph M.; Goffredo, Daniel L.; and Shakley, Conrad D., 4,402,800, Cl. 204-15.000.

Shambaugh, John S.; and Yetman, Robert G., to GTE Products Corporation. Terminal assembly. 4,402,567, Cl. 339-198.00J.

Shanefield, Daniel J.: *See—*
Kumagai, Henry Y.; Shanefield, Daniel J.; and Verdi, Fred W., 4,402,998, Cl. 427-97.000.

Shangkuan, Yon-Li: *See—*
Nemet-Mavrodin, Margaret I.; Shangkuan, Yon-Li; and Bobeck, Richard L., 4,402,794, Cl. 203-14.000.

Sharp Kabushiki Kaisha: *See—*
Suzuki, Hiroyuki; Taoka, Masayuki; and Watanabe, Kiyoshi, 4,403,317, Cl. 369-75.000.
Takagi, Yutaka; and Toyoda, Munemitsu, 4,403,128, Cl. 219-10.55B.

Shavit, Amos; and Gorney, Moshe, to Naan Mechanical Works. Rotary sprinkler. 4,402,460, Cl. 239-230.000.

Shek, Thompson, to Ark-Les Corporation. Pedal mounted switching assembly. 4,403,123, Cl. 200-61.890.

Shell Oil Company: *See—*
Diaz, Zaida, 4,402,930, Cl. 423-573.00G.
Post, Martin F. M.; and Sie, Swan T., 4,403,044, Cl. 518-714.000.
Schuurman, Pieter J., 4,402,337, Cl. 137-240.000.

Shen, Chung Y., to Monsanto Company. Process for producing chlorinated trisodium phosphate. 4,402,926, Cl. 423-300.000.

Shen, Tsung-Ying; Conquet, Philippe; and Le Douarec, Jean-Claude, to Merck & Co., Inc. & Laboratories; and Merck, Sharp & Dohme-Chibret. Ophthalmic formulations of 5-fluoro-2-methyl-1-(p-methylthiobenzylidene)-3-indenylacetic acid. 4,402,979, Cl. 424-317.000.

Sherman, Robert: *See—*
Fortmann, William E.; Mrazek, James A.; Telakowski, Robert; and Sherman, Robert, 4,402,618, Cl. 384-107.000.

Shibata, Souichi; Inoue, Hitoshi; and Katazawa, Kenji, to Mitsubishi Denki Kabushiki Kaisha. Cooling device for a bearing means. 4,402,559, Cl. 308-189.00R.

Shibata, Yasuo; Miyamaru, Yukio; Kawada, Shigeo; and Hatanaka, Kaoru, to Honda Giken Kogyo Kabushiki Kaisha. Automatic turn-signal cancelling system. 4,403,211, Cl. 340-73.000.

Shihabi, David S., to Mobil Oil Corporation. Aging resistance shape selective catalyst with enhanced activity. 4,402,866, Cl. 252-455.00Z.

Shikata, Makoto: *See—*
Ohgami, Masaaki; Shikata, Makoto; and Hara, Kazuo, 4,402,288, Cl. 123-339.000.

Shimano Industrial Company Limited: *See—*
Hamayasu, Norio, 4,402,470, Cl. 242-84.52R.

Shimizu, Hiroshi: *See—*
Harada, Masato; Sato, Akihiro; Yamada, Sadahiko; Kikuta, Kazutsune; Suzuki, Atsushi; Shimizu, Hiroshi; Masuda, Jun; Hamasaki, Tadamitsu; and Kachi, Atsuyuki, 4,403,081, Cl. 526-115.000.

Shimizu, Isamu; Shirai, Shigeru; and Inoue, Eiichi, to Canon Kabushiki Kaisha. Photoconductive member having an electrically insulating oxide layer. 4,403,026, Cl. 430-65.000.

Shimizu, Tasuku: *See—*
Hayashi, Makoto; Sakata, Shinji; and Shimizu, Tasuku, 4,402,227, Cl. 73-812.000.

Shin-Etsu Chemical Co., Ltd.: *See—*
Kitamura, Hajime; Imada, Kiyoshi; and Eguchi, Yoshitugu, 4,402,893, Cl. 264-53.000.
Takagishi, Yasushi; Doi, Yoshio; Aita, Kanji; and Hoshi, Noboru, 4,402,692, Cl. 604-890.000.

Shin-Etsu Polymer Co., Ltd.: *See—*
Sado, Ryoichi, 4,402,562, Cl. 339-61.00M.

Shinagawa, Shigeru: *See—*
Nose, Yukihiko; Kayashima, Koji; Sueoka, Akinori; Asanuma, Yoshihiro; Shinagawa, Shigeru; Smith, James; Werynski, Andrej; and Malchesky, Paul S., 4,402,940, Cl. 424-101.000.

Shinko, Julius S.; and Keyes, Thomas C., to Union Carbide Corporation. Porous free standing pyrolytic boron nitride articles. 4,402,925, Cl. 423-290.000.

Shioi, Shunsuke: *See—*
Okimoto, Tomoyuki; Shioi, Shunsuke; Kuroda, Takio; Okamoto, Shigeo; and Shiozaki, Tomoharu, 4,403,051, Cl. 524-45.000.

Shiokawa, Kozo: *See—*
Aya, Masahiro; Saito, Junichi; Yasui, Kazuomi; and Shiokawa, Kozo, 4,402,731, Cl. 71-92.000.

Shionogi & Co., Ltd.: *See—*
Takagishi, Yasushi; Doi, Yoshio; Aita, Kanji; and Hoshi, Noboru, 4,402,692, Cl. 604-890.000.

Shiozaki, Tomoharu: *See—*
Okimoto, Tomoyuki; Shioi, Shunsuke; Kuroda, Takio; Okamoto, Shigeo; and Shiozaki, Tomoharu, 4,403,051, Cl. 524-45.000.

Shirahata, Ryuji: *See—*
Akashi, Goro; and Shirahata, Ryuji, 4,403,002, Cl. 427-255.500.

Shirai, Shigeru: *See—*
Shimizu, Isamu; Shirai, Shigeru; and Inoue, Eiichi, 4,403,026, Cl. 430-65.000.

Shire, Harry E., Jr.: *See—*
Shire, Harry E., Sr.; and Shire, Harry E., Jr., 4,402,464, Cl. 241-73.000.

Shire, Harry E., Sr.; and Shire, Harry E., Jr. Scrap granulator. 4,402,464, Cl. 241-73.000.

Shoji, Masakazu: *See—*
Blahut, Donald E.; Fields, Jonathan A.; Huang, Victor K.; Lee, Charles M.; and Shoji, Masakazu, 4,403,287, Cl. 364-200.000.

Siau, John E.: *See—*
Green, Richard R.; Mahler, Henry W.; and Siau, John E., 4,403,256, Cl. 358-222.000.

Sibler, Guenter W., to Sutton Enigneering Company. Indirect extrusion press with die changer. 4,402,208, Cl. 72-263.000.

Sickler, Emory J., to J. I. Case Company. Counterweight arrangement. 4,402,413, Cl. 212-178.000.

Sidaway, Reginald: *See—*
Peterson, Harley G.; and Sidaway, Reginald, 4,402,119, Cl. 24-370.000.

Sie, Swan T.: *See—*
Post, Martin F. M.; and Sie, Swan T., 4,403,044, Cl. 518-714.000.

Siemens Aktiengesellschaft: *See—*
Goerne, Jan; and Traulsen, Wilfried, 4,403,159, Cl. 307-362.000.
Graasl, Hans P.; Herbst, Heiner; and Endlicher, Frank, 4,403,141, Cl. 250-214.00R.
Gupta, Probodh D., 4,403,333, Cl. 375-94.000.
Kessler, Hartmut, 4,403,270, Cl. 361-328.000.
Knur, Walter; and Winkelmann, Siegfried, 4,402,374, Cl. 180-65.00F.
Kulich, Vaclav; Michel, Herbert; and Witte, Hans-Hermann, 4,402,568, Cl. 350-96.160.
Lehrl, Hans; and Schroth, Reinhard, 4,403,109, Cl. 174-73.00R.
Meyer, Fritz, 4,403,330, Cl. 375-4.000.
Moeller, Alexander; and Scherowsky, Gunther, 4,402,854, Cl. 252-299.100.
Rosler, Helmut; and Gafert, Reinhard, 4,403,334, Cl. 377-44.000.
Schedele, Helmut, 4,403,203, Cl. 335-78.000.
Stahl, Horst; and Wachs, Walter, 4,402,624, Cl. 400-681.000.
Von Tomkewitsch, Romuald, 4,403,291, Cl. 364-424.000.
Zollner, Manfred; Hoffmann, Christian; and Zwicker, Eberhard, 4,403,118, Cl. 179-107.0FD.

Sievers, George K.: *See—*
Clark, Eugene V.; and Sievers, George K., 4,402,764, Cl. 148-6.000.

Sifniades, Stylianos: *See—*
Largman, Theodore; and Sifniades, Stylianos, 4,402,917, Cl. 423-7.000.

Silk, Leonard P.: *See—*
Selby, Donald A.; and Silk, Leonard P., 4,402,111, Cl. 16-308.000.

Silva, Darrell M.: *See—*
Dimitroff, Vladimir T.; Silva, Darrell M.; and Taber, Bruce D., 4,402,183, Cl. 60-660.000.

Silvestrini, Bruno; and Baiocchi, Leandro, to Aziende Chimiche Riunite Angelini Francesco ACRAF SpA. 2-[3-[4-(3-Chloro-4-fluorophenyl)-1-piperazinyl]propyl]-1,2,4-triazolo[4,3-a]pyridin-3(2H)-one. 4,402,956, Cl. 424-250.000.

Simjian, Luther G., to Command Automation Inc. Golf putting training device. 4,402,511, Cl. 273-183.00C.

Simmonds, Michael B., to S.H.E. Corporation. Superconducting quantum interference device having thin film Josephson junctions. 4,403,189, Cl. 324-248.000.

Simokat, Frank L., to TII Industries Inc. Station identification circuit arrangement. 4,403,115, Cl. 179-17.00A.

Simonelli, Robert J.: *See—*
Russell, Frank S.; and Simonelli, Robert J., 4,402,204, Cl. 72-131.000.

Simoons, John R. A.: *See—*
Wyburn-Mason, Roger, 4,402,965, Cl. 424-272.000.

Simpson, Clark C., to Clark Equipment Company. Interlock system for container handler twist lock. 4,402,543, Cl. 294-81.0SF.

Sinclair, William Y., to Aries Electronics, Inc. Zero insertion force connector. 4,402,563, Cl. 339-75.00M.

Singer Company, The: *See—*
Greenwood, Ivan A., 4,403,190, Cl. 324-304.000.

Sinkoff, Brian A.; and Bundus, Robert H., to Stauffer Chemical Company. Bulk starter media. 4,402,986, Cl. 426-41.000.

Skala, Stephen F. Nested thermal reservoirs with heat pumping therebetween. 4,402,188, Cl. 62-56.000.

Skega Aktiebolag: *See*—
Persson, Sture; and Ahlund, Mats, 4,402,465, Cl. 241-183.000.
Skelly, James K.; and Philpott, George C., to Ciba-Geigy Corporation. Process for the treatment of wool containing material. 4,403,011, Cl. 428-264.000.
Skerhut, Rainer: *See*—
Kaspar, Vaclay; Walz, Klaus; Molls, Hans-Heinz; Hornle, Reinhold; and Skerhut, Rainer, 4,402,702, Cl. 8-524.000.
SKF Industries, Inc.: *See*—
Olschewski, Armin; Brandenstein, Manfred; and Lothar, Walter, 4,402,558, Cl. 308-187.000.
Skosey, John L.: *See*—
Teodorescu, Marius C.; Skosey, John L.; and Chang, Jin-Lai, 4,402,934, Cl. 424-1.000.
Skowronski, Roman L.; and Szekeres, John M., to Emerson Electric Co. Die set packaging system. 4,402,423, Cl. 220-345.000.
Slafer, Warren D.: *See*—
Cowan, James J.; Gerber, Arthur M.; and Slafer, Warren D., 4,402,571, Cl. 350-162.170.
Sleeper & Hartley Corp.: *See*—
Russell, Frank S.; and Simonelli, Robert J., 4,402,204, Cl. 72-131.000.
Slemmer, William C., to Inmos Corporation. Two-way regulated substrate bias generator. 4,403,158, Cl. 307-297.000.
Slocumb, Robert C., to Conwed Corporation. Remarkable superior plastic netting for use in palletized loads. 4,402,409, Cl. 206-597.000.
Slusar, Randall J., to Kelley Company, Inc. Lip counterbalancing mechanism for a dockboard. 4,402,100, Cl. 14-71.300.
Smalley, Ned J.: *See*—
Mumford, George V.; and Smalley, Ned J., 4,402,416, Cl. 215-220.000.
Smallwood, Larry L. Spring mechanism for toilet seats. 4,402,092, Cl. 4-240.000.
Smith, Charles W., Jr.: *See*—
Ruyak, Robert F.; and Smith, Charles W., Jr., 4,402,715, Cl. 55-317.000.
Smith, Daniel M.: *See*—
Borras, Jaime A.; Gonzalez, Ruben J.; Smith, Daniel M.; and Wieczorek, Alfred B., 4,403,342, Cl. 455-76.000.
Smith, Dennis R.: *See*—
Elder, Arthur L.; Ostergaard, Mack R.; Smith, Dennis R.; and Warner, Reed H., 4,402,492, Cl. 266-196.000.
Smith, Donald J., to Communications Technology Corporation. Flexible clamp for hose, cable and the like. 4,402,113, Cl. 24-20.00R.
Smith International, Inc.: *See*—
Morrill, Charles D., 4,402,773, Cl. 285-25.000.
Smith, Jack B.; Holden, Barry W.; and Tanner, Robert H., to Hoover Universal, Inc. Sound barrier system. 4,402,384, Cl. 181-210.000.
Smith, James: *See*—
Nose, Yukihiko; Kayashima, Koji; Sueoka, Akinori; Asanuma, Yoshihiro; Shinagawa, Shigeru; Smith, James; Werynski, Andrej; and Malchesky, Paul S., 4,402,940, Cl. 424-101.000.
Smith, Rex L., to United States of America, Navy. Electric delay detonator. 4,402,269, Cl. 102-202.130.
Smith, Richard R., to Goodyear Tire & Rubber Company, The. Polyisophthalates and copolymers thereof having high barrier properties. 4,403,090, Cl. 528-272.000.
Smith, Robert A.; and Patterson, Dennis B., to Goodyear Tire & Rubber Company, The. Plastic resin prepared from meta or para-diisopropenylbenzene and method of preparation. 4,403,088, Cl. 528-205.000.
Smith, Robert F.; and Walters, Dwight E., to Exlog Smith. Gas sampling system. 4,402,910, Cl. 422-83.000.
Smith, William R.: *See*—
Kumpf, Richard E.; and Smith, William R., 4,403,340, Cl. 382-48.000.
Smoczynski, Frank E. Coin carrying plastic card. 4,402,398, Cl. 206-0.820.
Snap-on Tools Corporation: *See*—
Olson, Gene E.; Grover, Donald D.; Stout, Christopher B.; Becker, Thomas P.; Kaufman, Glenn A.; and Kot, Norbert J., 4,402,222, Cl. 73-579.000.
Snyder, David R. Ceiling grid bracket. 4,402,171, Cl. 52-741.000.
Snyder, Robert: *See*—
Wood, Edward T.; Snyder, Robert; Larson, William C.; and Dareing, Donald W., 4,402,551, Cl. 299-5.000.
Snyder, Robert E.: *See*—
Wood, Edward T.; and Snyder, Robert E., 4,402,517, Cl. 277-34.000.
Societe Anonyme dite: Ceraver: *See*—
Willem, Michel; and Gamet, Lucien, 4,402,540, Cl. 294-19.00R.
Societe Europeenne De Propulsion: *See*—
Heidmann, Richard; and Poisson, Jean, 4,402,271, Cl. 102-362.000.
Societe Nationale Industrielle Aerospatiale: *See*—
Martin, Henri, 4,402,478, Cl. 244-111.000.
Solazzi, Michael C., to Chemplex Industries, Inc. Vials for comminuting and blending samples for spectrochemical analysis. 4,402,909, Cl. 422-50.000.
Solid Photography Inc.: *See*—
DiMatteo, Paul; and Rademacher, Paul, 4,402,608, Cl. 356-375.000.
Sollenberger, Nelson R.: *See*—
Leland, Kenneth W.; and Sollenberger, Nelson R., 4,403,348, Cl. 455-203.000.
Solsky, Robert L.: *See*—
Rechnitz, Garry A.; and Solsky, Robert L., 4,402,819, Cl. 204-418.000.
Solvay & Cie. (Societe Anonyme): *See*—
Tytgat, Daniel, 4,402,759, Cl. 134-3.000.
Sonca Industries Limited: *See*—
Yeh, Warner S., 4,403,182, Cl. 320-2.000.
Sone, Masazumi: *See*—
Imai, Iwao; and Sone, Masazumi, 4,403,350, Cl. 455-297.000.
Sone, Yoshiaki; Hashimoto, Susumu; Ishikawa, Kiyotsugu; and Kunii, Takao, to Matsushita Electronics Corporation. Solid state color imaging apparatus. 4,403,247, Cl. 358-44.000.
Sony Corporation: *See*—
Okada, Takashi; and Matsuzaki, Atsushi, 4,403,254, Cl. 358-171.000.
Tanaka, Masato, 4,403,261, Cl. 360-13.000.
Sorensen, Norman L.: *See*—
Green, Hal; and Sorensen, Norman L., 4,402,536, Cl. 292-113.000.
Sorwick, Jack R.: *See*—
Lindgren, Gunnar; Molesworth, Richard E.; and Sorwick, Jack R., 4,402,324, Cl. 128-660.000.
Southwire Company: *See*—
Arp, David F.; and Pariani, Ronald L., 4,402,740, Cl. 75-65.00R.
Spectrol Electronics Corp.: *See*—
Turner, Bradley D.; and Riley, Richard E., 4,403,133, Cl. 219-121.0LJ.
Spence, Gavin G.: *See*—
Maslanka, William W.; and Spence, Gavin G., 4,403,062, Cl. 524-458.000.
Maslanka, William W.; and Spence, Gavin G., 4,403,063, Cl. 524-458.000.
Spence, Jack T. Display case with castellated tongue and groove joints. 4,402,397, Cl. 206-45.340.
Spighi, Pasqualino: *See*—
Mattera, Adriano; Quaglino, Marino; Spighi, Pasqualino; and Stolfi, Massimo, 4,402,835, Cl. 210-724.000.
Spyder Sales & Service, Inc.: *See*—
Barchard, John, 4,402,644, Cl. 414-417.000.
Squires, Wayman. Wood-burning stove. 4,402,301, Cl. 126-77.000.
Stach, Leonard J.; and Chen, Sun M., to Velsicol Chemical Corporation. Heterocyclic anilines. 4,402,728, Cl. 71-88.000.
Stadie, Dieter: *See*—
Courvoisier, Peter; and Stadie, Dieter, 4,402,895, Cl. 264-109.000.
Stahl, Edward L.: *See*—
Kreeger, Elsmer W.; and Stahl, Edward L., 4,402,408, Cl. 206-507.000.
Stahl, Horst; and Wachs, Walter, to Siemens Aktiengesellschaft. Device for adjusting the slope of a keyboard. 4,402,624, Cl. 400-681.000.
Stahl, Werner; Frobose, Walter; and Lisfeld, Robert, to Ernst Leitz Wetzlar GmbH. Adjusting device for the stage of an optical instrument. 4,402,576, Cl. 350-531.000.
Staltmeir, Josef: *See*—
Wosegien, Bernd; Staltmeir, Josef; and Sander, Nils B. L., 4,402,388, Cl. 188-56.000.
Standard Oil Company, The: *See*—
Schieman, Richard D., 4,402,841, Cl. 252-46.600.
Standard Oil Company (Indiana): *See*—
Brooks, Gary T.; and Bockrath, Ronald E., 4,403,061, Cl. 524-433.000.
Donohue, John A., 4,402,805, Cl. 204-75.000.
McKinney, Claude O., 4,402,913, Cl. 422-110.000.
Stapp, Paul R., to Phillips Petroleum Company. Ammonium carbonate and/or bicarbonate plus alkaline chlorate oxidant for recovery of uranium values. 4,402,921, Cl. 423-17.000.
Stauffer Chemical Co.: *See*—
Anzenberger, Joseph F., Sr., 4,402,883, Cl. 260-990.000.
Giolito, Silvio L.; Goswami, Jagadish C.; and Weil, Edward D., 4,403,056, Cl. 524-280.000.
Jung, Alfred K., 4,402,880, Cl. 260-429.900.
Sinkoff, Brian A.; and Bundus, Robert H., 4,402,986, Cl. 426-41.000.
Stegmuller, Albert; Stockl, Herbert; and Winterholler, Johann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Engagement pressure measuring apparatus for rollers in printing machines. 4,402,232, Cl. 73-862.550.
Steidinger, Ronald L., to Forrest Redi-Mix Co. Method of constructing a system of gutters for a swine building. 4,402,282, Cl. 119-28.000.
Stein, Martin L.: *See*—
Aisenberg, Sol; and Stein, Martin L., 4,402,993, Cl. 427-38.000.
Steinki, Karl; and Ripkens, Hans-Gerd, to Maschinenfabrik Carl Zangs Aktiengesellschaft. Method of controlling the speed of rotation of the drive motor of an embroidery, stitching or sewing machine. 4,402,276, Cl. 112-262.300.
Stellaccio, Robert J., to Texaco Inc. Simultaneous production of clean dewatered and clean saturated streams of synthesis gas. 4,402,709, Cl. 48-197.00R.
Stellaccio, Robert J., to Texaco Inc. Carbon recovery process. 4,402,710, Cl. 48-197.00R.
Stellaccio, Robert J., to Texaco Inc. Partial oxidation process with extractant purification. 4,402,711, Cl. 48-197.00R.
Stenkvist, Sven-Einar: *See*—
Lassander, Erik; and Stenkvist, Sven-Einar, 4,403,328, Cl. 373-103.000.
Stephan, Hans-Werner: *See*—
Panter, Herbert; Klein, Hermann; Nolte, Gerhard; Preisler, Eberhard; Stephan, Hans-Werner; and Reichert, Gunter, 4,402,812, Cl. 204-275.000.
Sterling Drug Inc.: *See*—
Brocklehurst, Peter; and Ferguson, Angus S., 4,402,853, Cl. 252-186.260.
Hobbs, Millice F., 4,402,758, Cl. 134-3.000.

Sterrenberg, John W., to Sterrenberg, John W. Leveling mechanisms for hand-held power drill. 4,402,141, Cl. 33-334.000.
Stevens, William M.; Atkinson, William E.; and Dirr, William J., Jr., to Randam Electronics, Inc. Calibration with double-pass measurements and computational peak finding. 4,403,145, Cl. 250-252.100.
Stihl, Andreas: *See*—
Glockle, Volker; Glockle, Rainer; Weiss, Hermann; Layer, Heinz; and Schnaithmann, Klaus, 4,402,138, Cl. 30-382.000.
Stilson Division of Stocker & Yale, Inc.: *See*—
Feeney, Alvan H., 4,402,390, Cl. 193-37.000.
Stiner, Roy E., to Brunswick Corporation. Self-aligning drag drive for fishing reels. 4,402,469, Cl. 242-84.50A.
Stockl, Herbert: *See*—
Stegmuller, Albert; Stockl, Herbert; and Winterholler, Johann, 4,402,232, Cl. 73-862.550.
Stolfi, Massimo: *See*—
Mattera, Adriano; Quaglino, Marino; Spighi, Pasqualino; and Stolfi, Massimo, 4,402,835, Cl. 210-724.000.
Stoll, Donald L. Conveyor belt scraper. 4,402,394, Cl. 198-499.000.
Stone, Jeffrey B.: *See*—
Robitschek, Paul; and Stone, Jeffrey B., 4,403,013, Cl. 428-318.400.
Stone & Webster Engineering Corp.: *See*—
Domahidy, George, 4,402,713, Cl. 55-53.000.
Stout, Christopher B.: *See*—
Olson, Gene E.; Grover, Donald D.; Stout, Christopher B.; Becker, Thomas P.; Kaufman, Glenn A.; and Kot, Norbert J., 4,402,222, Cl. 73-579.000.
Stout, James T., to Mead Corporation, The. Article carrier. 4,402,400, Cl. 206-162.000.
Strahan, Virgil H.; James, Kenneth A.; and Quick, William H., to Rockwell International Corporation. Fiber optic accelerometer. 4,403,144, Cl. 250-231.00R.
Strong, Grant F., to General Tire & Rubber Company, The. Salt recovery system for a liquid curing medium. 4,402,760, Cl. 134-10.000.
Strong, John R., to Paccar Inc. Apparatus and method for supporting a transmission. 4,402,380, Cl. 180-292.000.
Stroppel, Hans: *See*—
Balzan, Angelo; and Stroppel, Hans, 4,403,258, Cl. 358-284.000.
Strudwick, Ian A.: *See*—
Maitland, Arthur; Menown, Hugh; and Strudwick, Ian A., 4,403,167, Cl. 313-632.000.
Sturm, Elmar, to Ciba-Geigy Corporation. Microbicidal dioxolanylalkyltriazole compositions. 4,402,963, Cl. 424-269.000.
Sueoka, Akinori: *See*—
Nose, Yukihiko; Kayashima, Koji; Sueoka, Akinori; Asanuma, Yoshihiro; Shinagawa, Shigeru; Smith, James; Werynski, Andrej; and Malchesky, Paul S., 4,402,940, Cl. 424-101.000.
Suga, Michihisa: *See*—
Tsuzuki, Mitsuo; and Suga, Michihisa, 4,403,223, Cl. 346-1.100.
Sugardale Foods Incorporated: *See*—
Vollmer, Arthur N.; and Rosenfield, Richard G., 4,402,873, Cl. 260-118.000.
Sugawara, Katuo; Ohe, Etsuo; Tani, Ichitaro; and Tsukioka, Hideo, to Hitachi, Ltd. System for monitoring abnormality of oil-filled electric devices. 4,402,211, Cl. 73-19.000.
Sugawara, Ryozo: *See*—
Kuriyama, Kazuya; Murakami, Shigeru; Sugawara, Ryozo; and Honda, Kiyoshi, 4,402,887, Cl. 264-22.000.
Sugimoto, Nobuo, to Aro Machinery Company, Ltd. Induction compensating method and apparatus for weld nugget resistance sensing leads of spot welders. 4,403,132, Cl. 219-109.000.
Sugiura, Sadao: *See*—
Koike, Shinkichi; Kimura, Akira; Hikage, Toru; and Sugiura, Sadao, 4,402,884, Cl. 264-8.000.
Sugiura, Toshiaki, to Brother Kogyo Kabushiki Kaisha. Ink-ribbon lifting apparatus. 4,402,622, Cl. 400-212.000.
Sugiyama, Hiroyuki, to Komori Printing Machinery Co. Ltd. Front lay device for sheet-fed rotary printing presses. 4,402,266, Cl. 101-409.000.
Sugiyama, Kazunori: *See*—
Miura, Mituo; Kukino, Yoshinori; Fujii, Takumi; Sugiyama, Kazunori; Inoue, Takashi; and Ogishima, Mamoru, 4,402,630, Cl. 405-266.000.
Sullivan, George D.: *See*—
Meenan, William C.; and Sullivan, George D., 4,402,274, Cl. 110-346.000.
Sullivan, Patrick O., to P. Sully Co. Brake light enhancer circuit. 4,403,210, Cl. 340-72.000.
Sullivan, Paul F., to Polaroid Corporation. Verification device. 4,402,150, Cl. 40-454.000.
Sumitomo Chemical Co., Ltd.: *See*—
Akiba, Keiichiro; Satomi, Takeo; Fujinami, Akira; Asano, Yasuhisa; Kameda, Nobuyuki; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 4,402,734, Cl. 71-111.000.
Hazama, Motoo; Aratani, Tadatoshi; Suzukamo, Gohu; and Takahashi, Takeo, 4,403,096, Cl. 548-321.000.
Tamura, Takashi; and Kojima, Yoichi, 4,402,859, Cl. 252-401.000.
Sumitomo Electric Industries Ltd.: *See*—
Edahiro, Takao; Kurosaki, Shiro; and Watanabe, Minoru, 4,402,720, Cl. 65-3.120.
Kobayashi, Mitsunori; and Doi, Yoshihiko, 4,402,994, Cl. 427-38.000.
Nakai, Tetsuo; Yazu, Shuji; and Hara, Akio, 4,403,015, Cl. 428-565.000.
Sato, Kenichi; Yamauchi, Kazuhisa; Hanaki, Yasumasa; Kondo, Takasi; and Yokota, Minoru, 4,402,763, Cl. 148-2.000.
Sumitomo Metal Industries, Limited: *See*—
Sunami, Yoshihiko; Sasaki, Keiichi; and Iwahashi, Tohru, 4,402,824, Cl. 208-45.000.
Sun Tech, Inc.: *See*—
Moore, Robert E., 4,402,984, Cl. 424-352.000.
Sunami, Yoshihiko; Sasaki, Keiichi; and Iwahashi, Tohru, to Sumitomo Metal Industries, Limited. Process for refining coal-based heavy oils. 4,402,824, Cl. 208-45.000.
Sundmar, Goran: *See*—
Gustavsson, Olle; and Sundmar, Goran, 4,402,253, Cl. 89-46.000.
Sundstrand Corporation: *See*—
Ejzak, Richard P.; Thom, James B.; Peterson, William J.; and Glennon, Timothy F., 4,403,292, Cl. 364-492.000.
Sung, Rodney L.: *See*—
Zoleski, Benjamin H.; and Sung, Rodney L., 4,402,845, Cl. 252-52.00A.
Suroff, Leonard W.: *See*—
Kolt, Stanley, 4,402,455, Cl. 236-93.00B.
Sutton Enigneering Company: *See*—
Sibler, Guenter W., 4,402,208, Cl. 72-263.000.
Suzaki, Tuneo: *See*—
Emura, Koji; Suzaki, Tuneo; Takai, Koji; and Kazama, Hidemichi, 4,402,901, Cl. 264-294.000.
Suzukamo, Gohu: *See*—
Hazama, Motoo; Aratani, Tadatoshi; Suzukamo, Gohu; and Takahashi, Takeo, 4,403,096, Cl. 548-321.000.
Suzuki, Atsushi: *See*—
Harada, Masato; Sato, Akihiro; Yamada, Sadahiko; Kikuta, Kazutsune; Suzuki, Atsushi; Shimizu, Hiroshi; Masuda, Jun; Hamasaki, Tadamitsu; and Kachi, Atsuyuki, 4,403,081, Cl. 526-115.000.
Suzuki, Hideo: *See*—
Oya, Akiyoshi; Ubayama, Takashi; and Suzuki, Hideo, 4,402,245, Cl. 84-1.170.
Suzuki, Hiroyuki; Taoka, Masayuki; and Watanabe, Kiyoshi, to Sharp Kabushiki Kaisha. Automated disk mount assembly. 4,403,317, Cl. 369-75.000.
Suzuki, Kenichiro: *See*—
Nakanishi, Kyoji; Suzuki, Kenichiro; Tanaka, Michio; Matsuno, Jun-ichi; Ohmori, Hisashi; and Nozaki, Tsutomu, 4,402,739, Cl. 75-60.000.
Suzuki, Masatoshi: *See*—
Sano, Hiromi; Suzuki, Masatoshi; Fujimoto, Masaya; Yamakawa Mitihiro; and Saito, Toshitaka, 4,402,820, Cl. 204-425.000.
Suzuki, Minoru, to Ricoh Company, Ltd. Copying machine using sheet cassette. 4,402,498, Cl. 271-164.000.
Suzuki, Seigo, to Tokyo Shibaura Denki Kabushiki Kaisha. Signal synthesizer apparatus. 4,403,295, Cl. 364-513.000.
Suzuki, Tadashi, to Satogosei Co., Ltd. Tag-pin attaching apparatus. 4,402,446, Cl. 227-67.000.
Suzuta, Mikio: *See*—
Tsunoda, Atsuo; Midorikawa, Koyo; Murase, Hidetoshi; Suzuta, Mikio; Moriwaki, Masazumi; Mochizuki, Noritaka; Minami, Setsuo; and Matsui, Yoshiya, 4,402,572, Cl. 350-167.000.
Svensson, Leif O. G.: *See*—
von Dardel, Guy; Henning, Sten A.; and Svensson, Leif O. G., 4,402,927, Cl. 423-335.000.
Swainbank, Sheila O. Conductive wrist strap. 4,402,560, Cl. 339-11.000.
Swanson, Hilmer I., to Harris Corporation. Amplifier employing digital modulator circuit. 4,403,197, Cl. 330-10.000.
Swanson, William C., to International Harvester Co. Receptacle lift apparatus. 4,402,549, Cl. 298-18.000.
Swartz, Mitchell R. Method for inactivating viruses, bacteria, etc. in vitro and production of vaccines. 4,402,318, Cl. 604-20.000.
Swinderman, Robert H.: *See*—
Honath, Harold F.; Reiling, Gebhart J.; Swinderman, Robert H.; and Hills, Richard E., 4,402,422, Cl. 220-327.000.
Swiss Aluminium Ltd.: *See*—
Festag, Werner; Muller, Hans U.; Breitler, Hans P.; and Bolliger, Max, 4,403,010, Cl. 428-200.000.
Syntex (U.S.A.) Inc.: *See*—
Waterbury, L. David, 4,402,967, Cl. 424-273.00R.
Szekeres, John M.: *See*—
Skowronski, Roman L.; and Szekeres, John M., 4,402,423, Cl. 220-345.000.
T C Manufacturing Company: *See*—
Blitstein, John; and Kathrein, Donald, 4,403,048, Cl. 523-218.000.
T & R Chemicals, Inc.: *See*—
Alvarez, Jose A. A.; and Thompson, Ralph B., 4,402,982, Cl. 424-329.000.
Thompson, Ralph B., 4,402,943, Cl. 424-180.000.
Thompson, Ralph B., 4,402,946, Cl. 424-180.000.
Taaks, Hermann: *See*—
Hofmann, Gerhard; and Taaks, Hermann, 4,403,215, Cl. 340-573.000.
Taber, Bruce D.: *See*—
Dimitroff, Vladimir T.; Silva, Darrell M.; and Taber, Bruce D., 4,402,183, Cl. 60-660.000.
Taguchi, Tatsuya: *See*—
Tezuka, Nobuo; and Taguchi, Tatsuya, 4,402,468, Cl. 242-71.000.
Taguchi, Yasuo: *See*—
Nakao, Satoshi; Taguchi, Yasuo; and Higuchi, Takashi, 4,402,299, Cl. 123-632.000.
Taihei Chem. Inc.: *See*—
Eguchi, Kiyohisa; Kitamura, Norio; Ohta, George; Okamura, Terumasa; and Yamada, Seizi, 4,402,838, Cl. 252-28.000.

Takagi, Masayuki, to NSK-Warner K.K. Buckle mechanism for seat belts and method for the production thereof. 4,402,114, Cl. 24-201.00R.

Takagi, Shigeru: *See*—
Nara, Akio; Sasaya, Hideaki; Takagi, Shigeru; and Mitsui, Takao, 4,402,655, Cl. 418-137.000.

Takagi, Yutaka; and Toyoda, Munemitsu, to Sharp Kabushiki Kaisha. Microwave oven with a capability of functioning as an electric heating oven. 4,403,128, Cl. 219-10.55B.

Takagishi, Yasushi; Doi, Yoshio; Aita, Kanji; and Hoshi, Noboru, to Shionogi & Co., Ltd.; and Shin-Etsu Chemical Co., Ltd. Medicament capsules for rectal application. 4,402,692, Cl. 604-890.000.

Takahashi, Tadashi; Hayashida, Hiroshi; and Miyashita, Kunio, to Hitachi, Ltd. Magnetic head for sensing the position of a moving member. 4,403,187, Cl. 324-208.000.

Takahashi, Takeo: *See*—
Hazama, Motoo; Aratani, Tadatoshi; Suzukamo, Gohu; and Takahashi, Takeo, 4,403,096, Cl. 548-321.000.

Takai, Kazuki: *See*—
Okada, Hitoshi; Takai, Kazuki; and Yamaguchi, Katsumi, 4,403,265, Cl. 360-96.500.

Takai, Koji: *See*—
Emura, Koji; Suzaki, Tuneo; Takai, Koji; and Kazama, Hidemichi, 4,402,901, Cl. 264-294.000.

Takata, Yoshinori: *See*—
Ogaki, Koji; Tamura, Yukio; Kaminishi, Masashi; and Takata, Yoshinori, 4,402,555, Cl. 305-11.000.

Takayama, Kazuo, to Fujitsu Ten Limited. Intermediate frequency detection circuit. 4,403,349, Cl. 455-219.000.

Takemura, Takehide, to Matsushita Electric Industrial Co., Ltd. Pulse detection circuit. 4,403,193, Cl. 328-109.000.

Takemura, Tetsuo: *See*—
Kato, Takao; Takemura, Tetsuo; Horiki, Akira; and Watanabe, Noboru, 4,403,322, Cl. 370-110.100.

Takenaka Doboku Co., Ltd.: *See*—
Miura, Mituo; Kukino, Yoshinori; Fujii, Takumi; Sugiyama, Kazunori; Inoue, Takashi; and Ogishima, Mamoru, 4,402,630, Cl. 405-266.000.

Takenaka Komuten Co., Ltd.: *See*—
Miura, Mituo; Kukino, Yoshinori; Fujii, Takumi; Sugiyama, Kazunori; Inoue, Takashi; and Ogishima, Mamoru, 4,402,630, Cl. 405-266.000.

Takeshita, Ritsuji: *See*—
Seki, Kunio; and Takeshita, Ritsuji, 4,403,240, Cl. 357-48.000.

Takeshita, Toru; Hoshina, Kenji; Ohtsu, Akira; and Naruchi, Tatsuyuki, to Teijin Limited. Aminocarboxylic acids, amino alcohols, or the derivatives thereof, processes for production thereof, and pharmaceutical uses thereof. 4,402,975, Cl. 424-309.000.

Takeuchi, Sigetaka: *See*—
Yamaoka, Yukinori; Nakano, Seizo; Takeuchi, Sigetaka; Oishi, Kazuaki; and Sasaki, Koji, 4,403,125, Cl. 200-144.00R.

Taki, Waro: *See*—
Handa, Hajime; Yonekawa, Yasuhiro; Yamagata, Sen; Taki, Waro; Ikada, Yoshito; and Iwata, Hiroo, 4,402,319, Cl. 128-325.000.

Takinami, Koichi: *See*—
Goto, Eiji; Ishihara, Masaru; Sakurai, Shoji; Enei, Hitoshi; and Takinami, Koichi, 4,403,033, Cl. 435-108.000.

Talbot, Daniel B. Closed loop amplitude demodulator. 4,403,194, Cl. 329-146.000.

Taldo, Terry J.; and Jackson, Kenneth R., to Delta Manufacturing and Sales, Inc. Portable lavage device. 4,402,331, Cl. 134-58.00R.

Talon, Inc.: *See*—
Moertel, George B., 4,402,115, Cl. 24-205.16R.

Tamura, Takashi; and Kojima, Yoichi, to Sumitomo Chemical Co., Ltd. Process for producing diarylamine antioxidants in globular form. 4,402,859, Cl. 252-401.000.

Tamura, Yukio: *See*—
Ogaki, Koji; Tamura, Yukio; Kaminishi, Masashi; and Takata, Yoshinori, 4,402,555, Cl. 305-11.000.

Tanabe, Isao; Nagata, Ryoichi; Watanabe, Toru; and Miyamoto, Nobuaki, to Tanabe, Isao; and Mitsui Mining & Smelting Co., Ltd. Process for producing manganese dioxide. 4,402,931, Cl. 423-605.000.

Tanabe, Kuniaki: *See*—
Goto, Issei; Tanabe, Kuniaki; and Okita, Hiroshi, 4,402,765, Cl. 148-6.15R.

Tanabe, Shoji: *See*—
Miyashita, Kunio; Yamashita, Seizi; Watanabe, Hiroshi; and Tanabe, Shoji, 4,403,161, Cl. 310-156.000.

Tanaka, Fumio; Tani, Kenroku; and Mifune, Hideo, to Matsushita Electric Industrial Co., Ltd. Piezoelectric relay with oppositely bending bimorphs. 4,403,166, Cl. 310-332.000.

Tanaka, Haruo: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Kitaguchi, Koji; Ozaki, Masakuni; Kitano, Masahiko; Okamura, Toshihiro; and Tanaka, Haruo, 4,402,948, Cl. 424-182.000.

Tanaka, Kanou: *See*—
Tomosada, Masahiro; Honda, Haruhisa; and Tanaka, Kanou, 4,402,598, Cl. 355-69.000.

Tanaka, Katsumasa: *See*—
Kawakami, Heijiro; Tanaka, Katsumasa; Kamamoto, Seiichi; and Sato, Kazuo, 4,402,757, Cl. 134-1.000.

Tanaka, Masato, to Sony Corporation. Method and apparatus for editing digital signal. 4,403,261, Cl. 360-13.000.

Tanaka, Michio: *See*—
Nakanishi, Kyoji; Suzuki, Kenichiro; Tanaka, Michio; Matsuno, Jun-ichi; Ohmori, Hisashi; and Nozaki, Tsutomu, 4,402,739, Cl. 75-60.000.

Tanaka, Shin-ichi: *See*—
Miura, Konoe; Tanaka, Shin-ichi; Kojima, Hiroshi; Tanaka, Takeshi; and Matsushita, Osamu, 4,403,030, Cl. 430-273.000.

Tanaka, Takeshi: *See*—
Miura, Konoe; Tanaka, Shin-ichi; Kojima, Hiroshi; Tanaka, Takeshi; and Matsushita, Osamu, 4,403,030, Cl. 430-273.000.

Tanaka, Teruaki: *See*—
Yanazawa, Tadaaki; Tanaka, Teruaki; Yamashita, Masashi; Ehiro, Takashi; Okumura, Hiroshi; Saito, Shinzo; and Kusaba, Takashi, 4,402,206, Cl. 72-221.000.

Tanaka, Toshie, to Nifco Inc. Blind rivet. 4,402,638, Cl. 411-34.000.

Tanaka, Yoshimitsu: *See*—
Utsunomiya, Naomasa; and Tanaka, Yoshimitsu, 4,402,545, Cl. 296-204.000.

Tani, Ichitaro: *See*—
Sugawara, Katuo; Ohe, Etsuo; Tani, Ichitaro; and Tsukioka, Hideo, 4,402,211, Cl. 73-19.000.

Tani, Kenroku: *See*—
Tanaka, Fumio; Tani, Kenroku; and Mifune, Hideo, 4,403,166, Cl. 310-332.000.

Tani, Masayuki: *See*—
Sasaki, Yoshiyuki; Kuwabara, Mitsuo; and Tani, Masayuki, 4,403,094, Cl. 528-308.200.

Tanigawa, Kou: *See*—
Hayashi, Kazuhiko; Tanigawa, Kou; and Egusa, Takashi, 4,402,376, Cl. 180-179.000.

Taniguchi, Motoya; Ikeda, Minoru; and Akiyama, Nobuyuki, to Hitachi, Ltd. X-Ray exposure apparatus. 4,403,336, Cl. 378-035.000.

Tanimizu, Shinkichi: *See*—
Nakano, Masaki; and Tanimizu, Shinkichi, 4,403,171, Cl. 313-486.000.

Tanner Chemical Company: *See*—
Self, James M., 4,402,633, Cl. 405-261.000.

Tanner, Robert H.: *See*—
Smith, Jack B.; Holden, Barry W.; and Tanner, Robert H., 4,402,384, Cl. 181-210.000.

Taoka, Masayuki: *See*—
Suzuki, Hiroyuki; Taoka, Masayuki; and Watanabe, Kiyoshi, 4,403,317, Cl. 369-75.000.

Tarzia, Giorgio: *See*—
Mariani, Luigi; and Tarzia, Giorgio, 4,402,970, Cl. 424-274.000.

Tateishi, Kohshi: *See*—
Akiba, Keiichiro; Satomi, Takeo; Fujinami, Akira; Asano, Yasuhisa; Kameda, Nobuyuki; Mine, Akihiko; Hino, Naganori; and Tateishi, Kohshi, 4,402,734, Cl. 71-111.000.

Tatsumichi, Toshio; and Kawarada, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Method of preparation of substrates for liquid crystal display devices. 4,402,999, Cl. 427-126.300.

Tauster, Samuel J.; and Fung, Shun C., to Exxon Research and Engineering Co. Group VIII metals on manganese-containing oxide supports which exhibit strong metal support interactions. 4,402,869, Cl. 252-471.000.

Tavana, Benito J.: *See*—
Amara, Louis J.; Paoletti, Peitro; and Tavana, Benito J., 4,402,753, Cl. 106-94.000.

Tayler, Gerald E.: *See*—
Christian, John H.; Nolta, Arthur H.; Reed, David G.; Rieck, Richard E.; Tayler, Gerald E.; Truan, Terrell N.; and Williams, John S., 4,403,288, Cl. 364-200.000.

Taylor, Julian S. Rupture band relief valve. 4,402,334, Cl. 137-70.000.

Tazaki, Kichiya: *See*—
Yamashita, Izumi; Yoshida, Kazuo; Kusumi, Yuji; Fukuda, Kunio; and Tazaki, Kichiya, 4,403,057, Cl. 524-288.000.

Tazaki, Shigemitsu: *See*—
Terasawa, Koji; Tazaki, Shigemitsu; and Okamura, Shigeru, 4,403,233, Cl. 346-140.00R.

Teche, Andre: *See*—
Martel, Jacques; Tessier, Jean; and Teche, Andre, 4,402,972, Cl. 424-304.000.

Technicare Corporation: *See*—
Lindgren, Gunnar; Molesworth, Richard E.; and Sorwick, Jack R., 4,402,324, Cl. 128-660.000.

Teijin Limited: *See*—
Sasaki, Yoshiyuki; Kuwabara, Mitsuo; and Tani, Masayuki, 4,403,094, Cl. 528-308.200.
Takeshita, Toru; Hoshina, Kenji; Ohtsu, Akira; and Naruchi, Tatsuyuki, 4,402,975, Cl. 424-309.000.

Tektronix, Inc.: *See*—
Lueker, Jonathan C., 4,403,183, Cl. 324-72.500.

Telakowski, Robert: *See*—
Fortmann, William E.; Mrazek, James A.; Telakowski, Robert; and Sherman, Robert, 4,402,618, Cl. 384-107.000.

Telectronics Pty. Limited: *See*—
Doring, Carl, 4,402,328, Cl. 128-785.000.

Teledyne Industries, Inc.: *See*—
Guajardo, Ciro; and Chabala, Dennis B., 4,403,157, Cl. 307-297.000.

Telle, Otto: *See*—
Moeschler, Heinrich F.; Sasse, Klaus; Lange, Peter M.; Golker, Christian; Zoebelein, Gerhard; and Telle, Otto, 4,402,947, Cl. 424-181.000.

Teodorescu, Marius C.; Skosey, John L.; and Chang, Jin-Lai. Diagnostic technique for rheumatoid arthritis. 4,402,934, Cl. 424-1.000.

Tepe, Ernst: *See—*
Klotz, Helmut; Tepe, Ernst; and Sesterhenn, Lothar, 4,402,811, Cl. 204-256.000.
Terasawa, Koji; Tazaki, Shigemitsu; and Okamura, Shigeru, to Canon Kabushiki Kaisha. Ink jet apparatus. 4,403,233, Cl. 346-140.00R.
Terekhov, Igor L.: *See—*
Nikitin, Jury F.; Nikitin, Dmitry J.; Rykov, Nikolai A.; and Terekhov, Igor L., 4,402,369, Cl. 173-18.000.
Terlecke, Mark J.: *See—*
Ohman, Thor; and Terlecke, Mark J., 4,402,109, Cl. 16-95.00D.
Terry, Malvin D.: *See—*
Daly, John K.; and Terry, Malvin D., 4,402,613, Cl. 356-446.000.
Tessier, Jean: *See—*
Martel, Jacques; Tessier, Jean; and Teche, Andre, 4,402,972, Cl. 424-304.000.
Te Velde, Ties S., to U.S. Philips Corporation. Display device with deformable reflective medium. 4,403,248, Cl. 358-62.000.
Texaco Development Corp.: *See—*
Hunter, Walter D., 4,403,071, Cl. 525-330.400.
Texaco Inc.: *See—*
Duranleau, Roger G.; and Gates, Walter C., Jr., 4,402,868, Cl. 252-470.000.
McCoy, David R., 4,402,363, Cl. 166-267.000.
McCoy, David R.; and Waddill, Harold G., 4,403,078, Cl. 525-504.000.
Royle, Rae A., 4,402,857, Cl. 252-342.000.
Stellaccio, Robert J., 4,402,709, Cl. 48-197.00R.
Stellaccio, Robert J., 4,402,710, Cl. 48-197.00R.
Stellaccio, Robert J., 4,402,711, Cl. 48-197.00R.
Zoleski, Benjamin H.; and Sung, Rodney L., 4,402,845, Cl. 252-52.00A.
Texas Instruments Incorporated: *See—*
Chapman, Richard A., 4,402,126, Cl. 29-571.000.
Sacarisen, Stephen P.; and Guttag, Karl M., 4,403,284, Cl. 364-200.000.
Ty, Henry, 4,402,454, Cl. 236-1.00G.
Tezuka, Nobuo; and Taguchi, Tatsuya, to Canon Kabushiki Kaisha. Film takeup spool for camera. 4,402,468, Cl. 242-71.000.
Therm-O-Disc, Incorporated: *See—*
Anderson, Richard M., 4,403,206, Cl. 337-348.000.
Thermalloy Incorporated: *See—*
Jordan, William D.; Hundt, Roger C.; and Pritchett, James D., 4,403,102, Cl. 174-16.0HS.
Thermo King Corporation: *See—*
King, Donald D., 4,402,191, Cl. 62-239.000.
Thierion, Michel. Manually controlled machine for loading or unloading articles in cases where such articles are stowed. 4,402,173, Cl. 53-538.000.
Thiokol Corporation: *See—*
Johnson, Lawrence A.; and Wen, Hwei-mei, 4,402,874, Cl. 260-123.500.
Wade, Robert C., 4,403,045, Cl. 521-82.000.
Thom, James B.: *See—*
Ejzak, Richard P.; Thom, James B.; Peterson, William J.; and Glennon, Timothy F., 4,403,292, Cl. 364-492.000.
Thomas, Donald E., to Westinghouse Electric Corp. Substrate for silicon solar cells. 4,402,771, Cl. 148-174.000.
Thomas, William R. Animal caging system. 4,402,280, Cl. 119-15.000.
Thomason-CSF: *See—*
Pham, Ngu T.; and Nuzillat, Gerard, 4,402,127, Cl. 29-571.000.
Thomason, Herman B., to Mobil Oil Corporation. Three-dimensional seismic data gathering method. 4,403,312, Cl. 367-56.000.
Thompson, Earl C.; Keller, Morris C.; and Rustin, Francis, to Thompson, Earl Clayton. Animal watering valve with protected biasing spring. 4,402,343, Cl. 137-614.200.
Thompson, Earl Clayton: *See—*
Thompson, Earl C.; Keller, Morris C.; and Rustin, Francis, 4,402,343, Cl. 137-614.200.
Thompson, Ralph B., to T & R Chemicals, Inc. Antihypertension treatment. 4,402,943, Cl. 424-180.000.
Thompson, Ralph B., to T & R Chemicals, Inc. Antithrombotic treatment. 4,402,946, Cl. 424-180.000.
Thompson, Ralph B.: *See—*
Alvarez, Jose A. A.; and Thompson, Ralph B., 4,402,982, Cl. 424-329.000.
Thomson-CSF: *See—*
Granek, Roger; Hybre, Jean; and Drobecq, Michel, 4,403,345, Cl. 455-182.000.
Huignard, Jean-Pierre; and Leclerc, Pierre, 4,403,352, Cl. 455-601.000.
Lacombat, Michel, 4,402,610, Cl. 356-400.000.
Tournois, Pierre, 4,403,311, Cl. 367-11.000.
Tournois, Pierre, 4,403,314, Cl. 367-100.000.
Zann, Annie; and Dubois, Jean-Claude, 4,402,855, Cl. 252-299.650.
Thornberry, Gerald E., to RCA Corporation. Vertical detail enhancement on/off switch. 4,403,246, Cl. 358-37.000.
Thus, Heinz: *See—*
Fabian, Horst; and Thus, Heinz, 4,402,392, Cl. 198-311.000.
TII Industries Inc.: *See—*
Simokat, Frank L., 4,403,115, Cl. 179-17.00A.
Tile Council of America, Inc.: *See—*
Chesney, Joseph J., Jr., 4,402,752, Cl. 106-93.000.
Timex Corporation: *See—*
Ausbrooks, Charles, 4,403,016, Cl. 428-672.000.
Tivy, Vincent V., to Loveland Controls Company. Process control system prover. 4,403,297, Cl. 364-579.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
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Tohyama, Yoshikuni: *See—*
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Toivonen, Pentti; and Ovaska, Juhani, to Valmet OY. Apparatus for driving a rotatable mantle mounted on a fixed axle. 4,402,233, Cl. 74-411.000.
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Tsuge, Kazuo, 4,402,493, Cl. 267-64.210.
Tokiwa Kagaku Kikai Co., Ltd.: *See—*
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Tokushige, Kaoru; and Nakane, Masayoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory operable as static RAM or EAROM. 4,403,306, Cl. 365-156.000.
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Ando, Hideo; and Nakagawa, Toshiharu, 4,403,231, Cl. 346-135.100.
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Kurihara, Tetsuro; and Nishio, Kosaku, 4,403,150, Cl. 250-370.000.
Minami, Munehiro, 4,403,310, Cl. 365-230.000.
Nakao, Satoshi; Taguchi, Yasuo; and Higuchi, Takashi, 4,402,299, Cl. 123-632.000.
Ogawa, Shigeo, 4,403,346, Cl. 455-189.000.
Ohba, Hiroshi; and Horino, Shigeo, 4,402,410, Cl. 209-534.000.
Okado, Chihiro, 4,403,280, Cl. 363-96.000.
Suzuki, Seigo, 4,403,295, Cl. 364-513.000.
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Tomforde, Johann: *See—*
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Tomiita, Kazuo: *See—*
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Tomlinson, Malcolm, to General Motors Corporation. Variable ratio power transmission mechanisms. 4,402,237, Cl. 74-689.000.
Tomosada, Masahiro; Honda, Haruhisa; and Tanaka, Kanou, to Canon Kabushiki Kaisha. Exposure control apparatus. 4,402,598, Cl. 355-69.000.
Tomy Corporation: *See—*
Seki, Yoshizo; and Watanabe, Saburo, 4,402,158, Cl. 46-44.000.
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Tournemine, Colette: *See—*
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Tournier, Herve: *See—*
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Tournois, Pierre, to Thomson-CSF. Acoustic imaging system. 4,403,311, Cl. 367-11.000.
Tournois, Pierre, to Thomson-CSF. Active detection system using simultaneous multiple transmissions. 4,403,314, Cl. 367-100.000.
Toyo Kogyo Co., Ltd.: *See—*
Utsunomiya, Naomasa; and Tanaka, Yoshimitsu, 4,402,545, Cl. 296-204.000.
Toyoda, Munemitsu: *See—*
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Parker, Harry A.; and Greenman, Joseph, 4,403,004, Cl. 428-31.000.
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Trepka, William J., to Phillips Petroleum Company. Viscosity index improvers with dispersant properties prepared by reaction of lithiated hydrogenated copolymers with 4-substituted aminopyridines. 4,402,843, Cl. 252-50.000.
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Rogers, Peter L.; and Tribe, David E., 4,403,034, Cl. 435-161.000.
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TRW Inc.: *See*—
Crawshaw, James R.; and Moosberger, David W., 4,403,204, Cl. 335-229.000.
Trybulski, Eugene J., to Hoffmann-La Roche Inc. Production of 2-benzazepines. 4,402,876, Cl. 260-239.0BB.
TSH-Handels AG: *See*—
Ziegler, Gerd W., 4,402,520, Cl. 280-11.200.
Tsuboshima, Kosaku, to Olympus Optical Co., Ltd. Position controlling device. 4,403,180, Cl. 318-640.000.
Tsuchiya, Yutaka, to Hamamatsu TV Co., Ltd. Electron-beam shutter and shutter tube. 4,403,140, Cl. 250-213.0VT.
Tsuda, Shuji; and Iwasaki, Makoto, to Tokiwa Kagaku Kikai Co., Ltd. Inhalation toxicity testing apparatus. 4,402,315, Cl. 128-200.180.
Tsuge, Kazuo, to Tokico Ltd. Vehicle height adjusting device. 4,402,493, Cl. 267-64.210.
Tsuji, Shintaro; and Kamohara, Toshiyuki, to Mitsubishi Denki Kabushiki Kaisha. Elevator control system. 4,402,387, Cl. 187-29.00R.
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Tsunoda, Atsuo; Midorikawa, Koyo; Murase, Hidetoshi; Suzuta, Mikio; Moriwaki, Masazumi; Mochizuki, Noritaka; Minami, Setsuo; and Matsui, Yoshiya, to Canon Kabushiki Kaisha. Projection device. 4,402,572, Cl. 350-167.000.
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Tsuruoka, Masao, to Hitachi, Ltd. Semiconductor device having a metal-fiber composite material electrode. 4,403,242, Cl. 357-71.000.
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Tummes, Hans: *See*—
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Turbak, Albin F.: *See*—
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Clark, Eugene V.; and Sievers, George K., 4,402,764, Cl. 148-6.000.
Turiot, Andre; and Derrien, Michel, to Messier-Hispano-Bugatti (SA). Tandem type landing gear. 4,402,477, Cl. 214-102.00R.
Turner, Alan K.: *See*—
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Turner, Bradley D.; and Riley, Richard E., to Spectrol Electronics Corp. Method of trimming a resistance element. 4,403,133, Cl. 219-121.0LJ.
Turner, James K.: *See*—
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Tuten, William J.; Crosby, Kennith D.; and Black, Harold W., to Creative Technology Inc. Selective scrap metal collection apparatus. 4,402,391, Cl. 194-4.00C.
Twilley, Ian C.: *See*—
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Twort, Thomas J., to Urquhart Engineering Co., Ltd.; and Bloom Eng. Co., Inc. Precast furnace pipe insulation. 4,402,345, Cl. 138-149.000.
Ty, Henry, to Texas Instruments Incorporated. Gas flue damper and thermostat metal therefore. 4,402,454, Cl. 236-1.00G.
Tyndall, Louie L. Ash shovel. 4,402,538, Cl. 294-55.000.
Tyrell, John A.: *See*—
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Tytgat, Daniel, to Solvay & Cie. (Societe Anonyme). Process for inhibiting the corrosion of a metal installation in contact with an acid bath. 4,402,759, Cl. 134-3.000.
U. G. Closures & Plastics Limited: *See*—
Hopley, Eric T., 4,402,415, Cl. 215-32.000.
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Udaka, Makoto: *See*—
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Udell, Debra M. Atmosphere modification satellite. 4,402,480, Cl. 244-158.00R.
Ueda, Shoji; Daikoku, Takashi; Zama, Masato; Matsuo, Shintaro; Saito, Masahiro; and Kinoshita, Hidejiro, to Mitsubishi Jukogyo Kabushiki Kaisha. Metallic material proof against attachment of marine organisms. 4,402,906, Cl. 420-493.000.
Uffner, William E., to Owens-Corning Fiberglas Corporation. Chemically modified asphalt joint sealing compositions. 4,403,067, Cl. 525-54.500.
Uhrig, Heinz; Weide, Joachim; and Deubel, Reinhold, to Hoechst Aktiengesellschaft. Anionic compounds based on modified novolak oxyalkylates, their preparation, and their use as foam-free surface-active agents. 4,403,077, Cl. 525-502.000.
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Fethke, Walter P.; Dunne, Stephen R.; and Auzikaitis, Joseph P., 4,402,714, Cl. 55-35.000.
Lewis, Irwin C.; and Moore, Arthur W., 4,402,928, Cl. 423-447.100.
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Shinko, Julius S.; and Keyes, Thomas C., 4,402,925, Cl. 423-290.000.
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Miller, Eugene; and McSweeney, Gerald B., 4,402,932, Cl. 423-625.000.
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Liebert, Curt H., 4,402,992, Cl. 427-34.000.
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Koon, Norman C., 4,402,770, Cl. 148-31.570.
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U.S. Philips Corporation: *See*—
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Vaillancourt, Marc. Veterinary composition for preventing feline urological syndrome and litter product containing the composition. 4,402,941, Cl. 424-153.000.
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Jacquet, Maurice A., 4,402,486, Cl. 251-306.000.
Vallon, Roger. Free-piston electric current generator. 4,403,153, Cl. 290-1.00R.
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Valsamis, Lefteris N.; and Donoian, Gary S., to USM Corporation. Rotary processors. 4,402,616, Cl. 366-99.000.
Van Aken, Morgan D. Diagnostic test for the detection of a specific tumor antigen with CoA-SPC. 4,403,040, Cl. 436-501.000.
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Vandeberg, Robert M. Acoustic signature inspection of railroad wheels. 4,402,210, Cl. 73-12.000.
Vanden Driessche, Jean R., to Waterlomat Societe Anonyme. Apparatus for drawing off carbonated drinks from a container with incorporated gas supply. 4,402,429, Cl. 222-153.000.
van de Veerdonk, Johannes T. A., to U.S. Philips Corporation. Swing-arm device for an optical scanning unit. 4,403,316, Cl. 369-44.000.
van Leeuwen, Peter. High-voltage electrode consisting of a plurality of series-connected single electrodes for a spark-discharge device. 4,403,168, Cl. 313-336.000.
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van Zyl, Robert M. Power pool cleaner. 4,402,101, Cl. 15-1.700.
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von Dardel, Guy; Henning, Sten A.; and Svensson, Leif O. G. Silica aerogel. 4,402,927, Cl. 423-335.000.
von Lersner, Wolf A.; and Unger, Barron M., to Campbell Soup Company. Nutritionally enriched and stabilized meat products and method of producing such products. 4,402,987, Cl. 426-281.000.
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Marans, Nelson S.; and Kehr, Clifton L., 4,403,083, Cl. 528-44.000.
WABCO Fahrzeugbremsen GmbH: *See—*
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Walter, Richard P., to Bendix Corporation, The. Fuel injector with abrupt and stable termination. 4,402,457, Cl. 239-91.000.
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Vanden Driessche, Jean R., 4,402,429, Cl. 222-153.000.
Waugh, Richard A., to General Electric Company. Differentially damped support assembly for washing machine. 4,402,199, Cl. 68-23.300.
Weathers, Douglas W.; and Gardner, Robert B., to Container Corporation of America. Multiple sized chair base. 4,402,406, Cl. 206-326.000.
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Webinger, George, to Champion International Corporation. Two part container with adjustable vents. 4,402,433, Cl. 222-485.000.
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Weiner, Antoine; Artois, Fernand; and Limpach, Raymond, to Arbed S.A. Process for the continuous blowing of fine-particled reducing agents consisting predominantly of mineral coal into a shaft furnace. 4,402,275, Cl. 110-347.000.
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West, Theodore V., to Burcliff Industries, Inc. Device for attaching insulator pods to wire terminals. 4,402,132, Cl. 29-759.000.
Westelaken, Christianus M. T. Air heating apparatus. 4,402,302, Cl. 126-117.000.
Westerman, Robert D. Method and apparatus for dental crown removal. 4,402,671, Cl. 433-218.000.
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Western Electric Company, Inc.: *See—*
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Kent, William C., 4,402,393, Cl. 198-345.000.
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Phipps, Joseph W., III; and Jensen, Warren H., 4,402,479, Cl. 244-116.000.
Thomas, Donald E., 4,402,771, Cl. 148-174.000.
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McConnel, Ronald J., 4,402,574, Cl. 350-418.000.
Whipps, Patrick A., to Hughes Aircraft Company. Silicon-containing compositions for self-sustained intermetallic reactions. 4,402,776, Cl. 149-108.200.
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White, Charles A., to U.S. Industries, Inc. Poultry cage feed trough stabilizing system. 4,402,281, Cl. 119-18.000.
White, David L.; and White, Beverly A. Sheet material device with loosely rotatable member. 4,402,157, Cl. 46-36.000.
White, David L., to Medtronic, Inc. Disposable electrophysiological exploring electrode needle. 4,402,323, Cl. 128-642.000.
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Wilde, Bryce B. Building material and method of manufacturing same. 4,402,751, Cl. 106-93.000.
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Williman, Glenn S., to United States of America, Army. Priority circuit for service request signals. 4,403,192, Cl. 328-152.000.

Wilson, Bruce H.: *See*—
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Wilson, Joe C.; and Hirozawa, Stanley T., to BASF Wyandotte Corporation. High lead solder corrosion inhibitors. 4,402,847, Cl. 252-75.000.

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Wischermann, Gerhard, to Robert Bosch GmbH. Method and circuit for time-correction of digital switching signals. 4,403,245, Cl. 358-22.000.

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Zeikus, Joseph G.; and Ng, Thomas K., 4,403,032, Cl. 435-18.000.

Wise, Hiram J., III, to W. H. Brady Co. Membrane switch assembly with modular switch and spacer portions. 4,403,122, Cl. 200-5.00A.

Withers, Michael S., to Du Pont de Nemours, E. I., and Company. Apparatus for making a web-supported membrane. 4,402,785, Cl. 156-499.000.

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Witte, Hans-Hermann: *See*—
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Witte, Stefan H.; and Heed, Bjorn. Treatment chamber. 4,402,279, Cl. 118-326.000.

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Wolar, William. Protective device for attachments affixed to electrically operated beds. 4,403,214, Cl. 340-540.000.

Wolf, David A., to United States of America, National Aeronautics and Space Administration. Heat pipe thermal switch. 4,402,358, Cl. 165-32.000.

Wolf, Erich; Lembke, Andreas; and Deininger, Rolf, to Chimicasa GmbH. Process and preparation for deactivating viruses. 4,402,950, Cl. 424-195.000.

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Wong, Patrick S., to Alza Corporation. Device for delivering agent in vagina. 4,402,695, Cl. 604-892.000.

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Wood, Edward T.; and Snyder, Robert E., to Completion Tool Company. Well packer valve arrangement. 4,402,517, Cl. 277-34.000.

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Wood, Rex C., to Modern Controls, Inc. Machines for classifying pharmaceutical capsules. 4,402,412, Cl. 209-625.000.

Wood, Stanley E., to United States of America, Navy. Hybrid gun propellant. 4,402,775, Cl. 149-49.000.

Wortham, Robert R., Jr. Sign post with stabilizer. 4,402,166, Cl. 52-155.000.

Wosegien, Bernd; Staltmeir, Josef; and Sander, Nils B. L., to Knorr-Bremse GmbH. Adjustable broke rigging for rail vehicles. 4,402,388, Cl. 188-56.000.

Woste, Ludger H., to Lexel Corporation. Dye laser having a dye jet nozzle which forms a well-defined dye stream, and its method of manufacture. 4,403,324, Cl. 372-54.000.

Wu, Chyuan-Jong. Shoe having automatic step counter. 4,402,147, Cl. 36-136.000.

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Wunderlich, Donald K., to Atlantic Richfield Company. Method and apparatus for oxidizing dried low rank coal. 4,402,706, Cl. 44-1.00G.

Wunderlich, Donald K., to Atlantic Richfield Company. Deactivating dried coal with a special oil composition. 4,402,707, Cl. 44-6.000.

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Wurzburg, Henry, to Motorola, Inc. Parasitic insensitive switched capacitor operational amplifier circuit. 4,403,195, Cl. 330-9.000.

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Yabe, Hisao, to Olympus Optical Co., Ltd. Endoscope light source device. 4,402,313, Cl. 128-6.000.

Yakovlev, Vladimir K.; Lugovoi, Elektron P.; and Ivankov, Vasily A. Apparatus for forming helical springs. 4,402,205, Cl. 72-138.000.

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Yamada, Seizi: *See*—
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Yamada, Shigeru; Watanabe, Kazuo; and Aramaki, Mitsuo, to Clarion Co., Ltd. Receiver having program reserving function. 4,403,344, Cl. 455-181.000.

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Momura, Kazuhiko; Sato, Toshiyuki; Kanda, Atsushi; and Kanno, Nobuyuki, 4,402,351, Cl. 141-98.000.
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Yamakawa Mitihiro: *See*—
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Yamamoto, Shigeo: *See*—
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Yamanaka, Motosuke; Saito, Isao; Yamatsu, Kiyomi; and Fujimoto, Takako, to Eisai Co., Ltd. Acylaminophenyl imidazoles and antidepressing agent containing the same. 4,402,966, Cl. 424-273.00R.

Yamaoka, Yukinori; Nakano, Seizo; Takeuchi, Sigetaka; Oishi, Kazuaki; and Sasaki, Koji, to Hitachi, Ltd. Gas-insulated disconnecting switch. 4,403,125, Cl. 200-144.00R.

Yamasaki, Masafumi, to Olympus Optical Company Ltd. Photometric mode switching apparatus for cameras of automatic exposure control type. 4,402,587, Cl. 354-31.000.

Yamashita, Izumi; Yoshida, Kazuo; Kusumi, Yuji; Fukuda, Kunio; and Tazaki, Kichiya, to Asahi-Dow Limited. Diester of 3,5,3',5'-tetrabromo-bisphenol A with halogenated aromatic carboxylic acid. 4,403,057, Cl. 524-288.000.

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Yan, Tsoung-Yuan, to Mobil Oil Corporation. Process for liquefaction of coal. 4,402,821, Cl. 208-8.0LE.

Yanagawa, Nobuyuki; Iwanaga, Yoshiharu; and Ishikawa, Toyozi, to Ricoh Company, Ltd. Cleaning unit for copying machine. 4,402,103, Cl. 15-256.520.

Yanazawa, Tadaaki; Tanaka, Teruaki; Yamashita, Masashi; Ehiro, Takashi; Okumura, Hiroshi; Saito, Shinzo; and Kusaba, Takashi, to Kawasaki Steel Corporation. Method of rolling slabs for the manu-

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Yasui, Kazuomi: *See*—
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Yazaki Corporation: *See*—
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Yeh, Warner S., to Sonca Industries Limited. Dry-cell holders. 4,403,182, Cl. 320-2.000.

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Yokogawa Hokushin Electric Works: *See*—
Ban, Tsuyoshi; Murayama, Takeshi; Muramoto, Setsuo; and Hanaoka, Yuzuru, 4,403,039, Cl. 436-150.000.

Yokoi, Gunpei, to Nintendo Co., Ltd. Puzzle toy. 4,402,510, Cl. 273-153.00S.

Yokoi, Gunpei, to Nintendo Co., Ltd. Display. 4,403,216, Cl. 340-705.000.

Yokota, Minoru: *See*—
Sato, Kenichi; Yamauchi, Kazuhisa; Hanaki, Yasumasa; Kondo, Takasi; and Yokota, Minoru, 4,402,763, Cl. 148-2.000.

Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Bandpass filter circuit. 4,403,201, Cl. 330-304.000.

Yonekawa, Yasuhiro: *See*—
Handa, Hajime; Yonekawa, Yasuhiro; Yamagata, Sen; Taki, Waro; Ikada, Yoshito; and Iwata, Hiroo, 4,402,319, Cl. 128-325.000.

York-Shipley, Inc.: *See*—
Korenberg, Jakob, 4,402,665, Cl. 431-170.000.

Yoshida, Kazuo: *See*—
Yamashita, Izumi; Yoshida, Kazuo; Kusumi, Yuji; Fukuda, Kunio; and Tazaki, Kichiya, 4,403,057, Cl. 524-288.000.

Yoshida, Ken: *See*—
Nishizaki, Tomoyoshi; Oguma, Kanzi; Sakagami, Katsuyoshi; and Yoshida, Ken, 4,402,915, Cl. 422-202.000.

Yoshida, Kiyoshi: *See*—
Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, 4,402,244, Cl. 84-1.030.

Yoshida Kogyo K.K.: *See*—
Okamura, Tatsuro; and Irifune, Hideki, 4,402,750, Cl. 106-85.000.

Yoshida, Tomio: *See*—
Nagashima, Michiyoshi; Yoshida, Tomio; and Ohta, Takeo, 4,403,318, Cl. 369-100.000.

Yoshimi, Toshikazu, to Pioneer Electronic Corporation. Earphone. 4,403,120, Cl. 179-182.00R.

Yoshioka, Atsushi: *See*—
Watatani, Yoshizumi; and Yoshioka, Atsushi, 4,403,264, Cl. 360-33.100.

Yoshioka, Tamotsu; Mizuguchi, Ryuzo; Ishikura, Shinichi; and Ishii, Keizo, to Nippon Paint Co., Ltd. Polymeric resin, and its production and use. 4,403,065, Cl. 524-816.000.

Young, Clifton A.: *See*—
Domeniconi, Michael J.; Schlaikjer, Carl R.; and Young, Clifton A., 4,403,021, Cl. 429-101.000.

Young, Donald C., to Union Oil Company of California. Noncorrosive urea-sulfuric acid compositions. 4,402,852, Cl. 252-182.000.

Young, Glen C.; and Durant, Michael B., to Essex Group Inc. Automatic resetting of control system for loss of time reference. 4,403,302, Cl. 364-900.000.

Young, Sidney P. Trunk exercising device. 4,402,505, Cl. 272-130.000.

Yu, Chia-Nien: *See*—
Pelosi, Stanford S., Jr.; and Yu, Chia-Nien, 4,403,097, Cl. 549-487.000.

Yuasa, Yoshio, to Minolta Camera Kabushiki Kaisha. Colorimeter. 4,402,611, Cl. 356-405.000.

Zabielski, Kenneth D.: *See*—
Garver, Edward B., Sr.; and Zabielski, Kenneth D., 4,402,682, Cl. 604-111.000.

Zahnradfabrick Friedrichshafen A.G.: *See*—
Knur, Walter; and Winkelmann, Siegfried, 4,402,374, Cl. 180-65.00F.

Zahnradfabrik Friedrichshafen A.G.: *See*—
Bendel, Gunther; and Loffler, Siegfried, 4,402,235, Cl. 74-473.00R.

Zalewski, Edward F.; Keller, Richard A.; and Apel, Charles T. Optogalvanic intracavity quantitative detector and method for its use. 4,402,606, Cl. 356-315.000.

Zama, Masato: *See*—
Ueda, Shoji; Daikoku, Takashi; Zama, Masato; Matsuo, Shintaro; Saito, Masahiro; and Kinoshita, Hidejiro, 4,402,906, Cl. 420-493.000.

Zambrow, John L.: *See*—
Krueger, Robert H.; and Zambrow, John L., 4,402,912, Cl. 422-107.000.

Zankman, Alvin M. Harmonica music holder and learning system. 4,402,249, Cl. 84-453.000.

Zann, Annie; and Dubois, Jean-Claude, to Thomson-CSF. Type A smectic liquid crystal having a positive dielectric anisotropy. 4,402,855, Cl. 252-299.650.

Zeikus, Joseph G.; and Ng, Thomas K., to Wisconsin Alumni Research Foundation. Continuous spectrophotometric assay of microbial cellulase. 4,403,032, Cl. 435-18.000.

Zelov, Evgeny A.: *See*—
Uchitel, Alexandr D.; Zelov, Evgeny A.; Brener, Leonid J.; Baturov, Evgeny G.; Derbas, Anatoly G.; Ivchenko, Kim D.; Kuevda, Jury K.; and Khomich, Ivan T., 4,402,826, Cl. 209-366.500.

Zeugner, Horst: *See*—
Liepmann, Hans; Hueschens, Rolf; Milkowski, Wolfgang; Zeugner, Horst; Heinemann, Henning; Wolf, Klaus-Ullrich; Hell, Insa; and Hempel, Reinhard, 4,402,981, Cl. 424-324.000.

Ziegler, Gerd W., to TSH-Handels AG. Roller skate or the like with brake attachment. 4,402,520, Cl. 280-11.200.

Ziemke, Robert A.: *See*—
Walker, Richard E.; Heckelman, James D.; and Ziemke, Robert A., 4,403,143, Cl. 250-227.000.

Zilske, Wolfgang: *See*—
Kreuter, Erika; Kuhn, Werner; and Zilske, Wolfgang, 4,402,802, Cl. 204-47.000.

Zimmer, Edward P.; and Cardinal, Joseph F. Coin-operated bank. 4,402,156, Cl. 46-4.000.

Zink, Rudolf, to Ciba-Geigy Corporation. Methine compounds. 4,403,095, Cl. 542-466.000.

Zoebelein, Gerhard: *See*—
Moeschler, Heinrich F.; Sasse, Klaus; Lange, Peter M.; Golker, Christian; Zoebelein, Gerhard; and Telle, Otto, 4,402,947, Cl. 424-181.000.

Zoleski, Benjamin H.; and Sung, Rodney L., to Texaco Inc. Process for improving the spreadability of marine diesel cylinder oils. 4,402,845, Cl. 252-52.00A.

Zollner, Manfred; Hoffmann, Christian; and Zwicker, Eberhard, to Siemens Aktiengesellschaft. Method for generating acoustical speech signals which can be understood by persons extremely hard of hearing and a device for the implementation of said method. 4,403,118, Cl. 179-107.0FD.

Zuckerman, Lee B.: *See*—
Grenier, Wilfred J.; Zuckerman, Lee B.; Ferris, John P.; and DeFalco, Joseph, 4,402,628, Cl. 404-16.000.

Zuev, Vladimir K.: *See*—
Alexander, Jury V.; Viktorov, Viktor D.; Zuev, Vladimir K.; Orlov, Gennady S.; Filipin, Nikolai A.; and Khunafin, Fedor S., 4,402,612, Cl. 356-427.000.

Zwicker, Eberhard: *See*—
Zollner, Manfred; Hoffmann, Christian; and Zwicker, Eberhard, 4,403,118, Cl. 179-107.0FD.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF SEPTEMBER, 1983

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Canon Kabushiki Kaisha: *See—*
Mashimo, Yukio; Sakurada, Nobuaki; Ito, Tadashi; Ito, Fumio; and Shinoda, Nobuhiko, Re. 31,370, Cl. 354-23.00D.

Dell, Christopher C., to National Research Development Corporation. Countercurrent decantation. Re. 31,374, Cl. 210-800.000.

Devine, Thomas M., Jr., to General Electric Company. Method for joining an anode target comprising tungsten to a graphite substrate. Re. 31,369, Cl. 228-122.000.

Emoto, Masami: *See—*
Kuroishi, Shoji; Kimura, Tsuguo; Emoto, Masami; and Yamamoto, Shiro, Re. 31,371, Cl. 355-10.000.

General Electric Company: *See—*
Devine, Thomas M., Jr., Re. 31,369, Cl. 228-122.000.

Grain Systems, Inc.: *See—*
Trumper, Mark A., Re. 31,368, Cl. 52-303.000.

Istituto Sieroterapico e Vaccinogeno Toscano "Sclavo" S.p.A.: *See—*
Ricci, Antonio, Re. 31,372, Cl. 436-522.000.

Ito, Fumio: *See—*
Mashimo, Yukio; Sakurada, Nobuaki; Ito, Tadashi; Ito, Fumio; and Shinoda, Nobuhiko, Re. 31,370, Cl. 354-23.00D.

Ito, Tadashi: *See—*
Mashimo, Yukio; Sakurada, Nobuaki; Ito, Tadashi; Ito, Fumio; and Shinoda, Nobuhiko, Re. 31,370, Cl. 354-23.00D.

Kimura, Tsuguo: *See—*
Kuroishi, Shoji; Kimura, Tsuguo; Emoto, Masami; and Yamamoto, Shiro, Re. 31,371, Cl. 355-10.000.

Kuroishi, Shoji; Kimura, Tsuguo; Emoto, Masami; and Yamamoto, Shiro, to Ricoh Co., Ltd. Developing system. Re. 31,371, Cl. 355-10.000.

Mashimo, Yukio; Sakurada, Nobuaki; Ito, Tadashi; Ito, Fumio; and Shinoda, Nobuhiko, to Canon Kabushiki Kaisha. System for exposure measurement and/or focus detection by means of image sensor. Re. 31,370, Cl. 354-23.00D.

National Research Development Corporation: *See—*
Dell, Christopher C., Re. 31,374, Cl. 210-800.000.

Nevamar Corporation: *See—*
Ungar, Israel S.; Scher, Herbert I.; and Williams, Delbert A., Re. 31,373, Cl. 156-222.000.

Ricci, Antonio, to Istituto Sieroterapico e Vaccinogeno Toscano "Sclavo" S.p.A. Method for measuring antistreptolysin concentration in blood. Re. 31,372, Cl. 436-522.000.

Ricoh Co., Ltd.: *See—*
Kuroishi, Shoji; Kimura, Tsuguo; Emoto, Masami; and Yamamoto, Shiro, Re. 31,371, Cl. 355-10.000.

Romanauski, James A.: *See—*
Sellers, John C.; and Romanauski, James A., Re. 31,375, Cl. 343-6.5LC.

Sakurada, Nobuaki: *See—*
Mashimo, Yukio; Sakurada, Nobuaki; Ito, Tadashi; Ito, Fumio; and Shinoda, Nobuhiko, Re. 31,370, Cl. 354-23.00D.

Scher, Herbert I.: *See—*
Ungar, Israel S.; Scher, Herbert I.; and Williams, Delbert A., Re. 31,373, Cl. 156-222.000.

Sellers, John C.; and Romanauski, James A. Transponder-responder system. Re. 31,375, Cl. 343-6.5LC.

Shinoda, Nobuhiko: *See—*
Mashimo, Yukio; Sakurada, Nobuaki; Ito, Tadashi; Ito, Fumio; and Shinoda, Nobuhiko, Re. 31,370, Cl. 354-23.00D.

Trumper, Mark A., to Grain Systems, Inc. Flour system for grain bin. Re. 31,368, Cl. 52-303.000.

Ungar, Israel S.; Scher, Herbert I.; and Williams, Delbert A., to Nevamar Corporation. High pressure decorative laminate having registered color and embossing. Re. 31,373, Cl. 156-222.000.

Williams, Delbert A.: *See—*
Ungar, Israel S.; Scher, Herbert I.; and Williams, Delbert A., Re. 31,373, Cl. 156-222.000.

Yamamoto, Shiro: *See—*
Kuroishi, Shoji; Kimura, Tsuguo; Emoto, Masami; and Yamamoto, Shiro, Re. 31,371, Cl. 355-10.000.

LIST OF DESIGN PATENTEES

Airwick Industries, Inc.: *See—*
Hoyt, Earl, 270,468, Cl. D23-150.000.

Anchor Hocking Corporation: *See—*
Thrush, James L., 270,415, Cl. D7-11.000.
Thrush, James L., 270,416, Cl. D7-27.000.
Thrush, James L., 270,417, Cl. D7-28.000.

Anderson, Donald R.; Huisinga, Roger L.; and Norstrud, Iven R., to Britt Tech Corporation. Liquid dispensing container. 270,429, 9-6-83, Cl. D9-347.000.

Arfert, Horst F. W., to Reynolds Metals Company. Can carrier. 270,428, 9-6-83, Cl. D9-344.000.

Ashihara, Kazuhiko, to Sharp Corporation. Printer. 270,448, 9-6-83, Cl. D14-111.000.

Baugh, Benjamin C., to Coleman Company, Inc., The. Portable barbecue grill. 270,420, 9-6-83, Cl. D7-337.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Gevert, Klaus V., 270,435, Cl. D12-110.000.

Bieler, Arthur. Carpet showcase. 270,412, 9-6-83, Cl. D6-188.000.

Bixler, Kenneth D.: *See—*
El-Hag, Nabil A.; Bixler, Kenneth D.; and Ralphs, Robert E., 270,422, Cl. D7-357.000.

Bizovi, Dan D. Golf putter. 270,465, 9-6-83, Cl. D21-217.000.

Black, Allan N., to Guest Keen & Nettlefolds (Aust) Limited. Scaffold anchorage socket. 270,476, 9-6-83, Cl. D25-68.000.

Blackburn, Bruce N., to Champion International Corporation. Print font. 270,454, 9-6-83, Cl. D18-24.000.

Blackburn, Bruce N., to Champion International Corporation. Print font. 270,455, 9-6-83, Cl. D18-24.000.

Blackburn, Bruce N., to Champion International Corporation. Print font. 270,456, 9-6-83, Cl. D18-24.000.

Blair, Thomas O. Spool thread cutter. 270,396, 9-6-83, Cl. D3-18.000.

Braswell, C. Richard, to Design Partition Company, Inc. Edge member for movable partition. 270,479, 9-6-83, Cl. D25-74.000.

Britt Tech Corporation: *See—*
Anderson, Donald R.; Huisinga, Roger L.; and Norstrud, Iven R., 270,429, Cl. D9-347.000.

Bulgari, Marina, to Zoldis Anstalt. Ring. 270,432, 9-6-83, Cl. D11-34.000.

Burtoft, William K.; Goldberg, Dale I.; and Osborne, Thomas P., to CPG Products Corp. Electronic road racing toy. 270,460, 9-6-83, Cl. D21-13.000.

Bury, Joe. Note pad holder. 270,457, 9-6-83, Cl. D19-90.000.

Canon Kabushiki Kaisha: *See—*
Sakurai, Mitsuru, 270,452, Cl. D16-31.000.
Tokuda, Hiroyuki, 270,451, Cl. D16-30.000.

Casa Bella Imports, Inc.: *See—*
Matthias, Jan H., 270,401, Cl. D6-61.000.
Matthias, Jan H., 270,402, Cl. D6-61.000.
Matthias, Jan H., 270,403, Cl. D6-61.000.

Cervantes, Rafael T., to Westbury Foundation, The; and Sociedad de Dispositivos Reductores de Tabaco, S.A. Cigar and cigarette filter perforator. 270,485, 9-6-83, Cl. D27-51.000.

Champion International Corporation: *See—*
Blackburn, Bruce N., 270,454, Cl. D18-24.000.
Blackburn, Bruce N., 270,455, Cl. D18-24.000.
Blackburn, Bruce N., 270,456, Cl. D18-24.000.

Chen, Tung-Sing. Telephone set. 270,445, 9-6-83, Cl. D14-64.000.

Chloride Group Limited: *See—*
Jones, Donald, 270,482, Cl. D26-37.000.

Clark, Richard F., to United States of America, Army. Front gun sight. 270,466, 9-6-83, Cl. D22-8.000.

Coleman Company, Inc., The: *See—*
Baugh, Benjamin C., 270,420, Cl. D7-337.000.
Haines, Gerald L.; Havenar, Richard A.; and Herolzer, Ralph H., 270,474, Cl. D25-62.000.

Conti, Rino, to Dart Industries Inc. Food storage container or the like. 270,418, 9-6-83, Cl. D7-76.000.

Conti, Rino, to Dart Industries Inc. Butter dish or the like. 270,419, 9-6-83, Cl. D7-84.000.
CPG Products Corp.: *See*—
Burtoft, William K.; Goldberg, Dale I.; and Osborne, Thomas P., 270,460, Cl. D21-13.000.
Crisp, Donald L.: *See*—
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Dart Industries Inc.: *See*—
Conti, Rino, 270,418, Cl. D7-76.000.
Conti, Rino, 270,419, Cl. D7-84.000.
DeGregori, Alessandro. Table. 270,411, 9-6-83, Cl. D6-177.000.
Design Partition Company, Inc.: *See*—
Braswell, C. Richard, 270,479, Cl. D25-74.000.
DHV, Inc.: *See*—
Havener, Gary W., 270,475, Cl. D25-68.000.
Diamond International Corp.: *See*—
El-Hag, Nabil A.; Bixler, Kenneth D.; and Ralphs, Robert E., 270,422, Cl. D7-357.000.
Eastern Company, The: *See*—
Weinerman, Lee S., 270,424, Cl. D8-21.000.
El-Hag, Nabil A.; Bixler, Kenneth D.; and Ralphs, Robert E., to General Foods Corporation; and Diamond International Corp. Convective heating tray. 270,422, 9-6-83, Cl. D7-357.000.
Erdmann, Lois M. Animal collar. 270,488, 9-6-83, Cl. D30-38.000.
Evans, Alfred: *See*—
Raasakka, Benny O.; and Evans, Alfred, 270,473, Cl. D25-33.000.
Everds, Martha: *See*—
Young, Robert W., Jr.; and Everds, Martha, 270,461, Cl. D21-34.000.
Fine Art Pillow & Specialties Corp.: *See*—
Schutz, Bernard R., 270,400, Cl. D6-48.000.
Fowler, James M., Jr.; and Pirsch, Peter J., to Masco Corporation. Electronic air cleaner. 270,467, 9-6-83, Cl. D23-149.000.
Fratelli Saporiti Industria Arredamenti di Saporiti Sergio E. Giorgio S.N.C.: *See*—
Radaelli, Ernesto, 270,405, Cl. D6-71.000.
Fukuoka, Fumiko, to Kabushiki Kaisha Daini Seikosha. Wristwatch. 270,430, 9-6-83, Cl. D10-39.000.
Gaddi, Bruno, to Piaggio & C. S.p.A. Motorcycle. 270,436, 9-6-83, Cl. D12-110.000.
Gardner, Robert C.; and Shah, Ashok C., to Slater Electric Inc. Portable indirect lighting fixture. 270,483, 9-6-83, Cl. D26-63.000.
General Foods Corporation: *See*—
El-Hag, Nabil A.; Bixler, Kenneth D.; and Ralphs, Robert E., 270,422, Cl. D7-357.000.
Gevert, Klaus V., to Bayerische Motoren Werke Aktiengesellschaft. Motorcycle. 270,435, 9-6-83, Cl. D12-110.000.
Goldberg, Dale I.: *See*—
Burtoft, William K.; Goldberg, Dale I.; and Osborne, Thomas P., 270,460, Cl. D21-13.000.
Gramprie, Robert D. Utility shelter. 270,472, 9-6-83, Cl. D25-1.000.
Guest Keen & Nettlefolds (Aust) Limited: *See*—
Black, Allan N., 270,476, Cl. D25-68.000.
Gutner, Kenneth H.; and Waxman, Jay S., to Gutner, Kenneth H. Fitting for drawer slide assembly. 270,413, 9-6-83, Cl. D6-191.000.
Haines, Gerald L.; Havenar, Richard A.; and Herolzer, Ralph H., to Coleman Company, Inc., The. Tree stand for hunters. 270,474, 9-6-83, Cl. D25-62.000.
Half Court Tennis Pty. Limited: *See*—
Wills, Neville D.; and Kwiatkowski, Sigmund, 270,464, Cl. D21-212.000.
Hamilton, Harry J.; and Richards, Peter. Block for use in supporting the pole of an equestrian fence. 270,426, 9-6-83, Cl. D8-380.000.
Hannah, Bruce R., to Knoll International, Inc. Storage module. 270,409, 9-6-83, Cl. D6-165.000.
Hara, Kunio, to Tokyo Shibaura Denki Kabushiki Kaisha. Picture image memory unit or the like. 270,447, 9-6-83, Cl. D14-107.000.
Havenar, Richard A.: *See*—
Haines, Gerald L.; Havenar, Richard A.; and Herolzer, Ralph H., 270,474, Cl. D25-62.000.
Havener, Gary W., to DHV, Inc. Splice element for a ladder safety rail. 270,475, 9-6-83, Cl. D25-68.000.
Henington, Jeri K. Combination hairbrush and pump sprayer. 270,427, 9-6-83, Cl. D9-300.000.
Herolzer, Ralph H.: *See*—
Haines, Gerald L.; Havenar, Richard A.; and Herolzer, Ralph H., 270,474, Cl. D25-62.000.
Horne, Barry E., to Horne, Barry E. Respiratory checking device. 270,469, 9-6-83, Cl. D24-17.000.
Hoyt, Earl, to Airwick Industries, Inc. Dispenser for air treating material. 270,468, 9-6-83, Cl. D23-150.000.
Huisinga, Roger L.: *See*—
Anderson, Donald R.; Huisinga, Roger L.; and Norstrud, Iven R., 270,429, Cl. D9-347.000.
Hunter, Wilfred, to Lucas Industries Limited. Operating member for an electrical switch. 270,439, 9-6-83, Cl. D13-37.000.
Hunter, Wilfred, to Lucas Industries, Limited. Operating member for an electrical switch. 270,440, 9-6-83, Cl. D13-37.000.
International Jensen Incorporated: *See*—
Matsuda, Hari; and Urban, Keith F., 270,444, Cl. D14-33.000.
International Playtex, Inc.: *See*—
Taniyama, Toshiko, 270,394, Cl. D2-24.000.
Jones, Donald, to Chloride Group Limited. Electric lamp. 270,482, 9-6-83, Cl. D26-37.000.
Joy Manufacturing Company: *See*—
Moldenhauer, David W., 270,441, Cl. D13-38.000.
Kabushiki Kaisha Daini Seikosha: *See*—
Fukuoka, Fumiko, 270,430, Cl. D10-39.000.
Kato, Takaharu, to Ricoh Company, Ltd. Camera. 270,450, 9-6-83, Cl. D16-8.000.
Knoll International, Inc.: *See*—
Hannah, Bruce R., 270,409, Cl. D6-165.000.
Schultz, Moses R., 270,406, Cl. D6-75.000.
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Kwiatkowski, Sigmund: *See*—
Wills, Neville D.; and Kwiatkowski, Sigmund, 270,464, Cl. D21-212.000.
Laurie Whelan Industries Pty. Limited: *See*—
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Levy, Richard D. Pharmaceutical rack. 270,470, 9-6-83, Cl. D24-31.000.
Lombard, Charles W. Automotive wheel cover. 270,438, 9-6-83, Cl. D12-209.000.
Lucas Industries Limited: *See*—
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Hunter, Wilfred, 270,440, Cl. D13-37.000.
Mariol, James F. Toy motorcycle. 270,462, 9-6-83, Cl. D21-80.000.
Masco Corporation: *See*—
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Matthias, Jan H., to Casa Bella Imports, Inc. Sofa. 270,402, 9-6-83, Cl. D6-61.000.
Matthias, Jan H., to Casa Bella Imports, Inc. Sofa. 270,403, 9-6-83, Cl. D6-61.000.
McCullough, Kenneth H. Sock donning tool. 270,395, 9-6-83, Cl. D2-378.000.
Miller, Thomas. Table with an illuminated top. 270,399, 9-6-83, Cl. D6-27.000.
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Moldenhauer, David W., to Joy Manufacturing Company. Electrical switch. 270,441, 9-6-83, Cl. D13-38.000.
Myers, Carl J.; and Teufel, Rainer B., to Warner & Swasey Company, The. Turning machine. 270,449, 9-6-83, Cl. D15-130.000.
Nagatomo, Daiji, to Sony Corporation. Digital audio compact disk player. 270,443, 9-6-83, Cl. D14-14.000.
Nagelkerke, Petrus J. J., to U.S. Philips Corporation. Dry shaver. 270,486, 9-6-83, Cl. D28-49.000.
Nagelkerke, Petrus Jacobus J.; and Oord, Klaas T., to U.S. Philips Corporation. Dry shaver. 270,487, 9-6-83, Cl. D28-50.000.
Norstrud, Iven R.: *See*—
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North American Philips Electric Corp.: *See*—
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Ochwat, Richard. Combined toothbrush and toothpaste holder. 270,407, 9-6-83, Cl. D6-92.000.
O'Leary, Donald B.; and Ross, Grant D., Jr., to RCA Corporation. Video disc player. 270,442, 9-6-83, Cl. D14-1.000.
Oord, Klaas T.: *See*—
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Orton, Roger. Food dehydrator. 270,423, 9-6-83, Cl. D7-368.000.
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Parker-Hannifin Corporation: *See*—
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Taylor, David S., 270,478, Cl. D25-72.000.
Piaggio & C. S.p.A.: *See*—
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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

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ISSUED SEPTEMBER 6, 1983

NOTE.—First number, class; second number, subclass; third number, patent number

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CLASS 214

102 R 4,402,477

CLASS 215

32 4,402,415
220 4,402,416
232 4,402,417
252 4,402,418

CLASS 219

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69 E 4,403,129
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69 W 4,403,131
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121 LG 4,403,134
121 LJ 4,403,133
137 PS 4,403,135
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306 4,403,137

CLASS 220

70 4,402,419
266 4,402,420
269 4,402,421
327 4,402,422
345 4,402,423

CLASS 221

13 4,402,424
202 4,402,425

CLASS 222

47 4,402,427
56 4,402,426
58 4,402,428
153 4,402,429
183 4,402,430
207 4,402,431
321 4,402,432
485 4,402,433
492 4,402,434
556 4,402,435
561 4,402,436
607 4,402,437
625 4,402,438

CLASS 224

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265 4,402,441
324 4,402,442

CLASS 225

103 4,402,443

CLASS 227

19 4,402,444
4,402,445
67 4,402,446

CLASS 228

103 4,402,447
122 Re.31,369
125 4,402,448
165 4,402,449
180 A 4,402,450

CLASS 229

5.5 4,402,451
41 R 4,402,452
62 4,402,453

CLASS 235

493 4,403,138

CLASS 236

1 G 4,402,454
93 B 4,402,455

CLASS 239

90 4,402,456
91 4,402,457
102 4,402,458
186 4,402,459
230 4,402,460
453 4,402,461

CLASS 241

30 4,402,462
37 4,402,463
73 4,402,464
183 4,402,465
199.7 4,402,466

CLASS 242

58.2 4,402,467
71 4,402,468
84.5 A 4,402,469
84.52 R 4,402,470
96 4,402,471
107.2 4,402,472
107.4 A 4,402,473
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CLASS 244

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99 4,402,476
111 4,402,478
116 4,402,479
158 R 4,402,480

CLASS 248

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466 4,402,482
636 4,402,483

CLASS 249

129 4,402,484

CLASS 250

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213 VT 4,403,140
214 R 4,403,141
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227 4,403,143
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252.1 4,403,145
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370 4,403,150
492.2 4,403,151
551 4,403,152

CLASS 251

118 4,402,485
306 4,402,486

CLASS 252

28 4,402,838
34.7 4,402,839
45 4,402,840
46.6 4,402,841
47.5 4,402,842
50 4,402,843
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70 4,402,846
75 4,402,847
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175 4,402,850
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186.26 4,402,853
299.1 4,402,854
299.61 4,402,849
299.65 4,402,855
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420 4,402,860
426 4,402,862
429 B 4,402,861
4,402,863
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432 4,402,865
455 Z 4,402,866
4,402,867
470 4,402,868
471 4,402,869
477 R 4,402,870
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CLASS 254

133 R 4,402,487
371 4,402,488
389 4,402,489

CLASS 260

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118 4,402,873
123.5 4,402,874
239 BB 4,402,876
239 R 4,402,875
239.3 P 4,402,877
429.9 4,402,880
448 C 4,402,881
980 4,402,882
990 4,402,883

CLASS 264

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11 4,402,885
15 4,402,886
22 4,402,887
4,402,888
37 4,402,889
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42 4,402,892
53 4,402,893
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109 4,402,895
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173 4,402,898
188 4,402,899
205 4,402,900
294 4,402,901
349 4,402,902

CLASS 266

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144 4,402,491
196 4,402,492
255 4,402,494

CLASS 267

64.21 4,402,493
125 4,402,495

CLASS 270

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CLASS 271

11 4,402,497
164 4,402,498

CLASS 272

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33 R 4,402,500
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118 4,402,504
130 4,402,505
132 4,402,506

CLASS 273

26 R 4,402,507
75 4,402,508
148 R 4,402,509
153 S 4,402,510
183 C 4,402,511
273 4,402,512
296 4,402,513

CLASS 277

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24 4,402,515
26 4,402,516
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CLASS 279

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CLASS 280

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707 4,402,527
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808 4,402,528
816 4,402,529

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45 4,402,530

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14 4,402,531
18 4,402,532
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25 4,402,773
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CLASS 290

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53 4,403,154

CLASS 292

113 4,402,536

CLASS 293

149 4,402,537

CLASS 294

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55 4,402,538
78 R 4,402,539
81 R 4,402,541
81 SF 4,402,543
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CLASS 296

110 4,402,544
204 4,402,545

CLASS 297

374 4,402,546
379 4,402,547
464 4,402,548

CLASS 298

18 4,402,549

CLASS 299

2 4,402,550
5 4,402,551
7 4,402,552

CLASS 303

3 4,402,553
10 4,402,554

CLASS 305

11 4,402,555

CLASS 307

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219.1 4,403,156
297 4,403,157
4,403,158
362 4,403,159

CLASS 308

3.6 4,402,556
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187 4,402,558
189 R 4,402,559

CLASS 310

156 4,403,161
184 4,403,160
194 4,403,162
213 4,403,163
232 4,403,164
313 D 4,403,165
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640 4,403,180
664 4,403,181

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2 4,403,182

CLASS 324

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78 R 4,403,184
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452 4,403,191

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152 4,403,192

CLASS 329

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CLASS 330

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278 4,403,199
294 4,403,200
304 4,403,201

CLASS 333

150 4,403,202

CLASS 335

78 4,403,203
229 4,403,204

CLASS 336

180 4,403,205

CLASS 337

348 4,403,206

CLASS 338

34 4,403,207

CLASS 339

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17 CF 4,402,561
61 M 4,402,562
75 M 4,402,563
91 R 4,402,564
103 M 4,402,565
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198 J 4,402,567

CLASS 340

33 4,403,208
52 R 4,403,209
72 4,403,210
73 4,403,211
311.1 4,403,212
517 4,403,213
540 4,403,214
573 4,403,215
705 4,403,216
718 4,403,217
870.18 4,403,218
870.37 4,403,219

CLASS 343

6 R 4,403,220
6.5 LC Re.31,375
700 MS 4,403,221
833 4,403,222

CLASS 346

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4,403,224
35 4,403,225
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75 4,403,227
4,403,228
4,403,229
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135.1 4,403,231
4,403,232
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4,403,234
160 4,403,235

CLASS 350

96.16 4,402,568
96.26 4,402,569
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162.17 4,402,571
167 4,402,572
357 4,402,573
418 4,402,574
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531 4,402,576

CLASS 351

125 4,402,577
140 4,402,578
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203 4,402,580

CLASS 352

192 4,402,581

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3 4,402,582
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117 4,402,584
120 4,402,585

CLASS 354

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77 4,402,599
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28.5 4,402,601
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405 4,402,611
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446 4,402,613
4,402,614

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24 4,403,237
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55 4,403,241
71 4,403,242
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22 4,403,245
37 4,403,246
44 4,403,247
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80 4,403,249
105 4,403,250
107 4,403,251
114 4,403,252
160 4,403,253
171 4,403,254
186 4,403,255
222 4,403,256
283 4,403,257
284 4,403,258
342 4,403,259

CLASS 360

10.2 4,403,260
13 4,403,261
19.1 4,403,262
32 4,403,263
33.1 4,403,264
96.5 4,403,265
105 4,403,266

CLASS 361

42 4,403,267
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91 4,403,269
328 4,403,270
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CLASS 362

32 4,403,273
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220 4,403,275
226 4,403,276
263 4,403,277
396 4,403,278

CLASS 363

60 4,403,279
96 4,403,280

CLASS 364

170 4,403,281
200 4,403,282
4,403,283
4,403,284
4,403,285
4,403,286
4,403,287
4,403,288
414 4,403,289
422 4,403,290
424 4,403,291
492 4,403,292
494 4,403,293
507 4,403,294
513 4,403,295
573 4,403,296
579 4,403,297
724 4,403,298
824 4,403,299
900 4,403,300
4,403,301
4,403,302
4,403,303

CLASS 365

12 4,403,304
16 4,403,305
156 4,403,306
174 4,403,307
222 4,403,308
229 4,403,309
230 4,403,310

CLASS 366

65 4,402,615
99 4,402,616

CLASS 367

11 4,403,311
56 4,403,312
61 4,403,313
100 4,403,314

CLASS 368

321 4,403,315

CLASS 369

44 4,403,316
75 4,403,317
100 4,403,318
261 4,403,319
271 4,402,405

CLASS 370

56 4,403,320
4,403,321
110.1 4,403,322

CLASS 372

40 4,403,323
54 4,403,324
90 4,403,325

CLASS 373

71 4,403,326
80 4,403,327
103 4,403,328
130 4,403,329

CLASS 375

4 4,403,330
37 4,403,331
94 4,403,332
4,403,333

CLASS 376

245 4,402,903
251 4,402,904

CLASS 377

44 4,403,334
87 4,403,335

CLASS 378

95 4,403,337
035 4,403,336
146 4,403,338

CLASS 382

44 4,403,339
48 4,403,340

CLASS 384

95 4,402,617
107 4,402,618

CLASS 400

36 4,402,619
121 4,402,620
208 4,402,621
212 4,402,622
618 4,402,623
681 4,402,624

CLASS 403

7 4,402,625
328 4,402,626

CLASS 404

15 4,402,627
16 4,402,628
90 4,402,629

CLASS 405

48 4,402,631
210 4,402,632
261 4,402,633
266 4,402,630
299 4,402,634

CLASS 406

14 4,402,635

CLASS 408

4,402,636

CLASS 411

31 4,402,637
34 4,402,638
51 4,402,639
112 4,402,640
510 4,402,641

CLASS 414

18 4,402,642
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417 4,402,644
685 4,402,645
719 4,402,646

CLASS 415

90 4,402,647
121 B 4,402,648

CLASS 416

5 4,402,649
87 4,402,650

CLASS 417

182 4,402,651
404 4,402,652

CLASS 418

76 4,402,653
131 4,402,654
137 4,402,655

CLASS 419

10 4,402,905

CLASS 420

493 4,402,906

CLASS 422

7 4,402,907
43 4,402,908
50 4,402,909
83 4,402,910
102 4,402,911
107 4,402,912
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202 4,402,915
256 4,402,916

CLASS 423

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4,402,918
4,402,919
4,402,920
17 4,402,921
164 4,402,922
166 4,402,923
258 4,402,924
290 4,402,925
300 4,402,926
335 4,402,927
447.1 4,402,928
456 4,402,929
573 G 4,402,930
605 4,402,931
625 4,402,932
648 R 4,402,933

CLASS 424

1 4,402,934
61 4,402,935
70 4,402,936
4,402,977
4,402,937
80 4,402,938
85 4,402,939
92 4,402,940
101 4,402,941
153 4,402,942
177 4,402,943
180 4,402,944
4,402,945
4,402,946
181 4,402,947
182 4,402,948
183 4,402,949
195 4,402,950
200 4,402,951
4,402,952
246 4,402,955
248.54 4,402,953
249 4,402,954
250 4,402,956
4,402,957
4,402,958
4,402,959
251 4,402,960
258 4,402,961
260 4,402,962
269 4,402,963
270 4,402,964
272 4,402,965
273 R 4,402,966
4,402,967
4,402,968
274 4,402,969
4,402,970
279 4,402,971
304 4,402,972
305 4,402,973
308 4,402,974
309 4,402,975
311 4,402,976
317 4,402,978
4,402,979
321 4,402,980
324 4,402,981
329 4,402,982
352 4,402,984

CLASS 425

140 4,402,656
183 4,402,657
192 R 4,402,658
233 4,402,659
290 4,402,660
543 4,402,661

CLASS 426

3 4,402,985
41 4,402,986
281 4,402,987
335 4,402,988
536 4,402,989
658 4,402,990

CLASS 427

31 4,402,991
34 4,402,992
38 4,402,993
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58 4,402,995
86 4,402,996
94 4,402,997
97 4,402,998
126.3 4,402,999
206 4,403,000
217 4,403,001
255.5 4,403,002
407.1 4,403,003

CLASS 428

31 4,403,004
48 4,403,005
70 4,403,006
95 4,403,007
117 4,403,008
159 4,403,009
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290 4,403,012
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546 4,403,014
565 4,403,015
672 4,403,016
702 4,403,017

CLASS 429

34 4,403,018
53 4,403,019
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101 4,403,021
111 4,403,022
120 4,403,023
146 4,403,024

CLASS 430

59 4,403,025
65 4,403,026
110 4,403,027
178 4,403,028
258 4,403,029
273 4,403,030
332 4,403,031

CLASS 431

7 4,402,662
66 4,402,663
79 4,402,664
170 4,402,665
177 4,402,666

CLASS 432

14 4,402,667
138 4,402,668

CLASS 433

5 4,402,669
61 4,402,670
218 4,402,671

CLASS 434

217 4,402,672
365 4,402,673

CLASS 435

18 4,403,032
108 4,403,033
161 4,403,034
172 4,403,035
317 4,403,036

CLASS 436

16 4,403,038
150 4,403,039
501 4,403,040
4,403,041
519 4,403,042
521 4,403,037
522 Re.31,372

CLASS 440

38 4,402,674
53 4,402,675

CLASS 455

76 4,403,342
100 4,403,341
134 4,403,343
181 4,403,344
182 4,403,345
189 4,403,346
193 4,403,347
203 4,403,348
219 4,403,349
297 4,403,350
304 4,403,351
601 4,403,352

CLASS 474

100 4,402,676
138 4,402,677
171 4,402,678

CLASS 493

420 4,402,679

CLASS 494

3 4,402,680

CLASS 501

70 4,403,043

CLASS 518

714 4,403,044

CLASS 521

82 4,403,045

CLASS 523

144 4,403,046
153 4,403,047
218 4,403,048
455 4,403,049
501 4,403,050

CLASS 524

45 4,403,051
80 4,403,052
91 4,403,053
155 4,403,054
173 4,403,055
280 4,403,056
288 4,403,057
397 4,403,058
399 4,403,059
413 4,403,060
433 4,403,061
458 4,403,062
4,403,063
494 4,403,064
816 4,403,065
876 4,403,066

CLASS 525

54.5 4,403,067
62 4,403,068
197 4,403,069
330.4 4,403,070
4,403,071
353 4,403,072
374 4,403,073
386 4,403,074
418 4,403,075
501 4,403,076
502 4,403,077
504 4,403,078
507 4,403,079

CLASS 526

76 4,403,080
115 4,403,081

CLASS 528

15 4,403,082
44 4,403,083
45 4,403,084
4,403,085
4,403,086
196 4,403,087
205 4,403,088
247 4,403,089
272 4,403,090
288 4,403,091
290 4,403,092
297 4,403,093
308.2 4,403,094

CLASS 542

466 4,403,095

CLASS 548

321 4,403,096
421 4,402,878
4,402,879

CLASS 549

487 4,403,097
532 4,403,098

CLASS 556

422 4,403,099

CLASS 560

121 4,403,100

CLASS 604

9 4,402,681
20 4,402,318
111 4,402,682
175 4,402,683
264 4,402,684
280 4,402,685
311 4,402,686
319 4,402,687
385 4,402,688
387 4,402,689
391 4,402,690
411 4,402,691
890 4,402,692
4,402,693
891 4,402,694
892 4,402,695
897 4,402,696

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D2—	24	270,394		175	270,410		380	270,426	D14—	1	270,442	D21—	2	270,458		62	270,474
	378	270,395		177	270,411	D9—	300	270,427		14	270,443		13	270,459		68	270,475
D3—	18	270,396		188	270,412		344	270,428		33	270,444			270,460			270,476
	23	270,397		191	270,413		347	270,429		64	270,445		34	270,461		72	270,477
	76	270,398			270,414	D10—	39	270,430		106	270,446		80	270,462			270,478
D6—	27	270,399	D7—	11	270,415		58	270,431		107	270,447		208	270,463		74	270,479
	48	270,400		27	270,416	D11—	34	270,432		111	270,448		212	270,464	D26—	3	270,480
	61	270,401		28	270,417		129	270,433	D15—	130	270,449		217	270,465		24	270,481
		270,402		76	270,418			270,434	D16—	8	270,450	D22—	8	270,466		37	270,482
		270,403		84	270,419	D12—	110	270,435		30	270,451	D23—	149	270,467		63	270,483
	63	270,404		337	270,420			270,436		31	270,452		150	270,468		94	270,484
	71	270,405		338	270,421		187	270,437	D18—	2	270,453	D24—	17	270,469	D27—	51	270,485
	75	270,406		357	270,422		209	270,438		24	270,454		31	270,470	D28—	49	270,486
	92	270,407		368	270,423	D13—	37	270,439			270,455		43	270,471		50	270,487
	164	270,408	D8—	21	270,424			270,440			270,456	D25—	1	270,472			
	165	270,409		341	270,425		38	270,441	D19—	90	270,457		33	270,473	D30—	38	270,488

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P.—	9	5,097		11	5,098		69	5,099			5,100						

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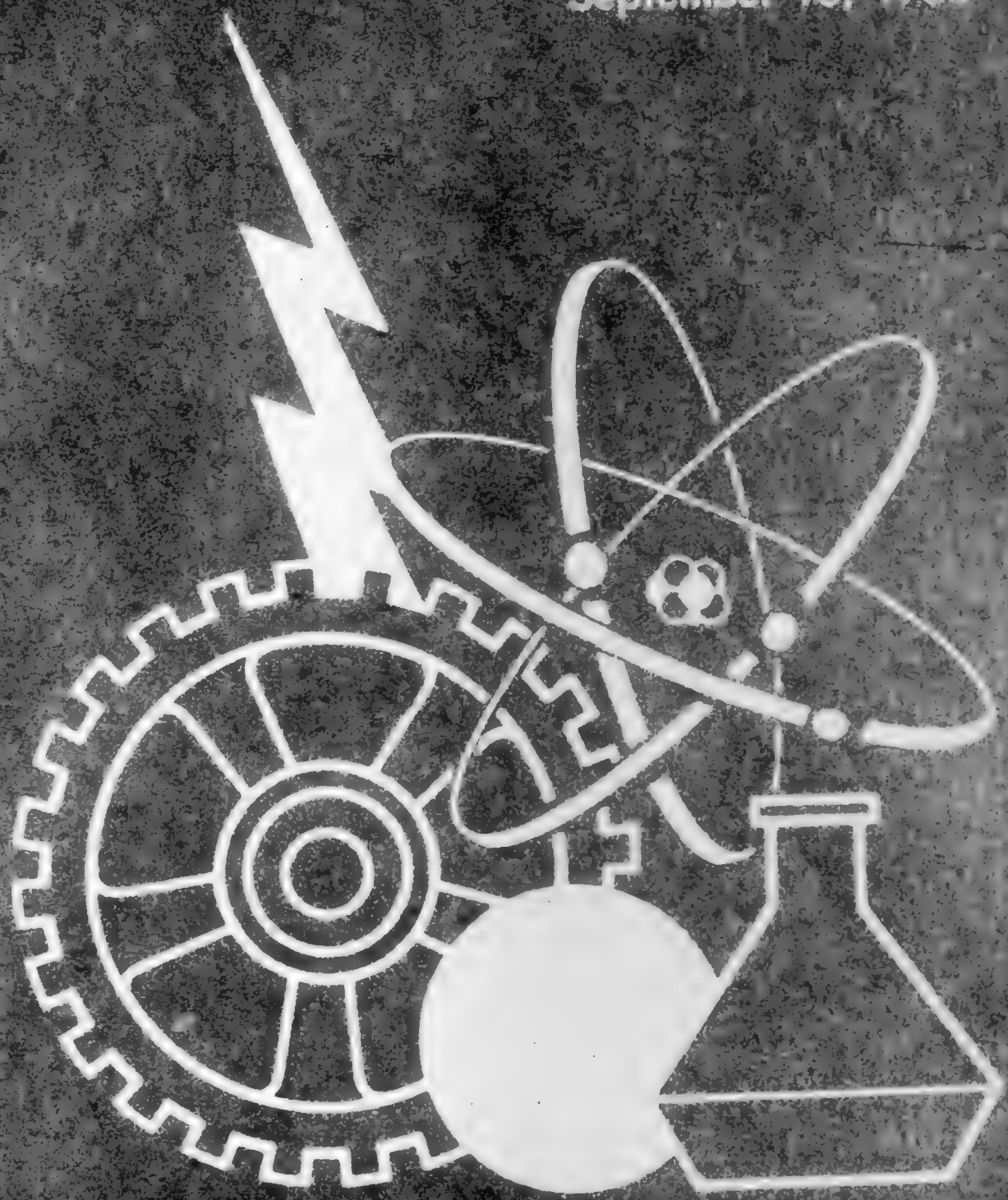
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

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Dec. 3, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,227,829, Re. S.N. 398,755, Filed July 15, 1982, Cl. 405/20, SOIL EROSION PREVENTION BLOCKS, Kossuth J., Landry, Jr., Owner of Record: *Inventor,* Attorney or Agent: Guy E. Matthews, Ex. Gp.: 356

4,257,893, Re. S.N. 478,447, Filed Mar. 24, 1983, Cl. 210/169, PORTABLE PURIFICATION DEVICE FOR USE IN AQUARIUMS, Todd J. Burton, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 176

4,263,551, Re. S.N. 485,850, Filed Apr. 18, 1983, Cl. 324/233, METHOD AND APPARATUS FOR IDENTIFYING CONDUCTIVE OBJECTS BY MONITORING THE RESISTIVE COMPONENT OF IMPEDANCE CHANGE IN A COIL SYSTEM CAUSED BY THE OBJECT, William D. Gregory, Owner of Record: *President and Directors of Georgetown University, Washington, D.C.,* Attorney or Agent: Norman F. Oblon, et al., Ex. Gp.: 252

4,319,657, Re. S.N. 444,863, Filed Nov. 26, 1982, Cl. 180/219, AIR INTAKE CONDUITRY FOR A MOTORCYCLE, Kazuhiko Nomura, Owner of Record: *Yamaha Hatsudoki Kabushiki Kaisha, Shizuoka, Japan,* Attorney or Agent: Ernest A. Beutler, Ex. Gp.: 316

4,320,960, Re. S.N. 512,808, Filed July 11, 1983, Cl. 355/14R, SENSOR CONTROLLING IN COMPUTER FANFOLD REPRODUCTION, Joseph W. Ward, et al., Owner of Record: *Xerox Corp., Stamford, Conn.,* Attorney or Agent: Ronald Zibelli, et al., Ex. Gp.: 215

4,344,860, Re. S.N. 512,306, Filed July 11, 1983, Cl. 252/389, STABILIZATION OF SILICATES USING SALTS OF SUBSTITUTED NITROGEN OR SULFUR CONTAINING SILICONATES, Edwin P. Plueddemann, Owner of Record: *Dow Corning Corp., Midland, Mich.,* Attorney or Agent: James E. Bittell, Ex. Gp.: 223

4,352,918, Re. S.N. 509,479, Filed June 30, 1983, Cl. 528/89, PROCESS FOR PREPARING EPOXY RESINS HAVING IMPROVED PHYSICAL PROPERTIES WHEN CURED USING QUATERNARY PHOSPHONIUM CATALYSTS, Ross C. Whiteside, Jr., et al., Owner of Record: *Dow Chemical Co., Midland, Mich.,* Attorney or Agent: Richard G. Waterman, et al., Ex. Gp.: 143

4,353,556, Re. S.N. 512,139, Filed July 8, 1983, Cl. 273/186.A, GOLF CLUB SWING TRAINING AID, James M. Self, et al., Owner of Record: *Golf Bands Products/Louisianna Partnership, New Orleans, La.,* Attorney or Agent: Arthur Schwartz, et al., Ex. Gp.: 334

4,369,616, Re. S.N. 512,057, Filed July 8, 1983, Cl. 192/105, CENTRIFUGAL CLUTCH AND BRAKE FOR LAWN MOWER, John M. Cody, et al., Owner of Record: *Inventors,* Attorney or Agent: A. Yates Dowell, Jr., et al., Ex. Gp.: 352

4,375,989, Re. S.N. 501,502, Filed June 6, 1983, Cl. 106/300, COATED TITANIUM DIOXIDE PIGMENT AND A PROCESS FOR THE PRODUCTION OF THE SAME, Pekka Immanuel Makinen, Owner of Record: *Kemira Oy, Helsinki, Finland,* Attorney or Agent: Norbert P. Holler, et al., Ex. Gp.: 113

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,753,421, Reexam. No. 90/000,423, Requested: July 22, 1983, Cl. 119/29, METHOD AND APPARATUS FOR CONTROLLING AN ANIMAL, Richard M. Peck, Owner of Record: *Inventor,* Attorney or Agent: Lane, Aitken & Kananen, Ex. Gp.: 330, Requester: Shiley Corp., Cincinnati, Ohio

3,818,837, Reexam. No. 90/000,431, Requested: Aug. 5, 1983, Cl. 104/166, VEHICLE AND TRACK SYSTEM, Charles E. Jacoby, et al., Owner of Record: *Si Handling Systems, Inc., Easton, Pa.,* Attorney or Agent: Seidel, Gonda & Goldhammer, Ex. Gp.: 310, Requester: Evana Tool and Engineering, Inc., Evansville, Ind.

4,352,822, Reexam. No. 90/000,429, Requested: Aug. 8, 1983, Cl. 426/3, GUM BASE CHEWING GUM CONTAINING SAME AND METHOD, Subraman P.

Cherukuri, et al., Owner of Record: *Nabisco Brands, Inc., New York, N.Y.*, Attorney or Agent: Richard Kornutik, Ex. Gp.: 170, Requester: Wm. Wrigley Jr. Co., Chicago, Ill.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

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Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Manager,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-419,637. PREPARATION OF AN ENTOMOPATHOGENIC FUNGAL INSECT CONTROL AGENT.

SN 6-473,395. RUNNING SKYINE INTERMEDIATE SUPPORT AND MULTI-SPAN CARRIAGE.

SN 6-473,396. PREPARATION OF ESTERS OF RESIN ACIDS, RESINS, ROSINS, AND DERIVATIVES THEREOF.

SN 6-473,478. BIOLOGICAL PROCESS FOR REDUCING ENERGY REQUIREMENT FOR POST REFINING OF PULPS.

SN 6-474,996. NOVEL DIOLEFIN PHEROMONE MIMICS AS DISRUPTANTS OF SEXUAL COMMUNICATION IN INSECTS.

SN 6-475,784. METHOD FOR REDUCING SODIUM CONTENT AND SIMULTANEOUSLY INCREASING POTASSIUM CONTENT OF A FOOD.

SN 6-491,151. A VAPOR PROCESS FOR MINERAL DYEING CELLULOSIC FABRICS.

SN 6-496,687. SYNTHETIC PHEROMONE FOR THE SPINED SOLDIER BUG, *PODISUS MACULIVENTRIS.*

SN 6-506,482. METHOD FOR OBTAINING A PURIFIED FRACTION FROM A MIXTURE USING A MAGNETIC FLUID.

DEPARTMENT OF THE AIR FORCE

SN 6-171,614 (4,387,989). COHERENT OPTICAL FEATURE IDENTIFIER APPARATUS.

SN 6-192,406 (4,387,971). DYNAMIC DAMPING SYSTEM.

SN 6-200,226 (4,390,816). SCAN CORRECTED VIDICON CAMERA APPARATUS.

SN 6-216,103 (4,388,614). AUTOMATICALLY SEQUENCED SIGNALING SYSTEM.

SN 6-225,556 (4,387,344). PHOTON STORAGE TUBE HIGH POWER LASER SYSTEM.

SN 6-231,074 (4,387,955). HOLOGRAPHIC REFLECTIVE GRATING MULTIPLEXER/DEMULTIPLEXER.

SN 6-239,955 (4,390,854). BROAD BANDWIDTH SURFACE ACOUSTIC WAVE FILTER APPARATUS WITH STAGGERED TUNING.

SN 6-286,817 (4,387,467). SATELLITE TEST CHAMBER WITH ELECTROMAGNETIC REFLECTION AND RESONANCE DAMPING FOR SIMULATING SYSTEM GENERATED ELECTROMAGNETIC PULSES.

SN 6-308,976 (4,387,962). CORROSION RESISTANT LASER MIRROR HEAT EXCHANGER.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-508,323. GENETIC REASSORTMENT OF ROTAVIRUSES FOR PRODUCTION OF VACCINES AND VACCINE PRECURSORS.

SN 6-509,819. METHOD OF JOINING PLASTIC OPTICAL FIBERS AND CONNECTIONS OBTAINED.

DEPARTMENT OF THE INTERIOR

SN 6-324,173. METHOD FOR SOLDERING ALUMINUM AND MAGNESIUM.

PATENT NOTICES

Certificates of Correction for the Week of Sept. 13, 1983

D. 257,780	4,363,678	4,386,087	4,390,570
D. 266,585	4,366,032	4,386,214	4,390,638
Re. 30,361	4,367,458	4,386,308	4,390,667
3,950,379	4,368,105	4,386,314	4,390,678
4,046,798	4,370,679	4,386,865	4,390,734
4,101,307	4,373,127	4,386,941	4,390,873
4,213,455	4,373,692	4,387,039	4,391,545
4,237,584	4,374,831	4,387,770	4,391,568
4,246,044	4,376,298	4,387,852	4,391,598
4,256,894	4,378,394	4,388,539	4,391,622
4,263,317	4,378,633	4,388,581	4,391,924
4,263,576	4,378,655	4,388,634	4,392,191
4,288,506	4,379,134	4,388,750	4,392,243
4,290,164	4,379,237	4,388,795	4,392,315
4,320,779	4,379,334	4,388,946	4,392,505
4,324,404	4,380,825	4,389,229	4,392,675
4,343,479	4,380,887	4,389,521	4,392,693
4,344,977	4,381,390	4,389,623	4,392,853
4,345,071	4,381,398	4,389,751	4,393,084
4,348,552	4,381,499	4,389,864	4,393,471
4,353,855	4,382,329	4,389,882	4,394,063
4,354,345	4,382,967	4,389,888	4,394,293
4,354,368	4,383,645	4,390,096	4,395,005
4,358,820	4,384,718	4,390,146	
4,359,742	4,385,363	4,390,432	
4,360,965	4,385,904	4,390,498	

Disclaimers

3,655,201.—*Larry D. Nichols,* Arlington, Mass. PATTERN FORMING PUZZLE AND METHOD WITH PIECES ROTATABLE IN GROUPS. Patent dated Apr. 11, 1972. Disclaimer filed Apr. 25, 1983, by the assignee, *Moleculon Research Corp.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,194,815.—*Wayne E. Trombley,* Midland Mich. SEMI-SCLERAL CONTACT LENS. Patent dated Mar. 25, 1980. Disclaimer filed July 28, 1983, by the assignee, *Dow Corning Corp.*

Hereby enters this disclaimer to all claims of said patent.

DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Part 1

[Docket No. 30725-143]

Proposed Revision of Patent Practice

AGENCY: Patent and Trademark Office, Commerce

ACTION: Notice of proposed rulemaking.

SUMMARY: The Patent and Trademark Office proposes to amend the rules of practice in patent cases, Part 1 of 37 CFR, to clarify the practice under certain sections of Public Law 97-247 of 1982 and to make certain other changes and clarifications in practice which have been found desirable after some experience. The changes proposed would change the practice under §§1.27 and 1.28 with regard to subsequently establishing small entity status and qualifying for a refund of fees paid in full. The proposed changes in other rules are intended to clarify and improve the practice in certain areas.

DATES: Comments must be submitted on or before October 18, 1983; a public hearing will be held on October 18, 1983, 9:30 a.m.; requests to present oral testimony should be received on or before October 11, 1983.

ADDRESS: Address written comments and requests to present oral testimony to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, Attention: R. Franklin Burnett, Room 3-11A13. The hearing will be held in Room 6-1215, on the 12th floor of Building 6, Crystal Plaza, located at 2221 Jefferson Davis Highway, Arlington, Virginia. Written comments and a transcript of the public hearing will be available for public inspection in Room 11A13 of Building 3, Crystal Plaza at 2021 Jefferson Davis Highway, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: R. Franklin Burnett by telephone at (703) 557-3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: This proposed rule change is designed primarily to 1) clarify the small entity status of independent inventors, small business concerns and nonprofit organizations having funding agreements with a federal governmental agency as defined in 35 U.S.C. 202(c)(4); 2) rewrite §1.28 to provide a system for obtaining a refund of a portion of a fee paid in full when small entity status is established within two months of the date of such payment; 3) provide that a separate statement establishing small entity status is not required in an application filed under §1.62 when such status has been established in the parent application; and 4) modify certain other rules to clarify practice.

Proposed new §1.21(l) would establish a fee for processing and retaining any application which is abandoned for failing to

complete the application pursuant to §1.53(d). This proposed new paragraph, as well as the proposed changes to §§1.53 and 1.78, would indicate that in order to obtain benefit of a prior U.S. application, either the basic filing fee or the processing and retention fee of §1.21(l) must be paid. Proposed §1.53(d) would further establish that the application will be disposed of if the required fee is not paid within a set period. Proposed §1.56(b) would require submission of copies of foreign patent documents, non-patent publications, or other non-patent items of information disclosed pursuant to the duty to disclose. Proposed new §1.191(d) would clarify that §§1.136 or 1.550(c) apply to all time periods set forth in §§1.191-1.194, 1.196 and 1.197.

DISCUSSION OF SPECIFIC RULES:

Section 1.5, paragraph (a), if amended as proposed, would remove a reference to §1.55, which is no longer appropriate.

Section 1.6, if amended as proposed, would clarify the manner in which letters and papers which are filed in accordance with §1.10 by "Express Mail" are date stamped when received in the Patent and Trademark Office. Such letters and papers, which comply with §1.10, will be stamped with the date of deposit as "Express Mail" with the United States Postal Service unless the date of deposit is a Saturday, Sunday or federal holiday within the District of Columbia, in which case the date stamped will be the next succeeding day which is not a Saturday, Sunday, or a federal holiday within the District of Columbia. No papers are received in the Patent and Trademark Office on Saturdays, Sundays, or federal holidays within the District of Columbia.

Section 1.14, if amended as proposed, would revise paragraph (b) to clarify that only complete patent applications as defined in §1.51(a) which become abandoned will be retained for a period of twenty years from the filing date. Incomplete applications will be retained as provided in proposed §§1.21 and 1.53.

Section 1.19, paragraph (b)(3), if amended as proposed, would clarify that only copies made from Office records, but not prepared by the Office, will be compared with the original prior to certification of the copies. The Office will not compare copies made from some other copy or record with Office records for purposes of certification. The stated charge of ten cents per page would not be sufficient to make a word-by-word comparison. The requirements of the public appear to still be served by limiting the use of the comparison fee to Office records.

Section 1.21, if amended as proposed, would revise paragraph (b)(2) and establish a new paragraph (l). The change in paragraph (b)(2) is in accord with the proposed change in §1.25(a). Proposed new paragraph (l) provides a fee for processing and retaining any application which is abandoned pursuant to §1.53(d). Such applications have received a filing date pursuant to 35 U.S.C. 111 but have been abandoned for failure to complete the application by filing the oath or declaration, filing fee or surcharge (§1.16(e)). The proposed fee would cover the handling, filming, processing, data input and

storage required to retain an application. The proposed fee would not be due in any application in which the basic filing fee was paid.

Section 1.25, if amended as proposed, would revise paragraph (a) to set the minimum deposit for a deposit account at $1000 and to clarify that an amount sufficient to cover all fees as well as services, copies, etc., requested must always be on deposit. This minimum amount is considered necessary and proper in view of the substantial increase in the amounts of fees being charged to deposit accounts and the processing costs of handling these accounts. Proposed paragraph (b) would clarify that fees may be charged against a deposit account only where sufficient funds are on deposit to cover the entire amount of the fees. Proposed paragraph (b) would also clarify that an authorization to charge a fee to a deposit account will not be considered payment on the date the authorization to charge is effective as to that fee unless sufficient funds are present in the account to cover the fee.

Section 1.27, if amended as proposed, would revise paragraphs (b), (c) and (d) to provide clearly that an independent inventor, small business concern, or nonprofit organization, which is otherwise qualified as a small entity for purposes of paying reduced patent fees under 37 CFR 1.9 and 1.27, is not disqualified therefrom because of a license to a federal agency pursuant to 35 U.S.C. 202(c)(4). Section 1.27 is proposed to be amended to state that such a license does not constitute a license or a conveyance of rights which would preclude qualifying for small entity status. The amendment is necessary for clarification and to avoid frustrating the intent of Public Law 97-247 and Public Law 96-517 when taken together.

The text of title 35, United States Code, §202(c)(4) reads as follows:

> §202. Disposition of rights
>
> (c) Each funding agreement with a small business firm or nonprofit organization shall contain appropriate provisions to effectuate the following:
>
> * * *
>
> (4) With respect to any invention in which the contractor elects rights, the Federal agency shall have a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States any subject invention throughout the world, and may, if provided in the funding agreement, have additional rights to sublicense any foreign government or international organization pursuant to any existing or future treaty or agreement.

Section 1.28, if amended as proposed, would revise paragraph (a) to clarify that a separate verified statement is not required to be filed in a file wrapper continuing application filed pursuant to §1.62, if status as a small entity has been established in the

parent application and is still proper. Proposed §1.28(a) would also permit a refund of a fee timely paid in the full amount if within two months of the date of the full timely payment: (1) small entity status is properly established, and (2) a refund is requested. Under proposed §1.28(a), no request for a refund filed later than two months after the date on which a full fee has been paid will be entertained. Proposed §1.28(a) would provide for, in somewhat modified form, the practice presently in effect pursuant to a waiver of §1.28 published at 1023 O.G. 77 on October 26, 1982 and extended at 1027 O.G. 115 on February 15, 1983.

The revised refund procedures in proposed §1.28(a) would apply to any fees timely paid in full on or after the effective date of the final rule. The refund procedures set forth in the Patent and Trademark Office Official Gazette Notice entitled "Filing of Verified Statements Claiming Small Entity Status" published at 1023 O.G. 77 on October 26, 1982, and the Official Gazette Notice entitled "Requirement for Filing Verified Statements Claiming Small Entity Status" published at 1027 O.G. 115 on February 15, 1983, continue in effect until the effective date of the final rule or until other action is taken.

Section 1.52(d), if amended as proposed, would clarify that the verified English translation of a non-English language application and the fee set forth in §1.17(k) can be filed with the application or within such time as may be set by the Office.

Section 1.53, paragraphs (b) and (d), if amended as proposed, would clarify in paragraph (b) that the application for patent must be filed in the name of the actual inventor or inventors by giving all their names as required by §1.41. Proposed paragraph 1.53(d) would state that if a correspondence address is provided, notice would be provided where the appropriate filing fee or oath or declaration do not accompany the application. Proposed paragraph 1.53(d) would also provide that if the required filing fee is not paid, or the processing and retention fee is not paid, within one year of the date of mailing of notification pursuant to proposed paragraph 1.53(d), the application will be disposed of. The proposed paragraph wording would further indicate that no copies will be provided or certified by the Office of an application which has been disposed of or in which neither the basic filing fee nor the processing fee has been paid. Finally, proposed paragraph 1.53(d) would specify that if no correspondence address is included in the application, applicant will have two months from the filing date to file the fee, oath or declaration and to pay the surcharge set forth in §1.16(e) in order to prevent abandonment of the application.

Section 1.55, paragraph (b), if amended as proposed, would correct an error in referring to paragraph (a) of this section.

Section 1.56, if amended as proposed, would revise paragraph (b) and add a new paragraph (j). Proposed paragraph 1.56(b) would require that a copy of each foreign patent document, non-patent publication, or other non-patent item of information in written form being disclosed pursuant to §1.56 accompany such disclosures. Proposed paragraph 1.56(b) would also add "or her"

to refer to both genders. Proposed new paragraph 1.56(j) would state that applicant would be notified if a copy of each foreign patent document, non-patent publication, or other non-patent item of information in written form is not submitted and given a time period within which to file the copy or state that the copy is not in the possession of the person making the disclosure. Such a time period would be extendable under §1.136. Failure to respond in a proper and timely manner would result in abandonment of the application.

Section 1.59, if amended as proposed, would clarify that the Office will furnish copies of papers received in the Office at the usual cost only if the basic filing fee or the processing and retention fee has been paid.

Section 1.60, if amended as proposed, would break the section into paragraph (a) and new paragraph (b). Paragraph (a) would add a reference to proposed amended §1.78(a) to clarify the conditions under which continuation or divisional applications may be filed. Proposed new paragraph 1.60(b) would provide that the signing of the oath or declaration could be omitted if the prior application was complete as set forth in §1.51(a). Proposed new paragraph 1.60(b) also requires that a true copy of the prior complete application be filed. Proposed paragraph 1.60(b) would also provide that only amendments reducing the number of claims or adding a reference to the prior application will be entered before calculating the filing fee and granting the filing date.

Section 1.62, if amended as proposed, would revise paragraphs (a) and (d). Proposed paragraph 1.62(a) would provide that the file wrapper continuing procedure is applicable only to prior complete applications under §1.51(a). Proposed paragraph 1.62(d) would clarify that the filing fee referred to is the basic filing fee.

Section 1.78, if amended as proposed, would change the title to more explicitly define the contents of the section and proposed paragraph (a). Proposed paragraph 1.78(a) would specify that in order for an application to claim the benefit of a prior filed copending national application, the prior application must be complete as set forth in §1.51(a) or be entitled to a filing date as set forth in §1.53(b) and include the basic filing fee set forth in §1.16, or be entitled to a filing date as set forth in §1.53(b) and have paid the processing and retention fee set forth in §1.21(l) within the time period set forth in §1.53(d).

Section 1.121, if amended as proposed, would revise paragraph (e) to specify how amendments to the description and claims are to be made in reissue applications.

Section 1.123, if amended as proposed, would clarify that the paper requesting amendments to the drawing should be a separate paper.

Section 1.135 is proposed to be amended by removing paragraph (d) since it is not necessary in view of the ability to obtain extensions of time under §1.136(a) by petition and payment of fee.

Section 1.136, if amended as proposed, would clarify in paragraphs (a) and (b) that the extension of time practice under this section does not apply in interference proceedings or in reexamination proceedings. Extension of time practice in interference proceedings, including extension of time for appeal or civil action (§1.304), is subject to §1.245. Extension of time practice in reexamination proceedings, including extension of time for appeal or civil action (§1.304), is subject to §1.550(c).

Section 1.191, if amended as proposed, would add a new paragraph (d) to provide that the time periods for appeal and review set forth in §§1.191-1.194, 1.196 and 1.197 are subject to the provisions of §1.136 for patent applications or §1.550(c) for reexamination proceedings.

Section 1.192, if amended as proposed, would revise paragraph (a) to delete the reference to §1.136 since it is provided for in proposed new §1.191(d).

Section 1.197, if amended as proposed, would revise paragraph (b) to delete the reference to §1.136 since it is provided for in proposed new §1.191(d).

Section 1.304, if amended as proposed, would clarify that extensions of time periods set forth therein are subject to the provisions of §1.245 for interferences or §1.550(c) where reexamination proceedings are involved rather than to §1.136 which applies in all other cases.

Section 1.550, if amended as proposed, would revise paragraph (c) to clarify that the time for taking any action, including appeal, by a patent owner in a reexamination proceeding is governed solely by this section.

Section 1.555, if amended as proposed, would revise paragraphs (a) and (b). Proposed paragraph 1.555(a) would change "prior art" statement to --information disclosure-- statement to conform to the language of §1.98. Proposed paragraph 1.555(b) would require that disclosures pursuant to this paragraph be accompanied by a copy of each foreign patent document or non-patent printed publication which is being disclosed and which is in the possession of the person making the disclosure.

Environmental, energy, and other considerations: The proposed rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et. seq.

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96-354). Public Laws 96-517 and 97-247 have both taken into consideration the impact they may have on small entities.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et. seq., since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to filing of small entity statements in applications filed under §1.62 will be reduced.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations, Conflict of interests, Courts, Inventions and patents, Lawyers.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6 and Public Law 97-247, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations as set forth below.

It is proposed to amend 37 CFR, Part 1, as follows with deletions indicated by brackets and additions by arrows.

1. Section 1.5 is proposed to be amended by revising paragraph (a) to read as follows:

§1.5 Identification of application, patent or registration.

(a) When a letter concerns an application for patent, it should state the name of the applicant, the title of the invention, the serial number or international application number of the application, the date of filing the same, and, if known, the group art unit and name of the examiner to which it has been assigned [(see §1.55)].

* * * * *

2. Section 1.6 is proposed to be amended by revising paragraph (a) to read as follows:

§1.6 Receipt of letters and papers.

(a) Letters and other papers received in the Patent and Trademark Office are stamped with the date of receipt ▶ except where such letters and papers are filed in accordance with §1.10. Any such letters and papers filed in accordance with §1.10 will be stamped with the date of deposit as "Express Mail" with the United States Postal Service unless the date of deposit is a Saturday, Sunday, or federal holiday within the District of

Columbia in which case the date stamped will be the next succeeding day which is not a Saturday, Sunday, or a federal holiday within the District of Columbia ◀. No papers are received in the Patent and Trademark Office on Saturdays, Sundays or federal holidays within the District of Columbia.

* * * * *

3. Section 1.14 is proposed to be amended by revising paragraph (b) to read as follows:

§1.14 Patent applications preserved in secrecy.

* * * * *

(b) Except as provided in §1.11(b) abandoned applications are likewise not open to public inspection, except that if an application referred to in a U.S. patent, or in an application which is open to inspection pursuant to §1.139, is abandoned and is available, it may be inspected or copies obtained by any person on written request, without notice to the applicant. [Abandoned] ▶ Complete ◀ applications ▶ (§1.51(a)) which are abandoned ◀ may be destroyed after 20 years from their filing date, except those to which particular attention has been called and which have been marked for preservation. Abandoned applications will not be returned.

* * * * *

4. Section 1.19 is proposed to be amended by revising paragraph (b)(3) to read as follows:

§1.19 Document supply fees.

* * * * *

(b) * * *

(3) For comparing copies ▶, made from Patent and Trademark Office records but ◀ not prepared by the ▶ Patent and Trademark ◀ Office ▶, ◀ with the original, prior to certification of the copies, per page.....$ 0.10

* * * * *

5. Section 1.21 is proposed to be amended by revising paragraph (b)(2) and by adding a new paragraph (1) to read as follows:

§1.21 Miscellaneous fees and charges.

* * * * *

(b) * * *

(2) Service charge for each month when the balance at the end of the month is below [$40] ▶$1000◀..$ 2.00

* * * * *

▶(1) For processing and retaining any application abandoned pursuant to §1.53(d) unless the required basic filing fee has been paid..... $100.00.◀

6. Section 1.25 is proposed to be revised to read as follows:

§1.25 Deposit accounts.

(a) For the convenience of attorneys, agents, and the general public in paying any fees due, in ordering services offered by the Office, copies of records, etc., deposit accounts may be established in the Patent and Trademark Office upon payment of the fee for establishing a deposit account (§1.21(b)(1)). A minimum deposit of [$50] ▶ $1000 ◀ or more, depending on the activity of the individual account, is required. At the close of each month's business, a statement will be rendered. A remittance must be made promptly upon receipt of the statement to cover the value of items or services charged to the account and thus restore the account to its established normal deposit value. An amount sufficient to cover all ▶ fees, ◀ services, copies, etc., requested must always be on deposit. A service charge (§1.21(b)(2)) will be assessed for each month that the balance at the end of the month is below $[40] ▶ 1000 ◀ .

(b) Filing, issue, appeal, international-type search report, international application processing, petition, and post-issuance fees may be charged against these accounts ▶ if sufficient funds are on deposit to cover such fees ◀ . A general authorization to charge all fees, or only certain fees, set forth in §§1.16 to 1.18 to a deposit account ▶ containing sufficient funds ◀ may be filed in an individual application, either for the entire pendency of the application or with respect to a particular paper filed. An authorization to charge to a deposit account the fee for a request for reexamination pursuant to §1.510 and any other fees required in a reexamination proceeding in a patent may also be filed with the request for reexamination. ▶ An authorization to charge a fee to a deposit account will not be considered payment of the fee on the date the authorization to charge the fee is effective as to the particular fee to be charged unless sufficient funds are present in the account to cover the fee. ◀

7. Section 1.27 is proposed to be amended by revising paragraphs (b), (c) and (d) to read as follows:

§1.27 Statement of status as small entity.

* * * * *

(b) Any verified statement filed pursuant to paragraph (a) of this section on behalf of an independent inventor must be signed by the independent inventor except as provided in §§1.42, 1.43, or 1.47 of this part, and must aver that the inventor qualifies as an independent inventor in accordance with §1.9(c) of this part. Where there are joint inventors in an application, each inventor must file a verified statement establishing status as an independent inventor in order to qualify as a small entity.

Where any rights have been assigned, granted, conveyed, or licensed, or there is an obligation to assign, grant, convey, or license, any rights to a small business concern, a nonprofit organization, or any other individual, a verified statement must be filed by the individual, the owner of the small business concern, or an official of the small business concern or nonprofit organization empowered to act on behalf of the small business concern or nonprofit organization averring to their status. ▶ For purposes of a verified statement under this paragraph, a license to a federal agency resulting from a funding agreement with that agency pursuant to 35 U.S.C. 202(c)(4) does not constitute a license as set forth in §1.9 of this part. ◀

(c) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a small business concern must (1) be signed by the owner or an official of the small business concern empowered to act on behalf of the concern; (2) aver that the concern qualifies as a small business concern as defined in §1.9(d); and (3) aver that exclusive rights to the invention have been conveyed to and remain with the small business concern, or if the rights are not exclusive, that all other rights belong to small entities as defined in §1.9. Where the rights of the small business concern as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such. ▶ For purposes of a verified statement under this paragraph, a license to a federal agency resulting from a funding agreement with that agency pursuant to 35 U.S.C. 202(c)(4) does not constitute a license as set forth in §1.9 of this part. ◀

(d) Any verified statement filed pursuant to paragraph (a) of this section on behalf of a nonprofit organization must (1) be signed by an official of the nonprofit organization empowered to act on behalf of the organization; (2) aver that the organization qualifies as a nonprofit organization as defined in §1.9(e) of this part specifying under which one of §1.9(e)(1), (e)(2), (e)(3), or (e)(4) of this part the organization qualifies; and (3) aver that exclusive rights to the invention have been conveyed to and remain with the organization or if the rights are not exclusive, that all other rights belong to small entities as defined in §1.9 of this part. Where the rights of the nonprofit organization as a small entity are not exclusive, a verified statement must also be filed by the other small entities having rights averring to their status as such. ▶ For purposes of a verified statement under this paragraph, a license to a federal agency resulting from a funding agreement with that agency pursuant to 35 U.S.C. 202(c)(4) does not constitute a conveyance of rights as set forth in this paragraph. ◀

8. Section 1.28 is proposed to be amended by revising paragraph (a) to read as follows:

§1.28 Effect on fees of failure to establish status, or change status, as a small entity.

(a) The failure to establish status as a small entity (§§1.9(f) and 1.27 of this part) in any application or patent prior to paying, or at the time of paying, any fee [(1)] precludes payment

of the fee in the amount established for small entities [; and (2) precludes a refund pursuant to §1.26 of this part of any portions of fees paid prior to establishing status as a small entity]. ▶ A refund pursuant to §1.26 of this part, based on establishment of small entity status, of a portion of fees timely paid in full prior to establishing status as a small entity may only be obtained if a verified statement under §1.27 and a request for a refund of the excess amount are filed within two months of the date of the timely payment of the full fee. ◀ Status as a small entity is waived for any fee by the failure to establish the status prior to paying, [or] at the time of paying ▶, or within two months of the date of payment of, ◀ the fee. Status as a small entity must be specifically established by a verified statement filed in each application or patent in which the status is available and desired, except those applications filed under §1.60 ▶ or §1.62 ◀ of this part where the status as a small entity has been established in a parent application and is still proper. Once status as a small entity has been established in an application or patent, the status remains in that application or patent without the filing of a further verified statement pursuant to §1.27 of this part unless the Office is notified of a change in status. Status as a small entity in one application or patent does not affect any other application or patent, including applications or patents which are directly or indirectly dependent upon the application or patent in which the status has been established, except those filed under §1.60 ▶ or §1.62 ◀ of this part. Applications filed under §1.60 ▶ or §1.62 ◀ of this part must include a reference to a verified statement in a parent application if status as a small entity is still proper and desired.

* * * * *

9. Section 1.52 is proposed to be amended by revising paragraph (d) to read as follows:

§1.52 Language, paper, writing, margins.

* * * * *

(d) An application [including a signed oath or declaration] may be filed in a language other than English [if it is accompanied by the fee set forth in §1.17(k)]. A verified English translation of the non-English language application [is] ▶ and the fee set forth in §1.17(k) are ◀ required to be filed with the application or within such time as may be set by the Office.

10. Section 1.53 is proposed to be amended by revising paragraphs (b) and (d) to read as follows:

§1.53 Serial number, filing date, and completion of application.

* * * * *

(b) The filing date of an application for patent is the date on which (1) a specification containing a description pursuant to §1.71 and at least one claim pursuant to §1.75, and (2) any drawing required by §1.81(a), are filed in the Patent and

Trademark Office ▶ in the name of the actual inventor or inventors as required by §1.41 ◀ . No new matter may be introduced into an application after its filing date (§1.118).

* * * * *

(d) If an application which has been accorded a filing date pursuant to paragraph (b) of this section does not include the appropriate filing fee or an oath or declaration by the applicant, applicant will be so notified ▶, if a correspondence address has been provided, ◀ and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application. ▶ If the required filing fee is not timely paid, or if the processing and retention fee set forth in §1.21(l) is not paid within one year of the date of mailing of the notification required by this paragraph, the application will be disposed of. No copies will be provided or certified by the Office of an application which has been disposed of or in which neither the required basic filing fee nor the processing and retention fee has been paid. ◀ The notification pursuant to this paragraph may be made simultaneously with any notification pursuant to paragraph (c) of this section. ▶ If no correspondence address is included in the application, applicant has two months from the filing date to file the fee, oath or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application. ◀

* * * * *

11. Section 1.55 is proposed to be amended by revising paragraph (b) to read as follows:

§1.55 Claim for foreign priority.

* * * * *

(b) An applicant may under certain circumstances claim priority on the basis of an application for an inventor's certificate in a country granting both inventor's certificates and patents. When an applicant wishes to claim the right of priority as to a claim or claims of the application on the basis of an application for an inventor's certificate in such a country under 35 U.S.C. 119, last paragraph (as amended July 28, 1972), the applicant or his ▶ or her ◀ attorney or agent, when submitting a claim for such right as specified in paragraph ▶ (a) ◀ [(b)] of this section, shall include an affidavit or declaration including a specific statement that, upon an investigation, he or she has satisfied himself or herself that to the best of his or her knowledge the applicant, when filing his or her application for the inventor's certificate, had the option to file an application either for a patent or an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority.

12. Section 1.56 is proposed to be amended by revising paragraph (b) and by adding a new paragraph (j) to read as follows:

§1.56 Duty of disclosure; fraud; striking or rejection of applications.

* * * * *

(b) Disclosures pursuant to this section ▶ must be accompanied by a copy of each foreign patent document, non-patent publication, or other non-patent item of information in written form which is being disclosed and ◀ may be made to the Office through an attorney or agent having responsibility for the preparation or prosecution of the application or through an inventor who is acting in his ▶or her◀ own behalf. Disclosure to such an attorney, agent or inventor shall satisfy the duty, with respect to the information disclosed, of any other individual. Such an attorney, agent or inventor has no duty to transmit information which is not material to the examination of the application.

* * * * *

▶(j) If any disclosure pursuant to this section does not include a copy of each foreign patent document, non-patent publication, or other non-patent item of information in written form which is being disclosed, applicant will be so notified and given a period of time within which to file the copy or state that the copy is not in the possession of the person making the disclosure. The time period set may be extended under §1.136.◀

13. Section 1.59 is proposed to be revised to read as follows:

§1.59 Papers of application with filing date not to be returned.

Papers in an application which has received a filing date pursuant to §1.53 will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost ▶ of any application in which either the required basic filing fee (§1.16) or the processing and retention fee (§1.21(l)) has been paid ◀.

14. Section 1.60 is proposed to be revised to read as follows:

§1.60 Continuation or divisional application for invention disclosed in a prior application.

▶(a)◀ A continuation or divisional application (filed under the conditions specified in 35 U.S.C. 120 or 121 ▶ and §1.78(a) ◀), which discloses and claims only subject matter disclosed in a prior application may be filed as a separate application before the patenting or abandonment of or termination of proceedings on the prior application. [Signing and execution of the application papers by the applicant may be omitted provided the copy is supplied by and accompanied by a statement by, the applicant or his or her attorney or agent that the application papers comprise a true copy of the prior application as filed. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. Only amendments reducing the number of claims or adding a reference to the prior application (§1.78(a)) will be

entered before calculating the filing fee and granting the filing date.]

▶(b) An applicant may omit signing of the oath or declaration in a continuation or divisional application if (1) the prior application was a complete application as set forth in §1.51(a) and (2) applicant files a true copy of the prior complete application as filed including the specification (including claims), drawings, oath or declaration, and any amendments referred to in the oath or declaration filed to complete the prior application. The copy of the prior application must be accompanied by a statement that the application papers filed are a true copy of the prior application and that no amendments referred to in the oath or declaration filed to complete the prior application introduced new matter therein. Such statement must be by the applicant or applicant's attorney or agent and must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. Only amendments reducing the number of claims or adding a reference to the prior application (§1.78(a)) will be entered before calculating the filing fee and granting the filing date.◀

15. Section 1.62 is proposed to be amended by revising paragraphs (a) and (d) to read as follows:

§1.62 File wrapper continuing procedure.

(a) A continuation, continuation-in-part, or divisional application, which uses the specification ▶ , ◀ [and] drawings ▶ and oath or declaration ◀ from a prior ▶ complete ◀ application ▶ (§1.51(a)) ◀ to be abandoned, may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on [a] ▶ the ◀ prior application. The filing date of an application filed under this section is the date on which a request is filed for an application under this section including identification of the Serial Number, filing date, and applicant's name of the prior ▶ complete ◀ application.

* * * * *

(d) If an application which has been accorded a filing date pursuant to paragraph (a) of this section does not include the appropriate ▶ basic ◀ filing fee pursuant to paragraph (b) of this section, or an oath or declaration by the applicant in the case of a continuation-in-part application pursuant to paragraph (c) of this section, applicant will be so notified and given a period of time within which to file the fee, oath, or declaration and to pay the surcharge as set forth in §1.16(e) in order to prevent abandonment of the application. The notification pursuant to this paragraph may be made simultaneously with any notification of a defect pursuant to paragraph (a) of this section.

* * * * *

16. Section 1.78 is proposed to be amended by revising the title and paragraph (a) to read as follows:

§1.78 ▶ Claiming benefit of earlier filing date and cross-references ◀ [Cross-references] to other applications.

(a) [When an applicant files an] ▶ An ◀ application ▶ may claim ◀ [claiming] an invention disclosed in ▶ the same applicant's ◀ [a] prior filed copending national application or international application designating the United States of America [of the same applicant,] ▶ . In order for an application to claim the benefit of a prior filed copending national application, the prior application must be (1) complete as set forth in §1.51, or (2) entitled to a filing date as set forth in §1.53(b) and include the basic filing fee set forth in §1.16; or (3) entitled to a filing date as set forth in §1.53(b) and have paid therein the processing and retention fee set forth in §1.21(l) within the time period set forth in §1.53(d). Any application claiming the benefit of a prior filed copending national or international application ◀ [the second application] must contain or be amended to contain in the first sentence of the specification following the title a reference to such prior application, identifying it by serial number and filing date or international application number and international filing date and indicating the relationship of the applications [, if the benefit of the filing date of such prior application is to be claimed]. Cross-references to other related applications may be made when appropriate. (See §1.14(b)).

* * * * *

17. Section 1.121 is proposed to be amended by revising paragraph (e) to read as follows:

§1.121 Manner of making amendments.

* * * * *

(e) In reissue applications, both the descriptive portion and the claims are to be amended [as specified in paragraph (a) of this section.] ▶by either (1) submitting a copy of a portion of the description or an entire claim with all matter to be deleted from the patent being placed between brackets and all matter to be added to the patent being underlined, or (2) indicating the exact word or words to be stricken out or inserted and the precise point where the deletion or insertion is to be made. Any word or words to be inserted must be underlined. See §1.173.◀

* * * * *

18. Section 1.123 is proposed to be revised to read as follows:

§1.123 Amendments to the drawing.

No change in the drawing may be made except by permission of the Office. Permissible changes in the construction shown in any drawing may be made only by bonded draftsmen, at applicant's expense, or by the submission of substitute drawings by applicant. A sketch in permanent ink showing proposed changes, to become part of the record, must be filed for approval by the

examiner[. The paper requesting amendments to the drawing] ▶ and ◀ should be ▶ a ◀ separate ▶ paper ◀ [from other papers].

19. Section 1.135 is proposed to be amended by removing paragraph (d).

§1.135 Abandonment for failure to respond within time period.

* * * * *

[(d) Prompt ratification or filing of a correctly signed copy may be accepted in case of an unsigned or improperly signed paper. (See §1.7.)]

20. Section 1.136 is proposed to be revised to read as follows:

§1.136 Filing of timely responses with petition and fee for extension of time and extensions of time for cause.

(a) If an applicant is required to respond within a non-statutory or shortened statutory time period, applicant may respond up to four months after the time period set if a petition for an extension of time and the fee set in §1.17 are filed prior to or with the response, unless (1) applicant is notified otherwise in an Office action or (2) the application is involved in an interference declared pursuant to §1.207. The date on which the response, the petition, and the fee have been filed is the date of the response and also the date for purposes of determining the period of extension and the corresponding amount of the fee. The expiration of the time period is determined by the amount of the fee paid. In no case may an applicant respond later than the maximum time period set by statute, or be granted an extension of time under paragraph (b) of this section when the provisions of this paragraph are available. ▶ See §1.245 for extension of time in interference proceedings and §1.550(c) for extension of time in reexamination proceedings. ◀

(b) When a response with petition and fee for extension of time cannot be filed pursuant to paragraph (a) of this section, the time for response will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the applicant is due, but in no case will the mere filing of the request effect any extension. In no case can any extension carry the date on which response to an Office action is due beyond the maximum time period set by statute or be granted when the provisions of paragraph (a) of this section are available. See §1.245 for extension of time in interference proceedings ▶ and §1.550(c) for extension of time in reexamination proceedings ◀ .

21. Section 1.191 is proposed to be amended by adding a new paragraph (d) to read as follows:

§1.191 Appeal to Board of Appeals.

* * * * *

▶ (d) The time periods set forth in §§1.191 through 1.194, 1.196 and 1.197 are subject to the provisions of §1.136 for patent applications or §1.550(c) for reexamination proceedings.◀

22. Section 1.192 is proposed to be amended by revising paragraph (a) to read as follows:

§1.192 Appellant's brief.

(a) The appellant shall, within 2 months from the date of the notice of appeal under §1.191 in an application, reissue application, or patent under reexamination, or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate. The brief must be accompanied by the requisite fee set forth in §1.17(f) and must set forth the authorities and arguments on which the appellant will rely to maintain the appeal. The brief must include a concise explanation of the invention which should refer to the drawing by reference characters, and a copy of the claims involved. [The time periods set forth herein are subject to the provisions of §1.136.]

* * * * *

23. Section 1.197 is proposed to be amended by revising paragraph (b) to read as follows:

§1.197 Action following decision.

* * * * *

(b) A single request for rehearing or reconsideration, or modification of the decision, may be made if filed within thirty days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Appeals so states. [Such time may be extended under the provisions of §1.136.]

* * * * *

24. Section 1.304 is proposed to be amended by revising paragraph (a) to read as follows:

§1.304 Time for appeal or civil action.

(a) The time for filing the notice and reasons of appeal to the U.S. Court of Appeals for the Federal Circuit (§1.302) or for commencing a civil action (§1.303) is sixty days from the date of the decision of the Board of Appeals or the Board of Patent Interferences. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time provided pursuant to §1.197(b) or §1.256(b), the time for filing an appeal or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. The time periods set forth herein are subject to the provisions of §1.136 ▶ or §1.550(c) as to decisions of the Board of Appeals, or §1.245 as to decisions of the Board of Patent Interferences ◀ .

* * * * *

25. Section 1.550 is proposed to be amended by revising paragraph (c) to read as follows:

§1.550 Conduct of reexamination proceedings.

* * * * *

(c) The time for ▶ taking any action by a patent owner in a reexamination proceeding ◀ [reply set in paragraph (b) of this section] will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the patent owner is due, but in no case will the mere filing of the request effect any extension.

* * * * *

26. Section 1.555 is proposed to be amended by revising paragraphs (a) and (b) to read as follows:

§1.555 Duty of disclosure in reexamination proceedings.

(a) A duty of candor and good faith toward the Patent and Trademark Office rests on the patent owner, on each attorney or agent who represents the patent owner, and on every other individual who is substantively involved on behalf of the patent owner in a reexamination proceeding. All such individuals who are aware, or become aware, of patents or printed publications material to the reexamination which have not been previously made of record in the patent file must bring such patents or printed publications to the attention of the Office. ▶ An information disclosure ◀ [A prior art] statement, preferably in accordance with §1.98, should be filed within two months of the date of the order for reexamination, or as soon thereafter as possible in order to bring such patents or printed publications to the attention of the Office.

(b) Disclosures pursuant to this section ▶ must be accompanied by a copy of each foreign patent document or non-patent printed publication which is being disclosed and ◀ may be made to the Office through an attorney or agent having responsibility on behalf of the patent owner for the reexamination proceeding or through a patent owner acting in his or her own behalf. Disclosure to such an attorney, agent or patent owner shall satisfy the duty of any other individual. Such an attorney, agent or patent owner has no duty to transmit information which is not material to the reexamination.

* * * * *

JUL 22 1983

Date

Gerald J. Mossinghoff
Commissioner of Patents and Trademarks

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Austin: McKinney Engineering Library, University of Texas....	(512) 471-1610
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,243,822 to 3,248,737, inclusive

Plant Patents ..... Numbers 2,616 to 2,627 inclusive

REISSUES

SEPTEMBER 13, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

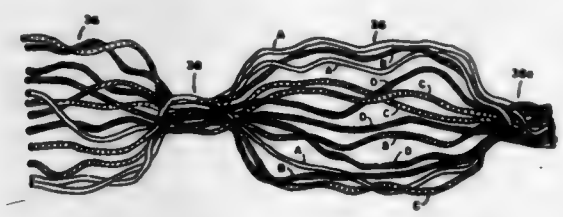
Re. 31,376
YARN STRUCTURE AND METHOD FOR PRODUCING SAME

Richard W. Sheehan; David B. Parlin; Harry F. Jamrogowicz, all of Greenville, and John A. Patterson, Abbeville, all of S.C., assignors to Bigelow-Sanford, Inc., Greenville, S.C.

Original No. 3,846,968, dated Nov. 12, 1974, Ser. No. 368,875, Jun. 11, 1973. Application for reissue Jan. 12, 1981, Ser. No. 224,461

Int. Cl.³ D02G *3/34, 3/24, 3/12, 1/16*

U.S. Cl. 57—208 **9 Claims**



1. A continuous yarn structure comprising at least one *air jet entangled* yarn element formed from a plurality of fibers, said yarn structure comprising lengths of high bulk, substantially un-entangled yarn element fibers alternating with lengths of compacted yarn element fibers in which substantially all fibers are mutually entangled throughout the volume of the compacted *yarn* lengths, *at least some of the yarn element fibers each having a cross-sectional area in certain portions of the yarn differing in size from that in other portions of said yarn so that* at least some of the individual fibers have a lesser cross-sectional area in the final yarn structure than [in their unprocessed lengths] *prior to being air entangled.*

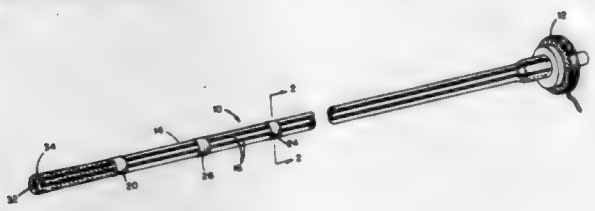
Re. 31,377
DISPOSABLE ESOPHAGEAL AND TRACHEAL MULTI-PROBES

Kenneth C. Mylrea, Tucson, Ariz., and Joseph Demer, Baltimore, Md., assignors to University Patents, Inc., Norwalk, Conn.

Original No. 4,176,660, dated Dec. 4, 1979, Ser. No. 885,173, Mar. 10, 1978. Application for reissue Nov. 28, 1980, Ser. No. 210,901

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—642 **6 Claims**



1. A disposable [*esophageal*] *probe comprising a flexible plastic tube having proximal and distal portions and an unobstructed lumen, said tube adapted to be inserted into a patient's mouth and then into either* the esophagus *or the trachea*;

a plurality of conductive pathways longitudinally embedded in the wall of said plastic tube, said pathways having substantially similar flexibility to said plastic tube and being insulated from each other and the patient by the plastic of said tube;

a least a pair of conductive bands encircling said tube's distal portion, each band making contact with at least one embedded conductive pathway and being adapted to receive ECG signals and

a connector plug mounted on the proximal portion of said plastic tube, said connector plug having a plurality of sharp metal connecting pins which pierce and electrically connect to said conductive pathways, said plug further having an unobstructed lumen which mates with the lumen of said tube.

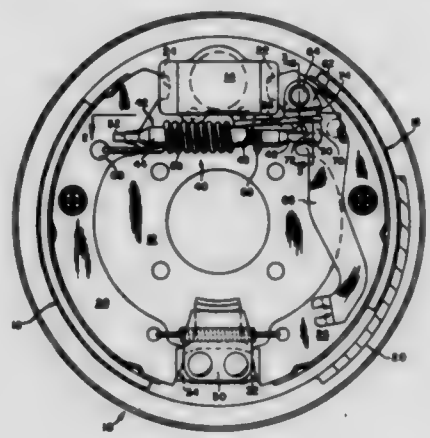
Re. 31,378
DRUM BRAKE ADJUSTER

Richard T. Burnett, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Original No. 4,101,011, dated Jul. 18, 1978, Ser. No. 791,667, Apr. 28, 1977. Application for reissue Aug. 15, 1980, Ser. No. 178,274

Int. Cl.³ F16D *65/56*

U.S. Cl. 188—79.5 GT **8 Claims**



1. An adjustment mechanism for a drum brake having a hydraulic actuator cooperating with a pair of brake shoes to urge the latter into engagement with a rotatable member for effectuating braking, said adjustment mechanism comprising:

an extendible member engaging the pair of brake shoes, said extendible member being extendible to dispose the pair of brake shoes adjacent but slightly spaced from the rotatable member;

a pawl pivotally mounted on one of the brake shoes, said pawl engaging said extendible member to provide for extension of the extendible member when the pawl pivots relative to the one brake shoe; and

a resilient member extending from the other brake shoe to said pawl, said resilient member cooperating with the one brake shoe via the pivotal mounting with said pawl and the other brake shoe to bias the pair of brake shoes into engagement with the hydraulic actuator [and], said resilient member [also] cooperating with said pawl to pivot said pawl relative to the one brake shoe, *and said resilient member also cooperating with said pawl to bias said pawl into abutting engagement with said extendible member to bias said extendible member away from the one brake shoe and into engagement with the other brake shoe and said pawl being pivoted about the abutting engagement with said extendible member by said resilient member in order to retract the one brake shoe away from the rotatable member upon termination of braking.*

Re. 31,379

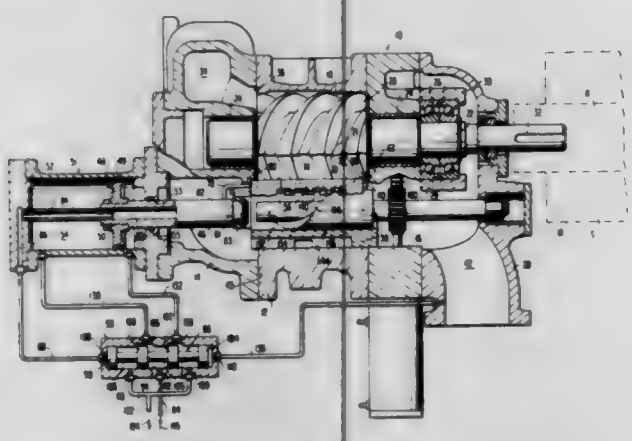
COMBINED PRESSURE MATCHING AND CAPACITY CONTROL SLIDE VALVE ASSEMBLY FOR HELICAL SCREW ROTARY MACHINE

David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Original No. 4,222,716, dated Sep. 16, 1980, Ser. No. 44,433, Jun. 1, 1979. Application for reissue Oct. 16, 1980, Ser. No. 197,401

Int. Cl.³ F04B *49/02*

U.S. Cl. 417—310 5 Claims



5. In a positive displacement helical screw rotary machine functioning either as a compressor or an expander and including a casing provided with a barrel portion defined by intersecting bores with coplanar axes located between axially spaced end walls and having inlet and outlet ports in communication with the bores at opposite ends, helical screw rotors, each having grooves and lands and being mounted for rotation within respective bores with lands and bores of respective rotors intermeshed, an axially extending recess provided within the barrel portion of the casing in open communication with said bores, and a slide valve member mounted for axial sliding within the recess with at least a portion of the interface of the slide valve member being complementary to the envelope of that portion of the bores of the casing structure confronted by the opening of the recess and with the slide valve member communicating the bore portion of the casing structure with the slide valve member in sealing relation with the confronting rotor structure, the outlet port having at least a portion located in the barrel portion of the casing structure, with the slide valve member being movable between extreme positions in which the outlet port is open and closed, said slide valve member being of sufficient length to cover the entire remaining length of the confronting portion of the rotor structure throughout the range of movement of said slide valve member between extreme positions, pressure sensing means provided adjacent to the end of the slide valve member closing off the outlet port to the closed thread for sensing the pressure of the working fluid within the closed thread just upstream from the outlet port, means for comparing the pressure of the outlet port to the closed thread pressure at the outlet port, and means for automatically shifting the slide valve member axially to equalize these pressures to prevent undercompression or overcompression of the working fluid when the unit is functioning as a compressor and for preventing underexpansion or overexpansion of the working fluid when the unit is functioning as an expander to maximize machine efficiency in respective modes, the improvement comprising:

an arcuate opening within said slide valve member,

an arcuate volumetric capacity control valve body slidably and sealably fitting said arcuate opening within said slide valve member,

means including said arcuate volumetric capacity control valve body for communicating the inlet port of said machine to said working chamber bearing the intermeshed helical screw rotors,

means responsive to shifting of the valve body relative to the slide valve member for varying communication between said inlet port of said machine and said working chamber, and

means for effecting controlled movement of said valve body relative to said slide valve member for varying the capacity of said positive displacement helical screw rotary machine.

Re. 31,380

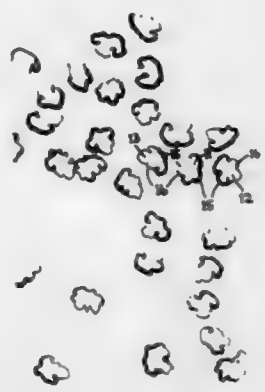
RAYON FIBERS CONTAINING STARCH

Frederick R. Smith, Toms Brook, Va., assignor to Avtex Fibers Inc., Valley Forge, Pa.

Original No. 4,144,079, dated Mar. 13, 1979, Ser. No. 811,793, Jun. 30, 1977. Continuation-in-part of Ser. No. 696,451, Jun. 15, 1976, abandoned, and a continuation-in-part of Ser. No. 629,952, Nov. 7, 1975, abandoned. Application for reissue Sep. 23, 1980, Ser. No. 189,870

Int. Cl.³ C08L *1/24;* D01F *2/08*

U.S. Cl. 106—164 19 Claims



29. Process for preparing starch-containing rayon fiber which comprises forming a slurry of starch granules in aqueous medium, adding an aqueous solution of a starch-splitting agent active in alkaline medium to said slurry, the proportion being about 0.003 by 0.015 moles of agent per mole of starch in slurry, adding sodium hyroxide (NaOH) to said slurry to produce an aqueous alkaline solution of starch, blending said solution with viscose, extruding the starch-containing viscose in fiber form and regenerating the cellulose in the extruded viscose to form starch-containing regenerated cellulose fibers, said starch having an amylopectin content of at least 60%.

Re. 31,381

PROCESS FOR THE PREPARATION OF PROPYLENE OXIDE

Günter Prescher; Gerd Schreyer, both of Hanau; Otto Weiberg, Neu-Isenburg; Rolf Wirthwein, Hanau; Helmut Waldmann, Leverkusen; Hermann Seifert, Cologne; Wulf Schwerdtel, Leverkusen, and Wolf Swodenk, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Deutsche Gold-und Silber-Scheideanstalt, Frankfurt am Main, both of, Fed. Rep. of Germany

Original No. 4,137,242, dated Jan. 30, 1979, Ser. No. 678,823, Apr. 28, 1976. Application for reissue Feb. 14, 1980, Ser. No. 121,604

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1975, 2519297

Int. Cl.³ C07D *301/14*

U.S. Cl. 549—526 32 Claims

1. Process for the continuous production of propylene oxide from propylene and aqueous hydrogen peroxide which comprises:

(a) contacting aqueous hydrogen peroxide with propionic acid for reaction of hydrogen peroxide and propionic acid to form perpropionic acid, in the presence of a water-soluble acid catalyst for the reaction, the amount of water, catalyst and hydrogen peroxide corresponding to an aqueous solution of catalyst and hydrogen peroxide containing 10 to 40% by weight of catalyst and 20 to 30% by weight of hydrogen peroxide, and the molar ratio of hydrogen peroxide to propionic acid being 3.5 to 5:1, at a temperature of 10° to 70° C.;

(b) extracting the resulting reaction mixture with benzene

for formation of benzene phase rich in perpropionic acid, propionic acid, and containing hydrogen peroxide, and aqueous raffinate phase rich in hydrogen peroxide and catalyst[,];

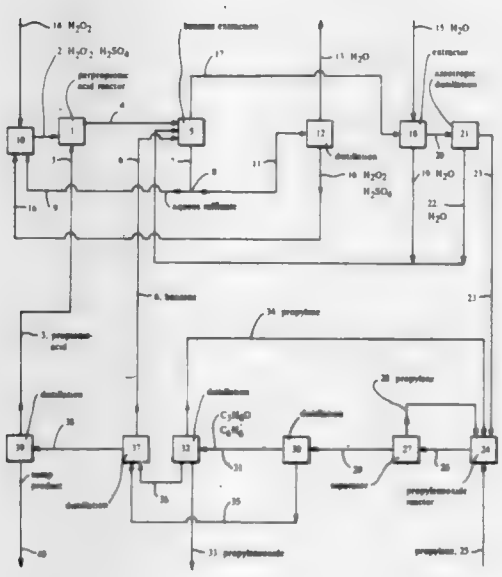
(c) treating at least part of the aqueous raffinate to remove water therefrom and form a concentrated solution of hydrogen peroxide and catalyst[,];

(d) recycling said concentrated solution of hydrogen peroxide and catalyst to step (a)[,];

(e) extracting the benzene phase of step (b) with water for formation of a benzene phase containing perpropionic acid, propionic acid, water and a reduced amount of hydrogen peroxide, and an aqueous phase containing hydrogen peroxide[,];

(f) subjecting the benzene phase produced in step (e) to azeotropic distillation to reduce the water content thereof to less than 0.5% by weight[,];

(g) contacting the benzene phase of reduced water content of step (f) with propylene at a temperature of 40° to 100° C. and a pressure of 2 to 30 bars for reaction of perpropionic acid of the benzene phase with propylene to form propylene oxide and a reaction mixture containing the propylene oxide, and other materials[,];



(h) distilling the reaction mixture to distill overhead propylene, propylene oxide and benzene and removing bottoms comprising benzene and propionic acid;

(i) subjecting the overhead from step (h) to a second distillation to distill off overhead propylene and recycling said propylene to step (g);

(j) introducing the bottoms consisting essentially of propionic acid and benzene from the distillation of step [(i) to] *(h) and benzene from the distillation of step (i) into* a third distillation *column* and distilling off overhead benzene and recycling said benzene to step (b)[.];

(k) removing bottoms from said third distillation *column* consisting essentially of propionic acid and materials of higher boiling point than propionic acid and introducing said bottoms into a fourth distillation *column* and distilling over propionic acid and recycling said propionic acid to step (a) and separating bottoms consisting essentially of the material of higher boiling point than propionic acid[,]; and

(l) recovering propylene oxide as a side cut from said second distillation.

Re. 31,382

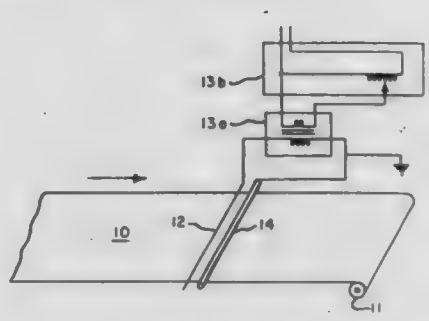
STATIC CHARGE NEUTRALIZER AND PROCESS

Edward J. Moore, Florence, S.C., and John E. Owens, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Original No. 4,110,810, dated Aug. 29, 1978, Ser. No. 776,231, Mar. 10, 1977. Application for reissue Apr. 13, 1981, Ser. No. 253,807

Int. Cl.³ H05F *3/04*

U.S. Cl. 361—213 **13 Claims**



1. A web winding device for a dielectric web material comprising:

a driven winding roll onto which the web is wound;

a nip roll in pressure contact with the web wound on the winding roll and at which pressure contact the web is first laid onto the winding roll;

a conductive bare wire less than 0.03 cm in diameter extending across and parallel with the web and located 0.6 to 8 cm from the web on the winding roll in an arc of 0° to 90° after contact by the web with the winding roll; and

means for impressing an AC voltage on the wire of 3000 to 10,000 volts at 40 to 70 Hertz.

Re. 31,383

ANTILOCKING CONTROL SYSTEM

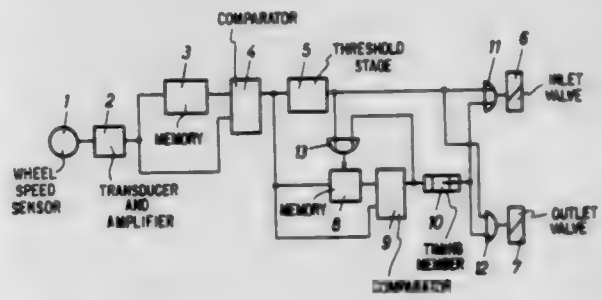
Heinz Leiber, Leimen; Jürgen Gerstenmeier, Ngm.-Waldhilsbach, and Wolfgang Korasiak, Ketsch, all of Fed. Rep. of Germany, assignors to Teldix GmbH, Heidelberg, Fed. Rep. of Germany

Original No. 4,077,675, dated Mar. 7, 1978, Ser. No. 747,685, Dec. 6, 1976. Application for reissue Mar. 4, 1980, Ser. No. 127,261

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1975, 2555005

Int. Cl.³ B60T *8/02*

U.S. Cl. 364—426 **27 Claims**



1. In an antilocking control system composed of at least one sensor connected to measure the speed of a vehicle wheel equipped with a brake and to produce a signal representative of the current wheel speed, an evaluation circuit connected to receive the signal from the sensor and generate a primary control signal, and a brake pressure control device connected to respond to the primary control signal to effect a variation in the brake-pressure applied to the wheel brake in a manner to prevent the wheel from locking, the evaluation circuit acting to produce the primary control signal when the wheel speed decreases at greater than a predetermined rate, the improve-

ment comprising signal deriving means including: wheel speed variation monitoring means connected for comparing the values, at successive instants, of a parameter dependent on wheel speed, and for producing at least one wheel speed tendency signal based on such comparison; and signal processing means connected for producing selected supplemental control signals influencing the brake pressure in a predetermined manner, in response to the appearance of such a speed tendency indication wherein said variation monitoring means are arranged to produce a wheel speed increase tendency signal in response to a parameter value comparison indicating a tendency of the wheel speed to increase, said signal processing means are arranged to produce a first supplemental control signal serving to prevent brake pressure reduction in response to the presence of the wheel speed increase tendency signal, and said signal processing means are arranged to cause the first supplemental control signal to have an influence serving to maintain the brake pressure constant.

PLANT PATENTS

GRANTED SEPTEMBER 13, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,101

MINIATURE ROSE PLANT—SCHANBIRAN VARIETY

Earnest Schwartz, deceased, late of Kingsville, Md. (by Hazel E. Schwartz, executrix), assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Oct. 21, 1981, Ser. No. 313,663

Claims priority, application Netherlands, Oct. 22, 1980, ROO 1034

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of rose plant of the Miniature Class, substantially as herein shown and described, characterized particularly by a vigorous growth habit, the common formation of an attractive single bloom per stem having a distinctive pink and white tonality, and the formation of dark green foliage which covers the plant well having above average resistance to common garden diseases.

5,102

Patent Not Issued For This Number

5,103

PEACH TREE

Thomas O. Chamberlin, Sr., Visalia, Calif., assignor to H. P. Metzler & Sons, Inc., Del Rey, Calif.

Filed Nov. 23, 1981, Ser. No. 323,982

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—43 1 Claim

1. A new and distinct variety of peach tree substantially as illustrated and described and which is characterized by its freestone fruit having a dark red color with bright yellow flesh of very firm and crisp character with a skin which is tenacious to the flesh and which ripens for picking in the last week of August and after the patented O'Henry peach.

5,104

PLANT OF THE CACTACEAE PLANT FAMILY

Barnell L. Cobia, and Robert L. Cobia, both of Winter Garden, Fla., assignors to B. L. Cobia, Inc., Winter Garden, Fla.

Filed Apr. 21, 1982, Ser. No. 370,554

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—88 1 Claim

1. A new and distinct plant variety of the Cactaceae family as shown and described and which is distinguished by the following combination of characteristics:

1. An erect growth habit,
2. A bloom with perianth tube forming tepals that have an axially oriented crease that extends proximally from the distal end of the tepal, and
3. A bloom with perianth tube forming and laminating tepals that in the marginal blade areas are dominated by colors with a yellow hue.

PATENTS

GRANTED SEP. 13, 1983

ERRATA

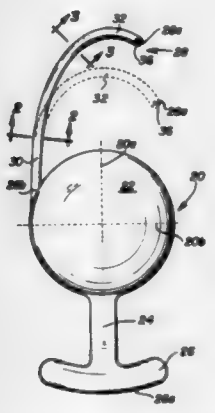
For CLASS	See PATENT NO.
604–070	4,403,609
604–061	4,403,610
604–073	4,403,611
139–102	4,403,630
192–058	4,403,757
425–589	4,403,810
254–275	4,403,845
052–309	4,403,980
057–298	4,404,003
148–011	4,404,025
501–139	4,404,029
210–138	4,404,093
548–423	4,404,139
423–035	4,404,169
521–029	4,404,346

PATENTS

GRANTED SEPTEMBER 13, 1983

GENERAL AND MECHANICAL

4,403,353
ANTERIOR CHAMBER IMPLANT LENS
Jerald L. Tennant, 806 Greentree La., Duncanville, Tex. 75116
Filed Jun. 25, 1981, Ser. No. 277,250
Int. Cl.[3] A61F *1/16, 1/24*
U.S. Cl. 3—13 **8 Claims**



1. An intraocular implant unit for installation and immobilization in a circularly bounded chamber of an eye of a patient comprising:

a lens disposed in a first plane for insertion within the chamber of the eye;

a limb integral with and extending outward from a margin portion of said lens to a second plane for placement within the chamber of the eye, said second plane being spaced apart from said first plane;

means extending from said limb and lying in said second plane for engaging a first portion of the chamber to thereby minimize torsional movement of said lens in the chamber;

a flexible strand having a first end connected to said lens in said first plane and a second end lying in said second plane; and

an elongated arcuate portion extending from said flexible strand second end and lying in said second plane for engaging a second portion of the chamber approximately opposite said first portion of the chamber, said elongated arcuate portion being disposed approximately opposite said means extending from said limb, and said flexible strand being doubly folded in a third plane approximately common to said first end of said flexible strand and to the ends of said elongated portion to flex in said third plane between said flexible strand first end and said elongated arcuate portion for varying the distance between said lens and said elongated arcuate portion, such that said elongated arcuate portion may engage said second portion of the chamber, said doubly folded portion not being engageable with eye tissue defining the chamber to thereby adjust the intraocular implant unit to the size of the chamber at a position between said second portion of the chamber and said lens and immobilize the implant unit in the chamber.

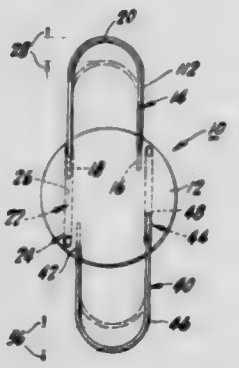
4,403,354
INTRAOCULAR LENS HAVING A FIXATION MECHANISM
Edgar A. Rainin, 2260 Gladstone Dr. #3, Pittsburgh, Calif. 94565
Continuation of Ser. No. 54,953, Jul. 5, 1979, abandoned. This application Sep. 28, 1981, Ser. No. 306,420
Int. Cl.[3] A61F *1/16, 1/24*
U.S. Cl. 3—13 **13 Claims**

1. An intraocular lens having a fixation mechanism comprising:

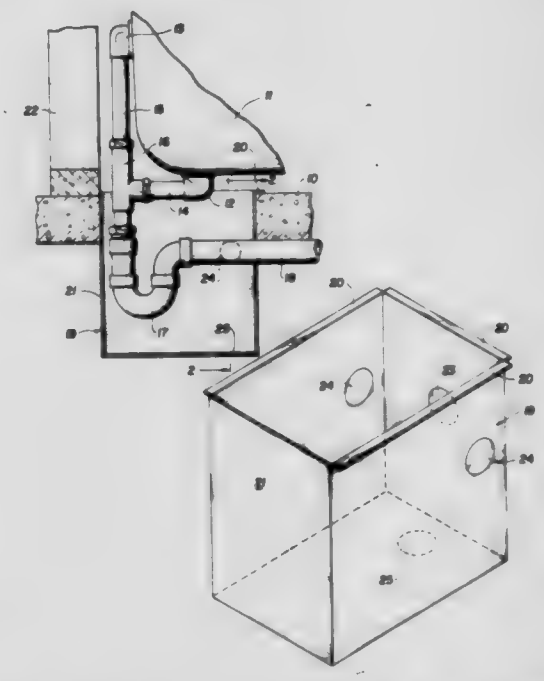
a. a lens portion;

b. a flexible appendage having one end portion, another end portion, and an intermediate portion between said one and another end portions, said flexible appendage being fixed to said lens portion at said one end portion; and

c. means for slidably engaging the other end portion of said flexible appendage to said lens portion, said intermediate appendage portion between said one end portion and said another end portion adapted to extend to the periphery of the iris.



4,403,355
BATHTUB DRAIN ENCLOSURE
William T. Petty, Rutherford, Tenn., assignor to Elbert L. Petty; Lloyd F. Petty, both of Rutherford and Robert M. Petty, Kenton, all of, Tenn.
Continuation-in-part of Ser. No. 175,580, Aug. 5, 1980, Pat. No. 4,338,688. This application Jun. 23, 1982, Ser. No. 390,999
Int. Cl.[3] E03D *11/00*
U.S. Cl. 4—191 **1 Claim**



1. An enclosure for tub drains adapted for mounting in a floor opening adjacent to a tub drain into which opening the tub drain projects, said enclosure comprising a rectangular open top metal box having vertical side walls which extend through the floor opening and a horizontal bottom wall disposed at an elevation substantially below the floor opening and floor, said enclosure forming a protected dry compartment for tub drain components including a drain trap, a rising vertical drain pipe connected with one end of the trap and a downstream horizontal drain pipe connected with and leading away from said trap, narrow marginal horizontal support flanges for said enclosure at the top thereof and at least on three contiguous side walls of the enclosure, said flanges being adapted to

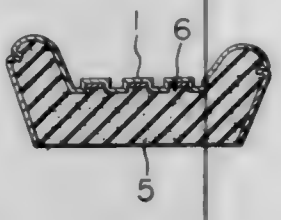
rest directly on a horizontal floor surface surrounding said floor opening to thereby form the sole support for the enclosure on the floor and within the floor opening, a single vertical axis knock-out disc in the horizontal bottom wall of the enclosure near one side wall thereof and remotely spaced from the opposing side wall and spaced substantially midway between the other opposing side walls of the enclosure, and three additional knock-out discs on three vertical side walls of the enclosure at a common elevation above said bottom wall, one pair of said side wall knock-out discs being axially aligned across the enclosure and having their common axis in a substantially vertical common plane with the axis of the bottom wall knock-out disc, and the third side wall knock-out disc being provided on the side wall of the enclosure nearest to said common vertical plane and being located midway between the pair of side walls having the knock-out discs on a common axis.

4,403,356

SEAT CUSHIONS

Muneharu Urai, Tokyo, Japan, assignor to Tachikawa Spring Co., Ltd., Japan

Filed Oct. 30, 1980, Ser. No. 202,346
Claims priority, application Japan, Nov. 13, 1979, 54-146034
Int. Cl.³ A47C *27/16, 27/14*
U.S. Cl. 5—481 **9 Claims**



1. A seat cushion comprising a seat surface covering including a seating portion of fabric material shaped to conform to a required surface configuration and seat side portions joined to said seating portion, and a mass of cushion providing material bonded by a bonding agent to said seating portion of said seat surface covering at a plurality of distributed points.

4,403,357

RECLINING FURNITURE

Hugo Degen, Seltisberg, Switzerland, assignor to Inpaver AG, Zug, Switzerland

Filed Nov. 18, 1980, Ser. No. 207,843
Claims priority, application Switzerland, Nov. 28, 1979, 10590/79
Int. Cl.³ A61G *7/00*
U.S. Cl. 5—66 **6 Claims**



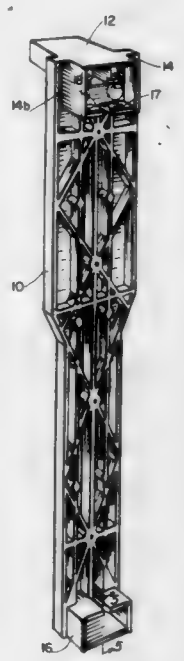
1. An article of reclining furniture comprising:
(a) a frame and an under-mattress movably mounted on the frame,
(b) the under-mattress including a back member, a foot member, a thigh member and an intermediate member,
(c) the pivotable back member having an inner end portion, an outer end portion, and a horizontal pivot axis between said end portions,
(d) the foot member being pivotable about a horizontal axis and mounted for displacement in the frame longitudinally of the article and being pivotally connected to one end of the thigh member,
(e) the intermediate member being connected to the inner end portion of the back member with a pivot joint and to an adjacent inner end portion of the thigh member with another pivot joint at the end of the thigh member opposite the pivotal connection to the foot member, and
(f) the pivot joints have horizontal pivot axes and freely suspend the intermediate member from said two inner end portions respectively so that the intermediate member is freely responsive to the positions of the back member and the thigh member.

4,403,358

END BAR

Ralph Burgin, West Point, Iowa, and Timothy C. Dadant, Hamilton, Ill., assignors to Dadant & Sons, Inc., Hamilton, Ill.

Filed Dec. 8, 1981, Ser. No. 328,602
Int. Cl.³ A01K *47/02*
U.S. Cl. 6—10 **1 Claim**



1. An end bar for a bee foundation frame that includes
(a) an upper rectangular socket which has about the same interior cross sectional area and configuration as the cross sectional area and configuration of the top cross bar that is to be inserted in the socket, and
(b) a lower rectangular socket which has about the same interior cross sectional area and configuration as the cross sectional area and configuration of the bottom cross bar that is to be inserted in the socket,
the improvement which comprises
(1) the lower horizontal portion of the upper socket and the upper horizontal portion of the lower socket each consisting of two sections that are spaced apart so as to leave an elongated opening between the inner facing edges thereof,
(2) each of the two facing sections of each socket being provided with a locking projection on the inner surface thereof in a position immediately adjacent to said elongated opening that extends between the sections,
(3) each of said two locking projections consisting of a pyramid having three upstanding triangular sides including a vertical backside that is aligned perpendicular to said elongated opening, an inner side that is parallel to and aligned with said elongated opening, and a sloping side which slopes toward the rear of the socket and upwardly from the section on which it is mounted,
whereby, when the end of a cross bar is inserted into one of said sockets and pressed inwardly over and past the sloping sides of said locking projections, the cross bar will be held in said socket by said locking projections.

4,403,359

METHOD FOR WASHING OUT THICKENING FROM PRINTED TEXTILE MATERIALS IN WEB FORM

Johannes Kutz, Tönisvorst, Fed. Rep. of Germany, assignor to Eduard Küsters, Krefeld, Fed. Rep. of Germany

Filed Jul. 10, 1981, Ser. No. 282,151

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1980, 3026349

Int. Cl.³ D06B *5/08, 15/04, 21/00*

U.S. Cl. 8—149.1 **4 Claims**

1. A method for washing out thickening from printed textile material in web form, comprising: applying a foam which contains in its foam-forming liquid, particularly water, only a wetting agent and optionally a foaming agent to the printed side of the textile material; working the foam into the textile material; steaming the textile material; applying a washing fluid to the backside of the textile material; and applying suction to the printed side of the textile material to remove said washing fluid.

4,403,360

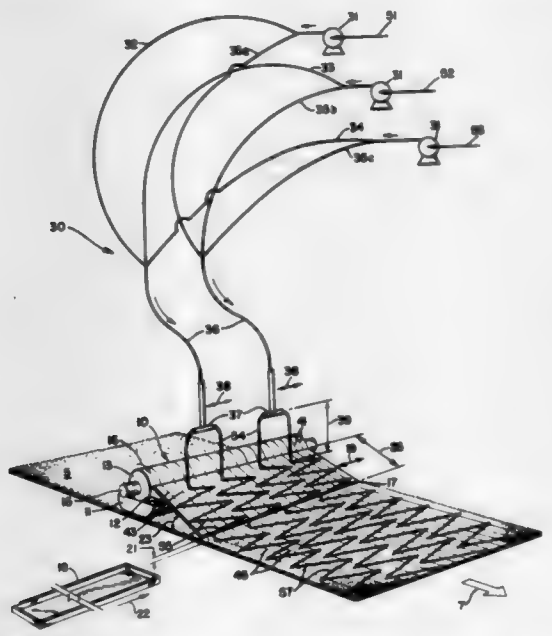
DISTRIBUTOR FOR GEL SYSTEMS TO FORM SHARPLY DELINEATED COLOR PATTERNS UPON TEXTILE SURFACES

Michael L. Finney, Charlotte, N.C.; Danny Moates, Cohutta, Ga., and Michael R. Brown, Louisville, Ky., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 2, 1981, Ser. No. 250,480

Int. Cl.³ D06B *1/06, 11/00*

U.S. Cl. 8—151 **4 Claims**



1. A method for continuously forming an off-carpet multi-gel pattern, before delivery thereof to a continuously moving carpet, and for forming a sharply delineated color pattern on flat, textured, or fiber-pile carpet surfaces, substantially without dyestuff migration that causes secondary and tertiary coloration, said process comprising:

A. forming a gel blanket on an inclined slide having a smooth surface and a selected angle of inclination;

B. forming a mixture of colorant gels, said gel blanket and said colorant gels being selected from the group consisting of immiscible gels and immobilized gels;

C. dropping said mixture onto said blanket through a selected drop height of approximately 1 inch to 10 inches to form said off-carpet multi-gel pattern upon said slide having a sliding length of approximately 10 inches to 25 inches;

D. selectively and individually oscillating said mixture during said dropping;

E. selectively oscillating said blanket during said dropping to form said off-carpet multi-gel pattern;

F. viewing and judging said multi-gel pattern on said slide, said off-carpet multi-gel pattern being discarded until said pattern is judged to be substantially perfect; and

G. delivering said multi-gel pattern onto said carpet through a selected delivery height to form said sharply delineated color pattern on said carpet.

4,403,361

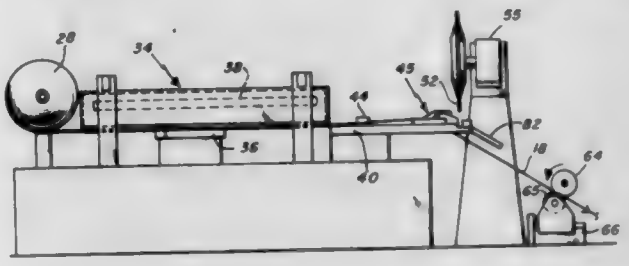
TECHNIQUES FOR STRIPPING A SLEEVE FROM RESIN IMPREGNATED FIBROUS ROVINGS

Raymond M. Bowler, Salem, N.H., and Jules N. Allard, Tyngsboro, Mass., assignors to Bush Universal, Inc., Woburn, Mass.

Filed Feb. 20, 1981, Ser. No. 236,570

Int. Cl.³ A63D *9/00*

U.S. Cl. 12—142 R **10 Claims**



1. A method for stripping an encasing sleeve from resin-impregnated fiber rovings comprising:

preheating the material to decrease the viscosity of the resin;

passing the sleeve over a separator tube while passing the fiber rovings through the separator tube, the separator tube having a generally circular, ring-like inlet whereby the rovings are confined into a generally circular, cross-sectional configuration and the sleeve is spread to a generally circular cross-sectional configuration;

slitting the sleeve at a location downstream of the inlet to the separator tube and then separating the sleeve from the roving by drawing the sleeve in a different direction than that of the roving;

said drawing of said slit sleeve comprising the sole means for advancing the material.

4,403,362

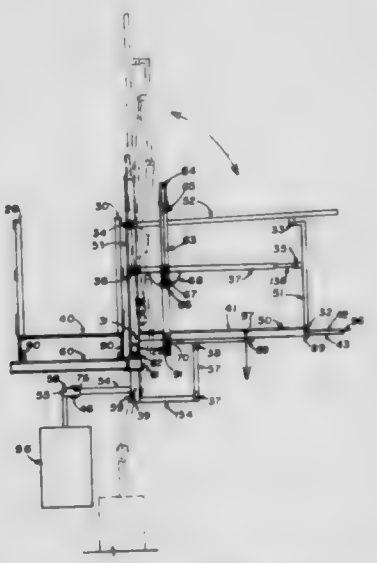
BULK LOADING FACILITY HAVING A DROP WAY

Richard Durrant, 315 London Rd., Sarnia, Ontario, Canada

Filed Jan. 2, 1981, Ser. No. 222,007

Int. Cl.³ E01D *1/00*

U.S. Cl. 14—71.1 **34 Claims**



1. Improvement in a bulk loading facility having a fixed deck having a drop way projecting from and hinged to said deck so that it can be raised or lowered for loading, said drop way

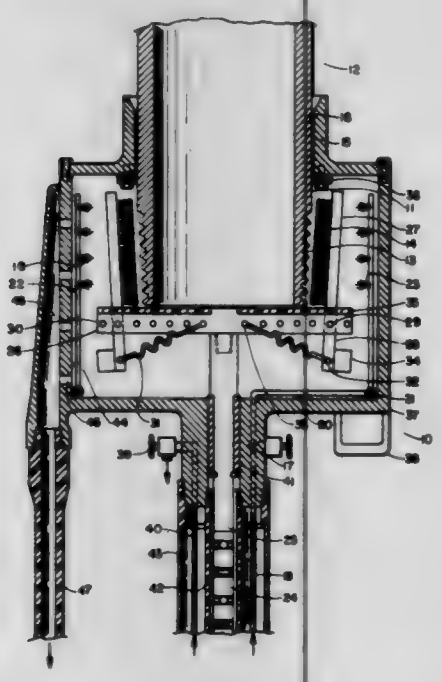
having an extendible deck slideably supoorted from and attached to the outboard end thereof, said drop way having a handrail assembly, said improvement comprising means for operating the extendible deck including a lever type mechanism having a hand lever and a locking mechanism, said lever having a fulcrum affixed to said handrail assembly, the lower end of said lever being affixed to said deck for actuating same, said locking mechanism being operative upon release of said lever to lock said deck in position.

4,403,363

PIPE THREAD CLEANER

John L. Hess, Rte. 1 Box 87B-4, Carencro, La. 70520

Filed Sep. 4, 1980, Ser. No. 184,081
Int. Cl.[3] B08B *9/02*
U.S. Cl. 15—104.04 9 Claims



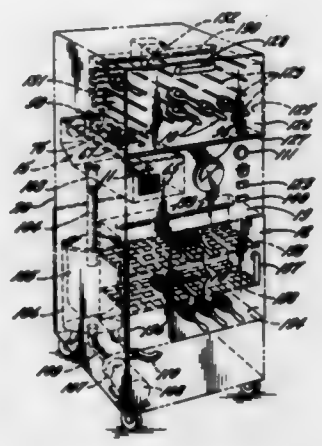
1. An apparatus for cleaning thread on a pipe comprising a portable housing for positioning over an end of said pipe; said housing having a first end and a second end with said first end having an opening for receiving the pipe end and pipe threads; said housing including a rotatable rigid shaft mounted to the second end concentrically with the opening in the first end, a plurality of radial arms of said rigid shaft positioned around its periphery, an aperture in each of said radial arms suitable for receiving a pivot pin, a pivot pin mounted in the aperture of each radial arm, brushes positioned radially with respect to the pipe threads and pivotally mounted on said pivot pins so as to allow movement of said brushes between a position of contact with the threads and a position of no contact, a spring attached to each of said brushes and to its respective radial arm so as to cause said brushes to lose contact with said threads when said rigid shaft is not rotating, and a weight attached to each of said brushes so as to cause, when said rigid shaft is rotated, a centrifugal force sufficient to overcome said spring to thereby force said brushes into contact with said threads; a flexible shaft exterior of said housing for driving said rigid shaft; motor means for driving said flexible shaft; said motor means being remote from said housing such that movement of said housing does not require the movement of said motor means; said housing including means for supplying cleaning fluid to said threads; and said housing further including means for recovering substantially all of said cleaning fluid.

4,403,364

AUTOMATIC BRUSH CLEANER

Robert W. Schroeder, Bensenville, Ill., assignor to RoMark Technology, Inc., Itasca, Ill.

Filed Jan. 21, 1982, Ser. No. 341,272
Int. Cl.[3] A46B *13/04*
U.S. Cl. 15—4 18 Claims



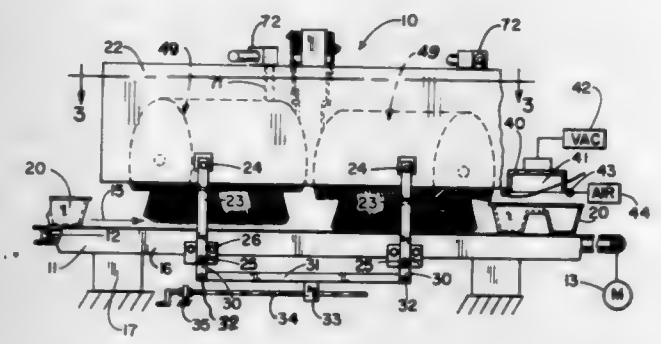
1. In an apparatus for cleaning brushes, the combination of, a carrier member adaped to releasably support and carry a brush to be cleaned, drive mechanism operable to move said carrier member and the supported brush along a predetermined path, said carrier member being turnable about the line of said path as the carrier member moves along the path, a cleaning member disposed along said path for engagement with the bristles of a brush supported by said carrier member and rotatable about an axis generally paralleling said line, power means for rotating said cleaning member, and means disposed along said path and engageable with one of said members, said means being operable to position said one member whereby the bristles of the brush face said cleaning member as the carrier member approaches the latter and to oscillate said one member and hence to oscillate the brush relative to the cleaning member as the bristles of the brush are engaged by the cleaning member.

4,403,365

BRUSH ASSEMBLY FOR CLEANING BREAD PANS

Douglas R. Hanson, 1720-9th Ave. South, Anoka, Minn. 55303

Filed Sep. 28, 1981, Ser. No. 306,215
Int. Cl.[3] A47L *15/39;* A46B *13/02*
U.S. Cl. 15—56 11 Claims



1. A cleaning apparatus for a pan to be cleaned, and wherein such pan is movable by a conveyor, said cleaning apparatus comprising a frame, said pan to be cleaned being moved generally in a plane along said frame from a first end to a second end, at least one brush means mounted on said frame and having elongated bristles extending outwardly in position to engage a pan moving along the plane, means to rotate said brush means about an axis so that the bristles engage a pan moving in the plane and move material from a pan, and power means to oscillate the brush means toward and away from a pan being moved in the plane at the same time as the brush means rotates,

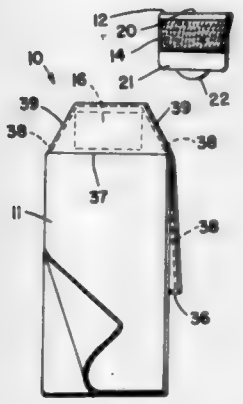
said means to oscillate causing the bristles to be moved in longitudinal direction so the ends of the bristles are moved against the pan intermittently as the brush means rotates.

4,403,366

TOWEL AND MOUNTING METHOD AND MEANS

Harold J. Lucke, 930 Crestview Dr., Millbrae, Calif. 94030

Filed Sep. 15, 1981, Ser. No. 302,676
Int. Cl.[3] A44B *21/00*; A47K *10/02*
U.S. Cl. 15—209 R 2 Claims



1. A removable towel means for mounting on the clothing, accessories or the like of a user comprising in combination:

(a) a support member comprising a thin flat plate member made of solid material and formed into a U-shaped clip having a bight portion and converging legs in side view adapted to be mounted on said clothing, accessories or the like of said user against removal by manual forces exerted thereon in outward and downward directions only;

(b) a gripping means rigidly affixed to the exterior surface of one of said legs of said support member and including a fabric backing strip having a plurality of exposed flexible hooking elements on the free side thereof projecting from said support member when said support member is mounted on the clothing, accessories or the like of the user,

(c) a length of toweling having side and end edges including an integral packet formed therein, and

(d) a receiver means rigidly affixed to said length of toweling and including a fabric backing strip having a plurality of flexible loop elements on the free side thereof adapted to receive and hold said plurality of flexible hooking elements of said gripping means when applied thereto under manual pressure, said gripping means being adapted to be disengaged from said receiving means by manual pulling in outward and downward direction,

(e) wherein a gripping means including a plurality of projecting flexible hooking elements is affixed to one interior surface of said integral pocket adjacent the opening thereof and a receiving means including a plurality of flexible loop elements adapted to receive said hooking elements is affixed to the other interior surface of said integral pocket in opposition to said gripping means.

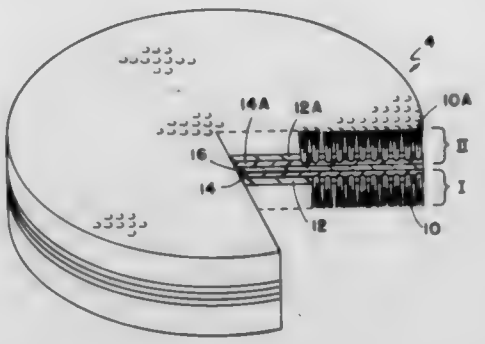
4,403,367

YARN PAD

Robert S. Brown, and John H. O'Neill, Jr., both of Spartanburg, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Aug. 17, 1981, Ser. No. 293,723
Int. Cl.[3] B24D *13/14, 13/20*
U.S. Cl. 15—230.12 12 Claims

1. A circular yarn pad having two composite layers for use on a floor cleaning machine, each of said layers comprising a flat primary substrate material, a plurality of yarn segments having a major proportion of each segment protruding from a first face of said primary substrate material in fixed relation thereto, a secondary backing material secured to a second face of said primary backing material, said second face being opposite from said first face, wherein said layers are securely joined with said backing materials in opposed relation and said first



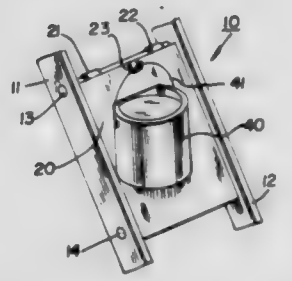
faces of said substrate materials directed in mutually opposite directions.

4,403,368

PAINT CAN SUPPORT FOR LADDERS

Orville R. Harper, 1410 6th Ave., Neptune, N.J. 07753

Filed Feb. 10, 1982, Ser. No. 347,573
Int. Cl.[3] B44D *3/14*
U.S. Cl. 15—257 R 6 Claims



1. A paint pail holder for a ladder having a given spacing between the sides of said ladder, and a given spacing between the rungs of said ladder; said paint pail holder comprising a rigid support sheet; said support sheet being narrower than said given spacing between the sides of said ladder, and being longer than said given spacing between the rungs of said ladder; at least one hook extending from the upper rear of said support sheet to hook over one of the rungs of said ladder; a trapezoidal section cut out of the central portion of said support sheet to fit between said sides and two adjacent rungs of said ladder; said trapezoidal section having a base portion equal in length to the diameter of a given pail of paint; said trapezoidal section having a heigth equal to the height of said given pail of paint; and said trapezoidal section having a top portion of less length than that of said base portion; to accomodate and hold said given pail, rigid within said trapezoidal section, at an angle with respect to said support sheet, in a horizontal plane.

4,403,369

INTERNAL CADDY CLEANING APPARATUS

Peter T. Lin, East Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 26, 1981, Ser. No. 314,906
Int. Cl.[3] A47L *5/14*
U.S. Cl. 15—304 10 Claims

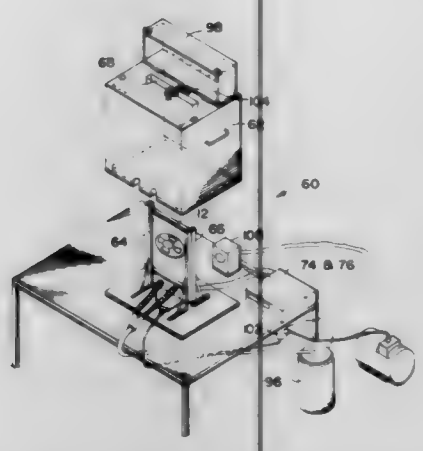
1. An apparatus for cleaning an enclosure formed by a pair of spaced panels defining an edge opening in communication with a cavity comprising:

(A) a housing for receiving said enclosure;

(B) means in communication with the external surfaces of said panels for causing excitation thereof;

(C) means coupled to said edge opening for directing a jet of pressurized fluid into said cavity;

and



(D) means subject to engagement with said edge opening for connecting said cavity to a vacuum chamber for removing dislodged foreign matter from said cavity.

4,403,370

ARRANGEMENT FOR CLEANING BAND-LIKE DATA CARRIERS

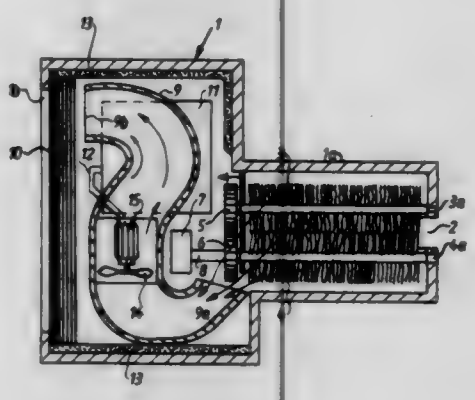
Heinz Rapp, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Aug. 21, 1981, Ser. No. 295,093

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1980, 3033315

Int. Cl.³ A47L *9/28*

U.S. Cl. 15—308 **8 Claims**



1. An arrangement for cleaning band-shaped data carriers, particularly photographic films, comprising at least one brush element arranged to move relative to a data carrier so as to remove dirt particles from the latter; aspirating means for aspirating the thus removed particles; a high frequency electric motor driving said aspirating means and having a frequency which is a multiple of that of an electric network; a frequency amplifier arranged to connect said electric motor with the electric network; and an S-shaped tubular member having a central portion, said aspirating means and said high-frequency electric motor being located in said central portion of said S-shaped tubular member.

4,403,371

DEBRIS COLLECTING DEVICE

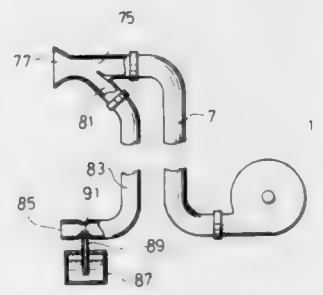
Katsumi Kiyooka, Warabishi, Japan, assignor to Komatsu Zenoah Co., Tokyo, Japan

Filed Apr. 28, 1981, Ser. No. 258,513

Claims priority, application Japan, May 7, 1980, 55-059282; May 7, 1980, 55-059481; May 7, 1980, 55-061450[U]; May 7, 1980, 55-061451[U]; May 7, 1980, 55-061452[U]; May 7, 1980, 55-061453[U]; Jun. 13, 1980, 55-079109; Jun. 13, 1980, 55-081650[U]; Jun. 13, 1980, 55-081651[U]; Jun. 30, 1980, 55-090643[U]; Aug. 9, 1980, 55-079110; Aug. 9, 1980, 55-108822[U]

Int. Cl.³ A47L *5/18*

U.S. Cl. 15—328 **1 Claim**



1. In a debris collecting device of the type having a portable air blower unit, a blower conduit connected for directing the air stream from said blower to an air stream passage, and a debris intake conduit connected to said air stream passage such that air in said debris intake is entrained by said air stream in said air stream conduit whereby debris may be lifted from a ground surface into said intake conduit, said air stream passage having an exhaust end to which may be removably attached a debris collecting container, the improvement comprising an injection port for connection with a source of chemicals, said port opening into said debris intake conduit for injecting chemicals into said air stream, such that said debris collecting device may be converted to a chemical applicator upon removal of said collecting container.

4,403,372

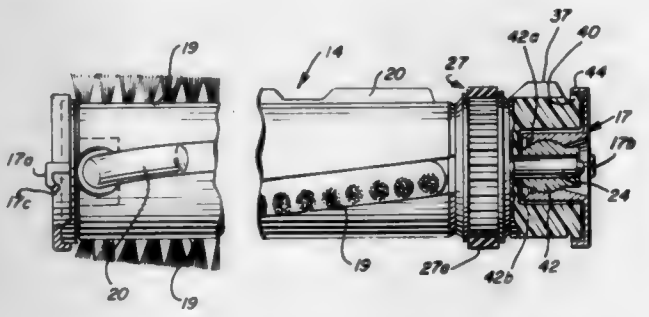
VACUUM CLEANER BRUSH HAVING STRING GUARD MEANS

James W. Keane, White Bear Lake, and Erwin E. Nordeen, St. Paul, both of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Feb. 22, 1982, Ser. No. 351,233

Int. Cl.³ A47L *9/00*

U.S. Cl. 15—339 **17 Claims**



1. In a vacuum cleaner brush having a cylindrical support carrying brush tufts and defining longitudinally opposite ends, and bearing means at said opposite ends for journaling the support for rotation about its longitudinal axis, the improvement comprising

a string guard at said opposite ends for preventing movement of string on said support outwardly to said bearing means, said string guard means comprising means at said ends defining spaces wherein string received therein has a lower energy level than that of string adjacent thereto whereby the tendency of string picked up by the rotating

brush to seek the lowest available energy level causes the string to be effectively captured in said spaces.

4,403,373

HINGE FITTING FOR FOLDABLE LADDERS

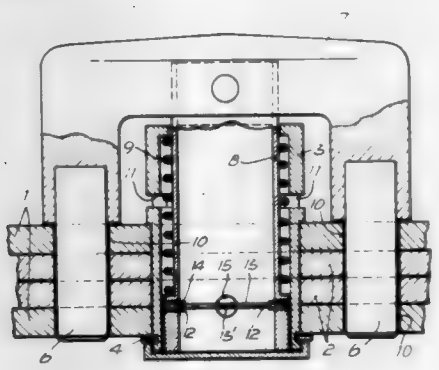
Walter Kümmerlin, In den Fressackern 6, D-7120 Bietigheim-Bissingen, Fed. Rep. of Germany

Filed Feb. 4, 1981, Ser. No. 231,555

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005692; Feb. 15, 1980, 3005693

Int. Cl.³ E05D *11/10*

U.S. Cl. 16—327 **22 Claims**



1. In a hinge fitting for foldable ladders, having two fitting parts connected with each other in flange regions of said fitting parts by a hollow hinge pin and having a locking device which comprises at least one locking bolt, mounted for swinging parallel to the hinge axis and movable by means of a handle from an interlocking position into an unlocked position and openings formed in the flange regions of the fitting parts, said at least one locking bolt being insertable into the openings in predetermined angular positions of the fitting parts relative to each other, at least one of said openings is connected with a slot in one of said flange regions which extends from said one opening over a path which is concentric to the hinge axis, the improvement wherein

the width of said slot measured in radial direction is less than the width measured in radial direction of the opening which is connected with the slot,

the locking bolt has a constriction in a section thereof, in the interlocking position said constriction is at least partially longitudinally outside the openings of the two flange regions and is alignable by a longitudinal displacement of the locking bolt with said one flange region with the slot, said constriction having a shape which permits a relative movement within the slot in longitudinal direction of the slot.

4,403,374

MEANS FOR CONTROLLING DENSITY OF NON-WOVEN FIBER WEBS

Dennis E. Wood, Fairport, N.Y., assignor to Rando Machine Corporation, Macedon, N.Y.

Filed Jun. 17, 1981, Ser. No. 274,521

Int. Cl.³ D01G *15/40*

U.S. Cl. 19—105 **9 Claims**

1. Apparatus for forming a non-woven fiber mat, comprising

a fiber feed chute having in its upper end a surge section for receiving air-borne fibers from a supply thereof, and in its lower end a formation section for forming fibers into a predetermined configuration,

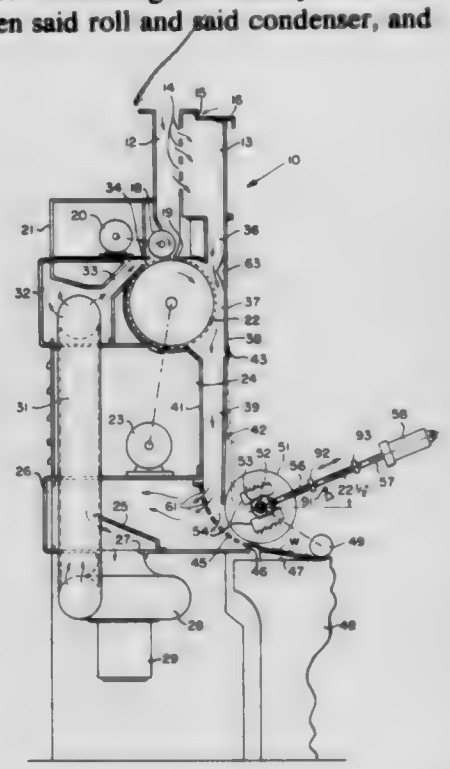
means intermediate the ends of said chute for feeding fibers downwardly from said surge section to said formation section,

a metering roll mounted to rotate adjacent the lower end of said chute, and for limited reciprocable movement transversely thereof,

a stationary condenser mounted beneath an opening in the lower end of said chute and having thereon a concave surface extending beneath said roll to form therewith a nip which communicates with said opening in the chute,

said roll being operative during rotation thereof to draw fibers from said chute and to compress them into a non-woven mat as they pass through said nip and between said roll and the concave surface on said condenser,

sensing means for monitoring the density of the fiber mat passing between said roll and said condenser, and



means for adjusting the density of said mat when said density differs from a predetermined value,

said adjusting means including means for positively moving said roll toward said condenser, when said mat density falls below said predetermined value, and to move said roll away from said condenser, when said mat density exceeds said predetermined value.

4,403,375

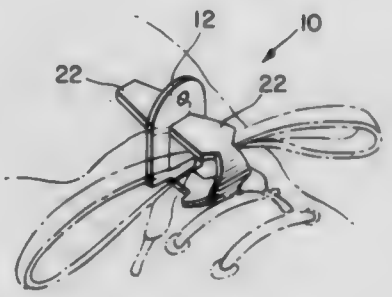
TYING DEVICE

Ronald D. Blum, 838 Orchard Rd. SW., Roanoke, Va. 24014

Filed Jul. 6, 1982, Ser. No. 395,621

Int. Cl.³ F16G *11/00*; B65D *63/00*

U.S. Cl. 24—16 PB **6 Claims**



1. A tying device comprising:

(a) a resilient, flexible material having a generally flat configuration with a base portion defining a slot therethrough and a tongue portion extending from the base portion configured for insertion into the slot;

(b) said tongue portion including two portions, an intermediate portion having a plurality of wedge portions arranged contiguous with one another, and a tail portion extending from a wedge portion distal from said base portion, said tail portion have a width less than the width of the slot defined in the base portion for facilitating insertion of the tail portion therethrough;

(c) at least one of said wedge portions defining a grasping

member extending from the surface thereof for grasping material to which said device can be secured;

(d) adjacent wedge portions being crimped therebetween to provide a tear line where the remaining portion of the tongue portion can be torn away once the device is locked in place, said wedge portion distal from said base portion is a distal wedge portion and includes a crimped portion at its juncture with the tail portion to provide a tear line where the tail portion can be torn away from the remaining portion of the device; and

(e) said wedge portions having one end with a width less than the width at the opposite end, the maximum width of said wedge portion being less than the length of the slot but greater than the slot width to permit passing of said wedge portions through the slot while preventing retraction when oriented such that the maximum width of a wedge portion engages the adjacent surfaces of the base portion defining the slot.

4,403,376

CENTRAL BELT LOCK, PARTICULARLY FOR AIRCRAFT SAFETY BELT

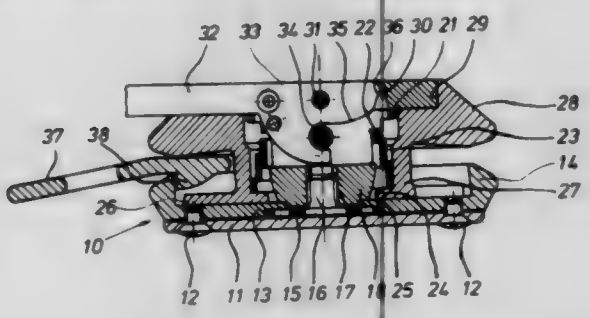
Armin Palloks, Heist, Fed. Rep. of Germany, assignor to Autoflug GmbH, Rellingen, Fed. Rep. of Germany

Filed Jan. 28, 1981, Ser. No. 229,130

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1980, 3047664

Int. Cl.³ A44B *11/25*

U.S. Cl. 24—205.17 **4 Claims**



1. A central strap lock, particularly for aircraft safety belts, for simultaneous releasable connection of a plurality of straps which have respective connection tongues which in turn are provided with respective hook-shaped connection devices, said central strap lock comprising in combination:

a lock housing having a base portion and a hook-shaped bead therearound;

a hub secured to said housing, that end of said hub secured to said housing being provided with a tapering portion, the other end of said hub comprising a cylindrical part;

a disc arranged on said hub and having a portion thereof located across from said bead of said housing, said disc being shiftable against spring action, with said tapering of said hub essentially coinciding in length with the shifting path of said disc, said disc including an opening which encircles said hub, said opening having a diameter corresponding essentially to the diameter of said cylindrical part of said hub; and

a latching device associated with said disc, said latching device including a hook-like projection that engages a portion of said hub when said latching device is moved to a horizontal position locking said tongues in place, and said latching device also being movable into at least one other position which permits insertion of said connection tongues between said disc and said housing, said disc being tiltable around said tapering of said hub during said at least one other insertion position of said latching device.

4,403,377

FASTENING DEVICE

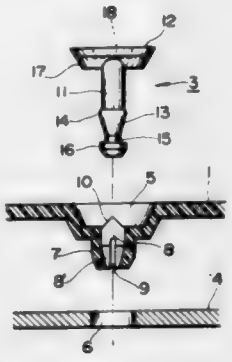
Akira Mizusawa, Fujisawa, Japan, assignor to Nifco Inc., Tokyo, Japan

Filed Dec. 15, 1980, Ser. No. 216,100

Claims priority, application Japan, Dec. 18, 1979, 54-174290[U]

Int. Cl.³ F16B *13/06*

U.S. Cl. 24—217 R **10 Claims**



1. A fastening device comprising a fastening base and a wedge member, said fastening base being provided with a radially expendable engaging leg vertically extended downwardly from the lower surface of said fastening base and adapted to be inserted into a perforated hole in a panel and with an axially converging insertion hole extending vertically along the axis of said engaging leg downwardly from the upper surface thereof to a reduced neck portion at the entering end of said leg, and said wedge member being provided with a shank portion adapted for pre-assembled insertion into said insertion hole and with a flange-shaped head portion formed at the upper end of said shank portion, whereby the fastening of said fastening base to the panel is accomplished by inserting said engaging leg into the perforated hole of the panel and then forcing said shank portion of said wedge member by further advancement into said insertion hole thereby causing said engaging leg to be initially radially expanded within the perforated hole, said wedge member shank portion further comprising an enlarged diameter leading end portion opposite to said head portion and followed by a first shank portion of reduced diameter substantially no greater than the smallest unexpanded diameter defined by said axially converging insertion hole neck portion for normally retaining said wedge member pre-assembled and non-removably engaged with and partially axially advanced with respect to said fastening base with said engaging leg in a non-expanded condition, said neck portion embracing said first shank portion with said entering end portion extending beyond said leg entering end as a pilot, and a second enlarged diameter portion following said first shank portion and followed by a second shank portion of diameter greater than said smallest unexpanded diameter of said axially converging insertion hole, said second shank portion contacting and radially expanding said engaging leg within said perforated hole upon further axial advancement of said wedge member.

4,403,378

PIPE CLAMP MEANS

Arnold B. Engman, Des Moines, Iowa, assignor to EMCO Industries, Inc., Des Moines, Iowa

Filed Dec. 7, 1981, Ser. No. 327,899

Int. Cl.³ B65D *63/00*

U.S. Cl. 24—277 **1 Claim**

1. A clamp for securing telescopic positioned pipe sections together, comprising,

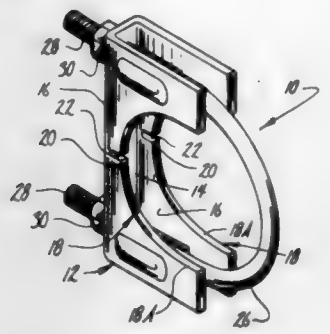
a saddle portion being U-shaped in cross-section and having a straight back portion, and opposite side portions,

each side portion having semi-circular openings adapted to engage a portion of a pipe perimeter,

a U-shaped bolt means having opposite ends and being posi-

tioned to form a pipe-receiving aperature with said semi-circular openings,

said back portion having apertures to receive the ends of said U-shaped bolt means, tightening means on the ends of said bolt means to draw said U-shaped bolt means towards said saddle portion,



a radially disposed slot having parallel opposite sides and an arcuate bottom, said slot being located at the apex of each of said semi-circular openings to facilitate the deflection of said back portion and to facilitate the conformation of said semi-circular openings to pipe sections extending through said pipe-receiving aperture as said tightening means draws said U-shaped bolt means towards said saddle portion to partially collapse said slot.

4,403,379

CHAIN FOR A TENTER FRAME WITH TENTERING CLAMPING AND NEEDLE COMBINATION LINKS

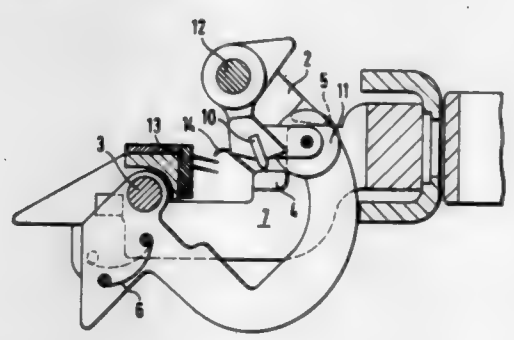
Karl Grafen, Wuerselen, Fed. Rep. of Germany, assignor to H. Krantz GmbH & Co., Aachen, Fed. Rep. of Germany

Filed Aug. 24, 1981, Ser. No. 295,709

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1980, 3033271

Int. Cl.³ D06C *3/04*

U.S. Cl. 26—95 **5 Claims**



1. A chain structure for a tenter frame for substantially vertical chain reversal, comprising chain link means, intermediate support means (7) having a first free end and a second end secured to said chain link means, arched bail means (2), first lower journal means (3) extending below and in parallel to a margin of a fabric web for journaling a lower end of said bail means (2) to said first free end of said intermediate support means (7) for tilting said bail means between a working position and a rest position, tenter hook means (10), second upper journal means (12) extending above and in parallel to a margin of a fabric web for journaling said tenter hook means (10) to said bail means (2) at the upper free end thereof, wherein said arched bail means (2) is tiltable about said lower journal pin (3) in such a manner that a plane extending through both journal means (3, 12) intersects a fabric web at a given spacing from the respective margin of a fabric web (1), said tentering hook means (10) producing on the fabric margin a clamping line which is located within said given spacing, said chain structure further comprising needle means, needle bar means (13), for operatively supporting said needle means, said needle bar means being journaled to said first lower journal means (13) for tilting said needle bar means between an inoperative position and an operative position in which the needle penetrates a margin of a fabric web, said arched bail means (2) being tiltable into said rest position in which said plane extending through both journal means passes outside a fabric web for permitting said tilting of the needle bar means into an operative position in which said needle means penetrate a fabric web (1).

4,403,380

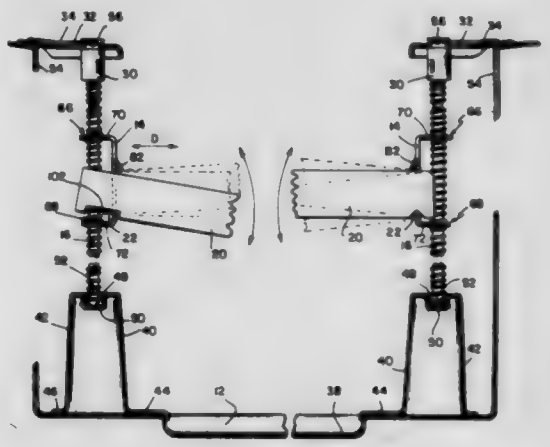
CASKET BED

David A. Hazelett; Charles B. Shaw, both of Lynn, and Paul W. McCombs, Connersville, all of Ind., assignors to Astral Industries, Inc., Lynn, Ind.

Filed Feb. 11, 1982, Ser. No. 348,094

Int. Cl.³ A61G *17/00*

U.S. Cl. 27—12 **14 Claims**



1. A vertically adjustable casket bed comprising:

a pair of vertically extending, threaded rods, one rod situated at each end of the casket,

a pair of laterally extending frame ends, each frame end comprising a U-shaped channel member having a pair of apertures surrounding one of the vertically extending rods, one such aperture being situated in each leg of the U-shaped channel forming the frame end, at least one aperture directly engaging the threads of a corresponding rod, each frame end having two additional apertures situated in the bight of the U-shaped channel for receiving side members, each additional aperture including an edge protruding from the plane of the bight, and

a pair of longitudinally extending side members, the ends of each side member being lockingly received in one of the additional apertures in each frame end, at least one end of each longitudinally extending side member including means for permitting longitudinal variation of the distance between the pair of frame ends.

4,403,381

METHOD FOR THE MANUFACTURE OF LAYER CAPACITORS

Saad Almahmoud, Zeitlarn; Hubert Kraus, Regensburg, and Martin Riepl, Poikam, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 16, 1981, Ser. No. 254,593

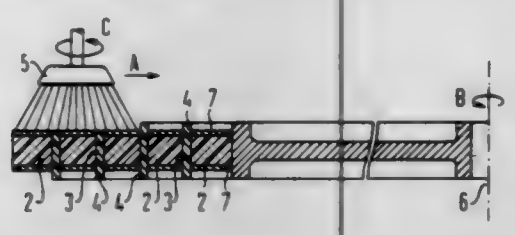
Claims priority, application Fed. Rep. of Germany, May 7, 1980, 3017507

Int. Cl.³ H01G *4/30*

U.S. Cl. 29—25.42 **3 Claims**

1. In a method for the manufacture of layer capacitors which comprises winding a plurality of parent capacitors on a drum with one capacitor on top of the other, separating the parent capacitors from one another by wound-in separating layers of plastic material which protrude from face surfaces of the parent windings, completely covering the faces of the thus-formed starting capacitor with a sprayed metal layer, removing the parts protruding over the sprayed metal layers of the separating layers before dividing the thus-formed starting capacitor, opening said starting capacitor by at least one radial cut, and

dividing said starting capacitor into single parent capacitors, the improvement comprising employing as said separating layers foils of celluloseaceto-butyrate which, after the completion of the starting capacitor are brittle, at least in the regions



which protrude from the sprayed metal layer, brushing away said brittle protruding parts of the separating layers by means of a rotating cup-type brush, and removing the separating layers after the division into single parent capacitors.

4,403,382

PROCESS FOR MANUFACTURING ELECTROMECHANICAL TRANSDUCERS USING AT LEAST ONE POLYMER FILM

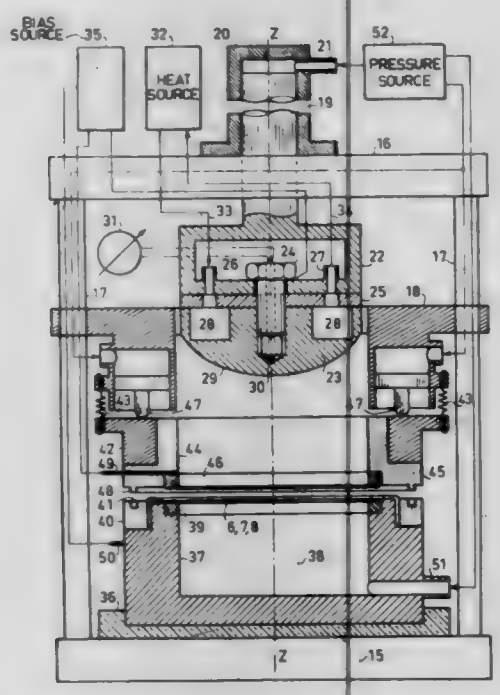
Hugues Facoetti; Patrick Petit; Philippe Menoret; Francois Micheron, and Pierre Ravinet, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 2, 1981, Ser. No. 239,643

Claims priority, application France, Mar. 4, 1980, 80 04832

Int. Cl.³ H04R *17/00*

U.S. Cl. 29—25.35 **8 Claims**



1. A process for manufacturing electromechanical transducers using at least one polymer film which is subjected to shaping, said process comprising:

providing two faces of a flat structure comprising said film with similar metalizations intended to form electrodes; and

shaping said flat structure with metalizations thereon to produce a self-supporting and nondevelopable structure by applying a polarizing voltage to said metalizations while carrying out bidirectional stretching so that the mechanical stress permanently increases the surface area of the metalizations carried by said structure.

4,403,383

ELECTRICAL LEAD TRANSFER UNIT

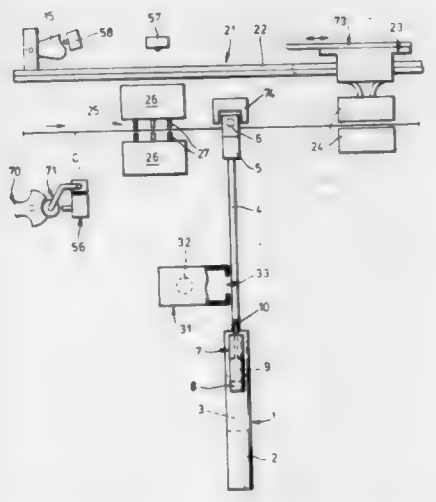
Paul E. Dewhurst, and John C. Collier, both of Southport, England, assignors to BICC PLC and Burndy Corporation, Norwalk, Conn.

Continuation of Ser. No. 54,971, Jul. 5, 1979, abandoned. This application Jul. 27, 1981, Ser. No. 287,529

Claims priority, application United Kingdom, Jul. 4, 1978, 28714/78; Dec. 1, 1978, 46880/78

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—33 M **10 Claims**



1. For use in transferring an electrical lead from a measuring, cutting and stripping machine having a cutting and stripping head and a clamping head movable axially of a wire to be cut into separate leads from said cutting and stripping head to a lead measuring position spaced from said cutting and stripping head to a terminating machine having a drive shaft, a transfer unit comprising

(a) a fluid-operated piston working in a cylinder;

(b) an electrical lead gripping device which is carried by the piston and which is caused to be reciprocated by the said piston in a rectilinear direction substantially parallel to the direction of motion of the said piston and transverse to the length of an electrical lead being measured, cut and stripped in the measuring, cutting and stripping machine between a first position at which the gripping device grips an electrical lead being measured, cut and stripped in the measuring, cutting and stripping machine and a second position transversely spaced therefrom at which an electrical termination can be secured by the terminating machine to a stripped end of an electrical lead carried by the gripping device while another electrical lead is being measured, cut and stripped by the measuring, cutting and stripping machine;

(c) means for ejecting an electrical lead from the gripping device after an electrical termination has been secured to one of the ends of the electrical lead, which automatic ejection means comprises a spring-loaded pneumatically operated piston working in a cylinder, a source of air pressure, a normally closed valve by which said source of air pressure is connected to said piston, and a cam adapted to be rotatably driven by the drive shaft of the terminating machine, which cam controls the normally closed valve and is so shaped that after a termination has been secured to an electrical lead, it opens the valve to effect the operation of the piston against the action of its spring to push the terminated electrical lead out of the gripping device; and

(d) a control system for effecting automatic reciprocation of the gripping device between said two positions and operation of the ejection means in synchronisation with the cycles of operations of the measuring, cutting and stripping machine and of the terminating machine whereby a lead is drawn through the cutting and stripping head while the lead gripping device is removed from its first position.

4,403,384

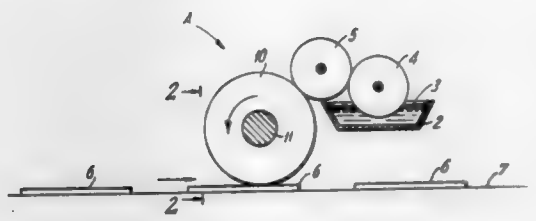
APPLICATOR FOR DIRECT ROLL COATING

Ozzie Fogle, Orangeburg, S.C., assignor to Champion International Corporation, Stamford, Conn.

Division of Ser. No. 156,818, Jun. 5, 1980. This application Jan. 12, 1981, Ser. No. 223,950

Int. Cl.[3] B21B *31/08*; B60B *7/04*

U.S. Cl. 29—130 4 Claims



1. An applicator for direct roll coating of a surface of a textured panel, said surface of said textured panel defining a plurality of contours, said applicator comprising:

an elongated central core member of annular cross-section;

a layer of fibrous pliable material disposed on said central core member, said layer of fibrous pliable material being of web construction and held together by a binding adhesive, said fibrous layer having a radial thickness of sufficient dimension to enable said fibrous layer to assume the contours of said textured panel without exceeding the elastic limit of said fibrous layer;

a protective tube member of pliable impervious polyethylene material disposed around said layer of fibrous web material, said tube member having a smaller radial thickness than said layer of fibrous material; and

a layer of woven material disposed over said protective tube member, said layer of woven material being of smaller radial thickness than the radial thickness of the layer of fibrous material, whereby said tube member and said layer of woven material are urged by said fibrous layer into continuous rolling contact with said contours on said surface of said textured panel.

4,403,385

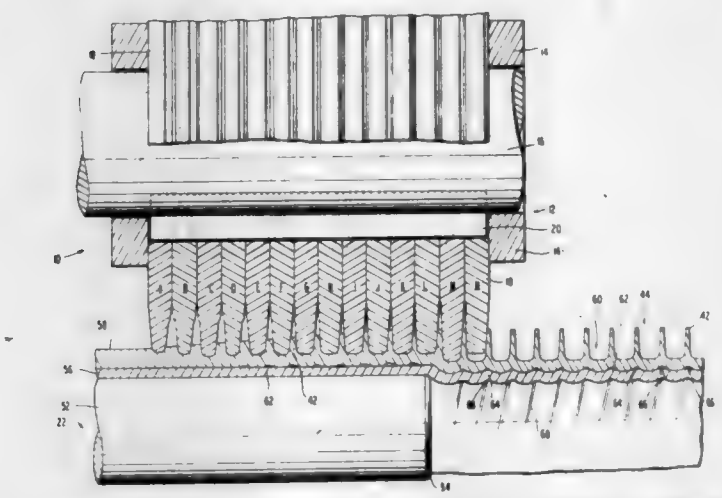
PROCESS OF PREPARING A DOUBLE WALL HEAT EXCHANGER

Kenneth L. Kirk, Cranston, R.I., assignor to Amtrol Inc., West Warwick, R.I.

Division of Ser. No. 200,598, Oct. 24, 1980, Pat. No. 4,337,824. This application Jul. 7, 1981, Ser. No. 281,069

Int. Cl.[3] B23P *15/26*

U.S. Cl. 29—157.3 AH 4 Claims



1. Process for forming a double wall heat exchanger which comprises:

(i) placing a first ductile tube inside of a second ductile tube, the first tube tightly fitting inside of said second tube, the first tube being the inner tube and the second tube being the outer tube, and placing a mandrel inside of the first ductile tube; and

(ii) finning the combination of the outer tube and the inner tube and the inner tube in a finning apparatus, whereby a helical fin is pressure formed on the outer surface of the outer tube before the pipes reach the end of the mandrel and whereby simultaneously a continuous, small helical groove is formed on the inside surface of the outer tube which follows the path of the helical path of the helical fin, a disc of the finning apparatus, which is located beyond the end of the mandrel and which is larger in radius than the discs located over the mandrel, pushing inwardly both of the tubes after the tubes have progressed beyond the end of the mandrel, the radius of such disc being sufficiently large to provide sufficient inward pushing on the inner tube to cause the inner tube to expand and conform to the inside surface and diameter of the outer tube, whereby a slightly-raised, continuous, helical protrusion is formed which mates with the internal helical groove of the outer tube, but does not entirely fill the internal groove, a continuous helical passageway between the inner and outer tubes thereby being formed, the continuous, narrow helical passageway being unimpeded and extending from one end of the double wall heat exchanger to the other end thereof, the inner surface of the outer tube, except in the region of the inner, continuous, small helical groove thereof, contacting the outer surface of the inner tube, except in the region of the slightly-raised continuous helical protrusion thereof.

4,403,386

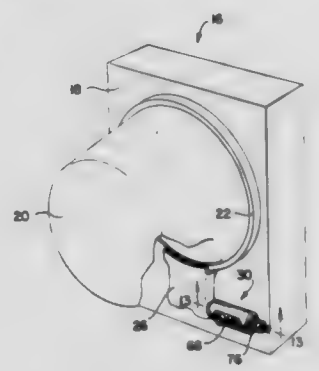
BOLT TYPE LOCK PULLER

Richard E. Hoyt, Worcester, Mass., assignor to Omco, Inc., Holden, Mass.

Continuation of Ser. No. 102,925, Dec. 12, 1979, abandoned. This application Sep. 1, 1981, Ser. No. 298,294

Int. Cl.[3] B23P *19/04*

U.S. Cl. 29—265 3 Claims



1. A bolt type lock puller comprising:

(a) a hollow sleeve having an open leading end and a closed trailing end in which an axially centered circular aperture is provided;

(b) an extractor mounted to axially reciprocate within said sleeve, said extractor having split jaws at its leading end, said jaws being split along an axial plane, said jaws fixed against relative rotational and axial movement with respect to each other, said jaws mounted for limited relative movement solely in a transverse direction towards and away from each other;

(c) said extractor split jaws having opposed teeth positioned to clamp around a cylindrical object;

(d) means for releasably closing said split jaws by transversely moving said jaws towards each other in a direction normal to the axis of said sleeve, said jaw closing means causing said jaws to bite into and tightly grip the head of a bolt type lock; and

(e) means for reciprocating said extractor relative to said sleeve to pull a tightly gripped bolt type lock into said sleeve, said reciprocating means including a longitudinal

stud affixed to said extractor and extending through said sleeve trailing end aperture, said longitudinal stud adapted to be acted upon to axially move said extractor within said sleeve, said longitudinal stud being externally threaded, each said split jaw being formed with a substantially semi-circular axial bore, each said bore having internal threads sized to receive said externally threaded stud, said split jaws constrained for limited transverse movement and fixed against axial movement relative to said longitudinal stud, said reciprocating means being entirely separate from and operating independently of said jaw closing means;

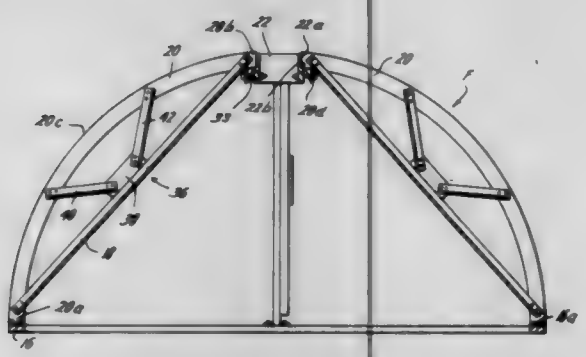
(f) said closing means moving said jaws solely in the transverse direction, and said reciprocating means moving said jaws solely in the axial direction.

4,403,387

METHOD OF MAKING FRAME FOR THE CONSTRUCTION OF HEMISPHERICAL MULTI-LAYERED SHELL

Raymond E. Pechacek, Houston, Tex., assignor to Hahn & Clay, Houston, Tex.

Filed May 11, 1981, Ser. No. 262,422
Int. Cl.³ B23P *17/00*
U.S. Cl. 29—416 **5 Claims**



1. A method for making a hemispherical frame for constructing a hemispherical multi-layered head, comprising the steps of:

machining a plurality of annular plates to a substantially equal outer diameter, which outer diameter is substantially equal to the inner diameter of the hemispherical frame to be manufactured thereon;

arranging one of the annular plates in position as a base plate;

cutting the remainder of the plates into substantially congruent arc portions of less than 90°, each of the arc portions having first and second end;

mounting a brace member to each of the arc portions;

mounting the arc portions by the first end to the upper surface of the annular base plate;

circumferentially spacing the arc portions in a radial direction, equally around the annular base plate; and

fastening the second end of each of the arc portions to a central annular collar.

4,403,388

AUTOMATIC PALLET-MAKING MACHINE AND METHOD

Roy L. Belcher, 5434-88th St. SW., Everett, Wash. 98204

Continuation-in-part of Ser. No. 131,405, Mar. 17, 1980, abandoned. This application May 11, 1981, Ser. No. 262,397
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—429 **27 Claims**

1. An automatic pallet-making machine for assembling a pallet from slats and stringers, comprising:

a movable carrier on which a pallet is automatically assembled;

a slat magazine;

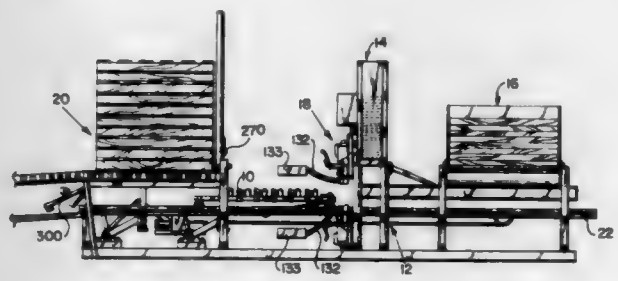
slat dispensing means for serially dispensing slats onto the carrier from the slat magazine as the carrier passes the slat magazine;

a stringer magazine;

stringer dispensing means for dispensing stringers from the stringer magazine transversely onto the slats previously dispensed onto the carrier;

fastening means for automatically fastening the slats and stringers together on the carrier to form an assembled pallet;

a track running between the slat magazine and stringer magazine upon which the carrier moves with a reciprocating motion; and means for reciprocally driving the carrier along the track so that a first series of slats are dispensed on the carrier as it moves in a forward direction to form a bottom deck for a pallet, stringers are then dispensed onto the first series of slats on the carrier by the stringer dispensing means, and a second series of slats is dispensed



onto the stringers as the carrier moves in a reverse direction past the slat magazine and slat dispensing means.

22. A method for automatically forming a double-sided pallet from slats and stringers, comprising the steps of:

serially dispensing a first plurality of slats onto a reciprocating carrier to form a lower deck of the pallet when the carrier moves in a first direction;

dispensing a plurality of stringers onto the first plurality of slats forming the lower deck of a double-sided pallet when the carrier moves in said first direction;

dispensing a second plurality of slats onto the stringers to form an upper deck when the carrier moves in a second direction; and

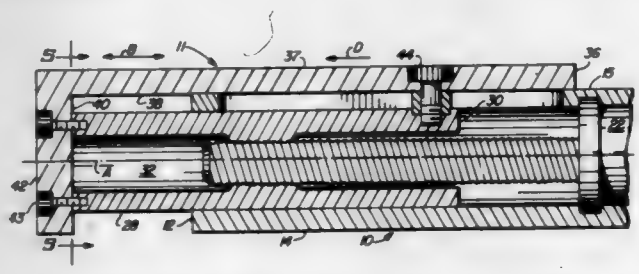
then automatically fastening the slats forming the upper and lower decks to the stringers, without flipping the partially formed pallet of slats and stringers, to form an assembled pallet.

4,403,389

SLIDE MECHANISM

Robert L. Coope, Phoenix, Ariz., assignor to Stevens Engineering, Inc., Phoenix, Ariz.

Filed Feb. 5, 1981, Ser. No. 231,896
Int. Cl.³ B23Q *1/14*
U.S. Cl. 29—561 **4 Claims**



1. A slide mechanism for stabilized rectilinear reciprocation comprising:

a. a base having a planar surface;

b. a slide element having a planar surface slidably and continuously disposed against the planar surface of said base; and

c. stabilizing means for guiding said slide element during reciprocal movement relative said base while maintaining the planar surface of said slide element in sliding contact

with the planar surface of said base, said stabilizing means comprising:

a bore formed within said base and having an axis lying in a plane parallel to the planar surface of of said base;

a shuttle slidably disposed within said bore, said shuttle having a first end and a second end;

an elongate slot communicating between the planar surface of said base and said bore and extending along an axis parallel to the axis of said bore;

a fastening element extending through said slot and interconnecting said slide element with said shuttle at said first end thereof;

an attachment element projecting from said slide element over an end of said base; and

a plurality of connecting elements for affixing said attachment element to said second end of said shuttle.

4,403,390

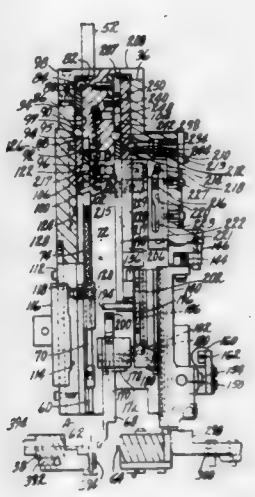
RADIAL LEAD INSERTING MACHINE

Daniel W. Woodman, Jr., Beverly, Mass., assignor to USM Corporation, Farmington, Conn.

Division of Ser. No. 956,436, Oct. 31, 1978, Pat. No. 4,293,999. This application Feb. 13, 1981, Ser. No. 234,345

Int. Cl.³ H05K *13/04*

U.S. Cl. 29—564.1 **2 Claims**



1. In a machine for inserting the leads of electrical components into circuit board holes and comprising a driver reciprocable along a path toward and from the board, means for thus actuating the driver, mechanism for indexing relative to the driver path the respective components to be inserted, pairs of fingers actuatable in time relation to the driver for seizing the respective leads of an indexed component to guide them partly into selected lead-receiving board holes, and a pusher actuatable by the driver to engage each indexed component to complete the insertion of said guided lead, the improvement which comprises providing a compressible spring connection between the pusher and said driver, and means releasably locking the pusher to said driver permitting loading of said spring connection, cam means controlling said locking means and operable while said fingers are approaching the board with the seized leads to store potential energy in said connection, the cam means being arranged to release said locking means and said energy substantially when the fingers have contacted the board.

4,403,391

MACHINE TOOL INCLUDING A TOOL TRANSFER MECHANISM

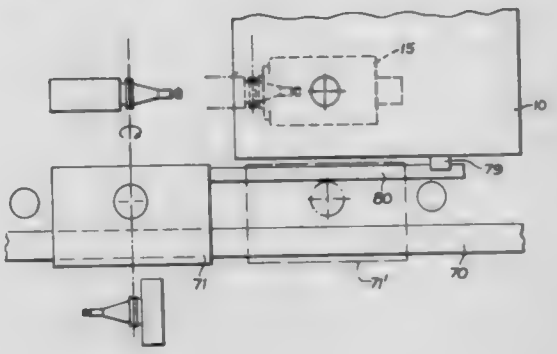
Colin J. Peacock, Long Buckby, England, assignor to De Vlieg Machine Company Ltd., Lutterworth, England

Filed Apr. 8, 1981, Ser. No. 252,036

Claims priority, application United Kingdom, Apr. 15, 1980, 8012396

Int. Cl.³ B23Q *3/157*

U.S. Cl. 29—568 **8 Claims**



1. A machine comprising:

(a) a work head adapted to mount a tool therein;

(b) means operative to move the work head in a predetermined direction;

(c) means defining a tool exchange location where tools are presented for mounting in said work head and are received after removal from said work head; and

(d) a tool transfer mechanism operative to change the tool mounted in said work head, said tool transfer mechanism including:

(i) a carriage;

(ii) means operative to move said carriage in said predetermined direction between said work head and said means defining the tool exchange location;

(iii) latch means operable to latch said carriage positively and detachably to said work head for movement with said work head in said predetermined direction, said latch means including an arm which can be extended and retracted relative to said carriage in said predetermined direction and a latch device for latching said arm to said work head; and

(iv) a pair of tool grippers carried by said carriage, one of said tool grippers being arranged to grip a tool removed from said work head during movement of said carriage from said work head to said means defining the tool exchange location, the other of said tool grippers being arranged to grip a replacement tool for mounting in said work head during movement of said carriage from said means defining the tool exchange location to said work head.

4,403,392

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Jiro Oshima; Masaharu Aoyama; Seiji Yasuda, all of Yokohama, and Toshio Yonezawa, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 22, 1980, Ser. No. 152,305

Claims priority, application Japan, Jun. 6, 1979, 54-71042

Int. Cl.³ H01L *21/225*

U.S. Cl. 29—569 R **8 Claims**

1. A method for manufacturing a semiconductor device comprising:

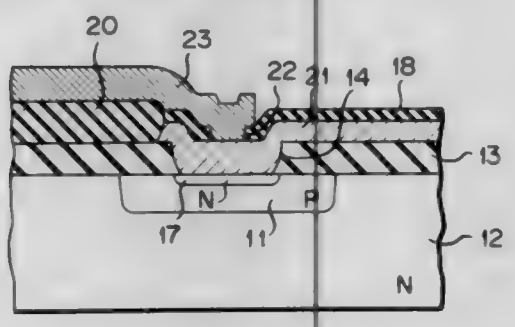
(a) forming on a semiconductor substrate an insulating layer having a diffusion window;

(b) forming an impurity-doped poly-silicon layer on the insulating layer and on that portion of the semiconductor substrate which is exposed through the diffusion window, said impurity being arsenic;

(c) forming an undoped poly-silicon layer on the impurity-doped poly-silicon layer;

(d) thermally oxidizing the substrate with the insulating layer, impurity-doped poly-silicon layer and undoped poly-silicon layer, thus diffusing the impurity from the impurity-doped poly-silicon layer into the semiconductor substrate through the diffusion window and converting the undoped poly-silicon layer to a silicon oxide layer;

(e) forming on the silicon oxide layer an oxidation-resisting mask layer in a desired pattern; and



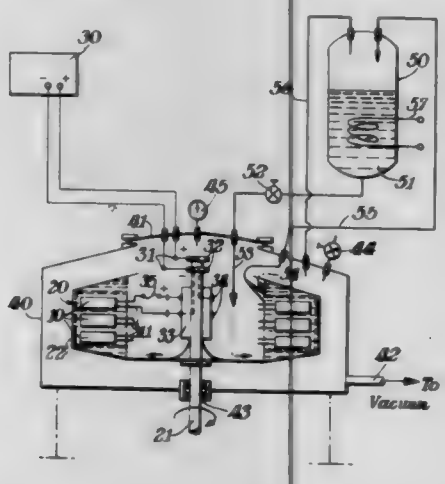
(f) thermally oxidizing the substrate with the insulating layer, impurity-doped poly-silicon layer, silicon oxide layer and mask layer, thus converting those portions of the impurity-doped poly-silicon layer which lie beneath those portions of the silicon oxide layer which are exposed through the mask layer to impurity-doped silicon oxide layers, whereby the remaining portions of the impurity-doped poly-silicon layer provide an interconnection electrode layer having a desired pattern.

4,403,393

ACCELERATED AGING-IMPREGNATION OF ELECTROLYTIC CAPACITORS

Giacomo Giacomello, Milan, Italy, assignor to Sprague Electric Company, North Adams, Mass.

Filed Oct. 23, 1981, Ser. No. 314,281
Int. Cl.³ H01G 9/24
U.S. Cl. 29—570 **5 Claims**



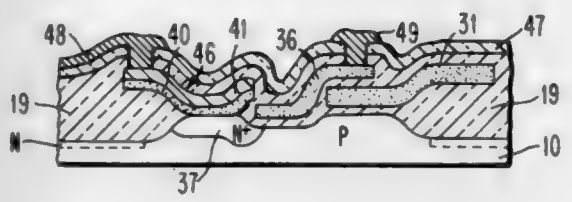
1. A two-stage process for accelerated aging and impregnating electrolytic capacitors comprising a first stage sequence of first loading capacitors having formed anodes into a centrifuge, second supplying a voltage less than the desired final aging voltage to said capacitors, third reducing pressure within said centrifuge, fourth starting said centrifuge, fifth admitting impregnating electrolyte, and aging said capacitors while centrifuging and impregnating until said capacitors are fully impregnated, and a second stage of increasing said voltage to said desired aging voltage.

4,403,394

FORMATION OF BIT LINES FOR RAM DEVICE

Joseph F. Shepard, Hopewell Junction, and Paul J. Tsang, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1980, Ser. No. 217,371
Int. Cl.³ H01L 21/22, 21/28
U.S. Cl. 29—571 **13 Claims**



1. A method for forming a conductor line for connection through self-aligned contacts to a first portion of each of a plurality of devices on a monocrystalline silicon substrate with the first portion having an opposite conductivity to the conductivity of the substrate including:

providing separated portions of at least a layer of silicon nitride over each of a plurality of separated areas of the substrate with each area to have one of the plurality of the devices formed therein and the first portion of the device to be connected to the conductor line;

forming electrically insulating material on the substrate to electrically isolate each area having one of the separated portions of the layer of silicon nitride to form electrically isolated areas with each area to have one of the plurality of devices therein;

removing the separated portion of the layer of silicon nitride within each of the electrically isolated areas except in a portion in which a self-aligned contact and at least part of the first portion of one of the plurality of the devices are to be formed;

forming additional portions of each of the plurality of devices on the substrate within each of the electrically isolated areas in portions of the area in which the separated portion of the layer of silicon nitride has been removed after removal of the separated portion of the layer of silicon nitride except in the portion of the area in which the self-aligned contact and at least part of the first portion of each of the plurality of the devices are to be formed;

forming the first portion of each of the plurality of devices for connection to the conductor line after the additional portions of the device have been formed;

forming at least part of the first portion of each of the plurality of devices for connection to the conductor line in an area beneath a portion of the remaining portion of the layer of silicon nitride within each of the electrically isolated areas;

removing the remaining portion of the layer of silicon nitride to form the self-aligned contact with at least the part of the first portion of the device in each of the electrically isolated areas after formation of at least the part of the first portion of the device not beneath the remaining portion of the layer of silicon nitride within each of the electrically isolated areas;

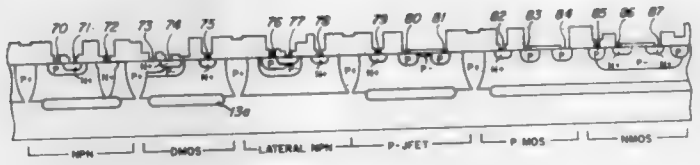
and forming the conductor line on the electrically insulating material on the substrate in electrical contact through the self-aligned contact with at least part of the first portion of each of the plurality of devices and of a material selected from the group consisting of polycrystalline silicon and a metal silicide, polycrystalline silicon and a conductive metal, and polycrystalline silicon, a metal silicide, and a conductive metal with the polycrystalline silicon contacting at least part of the first portion of the device.

4,403,395

MONOLITHIC INTEGRATION OF LOGIC, CONTROL AND HIGH VOLTAGE INTERFACE CIRCUITRY

Patrick A. Curran, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 12,267, Feb. 15, 1979, Pat. No. 4,325,180.
This application Nov. 9, 1981, Ser. No. 319,866
Int. Cl.³ H01L *21/265*
U.S. Cl. 29—571 **5 Claims**



1. A process for the monolithic integration of a semiconductor circuit having D-MOS and high performance vertical NPN components, comprising the steps of:

(a) providing a monocrystalline p-type semiconductor substrate having a surface layer of isolated n-type semiconductor regions thereon;

(b) forming a lightly-doped p-type D-well region in each of selected said n-type regions;

(c) forming p-type regions constituting the vertical NPN base and the D-MOS gate contact;

(d) then selectively forming n-type regions constituting the vertical NPN emitter and collector; and

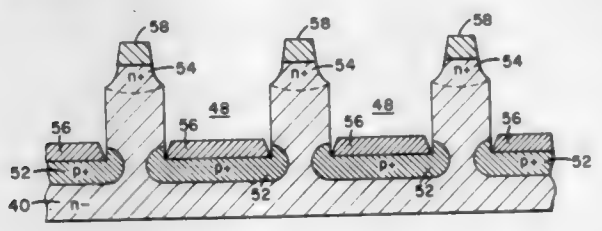
(e) controlling the dopant concentration in step (b) such that said D-MOS threshold is determined by the intersection of said emitter and said D-well dopant profiles.

4,403,396

SEMICONDUCTOR DEVICE DESIGN AND PROCESS

Richard J. Stein, Stow, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 24, 1981, Ser. No. 334,393
Int. Cl.³ H01L *21/265, 21/302*
U.S. Cl. 29—571 **6 Claims**



1. A method for forming a structure for a vertically structured semiconductor device comprising:

depositing impurities on a surface of a semiconductor material of a first conductivity type to uniformly increase the impurity concentration of a contact layer adjacent said surface sufficient to provide contact areas on said surface;

forming a protective layer over said surface;

opening windows through said protective layer;

isotropically etching grooves into said semiconductor material to form partial grooves underlying said windows to a depth through said contact layer and greater than the width of said grooves;

anisotropically etching to deepen said grooves beneath said windows, the bottom of each of said grooves being at least as wide as the top thereof;

depositing impurities into said semiconductor material at the bottom of said grooves to form a semiconductor region of a second conductivity type opposite said first conductivity type at the bottom of each of said grooves, the semiconductor regions at the bottom of adjacent grooves forming a channel therebetween from said contact layer to a bulk region of said semiconductor material;

removing said protective layer; and

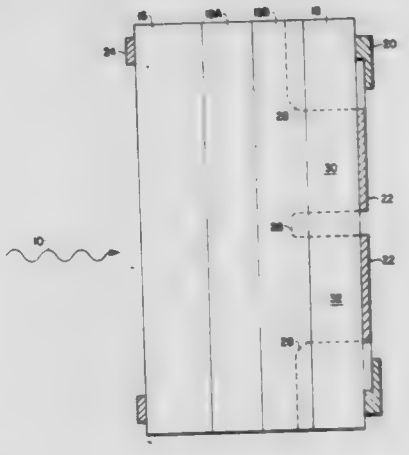
depositing metal over said surface whereby said metal deposits on said contact area and on the bottom of each of said grooves, the walls of said grooves providing isolation between the metal on said contact areas and the metal on the bottoms of said grooves.

4,403,397

METHOD OF MAKING AVALANCHE PHOTODIODES

Nicholas Bottka, and Marian E. Hills, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 13, 1981, Ser. No. 282,783
Int. Cl.³ H01L *21/76, 27/14, 21/363*
U.S. Cl. 29—572 **7 Claims**



1. A method of making avalanche photodiode segmented detectors with at least one active layer from an epitaxially grown heterostructure sample of $GaAs_{1-x}Sb_x$ epitaxially grown on an Sn doped GaAs substrate comprising the steps of:

(a) applying a photoresist solution to coat both sides of the sample;

(b) exposing at a preselected wavelength, the sample's active layer through a first mask to open a plurality of windows on said sample;

(c) etching the sample;

(d) plating a conductive material over said plurality of windows on said active layer;

(e) applying a layer of photoresist on the epilayer side of the sample;

(f) exposing said epilayer side applied layer through a second mask at a preselected wavelength, said second mask having different dimensions than said first mask;

(g) bombarding said epilayer side of said sample with protons to produce semi-insulating volumes on said epilayer side where photoresist does not cover said epilayer side surface;

(h) removing said unexposed layer of photoresist such that no photoresist remains on the sample;

(i) applying a layer of photoresist to coat both sides of the sample;

(j) exposing the epilayer side of photoresist through a third mask at a preselected wavelength;

(k) etching said sample;

(l) depositing electrode contacts on the conductive material on said epilayer side of said sample;

(m) plasma-etching away said undeveloped photoresist with O_2;

(n) depositing ohmic contacts on preselected portions of the substrate side of said sample;

(o) cleaving the edges of said sample to reduce leakage current;

(p) mounting said sample; and

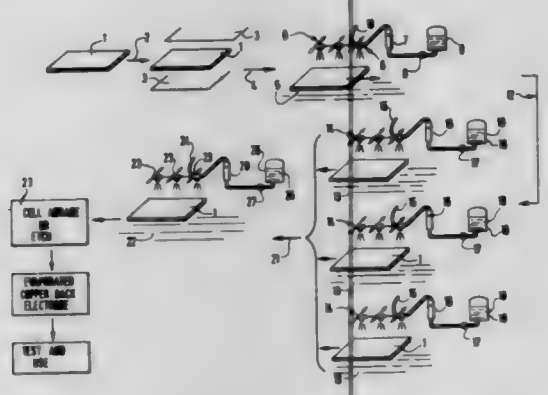
(q) making electrical contacts to said deposited ohmic contacts and said deposited electrode contacts.

4,403,398

METHOD OF MANUFACTURING A CADMIUM SULPHIDE PHOTO-VOLTAIC DEVICE

Alexander S. Laurie, Melbourn, and Robert C. Whelan, Comberton, both of England, assignors to Prutec Limited, England

Filed Dec. 9, 1981, Ser. No. 328,926
Claims priority, application United Kingdom, Dec. 12, 1980, 8039836
Int. Cl.[3] H01L *21/363, 31/06*
U.S. Cl. 29—572 10 Claims



1. In a method of manufacturing a cadmium sulphide photo-voltaic device which comprises;

forming a conductive layer to act as a first electrode, depositing on the conductive layer a layer of cadmium sulphide,

forming a layer of copper sulphide in contact with the cadmium sulphide layer to produce a photo-voltaic junction, and

forming a second electrode in contact with the copper sulphide;

the improvement wherein the step of depositing the cadmium sulphide layer comprises;

spraying onto the heated conductive layer a first precursor solution having such a cadmium concentration as to result in cadmium sulphide being deposited at a relatively slow first rate, and

subsequently spraying with a second solution having a significantly greater cadmium concentration such that cadmium sulphide is deposited at a rate at least five times greater than the first rate.

4,403,399

METHOD OF FABRICATING A VERTICAL FUSE UTILIZING EPITAXIAL DEPOSITION AND SPECIAL MASKING

David L. Taylor, Carrollton, Tex., assignor to Harris Corporation, Melbourne, Fla.

Filed Sep. 28, 1981, Ser. No. 306,226
Int. Cl.[3] H01L *21/20, 21/283, 27/10*
U.S. Cl. 29—574 5 Claims

1. In a process of fabricating a programmable read only memory including forming a plurality of emitter followers, one for each cell, wherein the emitter being formed by introducing impurities into a base region through an aperture in an insulative layer, the improvement comprising:

removing any material in the emitter diffusion aperture;

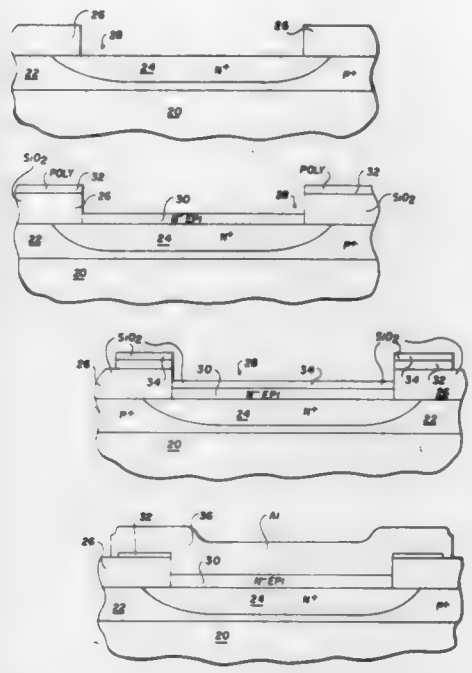
epitaxially growing a thin layer of semiconductor material of conductivity type opposite that of said emitter on said insulative layer and in said aperture;

partially oxidizing said epitaxial layer;

removing said epitaxial layer on said insulative layer except on portions adjacent said aperture;

removing oxide from all remaining portions of said epitaxial layer; and

forming a metallic contact to said remaining portions of said epitaxial layer wherein said epitaxial grown layer is of a thickness such that atoms of said metallic contact will



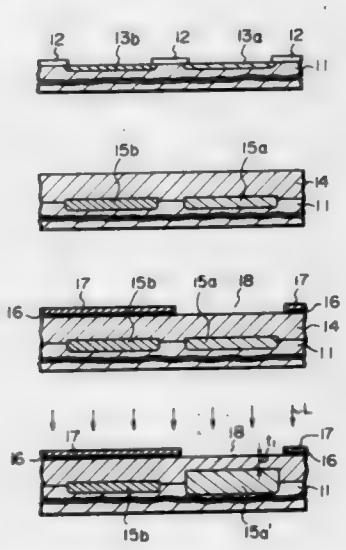
migrate thereacross upon application of migration inducing voltage to said contact.

4,403,400

PROCESS FOR PRODUCING A SEMICONDUCTOR DEVICE

Junji Sakurai, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 10, 1982, Ser. No. 347,586
Claims priority, application Japan, Feb. 17, 1981, 56-22005
Int. Cl.[3] H01L *21/74*
U.S. Cl. 29—576 B 15 Claims



1. A process for producing a semiconductor device on a semiconductor substrate, comprising the steps of:

(a) forming buried regions within the semiconductor substrate by introducing an impurity;

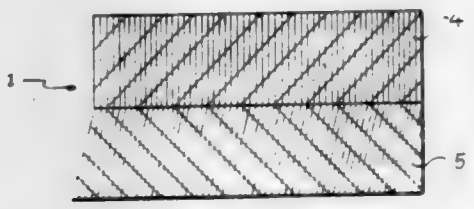
(b) forming an epitaxial layer, having a surface, on the semiconductor substrate and the buried regions; and

(c) selectively irradiating the surface of the epitaxial layer with an energy beam to cause diffusion of the impurity from at least one of the buried regions into the epitaxial layer.

4,403,401
METHOD OF MAKING A DYNAMOELECTRIC MACHINE STATOR HAVING CONCENTRIC AMORPHOUS METAL LAMINATIONS

George M. Rosenberry, Hendersonville, Tenn., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 942,852, Sep. 15, 1978. This application Aug. 26, 1981, Ser. No. 296,387
Int. Cl.³ H02K *15/02*
U.S. Cl. 29—596 5 Claims



1. A method of making a dynamoelectric machine stator comprising the steps of:

a. forming first and second helical ribbons of high magnetic induction amorphous metal alloy,

b. arranging a selected length of said first ribbon to form a first edgewound helix having its adjacent turns stacked on one another to form a first cylinder,

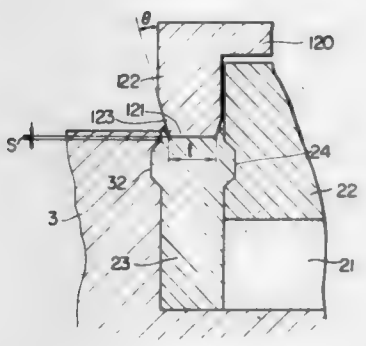
c. arranging a selected length of said second ribbon to form a second edgewound helix having each of its turns disposed in frusto-conical relation to the central longitudinal axis of said second helix and stacked on one another to form a second cylinder, and then

d. mounting the second cylinder within the first cylinder with the inner edges of the turns of the first cylinder, respectively, abutting the outer edges of the turns of the second cylinder.

4,403,402
METHOD FOR PRODUCING A MAGNETO DEVICE FOR GENERATING SIGNALS

Tosio Tomite, Katsuta; Nobuhiko Ogasawara, Mito; Kaniti Isii, and Hisanobu Kanamaru, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 6, 1979, Ser. No. 45,971
Claims priority, application Japan, Jun. 16, 1978, 53/72138
Int. Cl.³ H02K *15/02*
U.S. Cl. 29—598 7 Claims



1. In a method for producing a magneto device for generating signals, the magneto device comprising a pole piece assembly including a permanent magnet and a pole piece block adapted to be secured to a rotary body, and a stationary signal output coil cooperative with said pole piece assembly, said method comprising the steps of:

forming a recess in said rotary body at a position where said pole piece assembly is firmly held in said rotary body, said recess being dimensioned so as to accommodate said permanent magnet and pole piece block while leaving an annular space;

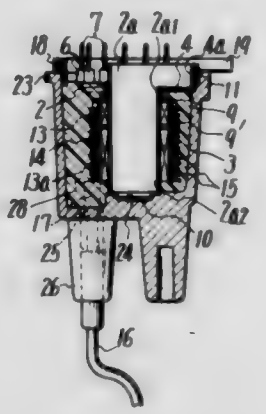
inserting a cylindrical key member, said permanent magnet and said pole piece block into said recess, said key member surrounding said permanent magnet and said pole piece block and being made of a non-magnetic material of a given mechanical strength which is less resistive to deformation than said rotary member and pole piece block, and having a height approximating that of said annular space;

pressing a metal mold against said key member to plastically deform the key member to thereby secure said pole piece assembly to said rotary body by a rigid engagement of the deformed key member with said rotary body and said pole piece assembly.

4,403,403
METHOD OF MAKING A FLY BACK TRANSFORMER

Mitsuru Hosoya, Fujisawa; Toshio Onodera, Kamakura, and Ken Tanimura, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 86,617, Oct. 19, 1979, abandoned. This application Jul. 16, 1981, Ser. No. 284,102
Claims priority, application Japan, Oct. 20, 1978, 53-144832
Int. Cl.³ H01F *41/00*
U.S. Cl. 29—602 R 1 Claim



1. The method of making a fly-back transformer comprising the steps of:

mounting a first hollow cylindrical bobbin with a low voltage winding thereon within a second hollow cylindrical bobbin with at least one high voltage winding mounted thereon, connecting a plurality of input and output terminals to said low and high voltage windings,

mounting a core receiving member having an integral cover plate over at least one end of said first bobbin,

mounting said first and second bobbins, said core receiving member and said terminals in a mold, said mold,

injecting thermal setting resin into said mold,

removing said first and second bobbins, said core receiving member and said input and output terminals from said mold after said resin has set,

removing said integral cover plate from said core receiving member, and

attaching a generally C-shaped core to said first bobbin such that its open ends engage the ends of said first bobbin and said core receiving member.

4,403,404
METHOD OF MAKING A CELLULOSE-FREE TRANSFORMER COILS

Dean C. Westervelt, Bullskin Township, Westmoreland County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

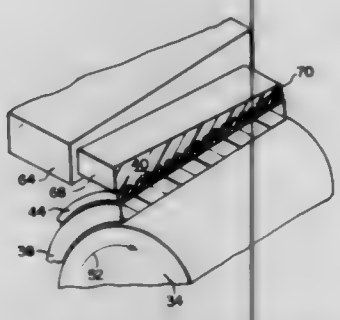
Filed Oct. 2, 1981, Ser. No. 308,314
Int. Cl.³ H01F *41/06*
U.S. Cl. 29—605 5 Claims

1. A method for making a non-cellulose insulated transformer coil comprising the steps of:

(a) providing a winding mandrel for repeated rotation past a resin applicator and a resin curing station;

(b) applying a layer of resinous material onto the mandrel upon a single rotation of the mandrel, forming a tubular hub;

(c) curing the layer of resinous material in place as the mandrel is rotated adjacent to the curing station;
(d) coiling a first number of turns of a conductor helically onto and over the tubular hub;
(e) applying a first tapered resinous insulator coextensive with and around the first turns of conductors and having a thin edge at one end of the first layer and a thick edge at the other end thereof;
(f) curing the first tapered resinous insulator;
(g) coiling a second number of turns of the conductor helically onto and over the first tapered resinous insulator on the side opposite the first number of turns;



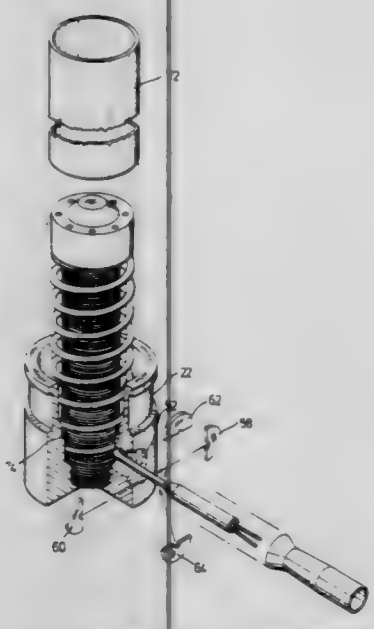
(h) applying a second tapered resinous insulator coextensive with and around the second turns of conductor, and having thin and thick edges oppositely disposed to those of the first tapered insulator;
(i) curing the second tapered resinous insulator;
(j) coiling a third number of turns of the conductor helically onto and over the second tapered resinous insulator on the side opposite the second number of turns; and
(k) the layers of resinous material being each applied at steps (b), (e), and (h) during one revolution of the mandrel.

4,403,405

SPRUE BUSHING CONNECTOR ASSEMBLY METHOD

Jobst U. Gellert, 7A Prince St., Glen Willisms, Canada

Filed Jul. 20, 1981, Ser. No. 285,260
Claims priority, application Canada, Jul. 15, 1981, 381799
Int. Cl.³ H05B *3/04*
U.S. Cl. 29—611 **4 Claims**



1. In a method of manufacturing an integral electrically heated sprue bushing having a hollow elongated inner core portion with a runner passage extending centrally therethrough, an electrical heating element with a helical portion encircling the inner core portion and a lead portion extending out through an aperture in the sprue bushing, a highly conductive elongated portion around the helical portion of the heating element, and an elongated outer sleeve portion over the conductive portion, including the steps of assembling the heating element onto the core portion, securing the outer sleeve in a position around the inner core portion to enclose a space therebetween, the space being sufficiently sealed to prevent substantial leakage, and vacuum filling the space with a highly conductive material;

the improvement wherein the aperture is considerably larger than the heating element lead portion extending therethrough leaving a space therearound and the aperture has seat means, further including the steps of:

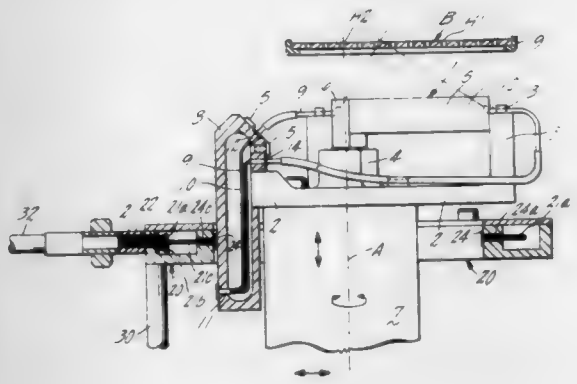
(a) forming a first split washer with a central opening through which the heating element lead portion extends by fitting a first plurality of split washer portions in the seat means in the aperture around the heating element lead portion to substantially close said space therearound,
(b) forming a second split washer similar to the first split washer adjacent thereto by fitting a second plurality of split washer portions in the seat means in the aperture around the heating element lead portion, and
(c) rigidly fixing a hollow elongated connector sleeve to the bushing with one end received in the aperture adjacent the second split washer and the heating element lead portion extending therein for connection to external lead wires.

4,403,406

COMPONENT POSITION INDICATOR FOR ELECTRONIC COMPONENT INSERTION STATION

Michael S. Foley, Beverly, Mass., assignor to USM Corporation, Farmington, Conn.

Filed Mar. 15, 1979, Ser. No. 20,709
Int. Cl.³ B23P *21/00*
U.S. Cl. 29—721 **11 Claims**



1. Apparatus for securing a component having more than one lead-in wire to a circuit board containing a plurality of apertures disposed therein, said apparatus including:

support means for said circuit board;
securing means for affixing the component to said circuit board disposed on one side of said support means;
means for moving said securing means relative to said support means;
first illuminating means carried with said securing means and disposed on the same side of the support means as said securing means and arranged to illuminate an aperture of said circuit board that is substantially aligned with an aperture to indicate the intended location for one of said lead-in wires.

4,403,407

MULTIPLE WIRE TERMINAL APPLYING

Ralph Mazzola, Brighton, Mass., assignor to Ark-les Corporation, Watertown, Mass.

Filed Jun. 1, 1981, Ser. No. 270,616
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—749 **8 Claims**

1. An automatic multiple wire terminal applying machine for simultaneously attaching at least one terminal, of a terminal strip of terminals attached sidewise to one another to form said terminal strip and fed in its longitudinal direction in a terminal strip plane along a terminal strip feed path, to the adjacent ends

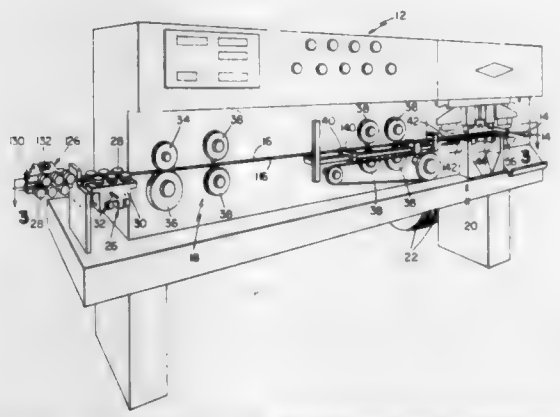
of parallellized multiple lengths of wire arranged in a plane parallel to and spaced from said terminal strip plane and fed in their longitudinal direction along a wire feed path perpendicular to said terminal strip feed path

said machine including

terminal applicator means having a terminal applicator station with a terminal applicator position at the end of said terminal strip feed path

terminal strip carrier feed means for feeding said terminal carrier strip in its longitudinal direction in a terminal strip plane along said terminal strip feed path to said terminal applicator station to place at least one terminal in terminal attaching position

multiple wire feed means for simultaneously feeding said



multiple lengths of wire in their longitudinal direction in a wire feed plane parallel to and spaced from said terminal strip plane along said wire feed path to a position adjacent said terminal applicator station, and

multiple wire guide means for guiding the ends of said multiple wires toward said terminal applicator station to place said wire ends in terminal attaching position,

said multiple wire feeding means comprising multiple parallel wire feed tube means for feeding simultaneously said multiple parallel lengths of wire, and

said feed tube means comprising a plurality of parallel outer tubes connected together to provide a recessed cavity at their forward ends for receiving attached terminals therewithin when feeding said attached terminals through said machine.

4,403,408

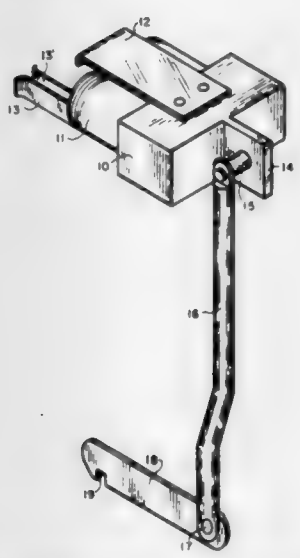
PRINTED CIRCUIT CARD EXTRACTING TOOL

James V. Koppensteiner, Chicago, and Joseph B. Onesto, Oak Lawn, both of Ill., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Jun. 18, 1981, Ser. No. 274,902

Int. Cl.³ H05K *3/36*

U.S. Cl. 29—764 **4 Claims**



1. A tool for facilitating the extraction of a printed circuit card from a holder, the latter having top and bottom parallel card guides each card guide including at least one transversely oriented guide track having respective lateral card edges resting therein, said circuit card including a handle mounted to a transverse edge of said circuit card, said tool comprising:

a mounting body including at least one magnet and a retainer clip, said magnet and retainer clip extending outward from a front face of said mounting body arranged to engage and attach said mounting body to said top card guide;

a pair of L-shaped spring guides arranged parallel to each other extending outward from said mounting body parallel to said magnet, said spring guides arranged to receive said circuit card therebetween when said mounting body is installed on said card guide;

a handle rotatably mounted to said mounting body; and

a linkage rotatably mounted to said handle opposite said mounting body said linkage including means for interlockingly engaging said circuit card handle;

whereby a pulling force applied to said handle extracts said circuit card from said holder.

4,403,409

FASTENING APPARATUS AND CONTROL SYSTEMS THEREFOR

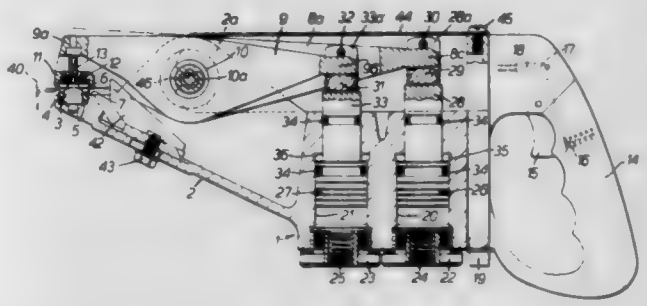
Edwin H. Richards, Ripple, England, assignor to L & H Designs Limited, Gloucestershire, England

Filed Feb. 17, 1981, Ser. No. 235,260

Claims priority, application United Kingdom, May 6, 1980, 8015047

Int. Cl.³ B23P *19/00, 11/00*

U.S. Cl. 29—798 **11 Claims**



1. In an apparatus operable to fasten together overlying metal sheets or webs, wherein a co-operating piercing-and-forming punch and die set is operable partially to sever and to displace a localised region of said sheets out of the planes thereof, and a flattening punch is then operable to spread the displaced region and thus fasten the sheets together with a clenching action, the improvement comprising:

a die mounting section on which said piercing-and-forming die is mounted;

a punch mounting section on which said flattening punch is mounted;

first and second hydraulically-operated piston and cylinder arrangements by which said die and punch mounting sections are respectively and separately operable, in sequence, for required movements relatively to said piercing-and-forming punch;

first and second lever arms which share a common intermediate pivot axis and at adjacent ends of which said piercing-and-forming die and said flattening punch are respectively mounted, said piston and cylinder arrangements including hydraulic pistons acting at the other ends of said first and second arms; and

a third lever arm with which each of said first and second lever arms has a scissor relationship, which is fixed with respect to hydraulic cylinders of said piston and cylinder arrangements, and which mounts said piercing-and-forming punch.

4,403,410
MANUFACTURE OF PRINTED CIRCUIT BOARDS

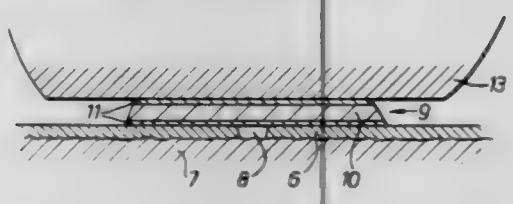
John E. Robinson, Dukinfield, England, assignor to International Computers Limited, London, England

Filed Jan. 14, 1981, Ser. No. 225,092

Claims priority, application United Kingdom, Jan. 23, 1980, 8002345

Int. Cl.[3] A05K *3/36*

U.S. Cl. 29—830 5 Claims



1. A process for the manufacture of a printed circuit board assembly including the steps of manufacturing a printed circuit board by forming a conductive layer comprising at least one conductive track on a sheet of insulating material; testing each such conductive track for electrical continuity to detect any defect in the continuity of the track; repairing the detected defect by providing a strip of electrically conductive material of a length sufficient to bridge the defect and overlap the track on both sides of the defect, positioning the strip to bridge the defect with its ends overlapping the track with a layer of solder interposed between the strip and the track; applying heat to cause the solder layer to reflow so that on cooling the strip is bonded to the track and is effective to repair the defect in electrical continuity of the track; and thereafter performing further steps in the manufacture of the assembly during which the repaired printed circuit board is subjected to heating to a temperature at which the solder melts.

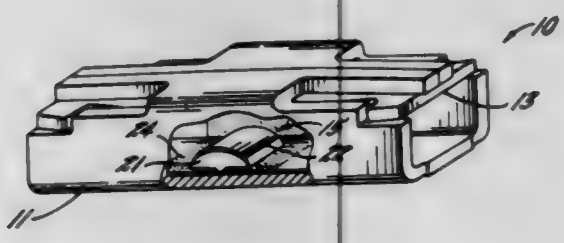
4,403,411
METHOD OF FORMING PRECIOUS METAL ELECTRICAL CONTACT

George A. Patton, Candler, N.C., assignor to Akzona Incorporated, Asheville, N.C.

Filed Feb. 4, 1981, Ser. No. 231,329

Int. Cl.[3] H01R *43/02*

U.S. Cl. 29—879 1 Claim



1. The method of forming a precious metal electrical contact portion on that portion of a blank to be formed into an inner wall of an elongated copper pin-socket box comprising the steps of forming a tab by cutting a short link from the end of a carrier ribbon made of essentially nickel base metal having one surface plated with essentially gold precious metal, resistance welding the base metal to said portion of a blank to be formed into the interior copper wall through at least one ridge formed on the non-plated side of said tab, and coating the tab and surrounding portion of the blank to be formed into a wall area with a precious metal, essentially gold, wash so that no base metal is exposed.

4,403,412
RAZOR BLADE ASSEMBLY

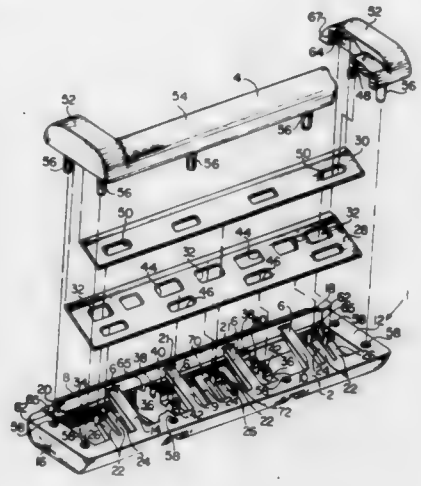
Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 176,138, Aug. 7, 1980, Pat. No. 4,324,041, and a continuation-in-part of Ser. No. 229,623, Jan. 29, 1981, Pat. No. 4,337,575. This application Apr. 10, 1981, Ser. No. 253,071

The portion of the term of this patent subsequent to Apr. 13, 1989, has been disclaimed.

Int. Cl.[3] B26B *21/22*

U.S. Cl. 30—47 33 Claims



1. A razor blade assembly comprising a cap portion and a base portion, a guard portion extending from said base portion and extending generally parallel to said base portion, arm means extending from said base portion toward said guard portion, and blade means disposed on said arm means, said arm means being leaf spring means permitting movement of said blade means relative to said base portion, guard portion and cap portion during a shaving operation.

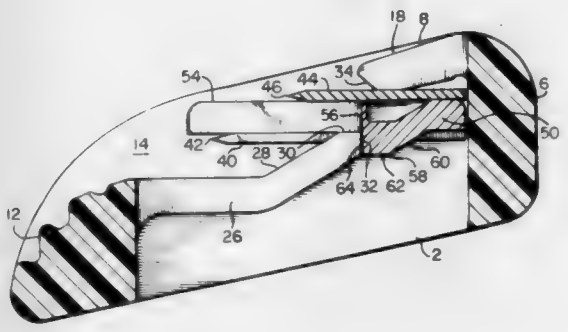
4,403,413
SHAVING IMPLEMENT

Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 194,551, Oct. 6, 1980, Pat. No. 4,354,312. This application Sep. 11, 1981, Ser. No. 300,400

Int. Cl.[3] B26B *21/06, 21/22*

U.S. Cl. 30—47 3 Claims



1. A shaving implement comprising a platform portion, a back portion upstanding from a lengthwise margin of said platform portion, a cap portion extending from said back portion and overlying said platform portion, and blade means adapted to be permanently disposed between said cap and platform portions, said cap portion being adapted to exercise a clamping pressure on said blade means, said blade means comprising a first blade member, a spacer member, and a second blade member, said spacer member being disposed between said first and second blade members, said blade and spacer members being in abutting engagement and adapted to be held together by said clamping pressure, but otherwise being un-

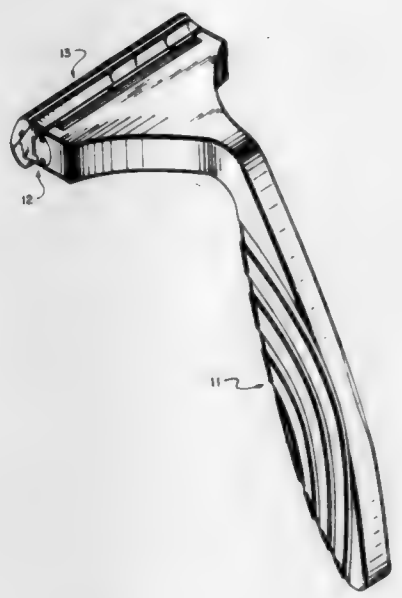
connected, said spacer having a lug extending from its underside proximate either end thereof, and said platform portion having a pair of integrally molded leaf spring members sufficiently flexible to permit said lugs to ride thereover during insertion of said blade means between said platform and cap portions, but biased to thereafter snap into locking engagement with said lugs to lock said spacer permanently in said disposition between said platform and cap portions.

4,403,414

SOCKET DEVICE FOR A PIVOTAL RAZOR

Ernest F. Kiraly, Fairfield, and Ernest A. Ortiz, Cheshire, both of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 9, 1981, Ser. No. 252,638
Int. Cl.³ B26B *19/00, 21/00*
U.S. Cl. 30—57 **13 Claims**



1. In a razor including a single or multiple blade cartridge of the type carried by a socket mounted movably in a support by means of interlocking arcuate flanges, said socket being pivotal through an arc on opposite sides of a neutral position about an axis parallel to a blade and slidable to and fro through a stroke along a path parallel to said axis, the improvement comprising:

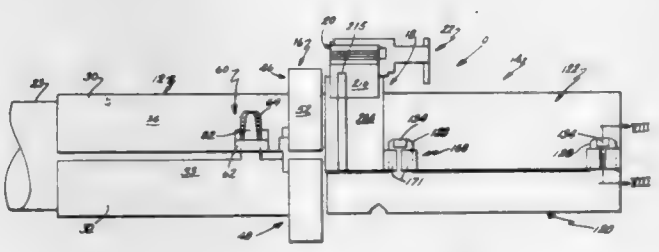
a plurality of pockets formed in said support, said pockets being disposed along a line generally corresponding to the pivot side of the socket, each pocket having a bearing surface, a thrust bearing element projecting from said socket and cooperating with the bearing surface and said arc and spring means carried by said socket operable to engage second and third pockets to bias said socket toward said neutral position.

4,403,415

WINDOW SHADE ROLLER WITH SHADE CUTTING ASSEMBLY

Fred W. Kufrin, Janesville, Wis., assignor to Fox Valley Corporation (Breneman Div.), Norcross, Ga.

Filed May 14, 1981, Ser. No. 263,554
Int. Cl.³ B26D *1/26*
U.S. Cl. 30—96 **34 Claims**



1. A shade cutter adapted to be mounted on a rolled shade or the like and positioned to cut the shade to a desired length, said cutter comprising:

an elongaed, tubular shade holder defining a passage for receiving the rolled shade;

an elongated, tubular collar also defining a passage for receiving the rolled shade, said holder and said collar dimensioned to be gripped by a user;

connecting means on said shade holder and said collar for rotatably connecting said collar to said shade holder and positioning same in generally coaxial relationship; and

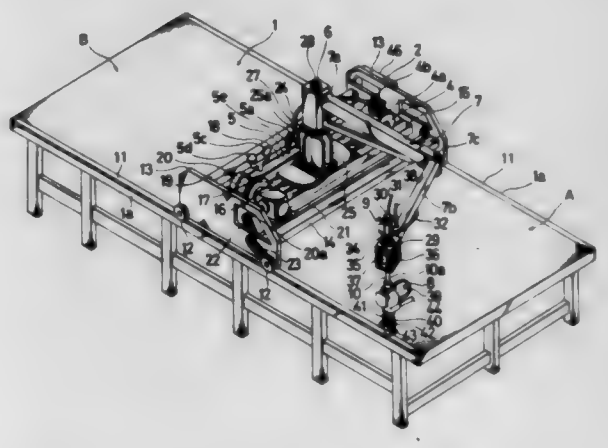
cutting means carried by said collar for cutting the shade upon rotation of said collar with respect to said holder, said cutting means including a cutting blade having an edge aligned generally perpendicular to the longitudinal axis of said collar and which is shiftable into the collar and towards the rotational axis of said collar.

4,403,416

CLOTH-CUTTING MACHINE

Shoichi Adachi, Osaka, Japan, assignor to N.C.A. Co., Ltd., Japan

Filed May 27, 1981, Ser. No. 267,467
Claims priority, application Japan, Feb. 6, 1981, 56-16363[U]; Feb. 6, 1981, 56-16364[U]; Feb. 6, 1981, 56-16365[U]
Int. Cl.³ D06H *7/00*; B26D *5/00*
U.S. Cl. 30—273 **1 Claim**



1. A cloth-cutting machine, comprising:

a working table;

a carriage arranged for horizontal reciprocation over the table, the carriage having side frame members interconnected by a plurality of cross frame members, at least one of which is hollow;

an upstanding post disposed on at least one of the cross frame members of the carriage;

a support arm extending transversely from the post and mounted for horizontal rotation around the post;

extensible cylinder means having a cylinder affixed to the free end of the support arm and a piston assembly vertically reciprocable relative to the cylinder;

cutting means, having an automatic cutter, supported by the piston assembly of the cylinder means for vertical movement between a lower cutting position and an upper flying-over position, the cylinder means absorbing substantially all vibration due to operation of the cutting means, which would otherwise be transmitted back to the carriage and working table through the support arm and post; and,

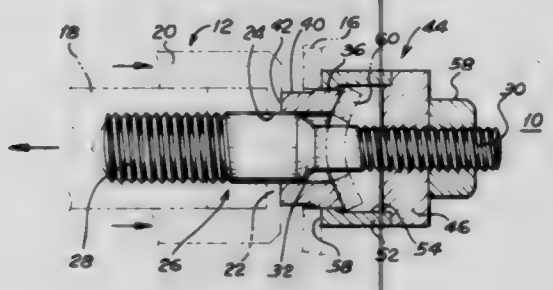
an air compressor mounted on at least one of the cross frames of the carriage, the at least one hollow frame member forming an integral compressed air tank for driving the piston assembly of the cylinder means between the upper and lower positions, whereby the cutting means may be selectively operated on and fly over the entire working table.

4,403,417

DRAW PUNCH

Stephen K. Wilson, 18625 88th W., and Raymond I. Beatty, 23610 107th W., both of Edmonds, Wash. 98020

Filed Jun. 4, 1982, Ser. No. 385,063
Int. Cl.³ B26F 1/00
U.S. Cl. 30—360 12 Claims



1. A draw punch for enlarging a pilot hole in a wall, comprising:

(a) an actuating rod having a major diameter section, a minor diameter section and a beveled pilot shoulder interconnecting the rod major and minor diameter sections;

(b) a male punch slidably engageable over the rod major diameter section;

(c) a female die including:

a backing member engageable over the actuating rod minor diameter section, the side of said backing member facing the punch defining piloting means; and

a cylindrical member having a smaller, inner diameter portion adjacent the punch to define a cutting face and to snugly, slidably receive the punch, and a larger inner diameter clearance portion engageable with the piloting means to coaxially align the die cylindrical member with the actuating rod; and

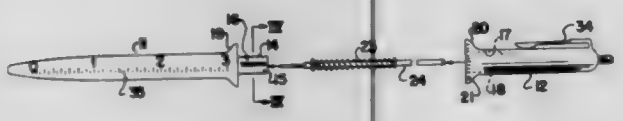
(d) securing means for preventing disengagement of the die backing member from the actuating rod when the punch and die, which are disposed on opposite sides of the wall, are forced relatively towards each other to sever the wall.

4,403,418

DEVICE TO DETERMINE AND RECORD SMALL DIMENSIONS

Ernest Vagias, 265 Prospect St., Baden, Pa. 15005

Filed Dec. 14, 1981, Ser. No. 330,338
Int. Cl.³ G01B 3/18; B43K 29/00
U.S. Cl. 33—164 R 5 Claims



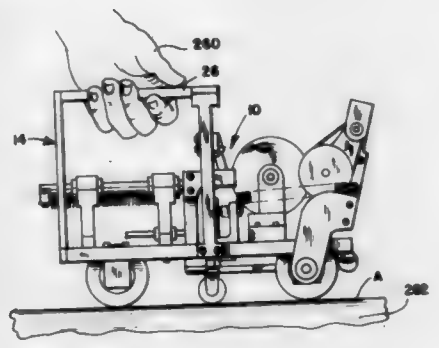
1. A device for use in determining and recording a precise dimension, said device comprising, in combination, first and second generally cylindrical hollow members having between them a threaded connection, an end of said first member being received within said second member, writing means supported within said first and second members and projecting outwardly from an end of one of said members which is remote from said threaded connection, collar means upon each of said members, said collar means being adapted to be brought into contact with an object to be measured, and indicia upon each of said members, said indicia being adapted to indicate the dimension to be determined of said object.

4,403,419

SURFACE PROFILE RECORDER

J. Robert Graves, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Jun. 22, 1981, Ser. No. 275,565
Int. Cl.³ G01B 5/20
U.S. Cl. 33—174 P 21 Claims



1. A surface profile recorder comprising:

a frame;

front and rear roller means mounted to and extending below said frame;

follower means rotatably mounted to said frame and having a portion capable of rotation from said frame to a position below said front and rear roller means;

lever means including a follower engaging member and a substantially upright, elongate stylus support member;

support means mounted to said frame pivotally mounting said lever means and including means urging said follower engaging member against said follower means such that rotation of said follower means causes said lever means to pivot in response thereto; and

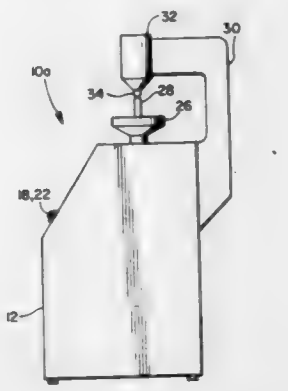
means including a stylus mounted to said support means for recording pivotal movement of said lever means and thereby recording rotational movement of said follower means.

4,403,420

DIGITAL GAUGE FOR MEASURING SAGITTAL DEPTH AND THICKNESS OF LENS, AND RELATED SYSTEM AND METHOD

Kimber W. Rarick, Muskogee, Okla., assignor to Coburn Optical Industries, Inc., Muskogee, Okla.

Filed Jul. 27, 1981, Ser. No. 286,828
Int. Cl.³ G01B 7/06, 7/28
U.S. Cl. 33—174 A 20 Claims



15. A system for automatically computing the sagittal depth and thickness of a lens, comprising:

a base having a bell mounted thereon;

gauging means for gauging the sagittal depth and thickness, respectively, of the lens, said gauging means comprising a gauging probe located above said bell, and a moveable plunger located concentrically within said bell and in alignment with said gauging probe, said moveable plunger

being moveable in an upward or downward direction within said bell and substantially perpendicular to said base;

encoder means actuated by said gauging means for providing electrical signals corresponding to the sagittal depth and thickness, respectively, of the lens;

digital means responsive to the electrical signals corresponding to the sagittal depth and thickness, respectively, of the lens for producing first and second digital outputs representing the sagittal depth and thickness, respectively, of the lens; and

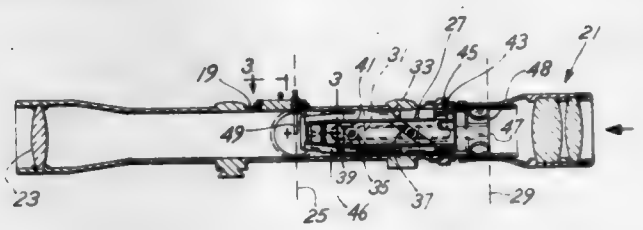
processor means for receiving and processing said first and second digital outputs to derive the thickness and sagittal depth, respectively, of the lens.

4,403,421

TELESCOPIC GUN SIGHT

Daniel R. Shepherd, R.R. #1, P.O. Box 23, Waterloo, Nebr. 68069

Filed Nov. 13, 1980, Ser. No. 206,668
Int. Cl.³ F41G *1/38, 1/42*
U.S. Cl. 33—246 **20 Claims**



1. A telescope sight for sighting-in and aiming a firearm, comprising:

objective lens means for presenting an object onto an image plane;

inverting tube means positioned relative to said image plane for inverting the object image appearing in said image plane;

occular lens means for presenting the inverted object image for viewing;

a primary reticule for constantly defining the center point of the field of view of the sight for defining a first aiming sight position through the telescope sight, said primary reticule positioned at and in a fixed relationship with one end of said inverting tube means, said one end being the end disposed more distally from said image plane;

first adjustment means manually actuable for positioning the other end of said inverting tube means relative to said one end, for adjusting said first aiming sight position of said primary reticule relative to the bore of the firearm;

a secondary reticule located at said image plane for establishing a reference point which defines the relationship of the primary reticule to the bore of the firearm, with respect to which said first adjustment means may be actuated for aligning the reticules to sight-in the firearm, said secondary reticule being movable both horizontally and vertically in said image plane independent of said inverting tube means; and

second adjustment means for moving said secondary reticule relative to said primary reticule for establishing said relationship.

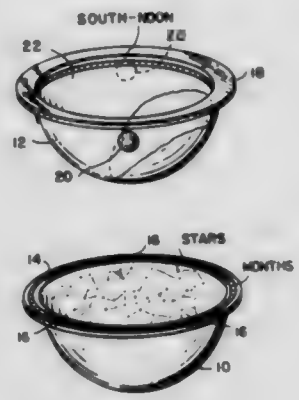
4,403,422

STAR FINDER

Norman Sperling, 17 Thorpe St., Somerville, Mass. 02143, and George Loui, 4 Brattle Dr. #24, Arlington, Mass. 02174

Filed Jun. 19, 1981, Ser. No. 275,436
Int. Cl.³ G01C *17/34*
U.S. Cl. 33—268 **10 Claims**

1. A device for portraying the night sky in any specific latitude for any specific day and time, comprising inner and outer transparent nested hemispheres rotatable relative to each other about an axis perpendicular to their diametral side, indicia depicted on the concave surface of the outer hemisphere representing the heavenly bodies in relation to each other, and a non-transparent horizon shield on the inner hemisphere positioned so that when the hemispheres are rotated relative to



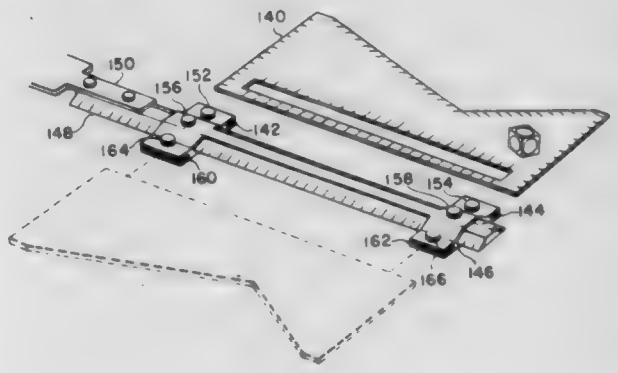
each other to match the day and time of observation, the perimeter of the horizon shield will define the area of the sky visible for that day and time and at the said specific latitude for which the device is to be designed to be used blocking out that portion of the sky which is not visible.

4,403,423

DRAFTING INSTRUMENT

Alan T. Ford, P.O. Box 531, Green Harbor, Mass. 02041, and Norman G. Graf, 225 High St., Hingham, Mass. 02043

Continuation-in-part of Ser. No. 73,220, Sep. 7, 1979, abandoned. This application Aug. 21, 1981, Ser. No. 295,094
Int. Cl.³ B43L *13/14*
U.S. Cl. 33—432 **2 Claims**



1. A drafting instrument for use in making axonometric projections, comprising

(a) a generally flat template of a relatively stiff material;

(b) said template being formed with a pair of straight parallel side edges, a straight bottom edge perpendicular to the side edges and a pair of mutually intersecting first and second straight upper edges;

(c) said upper edges extending generally from the side edges of said template downwardly and inwardly to define therebetween an angle corresponding to the angle of a selected axonometric projection;

(d) scale markings corresponding to the selected axonometric projection extending along the margins of said first and second upper and at least one of said side edges, said scale markings along the margins of said upper edges including a plurality of scale lines with the lines along the margin of said first upper edge oriented parallel to the second upper edge and the lines along the margin of said second upper edge oriented parallel to the first upper edge;

(e) said drafting instrument in combination with a slide adapted to be mounted slidably to a straight scale and the like and connecting means operatively associated with

said slide and said drafting instrument for connecting one to the other; and

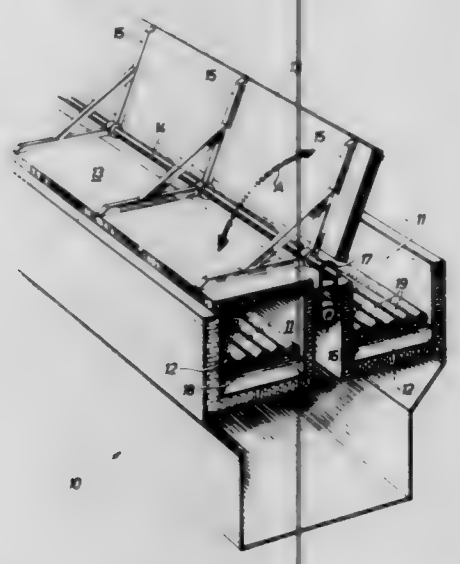
(f) wherein said slide includes groove means along at least one side thereof to receive the lower edge of said template inserted therein.

4,403,424

A DRIER CABINET FOR DRYING FIRE HOSES OR OTHER SIMILAR HOSES

Hans V. Wahlström, Bergasstigen 3, 182 33 Danderyd; Rolf E. Nilsson, Uttervägen 9, 195 00 Märsta, and Kjell A. Pihlgren, Uppland Väsby, all of Sweden, assignors to Hans V. Wahlström, Danderyd and Rolf E. Nilsson, Märsta, both of, Sweden

Filed Mar. 30, 1981, Ser. No. 248,706
Int. Cl.³ F26B *9/06*
U.S. Cl. 34—104 **8 Claims**



1. A drier cabinet for use in a drier for drying fire-hoses or other similar hoses, said drier cabinet comprising:

an elongated horizontal receptacle divided into two parallel drying chambers extending in side by side relationship along the length of the receptacle and having individually closable longitudinal openings at their upper ends, each of said chambers receiving a plurality of wet hoses through said longitudinal opening, the hoses being placed side by side in extended positions to undergo drying in said drying chambers upon closure of the longitudinal openings of the chambers; and

means for closing the longitudinal openings of said drying chambers to thereby enclose the hoses within the drying chambers, said means for closing comprising two covers, one for each drying chamber, said two covers being connected to each other so as to permit only one drying chamber at a time to be closed by its cover.

4,403,425

APPARATUS FOR DRYING AND SMOOTHING ARTICLES OF CLOTHING

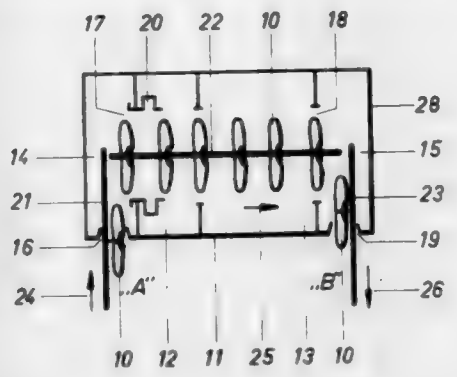
Klaus Müssiger, Bad Salzuflen, Fed. Rep. of Germany, assignor to Herbert Kannegiesser GmbH & Co., Vlotho, Fed. Rep. of Germany

Continuation of Ser. No. 49,831, Jun. 18, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,157
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827433
Int. Cl.³ B08B *3/02*
U.S. Cl. 34—162 **1 Claim**

1. An apparatus for the simultaneous drying and smoothing of washed articles of clothing (10), having a treatment chamber in the shape of a tunnel, the articles of clothing being conveyed therethrough, and a transport device for conveying the articles of clothing, which are suspended on hangers, transversely to the direction of conveyance of said articles of clothing through the tunnel, characterized by:

(a) a first non-treatment chamber (14) preceding the tunnel (11), a continuously open inlet opening (16) of the first non-treatment chamber extending perpendicularly relative to a continuously open outlet opening (17) thereof, the inlet opening (16) of the first non-treatment chamber (14) being relatively narrow to accommodate for longitudinal transportation of the articles of clothing therethrough, and the outlet opening (17) being relatively wide to accommodate for cross transportation of the articles of clothing (10) therethrough.

(b) a second non-treatment chamber (15) following the tunnel (11), a continuously open inlet opening (18) of the second non-treatment chamber extending perpendicularly



to a continuously open outlet opening (19) of the second non-treatment chamber, the inlet opening (18) of the second non-treatment chamber being relatively wide to accommodate for cross transportation of the articles of clothing therethrough and the outlet opening (19) thereof being relatively narrow to accommodate for longitudinal transportation of the articles of clothing (10) therethrough,

(c) first and second conveyance means (21, 23) for the transportation of the individual articles of clothing (10) through the first and second non-treatment chambers (14, 15), respectively and

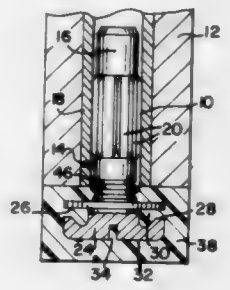
(d) a hot air channel (20) in an area of the inlet opening of the tunnel (11) for, together with the first non-treatment chamber (14), preventing the escape of steam, hot air and the like from the tunnel.

4,403,426

HEEL LIFT

S. Richard Kaplan, 5328 W. Grove St., Skokie, Ill. 60077

Filed Jul. 27, 1981, Ser. No. 287,306
Int. Cl.³ A43B *21/36, 21/39*
U.S. Cl. 36—36 R **15 Claims**



1. A replaceable heel lift construction comprising:

(a) an elongated body portion having a plurality of ridges extending axially along the body portion;

(b) a head portion having an upper surface which includes a continuous annular undercut coaxial with the body portion, said upper surface being connected to the lower end of said body portion, and a lower surface including a slot extending radially therethrough across the head portion

and in communication with said annular undercut to form at least one passage within said head portion;

(c) a ring member fitting around said body portion adjacent the upper surface of said head portion, said ring member comprising a continuous outer peripheral portion and having inwardly extending fingers engaging said body portion, the internal ends of said fingers defining a central opening in said ring member having a diameter slightly less than the outer diameter of said body portion whereby engagement of said fingers with said body portion serves to hold said ring member in place on said body portion in spaced apart relationship with respect to said head portion; and

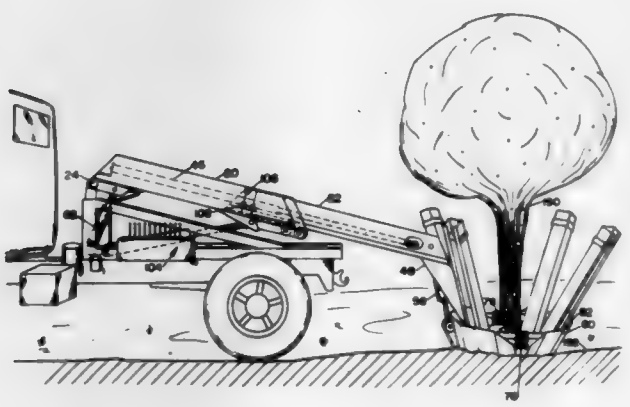
(d) a wearing portion formed of a molding material surrounding said head portion, said ring member and the spaces defined between said fingers and between said outer peripheral portion and said body portion, said molding material also extending between said head portion and said ring member and within the annular undercut, the slot and the passage within the head portion whereby said wearing portion is firmly secured in said construction.

4,403,427

TREE PLANTER

Arthur Dahlquist, 1404 E. Crystal Lake Rd., Burnsville, Minn. 55337

Filed Jun. 1, 1982, Ser. No. 384,021
Int. Cl.³ A01G *23/04*
U.S. Cl. 37—2 R **15 Claims**



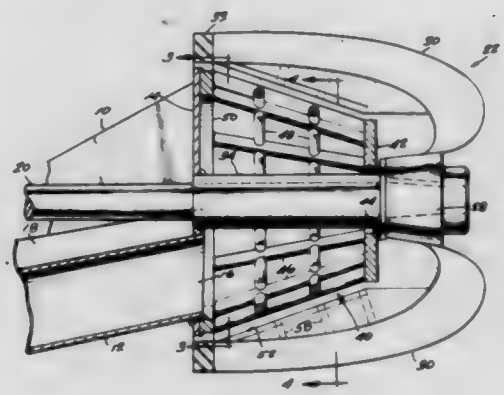
1. Tree planter comprising: vehicular chassis including a frame, an engine mounted on said frame, at least two axles of wheels axially mounted on said frame, a transmission connected between one of said axles and said engine, a hydraulic take-off power system for providing hydraulic pressure connected to said engine; a hoist frame means affixed to said vehicle frame and supporting a main pivot point, a boom including a telescopically extendable inner and outer boom assembly affixed at said main pivot point through a self-aligning bushing; a main boom hoist cylinder connected between a mid portion of said outer boom and a lower portion of said hoist frame means through self-aligning bushings, a side-swing cylinder connected between a side pivot point of said outer boom and said hoist frame means through self-aligning bushings, a yaw twist cylinder connected through a single bar linkage between said main pivot point and said hoist frame means through self-aligning bushings; said inner boom supporting a nose for a digger means, said inner boom slidable on a plurality of rollers supported at one end of said inner boom, and rollers at an outer end of said outer boom, and a track affixed to said inner boom and riding between opposing rollers affixed to an interior of said outer boom, and a hydraulic cylinder connected between the outer ends of said inner boom and said outer boom for telescopically extending and retracting said boom assembly, a nose pivot cylinder connected between said outer end of said inner boom and said digger means; said digger means pivoted on an end of said nose, said nose pivot cylinder mounted between self-aligning bushings; said digger means including a frame and including four hydraulically actuated spade towers, each of said spade towers supporting a spade actuated by said hydraulic cylinder, two gate pivots at opposing positions, said gate pivots supporting two of said hydraulically actuated spade towers, said gates actuated about said pivots by gate hydraulic cylinders mounted through self-aligning bushings for opening and closing said gate hydraulic spade towers about a mature tree whereby said main boom hoist elevator cylinder, said yaw twist cylinder, and said swing cylinder provide for all degrees of axial and radial freedom of movement of said boom assembly, said hydraulic cylinder connected between said ends of said outer and inner booms provides for telescopically extending and retracting action of said boom assembly carrying said digger means, and an octagonal digger means assembly providing for working in restricted areas and about trees, thereby providing for excavation, transportation and planting of a tree.

4,403,428

SUCTION DREDGE CUTTER HEAD

Marion R. Chapman, Jr., General Delivery, Gloucester, Va. 23061, and Marion J. Chapman, 1102D Holik, College Station, Tex. 77840

Filed Nov. 13, 1981, Ser. No. 321,238
Int. Cl.³ E02F *3/92*
U.S. Cl. 37—57 **8 Claims**



1. In a suction dredge having a ladder carrying a suction pipe and a driven cutter head of open-work divergently spiral toothed-rib construction which encloses and is rotatable about the mouth of the pipe, the combination of:

a crusher of open-work construction fixed relative to and enclosing the mouth within and cooperating with the cutter head on rotation thereof to crush therebetween large lumps passing through the cutter head to minimize damage and clogging of suction and discharge lines and the dredge pump, said crusher being of generally frusto-conical configuration and generally-coaxial with the head and being provided with interconnecting generally-circumferential and generally-longitudinal bars defining openings therebetween, whereby the head ribs sweep large lumps dug by the head into the clearance between the ribs and bars so as to exert a crushing action which breaks the lumps into smaller pieces which can pass through said openings and into the mouth of the pipe.

4,403,429

ARTICULATED ARM FOR EXCAVATOR MACHINES

Alois Haringer, Egna, Italy, assignor to VEMA, S.p.A., Egna, Italy

Filed Oct. 26, 1981, Ser. No. 314,968
Claims priority, application Italy, Nov. 4, 1980, 68686 A/80
Int. Cl.³ E02F *5/02*
U.S. Cl. 37—103 **4 Claims**

1. An articulated arm mounted on an excavator vehicle to permit the excavator which is movable along a working floor to make an excavation lateral thereto and parallel to the vehicle line of travel, comprising:

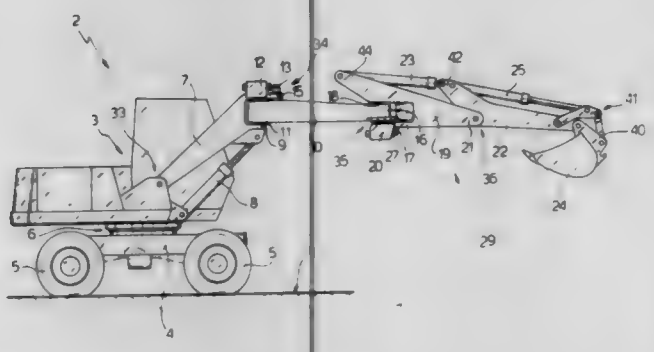
(a) a rigid arm hingedly connected at one end to the excava-

tor vehicle to permit the arm to move in a vertical plane perpendicular to the working floor,

(b) a second horizontally movable arm hingedly connected through a pin assembly to the other end of the first arm to permit the second arm to swing in a substantially horizontal direction to either side of the vehicle,

(c) the other end of the second arm hingedly supporting a third arm at one end thereof through a pin assembly for rotational movement in the same plane as the second arm, such that it can also move in a substantially horizontal direction,

(d) a fourth and shovel supporting arm hingedly connected to the other end of the third arm to permit it to move in a plane perpendicular to the plane containing the line of movement of the third arm,



(e) the hinged connections at each end of the second arm including an upright hinge pin,

(f) a motor directly mounted on each of the second and third arms in substantial alignment with and directly connected to the hinge connections for permitting movement of the interconnected arms in a large arc,

(g) locking-pin means associated with each of the hinge connections for permitting an arcuate locking arrangement of the second arm with respect to the first arm and the third arms,

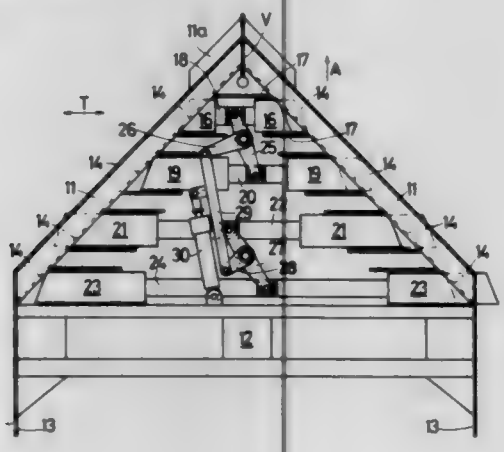
(h) the locking means including a plurality of arcuately spaced fixing bores on one of the arms of each hinged connection at each end of the second arm, and a fixing pin integral with the other arm of each hinged connection which can be moved to engage any of the fixing bores.

4,403,430

PLOUGH WITH LATERAL EJECTORS FOR DISPLACING RAILWAY TRACK BALLAST

Sergio Valditerra, Alessandria, Italy, assignor to Matisa Materiel Industriel S.A., Switzerland

Filed Jan. 29, 1981, Ser. No. 227,681
Claims priority, application Italy, Oct. 22, 1979, 69052 A/79
Int. Cl.³ E02F *5/22*
U.S. Cl. 37—104 **13 Claims**



1. A plow for laterally displacing compacted ballast of railway road beds, comprising:

a vehicle having means for propelling said vehicle along the road bed, a V-shaped plow mounted on said vehicle and having an apex and plow blades which extend at an angle rearwardly and laterally outwardly from the apex of said plow, each of said blades having spaced apertures in lower portions thereof,

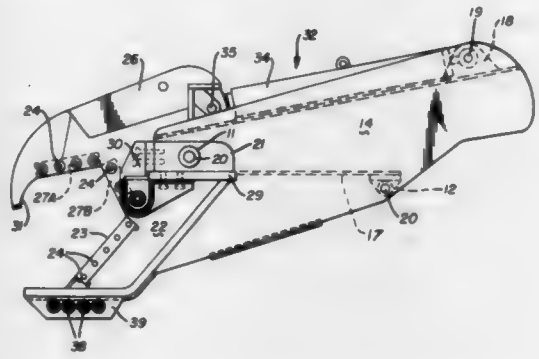
a plurality of ejectors disposed in said apertures and movable transversely of the direction of movement of said vehicle between a retracted position and an extended position in which they project laterally outwardly from said blades, and power means for intermittently moving said ejectors laterally between said retracted position and said extended position as said plow is moved forwardly by said vehicle.

4,403,431

SELF-CONTAINED MATERIAL HANDLING AND SHEARING ATTACHMENT FOR A BACKHOE

Michael Ramun, and John Ramun, both of 2100 Poland Ave., Youngstown, Ohio 44502

Filed Jul. 19, 1982, Ser. No. 399,734
Int. Cl.³ E02F *3/76;* B23P *19/00*
U.S. Cl. 37—117.5 **6 Claims**



1. An improvement in a cutting and manipulating attachment for a backhoe, the bucket of which has been removed and having a boom and means for moving the boom; the improvement comprising a mounting body defining an elongated cavity arranged to receive a portion of said boom, means for attaching said mounting body to said boom, an elongated movable cutting blade having a pair of cutting edges arranged in a V-shape on a common plane parallel with said cutting blade, said cutting edges positioned in shearing relation to a fixed cutting blade on said mounting body, means pivotally mounting said elongated cutting blade on said mounting body in pivotal relation to said fixed cutting blade with at least one of said cutting edges arranged in approximately parallel spaced relation to said fixed cutting blade when said elongated movable cutting blade is in substantially open relation thereto, means on said mounting body for keeping said elongated movable cutting blade in shearing relation to said fixed cutting blade consisting of spaced parallel guides adjacent said fixed cutting blade defining an elongated guide path for a portion of said movable elongated cutting blade, a piston and cylinder positioned on said mounting body and pivotally connected to said movable cutting blade so that the same can be moved relative to said fixed body thereby.

4,403,432

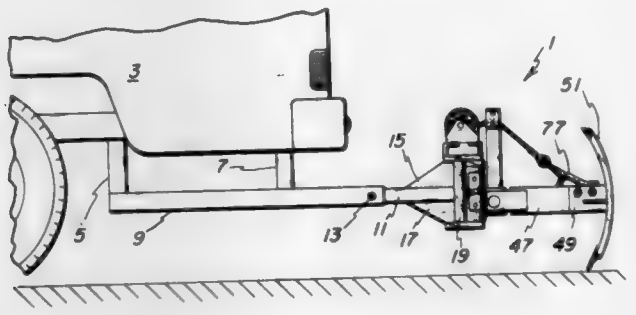
TRAILER HITCH SNOW PLOW

Michael P. Biance, 7 Martingale Dr., Albany, N.Y. 12205

Filed Feb. 17, 1983, Ser. No. 467,400
Int. Cl.³ E01H *5/06;* A01B *65/00*
U.S. Cl. 37—235 **6 Claims**

1. A snow plow operatively carried on and upon the rear of a vehicle and with its plow blade disposed in positions of raised or lowered elevation, and traverse, relative to said vehicle; said snow plow comprising a tongue, pedestal assembly, pintle, sleeve, pin, first member, second member, winch means and plow blade; said vehicle having on its bottom rear segment a receiver, said receiver operatively carrying said tongue and

removably mounting said tongue, said tongue carrying said pedestal assembly, said pedestal assembly carrying said pintle, said pintle freely carrying said sleeve in rotary relationship and affording such traverse of said plow blade, said sleeve carrying said first member, said first member being in pivotal relationship with said second member and affording such elevation of said plow blade, said second member carrying said plow blade,



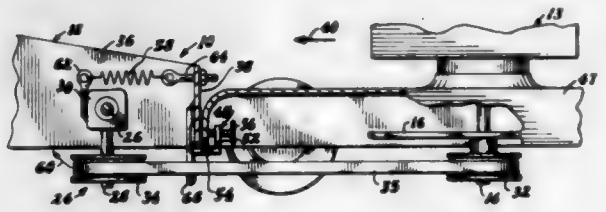
said winch means being operatively connected to said second member to raise or lower said plow blade to a discrete position of elevation, said pintle and sleeve having sets of aligned holes with each set of which corresponding to a discrete position of traverse of said plow blade, and said pin being removably engaged with a set of said aligned holes in said pintle and sleeve to lock said plow blade in a discrete position of traverse.

4,403,433

SNOW BLOWER AUXILIARY FOR ROTARY LAWN MOWER

Delmar A. Smith, Kokomo, Ind., assignor to Richard L. Rayl, Kokomo, Ind., a part interest

Filed Dec. 24, 1981, Ser. No. 334,434
Int. Cl.³ E01H 5/09
U.S. Cl. 37—243 **2 Claims**



1. A snow blower auxiliary for a rotary lawn mower of a type having a vertical power shaft normally used for driving the cutter blade of the lawn mower, the snow blower auxiliary comprising:

snow blower means of a type having a support means, including a support member, and a rotatable means by which snow is gathered and forcibly ejected;

first power means, for receiving power drive from the vertical power shaft of the lawn mower, the shaft being the shaft normally used for driving the cutter blade of the mower;

second drive means, by which the power drive of the said first power means is utilized to drive the rotatable means of the snow blower means;

said second drive means including a horizontal power shaft, and a vertical drive shaft operatively interconnected thereto for power-transmission of power received through the said vertical drive shaft and powering the horizontal power shaft therefrom, and including a normally stationary body member means providing a support means with respect to which both the horizontal power shaft and the vertical drive shaft are relatively movable;

the first power means including driver means connected to the vertical drive shaft, and driven means drivably interconnecting the first power means and the said second drive means;

bearing means for supporting the said horizontal power shaft; and

the support means of the snow blower means supportingly interconnecting the bearing means to both the support member of the snow blower means and to the deck of the lawn mower, thereby achieving support of the horizontal power shaft of the snow blower means from the lawn mower merely by support from the deck thereof; and

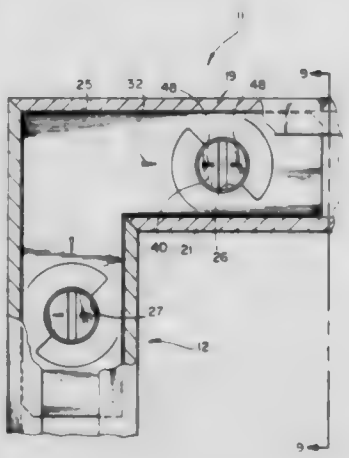
the normally stationary body member means being rotatable concentrically with respect to the axis of the horizontal power shaft, the rotation of the body member means about the axis of the horizontal power shaft causing rotation of the vertical drive shaft of the second drive means in a plane perpendicular to the horizontal power shaft.

4,403,434

PICTURE FRAME ASSEMBLY

Robert D. Jenkins, Indianapolis, Ind., assignor to David G. Reilich; Unipak, Inc. and Jeffrey J. Quinn, all of Indianapolis, Ind., part interest to each

Filed Jan. 18, 1982, Ser. No. 340,257
Int. Cl.³ G09F 1/12
U.S. Cl. 40—152 **26 Claims**



1. A frame assembly comprising:

a plurality of framing members arranged in series, with the ends of each member meeting the ends of the next adjacent member in the series at junctions, to form a frame, each of said members having a generally C-shaped cross section comprising spaced facing wall means;

a plurality of connector assemblies, one of said connector assemblies being located at each of said junctions of frame members to connect the adjacent frame members together at the junction, each connector assembly including a bearing piece having at least two apertures therein spaced from each other and located on opposite sides of the junction between the two frame members being connected by the connector assembly at the junction, each of said bearing pieces of the connector assembly engaging one of said wall means of each of the two frame members on opposite sides of the junction and adjacent said apertures, and each connector assembly including at least two bearing pad means, each bearing pad means including a bearing pad portion engaging the other of said wall means of one of said frame members, and each bearing pad means including a locating stem received in one of said apertures of the connector bearing piece, the stem having a tool receiver therein;

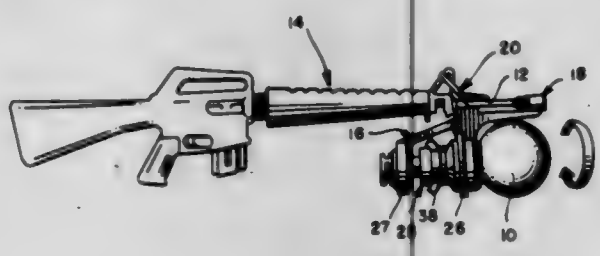
said bearing pieces and bearing pad means having cooperating cam and follower means thereon operable by a tool when received in the tool receiver of the stem of the bearing pad means to tighten and loosen the connector assemblies between the said facing wall means at the junctions.

4,403,435

RELEASE AND ALIGNMENT MECHANISM FOR JET-PROPELLED PROJECTILES

Alan C. Baker, Huntington Beach; Nathan N. Shiovitz, Anaheim, and George E. Whiting, Santa Ana, all of Calif., assignors to Brunswick Corporation, Skokie, Ill.

Filed Apr. 2, 1981, Ser. No. 250,427
Int. Cl.[3] F41C *27/06*
U.S. Cl. 42—1 F 22 Claims



1. A projectile release mechanism for facilitating launching a jet-propelled projectile, comprising:

a nozzle extending from said projectile, including fusible joint means for heating by high-temperature exhaust gases expelled by said projectile to release the projectile;

a projectile support means, including open-ended receptacle means generally coaxial with said nozzle for receiving the nozzle and thereby supporting said projectile; and

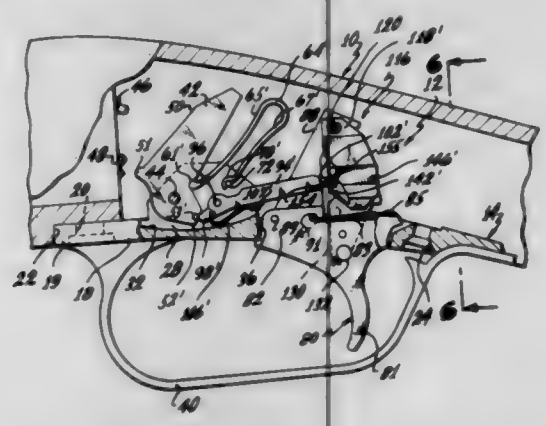
means for retaining the nozzle in said receptacle means and permitting fore and aft sections of said nozzle to move out of the open ends of said receptacle means on fusing and separation of said fusible joint means.

4,403,436

TRIGGER MECHANISM FOR MULTIPLE BARREL FIREARM PROVIDING BARREL SELECTION

Fred Jennie, Corona del Mar, Calif., assignor to Weatherby, Inc., South Gate, Calif.

Filed Sep. 8, 1981, Ser. No. 299,734
Int. Cl.[3] F41C *19/00*
U.S. Cl. 42—42 R 11 Claims



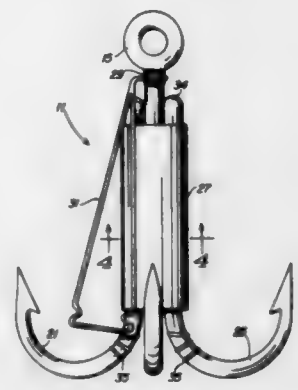
1. A firearm having double barrels and a trigger mechanism including a trigger, a hammer for each barrel, a sear for each hammer, connector means actuateable by the trigger and engageable with an individual sear for releasing its respective hammer, barrel selector means cooperative with the connector means for selecting an individual barrel to be fired by positioning of the connector means, said connector means being constructed to be moveable laterally by the selector means for a position for engagement with a first sear to a second position for engagement with a second sear, said connector means also being moveable in a forward direction from a position for engagement with a first sear to a position for engagement with a second sear, each sear and its respective hammer having a constructional relationship whereby after sear releases its hammer, the hammer rotates the sear, and means providing for engagement of each sear with the connector means whereby rotation of the sear causes movement of the connector means rearwardly to disengage it from the sear and means to move the connector means to a more forward position for engagement with the second sear.

4,403,437

TORSIONALLY LOADED TREBLE HOOK WITH PIVOTABLE WEED GUARD

Ervin H. Shuman, 720 NE. 18th Ave., Ocala, Fla. 32670

Filed Mar. 9, 1981, Ser. No. 241,726
Int. Cl.[3] A01K *83/02*
U.S. Cl. 43—36 6 Claims



1. A hook device for catching fish comprising:

a stationary hook having a shank portion and a curved portion;

at least one oscillatable hook having a shank portion and a curved portion disposed adjacent to the stationary hook;

a slender torsion bar disposed parallel and adjacent to the shank portions of the stationary hook and the oscillatable hook, said slender bar being secured to the curved portion of the oscillatable hook in a preloaded condition;

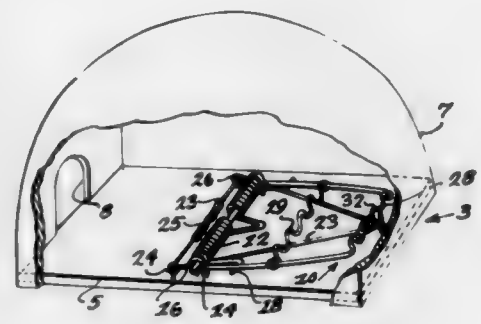
a sleeve surrounding at least a portion of the slender torsion bar and the shank portions of the stationary hook and the oscillatable hook, said sleeve having an interior cross sectional area that provides a minimum clearance fit around the slender torsion bar and the shank portions of the stationary hook and the oscillatable hook whereby the cross sectional area of the hook device is minimized.

4,403,438

DISPOSABLE RODENT TRAP

Aramynta West-Harron, Heyatawin Lodge, 189 Chelton Rd., Manitou Springs, Colo. 80828

Filed May 15, 1981, Ser. No. 264,102
Int. Cl.[3] A01M *23/32*
U.S. Cl. 43—81 3 Claims



1. In a rodent trap having:

a base member;

a pivotal jaw attached to the base member; and

spring means operably connected with the jaw for biasing the jaw into a first position; the improvement comprising:

at least three anchor means attached to the top side of the base member;

an endless loop bait-carrying trigger cord slidingly engagably held by said anchor means where the bait being carried by the cord is disposed at a position forward of the

spring means and where at least one of said anchor means is disposed rearwardly of the spring means and positioned so as to bring said cord into contact with the jaw to maintain the jaw in a second position against the force of the spring means.

4,403,439

INTEGRAL FISHING ROD, HANDLE AND REEL SEAT

Leonard D. Wallace, 1 S. Strawberry St., Philadelphia, Pa. 19106

Filed Apr. 13, 1981, Ser. No. 253,334
Int. Cl.³ A01K *87/00*
U.S. Cl. 43—18.1 **5 Claims**



1. An integral fishing rod, handle and reel seat, said rod comprising an elongated rod having a distal end, said handle and reel seat comprising an elongated one-piece cylindrical member formed of a plastic material and having a front end in the form of a reel seat and a rear end in the form of a gimbal butt, said rod being permanently secured to said handle by molding said handle and reel seat in situ on the distal end of said rod to form a solid bodied handle with the distal end of the rod extending into and secured to the handle along substantially the entire length thereof to a point immediately adjacent the gimbal butt to serve as reinforcement for the handle.

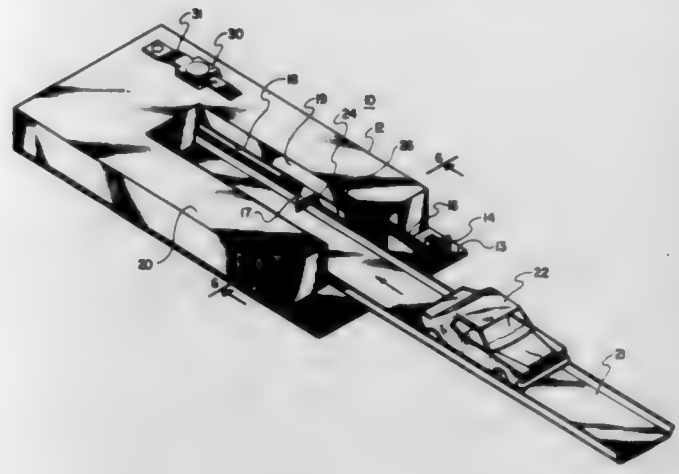
4,403,440

TOY VEHICLE ACCELERATOR

Virgil W. Wulff, Fullerton, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Oct. 19, 1981, Ser. No. 312,440
Int. Cl.³ A63H *33/00, 29/00*
U.S. Cl. 46—1 K **7 Claims**

1. A toy vehicle accelerator comprising a track piece; a pair of essentially parallel walls on opposite sides of the track piece separated by a distance selected to fit a particular size of toy vehicle; an impeller rotatably positioned to intrude over the track piece, the impeller being mounted to rotate freely in a horizontal plane and having first and second surfaces arranged so that when the first surface contacts the front or rear of a selected toy vehicle placed on the track piece the second



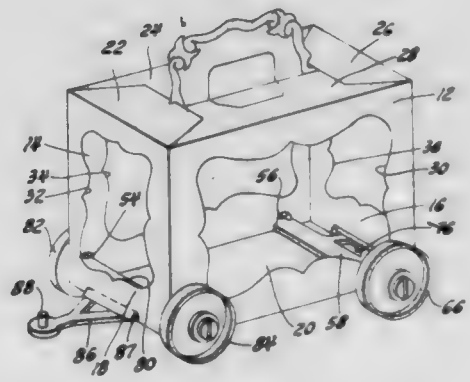
surface contacts a side of the vehicle; and means for moving the impeller along the track piece.

4,403,441

MEAL BOX ASSEMBLY

David L. White, and Beverly A. White, both of 7777 Mohrle, Fowlerville, Mich. 48836

Filed Jul. 20, 1981, Ser. No. 284,942
Int. Cl.³ A63H *33/00*
U.S. Cl. 46—11 **4 Claims**



1. A combination comprising:

a collapsible meal box formed of a paperboard and having a base and a pair of spaced parallel sidewalls foldably secured along opposite sides of the base;

means rendering the base movable along a predetermined path of motion upward to a position between said sidewalls as they are moved toward one another to collapse the box;

an elongated axle member, and means supporting the ends of the axle member on the sidewalls of the box such that the axle member is disposed in the path of motion of the base to prevent the sidewalls from being moved one toward the other;

the sidewalls having a pair of aligned openings adjacent the base, the axle member extending through the openings in the sidewalls, and said axle member including means having a diameter larger than said sidewall openings mounted on the ends of the axle member within said box for abutment with the inner surfaces of said sidewalls when said box is in an erected position.

4,403,442

EXTENDABLE NAILS FOR DOLLS

Josephine Blanco, and Jeanne M. Blanco, both of 2460 Brice Rd., Akron, Ohio 44313

Filed Oct. 14, 1981, Ser. No. 311,199
Int. Cl.[3] A63H *3/36*
U.S. Cl. 46—163 8 Claims



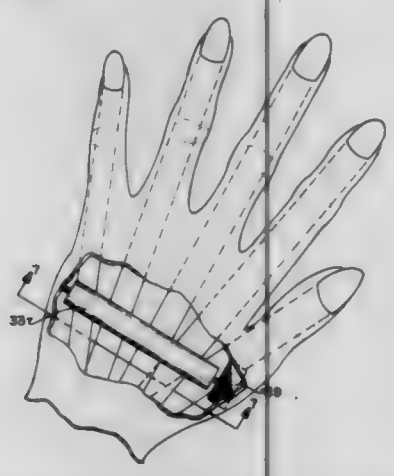
1. A doll having extendable nails, comprising:
a doll body having hollow fingers, hands, toes and feet;
nail material disposed within said fingers and toes for forming nails thereon;
a pair of nail tracks positioned on either side of a respective said finger or toe through which slides and which frictionally secures the associated nail material;
means for extending said nails including at least a pair of pinch rollers secured within said hand or foot of said doll;
an electric motor driving said pinch rollers;
a battery to power said motor; and
a switch to activate and deactivate said motor.

4,403,443

FLOWER POT DEVICE

Nicola J. Valente, Minnesota Ave., North Greenbush, N.Y. 12144

Filed Sep. 28, 1982, Ser. No. 425,449
Int. Cl.[3] A01G *13/00*
U.S. Cl. 47—32 10 Claims



1. A device for use with a conventional flower pot to prevent spillage of soil in the event the flower pot is knocked over but to allow air circulation, watering and fertilizing of a potted house plant in said flower pot; said device comprising mounting brackets and a circular member, said mounting brackets having adhesive backings for removably affixing said mounting brackets to said flower pot, said mounting brackets having a plurality of spaces for receiving and adjustably mounting said circular member within said flower pot at a plurality of vertical positions from the top of said flower pot, and said circular member having a screened portion of open-mesh design to prevent such soil spillage, but to allow such air circulation, watering and fertilizing of such potted house plant.

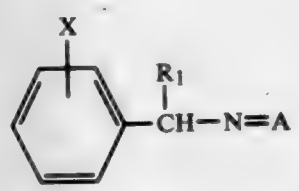
4,403,444

SUBSTITUTED 2-IMINO-1,3-DITHIO AND 1,3-OXATHIO HETEROCYCLIC COMPOUNDS AS HERBICIDAL ANTIDOTES

Frederic G. Bollinger, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 170,506, Jul. 21, 1980, Pat. No. 4,317,310, which is a division of Ser. No. 960,987, Nov. 15, 1978, Pat. No. 4,231,783. This application Dec. 7, 1981, Ser. No. 327,975
Int. Cl.[3] A01C *1/06*
U.S. Cl. 47—57.6 2 Claims

1. Sorghum seeds, the plants grown from which are resistant to injury by alachlor herbicide comprising crop seed coated with a safening effective amount of a compound of the formula

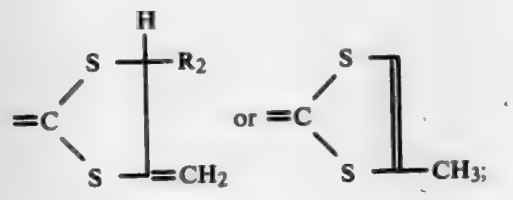


or an agriculturally acceptable acid addition salt thereof, wherein

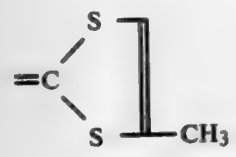
R_1 is hydrogen or methyl;

X is hydrogen, lower alkyl or lower alkoxy;

A is



R_2 is hydrogen or methyl;
provided that when A is



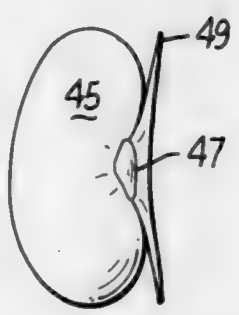
X must equal hydrogen.

4,403,445

METHOD OF SELECTING STRINGLESS BEANS

Calvin R. Lamborn, Twin Falls, Id., assignor to Sandoz, Ltd., Basel, Switzerland

Filed Oct. 8, 1981, Ser. No. 309,590
Int. Cl.[3] A01H *1/04*
U.S. Cl. 47—58 2 Claims



1. A method of improving seed bean stock to increase the percentage of stringless beans therein comprising:
separating from a lot of bean seeds, those seeds which have a placenta from those seeds which do not have a placenta

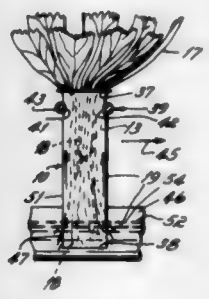
and maintaining those seeds which have a placenta as improved breeding stock for stringless green beans.

4,403,446

HYDROPONIC GROWING MEDIUM AND METHOD

Richard E. Wolfe, and Marvin G. Fiechtner, both of Cincinnati, Ohio, assignors to The Stearns & Foster Company, Cincinnati, Ohio

Filed Jul. 13, 1981, Ser. No. 282,946
Int. Cl.³ A01G *31/00*
U.S. Cl. 47—58 **4 Claims**



1. A method of hydroponically growing a plant, said method comprising the steps of

providing an elongated element of non-biodegradable fibers, said element having an exterior shell that surrounds the internal fibers which is formed from the outermost layer of said fibers by melting the outermost layer of said fibers, said internal fibers being oriented generally axially of said element, said fibers being adapted to provide capillary transfer of a nutrient solution from one end of said element to the other end of said element, said fibers selected from the group consisting of polypropylene, polyethylene terephthalate, nylon, acrylic, polyvinyl acetate, and mixtures thereof, said elongated element having a bending length at least about 50% greater than the bending length of the fiber sliver or fiber two from which said element is produced, said internal fibers having a bulk density between about 0.02 grams per cc and about 0.10 grams per cc, and said internal fibers having a denier of less than about 100,

orienting said elongated element in a generally vertical fashion,

gripping said elongated element between its ends for restraining said element in said generally vertical orientation, said gripping being accomplished by partially deforming said element upon insertion of that element in a generally V-shaped clamp so that said element's one end is above said clamp when said element's other end is immersed in said solution, said element initially being restrained within said clamp due to the deformation of said element by said clamp,

seating a seed on said element's one end, said one end having a surface area substantially greater than the cross-sectional are of said seed, and

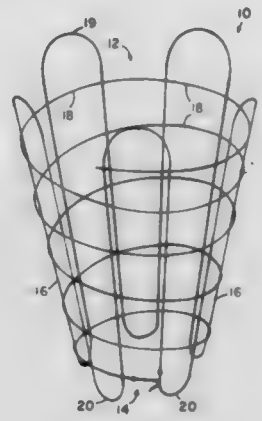
immersing said element's other end in a nutrient solution, said shell cooperating with said plant's root system during growth of said plant so as to direct said root system from said element's seat end toward said element's nutrient solution end while confining said root system interiorly of said element within said shell substantially throughout that section of said element not exposed to said nutrient solution, said interior confinement being in response to the structural integrity provided by said element's shell, the immersion lasting for a sufficient time period to permit and promote root growth within said element as well as exterior to said element, but the exterior root growth occurring only at that end of said element immersed in the nutrient solution.

4,403,447

WIRE BASKET, APPARATUS AND METHOD

Peter Braun, 58 Pleasant Ave., Hamilton, Ontario, Canada (L9C 4M8)

Filed Aug. 17, 1981, Ser. No. 293,607
Int. Cl.³ A01G *23/04*
U.S. Cl. 47—76 **5 Claims**



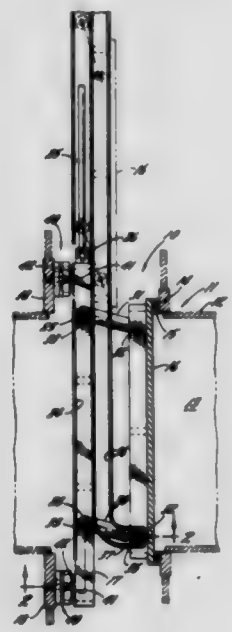
1. A wire basket for holding the root system of a plant in a ball of earth, comprising a single continuous strand of wire having a first portion forming a tubular cage consisting of back and forth bight strands and a second portion forming a helically coiled grid overlying the bight strands and welded thereto at the crossing points.

4,403,448

APPARATUS FOR CLOSING AND SEALING A DOORWAY

M. Kenneth Lesher, Rockford, Ill., assignor to Alco Standard Corporation, Valley Forge, Pa.

Filed Dec. 18, 1981, Ser. No. 331,974
Int. Cl.³ E05D *15/10*
U.S. Cl. 49—225 **5 Claims**



1. Door apparatus for selectively closing and sealing a doorway in a wall, said door apparatus comprising a main support, a carrier having inner and outer sides, and a door on the inner side of said carrier, means mounting said carrier for back and forth movement on said support and enabling said carrier to move said door between open and closed positions relative to said doorway, said carrier and said door shifting back and forth along a path substantially parallel to the plane of the doorway as said carrier moves said door between said open and closed positions, means mounting said door on said carrier and enabling said door to shift inwardly and outwardly relative to said carrier and into and out of sealing engagement with said

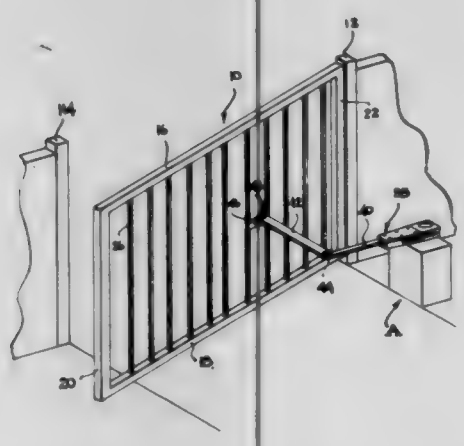
wall and sealing relationship with said doorway when said door is in said closed position, and bearing means for supporting said carrier with rolling friction as said carrier moves said door between said open and closed positions and for sustaining the outward force imposed on said carrier when said door is shifted inwardly into sealing engagement with said wall, said door apparatus being characterized in that said bearing means comprise a substantially spherical ball engageable with the outer side of said carrier, and means on said support and guding said ball to roll back and forth through a limited distance along a path substantially parallel to the path of said carrier while leaving said ball free to spin universally about is own center.

4,403,449

GATE-OPENING AND CLOSING APPARATUS AND METHOD

Moscow K. Richmond, 2819 Butler Ave., Los Angeles, Calif. 90066

Continuation of Ser. No. 126,717, Mar. 3, 1980, abandoned. This application Aug. 9, 1982, Ser. No. 406,720
Int. Cl.³ E05F *11/24*
U.S. Cl. 49—340 **46 Claims**



1. An apparatus for swinging a gate in an arcuate path from a closed position with respect to an access opening to an opened position and from the opened position to the closed position, said apparatus comprising:

(a) housing means,

(b) motive means in said housing means,

(c) a drive shaft extending from said housing means and being rotatable by said motive means in both clockwise and counter-clockwise directions during normal operation,

(d) a drive arm respectively connected to said drive shaft and being rotatable thereby in both clockwise and counter-clockwise direction during normal operation,

(e) a lever arm means comprising:

(1) a first lever arm operatively coupled to said drive arm, and capable of being driven through an arcuate path upon operation of said motive means, and

(2) a second lever arm pivotally coupled to said first lever arm by a pivotal connection, said second lever arm also being operatively connected to said gate and moving through a somewaht arcuate path upon movement of said first lever arm,

(f) means associated with said drive arm to permit said first lever arm to be coupled thereto for arcuate movement with said drive arm and to permit coupling of the second lever arm to a gate for swinging same to an open position and to a closed position,

(g) shaft coupling means associated with said drive arm for coupling said drive arm to said drive shaft so that said drive arm is rotatable with said drive shaft when the motive means is operated, and

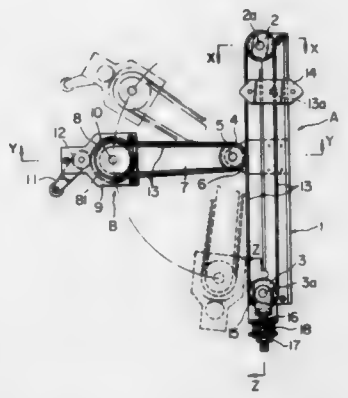
(h) disconnect means associated with said drive arm and being operatively connected to said shaft coupling means for disengaging said shaft coupling means from said drive arm to permit said drive arm to rotate independently of said drive shaft.

4,403,450

WINDOW REGULATOR FOR AN AUTOMOTIVE VEHICLE

Kinichi Ishii, Yokohama, Japan, assignor to Kabushiki Kaisha Johnan Seisakusho, Japan

Filed Aug. 30, 1982, Ser. No. 412,992
Claims priority, application Japan, Sep. 2, 1981, 56-130418[U]
Int. Cl.³ E05F *11/48*
U.S. Cl. 49—352 **4 Claims**



1. A window regulator for an automotive vehicle comprising:

(a) a guide rail;

(b) first and second pulleys rotatably supported in a fixed spatial relationship along the guide rail;

(c) a link arm, one end of which is pivotably connected to the axle of the first pulley;

(d) a drum rotatably supported by the other end of the link arm;

(e) a drive wire, one end of which is fixed to the drum, then wound sequentially around the first pulley, around the second pulley, then around the first pulley again, and the other end of which is fixed to the drum, the opposite ends of the drive wires being wound around the drum in opposite directions; and

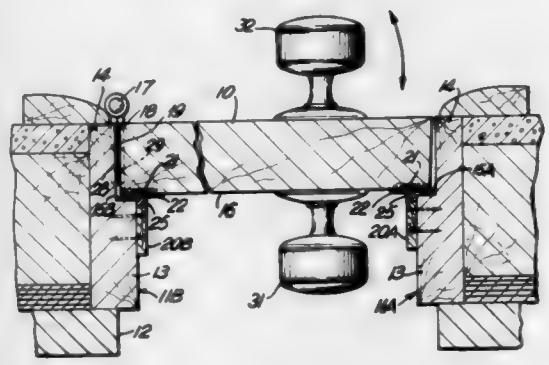
(f) a window bracket secured to the wire and slidably mounted on the guide rail, the window bracket being securable to a window pane.

4,403,451

WEATHERSTRIPPING METHOD AND ARRANGEMENT

Roger R. Douillard, 66 Columbus Ave., Valhalla, N.Y. 10595

Filed Nov. 20, 1981, Ser. No. 323,561
Int. Cl.³ E06B *7/16*
U.S. Cl. 49—475 **10 Claims**



1. A weatherstripping arrangement for a door which is hinged to a door jamb on one side and closes against a door jamb on the other side comprising:

a separate elongated wooden lattice strip mounted to the door jamb on each side of the door at a predetermined

distance from the door when the door is in a closed position and a separate lattice strip mounted to the upper jamb at a spaced distance from the top of the door,

a lubricant applied to said door along the periphery of the closing face of said door on both sides and along the top thereof,

a tape strip positioned over said lubricant and removable therefrom, and,

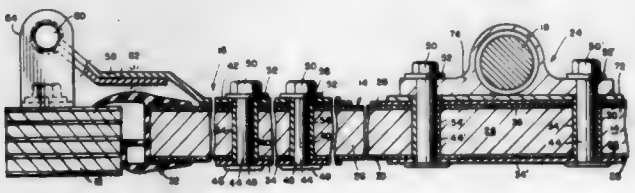
a silicone compound inserted between the tape strip and the edge of the wooden lattice strip with the door in a closed position, said compound flowing into the space between the jamb and door surface and wherein said silicone compound is allowed to harden in place to the lattice strip and door jamb to form a formfitting closure with the door.

4,403,452

HARDWARE ATTACHING MEANS FOR PANEL STRUCTURES

Burton A. Urbanick, LaGrange, Ill., assignor to Met-L-Wood Corporation, Chicago, Ill.

Filed Jun. 25, 1981, Ser. No. 277,268
Int. Cl.³ E06B *3/00*
U.S. Cl. 49—501 **35 Claims**



1. A support assembly for attaching hardware to a panel structure having first and second exterior surfaces, comprising in combination:

a first doubler plate on one side of said panel structure in abutment with said first exterior surface;

a second doubler plate on the opposite side of said panel structure in abutment with said second exterior surface;

a hardware member engageable with the outside of said second doubler plate;

aperture means extending in alignment through said doubler plates, said panel structure and said hardware member;

fastening means engaging said first doubler plate and extending through said aperture means through said hardware member;

spacer means fixed to said hardware member and extending through said second doubler plate and said panel structure and into abutment with said first doubler plate to prevent excessive compression of said panel structure; and

securing means engageable with said fastening means on the outside of said hardware member to hold said support assembly in supporting relationship with said panel structure.

4,403,453

STYLUS CONING FIXTURE

Eric F. Cave, and James J. Cowden, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 21, 1981, Ser. No. 313,577
Int. Cl.³ B24B *5/14*
U.S. Cl. 51—124 R **12 Claims**

1. An apparatus for positioning the tip of a stylus adjacent a rotating scaife while continuously rotating said stylus comprising:

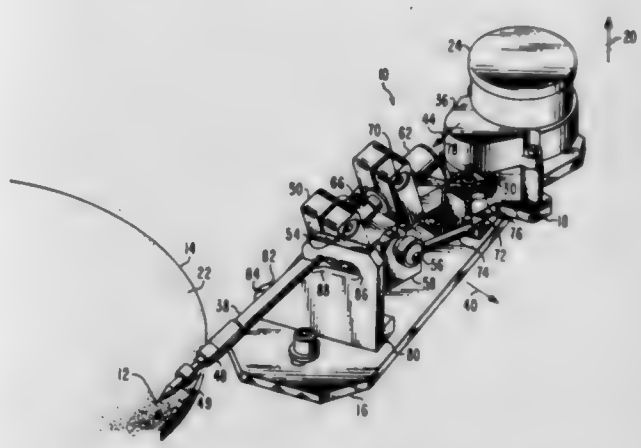
a platform adapted to be mounted adjacent said scaife,

a base plate connected to said platform by means for sweeping said plate through a sweep arc about a first axis orthogonal to the surface of said scaife,

a tube connected to said base plate by means for pivoting the tube about a second axis orthogonal to said first axis, said tube rotatably supporting a shaft adapted to rotate about a third axis oriented along the longitudinal axis of said tube, and positioned to allow one end of said shaft to move adjacent the surface of said scaife, said one end adapted to hold the shank of said stylus,

means mounted on said pivoting means and connected to the other end of said shaft for rotating said shaft about said third axis,

means supported by said base plate and connected to said pivoting means for exerting a constant torque about said second axis in a direction forcing the one end of said shaft toward the surface of said scaife, and



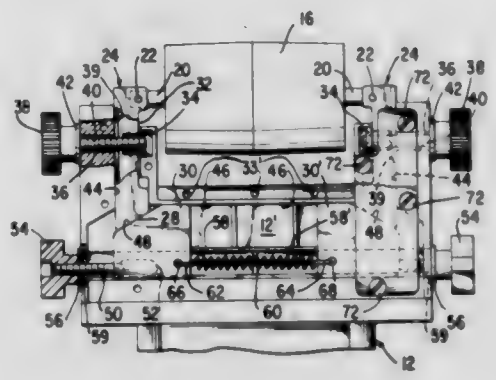
a ramp block mounted on said platform between said base plate and said scaife, said block having an inclined ramp oriented along a direction sufficiently orthogonal to said third axis to allow said tube to make contact therewith, while said stylus is positioned adjacent the surface of said scaife, and be lifted from the surface of said scaife when said sweeping means moves said plate through a portion of said sweep arc.

4,403,454

BELT SANDER

Thomas G. Glore, Easley, and Randy G. Koon, Pickens, both of S.C., assignors to The Singer Company, Stamford, Conn.

Filed Apr. 30, 1981, Ser. No. 259,300
Int. Cl.³ B24B *21/00, 21/18*
U.S. Cl. 51—135 BT **11 Claims**



1. Idler roll support and tensioning and tracking adjustment means for a belt sander having a die cast bed or frame, comprising: a pair of stamped metal yoke components adapted to be slidable in ways provided longitudinally in said die cast bed or frame and a pair of ramp members adapted to be slidable in transverse ways provided in said die cast bed or frame; each of said stamped metal yoke components comprise a generally U-shaped cross sectional configuration having a pair of legs, each leg having an aperture generally adjacent a forward end portion thereof to provide a pair of aligned apertures; a pivot pin received within said of aligned apertures for pivotally supporting an idler roll support shaft and an idler roll, each leg having rearward edges being angulated and defining ramp or camming surfaces for engaging contiguous and cooperating

ramp edges of one of said pair of ramp members for moving the yoke generally longitudinally forwardly and backwardly relative the bed or frame upon sideways movement of said ramp members; said support and tensioning and tracking adjustment means having means for selectively finely positioning said ramp members to obtain individual fine positioning, longitudinally of each of said yoke components, and means for locking each of said yoke components in selected fine positions.

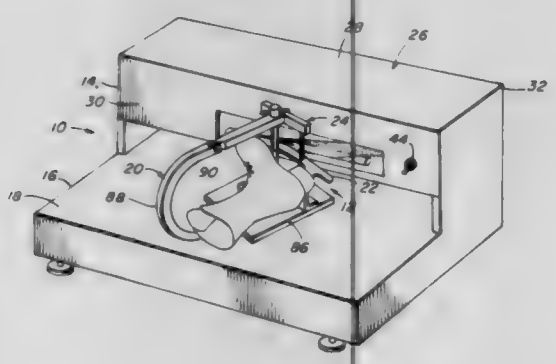
5. Belt sander comprising a die cast bed or frame, drive roll, an idler roll, an idler roll support shaft, and an idler roll support and tensioning and tracking adjustment means therefor, said support and tensioning and tracking adjustment means comprising: a pair of stamped metal yoke components slidable in ways provided longitudinally in said die cast bed or frame and a pair of ramp members slidable in transverse ways provided in said die cast bed or frame; each of said stamped metal yoke components comprise a generally U-shaped cross sectional configurations having a pair of legs spaced to receive an end of said idler roll support shaft, each leg having an aperture generally adjacent a forward end portion thereof to provide a pair of aligned apertures, said ends of said idler roll support shaft also having an aperture in alignment with said pair of aligned apertures of said yoke, a pair of pivot pins received within said aligned apertures for pivotally supporting said idler roll support shaft, each leg having rearward edges being angulated and defining ramp or camming surfaces for engaging contiguous and cooperating ramp edges of one of said pair of ramp members for moving the yoke generally longitudinally forward and backwardly relative the bed or frame upon sideways movement of said ramp members; said support and tensioning and tracking adjustment means further comprising means for selectively finally positioning said ramp members to obtain individual fine positioning, longitudinally, of each of said yoke components, and means for locking each of said yoke components in selected fine positions.

4,403,455

BELT GRINDER FOR SHARPENING ICE SKATE BLADES AND THE LIKE

Robert H. Chiasson, 1 Linden St., Maynard, Mass. 01754

Filed Apr. 10, 1981, Ser. No. 252,923
Int. Cl.³ B24B *21/10*
U.S. Cl. 51—141 **6 Claims**



1. Apparatus for grinding a workpiece such as a skate blade or the like, comprising

(a) an elongated and relatively straight platen;

(b) at least a pair of pulleys spaced from one another;

(c) power means drivingly connected to at least one of said pulleys;

(d) an endless abrasive belt looped about said pulleys in driving engagement therewith and against said platen;

(e) said pulleys disposed to guide said belt diagonally with respect to the length of said platen whereby a diagonal section of said belt will be presented at said platen to said workpiece;

(f) said platen being a shaft which rotatably supports a sleeve having a plurality of differently contoured working faces moveable into and out of working engagement with said belt; and

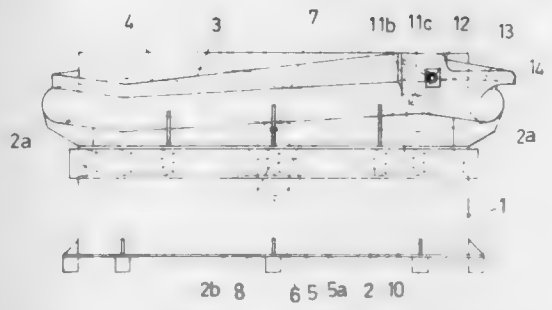
(g) a housing having a generally flat, straight bed extending parallel to said platen and a workpiece holder adapted to be moved along said bed to carry said workpiece lengthwise against that diagonal portion of said belt moving over said platen.

4,403,456

VIBRATORY BARREL FINISHING MACHINE

Hisamine Kobayashi, Nagoya, Japan, assignor to Shikishima Tipton Mfg. Co., Ltd., Nagoya, Japan

Filed Aug. 28, 1981, Ser. No. 297,168
Claims priority, application Japan, Sep. 12, 1980, 55-126803; Sep. 18, 1980, 55-132671[U]; Dec. 4, 1980, 55-174206[U]
Int. Cl.³ B24B *31/00*
U.S. Cl. 51—163.2 **18 Claims**



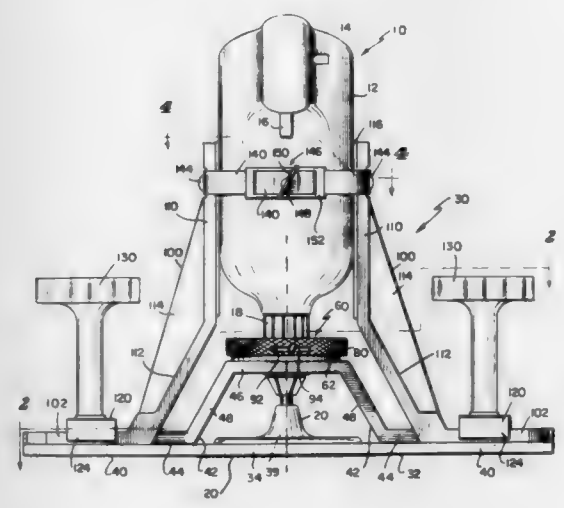
1. In a vibratory barrel finishing machine of the type having a single or multiple annular barrel structure of an elongated elliptical form in plan view including semi-circular barrel sections at the opposite ends thereof and straight longitudinal barrel sections running in parallel and connecting between the opposite semi-circular barrel sections, the barrel structure being adapted to have a vibratory motion to be supplied by vibration generating means such that the barrel structure under the vibration can allow the contents or mass therein to flow with a spiral motion through the barrel structure, said opposite semi-circular barrel sections each having a descending-slope path in the direction of the mass flow and said straight longitudinal barrel sections each having an ascending-slope path in the direction of the mass flow.

4,403,457

APPARATUS FOR SUPPORTING PORTABLE HAND TOOLS

Lowell B. Zerbe, 317 Sunset Dr., Columbus, Ind. 47201

Filed Feb. 9, 1981, Ser. No. 232,399
Int. Cl.³ B24B *23/02*
U.S. Cl. 51—170 T **12 Claims**



1. Apparatus for supporting a portable tool of the type having an outer casing and a chuck adapted to receive a tool attachment, comprising a base member having a longitudinal

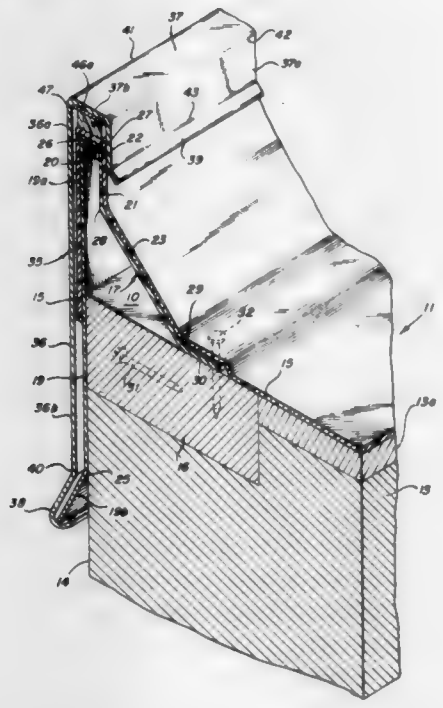
axis, a first opening formed in the base member and having a central axis at generally a right angle to the longitudinal axis of the base member, a guide member mounted on the base member, the guide member including a bridge section in spaced relationship to the first opening, a second opening formed in the bridge section having a center generally located on the central axis of the first opening, an adjustment member on the bridge section providing at least one groove extending radially with respect to the second opening, at least one finger radially movable in the groove into close proximity to the chuck, means for moving the finger to adjust the size of the second opening to receive chucks of various sizes, the bracket means for engaging the casing to support the tool, the bracket means being movable on the base member to adjust the position of the tool relative to the central axis of the first opening, and means for securing the bracket means to the base member in selected positions to support the tool.

4,403,458

CONJOINT FACIA

Ted E. Lolley, Tucker, Ga., assignor to MM Systems Corporation, Tucker, Ga.

Filed Jul. 31, 1981, Ser. No. 289,087
Int. Cl.³ E04D *13/15*
U.S. Cl. 52—60 **16 Claims**



1. In a conjoint facia, hood and water dam, the combination which includes; dam and first engagable means comprising, dam means having longitudinal ridge structure which includes upwardly extending laterally opposite forward and rearward sides and top lateral end means, and said dam means adapted to be on a roof deck of a building and installed adjacent to a wall of said building for sustaining said ridge structure in a substantially fixed position above said roof deck and supporting sheet roofing having a rearward lower portion of said sheet roofing lead from said roof deck at the rear of said dam means and an upper portion of said sheet roofing extend over said top lateral end means of said ridge structure to be covered, and first engagable means adapted to be in a position adjacent to said building wall and below said ridge structure; facia and hood means including at least one facia and hood member and said facia and hood member comprising, facia means to be disposed frontally of said dam means and said wall of said building, second engagable means connected with said facia means, and hood structure to cover said ridge structure and said upper portion of said sheet roofing on said top lateral end means of said ridge structure, said hood structure having a downwardly extending forward wall, and a rearward portion lowermost to be spaced stably upwardly free of said lower portion of said sheet roofing, said rearward portion comprising a downwardly extending rearward wall laterally opposite said forward wall, and said first engagable means and said second engagable means together including tongue means and grooved means for said tongue means and said grooved means to be engaged and said first engagable means including detaining means for movement of said facia and hood member in an upward direction relatively to said dam and first engagable means to be stopped, said tongue means to be received leading in a direction which intersects with horizontal into said grooved means during upward movement of said facia and hood member, to engage said tongue means and said grooved means laterally interlockingly and maintain said facia means horizontally laterally restrained; and resilient biasing means; said facia and hood member in being installed being downwardly and then upwardly moved with said downwardly extending laterally opposite forward and rearward walls of said hood structure being laterally outside said upwardly extending laterally opposite forward and rearward sides of said ridge structure, and said resilient biasing means being inside said hood structure and abutting said hood structure while over said upper portion of said sheet roofing on said top lateral end means of said ridge structure and pressed during said downward movement of said facia and hood member, for clamping said sheet roofing against said top lateral end means of said ridge structure and enabling said tongue means and said grooved means to be aligned for being engaged in response to upward movement of said facia and hood member meanwhile having said hood structure cover said upper portion of said sheet roofing, and for said biasing means reactively to bias said facia and hood member to effect said upward movement of said facia and hood member with said tongue means and said grooved means engaged until said facia and hood member is stopped by said detaining means, thereafter having said downwardly extending laterally opposite forward and rearward walls of said hood structure still laterally outside said upwardly extending laterally opposite sides of said ridge structure and said hood structure still covering said upper portion of said sheet roofing, said tongue means and said grooved means still engaged, and said biasing means still clamping said upper portion of said sheet roofing against said top lateral end means of said ridge structure and reactively urging said facia and hood member in an upward direction to maintain said hood structure stable with said rearward portion of said hood structure meanwhile being lowermost stably spaced upwardly free of said lower portion of said sheet roofing.

4,403,459

BENCHMARK FOR USE IN ARCTIC REGIONS

Roy B. Hurlbut, Vancouver, Wash., assignor to Atlantic Richfield Co., Los Angeles, Calif.

Filed Jan. 27, 1981, Ser. No. 228,815
Int. Cl.³ E01F *9/02*; E04H *13/00*
U.S. Cl. 52—103 **4 Claims**

1. A benchmark for an arctic region having an active surface layer which partially thaws and then refreezes over prolonged periods, said benchmark comprising:

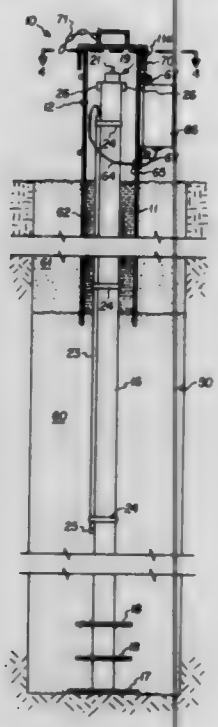
a casing set through said active layer and into the layer underlying said active layer;

a marker element extending completely through said casing and into said underlying layer, said marker element comprising:

a length of pipe; and

a reference element mounted on the upper end of said pipe; and

fluidic material in said casing around at least that portion of said marker element that pass through said active layer,



said fluidic material being material which does not freeze under ambient conditions.

4,403,460

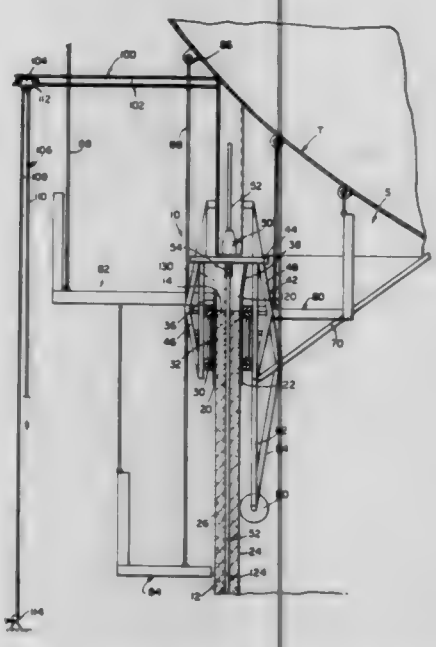
METHOD OF ERECTING AN ELEVATED TANK USING FORMWORK

Richard E. Hills, Coraopolis, Pa., assignor to Pittsburgh-Des Moines Corporation, Pittsburgh, Pa.

Filed Oct. 1, 1981, Ser. No. 307,640

Int. Cl.³ E04H *12/30*

U.S. Cl. 52—745 **14 Claims**



1. A method of erecting an elevated tank comprising steps of:

positioning a tank support means on a ground located footing;

forming a tank on said ground-mounted tank support means;

attaching formwork apparatus to said tank, said formwork apparatus including a plurality of jacking mechanisms, said jacking mechanisms being connected to said tank;

forming a support wall using formwork apparatus; and

elevating said tank simultaneously with said support wall formation using said formwork jacking mechanisms to lift said tank as said wall is formed, said tank remaining coupled to said support wall via said formwork apparatus during formation of said support wall and being carried upwardly by said support wall as said support wall moves upward during formation thereof.

4,403,461

DEVICE FOR SEALING HARD GELATIN CAPSULES AND FOR PACKING A LIQUID PRODUCT DOSE IN THE THUS SEALED CAPSULE

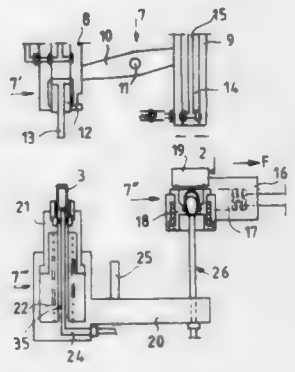
Rene-Michel Goutard, Verrieres-le-Buisson, and Pierre Piry, Briis sous Forges, both of France, assignors to Automatisme et Technique, Arcueil and Laboratoires Sophartex, Vernouillet, both of, France

Filed Feb. 19, 1981, Ser. No. 235,994

Claims priority, application France, Feb. 29, 1980, 80 04617; Apr. 18, 1980, 80 08787

Int. Cl.³ B65B *1/04, 51/02;* B67B *7/00*

U.S. Cl. 53—282 **4 Claims**

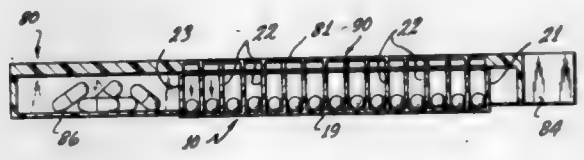


1. A device for sealing hard gelatin capsules comprising a capsule body fitted within a cap and packing in the capsules thus prepared products such as medicines, in granular, powder or liquid form, characterized in that it comprises a unit capable of rotating about a vertical axis and formed from three subassemblies spaced apart from top to bottom, the upper subassembly comprising essentially two vertical-movement slides (8 and 9), articulated together by means of a balance rod pivoting about a horizontal axis, a product-distributing piston sliding coaxially inside one of said slides (8) and extending downwards into a nozzle, whereas an adhesive-distributing piston slides coaxially inside the other of said slides (9), the intermediate subassembly being formed essentially by a horizontally movable slide (16) integral with an abutment block, whereas a support (17) slides coaxially inside said slide (16) and carries a vehicle for carrying the capsule, the lower subassembly being essentially formed by a vertically movable support (20) supporting successively from the periphery of the device towards said vertical axis, in the first place a slide (21) able to move abuttingly upwards under the action of a spring, said lower subassembly slide (21) comprising at its upper end a housing able to be connected to a vacuum line for removing the capsule body from said capsule carried in said vehicle and leaving said cap in said vehicle, and said slide (21) comprising a coaxial pushrod, in the second place a vertical finger for sensing the presence of said cap within said vehicle, in the third place an adhesive pick-up and transfer member, this member presenting an essentially vertical orientation, the housing at the upper end of said slide (21) being, by construction, placed in vertical alignment with said nozzle, whereas the adhesive take-up and transfer member is, by construction, placed in vertical alignment with the axis of said other of said slides (9), and during a single filling and sealing cycle said vehicle is brought by the movement of said horizontally moving slide (16) and support (17) respectively into vertical alignment with said housing, into vertical alignment with said finger and into vertical alignment with the adhesive pick-up and transfer member to thereby apply adhesive from said transfer member to said cap and reinsert said body into said cap.

4,403,462
PLASTIC PILL BOX AND ASSOCIATED LOADING APPLIANCE

Frank Halbich, 16123 Valeria St., Van Nuys, Calif. 91402

Division of Ser. No. 34,471, Apr. 30, 1979, Pat. No. 4,253,572. This application Aug. 12, 1980, Ser. No. 177,383
Int. Cl.³ B65B 67/02, 35/32
U.S. Cl. 53—392 7 Claims

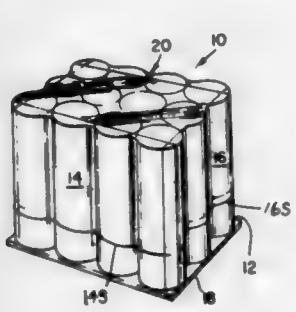


1. A multi compartment container for pills and alike, the container being defined by side, end, and bottom walls of material, means defining partitions within the container defining a plurality of individual open top compartments each adapted to receive a product, integral cover means configurated to fit onto the container, and to form a top closure for the individual compartments, said cover including a plurality of individual sections each shaped to provide a closure, for an individual compartment and each section including a frangible part connecting it to the cover whereby each individual section can be broken free of the cover in order to open and uncover an individual compartment, the improvement including a loading appliance for the container, the said appliance being in the form of a receptacle having a retaining surface, the retaining surface having a plurality of spaced recesses, the said surface having flat areas adjacent to the recesses, the spacing corresponding to the spacing of the said individual compartments, the recesses being shaped to receive the pills to be placed in the container, the receptacle having a top opening shaped for the placing of pills on said flat areas whereby pills can be put into the receptacle and caused by agitation of the receptacle to align themselves into the recesses, the receptacle being shaped to have the container positioned relative to it in a position whereby all of the pills can be caused to transfer from the recesses into individual compartments of the container.

4,403,463
PACKAGING IN EXTENSIBLE BANDS

Bernard R. Danti, Six Alfred Cir., Bedford, Mass. 01730

Continuation-in-part of Ser. No. 88,609, Oct. 26, 1979, Pat. No. 4,304,332. This application May 13, 1980, Ser. No. 149,346
Int. Cl.³ B65B 21/24
U.S. Cl. 53—398 7 Claims



1. A process for packaging articles snugly within extensible hoops formed of stretchable polymeric film, said process comprising the steps of:

(a) inserting a plurality of mechanical spreader means within a said hoop while it is in a non-extended position;

(b) contacting extensible portions of said hoop only with surfaces of each of said spreader means which are freely rotatable about an axis parallel to the direction of insertion;

(c) moving said plurality of rotatable spreader means away from each other in a direction perpendicular to the direction of insertion to an extended position thereby causing each of said spreader means to freely rotate in response to the stress exerted by said film on said spreader means surfaces to thereby uniformly stretch said hoop;

(d) placing an article within said hoop;

(e) moving said spreader means from said extended position to allow said stretched hoop to relax into snug contact with portions of the surface of said article to be packaged; then,

(f) removing said spreading means from within said hoop.

4,403,464
ACRYLIC COATED/POLYVINYLIDENE CHLORIDE COATED POLYOLEFIN FILM

Gary L. Duncan, Pittsford, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 73,830, Sep. 10, 1979, abandoned, which is a division of Ser. No. 909,426, May 25, 1978, abandoned, which is a continuation of Ser. No. 711,910, Aug. 5, 1976, abandoned. This application Apr. 9, 1981, Ser. No. 252,698
Int. Cl.³ B65B 51/10; B32B 27/08
U.S. Cl. 53—452 12 Claims

1. A method of making a package for a product from a single-ply oriented polyolefin film having a heat sealable acrylic-based coating on one side; and a heat sealable polyvinylidene chloride-based coating on the other side comprising:

forming said package from said film with said polyvinylidene chloride-based coating facing inwardly, and with said acrylic-based coating facing outwardly, and

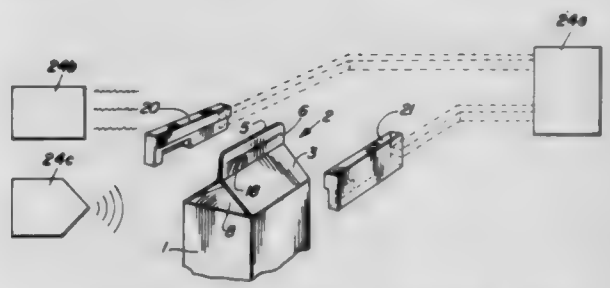
heat sealing said film about said product;

wherein said acrylic-based coating consists essentially of an interpolymer of an alpha-beta monoethylenically unsaturated carboxylic acid selected from acrylic acid, methacrylic acid, and mixtures thereof, and neutral monomer esters selected from methyl acrylate, ethyl acrylate and methyl methacrylate; and wherein said polyvinylidene chloride-based coating consists essentially of an interpolymer of vinylidene chloride, an alpha-beta ethylenically unsaturated carboxylic acid selected from acrylic acid, methacrylic acid and mixtures thereof and an ethylenically unsaturated monomer selected from methyl acrylate, ethyl acrylate and mixtures thereof.

4,403,465
METHOD AND DEVICE FOR CLOSING AND SEALING GABLE SHAPED FOLDING CARTONS

George L. Bachner, Barrington, Ill., assignor to Nimco Corporation, Crystal Lake, Ill.

Continuation of Ser. No. 145,776, May 2, 1980, abandoned. This application Sep. 2, 1982, Ser. No. 414,453
Int. Cl.³ B65B 51/14
U.S. Cl. 53—477 12 Claims



1. In an apparatus for sealing a package having a gable shaped closure, the gable shaped closure having marginal areas forming a sealing truss, the apparatus having jaw means for applying force externally on said marginal areas while the temperature of said marginal areas is elevated to thereby seal the package, the improvement comprising jaw means having a pair of jaws with multiplanar surfaces, each of said jaws having a first planar surface for engaging a first thickness of package material, a second planar surface, recessed from the first planar surface, for engaging a second thickness of package material, a

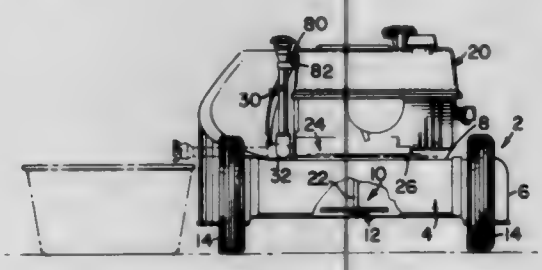
third planar surface, recessed from the second planar surface, for engaging a third thickness of package material, and a fourth planar surface, recessed from the third planar surface, for engaging the third thickness of package material, whereby less force is exerted on the third thickness of package material corresponding to relieved portions engaged by the fourth planar surface of the multiplanar surfaces of said jaw means.

4,403,466

LAWN MOWER ENGINE OIL DRAIN

Henry B. Tillotson, Minnneapolis; Richard A. Thorud, Bloomington, and James R. Baumann, St. Louis Park, all of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed May 6, 1982, Ser. No. 375,421
Int. Cl.³ A01D *35/26*; B67D *5/00*; F01M *11/04*
U.S. Cl. 56—16.7 **9 Claims**



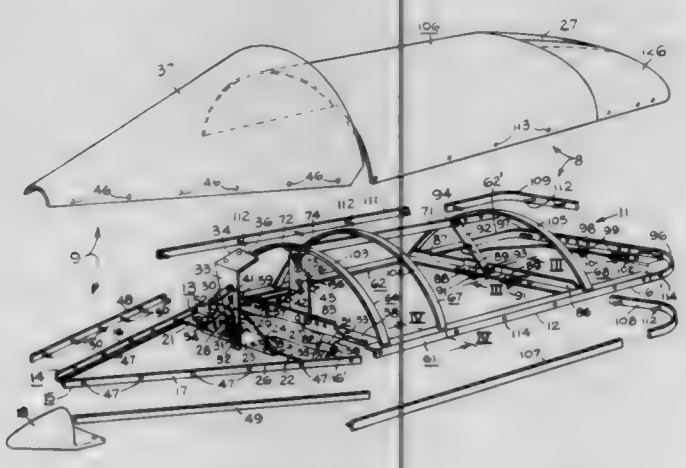
1. An improved lawn mower, which comprises:
(a) a housing;
(b) means for movably supporting the housing for movement over the ground;
(c) a cutting element carried on the housing for severing ground growing vegetation;
(d) an internal combustion engine carried on the housing for powering the cutting element, the engine having an oil sump for containing oil and an elongated tube connected to the sump for filling the sump with oil; and
(e) means for movably connecting the tube to the sump for movement between a first position in which the tube is substantially vertical relative to the housing and a second position in which the tube is substantially horizontal relative to the housing, whereby the tube in its second position enables the easy draining of oil from the sump.

4,403,467

ROW DIVIDER WITH FLEXIBLE PLASTIC SHEATH

Robert T. Baugh, Brookfield, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sep. 29, 1982, Ser. No. 426,985
Int. Cl.³ A01D *45/02*
U.S. Cl. 56—119 **7 Claims**



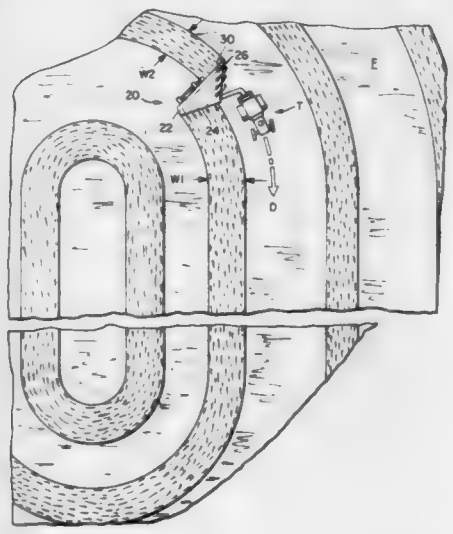
1. In a row crop harvester having a frame with a transverse beam and a plurality of row units releasably mounted on said beam at lateral spacings therebetween to conform to the row spacings of crops being harvested, the combination comprising:
a longitudinally extending divider structure between adjacent row units having
a longitudinally extending, adjustable with hood including
a flexible plastic sheath having a cylindrical portion formed by bending a single integral sheet of flexible plastic, said cylindrical portion bowing upwardly and extending between said adjacent row units and
means releasably connecting laterally opposite sides of said hood to said adjacent row units, said flexible cylindrical portion bowing upwardly at different curvatures when said adjacent row units are mounted on said beam at different row spacings.

4,403,468

SWATH TURNING MACHINE

Kermit L. Yoder, R.D. 1, Box 174, Accident, Md. 21520

Filed Jun. 10, 1982, Ser. No. 387,042
Int. Cl.³ A01D *79/00*
U.S. Cl. 56—370 **27 Claims**



1. A swath turning machine comprising:
a frame including a first edge and a second edge,
a wheel means rotatably attached to said frame whereby said frame can be moved in a first direction of travel,
a pick-up means disposed along said first edge for engaging swaths lying on the ground and depositing said swaths on said frame,
a moving means connected to said frame for moving said deposited swaths from said first edge to said second edge,
said moving means moving the swaths between said first edge and said second edge in a direction perpendicular to said first direction of travel,
said second edge being spaced above the ground,
said second edge defining an obtuse angle with said direction of frame travel, and
a turning means for moving said swaths in a direction generally perpendicular to said first direction of travel from said second edge to the ground, said turning means turning said swaths over as said frame moves in said first direction of travel and as said swaths are moved from said second edge to the ground.

4,403,469

COMBINE TOOTH AND MOUNTING THEREFOR

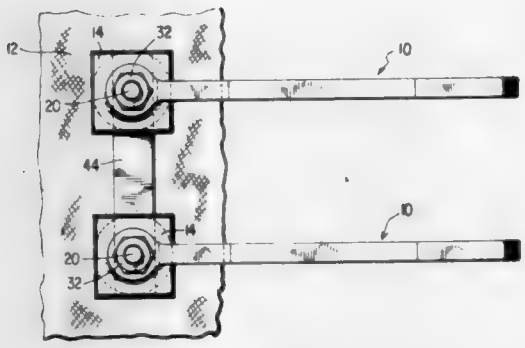
Walter D. Hofer, 926-7 A St. S., Lethbridge, Alberta, Canada

Filed Apr. 5, 1982, Ser. No. 365,282
Int. Cl.³ A01D *77/08*
U.S. Cl. 56—400 **5 Claims**

1. A combine tooth and mounting adapted for use on a combine belt comprising:
a tooth having a base portion and a tine portion, said base portion having a through bore extending from the bottom to the top thereof, at least the lower portion of said bore

being of square cross-sectional configuration, the bottom face of said base portion having a transversely extending recess, said tine portion projecting at an angle from one side of said base portion;

a friction plate of a length such as to extend between adjacent teeth positions on said combine belt and including, at each tooth position, a portion the configuration of which is complementary to that of said recess, said plate having a square hole at each tooth position;



a bolt having an enlarged, substantially planar head, a first shank portion of square cross-sectional configuration and a further threaded shank portion; and

a nut threadable onto said further shank portion; the arrangement being such that, when said combine tooth is mounted on said combine belt, the shank portions of said bolt extend through said belt, said friction plate, said tooth base portion and said nut, in sequence, said belt being clampingly engaged between said bolt head and said friction plate.

4,403,470

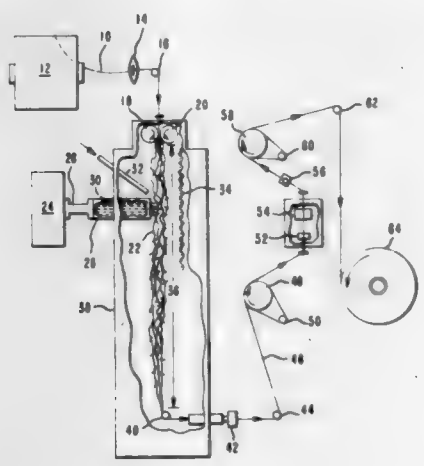
PROCESS FOR MAKING COMPOSITE YARN OF CONTINUOUS FILAMENTS AND STAPLE FIBERS

Thomas L. Nelson, Georgetown, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 30, 1981, Ser. No. 335,643

Int. Cl.³ D02G *3/38, 3/42*

U.S. Cl. 57—5 **4 Claims**



1. In a process for making a composite yarn of staple fibers commingled with continuous filaments including the steps of passing a feed yarn of continuous filaments which is under tension and substantially free of twist and filament entanglement through a nip formed by a pair of counter rotating rolls which advance the yarn to a splaying zone in air wherein the filaments are splayed into an open network and airborne staple fibers are projected from a source angularly into the open network to combine and commingle with the continuous filaments after which the open network is collapsed into said composite yarn, the improvement which comprises creating said open network of continuous filaments by passing through said nip region as the feed yarn a yarn of crimped continuous filaments of a synthetic organic polymer which filaments individually contract from crimp retractive forces substantially immediately upon passing through said nip region and splay of their own accord into an open three-dimensional filament network which continues to travel in a substantially linear direction at a slightly reduced speed and projecting said staple fibers into said three-dimensional network.

4,403,471

BOBBIN EXCHANGE APPARATUS ON A RING SPINNING OR RING TWISTING MACHINE

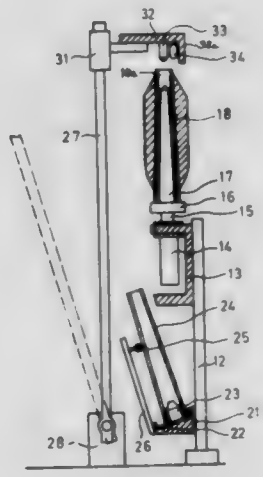
Peter Oswald, Matzingen, Switzerland, assignor to Rieter Machine Works Limited, Winterthur, Switzerland

Filed Aug. 24, 1981, Ser. No. 295,837

Claims priority, application Switzerland, Sep. 15, 1980, 6901/80

Int. Cl.³ D01H *9/08, 9/14*

U.S. Cl. 57—274 **13 Claims**



1. A bobbin exchange apparatus on a ring spinning or a ring twisting machine equipped with bobbin spindles, said bobbin exchange apparatus comprising:

a transporting belt;

a plurality of bobbin holders provided for said transporting belt and serving for taking-up bobbin tubes;

said bobbin holders being arranged at a mutual distance from one another essentially corresponding to the spindle gauge of the bobbin spindles of the machine;

said transporting belt extending in the longitudinal direction of the machine;

said transporting belt, viewed relative to the machine, being positioned at an inclination downwardly towards a front side of the machine;

supporting means provided for said bobbin tubes;

said supporting means extending substantially in the longitudinal direction of the machine; and

said supporting means being positioned in front of the bobbin tubes placed upon the bobbin holders of the transporting belt and supporting said bobbin tubes.

4,403,472

METHOD OF CLEANING SPINNING ROTORS AND APPARATUS FOR CARRYING OUT THE METHOD

Andre Lattion, Seuzach, Switzerland, assignor to Rieter Machine Works Limited, Winterthur, Switzerland

Filed Jul. 29, 1982, Ser. No. 402,935

Claims priority, application Switzerland, Aug. 11, 1981, 5051/81; Jun. 11, 1982, 3631/82

Int. Cl.³ D01H *7/885*

U.S. Cl. 57—302 **16 Claims**

1. A method of cleaning spinning rotors for open-end spinning, wherein a rotor is located in a related rotor housing provided with a rotor housing opening for application of external suction, comprising the steps of:

opening the rotor housing of the rotor which is to be cleaned;

mounting a cleaning device containing a rotatable blower head upon said rotor housing in order to cover the opened rotor housing;

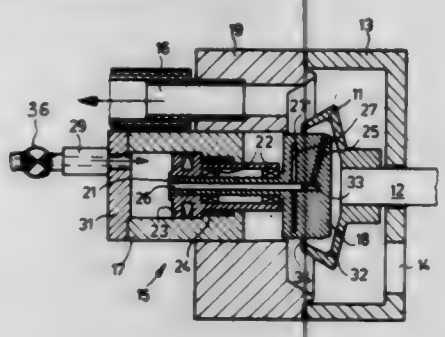
during mounting of the cleaning device upon the rotor housing forming between an end face of the rotatable blower head and a free edge of the rotor an annular gap located between substantially parallel planes;

bringing the rotor to standstill prior to generating at least one rotatable air jet by means of the rotatable blower head of the cleaning device and which air jet essentially impinges a collecting groove of the rotor;

sucking air from the rotor housing through the internal space of the rotor during a suction operation; and

thereafter immersing the rotatable blower head into the internal space of the rotor and placing such rotatable blower head into rotation, to thereby form the rotating air jet while maintaining the suction operation.

7. A cleaning device for cleaning spinning rotors for open-end spinning, comprising:



a cleaning cover which can be placed upon a rotor housing of a rotor having an axis of rotation and which rotor is to be cleaned;

said cleaning device containing a rotatable blower head having an axis of rotation;

said axis of rotation of the rotatable blower head substantially coinciding with the axis of rotation of the rotor;

a suction channel leading through said cleaning cover;

means mounting said blower head to be movable essentially parallel to its axis of rotation from a first working position, where an end face thereof is directed towards the rotor and forms with a free edge of the rotor a substantially annular gap, into a second working position where the blower head extends into the internal space of the rotor;

said blower head being provided with at least one cleaning channel serving for the generation of an air jet;

means providing a compressed air line serving for the selective infeed of compressed air to said cleaning channel; and

said cleaning channel being operatively connected in flow communication with said compressed air line.

4,403,473

AMMONIA/FUEL RATIO CONTROL SYSTEM FOR REDUCING NITROGEN OXIDE EMISSIONS

John R. Gladden, Metamora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00845, § 371 Date Jun. 22, 1981, § 102(e) Date Jun. 22, 1981, PCT Pub. No. WO83/00057, PCT Pub. Date Jan. 6, 1983

PCT Filed Jun. 22, 1981, Ser. No. 287,543

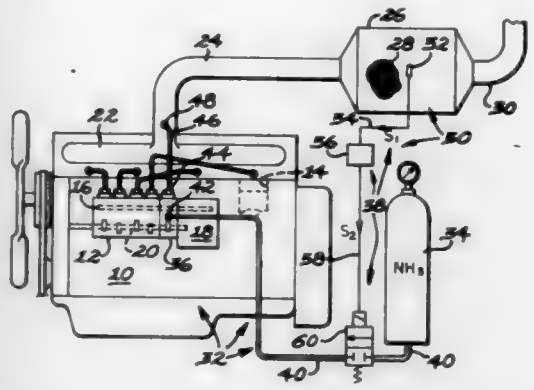
Int. Cl.³ F01N *3/20, 3/36*

U.S. Cl. 60—274 **13 Claims**

1. A method of reducing the amounts of oxides of nitrogen contained in a combusted gas stream from an engine combustion chamber, comprising the steps of:

conducting the combusted gas stream to a reactor; and

metering ammonia to the combusted gas stream at a location between said combustion chamber and said reactor in a preselected proportion to the fuel mass flow rate supplied to said engine combustion chamber wherein the step of metering ammonia includes the step of metering the



amount of ammonia in response to a fuel pump rack position and engine speed.

4,403,474

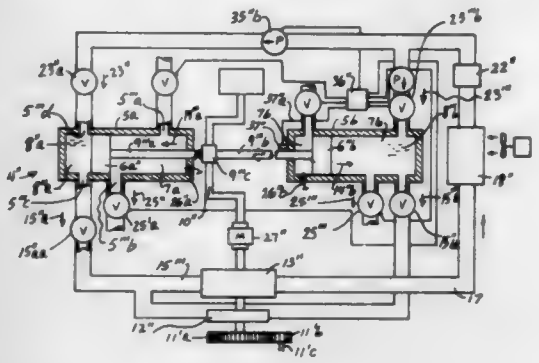
HYDROLIC FLUID-LUBRICATED PISTON-COMBUSTION ENGINE

William A. Ruthven, 170-C Manchester Dr., Basking Ridge, N.J. 07920

Filed Apr. 13, 1981, Ser. No. 253,185

Int. Cl.³ F04B *17/00*

U.S. Cl. 60—396 **9 Claims**



1. A combustion engine comprising in combination: a combustion piston chamber means that forms at least one elongated chamber therein for the mounting therein of a reciprocable piston, with at least one fuel inlet port and exhaust outlet port positioned to be in flow communication with one end of the elongated chamber, and with at least one set of hydraulic fluid inlet and outlet ports positioned to be in flow communication with a opposite end of the elongated chamber and with at least one piston port also positioned to be in communication with said piston within the elongated chamber; said reciprocable piston mounted within the elongated chamber with the piston positioned such that its substantially forward face thereof extends transversely across an axis of a longitudinal length of the elongated chamber and the piston being mounted to freely move to and fro reciprocably along a longitudinal axis of the elongated chamber; piston force means for transmitting force to and movement with said reciprocable piston through said piston port, responsive to a starter means; and said starter means being drivably connected to drive said piston force means adapted such that said piston moves reciprocably within the elongated chamber; liquid turbine means having at least one inlet thereof connected in closed communication with the hydraulic fluid outlet port; hydraulic fluid reservoir means for containing expanding and contracting volume of hydraulic fluid, having at least one reservoir inlet port and at least one reservoir outlet port, the reservoir inlet port being in flow-communication with the turbine outlet port, and the reservoir outlet port being in flow-communication through valve means with each of the hydraulic fluid inlet and outlet ports of the elongated chamber; space of said elongated chamber adjacent

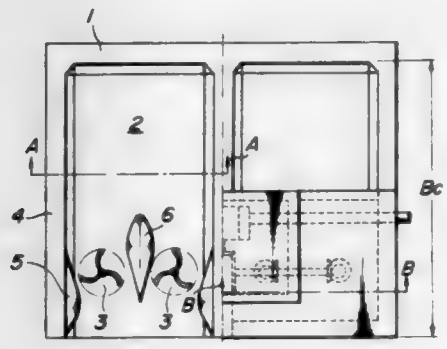
said one end being a combustion chamber, and space adjacent said other end being a hydraulic fluid chamber, said combustion chamber being segregated from said hydraulic fluid chamber by said reciprocable piston; hydraulic fluid being present in said hydraulic fluid chamber and in said reservoir and in communication lines connecting the hydraulic fluid chamber with the liquid turbine means and the reservoir means such that the hydraulic fluid serves as lubricant around sides of the piston facilitating reciprocal movement of the reciprocable piston and such that said hydraulic fluid drives said liquid turbine means when said reciprocable piston is moved toward said opposite end; said valve means being for channeling said hydraulic fluid from said hydraulic fluid outlet port through said liquid turbine means and thereafter to said reservoir inlet port and simultaneously preventing flow to said reservoir means from said hydraulic fluid inlet port as said reciprocable piston moves toward said opposite end, and for channeling said hydraulic fluid from said reservoir outlet port to said hydraulic fluid inlet port of the hydraulic fluid chamber and simultaneously preventing flow from said reservoir means through said turbine means to said hydraulic fluid outlet as said reciprocable piston moves toward said one end; and combustion means for injecting fuel into said combustion chamber through the fuel inlet port and for explosively igniting and burning fuel within said combustion chamber and for exhausting spent exhaust fumes from the combustion chamber through the exhaust outlet port.

4,403,475

WAVE ENERGY ABSORBER MOUNTABLE ON WAVE-FACING STRUCTURE

Hideo Kondo, Muroran, Japan, assignor to Muroran Institute of Technology, Hokkaido, Japan

Filed Sep. 9, 1980, Ser. No. 185,620
Claims priority, application Japan, Sep. 20, 1979, 54-120083
Int. Cl.³ F03B *13/12*
U.S. Cl. 60—398 **6 Claims**



1. A resonant type apparatus for absorbing wave energy, said apparatus being an integral part of a fixed coastal structure, comprising

a caisson having

a rear wall secured to said fixed coastal structure, said rear wall facing the sea;

a bottom wall attached to the lower part of said rear wall and extending toward the sea;

at least two sidewalls attached to said rear and bottom walls, said rear wall being located between said side walls to form a water chamber open at the end facing the sea and at least partially open at the top, the length of said chamber being longer than one-quarter of the wavelength L_c of a standing wave in said water chamber, said standing wave having a node at a distance $L_c/4$ from said rear wall measured toward the open end of said water chamber;

a wave-power turbine impeller rotatably supported by said caisson at a position coinciding with the position of said node; and

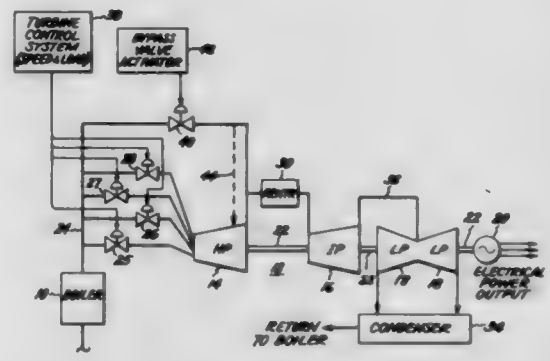
means for limiting the rotation of said impeller to a single direction, whereby the energy of waves incident on said caisson is absorbed by said impeller as rotational energy thereof.

4,403,476

METHOD FOR OPERATING A STEAM TURBINE WITH AN OVERLOAD VALVE

Lloyd H. Johnson, Scotia; Robert S. Couchman, Ballston Lake; Robert C. Spencer, Jr., Burnt Hills; John A. Booth, Scotia, and Russell J. Holman, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,697
Int. Cl.³ F01K *13/02*
U.S. Cl. 60—652 **11 Claims**



1. A method of operating a steam turbine delivering power to a connected load and adapted to receive steam from a steam generating source, the turbine having a plurality of control valves for controlling the admission of steam to higher pressure stages of the turbine and having a bypass overload valve connected to receive steam from the steam source and to discharge such steam to a power pressure stage of the turbine, said method comprising the steps of:

(a) maintaining said bypass overload valve closed while controllably positioning said control valves to admit steam to the turbine to sustain a preselected power load;

(b) increasingly opening said control valves with increasing load demand on the turbine until all valves of said plurality of control valves have reached a fully opened position;

(c) fully opening said bypass overload valve while substantially simultaneously controllably positioning at least one of said control valves toward a closed position sufficient to offset steam flow through said bypass overload valve in excess of that required to sustain the turbine load; and

(d) further increasing the power output of the turbine by controllably positioning said plurality of control valves toward said fully opened position.

4,403,477

AIR STORAGE INSTALLATION BLOWOUT PREVENTION DEVICE

Alfred Schwarzenbach, Wettingen, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

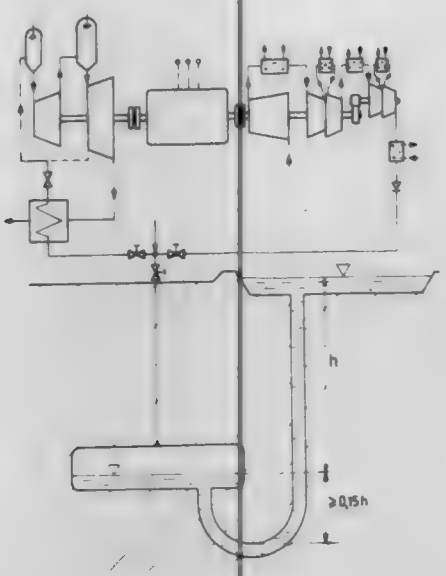
Filed Sep. 5, 1980, Ser. No. 184,382
Claims priority, application Switzerland, Sep. 7, 1979, 8078/79
Int. Cl.³ F02C *3/00*
U.S. Cl. 60—659 **4 Claims**

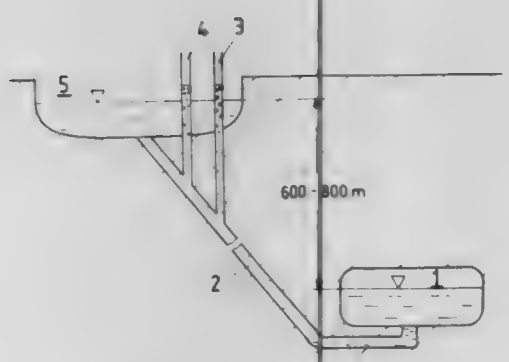
1. In a constant pressure air storage installation of a gas turbine power station of the type having a compressor and a gas turbine and a subterranean air storage cavity with connecting lines for supplying air from the compressor to the storage cavity and from the storage cavity to the gas turbine, a water basin at a higher level than the cavity, and a standpipe connecting the water basin to the subterranean cavity, the improvement wherein:

at least an upper portion of said standpipe is inclined with respect to the horizontal; and

said standpipe includes a ventilation pipe which is connected to, and in fluid communication with, said upper portion of

said standpipe to receive a water-air mixture forming during the charging of said air storage cavity, said ventilation pipe extending through the water basin with an upper





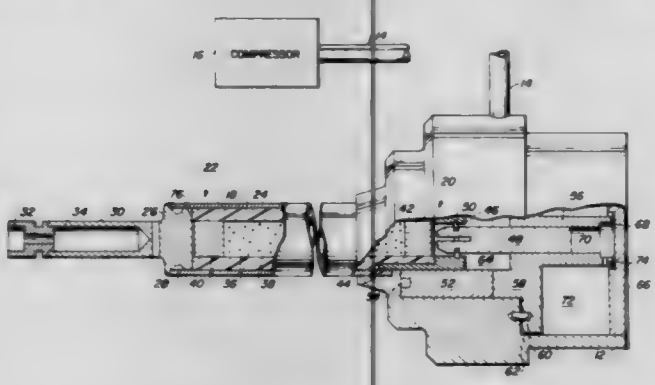
end of said ventilation pipe extending above the water level of said water basin to permit the venting of air from said water-air mixture thereby preventing a blowout of said air storage cavity.

4,403,478

EXPANDER STROKE DELAY MECHANISM FOR SPLIT STIRLING CRYOGENIC COOLER

Roland W. Robbins, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 26, 1982, Ser. No. 362,355
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **38 Claims**



1. A split Stirling cycle engine refrigerating device, comprising:

an expander housing having a first second, and third compartment, each retaining a contained volume of gas, a gas inlet to vary the pressure on said first compartment, and an elongated displacer housing extending from said first compartment for gas expansion and contraction as gas pressure varies therein;

an elongated regenerator displacer piston slidably situated within said displacer housing, extending into said expander housing for reciprocating movement therein;

a first seal between said expander housing and said displacer to seal gas within said housing while said regenerator displacer piston reciprocates therein;

a second seal within said expander housing to separate said first compartment from said second compartment;

a plunger attached to said elongated regenerator displacer piston, extending through said second seal to reciprocate therethrough as gas pressure varies in said first compartment; and

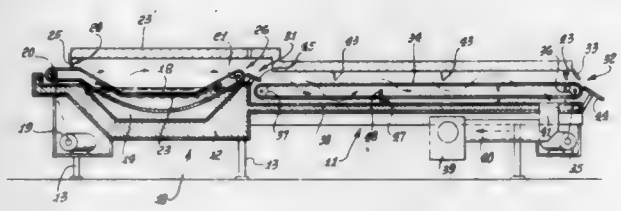
a cylindrical extension of said second seal, surrounding said plunger to separate said third compartment from said second compartment, having an orifice through the wall thereof to connect said second and third compartments.

4,403,479

QUICK FREEZING SYSTEM

Ivan Rasovich, 2653 E. Timberlake, La Crescenta, Calif. 91214, assignor to Ivan Rasovich, Pacomia, Calif.

Continuation-in-part of Ser. No. 182,961, Sep. 2, 1981, abandoned. This application Feb. 18, 1982, Ser. No. 349,989
Int. Cl.³ F25D *13/06*
U.S. Cl. 62—63 **13 Claims**



1. In a quick freezing system for food products and the like, the combination of:

an insulated tank containing a cryogenic liquid bath for quickly freezing items therein and having means defining an enclosed space over said tank with an inlet and an outlet;

an inlet receptacle at said tank inlet positioned for receiving cryogenic vapor from said tank, said receptacle including means for receiving atmosphereic air for mixing with the cryogenic vapor to form a gas mixture;

first duct means for withdrawing said gas mixture from said receptacle;

a temperature sensor for sensing the temperature of said gas mixture and providing a temperature signal;

an elongate, horizontally disposed insulated chamber having an inlet and an outlet, with said tank outlet positioned at said chamber inlet providing a vapor flow path in the zone between said tank and chamber;

a first conveyor belt in said tank for moving a product from said tank inlet to said tank outlet into and out of said liquid bath along a generally horizontal path;

a second conveyor belt in said chamber for moving a product through said chamber from said chamber inlet to said chamber outlet along a generally horizontal path with said tank outlet and chamber inlet disposed for transfer of product through said zone from said first conveyor belt to said second conveyor belt;

exhaust means coupled to said chamber adjacent said chamber outlet for drawing vapor from said tank through said zone and through said chamber and removing vapor from said chamber,

said exhaust means including second duct means between said chamber and the atmosphere and control means for controlling the flow through said second duct means as a function of said temperature signal; and

means connecting said temperature signal from said temperature sensor to said control means.

4,403,480
METHOD OF AND APPARATUS FOR RECOVERING HEAT ENERGY CONTAINED IN VAPORS OF MULTI-STAGE EVAPORATORS INSTALLED FOR THERMAL MATERIAL-SEPARATING PROCESSES

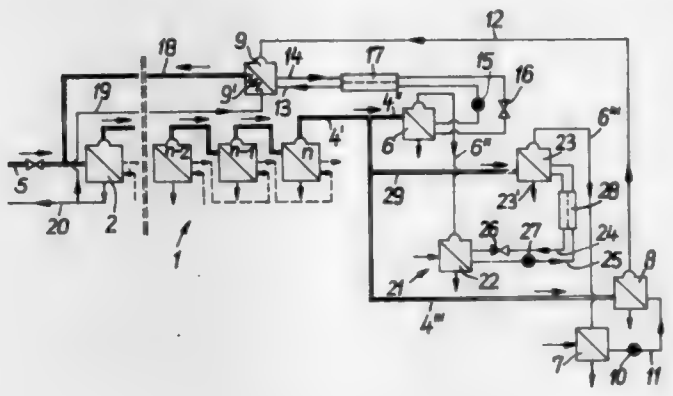
Paul Franzen, Koblenz, Fed. Rep. of Germany, assignor to Maschinenfabrik Buckau R. Wolf AG, Grevenbroich, Fed. Rep. of Germany

Filed Feb. 3, 1981, Ser. No. 231,018

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1980, 3004197

Int. Cl.³ F25B *7/00*

U.S. Cl. 62—79 **22 Claims**



1. A method of recovering heat energy which is contained in the vapors of multi-stage evaporators utilized for thermal material-separating processes with an isothermic absorption and including a heat transformer, said method comprising the steps of:

supplying said vapors to at least one expulsion stage and to at least one vaporizing stage of the heat transformer;

vaporizing easily volatized components of a multi-material mixture at a first pressure in said expulsion stage, resulting in a residue or residual mixture of said multi-material mixture;

vaporizing the easily volatized components entering said vaporizing stage in the latter at a second pressure, said second pressure being greater than said first pressure;

supplying heating-steam as process steam to said multi-stage evaporator;

supplying the vaporous, easily volatized components, which are at said higher second pressure, along with said residual mixture resulting from said expulsion stage, to at least one absorption stage of the heat transformer, resulting in the production of heat; and

recovering heating-steam by means of said heat producing during said absorption stage.

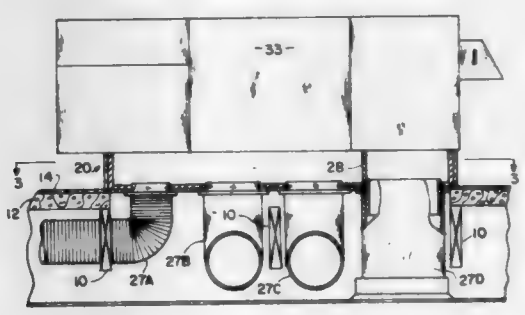
4,403,481
COMBINATION ROOF MOUNTING CURB AND PLENUM

Robert W. Yoho, Sr., 12900 Automobile Dr., Clearwater, Fla. 33520

Filed Feb. 25, 1981, Ser. No. 237,857

Int. Cl.³ F25D *23/12*

U.S. Cl. 62—259.1 **4 Claims**



1. A curb to support an air conditioner on the roof of a building and distribute conditioned air, comprising in combination:

four upstanding exterior walls;

the ends of said exterior walls being connected together in the form of a rectangular box;

the bottom edges of said exterior walls being connected together with sheet material whereby an open-top rectangular box is formed;

an upstanding interior wall;

the ends of said interior wall being connected to the insides of different exterior walls whereby a plenum is formed; and

the bottom of said plenum being of sufficient size to accept a plurality of air conditioning supply ducts connected thereto at any desired location therewithin.

4,403,482
AUTOMATIC PLATE FREEZERS

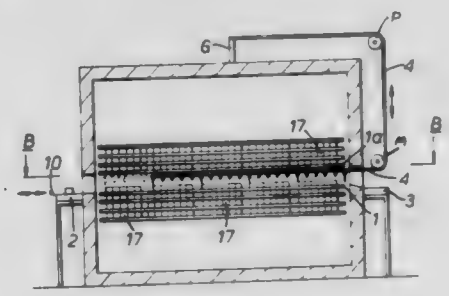
Frank R. Fenner, South Humberside, England, assignor to Jackstone Froster Limited, Grimsby, England

Filed Apr. 29, 1982, Ser. No. 373,274

Claims priority, application United Kingdom, May 1, 1981, 8113571

Int. Cl.³ F25C *5/14*

U.S. Cl. 62—341 **4 Claims**



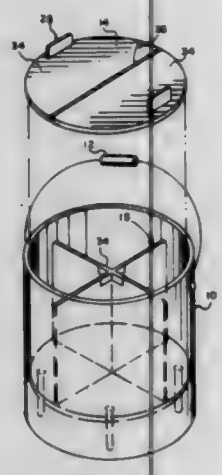
1. In an automatic plate freezer including at least two freezer plates movable between an open condition enabling articles to be frozen to be moved through the space between the plates and a closed condition wherein said articles are engaged by each plate, a receiving station where at least one row of articles can be positioned, one of said plates in its opened condition being disposed in a position to receive articles from said receiving station, and advancing means to advance a row of articles from the receiving station onto said one of said plates, the invention comprising a drive element movable reciprocally in opposite directions parallel to the direction of advance of said articles, driving members spaced along and pivotal relative to said drive element between an article engaging first position and an inoperative second position, means biasing said drive members towards their first position, an operating member coupled to each of said driving members for effecting movement of said driving members between their first and second positions, a positioning element movable between a first position where it engages with the operating member to retain the driving members in their second position during movement of said drive element in a direction away from the direction of advance of said articles and a second position where said positioning member releases said operating member during advance movement of said drive element to effect movement by said biasing means of said driving members to their first position, means cooperating with movement of said drive element to move said positioning element between its first and second positions depending upon whether said drive element is moving away from or towards the direction of advance of said articles, and means operable to withdraw said drive element and said driving members from between the plates when the desired number of rows of articles have been located on the freezer plate by the advancing means to permit the plates to be moved relative to one another to the closed condition.

4,403,483

BUCKET INSERT

Peter E. Lisalda, 14969 Redwood La., Chino, Calif. 91710

Filed Jan. 15, 1982, Ser. No. 339,364
Int. Cl.³ F25D 3/08
U.S. Cl. 62—457 7 Claims



1. An apparatus for converting a standard bucket into a bucket advantageously used by fishermen, hunters, picnicers and the like, and having a plurality of separated compartments for storing bait, tackle, food and other items advantageous for fishing, and ice for selected cooling of such items; the apparatus comprising:

a circular, planar base member adapted to substantially conform to the inner dimensions of said bucket and having perforations along at least a 90 degree sector;

a plurality of divider panels extending perpendicularly from said base member and dividing said base member into isolated perforated and non-perforated sectors; and

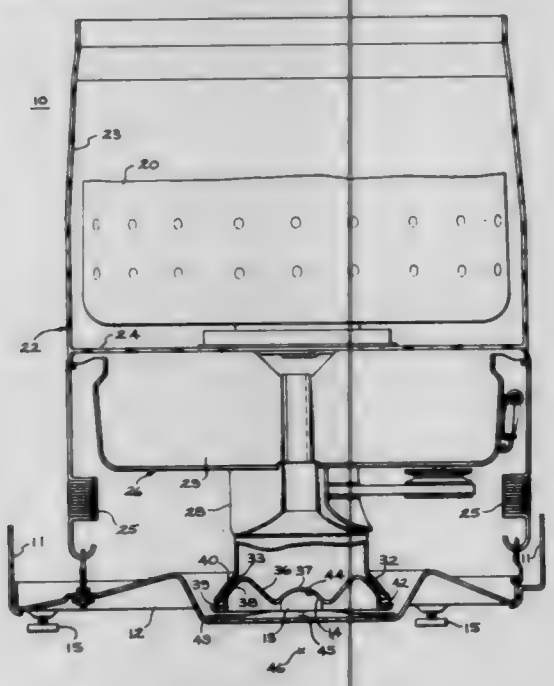
a plurality of support legs extending perpendicularly from said base member opposite said divider panels for supporting said base member and divider panels above ice within said bucket.

4,403,484

DUAL NODE SUPPORT ASSEMBLY FOR WASHING MACHINE

Robert M. Fey, and Robert D. Harris, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Sep. 28, 1981, Ser. No. 306,025
Int. Cl.³ D06F 37/24
U.S. Cl. 68—23.3 8 Claims



1. A support assembly for a washing machine having an assemblage of working parts for agitation of fabrics in a liquid for washing the fabrics and centrifugal extraction of liquid from the fabrics, the support assembly comprising:

a mount secured to the assemblage of working parts and adapted to move therewith during operation of the machine;

a cabinet structure enclosing the assemblage of working parts and said mount, said cabinet including a base;

an intermediate member positioned between said mount and said base for movably supporting said mount and the assemblage of moving parts from said base;

said base and said intermediate member being formed with a first set of mating support surfaces for sliding movement therebetween;

said mount and said intermediate member being formed with a second set of mating support surfaces for sliding movement therebetween;

one of said sets of support surfaces being smoothly curved with a relatively short radius of curvature to form a first node for movement of said mount, the other of said sets of support surfaces being smoothly curved with a relatively long radius of curvature to form a second node for movement of said mount;

means providing the interface of said one set of support surfaces with a relatively low coefficient of friction and means providing the interface of said other set of support surfaces with a relatively high coefficient of friction so that relative movement between said intermediate member and either of said base and said mount tends to be between said one set of support surfaces;

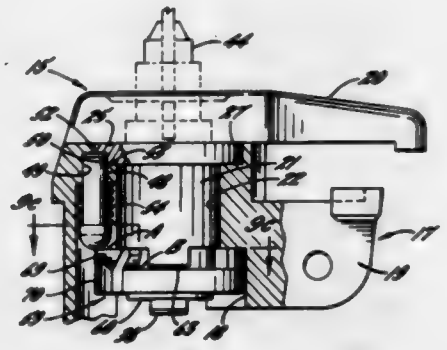
said intermediate member and the one of said base and said mount forming said one set of support surfaces coming into interfering engagement upon a predetermined amplitude of movement of said mount so that relative movement between said one set of support surfaces is substantially inhibited and relative movement between said other set of support surfaces occurs in response to movement of said mount in excess of the predetermined amplitude.

4,403,485

SLIDE FASTENER BAG LOCK

Frank J. Scherbing, Chicago, Ill., assignor to Fort Lock Corporation, River Grove, Ill.

Continuation-in-part of Ser. No. 150,968, May 19, 1980, abandoned. This application Sep. 23, 1981, Ser. No. 304,856
Int. Cl.³ E05B 17/04, 67/38
U.S. Cl. 70—68 12 Claims



1. A locking device comprising, in combination:

a housing having a tubular opening therein,

an arm means including a cylindrical portion that is telescopically received in the tubular opening of said housing so that the arm means can be rotatably turned between a first angular position and a second angular position,

a key receiving locking mechanism carried by said arm means, including a spindle member that projects within the housing and is rotatable between a key-unlocked and a key-locked position by a proper key inserted in a keyway presented in said arm means,

locking pin means disposed within said housing and adapted

to be movable into restraining engagement with said arm means when said arm means is in the first angular position, said pin being movable away from the arm means to release the arm means for rotation to said second angular position when the lock mechanism is in the key-unlocked position, and

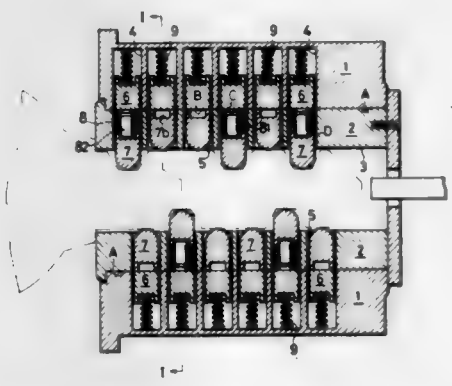
an actuator member adapted to be secured to said lock spindle for rotation therewith, said actuator member having means to move the locking pin into engagement with said arm means when the arm is in the first angular position and the lock spindle is rotated from the key-unlocked to the key-locked position.

4,403,486

PIN TUMBLER LOCK

Mitsunori Miyake, Osaka, Japan, assignor to Kabushiki Kaisha Goal, Osaka, Japan

Filed Dec. 16, 1980, Ser. No. 216,867
Claims priority, application Japan, Dec. 28, 1979, 54-173814
Int. Cl.³ E05B *15/14, 25/00, 27/06, 35/08*
U.S. Cl. 70—383 **9 Claims**



1. In a pin tumbler lock having a housing with a cylindrical bore, a cylinder provided with a key slot rotatable in said bore, at least one housing pocket provided in the cylindrical inner face of the housing, at least one auxiliary pocket in said cylindrical inner face of the housing circumferentially spaced from said housing pocket, at least one cylinder pocket in the cylindrical outer face of the cylinder alignable by rotation of the cylinder with the housing pocket and an auxiliary pocket, a support pin slidably disposed in each housing pocket and each auxiliary pocket resiliently urged by a spring inwardly in the direction of the key slot, one cylinder pin slidably guided in each cylinder pocket and at least one change pin slidably interchangeable between a housing pocket, cylinder pocket and auxiliary pocket, the improvement comprising:

engaging means engageable with the cylinder pin in each position of the change pin in alignment with a cylinder pocket for blocking relative circumferential movement between said change pin and said cylinder pin, and disengaging means for releasing said engaging means from the blocking position when said cylinder pocket is substantially aligned with said auxiliary pocket.

4,403,487

ONE PIECE KEY IDENTIFICATION COVER

Frederic C. Marty, 2919 N. Vincent Ave., Minneapolis, Minn. 55411

Filed Oct. 2, 1981, Ser. No. 308,063
Int. Cl.³ E05B *19/04;* A47G *29/10*
U.S. Cl. 70—408 **10 Claims**

1. A key identification cover including

(a) a hollow body of deformable material having an enlarged portion terminating in

(b) a restricted portion at one end thereof with an opening therein communicating with the interior of the hollow body portion and through which a portion of a key is extendable, said hollow body including

(1) a substantially closed, flat top portion connected to

(2) a substantially closed, flat bottom portion by

(3) opposed spaced sidewalls,

(c) said substantially closed, flat top portion of said hollow body having a slit opening formed therein through which



a key is inserted into the hollow body with a portion of a key extending partially out of said restricted opening portion and the head portion of the key within the hollow body,

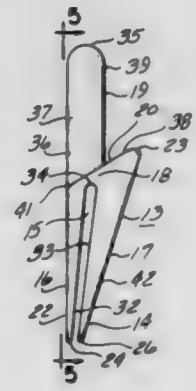
(d) the other end of said body portion having means for connecting a holder to the body.

4,403,488

IN-PURSE KEY HOLDER

Angeline V. Engle, and Richard A. Engle, both of 7594 E. 12 Mile Rd., Warren, Mich. 48092

Filed May 14, 1981, Ser. No. 263,707
Int. Cl.³ A47G *29/10*
U.S. Cl. 70—458 **1 Claim**



1. A finder-holder for securing a key ring or the like on a compartment wall of a purse where it is readily accessible, comprising;

an elongated holder body constructed of resilient plastic material, said body having a generally rectangularly outlined bill-like portion extending from the lower ends upwardly about ⅗ the length of the body, including a vertical front wall, an upwardly and rearwardly inclined rear wall, right and left side walls substantially lessor in thickness than the width of front and rear walls, an upwardly and rearwardly slanted substantially flat shoulder portion connecting said walls at their upper ends,

a deep straight mouth-like slit vertically bifurcating said bill-like portion edgewise almost the full length thereof to a point adjacent said shoulder nearer to the forward wall than the rearward wall, thereby separating said bill portion into oppositely disposed resilient blade-like jaws including a forwardly disposed jaw portion and a rearwardly disposed jaw portion adapted to resiliently grip the compartment wall, the thickness of the blades being smallest at their free ends, and tapering gradually thicker toward the shoulder, the rearward blade being substantially larger than the width of the free end where it joins the shoulder, and an elongated, annular, necked-down, generally cylindrical protrusion connected integrally in off-centered relationship to the face of said shoulder, the

thickness of the protrusion at its juncture with the shoulder being substantially less than the depth of the shoulder, with the protrusion extended oppositely to the slit about ¼ the length of the body with the front wall of said protrusion positioned in line with and substantially flush with the body front wall, the relative size of the shoulder and protrusion being arranged and adapted to leave a generally upwardly slanted ledge portion having a depth of sufficient size to hold a key ring thereon between the partition and the inside wall of the bag without same slipping down the holder body.

4,403,489

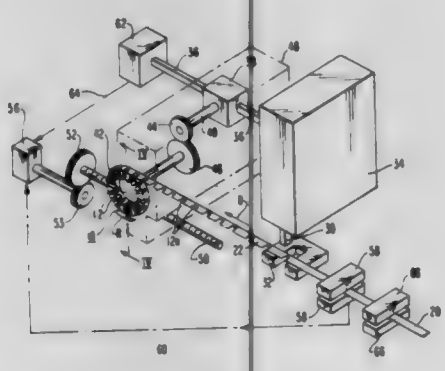
STRIP WINDING MACHINE AND METHOD

Ronald S. Munsterman, Shawnee Township, Allen County, and Homer C. Bowers, Lima, both of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 16, 1981, Ser. No. 254,676

Int. Cl.³ H02K *15/04*; B21C *47/00*

U.S. Cl. 72—16 **12 Claims**



1. A winding machine, comprising:

means for punching an impression in band-shaped material;

a rotatable means for winding the punched material;

means for measuring the thickness of said band-shaped material;

means for moving said winding means away from said punching means;

means for adjusting said moving means to move said rotatable winding means in response to said thickness measuring means; and

means for synchronizing said moving means to said punching means.

4,403,490

METAL FORMING LUBRICANT AND METHOD OF USE THEREOF

Donald J. Sargent, West Lafayette, Ind., assignor to E/M Lubricants, Inc., West Lafayette, Ind.

Filed Jun. 24, 1981, Ser. No. 276,937

Int. Cl.³ B21B *45/02*

U.S. Cl. 72—42 **10 Claims**

6. In a method of forming two piece cans from black plate steel in which a blank is produced from the black plate steel and the blank is subjected to drawing and ironing operations to produce an elongated can body, the improvement comprising the additional steps of:

a. prior to the drawing operation, coating the portion of the black plate steel which ultimately becomes the exterior of the can body with a first coating lubricant, said first coating lubricant comprising 2.0 to 10.0 percent emulsifiable microcrystalline wax, 3.5 to 11.75 percent refined microcrystalline wax, 0.2 to 1.0 percent unsaturated fatty acid, 0.75 to 3.5 percent nonylphenoxypolyethoxy ethanol, 0.4 to 1.75 percent amines, 24.0 to 32.0 percent of a compound comprising an anion selected from Group VIb of the Periodic Table and a cation selected from Group VIa of the Periodic Table, 8.5 to 11.5 percent synthetic wax emulsion and the remainder distilled water;

b. drying the first coating lubricant;

c. coating the portion of the black plate steel which ultimately becomes the interior of the can body with a second coating lubricant, said second coating lubricant comprising 5.0 to 20.0 percent synthetic wax emulsion and the remainder distilled water; and

d. after the ironing operation, removing said first and second coating lubricants by washing the elongated, enclosed can body in a slightly alkaline solution.

4,403,491

APPARATUS FOR FORMING A SPLIT TUBE

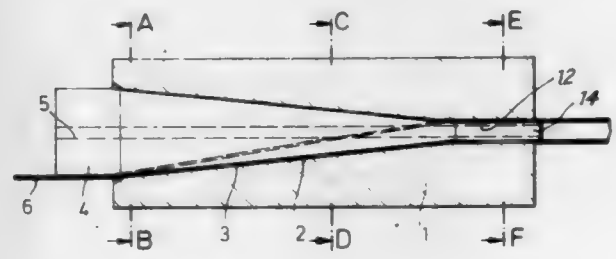
Johannes Wassen, Langenfeld, and Siegfried Honisch, Hellenthal, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Nov. 2, 1981, Ser. No. 317,131

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1980, 3044003

Int. Cl.³ B21C *1/24*

U.S. Cl. 72—52 **3 Claims**



1. An apparatus for forming a strip into a split tube by progressively drawing and folding said strip comprising:

a die member having a conical bore, with a wide entrance end on one side of the die member, said bore extending and merging with the member in a cylindrical bore at a narrow end of the conical bore said cylindrical bore extending in the member from said narrow end of said conical bore to an exit end on a side opposite said entrance end, said conical bore having a shallow strip forming groove formed in its surface which merges with said cylindrical bore; and

a mandrel of conical configuration matchingly inserted in said conical bore, said mandrel being dimensioned to completely occupy said conical bore except for said groove, so that a strip being drawn through said groove is gradually folded into a split tube as it progresses through said bores and leaves said cylindrical bore of said die member at said exit end on said side opposite said one side.

4,403,492

STRIP COOLING

Thomas Hope, Doncaster, England, assignor to Davy-Loewy, Limited, Sheffield, England

Continuation of Ser. No. 89,499, Oct. 30, 1979, abandoned. This application Dec. 15, 1981, Ser. No. 330,937

Claims priority, application United Kingdom, Nov. 3, 1978, 7843137

Int. Cl.³ B21B *27/06*

U.S. Cl. 72—201 **9 Claims**

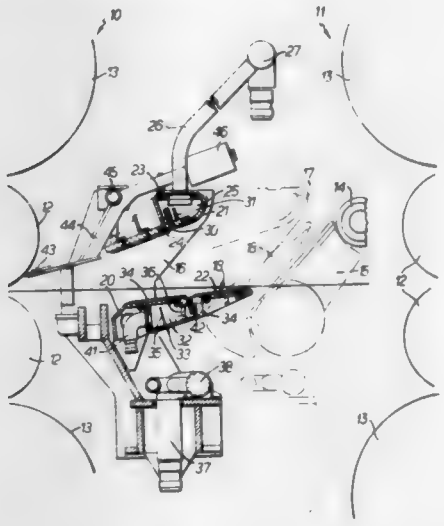
1. In combination with a hot metal strip rolling mill stand for rolling a hot strip along a horizontal given path of travel, including means for deflecting said strip after leaving said stand away from said given path of travel, and wherein in its maximum deflected position said deflected strip is a substantial distance away from said given path of travel, a guide means for receiving said hot strip from said stand for delivery therebeyond and wherein said strip is deflected while within said guide means;

said guide means comprising:

a guide plate adapted to guide said strip relative to said stand;

a supporting structure for mounting said guide plate adjacent said stand, and vertically spaced from said given path of travel,

an elongated discharge nozzle having a continuous narrow uninterrupted discharge opening formed in said guide plate operatively carried by said supporting structure, and constructed and arranged to extend substantially across the full width of said strip,



said supporting structure including means which in cooperation with said nozzle delivers a substantially uniform cross sectional coherent and non-turbulent curtain of coolant extending continuously between said nozzle and said strip in a manner that said curtain is maintained throughout said substantial distance irrespective of the degree of deflection of said strip and the distance between said strip and said nozzle, and

means for supplying said coolant to said supporting structure.

4,403,493

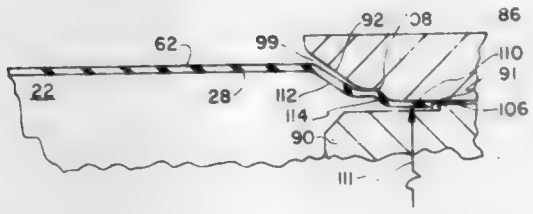
METHOD FOR NECKING THIN WALL METALLIC CONTAINERS

Michael L. Atkinson, Arvada, Colo., assignor to Ball Corporation, Muncie, Ind.

Continuation of Ser. No. 120,419, Feb. 12, 1980, abandoned, which is a continuation-in-part of Ser. No. 51,573, Jun. 25, 1979, abandoned. This application Nov. 30, 1981, Ser. No. 325,693

Int. Cl.³ B21D *22/00*

U.S. Cl. 72—356 **13 Claims**



1. A method of forming at least two reduced diameter portions in a drawn and ironed seamless body having a cylindrically shaped sidewall, an internally formed bottom and an open end, said method comprising deflecting inwardly the open end of the body into contact with first die forming means including a supporting bore with a curvilinear transition portion leading into a necking bore, said supporting bore conforming substantially to the external diameter of the body, said deflecting inwardly causing a reduction in the diameter of the open end on the order of about 3.5 percent to about 3.8 percent over a predetermined length, further deflecting inwardly the reduced open end only over the same predetermined length by a second die forming means to further reduce the diameter of the reduced open end, said second die forming means including a second supporting bore with a second curvilinear transition portion leading into a second necking bore, said second curvilinear transition portion contacting directly and turning the open end of the body along a sloping surface to redeflect the previous diameter formed by the first inward deflection and bringing the previous diameter into conformity with the entire second die forming means, the second deflection reducing the diameter along the predetermined length on the order of between about 1.69 percent to about 1.7 percent, and thereafter deflecting inwardly in a final stage a length less than the predetermined length by a third die forming means comprising a short supporting portion conterminous with a short transition portion leading into a short necking bore, said further reduced open end being brought into comformity with the short supporting portion, transition portion and necking bore to reduce the final diameter thereof on the order of between about 3.8 to about 4.1 percent.

4,403,494

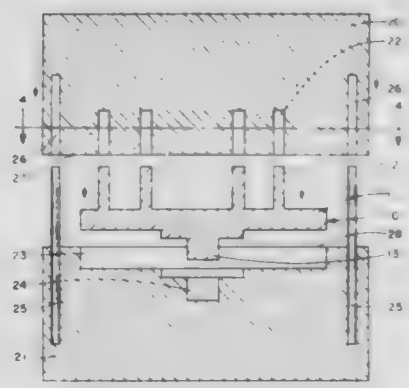
METHOD OF FABRICATING SCROLL MEMBERS BY COINING AND TOOLS THEREFOR

John E. McCullough, Carlisle, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Mar. 2, 1981, Ser. No. 239,564

Int. Cl.³ B21D *22/00, 31/00, 17/02*

U.S. Cl. 72—360 **3 Claims**



1. A method of fabricating a scroll member, comprising the steps of

(a) providing a preformed scroll member comprising an end plate and an involute wrap which have attained at least about 95 percent of the dimensional accuracy and finish required for the flank surfaces of said wrap and the contacting surface of said end plate; and

(b) coining said preformed scroll member to the required dimensional accuracy and finish.

4,403,495

APPARATUS FOR BENDING CHANNEL SECTION MEMBERS

Terence R. Talbot, Newport, England, assignor to Rockwell International Corporation, Pittsburgh, Pa.

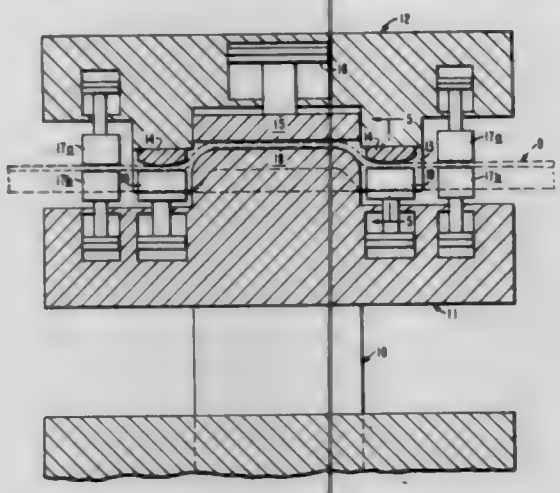
Filed May 15, 1981, Ser. No. 263,817

Int. Cl.³ B21D *7/03*

U.S. Cl. 72—383 **2 Claims**

1. An apparatus for bending an elongate member comprising a pair of spaced parallel planar flanges extending normally from a planar web to form a channel section, said apparatus including a first means for close fitting engagement with the exterior web and flange faces of said elongate member at least in a region of said elongate member in which a bend is to be formed, said first means further having a counter-pressure means, one surface of which engages the exterior face of said web of said elongate member in said bending region, said counter-pressure means capable of being selectively advanced or retracted within said first means; a second means shaped for close fitting engagement with the interior web and flange faces of said elongate member at least in said bending region of said

elongate member, said second means being articulated for movement of projection means on said second means, said movement being relative to said first means to apply a bending force in said bending region acting in the planes of said flanges on longitudinally spaced first and second portions of said elongate member for relative displacement thereof informing at least one bend, said second means and projection means being



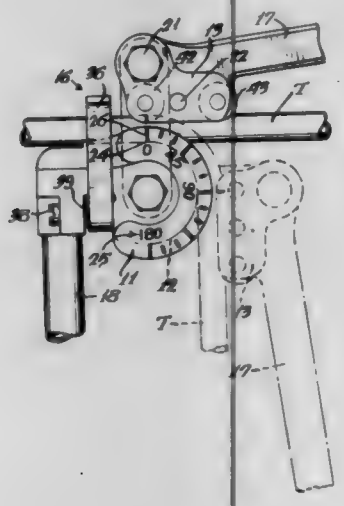
maintained in a close fitting engagement with said interior web and flange faces of said elongate member during said displacement, and said first means and said counter-pressure means being maintained in a closely fitting engagement with said corresponding exterior web and flange faces of said elongate member during said displacement, whereby said flanges in said region of said member are maintained in a planar position.

4,403,496

TUBE BENDER CONSTRUCTION

Leonard J. Kowal, Prospect Heights, Ill., assignor to Imperial Clevite Inc., Rolling Meadows, Ill.

Filed Jan. 30, 1981, Ser. No. 229,861
Int. Cl.³ B21D 11/04
U.S. Cl. 72—388 **28 Claims**



1. In a manually operable tube bender having a mandrel defining a tube-receiving bending groove extending arcuately about a bend axis to define a bending plane, a forming member mounted to said mandrel to swing about said bend axis for urging a tube to be bent into said bending groove, and means for holding the tube against longitudinal displacement in said bending groove during a tube bending operation, the improvement comprising:

a first handle connected to the forming member and having a distal end defining a first gripping portion at said bending plane; and

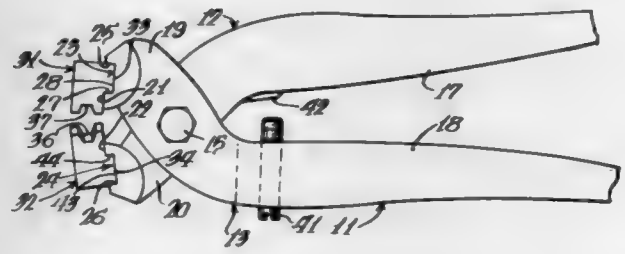
a second handle having a connecting portion connected to the mandrel and extending therefrom away from the bending plane and defining a second gripping portion connected to the distal end of the connecting portion and extending therefrom toward the bending plane, said second gripping portion being disposed at a distance from said bending axis a distance greater than the spacing of said first gripping portion therefrom, whereby said first gripping portion may be swung about said bending axis to adjacent said second gripping portion free of interference between the user's hands on said gripping portions at said bending plane.

4,403,497

BEAD BENDING TOOL

Felix V. Matteucci, 1422 S. 61st Ave., Cicero, Ill. 60650

Filed May 11, 1981, Ser. No. 262,757
Int. Cl.³ B21D 9/08
U.S. Cl. 72—409 **17 Claims**



1. A tool for bending articles having a rolled edge or bead comprising:

(a) a pair of levers joined by a pivot pin, the levers being adapted for movement in a pivot plane and defining handles on one side of the pivot pin and arms having forward ends on the other side of the pivot pin, the forward end of each arm defining a slot having a bottom, an inboard surface and an outboard surface such that when the tool is placed in a closed position the two outboard surfaces are substantially parallel;

(b) a male jaw member removably mounted on the forward end of one of the arms and having an arcuate male workface provided with a groove adapted to receive the bead or rolled edge of the article, the male jaw member also being provided with a ledge to be received in the slot and adapted to engage the outboard surface of the slot of the arm the male jaw member is removably mounted on; and

(c) a female jaw member removably mounted on the forward end of the other arm and having an arcuate female workface substantially complementary to the male workface and provided with the groove adapted to receive the bead of the article, the female jaw member being of greater width than the male jaw member, the female jaw member also being provided with a ledge to be received in the slot and to engage the outboard surface of the slot of the arm the female jaw member is removably mounted on;

said jaw members being retained on their respective arms by screws set substantially perpendicular to the slots and extending generally in the direction of the handles.

4,403,498

PRESS

Arthur Holtschmidt, Augsburg, Fed. Rep. of Germany, assignor to Karl Mengele & Söhne Maschinenfabrik und Eisengiesserei GmbH & Co., Gunzburg, Fed. Rep. of Germany

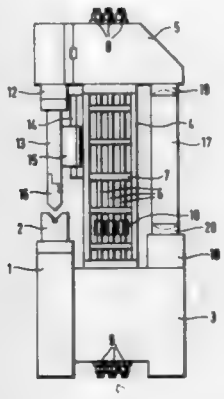
Filed Jul. 14, 1981, Ser. No. 283,297
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1980, 3027495
Int. Cl.³ B21D 5/02
U.S. Cl. 72—455 **5 Claims**

1. A press comprising a tamping tool with hydraulic drive for the tamping tool, a table, and a multiple part structure comprising a lower crosshead arrangement connected to said table, an upper crosshead arrangement spaced above said lower crosshead arrangement, a top clamping bar carried by said upper cross head arrangement, and a center part extending

between and interconnecting said lower crosshead arrangement and said upper crosshead arrangement, said multiple part structure clears a working space in the press that is accessible from three sides, said multiple part structure being stressed during the working operation, and comprising:

(a) said center part comprises upright columns,

(b) said table and said lower crosshead arrangement are formed as a unit of prestressed concrete, and



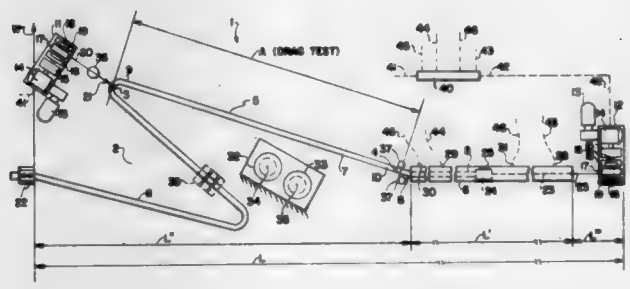
(c) said multiple part structure has a front side and a rear side with said upright columns spaced between said front and rear sides, and pressure columns including hydraulic expanding cylinders located on the rear side of said upright columns and extending between said lower crosshead arrangement and said upper crosshead arrangement.

4,403,499

CABLE TESTER ARRANGEMENT AND METHODS

Joel Sack, 45 Beverly Rd., West Orange, N.J. 07052, and Irving Neshin, 737 Suburban Rd., Union, N.J. 07083

Filed Nov. 9, 1981, Ser. No. 319,253
Int. Cl.³ G01N *3/56*
U.S. Cl. 73—7 **13 Claims**



1. Cable tester arrangement for subjecting cable such as mining cable to simulated field conditions substantially corresponding to actual field conditions as normally encountered by the cable for determining cable longevity, comprising

a support surface having a first reference point and a second reference point spaced apart a selective distance and defining a test drag surface area therebetween,

a source means adjacent the second point for feed and return of a selective length of a test span of such a cable having a forward cable end portion and a rearward cable end portion,

first selectively operatable moving means operatively connectable to the cable for moving the forward end portion of the test span of the cable from the second point to the first point, and second selectively operatable moving means operatively connectable to the cable for moving the rearward end portion of the test span of the cable from the second point to the source means, and

control means arranged for selectively independently controlling the operation and movement of the first moving means and second moving means,

for operation in a first test mode for simultaneous reciprocal movement of the first moving means and second moving means to move the test span of the cable relative to the source means and drag the test span back and forth along the drag surface area between the first point and the second point a selective number of times under selective tension to simulate substantially actual field condition dragging as normally encountered by the cable for determining cable dragging longevity, and

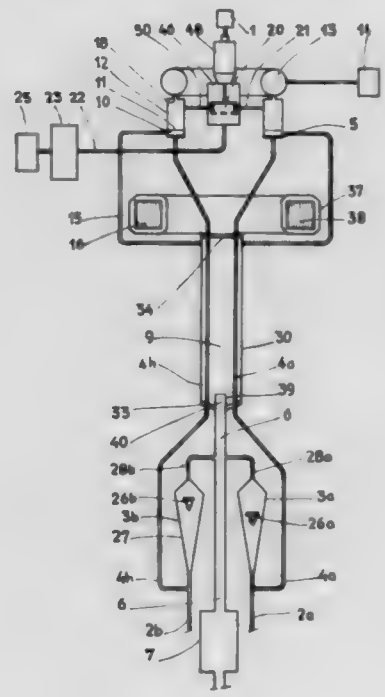
alternatively for operation in a second test mode for reciprocal movement of at least one said moving means relative to the other said moving means to permit the forming of a selectively sized loop in an intermediate section of the test span of the cable on the drag surface area between the first point and the second point in a forward releasing feed phase of reciprocal movement of said at least one moving means, and then the removing of the loop in a rearward selective tension pulling return phase of reciprocal movement of said at least one moving means, a selective number of times to simulate substantially actual field condition looping and unlooping as normally encountered by the cable for determining cable looping and unlooping longevity.

4,403,500

APPARATUS FOR MEASURING A PARAMETER RELATING TO AT LEAST ONE SUBSTANCE POSSIBLY PRESENT IN ONE OR SEVERAL CHAMBERS OF A SET OF MEASUREMENT CHAMBERS KEPT UNDER VERY LOW RESIDUAL PRESSURE

Patrice Le Baud, Versailles, France, assignor to Novatome, Le Plessis Robinson, France

Filed Sep. 15, 1980, Ser. No. 187,452
Claims priority, application France, Oct. 18, 1979, 79 25902
Int. Cl.³ G01N *1/26, 7/10*
U.S. Cl. 73—19 **13 Claims**



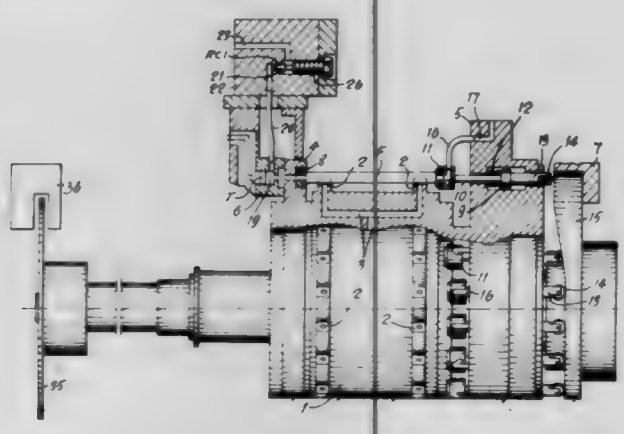
1. Apparatus for measuring a parameter relating to at least one substance possibly present in at least one chamber of a set of measurement chambers kept under ultra-high vacuum by a single vacuum pump installation and each connected by a member (11) allowing limited and selective passage of the substance to be measured at one point of a circuit or of an installation containing a fluid comprising said substance, wherein said measurement chambers are connected to said single vacuum pump installation by low conductance elements offering great resistance to the passage of molecules, and to a means for measuring said parameter, common to said set of chambers, by a selector of the continually rotating type allowing each of said chambers successively and in a short period of time to be placed in communication with said means for measuring said parameter.

4,403,501

METHOD AND DEVICE FOR THE ELECTROPNEUMATIC TESTING OF CIGARETTE FILTERS

Giovanni Pezzi, Bologna, Italy, assignor to Cir S.p.A. Divisione Sasib, Bologna, Italy

Filed Jan. 22, 1981, Ser. No. 228,881
Claims priority, application Italy, Feb. 5, 1980, 12433 A/80
Int. Cl.³ G01N *15/08*
U.S. Cl. 73—38 **14 Claims**



1. A method of determining the permeability to the air of filter rods for filter tip cigarettes, comprising the steps of:

applying a fluid under pneumatic pressure to one end of a filter rod, the other end of said filter rod being connected to the atmosphere through a calibrated passage;

converting the pneumatic pressure at said one end of said filter rod to an inspection signal corresponding to the permeability of said filter rod;

generating higher and lower reject threshold signals, the value of said higher reject threshold signal corresponding to a permeability of said filter rod which exceeds an upper permissible limit and the value of said lower reject threshold signal corresponding to a permeability of said filter rod which is less than a lower permissible limit;

generating higher and lower alarm threshold signals having values between those of said higher and lower reject threshold signals;

comparing said inspection signal with said reject and alarm threshold signals;

generating an alarm signal when said inspection signal exceeds said higher alarm threshold signal or is less than said lower alarm threshold signal; and

generating a reject signal when said inspection signal exceeds said higher reject threshold signal or is less than said lower reject threshold signal.

4,403,502

VISCOMETER FOR CAST FOAMING MATERIALS AND ASSOCIATED METHOD

Jan T. Lindt, Pittsburgh, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

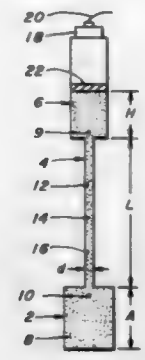
Filed Mar. 4, 1981, Ser. No. 240,581
Int. Cl.³ G01N *11/08*; G01F *23/28*
U.S. Cl. 73—55 **21 Claims**

1. A viscometer for foaming materials comprising

reservoir means for containing a supply of material to be foamed,

receiver means for receiving a portion of the foamed material,

pressure sensing means for measuring the pressure of said material as it is foamed, and



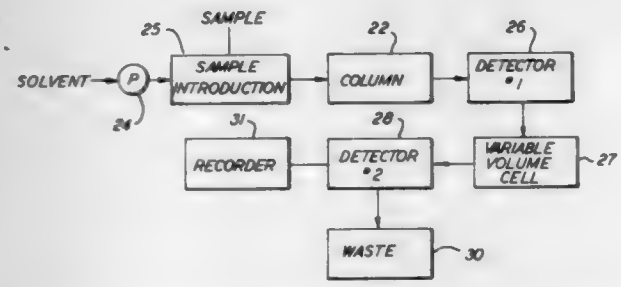
rise measuring means operatively associated with said receiver means for measuring the rate of rise of said foaming material within said receiver means.

4,403,503

APPARATUS AND METHOD FOR THE REDUCTION OF INTERFERENCES IN CHROMATOGRAPHY

Sujit Banerjee, 128 E. Remington Ave., Syracuse, N.Y. 13210, and Edward J. Pack, Jr., Cobblestone Sq., Clay, N.Y. 13041

Filed Nov. 9, 1981, Ser. No. 319,260
Int. Cl.³ G01N *31/08*
U.S. Cl. 73—61.1 C **12 Claims**



1. Apparatus for the reduction of interferences in chromatography comprising in combination a chromatographic column, means for flowing a sample through the column, first and second detectors of substantially identical construction, means for delivering the ouflow from the column to the first and second detectors, variable volume cell means positioned between the column and the second detector so that the column outflow passes through the variable volume cell before entering the second detector, and means for recording the output of the detectors.

4,403,504

ENGINE TESTING MICROWAVE TRANSMISSION DEVICE

Mark K. Krage, Royal Oak, and Alexander Meduvsky, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 13, 1981, Ser. No. 292,683
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—116 **6 Claims**

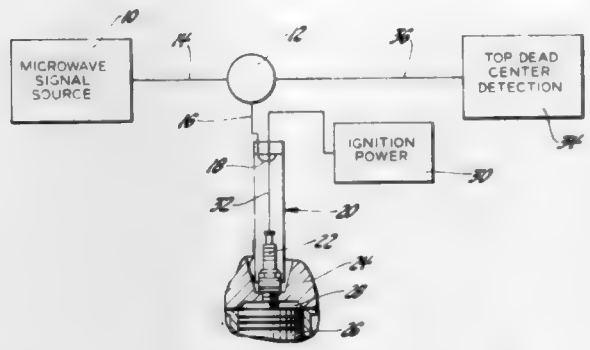
1. Apparatus for transmitting a microwave signal into the combustion chamber of a spark-ignited internal combustion engine and for transmitting a reflected microwave signal therefrom, comprising in combination:

a microwave signal source, a resistor-type spark plug having an internal axially extending resistor and electrodes communicating with the combustion chamber of said engine,

an elongated metallic waveguide having an axially extending part thereof encompassing at least a portion of said spark plug;

an antenna element coupled to said microwave signal source, said antenna element located within said wave-

guide and so positioned relative thereto as to cause the waveguide to be excited in a transverse electric mode with an electric field that is transverse to the longitudinal axis of the spark plug and internal resistor thereof when the antenna element is excited by said microwave signal



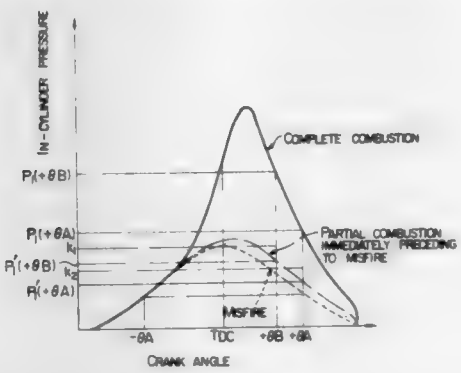
source, said mode having substantially no axially directed electric field whereby the internal resistor of the spark plug does not substantially attenuate the transmission of the microwave signals into and out of the combustion chamber.

4,403,505

IGNITION RANGE DETECTOR FOR INTERNAL COMBUSTION ENGINE

Tadashi Hattori, Okazaki; Hiroaki Yamaguchi, Anjo, and Tadashi Ozaki, Gamagori, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Nov. 2, 1981, Ser. No. 317,405
Claims priority, application Japan, Nov. 7, 1980, 55-156790
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.3 **3 Claims**



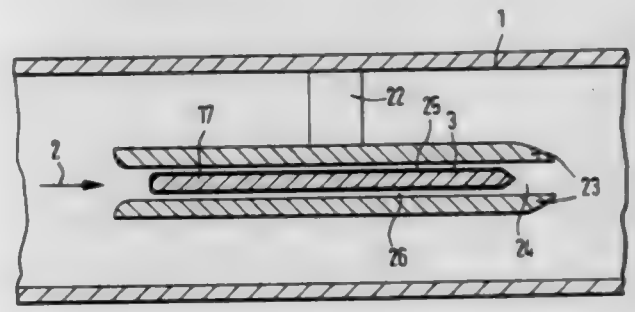
1. An ignition range detecting system for the internal combustion engine, comprising a pressure detector for detecting the pressure in a cylinder of the internal combustion engine, a first circuit connected to said pressure detector for detecting the pressure in the cylinder at a first crank angle of the internal combustion engine preceding to the explosion of the air-fuel mixture in said cylinder, a second circuit for detecting the pressure in the cylinder at a second crank angle of the internal combustion engine after the top dead center where the air-fuel mixture in the cylinder explodes and is combusted, a decision circuit for comparing a predetermined value with the ratio between the pressures detected by said first and second circuits respectively thereby to detect an ignition range, and means for detecting the ignition range always at a predetermined level regardless of the running conditions of the internal combustion engine on the basis of the result of comparison of said pressure ratio with said predetermined value.

4,403,506

APPARATUS FOR THE MEASUREMENT OF THE MASS OF A FLOWING MEDIUM

Heinz Lauterbach, Esslingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 96,129, Nov. 20, 1979, Pat. No. 4,317,365. This application Oct. 13, 1981, Ser. No. 310,933
Claims priority, application Fed. Rep. of Germany, Jan. 4, 1979, 2900220
Int. Cl.³ G01F *1/68*; G01P *5/12*
U.S. Cl. 73—204 **2 Claims**



1. Apparatus for the measurement of a flowing medium such as the measurement of induced air mass in internal combustion engines,

an intake manifold having a nozzle body channeling the flowing medium,

flow control means disposed within the nozzle body comprising at least three plate-shaped members with one of the plate-shaped members being positioned intermediate the other two,

said plate-shaped members having plate surfaces in opposed parallel spaced relation to each other defining narrow parallel spaced gaps between the plate members,

said spaced gaps being parallel to the path of the medium flowing through the nozzle body wherein at least a portion of the medium passes through the nozzle with substantially laminar flow,

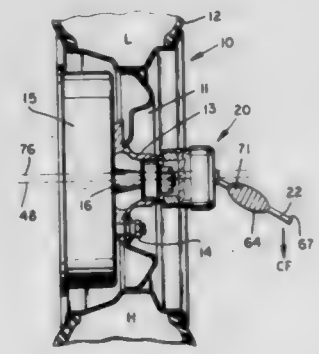
and a hot-film temperature dependent resistor disposed on plate surfaces on either side of each gap in the path of the laminar medium flow.

4,403,507

WHEEL BALANCE INDICATOR

Sam S. Thomas, 3601 Piedmont Rd., Apt. 707, Atlanta, Ga. 30305

Filed Aug. 31, 1981, Ser. No. 297,639
Int. Cl.³ G01M *1/28*
U.S. Cl. 73—457 **6 Claims**



1. A wheel balance indicator for attachment to a wheel assembly while rotatably mounted to a vehicle about a horizontal axis comprising a chuck for connection to the wheel assembly at the axis of rotation of the wheel assembly, an indicator stem having a pivotable ball end portion pivotably received in a socket means of the chuck and a free distal end portion angularly movable with respect to said chuck, means

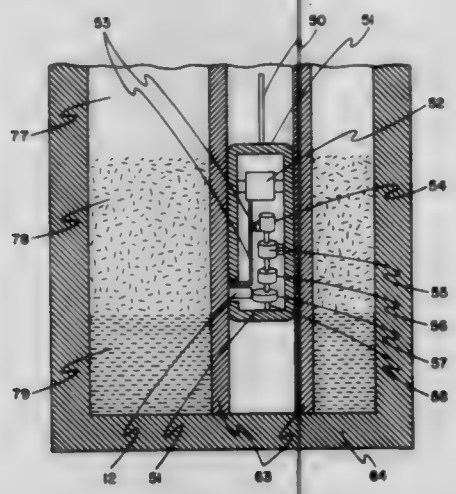
for biasing said pivotable ball end portion in engagement with said socket means to yieldably hold the indicator stem in a fixed attitude with respect to said chuck, whereby when the wheel balance indicator is mounted on a wheel assembly that is out of balance and the wheel assembly is rotated on the vehicle about its axis of rotation so that the wheel assembly oscillates about an axis of oscillation, the indictor stem can be oriented as the wheel assembly rotates so that it extends from its pivotable end portion at the axis of rotation and intersects the axis of oscillation such that the indictor stem becomes balanced in this attitude and remains in this attitude when the rotation and oscillation of the wheel assembly is stopped.

4,403,508

LOCATING INTERFACES IN VERTICALLY-LAYERED MATERIALS AND DETERMINING CONCENTRATIONS IN MIXED MATERIALS UTILIZING ACOUSTIC IMPEDANCE MEASUREMENTS

Gary N. Langlois, Richland, Wash., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Jun. 10, 1981, Ser. No. 272,227
Int. Cl.³ G01N *29/02*; G01F *23/28*
U.S. Cl. 73—589 **2 Claims**



2. A device for determining the relative acoustic characteristic impedance of a medium, said medium being vertically layered and having a gas/solid interface and including an electrolytic aqueous solution, comprising:

(a) a transmitter having a highly damped pulsed soundwave transducer;

(b) a receiver having a soundwave transducer and an amplifier;

(c) a reference plate having two sides, one of said sides acoustically contacting said transmitter's transducer and said receiver's transducer, and the other of said sides physically contacting said medium, wherein said reference plate is part of a drywell which is vertically disposed within a tank containing said medium, with said transmitter's transducer oriented to transmit a signal pulse to, and said receiver's transducer oriented to receive a return pulse which is the reflection of said signal pulse from, the interface between said other side of said reference plate and said medium;

(d) means for remotely pumping acoustical couplant between the transducers and the reference plate;

(e) means for pressing the transducers against the reference plate;

(f) electronic gating means for passing substantially only said return pulse to said receiver's amplifier;

(g) means for determining the amplitude of said return pulse, said amplitude indicating the relative acoustic characteristic impedance of said medium;

(h) means for vertically displacing said transmitter's transducer and said receiver's transducer;

(i) means for measuring said vertical displacement; and

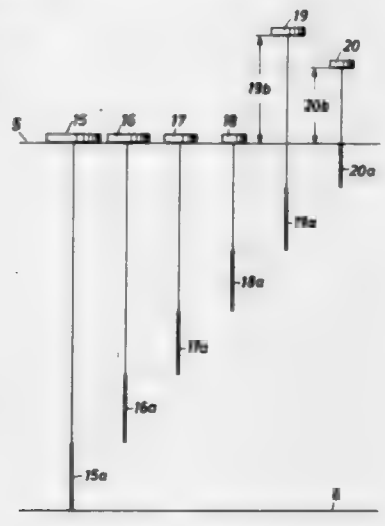
(j) means for determining the discontinuities in the amplitudes for repeated measurements, said discontinuites indicating the vertical heights of the interfaces of said vertical layers.

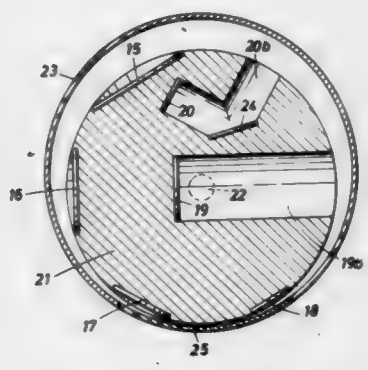
4,403,509

ULTRASONIC EQUIPMENT FOR EXAMINATIONS USING SECTION IMAGES

Carl Kretz, Zipf, Austria, assignor to Kretztechnik Gesellschaft mbH, Zipf, Austria

Filed Jun. 22, 1981, Ser. No. 275,874
Claims priority, application Austria, Jul. 15, 1980, 3663/80
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—639 **8 Claims**





1. In ultrasonic examination equipment comprising

a scanning mechanism including a wheel and drive means for rotating said wheel about its axis,

a plurality of focussing sound transducer heads carried by said wheel and angularly spaced apart with respect to said axis, each of said sound transducer heads being adapted to be activated to emit sound pulses forming a sound beam, which is projected outwardly of the periphery of said wheel and adapted to enter a section surface of an object to be examined, each of said sound transducer heads when activated being also adapted to receive echo pulses originating in said object in response to said sound pulses, and to derive electric echo signals from said echo pulses, each of said sound transducer heads having a working range which has a near end and a far end spaced apart along said beam, each of said sound beams having in said working range of the sound transducer head emitting said beam a higher resolution than in other length portions of said sound beam,

activating means for activating each of said sound transducer heads during the movement thereof through a predetermined angular range with respect to said axis, which angular range is not in excess of the angular spacing of adjacent ones of said sound transducer heads with respect to said axis, whereby successive ones of said sound transducer heads are adapted to successively scan said section surface with said sound beams,

a display unit having a display surface, and

signal-processing means arranged to receive said echo signals from said sound transducer heads and in response to said echo signals to cause said display unit to display said echoes on said display surface at locations geometrically coordinated with their origins in said section surface,

the improvement residing in that

the near ends and far ends, respectively, of angularly adjacent ones of said sound transducer heads are spaced different distances outwardly from the periphery of said wheel,

signal-selecting means are provided, which are arranged to deliver to said signal-processing means only those of said echo signals which have been derived from echoes originated in the working range of an activated sound transducer head, and

pre-entry path defining means are accommodated in said wheel and define at least one pre-entry path which has a substantial length and is arranged to receive within said periphery said sound beam from one of said sound transducer heads which has a working range having near and far ends which are respectively spaced smaller distances outwardly from said periphery than the near and far ends, respectively, of the working range of another of said sound transducer heads, and to project the last-mentioned sound beam outwardly from said periphery when said sound beam has travelled a substantial distance in said pre-entry path.

4,403,510

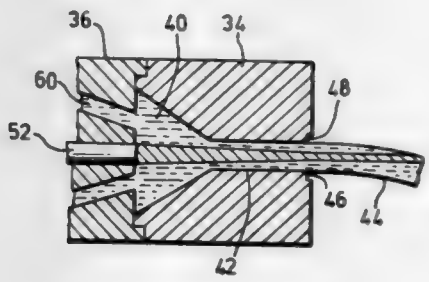
APPARATUS AND METHOD FOR ULTRASONIC INSPECTION

Stewart deWalle, 25 Lagos Rd., Rexdale, Ontario, Canada M9W 4EJ; Dirk W. Hamoen, R.R. #3, Campbellville, Ontario, Canada (L0P 1B0), and James W. Boyd, 36 Belvidere Ave., Hamilton, Ontario, Canada (L9A 3B7)

Filed Oct. 23, 1980, Ser. No. 199,752

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—644 **14 Claims**





1. Apparatus for ultrasonic inspection of an object comprising:

an inspection device having a housing;

the housing having a liquid inlet thereto, a liquid outlet therefrom, and passage means therein connecting the inlet and the outlet and including a convergent portion for the production of a substantially non-turbulent flowing liquid column having an external envelope issuing from the outlet;

an ultrasonic transducer mounted in the housing so as to produce within the flowing liquid column a beam of ultrasonic oscillations having a respective external envelope;

the transducer focusing the said beam at a point downstream from itself, so that the cross sectional area of the beam is less than the cross sectional area of the column generated at said outlet whereby upon inpingement with an object to be inspected the ultrasonic beam envelope is contained wholly within the liquid column and noise caused by turbulence on the surface of the column is inhibited.

4,403,511

HYDRAULIC VIBRATION TESTER

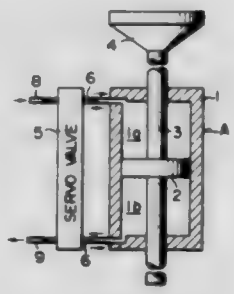
Makoto Shibano, Hatano; Hideaki Kakuma, Atsugi, and Hisatake Yasuyama, Zama, all of Japan, assignors to Kabushiki Kaisha Akashi Seisakusho, Tokyo, Japan

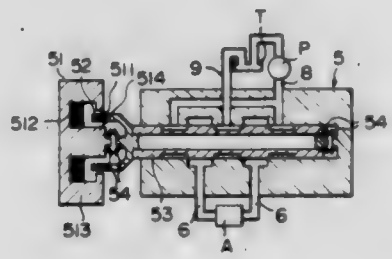
Continuation-in-part of Ser. No. 136,546, Apr. 2, 1980, abandoned. This application Oct. 5, 1981, Ser. No. 308,478

Claims priority, application Japan, Apr. 13, 1979, 54-45616

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—665 **8 Claims**





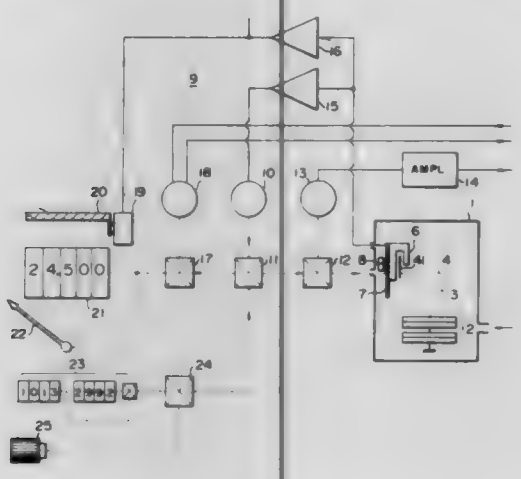
1. Hydraulic vibration tester provided with an actuator comprising a piston fitted in a cylinder and a vibration testing table member connected to the piston through a piston rod and with a direct drive type servo valve enabling an alternative feeding of working pressure fluid alternately to opposite ends of the cylinder of said actuator through passages so as to reciprocate said piston, characterized in that each of the resonance frequency range of said servo valve and the resonance frequency range of said passages is set to be in a high frequency range above 650 Hz so as to achieve a local effective working range in a high frequency range above 650 Hz of said vibration testing table member as said piston is reciprocated.

4,403,512

SERVO-TYPE CAPSULE-EQUIPPED INSTRUMENT

Kazushi Nakahama, Komae, Japan, assignor to Tokyo Aircraft Instrument Co. Ltd., Tokyo, Japan

Filed Jun. 2, 1981, Ser. No. 269,785
Claims priority, application Japan, Jan. 6, 1981, 56-947
Int. Cl.³ G01L 7/12, 9/00
U.S. Cl. 73—701 11 Claims



1. A servo-type capsule-equipped instrument having an error correcting mechanism, said instrument comprising

at least one capsule,

a sector adapted for rotation corresponding to the displacement of the capsule,

a photosensor for producing an output corresponding to its angular position relative to the sector,

a support for rotating the photosensor, said photosensor being supported adjustably by said support for tracing the sector,

a cam adapted to make the amount of the adjustment of the photosensor variable in accordance with the position of the support,

a motor having a shaft coupled to said support for the displacement thereof,

means for generating a signal corresponding to the rotating positional angle of the shaft of said motor, and

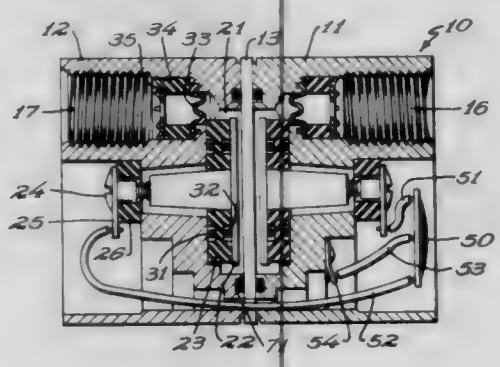
an amplifier having its input coupled to said photosensor and its output coupled to said motor, said amplifier amplifying the output of the photosensor and driving the motor so as to maintain the output of the photosensor constant.

4,403,513

CAPACITIVE DIFFERENTIAL PRESSURE TRANSDUCER

John R. Sjolund, St. Paul, Minn., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jan. 24, 1979, Ser. No. 5,936
Int. Cl.³ G01L 9/12
U.S. Cl. 73—718 14 Claims



1. A capacitive differential pressure transducer for sensing the difference in pressure between at least two fluids, comprising:

a housing including first and second housing halves;

a diaphragm forming a common capacitive plate to said capacitive differential pressure transducer;

means for securing said first and second housing halves together with said common capacitive plate mounted therebetween and in contact with said housing halves; and,

each housing half including

an interior chamber filled with a force transmitting fluid,

sealing means between said chamber and an input port comprising a diaphragm located in the input port and a retaining ring for holding the diaphragm in said input port, said input port receiving one of said at least two fluids,

sensing capacitive plate means cooperating with said common capacitive plate and including a sensing capacitive plate located within said interior chamber and a first insulative washer mounted between said sensing capacitive plate and an interior wall of said housing half,

fastening means for holding said sensing capacitive plate means tight against said housing half, said fastening means includes a second insulative washer and a screw extending through said second insulative washer and into said sensing capacitive plate, said second insulative washer being mounted between an oppositely facing interior wall of said housing half and said fastener so that said housing half is pinched between said sensing capacitive plate and said fastener when mounted, and

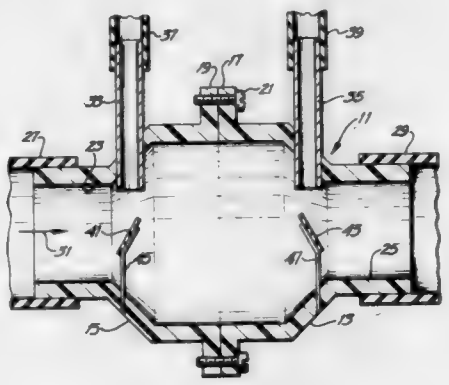
means connecting said sensing capacitive plate and said common capacitive plate to a sensing circuit, said sensing circuit comprising electronic means having inputs connected to said sensing capacitive plate in the respective housing halves and wherein said sensing circuit has a common junction connected to said housing halves.

4,403,514

PNEUMOTACHOGRAPH WITH PITOT-LIKE TUBES

John J. Osborn, Tiburon, Calif., assignor to Critikon, Inc., Tampa, Fla.

Continuation of Ser. No. 151,742, May 20, 1980, abandoned.
This application Mar. 29, 1982, Ser. No. 363,173
Int. Cl.³ G01F 1/36; A61B 5/08
U.S. Cl. 73—861.52 14 Claims

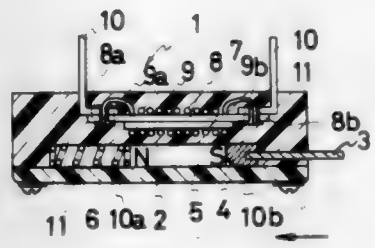


1. A pneumotachograph comprising a housing having a pair of input-output ports defining a flow path for respiratory gases, first and second pitot tubes disposed along said flow path and a pair of baffles disposed in said flow path and below each of said pitot tubes, each of said baffles being disposed at an angle of gas flow reflection between the axis of its associated pitot tube and the flow path from a different one of said ports.

4,403,515
POSITION SENSOR

Shinichiro Iwasaki, Auburn Heights, Mich., assignor to Aisin Seiki Company, Limited, Kariya, Japan

Continuation of Ser. No. 182,662, Aug. 29, 1980, abandoned.
This application Apr. 26, 1982, Ser. No. 371,980
Int. Cl.³ G01L 1/04
U.S. Cl. 73—862.38 10 Claims



1. A position sensor for detecting a displacement of an object, comprising:

a movable member coupled to said object;

permanent magnet means connected to said movable member for producing a magnetic field which varies in a predetermined region in dependence on the displacement of said movable member;

core means made of a magnetically soft material and disposed in said predetermined region for forming a magnetic circuit with said magnet means;

electric coil means including at least one coil wound around said core means for detecting a change in magnetic flux in said magnetically soft member; and

means for detecting the displacement of said object, comprising,

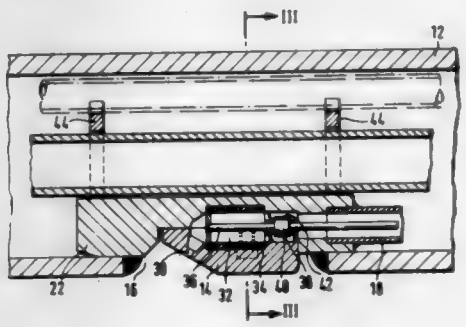
means for applying a pulse voltage to a first terminal of said coil to saturate magnetically said core means, and

means coupled to a second terminal of said coil for producing a displacement output signal indicative of the displacement of said magnet means and therefore of said movable body based on the time between application of said pulse voltage and saturation of said core means.

4,403,516
FURNACE PROBE

Pierre Mailliet, Howald, and Victor Kremer, Luxembourg, both of Luxembourg, assignors to Paul Wurth S.A., Luxembourg

Filed Jan. 18, 1982, Ser. No. 340,362
Claims priority, application Luxembourg, Jan. 23, 1981, 83087
Int. Cl.³ G01N 1/26; G01K 13/12
U.S. Cl. 73—863.11 10 Claims



1. A probe for taking gas samples and thermal measurements in a furnace comprising:

a tubular external casing, said casing having an axis and being provided with a linear array of spacially displaced apertures in the wall thereof;

a plurality of gas sampling conduits disposed within said casing, said sampling conduits being of different length whereby first ends thereof are located adjacent respective of said casing apertures;

block means positioned within said casing and covering each of said casing apertures, said block means being hermetically sealed to the wall of said casing, said block means each further being hermetically affixed to the end of one of said sampling conduits, said block means further including passages for establishing fluid communication between the interior of the conduit affixed thereto and the outwardly facing side of said block means;

conduit support means positioned within casing, said conduit support means extending generally transversely with respect to the axis of said casing, said sampling conduits being located within said casing by said conduit support means;

plate means detachably connected to each of said block means, said plate means being located in said casing apertures and cooperating with said block means to define a gas sampling chamber in communication with an end of a block means passage, said plate means each further being provided with a gas admission orifice which establishes communication between the exterior of said casing and said sampling chamber;

temperature sensor means positioned within at least some of said gas sampling chambers;

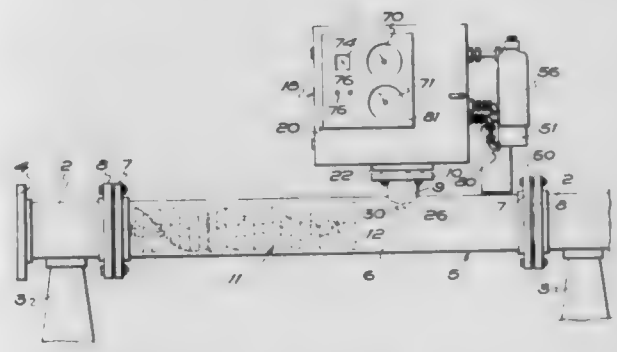
means supporting said temperature sensor means such that movement thereof in a direction parallel to the axis of said casing is prevented; and

means for establishing a flow of coolant in said casing.

4,403,517
LIQUID SAMPLING

Magnus Thomte, Oslo, Norway, assignor to Interpower A/S, Oslo, Norway

Filed Jun. 4, 1981, Ser. No. 270,541
Claims priority, application Norway, Jun. 6, 1980, 801702
Int. Cl.³ G01N 1/14
U.S. Cl. 73—863.84 10 Claims



1. Portable apparatus for sampling viscous oil delivered through a pipe from a supply to at least one receiving container on board a ship, comprising

a portable structure,

a positive displacement pump having an inlet and an outlet,

an inlet duct for communicating the pipe interior with said pump inlet,

a connector for attaching a sample collecting receptacle,

a further duct connecting said pump outlet to said connector,

drive means for said pump, and

control means arranged to operate said drive means and hence said pump, to extract small quantities over the course of delivery and supply them to the collecting receptacle to accumulate therein,

said pump, connector, further duct, drive means and control means being assembled to said structure, whereby the assembly thereof is portable as a self-contained unit for ready connection to and disconnection from the pipe so as to permit ready connection for use with said assembly disposed exteriorly of said pipe, and said inlet duct connecting said pipe interior to said pump inlet, and also to

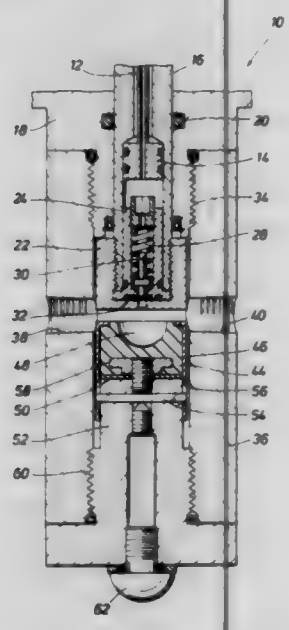
permit disconnection for storage during periods of non-use.

4,403,518

SAMPLER APPARATUS

Robert H. Welker, Sugar Land, Tex., assignor to Welker Engineering Company, Sugar Land, Tex.

Filed Apr. 6, 1981, Ser. No. 251,134
Int. Cl.³ G01N *1/14*
U.S. Cl. 73—864.34 **8 Claims**



1. In a sampler having a resilient cylindrical plug, a shield surrounding said plug and defining an end exposed face of the plug having an indention formed therein and which end exposed face is opposite a cooperative facing plate, and wherein the indention of the exposed face is subjected to contraction in response to movement of a push rod relatively moving said plug towards said facing plate to seal there against and capture a fluid in the indention thereof, the apparatus further including a rigid pump support body, a rigid restraining washer being positioned in contact with said rigid pump support body and forming an aperture, said resilient cylindrical plug being in intimate contact with said restraining washer, a projecting mounting post secured to said rigid pump body and extending through said aperture of said washer and into said plug from an end thereof opposite said indention wherein said mounting post includes an undercut portion with an enlarged overhang shoulder and wherein said shield overhangs the exposed face of said plug and cooperates with said mounting post to hold said plug within said shield.

4,403,519

SAMPLE COLLECTION APPARATUS

Robert H. Welker, Sugar Land, Tex., assignor to Welker Engineering Company, Sugar Land, Tex.

Filed Jul. 6, 1981, Ser. No. 280,658
Int. Cl.³ G01N *1/10*; B01F *7/26*
U.S. Cl. 73—864.62 **5 Claims**

1. A sample collecting apparatus for collecting and storing a liquid sample wherein the apparatus comprises:

(a) a cylinder having a head means thereon;

(b) a piston in said cylinder which defines a sample storage chamber adjacent to said piston in said cylinder;

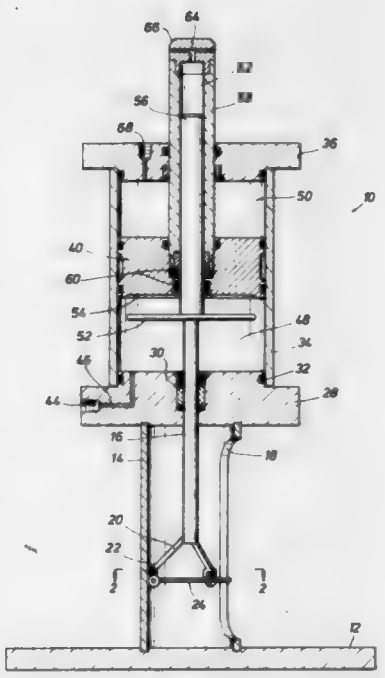
(c) inlet means connected to said sample storage chamber and which is adapted to be connected with a source of a sample to deliver a sample to said chamber;

(d) a stirring plate having a stirring edge in said chamber and which plate is smaller than said chamber to enable said plate to fit within said chamber;

(e) centered rod means having upper and lower rod portions connected to said stirring plate for positioning said plate in said sample storage chamber which plate extends into sample contained in said chamber to agitate said sample around the stirring edge of said plate on reciprocation of said rod means, said rod means having a length sufficient to extend fully through said sample storage chamber to a location remote from said sample storage chamber;

(f) foot powered operator means connected to said rod means for forcing said stirring plate to move through said sample storage chamber; and

(g) said rod means upper portion being larger in diameter than the lower portion thereof with the upper portion thereof being located above said plate and the lower portion being below said plate, and wherein the difference in diameter of said upper and lower portions creates a differential force on admitting a sample to said sample storage chamber under pressure and the differential force urges said plate upwardly in said sample storage chamber toward said piston, and said foot powered operator means forces said plate downwardly overcoming the differential force; wherein said foot powered operator means comprises:



(1) an upstanding support means for said sample collecting apparatus;

(2) treadle stirrup means vertically movably received in said support means adjacent to an opening therein;

(3) connecting means for connecting said stirrup means to said rod means to reciprocate said rod means on movement of said stirrup means;

(4) said opening formed and sized to enable a user to insert his foot in a reciprocating motion;

(5) said stirrup means including a foot receiving plate;

(6) said foot receiving plate and said connecting means being located at the lower end of said lower portion of said rod means;

(7) roller means connected to said foot receiving plate for guiding said foot receiving plate in reciprocating movement; and

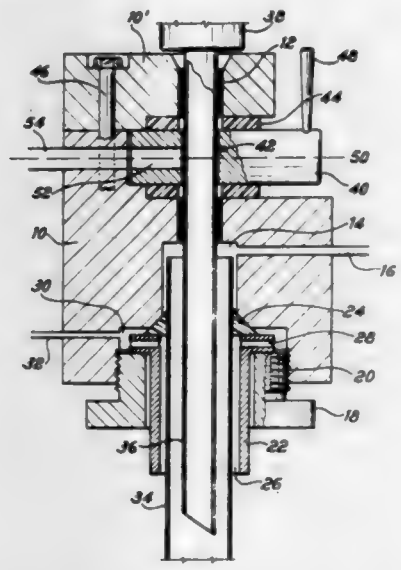
(8) a surface of said support means contacted by said roller means limiting the reciprocating motion of said foot receiving plate to only vertical motion.

4,403,520

CONTROL VALVE FOR A DIRECT ON-COLUMN INJECTOR AND INJECTION METHOD

Giorgio Sisti, Melzo; Bruno Tosi, Carate Brianza, both of Italy; Sorin Trestianu, Brussels, Belgium, and Mario Galli, Legnano, Italy, assignors to Carlo Erba Strumentazione S.p.A., Italy

Filed Dec. 30, 1980, Ser. No. 221,304
Claims priority, application Italy, Jan. 2, 1980, 19005 A/80
Int. Cl.³ G01N *31/04*
U.S. Cl. 73—864.81 11 Claims



1. Apparatus for controlling the injection passage of an on-column injector, said apparatus comprising an injection body, said injection body having an injection passage therethrough for introduction of a sample to a gas chromatography column via an injection syringe inserted through said injection passage; a valve in said injection passage between the outside environment and the end of said injection passage; a second passage fluidically connected to said injection passage at the end of said injection passage; and means for introducing carrier gas into said second passage; wherein said valve includes a valve body with a through-channel, said valve selectively allowing insertion of an injection syringe needle through said through channel of said valve body and said injection passage when said valve is in its open position, wherein said valve also includes at least one second channel fluidically connected to said through-channel at one end and adapted to be connected to a source of carrier gas and/or to the atmosphere on the other end, and wherein said second passage is of a larger cross-sectional area than the cross-sectional area of the annular space created between said injection passage and said injection needle and/or between said through-channel and said injection needle when the injection needle is in its insertion position in said injection passage such that, when the carrier gas is passed through said second channel, the carrier gas introduced through said second channel will create a counter-pressure in said through-channel and said injection passage to avoid sample return through said through-channel and said injection passage without substantial increase in carrier gas flowing into said column.

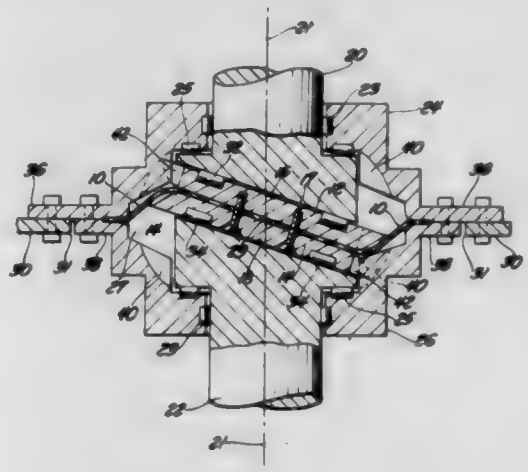
4,403,521

CONTINUOUS SHAFT SEAL

Erwin f'Geppert, Oakland, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 26, 1981, Ser. No. 277,457
Int. Cl.³ F16J *15/50*
U.S. Cl. 74—17.8 1 Claim

1. In a system that includes a partition (30) having an opening (31) therethrough: the improvement comprising a first housing structure (24) having a first peripheral flange (36) adapted to overlap and be secured to face areas of the partition that define the aforementioned opening; a second housing structure (26) having a second peripheral flange (38) clamped to the peripheral flange on said first housing structure, said peripheral flange on the second housing structure having a lesser radial dimension than said opening for disposition therein without contacting the partition; a continuous flexible sealing diaphragm 10 located within the space circumscribed by the housing structures, said diaphragm having a peripheral edge area thereof clamped between the housing structure peripheral flanges to seal the defined peripheral joint; a first pressure plate (12) positioned on one face of the diaphragm; a second pressure plate (14) positioned on the other face of the diaphragm; means (17) securing the pressure plates to the diaphragm; a first rotary shaft (20) extending into the first housing structure, said first shaft having an interior end face (16) acutely angled to the shaft axis to form a first cam surface; first anti-friction rollers (32) interposed between said cam surface and the first pressure plate; a second rotary shaft (22) extending into the second housing structure in axial alignment with the first shaft, said second shaft having an interior end face (18) acutely angled to the shaft axis at the same angle as said first mentioned end face, said last-mentioned end face



constituting a second cam surface; second anti-friction rollers (34) interposed between said second cam face and the second pressure plate; thrust bearings (25) in each housing structure for absorbing thrust loads transmitted from one cam surface to the other cam surface through the pressure plates; radial bearings (23) in each housing structure for absorbing radial loads associated with rotational movements of the respective shafts; said diaphragm having a peripheral slack area between the outer edges of the pressure plates and the clamped peripheral edge areas of the diaphragm, whereby the diaphragm-pressure plate assembly can undergo a wobble motion around the intersection point of the diaphragm and the shaft axis; and means for preventing rotational stress on the diaphragm; said stress-prevention means comprising two diammetrically-disposed internal slots (40) in each housing structure, and two diammetrically-disposed projections (42) extending from each pressure plate into different ones of the slots; said housing structures being clamped together to confine the shafts and sealing diaphragm in a unitary assembly installable on the partition by suitable positionment of said first peripheral flange on a face area of the partition.

4,403,522

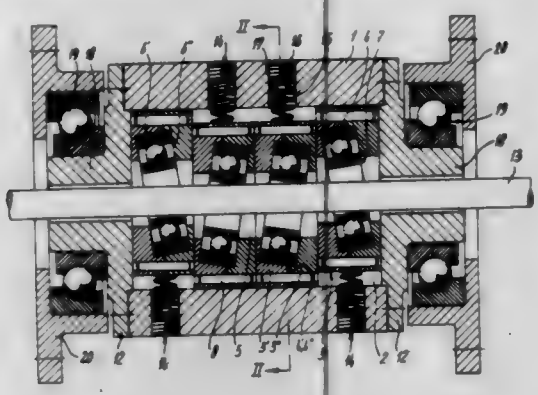
METHOD FOR MAKING A DEVICE FOR CONVERTING A ROTARY MOTION INTO A LINEAR MOTION

Zvonimir Z. Kumpar, Zeist, Netherlands, assignor to SKF Industrial Trading & Development Company B.V., Netherlands

Filed Feb. 13, 1981, Ser. No. 235,542
Claims priority, application Netherlands, Feb. 13, 1980, 8000907
Int. Cl.³ F16H *21/16*
U.S. Cl. 74—89 8 Claims

1. A mechanism for converting a rotary motion to a linear motion or vice versa comprising a housing having an axial bore

therethrough, an elongated shaft extending through said bore, a plurality of rolling bearings having inner and outer rings and a plurality of rolling elements between the rings circumscribing said shaft and mounted in side-by-side relation in the bore of the housing, support means for the bearings so that the axis of each bearing is located non-parallel to the axis of said shaft, each said support means comprising a pair of complementary annular members having a central aperture running parallel to the center of said housing bore and axis of the shaft, said pair of members formed with a pocket for the rolling bearing to support the bearing with its axis at an angle to said aperture



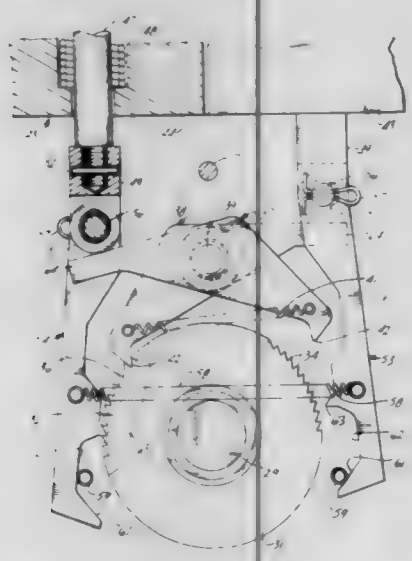
center line and the annular inner surface of the inner ring projects inwardly beyond said aperture surface, which members have been placed resting against one another in the bore of the housing in such fashion that the center lines of the apertures of the members run parallel with the center line of the bore but are displaced transverse to this center line in relation thereto, a cover closing at opposite ends of said bore and pressure elements running through the wall of the housing which elements hold the members in the said position displaced in transversee direction in relation to the center line and means holding the annular members of each pair together to lock the bearing in a fixed angularly disposed position therein.

4,403,523

REVERSIBLE STEPPING ACTUATOR

Fritz O. Seger, Mission Viejo, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Jun. 23, 1981, Ser. No. 276,653
Int. Cl.³ F16H *27/02*
U.S. Cl. 74—128 **34 Claims**



1. A reversible stepping actuator for producing a reversible incremental output rotation in response to a pulse input comprising:

a drive gear;

a first ratchet wheel connected to the gear for driving the gear in a first sense of rotation;

a second ratchet wheel connected to the gear for driving the gear in a second sense of rotation opposite to the first sense of rotation;

a first drive pawl for engaging the first ratchet wheel and driving the first wheel in the first sense;

a second drive pawl for engaging the second ratchet wheel and driving the second wheel in the second sense;

a first locking pawl for engaging the first ratchet wheel and preventing rotation of the first wheel in the second sense;

a second locking pawl for engaging the second ratchet wheel and preventing rotation of the second wheel in the first sense;

means for maintaining both locking pawls in engagement with their respective ratchet wheels and both drive pawls out of engagement with their respective ratchet wheels when in a neutral position;

first actuator means for disengaging the second locking pawl from the second ratchet wheel and at about the same time engaging the first drive pawl with the first ratchet wheel; and

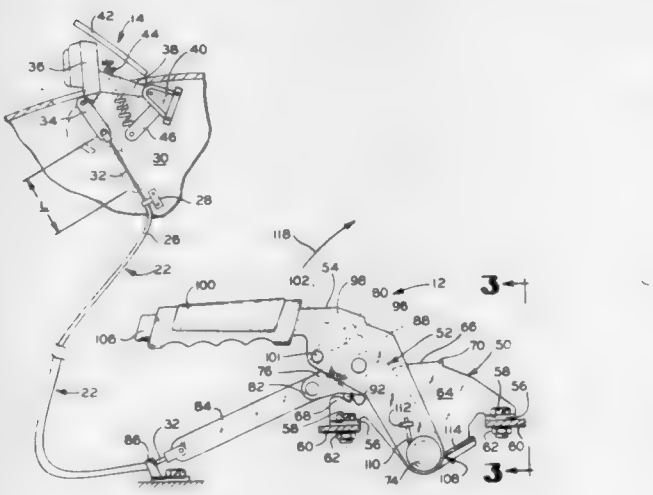
second actuator means for disengaging the first locking pawl from the first ratchet wheel and at about the same time engaging the second drive pawl with the second ratchet wheel.

4,403,524

HEADLAMP DOOR LEVER ASSEMBLY

Anthony R. Gurney, Toledo, Ohio, assignor to Donovan Wire & Iron Co., Toledo, Ohio

Filed Aug. 3, 1981, Ser. No. 289,725
Int. Cl.³ G05G *5/18*
U.S. Cl. 74—538 **7 Claims**



1. A hand-actuated lever assembly for mechanical linkage to and operation of a remote mechanism, said assembly comprising:

a support plate having at least one projection formed along a portion of the periphery of said plate and means for securing said plate from movement;

a lever mechanism including an operating lever and a releasable lock, said operating lever having one end thereof pivotally mounted relative to said support plate and having both a stop means for pivoting said lever and a means for mechanical linkage to such remote mechanism mounted on the opposite distal end whereby such remote mechanism is moved to an operating position when said lever mechanism is pivoted in an operating direction, and said releasable lock including a pawl pivotally mounted to said lever mechanism and adjacent said support plate and means supported by said lever mechanism for biasing said pawl into engagement with said projection of said support plate when said lever mechanism is pivoted in an operating direction whereby said pawl maintains said lever mechanism in the operating position until disengaged;

a handle pivotally mounted relative to said support plate and including a drive member adapted to abut and drive said

stop means of said lever mechanism when said handle is pivoted in an operating direction, thereby simultaneously pivoting said handle and said lever mechanism and engaging said pawl with said projection on said support plate, said handle being returnable to a non-operating position without disengaging said pawl from said projection; and

means on said handle for disengaging said pawl from said projection, thereby releasing said lock and permitting said lever mechanism to return to a non-operating position.

4,403,525

CONNECTING ROD FOR AN ENGINE

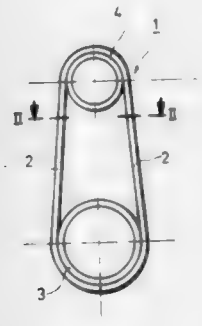
Bernd Bongers, Kirchheim, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

Filed Dec. 15, 1980, Ser. No. 216,248

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951112

Int. Cl.³ G05G *1/00*

U.S. Cl. 74—579 E **6 Claims**



1. In a connecting rod for an engine comprising a first annular bearing shell for a crankshaft bearing and a second annular bearing shell for a piston pin, said first and second bearing shells disposed in spaced relation and the axes thereof disposed in laterally spaced parallel relation and said connecting rod having a long axis extending between and transversely of the axes of said first and second bearing shells, said bearing shells each having an annular outer surface with a first portion of each outside surface facing toward other and a second portion of said outside surface facing away from other, a belt strand formed of fiber-reinforced plastics material is wrapped around the second portion of the outside surfaces of said first and second bearing shells and extends between said first and second bearing shells, a bearing plate formed of a fiber-reinforced plastics material extending between said first and second bearing shells and located inwardly of said belt strand, wherein the improvement comprises a plurality of said belt strands wrapped around and extending between said first and second bearing shells, each of said belt strands having a first portion in contact with the second portion of the outside surface of said first bearing shell, a second portion in contact with the second portion of the outside surface of said second bearing shell, and a pair of third portions spaced laterally outwardly from the long axis of said connecting rod and each said third portion extending between one end of said first portion and one end of said second portion of said belt strand which ends are located on the same side of the long axis of said connecting rod, the adjacent surfaces of adjacent said belt strands disposed in spaced relation in the axial direction of said bearing shells, the surfaces of said third portions of said bearing strands facing toward one another and the first portions of the outside surfaces of said shells define a first space, a plurality of said bearing plates located in said first space extending between and in contact with the first portions of the outer surface of said first and second bearing shells and each said bearing plate located between a pair of adjacent said belt strands with the side edges of said bearing plates extending between said bearing shells located between and extending along the outer edges of the third portions of said strands whereby said bearing plates divide the first space into a number of sub-spaces, said bearing plates having a width extending transversely of the long axis of said connecting rod corresponding to the outer dimension between said third portions of said belt strand extending between said bearing shells, thrust pieces located in said subspaces between adjacent said plates and located inwardly of said third portions of said belt strands and disposed in bearing contact with the first portions of the outer surface of said first and second bearing shells, and said bearing plates and thrust pieces are formed of fiber-reinforced plastics material.

4,403,526

MANUAL TRANSMISSION AND HYDRAULICALLY OPERATED SUBTRANSMISSION

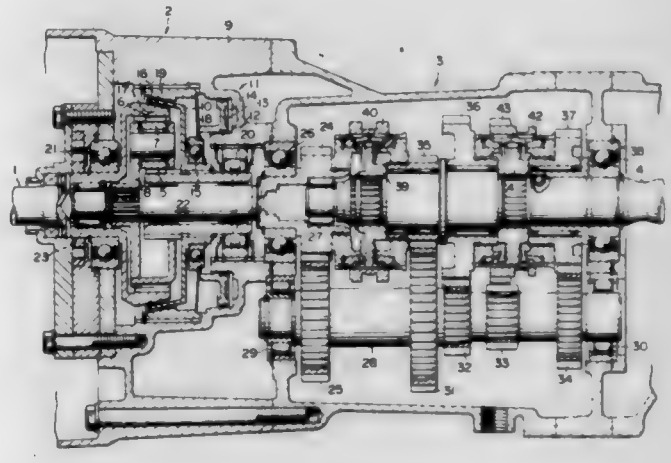
Akio Numazawa, Nagoya, and Hajime Arai, Aichi, both of Japan, assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 8, 1980, Ser. No. 166,906

Claims priority, application Japan, Sep. 25, 1979, 54-123503

Int. Cl.³ F16H *37/00, 3/44*

U.S. Cl. 74—740 **4 Claims**



1. A transmission for an automotive vehicle, comprising:

(a) a transmission casing;

(b) a power input shaft;

(c) an auxiliary speed change device, comprising:

(c1) a planetary gear mechanism, comprising a sun gear, a ring gear having hollow hub portion and drivingly coupled to the power input shaft, a plurality of planetary pinions meshed between the sun gear and the ring gear, and a carrier having an internally splined hollow hub portion and rotatably supporting the planetary pinions, said ring gear being rotatably supported at the outside of said hollow hub portion from said transmission casing;

(c2) an annular friction engaging element coupled to the sun gear, which is selectively drivable between a first position wherein it connects the sun gear to the ring gear, and a second position where it connects the sun gear to the transmission casing; and

(c3) a hydraulic actuator, comprising an annular chamber, an annular piston fitted in said annular chamber, and an annular spring plate which engages with and biases said friction engaging element to said second position and which also engages with said annular piston to transmit therethrough driving power of said annular friction engaging element when said hydraulic actuator is energized, a supply of hydraulic fluid pressure to said annular chamber propelling said friction engaging element to said first position against the biasing force of said annular spring plate; and

(d) a main speed change device, comprising:

(d1) a power input member which receives input of rotary power from said planetary carrier, said power input member integrally having a first bearing portion which is rotatably supported from the inside of said hollow hub portion of said ring gear, a splined portion which is engaged with said internally splined hollow hub portion of said planetary carrier, a second bearing portion which rotatably supports said sun gear, a third bearing

portion which is rotatably supported from said transmission casing, and a gear portion, in said order from one end toward the other end thereof in a manner steppedly to increase diameters thereof;

(d2) a power output shaft; and

(d3) a gear transmission mechanism which includes said gear portion of said power input member as a power input gear thereof and provides a plurality of reduction gear ratios between said power input member and said power output shaft, according to manual shift operation.

4,403,527

APPARATUS FOR DECREASING JOLTS DURING GEAR SHIFTS IN AUTOMATIC TRANSMISSIONS IN MOTOR VEHICLES

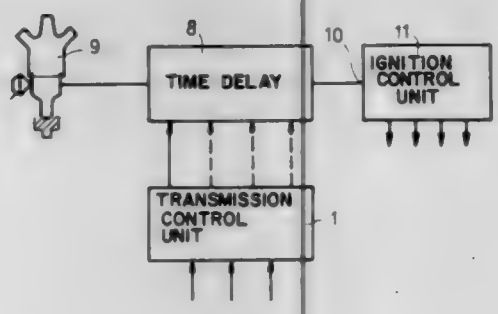
Helmut Mohl, Schwieberdingen; Alfred Müller, Leonberg; Manfred Schwab, Gerlingen, and Walter Stroh, Cleebronn, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 25, 1980, Ser. No. 172,239

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2935916

Int. Cl.³ B60K *41/06*

U.S. Cl. 74—851 **10 Claims**



1. In a drive system including a motor having a shaft equipped with associated electrical components for furnishing timing signals during the rotation thereof, a motor control unit operative under control of said timing signals to furnish ignition control signals controlling operating parameters of said motor, and an automatic transmission operative in a plurality of gears, the improvement comprising:

a transmission control unit (1,11,21 . . .) for controlling gear shifts in said automatic transmission, said automatic transmission control unit comprising means for generating a motor instruction signal signifying a desired change of an operating parameter of said motor during one of said gear shifts for decreasing jolts during said gear shifts; and

time delay means (8,20 . . .) connected to said transmission control unit for receiving said motor instruction signals and interposed between said motor control unit and said electrical components associated with said shaft for delaying the furnishing of said ignition control signals in response to said motor instruction signals.

4,403,528

CROWN CAP REMOVING AND RETAINING IMPLEMENT

C. Joseph Locke, Lake Oswego, Oreg., assignor to L-N International, Inc., Lake Oswego, Oreg.

Filed Jun. 29, 1981, Ser. No. 278,042

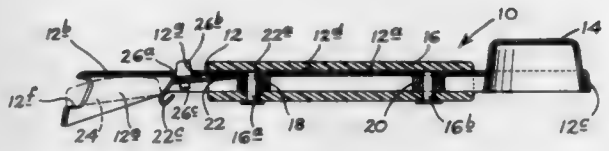
Int. Cl.³ B67B *7/16, 7/44*

U.S. Cl. 81—3.46 R **3 Claims**

1. A crown cap removing and retaining device comprising

a rigid body having an elongate handle portion and a cap-receiving portion joined to one end of said handle portion, said cap-receiving portion having a cavity for receiving a cap and cap-rim-engaging means disposed opposite from said handle portion,

an elongate unitary leaf-spring member cooperating with said cap-receiving portion to releasably hold a removed cap in said cap-receiving portion by engaging the underside of the rim of the cap, said leaf-spring member having an elongate expanse substantially paralleling said handle portion which expanse terminates in one end which is fixed to said handle portion, said leaf-spring member further including a distal end portion joined to the opposite end of said expanse extending at an obtuse angle from said expanse into said cavity for holding engagement with the underside of the rim of a cap disposed in said cap-receiving portion, the extremity of said distal end portion being formed in a reverse bend away from said cavity, said expanse progressing outwardly from said fixed end being



resiliently flexible away from said handle portion and flexing of said expanse producing movement of said distal end portion in an arcuate path extending away from said handle portion and away from said cap-rim-engaging means, movement in said arcuate path producing release of a cap, and

push button means for flexing said expanse,

said body having a transverse bore disposed adjacent where the handle and cap-receiving portions join, said push button means comprising a knob attached to said expanse of said leaf-spring member, said knob extending through said bore and being depressible to flex said expanse away from said handle portion thus to produce movement of said distal end portion in said arcuate path.

4,403,529

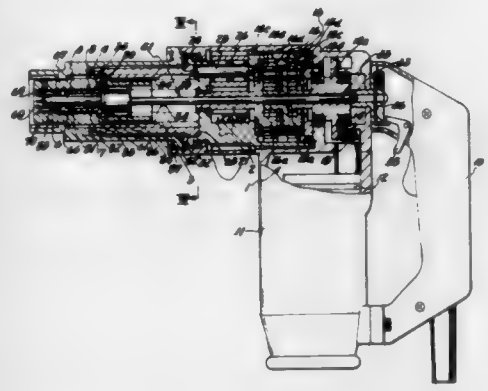
DEVICE FOR FASTENING BOLTS

Seiji Ikeda, Osaka, and Katsuyuki Ono, Moriguchi, both of Japan, assignors to Maeda Metal Industries Ltd., Osaka, Japan

Filed Aug. 19, 1981, Ser. No. 294,234

Int. Cl.³ B25B *17/00*

U.S. Cl. 81—56 **5 Claims**



1. A bolt fastening device comprising an outer socket having a nut engaging bore at its forward end, a tubular holder fitted in the outer socket rotatably independently of rotation of the outer socket, the outer socket and the holder being coupled to a drive assembly for subjecting the socket and the holder to torque acting in directions opposite to each other, an inner socket axially slidably fitted in the holder and rotatable with the holder, the inner socket being formed at its forward end with a bore for engaging therein a tip of a bolt to be sheared therefrom, characterized with a tubular rod inserted in the inner socket and biased by a spring to project into and retract from the tip engaging bore, a stopper retractable into a hole extending through the side wall of the inner socket and pro-

jectable from the hole toward a bearing face positioned outside the inner socket, the stopper being outwardly pushable into engagement with the bearing face when the tubular rod is brought to an advanced position, the stopper being retractable from the bearing face when the tubular rod is in a retracted position, and a knockout pin slidably fitted in the tubular rod.

4,403,530

TORQUE WRENCH

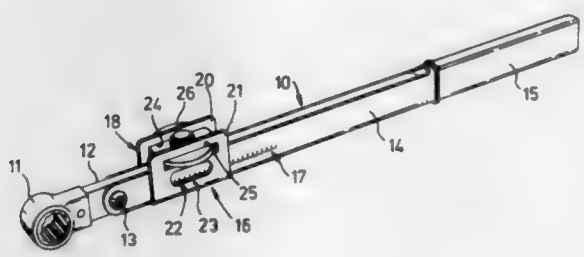
Howard W. Biddle, Cambridge, England, assignor to Cambridge Consultants Limited, Cambridge, England

Filed Jan. 12, 1981, Ser. No. 224,032

Claims priority, application United Kingdom, Jan. 11, 1980, 8001025

Int. Cl.³ B25B *23/142*

U.S. Cl. 81—478 **12 Claims**



1. A torque wrench comprising a driving head, an operating arm and an adjustable torque limit signalling means characterized by: a first arm drivingly connected with the driving head, a second arm pivotally coupled to the driving head, a torque limit signalling assembly slidably adjustable in position along one of the arms for selecting a torque limit, said assembly including a non-linear spring having a spring limit at a single fixed compressional force unique to said spring, said spring being arranged to apply force in reaction to pivoted displacement of said arms with respect to each other at the adjusted position of said assembly and to at least the extent of said fixed force; whereby, upon attainment of said spring limit, namely, a predetermined fixed force regardless of assembly position, the setting of the torque wrench is solely a function of selected positioning of said assembly along said one arm.

4,403,531

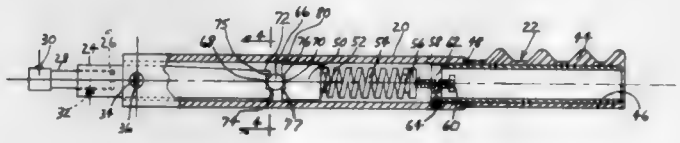
PRESET TORQUE WRENCH

Roy E. Bailey, Rte. #2, Box 100, Clifton, Tenn. 38425, and Ben J. Bailey, 901 Michigan St., Brighton, Mich. 48116

Filed Mar. 11, 1981, Ser. No. 242,626

Int. Cl.³ B25B *23/142*

U.S. Cl. 81—483 **15 Claims**



1. A torque wrench comprising a generally tubular body having a handle at one end and a click arm extending from the other end, the click arm being pivotally attached within the tubular body,

a slot in the end of the click arm inside the tubular body forming a pair of engageable edges parallel to the pivot axis of the click arm,

a slideable member inside the tubular body, a slot in one end thereof forming a second pair of engageable edges parallel to the pivot axis of the click arm and opposed to the click arm,

a free floating circular roller having the axis thereof parallel to the pivot axis of the click arm and having the round side thereof in engagement with each of the aforesaid edges in the unactuated position, said roller spaced from the bottom of each of said slots and separating the click arm from the slideable member,

means within the tubular body engaging the slideable member and urging the slideable member into engagement with the roller, said means including adjustment means to determine the force applied by the slideable member against the roller and click arm.

4,403,532

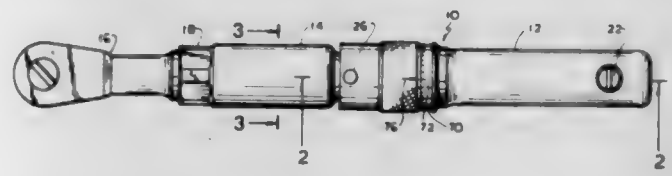
RATCHET NUTRUNNER WITH AUDIBLE TORQUE SIGNAL

William K. Wallace, Barneveld, and David A. Giardino, Deerfield, both of N.Y., assignors to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Sep. 24, 1981, Ser. No. 305,126

Int. Cl.³ B25B *23/142*

U.S. Cl. 81—483 **8 Claims**



1. In a pneumatically powered hand-held tool for setting fasteners, said tool having in axial alignment a handle portion, a motor portion flexibly affixed to the handle portion, and a work engaging portion, an improvement comprising an audible signal means to indicate to the tool operator when preset torque is attained in a fastener setting operation, said signal means including a torque tube enclosed in the handle portion and arranged to conduct pneumatic medium through the handle portion to the motor portion, said torque tube being secured at one end to an extension of the motor housing the other end being unattached and extending axially in the handle portion in spaced relation thereto, and a cam means provided at the free end of the torque tube, said cam means being arranged to cause snap action movement of the handle portion toward contact with the torque tube when a predetermined torque load is applied to a fastener being operated upon.

4,403,533

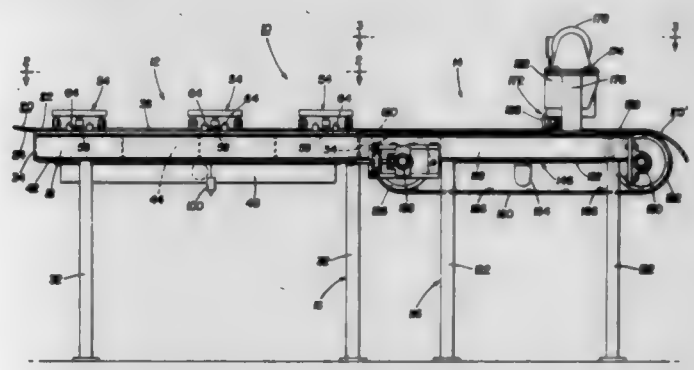
HIGH ACCURACY SLITTER SYSTEM

Ernest R. Cox, Barberton, and Duane E. Snyder, Jr., Akron, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jul. 23, 1981, Ser. No. 286,229

Int. Cl.³ B26D *1/20*

U.S. Cl. 83—56 **17 Claims**



11. In a method for aligning and slitting an elongate web of reinforced elastic material into multiple strips including the steps of:

i. at least partially supporting said web on a cushion of gas acting through a porous supporting and advancing means;

ii. aligning said web;

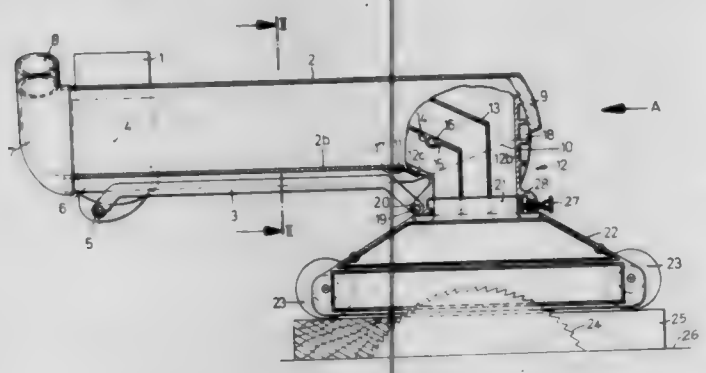
iii. adhering said web to said advancing means; and
iv. slitting said web, wherein the improvement comprises:
(a) aligning said web relative to one of its longitudinal center lines and one of its edges;
(b) keeping said web in a generally flat condition while aligning said web; and
(c) restraining said advancing means against lateral movement at least during said slitting step.

4,403,534

MOVABLE PROTECTIVE HOOD FOR POWER TOOL OF A WORK TOOL MACHINE

Kurt Altendorf, and Siegfried Thiele, both of Minden, Fed. Rep. of Germany, assignors to Wilhelm Altendorf GmbH & Co. KG, Minden, Fed. Rep. of Germany

Filed Sep. 11, 1981, Ser. No. 301,204
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034665
Int. Cl.³ B27G *3/00*
U.S. Cl. 83—100 **12 Claims**



1. A work tool machine comprising:
a power tool;
an exhaust hood assembly disposed over the power tool in a manner to permit access of a work piece thereto;
a stationary member spaced from the hood assembly;
an elongated guide bar extending between the stationary member and the hood assembly;
means for pivotally attaching one end of the guide bar to the stationary member for rotation about a first axis;
means for pivotally attaching the other end of the guide bar to the hood assembly for rotation about a second axis;
an elongated conduit extending between the stationary member and the hood assembly in fluid communication with the hood assembly;
means for pivotally attaching one end of the conduit to the stationary member for rotation about a third axis;
means for pivotally attaching the other end of the conduit to the hood for rotation about a fourth axis, the distance between the first and second axes being equal to the distance between the third and fourth axes, and the distance between the first and third axes being equal to the distance between the second and fourth axes; and
means for exhausting the conduit.

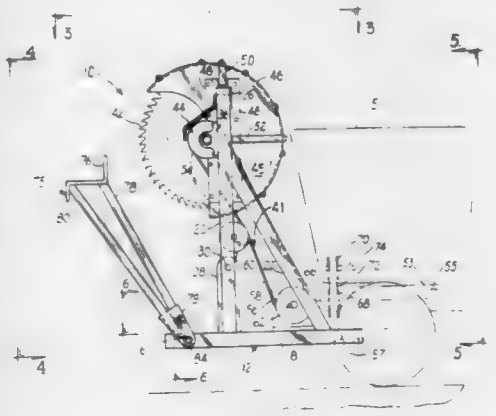
4,403,535

VEHICLE TRANSPORTABLE CORDWOOD CUTTING MACHINE

Frank J. Serwatowski, 12155 Spencer Rd., Milford, Mich. 48042

Continuation-in-part of Ser. No. 39,205, May 15, 1979, abandoned. This application Jan. 2, 1981, Ser. No. 222,157
Int. Cl.³ B27B *5/10*
U.S. Cl. 83—490 **14 Claims**

1. A vehicle transportable cordwood cutting machine attachable to a vehicle so as to be transportable in operable mode, said vehicle having a frame, said machine comprising at least two horizontal frame members, means at one end of each of said two horizontal frame members for cantilevered attachment to said vehicle frame, said horizontal frame members thereby extending outwardly from said vehicle frame, at least two vertical frame members extending upwardly from and joined to said horizontal frame members, each of said vertical frame members at a position spaced from said cantilevered attachment, the height of said vertical frame members above said horizontal frame members being at least twice the elevation of the horizontal frame members above the ground upon which the vehicle is supported, wood cutting means supported on said vertical frame members adjacent the top thereof, means including a power train for powering said wood cutting means,



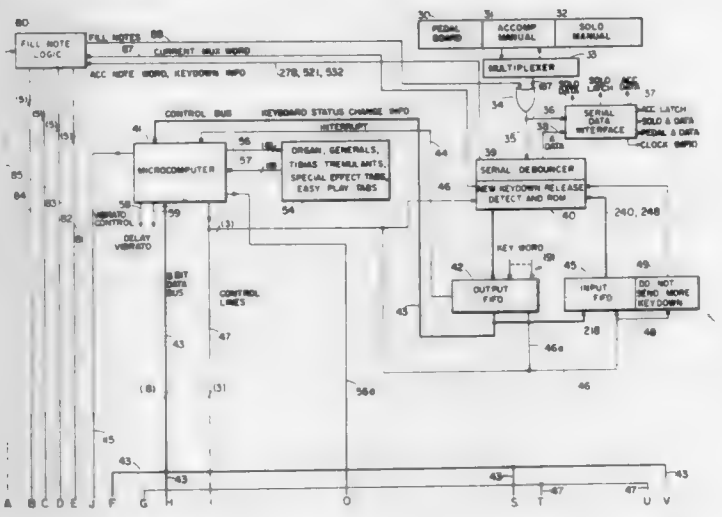
a pair of support members pivotably mounted on one end of said horizontal frame members, a saw table made fast to the upper ends of said pivotable support members constructed to hold a length of cordwood thereon widthwise of said frame members, means yieldably biasing said saw table into an at-rest position disposed away from said wood cutting means, said saw table capable of moving past said wood cutting means when the user pushes against a length of cordwood held on said saw table so as to cut the same into the desired length.

4,403,536

MICROCOMPUTER INTERFACED ELECTRONIC ORGAN

Robert A. Weil, Jr., Dale; Gary A. Eck, Jasper, and Gary R. Fritz, Ferdinand, all of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Jun. 22, 1981, Ser. No. 276,256
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **21 Claims**



1. A microcomputer interfaced electronic musical instrument comprising:
a keyboard having a plurality of keyswitches,
multiplexer means for continuously and cyclically scanning said keyswitches and producing a time division multiplexed data stream comprising a plurality of time slots corresponding to respective ones of said keyswitches and keydown signals in time slots corresponding to actuated said keyswitches,

assignment control means having an input connected to said data stream for monitoring said data stream and producing a multiple bit key actuated word when a keydown signal newly appears in a time slot which previously did not contain a keydown signal and for producing a multiple bit key released word when a keydown signal disappears from a time slot that previously contained a keydown signal, said key actuated and key released words being coded to identify the time slots in which the respective keydown signals newly appear and disappear,

programmable microcomputer means connected to said assignment control means for sequentially accepting and operating on the key actuated and key released words produced by said assignment control means and producing on an output digital tone generator-keyer assignment words containing keydown, key release, and tone frequency and amplitude envelope information, said microcomputer means accepting key actuated and key released words from said assignment control means at a rate slower than the rate at which the keyswitches are scanned by said multiplexer means,

a plurality of tone generator-keyer means each capable of producing and keying a tone having a selectable frequency and an attack and decay amplitude envelope,

register control means interposed between said microcomputer means output and said plurality of tone generator-keyer means for steering the tone generator assignment words to selected tone generator-keyer means in accordance with instructions from said microcomputer means,

said tone generator-keyer means being responsive to said information in the assignment words to produce tones having corresponding frequencies and amplitude envelopes,

said assignment control means including means for comparing the data stream from said multiplexer means with data for each time slot corresponding to whether the last word transmitted to said microcomputer means for that time slot was a key depressed word and for causing a key actuated word to be transmitted to said microcomputer means when a keydown signal appears in the time slot for which the last word transmitted to said microcomputer means was not a key actuated word and for causing a key released word to be transmitted to said microcomputer means when no keydown signal appears in a time slot for which the last word transmitted to said microcomputer means was a key actuated word; and

said microcomputer means including means for transmitting to said assignment control means keyer busy data indicating that no tone generator-keyer means are available for a particular group of keyswitches and said assignment control means includes means responsive to said keyer busy data for inhibiting the transmission to said microcomputer means of a key actuated word for one of that particular group of keyswitches.

4,403,537

BLIND CAPTURE SYSTEM INCLUDING CRESCENDO CONTROL

Gary R. Fritz, Ferdinand, and John W. Robinson, Jasper, both of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Division of Ser. No. 121,406, Feb. 14, 1980, Pat. No. 4,300,436. This application Aug. 14, 1981, Ser. No. 292,729

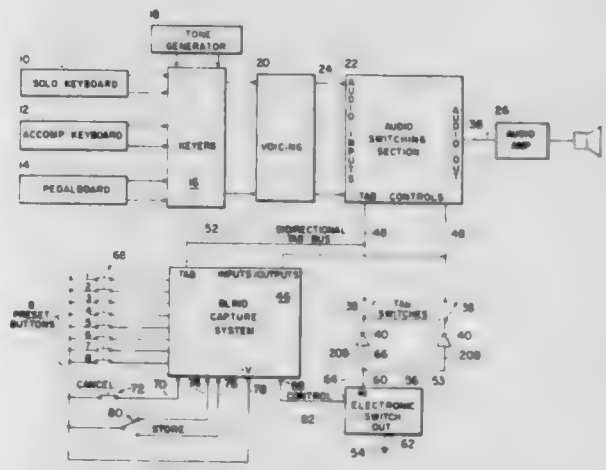
Int. Cl.³ G10B *3/10*

U.S. Cl. 84—345 **7 Claims**

1. In a keyboard musical instrument for producing tones including means for controlling the tones produced by the instrument under the control of a plurality of player operated switches, said means for controlling having a plurality of inputs connectable to said switches, respectively, the improvement being a blind capture system comprising:

a memory in which is stored data representative of a plurality of different combinations of actuated said switches, said data representative of the plurality of different combinations being stored in a plurality of respective storage frames in the memory,

player operated preset select means for selecting ones of said storage frames comprising a manually actuated element capable of movement from one position through a plurality of intermediate positions to a second position, said preset select means cumulatively and successively selecting respective said storage frames one at a time as said element is moved continuously from one position through the intermediate positions to the second position, and



memory output means connected to said memory for addressing the selected storage frames of said memory and reading out the data stored therein and producing a plurality of electrical control signals on corresponding ones of the control inputs so as to cause the means for controlling to be activated in a manner consistent with the combination of control inputs on which electrical control signals are present, said preset select means being operatively connected with said memory output means.

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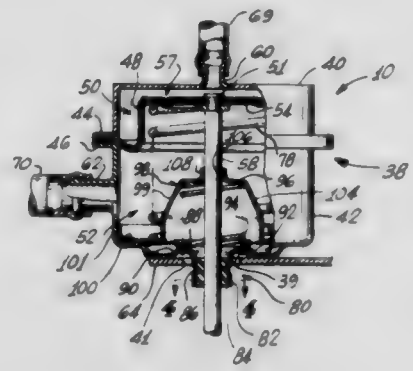
TURBOCHARGER CONTROL ACTUATOR

Leif Rise, Los Angeles, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Sep. 2, 1980, Ser. No. 182,859

Int. Cl.³ F01B *19/00*

U.S. Cl. 92—94 **5 Claims**



1. A turbocharger control actuator comprising a housing; a diaphragm dividing said housing into a pair of chambers; an actuator rod having one end coupled to said diaphragm for movement therewith and extending therefrom out of said housing through an opening formed in said housing; a relatively stiff spring for predeterminably biasing said diaphragm; a seal member including a lower cylindrical portion concentrically received about said rod and a generally cup-shaped upper portion defining a sealing seat formed generally as a portion of a spherical surface in pivotally bearing engagement with said housing adjacent said opening, said housing including a housing lip formed concentrically about said opening and configured for mating engagement with said sealing seat; retainer means comprising a generally cup-shaped inverted retainer received within said housing about said rod and including a

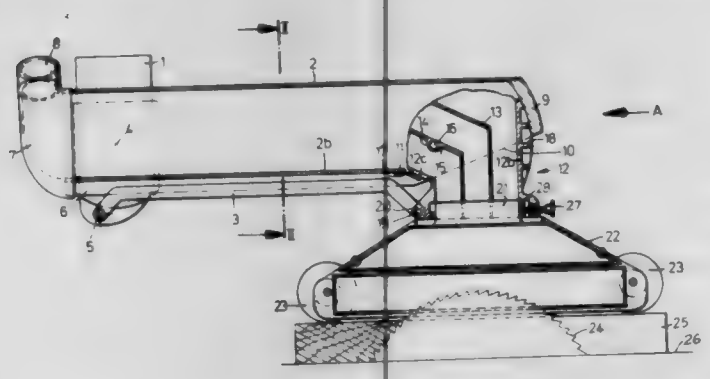
iii. adhering said web to said advancing means; and
iv. slitting said web, wherein the improvement comprises:
(a) aligning said web relative to one of its longitudinal center lines and one of its edges;
(b) keeping said web in a generally flat condition while aligning said web; and
(c) restraining said advancing means against lateral movement at least during said slitting step.

4,403,534

MOVABLE PROTECTIVE HOOD FOR POWER TOOL OF A WORK TOOL MACHINE

Kurt Altendorf, and Siegfried Thiele, both of Minden, Fed. Rep. of Germany, assignors to Wilhelm Altendorf GmbH & Co. KG, Minden, Fed. Rep. of Germany

Filed Sep. 11, 1981, Ser. No. 301,204
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1980, 3034665
Int. Cl.³ B27G *3/00*
U.S. Cl. 83—100 **12 Claims**



1. A work tool machine comprising:
a power tool;
an exhaust hood assembly disposed over the power tool in a manner to permit access of a work piece thereto;
a stationary member spaced from the hood assembly;
an elongated guide bar extending between the stationary member and the hood assembly;
means for pivotally attaching one end of the guide bar to the stationary member for rotation about a first axis;
means for pivotally attaching the other end of the guide bar to the hood assembly for rotation about a second axis;
an elongated conduit extending between the stationary member and the hood assembly in fluid communication with the hood assembly;
means for pivotally attaching one end of the conduit to the stationary member for rotation about a third axis;
means for pivotally attaching the other end of the conduit to the hood for rotation about a fourth axis, the distance between the first and second axes being equal to the distance between the third and fourth axes, and the distance between the first and third axes being equal to the distance between the second and fourth axes; and
means for exhausting the conduit.

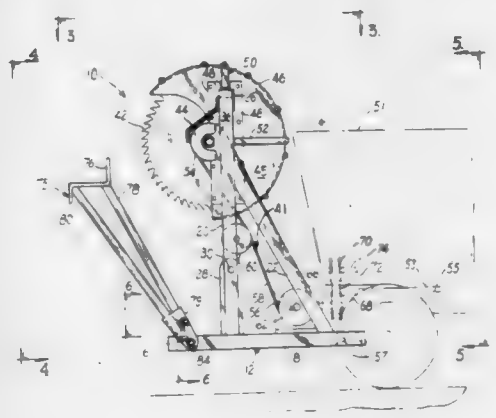
4,403,535

VEHICLE TRANSPORTABLE CORDWOOD CUTTING MACHINE

Frank J. Serwatowski, 12155 Spencer Rd., Milford, Mich. 48042

Continuation-in-part of Ser. No. 39,205, May 15, 1979, abandoned. This application Jan. 2, 1981, Ser. No. 222,157
Int. Cl.³ B27B *5/10*
U.S. Cl. 83—490 **14 Claims**

1. A vehicle transportable cordwood cutting machine attachable to a vehicle so as to be transportable in operable mode, said vehicle having a frame, said machine comprising at least two horizontal frame members, means at one end of each of said two horizontal frame members for cantilevered attachment to said vehicle frame, said horizontal frame members thereby extending outwardly from said vehicle frame, at least two vertical frame members extending upwardly from and joined to said horizontal frame members, each of said vertical frame members at a position spaced from said cantilevered attachment, the height of said vertical frame members above said horizontal frame members being at least twice the elevation of the horizontal frame members above the ground upon which the vehicle is supported, wood cutting means supported on said vertical frame members adjacent the top thereof, means including a power train for powering said wood cutting means,



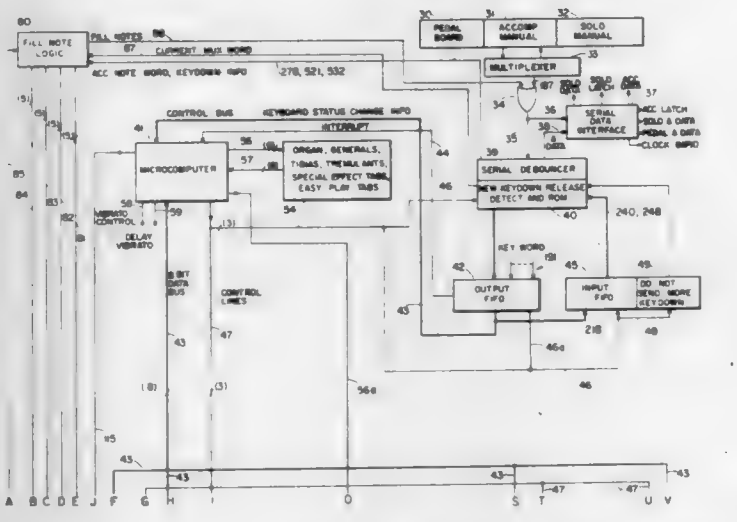
a pair of support members pivotably mounted on one end of said horizontal frame members, a saw table made fast to the upper ends of said pivotable support members constructed to hold a length of cordwood thereon widthwise of said frame members, means yieldably biasing said saw table into an at-rest position disposed away from said wood cutting means, said saw table capable of moving past said wood cutting means when the user pushes against a length of cordwood held on said saw table so as to cut the same into the desired length.

4,403,536

MICROCOMPUTER INTERFACED ELECTRONIC ORGAN

Robert A. Weil, Jr., Dale; Gary A. Eck, Jasper, and Gary R. Fritz, Ferdinand, all of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Jun. 22, 1981, Ser. No. 276,256
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **21 Claims**



1. A microcomputer interfaced electronic musical instrument comprising:
a keyboard having a plurality of keyswitches,
multiplexer means for continuously and cyclically scanning said keyswitches and producing a time division multiplexed data stream comprising a plurality of time slots corresponding to respective ones of said keyswitches and keydown signals in time slots corresponding to actuated said keyswitches,

assignment control means having an input connected to said data stream for monitoring said data stream and producing a multiple bit key actuated word when a keydown signal newly appears in a time slot which previously did not contain a keydown signal and for producing a multiple bit key released word when a keydown signal disappears from a time slot that previously contained a keydown signal, said key actuated and key released words being coded to identify the time slots in which the respective keydown signals newly appear and disappear,

programmable microcomputer means connected to said assignment control means for sequentially accepting and operating on the key actuated and key released words produced by said assignment control means and producing on an output digital tone generator-keyer assignment words containing keydown, key release, and tone frequency and amplitude envelope information, said microcomputer means accepting key actuated and key released words from said assignment control means at a rate slower than the rate at which the keyswitches are scanned by said multiplexer means,

a plurality of tone generator-keyer means each capable of producing and keying a tone having a selectable frequency and an attack and decay amplitude envelope,

register control means interposed between said microcomputer means output and said plurality of tone generator-keyer means for steering the tone generator assignment words to selected tone generator-keyer means in accordance with instructions from said microcomputer means,

said tone generator-keyer means being responsive to said information in the assignment words to produce tones having corresponding frequencies and amplitude envelopes,

said assignment control means including means for comparing the data stream from said multiplexer means with data for each time slot corresponding to whether the last word transmitted to said microcomputer means for that time slot was a key depressed word and for causing a key actuated word to be transmitted to said microcomputer means when a keydown signal appears in the time slot for which the last word transmitted to said microcomputer means was not a key actuated word and for causing a key released word to be transmitted to said microcomputer means when no keydown signal appears in a time slot for which the last word transmitted to said microcomputer means was a key actuated word; and

said microcomputer means including means for transmitting to said assignment control means keyer busy data indicating that no tone generator-keyer means are available for a particular group of keyswitches and said assignment control means includes means responsive to said keyer busy data for inhibiting the transmission to said microcomputer means of a key actuated word for one of that particular group of keyswitches.

4,403,537

BLIND CAPTURE SYSTEM INCLUDING CRESCENDO CONTROL

Gary R. Fritz, Ferdinand, and John W. Robinson, Jasper, both of Ind., assignors to Kimball International, Inc., Jasper, Ind.

Division of Ser. No. 121,406, Feb. 14, 1980, Pat. No. 4,300,436. This application Aug. 14, 1981, Ser. No. 292,729

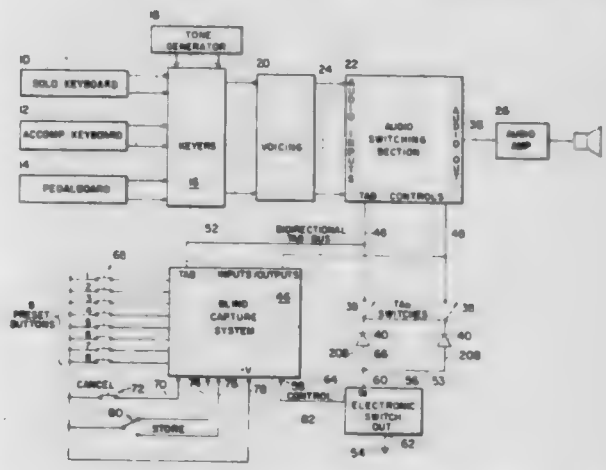
Int. Cl.³ G10B *3/10*

U.S. Cl. 84—345 **7 Claims**

1. In a keyboard musical instrument for producing tones including means for controlling the tones produced by the instrument under the control of a plurality of player operated switches, said means for controlling having a plurality of inputs connectable to said switches, respectively, the improvement being a blind capture system comprising:

a memory in which is stored data representative of a plurality of different combinations of actuated said switches, said data representative of the plurality of different combinations being stored in a plurality of respective storage frames in the memory,

player operated preset select means for selecting ones of said storage frames comprising a manually actuated element capable of movement from one position through a plurality of intermediate positions to a second position, said preset select means cumulatively and successively selecting respective said storage frames one at a time as said element is moved continuously from one position through the intermediate positions to the second position, and



memory output means connected to said memory for addressing the selected storage frames of said memory and reading out the data stored therein and producing a plurality of electrical control signals on corresponding ones of the control inputs so as to cause the means for controlling to be activated in a manner consistent with the combination of control inputs on which electrical control signals are present, said preset select means being operatively connected with said memory output means.

4,403,538

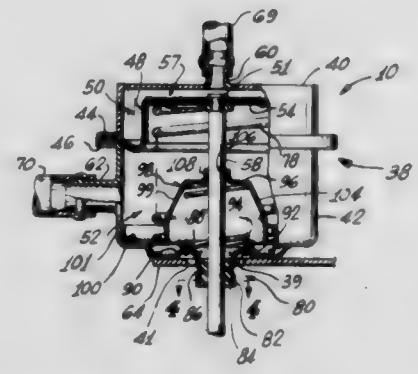
TURBOCHARGER CONTROL ACTUATOR

Leif Rise, Los Angeles, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Sep. 2, 1980, Ser. No. 182,859

Int. Cl.³ F01B *19/00*

U.S. Cl. 92—94 **5 Claims**



1. A turbocharger control actuator comprising a housing; a diaphragm dividing said housing into a pair of chambers; an actuator rod having one end coupled to said diaphragm for movement therewith and extending therefrom out of said housing through an opening formed in said housing; a relatively stiff spring for predeterminably biasing said diaphragm; a seal member including a lower cylindrical portion concentrically received about said rod and a generally cup-shaped upper portion defining a sealing seat formed generally as a portion of a spherical surface in pivotally bearing engagement with said housing adjacent said opening, said housing including a housing lip formed concentrically about said opening and configured for mating engagement with said sealing seat; retainer means comprising a generally cup-shaped inverted retainer received within said housing about said rod and including a

retainer wall disposed generally between said seal member and said diaphragm and having a passage formed therein for passage of said rod to accommodate limited angular rod displacement, said retainer means further including a generally cylindrical side wall projecting downwardly from said retainer wall for engagement with said housing circumferentially about said housing lip, and a flange projecting radially outwardly from the lower end of said side wall for bearing engagement with said housing, said relatively stiff spring reacting between said diaphragm and said flange for maintaining said flange in bearing engagement with said housing; a relatively flexible spring reacting between said retainer wall and said seal member for urging said sealing seat into pivotally sealing engagement with said housing to maintain said seal member and housing in pivotally sealing relation; and bushing means concentrically secured within said cylindrical portion of said seal member and slidably received about said rod for maintaining said seal member and said rod in axially sliding sealing relation.

4,403,539

ARRANGEMENT FOR CONNECTING A DIAPHRAGM WITH AN ACTUATOR ROD IN A DIAPHRAGM-OPERATED DEVICE

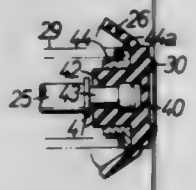
Kenichi Motoki, Hoya, and Nobuyasu Ushiroyama, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1981, Ser. No. 261,484

Claims priority, application Japan, Nov. 15, 1980, 55-163884[U]

Int. Cl.³ F01B *19/00*

U.S. Cl. 92—94 **2 Claims**



1. An arrangement for connecting a diaphragm and an actuator rod in a diaphragm-operated device comprising a diaphragm formed of elastic material and having a moveable central portion, a connection boss formed at the moveable central portion of said diaphragm and having a blind bore and an annular projection extending radially inwardly from the inner periphery of said blind bore, an actuator rod fitted in said blind bore for elastic engagement therewith having one end portion extending into said blind bore, said one end portion having an annular recess receiving the inwardly extending projection, a retainer fitted over the outer periphery of said connection boss for restraining deformation of said connection boss, said retainer including a cylinder portion fitted over the outer periphery of of the connection boss for restraining radially expansive deformation of the boss and a flange portion integrally extending from the cylinder portion in a radially outward direction with its one side surface abutting against the diaphragm, and spring means for urging said retainer against said diaphragm, the other side surface of said flange portion supporting one end of said spring means.

4,403,540

BACON GRILL

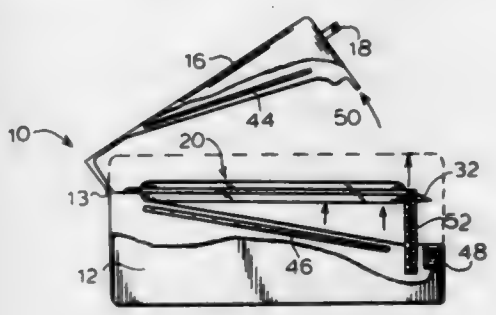
Johannes F. Erkelenz, Seoul, Rep. of Korea, assignor to Top-Qua & Co., Ltd., Victoria, Hong Kong

Filed Apr. 1, 1982, Ser. No. 364,445

Int. Cl.³ A47J *37/10*

U.S. Cl. 99—375 **3 Claims**

1. An electric grill assembly for broiling bacon, which comprises; a housing defining an inner chamber; a lid hinged to the housing and giving access to the chamber; a first heating element positioned in the chamber; a second heating element positioned on the inner surface of the lid and spaced apart from the first heating element; means for energizing the heating elements; means for holding the grill member between the first and second heating elements, in a first horizontal, non-cooking position when the lid is open and in a second, inclined, cooking position when the lid is closed; means in the chamber for moving the grill member from the first to the second position when the lid is closed and for returning the grill member from the second to the first position when the lid is opened; and a grease collector situated to receive liquid grease from the inclined grill member; said grill member comprising an upper covering plate and a mating lower plate, the lower plate having a corrugated cooling surface; a non-stick coating and spikes to hold the bacon in place; said grill member being removable from its position between the first and second heating elements when the lid is open.



4,403,541

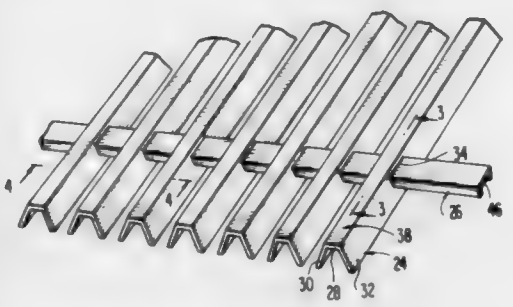
HEAT TRAPPING COOKING GRILL

Bernard B. Berger, Aiken, S.C., assignor to Ducane Heating Corporation, Columbia, S.C.

Continuation of Ser. No. 43,863, May 29, 1979, abandoned. This application Nov. 28, 1980, Ser. No. 210,916

Int. Cl.³ A47J *37/08*

U.S. Cl. 99—385 **14 Claims**



1. A cooking grill for supporting food to be cooked over heating means for providing cooking heat, said cooking grill comprising:

a plurality of elongated channel members spaced transversely apart one adjacent to the other and each comprising a deformable sheet of heat conducting material deformed to provide a transversely and longitudinally extending base and opposing, longitudinally extending sidewalls depending from said base and diverging from each other from said base to the lower edge of each sidewall, said base being substantially flat in both said transverse and said longitudinal directions and defining a wide, substantially flat cooking surface extending transversely across and longitudinally along the upper side of said base, and said base and said opposing sidewalls defining an inverted channel pocket beneath said base, the transverse width of said channel pocket between the lower edges of said opposing sidewalls being significantly greater than the transverse width of said base and said channel pocket providing a trap for a sufficient portion of said cooking heat to cause said wide, substantially flat cooking surface to sear abutting surfaces of food supported over said heating means by said channel member;

at least one set of apertures comprised of an aperture extending through each sidewall adjacent to said substantially flat base of each of said adjacent channel members;

at least one elongated stringer passing through said at least one set of apertures and extending between the opposing sidewalls of each of said adjacent channel members; and,

securing means for securing the base of each of said channel members to said stringer extending between said opposing sidewalls so as to hold said channel members in said transversely spaced adjacent relationship.

4,403,542

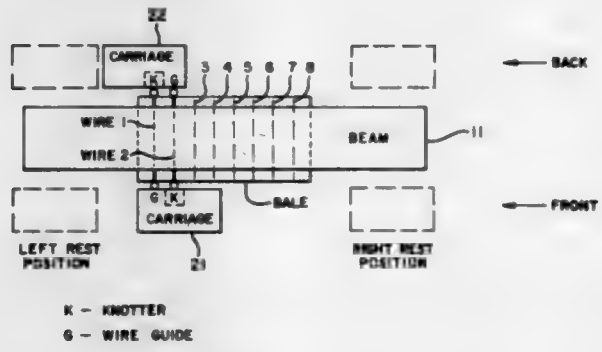
BALE STRAPPING SYSTEM

Charles B. Lewis, West Linn, Oreg., assignor to Cranston Machinery Company, Inc., Oak Grove, Oreg.

Filed Sep. 1, 1981, Ser. No. 298,497

Int. Cl.³ B65B *13/14*

U.S. Cl. 100—2 **13 Claims**



10. The method of strapping a bale of material comprising applying strapping means to opposite sides of the bale, moving said strapping means in one direction along the bale from one strapping station to another, and applying a pair of straps from said opposite sides of the bale in two different positions on the bale at each station.

4,403,543

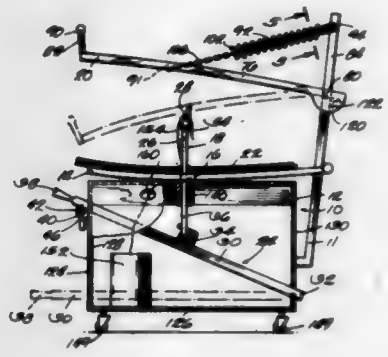
BALING DEVICE

Lovett Sanders, 1216 W. Walnut St., Milwaukee, Wis. 53205

Filed May 3, 1982, Ser. No. 374,354

Int. Cl.³ B65B *13/20*

U.S. Cl. 100—34 **7 Claims**



1. In a scrap baling device comprising a frame, a raise support platform provided with a central opening, a pointed spindle extending through the central opening, means for impaling material on said spindle to assemble a stack, means for binding said stack together to form a bale, and means for removing said spindle from said bale, the improvements wherein said spindle has a shaft and a point including means for receiving tie strings, said shaft is supported from beneath said support platform by a support member normally latched at a raised position, and said means for removing said spindle from said bale comprises means for unlatching said support member and moving it to a lowered position, thereby withdrawing said shaft from said stack.

4,403,544

OVERLOAD PROTECTION DEVICE FOR BALER FEEDER MECHANISM

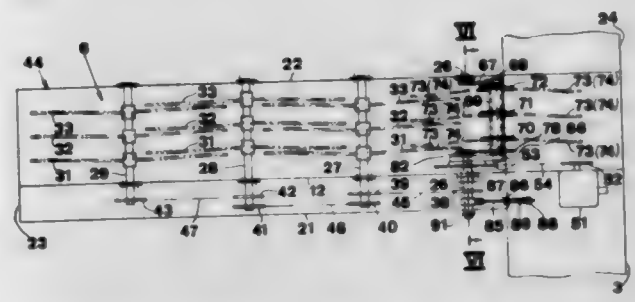
Adrianus Naaktgeboren, Zedelgem, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 20, 1981, Ser. No. 294,677

Claims priority, application United Kingdom, Aug. 30, 1980, 8028103

Int. Cl.³ B30B *1/00*

U.S. Cl. 100—189 **7 Claims**



1. In a baler including a bale case, a feed platform adjacent said bale case, feed means for feeding crop material across said feed platform into said bale case including feeder elements connected to and rotatable about a generally stationary means, the improvement comprising resilient means urging said generally stationary means in one direction while permitting movement of said generally stationary means in another direction in response to a predetermined load on said feeder elements.

4,403,545

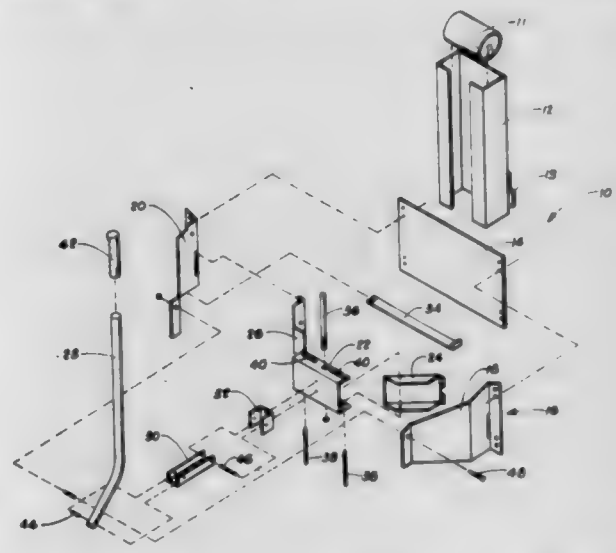
CAN CRUSHING DEVICE

Delmar K. Toburen, Rte. #1, Box 61, Riley, Kans. 67531; Dennis L. Toburen, and Steven R. Toburen, both of 931 Lincoln, Clay Center, Kans. 67432

Filed Jan. 7, 1982, Ser. No. 337,581

Int. Cl.³ B30B *15/30*

U.S. Cl. 100—215 **5 Claims**



1. A can crusher for flatening cylindrical cans, the crusher comprising:

a hopper adapted for receiving a plurality of cans therein, the cans laid on their sides in a horizontal position one on top of the other;

a crusher housing, the hopper attached to and disposed above the housing for feeding the cans individually by gravity into the housing;

a handle pivotally mounted on the housing;

can crushing means adapted for flatening a first can in the housing, the crushing means pivotally attached to the sides of the housing and the handle;

can crimping means mounted on top of the can crushing means adapted for crimping a second can disposed in the bottom of the hopper; and

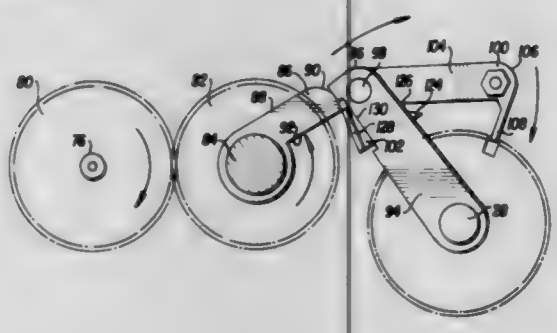
the handle when pivoted on the housing urges the can crimping means and the can crushing means inwardly into the housing, the crimping means engaging the center of the second can and pushing it inwardly as the top and the bottom of the can are folded inwardly toward the center of the can, the can crushing means engaging the folded top and bottom of the first can and flatening the top and bottom of the can against the sides of the can.

4,403,546

PRINTING MECHANISM

Lyell G. Sanford, and Leslie Ransom, both of Cincinnati, Ohio, assignors to General Signal Corporation, Stamford, Conn.

Filed Oct. 20, 1980, Ser. No. 199,910
Int. Cl.³ G06F *11/10*; B41J *3/40*
U.S. Cl. 101—79 **19 Claims**



1. An improved imprinting mechanism, comprising:
a frame;
a first shaft supported in said frame;
a plurality of character wheels mounted for rotation about said first shaft, each wheel comprising a plurality of radially outwardly extending peripheral teeth and plurality of radially outwardly extending characters to be imprinted, said teeth being separated by radially inwardly extending slots;
an arm pivotably mounted on said frame, said arm having a trailing edge;
a rotatable cam means mounted on said frame in position for rotating said arm;
a second shaft affixed to said arm;
an indexing rake pivotably mounted on said second shaft, said rake comprising a plurality of tines, each tine being for insertion into a slot between said teeth of said character wheels, said rake comprising a contact plate pivotable with said rake on said second shaft, said contact plate extending between said cam and said trailing edge, said contact plate being initially spaced from said trailing edge, said cam means initially contacting said plate to pivot said plate and said rake relative to said second shaft and thereby separate said tines from said slots, then pressing said plate against said trailing edge to move said arm and said tines along the circumference of said character wheels, then releasing said plate to insert at least one of said tines into at least one of said other slots and finally releasing said arm to allow said rake to return to its initial position, so that movement of said rake causes at least one of said character wheels to rotate about said first shaft to bring at least one new character into position for imprinting.

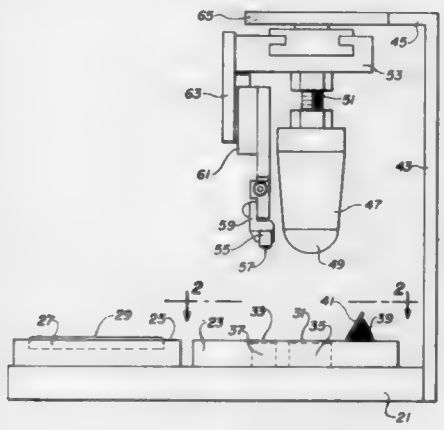
4,403,547

METHOD OF PRINTING INTELLIGIBLE INFORMATION

Steven C. Forberger, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 7, 1981, Ser. No. 328,402
Int. Cl.³ B41M *3/00*
U.S. Cl. 101—170 **10 Claims**

1. A method of printing intelligible information upon a receiving surface comprising
(1) providing a plate having a nonporous plate surface with a shallow depressed area therein, said depressed area having an arbitrary shape that is unrelated to the information to be printed,
(2) filling said depression area with a viscous printing medium,
(3) providing a transfer surface having a geometric pattern conveying intelligible information,
(4) translating said transfer surface in a direction that is substantially normal to said plate surface into contact with



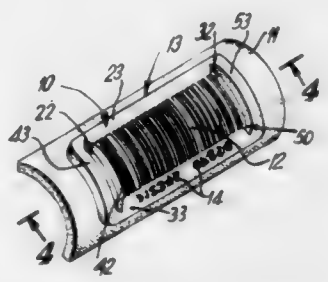
said medium in said filled depressed area, whereby said transfer surface is coated with said printing medium,
(5) removing said coated transfer surface from said filled depressed area, and
(6) translating said coated transfer surface in a direction that is substantially normal to said receiving surface into contact with said receiving surface whereby printing medium in substantially said geometric pattern is transferred from said transfer surface to said receiving surface.

4,403,548

PRINTING PLATE FOR LINEAR BAR SYMBOL CODE

Rudolph A. Faller, Edina, Minn., assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 112,924, Jan. 17, 1980, abandoned. This application Aug. 24, 1981, Ser. No. 295,572
Int. Cl.³ B41F *13/00*
U.S. Cl. 101—372 **5 Claims**



1. A printing plate for printing a symbol code on a corrugated paperboard material comprising:
a body portion;
a series of raised, spaced parallel bar members integral with said body portion, said bar members corresponding in size and spacing to the size and spacing of the linear bars of the symbol code and including an approximately centrally located field separation pattern to enable two half-scans of the code; and
a continuous substantially rectangular peripheral frame member integral with said body portion and disposed entirely around said bar members, said frame including opposed pairs of end and side members, said end members of said frame being generally parallel to and spaced away from the longitudinal edges of the first and last bar members in the series, the side members of said frame being unitary with and generally perpendicular to the opposite

end edges of each said bar member, said side members and end members of said frame enclosing a central channel for receiving the bar members, said side members having portions of reduced width adjacent each said end member such that the central channel enclosed by said side members and end members comprises a central, substantially rectangular aperture for receiving the bar members and a pair of end apertures flared outwardly from said rectangular aperture a sufficient amount to enable the symbol code to be scanned by two angled half-scans, with each said half-scan incorporating at least one-half of said symbol code plus the field separation pattern, said frame being raised from the surface of the body portion the same distance as the bar members such that the printing contact surface of said frame member is flush with the printing contact surfaces of the bar members, said frame member constituting the major portion of the printing contact surface of the printing plate.

4,403,549

PRINTING PLATE ATTACHMENT ARRANGEMENT

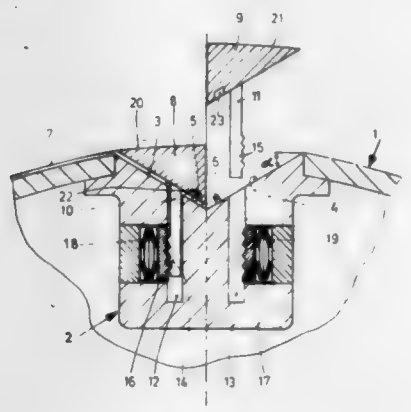
Walter Matuschke, Vevey, Switzerland, assignor to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Feb. 26, 1982, Ser. No. 352,751

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3110982

Int. Cl.³ B41F *27/12*

U.S. Cl. 101—415.1 **2 Claims**



1. Printing plate attachment arrangement particularly for newspaper, magazine, journal and similar printing machines to attach a printing plate (7) to a plate cylinder (1) for printing of subject matter on a web of paper,

in which the cylinder (1) is formed with an axial groove defining two bearing surfaces (3, 4) thereon,

which bearing surfaces (3, 4) meet each other at an obtuse angle to form an obtuse angle of inclination with respect to each other in the shape of a shallow "V" and extend inwardly of a theoretical cylindrical circumference of the plate cylinder,

and comprising

means (5, 6) for retaining the plate (7) in engagement with the bearing surfaces, said bearing surfaces extending at an angle of less than 45° with respect to a tangent of the plate cylinder at the intersection of the bearing surfaces with the cylindrical surface of the plate cylinder,

two cover strips (8, 9) essentially filling the groove and fitting over the plate on the bearing surfaces (3, 4), each cover strip covering one of the bearing surfaces and covering one edge or marginal strip of the plate only, and having a first surface matching the underlying bearing surface and an outer surface corresponding to the theoretical cylindrical circumference of the plate cylinder (1) with the printing plate (7) thereon;

and means (10, 16; 11, 17) for securing the cover strips (8, 9) in the groove;

wherein

the dimension—in circumferential direction with respect to the cylinder—of the bearing surfaces, each corresponds essentially to the width of the margins adjacent the subject matter to be printed;

the outer surfaces (20, 21) of the cover strips (8, 9) have radii of curvature which correspond to the radius of curvature of the printing plate stretched over the plate cylinder to form therewith an essentially continuous cylindrical surface;

and wherein, further, the outer surfaces of the cover strips have a surface characteristic which is hydrophilic and ink-rejecting, said outer surfaces being of steel which is roughened or granulated or knurled to form said hydrophilic and ink-rejecting surface characteristic.

4,403,550

PROCESS FOR PLANOGRAPHIC PRINTING

Thomas K. R. Sharp, Bloomingdale, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 147,045, Aug. 23, 1979, Pat. No. 4,304,601, which is a continuation of Ser. No. 895,628, Apr. 12, 1978, abandoned, which is a continuation of Ser. No. 689,381, May 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 631,433, Nov. 13, 1975, abandoned, which is a continuation-in-part of Ser. No. 583,837, Jun. 4, 1975, abandoned. This application Aug. 7, 1981, Ser. No. 291,182

Int. Cl.³ B41M *1/00*

U.S. Cl. 101—452 **8 Claims**

1. A planographic printing process employing a planographic plate having image and non-image areas comprising applying a planograpic printing ink to said areas to provide for acceptance of the ink by an image area and rejection of the ink by a non-image area, said planographic printing ink being thermally stable at temperatures of about 85° F. to 140° F. and comprising (a) pigment dispersed in a planographic ink vehicle; (b) a modifying varnish in an amount sufficient to provide an ink having a yield value below about 5000 dynes/cm^2 and a viscosity above 100 poise at 40° C. with high internal cohesion, the modifying varnish being selected from the group consisting of cyclised rubber, dimerized rosin esters, alkyds, rosin modified alkyds, esterified rosin modified oleoresinous gells, and hydrocarbon resin solutions; and (c) a silicone polymer, flow control additive in an amount sufficient to increase the temperature, at which the ink becomes pseudoplastic, to at least 85° F. and provide an ink having a low surface energy; said internal cohesion being sufficient to maintain wetting and transference of the ink to the image areas of a printing plate whereas said surface energy is sufficiently low to avoid wetting, by the ink, of the non-image areas of the printing plate within the operating temperatures of the plate.

4,403,551

PNEUMATICALLY PROPELLED DUCT MOTOR

John R. Slight, Bromley, England, assignor to Post Office, London, England

Filed Aug. 20, 1980, Ser. No. 179,777

Int. Cl.³ B61B *13/10*; F01B *15/02, 19/04*

U.S. Cl. 104—138 G **4 Claims**



1. Apparatus for self-propulsion along a duct comprising, in combination, first and second inflatable gripping bags and a telescopic fluid pressure operated unit interconnected between said gripping bags, said unit including a piston and cylinder arranged to extend and contract said telescopic unit, an inflation valve and a deflation valve connected to each of said gripping bags, a distribution valve connected to said telescopic unit for controlling the direction of movement of said unit, said distribution valve connected to a source of compressed air,

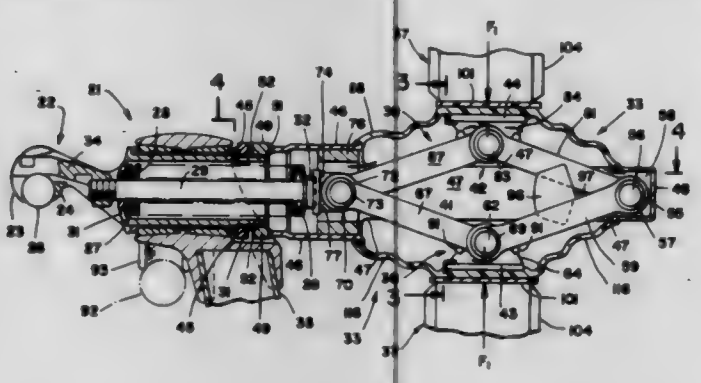
said distribution valve connected to each of said inflation valve of said first and second gripping bags, said first gripping bag extending to grip said duct upon the actuation of said distribution valve and said inflation valve of said first gripper bag contemporaneous with the actuation of the deflation valve of said second gripper bag, said distribution valve connected to said telescopic unit for expanding said unit to move said second gripper bag along said duct, said distribution valve connected to said inflation valve at said second gripper bag for expanding said second gripper bag into engagement with said duct contemporaneous with the actuation of the deflation valve of said first gripper bag, said distribution valve connected to said telescopic member for contracting same and moving said first gripper bag along said duct towards said second gripper bag, said distribution valve having a hollow valve stem associated therewith, said piston having a piston head connected to a hollow piston rod, said hollow valve stem extending through said piston head into said piston rod whereby said compressed air may be fed to said second gripper bag, said distribution valve being located coaxially with and on a side of said first gripper bag remote from said telescopic member.

4,403,552

DETACHABLE GRIP ASSEMBLY AND METHOD

Jan K. Kunczynski, 2400 Arrowhead Dr., Carson City, Nev. 89701

Filed Dec. 9, 1981, Ser. No. 328,932
Int. Cl.³ B61B *12/12*
U.S. Cl. 104—206 **9 Claims**



1. A grip assembly for detachably mounting a chair, gondola or the like to a movable cable for transport thereof, said grip assembly including cable gripping jaw means formed for movement between an open position and a closed position, spring biasing means coupled to said jaw means and formed to generate sufficient gripping force in said jaw means to attach said grip assembly to said cable, and jaw actuating means formed for the application of substantially equal and opposite actuating forces to said grip assembly from opposite sides thereof and from substantially moment-free and lateral thrust-free positions on said grip assembly to urge said jaw means between said open position and said closed position, wherein the improvement in said grip assembly is comprised of:

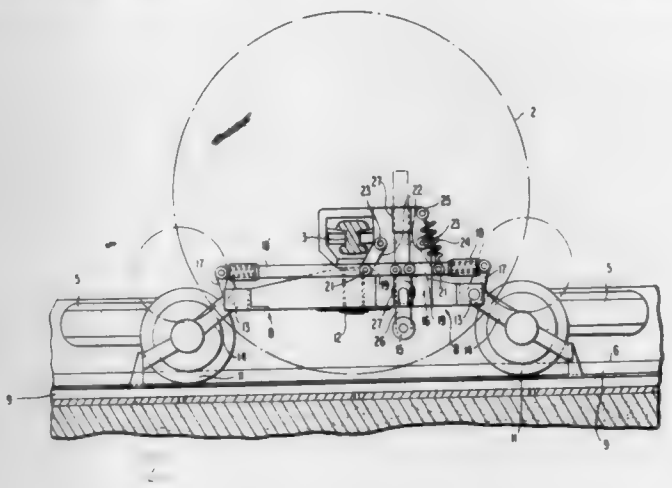
said jaw actuating means being formed as a pair of oppositely facing toggle joint means each having knee portions formed for application of said actuating forces thereto, said toggle joint means being further coupled to said jaw means for transmission of actuating forces sufficient to overcome said gripping force generated by said spring biasing means, said toggle joint means being formed for movement between a stable position on one side of a toggle line to another stable position on an opposite side of said toggle line, and said spring biasing means being formed to maintain said toggle joint means in both of the stable positions.

4,403,553

MOTOR VEHICLE ADAPTED FOR GUIDANCE ALONG A TRACK

Hellmuth Binder, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 243,772
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009857
Int. Cl.³ B61F *9/00, 13/00;* E01B *25/28*
U.S. Cl. 104—245 **19 Claims**



1. Automobile vehicle usable as a rail-bound conveyance with steerable supporting wheels having a horizontal tread and with at least one transverse guide means arranged between opposite steerable supporting wheels on a track guide lever means which is pivotable in a horizontal plane which guide means acts on the steerable supporting wheels and extends in the operating position below the tread level of the supporting wheels, which transverse guide means, by means of a horizontal swivel axle in the track guide lever means, can be automatically retracted from the operating position into an ineffective waiting position and/or lowered into an operating position by road-way responsible roller feeler means, movably guided at right angles to the driving direction, characterized by the combination of the following features:

(a) an expanding gear system is coupled with the roller feeler, this gear system producing, upon roller feeler movement, a movement oriented in the longitudinal direction of the vehicle, and being movable to and fro between two defined end positions;

(b) a vertically movable section of the track guide lever carrying the transverse guide means is connected, via an angle lever means rigidly connected therewith and via a coupling rod essentially aligned in the longitudinal direction of the vehicle, with the expanding gear system;

(c) the expanding gear system is fashioned to be one of reaction-free or self-locking in the end position corresponding to the operating position of the transverse guide means so that force effects from the roadway side on the track guide lever means lowered into the operating position do not cause any reactions on the position of the expanding gear system;

(d) one of the expanding gear system and the roller feeler means comprising end position securing means for retaining the transverse guide means in the waiting position when not lowered into the operating position.

4,403,554

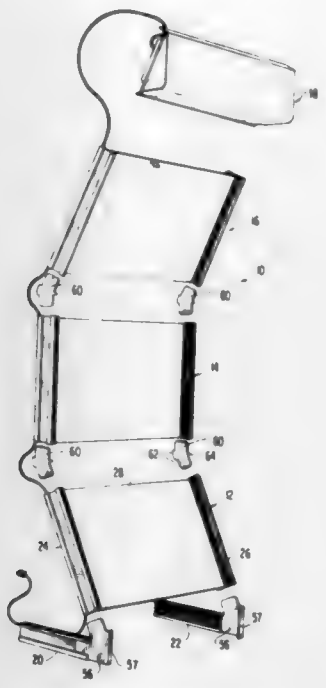
PORTABLE EXHIBIT SYSTEM

Clark Valentine, El Toro, and George E. Bamber, La Crescenta, both of Calif., assignors to Good Thumb Company, Los Angeles, Calif.

Filed Apr. 30, 1981, Ser. No. 259,276
Int. Cl.³ A47B *47/00*
U.S. Cl. 108—23 **17 Claims**

1. A portable exhibit system comprising at least one display

module having a pair of identical mirror image side support extrusions, display means extending between and detachably connected to said side support extrusions, a pair of bottom



support extrusions having a cross-sectional configuration identical to said side support extrusions and a pair of connector means detachably connecting said side support extrusions to said bottom support extrusions, respectively at an acute angle.

4,403,555

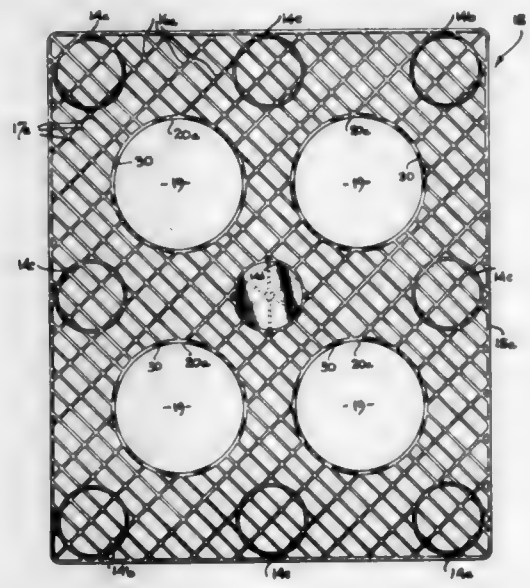
PALLET FOR USE IN HANDLING MATERIAL

John E. Forrest, 1617 - 22nd St., Manhattan Beach, Calif. 90266

Filed Jun. 11, 1981, Ser. No. 272,749

Int. Cl.³ B65D *19/32*

U.S. Cl. 108—51.1 **13 Claims**



1. A pallet for use in the handling and transportation of material comprising

a top half section including an edge border frame and first and second sets of stringers running diagonally between said frame to form a lattice truss structure, the stringers of said first set being substantially parallel to each other, the stringers of said second set being substantially parallel to each other and orthogonal to the stringers of said first set, there being a substantially greater number of stringers in the second set than the first set, and a plurality of spaced apart leg members extending normally from the surface of said lattice structure, and

a base half section having a lattice structure with a frame and first and second sets of diagonal stringers similar to that of said first half section and having a plurality of similar spaced apart leg members extending normally from its lattice structure, and positioned on the associated lattice structure in the same manner as the positioning of the leg members of the first half section on its associated lattice structure, said top and base half sections being joined together to form an integral unit with the ends of corresponding leg members of said sections joined in abutment with each other to form a plurality of leg truss members running between the lattice structure, the second set of stringers of said top half section running orthogonally to the first set of stringers of the base half section and the first set of stringers of the top half section running orthogonally to the second set of stringers of the base half section.

4,403,556

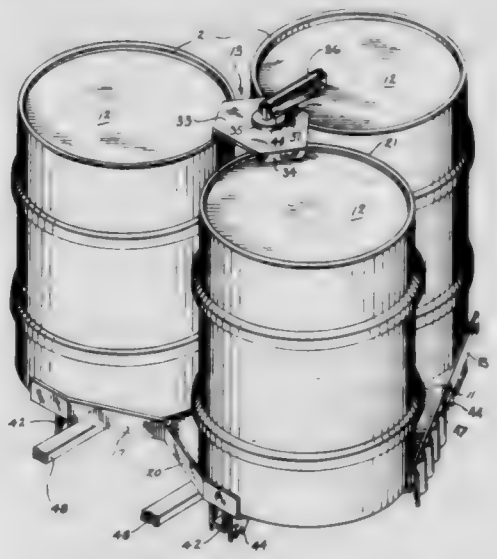
DRUM RETAINER

James J. Van Gompel, Fremont, Ind., assignor to NP Marketing Corporation, Neenah, Wis.

Filed Jun. 4, 1981, Ser. No. 269,409

Int. Cl.³ B65D *19/44*

U.S. Cl. 108—55.3 **13 Claims**



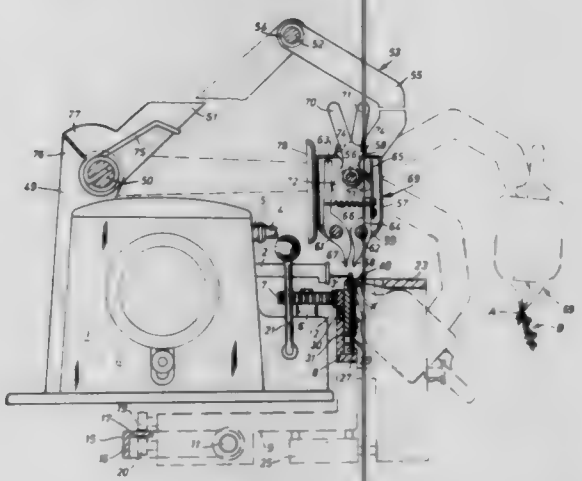
1. In a retainer for a plurality of drums, platform means for supporting drums thereon disposed upright on end, hold-down means extending upright from the platform means, said drums being arranged circumferentially relative to the hold-down means and being engaged at their top by the hold-down means to provide for their securement between the hold-down means and the platform means, a plurality of floor contacting means disposed beneath the platform means to space the platform means above the floor, said floor contacting means having floor piercing means projecting downwardly therefrom to engage and pierce the floor and thereby generally restrain the drum retainer against movement, said hold-down means comprising a plate member adapted to seat on the tops of the drums, a tubular member connected to the platform means at the lower end thereof and having a closed upper end spaced beneath the plate member, a threaded member disposed in the tubular member and extending upwardly through generally aligned openings in the upper end of the tubular member and the plate member, a nut engaged on said threaded member inside said tubular member, said nut being slideable relative to the tubular member and confined against rotation therein, said threaded member being rotatable to drive the nut upwardly against the closed end of the tubular member, and means disposed above the plate member and associated with the threaded member to impose a hold-down pressure on the plate member when the nut is driven tightly against the closed end of the tubular member.

4,403,557

APPARATUS FOR LETTING OUT FURSKINS

Herbert Dietrich, Kaiserslautern, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Jun. 8, 1982, Ser. No. 386,307
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1981, 3123567
Int. Cl.[3] D05B *15/00, 27/00*
U.S. Cl. 112—19 8 Claims



1. An apparatus for use with a sewing machine having a reciprocating needle to sew materials such as furskins into sections at a sewing zone, comprising a carriage mounted alongside said sewing machine and being movable through the sewing zone, drive means connected to said carriage for driving said carriage through the sewing zone, a clamp for clamping material therein in a position for being sewn and positioned on said carriage for movement therewith past the sewing zone for the sewing thereof, and a holding bracket for holding an article section which has already been formed in the vicinity of said clamp carried by said carriage for movement with said carriage through said sewing zone.

4,403,558

CONTROL SYSTEM FOR SEWING MACHINE

Charles R. Martell; Elmer N. Leslie; Don D. Isett, all of Dallas, and Stephen S. Treadwell, Richardson, all of Tex., assignors to Microdynamics, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 168,525, Jul. 14, 1980, Pat. No. 4,359,953. This application Nov. 26, 1980, Ser. No. 210,197
Int. Cl.[3] D05B *19/00*
U.S. Cl. 112—121.11 15 Claims

9. A semi-automatic sewing system, comprising:

a sewing machine;

said sewing machine including a reciprocal needle for stitching a seam in material advanced along a feed direction, and controls for operating said sewing machine;

means for driving said sewing machine;

said driving means including a variable speed motor with a shaft, an electromagnetic brake mounted on the motor shaft, and means for sensing rotation and angular displacement of the motor shaft;

means for counting stitches being sewn by said sewing machine;

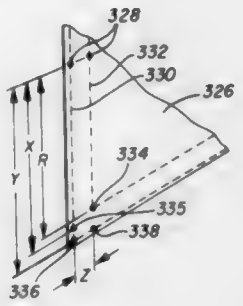
a sensor mounted in spaced relationship ahead of said sewing machine needle for detecting the material edge following a seam;

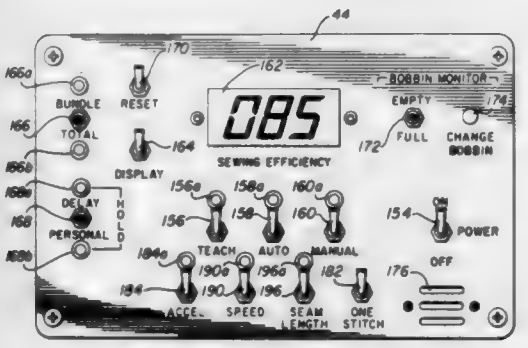
a microprocessor controller operatively associated with said stitch counting means, sewing machine drive means, and sewing machine controls;

said microprocessor controller having plural operational modes and being responsive to said material edge sensor and said motor shaft sensing means;

said microprocessor controller being operable in one mode to record for each seam the operational sequence of said sewing machine controls as a function of stitch count, the sewing speed profile, and an adaptive number of terminal stitches between detection of the material edge by said sensor and the seam endpoint; and

said microprocessor controller in another mode being operable to generate output signals for said sewing machine controls and the brake of said driving means to initiate countdown of said adaptive number of terminal stitches





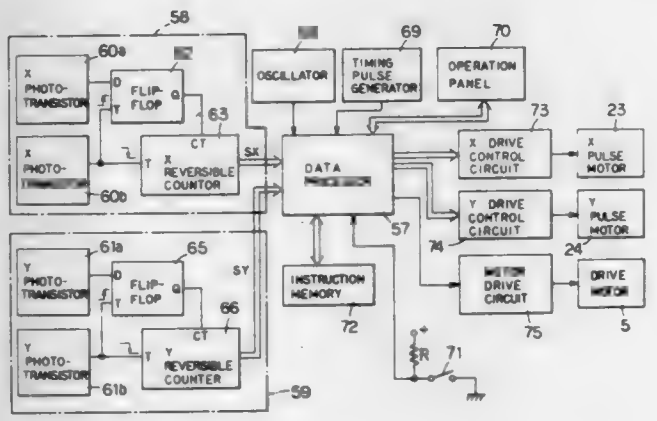
upon detection of the material edge by said sensor, wherein said microprocessor controller in said another mode monitors the stitches sewn during deceleration of the sewing machine to a seam endpoint and adaptively adjusts the point at which deceleration is initiated in order to minimize the number of slow stitches at the end of each seam.

4,403,559

PROGRAMMING SYSTEM FOR A SEWING MACHINE

Mitsuhiro Hirose, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Feb. 27, 1981, Ser. No. 239,164
Claims priority, application Japan, Mar. 17, 1980, 55-34344
Int. Cl.[3] D05B *21/00*
U.S. Cl. 112—121.12 8 Claims



1. A programming system for a sewing machine which varies the stitching relative position between a workpiece and a needle according to stitch instructions so as to form a desired seam on the workpiece, said programming system for preparing the stitch instuctions comprising:

a record medium provided with a profile corresponding to said seam;

an index member opposite to said record medium to trace said profile;

a drive mechanism operative to vary the programming relative position between said record medium and said index member;

operating means including a manual member operative to designate one of directions on a fixed plane and to designate the speed of varying said programming relative position in the designated direction, said manual member being capable of inclining toward said fixed plane;

detecting means, associated with said operating means, for detecting the amount of inclination of said manual member and the direction designated by said manual member, and then generating detection signals related to the inclination amount and the designated direction;

data processing means responsive to said detection signals, said data processing means determining tracing speed data corresponding to said inclination amount and position data corresponding to the variation in said programming relative position in said designated direction, and preparing said stitch instructions based on the position data;

instruction storage means for storing said stitch instructions prepared by said data processing means;

means for controlling the operation of said drive mechanism according to said tracing speed data and said position data; and

means for inhibiting the operation of said drive mechanism when said inclination amount is a predetermined value or less.

4,403,560

ELECTRONIC SEWING MACHINE

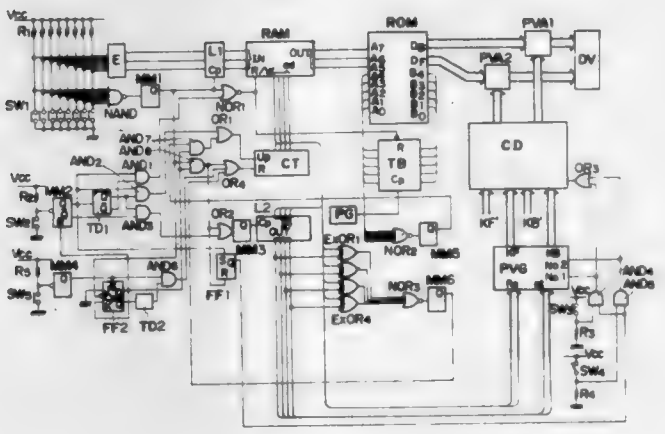
Hachiro Makabe, Kanagawa; Akira Orii, Sagamihara, and Yoshitaka Takahashi, Koganei, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1981, Ser. No. 289,521

Claims priority, application Japan, Aug. 8, 1980, 55-108278

Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 E **1 Claim**



1. In an electronic sewing machine having stitch forming instrumentalities including a feed regulating device for feeding a fabric to be sewn and a needle regulating device with a needle vertically reciprocated and laterally swingable transversely of the fabric feeding direction, and an electronic circuit device for controlling the stitch forming instrumentalities for producing and modifying a series of stitch patterns, the electronic circuit device comprising:

first memory means (ROM) for storing stitch control data for producing various stitch patterns;

pattern selecting means (KEY) connected to said first memory means and including a plurality of pattern selecting switches (SW_1) each selectively operated to produce a pattern datum designating a specific one of the stitch control data stored in the first memory means (ROM);

pattern disposing means connected to said pattern selecting means and including a second memory (RAM) for storing a series of pattern data produced by the pattern selecting switches in a predetermined order for sequentially addressing the first memory means to read out therefrom the stitch control data, a function switch (SW_2) operated each time after any of the pattern selecting switches are operated, to thereby produce a signal for causing the second memory to write down therein the pattern data of the pattern selecting switches, a counter (CT) operated upon receipt of the signal from the function switch to count in the second memory in a predetermined order the pattern data produced by the pattern selected switches and to generate count-up signals, and a third memory (L_2) operated upon receipt of the signal from the function switch to store therein the count-up signals of the counter;

pattern variation rate generating means (PVG) connected to said counter and containing a calculating formula and receiving the output of the counter representing the order of patterns and the output of the third memory representing the total number of patterns, to produce an output as a result of calculation with the calculating formula and the outputs of the counter and the third memory;

mode switching means connected to said pattern variation rate generating means and including at least one switch operated to influence the pattern variation rate generating means to determine a variation rate of the selected series of patterns; and

calculating means connected to said first memory means and to said pattern variation rate and operated for receiving the stitch control data produced from the first memory means and the pattern variation rate produced from the pattern variation rate generating means to produce an output signal as a result of calculation with the stitch control data and the pattern variation rate to be applied to a stitch forming device.

4,403,561

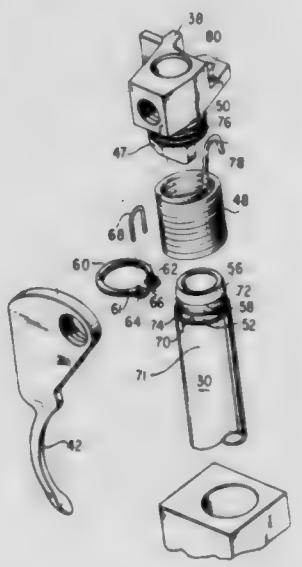
PRESSER BAR SPRING-CONNECTION

Henry Schaeflern, Pittstown, and Jan Szostak, Lincroft, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Nov. 23, 1981, Ser. No. 323,773

Int. Cl.³ D05B *29/02*

U.S. Cl. 112—237 **8 Claims**



1. In combination, two axially aligned members mounted for relative axial movement, at least one of the members including an annular groove, a split resilient ring located in said groove and projecting outwardly from opposite side surfaces of the groove, a helical spring having one end portion threaded into the ring which is constrained thereby to enforce engagement of opposite side surfaces of the ring with the opposite side surfaces of the groove and so prevent relative axial movement of the said one end portion of the spring and the grooved

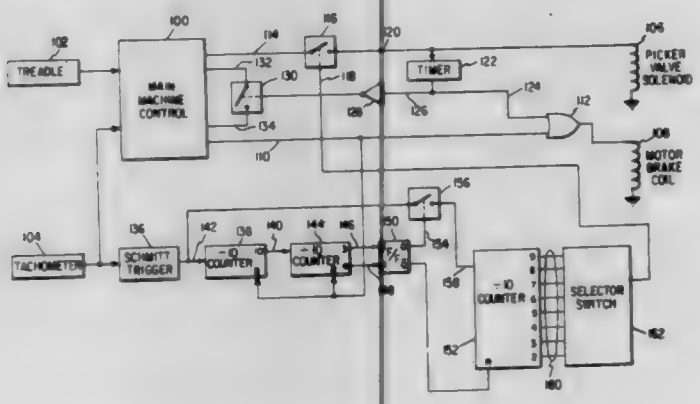
member, and means connecting an opposite end portion of the spring to said other member.

4,403,562

THREAD PICKER CIRCUIT FOR INDUSTRIAL SEWING MACHINE

Tibor L. Tancs, Roselle Park, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Feb. 14, 1983, Ser. No. 466,258
Int. Cl.³ D05B *69/22, 65/00*
U.S. Cl. 112—275 **2 Claims**



1. Apparatus for operating a thread picker associated with a thread trimmer in a sewing machine comprising:

operator actuated means for generating a trim command signal to initiate a trim operation of said sewing machine;

control means responsive to said trim command signal for stopping said sewing machine with the sewing machine needle at substantially its lowest position, said sewing machine including a mechanical brake activated in response to a brake signal applied thereto, said control means generating said brake signal to stop said sewing machine, said control means further causing said sewing machine to operate after stopping and generating a trim signal to operate said thread picker;

tachometer means operating in synchronism with said sewing machine for generating a fixed number of pulses for every complete operating cycle of said sewing machine, the frequency of said pulses corresponding to the speed of operation of said sewing machine;

counting means for counting said pulses and providing a count output signal upon reaching a predetermined count value;

means responsive to said brake signal generated by said control means for resetting said counting means;

transmitting means responsive to said count output signal for transmitting said trim signal from said control means to said thread picker;

timer means responsive to operation of said transmitting means for timing a predetermined time interval;

means operative during said predetermined time interval for generating said brake signal; and

means operative during said predetermined time interval for stopping operation of said control means.

4,403,563

ELECTRIC SEWING MACHINE DRIVING APPARATUS

Nozomu Shinozaki, Hirakata; Shigeo Neki, Osaka, and Takashi Dohi, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 21, 1981, Ser. No. 287,075
Claims priority, application Japan, Jul. 31, 1980, 55-106099
Int. Cl.³ D05B *69/22*
U.S. Cl. 112—275 **6 Claims**

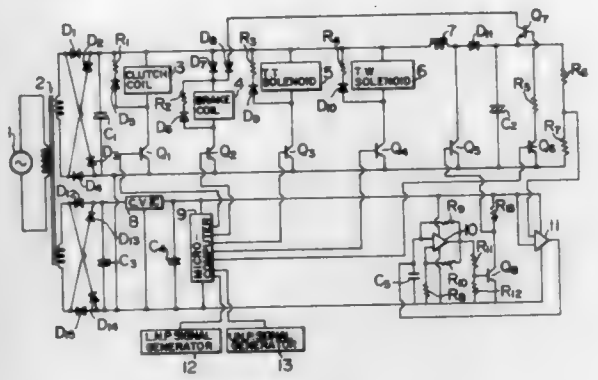
1. An electric sewing machine driving apparatus comprising:

a clutch coil of an electromagnetic clutch for transmitting a torque of a motor to a sewing machine to drive the same;

a brake coil of an electromagnetic brake for applying a braking force to said sewing machine;

means for generating a needle position signal to stop said sewing machine at a predetermined needle position;

a DC power source for energizing said clutch coil and said brake coil;



means for generating a DC voltage higher than a supply voltage of said DC power source; and

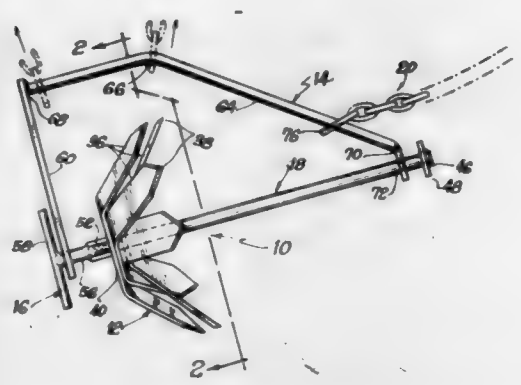
a capacitor disposed to be charged by said voltage generating means; whereby an electric charge stored in said capacitor is caused to discharge through said brake coil to energize the same in response to said needle position signal generated by said needle position signal generating means.

4,403,564

ANCHOR

Robert E. Garvin, 316 Millar Ave., El Cajon, Calif. 92020

Filed Mar. 2, 1981, Ser. No. 239,382
Int. Cl.³ B63B *21/46*
U.S. Cl. 114—299 **1 Claim**



1. An anchor having adjustable flukes comprising an elongated, rod shaped anchor shaft having a threaded portion on the crown end of the shaft, a rectangular plate secured to said shaft at a distance from said threaded portion to receive and retain a plurality of nestable flukes on the crown end portion of said shaft, said flukes being flat metal bars having an orifice in the planar mid-section of each fluke to receive the crown end of said shaft and bent end portions, the innermost fluke having a pair of spaced parallel bar shaped bosses secured to the surface of the mid-section to receive said retainer plate, said bosses abutting the edges of said retainer plate when said flukes are mounted on said shaft to prevent rotation of said innermost fluke and means to secure said flukes to said shaft in various angular relationships from 0° to 90° relative to each other, said securing means comprising a T-shaped handle having an interiorly threaded enlargement at the end of the handle to engage said threaded portion of said shaft and by rotation of said handle to press said enlargement into contact with the outermost fluke to lock said flukes in one of said selected angular relationships between said retainer plate and said enlargement, and means on said shaft for the attachment of an anchor line comprising a bail having one end slidably-mounted on said T-shaped handle and the other end slidably mounted on the end portion of said anchor shaft opposite said crown end,

means on said end portion to prevent said other end of said bail from sliding off said shaft and slidable means on said bail for connection with said anchor line.

4,403,565

EMERGENCY TRIANGULAR ROAD SAFETY DEVICE

Arthur F. Bleiweiss, Toronto, and Terence E. Base, London, both of Canada, assignors to Dominion Auto Accessories Limited, Toronto, Canada

Filed Mar. 11, 1981, Ser. No. 242,625
Int. Cl.³ E01F 9/10
U.S. Cl. 116—63 T **27 Claims**



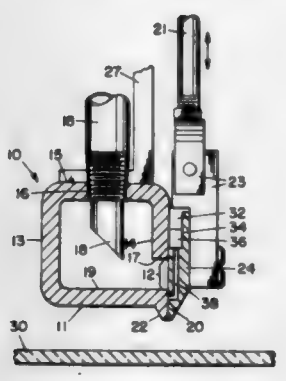
1. An emergency warning device comprising
a base adapted to rest on a road surface,
three arms extending upwardly from the base to define a triangle, the plane of the triangle defining a face generally perpendicular to the road surface and adapted to face the oncoming traffic when the device is on a road surface,
one of said arms extending horizontally on said base and said other two arms extending upwardly,
each arm having passive signal means on at least one surface thereof,
and vane means constructed and arranged, shaped and positioned on said triangle such that wind air flow against the vane means flows upwardly and produces a downward force on the vane means increasing the drag between the base and the road surface tending to prevent movement of the device relative to a road surface.

4,403,566

APPARATUS FOR PRODUCING A PRINTING PLATE

William Bloothoofd, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 161,847, Jun. 23, 1980, abandoned. This application Oct. 26, 1981, Ser. No. 315,092
Int. Cl.³ B05C 5/02
U.S. Cl. 118—407 **3 Claims**



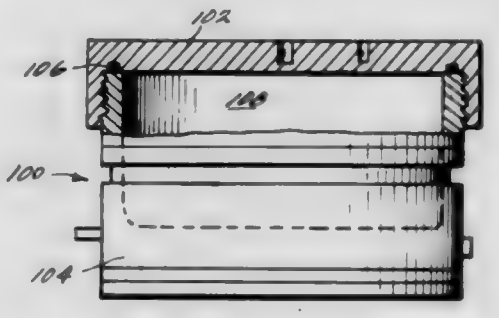
1. An apparatus to provide a uniform layer of liquid photopolymerizable resin material on a platemaking surface in the manufacture of a printing plate from said resin, said apparatus comprising:
a platemaking surface;
a manifold spanning the width of the platemaking surface vertically nonadjustable with respect to the platemaking surface during movement thereover and moveable along the lengthwise direction of said surface, which manifold is approximately C-shaped in cross-section having a closed bottom side having a wedge shaped lip projecting downward from its forward edge and forming a doctor blade, a back facing side, an upper side, and a forward facing side depending toward but not in contact with the forward edge of said bottom side and defining an opening across the length of said manifold adjacent said bottom side, one of said upper or back facing sides being closed and the other having a plurality of openings for the attachment of resin supply tubes, and closed ends;
a gate being essentially the same length as said manifold, disposed before the opening in the manifold adjacent the bottom side and vertically adjustable so that, when adjusted upward, its lower edge will define with the opening in the manifold an adjustable orifice slot extending the length of the opening in the manifold and when adjusted downwardly completely closing the opening in the manifold;
means to vertically adjust said gate upward and downward;
means to prevent air from entering the apparatus between the gate and the upper section of the forward facing side of the manifold; and
means to supply a regulated flow of liquid photpolymerizable resin material from a pressurized external reservoir through said resin supply tubes attached to said plurality of openings in said manifold.

4,403,567

WORKPIECE HOLDER

Harry daCosta, Paradise Valley, Ariz.; Hugh K. Howerton, Falls Church, Va.; William E. Hughes, Annandale, Va., and Gaines W. Monk, Alexandria, Va., assignors to Commonwealth Scientific Corporation, Alexandria, Va.

Filed Aug. 21, 1980, Ser. No. 179,960
Int. Cl.³ B05C 13/02
U.S. Cl. 118—500 **12 Claims**



1. A workpiece holder for semiconductor workpieces during treatment comprising:
a casing having an upper exterior surface for receiving and holding a workpiece thereon, an opposed lower surface and a hollow interior having a fixed space; and
a heat absorbing composition chosen from the group consisting of Glauber's salt and calcium chloride hexahydrate sealed within said interior for absorbing heat from said workpiece during treatment.

4,403,568

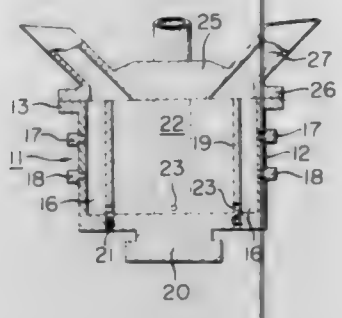
MILK-CLAW INCLUDING INSPECTION MEANS FOR MILK SUCKED FROM COW'S TEATS

Shoetsu Fukuhara; Yoshiaki Nakamura; Tadahiro Ibuki, all of Sayama, and Masaichi Yamamoto, Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1981, Ser. No. 331,774
Claims priority, application Japan, Dec. 24, 1980, 55-183562
Int. Cl.³ A01J 5/04, 7/00
U.S. Cl. 119—14.14 **9 Claims**

1. A milk-claw provided with inspection means for the milk sucked from cow's teats, comprising: a collecting chamber being formed within an airtight drum housing and connected to inlets for milk formed in the upper wall of said housing and an outlet for milk formed in the lower wall of the housing respectively; inspection chambers for milk which lie adjacent to and partitioned from said collecting chamber for milk by means of a partition wall such that a part of the milk flowing to

the collecting chamber for milk through said inlets is allowed to flow into said inspection chambers; electrode means attached to the wall surfaces of said inspection chambers and functioning to meausre the electric conductivity of the milk



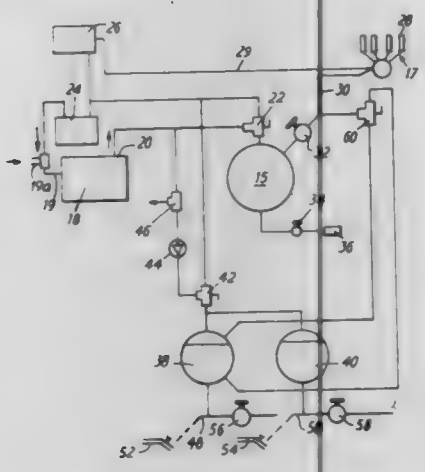
within the inspection chambers for milk; and a small hole provided at the lower part of the partition wall between said collecting chamber and inspection chambers whereby milk within the inspection chambers is allowed to flow in the collecting chamber.

4,403,569

MILKING MACHINE

Arthur J. R. Bennett, 65 Road No. 3, Victory Park, Johannesburg, South Africa

Filed Dec. 29, 1981, Ser. No. 335,372
Int. Cl.³ A01J *5/04*
U.S. Cl. 119—14.18 **6 Claims**



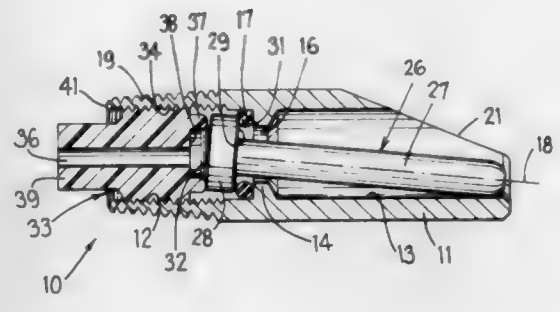
1. A milking machine comprising:
(a) a pneumatic pump having an outlet port and an inlet port;
(b) a teat cluster,
(c) a milk receiver,
(d) a milking line connecting the teat cluster to the milk receiver to convey milk from the teat cluster to the milk receiver,
(e) a suction line leading to the inlet port,
(f) a pressure line leading from the outlet port,
(g) a first valve to which the suction and pressure lines are connected and which is connected to the milk receiver, the first valve being adjustable to connect either the suction line or the pressure line to the milk receiver,
(h) a discharge line leading from the milk receiver and having means whereby it may be connected to a storage vessel,
(i) suction valve means in the suction line movable to an open position in which it connects the suction line to atmosphere,
(j) outlet valve means in the pressure line movable to an open position in which it connects the pressure line to atmosphere, and
(k) control valves in the milking and discharge lines for respectively opening or closing such lines.

4,403,570

ANIMAL WATERER

Donald H. Freehafer, Byron Township, Kent County, Mich., assignor to Cyclone International Incorporated, Holland, Mich.

Filed Jan. 11, 1982, Ser. No. 338,469
Int. Cl.³ A01K *7/00*
U.S. Cl. 119—72.5 **13 Claims**



1. In a nipple-type watering device for animals, including an elongated housing having an elongate passage extending therethrough, said housing having means associated therewith for defining an annular flange in surrounding relationship to said passage, said annular flange defining thereon a rearwardly facing valve seat which is spaced from the opposite ends of said passage, an annular elastomeric seal ring seated on said valve seat, and a valve member tiltable relative to the housing between open and closed positions, said valve member having an elongated stem which projects substantially axially of said passage from a location adjacent the front end thereof inwardly through said seal ring, said valve member also having an enlarged platelike valve head fixed to the inner end of said stem, said valve head having a front face which is normally maintained in sealing engagement with said seal ring to create a first annular band of sealing engagement, said valve member being free of interior flow passages so that opening of said valve member permits flow of water around said valve head and then across said seal ring and thence exteriorly of said stem, comprising the improvement wherein a one-piece cylindrical member of an elastomeric material is sealingly seated within the rearward portion of said passage, said cylindrical member having an annular elastomeric sealing ridge integrally formed thereon and projecting axially forwardly thereof for engagement with a rear face on said valve head to create a second annular band of sealing engagement, said elastomeric ridge also resiliently urging said valve member forwardly to sealingly press said valve head against said seal ring which in turn is sealingly pressed against said valve seat, and said cylindrical member having a small flow orifice extending axially therethrough, said orifice at its forward end opening into a region surrounded by said annular sealing ridge.

4,403,571

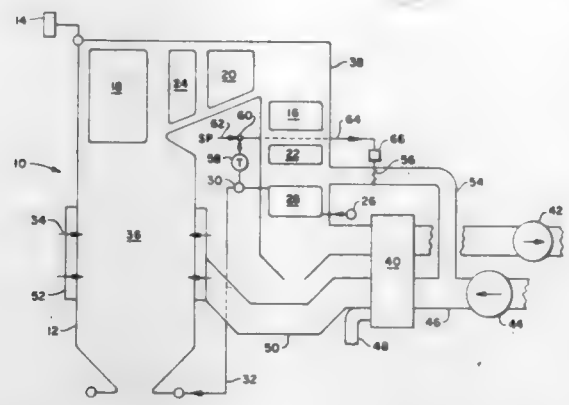
BOILER WITH ECONOMIZER HEAT ABSORPTION REDUCTION

Edward L. Kochey, Jr., Colebrook, Conn., assignor to Combustion Engineering, Inc., Wilson, Conn.

Filed Dec. 9, 1981, Ser. No. 328,893
Int. Cl.³ F22B *33/00*
U.S. Cl. 122—1 A **2 Claims**

1. A steam generator arrangement comprising: a furnace; a gas duct connected to said furnace for carrying flue gas therefrom; steam heating surface located within said gas duct; an economizer heating surface located within said gas duct at a location downstream of said steam heating surface with repsect to gas flow; a forced draft fan; an air duct connected to said forced draft fan and said furnace for conveying air to said furnace; an air heater in heat exchange relationship between gas flowing through said gas duct and air flowing through said air duct at a location in said air duct downstream of said fan and in said gas duct downstream of said economizer; a bypass

duct connected to said air duct between said fan and said air heater and connected to said gas duct at a location upstream of said economizer and downstream of said steam heating surface;



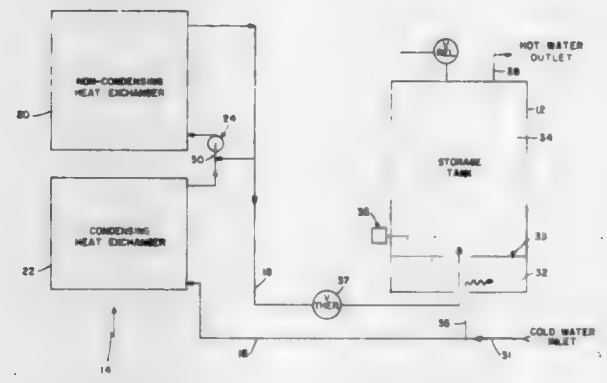
and controllable dampers located within said duct, whereby air is introduced through said bypass directly upstream of said economizer.

4,403,572

COMBUSTION PRODUCT CONDENSING WATER HEATER

Joseph Gerstmann, Framingham, and Andrew D. Vasilakis, Bedford, both of Mass., assignors to Advanced Mechanical Technology, Inc., Newton, Mass.

Filed May 16, 1980, Ser. No. 150,289
Int. Cl.³ F22B *33/00*
U.S. Cl. 122—20 B **19 Claims**



1. A method of heating water and storing the hot water in an insulated storage vessel comprising:

permitting natural stratification of the water within the vessel such that cooler water collects at the bottom of the vessel;

withdrawing cooler water from the bottom of the vessel and passing that water in heat exchange relationship with combustion gases from a burner assembly to cool those gases below their dew point temperature so as to extract some of the latent heat of vaporization from the gases and to heat the water;

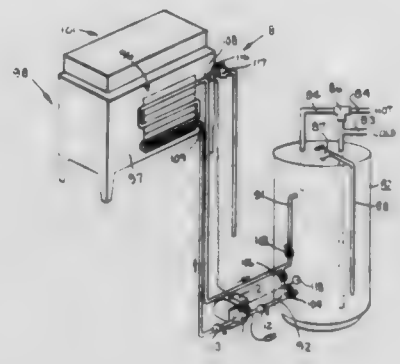
returning the thus heated water to the storage vessel at a location in the storage vessel above the cooler water and in a manner as to avoid mixing with the cooler water, the volume of the cooler water below the location at which hot water is returned to the vessel being sufficiently large to provide for condensation of the combustion gases through substantially the entire heating cycle of the burner.

4,403,573

WATER HEATING APPARATUS FOR SOLID FUEL FIREBOX

Charles J. Cauchy, 935 Lincoln St., Traverse City, Mich. 49684

Filed Mar. 29, 1982, Ser. No. 363,338
Int. Cl.³ F22B *33/00*
U.S. Cl. 122—20 A **13 Claims**



1. In combination with a solid fuel burning stove, furnace or the like, of the kind having a firebox in which the fuel is burned, which firebox includes a substantially flat exterior wall heated from within by said burning:

a water tank;

first and second water lines connected to said tank and including respective normally open first and second manual valves adjacent said tank;

a normally closed third manual valve connected between said first and second manual valves as a shunt across said first and second water lines;

means including a pump flanked by a pair of normally closed manual drain valves inserted in said second water line and separated from said tank by said second and third manual valves, said first and second water lines having ends remote from said water tank and leading to said firebox;

a heat conductor array comprising a plurality of aluminum fins each having an elongate substantially rectangular plate with one face fixed with respect to said exterior wall of said firebox in close heat exchanging relation, said plates being fixed in close side-by-side, substantially parallel relation to each other;

a single continuous, jointless tube of semi-rigid, heat conductive metal bent in a serpentine shape with elongate substantially parallel legs each fixed to the opposite face of respective said plates on the central length axes of said plates and with smoothly rounded integral bends at the ends of said plates and joining the adjacent ends of said adjacent legs, the opposite ends of said serpentine tube extending in the same direction from the array of plates substantially in parallel with each other, one said tube end being connected by a fitting to said second waterline remote end, the other tube end being connected by a fitting to the first waterline remote end and through a first temperature sensor to a temperature-pressure relief valve openable to a drain outlet;

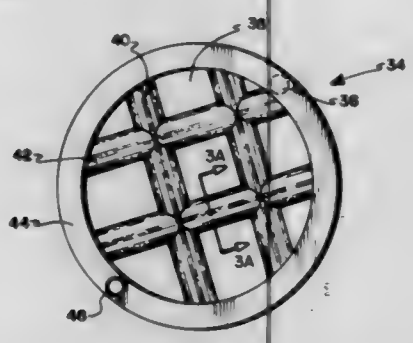
a second temperature sensor associated with said tank for sensing the temperature of water therein, said pump having a controller responsive to a preselected temperature drop between said temperatures sensed by said first and second temperature sensors, respectively, for operating said pump to circulate water from said tank through said serpentine tube and back through said tank, such that said firebox heats water in said tank.

4,403,574

BOILER PANCAKE DESIGN

Stephen Free, 47584 Bursley Rd., Wellington, Ohio 44090

Filed Jun. 10, 1981, Ser. No. 272,673
Int. Cl.³ F22B 5/00
U.S. Cl. 122—353 2 Claims



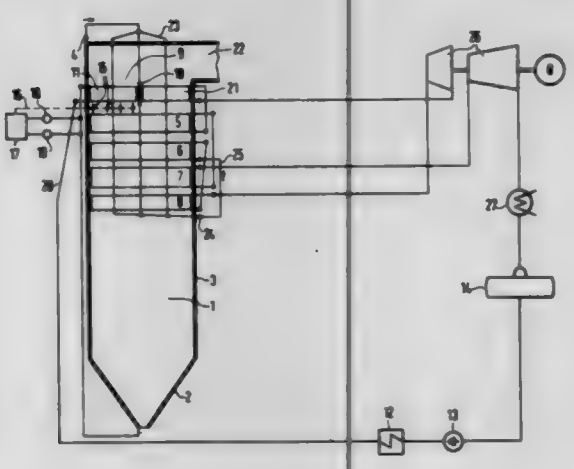
1. A direct fired boiler device comprising:
a firebox in which coal, wood or other suitable fuel is burned to produce combustion products;
a series of two or more heat transfer devices maintained above said firebox, each said heat transfer devices comprising interconnected grid patterns of hollow elliptical-shaped conduits with their respective major axes parallel to the flow path of said combustion produts, said grid pattern being asymmetrical; and
a chimney in communication with said firebox to convey said combustion products from the boiler.

4,403,575

DEVICE FOR PREVENTING FLASHING TO STEAM IN AN ECONOMIZER OF A FLOW THROUGH STEAM GENERATOR

Rudolf Kral, Langensendelbach, and Reiner Engelhardt, Effeltrich, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim an der Ruhr, Fed. Rep. of Germany

Filed Aug. 18, 1981, Ser. No. 293,884
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032507; Jul. 3, 1981, 3126321
Int. Cl.³ F22D 5/26
U.S. Cl. 122—451.1 4 Claims



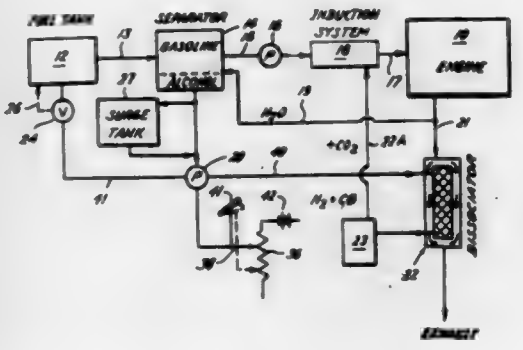
1. Device for preventing flashing to steam in an economizer of a flow-through steam generator wherein the economizer has heating surfaces disposed downstream of an evaporator and superheater surfaces in direction of a flue-gas path, comprising at least one partition separating the cross section of the flue-gas path in vicinity of the economizer into at least two joint areas separated from one another, the economizer having tubes disposed only in one of the thus formed joint areas, and further comprising shut-off devices for the flue gas disposed upstream of said tubes of the economizer as viewed in the direction of the flue-gas path and control means for said shut-off devices depending upon pressure and temperature of water in the tubes of the economizer, said shut-off devices being closable by said control means if danger of flashing to steam exists in the economizer.

4,403,576

FUEL SYSTEM FOR AND A METHOD OF OPERATING A SPARK-IGNITED INTERNAL COMBUSTION ENGINE

Edward Dimitroff, and John A. Vitkovits, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Division of Ser. No. 784,414, Apr. 4, 1977, Pat. No. 4,210,103. This application Apr. 15, 1980, Ser. No. 140,477
Int. Cl.³ F02B 47/04
U.S. Cl. 123—3 48 Claims



1. In a method of operating a spark-ignited internal combustion engine having an induction system in which gasoline may be atomized, the steps of storing a blend of gasoline and a liquid hydrocarbon alcohol of from 1 to 3 carbon atoms in a fuel tank, receiving the blend from the fuel tank into a separator tank in which the blend is separated into gasoline and liquid alcohol, supplying separated gasoline from the separator tank to the induction system through a first conduit means in order to atomize the gasoline, supplying separated liquid alcohol from the separator tank through a second conduit means separate from the first conduit to a means in which the liquid alcohol is dissociated into vapors including hydrogen, carbon monoxide and carbon dioxide, supplying the vapors to the induction system for mixing with the atomized gasoline to provide a fuel for the engine, and regulating the amount of vapors mixed with the atomized gasoline by supplying less dissociated vapors to the engine as the mass ratio of air to gasoline in the induction system increases and discontinuing the supply of vapors when the air to gasoline mass ratio becomes greater than 13 to 1.

4,403,577

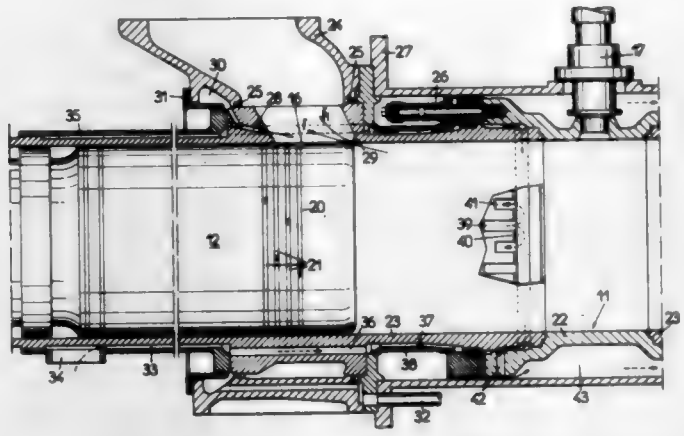
FREE PISTON INTERNAL COMBUSTION ENGINES

Henry Benaroya, 41, Boulevard du Commandant Charcot, Neuilly-sur-Seine, France

Filed Dec. 18, 1980, Ser. No. 217,993
Claims priority, application France, Jun. 20, 1979, 79 15837
Int. Cl.³ F02B 71/00
U.S. Cl. 123—46 R 7 Claims

1. In a free piston internal combustion engine, a motor cylinder having a wall formed with axially spaced intake and exhaust ports,
at least one driving piston located in said cylinder for reciprocating movement and drivably connected to a compressor piston located in a compression cylinder,
a head ring carried by said driving piston and cooperating with at least said exhaust ports to progressively uncover said exhaust ports during each power stroke of said driving piston;
and air delivery means, separate from said intake ports, formed in said cylinder adjacent said exhaust ports and spaced from said intake ports for supplying air originating from said compression cylinder toward the motor cylin-

der as a jet directed along those portions of said driving piston and at said head ring which cooperate with said



exhaust ports during the moment when said driving piston initially clears the exhaust ports.

4,403,578

SEPARATE LUBRICATING SYSTEM FOR OUTBOARD ENGINE

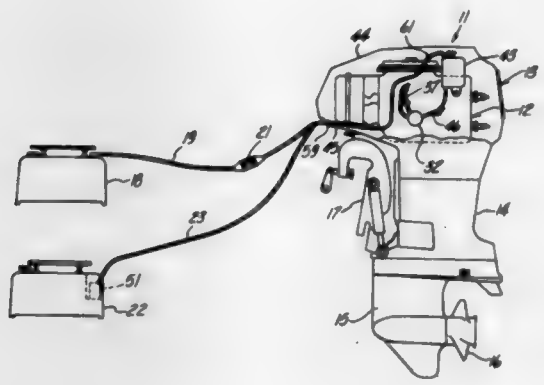
Tomio Iwai, and Motoi Tobinaga, both of Hamamatsu, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata and Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, both of, Japan

Filed Nov. 2, 1981, Ser. No. 317,347

Claims priority, application Japan, Nov. 27, 1980, 55-167823

Int. Cl.³ F01M *1/00, 1/02, 3/02*

U.S. Cl. 123—73 AD **24 Claims**



1. In a lubricating system for a two cycle engine comprising a lubricant delivery system for delivering lubricant to the engine, a relatively small delivery tank for supplying lubricant therefrom to said lubricant delivery system, and a separate, larger capacity lubricant storage tank, the improvement comprising pumping means located in said storage tank for pumping lubricant from said storage tank into said delivery tank.

4,403,579

INTERNAL COMBUSTION ENGINE IGNITION DISTRIBUTOR DRIVE ARRANGEMENT

Robert E. Young, and Bobbie D. Bridgewater, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 24, 1981, Ser. No. 295,557

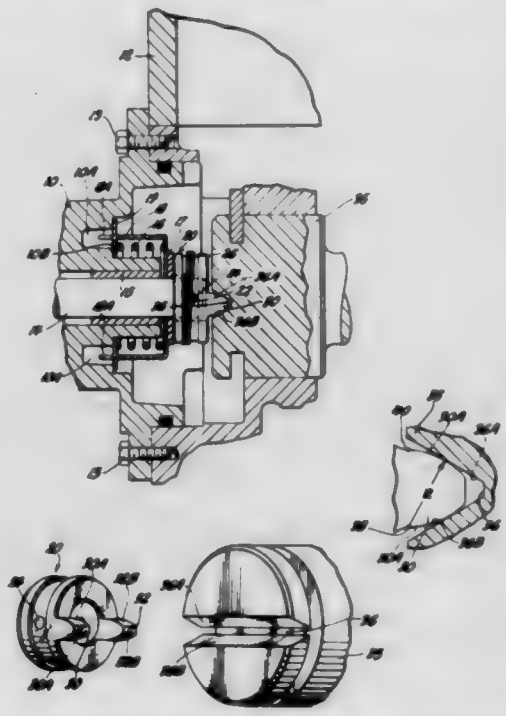
Int. Cl.³ F02P *7/00*

U.S. Cl. 123—146.5 A **3 Claims**

1. An internal combustion engine ignition distributor drive arrangement through which the distributor shaft is driven by and in an end-to-end relationship with the engine camshaft when the distributor is assembled on the engine comprising:

means drivably engaging said distributor shaft having at least one projection that extends in the direction of the longitudinal axis of said shaft and has two opposed face surfaces that extend axially of the shaft and are substantially equally curved toward each other from the root to the tip thereof;

a projection accommodating notch in the end of said camshaft adjacent said distributor shaft having substantially plane sidewalls that taper substantially equally inwardly at



such an angle that each may tangentially engage a respective one of said projection face surfaces; and

means for forcing said projection face surfaces into intimate engagement with said tapered sidewalls of said notch when said distributor is assembled on said engine whereby distributor drive backlash is substantially eliminated.

4,403,580

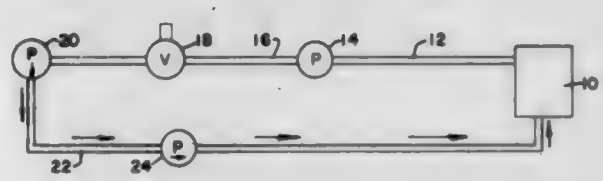
SHUT-DOWN APPARATUS FOR DIESEL ENGINES

Hans Bader, Laroe Rd., Chester, N.Y. 10918

Filed Dec. 19, 1980, Ser. No. 218,427

Int. Cl.³ F02M *63/02*

U.S. Cl. 123—198 DB **6 Claims**



1. A fuel supply control circuit and apparatus in which fuel from a supply tank is delivered by a transfer pump to an injector pump by which fuel is delivered at a given flow rate through a supply conduit and delivered in a metered condition to an internal combustion engine and with any excess fuel delivered to and not used by the injector pump returned to the fuel tank by and through a return conduit, said circuit and apparatus further including signal means for terminating the flow of fuel to the injector pump by and with an electrically actuated shut-off valve in the supply conduit from transfer pump to the injector pump and there is provided in said return conduit an electrically actuated return flow fuel pump, both the shut-off valve and return flow fuel pump being actuated in response to the same signal actuation of said intended flow of fuel to the injector pump being affectively terminated and the engine ceases to run due to an absence of fuel.

4,403,581

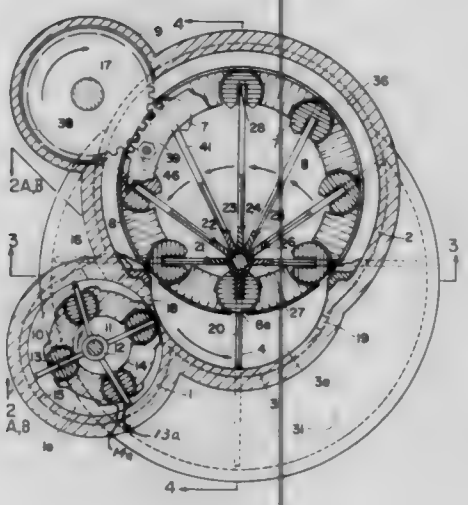
ROTARY VANE INTERNAL COMBUSTION ENGINE

George Rogachevsky, 8 Birchwood Ave., Spring Valley, N.Y. 10977

Continuation-in-part of Ser. No. 42,993, May 29, 1979, abandoned. This application Oct. 14, 1980, Ser. No. 196,262

Int. Cl.[3] F02B *53/08*

U.S. Cl. 123—239 35 Claims



1. A rotary-vane internal combustion engine comprising:

a. A compressor unit having a chamber for forming, compressing, and igniting a combustible fluid mixture and comprising:

1. a first rotor mounted eccentrically within the compressor chamber,

2. a plurality of compressor vanes mounted for rotation with said first rotor, and

3. means for igniting the compressed combustible mixture to form a working fluid,

b. A power unit having a chamber comprising

1. a power shaft disposed within the power chamber,

2. a second rotor mounted within said power chamber and eccentrically disposed with respect to said second shaft.

3. a plurality of radially disposed power vanes having one end thereof pivoted on said power shaft,

4. a plurality of slotted vane guide elements disposed in said second rotor for receiving respective ones of said power vanes in the said slots during only a part of the operating cycle of said engine, said power vanes being adapted to be withdrawn from the slots of their respective guide elements during other parts of said operating cycle,

5. Guide arm means connected to respective ones of said power vanes, said guide arm means continuously engaging respective ones of said vane guide elements, whereby said guide elements are adjusted to maintain their slots and their associated power vanes in alignment, and

6. An expansion chamber connected to the compressor unit for receiving the ignited combustible fluid and forming an extension of said power chamber, said power vanes extending into and forming a sealing relationship with said expansion chamber and forming variable volume working chambers for the expansion of the working fluid.

4,403,582

FUEL INJECTION CONTROL SYSTEM

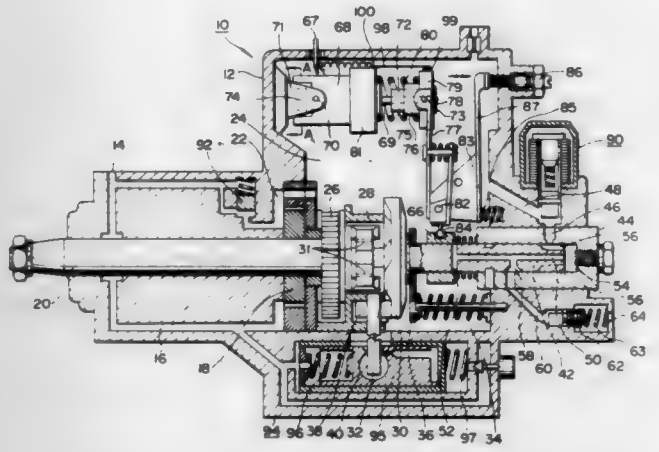
Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jun. 26, 1981, Ser. No. 277,818

Claims priority, application Japan, Sep. 10, 1980, 55-124639

Int. Cl.[3] F02D *31/00*

U.S. Cl. 123—357 7 Claims



1. A fuel injection control system for an internal combustion engine, comprising:

(a) a housing;

(b) a fuel distributing plunger disposed within the housing and moving angularly and axially therein in synchronism with the engine, said plunger having a spill port opening outwardly;

(c) a control sleeve slidably fitted over said plunger to open and close said spill port to control the amount of fuel injected into the engine as a function of axial position of the sleeve;

(d) a reversible electric motor disposed within the housing and having a threaded motor shaft;

(e) a slider disposed within the housing in threaded engagement with the motor shaft to thereby move along the motor shaft during rotation thereof;

(f) a linkage for transmitting movement of the slider to the control sleeve through a connecting member to move the sleeve axially as the slider moves; and

(g) an urging device biasing the motor shaft circumferentially to thereby rotate said shaft to a predetermined position when a motor output force exerted on the shaft stops; said predetermined position of the motor shaft being the same as that during engine idling operation;

whereby the amount of fuel injected into the engine is made small enough to maintain safe engine operation if the force exerted on the motor shaft stops due to a malfunction.

4,403,583

FUEL INJECTION PUMP

Franz Eheim, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 26, 1980, Ser. No. 124,888

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1979, 2909555

Int. Cl.[3] F02D *17/06*

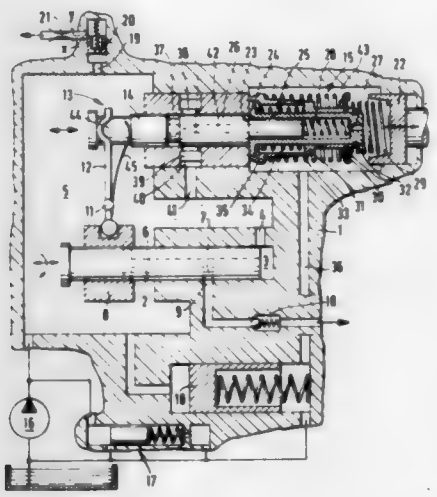
U.S. Cl. 123—387 19 Claims

1. A fuel injection pump with a housing and hydraulic rpm governor for internal combustion engines, the fuel injection pump having:

a supply pump with a suction chamber in which fuel is driven by the supply pump at a pressure depending on engine rpm, and wherein the supply pump is driven at an rpm also depending on engine rpm;

an adjusting piston in the housing, with an end face exposed to the supply pump fuel such that the adjusting piston is moved in a first direction;

a spring unit with an rpm governing spring connected to and controlled by the hydraulic rpm governor and also connected to move the adjusting piston in a second direction;
an adjusting lever connected to operate the spring unit such that an adjustment of the adjusting lever varies the tension in the rpm governor spring;
a distributor mounted in the housing parallel to the adjusting piston;
an annular slide mounted on the distributor;
a governor lever having first and second ends, which is mounted on a pivot and is connected at the first end to be



operated by the adjusting piston and connected at the second end to the annular slide to position the annular slide on the distributor;
said spring unit having at least two additional springs of unequal strength, a first spring of said spring unit functioning as a starting spring and cooperating with said adjusting piston and a second spring of said spring unit cooperating with said governor spring, said second spring arranged to engage said adjusting piston via cap which is supported during starting on said housing and guided on said adjusting piston.

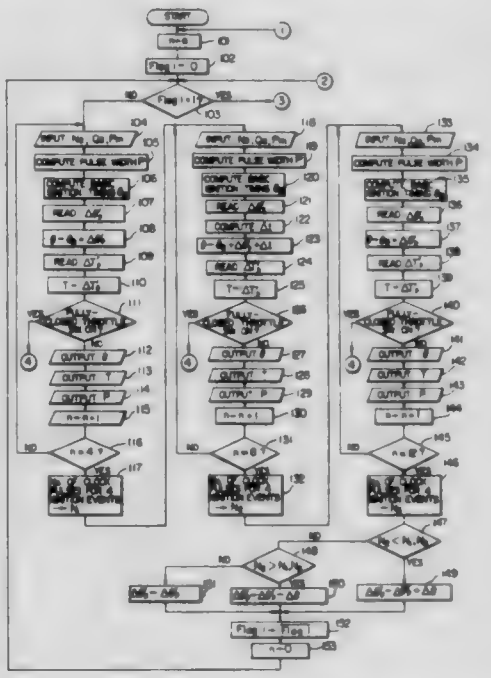
4,403,584

METHOD AND APPARATUS FOR OPTIMUM CONTROL FOR INTERNAL COMBUSTION ENGINES

Atsushi Suzuki, and Masakazu Ninomiya, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 2, 1981, Ser. No. 298,613
Claims priority, application Japan, Sep. 5, 1980, 55-123817
Int. Cl.³ F02D *37/02*
U.S. Cl. 123—417 **8 Claims**

1. A method for optimum control for internal combustion engines using memory means preliminarily storing, in the form of maps, values of ignition timing and air-fuel ratio as control variables of an internal combustion engine in accordance with parameters indicative of operating conditions of said engine and alternately performing an ignition timing optimizing control and an air-fuel ratio optimizing control, wherein:
said ignition optimizing control executing at least one cycle of an ignition timing optimization processing comprising:
operating said engine, with the value of air-fuel ratio being maintained constant at a value stored in the map, at at least two ignition timings including one of said stored values of ignition timing for a predetermined time period,
detecting signals indicative of one of engine rotational speed and engine output torque resulting from the operations of said engine at said at least two ignition timings, respectively,
comparing with one another said detection signals resulting from the operations of said engine over at least three successive ones of said predetermined time periods among said detection signals resulting from the operations of said engine at said at least two ignition timings,
deciding from the result of the comparison a direction of correction in which the rate of fuel consumption of said engine is to be improved, and
correcting in said direction said one of said stored values of ignition timing; and
said air-fuel ratio optimizing control executing at least one cycle of an air-fuel ratio optimization processing comprising:
operating said engine, with the value of ignition timing being maintained constant at a value stored in the map, at at least two air-fuel ratios including one of said stored values of air-fuel ratio for a predetermined time period,



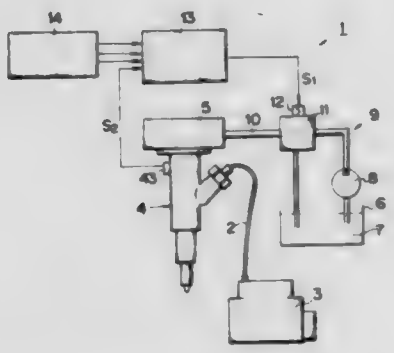
detecting signals indicative of one of engine rotational speed and engine output torque resulting from the operations of said engine at said at least two air-fuel ratios, respectively,
comparing with one another said detection signals resulting from the operations of said engine over at least three successive ones of said predetermined time periods among said detection signals resulting from the operations of said engine at said at least two air-fuel ratios,
deciding from the result of the comparison a direction of correction in which the rate of fuel consumption of said engine is to be improved, and
correcting in said direction said one of said stored values of air-fuel ratio.

4,403,585

FUEL INJECTION NOZZLE SYSTEM

Tomonori Ohie, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1981, Ser. No. 329,085
Claims priority, application Japan, Dec. 15, 1980, 55-175762
Int. Cl.³ F02D *1/04*; F02M *39/00*
U.S. Cl. 123—446 **12 Claims**



1. A fuel injection nozzle system for use in injecting fuel into an internal combustion engine, comprising:

an injection-valve which is capable of being adjusted in its injection-valve opening pressure;
means for adjusting the opening pressure of said injection-valve;
at least one sensor for detecting a condition of the operation of said engine;
a first citcuit responsive to the output signal from said sensor for generating a first signal indicative of a target value of the injection-valve opening pressure which is in accord with the condition of the operation of said engine;
a second circuit for generating a second signal indicative of the actual set value of the opening pressure of said injection-valve set by said adjusting means; and
a third circuit responsive to said first signal and said second signal for generating a third signal for driving said adjusting means in such a way that said actual value is coincident with said target value.

4,403,586

FUEL INJECTION PUMP OF INTERNAL COMBUSTION ENGINE

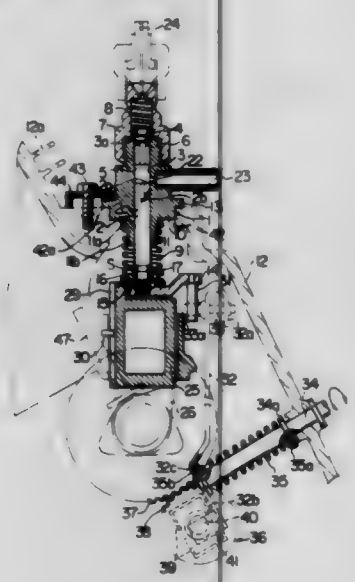
Hiroyuki Taniguchi, Otsu, Japan, assignor to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed Jul. 11, 1980, Ser. No. 167,463

Claims priority, application Japan, Dec. 11, 1979, 54-172046[U]; Dec. 11, 1979, 54-172047[U]; Dec. 17, 1979, 54-175384[U]; Dec. 17, 1979, 54-175385[U]; Dec. 18, 1979, 54-175910[U]; Dec. 18, 1979, 54-175911[U]; Dec. 26, 1979, 54-183206[U]; Dec. 28, 1979, 54-183217[U]; Dec. 28, 1979, 54-183218[U]

Int. Cl.³ F02M 39/02

U.S. Cl. 123—509 **3 Claims**



1. A fuel injection pump of an internal combustion engine comprising:
a pump body;
a disk-shaped flange formed integrally with said pump body at an intermediate portion thereof for positioning and securing said pump body directly to an engine body;
a plunger;
a plunger sliding bore formed in said pump body for receiving said plunger for sliding reciprocatory movement;
a discharge valve mounted on an end portion of said plunger sliding bore corresponding to an upper end portion of said plunger so that said end portion of said plunger sliding bore can guide said discharge valve;
a guide cylinder formed in a lower end portion of said pump body and having an annular engaging surface supporting an upper end portion of a plunger returning spring force fitted thereon; and a spring rest mounted on a lower end of said plunger returning spring force fitted thereon, whereby said pump body and said plunger can be unitarily connected to eafh other through said plunger returning spring, wherein said annular engaging surface of said pump body and an outer peripheral surface of said spring rest are each formed with a spring engaging recess, and said plunger returning spring has radially inwardly bent portions each formed at one of upper and lower ends thereof, said radially inwardly bent portions of said plunger returning spring being received and secured in said spring engaging recess of said pump body and said spring engaging recess of said spring rest.

4,403,587

FUEL EVAPORATIVE EMISSION CONTROL APPARATUS FOR VEHICLES

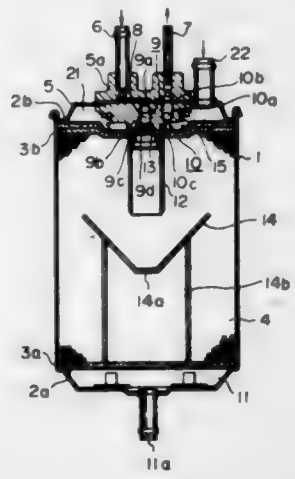
Junzi Mizuno; Akira Fukami, both of Okazaki; Hiroki Noguchi, Obu, and Takeshi Ishii, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed Mar. 18, 1982, Ser. No. 359,298

Claims priority, application Japan, Mar. 23, 1981, 56-40410

Int. Cl.³ F02M 37/02

U.S. Cl. 123—519 **18 Claims**



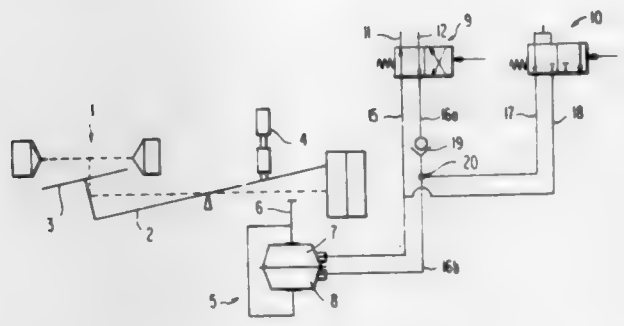
1. A fuel evaporative emission control apparatus for vehicles which comprises a cylindrical vessel in which an adsorbent for adsorbing a vaporized fuel is filled so that open spaces are formed on both ends of the vessel, a vaporized fuel inlet conduit connected to a fuel tank, said conduit being inserted in a layer of said adsorbent from one end of said vessel, and an air-fuel mixture discharge conduit for discharging an air-fuel mixture desorbed from said adsorbent to the outside of said apparatus, said air-fuel mixture discharge conduit being connected to one of said open spaces at the ends of the vessel with the other open space being used as a purge chamber communicated with the open air, wherein the improvement comprises a flow deflector of hollow conical shape or hollow conical frustrum shape having a diameter gradually increasing toward said vaporized fuel inlet conduit, said deflector being embedded in said adsorbent layer coaxially with said vaporized fuel inlet conduit to confront said vaporized fuel inlet conduit, a vertical angle (α) of said flow deflector is adjusted to 60° to 120°, the ratio (S1/S2) of a sectional area (S1) of a largest-diameter end portion of said flow deflector to a sectional area (S2) of said adsorbent layer is adjusted to 0.4 to 0.6, the ratio (a/b) of a distance (a) between the largest-diameter end portion of said flow deflector and a top end of said adsorbent layer to a distance (b) between said largest-diameter end portion of said flow deflector and a side end of said adsorbent layer is adjusted to at least 1.5, and said distance (a) is made smaller than the sum (g+b) of said distance (b) and a length (g) of said vaporized fuel inlet conduit in said adsorbent layer in an axial direction.

4,403,588

FUEL INJECTION SYSTEM FOR OTTO ENGINES

Dietrich Fischer, Bergien, Fed. Rep. of Germany, assignor to Daimler-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed Jun. 16, 1981, Ser. No. 274,187
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1980, 3022632
Int. Cl.³ F02M *21/02*
U.S. Cl. 123—525 11 Claims



1. A mechanism for the selective operation of Otto engines by means of gaseous and liquid fuels having a throttling member, that can be blocked by a pin, and a double-acting vacuum element which, on the one hand, can be acted upon by vacuum coming from an intake pipe and, on the other hand, by atmospheric pressure, characterized in that the mechanism is intended for a fuel-injection system having mixture controls, and comprises

an air meter and a fuel-volume divider means, where the pin can be adjusted by means of.a vacuum element;

two duct means are connected to the vacuum element; and

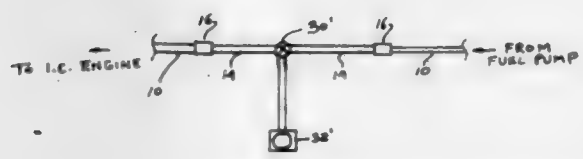
the pair of duct means branches into two respective pairs of ducts which are parallel to one another, where one pair of ducts is connected with a 4/2-way valve means, and the other pair of ducts is connected with a 3/2-way valve means.

4,403,589

SPARE TANK SYSTEM FOR MOTOR VEHICLE

John G. Bowen, 11521 Heathcliff Ave., Santa Ana, Calif. 92705, and Eugene N. Kovalenko, 461 Peralta, Long Beach, both of Calif. 90803

Continuation-in-part of Ser. No. 160,975, Jun. 19, 1980, abandoned. This application Jul. 6, 1981, Ser. No. 280,224
Int. Cl.³ F02M *21/02*
U.S. Cl. 123—525 5 Claims



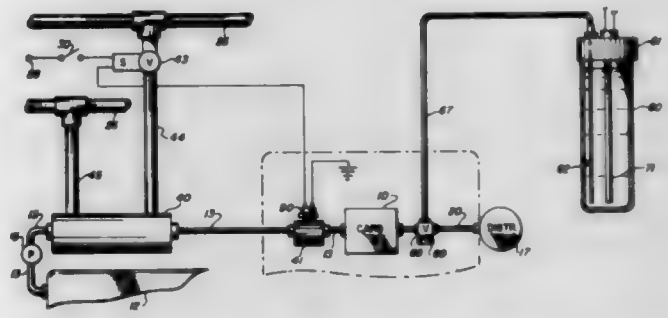
1. A spare tank emergency fuel system for an internal combustion engine of a motor vehicle comprising: a conduit adapted to be interposed in the fuel line of the internal combustion engine; a valve mounted in said conduit and having a first position for permitting the free flow of fuel through the fuel line and through the conduit from the normal fuel supply system to the internal combustion engine, and said valve also having a second position for isolating the normal fuel supply system from the internal combustion engine; a pressurized container of fuel constituting an auxiliary fuel source and having a nozzle; and a fitting coupled to the conduit for receiving the nozzle to enable the fuel to flow from the pressurized container through the conduit to the internal combustion engine when the valve is in its second position.

4,403,590

ENGINE FUEL CONSUMPTION REDUCTION SYSTEM

James P. Davis, Anaheim, Calif., assignor to Rodew International, Alta Loma, Calif.

Continuation of Ser. No. 18,507, Mar. 8, 1979, abandoned. This application Jul. 20, 1981, Ser. No. 285,413
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 1 Claim



1. A system for increasing the fuel economy of an engine fueled by a liquid petroleum fuel and having a source of fuel and a fuel distributing device, said system including in combination:

heating means having a fuel inlet and a fuel outlet located between said source of fuel and said fuel distributing device for heating said fuel to a predetermined temperature;

a linear fuel line located within said heating means;

an enlarged fuel chamber located within the heating means and positioned at the output portion of said linear fuel line for providing more accurate temperature control;

said heating means having proximity to said fuel distributing device;

insulating means at least partially surrounding said herating means for substantially thermally isolating said heating means at the location where said heating means is transferring heat to said fuel;

sensing means located within said insulating means and within said enlarged fuel chamber for sensing the temperature of fuel entering said fuel distributing device for controlling the temperature of said fuel at said predetermined temperature;

said sensing means comprising a thermostatic switch means coupled with said heating means for turning off said heating means when the temperature of said fuel entering said fuel distributing device exceeds said predetermined temperature by a predetermined amount;

said engine comprising a liquid cooled engine having a cooling system;

said heating means comprising a heat exchanger connected with said engine cooling system to obtain heat therefrom;

said fuel being supplied from the source of fuel to said fuel distributing device through a fuel line coupled in heat exchanging relationship with said heat exchanger;

means for supplying fluid from said engine cooling system to said heat exchanger;

a valve for controlling the flow of heating fluid from said engine cooling system through said heat exchanger so that said sensing means can operate to open said valve when the temperature of said fuel is above said predetermined temperature;

said valve comprising an electrically operated valve;

said temperature sensing means comprising said thermostatic switch means connected in series with said electrically operated valve across a voltage supply;

said enlarged chamber means comprising a heat chamber disposed proximal to said heating means outlet so that a portion of said thermostatic switch means is placed in said fuel proximal to and in communication with said fuel distributing device;

said fuel comprising gasoline; and

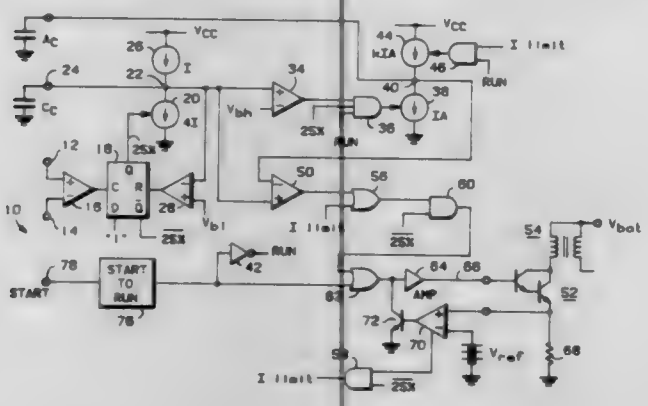
said predetermined temperature having a range of about 115° F. to about 130° F.

4,403,591

IGNITION SYSTEM HAVING VARIABLE PERCENTAGE CURRENT LIMITING

Howard F. Weber, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 13, 1981, Ser. No. 253,770
Int. Cl.³ F02P *9/00*
U.S. Cl. 123—609 **9 Claims**



1. An adaptive dwell ignition system for engine control wherein the excess dwell current time during which the magnitude of current in an ignition coil is limited prior to discharge thereof is caused to be varied in response to variations in engine rpm, the ignition system which is responsive to the initiation of timing signals generated in timed relationship with the engine to charge and discharge the coil includes a threshold circuit for producing a variable threshold signal whereby the percent of excess dwell current time in each firing cycle period is varied, the improvement comprising the threshold circuit being responsive to the initiation of each firing cycle period for causing the magnitude of the threshold signal to be decreased at a first rate during a predetermined percent of the firing cycle period minus a predetermined constant time interval of said percent of firing cycle period during which interval the magnitude of the threshold signal is held constant, the threshold circuit maintaining said magnitude of the threshold signal substantially constant thereafter until current limiting occurs at which time the magnitude of the threshold signal is caused to be increased at a second rate until the coil is discharged.

4,403,592

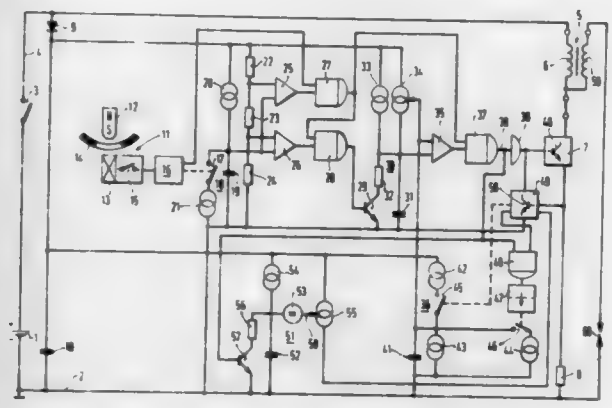
ENGINE IGNITION SYSTEM WITH AUTOMATIC TIMING SHIFT

Adolf R. Fritz, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 374,255
Claims priority, application Fed. Rep. of Germany, May 12, 1981, 3118679
Int. Cl.³ F02P *1/00*
U.S. Cl. 123—609 **8 Claims**

1. An ignition system for an internal combustion engine comprising an ignition coil (5) having primary and secondary windings, an interruptor switch (7) having its switching path in series with said primary winding and a source of voltage, means including an engine-driven generator (11) and a switching path (15) controllable by said generator for causing the switching path of said interruptor switch (7) to go from its conducting state into its blocking state at an ignition instant suitable for producing a spark in a circuit connected to said secondary winding, and a main electric storage circuit (30) for providing a first control voltage acting after said ignition initiation by said switching path (15) controlled by said generator (11) for timing return of said path of said interruptor switch to a conducting condition in a manner utilizing in alternation a first voltage change (f) in one direction and a second voltage change (l) more gradual than the first and in the opposite direction, and means responsive to said control voltage reaching a first threshold value (m) in the course of said second voltage change (1) for causing a change of the condition of said interruptor switch path to a conducting condition, as well as means for modifying said first threshold voltage (m) by application of a regulating value (q) dependent at least in part on the engine speed, said ignition system further comprising, in accordance with the invention:

an auxiliary electric storage circuit (18) for providing a second control voltage acting after said ignition initiation by said switching path (15) controlled by said generator (11), including means for generating an auxiliary signal (c) beginning at the moment of said ignition initiation and having a signal duration which is at least coextensive in time with the duration of said first voltage change (f) of said main electric storage circuit (30), and at the same time causing a first voltage change (d) to take place in said auxiliary electric storage circuit (18), said first voltage change (d) being followed by a second voltage change in the opposite direction, the beginning of which is timed by the return to a conducting state of said switching path (15) under control of said generator (11).

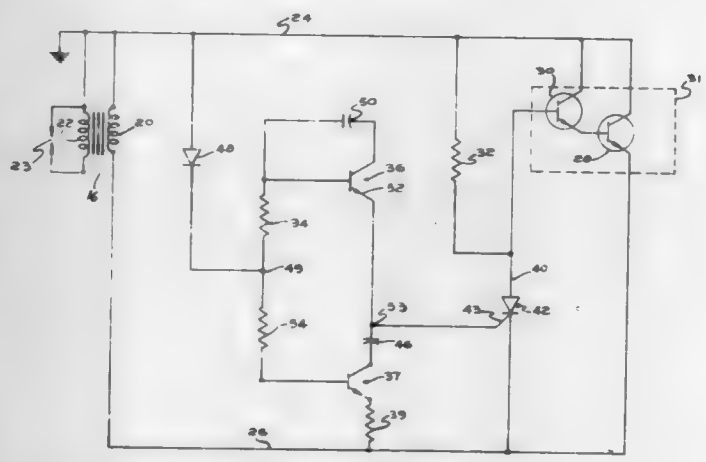


4,403,593

ELECTRONIC SWITCHING FOR SOLID STATE IGNITION

Michael J. Piteo, Enfield, Conn., assignor to R. E. Phelon Company, Incorporated, East Longmeadow, Mass.

Filed Feb. 1, 1982, Ser. No. 344,609
Int. Cl.³ F02P *1/08*
U.S. Cl. 123—651 **6 Claims**



1. In a breakerless ignition system for internal combustion engines having an ignition transformer including a primary coil associated with a rotating magnetic means for inducing current in the primary coil whose frequency is directly related to the engine rpm and in which said coil is connected into a primary current circuit containing an electronic switching means for making and breaking the circuit, a control circuit for actuating said switching means at a predetermined position of rotation of the magnetic means, said control circuit connected to receive

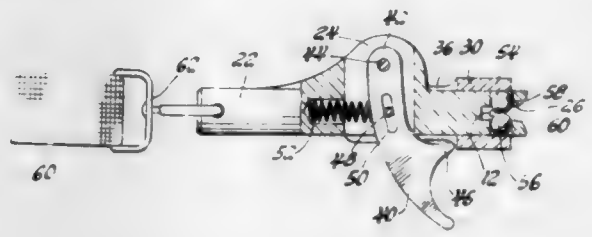
a portion of the current from the primary circuit and including a capacitor for storing voltage which, at a predetermined level, causes actuation of said electronic switching means; said control circuit including an input branch for controlling the rate of charging of the capacitor as a function of the frequency of the current pulses generated in the primary coil whereby, as the engine rpm increases, the feed rate for charging said capacitor decreases.

4,403,594

BOW STRING RELEASE

Gary J. Todd, 8324 Southfield Dr., Utica, Mich. 48087

Filed Dec. 21, 1981, Ser. No. 332,470
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—35 A **3 Claims**



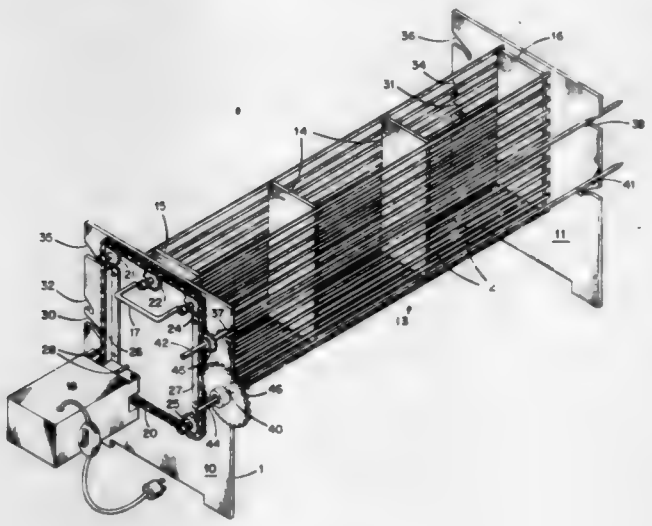
1. A bow string release device comprising:
a body having a slot for receiving a bow string;
a pair of balls mounted in said body on opposite sides of the slot, said balls being relatively movable from a first position in which they are adjacent one another and engage the bow string to prevent removal thereof from said slot, toward a second position in which they permit passage of the bow string therebetween;
a release member comprising a sleeve having an opening, the body being slideably mounted in the opening for movement between a string-retaining position in which the slot in the body is disposed within the sleeve to prevent movement of the balls from said first position, and a release position in which the slot in the body extends beyond the sleeve permitting movement of the balls toward said second position; and
means connected to the release member for moving it from the string-retaining position to the release position as at such times as said pair of balls are engaged with a bow string.

4,403,595

BARBECUE GRILL

Stanley J. Maesk, 39 Celeste St., Manchester, N.H. 03103

Filed Jun. 2, 1981, Ser. No. 269,698
Int. Cl.³ A47J *37/00*
U.S. Cl. 126—25 A **2 Claims**



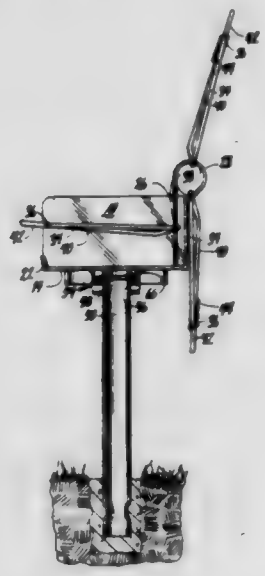
1. A barbecure grill comprising:
(a) a first end support;
(b) a second end support;
(c) a plurality of metal strips extending from said first end support to said second end support so as to form a cage open at the top;
(d) a plurality of matching slots around the peripheries of said first end support and said second end support for receiving rotatable spits, said slots being lateral of said cage and provided with a plurality of different depths whereby the distance of a spit from said cage can be selected;
(e) a motor driven chain mounted on said first end support with said chain supported on sprockets so as to pass adjacent to said slots; and,
(f) spits having sprockets of a plurality of different diameters whereby a spit having a large diameter sprocket will be driven by said chain when placed in a shallow slot and a spit having a small diameter sprocket will be driven by said chain when placed in a deep slot.

4,403,596

STRONG CANTILEVERED PARK GRILL

Craig R. Thomas, Cherokee, Iowa, assignor to R. J. Thomas Manufacturing Co., Cherokee, Iowa

Filed Feb. 22, 1982, Ser. No. 350,988
Int. Cl.³ A47J *37/00*; F16M *13/00*
U.S. Cl. 126—25 A **8 Claims**



1. An outdoor park grill of superior strength and resistance to wear, vadalism and deformation stress, comprising:
a firebox having a bottom, a pair of spaced apart sidewalls, a back wall and an open front;
a pair of spaced apart vertically oriented grate posts attached to said bottom and extending upwardly out of said firebox and looping around to engage the backwall of said firebox;
an adjustable grate for extension over the firebox defined by spaced apart grate sidebars and front and rear bars extending between said sidebars, and a plurality of rack bars extending therebetween;
said grate sidebars having a front handle portion and a rear eyelet which slidably engages said grate posts and also dwells in a different plane than said rack bars to provide a combination of compression and tension when downward pressure is placed on said handle portions.

4,403,597

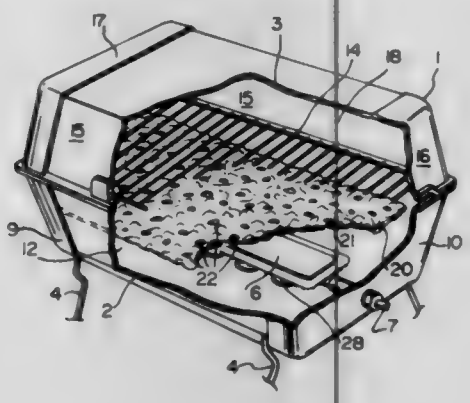
HEAT TRANSFER DEVICE

Don J. Miller, 5036 Barron Dr. NW., Calgary, Alberta, Canada (T2E 6R7)

Filed Jan. 16, 1981, Ser. No. 225,662
Int. Cl.³ A47J *37/00*; F23D *3/40*
U.S. Cl. 126—41 R **5 Claims**

1. In a gas barbecue of the type including burner means, food

support means for supporting food above the burner means, and a heat transfer device between said burner means and said support means, all enclosed within a casing having an openable cover, the improvement wherein said heat transfer device comprises at least one solid one-piece, metal heat conducting plate of sufficient thickness and strength to be self-supporting in span if supported at its edges, and having a generally continuous surface formed with a plurality of spaced openings in said plate separated by substantial surface portions of the plate, said



openings extending through said plate from the top surface to the bottom surface thereof, the top surface of said plate being formed with projections and depressions to resemble a lava bed or charcoal, the areas of said top surface around each of said openings being inclined toward said openings to promote the flow of food juice droplets into and through said openings, the inclinations and extent of said areas being such that in use at least a substantial number of food juice droplets at least partially vaporize while floating on vapor films and flowing along said areas toward said openings.

4,403,598

HEATING ELEMENT FOR AN OPEN FIREPLACE

Cono T. Scaffidi, 3401 E. Pratt St., Baltimore, Md. 21224

Filed Nov. 24, 1980, Ser. No. 209,879
Int. Cl.³ F24B *7/00*
U.S. Cl. 126—121 **10 Claims**

1. A substantially indistinguishable heating element for an open fireplace, comprising:

a first jacket means, the interior of said first jacket means being hollow, said first jacket means serving as a bottom;

a second jacket means, the interior of said second jacket means being hollow, said second jacket means being affixed to said first jacket means, said hollow interiors of said first and second jacket means communicating with each other, said second jacket means serving as a first side;

a third jacket means, the interior of said third jacket means being hollow, said third jacket means being affixed to said first jacket means, said hollow interiors of said first and third jacket means communicating with each other, said third jacket means serving as a second side;

an inlet means, said inlet means being pipe-like, said inlet means being affixed to said second jacket means, said pipe-like inlet means communicating with said interior of said second jacket means;

an outlet means, said outlet means being pipe-like, said outlet means being affixed to said third jacket means, said pipe-like outlet means communicating with said interior of said third jacket means;

a communicating means, said communicating means being pipe-like, said communicating means being affixed to and between said second and third jacket means, said pipe-like communicating means communicating with said interiors of said second and third jacket means, said first, second, and third jacket means, said inlet and outlet means, and said communicating means forming a heating element for installation in an open fireplace, said communicating means being obscured from view when installed in said open fireplace;

brick-like scoring, said brick-like scoring being applied to the innermost of outer surfaces of said second and third jacket means, said brick-like scoring conveying a brick-like appearance; and

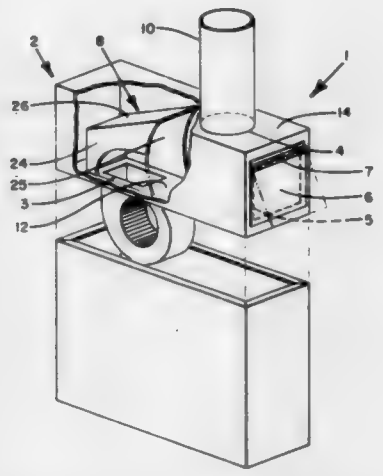
a ceramic-like coating, said ceramic-like coating being heat resistant and non-insulating, said ceramic-like coating being applied to said innermost of outer surfaces of said second and third jacket means over said brick-like scoring.

4,403,599

SPILLAGE DAMPER FOR A COMBUSTION SYSTEM

Lloyd F. Copenhaver, Indianapolis, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 18, 1980, Ser. No. 207,855
Int. Cl.³ F23J *11/00*
U.S. Cl. 126—312 **3 Claims**



1. A flue gas discharge box for a combustion system having a fan unit which directs gaseous products of combustion from a heat exchanger assembly through said discharge box to a flue pipe, said discharge box comprising:

a housing sized and positioned to provide a negative pressure region through which the combustion products pass on their way to the flue pipe;

a first opening in the housing for receiving the combustion products directed to the housing by the fan unit;

a second opening in the housing connected to the flue pipe for discharging the combustion products from the housing into the flue pipe;

a third opening in a vertical sidewall of the housing; and

a movable panel, pivotally connected to the housing above the third opening to hang in a substantially vertical position, for covering the opening in the housing during normal operation of the combustion system when the pressure in the housing is less than surrounding atmospheric pressure whereby the panel is forced closed by the pressure difference across the panel, and for uncovering the opening in the housing when the pressure in the housing is greater than surrounding atmospheric pressure whereby the panel is forced open by the pressure difference across the panel.

4,403,600

MODULAR SOLAR HEATING SYSTEM

Herbert F. Morrison, R.D. No. 7, 46 Boniello Dr., Mahopac, N.Y. 10541, and David A. Miller, 2 Beverly La., Marlborough, Conn. 06447

Filed Dec. 7, 1981, Ser. No. 327,955
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **6 Claims**

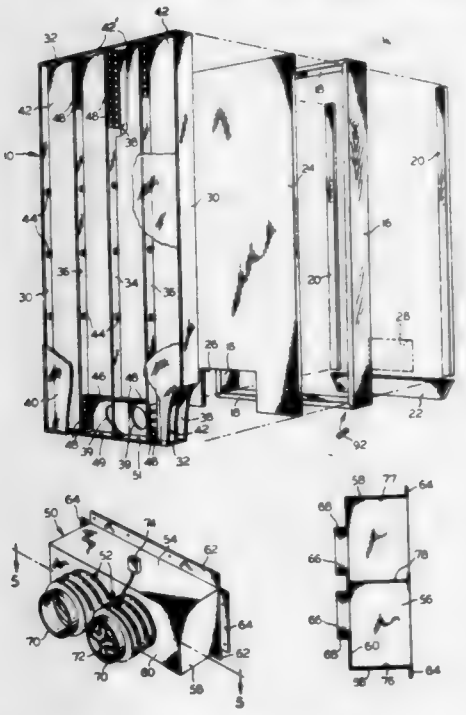
1. An active solar heating system adapted for retrofit installation in a building, with minimal structural modification thereto, comprising:

(1) a solar collector module adapted for mounting upon an outside building wall, including a frame having disposed therein a transparent front panel and a spaced generally

parallel rear panel defining an air flow space therebetween, and at least one member dividing said space, in a plane perpendicular to the planes of said front and rear panels, into two chambers, said rear panel having a pair of adjacent apertures formed therethrough near one end of said module, one of said apertures communicating with each of said chambers and said apertures being substantially isolated from one another by said dividing member, said chambers being in air flow communication with one another adjacent the opposite end of said module, thereby establishing a double-pass air flow path between said apertures through said module; and

(2) a plenum box assembly for actively circulating room air through said module, said assembly including:

(a) a box defining a plenum with an open front side, and adapted for installation in an opening formed through the building wall, with said open side disposed to the interior of the building and lying substantially in the



plane of the interior wall surface, said box having an internal barrier member dividing said plenum into two adjacent compartments, and a rear wall with a pair of passages formed therethrough, each communicating with one of said plenum compartments,

(b) a pair of flexible conduits connected to said box and said module with one of said conduits providing air flow communication between one of said compartments of said plenum box and one of said chambers of said module through said passages and apertures thereof, respectively, and

(c) blower means mounted substantially within one of said conduits for inducing such air flow circulation,

whereby said system is readily installed by forming an opening through an outside wall of the building, mounting said module exteriorly thereon and mounting said plenum box within said opening, and establishing air flow communication between said module and said box by connecting said conduits therebetween.

4,403,601

RADIATION RECEIVER

Arlon J. Hunt, Oakland, Calif., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

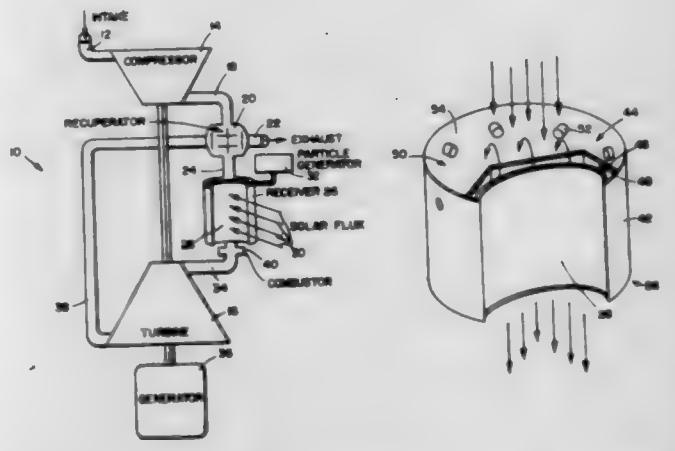
Division of Ser. No. 61,165, Jul. 26, 1979, Pat. No. 4,313,304.
This application Mar. 13, 1981, Ser. No. 243,396
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—435 **9 Claims**

1. A radiation receiver comprising:

a housing having an interior space;

at least one radiation transparent window provided in the periphery of said housing for allowing radiation to be received in the interior space of said housing;

a radiation transparent heat shield spaced from said radiation transparent window wherein said heat shield divides said interior space into a first compartment defined between said window and said heat shield and a second compartment;



means for passing a first stream of fluid through said first compartment and a second stream of fluid through said second compartment; and

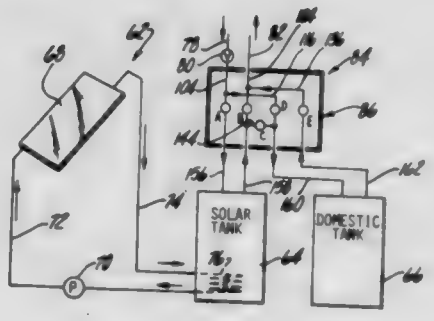
means for injecting solar radiation absorbent vaporizable particles into the stream of fluid passing through said second compartment, whereby agglomeration of the particles is eliminated and partical damage to associated turbine blades is prevented.

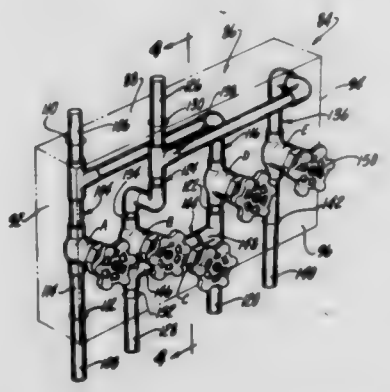
4,403,602

CONTROL VALVE UNIT FOR SOLAR ENERGY SYSTEM

Jerry T. Warden, 2806 Midwood, Lansing, Mich. 48910

Filed Mar. 8, 1982, Ser. No. 355,917
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—435 **12 Claims**





5. A control valve unit for controlling the flow of water through a solar energy system that includes a cold water supply, a hot water supply, a solar energy heated water storage tank having an inlet and an outlet, and a conventionally heated water storage tank having an inlet and an outlet, said control valve unit comprising, in combination, a housing, a first inlet pipe, first valve means controlling the flow of water through said first inlet pipe, a second inlet pipe, one end portion of said

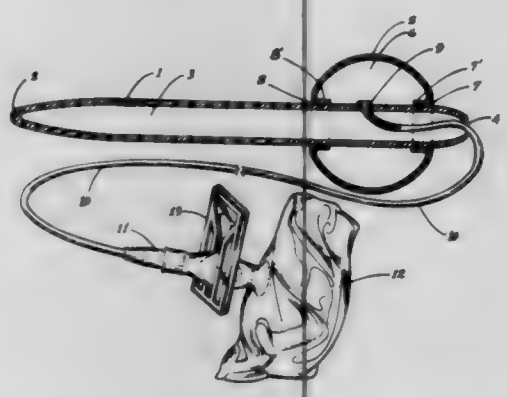
second inlet pipe being connected to said first inlet pipe at a position upstream of said first valve means, second valve means controlling the flow of water through said second inlet pipe, a first outlet pipe, third valve means controlling the flow of water through said first outlet pipe, a second outlet pipe, one end portion of said second outlet pipe being connected to said first outlet pipe at a position downstream of said third valve means, fourth valve means controlling the flow of water through said second outlet pipe, a cross pipe, one end portion of said cross pipe being connected to said first outlet pipe at a position upstream of said third valve means, the opposite end portion of said cross pipe being connected to said inlet pipe at a position downstream of said second valve means, and fifth valve means controlling the flow of water through said cross pipe, one end portion of said first inlet pipe being connectible to said cold water supply, the other end portion of said first inlet pipe being connectible to said inlet of said solar energy heated tank, the other end portion of said second inlet pipe being connectible to said inlet of said conventionally heated tank, one end portion of said first outlet pipe being connectible to said hot water supply, the other end portion of said first outlet pipe being connectible to said outlet of said solar energy heated tank, the other end portion of said second outlet pipe being connectible to said outlet of said conventionally heated tank.

4,403,603

METHOD TO ENHANCE ARTIFICIAL DOG BREEDING

Rhonda P. Hutchins, 414 C Old Jamestown Rd., Florissant, Mo. 63034

Continuation of Ser. No. 81,695, Oct. 4, 1979, abandoned. This application May 4, 1981, Ser. No. 260,261
Int. Cl.³ A61B *19/00*
U.S. Cl. 128—1 R **4 Claims**



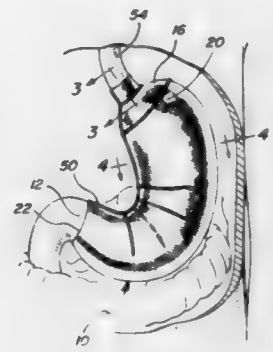
1. A method for promoting artificial breeding in dogs comprising; artificially inseminating a female dog, then inserting into the vagina of the dog the forward, phallic-simulative end portion of an elongated body having a surrounding fluid-inflatable chamber for disposition immediately distally of the constrictor vestibuli muscle of the female, inflating said chamber to be fluid-inflated for excitation of the vaginal musculature of the dog, whereby the constrictor vestibuli muscle contracts about said elongated body immediately rearwardly of said now inflated chamber developing a tie-forming relationship between said inflated chamber and said constrictor vestibuli muscle, holding said chamber inflated for a period of time approximating the interval for such tie during normal mating, then deflating said chamber, and then withdrawing said phallic-simulative end portion.

4,403,604

GASTRIC POUCH

Lawrence H. Wilkinson, and Lanette L. Wilkinson, both of 1516 Columbia Dr., NE., Albuquerque, N. Mex. 87106

Filed May 13, 1982, Ser. No. 378,004
Int. Cl.³ A61B *19/00*
U.S. Cl. 128—1 R **7 Claims**



1. The method of reduction of the capacity of a stomach, said method comprising the provision of an elongated generally rectangular flexible wrap panel having opposite ends and opposite side marginal edges and with the opposite side marginal edges each including longitudinally spaced laterally outwardly opening and inwardly tapering notches formed therein intermediate the opposite ends of the panel, a generally annular flexible yoke panel having adjacent opposing ends and a narrow elongated flexible strip panel, suturing the outer periphery of the yoke panel across one end of the wrap panel, suturing one longitudinal edge of the strip panel to the inner peripheral edge of the yoke panel, overlapping and suturing together the opposing edges of the wrap panel defining each notch to form darts in the panel and thereby conform the wrap panel to the shape of a stomach, placing the wrap panel along the greater curvature of the stomach with the central longitudinal zone of the wrap panel inwardly of the notches generally centered relative to the greater curvature, and thereafter suturing the opposite side marginal edges of the wrap panel snugly about the stomach, suturing the opposing ends of the yoke panel together about the esophagogastric junction and suturing the opposite ends of the strip panel together about the esophagus as well.

4,403,605

ENDOSCOPE PHOTOGRAPHING SYSTEM

Kowji Tanikawa, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1981, Ser. No. 255,692
Claims priority, application Japan, Apr. 25, 1980, 55-55008
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—6 **13 Claims**

1. In an endoscope photographing system which includes an endoscope, an endoscope camera optically coupled to said endoscope and a light source unit optically coupled to said endoscope,

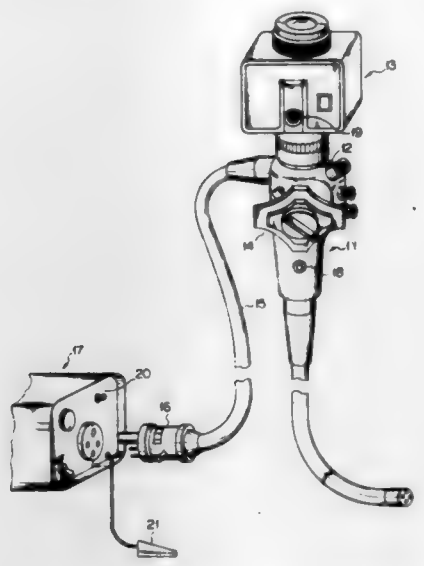
the improvement comprising:

at least two releasing means which are independently operable for initiating a photographing operation of said endoscope photographing system, each of said at least two releasing means being arranged on a respective different one of said endoscope, said endoscope camera and said light source unit;

release signal generating means coupled to each of said at least two releasing means for generating a release signal in response to the operation of any one of said releasing means;

means coupled to said release signal generating means for

executing a photographing operation cycle of said endoscope photographing system in response to a release signal generated by said release signal generating means; and



means for disabling another release signal generated in response to the operation of another of said releasing means during said executing of said photographing operation cycle which was initiated responsive to operation of the first operated one of said releasing means.

4,403,606

COMPATIBLE INTERNAL BONE FIXATION PLATE

Savio L-Y. Woo, Encinitas, and Wayne H. Akeson, La Jolla, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed May 9, 1980, Ser. No. 148,204
Int. Cl.³ A61F 5/04; A61B 17/18
U.S. Cl. 128—92 D **8 Claims**



1. A compatible internal fixation plate for diaphyseal bone fractures comprising:

a hollow elongated flat metal plate formed of biologically inert material;

said plate being provided with a plurality of transverse openings at each end for securing the plate to the bone on both sides of the fracture;

said plate including means for providing high bending and torsional stiffness but relatively low axial stiffness relative to a conventional solid metal fixation plate, said means including a continuous outer metallic surface with opposed inner walls spaced apart from one another to form a hollow metal-free central zone;

means for precluding bone ingrowth into the metal-free central zone of said plate; and

said plate including continuous integral structural metallic means extending between said openings at each end of said plate;

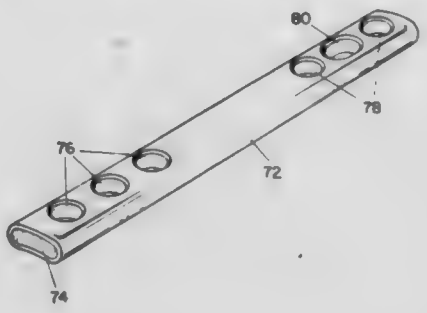
whereby bending and torsional rigidity is provided for early fracture healing, and the low axial stiffness of the plate inhibits osteoporosis and bone weakening during later stages of bone remodeling before the plate is removed.

4,403,607

COMPATIBLE INTERNAL BONE FIXATION PLATE

Savio L-Y. Woo, Encinitas; Wayne H. Akeson, La Jolla, both of Calif., and Dan L. Page, Warsaw, Ind., assignors to The Regents of the University of California, Berkeley, Calif.

Filed May 9, 1980, Ser. No. 148,205
Int. Cl.³ A61F 5/04; A61B 17/18
U.S. Cl. 128—92 D **10 Claims**



8. A compatible internal bone fixation plate comprising:

an anisotropic elongated bone fixation member formed of biologically inert tubular stock material, with a cross-sectional configuration having a closed integral outer periphery;

said bone fixation member including means for providing a relatively high level of resistance to bending and torsional forces comparable to that of conventional solid metallic fixation plates, and for concurrently providing a relatively low axial stiffness comparable to that of a bone, and substantially less than that of conventional solid metallic fixation plates;

said plate being provided with a plurality of transverse openings at each end thereof for securing the plate to a bone on each side of a fracture;

said plate including unitary or integral structural means extending between the transverse openings at each end of said plate; and

means for preventing bone ingrowth into said anisotropic plate, said plate having a substantially impervious outer surface;

whereby initial bending and torsional rigidity is provided for early fracture healing, and the low axial stiffness of the plate inhibits osteoporosis and bone weakening during later stages of bone remodeling before the plate is removed.

4,403,608

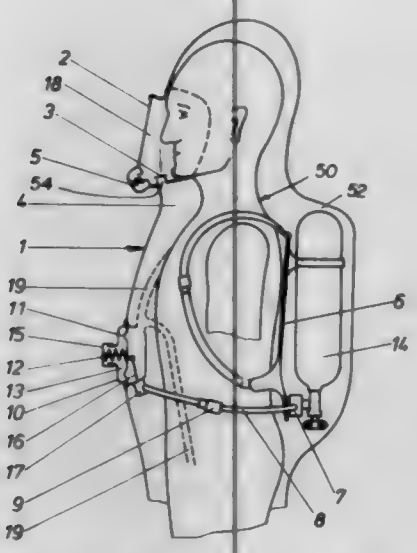
PRESSURE GAS VENTILATED PROTECTIVE SUIT AND METHOD OF OPERATING THE SUIT

Ernst Warncke, Lübeck, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 27, 1981, Ser. No. 248,495
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1980, 3015584
Int. Cl.³ A62B 7/04
U.S. Cl. 128—201.28 **13 Claims**

1. A pressure gas ventilated pressure suit comprising a suit adapted to cover a person including a head portion with a face encompassing part defining a breathing space in front of the face of the wearer and a body portion defining a pressure space separate from said breathing space, a connection between said pressure space and said breathing space, check valve means in said connection permitting flow of air from said pressure space to said breathing space upon there being a predetermined pressure differential between said spaces, exhaling valve pas-

sage means connected from said breathing space to the outside of said suit, and pressure gas supply means associated with said



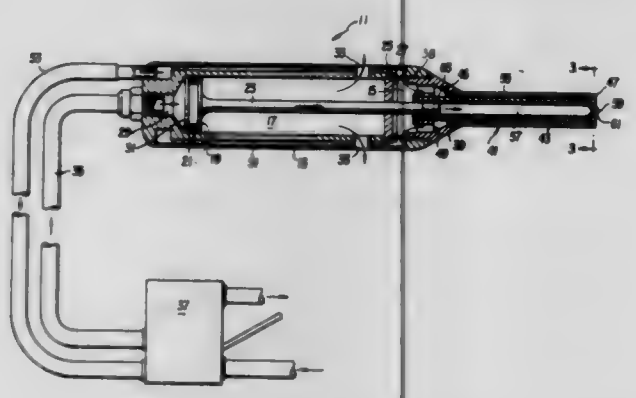
suit supplying gas under pressure to said pressure space to maintain it at a predetermined pressure.

4,403,609

VACUUM-COMPRESSION INJECTOR

Edgar C. Cohen, 4123 Vincennes Place, New Orleans, La. 70125

Filed Feb. 24, 1981, Ser. No. 237,563
Int. Cl.³ A61M *5/30*
U.S. Cl. 604—70 **10 Claims**



1. A needleless vacuum-compression injector comprising:

a continuous vacuum chamber and a pressurized gas chamber;

means for drawing a continuous vacuum in said vacuum chamber;

means for supplying pressurized gas to said pressurized gas chamber;

means for holding a medicament;

a nozzle having a passageway connected to said means for holding said medicament and for having said medicament expressed therethrough;

tissue immobilizing means including an outwardly extending surface spaced from and surrounding said nozzle wherein said nozzle substantially terminates in the plane of said surface;

said tissue immobilizing means further including an annular suction means formed in an annular region of said outwardly extending surface and spaced from and surrounding said nozzle, said annular suction means being in continuous communication with said vacuum chamber, said tissue immobilizing means, when positioned against said tissue, being operative to continuously draw said tissue toward said annular region and thereby immobilize and hold said tissue taut over said nozzle without puncturing said tissue and without substantially displacing said tissue from its initial condition; and,

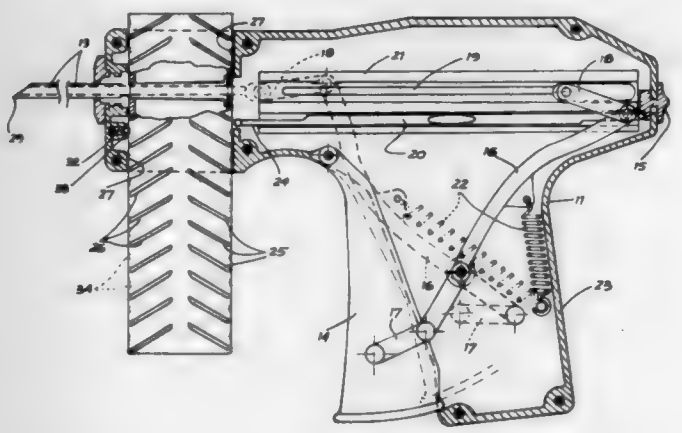
means adapted to express said medicament through said passageway and into said tissue upon application of said pressurized gas to said pressurized gas chamber.

4,403,610

GUN TO IMPLANT PELLETS IN ANIMALS

Robert H. Lodge, Wheeler Heights; Ian R. Phillips, Killara, and Mervyn F. Reynolds, Balgowlah, all of Australia, assignors to N.J. Phillips Pty. Limited, New South Wales, Australia

Filed Jun. 15, 1981, Ser. No. 273,551
Claims priority, application Australia, Jun. 19, 1980, PE4105
Int. Cl.³ A61M *5/18*
U.S. Cl. 604—61 **5 Claims**



1. A gun adapted to dispense pellets, said gun comprising a magazine formed with a plurality of passages within which the pellets are located, a plurality of projections on said magazine arranged in a predetermined relationship with respect to said passages, a gun body, a trigger movably supported by the body so as to be movable by an operator from a rest position to an actuated position, a first lever coupled adjacent one of its ends to said trigger, said lever being pivotally mounted intermediate its ends, an ejector rod adapted to be moved between a first and a second position, said ejector rod being coupled to the other end of said first lever so that upon said trigger being moved to said actuated position, said lever is caused to move from said first to said second position, guide means slidably engaging said ejector rod to cause it to move along a predetermined generally linear path, magazine support means adapted to receive said magazine so that a passage thereof is located at a predetermined position located on said path, said ejector rod, when moved from said first to said second position, being caused to move through one of said passages located at said predetermined position so as to eject a pellet located therein from within the gun, an indexing rod coupled to said other end of said lever, guide means slidably engaging said indexing rod so as to restrict the indexing rod to move along a generally linear further path between a retracted position when said trigger is in said rest position and an extended position when said trigger is in said actuated position, said further path being positioned so as to intersect projections so that upon engagement of said indexing rod with said projections said magazine is caused to move to locate a different one of said passages at said predetermined position, and wherein said indexing rod causes movement of said magazine upon movement of said indexing rod from said extended position to said retracted position.

4,403,611

SINUS EVACUATOR APPARATUS

Gerald J. Babbitt, 2424 N. Custis Rd., Arlington, Va. 22201, and Ahmet Kasap, 3306 Wyndale Ct., Woodbridge, Va. 22192

Filed Jul. 17, 1980, Ser. No. 169,684
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—73 **17 Claims**

1. A portable, flushable evacuator apparatus for aspiration of material from sinus cavities, said apparatus comprising:

(a) housing means including therein a vacuum producing

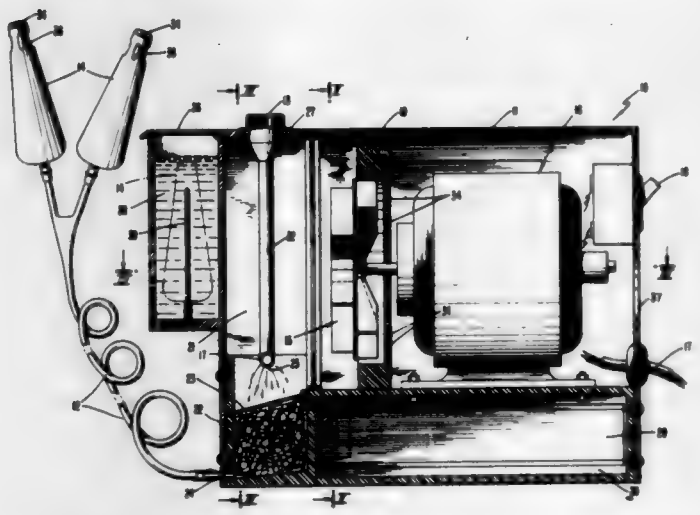
portion a mucus collection portion fixedly juxtaposed to one another and a means for flushing the mucus collecting portion with a cleansing fluid medium,

(b) propeller means rotatably mounted to a drive motor in the vacuum producing portion,

(c) catheter means connected to the mucus collection portion and being effective for insertion into a nasal opening,

(d) said propeller means being effective to produce only a suction to draw through the catheter means when said catheter means is inserted into a nasal opening,

(e) said propeller means being effective to produce an amount of suction sufficient to withdraw mucus material from the sinus cavities without causing irritation of the soft nasal tissues,



(f) said mucus collection portion having a mucus collecting compartment and a suction pervious barrier means that separates the mucus collection compartment from the vacuum producing portion and is flushable with the cleansing fluid medium to remove any mucus collected therein

(g) said barrier being effective to allow suction to be drawn through the catheter means while preventing mucus from entering the vacuum producing portion, and

(h) said flushing means being closable while said propeller means is producing a suction in said mucus collecting portion.

4,403,612

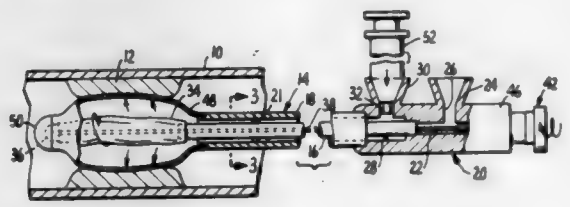
DILATATION METHOD

Thomas J. Fogarty, 770 Welch Rd., Palo Alto, Calif. 94304

Division of Ser. No. 198,342, Oct. 20, 1980, Pat. No. 4,338,942. This application Mar. 26, 1982, Ser. No. 362,295

Int. Cl.³ A61M *29/02*

U.S. Cl. 128—344 **4 Claims**



1. A method for inserting an inflatable balloon into a partially occluded section of a blood vessel and for dilating said section comprising axially twisting the balloon to reduce its diameter for passage along said vessel and into said partially occluded section, moving said balloon along said vessel while maintaining its axially twisted condition to emplace it in said section, moving said occluded section away from said balloon so that said section is not in pressing relationship with respect to said balloon and holding said section in such position while axially untwisting said balloon to an untwisted condition, and inflating said balloon to dilate said section.

4,403,613

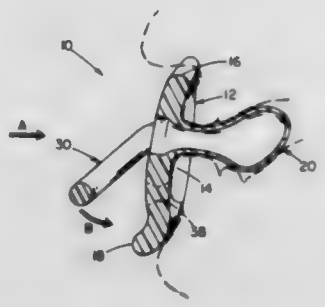
PACIFIER

Richard L. Panicci, Hanover, Mass., assignor to Kiddie Products, Inc., Avon, Mass.

Filed Mar. 9, 1981, Ser. No. 241,589

Int. Cl.³ A61J *17/00*

U.S. Cl. 128—360 **3 Claims**



1. A pacifier for an infant comprising:

a generally circular shield having an edge which is rounded and smooth,

said edge having a top which is disposed near the infant's nose when said pacifier is in place and a bottom which is disposed opposite said top,

said shield having a front side and a rear side, said front side being disposed adjacent to the infant's face when said pacifier is in place,

said shield having a nipple attached to and extending from said front side,

said shield having a substantially concave cross-section on said front side towards the infant's face from said top above said nipple when said pacifier is in place to the approximate midpoint between said nipple and said bottom, and a substantially convex cross-section on said front side towards the infant's face from the approximate midpoint between said nipple and said bottom to said bottom below said nipple, and

a handle means attached to and extending from said rear side of said shield.

4,403,614

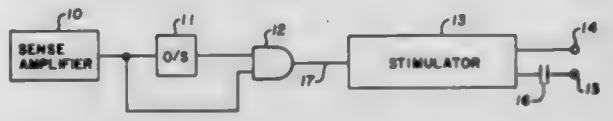
IMPLANTABLE CARDIOVERTER

William R. Engle, Blaine, Minn.; E. Neil Moore, Jr., Wallingford; Joseph F. Spear, Jr., Philadelphia, both of Pa., and Ronald H. Rockland, Parsippany, N.J., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 58,847, Jul. 19, 1979, abandoned. This application Feb. 27, 1981, Ser. No. 239,007

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 D **18 Claims**



1. A body implantable ventricular cardioverter which comprises:

means for detecting the onset of a malignant ventricular tachyarrhythmia;

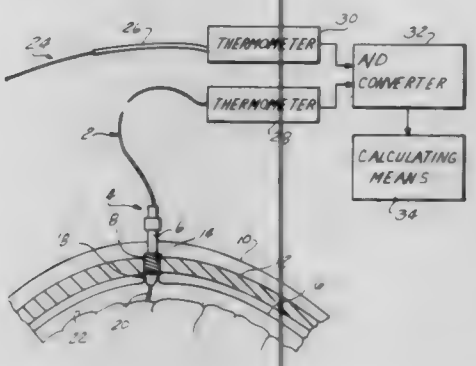
means responsive to the detecting means for providing a cardioverting signal, said cardioverting signal having an energy level that is high relative to a typical pacing threshold of 50 microjoules and below 45 joules that is typically necessary for defibrillation.

4,403,615

THERMAL METHOD FOR MEASURING BLOOD PERFUSION

Paul J. Hoehner, 1209 E. Belvedere Ave., Baltimore, Md. 21239

Filed Dec. 14, 1981, Ser. No. 330,568
Int. Cl.³ A61B 5/08
U.S. Cl. 128—692 **4 Claims**



1. A method for measuring blood perfusion comprising the steps of:

a. emplacing one temperature sensing means in contact with an organ of the patient;

b. inserting another temperature sensing means in a central artery of the patient;

c. injecting a fluid having a temperature substantially lower than the temperature of the blood of the patient into a vein of the patient;

d. recording the thermal temperature gradient of the blood perfusion through the portion of the organ in the patient's body;

e. recording the thermal temperature gradient of the blood flow through the artery of the patient;

f. calculating the area under the curve determined by the thermal temperature gradient of the blood perfusion through the portion of organ of the patient;

g. calculating the area under the curve determined by the thermal temperature gradient of the arterial blood flow; and

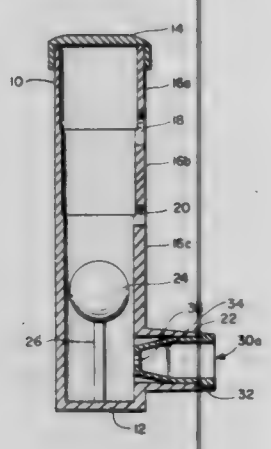
h. determining the difference between the two calculated areas to provide an indication of the rate of blood perfusion through the portion of the organ in the patient's body.

4,403,616

EXPIRATORY BREATHING EXERCISE DEVICE

George E. King, Barrington, R.I., assignor to K-Med, Inc., Flemington, N.J.

Filed Jun. 9, 1981, Ser. No. 271,984
Int. Cl.³ A63B 23/00
U.S. Cl. 128—725 **3 Claims**



1. An expiratory breathing exercise device comprising:

a substantially enclosed elongate air flow column disposed longitudinally in a generally vertical orientation, said air flow column having a horizontal cross-sectional interior dimension which increases in size upwardly in graduated increments over the length of said column;

an air inlet located in said column adjacent the bottom thereof;

connecting means for fluidly connecting said air inlet to the mouth of the user so that air expired from the user enters said column through said air inlet;

at least one air outlet located in said column above said air inlet through which expired air entering said air inlet is exhausted from said column;

an air flotation element movably disposed in said column so as to be lifted in said column by the blowing of air into said column with sufficient force by the user, said air flotation element being sized so as to fit relatively closely within said air flow column such that due to the increase in cross-sectional dimension of said column in increments, a given exhalation effort of the user causes said air flotation element to stabilize at a position in said air flow column relative to the cross-sectional dimension which corresponds to a given exhalation rate of air flow through said column and at a position where said air flotation element is visible to the user through said at least one air outlet; and

restriction means for altering the resistance to air flow through said connecting means and into said column whereby the effort expended by the user in the raising of said air flotation element to a predetermined position in said column is increased as the resistance to air flow increases,

said restriction means comprising a plurality of plugs having differing sized orifices, said plugs being interchangably insertable into said air inlet,

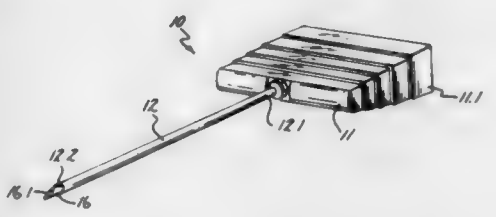
the interior of said plugs being funnel shaped in the direction of flow so that a smooth non-turbulent flow of air enters said column.

4,403,617

BIOPSY NEEDLE

Carl W. Tretinyak, Rochester, Minn., assignor to Waters Instruments, Inc., Rochester, Minn.

Filed Sep. 8, 1981, Ser. No. 299,981
Int. Cl.³ A61B 10/00
U.S. Cl. 128—754 **9 Claims**



1. In a biopsy needle comprising a hollow cannula with a sharpened distal end and a stylet coaxially received in the cannula and having a sharpened solid distal end protruding from the distal end of the cannula, the improvement wherein the sharpened distal end of the stylet includes an oblique, concave face forming a trough extending at an acute angle to, and intersecting, the axis of the stylet.

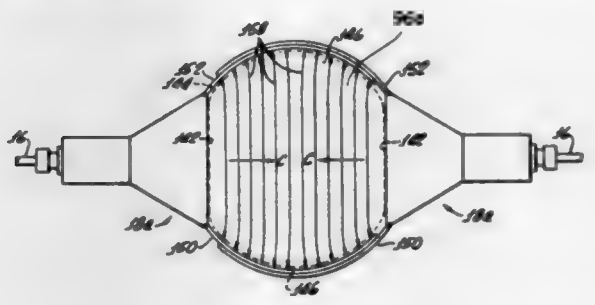
4,403,618
APPARATUS FOR ELECTROMAGNETIC RADIATION OF LIVING TISSUE AND THE LIKE

Paul F. Turner, North Salt Lake, and Om P. Gandhi, Holladay, both of Utah, assignors to BSD Medical Inc., Salt Lake City, Utah

Division of Ser. No. 2,584, Jan. 11, 1979, Pat. No. 4,271,848. This application Apr. 21, 1981, Ser. No. 256,019

Int. Cl.³ A61N *1/40*

U.S. Cl. 128—804 **1 Claim**



1. Electromagnetic radiation apparatus, which comprises:

(a) a plurality of applicators configured for irradiating living tissue and tissue simulating matter, each of said applicators having a radiation emitting surface; and,

(b) conductive means fixed to each of the applicators adjacent said emitting surface, for providing radiation emitting extensions, said conductive means including deformable first and second flaps adapted to be positioned at least partially around the tissue or tissue simulating matter in substantial overlapping relationship with at least one of the flaps of adjacent ones of the applicators to thereby enclose portions of the tissue or tissue simulating matter within a cavity defined by the radiation emitting surfaces and overlapping flaps.

4,403,619
METHOD AND APPARATUS FOR INFLUENCING THE PERMEABILITY OF WRAPPERS OF FILTER CIGARETTES OR THE LIKE

Rolf Dahlgrün, La Celle-St. Cloud, France, assignor to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

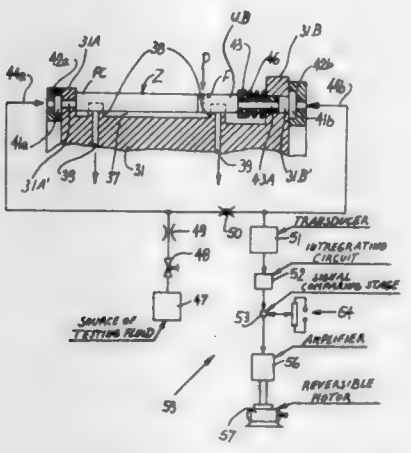
Division of Ser. No. 81,314, Oct. 3, 1979, Pat. No. 4,282,889. This application Apr. 20, 1981, Ser. No. 255,460

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1978, 2845342

The portion of the term of this patent subsequent to Aug. 11, 1998, has been disclaimed.

Int. Cl.³ A24C *5/00*

U.S. Cl. 131—280 **24 Claims**



1. A method of influencing the permeability of foraminous wrapping material for rod-shaped commodities which form part of or constitute smokers' products, comprising the steps of coating at least a portion of one side of the wrapping material with adhesive; converting the thus coated wrapping material into open-ended tubular wrappers of rod-shaped commodities; testing the air permeability of the wrappers and generating first signals denoting the measured air permeability of the wrappers; comparing said first signals with a second signal denoting the desired air permeability and generating third signals denoting the difference if any, between said first signals and second signal; and varying the quantity of adhesive which is applied per unit area of said one side of the wrapping material as a function of said third signals to thereby vary the permeability of the wrappers.

4,403,620
METHOD AND APPARATUS FOR MONITORING THE FUNCTIONING OF TESTING DEVICES IN MACHINES FOR THE PRODUCTION AND/OR PROCESSING OF SMOKERS' PRODUCTS

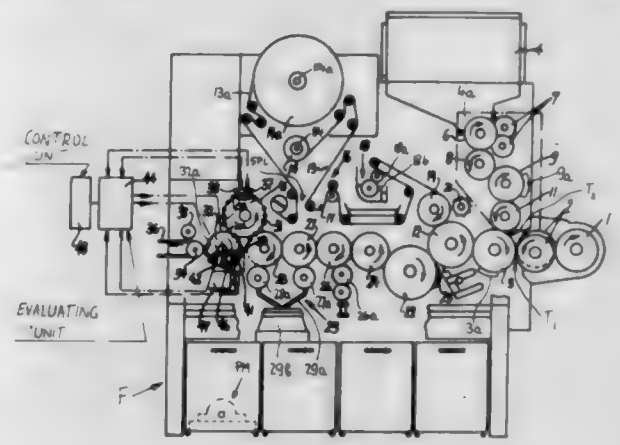
Horst D. Joseph, Hamburg, and Friedo Koch, Wohltorf, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed Jul. 8, 1981, Ser. No. 281,327

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1980, 3026255

Int. Cl.³ A24C *5/00*

U.S. Cl. 131—280 **36 Claims**



1. A method of manipulating rod-shaped articles which constitute or form part of smokers' products, comprising the steps of conveying the articles in a predetermined direction and along a predetermined path having a plurality of first sections as well as a second and a third section both located downstream of said first sections; subjecting successive articles to a test in each of said first sections, including respectively generating at each of said first sections signals of first and second types when the articles being tested are respectively defective and satisfactory; normally transporting signals of said first type from each of said first sections to said second section and utilizing such signals of the first type for segregation of the respective articles from said path at said second section; optionally transporting signals of at least one of said first and second types from a selected first section to said third section; and utilizing signals of said one type for removal of the respective articles from said path at said third section.

4,403,621
HAIR-WAVING ROD

Norman P. Paradise, 13991 Pike Rd., Saratoga, Calif. 95070

Filed Apr. 19, 1982, Ser. No. 369,436

Int. Cl.³ A45D *2/00*

U.S. Cl. 132—40 **11 Claims**

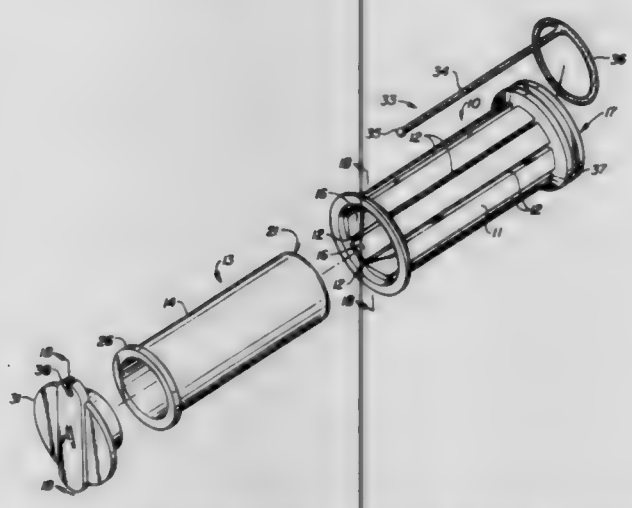
1. An implement for use in giving a permanent wave to hair comprising:

first means defining an elongate rod member of generally cylindrical shape for wrapping strands of hair thereabout;

second means defining a plurality of slender axially extending passageways within said rod member, said passage-

ways being angularly spaced about the periphery of said rod member, and each said passageway being in flow communication along its length with the exterior of said rod member; and

third means defining a diverting chamber at an end of said rod member in flow communication with said plurality of



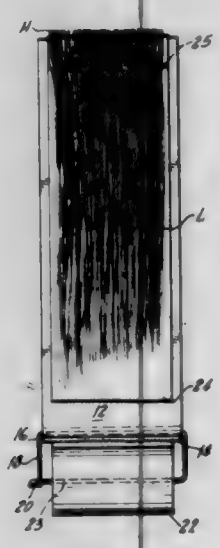
passageways, said chamber having an inlet for receiving hair treatment solution and being structured for diverting solution introduced through said inlet to each said passageway in roughly equal flow whereby solution flowing along said passageways passes to strands of hair wrapped around said rod member.

4,403,622

DEVICE FOR USE IN STRAIGHTENING OR RELAXING HAIR, AND METHOD THEREFOR

Michael L. Stahl, 7700 SW. 135th Ave., Miami, Fla. 33183

Filed Jul. 28, 1982, Ser. No. 402,790
Int. Cl.[3] A45D *2/18*
U.S. Cl. 132—43 R 9 Claims



1. A device for use in straightening and relaxing hair comprising a generally flat base member or board of a predetermined length and width, including

a first and second end portions, and opposed longitudinal side edge portions,

the first end portion to rest next to the head of hair to be treated; and

the second end portion, having along the width of said board

a cutting edge, and

a means for holding a generally rectangular shaped wire member; said wire member

having one length approximately the same as the width of said base member, and with said length of said wire member being held along said width of said base member;

having a second length which serves as a means for holding a roll of paper; and along one width of said wire member

having a fastener capable of being open and closed for inserting or removing said roll of paper;

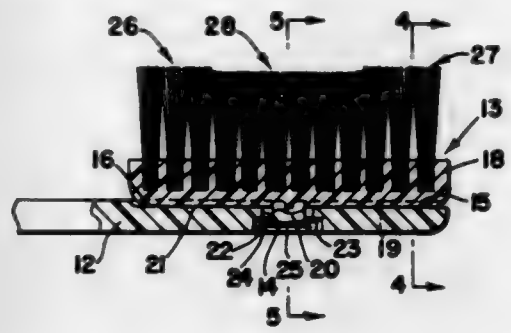
whereby said means for holding said wire member can act as a hinge for lowering or raising the assembly of wire member and roll of paper to bring a strip of paper, unrolled from a roll, in contact with said cutting edge of said base member in order to cut a length of paper having a desired length.

4,403,623

COMBINED TOOTHBRUSH AND GUM MASSAGE DEVICE

Reuben Mark, Greenwich, Conn., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,877
Int. Cl.[3] A45D *44/18*
U.S. Cl. 132—84 R 7 Claims



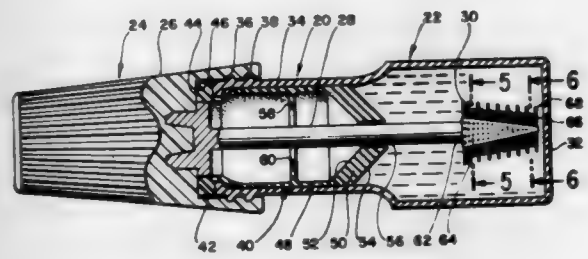
1. A combined toothbrush and gum massage assembly comprising an elongated handle member, a bristle carrying head member pivotally mounted on said handle member near one end for movement between a first operating position in substantial alignment with the length of such handle member and a second operating position substantially at right angles to the length of said handle member, and resiliently biasing said head member toward said handle member to maintain locking engagement between said members in each of said two positions, one of said members having a pivot stem rotatably mounted on the other member, and cooperating rib and groove means capable of resisting displacement of said head member from either of said locked positions during normal toothbrushing and/or gum massaging operations, but being readily responsive to torque applied by a user to turn the head member from one position to another being provided on said members to interlock at said positions.

4,403,624

COSMETIC APPLICATOR AND CONTAINER SYSTEM

Robin M. Montgomery, 3819 Hayvenhurst Ave., Encino, Calif. 91436

Filed Sep. 25, 1981, Ser. No. 305,697
Int. Cl.[3] A45D *40/26;* A46B *11/00*
U.S. Cl. 132—88.7 6 Claims



1. In a cosmetic system for use in the application of mascara to eye lashes,

a container for holding mascara and having an opening;

an applicator including a handle portion, a rod portion having a longitudinal axis and an applicator brush portion;

said applicator brush portion and said rod being removably inserted in said container through said opening to immerse said applicator brush portion in mascara;

wiper means mounted on said container and extending thereinto from said opening for wiping said applicator as it is withdrawn from said container;

the improvement comprising:

said applicator brush portion includes an annular base portion and a plurality of spines projecting outwardly from said base, said spines being resilient, of varying lengths, independent one from the other and each spine being circular in cross section;

said wiper means includes a cylindrical portion interfitted within said container having a flange portion at one end for engagement with the opening of said container and a frusto-conical shaped end portion of a resilient elastic and flexible material converging inwardly of said container forming an opposite end wall and an opening extending therethrough forming a first wiper portion therewith and intermediate said flange portion of said frusto-conical shaped end portion a wall of a resilient elastic and flexible material and an opening extending therethrough forming a second wiper portion therewith; and

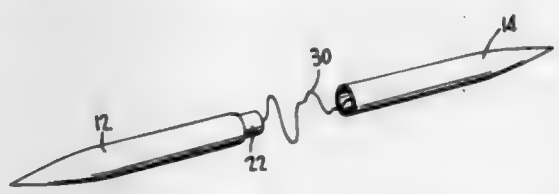
each of said openings in said wiper means being of a diameter to stretchable engage said applicator brush portion as said applicator is withdrawn from said container and one of said openings is of a diameter to also circumferentially engage said rod whereby excessive mascara on said brush portion and said rod is removed.

4,403,625

DISPOSABLE BUCCAL HYGENIC DEVICE

James B. Sanders, 1510 Beverwil Dr., Los Angeles, Calif. 90035, and Don Kobashigawa, 3633 W. Olive Ave., Burbank, Calif. 91505

Filed Oct. 23, 1981, Ser. No. 314,431
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—91 **20 Claims**



1. An inexpensive, disposable buccal hygenic device comprising

a strand of dental floss,

an elongated, generally cylindrical body having one end thereof narrowed sufficiently to function as a toothpick, the body being generally separable into two end members, a separate end of the strand of dental floss being affixed to each proximal end of the two end members so that when the members are separated, the members may serve as handles to assist in proper manipulation of the dental floss about a user's teeth, and

means for isolating the dental floss from the atmosphere prior to the members being separated from each other to insure hygenic conditions.

4,403,626

VALVE ASSEMBLY

Herman L. Paul, Jr., Lebanon, Pa., assignor to Continental Disc Corporation, Kansas City, Mo.

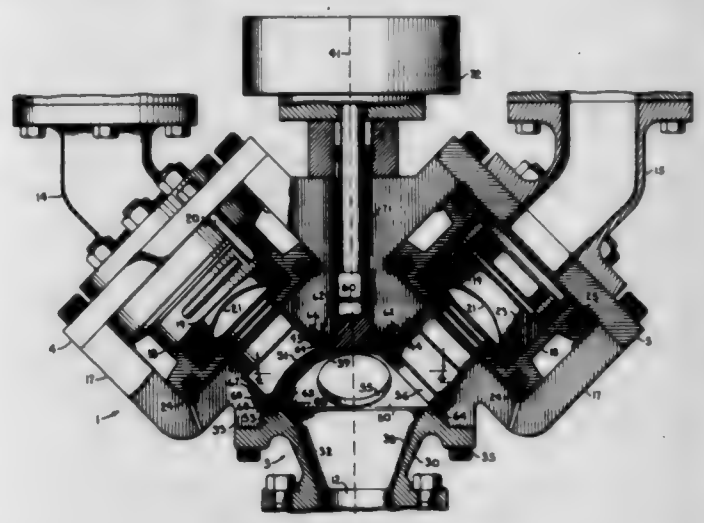
Filed May 18, 1981, Ser. No. 264,355
Int. Cl.³ F16K *13/04*
U.S. Cl. 137—68 R **15 Claims**

11. In a valve arrangement, the combination comprising:

(a) a valve housing having a first outlet and a second outlet in angularly spaced relation about a first axis of said housing and having an inlet, said housing including an inner surface which is a surface of revolution of a shape about said first axis;

(b) a flow directing member having a first aperture and a second aperture therethrough, said first and second apertures being in angularly spaced relation about a second axis associated with said member and in flow communication with said inlet, said flow directing member having an outer surface similar to said inner surface of said housing;

(c) said flow directing member being rotatably mounted coaxially within said housing for sealing between the outer surface of said flow directing member with the inner



surface of said housing, said flow directing member being rotatable to selectively position one of said first and second apertures in alignment with a respective one of said first and second outlets to provide full communication therethrough and to completely seal the other of said outlets; and

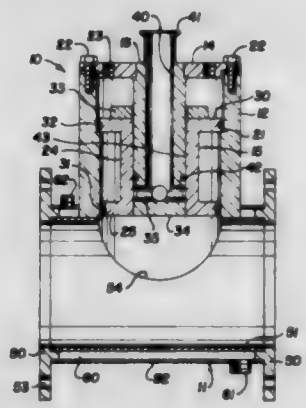
(d) said outlets and said apertures being sized and positioned such that said second aperture is partially aligned with said second outlet when said first aperture is partially aligned with said first outlet whereby a flow path is always provided between said inlet and at least one of said outlets.

4,403,627

BUFFER VALVE

Gerald R. Bradley, Rte. 1, Box 484A, Red Oak, Tex. 75154

Filed Jul. 22, 1980, Ser. No. 171,119
Int. Cl.³ F16K *17/12, 31/12*
U.S. Cl. 137—508 **10 Claims**



1. A buffer valve for a fluid flow system comprising: a cylindrical valve housing having a first open end for communication with said fluid flow system and a second opposite closed end; a central discharge tube secured to said second end of said valve housing, said discharge tube and said valve housing having coincident longitudinal axes, said discharge tube and the inner wall of said valve housing defining an annular housing chamber, said discharge tube having a blind bore closed at a first inward end and having an opening along a second oppo-

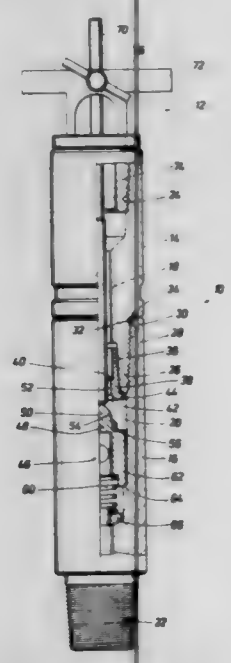
site end portion outward of said valve housing and lateral discharge ports along an inward end portion opening into said blind bore; an annular piston in said annular housing chamber around said discharge tube, said piston having an annular area facing said first open end of said housing and adapted to move between an inward end position covering said discharge ports in said discharge tube and an outward end position uncovering said discharge ports responsive to pressure in said fluid flow system admitted through said first open end; and means for biasing said annular piston toward said inward end position.

4,403,628

INSIDE BLOWOUT PREVENTER

Amrik S. Nijjar, Houston, Tex., assignor to Wood George & Company, Houston, Tex.

Filed Jan. 21, 1981, Ser. No. 226,726
Int. Cl.³ F16K *15/02*
U.S. Cl. 137—515.5 **3 Claims**



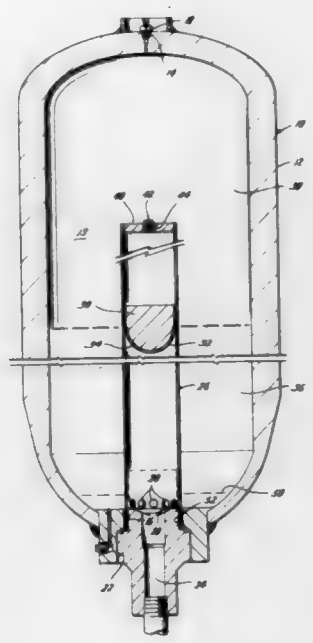
1. An inside blowout preventer, comprising
an upper body having a center passage therethrough, said upper body including an externally lower pin end including a center passage seat pocket with a downwardly and outwardly tapered side surface terminating in a shoulder at its lower end,
a lower body having a center passage therethrough, said lower body including an internally threaded upper box end for threaded attachment to said pin end of said upper body,
a valve seat having an external side surface upwardly and inwardly tapering so as to mate with said seat pocket,
an upwardly biased dart valve having a lesser taper at the valve seating surface than said valve seat surface mating with said seat pocket operating in conjunction with said seat so that normal downwardly circulated fluid through said seat opens said dart valve, excessive backpressure against said dart valve presenting such opening from occurring,
said seat having an outwardly turned flange for upward contacting of the shoulder at the terminating end of said seat pocket to prevent excessive back pressure applied to said dart valve from such hard upward wedging of said seat in said seat pocket so as to outwardly distort said pin end.

4,403,629

LIQUID-GAS ACCUMULATOR AND FLOAT VALVE

Douwe de Vries, 802 Piney Point, Houston, Tex. 77024

Filed Jan. 29, 1982, Ser. No. 344,129
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—31 **1 Claim**



1. A liquid-gas accumulator comprising,
a housing having a top port and a bottom port,
a gas charging valve positioned in the top port for the admission of high pressure gas,
a liquid inlet-outlet valve seat threadedly positioned in the bottom port for insertion and removal through the bottom port,
a riser tube coaxially and threadedly secured about the valve seat and extending upwardly in the housing, said riser tube being smaller in cross section than the bottom port for insertion and removal from the housing through the bottom port,
said tube being closed except for a plurality of fluid openings adjacent the lower end of the tube positioned above the valve seat, and an orifice at the top of the tube, said orifice sized to allow gas to enter the tube at a rate which keeps the liquid level in the tube equal to the liquid level in the housing, and
a solid float floating on the liquid in the tube having a valve element for coacting with and seating on the valve seat when liquid is expelled from the accumulator.

4,403,630

APPARATUS FOR TENSIONING THE WARP THREAD SHEET OF A LOOM

Miguel A. Stacher, Arbon, Switzerland, assignor to Aktiengesellschaft Adolf Saurer, Arbon, Switzerland

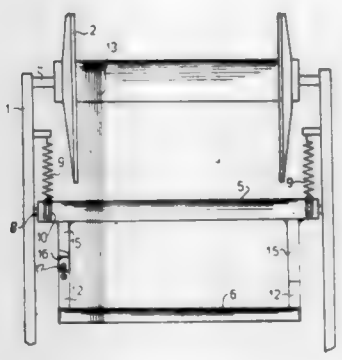
Filed Jul. 28, 1981, Ser. No. 287,632
Claims priority, application Switzerland, Aug. 26, 1980, 6417/80
Int. Cl.³ D03D *49/06, 39/22*
U.S. Cl. 139—102 **5 Claims**

1. An apparatus for tensioning a warp thread sheet of a weaving machine, particularly the pile warp of a Terry weaving machine, comprising:
a deflection beam which yields under the action of the alternating tension of warp threads withdrawn from a warp beam;
a support beam serving for supporting the warp threads;
said support beam having opposed ends;
bending springs effective in a direction of deflection of the warp threads travelling over said deflection beam;
said deflection beam being supported at both opposed ends of said support beam by means of said bending springs;

means mounting each of said bending springs rigidly for rotation with said support beam;

spring means provided for said support beam;

said support beam being subjected to the tension of said spring means which counteract a rotational action of the warp threads exerted upon said support beam;



said mounting means including a respective bending-resistant adjustable support plate which is adjustable in longitudinal direction thereof provided for each of the bending springs; and

said bending springs being supported upon each related one of said bending-resistant adjustable support plates in order to be able to change the effective bending length of said bending springs.

4,403,631

FLEXIBLE PIPE

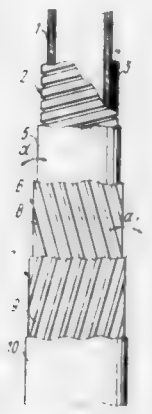
Gasan M. B. O. Abdullaev, ulitsa Saraikina, 27, blok 2, kv. 18; Faramaz G. O. Maxudov, ulitsa Gadzhibekova, 33/35, kv. 29; Dzhangir A. K. O. Kasimov, ulitsa Gadzhibekova, 38, kv. 39; Bakhtiyar M. R. O. Mamedov, prospekt Neftyanikov, 87, kv. 15; Gabil G. Aliev, ulitsa Gadzhieva, 42, blok 1, kv. 1; Yashar A. O. Gadzhiev, 4 mikroraion, ulitsa 7-ya Binagadinskaya, 9, kv. 9; Rovshan I. O. Shakhmamedov, ulitsa Gubanova, 10, kv. 8, all of Baku, and Alexei A. Iljushin, Chistyo prudy, 9, kv. 44, Moscow, all of U.S.S.R.

PCT No. PCT/SU80/00153, § 371 Date May 12, 1981, § 102(e) Date May 6, 1981, PCT Pub. No. WO81/00746, PCT Pub. Date Mar. 19, 1981

PCT Filed Sep. 1, 1980, Ser. No. 261,206

Int. Cl.³ F16L *9/16*

U.S. Cl. 138—130 **8 Claims**



1. In a flexible pipe comprising an inner supporting pipe made from an elastic material; a power frame formed by a shaped strip having a Z-shaped cross-sectional profile with two stepwise conjugated flanges, the strip being wound in a spiral fashion onto the supporting pipe such that the upper flange of each turn is disposed over the lower flange of the adjacent turn, an interlayer formed of an elastic material and superimposed onto the power frame, at least one pair of reinforcing layers including an upper and a lower reinforcing layer, said reinforcing layers being formed by groups of power filaments, said filaments being parallel to one another and wound in opposed directions onto said interlayer, and an external protective shell formed of an elastic material, the improvement comprising, each of said flanges is of a quadrangular cross-section and is of a height equal to one half of the height of the profile of the strip so that the upper flange of each turn rests directly on the lower flange of the adjacent turn, and the ends of the upper flanges as well as the ends of the lower flanges are aligned, the power filaments of each reinforcing layer being wound at angles of from about 0° to 20° to the axis of the pipe.

4,403,632

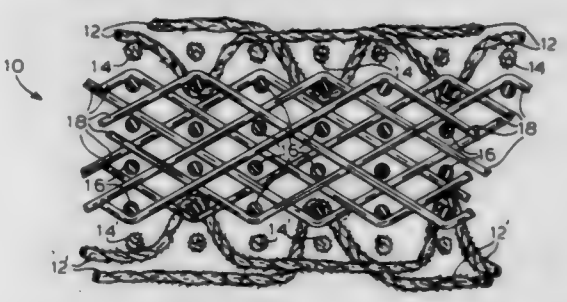
CORRUGATOR BELT WITH HIGH AIR PERMEABILITY

Eric R. Romanski, Delmar, and Michael J. Josef, Clifton Park, both of N.Y., assignors to Albany International Corp., Albany, N.Y.

Filed Mar. 19, 1981, Ser. No. 245,360

Int. Cl.³ D03D *11/00*; D21F *11/12*

U.S. Cl. 139—383 A **10 Claims**



1. A multi-layer, flat woven, high permeability, composite fabric, useful in forming the body of an endless corrugator machine belt and having an air permeability of at least 10 and up to 2000 cubic feet per minute which comprises;

a multi-layer base of interwoven machine direction and cross-machine direction synthetic polymeric resin monofilament yarns;

said base being sandwiched between surface layers, at least one of which is of interwoven, soft textile yarns;

said layers of soft textile yarns being secured to the base by an interweaving of the soft textile yarns with the base yarns.

4,403,633

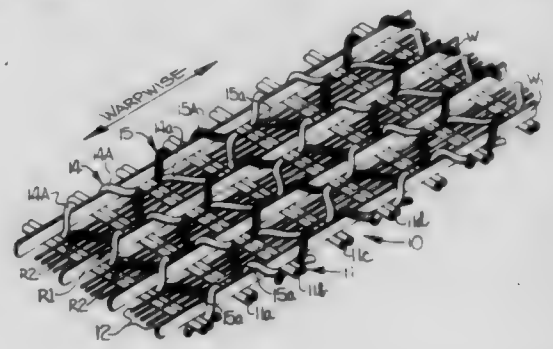
WOVEN PILE FABRIC

Paul A. Czelusniak, Jr., Eden, N.C., assignor to Fieldcrest Mills, Inc., Eden, N.C.

Filed Jun. 11, 1981, Ser. No. 272,505

Int. Cl.³ D03D *27/06*

U.S. Cl. 139—402 **9 Claims**



1. A woven pile fabric formed from weft yarns, groups of warp yarns, and two sets of pile yarns forming warpwise extending rows of pile tufts, each warpwise extending row of pile tufts being formed of pile yarns from both sets of pile yarns with the tufts formed of the two sets being arranged in a predetermined alternating sequence in each row warpwise of the fabric, and warpwise extending rows of pile yarn floats hidden

from view extending between said warpwise extending rows of pile tufts and across and over groups of warp yarns positioned therebetween, said rows of pile yarn floats being formed of pile yarns from both sets of pile yarns with the floats formed of the two sets being arranged in a predetermined alternating sequence warpwise of the fabric but in out-of-phase relation to said alternating sequence of arrangement of the tufts formed of the two sets of pile yarns forming the rows of pile tufts whereby pile yarns from both sets selectively and alternately form the pile tufts of the fabric to provide enhanced pattern effects.

4,403,634

WEFT YARN STORAGE DEVICE FOR WEAVING MACHINES

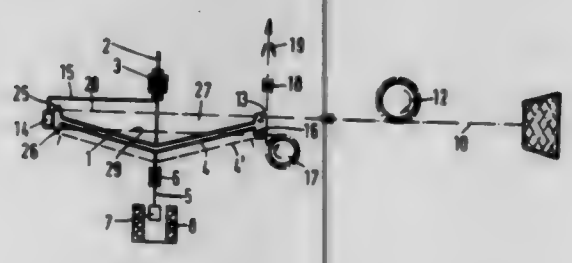
Frantisek Jankovsky, Winterthur, and Paul Lincke, Zell, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Mar. 17, 1981, Ser. No. 244,834

Claims priority, application Switzerland, Apr. 1, 1980, 2555/80; Jan. 7, 1981, 60/81

Int. Cl.³ D03D *47/36*

U.S. Cl. 139—452 **9 Claims**



1. A weft yarn storage device for a weaving machine comprising

a pair of storage drums;

a yarn advancer having a yarn guide disposed for rotation about said drums to lay one arm of a yarn loop on one of said drums and another arm of the yarn loop on the other of said drums; and

actuating means for causing a relative position of said yarn guide and at least one of said drums for releasing the yarn loop from said drums for insertion into a shed.

4,403,635

POWERED WOOD SPLITTER WITH MULTIPLE WORK HEADS

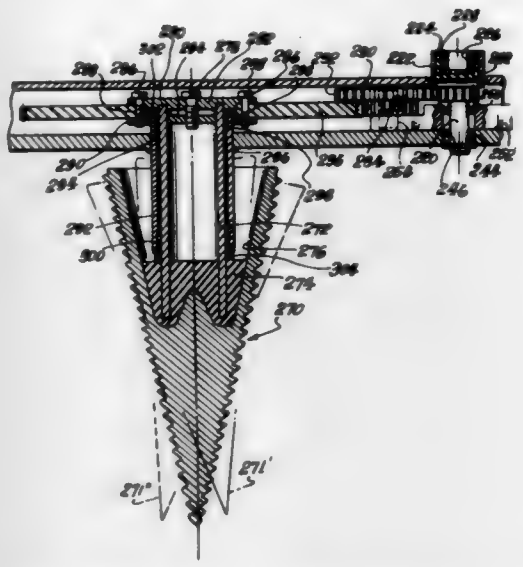
Floyd L. York, 33575 Bonnie B Rd., North Fork, Calif. 93643

Filed May 19, 1980, Ser. No. 151,306

Int. Cl.³ B27L *7/00*

U.S. Cl. 144—366 **10 Claims**

1. The method of splitting a piece of wood into a plurality of pieces with a portable powered hand-held device having at least two rotating output shafts which comprises: (1) attaching a conically-shaped, externally grooved member to each shaft in such manner that said conical members can be rotatably operable on an axes other than that of the rotating output shafts; (2) applying said conical members to said piece of wood in such manner that each conical member is in a different plane than the other in relationship to the various grains in the wood; and



(3) moving said conical members into the piece of wood to spread the segments of wood from one another.

4,403,636

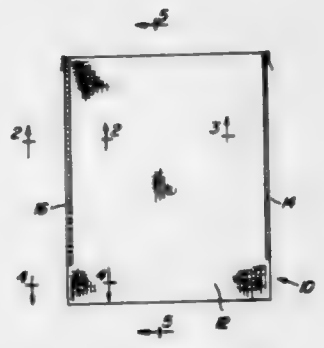
LAUNDRY BAG

Robin D. Lopez, 6954 N. Sheridan Rd., Chicago, Ill. 60626

Filed Jul. 6, 1981, Ser. No. 280,981

Int. Cl.³ A45C *3/00*

U.S. Cl. 150—1 **2 Claims**



1. A laundry bag comprising an elongated, flat heavy, fabric material folded in half upon itself, the lower portion of the side edges partially sewn together, means on both side edges above the portion sewn together and extending to the top of the bag for opening and closing said side edges whereby the bag may be substantially laid flat.

4,403,637

REINFORCED FLEXIBLE CONTAINER

Maria D. Rivelles Sabater, 16, Font de Mora St., Puzol (Valencia); Maria T. Alcala Perales, 8, Doctor Sumsi St., Valencia; Carmen Manes Uso, 11, San Vicente St., Tabernes Blanques (Valencia), and Maria A. Calabuig Sanchis, 5, Alcalde Reig St., Valencia, all of Spain

Filed Sep. 21, 1981, Ser. No. 304,341

Int. Cl.³ B65D *33/02*

U.S. Cl. 150—12 **4 Claims**

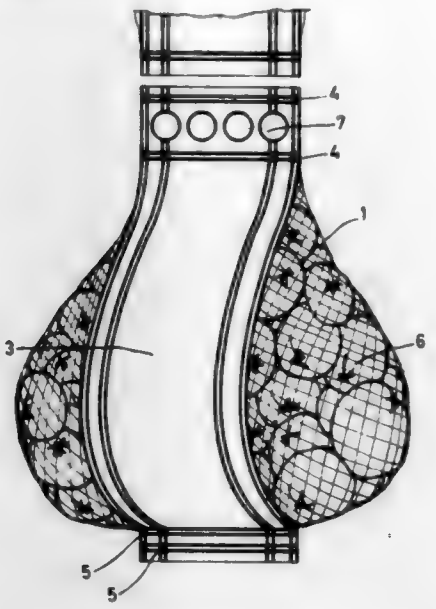
1. A container comprising:

a mesh bag having opposite ends;

first and second bands of flexible material having opposite ends;

said bands being positioned on opposite sides of said bag, with said opposite ends of said bands covering and being joined to respective said opposite ends of said bag, and

with said bag and said bands being free of any connection between said opposite ends; and



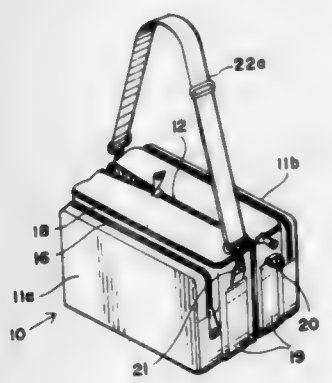
one said joined end of said bag and bands having formed therethrough at least one carrying opening.

4,403,638

COMBINATION CAMERA BAG

Frank Baum, 1030 E. 30th St., Hialeah, Fla. 33013

Filed Apr. 21, 1982, Ser. No. 370,304
Int. Cl.³ A45C *11/38*
U.S. Cl. 150—52 J **4 Claims**



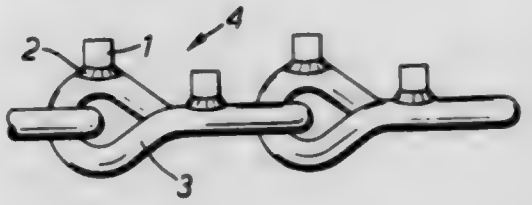
1. A camera bag assembly comprising, in combination, a first bag portion of flexible material, a second bag portion of flexible material, said second bag portion being of the same size as and a mirror image of said first bag portion, slide fastener means for securing one side of said first bag portion against the corresponding side of said other bag portion, a pair of substantially rectangular camera bag insert members removably receivable, one each, within said first and second bag portions, said bag insert members each comprising peripheral sidewalls, end walls, a bottom wall, and a top wall, all fabricated of a soft cushioning material serving as padding for contained articles, a plurality of interior partition wall members sub-dividing said bag insert members into a plurality of insert compartments, said partition walls also being fabricated of a soft, pliable and flexible material serving as padding for contained articles.

4,403,639

STUD ARRANGEMENT ON CHAINS FOR MOTOR VEHICLES, AND A METHOD OF PRODUCING SUCH CHAINS

Bjarne Holte, N-3789 Kjollbronn, Norway

Filed Sep. 11, 1981, Ser. No. 301,258
Claims priority, application Norway, Oct. 2, 1980, 802810
Int. Cl.³ B60C *27/00*; B21L *17/00*; B23K *11/04*
U.S. Cl. 152—245 **2 Claims**



1. A casehardened studded chain for motor vehicles comprising a plurality of casehardened chain links each of which has at least one stud extending outwardly therefrom, each of said studs consisting of a steel body which is permanently welded to a casehardened chain link and provided with a centrally disposed hard metal pin, the hard metal pin being located within the steel body such that the sides of said pin projecting away from said chain link and the end of said pin remote from said chain link are covered by steel material of said body, the covering portions of said steel material having a thickness which is at least equal to the casehardening penetration depth of said casehardened chain link.

2. A method of producing studded chains of the type comprising a plurality of casehardened chain links each of which has at least one stud extending outwardly therefrom and wherein each of the studs consists of a steel body which is permanently welded to a chain link and is provided with a centrally disposed hard metal pin, said method comprising the steps of cutting an inwardly converging blind hole into one end of the steel body, forcing into said blind hole a hard metal pin of a shape corresponding to the conical hole, the pin being shorter than the blind hole so that a skirt is formed adjacent the open end of said hole, beveling the edges of the skirt, joining the steel body with the hard metal pin therein to the chain link at the beveled end of said body by resistance welding in a machine for welding studs onto chain links, the bodyd with the pin therein gradually being moved toward the chain link as the beveled end melts and flows radially outwards, and thereafter casehardening the chain link with the stud joined thereto, the portions of said steel body which cover said hard metal pin being operative to protect said pin from damage during said casehardening step and having a thickness which is at least equal to the casehardening penetration depth of said casehardened chain link.

4,403,640

TIRE MOUNTING COMBINATION TOOL

Richard E. Schifferly, 9717 Waterville-Neapolis Rd., Waterville, Ohio 43566

Continuation-in-part of Ser. No. 104,741, Dec. 18, 1979. This application Jul. 13, 1981, Ser. No. 282,728
Int. Cl.³ B60C *25/04*
U.S. Cl. 157—1.3 **3 Claims**

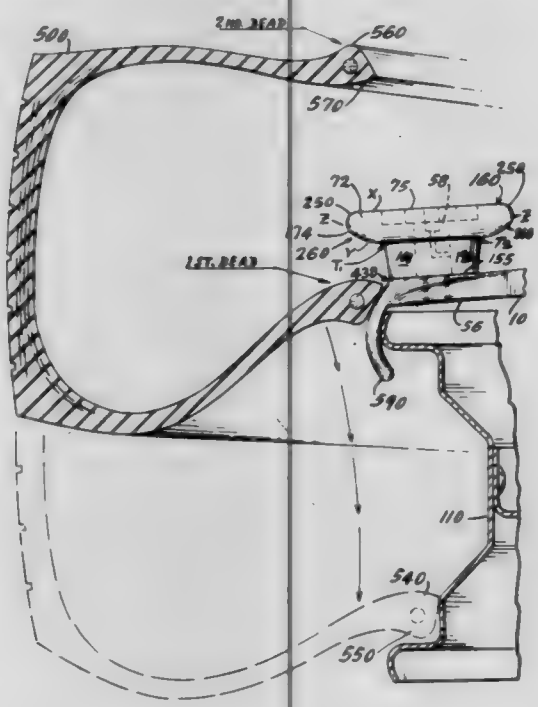
1. A semiautomatically operated tire mounting tool for mounting a tire comprising:

(a) a longitudinally extending base arm member of longitudinal extent with an upper and a lower surface, said arm member having a longitudinal central axis and said arm having a mounting end and a demounting end, with a fixed shaft member integrally affixed near the mounting end on the upper surface on said arm member, and wherein said mouting arm has a bend therein such that the upper surface has two portions in different surface planes that intersect one another, and wherein said arm member has a longitudinally extending opening extending over a portion

of said arm, with said opening extending completely through said arm from the upper surface to lower surface;

(b) a rotatably mounted roller affixed on the fixed shaft mounted on said arm member adjacent the mounting end thereof, and wherein the shaft on said mounting end is affixed such that the center thereof is located a distance away from the longitudinal central axis of said arm member, and wherein said roller has a longitudinally extending vertical central axis about which said roller is symmetrically formed and about which vertical axis said roller is rotatably mounted for free rotation relative to said tire mounting tool, said roller comprising:

(1) a lower portion said lower portion being shaped in the form of an inverted truncated cone with the upper part of said lower portion having an upper and lower part thereof;



(2) an upper portion with said upper portion on said roller having respectively an upper and lower surface with the lower surface of said upper portion being affixed adjacent to the upper part of said lower portion of said roller in a flush, concentric manner, and wherein said upper portion has a circumferential peripheral lip which is convex, and wherein such convex lip is defined on its external surface by two separate radii, one such generated from a center point which is on the upper surface of said upper portion and one of which is on the lower surface of said upper portion;

(c) a vertically depending positioning tong with lateral sides on the working end of said arm, which tong has a variable thickness on its extent as it extends from one side to the other of said arm member.

4,403,641

ADJUSTABLE, QUICK INSTALLATION, WINDOW COVERING DEVICE

William M. Reeder, 2666 St. Rte. 82, Aurora, Ohio 44202

Filed Aug. 26, 1981, Ser. No. 296,430
Int. Cl.³ A47G 5/02
U.S. Cl. 160—263 5 Claims

1. A window covering device, for use with framed windows of varying size comprising:

an elongated support rod having a slot therein for receiving an end of a piece of shade material;

a bracket for each end of said elongated support rod;

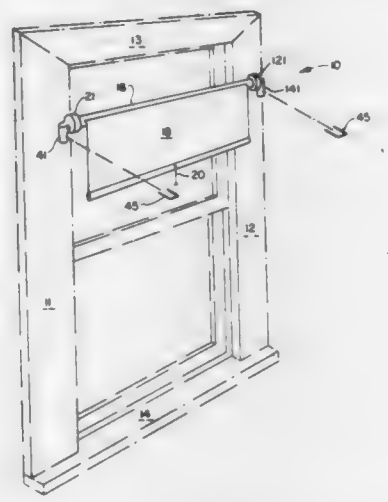
means to permit easy length adjustment of an end of said support rod;

further means for quickly attaching each bracket to a window frame for a quick, simple installation of the device with a framed window;

each bracket having a rod end support bearing therein to permit rotation of said support rod and a mounting projection extending outwardly therefrom for association with said further means;

said further means for quickly attaching each bracket to a window frame consisting of a U-shaped staple of a sufficient size to fit over said bracket mounting projection;

said means to permit length adjustment of an end of said support rod including a plurality of circumferentially spaced grooves evenly spaced from the tip end of the



slotted rod to permit portions thereof to be easily removed by breaking off during the initial sizing of the device; and

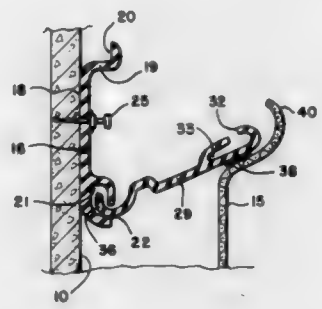
the bracket associated with the said tip end of the slotted support rod is provided with an enlarged bearing opening, and a secondary support rod portion of larger diameter along its entire length than the slotted support rod is mounted upon the tip end of the slotted support rod and supported rotatably within the enlarged bearing of said bracket.

4,403,642

FABRIC SUPPORTING TRACK ASSEMBLY

Milton A. Morris, 21423 Stanwell St., Chatsworth, Calif. 91311

Filed Dec. 7, 1981, Ser. No. 327,766
Int. Cl.³ A47H 23/01
U.S. Cl. 160—380 3 Claims



1. A fabric supporting track assembly including, in combination:

(a) a first extruded track having a flat longitudinal central portion for engaging a flat marginal surface of a wall area to be covered with fabric, one longitudinal edge of said first track turning away from the wall area in a direction generally normal thereto and thence turning outwardly of the central portion in a direction generally parallel to the wall area to define a first half of a snapping clamp, the opposite longitudinal edge of the track being formed into a C-shaped channel opening away from the wall area to define a first half of a hinge;

(b) fastening means for securing said flat longitudinal central portion to said flat marginal surface of said wall area; and,

(c) a second extruded track having a flat longitudinal central

portion for positioning in opposed spaced relationship to said first mentioned flat longitudinal central portion, one longitudinal edge of said second track turning towards said wall area and thence inwardly to define a second half of said snapping clamp, said one longitudinal edge further including a U-shaped stuffing channel with the opening of the U facing the underside of said second half of said snapping clamp, the opposite longitudinal edge of said second track turning towards said wall area, thence extending outwardly of the central portion, thence being formed into a C-shaped channel opening towards the wall area to define a second half of said hinge, whereby after securement of said first extruded track to said flat marginal surface of said wall area, said second track can be hinged to the first track by interdigitating the second half of said hinge with the first half of said hinge, said second track then being swingable about the hinge away from the wall area to facilitate insertion of the selvage of fabric material over said one longitudinal edge of said second track into said stuffing channel, subsequent swinging of the second track into opposing relationship to the first track a distance such that said second half of said snapping clamp snaps over said first half of said snapping clamp, to secure the selvage between the second and first snapping clamps, simultaneously stretching and locking the fabric to the first track along the entire one longitudinal edge of the first track said stretching occurring when the one edge of said fabric opposite said selvage is held fast.

4,403,643

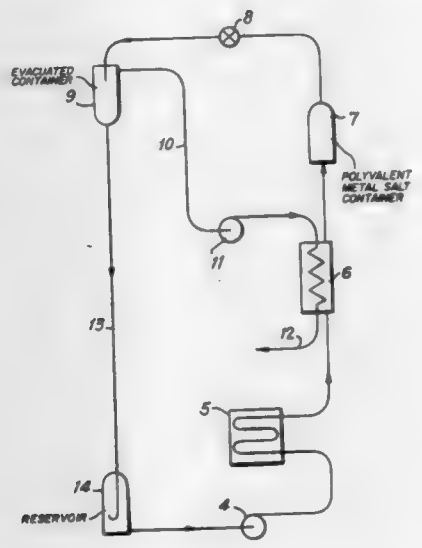
METHOD AND APPARATUS FOR ACCUMULATING, STORING AND RELEASING THERMAL ENERGY

Wallace L. Minto, Sarasota, Fla., assignor to Sunpower Systems Inc., Sarasota, Fla.

Division of Ser. No. 949,593, Oct. 10, 1978, abandoned. This application Jun. 22, 1981, Ser. No. 276,431

Int. Cl.³ F28D *21/00*

U.S. Cl. 165—1 **7 Claims**



1. The method of handling thermal energy comprising the steps of heating a heat storage medium including a slurry of an at least partially hydrated heat storage water soluble polyvalent metal salt material having relatively hydrated and dehydrated stages dispersed in a water immiscible liquid unreactive with said salt material with thermal energy derived from a source thereof to extract water from and convert said salt material to a water impoverished state, separating from said slurry the water released from said salt material, thereafter adding water to said water impoverished material to effect at least the partial rehydration thereof with the evolution of heat and applying said evolved heat to a heat consuming process.

4,403,644

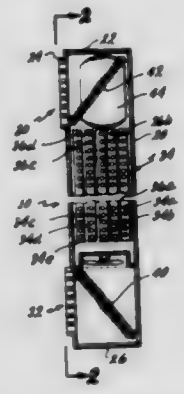
METHOD AND APPARATUS FOR ROOM TEMPERATURE STABILIZATION

Raymond T. Hebert, P.O. Box 134, Saratoga, Calif. 95071

Filed Sep. 20, 1982, Ser. No. 419,728

Int. Cl.³ F28D *21/00*

U.S. Cl. 165—1 **8 Claims**



1. Method for the efficient storage of heat from a fluid body comprising the steps of selecting a PCM body with a fusion transition of a predetermined temperature relative to temperature of said fluid body, moving the fluid stream through the PCM body in thermal exchange relation therewith to establish a fluid stream inlet and outlet with said body, removing heat from the outlet fluid stream and adding the removed heat to the inlet fluid stream at a higher temperature so as to utilize a higher thermal transfer efficiency from the fluid stream to the PCM material as the same passes therethrough whereby heat is efficiently withdrawn from the fluid stream and stored in the PCM body as it passes therethrough and exits therefrom substantially cooler.

4. A heat storage device for removing or adding heat from a fluid, a quantity of PCM, means for supporting said quantity in an array adapted for heat exchange relationship with said fluid and subdivided into channels to discourage stratification as the same is cycled through the fusion temperature, means forming an inlet and means forming an outlet for said fluid to be passed through said body and heat transfer contact therethrough, means for removing heat from the fluid at the outlet end, and means for receiving said heat from said last named means and for adding the same at a higher temperature to the fluid at the inlet end.

4,403,645

COMPACT STORAGE OF SEAT AND COOLNESS BY PHASE CHANGE MATERIALS WHILE PREVENTING STRATIFICATION

Calvin D. MacCracken, Englewood, N.J., assignor to Calmac Manufacturing Corporation, Englewood, N.J.

Continuation of Ser. No. 923,984, Jul. 12, 1978, Pat. No. 4,294,078, which is a continuation-in-part of Ser. No. 790,919, Apr. 26, 1977, abandoned. This application Feb. 5, 1981, Ser. No. 231,756

Int. Cl.³ F28D *21/00*; F25B *29/00*; F28D *17/00*

U.S. Cl. 165—10 **10 Claims**

7. Heat storage tank apparatus for temporarily storing heat energy comprising:

a thermally insulated tank having a fill port in the top thereof, liquid supply and return headers extending within said tank,

at least one grid of closely-spaced small diameter conduits of flexible plastic material connected at their ends to the respective headers and arranged within said tank to give multiple parallel liquid circuits through which a heat-transfer liquid can flow,

a liquid/solid phase change material substantially filling said tank and surrounding said grid of closely-spaced small diameter conduits,

spacer means in said tank associated with said grid for providing substantially uniform horizontal spacing of said small

diamter conduits of plastic material and permitting free flow of the phase change material in its liquid state throughout said tank,

said insulated tank, said flexible plastic conduits and said headers being formed of materials capable of withstanding temperature above and below the melting point of said liquid/-solid phase change material,

said grid being rolled into a spiral roll configuration as seen in cross section looking downwardly, and

said spacer means is low density matting having multiple spaces therein which has been rolled into said spiral roll configuration together with said grid, said matting and said grid being in alternate spiral layers as seen in cross section,

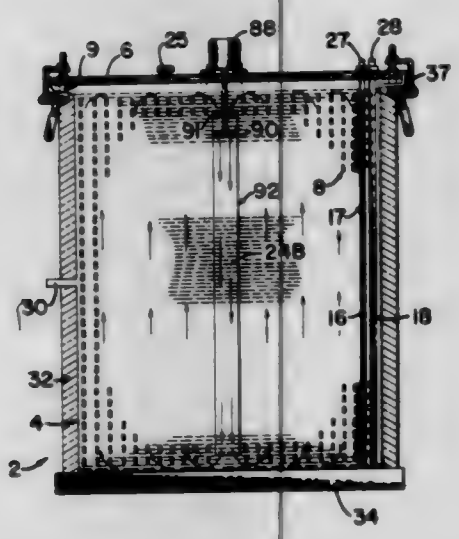
whereby said phase change material may be alternately melted and frozen throughout the interior of the mass thereof as heat is added thereto or withdrawn therefrom by circulating heat-transfer liquid through said conduit grid.

9. Heat storage tank apparatus for temporarily storing heat energy comprising:

a thermally insulated tank,

a liquid-conducting heat exchanger in said tank having supply and return connections thereto for feeding liquid into and out of said heat exchanger,

a liquid/solid phase change material substantially filling said tank in contact with said heat exchanger,



said heat exchanger substantially filling the tank for causing each region in the tank to be no more than a short distance away from the heat exchanger for freezing solid said phase change material throughout substantially the whole tank,

said insulated tank and said heat exchanger being formed of materials capable of withstanding temperature above and below the phase change temperature of said liquid/solid phase change material,

said liquid/solid phase change material being subject to stratification when in its liquid phase,

impelling means for circulating the liquid in the tank for preventing stratification,

motor means connected to said impelling means for driving the impelling means when the phase change material is in its liquid state,

an upright central conduit in said tank associated with said impelling means and extending through said heat exchanger, said conduit communicating with said phase change material near the bottom of said tank and communicating with said phase change material near the top of said tank, and

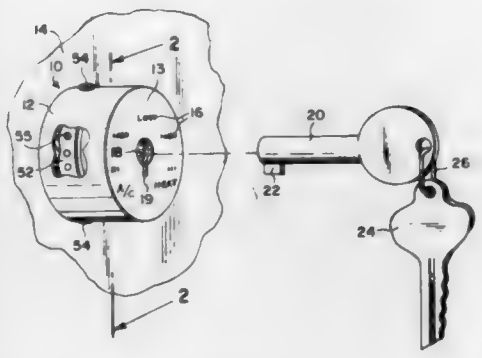
said impelling means impelling the phase change material through said upright conduit when said material is in its liquid state for said liquid to be recirculated through tank for preventing stratification of said material when in its liquid state.

4,403,646

ENERGY SAVING THERMOSTAT

Anthony W. Fodera, 55-28 138th St., Flushing, N.Y. 11355

Filed Sep. 7, 1982, Ser. No. 415,588
Int. Cl.³ H01H *37/04;* G05D *23/00*
U.S. Cl. 165—11 R **3 Claims**



1. A thermostatic room temperature control device, in combination, comprising:

a thermostat means rotatively mounted on a wall in a room, said thermostat adapted to be connected with a control means related to room temperature, said thermostat including a mounting piece having a face having a plurality of temperature setting indicators in association with said control means, said thermostat means being rotatable to said plurality of setting indicators, said thermostat being set in a first setting position;

a housing mounted to said wall enclosing said thermostat, said housing having a housing face with indicia, said face being in association with said setting indicators;

said housing forming an aperture and said thermostat means forming a keyway means, said aperture being adapted to pass a key to said keyway means, said keyway means being for rotating said thermostat between a first position and a plurality of selected second positions upon rotation of said key in said keyway means, said keyway means and said aperture also being for holding said key in said keyway means until said key is rotated to said first position and

a key holding means for holding said key along with the room key, whereby when the key is inserted into said device, the room key cannot be used until the key is rotated in the device and the thermostat is returned to its first setting position.

4,403,647

RADIATOR FILL APPARATUS FOR MOBILE ELECTRIC POWER GENERATING SYSTEMS

Joseph F. Melley, Jr., Davie, Fla., assignor to Melley Energy Systems, Pompano Beach, Fla.

Continuation of Ser. No. 883,391, Mar. 6, 1978, abandoned, which is a division of Ser. No. 759,209, Jan. 13, 1977, abandoned. This application Jun. 16, 1980, Ser. No. 159,660
Int. Cl.³ F01P *11/10, 11/18*
U.S. Cl. 165—41 **1 Claim**

1. In a substantially enclosed trailer carrying a power plant which produces heat during the operation thereof, the invention comprising:

means defining a roof opening in the top of said trailer;

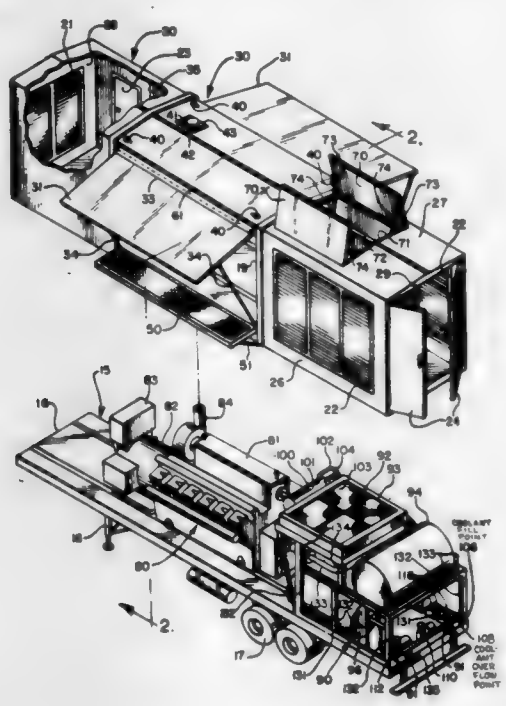
radiator means including a fluid reservoir having a fill opening through which fluid may be introduced into said reservoir and an overflow opening through which excess fluid may be discharged from said reservoir;

a first conduit extending from said fill opening to a fill point, located at a lower peripheral edge of said trailer, more readily accessible than the location of said fill opening; said first conduit being capable of transporting fluid from said fill point through said fill opening into said reservoir;

a second conduit extending from said overflow opening to an overflow point located adjacent the fill point at the

lower peripheral edge of said trailer such that the overflow point is more readily accessible than said overflow opening, said second conduit being capable of transporting excess fluid introduced into said reservoir from said reservoir to said overflow point, the passage of fluid from said overflow point being indicative that said reservoir is substantially full;

gate means having a first position covering said roof opening, and having a second position uncovering said roof opening;



means producing a signal during a start-up condition of said power plant occurring in advance of the beginning of the generating mode of said power plant;

means responsive to said signal for utilizing compressed air to move said gate means from said first position to said second position;

means for utilizing compressed air to maintain said gate means in said second position while said power plant is in said power generating mode.

4,403,648

ENGINE RADIATOR SUPPORT AND GUARD ASSEMBLY

Wayne G. Styok, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 47,599, Jun. 11, 1979, abandoned. This application May 11, 1981, Ser. No. 262,371

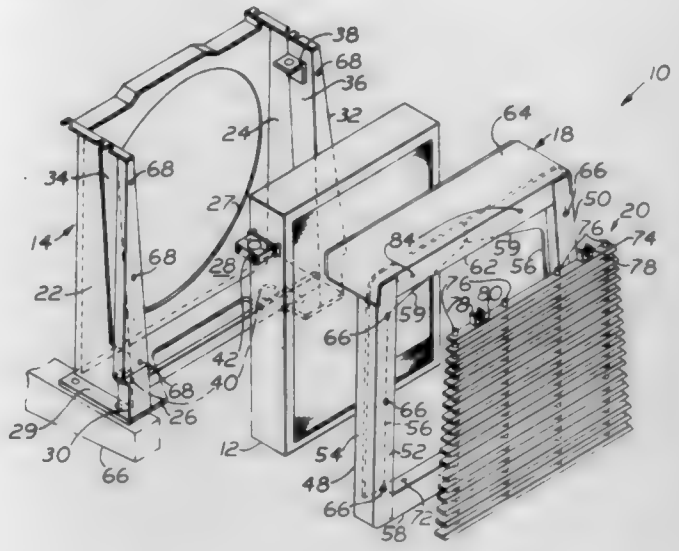
Int. Cl.³ F28F *9/00*

U.S. Cl. 165—76 **11 Claims**

1. An engine radiator support and guard assembly comprising:

a support frame mountable adjacent an engine defining an open end distal the engine, said open end adapted to mountingly receive a radiator and an opening proximate the engine;

resilient means for mounting said radiator in said support frame;



a guard means fixable to said support frame in an overlapping relation thereto and distal of said engine.

4,403,649

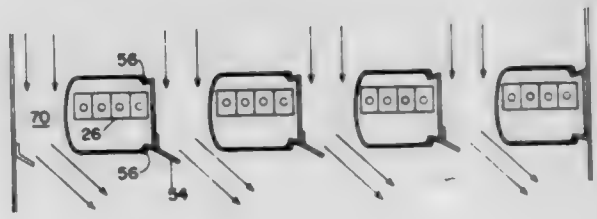
OMNI-DIRECTIONAL FACE-AND-BYPASS COIL

Ben B. Herschel, Howell, and Andrew Chaloka, Clark, both of N.J., assignors to Wing Industries, Inc., Cranford, N.J.

Filed Oct. 30, 1981, Ser. No. 316,828

Int. Cl.³ F28F *27/02*; F24H *13/04*

U.S. Cl. 165—101 **5 Claims**



1. A face-and-bypass coil apparatus comprising:

a frame including a pair of side panels, at least one upper panel attached to said side panels, and at least one lower panel also attached to said side panels and located on a portion of said side panels removed from said upper panel;

heating tubes pitched from between 1° and 3° with respect to the long axis of said side panels in order to avoid the accumulation of condensation within said heating tubes when said apparatus is mounted in a subsantially horizontal mode;

a top header attached to one end of said heating tubes;

a bottom header attached to the other end of said heating tubes;

movable means for attaching said bottom header to said frame so that said header floats and is free to respond to thermal expansions and contractions of said heating tubes;

fixed partition means connected to and extending between said upper and lower panels, said fixed partition means including a pair of flanges located on the leading and trailing edge of said partition means, said flanges facing towards said heating tubes and being slightly inclined towards each other;

movable damper means including a plurality of U-shaped damper means having two arms on opposite sides thereof, said two arms being resiliently related to each other in such a way that they respectively impinge upon the flanges of said fixed partition means in a sliding fit thereby camming said resilient arms of said movable damper means away from each other and forming a resilient compression seal with respect to said fixed partitions to sub-

stantially completely block off air which otherwise might base over said heating tubes;

mounting means for supporting said movable damper means so that said face-and-bypass coil can be installed in substantially any orientation ranging from vertical to horizontal with respect to gravity, said mounting means including linear ballbearing means attached to said frame and shaft means attached to said movable damper means, said shaft means being surrounded by said linear ballbearing means;

means for moving said movable damper means; and,

mixing and diverting baffle means attached to the trailing edge of said fixed partitions for improving the mix of bypass air with face-pass air and for equalizing system air flow volume with changes in damper opening position.

4,403,650

APPARATUS FOR FLOW OF A LIQUID MEDIUM

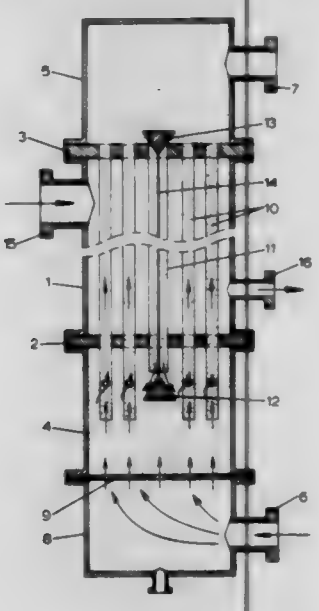
Dick G. Klaren, Hillegom, Netherlands, assignor to Esmil BV, Amsterdam, Netherlands

Filed Nov. 9, 1981, Ser. No. 319,322

Claims priority, application Netherlands, Nov. 12, 1980, 8006161

Int. Cl.³ F28D *13/00*

U.S. Cl. 165—104.16 **16 Claims**



1. In apparatus for flow of a liquid medium, comprising a plurality of vertical pipes whose bottom and top ends open respectively into a bottom chamber and a top chamber, the bottom and top chambers being respectively connected to supply inlet and discharge outlet for the liquid medium whereby in operation the medium flows upwardly through the pipes, there being present in the apparatus a mass of particles fluidisable by the flow of said medium so as to occupy, in the fluidized state, at least said pipes the improvement of: transfer means adapted to transfer said particles batchwise from said top chamber to said bottom chamber without the creation, in the transfer means, of a direct connection between said top and bottom chambers.

4,403,651

HEATPIPE WITH RESIDUAL GAS COLLECTOR VESSEL

Ulrich Groke, Duren, Fed. Rep. of Germany, assignor to Julich Gesellschaft mit beschrankter Haftung, Julich, Fed. Rep. of Germany

Filed Sep. 2, 1981, Ser. No. 298,353

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1980, 3034192

Int. Cl.³ F28D *15/00*

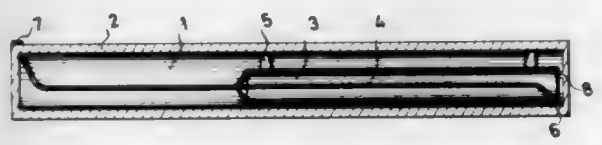
U.S. Cl. 165—104.27 **13 Claims**

3. A heatpipe having a gas collector for collecting residual gases, said heatpipe comprising:

(a) an elongated and hermetically sealed heatpipe, said heatpipe having a vaporization end and a condensation end;

(b) a sealed residual gas collection vessel mounted in said heatpipe adjacent the vaporization end, said vessel having a condensate collecting point and a residual gas collecting region;

(c) a working fluid for vaporization and condensation;



(d) a small diameter gas conducting tube, said conducting tube extending from the condensate end of said heatpipe to the condensate collecting point in said residual gas collector;

whereby non-working residual gases are conveyed from the condensate end of said heatpipe to the interior of said sealed gas collection vessel.

4,403,652

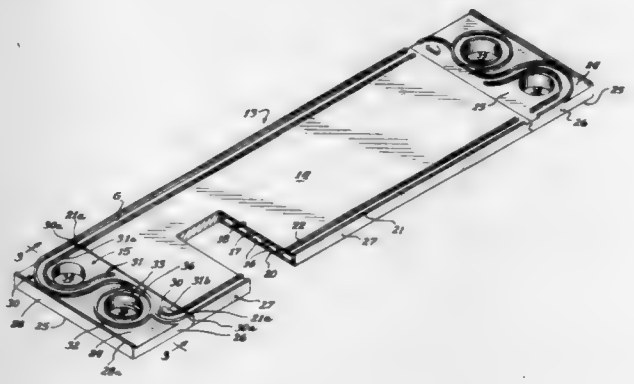
PLATE HEAT EXCHANGER

Ronald M. Schiltz, and Alan H. Corlett, both of Lake Mills, Wis., assignors to Crepaco, Inc., Lake Mills, Wis.

Filed Apr. 1, 1981, Ser. No. 249,855

Int. Cl.³ F28F *3/12, 3/10*

U.S. Cl. 165—167 **7 Claims**



1. A plate heat exchanger for accommodating two circulating heat exchange mediums, one of which is at a substantially higher pressure than the other, said heat exchanger comprising a plurality of plates mounted in abutting superposed face-to-face relation and defining first flow-paths for the heat exchange medium having the highest pressure and second flow-paths for the other heat exchange medium, said first and second flow-paths being independent of one another; inlet and outlet means for each flow-path; and compressible sealing gasket means interposed each pair of abutting plates and delimiting the second flow-paths; each plate including an elongated extruded section of heat conductive material, said section having opposed broad planar exterior surfaces, opposite ends of said section being connected to said inlet and outlet means, said section being provided with a plurality of elongated internal coextensive passages spanning the distance between said opposite ends, adjacent passages being separated from one another by continuous narrow webs integral with and interconnecting the opposed broad surfaces, said internal passages forming said first flow-paths; opposed broad surfaces of adjacent plates and said interposed gasket means coacting to form at least one second flow-path; at least one of the opposed broad surfaces being provided with peripheral laterally spaced ribs between which segments of the gasket means are disposed when compressed and are restrained by said ribs from lateral

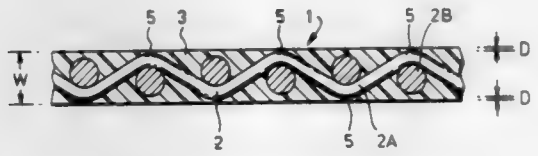
shifting beyond the periphery of said section when the heat exchange medium with the lower pressure is circulated through the second flow-path.

4,403,653

HEAT TRANSFER ELEMENTS

Maxwell W. Davidson, 31/32 Moray Pl., Edinburgh, Scotland EH3 6BZ

Continuation-in-part of Ser. No. 933,130, Aug. 9, 1978, abandoned. This application Apr. 23, 1980, Ser. No. 143,840
Claims priority, application United Kingdom, Aug. 11, 1977, 33662/77
Int. Cl.³ F28F *3/04, 21/06*
U.S. Cl. 165—170 **10 Claims**



1. Heat transfer sheet material for use in the construction of heat exchangers and particularly for the formation of heating tubes, said sheet material serving for transfer of heat between zones on either side of the material and comprising a thin composite wall member having a solid voidless interior, said wall member being made from wall portions of different thermal conductivity, one wall portion of higher thermal conductivity comprising a close metal mesh with weft and warp strands woven together to define a nodal network, while a further wall portion of lower thermal conductivity plastics material constitutes a closure layer, said closure layer extending in the longitudinal direction of the metal mesh with outer surfaces parallel to the mesh and with the mesh embedded in the closure layer, the respective nodes of the network being located at said outer surfaces of the closure layer but with thin coatings of plastics material covering the nodes for protection of the mesh, said thin coatings presenting virtually no barrier to heat so that heat is transferred by the full area of the mesh from one outer surface of the wall member transversely across the layer and perpendicular to the mesh to the other outer surface of the wall member.

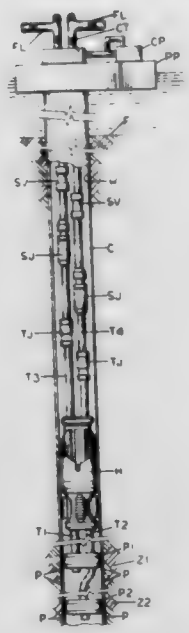
4,403,654

TORQUE TRANSMITTING EXPANSION JOINT AND A HANGER ASSEMBLY INCORPORATING SAME

Andrew Haynes, Missouri City, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Mar. 23, 1981, Ser. No. 246,767
Int. Cl.³ E21B *17/07*
U.S. Cl. 166—73 **13 Claims**

6. An apparatus for producing a well from productive zones penetrated by the well bore in which casing is set below the top of the well, said apparatus comprising: a downhole tubing hanger means secured to an upper level of the casing and supporting at least one lower production tubing string communicating with a production zone; a surface tubing hanger arranged to seat in a hanger bowl in the top portion of the casing; at least one space-out tubing string extending from said downhole hanger to said surface hanger and removably sealingly connectable in said downhole hanger to said lower production string to transmit production fluid from said lower production tubing string to the surface, each said space-out tubing string including a safety valve and a torque transmitting telescoping joint, said joint including means operable by successive reciprocations of said space-out tubing string for selectively limiting the axial contraction movement of said telescopic joint to



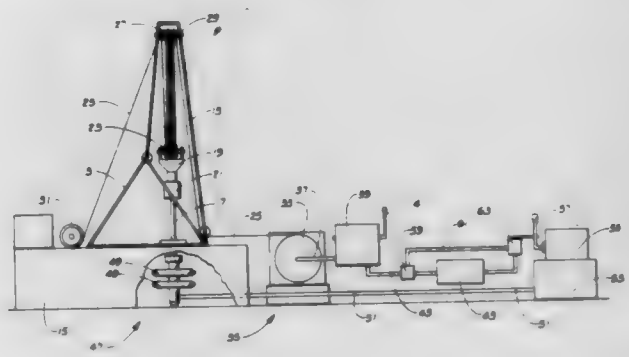
facilitate seating of said space-out tubing string in said downhole tubing hanger.

4,403,655

DRAW WORKS DISABLING DEVICE FOR USE WITH A WELL DRILLING APPARATUS

Buster B. Trout, 1220 Idaho, Chickasha, Okla. 73018

Filed Feb. 20, 1981, Ser. No. 236,318
Int. Cl.³ E21B *7/00*
U.S. Cl. 166—75 R **13 Claims**



1. A device for disabling the draw works of a well drilling apparatus of the type which includes a pressurized air supply connected through a draw works valve for actuating the draw works and an accumulator connected through an accumulator valve for supplying hydraulic fluid to a blow out prevention device which locks the drill string against movement, comprising:

a first valve for regulating the supply of air from said pressurized air supply to said draw works; and

fluid conveyance means for actuating said first valve responsive to the actuation of said accumulator holding said drill string against movement for actuation of said first valve such that said pressurized air supply is isolated from said draw works and such that the movement of said draw works is prevented.

4,403,656

PERMANENT THERMAL PACKER

Johan F. Ploeg, Fullerton, and Arlo L. Oden, Bakersfield, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jul. 29, 1981, Ser. No. 288,258
Int. Cl.[3] E21B *33/12, 33/13*
U.S. Cl. 166—179 6 Claims



1. A subsurface injection well completion combination, said well completion being installed within said well above an interval in said subsurface into which high temperature fluids are to be injected, comprising:

(a) a well casing fixed to the subsurface penetrated by said well so as to substantially completely seal said casing to said subsurface;

(b) an injection tubing within said casing, said tubing establishing a path for said high temperature fluids from the earth's surface to said subsurface;

(c) and a cement packer between the inside surface of said casing and the outside surface of said tubing, said cement packer being capable of withstanding temperatures higher than the temperature of said high temperature fluids injected through said injection tubing,

said packer being of substantial length along said well and completely sealing and filling the annulus between said casing and said tubing along said length of said packer.

4,403,657

LOCKING MANDREL HAVING DOGS FOR LATCHING TO A LANDING NIPPLE AND LUGS FOR LATCHING TO AN OPERATOR RECIPROCAL IN THE LANDING NIPPLE

James B. Adams, Jr., Lewisville, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jan. 6, 1981, Ser. No. 222,773
Int. Cl.[3] E21B *34/14*
U.S. Cl. 166—322 8 Claims

1. A subsurface safety valve comprising, a body,

a valve member and seat controlling flow through the body,

a valve actuator reciprocal in the body,

dogs carried by the body for latching the body in a landing nipple,

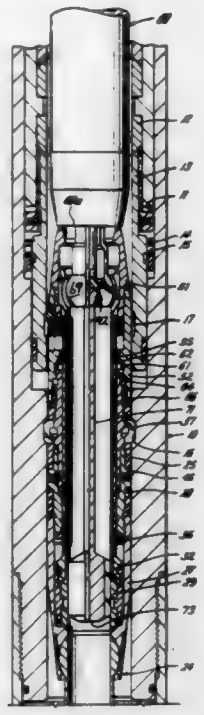
lugs carried by the actuator for latching the actuator to an operator reciprocal in the landing nipple,

a dog prop-out for latching the dogs in extended position,

a lug expander for latching the lugs in extended position,

said lug expander when moving to lug extending position shifting said dog prop-out to dog extending position,

detent-latch means releasably securing said actuator to said lug expander in lug expanded position for reciprocation as a unit in response to movement of said lug expander to lug expanding position and thereafter releasing said lug expander from said actuator and latching said lug expander to said dog prop-out in response to relative reciprocation of said lug expander and actuator.

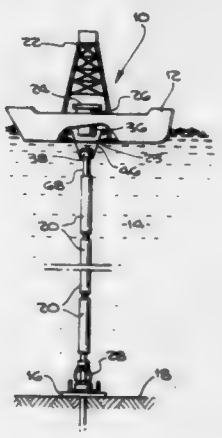


4,403,658

MULTILINE RISER SUPPORT AND CONNECTION SYSTEM AND METHOD FOR SUBSEA WELLS

Bruce J. Watkins, Palos Verdes Estates, Calif., assignor to Hughes Tool Company, Houston, Tex.

Filed Sep. 4, 1980, Ser. No. 183,881
Int. Cl.[3] E21B *19/09*
U.S. Cl. 166—355 15 Claims



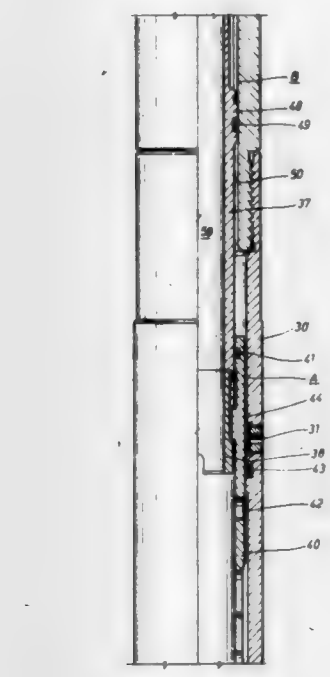
1. In a support and connection system for a subsea well having a multiline riser run in sections from a floating platform to said subsea well including an uppermost riser, the improvement comprising: support housing means mounted upon said platform; termination means disconnectably mounted within said support housing means for supporting said uppermost riser of said multiline riser run depending therefrom and having passageways communicating with said multilines within said riser; hose means connected to said termination means for communicating with said passageways; and means for disconnecting said termination means from said uppermost riser while retaining said hose means connected to said termination means; whereby assembly, hang off and recovery operations may be conducted without connecting and disconnecting said hose means.

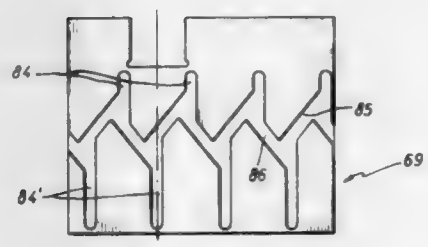
4,403,659

PRESSURE CONTROLLED REVERSING VALVE

James M. Upchurch, Stafford, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 13, 1981, Ser. No. 253,786
Int. Cl.[3] E21B *34/10*
U.S. Cl. 166—374 17 Claims





1. In a well testing apparatus having test tool components adapted to be suspended in a well bore on a pipe string, normally closed reversing valve means including a housing having laterally directed port means adapted to communicate the bore of the pipe string with the well annulus, and means responsive to at least a predetermined minimum number of pressure changes in the pipe string for operating said reversing valve means to enable formation fluids to be removed from the pipe string by reverse circulation of well fluids.

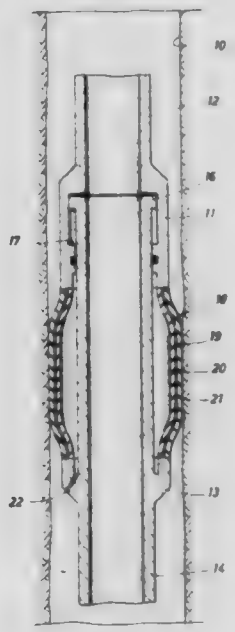
4,403,660

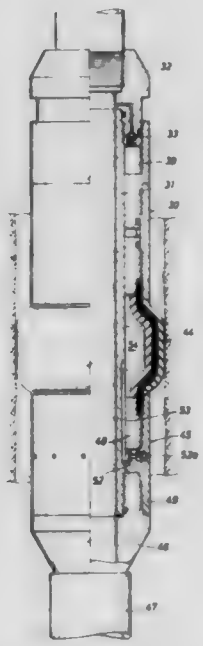
WELL PACKER AND METHOD OF USE THEREOF

Malcolm G. Coone, Houston, Tex., assignor to MGC Oil Tools, Inc., Houston, Tex.

Filed Aug. 8, 1980, Ser. No. 176,403
Int. Cl.[3] E21B *33/127, 33/128*
U.S. Cl. 166—387 7 Claims

1. A well packer for controlling the flow of fluid through a conduit in a wall bore, such as through the annulus between the drill pipe and the wall of the well bore comprising a tubular mandrel positioned along the longitudinal axis of the conduit, spaced annular packer heads mounted on the mandrel with at least one movable along the mandrel toward the other packer head, a packing element including a plurality of elongated, relatively narrow, strips of reinforcing material connected to and extending between the packer heads and arranged in a circle to bend away from the mandrel when the packer heads are moved together and inner and outer sheaths of elastomeric material positioned inside and outside the reinforcing strips and between the packer heads with the ends of the inner sheaths in sealing engagement with the packer heads, means for moving one of the packer heads toward the other to cause the reinforcing strips of the packing element to bend away from the mandrel to move the center portion of the packing element away from the mandrel and into sealing engagement with the well bore, and an opening in one of the packer heads through which the fluid in the conduit that is upstream from the packing element can enter the space between the mandrel and the packing element to exert pressure on the inside of the packing element and provide an additional force holding the packing element in its set position that varies directly with upstream pressure and combines with the force exerted on the well bore by the reinforcing strips to provide sufficient friction between the packing element and the well bore to hold the packer from movement relative to the well bore.





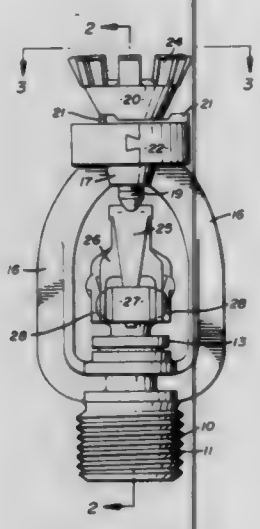
6. A method of sealing the annular space between a pipe string and the wall of the well bore comprising applying a compressing force in an axial direction to an imperforate tubular packing element carried by the pipe string to force the packing element to bow outwardly away from the pipe string and into engagement with the well bore while holding the ends of the packing element from moving outwardly away from the pipe string, holding the compressing force on the packing element, and supplying the space between the bowed out packing element and the pipe string with fluid from the annular space that is upstream of the packing element to allow the pressure of such fluid to enhance the seal between the packing element and the wall of the well bore in proportion to the pressure differential across the packing element and to anchor the packing element in the well bore.

4,403,661

AUTOMATIC SPRAY NOZZLE

Thomas Tokar, Garfield Heights, Ohio, assignor to A-T-O Inc., Willoughby, Ohio

Filed Apr. 9, 1981, Ser. No. 252,283
Int. Cl.³ A62C 37/08
U.S. Cl. 169—38 7 Claims



1. An improvement in a spray nozzle for distributing fluid in a spray pattern, the improvement comprising means for deflecting said fluid throughout an entire conical spray pattern, said spray nozzle comprising a body member having a fluid delivery passageway therethrough, oppositely disposed arms on said body member forming a frame outwardly of said fluid passageway and joined at their outer ends, a fitting positioned through a secondary passageway in said joined ends of said arms on the axial center line of said fluid delivery passageway, said means for deflecting said fluid through an entire conical spray pattern comprising an inverted conical deflector having a large end and a small end and positioned on said fitting with its small end adjacent said joined ends of said arms, a spider comprising at least two circumferentially spaced radially extending thin portions arranged with their smallest dimensions facing said fluid delivery passageway and positioned on said fitting between said joined ends of said arms and said conical deflector and a cylindrical ferrule on said outer ends of said radially extending thin portions of said spider coaxially positioned with respect to said fitting.

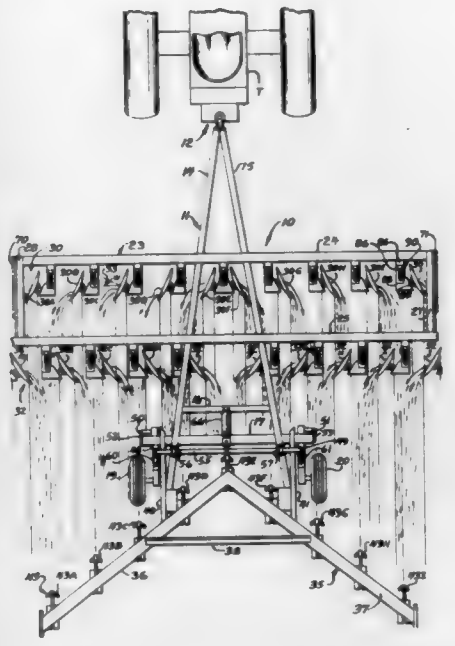
4,403,662

ONE-PASS COMPLETE TILLAGE SYSTEM

William J. Dietrich, Sr., Congerville, Ill., assignor to DMI, Inc., Goodfield, Ill.

Continuation-in-part of Ser. No. 934,585, Aug. 17, 1978, Pat. No. 4,245,706. This application Dec. 29, 1980, Ser. No. 220,419
Int. Cl.³ A01B 13/08
U.S. Cl. 172—156 34 Claims

1. Tillage apparatus adapted to be pulled by a vehicle, comprising: a frame having a longitudinal center line parallel to the direction of travel of said vehicle; wheels for supporting said frame; a first set of disc blades carried by said frame and widely spaced laterally to form alternate strips of cleared land and first windrows of trash and soil on previously undisturbed soil; a second set of disc blades carried by said frame behind said first set, said blades of said second set being widely spaced and located to part the windrows formed by said first set of blades and to displace at least some of the accumulated mixture in said first windrows, and to clear some previously undisturbed soil for forming second windrows laterally displaced from said first windrows, said second windrows being at least partly on previously undisturbed soil; and a plurality of plow points carried by said frame behind said blades, said plow points being located to till said strips of previously untilled soil on which said second windrows at least partially rest and including a forward edge for breaking soil at a depth greater than the working level of said blades, said plow points further including wing means for lifting and twisting the broken soil, thereby mixing the broken



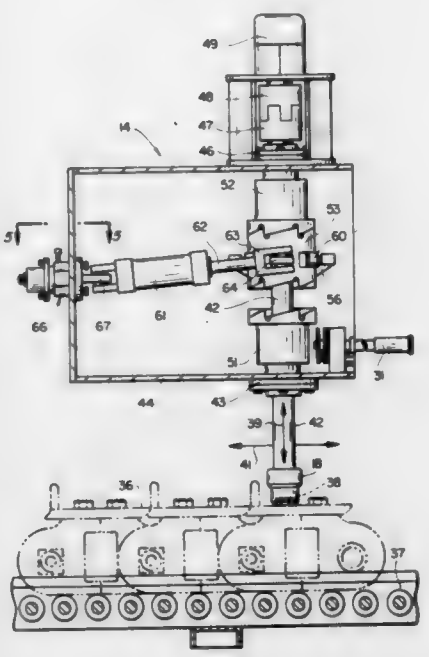
soil with the windrowed trash and top soil, and distributing the mixture without creating a new plow sole.

4,403,663

POWER-OPERATED TORQUE WRENCH

Harvey W. Janssen, Lafayette, Calif., assignor to Wolff Manufacturing Company, Burlingame, Calif.

Filed Apr. 13, 1981, Ser. No. 253,106
Int. Cl.³ B25B 21/00
U.S. Cl. 173—12 8 Claims



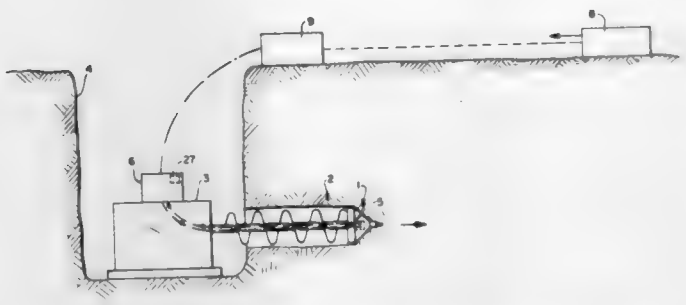
1. A power operated wrench comprising a drive shaft adapted to receive a socket, a motor coupled to said shaft for rotating said shaft, drive means including an overriding clutch means coupled to said shaft to drive and rotate said shaft when the motor is not driving the shaft for applying higher torque to said shaft than the torque capacity of said motor, means for controlling said drive means to apply a predetermined torque to said shaft and then to rotate said shaft through an additional predetermined angle of rotation.

4,403,664

EARTH BORING MACHINE AND METHOD

Richard Sullinger, 32135 Cook Rd., North Ridgeville, Ohio 44039

Filed Aug. 28, 1980, Ser. No. 182,413
Int. Cl.[3] E21B *44/00*
U.S. Cl. 175—24 31 Claims



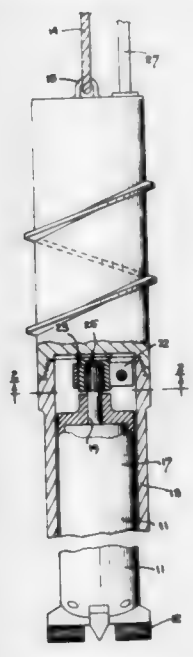
1. Remote controlled earth boring machine comprising,
means for boring a hole through the earth, said means for boring including a cutting head and auger means connected to said cutting head,
means for detecting the direction of said boring means in a bore hole,
means for adjusting the direction of said boring means in a bore hole,
means for producing an above-ground reference line for a hole to be bored, said reference line extending in a direction having at least a directional component which is essentially parallel to a corresponding directional component of said hole to be bored,
means for detecting the direction of at least said directional component of said reference line, and
means for remotely controlling said adjusting means whereby the direction of said boring means can be adjusted to at least said directional component of said reference line.

4,403,665

SONIC SYSTEM FOR PROPELLING PILINGS, DRILLS AND THE LIKE INTO THE EARTH EMPLOYING SCREW DEVICE

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Continuation-in-part of Ser. No. 76,194, Sep. 17, 1979, Pat. No. 4,266,619, which is a continuation-in-part of Ser. No. 64,046, Aug. 6, 1979, Pat. No. 4,261,425, and a continuation-in-part of Ser. No. 63,840, Aug. 6, 1979, Pat. No. 4,271,915. This application May 11, 1981, Ser. No. 262,650
Int. Cl.[3] E21B *7/24*
U.S. Cl. 175—55 11 Claims



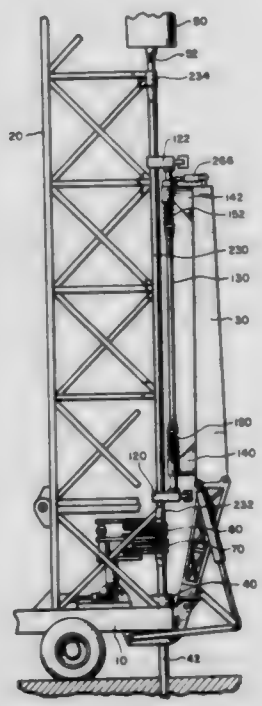
1. A system for cycloidally driving a column through earthen material, said column being activated in a bore hole formed in said earthen material, comprising
a spiral flute formed in at least a portion of the outer surface of said column, said flute being in firm engagement with the earthen material surrounding said bore hole,
a rotor having an eccentric mass,
means for rotatably supporting said rotor on said column with the axis of rotation of the rotor being substantially parallel to the longitudinal axis of the column, and
means for rotatably driving the rotor to generate a force vector in said column which is generally transverse of the longitudinal axis thereof and which rotates about an axis substantially parallel to the longitudinal axis of the column to cause cycloidal vibration of the column,
the fluted portion of said column precessing with a cycloidal motion around the side wall of the bore hole in forceful driving engagement thereagainst.

4,403,666

SELF CENTERING TONGS AND TRANSFER ARM FOR DRILLING APPARATUS

Clyde A. Willis, Wichita Falls, Tex., assignor to Walker-Neer Manufacturing Co. Inc., Wichita Falls, Tex.

Filed Jun. 1, 1981, Ser. No. 269,279
Int. Cl.[3] F21B *19/00*
U.S. Cl. 175—85 31 Claims



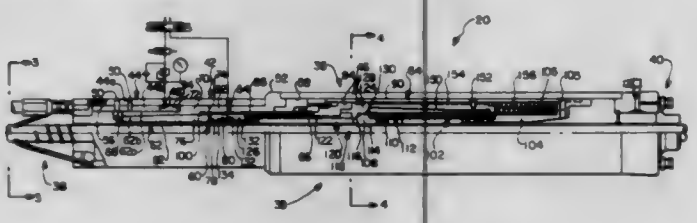
1. In combination with a drilling apparatus comprising a mast and a transfer arm positioned adjacent the mast to move down hole tubulars between a lowered position near ground level and a raised position aligned with the mast, the improvement comprising:
at least one clamp adapted to grip a down hole tubular having at least one threaded end;
means for mounting the clamp to the transfer arm such that the clamp is movable along an axis which is substantially parallel to the longitudinal axis of a tubular clamped in the at least one clamp; and
means for resiliently biasing the clamp to a rest position with respect to the transfer arm;
said mounting means and biasing means cooperating to permit movement of the clamp under axial loads applied to a clamped down hole tubular during tubular handling operations, thereby reducing wear and damage to the threaded end of the clamped tubular.

4,403,667

CABLE FOLLOWING APPARATUS UTILIZING A RELEASABLE CABLE GRIPPING MECHANISM

James M. Reichman, Issaquah, and . Douglas P. Kelley, Redmond, both of Wash., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Aug. 3, 1981, Ser. No. 289,211
Int. Cl.[3] E21B *19/08*
U.S. Cl. 175—230 13 Claims



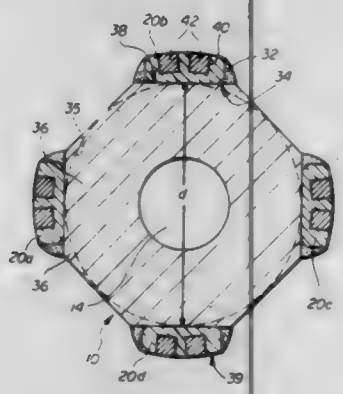
1. An apparatus for moving along the length of an existing cable in a forward direction, comprising: a main body including first and second segments interconnected for limited slidable movement relative to one another; means for supporting said main body to said cable such that alternating sliding movement of said body segments in said forward direction causes said main body to slide forward along said cable, said supporting means including cable gripping means connected with said first body segment and movable between a first position in engagement with said cable for preventing said first segment from sliding along said cable and a second position out of engagement with said cable; means for causing said first and second body segments to slide alternately in the forward direction; and means cooperating with said last-mentioned means for maintaining said gripping means in its cable engaging first position during sliding movement of said second segment and in its second position out of engagement with said cable during sliding movement of said first segment.

4,403,668

STABILIZING DRILL COLLAR

Rickey H. Ramsey, Rte. 1, Palacios, Tex. 77465

Filed Dec. 7, 1981, Ser. No. 328,118
Int. Cl.[3] E21B *17/10*
U.S. Cl. 175—325 10 Claims



1. A stabilizing drill collar connectable in a drill string comprising:

an elongated body having eight flat sides of substantially the same width extending longitudinally along the length thereof, with pairs of sides being diametrically opposite, and having a longitudinal internal flow passage extending therethrough;

the elongated body having an effective diameter measured between the middle of opposing flat sides of said elongated body;

a plurality of wear members welded to at least four alternating sides of said eight sides and extending longitudinally along at least a portion of said sides;

a plurality of longitudinally extending rib members connecting said wear members along each side containing said wear members, whereby there is a longitudinally continuous combination of wear members and rib members; and

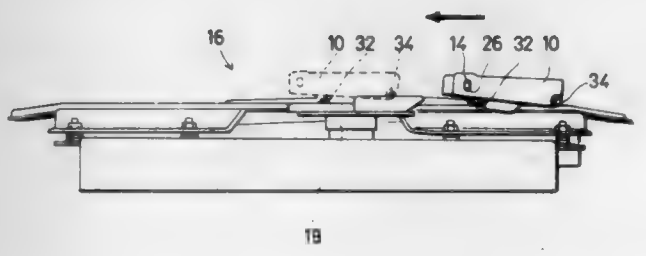
said wear members being welded to said sides on portions outside said effective diameter wherein the area of said collar affected by the heat of welding said wear members thereto is outside said diameter of said elongated body.

4,403,669

APPARATUS FOR WEIGHING CONTINUOUSLY-MOVING ARTICLES PARTICULARLY USEFUL FOR GRADING PRODUCE

Omri Raz, Hagalil Hamaaravi, Israel, assignor to Eshet Eilon, Hagalil Hamaaravi, Israel

Filed Jan. 18, 1982, Ser. No. 340,275
Int. Cl.[3] G01G *19/00, 21/22;* B07C *5/16*
U.S. Cl. 177—145 10 Claims



1. Apparatus for weighing continuously moving articles, comprising a plurality of trays for receiving the articles to be weighed, a weighing device, and drive means for moving said trays one-at-a-time longitudinally across said weighing device, characterized:

in that said weighing device comprises a first pair of rails at one end thereof extending parallel to and on opposite sides of its longitudinal axis, and a second pair of rails at the opposite end thereof extending parallel to and on opposite sides of its longitudinal axis;

and in that each of said trays comprises a first pair of contact points adjacent to the leading end thereof on opposite sides of its longitudinal axis engageable with one pair of rails during at least a portion of the movement of the tray across the weighing device, and a second pair of contact points adjacent to the trailing end thereof on opposite sides of its longitudinal axis engageable with the other pair of rails substantially concommittently with the engagement of the first pair of rails by said first pair of contact points, such that said tray is supported by said two pairs of contact points engaging said two pairs of rails for a substantial portion of the movement of each tray across said weighing device.

4,403,670

ADJUSTABLE DRAWBAR

Peter Sammarco, Downers Grove, Ill., assignor to International Harvester Co., Chicago, Ill.

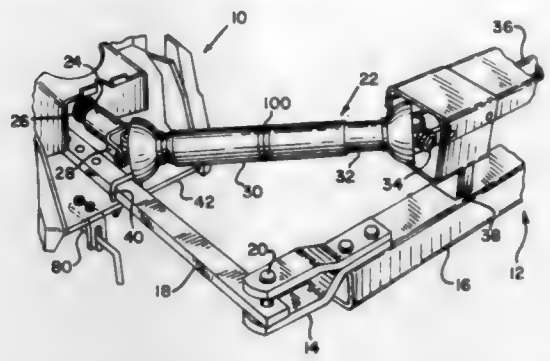
Filed Jun. 10, 1981, Ser. No. 272,146
Int. Cl.[3] B60D *1/02*
U.S. Cl. 180—14 R 7 Claims

1. In a tractor having a drawbar for towing two separate implements and a PTO shaft for powering said implements, said drawbar having a hitch hole end for pivotal connection to said implements and a pivot end for attachment to the tractor, said implements having power shafts capable of coupling with said PTO shaft, said shafts having lengths which differ by a given amount, the improvement comprising:

a bracket affixed to said tractor and having an aperture therein;

said pivot end having a pair of holes spaced apart a distance equal to one-half said given amount and capable of being aligned with said aperture;

a pin capable of insertion through said aperture and an aligned one of said holes; and



means mounting said pin on said tractor to permit selective removal and insertion of said pin.

4,403,671

FRONT AXLE BEARING BLOCK

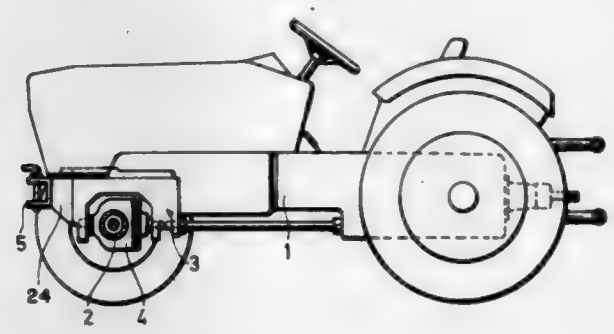
Theo Schmahl, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 54,701, Jul. 5, 1979, abandoned. This application May 21, 1981, Ser. No. 266,056

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1982, 2829455

Int. Cl.³ B60G *7/00*; B60K *17/28*

U.S. Cl. 180—53 R **11 Claims**



1. A multi-part front axle bearing block assembly for supporting a pendulum-type front axle mounted via a transverse trunnion, said block being used interchangeable with self-propelled utility vehicles of various sizes and drive configurations, which vehicles selectively mount a plurality of accessories including: pulling hitches, ballast weights and power take-offs; the front axle bearing block assembly including:

a universally used main component having a front end with a bearing therein for receiving the transverse trunnion, a top surface and a pair of spaced side walls through which the axle passes;

means mountable on the front end of the main component for mounting the accessories;

a height equalizing intermediate member positionable on the top surface of the main component for receiving the engine enclosure thereupon and for determining the height of the engine enclosure with respect to the top of the main component whereby engine enclosures of various sizes may be used in combination with a single universal main component configuration, and

two carrying elements interchangeable with one another and attachable to the front end of the main component beneath the intermediate member.

10. A multi-part front axle bearing block assembly according to claim 1 wherein said main component member includes a slip clutch supported therein for operative connection to a power take-off when a power take-off is attached to the main component.

4,403,672

DUAL LINKAGE COUPLING MECHANISM FOR A MOPED FOR ENGAGING A MOTOR DRIVEN PULLEY WITH THE MOPED REAR WHEEL

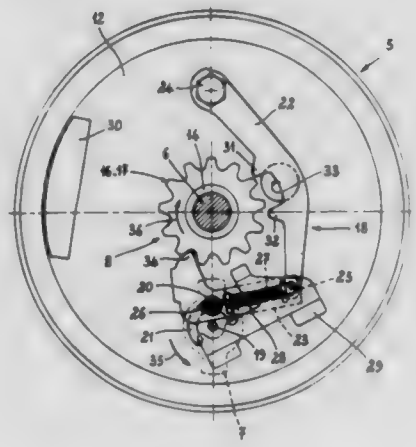
Christian Jaulmes, Paris, France, assignor to Ateliers de la Motobecane S.A., Pantin, France

Filed Jun. 2, 1981, Ser. No. 269,783

Claims priority, application France, Jun. 13, 1980, 80 13140

Int. Cl.³ B62M *23/02*

U.S. Cl. 180—205 **6 Claims**



1. In a moped having a motor, a rear wheel, a rotatable pedal crank including an axle carrying pinion gear means rotatable with said crank axle for drivingly coupling the axle with the rear wheel, and a pulley, driven by the motor, for rotation about the axle, a coupling mechanism for selectively coupling the pulley with the pinion gear means, comprising:

a first lever having first and second ends, said first end being pivotably connected to said pulley, said first lever including means, disposed between said first and second ends, for selectively engaging said pinion gear means to whereby selectively lock the pulley to the pinion gear means;

a second lever having first and second ends, said second lever being pivotably connected to said pulley, said first end of said second lever including a nose portion for selective engagement with said pinion gear means, the second ends of said first and second levers being pivotably interconnected to each other; and

actuating means, rotatably connected to said pulley and connected to said second lever, said actuating means including means for moving said coupling mechanism,

(1) from a first position in which said first lever engaging means and said second lever nose portion are disengaged from said pinion gear means,

(2) to a second position in which said first lever engaging means is disengaged from said pinion gear means and said second lever nose portion is engaged with said pinion gear means, and then

(3) to a third position in which said first lever engaging means is engaged with said pinion gear means and said second lever nose portion is disengaged from said pinion gear means,

whereby said coupling mechanism smoothly, efficiently and positively couples said engine with said back wheel.

4,403,673

POWERED VEHICLE

Douglas Ball, 190 Senneville Rd., Senneville, Quebec, Canada H9X 1B9

Filed Jan. 6, 1981, Ser. No. 222,939

Int. Cl.³ B62D *61/08*

U.S. Cl. 180—214 **8 Claims**

1. A powered vehicle comprising,

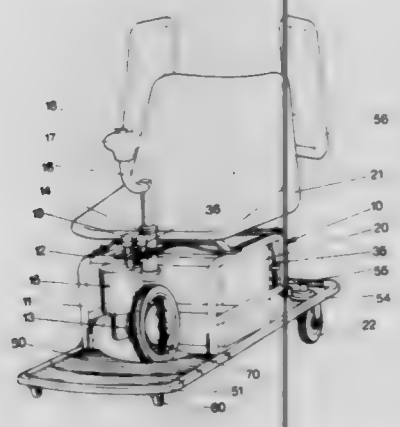
at least one steerable central front wheel, the front wheel

being steerable at least about 90° on either side of a straight ahead direction,

power means to drive the front wheel in forward and reverse directions,

at least two rear swivel caster wheels forming a tricycle arrangement with the central front wheel, each said caster wheel having a swivel point and an axle offset from said swivel point whereby said caster wheels normally trail said front wheel when the vehicle is going in a straight ahead direction,

means connected with each of the caster wheels to provide a free position wherein each caster wheel is independently



free to swivel in any direction, to provide an intermediate position wherein each caster wheel is independently free and unrestrained to swivel from a normal straight ahead direction outwards through an angle of approximately 180° to a reversed straight ahead direction and inwards through an angle of approximately 45°, and to provide a locked position for at least one caster wheel wherein the caster wheel is lockable in the straight ahead direction,

remote control selector means to change between the free position, the intermediate position, and the locked position of the caster wheel, and

spring loaded side bumpers mounted on said vehicle.

4,403,674

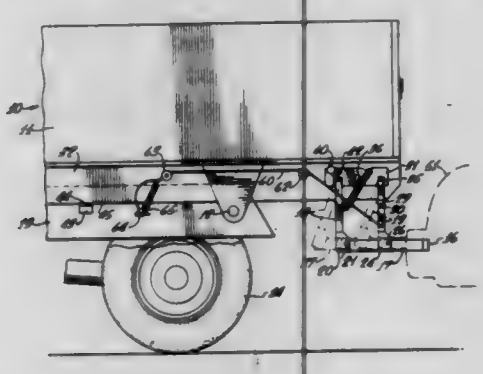
VEHICLE SAFETY BRAKING SYSTEM

Charles S. Viall, Sr., 1150D S. State College Blvd., Anaheim, Calif. 92806; Charles S. Viall, Jr., 3401 Gaviota, Long Beach, Calif. 90008, and Harold S. Viall, 938 S. Chancer, Anaheim, Calif. 92806

Continuation of Ser. No. 109,759, Jan. 7, 1980, abandoned, which is a division of Ser. No. 913,350, Jun. 7, 1978, Pat. No. 4,207,958, which is a division of Ser. No. 646,287, Jan. 2, 1976, Pat. No. 4,105,238. This application Nov. 13, 1981, Ser. No. 321,068

Int. Cl.³ B60K *28/00*; B60R *19/02*

U.S. Cl. 180—275 **10 Claims**



1. A safety device for a vehicle having brakes comprising:

means for sensing the placement of the vehicle in neutral gear;

means for applying the brakes of the vehicle;

means carried by said vehicle for engaging obstacles in the vehicle's path;

means for actuating said brake applying means in response to said neutral gear sensing means and engagement of an obstacle by said engaging means.

4,403,675

ANTI-THEFT DEVICE OR SYSTEM FOR VEHICLES

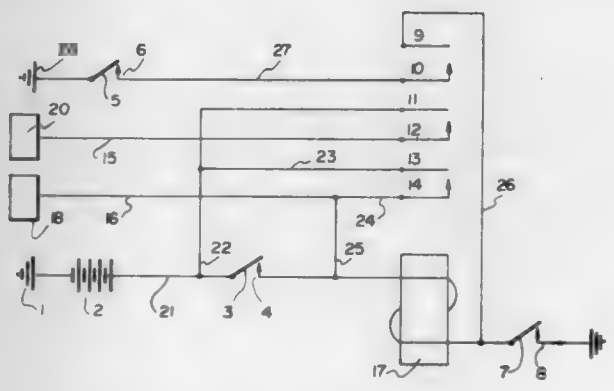
John A. Cardwell, c/o William Cardwell, 1216 18th St., NE., Calgary, Alberta, Canada

Continuation-in-part of Ser. No. 256,513, Apr. 22, 1981, abandoned, which is a continuation of Ser. No. 96,508, Nov. 21, 1979, abandoned, which is a continuation of Ser. No. 925,744, Jul. 18, 1978, abandoned. This application Sep. 10, 1982, Ser. No. 416,506

Claims priority, application Canada, Jul. 18, 1977, 282950

Int. Cl.³ B60R *25/04*

U.S. Cl. 180—287 **4 Claims**



1. In a vehicle having an engine ignition system controlled by a key-actuated ignition switch, the improvement comprising selectively controllable means for bypassing said ignition switch to permit opening of the ignition switch and removal of the key without de-energizing the ignition system but de-energizing the ignition system upon attempted operation of the vehicle while the ignition switch is open, said selectively controllable means comprising a first switch means constructed and arranged to be activated by movement of a vehicle operational component to a position which precludes normal operation of the vehicle, second switch means actuatable by the vehicle operator, and means responsive to activation of said first switch and actuation of said second switch when said ignition switch is closed for bypassing said ignition switch so long as said first switch remains activated, and regardless of the state of said ignition switch and said second switch, whereby the ignition switch can be opened and the key removed without de-energizing the ignition system, and attempted operation of the vehicle by movement of said component to a position which does not preclude vehicle operation will de-energize the ignition system unless said ignition switch is closed.

4,403,676

TRANSMISSION WITH DIFFERENTIAL WITH LONGER POWER OUTPUT SHAFT SUPPORT CASING

Masao Fujii, and Tetuo Hattori, both of Toyota, Japan, assignors to Toyoto Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 1, 1981, Ser. No. 279,570

Claims priority, application Japan, Sep. 16, 1980, 55-128172

Int. Cl.³ B60K *5/04*

U.S. Cl. 180—297 **12 Claims**

1. In a vehicle comprising two axially opposed driven wheels, a transmission comprising:

(a) two drive shafts of equal length, each flexibly drivingly coupled at its outer end to one of said wheels; and

(b) a differential axially located closer to a first one of said wheels and further from the other one of said wheels, comprising:

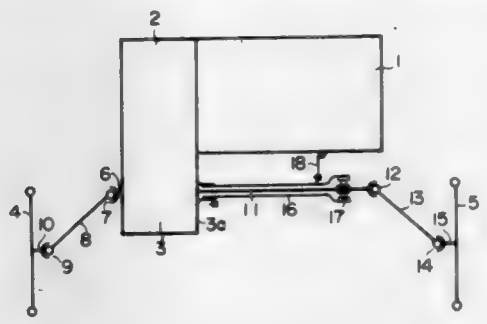
(b1) a casing;

(b2) a short power output shaft extending towards said first wheel and flexibly drivingly coupled at its outer end to the inner end of the one of said drive shafts whose outer end is drivingly connected to said first wheel;

(b3) a long power output shaft extending towards said other wheel and flexibly drivingly coupled at its outer end to the inner end of the one of said drive shafts whose outer end is drivingly connected to said other wheel;

(b4) a stiff tubular housing through which said long power output shaft passes, which is fixed at its inner end to said casing; and

(b5) a bearing mounted in the outer end of said tubular



housing and rotatably supporting an outer part of said long power output shaft;

(b6) said casing being formed with a cylindrical receiving aperture, and said tubular housing being formed with a cylindrical end portion which mates into said cylindrical receiving aperture and fixes said tubular housing to said casing in a fixed orientation; said differential further comprising a carrier and a carrier bearing which rotationally supports said carrier about a rotational axis collinear with the rotational axis of said long power output shaft, said casing being formed with a bearing hole which supports said carrier bearing, and said cylindrical receiving aperture being formed as a direct continuation of said bearing hole and being coaxial with said bearing hole.

4,403,677

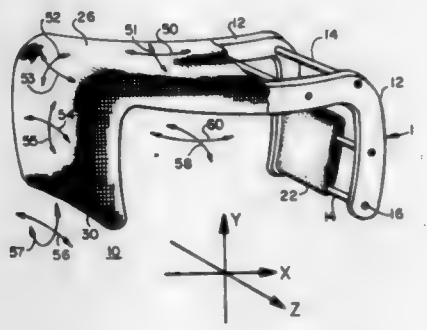
SPACE DIVIDERS AND METHOD OF MANUFACTURE

Alexander Messinger, 3725 Lankenau Rd., Philadelphia, Pa. 19131

Continuation-in-part of Ser. No. 4,438, Jan. 18, 1979, Pat. No. 4,230,365. This application Oct. 28, 1980, Ser. No. 201,598

Int. Cl.³ E04B *1/82*

U.S. Cl. 181—295 **11 Claims**



1. A space divider, comprising:

at least two peripheral frames, each having at least two arcuate portions;

cross-members holding the peripheral frames in spaced relationship; and,

a soft, stretchable fabric sleeve stretched over and entirely covering the peripheral frames and cross-members, the fabric resiliently forming itself into at least two major omni-directional sound controlling double-curvilinear surfaces in a natural equilibrium condition, the soft fabric absorbing the sound, the cross-members being so formed and positioned as to not interfere with the at least two major self-forming double-curvilinear surfaces.

4,403,678

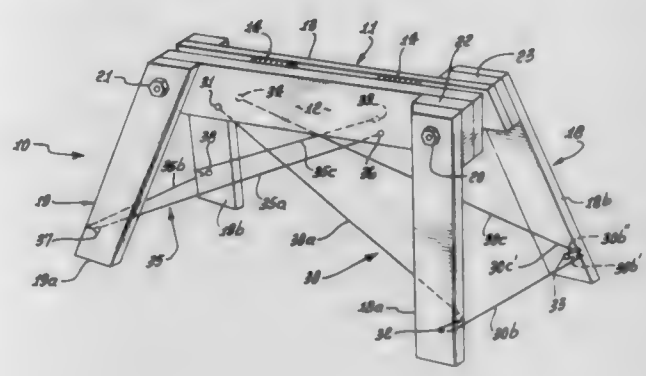
FOLDING SAW HORSE

Steven A. Zieg, Anaheim Hills, Calif., assignor to Mansion Industries, Inc., Industry, Calif.

Filed Nov. 2, 1981, Ser. No. 316,813

Int. Cl.³ B27B *21/00*; F16M *11/00*

U.S. Cl. 182—153 **12 Claims**



1. In a saw horse, the combination comprising

(a) generally horizontally extending upper frame structure,

(b) two pairs of legs pivotally connected to the frame structure to independently and swingably move toward each other between extended positions in which the frame structure is supported on the legs, and collapsed positions proximate that structure, and

(c) flexible connector means operatively connected with the legs and the upper frame structure to limit such independent swinging movement of the pairs of legs relatively away from one another at said extended positions,

(d) said upper frame structure including two longitudinally elongated frame members, the two legs of each of said pairs respectively connected to said members, and hinge means interconnecting said members to pivot laterally relative to one another, said flexible connector means also connected with said members to limit said member relative lateral pivoting.

4,403,679

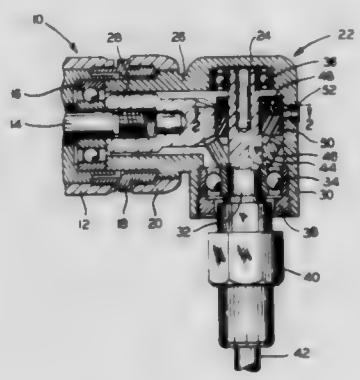
ANGLE DRIVE LUBRICATOR

Philip A. Snider, Hicksville, Ohio, assignor to Cooper Industries, Inc., Houston, Tex.

Filed Apr. 1, 1981, Ser. No. 249,987

Int. Cl.³ F16N *7/18*

U.S. Cl. 184—64 **10 Claims**



1. In a tool having a motor housing with a rotatable drive shaft at one end terminating in a bevel pinion, an angle drive attachment comprising:

an angular housing having a first leg and a second leg;

an output shaft journalled in said second leg of said angular housing;

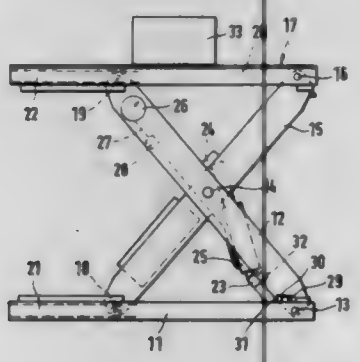
a bevel gear secured to said output shaft and disposed for engagement and rotation with the bevel pinion;
an annular absorbent sleeve disposed within said housing and adjacent said bevel gear; and
means for maintaining said absorbent sleeve stationary within said housing.

4,403,680

HYDRAULICALLY DRIVEN LIFTING, LOADING OR TIPPING PLATFORM

Walter Hillesheimer, Neu-Isenburg, Fed. Rep. of Germany

Filed Jan. 15, 1981, Ser. No. 225,433
Claims priority, application Fed. Rep. of Germany, Nov. 12, 1980, 3042656
Int. Cl.³ B66B *11/04*
U.S. Cl. 187—18 **20 Claims**



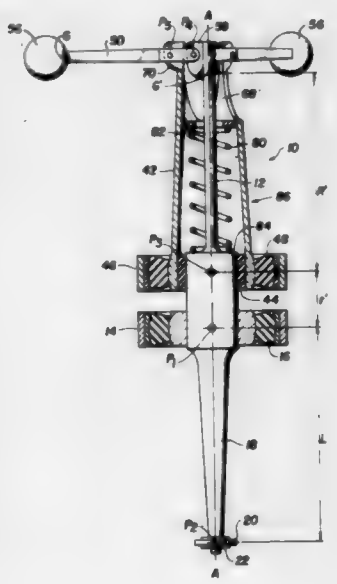
1. A hydraulically-operable platform-movng device, comprising in combination:
a platform adapted to hold a load,
moving means for moving said platform at least between a first position, and a second position at least partly elevated with respect to said first position, and wherein friction effects occur when said platform is moved, and the accuracy of the weight of the load resting on the platform may be impaired by said friction effects,
hydraulic cyliner-piston drive means for driving said moving means, being adapted to be energized by energizing means, said energizing means including a pump exerting pressure on at least a portion of said fluid, said hydraulic cylinder piston-drive means having a predetermined hydrostatic pressure prevailing therein, and including a hydraulic circuit,
hydraulically operable measuring means for determining the weight of the load resting on the platform,
indicating means connected to said measuring means, and including a scale subdivided into units of weight for indicating the weight on the load on said scale, and having a zero point, and a pointer settable so that said pointer coincides with said zero point at a predetermined position of said platform, when said platform is free of any load,
a hydraulic line connecting said hydraulic circuit to said measuring means,
switching means disposed in said hydraulic circuit, and adapted to operatively control, supply, and remove hydraulic fluid to, and from said hydraulic circuit, respectively, and including
a first valve disposed in said hydraulic line for controlling the hydraulic fluid flow between said hydraulic circuit and said measuring means, and
a second valve for shutting off the supply of the hydraulic fluid to said drive means upon said platform attaining said predetermined position, and
compensating means connected to said hydraulic circuit to counteract said friction effects, and including
a hydraulic cylinder formed with an inner space, and
a piston movable within said inner space and dividing said inner space into two chambers, one of said chambers being subjected to said hydrostatic pressure, the other of said chambers being subject to said pump pressure,
whereby said friction effects are substantially counteracted upon said hydrostatic pressure equalling said pump pressure, so as to reach a state of balance in said hydraulic cylinder.

4,403,681

THREE DIRECTIONAL VIBRATION ISOLATOR

Rene A. Desjardins, Media, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1980, Ser. No. 192,573
Int. Cl.³ F16F *7/10*
U.S. Cl. 188—379 **23 Claims**



1. A vibration isolator for connecting a body to a vibrating mass with minimum transfer of vibration therebetween, comprising:
a first member connected to the body at two locations;
a second member connected to the vibrating mass at one location and to the first member at a plurality of locations; and
a plurality of inertia arms each connected to the first member and the second member, forming thereby all but one of the plurality of connections of the second member to the first member, whereby displacement of the second member in response to a vibratory force imposed by the vibrating mass produces a relative displacement of the first member and second member and a given displacement of the inertia arms in the direction of the second member which produces a net balancing force opposed to the vibratory force.

4,403,682

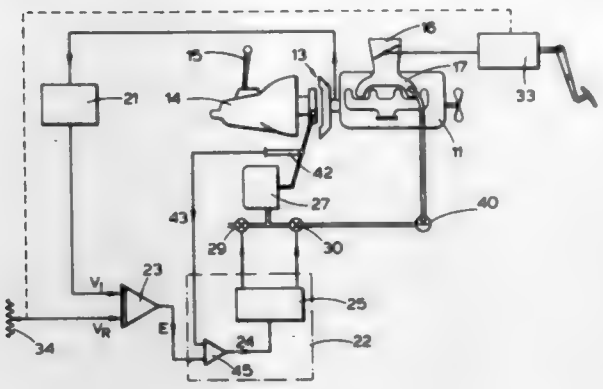
CLUTCH CONTROL APPARATUS

Peter J. Norris, St. Bees; Frederick J. Parker, Rugby, and Harry M. Windsor, Harbury Leamington Spa, all of England, assignors to Automotive Products Limited, Leamington Spa, England

Filed Feb. 18, 1981, Ser. No. 235,581
Claims priority, application United Kingdom, Feb. 18, 1980, 8005373
Int. Cl.³ B60K *41/02*
U.S. Cl. 192—0.033 **4 Claims**

1. A vehicle transmission clutch control system comprising;
an engine speed sensor;
means for producing an engine speed signal derived from the engine speed sensor;
generator means for producing a reference signal;
first comparator means arranged to receive and compare said speed signal and the reference signal and produce a consequent error signal;
a clutch actuator for operating the clutch to vary the state of engagement of the clutch with the vehicle engine;
a clutch actuator control for controlling the clutch actuator;
a clutch position transducer connected to the clutch actuator

to produce a clutch position signal indicative of the state of engagement of the clutch; and



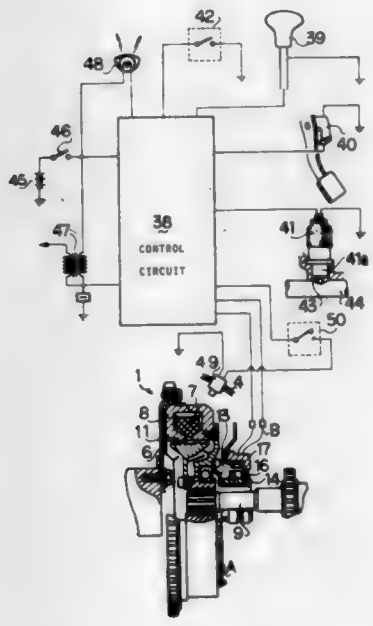
second comparator means arranged to receive and compare said error signal and the clutch position signal and produce a difference signal which is supplied to the actuator control.

4,403,683

ELECTRO-MAGNETIC POWDER CLUTCH SYSTEM FOR AUTOMOBILES

Toshio Takano, Hamuramachi, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1980, Ser. No. 195,897
Claims priority, application Japan, Oct. 22, 1979, 54-136560
Int. Cl.³ F16D *37/02*; B60K *41/02, 41/28*
U.S. Cl. 192—0.052 **7 Claims**



1. In a system for controlling an electro-magnetic clutch of an internal combustion engine for a vehicle, which has a drive member secured to a crankshaft of said internal combustion engine, a magnetizing coil provided in said drive member, and a driven member adjacent said drive member operatively connected to said drive member, and a transmission operatively connected to said driven member and having multi-stage change gears including at least first, second and third speed stages, the improvement comprising

a 2nd gear switch means for being operated by shifting the gears in said transmission to the second speed stage

a thermo switch means for being operated at a predetermined temperature of the clutch and connected to said 2nd gear switch means in series, and

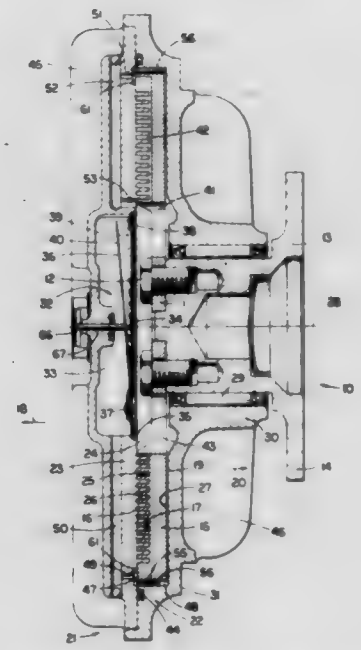
a warning means operatively connected to said 2nd gear switch means and said thermo switch means for being operated by a combination signal from said 2nd gear switch means and said thermo switch means.

4,403,684

FLUID SHEAR COUPLING APPARATUS

Paul J. Haeck, Indianapolis, Ind., assignor to Wallace Murray Corporation, New York, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,228
Int. Cl.³ F16D *33/12, 35/00, 43/25*
U.S. Cl. 192—58 B **18 Claims**



1. A fluid shear coupling apparatus which comprises:

a driving member including a disc-shaped portion having a front side and a rear side, the front side including a first shear surface;

a driven member defining a working chamber within which said driving member is received, said driven member including a first shear surface configured and positioned complementary to the first shear surface of said driving member to define a fluid shear chamber therebetween and cooperable with shear fluid in the fluid shear chamber to transmit torque between said driving member and said driven member;

mounting means for mounting said driven member to said driving member and rotatable about a common axis;

a shear fluid reservoir;

first flow means for providing flow of shear fluid from said reservoir to the working chamber and from the working chamber to said reservoir; and

second flow means, separate from the working chamber and said reservoir, for providing flow of shear fluid from a radially-outward location of the working chamber directly to a radially-inward location of the working chamber for permitting substantially continuous recirculation of shear fluid through the working chamber between the first and second locations, said second flow means including a passageway defined by said driven member and extending radially inward only to about the radially-innermost portion of the first shear surface, the passageway communicating with the fluid shear chamber and directing the recirculated shear fluid back into the fluid shear chamber at a location only as radially inward as about the radially-innermost portion of the first shear surface.

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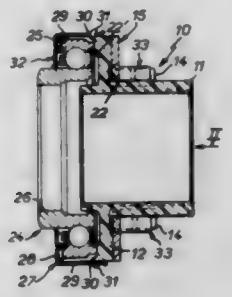
CLUTCH RELEASE BEARING

Carlo Beccaris, Santena, Italy, assignor to Valeo Societe Anonyme, Paris, France

Filed Dec. 29, 1980, Ser. No. 221,049
Int. Cl.³ F16D *23/14*
U.S. Cl. 192—98 **13 Claims**

1. A clutch release bearing comprising an operating element operable by a clutch control member, and a drive element actuable by said operating element and cooperable with a clutch release mechanism, said operating element comprising a

transverse annular flange, a bearing plate overlying said transverse annular flange for contact with the clutch control member, and clips having elastically deformable lateral wings with a bight portion therebetween for providing an elastic snap-fit



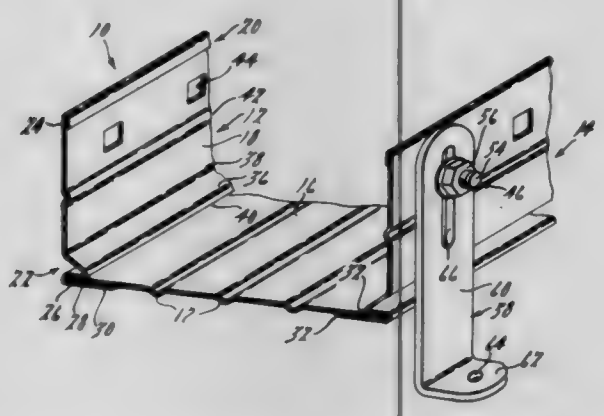
engagement of said clutch release bearing on the clutch control member, each of said clips defining an independent, generally U-shaped part, said bearing plate having lugs extending between said lateral wings of each respective clip and relatively adjacent said bight portion of each clip.

4,403,686

MODULAR CHUTE ASSEMBLY

Jacob L. Rycenga, 3285 Middlebury La., Birmingham, Mich. 48010

Filed Jun. 1, 1981, Ser. No. 268,690
Int. Cl.³ B65G *11/00*
U.S. Cl. 193—2 C **24 Claims**



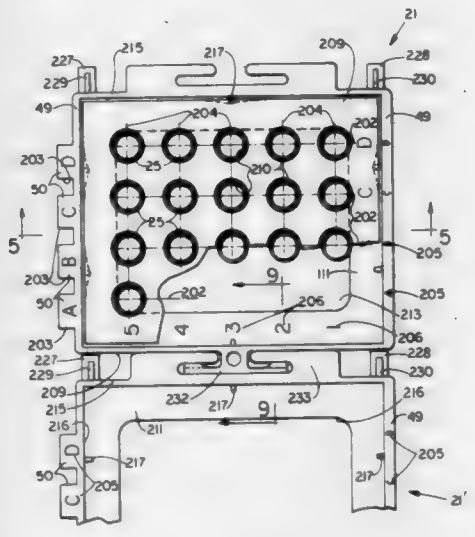
1. A three-piece modular chute assembly comprising a chute bottom and two chute sides, and chute sides each having a substantially flat body portion with an upper edge at one end and a lip means at the other end, said upper edge having a hem and said lip mears including a recess that lies substantially perpendicular to said chute sides, said recess having a recess top and a recess bottom, said recess bottom extending inwardly from and perpendicular to said chute side and said recess top extending inwardly from said chute side and substantially parallel to said recess bottom, said recess bottom extending further inwardly than said recess top, said recess having a vertical width slightly larger than the vertical width of said chute bottom so as to integrally accommodate the edges of said chute bottom, wherein said chute sides and said chute bottom comprise a chute module, said modular chute assembly containing at least one chute module, and whereby said chute bottom and said chute sides are manufactured in varying standard widths and heights so as to be interchangeably combined into said chute module according to each user's chute requirements.

4,403,687

LINKABLE SAMPLE-TUBE CARRYING TRAY WITH TABS AND GEARS

William M. Stevens, Loveland, and Eugene L. Timperman, Cincinnati, both of Ohio, assignors to Randam Electronics, Inc., Cincinnati, Ohio

Filed Oct. 27, 1980, Ser. No. 201,190
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—472 **33 Claims**



1. A sample tray for use with an analytical instrument having detector means for performing an analysis upon a sample contained in a sample holder and conveyor means for imparting a force to said tray, in a predetermined direction, said tray comprising:

(A) retaining means for holding a plurality of said sample holders in rows and in a plane including said direction;

(B) conveyor cooperating means, couplable to said retaining means, for receiving said force of said conveyor means to move said retaining means in said direction; and

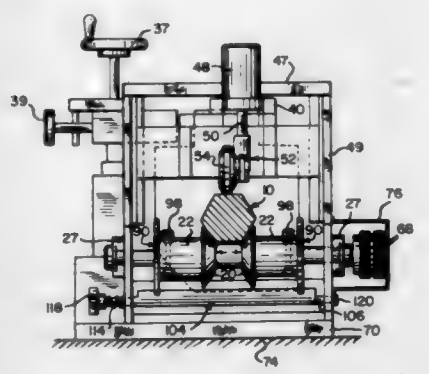
(C) machine-readable position-indicating means aside from printed alpha-numeric data, couplable to said retaining means and separate from said retaining means and from said conveyor cooperating means, for indicating to said instrument the location of the center of each of the rows.

4,403,688

TUBE OR BAR STOCK FEED SYSTEM

Michael R. Livia, Brooklyn; William S. Gould, Suffern, and Peter J. Suhr, Westbury, all of N.Y., assignors to Magnetic Analysis Corporation, Mt. Vernon, N.Y.

Filed May 6, 1981, Ser. No. 260,980
Int. Cl.³ B65G *13/02*
U.S. Cl. 198—785 **5 Claims**



1. An apparatus for transporting tube or bar stock in a direction along its longitudinal axis comprising:

(a) a series of drive assemblies aligned perpendicularly to said direction of transport, each drive assembly including:

(i) a driven shaft;

(ii) threaded portions of oppsite hands on said shaft dis-

posed on opposing portions of said shaft with respect to said axis;

(iii) a roller assembly of two coaxial frusto-conical rollers surrounding said shaft and engaging said threaded portions;

(iv) an inclined surface on each of said frusto-conical rollers configured to contact said tube or bar stock;

(v) means for rotationally connecting and disconnecting said rollers and said shaft including a housing configured to permit relative motion between said roller and said housing in the direction of said shaft, surrounding said driven shafts and rotationally engaging said rollers, and a series of electromagnetic clutches, one associated with each housing, said clutches configured to rotationally connect and disconnect said shaft and said housing;

(b) reversible drive means for rotating the driven shaft of each drive assembly in synchronism in a first direction or a second direction to transport said tube or bar stock when said shaft and said roller assemblies of each drive assembly are rotationally connected, and

(c) means for preventing the rotation of said rollers when said shaft is rotationally disconnected from said rollers whereby said rollers of each drive assembly synchronously travel toward one another on said threaded portions of opposite hands when said drive means is rotated in said first direction and synchronously travel away from one another when said drive means is rotated in said second direction.

4,403,689

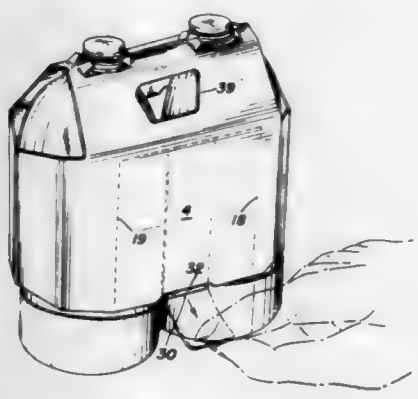
ARTICLE CARRIER

Prentice J. Wood, Hapeville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 27, 1981, Ser. No. 325,501

Int. Cl.³ B65D *85/62*; B66C *1/10*; B65D *75/00*

U.S. Cl. 206—158 **11 Claims**



1. An article carrier comprising a pair of handle panels foldably joined along the upper edges thereof, a pair of side walls joined respectively to said handle panels along the lower portions thereof, a plurality of article receiving apertures formed in said handle panels and disposed astride the fold line between said handle panels, end wall panels joined respectively to the end edges of said side walls and extending generally inwardly of the carrier, and a glue flap joined to the inner edge of one of said end wall panels at each end of the carrier and being adhered in overlapping relation to the adjacent end wall panel.

4,403,690

SLIDE-UP HANDLE

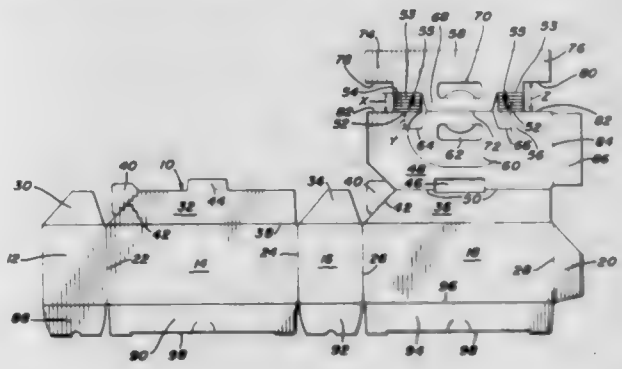
David Fischer, 12 Cavotti Crescent, Downsview, Ontario, Canada (M3H 4V1)

Filed Jan. 25, 1982, Ser. No. 342,213

Int. Cl.³ B65D *5/46, 75/00*

U.S. Cl. 206—163 **6 Claims**

1. A handle structure for application to cartons comprising a first panel, a handle cut in said first panel, said handle having a pair of shoulders extending laterally one from each side of said handle, a handle panel, means defining a second handle in said handle panel, the top edges of said handle and said second handle being connected by a fold line connection, connecting straps positioned one on each side of said second handle and foldably connected at one end to said handle panel and at its opposite end to said first panel by means of fold lines substantially parallel to said fold line connection, said straps being laterally spaced from said handle by a distance less than the distance said shoulders project laterally from said handle the



lengths of said straps between said fold lines connecting each said straps to said first panel and said handle panel and the distances between said shoulders and said fold lines connecting said straps to said first panel being substantially equal so that when said handle panel is folded into face-to-face relation with said first panel and said handle is moved to an extended position said shoulders are in a position to engage said connecting straps adjacent said fold lines connecting said straps to said handle panel.

4,403,691

SPARE LEAD HOLDER

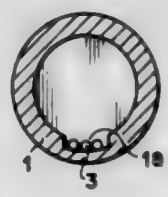
Hidehei Kageyama, and Takahiko Suzuki, both of Kawagoe, Japan, assignors to Kotobuki & Co., Ltd., Kyoto, Japan

Filed Dec. 11, 1980, Ser. No. 215,312

Claims priority, application Japan, May 9, 1980, 55-063437; Nov. 12, 1980, 55-161706

Int. Cl.³ A45C *11/34*

U.S. Cl. 206—214 **9 Claims**



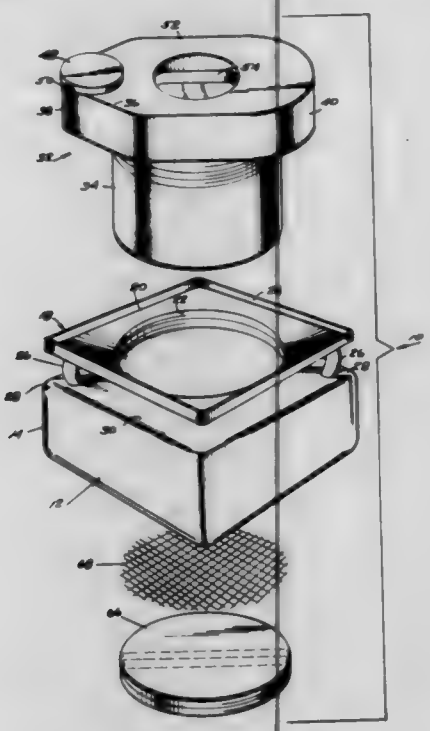
1. A spare lead holder which comprises a hollow cylindrical holder body for containing spare leads, said holder having an open end portion and having a longitudinal groove formed on the inner wall along the axial direction of said holder body for locating only a suitable number of leads to a position from which said leads are taken out, and a cap body frictionally and rotatably mounted on said one end portion of said holder body, said cap body having on the top surface thereof an opening for taking out said leads; said holder body and said cap body having means for limiting rotational motion of said cap body relative to said holder body in one direction of rotation of said cap body to a position in which said opening is aligned with said groove whereby only the spare leads within said groove are accessible through said opening.

4,403,692

MOTOR OIL CHANGE KIT

William F. Pollacco, 3819 Burlingame Pl., Alexandria, Va. 22309

Filed Aug. 27, 1981, Ser. No. 297,082
Int. Cl.[3] B65B *39/00;* F16N *31/00;* B65D *81/36*
U.S. Cl. 206—223 6 Claims



1. A motor oil change kit comprising: a jug of molded plastic material for initially containing a quantum of new oil sufficient to fill the engine oil reservoir of a motor vehicle internal combustion engine, said jug having at least one neck provided with a respective recloseable cap which at least one neck is located in the vicinity of the top of the jug when the jug is upright;

an outer container of molded plastic material, which initially receives and substantially encloses said jug, said outer container having a volumetric capacity at least as large as said quantum, and being capable of free-standing without need for being confined by a container box; and

securement means initially retaining said jug received within and substantially enclosed by said outer container;

said outer container initially completely enclosing said jug;

said outer container further including a lid which constitutes a front wall of said outer container when said jug is upright and which constitutes a top wall of said outer container when said outer container is disposed as a receiver for used oil;

said outer container having a body including an opposite wall from said lid and a peripheral wall perimetrically bounding said opposite wall; said perimetrical wall ending in a perimetrical lip distally of said opposite wall;

said lid including a perimetrical groove adapted to frictionally, removably securely receive said lip for removably sealingly securing said lid on said body of said outer container both when said jug is contained within said outer container and when said jug is outside said outer container and said outer container is full of used oil;

one said neck projecting vertically upwardly from said jug when said jug is upright;

said sidewall of said body of said outer container including means defining a pocket for receiving said one neck and the respective recloseable cap; and

said lid of said outer container including a corresponding appendage for covering said pocket, said lip extending around said pocket and said groove extending around said appendage.

2. A motor oil change kit comprising:

a jug of molded plastic material for initially containing a quantum of new oil sufficient to fill the engine oil reservoir of a motor vehicle internal combustion engine, said jug having at least one neck provided with a respective recloseable cap which at least one neck is located in the vicinity of the top of the jug when the jug is upright;

an outer container of molded plastic material, which initially receives and substantially encloses said jug, said outer container having a volumetric capacity at least as large as said quantum, and being capable of free-standing without need for being confined by a container box; and

securement means initially retaining said jug received within and substantially enclosed by said outer container;

said relcoseable cap for one said neck of said jug including, in addition to a cap end wall having a threaded skirt, an inner structure comprising a rod coaxially secured at one end thereof to and extending inwardly from said cap end wall and having a threaded plug disposed on the opposite end thereof;

said outer container including a body having an inner end wall adapted to function as a floor when said outer container is disposed in turkey roaster orientation for collecting and containing used oil, and a peripheral sidewall for perimetrically integrally joining said inner end wall and adapted to function as an upstanding sidewall when said outer container is disposed in said turkey roaster orientation;

means providing an internally threaded drain opening in said inner end wall, correspondingly threaded with said plug, so that said recloseable cap may be unthreaded from said jug and, after said jug is removed from said outer container, said plug may be threaded into said drain opening from within said outer container to removably stopper said drain opening and leave said recloseable cap projected substantially above said floor of said outer container;

said rod being of sufficient length that when said quantum of used oil has been drained into the outer container, said recloseable cap remains disposed above the used oil and free to be grasped and rotated for removing the plug from the drain opening; and

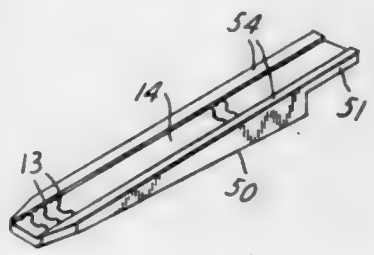
said jug and said outer container having cooperable surface means whereby said outer container, when stoppered and containing said quantum of used oil may be rested upon said jug with said drain opening, though stoppered by said plug, disposed in an open said neck of said jug, after said jug has been emptied of new oil, and said plug removed to allow the quantum of used oil to drain from said outer container into said jug, whereupon said jug may be reclosed using said recloseable cap.

4,403,693

MEDICAL STAPLING DEVICE

Harold E. Froehlich, St. Anthony, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 78,602, Sep. 24, 1979, Pat. No. 4,321,002, which is a division of Ser. No. 890,682, Mar. 27, 1978, Pat. No. 4,185,762. This application Feb. 16, 1982, Ser. No. 349,063
Int. Cl.[3] B65D *83/02, 85/24;* F15B *15/00;* A43B *23/20*
U.S. Cl. 206—339 3 Claims



1. A cartridge adapted for releasable engagement in a stapler, said cartridge comprising parallel elongate rails defining opposed parallel grooves; and a plurality of staples each having arcuate end portions in said grooves and frictionally engaged with said rails, said staples opening toward the same end of said cartridge, being disposed with the side surfaces of the staples in

common planes, and being in closely adjacent relationship along said grooves, and said cartridge having an opening between said rails on one side to afford access to the sides of said staples spaced along said rails.

4,403,694

GUIDE STRIP FOR CONVEYING FITTINGS INTO A STUDDING MACHINE

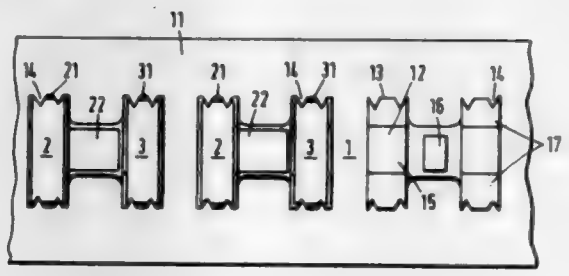
Karl E. Schmale, Lüdenscheid, Fed. Rep. of Germany, assignor to Schmale & Co., Lüdenscheid, Fed. Rep. of Germany

Continuation of Ser. No. 865,597, Dec. 28, 1977, abandoned. This application Oct. 2, 1980, Ser. No. 193,387

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1976, 2659150

Int. Cl.³ B65D *85/24*

U.S. Cl. 206—347 **11 Claims**



1. An assembly comprising a guide strip and a plurality of fittings carried by said strip, said assembly being provided for introduction into a studding machine in which each said fitting is separated from said strip and hammered into a box-shaped container, said guide strip comprising a tape-like foil presenting a succession of integral, conically tapered nests, each configured to conform to and retain a respective fitting, with said nests being spaced along said strip and all open to one face of said foil, and each said fitting being configured to be hammered into such a container and being releasably retained in a respective nest until being separated from said strip, and wherein each said nest includes holding means including a tongue disposed for holding a portion of the respective fitting in said nest.

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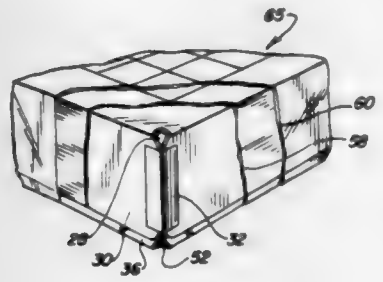
HEAT-SHRINKABLE FILM WRAPPED PACKAGING

Russell A. Raymoure, Olathe; Richard P. Bechtel, Jr., Prairie Village; Ray Carson, Shawnee, and Alva G. Don Carlos, Roeland Park, all of Kans., assignors to Hallmark Cards, Inc., Kansas City, Mo.

Filed Jan. 6, 1982, Ser. No. 337,497

Int. Cl.³ B65D *71/08, 85/00, 5/68*

U.S. Cl. 206—497 **12 Claims**



1. A carton for packaging articles formed of a rigid or semi-rigid material having a top and bottom and a plurality of sides disposed in angularly intersecting planes which define a plurality of angular corners and having at least a portion of the apex regions of said corners cut out to a size insufficient to disrupt continuity in lines of a heat-shrinkable overwrap applied to the carton whereby the carton is characterized by the absence of sharp points at the corners thereof and is adapted for overwrapping with a heat-shrinkable plastic film whereby the stress forces on the plastic film at all of the corners of the carton are reduced, comprising

a tray comprising

a bottom panel square or rectangular in shape,

upstanding side and end walls abutting with one another and engaged with the bottom panel at the edges thereof,

means securing the upstanding side and end walls in abutting relationship,

said tray having cut out portions at the corners thereof,

a cover comprising

a top panel structure similar in shape but somewhat larger than said bottom panel,

downturned side and end walls abutting with one another and engaged with the top panel at the edges thereof,

means securing the downturned side and end walls in abutting relationship,

said cover having cut out portions at the corners thereof.

4,403,696

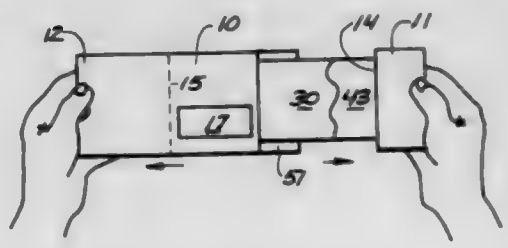
ENVELOPE

William C. Newell, Spokane, Wash., assignor to I-Tron, Inc., Spokane, Wash.

Filed Apr. 19, 1979, Ser. No. 31,503

Int. Cl.³ B65D *27/06, 27/34*

U.S. Cl. 206—623 **18 Claims**



1. A reusable stuffed envelope assembly for initial use in the delivery of an insert, comprising:

a front panel and a back panel overlying and secured to one another, the panels each having an inside surface and an outside surface;

a first tear line across the front panel;

a second tear line across the back panel;

the first tear line being spaced inwardly from one side edge of the envelope a distance greater than the distance between the second tear line and the one side edge of the envelope;

said first and second tear lines defining a removable portion of the envelope that includes said one side edge thereof and which is adapted to be grasped in pulling opposition to the opposite side edge of the envelope for bursting the envelope by separation of the removable portion from the remainder of the envelope along said first and second tear lines;

a primary insert sandwiched between the front and back panels adjacent the one side edge of the envelope, whereby the primary insert is grasped and removed from the envelope conjointly with separation of the removable portion of the envelope;

the back panel including a portion that extends outward from the first tear line after separation of the insert and the removable portion of the envelope from the remainder of the envelope, the extended portion of the back panel being foldable over the first tear line and front panel as a covering flap to enable the remainder of the envelope to be reusable;

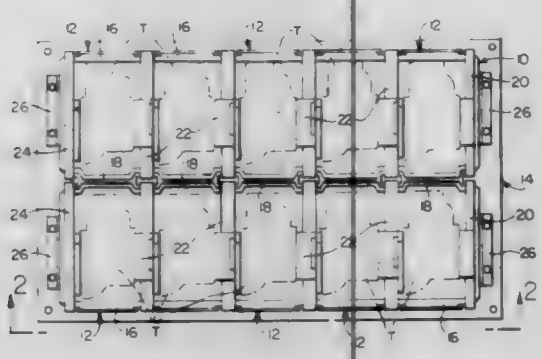
said front and back panels further including third and fourth tear lines respectively, said third and fourth tear lines being formed across the panels at positions intermediate the location of the first tear line and said opposite side edge of the envelope.

4,403,697

RACK CONSTRUCTION

David J. Forshee, 11 Misty Morning Dr., Hilton Head Island, S.C. 29928

Filed Dec. 29, 1980, Ser. No. 220,828
Int. Cl.[3] F16M 11/00
U.S. Cl. 211—13 31 Claims



1. A cradle set for translating a load unit or subassembly from one station to another comprising

a pair of plastic unitary integrally molded grid-type end nest component members, each having laterally extending support ledges complementary to and with a selected end portion or portions of said load unit or subassembly to support and cradle the same, said end nest members being arranged in parallel opposedly facing relationship,

a pair of plastic unitary integrally molded separator and tieing members removably secured to respective opposedly facing ends of said end nest members,

a plastic unitary, integrally formed accessory strap component operatively engageable with at least one said end nest component member and said selected end portion or portions securing said load unit or subassembly in said cradle set during translation of said load unit,

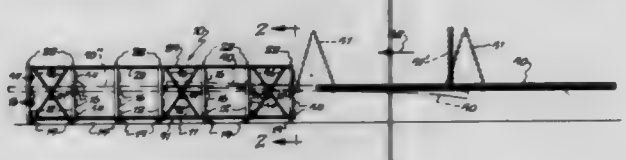
and fastener means removably securing said separator and tieing members to said end nest members.

4,403,698

ROD STORAGE RACK

Donald E. Care, Eden, and Edward L. Metzger, Angola, both of N.Y., assignors to E & D Specialty Stands, Inc., North Collins, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,754
Int. Cl.[3] E21B 19/14
U.S. Cl. 211—60 S 17 Claims



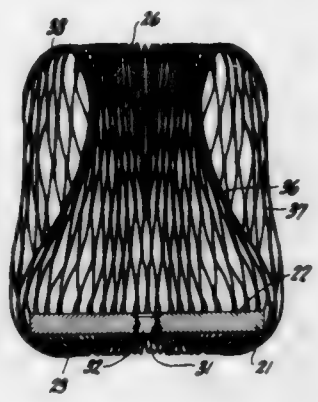
1. A rack for elongated rod-like members comprising a base, a plurality of frames mounted in aligned spaced relationship on said base, each of said frames comprising a plurality of vertical horizontally spaced columns, a plurality of horizontal vertically spaced beam-like members affixed to the columns of each of said frames to define openings in each of said frames with corresponding openings of all of said frames being in alignment, upper and lower biting edges on said beam-like members, rollers mounted on each of said frames behind each of said beam-like members with the upper portion of each of said rollers being slightly higher in elevation than the upper biting edge of the beam-like member adjacent thereto, and said lower biting edges being below said rollers, whereby said rod-like members will be carried by said rollers when said rod-like members are horizontal but will be bitingly engaged by the upper biting edge of one of said beam-like members of a frame at the end of said rack and the lower biting edge of another beam-like member at a higher elevation than the upper biting edge of said one of said beam-like members when the ends of said rod-like members outside of said rack tilt downwardly.

4,403,699

HOLDING DEVICE FOR PENCILS AND THE LIKE

Robert S. Hansen, 2 E St., Santa Rosa, Calif. 95404

Filed Feb. 2, 1978, Ser. No. 874,415
Int. Cl.[3] A47F 7/00
U.S. Cl. 211—69.1 9 Claims



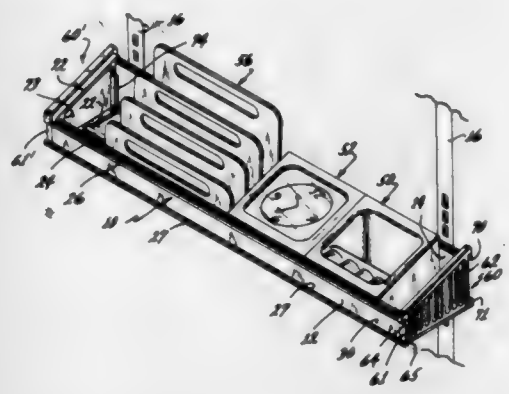
1. In a device for holding an elongated object: a generally planar base, an axially elongated tubing of flexible material folded back on itself to form inner and outer axially extending layers with a curved fold between the layers, and means including a plug mounted in a central bore in the base securing the ends of the tubing to the base with the axis of the tubing extending in a direction generally perpendicular to the plane of the base, said tubing comprising mesh of flexible strands joined together to form openings for receiving the elongated object in such a manner that the object extends through at least two of the openings and is gripped by the strands defining said openings, the mesh toward at least one end of the tubing being drawn together and secured in the bore by the plug.

4,403,700

MODULAR OFFICE ACCESSORY FOR PERSONAL ITEMS

Marvin D. Manlove, 6833 Oak Ter., Kansas City, Mo. 64113

Filed May 15, 1981, Ser. No. 263,775
Int. Cl.[3] A47F 5/08
U.S. Cl. 211—88 8 Claims



1. As an article of manufacture, in combination, means forming an integral frame structure having ends constructed to support individual modular holders for office accessories, a plurality of individual holders forming modules constructed to be held in the frame structure, the frame structure having a flat bottom an open top to receive and hold the said modules, the said frame structure having a front wall and a back wall the front wall being lower then the back wall, the top edge of each wall forming a rail so as to provide a trackway, the modules each having an upper part having front and back portions formed to engage said rails to be slideable along the trackway,

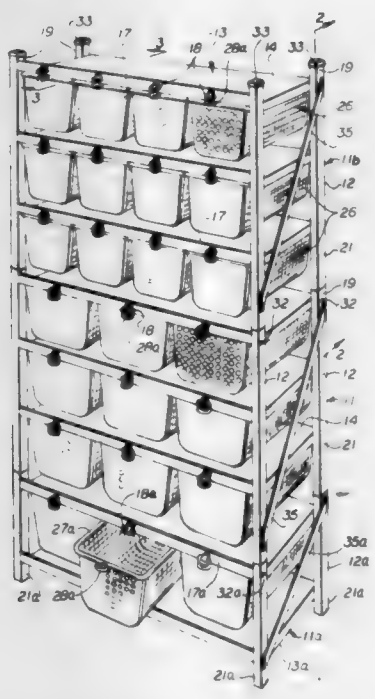
each of the modules being constructed to allow it to be manually removable and replaceable with respect to the frame structure, each individual module, having an office accessory carried by the said upper part within the said frame structure, the said frame structure being constructed so as to be adapted to be movably supported on a horizontal surface and having means for attachment to a vertical surface.

4,403,701

EXPANSIBLE RACK FOR LOCKER BASKETS AND GARMENT STORAGE

Patrick G. Corcoran, 3014 Rollison Rd., Redwood City, Calif. 94025

Filed Mar. 30, 1981, Ser. No. 249,080
Int. Cl.³ B01D *27/10*
U.S. Cl. 211—133 **4 Claims**



1. An extensible rack for locker baskets of the type having open tops defined by top boundary wires extending longitudinally of said baskets comprising a plurality of rectangular shelves horizontally spaced apart, vertical posts at the corners of said rack attached to said shelves, a plurality of guides fixed to the undersides of at least some of said shelves each said guide comprising a flat, horizontal central portion fixed to the underside of a shelf and on either longitudinal edge of said central portion a substantially vertical stretch extending downward and a substantially horizontal outwardly extending flange, said guides being spaced apart so that the two longitudinal top boundary wires of each of a plurality of baskets fit over opposed flanges and under the shelf to which said guides are fixed to restrain said baskets against horizontal transverse and vertical displacement, said flanges supporting said baskets spaced slightly above the shelf next below the shelf to which said guides are fixed, and cooperating locking means on said baskets and said shelves to restrain said baskets against horizontal longitudinal displacement.

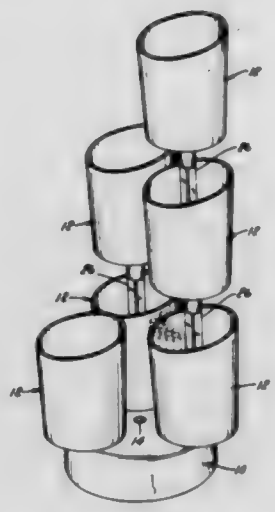
4,403,702

VARIABLE DISPLAY MERCHANDISING RACK

Paul Belokin, Jr., Rte. 4, Hayward, Wis. 54843

Filed Sep. 18, 1980, Ser. No. 188,334
Int. Cl.³ A47F *5/04*
U.S. Cl. 211—189 **1 Claim**

1. A knock-down display rack assembly for displaying articles at a point a purchase and which includes a base having a plurality of center posts, each of said center posts comprising a pair of elongated and axially outwardly-opening sockets, said center post further comprising a cross-member, the ends of said cross-member being connected to said sockets, a plurality of containers each having an inclined open upper end and also having a bottom, said inclined open upper end presenting a lower edge for good accessibility of said articles displayed therein, said container further having an integrally formed center post receiving member in its bottom with an upper and lower end and for detachable telescoping engagement with said sockets of said center posts whereby said containers can be stacked vertically on one another, said lower end of said center post receiving member being insertable in said recesses in said



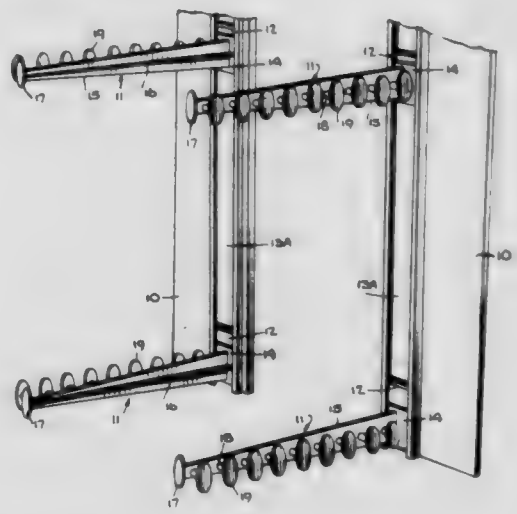
base so as to provide a plurality of stacks of containers on a single base, said center posts being quickly and easily removable from said upper ends of said center post receiving members by simple upward movement of said center posts, said center posts further being of a length sufficient to permit simultaneous customer access to said open ends of any of said vertically stacked containers, and said containers being transparent and being molded in one piece and of a plastic material.

4,403,703

GARMENT DISPLAY AND STORAGE UNIT

Walter G. Nikles, Jr., 210 Shore Rd., Long Beach, N.Y. 11561

Filed Feb. 5, 1981, Ser. No. 231,901
Int. Cl.³ A47G *29/02*
U.S. Cl. 211—193 **13 Claims**



1. A display and storage unit for garments having shoulder straps as well as garments having shouldered sleeves, the unit comprising:

A. at least one supporting beam having a longitudinally-extending channel on its front face; and

B. a plurality of modules, each constituted by a square plate receivable in said channel and an arm cantilevered from the plate, the arm being provided with a series of hooking posts which, when the plate is oriented in the channel so that the posts extend horizontally, function as hooks to engage the strap loops of garments having shoulder straps; and when the plate is oriented in the channel so that the

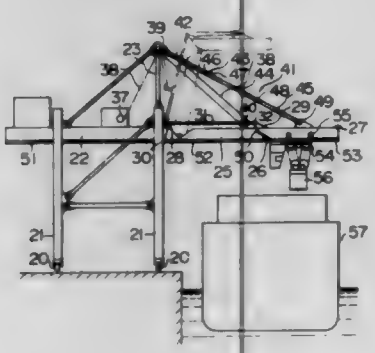
posts are upright, the posts then define a series of stations to hold the hooks of conventional clothes hangers carrying garments having shouldered sleeves.

4,403,704

VERTICALLY PIVOTABLE BOOM BENDING DEVICE FOR CRANE

Kazuhiro Makino, Kudamatsu, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 1, 1982, Ser. No. 364,470
Claims priority, application Japan, Apr. 8, 1981, 56-51781
Int. Cl.³ B66C *23/82*
U.S. Cl. 212—262 **4 Claims**



1. In a crane comprising a main boom, a vertically pivotable boom comprising an inner boom section connected to the outer end of the main boom for vertical pivotal movement and an outer boom section connected to the outer end of the inner boom section for vertical pivotal movement, an articulating rope extending from a main body of the crane to the inner boom section, a rope winding system for paying out and gathering in the articulating rope and first tension means connecting the main body of the crane to the outer boom section, a vertically pivotable boom bending device comprising:

second tension means connected at one end thereof to the main body of the crane for pivotal movement in a vertical plane and at the other end thereof to the outer boom section for pivotal movement in a vertical plane, wherein a point of connection of the inner boom section to the main boom of the crane, a point of connection of the inner boom section to the outer boom section, a point of connection of the second tension means to the main body of the crane and a point of connection of the second tension means to the outer boom section are located such that imaginary lines connecting these points of connection together form a substantial parallelogram.

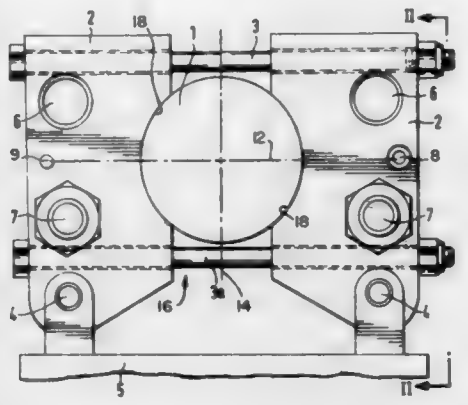
4,403,705

SHORT COUPLING FOR RAIL VEHICLES

Dieter Ernst; Hilmar Forster; Wilhelm Günther, all of Wolfenbüttel, and Ernst Vahldiek, Beierstedt, all of Fed. Rep. of Germany, assignors to Scharfenbergkupplung GmbH, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 155,164
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922439
Int. Cl.³ B61G *5/06*
U.S. Cl. 213—1.3 **4 Claims**

1. In an arrangement for a short coupling for rail vehicles, the short coupling having an end face and being of the type having guide means for supporting an axially displaceable electrical line coupling, and support means for both a centering pin and a bore for receiving the centering pin of a counter-coupling to be engaged therewith, and a bore for receiving a fixed pneumatic line coupling, the improvement in which said support means comprises two plates, each of said plates being shaped and disposed in mirror-symmetrical relationship relative to a vertical median plane extending through the short coupling, with a gap between said plates, said plates each having a recessed bearing face with a contour matching an outer contour of the short coupling, a screw bolt extending horizontally through said two plates above and below the short coupling and bridging said gap for detachably connecting each of said plates to each other and to the short coupling with each bearing face engaging the short coupling, said two plates offset axially rearwardly with respect to the end face,



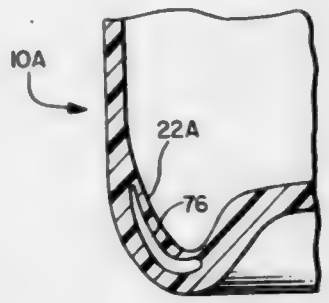
the centering pin of the short coupling being mounted on said support means and said support means including the bore for receiving the centering pin of a counter-coupling and for receiving the fixed pneumatic line coupling, and wherein said support means includes means for guiding the axially displaceable electrical line coupling.

4,403,706

PLASTIC CONTAINER WITH HOLLOW INTERNAL RIB REINFORCED BOTTOM AND METHOD OF FORMING THE SAME

Gautam K. Mahajan, Stamford, Conn., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Jun. 8, 1982, Ser. No. 386,378
Int. Cl.³ B65D *1/02, 23/00, 1/40*
U.S. Cl. 215—1 C **19 Claims**



8. A blow molded plastic material beverage bottle having a reversely turned bottom of the champagne type, said bottle including a body terminating at its lower end in a radially inwardly curved upper bottom portion which terminates in turn in a reversely turned annular base portion, and said bottom inwardly of said base portion being inverted and of a generally frustoconical configuration, said bottom being reinforced by radiating ribs disposed internally of said bottle and extending across said base portion, said ribs being tubular.

4,403,707

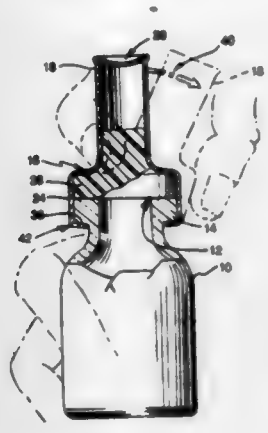
COMBINATION CONTAINER CAP AND CLOSURE SEAL

John T. Connor, Norristown, Pa., assignor to The West Company, Phoenixville, Pa.

Filed Nov. 12, 1981, Ser. No. 320,579
Int. Cl.³ B65D *41/42*
U.S. Cl. 215—253 **10 Claims**

1. A combination cap and container closure and sealing means, adapted for operative connection to a container having an access opening, to seal the contents therein, said cap comprising an elongated, exterior top portion, and a bottom, open-

ended skirt operatively integrated therewith, said skirt having a lower edge removably attachable to said container about said access opening, said combination cap and closure sealing means being conjointly operatively connectable to and removable from said container as an integrated unit to open the container for access to material therein, by application of a lateral tilting force against the elongated cap exterior portion



at a position thereof remote from connection of the cap to the container, said sealing means comprising a resilient material integrated with the cap interior and disposed within the interior of at least said skirt portion and extending into a portion of said elongated exterior top portion of said cap and being sealingly engaged with and about said access opening with said cap operatively mounted on said container.

4,403,708

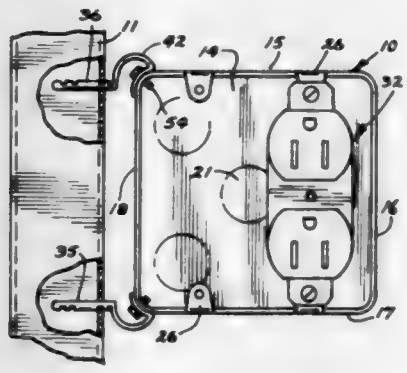
ELECTRICAL RECEPTACLE BOX ASSEMBLY

Robert A. Smolik, 670 W. Seventh St., St. Paul, Minn. 55102

Filed Jul. 19, 1982, Ser. No. 399,473

Int. Cl.³ H02G *3/10*

U.S. Cl. 220—3.5 **21 Claims**



1. An electrical receptacle box assembly comprising:

a box-like housing for accommodation of an electrical receptacle;

a metal wall stud of the type for use in building construction with a major side member having a plurality of mounting holes describing a hole pattern;

a plurality of resilient tines mounted on the exterior of the housing, each having a linear tine portion outwardly extended from the housing, said linear tine portions being substantially parallel to each other, each tine at an opposite end having a spring loop portion fixed to the housing permitting resilient deflection of the linear tine portion with respect to the housing;

the outer ends of the linear tine portions of said tines being arranged to describe a pattern generally corresponding to, but slightly deviant from, the hole pattern on the wall stud whereby the tines are insertable into corresponding holes under slight spring deflection to mount the housing with respect to the wall stud; and

each linear tine portion having at least one transverse notch positioned for engagement with the edge of a mounting hole upon insertion of the tines into the mounting holes.

4,403,709

DRINKING AND POURING AID FOR CONTAINERS OF BEVERAGES AND OTHER LIQUIDS

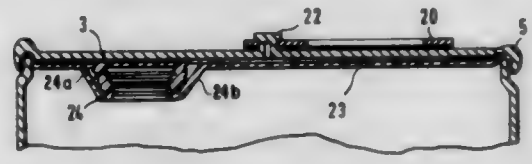
Wolfgang Meins, Aisterredder 44, D-2000 Hamburg 65, Fed. Rep. of Germany; Jürgen Stoldt, Ahrensburg, and Peter Rose, Henstedt-Ulzburg, both of Fed. Rep. of Germany, assignors to Wolfgang Meins, Hamburg, Fed. Rep. of Germany

Filed May 12, 1980, Ser. No. 148,727

Claims priority, application Fed. Rep. of Germany, May 18, 1979, 2920159

Int. Cl.³ A47G *19/22*

U.S. Cl. 220—90.4 **3 Claims**



1. A drinking spout arrangement for use with a beverage container having a cover secured to the top of the container wherein the cover has a removable area defined by a frangible seam and connected to a pull tab which removable area creates an opening through the cover when the tab is pulled, the drinking spout arrangement comprising:

a web of elastic material disposed within the container in juxtposition with the cover and being coextensive with the cover to enclose and seal the top of the can, and

a resilient spout formed integrally with the web and aligned with the removable area of the cover, the spout being in abutment with the removable area, the spout including a flange portion and a collapsible neck portion with the flange portion connecting the collapsible neck portion to the web; the spout having a cross-section defining an area substantially less than the removable area of the opening whereby when the opening through the cover is created by pulling the tab to discard the removable area, the spout springs beyond the cover and a portion of the web is exposed which is spaced from the spout, the exposed portion of the web having a vent hole therein spaced from the spout and communicating with the interior of the container;

the spout further including a top surface having a slit therein which slit is opened upon squeezing the spout with the mouth to drain the beverage from the container.

4,403,710

EASILY-OPENABLE HEAT SEAL LID

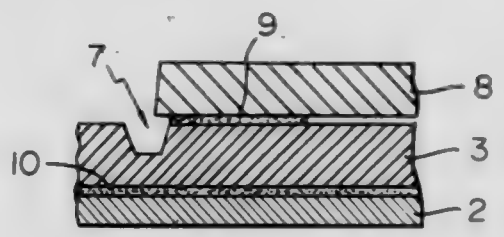
Kazumi Hirota, Tokyo; Yotaro Tsutsumi, Yokohama; Senji Ito, Ayase; Tadahiko Katsura, Yokohama; Kikuo Matsuoka, Yokohama, and Ichiro Hori, Yokohama, all of Japan, assignors to Toyo Seikan Kaisha Ltd., Tokyo, Japan

Filed May 11, 1982, Ser. No. 376,949

Claims priority, application Japan, May 13, 1981, 56-70783; Apr. 8, 1982, 57-57273; Apr. 22, 1982, 57-66373

Int. Cl.³ B65D *17/34*

U.S. Cl. 220—270 **12 Claims**



1. An easily openable heat seal lid for sealing a vessel proper by forming a heat-sealed portion between the lid and the vessel proper, which comprises a laminate comprising at least an

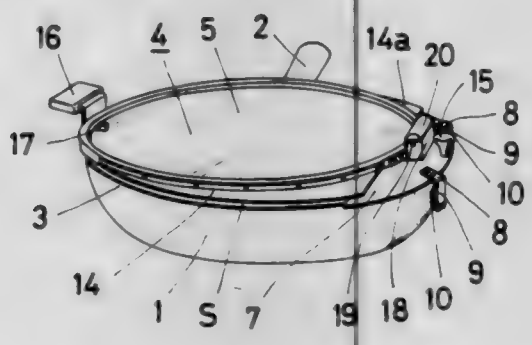
inner face member composed of a thermoplastic resin and a metal foil, wherein scores defining a portion to be opened are formed on the side inner than the portion to be heat-sealed so that the scores extend to the midway of the thickness direction of the metal foil, and said inner face member comprises at least one heat-selable thermoplastic resin layer having an adhesion strength of at least 800 g/15 mm to the metal foil, a tear strength lower than 3.0 Kg and a tensile modulus of at least 300 Kg/cm^2.

4,403,711

OIL SPLASH AND FIRE-PROOF LID

Kato Kyosuke, 58-22, 4-chome, Onomachi, Kasugai City, Aichi Prefecture, Japan

Filed Nov. 23, 1981, Ser. No. 324,014
Int. Cl.³ B65D *43/24*
U.S. Cl. 220—335 **1 Claim**



1. An oil splash and fire-proof lid arrangement that can be detachably mounted on the side of a shallow cooking or frying pan, which arrangement comprises:

(a) a bearing plate having an outer arcuate edge portion that approximates a portion of the outer periphery of the pan,

(b) means for detachably mounting said bearing plate on the side of the pan so that the bearing plate will be disposed parallel to the bottom of the pan regardless of the position of the lid,

(c) a lid member pivotally attached to said bearing plate by a pivotal mounting member so that said lid member can be pivoted from a lowermost position that is approximately parallel to the bottom of the pan to a raised position which permits access to the contents of the pan, said lid member comprising see-through, heat-resistant material, and

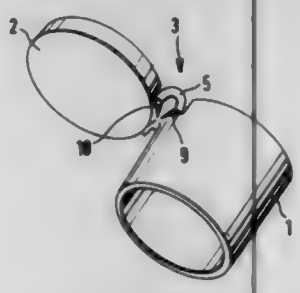
(d) means on said lid member for establishing a ventilating gap between the lid member and the upper rim of the pan when said lid member is pivoted downwardly to its lowermost position.

4,403,712

SNAP HINGE OF PLASTIC MATERIAL

Wilhelm Wiesinger, Koechlistrasse 2, CH-8004, Zurich, Switzerland

Filed Jan. 21, 1982, Ser. No. 341,208
Claims priority, application Switzerland, Jan. 21, 1981, 360/81
Int. Cl.³ B65D *43/14, 51/04*
U.S. Cl. 220—339 **25 Claims**



1. An integral snap hinge of plastic material, comprising:

two hinge members adapted to be folded about a main geometric axis and being flexibly interconnected by at least one connecting element, the hinge members being flexibly interconnected at at least one additional place along the main geometric axis;

film hinges having the connecting element interposed therebetween, the film hinges being divergent and at least one being inclined with respect to the main geometric axis: and

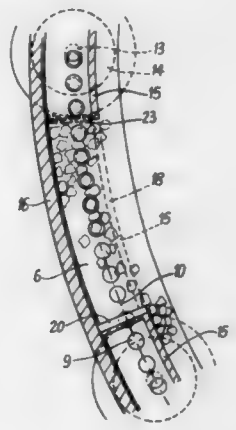
at least one component of the snap hinge being resilient to perform the snap action.

4,403,713

DISTRIBUTING DEVICE FOR SO-CALLED SINGLE-SEED SEED DRILLS AND SEED DRILL COMPRISING SUCH A DEVICE

Paul Herriau, Cambrai, France, assignor to Societe SOGEFINA Societe de Gestion Financiere Armoricaine, Paris, France

Filed Mar. 31, 1981, Ser. No. 249,367
Claims priority, application France, Mar. 31, 1980, 80 07190; Aug. 13, 1980, 80 17894; Feb. 19, 1981, 81 03317
Int. Cl.³ A01C *7/04*
U.S. Cl. 221—265 **14 Claims**



1. In a distribution device for single-seed seed drills of the type comprising a rotatable plate **5** having a peripheral edge **6**, a central portion onto which are fed the seeds, and a substantially vertical axis of rotation, the peripheral edge having recesses **9** substantially parallel to the axis of rotation and regularly spaced angularly about a circle **10** of said edge, the horizontal section of these recesses and the thickness of the edge corresponding substantially to the size of a seed said peripheral edge moving above a fixed support **11** in which are provided, directly below the recesses **9** of the rotatable plate, openings **13** for communication with a transport device **14**, and barrier means **22, 23, 50** upstream of each opening of the fixed support to deflect seeds not engaged in the recesses of the rotatable plate; the improvement comprising brake means **18, 39, 52** for retarding the outflow of seeds, said brake means being interposed between the central portion of the rotatable plate onto which are fed the seeds, and the barrier means **22, 23, 50**.

4,403,714

COLLAPSIBLE TUBE COMPRESSING PASTE DISPENSER

David M. Kane, 1238 Goldenrod Dr., Garland, Tex. 75043

Filed Dec. 10, 1981, Ser. No. 329,305
Int. Cl.³ B65D *35/28*
U.S. Cl. 222—101 **1 Claim**

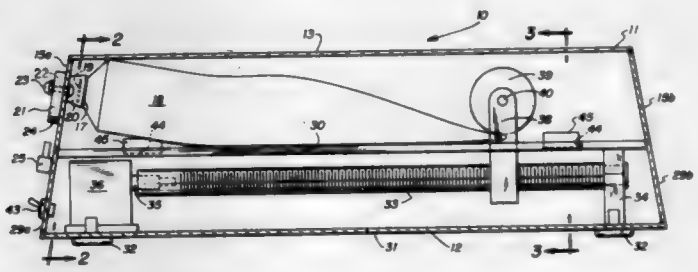
1. A collapsible tube compressing paste dispenser, comprising, in combination:

(a) two pairs of opposed walls affixed one to another and to a slotted platen, said walls also being rigidly affixed to a baseplate, thereby forming an enclosure having two ends, two sides, a top being said platen and a bottom being said baseplate;

(b) a tube compressing roller, rotatably mounted between

upper ends of two upright support members projected above the platen through two parallel slots so that the support members can travel longitudinally within the slots, and an internally threaded crossmember positioned below the slotted platen and having an end affixed to a lower end of one upright support member and an opposite end affixed to a lower end of the other upright support member, thereby forming a carriage for said roller;

(c) a single lead screw threaded through a threaded hole through said crossmember, supported at an end by a bearing means and supported at an opposite end by an output shaft of an electric gearmotor mounted within said enclosure, with said lead screw directly connected co-axially to the shaft of said gearmotor;



(d) a switch means interposed in an electric power supply wire means between an external electric power source and said gearmotor for actuation of said gear-motor and a second switch means connected to the supply wiring and to said gearmotor for reversing polarity and rotation of the gearmotor;

(e) a dispenser cover having a top wall affixed to a pair of opposed cover side walls and to a pair of opposed cover end walls, a circular hole through a first of said cover end walls sized to tightly fit around a cylindrical nozzle end of a dispensing adapter piece with thread means within a hole through said adapter piece;

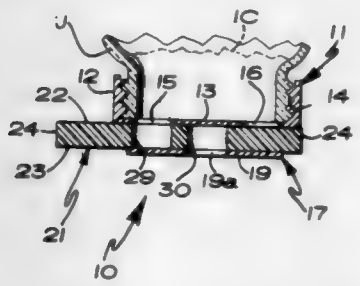
(f) a switch actuation and dispensing adapter nozzle closure lever pivotally mounted on a spindle affixed to said first cover end wall 15*a* and having a return spring means mounted on said spindle in association with said lever.

4,403,715

DEVICE FOR DISPENSING A MEASURED AMOUNT OF A PARTICULATE MATERIAL

Anthony W. Ludovissie, 1639 E. Constance Dr., Golden Valley, Minn. 55422

Filed Jun. 29, 1981, Ser. No. 278,685
Int. Cl.³ G01F *11/18*
U.S. Cl. 222—361 **1 Claim**



1. A particulate dispensing device, comprising:

a mounting member having an annular wall and having a flat, circular wall, said annular wall having means on the inner surface thereof adapted to engage the external means on the upper end of a conventional jar containing a particulate material such as instant coffee, said end wall having a pair of spaced apart similar openings therethrough;

a guide structure including opposed spaced apart sidde walls integral with said end wall of said mounting member, a substantially flat bottom wall integral with said side walls and spaced from said end wall of the mounting member, said bottom wall having a centrally located opening therethrough corresponding in size and shape to each opening in the end wall;

an elongated, generally rectangular shaped slide dispenser having side edges, substantially flat upper and lower surfaces, and end edges, said slide dispenser having a pair of spaced apart similar openings therethrough each corresponding in shape and size to the openings in said end and bottom walls, said slide dispenser being slidable in opposite directions in said guide structure, means on said slide dispenser engaging said guide structure to limit sliding movement of said slide dispenser in either direction, said slide dispenser when slid the limit of movement in either direction intercommunicating the other opening in the slide dispenser with the opening in the bottom wall of the guide structure whereby when the slide dispenser is shifted in either direction throughout its extent of movement, a predetermined amount of particulate material will be dispensed; and

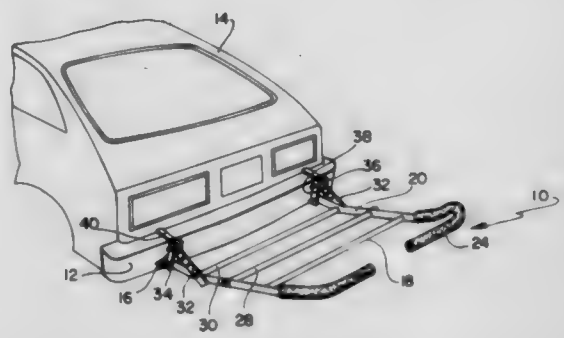
means on one end of said slide dispenser being shiftable to permit said slide dispenser to be removed from said guide structure, said shiftable means at one end of said slide dispenser comprising a pair of fingers each having a top element thereon for limiting movement of the slide dispenser in one direction, said fingers being movable toward each other to permit said slide dispenser to be removed from said guide structure.

4,403,716

AUTOMOBILE SUPPORT RACK

Gerald I. Carlson, 10 Paquin Rd., Barrington, R.I. 02806, and Norman J. Cook, 91 River Vue Ave., Warwick, R.I. 02889

Filed May 26, 1982, Ser. No. 382,129
Int. Cl.³ B60R *9/06*
U.S. Cl. 224—42.08 **10 Claims**



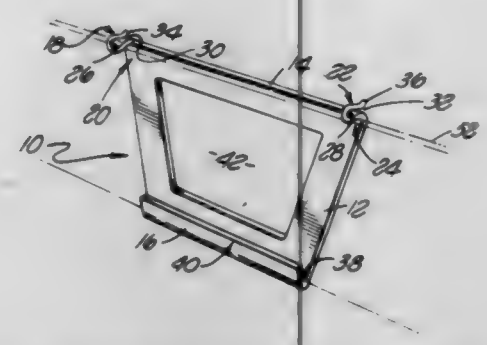
1. A multi-purpose support rack adapted for operative positioning at an end of an automobile and including means for positioning said rack thereat, said rack further including a frame comprising a pair of laterally separated posts pivotally connected at their inner ends to said positioning means and interconnected to each other by laterally extending crossmembers and a pair of essentially L-shaped handle members supported at the other ends of said posts for at least limited rotational movement with respect to said posts, said frame pivotally movable with respect to said positioning means between a first, upright, substantially vertical position where said handle members may be rotated to a rearwardly extending position normal to the plane of said frame for support of a bicycle and the like to a second substantially horizontal position where said frame extends outwardly from an end of said automobile for support of luggage and the like.

4,403,717

CAMERA CARRYING DEVICE

Betty L. Glover, 3132 Silverado Dr., Los Angeles, Calif. 90039

Filed Jan. 22, 1982, Ser. No. 341,931
Int. Cl.³ A45F 5/02
U.S. Cl. 224—252 6 Claims



1. A camera carrying device for attaching a camera having a pair of strap attachment rings on each side of the camera, to a belt or strap worn by a user, the camera carry device comprising:

a rigid body having an upper edge, a lower edge portion generally parallel to the upper edge and a pair of corner regions along the upper edge;

a pair of hook clips each extending from one of the corner regions, each hook clip for being clipped to one of the strap attachment rings on the camera; and

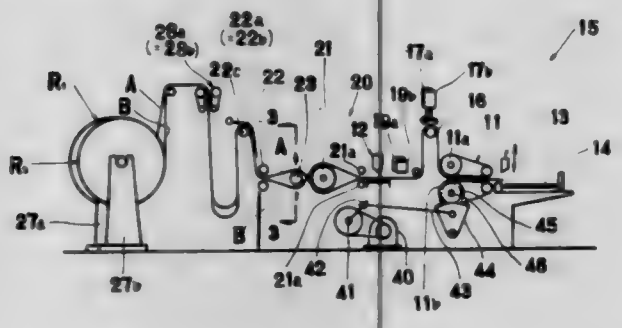
an upwardly directed reverse hook portion extending along the length of the lower edge portion for securing and holding the camera carry device with attached camera around the edge of the belt or strap of the user.

4,403,718

METHOD AND APPARATUS FOR AUTOMATICALLY CONTROLLING TRAVEL OF TWO PLASTICS FILM STRIPS AS A BAG MATERIAL OR THE LIKE

Mitsuo Nagano, Kawanoe, Japan, assignor to Taiyo Shokai Co., Ltd., Japan

Filed Oct. 16, 1981, Ser. No. 312,132
Claims priority, application Japan, Oct. 17, 1980, 55-144368
Int. Cl.³ B65H 23/00, 23/10, 23/04
U.S. Cl. 226—27 3 Claims



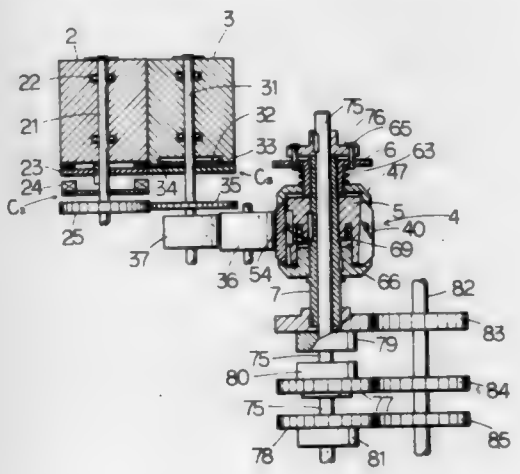
1. A method of automatically controlling travel of two transversely spaced parallel plastics film strips in a bag-making machine, packaging machine or the like, which comprises the steps of: moving the film strips, each having register marks at substantially regular intervals, by an intermittently operated conveyor means having a pair of nipping rollers; detecting the marks of the strips respectively by separate photoelectric detectors; and retarding either one of the strips that precedes the other strip during the next feeding action of said conveyor means by means of a first retarding device for the strip which is arranged to be operated in response to detection by one of said detectors of one of the marks of the strip, characterized in that in case where one of the marks of the other strip has not been detected by the other of said detectors within a predetermined time, after detection of one of the marks of the preceding strip, during each intermittent travel of the strips, retarding further the preceding strips and at the same time accelerating the other strip by means of a second retarding device for the strips.

4,403,719

TAPE FEEDING SYSTEM

Kyoichi Yamashita, Yokohama, Japan, assignor to Koyo-Jido-Ki Co., Ltd., Japan

Filed Jun. 24, 1981, Ser. No. 276,803
Claims priority, application Japan, Jul. 25, 1980, 55-101242
Int. Cl.³ B65H 17/22
U.S. Cl. 226—188 6 Claims



1. A tape feeding system comprising:

a larger drum and a smaller drum having greater and lesser circumferences than a predetermined length, respectively, and disposed in tangential contact for transporting tape therebetween;

a variable-diameter drum adapted to rotate at a constant speed;

transmission means for selectively connecting said variable-diameter drum to either one of said larger and smaller drums; and

control means for controlling said variable-diameter drum and said transmission means and capable of detecting whether the tape is overfed or underfed, whereby the diameter of said variable-diameter drum is reduced and the rotation of said larger drum depends on said smaller drum when said control means detects that the tape being transported between said larger and smaller drums is overfed, while the diameter of said variable-diameter drum is increased and the rotation of said smaller drum depends upon said larger drum when said control means detects that the tape is underfed.

4,403,720

BIDIRECTIONAL TAPE ADVANCING METHOD AND APPARATUS

Frederic F. Grant, Bellflower, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Feb. 5, 1982, Ser. No. 345,971
Int. Cl.³ B65H 59/38; G03B 1/04; G11B 15/32
U.S. Cl. 226—190 14 Claims

8. Apparatus for guiding an advancing tape in either one of two opposite directions, comprising in combination:

a hollow tape guide member;

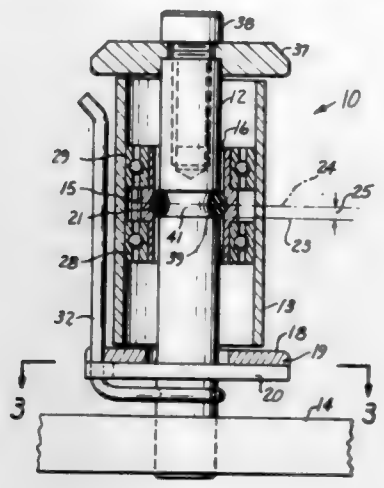
a post through said hollow tape guide member;

a sleeve around said post inside said hollow tape guide member;

a tape guide surface at an end of said tape guide member peripherally thereof and at an angle thereto;

means for supporting said sleeve for omnidirectional tilting motion relative to a plane intersecting said post at a predetermined location offset in a direction away from said tape guide surface from a central location corresponding to a longitudinal center line of said tape, including means for

providing a fulcrum circumferentially around said post at said offset predetermined location; and



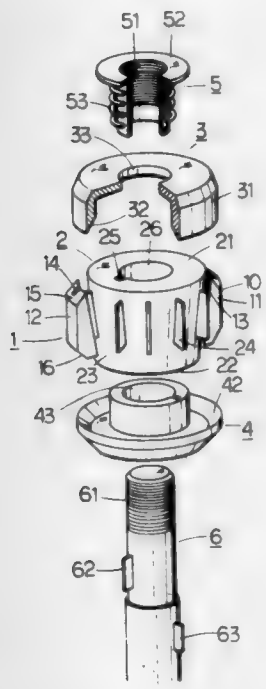
means for mounting said hollow tape guide member on said sleeve, including spaced bearings located at opposite sides of said plane.

4,403,721

VARIABLE DIAMETER DRUM

Kyoichi Yamashita, 2361 Nippa-cho, Kohoku-ku, Yokohama-shi, Kanagawa 223, Japan

Filed Jun. 5, 1981, Ser. No. 270,979
Int. Cl.³ B65H *17/20*; B23B *31/40*
U.S. Cl. 226—191 **6 Claims**



1. A variable diameter drum comprising:

a rotating shaft;

a plurality of separate cylinder segments circumferentially arranged around the shaft and each having an outer arc surface and outwardly beveled upper and lower surfaces such that lines extended parallel to said upper and lower surfaces would meet above said outer arc surface, the outer arc surfaces of said cylinder segments forming a substantially continuous cylindrical surface when said cylinder segments are joined together;

means for holding said cylinder segments, but allowing said cylinder segments to translate in their radial directions, said holding means including a lower ring secured to the shaft and an upper ring mounted for axial motion on the shaft and biased toward the lower ring, said cylinder segments being interposed between the lower and upper rings, said lower ring having an inwardly bevelled upper surface mating with said outwardly bevelled lower surfaces of said cylinder segments, and said upper ring having an inwardly bevelled lower surface mating with said outwardly bevelled upper surfaces of said cylinder segments; and

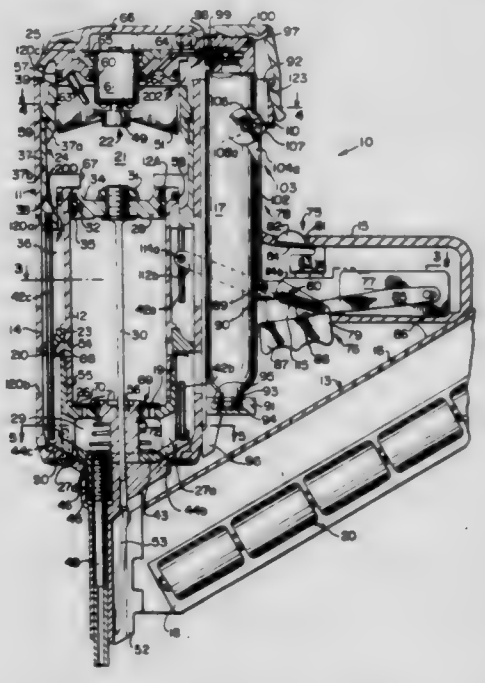
means for adjusting the position of said cylinder segments in their radial directions.

4,403,722

COMBUSTION GAS POWERED FASTENER DRIVING TOOL

Milovan Nikolich, Chicago, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Jan. 22, 1981, Ser. No. 227,194
Int. Cl.³ B25C *1/04*
U.S. Cl. 227—8 **29 Claims**



1. A portable fastener driving tool comprising a housing, a cylinder in said housing, a piston in said cylinder and movable through a driving stroke from a driving to a driven position, a driver attached to said piston, a magazine for supplying fasteners into position to be driven by said driver, a combustion chamber formed within said housing and having said piston as one wall thereof, a fan in said combustion chamber and controls therefor to operate same to cause turbulence in said chamber, main valve means controlling the flow of air into said combustion chamber and the exhausting of the gases of combustion from said combustion chamber, means for providing fuel into said combustion chamber and igniting same for driving said piston from said driving position to said drive position to drive a fastener, and means for returning the piston to the driving position after a fastener has been driven.

4,403,723

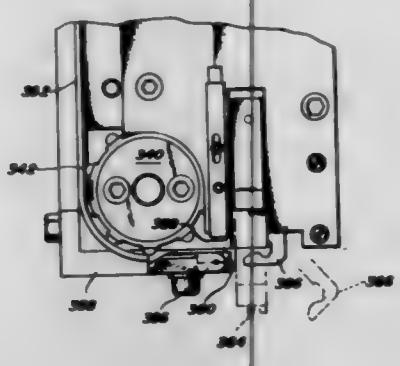
SEQUENCER LOADING HEAD FOR HIGH SPEED RADIAL LEAD COMPONENT SEQUENCING AND INSERTING MACHINE

Welbley J. Dean; David L. Merithew, and Phillip A. Ragard, all of Binghamton, N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,302
Int. Cl.³ B25B *5/08*
U.S. Cl. 227—76 **11 Claims**

1. An apparatus for transferring electronic components supplied on a substrate having a series of components attached thereto, and for loading selected components having at least one lead onto a conveyor in a preferred sequence, said conveyor having clip carriers for positive clamping of and transporting of said components by at least one lead, said apparatus comprising:

a main housing;
feed means for feeding said substrate attached components to a load position;
indexing means for incremental actuation of said feed means to present said components to said load position one at a time;



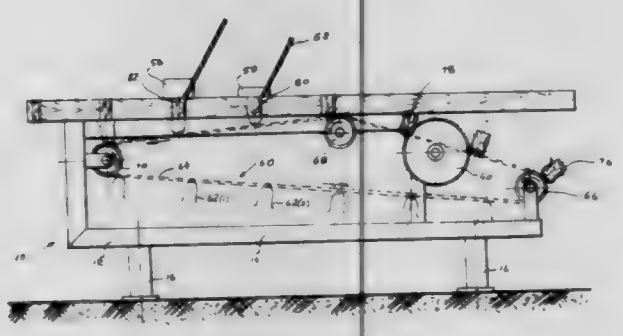
cutter means for severing said substrate between individual components to form severed components;
driver means for driving each of said severed components from said load position into a clip carrier upon command, such that said severed component is loaded into positive engagement with a clip carrier and clamped by said clip carrier.

4,403,724

AUTOMATED WALL PANEL FRAME MANUFACTURING APPARATUS

Albert Bardenstein, Syracuse, N.Y., assignor to Irwin J. Berlin, Venice Center, N.Y.

Filed Apr. 9, 1981, Ser. No. 252,414
Int. Cl.³ B27F 7/02
U.S. Cl. 227—76 **4 Claims**



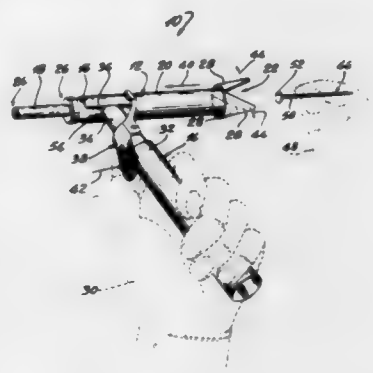
1. An apparatus for manufacturing wall panel frames comprising:
a frame;
means including a top surface of said frame for receiving a first plate;
means including a top surface of said frame for receiving a second plate parallel to and spaced apart from the first plate;
a conveyor extending between said first and second plate receiving means for delivering spaced apart studs between said plates, said conveyor following a continuous path from below said top surface, substantially to said top surface, and then returning below said top surface;
a saw positioned along said conveyor upstream of said first and second plate receiving means for cutting each of the studs delivered by the conveyor to a length equal to the spacing between said plates, said saw being upstream of where said conveyor reaches said top surface;
an automatic nailing device secured to said frame along said conveyor downstream of where the conveyor reaches the top surface and adapted to nail said studs to said plates when said studs are properly positioned between said plates; and,
releasable stud engaging means on said conveyor, said stud engaging means being adapted to release after a stud has passed said nailing device whereby said conveyor also moves said plates and the attached studs.

4,403,725

NAIL HOLDING AND DIRECTING DEVICE

Noel A. Lawrence, 5980 Bienville, Brossard, Quebec, Canada

Filed Mar. 6, 1981, Ser. No. 241,009
Int. Cl.³ B25C 3/00, 9/00
U.S. Cl. 227—147 **10 Claims**



1. A nail holding and directing device comprising:
a handle;
an elongated member connected to said handle, said member having a longitudinally extending bore into which an end portion of said nail may be coaxially inserted at one end of said member;
a striker rod slidably mounted in said bore for reciprocating movement therein, said rod having an outer end extending beyond the other end of said member and an inner end adapted to abut against said end portion of said nail;
a sleeve slidably mounted on said member for movement towards and away from said one end of said member;
at least two gripping fingers each pivotally mounted on a respective hinge provided on one end of said sleeve adjacent said one end of said member, whereby said gripping fingers are pivotally movable relative to said sleeve between open and closed positions so as to respectively release and slidably hold said nail between its ends while guiding same when a striking force is applied to said outer end of said striker rod for forcing said nail out of said bore and into said structure, each said gripping finger being provided adjacent its respective hinge with a respective inner cam surface for frictional engagement with an end edge of said member at said one end thereof so as to cause each finger to pivotally move towards said open position when said sleeve is moved away from said one end of said member;
biasing means normally urging each said gripping finger towards said closed position;
further biasing means normally urging said sleeve towards said one end of said member;
stop means for preventing said sleeve from moving beyond said one end of said member;
a pair of opposed lever arms pivotally mounted on said handle for pivotal movement between first and second positions, said lever arms having the free ends thereof straddling said sleeve and connected thereto for moving said sleeve away from said one end of said member against the pushing force exerted by said further biasing means towards said one end when said lever arms are moved towards said second position, said lever arms being normally urged through said connection towards said first position by said further biasing means; and
a finger actuated element connected to said lever arms for pivotally moving same towards said second position, thereby moving said sleeve away from said one end of said

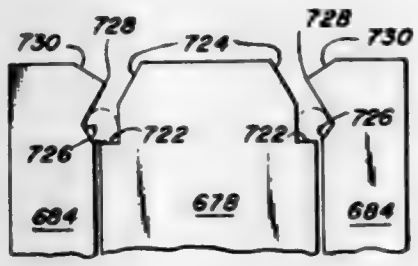
member and causing each said gripping finger to move to said open position against the closing force exerted by said biasing means.

4,403,726

INSERTION HEAD FOR HIGH SPEED RADIAL LEAD COMPONENT SEQUENCING AND INSERTING MACHINE

Michael D. Snyder, Binghamton, N.Y., and Crawford A. Matson, Wyalusing, Pa., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,608
Int. Cl.³ B25B *5/08*
U.S. Cl. 227—149 **8 Claims**



1. In an apparatus for cyclical insertion of radial leads of electronic components into the holes of a printed circuit board upon command, said apparatus including gripper means for gripping the leads of a component and pivoting about a pivot axis perpendicular to the longitudinal axis of the apparatus, drive means for actuating said pivotal gripper means, and a plunger for engaging the body of said component to drive the leads into said holes, the improvement comprising:

a guide tube vertically displaceable along and rotatable about said longitudinal axis and supporting said pivotal gripper means, said longitudial axis fixed vertically;

displacement means for vertical displacement of said guide tube along said longitudinal axis;

guide means for determining rotating or straight line movement of said guide tube along said longitudinal axis during vertical displacement of said guide tube;

first sensor means for sensing the vertical displacement of said guide tube; and

a guide jaw extending downwardly from a main body and flexible leaf jaws cooperating with said guide jaw to provide slots of a configuration suitable for receiving said leads in a flexible interference fit relation during said receiving and prior to said gripping such that shifting of said leads is avoided.

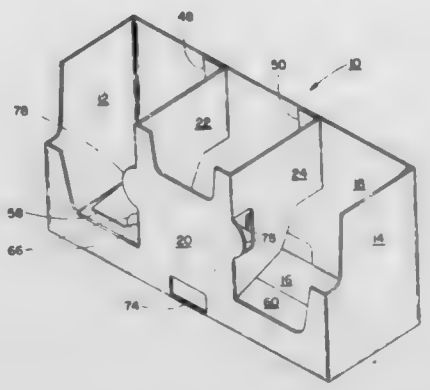
4,403,727

MULTI-COMPARTMENTED DISPLAY CARTON

Harold R. Grieve, and Thomas S. Andersen, both of Battle Creek, Mich., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 26, 1982, Ser. No. 362,179
Int. Cl.³ B65D *5/48*
U.S. Cl. 229—27 **10 Claims**

1. A foldable multi-compartment display carton including front and back side walls; two opposite end walls; a bottom wall structure; and at least one partition extending in spaced parallel relationship to said end walls so as to form said compartments, each said partition comprising a flap cut out from portions of said front side wall and end walls to provide full height corners between the back side wall and end walls and between the front side wall and said flap, said flap being glued to said back side wall, and said front, back and end walls and partitions having at least a portion of their top edges extending



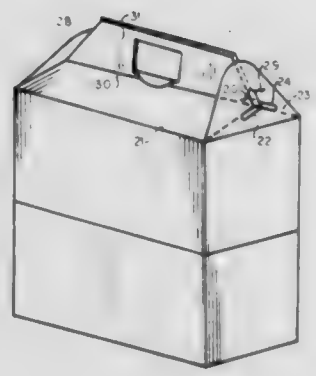
in a horizontal plane at the same maximum height extending above said bottom wall structure.

4,403,728

COLLAPSIBLE GABLE TOP CONTAINER

Irving M. Klotz, 2085 Islington Ave., Penthouse 9, Weston, Ontario, Canada M9P 3R1

Continuation of Ser. No. 157,390, Jun. 9, 1980, abandoned, which is a continuation-in-part of Ser. No. 153,911, May 28, 1980, abandoned. This application May 10, 1982, Ser. No. 377,539
Int. Cl.³ B65D *5/10, 5/46, 25/28*
U.S. Cl. 229—39 R **24 Claims**



1. A container prepared from a single blank of paperboard and/or the like and having an integral handle and a reusable top closure locking means comprising:

a. opposed pairs of side walls;

b. opposed pairs of end walls foldably connected to said opposed pair of side wall to define a tube;

c. bottom closure panel means foldably connected to the lower ends of said side walls and end walls, to form a complete bottom closure;

d. a top closure flap foldably attached to the upper end of each of said side walls, to define a top closure for said container;

e. a handle element foldably attached to and integral with each of said top closure flaps;

f. locking tabs extending from two opposing ends of said handle elements;

g. locking flaps foldably connected to the upper ends of each of said end walls, each of said locking flaps having a locking slot positioned to receive a locking tab; and

h. said locking slots extending arcuately in at least one direction to permit said locking tabs to rotate in said locking slot and to permit said top closure flaps to rotate about there fold lines, about 90 degrees.

4,403,729

FILE FOLDER BOX

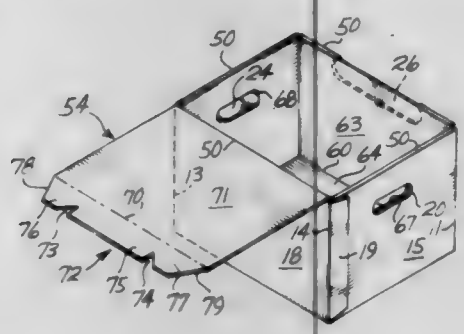
Richard Wytko, Olympia, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Continuation of Ser. No. 284,426, Jul. 20, 1981, abandoned, and Ser. No. 358,981, Mar. 17, 1982, Pat. No. 4,373,660. This application Jul. 26, 1982, Ser. No. 402,019

Int. Cl.³ B65D 5/10, 5/22

U.S. Cl. 229—39 R

11 Claims



1. A container blank comprising

first, second, third and fourth panels serially connected by score lines,

means for connecting said first and fourth panels in the completed container,

bottom closure panels extending from selected lower edges of said first, second, third and fourth panels,

two of said first, second, third and fourth panels having similar dimensions and being opposed side walls in the erect container,

the other two of said first, second, third and fourth panels having similar dimensions and being opposed front and back panels in the erect container,

a front reinforcing panel having the same height as said back panel and being hingedly attaced by a score line to the upper edge of said front panel,

an aperture through the outer face of said front panel,

a cover panel extending from the upper edge of the back panel and being hinged to said back panel along a score line,

a front closure flap hinged to the outer edge of said cover panel, said front closure flap having a closure tab having a length substantially equal to the length of said front panel aperture,

the distance between said front closure flap hinge and the inner edge of said closure tab being less than the distance between said front reinforcing panel hinge and the lower edge of said front aperture, and

the distance between said front closure flap hinge and the outer edge of said closure tab being greater than the distance between said front reinforcing panel hinge and the lower edge of said front aperture.

4,403,730

MAILBOX STAND

Bruce L. Batson, Stratton Lake Rd., Ashland City, Tenn. 37015

Filed Jun. 5, 1981, Ser. No. 270,889

Int. Cl.³ B65D 91/00

U.S. Cl. 232—39

6 Claims

1. A mailbox stand for supporting a standard rural delivery mailbox adjacent to a road, comprising:

a steel fence post for being secured in the ground adjacent the road and having a T-shaped cross section formed by a base member and a cross member attached at its midsection to one end of said base member;

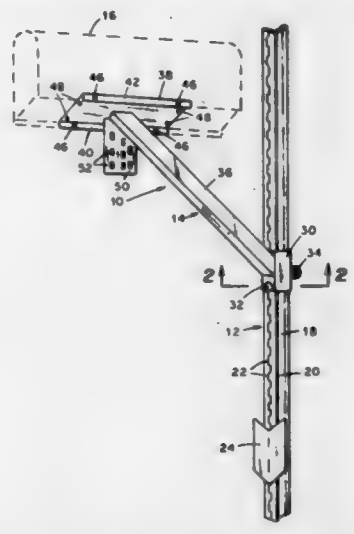
a plurality of studs disposed along the length of said fence post projecting from the outer surface of said cross member in a direction away from said base member;

a sleeve dimensioned for fitting over and sliding along the length of said fence post;

an indent in said sleeve for engaging and interacting with said studs on said fence post to fasten said sleeve to said fence post at a selected position;

a threaded aperture formed in said sleeve on the opposite side of said sleeve from said indent and being diposed in a laterally offset position on one side of said sleeve so that said aperture is spaced laterally with respect to said base member of said fence post; and

a set screw disposed in said threaded aperture and extending along and beside said base member to engage said cross



member, said set screw being operable when tightened to force said fence post to one side of the sleeve into a binding position and to urge said indent toward said fence post into a position above and engaging a selected one of said studs of said fence post;

a truss arm extending from said sleeve and having an outer end disposed in a position spaced apart from said fence post; and

means for mounting the mailbox on the outer end of said truss arm.

4,403,731

INTEGRATED HEAT PUMP AND HEAT STORAGE SYSTEM

Ami Katz, Ramat Gan, Israel, assignor to Electra (Israel) Ltd., Tel Aviv, Israel

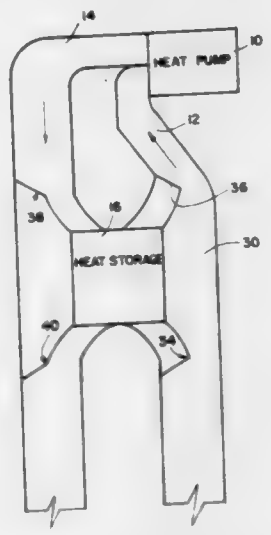
Filed Mar. 12, 1982, Ser. No. 357,648

Claims priority, application Israel, Mar. 13, 1981, 62344

Int. Cl.³ F24D 11/02

U.S. Cl. 237—2 B

3 Claims



1. An integrated heat pump and heat storage system comprising:

a heat pump;

a first conduit for supplying return air from an enclosure to said heat pump;

a second conduit for supplying heated air from said heat pump to said enclosure;

heat storage means selectably communicating with said first and second conduits;

first damper means operative in a first orientation to permit return air from said enclosure to enter said first conduit and to prevent return air from passing through said heat storage means and operative in a second orientation to cause return air to pass through said heat storage means for being heated thereby before entering said first conduit; and

second damper means operative in a first orientation to cause heated air from said second conduit to pass through said heat storage means for giving up a portion of its heat for storage and operative in a second orientation to prevent heated air from said second conduit from passing through said heat storage means and to permit heated air from said second conduit to reach said enclosure.

4,403,732

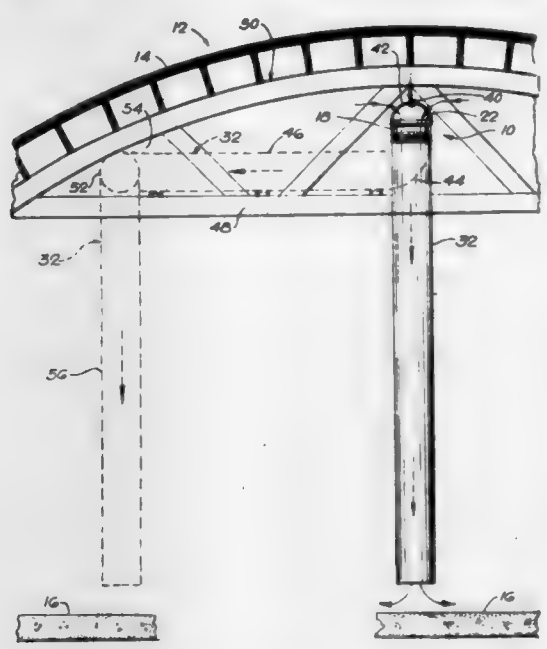
ENERGY SAVING HEAT RECYCLING SYSTEM

Theodore Primich, 4400 W. 9th Ave., Gary, Ind. 46406

Filed Aug. 18, 1980, Ser. No. 178,982

Int. Cl.³ F24D *5/00*

U.S. Cl. 237—50 **9 Claims**



1. An energy saving heat recycling system for circulating hot air from the top portion of a building to the lower portion of the building near the floor level,

said system comprising a generally cylindrical supporting sleeve,

a fan assembly having an electric motor with a rotatable shaft and a fan blade mounted on the shaft, said fan assembly being on a bracket and the bracket being mounted on said sleeve, the fan blade being rotatably disposed within said sleeve,

said sleeve having an intake end into which air is to be drawn by said fan and a discharge end from which air is to be discharged by said fan,

said sleeve being capable of being mounted in the top portion of a building from which hot air is to be drawn by said fan into said intake end of said sleeve,

and a flexible tubular duct connected to said discharge end of said sleeve to convey the hot air to the lower portion of the building near the floor level so that the hot air is reused to heat the lower portion of the building,

said duct being in the form of a tube made of thin flexible material which is compactly foldable for storage and shipment and which makes it possible to bend and thread said duct around obstructions and through openings.

4,403,733

TRACK ASSEMBLY FOR TOY TRAINS

Erik Bach, and Jan Ryaa, both of Billund, Denmark, assignors to Interlego A.G., Switzerland

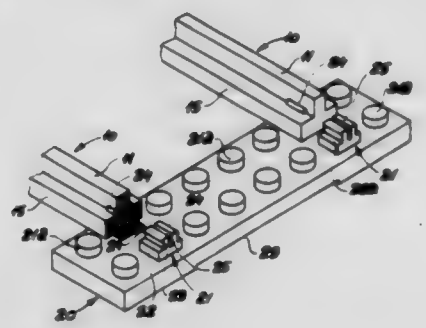
PCT No. PCT/DK80/00080, § 371 Date Jul. 22, 1981, § 102(e) Date Jul. 22, 1981, PCT Pub. No. WO81/01799, PCT Pub. Date Jul. 9, 1981

PCT Filed Dec. 15, 1980, Ser. No. 285,098

Claims priority, application Denmark, Dec. 20, 1979, 5465/79

Int. Cl.³ E01B *23/00*; A63H *33/00*

U.S. Cl. 238—10 E **2 Claims**



1. A track assembly for toy trains comprising a plurality of rails and ties having coupling means for detachably mounting the ends of the rails on the ties, wherein the rails are elongated, substantially rod-shaped elements having an upper face and a bottom face, a longitudinally extending rail-forming rib integral with the upper face and a longitudinally extending cavity in the bottom face, and wherein the ties are rectangular plate elements having a bottom face and a top face provided with upwardly extending coupling studs, characterized by the combination of the following features:

(a) in the rails: an aperture (bottom aperture) in the bottom of the cavity adjacent either end of the rail extending toward the rib and another aperture extending transversely through the rib (rib aperture) at the interface of said upper face and rib and communicating with the bottom aperture,

(b) on the ties: at least one pair of upwardly extending spring clips spaced apart at a distance corresponding to the rail gauge of the track, each of said spring clips comprising a socket having a width substantially equal to the width of the cavity in the rails and a height corresponding to the depth of the cavity, and a pair of upwardly extending and resiliently deformable tongues spaced apart from each other a distance substantially equal to the width of the bottom aperture and a height substantially equal to the depth of the bottom aperture and adapted to be received in and fill the bottom aperture, said tongues terminating at their upper ends in outwardly extending projections which overlie said upper face whereby when the socket is pressed into the cavity said socket fills the cavity and said tongues fill said bottom aperture and said projections extend into said rib aperture and over said upper face for cooperating with said socket seating in said cavity for detachably interlocking the ties with the rails in a double locking action.

4,403,734

EXPANDING-SLEEVE RAIL FASTENING

John T. Gorman, Seven Hills, Australia, assignor to Lyncross Pty, Ltd., Kenmore, Australia

Filed Jan. 22, 1981, Ser. No. 227,521

Claims priority, application Australia, Feb. 7, 1980, PE2284

Int. Cl.³ E01B *9/10*

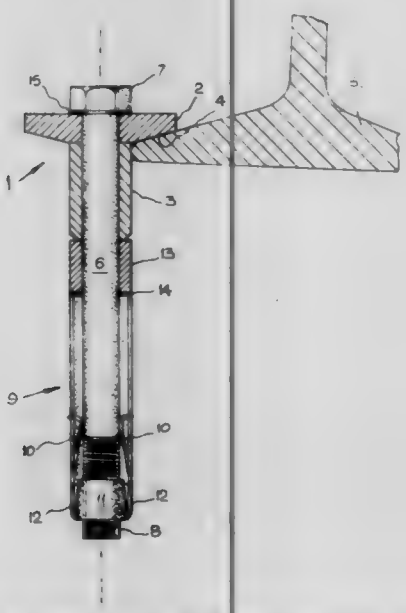
U.S. Cl. 238—372 **6 Claims**

1. An expanding-sleeve rail fastening, comprising:

a lug portion adapted to bear upon a rail foot;

a headed bolt having a threaded end and adapted to extend through an aperture in said lug portion and beyond into a bore provided in a permanent way sleeper via a sleeper plate spiked thereto;

a sleeve having radially-expandable, pronged portions surrounding said bolt and adapted to fit snugly into said bore;
a deformable collar interposed between said lug portion and said sleeve; and
a captive nut screwable onto the threaded end of said bolt, said nut being tapered towards its bolt-head end: the arrangement being such that, when said sleeve is inserted into said bore and said lug portion brought to bear on said



rail foot, said headed bolt is rotatable so as to cause said tapered nut to wedge in the lower end of said sleeve and, by continuing rotation of said bolt, to engage the radial inner surface of said pronged portions and to cause said pronged portions of the sleeve to be forced radially outwards; whereby said pronged portions are caused to grip the wall of said bore and whereby said lug portion is caused to firmly clamp said rail foot against said sleeper plate.

4,403,735

FLUID OPERATED NOZZLES FOR GENERATION OF VIBRATIONS IN LIQUIDS

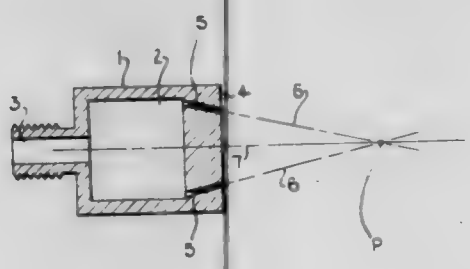
Colin R. Weaver, Warwickshire, England, assignor to Rolls Royce Limited, London, England

Continuation of Ser. No. 940,283, Sep. 7, 1978, abandoned. This application Jul. 31, 1980, Ser. No. 174,143

Claims priority, application United Kingdom, Sep. 15, 1977, 38503/77

Int. Cl.³ B01F *5/18, 11/02*

U.S. Cl. 239—1 **17 Claims**



1. A method of creating ultrasonic vibrations in a liquid comprising:

producing a plurality of discrete flows in the liquid; and

directing the flows such that they converge to come near to each other and to pass but do not intersect, such that a convergent-divergent vortex is produced in the liquid sufficient to cause cavitation to occur within the vortex.

4,403,736

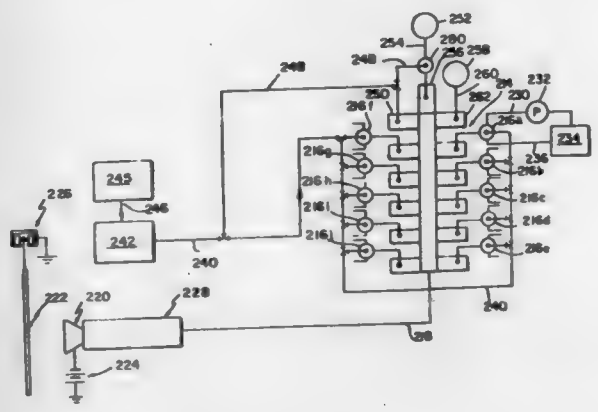
UNCONTAMINATED PURGE SOLVENT RECOVERY SYSTEM

James A. Scharfenberger, Indianapolis, Ind., assignor to Ransburg Corporation, Indianapolis, Ind.

Continuation of Ser. No. 326,151, Nov. 30, 1981, Pat. No. 4,350,720, which is a continuation-in-part of Ser. No. 228,166, Jan. 26, 1981, Pat. No. 4,311,724, and Ser. No. 275,872, Jun. 22, 1981, Pat. No. 4,348,425. This application Jun. 18, 1982, Ser. No. 389,695

Int. Cl.³ B05B *15/02, 7/16;* **F23D** *11/34, 13/28*

U.S. Cl. 239—112 **5 Claims**



1. An apparatus for terminating the flow of a coating material in a coating material delivery system which delivers the coating material to a dispensing device from which the material is dispensed during a coating operation and from which flow of the material ceases at the end of the coating operation, the apparatus including means for terminating the flow of coating material to the dispensing device, means for initiating and terminating the flow of a fluid cleaning medium to the dispensing device, and means for establishing a partial vacuum on the remaining cleaning medium.

4,403,737

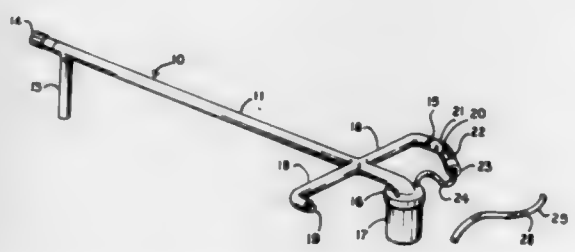
WATER-HOSE-POWERED GARDEN/AGRICULTURAL SPRAYERS AND SPECIAL NOZZLE

Homer H. Hancock, 4025 State St., Space 59, Santa Barbara, Calif. 93110

Filed Dec. 8, 1980, Ser. No. 214,480

Int. Cl.³ B05B *7/30*

U.S. Cl. 239—154 **1 Claim**



1. An agricultural spraying apparatus comprising:

coupling means for connecting the apparatus to a source of water;

a container for spray liquid concentrate;

a cap with means to receive said container;

a first nipple secured to said cap;

a hose coupled to said first nipple;

a nozzle means, said nozzle means including (a) a second nipple to which said hose is connected; (b) a screw-threaded end; (c) a diaphragm located downstream of said screw-threaded end and having a plurality of inclined passages for producing a swirling flow of water, (d) a transverse wall downstream of said diaphragm, said wall having a centrally located hole for the passage of said swirling flow of water, and (e) a shallow depression on a downstream end of said wall, said depression surrounding said hole, said nipple extending to said depression so as to

feed by gravity the concentrate from the container to said depression whereby as water flows through said hole in the form of a mist it picks up and carries the concentrate out of said nozzle means; a valve upstream of the nozzle means for controlling the flow of water to said nozzle means; support means for supporting said container and nozzle means that includes (a) said coupling means, (b) an elongate tubular conduit extending from said coupling means, (c) a short handle extending laterally away and in opposite directions from said elongated tubular conduit near the downstream end there-of and, (d) two short extensions extending laterally away and in opposite direction from said elongated tubular conduit near the downstream end there-of and, (e) each said short extension receiving a 45° elbow at its downstream end, each said 45° elbow having screwthreads which cooperate with the screwthreads of the nozzle means to secure same to the support means, the portion said elongated tubular conduit extending downstream of said short extension terminating in said cap, said elongated tubular conduit, said short extensions, and said 45° elbows being hollow so as to allow the flow of water from the coupling means to said nozzle means, and plug means for closing off the 45° elbow not having the nozzle means.

4,403,738

DEVICE FOR SPRAYING AQUEOUS MIXTURES

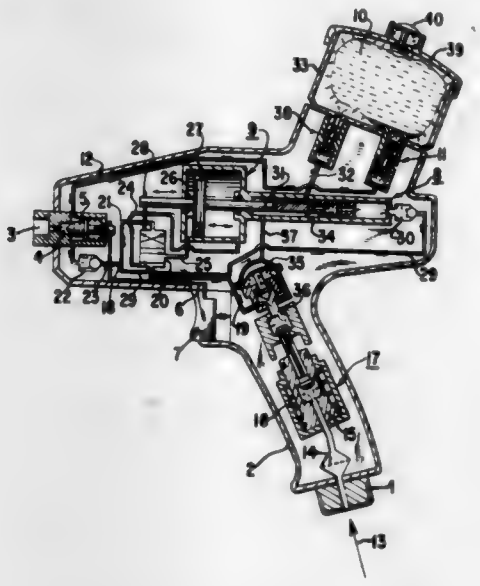
Hans Kern, Vachendorf, Fed. Rep. of Germany, assignor to Lang Apparatebau GmbH, Siegsdorf, Fed. Rep. of Germany

Filed Apr. 29, 1982, Ser. No. 373,296

Claims priority, application Fed. Rep. of Germany, May 8, 1981, 3118207

Int. Cl.³ B05B *7/26*

U.S. Cl. 239—313 **8 Claims**



1. In a spraying means having a connection to inflowing water under pressure, a nozzle spray head with mixing chamber and outlet valve that can be opened and closed by a trigger means, and a metering pump with pump drive for the quantity-proportional metering of a chemical from a chemical container into a stream of water in the mixing chamber,

the improvement which comprises

(a) a pressurized water feed, having a minimum pressure valve unit and leading to the mixing chamber of the nozzle spray head, which water feed is fed first to a water motor provided with a drive piston driven by the pressure of the inflowing water and then to a double-action metering pump having a metering piston coupled with said drive piston of the water motor, the cross-sectional area of the metering piston and the cross-sectional area of the drive piston being in a predetermined ratio;

(b) a flexible container for chemicals residing in a detachable rigid vessel connected to a metering outlet line of the metering pump, said flexible container being connected to the mixing chamber of the nozzle spray head by a container outlet valve and a container line, the chemicals being displaced from the flexible container by water metered through the metering outlet line into the vessel;

(c) a feedback line leading from the cylinder of the metering pump to a pressure water connection valve that is capable of closing in the event of overpressure in the metering pump to shut off inflowing pressurized water.

4,403,739

DEVICE FOR AERATING A JET OF WATER

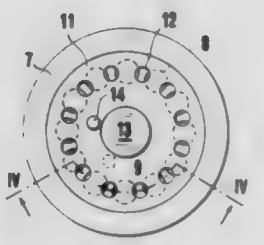
Francesco Knapp, 17, via Ferrini, Pavia, Italy, and Alfons Knapp, Bleicherstrasse 3, Biberach an der Riss, Fed. Rep. of Germany

Filed Nov. 20, 1981, Ser. No. 323,588

Claims priority, application Italy, Jan. 15, 1981, 67035 A/1981

Int. Cl.³ E03C *1/084*

U.S. Cl. 239—428.5 **7 Claims**



1. A device for aerating a jet of water, comprising a substantially cylindrical wall defining an inner mixing chamber and a bottom delivery orifice, air intake openings traversing said cylindrical wall, means for jet regularization arranged within said delivery orifice, and at the upper end of said cylindrical wall a pulverization device comprising a first element having at least one ring series of openings and a second element also having at least one ring series of openings, said second element being superimposed onto said first element with the openings of said second element in register with the openings of said first element only along short portions adjacent the edges of the openings, whereby the openings of said first and second element together form restricted passages for water, whose cross section is substantially lesser than the cross section of the openings themselves, said restricted passages being formed between the opposite edges of each opening of each element and the contiguous edges of two subsequent openings of the other element, whereby each pair of subsequent restricted passages generates two small water jets slanting the one towards the other.

4,403,740

FUEL INJECTION NOZZLE

Ewald Eblen, Stuttgart; Karl Hofmann, Neckarrems, and Odon Kopse, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 886,323, Mar. 13, 1978, Pat. No. 4,285,471. This application May 6, 1981, Ser. No. 261,062

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1977, 2711393

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.³ F02M *61/04*

U.S. Cl. 239—533.4 **12 Claims**

1. A fuel injection nozzle for internal combustion engines comprising, in combination,

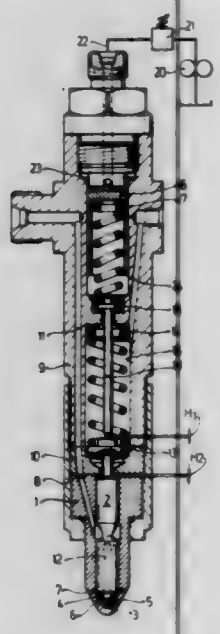
a nozzle body having a first set of fuel injection openings and fuel inlet means for applying pressurized fuel to said first set of injection openings,

a slidable valve needle in said nozzle body,

means for applying a closing force to said valve needle against which said valve needle opens for moving said valve needle into closing relationship with said first set of injection openings,

a control piston slidably disposed in said nozzle body for acting at one side on said valve needle,

a spring in said nozzle body for loading said control piston in a closing direction of said valve needle,



inlet means in said nozzle body for applying a pressurized control fluid from an associated source of fluid pressure to said control piston and

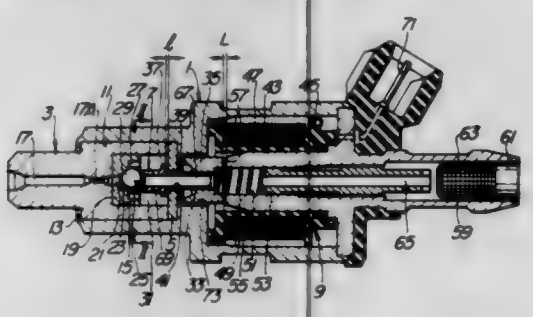
means for controlling said control fluid pressure independently of the pressure of said pressurized fuel supplied from said fuel inlet means to said first set of injection openings.

4,403,741

ELECTROMAGNETIC FUEL INJECTION VALVE

Hisanori Moriya; Masakichi Momono; Masahiro Souma, and Masami Nagano, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 30, 1981, Ser. No. 229,839
Claims priority, application Japan, Jan. 30, 1980, 55-10749
Int. Cl.³ B05B *1/30*
U.S. Cl. 239—585 **6 Claims**



1. An electromagnetic fuel injection valve comprising:

a main body case of the cylindrical shape;

nozzle means located at one end of said main body case and including a fuel injection passage and a valve seat of a conical shape formed at an inner end of said fuel injection passage;

an electromagnet located at the other end of said main body case in alignment with said valve seat of conical shape, said electromagnet including a core and an electromagnetic coil located around said core;

movable valve means located midway between an inner end of said core and said valve seat of conical shape substantially in alignment with said valve seat and said core, said movable valve means including a plunger disposed adjacent said core and cooperating with the core to form a magnetic circuit, a ball adapted to be brought into and out of engagement with said valve seat of conical shape, and a rod having said plunger and said ball secured to opposite ends thereof;

spring means normally urging said movable valve means into engagement with said valve seat of concial shape by its biasing force;

first guide means for physically guiding the outer periphery of said ball; and

second guide means for physically guiding the outer periphery of said rod to enable said movable valve means to move axially thereof.

4,403,742

USE OF ROD MILL FOR INITIAL STAGE OF SOLDER GLASS GRINDING

Marinda L. Wu, Fremont, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 13, 1980, Ser. No. 206,333
Int. Cl.³ B02C *17/20, 19/12*
U.S. Cl. 241—29 **4 Claims**

1. The method of grinding an alkali metal borate glass which comprises:

a.

charging to a rod mill particles of said glass comprising from about 60 to about 97 mole percent of B_2O_3 and a total of from about 3 to about 30 mole percent of one or more alkali metal oxides,

said glass having a Vickers hardness number of from about 200 to about 700,

said rods and the mill lining having Vickers numbers higher than that of the glass and being composed of the same or different, non-brittle materials;

b. grinding said glass in said mill until the particles have a volume average diameter greater than 7, up to about 11 microns and a dispersity factor greater than 4, up to about 5; and

c. grinding the resultant powder with Alundum balls, while in contact with a C_{12}–C_{42} aliphatic amine and at a temperature which is greater than 50° C. but less than the softening point of said glass, until at least some of the powder particles have been reduced to fragments having effective diameters of less than one micron.

4,403,743

ARTICULATED KNIFE ROTOR ASSEMBLY IN A MACHINE FOR REDUCING MATERIALS

Joseph C. V. Ducasse, Martinez, Calif., assignor to Fabcon Incorporated, San Francisco, Calif.

Filed Jun. 3, 1981, Ser. No. 270,124
Int. Cl.³ B02C *13/26*
U.S. Cl. 241—194 **20 Claims**

1. An articulated knife rotor assembly for use in a machine for reducing materials, said assembly comprising:

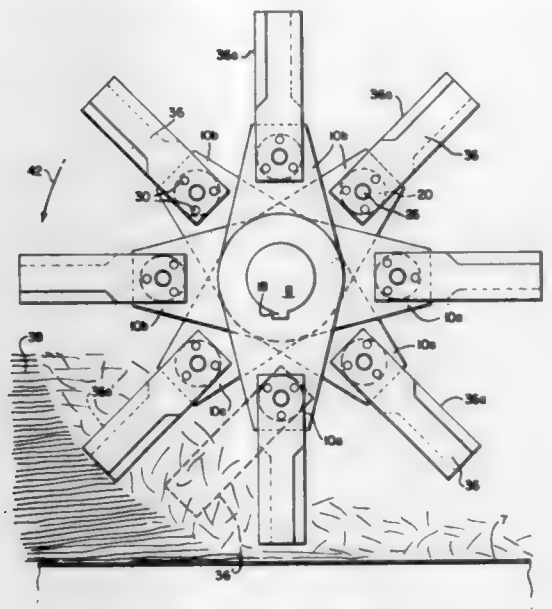
a shaft adapted to be rotated about the longitudinal axis thereof;

a plurality of blade holders arranged in axial alignment on said shaft, each said blade holder being fixed on said shaft and prevented from axial, radial and rotary movement with respect thereto, each said blade holder including end portions extending in opposite radial directions from said shaft, each said blade holder end portion having therethrough a journal opening having an axis extending parallel to said shaft axis;

a plurality of block members each including a cylindrical journal portion and at least one reduced diameter guide pin portion extending coaxially from a respective end of said journal portion, said journal portion of each said block member being positioned within and in journal contact with an inner surface of said journal opening of a respective said blade holder end portion, such each said

block member is relatively rotatable with respect to said blade holder about said axis of said journal opening;

each said guide pin portion having positioned thereon a respective knife blade; and



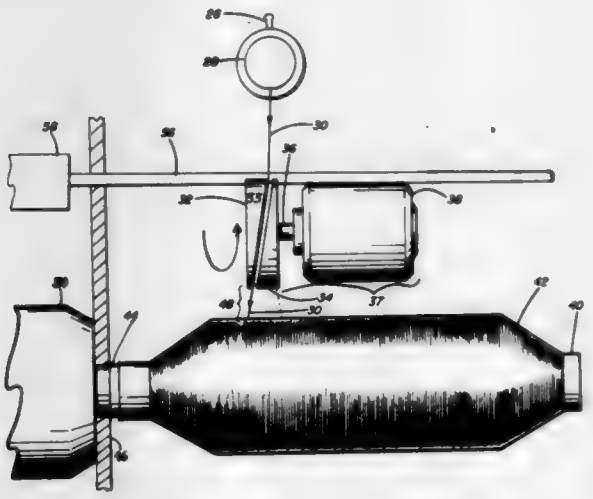
means for attaching each said knife blade to the respective said block member, such that said knife blade is rotatable with said block member about the respective said journal opening axis, but is prevented from rotation relative to said block member.

4,403,744

METHOD AND APPARATUS FOR CONTROLLING STRAND TENSION DURING WINDING

Walter J. Reese, North Huntington, Pa., and Jimmy D. Walker, Shelby, N.C., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 31, 1981, Ser. No. 297,603
Int. Cl.³ B65H *54/02*
U.S. Cl. 242—18 G **23 Claims**



1. A method of controlling strand tension during winding of filamentary material from a source, comprising:

a. contacting the filamentary material from the source with a rotating contacting means having an eccentric groove on the peripheral surface of said contacting means and having a drive means so that the filamentary material contacts the groove of the contacting means,

b. driving the rotating contacting means in a reverse direction to the direction of movement of the filamentary material to provide a draw to the filamentary material contacting the groove,

c. reciprocatingly traversing the filamentary material leaving the rotating contacting means,

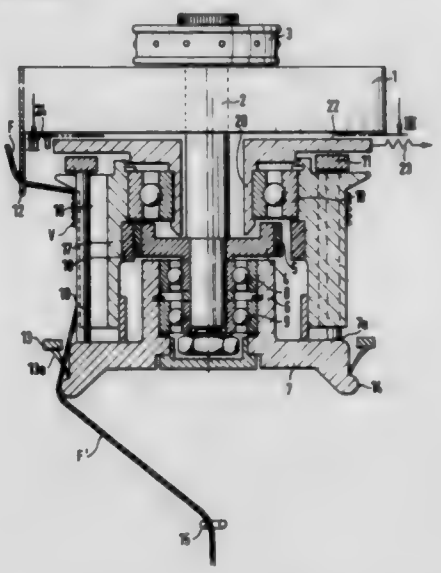
d. collecting the reciprocating filamentary material directly from the rotating contacting means onto a rotating collecting means having a drive means which pulls the filamentary material from the source into contact with the groove of the rotating contcting means so that the filamentary material is guided onto the rotating collecting means that is located at an effective distance from the grooved rotating contacting means to provide a nonparallel disposition of the filamentary material onto the rotating collecting means to produce a layered package of strand where every layer has the filamentary material in a nonparallel disposition.

4,403,745

THREAD STORING AND FEEDING DEVICE

Lars H. G. Tholander, Huskvarna, Sweden, assignor to Aktiebolaget IRO, Ulricehamn, Sweden

Filed Oct. 2, 1981, Ser. No. 307,987
Claims priority, application Sweden, Oct. 2, 1980, 8006886
Int. Cl.³ B65H *51/20*
U.S. Cl. 242—47.01 **19 Claims**



1. A thread storing and feeding device, particularly for textile machines with intermittent thread consumption, comprising:

a thread storage body mounted for rotation about a first axis and adapted to store thread windings therearound, said windings being wound tangentially onto said body and unwound therefrom in an axial direction;

said storage body having first and second drums, said first drum having circumferentially spaced slots formed therein and said second drum having bars which project into said slots for rotatably driving said first drum from said second drum, and said second drum being mounted with its longitudinal central axis disposed in inclined and eccentric relationship relative to said first axis;

mounting means supporting said second drum for movement relative to said first drum in response to the quantity of thread windings stored therearound; and

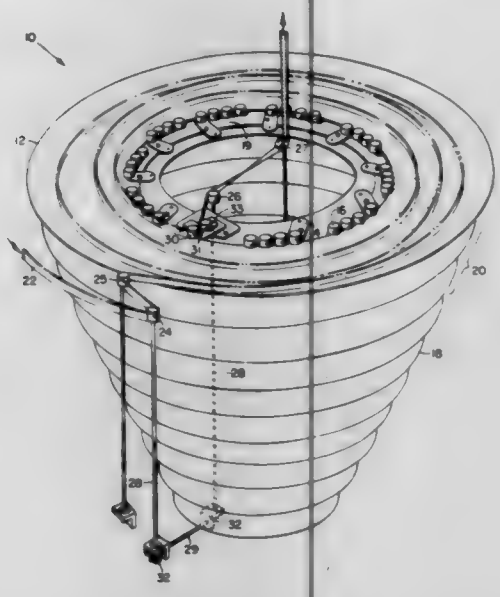
drive means for controlling the rotational speed of said body in response to the relative position between said drums to thereby control the thread windings around said body, said drive means including a rotatable drive shaft having a driving friction lining thereon, and a driven friction lining fixed to said second drum and engageable with said driving friction lining in response to relative movement between said drums to effect rotational driving of said body.

4,403,746

CONTINUOUS LOOP FILM PROJECTING APPARATUS

Roberto M. Garza, P.O. Box 7036, San Antonio, Tex. 78207

Filed Sep. 2, 1980, Ser. No. 183,437
Int. Cl.[3] G03B *21/00*; G11B *23/06*
U.S. Cl. 242—55.19 R 9 Claims



1. A continuous loop film projecting apparatus comprising:
a frame;
a revolving platter supported on said frame, said platter having a large outer diameter and a smaller inner diameter;
film friction reducing means cooperating with said platter, said means reducing friction between film received on said revolving platter and a receiving surface of said revolving platter, said film friction reducing means comprising:
a series of air outlets in said platter; said air outlets being holes arranged in a pattern of rows of closely spaced holes intermixed with rows of widely spaced slanted holes, a blower mounted on said frame; and
means to convey air from said blower to and through said air outlets in said platter;
seal means on said air conveying means, said seal means contacting the underside of said platter;
guide means mounted on said frame adjacent said platter inner and outer diameters, said guide means maintaining film received on said platter as said platter revolves in a configuration to subsequently be projected;
feeding means mounted on said frame adjacent said platter inner diameter, said feeding means receiving film from said platter and dispensing said film to a projector; and
means for driving said platter, said guide means and said feeding means.

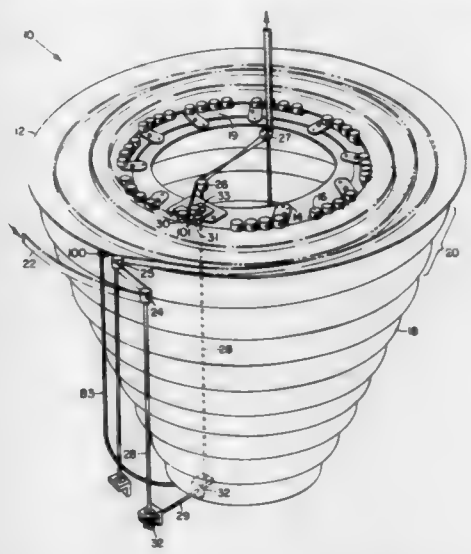
4,403,747

CONTINUOUS LOOP FILM PROJECTING APPARATUS

Roberto M. Garza, P.O. Box 7036, San Antonio, Tex. 78207

Continuation-in-part of Ser. No. 183,437, Sep. 2, 1980. This application Feb. 12, 1981, Ser. No. 233,920
Int. Cl.[3] G03B *21/00*; G11B *23/06*
U.S. Cl. 242—55.19 R 11 Claims

1. A continuous loop film projecting apparatus comprising:
a frame;
a revolving platter supported on said frame, said platter having a large outer diameter and a smaller inner diameter;
film friction reducing means cooperating with said platter, said means reducing friction between film received on said revolving platter and a receiving surface of said revolving platter, said film friction reducing means comprising:
a series of air outlets in said platter,
a blower mounted on said frame, and
means to convey air from said blower to and through outlets in said platter;
air injecting means mounted adjacent said platter inner and outer perimeters, said air injecting means comprising a first nozzle positioned adjacent said outer perimeter of said platter and a second nozzle positioned adjacent said inner perimeter of said platter, said first nozzle injecting air onto said film to provide a cushion between layers of



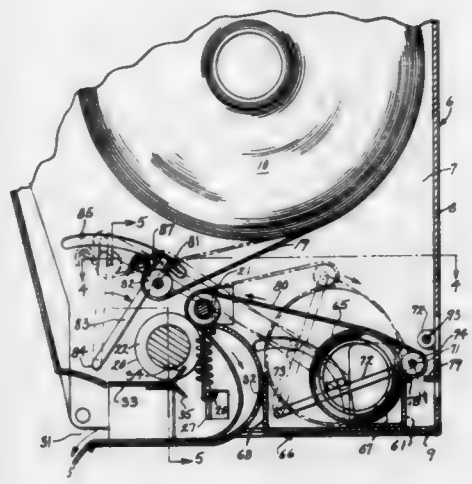
said film and said second nozzle injecting air between adjacent layers of film to separate said layers, said air injecting means allowing friction between layers of said film to be reduced;
feeding means mounted on said frame adjacent said platter inner diameter, said feeding means receiving film from said platter and dispensing said film to a projector; and
means for guiding said platter, said guide means and said feeding means.

4,403,748

DISPENSER FOR COILED MATERIAL HAVING IMPROVED TRANSFER MECHANISM

Robert W. Cornell, Milwaukee, Wis., assignor to Griffith-Hope Company, Milwaukee, Wis.

Filed Aug. 27, 1981, Ser. No. 296,816
Int. Cl.[3] B65H *19/00*
U.S. Cl. 242—55.53 15 Claims



1. A dispenser for coiled sheet material such as paper toweling, comprising a housing having a discharge opening, first support means disposed in the housing to support a first partially consumed roll of first sheet material, second support means disposed within the housing to support a second reserve roll of second sheet material, feed roll means disposed within the housing for feeding a sheet from either of said rolls through said discharge opening, and a transfer mechanism for transfer-

ring the feed from the partially consumed roll to the reserve roll, said transfer means comprising a transfer frame pivotally connected to the housing and including a first arm and a second arm, said arms disposed generally parallel to each other and disposed parallel to said feed roll means, said first sheet material extending rearwardly from said partially consumed roll beneath said first arm and then forwardly to said feed roll means, said second arm being spaced from said feed roll means when said first roll is in a partially consumed condition, sheet engaging means on said second arm for engaging the free end of said second sheet material, and biasing means for biasing the frame in a direction to urge said second arm towards said feed roll means, consumption of said partially consumed roll causing the first arm to move downwardly to thereby pivot the frame and move said second arm towards said feed roll means and deliver said second sheet material to said feed roll means to feed the second sheet material from the dispenser.

4,403,749

TAPE REEL

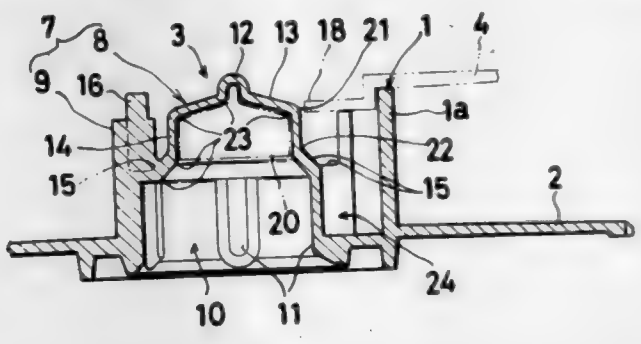
Akira Nakagawa, Tokyo, Japan, assignor to Nifco, Inc., Yokohama, Japan

Filed Mar. 6, 1981, Ser. No. 241,240

Claims priority, application Japan, Mar. 7, 1980, 55-28807[U]; Mar. 7, 1980, 55-28808[U]

Int. Cl.³ B65H *75/18, 75/20*

U.S. Cl. 242—71.8 **26 Claims**



1. An improved tape reel comprising a hub for winding a tape on the periphery thereof, a pair of flanges attached one each to the opposite end surfaces of said hub, the first of the pair of flanges being molded integrally with said hub and the second flange being molded separately of the hub, said hub containing a socket opening into the free end of the hub and adapted to receive a reel rotating shaft in a recording/playback machine in the axial direction, the free end of said hub having a plurality of bosses raised from the free end surface, said second flange being provided with holes at the positions corresponding to those of said bosses, whereby the union of said hub and said second flange for the completion of the tape reel is accomplished by inserting the bosses on the hub into the corresponding holes in the second flange and crushing the protruding tips of the bosses against the second flange by means of ultrasonic vibrations, the improvement comprising:

providing the hub with means for virtually uniformly absorbing the impacts of said ultrasonic vibrations throughout the free axial end of said hub.

4,403,750

BAIL LATCHING AND RELEASING MECHANISM FOR SPINNING REEL

Yoshinori Morimoto, Fuchu, Japan, assignor to Ryobi, Ltd., Hiroshima, Japan

Continuation of Ser. No. 138,633, Apr. 8, 1980, abandoned. This application Apr. 29, 1982, Ser. No. 373,186

Claims priority, application Japan, Apr. 9, 1979, 54-47153[U]; Apr. 9, 1979, 54-47164[U]

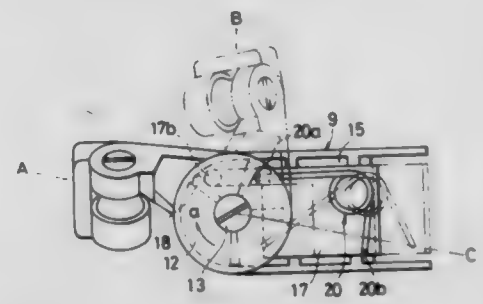
Int. Cl.³ A01K *89/01*

U.S. Cl. 242—84.2 G **9 Claims**

1. An outer spool type spinning reel of the type including a bail arm pivotably mounted at both ends to support housings positioned at diametrically opposite sides of a rotor for swinging movement of the bail arm thereacross between fishing line releasing and rewinding positions, and bail support members each coupled to said respective ends of said bail arm, said bail support members being rotatably secured to said respective support housings, the improvement comprising a bail arm latching and releasing mechanism assembled in either one of said support housings, said bail arm latching and releasing mechanism comprising:

(a) a kick lever secured in said one of said support housings, said kick lever being slidable along an axial direction of said rotor,

(b) a dead-point spring having one end connected to said kick lever and the other end connected to one of said bail support members disposed on said one of said support housings to selectively bias said bail arm toward its fishing line releasing and rewinding positions,



(c) a compression spring connected to said kick lever and extended along the axial direction of said rotor, said one of said bail support members having a bottom face provided with a boss to provide urging force to said kick lever and said other end of said dead-point spring and to receive urging force therefrom, and

(d) an operation cam secured to a stationary portion of a reel body, said operation cam being adapted to displace said kick lever when said bail arm is at the fishing line releasing position in order to rotate said one of said bail support members, to thus urge said bail arm from its fishing line releasing position to its rewinding position, said displacement of said kick lever also displacing said one end of said dead-point spring causing a dead-point line of said dead-point spring to also be displaced.

4,403,751

DEVICE FOR LOCKING WEBBING FOR THE SEAT BELT OF AN AUTOMOTIVE VEHICLE

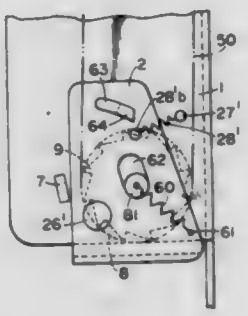
Shuichi Asano, Kawasaki, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1981, Ser. No. 290,085

Claims priority, application Japan, Aug. 7, 1980, 55-108512

Int. Cl.³ A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107.2 **3 Claims**



1. In a device for locking the webbing for a seat belt of an automotive vehicle, said device including a reel adapted to have the webbing of the seat belt wound therearound and biased in a direction to wind the webbing therearound, a rotatable drum spaced from said reel and adapted to have the web-

bing wound at least partially therearound, a drum base supporting said drum and adapted to pivot about an axis eccentric from the axis of rotation of said drum, a base supporting said reel and said drum base, a fixed plate provided on said base with a sufficient distance with respect to said drum to permit the webbing to pass therethrough, means for sensing an emergency condition of the vehicle, means responsive to said sensing means for preventing rotation of said reel and said drum when an emergency condition of the vehicle is sensed by said sensing means, said drum base being adapted to pivot about its eccentric axis to press said drum into contact with said fixed plate and hold the webbing tightly therebetween when the rotation of said reel and said drum is prevented to thereby impede the the webbing from being drawn from said reel by the tightening thereof therearound, the improvement residing in that said means for preventing rotation of said drum is fixed to said drum base, and said drum is mounted for movement relative to said drum base.

4,403,752

AUTOMATIC ROLL-UP DEVICE FOR SAFETY BELTS

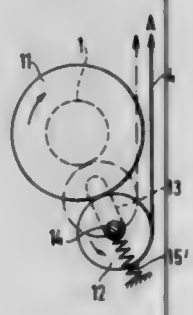
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to REPA Feinstanzwerk G.m.b.H., Alfdorf, Fed. Rep. of Germany

Filed Sep. 4, 1981, Ser. No. 299,518

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1980, 3033745

Int. Cl.³ A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.2 **4 Claims**



1. Automatic roll-up device for a safety belt having a winding shaft connected to a roll-up spring and to an automatic locking device for locking the winding shaft carrying a belt web winding roll which will vary in diameter, the roll-up device also having a braking roller located downsteam of the winding shaft in direction of pull of the belt web, the braking roller being in the form of a movable clamping member partly looped around by the belt web and actuatable for clamping the belt web after locking of the winding shaft by the automatic locking device, said braking roller lying at the periphery of the web roll and displaceable in direction of the winding shaft to follow the changing diameter of the web roll, the belt web extending from the belt web winding roll to said braking roller and partly looped around said braking roller in a direction opposite to the direction the web is wound on the winding roll, pressing means for urging said braking roller against the belt-web winding roll at all varying diameters of the belt-web winding roll during normal operation without clamping the belt web and, during abnormal operation when an elevated pulling force is applied to the belt web, the braking roller being pressed by the elevated pulling force against the belt web winding roll for clamping and locking the belt web winding roll.

4,403,753

COIL SPOOL FOR AN ELECTROMAGNETIC DEVICE

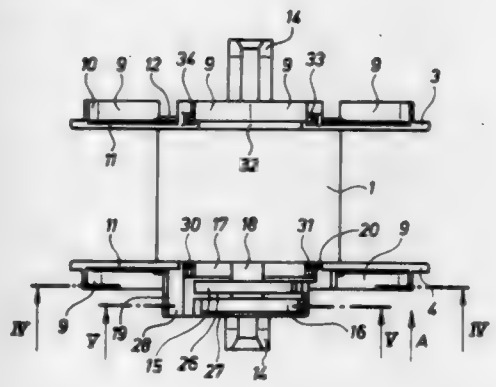
Christoph Gibas, Neunkirchener Weg 5, 5908 Neunkirchen, and Michael Müller, Zum Turm 1, 6683 Spiesen/Elversberg, both of Fed. Rep. of Germany

Filed Jul. 8, 1981, Ser. No. 281,563

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1980, 3026760

Int. Cl.³ B65H *75/28*; H01F *15/10*

U.S. Cl. 242—125.2 **6 Claims**



1. A coil spool for an electromagnetic device, comprising

a central cylindrical portion for receiving a wire coil thereon;

first and second end flanges extending radially from and axially spaced along said central cylindrical portion;

first and second outwardly opening pockets for receiving connections between wire coil ends and external conductors, said pockets being axially aligned relative to said central cylindrical portion and formed on said first end flange, and including

a first notch extending on said first end flange at an acute angle with a radius and at one side of said pockets through which a wire from one wire coil end can pass to said first pocket,

wall means adjacent said first notch defining a slot for receiving said wire, and

a second notch extending through said first end flange at the other side of said pockets through which a wire from the other wire coil end can pass to said second pocket,

whereby said wires can be led into said pockets within the flange circumference.

4,403,754

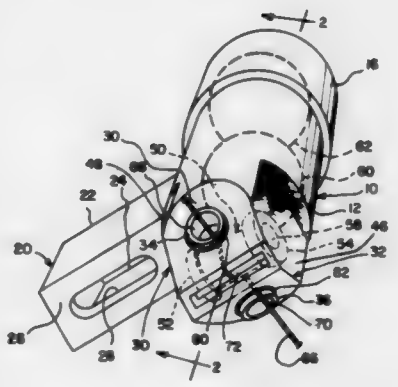
YARN TENSION WITH HORIZONTAL ROLLER

Edward J. McBride, Jr., P.O. Box 311, Moorestown, N.J. 08052

Filed Sep. 22, 1980, Ser. No. 189,606

Int. Cl.³ B65H *59/24*

U.S. Cl. 242—151 **27 Claims**



1. A roller type yarn tension device comprising a hollow body defining a generally vertical interior channel, the body

being downwardly formed to provide a pair of diametrically opposed, angularly oriented, converging, bottom walls,

each bottom wall being provided with a grommet receiving opening; a grommet loosely retained in at least one said bottom wall opening, the grommet having a body defining an interior channel therethrough, the channel defining a yarn path through the tension device,

the grommet being adapted to have limited movement within its respective opening, the grommet comprising means to retain the grommet within its associated opening; and

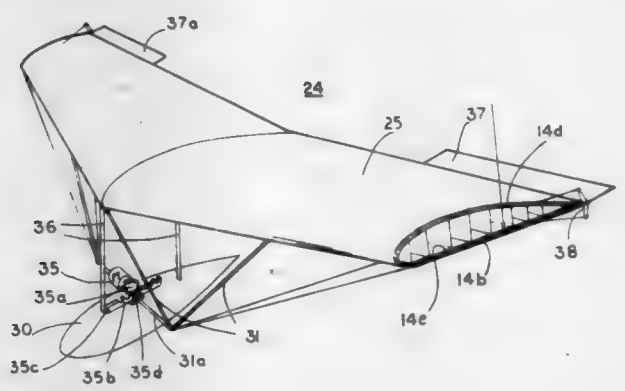
a roller horizontally oriented within the interior body channel and positioned to roll over and seat upon a portion of the grommet to tension a yarn as it travels through the said yarn path.

4,403,755

METHOD AND APPARATUS FOR USE IN HARNESSING SOLAR ENERGY TO PROVIDE INITIAL ACCELERATION AND PROPULSION OF DEVICES

Gunter E. Gutsche, 5175 Rue Forget, Box 666, St. Louis de Terrebonne, Quebec, Canada J0N 1N0

Filed Feb. 14, 1980, Ser. No. 121,493
Int. Cl.³ F03G *7/02;* B64B *1/24*
U.S. Cl. 244—53 R **22 Claims**



1. A method of providing acceleration and propulsion of a vehicle in an environment having at least some fluid, said vehicle having at least one member, at least a lower surface portion of which is treated for absorbing solar radiation for heating fluid adjacent the exterior of said member for use in propelling said vehicle through said environment, in the improvement comprising the steps of:

(a) exposing said treated portion to solar radiation and intentionally heating fluid adjacent the exterior of said member thereby increasing the pressure and volume of said external fluid; and

(b) exciting and thereby accelerating said heated fluid away from said lower surface portion in a manner to provide thrust and lift to said vehicle and accordingly providing propulsion of the vehicle, the acceleration of said fluid including allowing said heated and accordingly buoyant fluid to rise and accelerate against said member while deflecting said rising fluid in a direction so as to enhance said propulsion including the step of purposely allowing a flow of further external fluid to be heated.

4,403,756

BIFURCATED FEEL SIMULATOR FOR AIRCRAFT

J. Burton Berlin, Mercer Island, and Erwin V. Schweizer, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

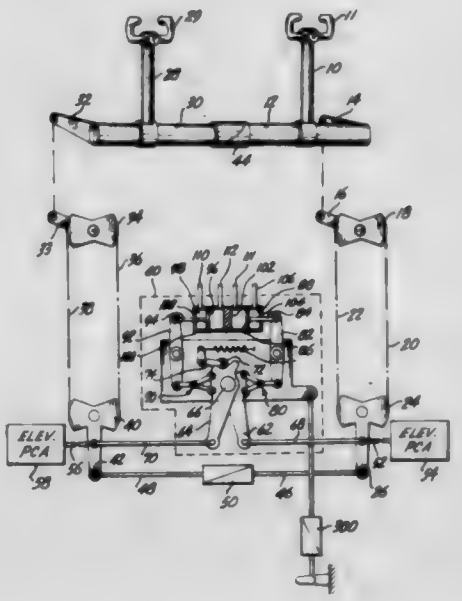
Filed Dec. 22, 1980, Ser. No. 218,469
Int. Cl.³ B64C *13/46*
U.S. Cl. 244—223 **3 Claims**

1. In a dual path flight control system having separate control paths linking the control surfaces of an aircraft to each of a pilot control stick and a copilot control stick, the improvement comprising a single feel unit coupled to both paths of said control system, said feel unit including:

a first lever constructed and arranged for pivotal movement about a first axis said first lever being coupled to and driven by said pilot control stick;

a second lever constructed and arranged for pivotal movement about said axis, said second lever coupled to and driven by said copilot control stick;

a feel load-generating means for producing a feel force representative of the aerodynamic forces acting on the aircraft control surfaces; and,



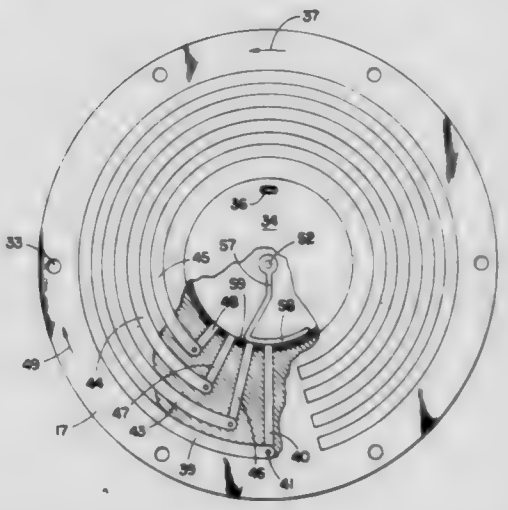
linkage means associated with said first and second levers and said feel load-generating means for coupling said first and second levers to said feel load-generating means such that said feel force opposes motion of said levers and such that said feel load-generating means is operable in the event of a jam in one path of said dual path system which jam renders inoperative a portion of the control surfaces of the aircraft to provide feel force to the other path of the dual path system that is representative of the aerodynamic forces acting on the remaining operative portion of the control surfaces.

4,403,757

MODULATING FLUID SHEAR COUPLING

Michael Shepherd, Carmel, Ind., assignor to Wallace Murray Corporation, New York, N.Y.

Filed Mar. 20, 1981, Ser. No. 245,734
Int. Cl.³ F16D *33/12, 35/00, 43/25*
U.S. Cl. 192—58 B **21 Claims**



1. A modulating fluid shear coupling apparatus which comprises:

a driving member including a disc-shaped portion having a first side including a shear surface;

a driven member defining a working chamber within which said driving member is received,, said driven member including a shear surface configured and positioned complementary with the shear surface of said driving member and driving therewith a fluid shear chamber cooperable with a shear fluid received therein for transmitting torque between said driving member and said driven member;

mount means for mounting said driven member to said driving member and rotatable about a common axis;

a shear fluid reservoir;

input flow means for providing flow of shear fluid from said reservoir to a first location of the working chamber on the first side of said driving member and radially-inward of the shear surface of said driving member;

first output flow means for providing flow of shear fluid from a second location of the working chamber on the first side of said driven member to said reservoir, the second location being radially-outward of the shear surface of said driving member, said first output flow means being capable of returning to said reservoir substantially all shear fluid moved to the first location of the working chamber by said input flow means;

first output control means for selectively opening and closing said first output flow means;

second output flow means for providing flow of shear fluid from a third location of the working chamber on the first side of said driving member to said reservoir, the third location being radially intermediate the shear surface of said driving member, said second output flow means being capable, when said first output control means closes said first output flow means, of returning to said reservoir substantially all shear fluid moved to the first location of the working chamber by said input flow means; and

second output control means for selectively opening and closing said second output flow means;

said apparatus having a first coupling condition in which said first output control means opens said first output flow means to substantially fill the working chamber with shear fluid radially-inward to the second location and consequently to cause fluid shear coupling between said driving and driven members, said apparatus having a second coupling condition in which said first output control means closes said first output flow means to substantially fill the working chamber with shear fluid radially-inward to the third location and consequently to cause fluid shear coupling between said driving and driven members greater than in the first coupling condition, and said apparatus having a third coupling condition in which said first and second output control means close said first and second output flow means, respectively, to substantially fill the working chamber with shear fluid radially-inward of the third location and consequently to cause fluid shear coupling between said driving and driven members greater than in the second coupling condition.

4,403,758

WASTE PIPE SUPPORT APPARATUS

Howard N. M. Burt, P.O. Box 478, Osoyoos, B.C., Canada

Filed Sep. 30, 1981, Ser. No. 307,113
Int. Cl.³ F16L *3/00*
U.S. Cl. 248—49 **19 Claims**

1. Apparatus for supporting a waste pipe normally interconnecting a vehicle waste drain pipe with a permanent camp site sewage head, comprising:

a first support member for supporting a first portion of said waste pipe;

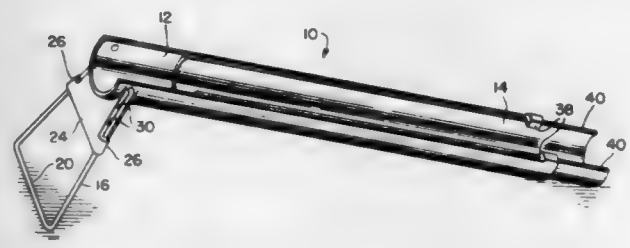
a second support member for supporting a second portion of said waste pipe, said second member being slideably disposed within said first support member;

leg means pivotably mounted, within a longitudinally extending plane, relative to said first support member so as to be disposed either in an operative or storage position and for supporting said first support member in an elevated position relative to the local terrain upon which said apparatus is to be disposed when said leg means is disposed in said operative position;

bracket means fixedly secured to said first support member;

said leg means being pivotably mounted within said bracket means;

first means defined within said bracket means for selectively mounting said leg means within any one of a multiplicity



of positions within said bracket means so as to selectively permit elevational adjustment of said leg means relative to said apparatus; and

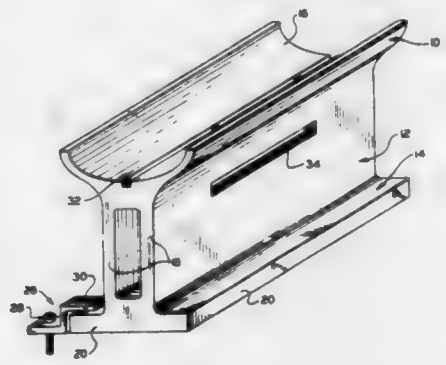
second means fixedly secured within said bracket means and projecting laterally outwardly therefrom so as to intercept said pivotable leg means within said longitudinally extending plane and thereby block the pivotable movement of said leg means within said longitudinal plane beyond which point said leg means cannot be moved, said point defining said operative position for said leg means.

4,403,759

CATHODIC CORROSION RESISTANT PIPE SADDLE WITH LOW FRICTION INSERT

Chester F. Hicks, 203 N. Main, Walbridge, Ohio 43465

Filed Oct. 21, 1980, Ser. No. 199,242
Int. Cl.³ F16L *3/16*
U.S. Cl. 248—55 **4 Claims**



1. A pipe saddle for supporting a pipe above a supporting surface comprising:

a cradle in the form of a segment of a right-circular cylinder;

a pedestal for said saddle having an inverted T-shaped cross-section, said pedestal including a base portion and a web portion connecting said base portion and said cradle, said base portion having longitudinal flanges extending on either side of said web portion and said web portion having two parallel, transversely spaced apart longitudinal walls;

a cavity formed in the bottom surface of said base adapted to removably retain a bearing element;

a bearing element removably inserted in said cavity and protruding beyond the bottom surface of said base, said bearing element having a relatively low coefficient of friction with respect to the supporting surface on which it is adapted to be mounted;

a plurality of brackets adapted to be secured to the supporting surface on which said bearing element is to be mounted, said brackets including portions adapted to

overlie said flanges on said base such that vertical and lateral movement of said pipe saddle is restricted and sliding movement of said base between the supporting surface and said brackets in the direction of the longitudinal axis of said cradle is permitted;

and

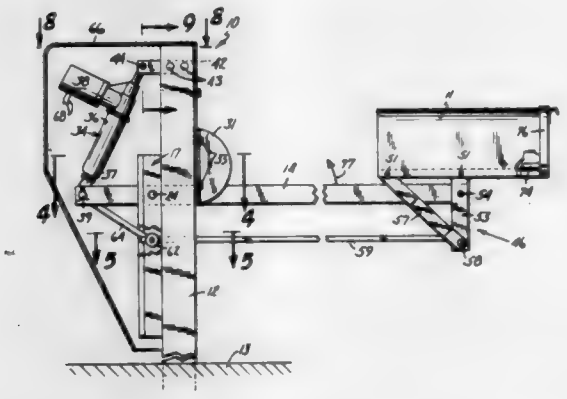
a drain channel formed in an upper surface of said cradle for receiving condensation which forms on the pipe supported in said cradle, said drain channel extending parallel to the longitudinal axis of said cradle and having a bottom wall formed higher at the center of the cradle than at the ends.

4,403,760

APPARATUS FOR RAISING AND LOWERING AN OBJECT

Palmer C. Alvermann, Rte. 1, Box 138, Clear Lake, Wis. 54005

Filed Jun. 11, 1981, Ser. No. 272,657
Int. Cl.³ E04G *3/00*
U.S. Cl. 248—284 **31 Claims**



1. An apparatus for selectively moving an object between first and second positions and holding the object in a desired position comprising: a support, an arm, means pivotally connecting the arm to the support allowing the arm to move relative to the support, an expandable and contractible means connected to the support and arm operable to pivot the arm between first and second positions, means adapted to be connected to an object, means connecting the arm to the means adapted to be connected to an object, control means located adjacent to said arm, means connecting the control means to the means adapted to be connected to an object, track means secured to the support, means connected to the control means cooperating with the track means to guide the control means along the track means, link means connecting the arm and control means whereby on operation of the expandable and contractible means the arm pivots and control means move along the track means and the means adapted to be connected to an object move between first and second positions.

4,403,761

APPARATUS FOR WALL MOUNTED PRESENTATION BOARDS

Walker Jamar, 365 S. First Ave., East, Duluth, Minn. 55802

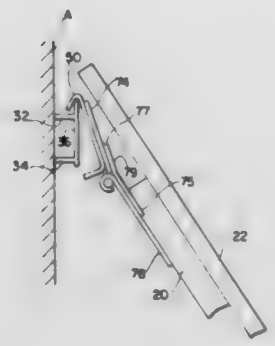
Filed Jan. 6, 1981, Ser. No. 222,383
Int. Cl.³ E04G *5/06*
U.S. Cl. 248—441 B **9 Claims**

1. Apparatus for wall mounting of a presentation board comprising:

a wall mounted support bracket;

mounting means for detachably engaging said support bracket; and

support means connecting said mounting means to the presentation board such that the board is supportable in an inclined position with respect to the mounting wall when said mounting means is operatively engaged with said support bracket in a board supporting position, said support means including an angled member having first and second legs pivotally connected together and also respectively connected to said mounting means and to the board such that the angle between said mounting means and the board is variable and a spring means for biasing said first leg with respect to said second leg such that when the



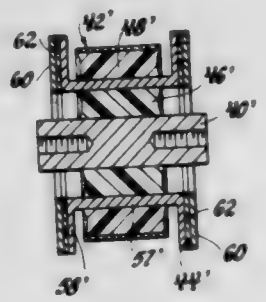
board is removed from said support bracket said first leg is held away from said second leg and in a position to permit the mounting means to be readily re-attached to said support bracket.

4,403,762

LOW FORCE TRANSMISSIBILITY MOUNT

James A. Cogswell, II, Clarkston, and Donald E. Malen, Lathrup Village, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 20, 1981, Ser. No. 236,335
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—559 **3 Claims**

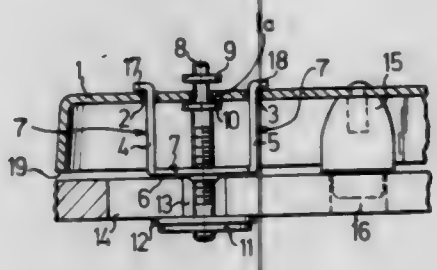


1. In a mounting arrangement for mounting a vibratory body on a supporting structure wherein the acceptable transmission of vibratory forces from the vibratory body to the supporting structure imposes a low level limit of transmissibility in a low frequency range, a high level limit of transmissibility in an intermediate frequency range, and a lowest level limit of transmissibility in a high frequency range: an improved mount comprising an intermediate mass independent of the supporting structure and vibratory body and adapted to be frequency tuned, first elastomeric coupling means for coupling said intermediate mass and the supporting structure, second elastomeric coupling means for coupling said intermediate mass and the vibratory body, an absorber mass independent of the supporting structure and vibratory body and intermediate mass and adapted to be frequency tuned, third elastomeric coupling means for coupling said absorber mass and intermediate mass, and said intermediate mass and absorber mass predetermined in combination with the elastomeric characteristics of all said coupling means so that said intermediate mass has upper and lower resonances of predetermined substantially different force transmissibility amplitude situated within the intermediate frequency range such that the force transmissibility of said mount is attenuated to below the lowest level throughout the high frequency range while also remaining below the other transmissibility level limits throughout their respective frequency range.

4,403,763
TRANSPORT SECURING DEVICE FOR RECORD PLAYERS

Helmut Dold, Untertalstr. 23, 7743 Furtwangen 6, Fed. Rep. of Germany

Filed Aug. 17, 1981, Ser. No. 293,584
Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120425
Int. Cl.³ F16M 13/00
U.S. Cl. 248—561 5 Claims



1. A transportation securing device for a turntable, the base plate of which when in operating condition rests, with the interposition of elastic support elements, on a mounting plate, comprising

a spacer member arranged substantially below the base plate of the turntable, said spacer member has a lower part and a top part, said lower part is formed with a female thread and has a bottom side projecting downwardly past a lower edge of said base plate, said spacer member including on said top part thereof upper projections which extend non-rotatably through said base plate of the turntable and rest loosely thereon,

said base plate is formed with a bore,

a screw seated in said female thread of the spacer member and extending upwardly through said bore formed in the base plate,

a lower collar on said screw being larger in diameter than said bore in the base plate of the turntable and lies therebelow, and upon screwing up said screw said lower collar clamps the base plate between said lower collar and said upper projections of said spacer member,

a foot part fastened on a lower end of said screw,

said mounting plate is formed with a laterally open recess, said recess is smaller in diameter than that of said foot part,

said screw is tiltably mounted on the base plate of the turntable, being swingable into and out of said laterally open recess in the mounting plate, said foot part being disposed below the mounting plate,

said mounting plate is clampable between said bottom side of said spacer member and said foot part of said screw by said screwing up of said screw,

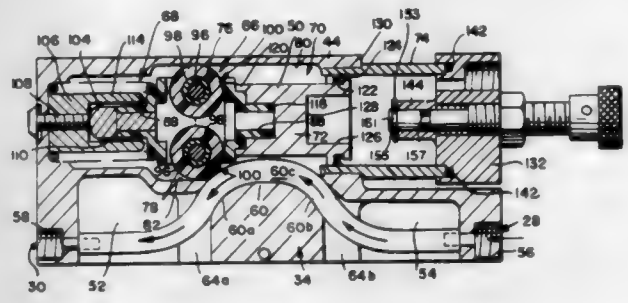
said foot part of said screw is arranged at such a distance from said lower collar of said screw that upon said screwing up of said screw, said base plate of the turntable and the mounting plate are simultaneously clamped fast.

4,403,764
METHOD AND APPARATUS FOR CONTROLLING FLOW OF WORK MATERIALS

Thomas J. Repplinger, Cary, Ill., assignor to Otto Engineering, Inc., Carpentersville, Ill.

Filed Oct. 8, 1981, Ser. No. 309,711
Int. Cl.³ F16L 55/14
U.S. Cl. 251—5 5 Claims

1. A compact unitary actuator and pinch valve assembly for positive suck back of work material on shutoff comprising body means having straight travel surface, resilient conduit means mounted on said body means and having an inlet, outlet, intermediate portion, and a normal configuration permitting full flow of work material from said inlet therethrough to said outlet, linearally movable actuator means within said body means movable in a plane parallel with said straight travel surface, linearally movable conduit engaging means operatively associated with said actuator means for movement between first, second and third positions, linearally alligned positions, the direction of movement from said first to second to third positions being substantially counter direction to the flow of work material in said intermediate portion of said resilient conduit means, and parallel with said straight travel surface, said linearally movable conduit engaging means having roller means with first and second roller means portions, said first roller means portion being in rolling engagement with said straight travel surface, said second roller means portion being engageable with said intermediate portion of said resilient conduit means, said conduit engaging means in said first position being operatively arranged to have said second roller

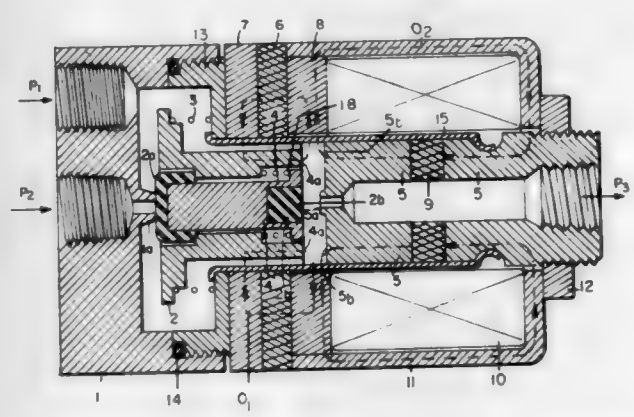


means portion spaced to operatively permit said resilient conduit means to maintain its normal configuration and full flow of material therethrough, said conduit engaging means while in and while moving between its second and third positions being operatively arranged to have said second roller means portion engage and compress said intermediate portion of said resilient conduit means to maintain stoppage of flow of work material therethrough, said conduit engaging means second roller means portion being further operable when moving from said second to third positions to permit a portion of the area previously compressed when said conduit engaging means was in its second position to move under inherent resiliency toward normal configuration and thereby cause a partial internal vacuum in said resilient conduit means to in turn cause suck back of material downstream thereof at said outlet.

4,403,765
MAGNETIC FLUX-SHIFTING FLUID VALVE

Richard T. Fisher, Pembroke, Mass., assignor to John F. Taplin, Newton, Mass.

Continuation of Ser. No. 97,079, Nov. 23, 1979, abandoned. This application May 18, 1981, Ser. No. 264,365
Int. Cl.³ F16K 31/08; H01F 3/12
U.S. Cl. 251—65 17 Claims



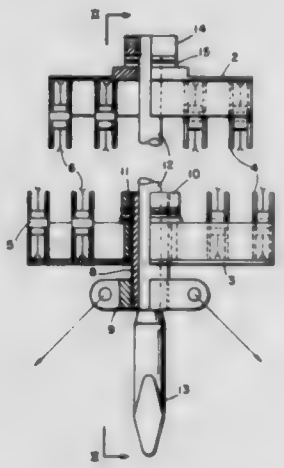
1. A magnetic flux-shifting valve having two different positions to control the paths of the flow of a fluid, said valve comprising

(a) a pair of relatively movable fluid-flow control parts including a valve element and a valve seat cooperating with said valve element;

(b) means for biasing said valve element away from said valve seat;
(c) a first fixed permanent magnet having a relatively large coercive force;
(d) a first soft iron member in physical engagement with one pole surface of said first magnet;
(e) a second soft iron member in physical engagement with the other pole surface of said first magnet;
(f) a pair of cooperating pole pieces of soft iron capable of forming a working gap therebetween, said pair of pole pieces including a movable pole piece and a fixed pole piece, said valve element being integral with said movable pole piece and said valve seat being integral with said fixed pole piece;
(g) said first magnet establishing a first closed flux path in the first position of said flux-shifting valve including one pole surface of said first magnet, said first soft iron member, said movable pole piece, said second soft iron member, and back to the other pole surface of said first magnet;
(h) a tubular soft iron member defining a fluid passageway jointly with said valve seat;
(i) a casing of soft iron forming a cavity for housing a flux-shifting electromagnet, said casing extending from the end of said tubular member opposite said fixed pole piece to said first magnet;
(j) a second fixed permanent magnet having a relatively small coercive force in comparison to said first magnet, said second magnet being supported by said tubular member which forms said fixed pole piece on one end of said second magnet, said second magnet establishing in said first position of said flux-shifting valve a second closed flux path separate from said first flux path except for the portion of said second flux path in said second soft iron member, said second flux path including one pole surface of said second magnet, a portion of said tubular member, said fixed pole piece, said second soft iron member, said casing, another portion of said tubular member, and back to the other pole surface of said second magnet;
(k) an electromagnet in said casing for reversing the polarity of said second magnet to establish said second fluid control position of said flux-shifting valve wherein the fluxes of said first magnet and said second magnet are in series and the single closed flux path of said first magnet and said second magnet include a pole surface of said second magnet, a portion of said tubular member, said casing, said first magnet substantially excluding said second soft iron member, said first soft iron member, said movable and said fixed pole piece, another portion of said tubular member, and back to the other pole surface of said second magnet; and
(l) fluid passage means defined by the space between said first magnet and said movable pole piece for admitting fluid to said valve seat when said valve element is separated from said valve seat.

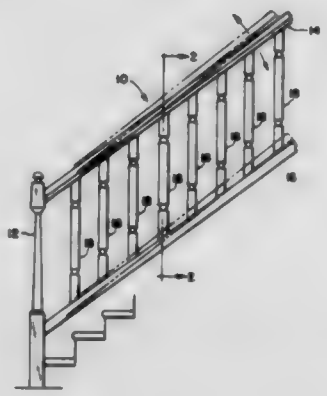
4,403,766
BLOCK AND PULLEY ARRANGEMENT
Adolf Schmeider, Versbach, Fed. Rep. of Germany, assignor to Gg. Noell GmbH, Wurzburg, Fed. Rep. of Germany
Filed Feb. 21, 1980, Ser. No. 123,420
Int. Cl.³ B66D *3/08*
U.S. Cl. 254—399 **1 Claim**

1. In a hoist for a load-lifting applicance including a housing for the pulleys, a shaft for supporting the load hook and projecting through said housing and being affixed to said housing, said pulleys being arranged inside said housing in coaxial relation to opposite sides of said shaft, and said hoist further including an additional load bearing member besides said load hook, the combination of
(a) a pulley-housing (1) including an upper pulley-housing part (2) and a lower pulley-housing part (3);
(b) a plurality of pairs of shaft-support plates (4) affixed to said upper pulley-housing part (2) and a plurality of pairs of shaft-support plates (4) affixed to said lower pulley-housing part (3), said pairs of shaft support plates in said upper and said lower pulley-housing parts (2,3) interleaving when said upper pulley-housing part (2) and said lower pulley-housing part (3) are in engagement;
(c) a plurality of pulleys (6) and a plurality of pulley-supporting shafts (5), each of said plurality of pulleys (6) being supported by a separate shaft of said plurality of pulley-supporting shafts (5);



(d) some of said plurality of pulley-supporting shafts (5) being supported by pairs of said shaft-supporting plates (4) affixed to said upper pulley-housing part (2), and others of said plurality of pulley-supporting shafts (5) being supported by pairs of said shaft-supporting plates (4) affixed to said lower pulley-housing part (3);
(e) a shaft (12) for supporting said load hook (13) rotatably supported by said upper housing part (2); and
(f) an additional load supporting member (9) rotatably supported by said lower housing part (3).

4,403,767
VARIABLE RACK STAIR RAIL ASSEMBLY
Gene Basey, 18447 Santar, Rowland Heights, Calif. 91748
Filed Dec. 29, 1980, Ser. No. 220,453
Int. Cl.³ E04H *17/14*
U.S. Cl. 256—66 **11 Claims**



1. A variable rack stair rail assembly which comprises:
a hand rail,
a shoe rail,
a plurality of elongated balusters extending intermediate the shoe rail and the hand rail,
means for joining each of said balusters to said hand rail and said shoe rail, said means for joining comprising an elongated plug member and a socket member having an opening thereon, said plug and socket members having respective first axial extremities dimensioned and configured for mutual engagement, one of said members being disposed in cooperating relationship with one of said rails and the other of said members being disposed in cooperating relationship with one axial extremity of the balusters, and said socket member having one axial extremity to which said

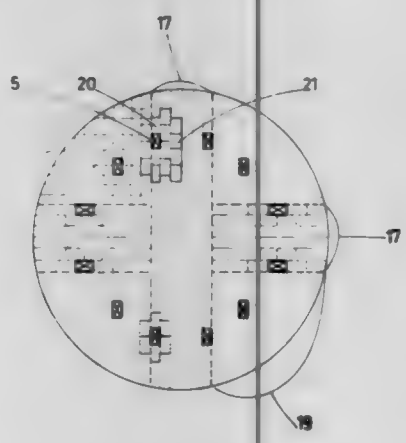
opening extends, said first axial extremity including an outwardly extending flange.

4,403,768

BOTTOM OF METALLURGICAL CONTAINER AND PROCESS OF FORMING THE SAME

Jean-Claude Grosjean, Semecourt, and Jean-Marie Landry, Maizieres-les-Metz, both of France, assignors to Institut de Recherches de la Siderurgie Francaise (IRSID), Saint-Germain-en-Laye, France

Filed Nov. 30, 1981, Ser. No. 325,844
Claims priority, application France, Dec. 2, 1980, 80 25615
Int. Cl.³ C21C 5/44
U.S. Cl. 266—44 8 Claims



1. A process of forming the bottom of a metallurgical container of the type which comprises a metallic base, at least a layer of refractory material superimposed on the metallic base, a first layer of refractory bricks superimposed on said layer of refractory material and a second layer of refractory bricks superimposed on said first layer, the steps of placing spaced from each other on said first layer of refractory bricks a plurality of refractory elements permeable to gas and each enclosed in a metallic casing having a bottom and a circumferential wall and being open at the top; surrounding the circumferential wall of the metallic casing of each of said elements with bricks of a material which expand during rise of the temperature so as to press during operation of the metallurgical container the peripheral wall of each metallic casing tightly against the respective gas permeable refractory element; and thereafter finishing the construction of said second layer by filling the remainder of the second layer with refractory bricks.

4,403,769

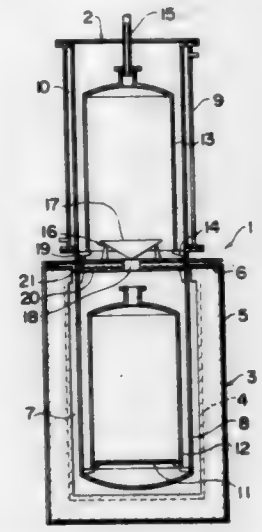
VACUUM SEPARATOR

Hiroshi Ishizuka, 19-2, Ebara 6-chome, Shinagawa-ku, Tokyo, Japan

Filed Apr. 23, 1982, Ser. No. 371,417
Claims priority, application Japan, May 12, 1981, 56-71118
Int. Cl.³ F27B 5/04
U.S. Cl. 266—149 9 Claims

1. In a vacuum separator for separating refractory metal from contaminants of magnesium metal and magnesium chloride mixed therewith, said vacuum seprator comprising a vertically elongated substantially cylindrical retort defining a closed space thereinside, a chamber capable of accomodating such mixture as loaded in a container, heating means for effecting evaporation of a substantial portion of said contaminants from such mixture, said chamber and heating means being provided in a lower section of the retort, a cylindrical surface, provided by an inside surface of another container for depositing thereon the contaminants which ascend in said retort as vapor, cooling means for effecting condensation of such contaminants on said surface, said surface and cooling means being provided in an upper section of said retort, and means for degassing the retort to an elevated degree of vacuum; the improvement wherein:

said retort further comprises a heat shield unit at an intermediate level between said upper and lower sections of the retort, said heat shield unit comprising a circular plate with a central bore and a flat solid disc larger than the bore, said disc being attached to but spaced from said circular plate, each of said circular plate and disc consisting of steel and being arranged at such a distance from one another, in relation to the bore, that the heat shield unit as



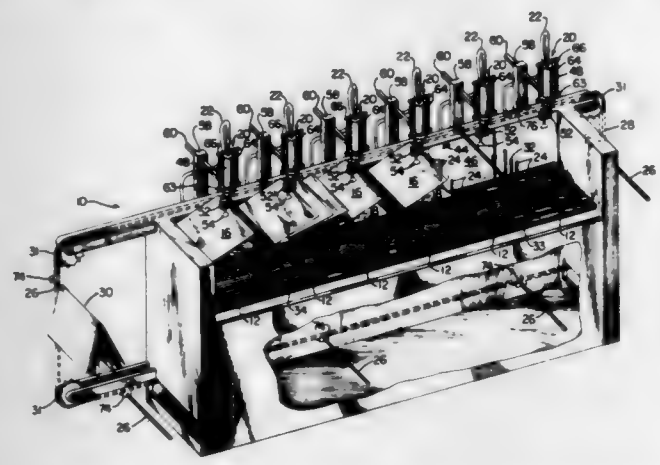
a whole blocks any direct sight of the surface of the lower section of the retort, when holding the container loaded with a mixture to be treated, from a substantial part of the condensation surface in the upper section, thus intercepting a substantial part of primary heat radiation from the retort lower section, while allowing passage of ascending vapor of contaminants.

4,403,770

APPARATUS FOR COLLATING SIGNATURES

Leonard Ferguson, 7206 W. Walden Pl., Littleton, Colo. 80123, and Jack W. Mefford, 395 Iris St., Broomfield, Colo. 80020

Filed Mar. 22, 1982, Ser. No. 360,190
Int. Cl.³ B65H 5/30
U.S. Cl. 270—55 12 Claims



1. In a collating apparatus for sequentially engaging a plurality of individual folded signatures and gathering said signatures sequentially within each next signature in succession along the respective fold lines of said signatures for subsequent binding, the improvement comprising:

a plurality of juxtaposed signature stations for supporting said signatures;

vacuum producing means;

a suction delivery assembly including a suction port housing situated above each said signature station, each housing having a pivotal suction port in communication with said vacuum producing means, each said suction port engageable with the top leaf of a top signature disposed within its signature station, said suction delivery assembly including means urging each said suction port housing downwardly

into engagement with said signatures at each signature station, said assembly having actuator means to overcome the downward urging of said means and to cause upward movement of each said housing only upon application of a vacuum through each said suction port when said suction port is in engagement with a signature; and

at least one collector rod means movable between the leaves of the successive signatures as said signatures are engaged and lifted by the application of vacuum through respective said suction ports, said rod means as it collects each signature thereon operative to cause pivotal movement of said suction port to a position interrupting the application of vacuum through said suction port whereby to release said signature from said suction port as the vacuum is interrupted thereto.

9. In a collating apparatus capable of engaging for subsequent collection a plurality of individual singularly folded signatures arranged in supply stations for housing signatures, the improvement comprising:

vacuum applying means; and

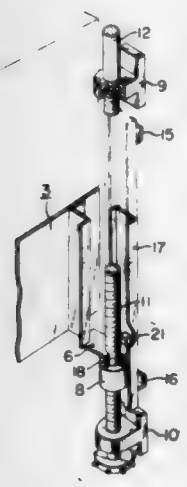
a suction delivery assembly having a suction port housing, a portion of which is arcuately pivotal, and having protruding from said pivotal portion a suction port, said suction port housing having extending therethrough a vacuum delivery channel in communication with said vacuum applying means and extending first through a stationary portion of said housing and through said arcuately pivotal portion thereof, said suction port housing being in the form of a generally rectangular block provided with a vertically directed opening therein, said pivotal portion being pivotally mounted within said opening for downward projection of said suction port from said block, said channel extending through a portion of said block and said pivotal portion, means for yieldably urging said pivotal portion to a position forming a continuous channel through said block and pivotal portion of said suction port and said suction port including a lower extremity having a suction cup of rubber or rubber-like material thereon, the application of vacuum through said channel being interrupted when said pivotal portion of said housing is arcuately pivoted.

4,403,771

COPYING APPARATUS WITH SLIDABLY ATTACHED SORTER BIN

Junkichi Kasahara; Mitsuyoshi Nagashita, and Hiroyuki Honda, all of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1981, Ser. No. 258,798
Claims priority, application Japan, Apr. 30, 1980, 55-58205
Int. Cl.³ B65H *39/11*
U.S. Cl. 271—294 **3 Claims**



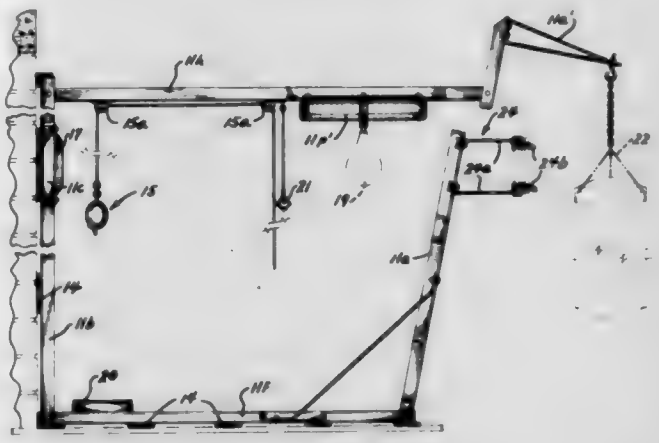
1. In a copying apparatus equipped with a sorter consisting of a bin supported for sliding up and down movement relative to a main frame, a feeding screw vertically supported on the main frame, a nut on said feeding screw, a first coupling extension attached at one end to said bin and at its other end slidably mounted on said feeding screw, a second coupling extension attached at one end to said bin and it its other end to said nut, and means for rotating said feeding screw to cause movement of said nut and up and down movement of said bin attached thereto, the improvement comprising a U-shaped guide rail vertically mounted on said main frame parallel to said feeding screw with the arms of said U extending toward said feeding screw and said second coupling extension, guide means intermediate said second coupling extension and said guide rail, said guide means having two faces projecting toward said U-shaped guide rail with one face slidably contacting the main inner vertical face of said U-shaped guide rail and the other face slidably contacting the inner face of one of the arms of said U-shaped guide rail, and an elastic shock-absorbing means intermediate said nut and said second coupling extension, whereby imbalance of the bin caused by the weight of stacked copies and vibrations caused by movement of said feeding screw are avoided by the cushioning effect of said shock-absorbing means and the regulated contact between said second coupling extension and said U-shaped guide rail through said guide means.

4,403,772

UNITARY SELF-CONTAINED PHYSICAL CONDITIONING STRUCTURE

Lynn B. Stangle, Box 25, St. Francisville, Ill. 62460

Continuation of Ser. No. 96,051, Nov. 20, 1979, abandoned. This application Sep. 14, 1981, Ser. No. 302,316
Int. Cl.³ A63B *69/00*
U.S. Cl. 272—78 **1 Claim**



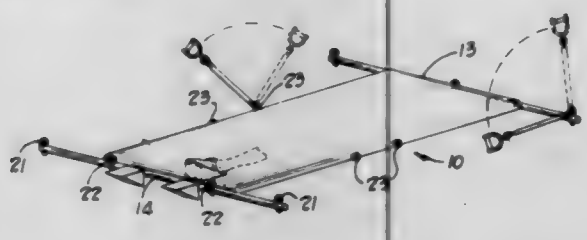
1. An athletic conditioning apparatus for the martial arts comprising a framework independently movable from one location to another on a floor surface, said framework defined as a unitary assembly represented by interconnecting rear members in a quadrangular relationship abutting an impact receiving upstanding wall, interconnecting upper members formed in a converging configuration in plan view having an apex area remote from said rear members supporting a subframework receiving a rebound ring and speed bag, an interconnecting base member mounting an upwardly angling member connecting to said apex area and supporting an outwardly extending portion for a conditioning unit, and other conditioning units selectively locatable on said upwardly angling member, said upper members, said rear members and said base member, where another base member and a rear member support flooring, and where resilient cushioning members isolate said rear members of said framework from said upstanding wall and said base members of said framework from said floor surface.

4,403,773

EXERCISING APPARATUS

David T. Swann, 18924 Lomond Blvd., Shaker Heights, Ohio 44122

Filed Mar. 10, 1980, Ser. No. 128,654
Int. Cl.[3] A63B 23/04, 23/02
U.S. Cl. 272—134 2 Claims



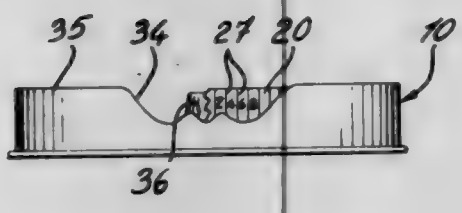
1. An exercise apparatus comprising an elongated rectangular flat and immovable support during use of said apparatus, anchoring means secured to said support at backend thereof and at intermediate portions lengthwise thereof, a plurality of detachable exercise means having connecting means adapted to be selectively secured to an arm and/or leg, tension means having fastening means at each end thereof adapted to be secured to said detachable exercise means and to selected said anchoring means said support being provided at each end with laterally outwardly extended arms having additional anchoring means at the ends thereof for arm and/or leg firming exercises when said spring tension arm and/or leg exercise means are secured to said additional anchoring means to selectively afford flexion, adduction and extension exercises of the selected terminal or torso portions of the unrestrained body of an exerciser.

4,403,774

DEVICE FOR OBTAINING READINGS OF STATISTICAL VARIABLES

Roger Turcotte, 4094 Harvard, Montreal, Quebec, Canada H4A 2W7, and Vincent Papillon, 5236 Durocher, Outremont, Quebec, Canada H2V 3Y1

Filed Jun. 26, 1981, Ser. No. 277,861
Int. Cl.[3] A63F 5/04
U.S. Cl. 273—143 R 9 Claims



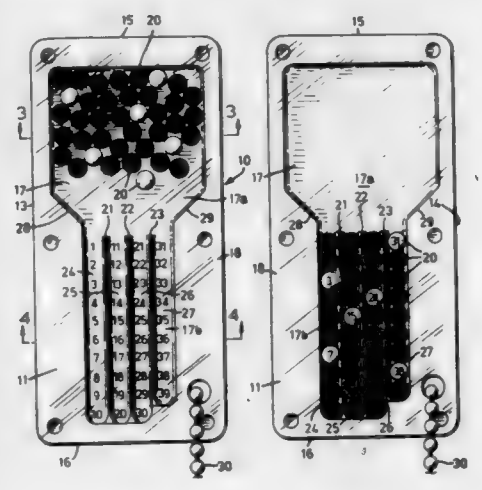
1. A device for obtaining readings of statistical variables in a random manner, said device comprising a base member having a bottom wall, a cylindrical side wall extending vertically above said bottom wall, a vertical centering post projecting from said bottom wall centrally of said cylindrical side wall, a data carrying circular spool having a circular bottom wall centrally supported for rotation on said post, said cylindrical side wall having reference means for obtaining a reading of information from said spool, a central hub extends above a top face of said spool bottom wall to constitute a finger grasping post to impart rotation to said spool, and a post receiving cavity extending into said hub from a bottom face of said spool to receive said centering post therein, said centering post being shorter than the depth of said cavity whereby said spool will rest on an elevated concentric portion of a top surface of said bottom wall, passage means in said cylindrical side wall for the admission of air in the area bounded by said cylindrical side wall to create an air cushion under said bottom wall of said spool when rotated on said support post to liberate said spool from frictional engagement with said elevated concentric portion, said concentric portion constituting a braking surface to frictionally arrest said spun spool when lowered thereon by gravity as it decreases its rotational speed.

4,403,775

RANDOM INDICIA SELECTOR

Joseph R. Chaput, 9 Deer Park Cres., Apt. 1501, Toronto, Ontario, Canada M4V 2C4

Filed Jun. 14, 1982, Ser. No. 388,092
Int. Cl.[3] A63F 7/04
U.S. Cl. 273—144 B 13 Claims



1. Apparatus for randomly selecting at least one indicia comprising a container having an enclosed compartment having at least first and second sections communicating with each other; a plurality of balls located in said compartment and moveable between said two sections thereof, some of said balls being of a first colour and at least one of said balls being of a second colour; a window in said container through which said balls in said second section can be viewed; a plurality of indicia also viewable when viewing said second section through said window, said indicia being of a colour that does not contrast with said first colour but does contrast with said second colour, said second section, balls, window and indicia being so constructed and arranged that when said balls are in said second section they are located behind said indicia relative to a person looking into said second section through said window and said indicia that are adjacent said balls of said first colour are masked by said colour of said balls of said first colour and thereby rendered substantially invisible, while said at least one ball of said second colour forms a colour contrasting background for the one of said indicia adjacent thereto and highlighting the latter indicia as the one to be selected.

4,403,776

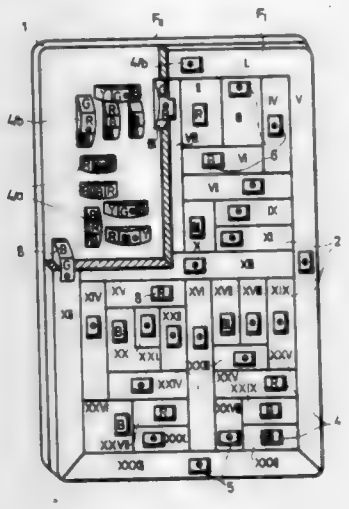
LOGIC TOY

Gyula Subotics; Gyulane Subotics, both of 52, Ferihegyi u., Budapest 1173, and Lajos Nagy, 11, Jos u., Budapest 1036, all of Hungary, assignors to Gyula Subotics; Gyulane Subotics and Lajos Nagy, all of Budapest, Hungary

Filed Apr. 27, 1981, Ser. No. 257,920
Claims priority, application Hungary, Apr. 25, 1980, 1022
Int. Cl.[3] A63F 9/08
U.S. Cl. 273—153 R 5 Claims

1. A logic toy for independently and distinctly signalling bordering zones designated on two oppositely lying logic game

surfaces of a body (1) of said toy, each said surface (F_I, F_{II}) of said body (1) being divided into a plurality of separated zones (2), wherein said body (1) comprises a plurality of signalling means, predetermined ones (4/a) of said signalling means each serving an individual one of said zones only on one of said surfaces, predetermined ones of said signalling means each serving an individual one of said zones only on the oppositely



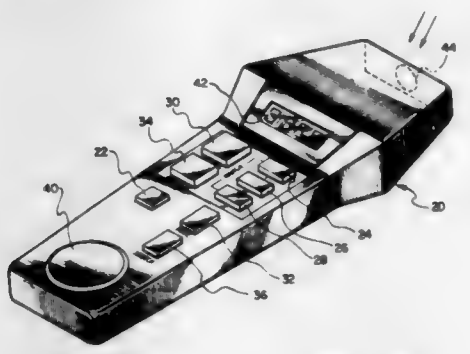
lying surfaces, and predetermined other (4/b) of said signalling means serving more than one of said zones simultaneously, each one of said zones being served simultaneously lying on one of said opposite surfaces, said signalling means comprising switchable disks (4) provided with signals thereon, whereby displaying a different signal for adjacent zones lying on the same surface can be accomplished.

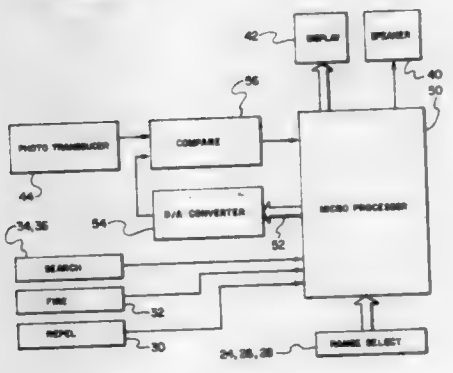
4,403,777

ELECTRONIC GAME USING PHOTOTRANSDUCER

Robert M. Del Principe, Hawthorne; David A. Hostetler, Torrance, and John Ling, Hacienda Heights, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 8, 1981, Ser. No. 223,537
Int. Cl.³ A63F *9/00*
U.S. Cl. 273—313 **16 Claims**





1. In a handheld electronic game for simulating search for an invisible being, the combination comprising:

means for providing at least one of a visible and audible stimuli;

phototransducer means for sensing incident and ambient light in the direction in which said game is pointed;

means responsive to an output from said phototransducer means for varying said at least one of said visible and audible stimuli for providing clues as to the whereabouts of the being;

means for establishing a reference light level, said means including means for randomly selecting at least one reference light level from said phototransducer means;

manually operable switch means; and

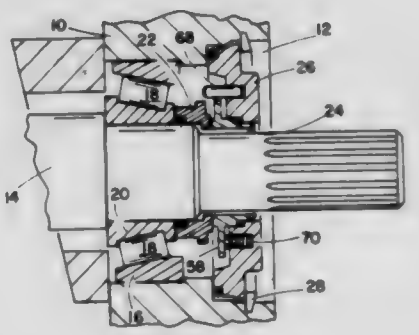
means for comparing the reference light level to the light impinging on said phototransducer means and correlating actuation of said switch means with said means for providing at least one of a visible and audible stimuli for further affecting said means for varying the stimulus so provided whereby to indicate to the operator the success or failure of locating the being.

4,403,778

FACE SEAL ASSEMBLY AND METHOD OF USE

Edward J. Shevokas, and William S. Bathgate, both of Ames, Iowa, assignors to Sundstrand Corporation, Rockford, Ill.

Filed May 27, 1982, Ser. No. 382,492
Int. Cl.³ B23P *19/02*
U.S. Cl. 277—1 **20 Claims**



1. A face seal assembly for transporting face seal elements while maintaining said face seal elements in a mutually abutting relationship, said face seal elements including a first element having a first sealing face and a second seal element having a second sealing face adapted to abut said first element sealing face to form a rotating seal interface, said face seal assembly characterized by:

a sleeve having said first and second elements axially positioned thereon with said sealing faces in abutting contact and with each of said elements frictionally engaging the outer surface of said sleeve in a manner which prevents relative axial movement of said elements and whereby said face seal assembly is adapted to be positioned within a housing in a final assembly position concentric with respect to a shaft with said first and second element sealing faces in an axially abutting relationship on said sleeve.

4,403,779

SEALS FOR LIQUID-TIGHT CLOSURE BETWEEN ROTARY COMPONENT AND PARTITION

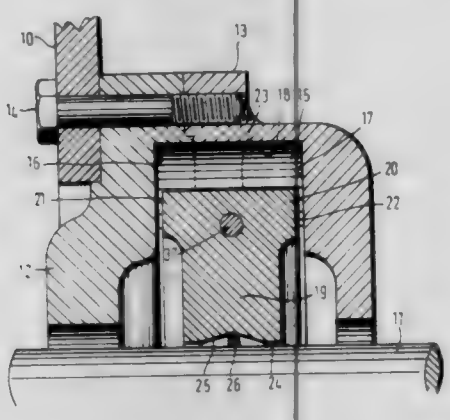
Samual C. W. Wilkinson, Chichester, England, assignor to Crane Packing Limited, Slough, England

Filed Nov. 19, 1982, Ser. No. 443,149
Claims priority, application United Kingdom, Nov. 21, 1981, 8135135
Int. Cl.³ F16J *15/18, 15/44, 15/46*
U.S. Cl. 277—27 **7 Claims**

1. A seal for producing a liquid-tight closure between a rotary component and a partition separating two chambers, where the rotary component penetrates the partition, said seal comprising; a retaining means adapted to be mounted on the partition, so that it surrounds the rotary component as it passes through the partition, said retaining means defining an annular formation;

said annular formation overlapping radially, a corresponding formation on the outer portion of an annular floating

member, to locate said annular floating member axially while permitting a degree of radial movement, the inner surface of the floating member being dimensioned to give a small clearance about the rotary component; and sealing means associated with either the internal surface of the floating member or the opposed surface of the rotary



component; said sealing means being arranged to seal the gap between the floating member and the rotary component and opposed surfaces of the formations defined by the retaining means and the floating member being arranged to make sealing engagement, upon exposure to liquid, following flooding of one of the chambers separated by the partition.

4,403,780

ANNULAR FLUID SEALS

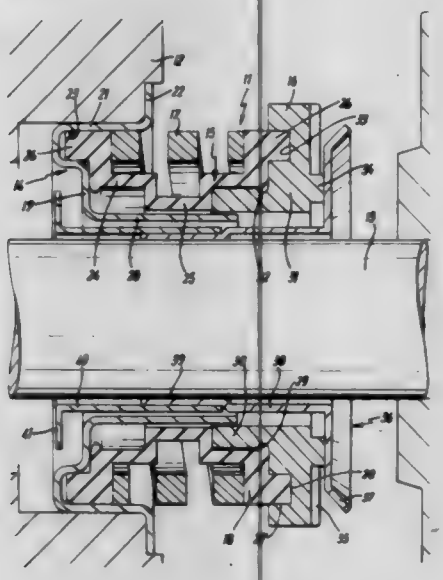
Charles W. Potter, Manchester, England, assignor to J. H. Fenner & Co. Ltd., Yorkshire, England

Filed Jul. 15, 1981, Ser. No. 283,626

Claims priority, application United Kingdom, Jul. 17, 1980, 8023469

Int. Cl.³ F16J *15/34*

U.S. Cl. 277—88 **11 Claims**



1. A face seal arrangement for effecting a fluid seal between a housing and a shaft rotatable therein, comprising an annular shell, a diaphragm seated in said shell and having an end remote from the shell, a compression spring applying a loading to said diaphragm, a sealing member adjacent said end of the diaphragm and moveable in the axial direction of the seal under the effect of the spring-loaded diaphragm, the said sealing member having an annular sealing surface at an outer face thereof, and a sealing ring arranged in opposed disposition relative to the sealing member for cooperation with the annular sealing surface to effect a fluid seal therebetween, one of the annular shell and sealing ring being respectively mountable in the housing and the other of the annular shell and sealing ring being mounted on the shaft, the diaphragm including a body and spaced radial flanges, and said compression spring comprising material of rectangular transverse cross-section interposed between said flanges, each flange having an axially outer face and including a respective axially extending rim thereat, the shell and sealing member having respective seatings within which said rims are retainably engaged and are deformed to provide sealing contact therebetween.

4,403,781

SEALING ASSEMBLY FOR UNIVERSAL JOINT

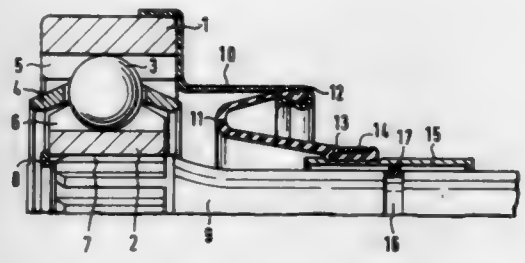
Helmut Riemscheid, Lohmar, Fed. Rep. of Germany, assignor to Uni-Cardan Aktiengesellschaft, Siegburg, Fed. Rep. of Germany

Filed Sep. 22, 1981, Ser. No. 304,622

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1980, 3035884

Int. Cl.³ F16D *3/84*; B61F *15/22*

U.S. Cl, 277—212 FB **3 Claims**



1. A sealing assembly for a universal joint including an inner joint member, an outer joint member, torque transmission means interposed between said inner and outer joint members, said torque transmission means including rolling members received in grooves of said inner and outer joint members, and a drive shaft connected in driving engagement with one of said inner and outer joint members, said sealing assembly comprising: a sleeve having a first end with a larger diameter and a second end with a smaller diameter, said first end of said sleeve being connected to the other of said inner and outer members; an annular groove formed in said drive shaft; a bush arranged to concentrically surround said drive shaft with a uniform radial distance therebetween; a sealing ring arranged within said annular groove between said bush and said drive shaft, said annular groove with said sealing ring arranged therein being located within an operating range of said bush thereby mounting said bush to be axially movable relative to said drive shaft within said operating range, said sealing ring operating as a contact seal relative to the inner diameter of said bush; and attachment means affixing said second smaller diameter end of said sleeve to the outer circumference of said bush.

4,403,782

PUSH-TYPE JAW CHUCK

James R. Buck, Hickory Corners, Mich., assignor to Buck Tool Company, Cape Coral, Fla.

Filed Jan. 30, 1981, Ser. No. 229,694

Int. Cl.³ B23B *31/16*

U.S. Cl. 279—121 **5 Claims**

1. A rotatable jaw chuck arrangement, comprising:

sleevelike body means rotatable about its longitudinally extending axis, said body means defining thereon a front face adjacent one axial end thereof, and a plurality of guide slots projecting radially of said body means;

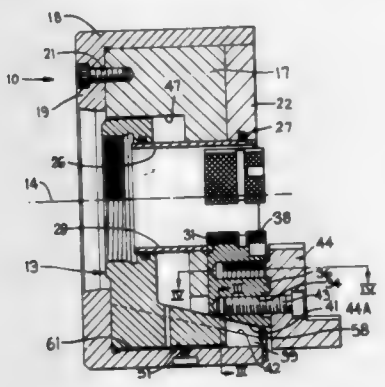
said body means including an inner sleevelike housing having said slots formed therein, said slots opening axially outwardly through said front face, said body means also including an outer sleevelike housing which is fixed to and snugly surrounds the inner housing so that said outer housing overlaps and closes off the radially outer ends of said slots;

a plurality of jaw carriers radially slidably supported within said slots directly adjacent said front face, said jaw carri-

ers having means associated therewith for gripping engagement with the outer periphery of a workpiece;

an actuator axially slidably supported on said body means adjacent the rearward end thereof, said actuator including a plurality of wedges projecting axially forwardly therefrom and being axially slidably engaged with said jaw carriers for effecting radial displacement thereof, the actuator and the wedges fixedly associated therewith being axially movable between a released position and a workpiece position, said actuator being moved axially forwardly when being displaced from said released position toward said workpiece-gripping position;

said wedges being sloped radially outwardly as they project axially toward said front face and being slidably engaged with similar sloped surfaces on the jaw carriers so that the jaw carriers are radially displaced inwardly for gripping engagement with a workpiece in response to a forwardly-directed pushing force imposed on the actuator;



said jaw carriers having sloped grooves extending axially therethrough for slidably receiving therein the respective wedge, said sloped grooves extending axially forwardly substantially to said front face, said sloped grooves also opening radially outwardly through the radially outer periphery of said jaw carriers, each said wedge when in said released position being disposed with the front free end portion thereof projecting only slightly into the groove of its respective jaw carrier, and each said wedge when the actuator is in said workpiece-gripping position being disposed so that its front free end portion projects into the groove of the respective jaw carrier through an axial distance which substantially exceeds a majority of the axial extent thereof; and

said wedges having an outer peripheral surface which is axially slidably supported directly on said outer housing on the portion thereof which is radially aligned with and closes off the radially outer ends of said slots.

4,403,783

LIQUID AND GRANULAR HAULING TRAILER

Frank E. Henderson, Plant City, Fla., assignor to Harsco Corporation, Camp Hill, Pa.

Filed Jul. 22, 1981, Ser. No. 286,040
Int. Cl.³ B60P *3/24*
U.S. Cl. 280—5 G **15 Claims**

11. A vehicle with a tank having a body which extends along an axis, the body having a first end and a second end comprising:

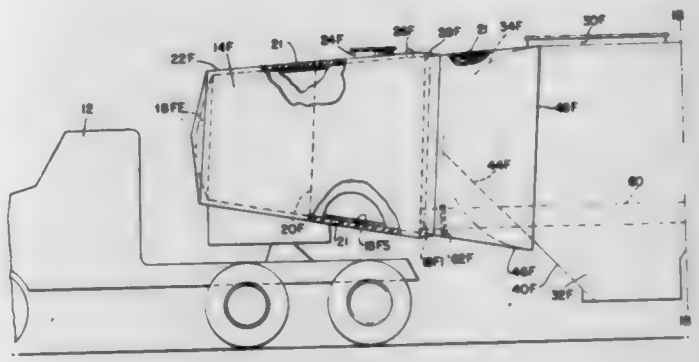
a first end chamber at said first end of said body and defined by a side wall portion, an exterior end wall portion, and an interior end wall portion;

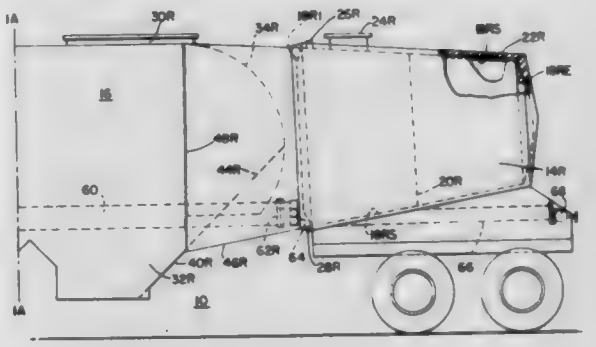
a second end chamber at said second end of said body and defined by a side wall portion, an exterior end wall portion, and an interior end wall portion;

a center chamber disposed in between said interior end wall portion of said first end chamber and said interior end wall portion of said second end chamber, said center chamber defined by center chamber walls and closed off from both said first end chamber and said second end chamber;

a first port for removing substances from said first end chamber; and,

an insulated pipe mounted to said body and connecting said first end chamber to said second end chamber, and wherein said first end chamber is inside of a first jacket





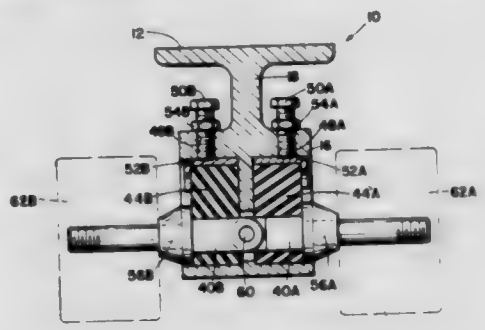
piece with insulation in between said first end chamber and said first jacket piece, and said second end chamber is inside of a second jacket piece with insulation in between said second end chamber and said second jacket piece and said insulated pipe extends from the bottom of said second end chamber to the bottom of said first end chamber.

4,403,784

ROLLER SKATE AXLE SUSPENSION

Robert C. Gray, P.O. Box 15262, Tulsa, Okla. 74112

Filed Jan. 22, 1981, Ser. No. 227,418
Int. Cl.³ A63C *17/02*
U.S. Cl. 280—11.28 **13 Claims**



1. In a roller skate comprising:

a skate body with an upper surface adaptable to receive a shoe thereon, and having forward and rearward downwardly extending suspension housings, at least one housing having an opening therethrough the axis of the opening being transverse the vertical plane of the skate body longitudinal axis;

an axle extending through each said suspension housing opening having an intermediate point and means at each end thereof to receive a skate wheel;

a first and second elastomeric member received in said suspension housing opening in spaced apart relationship, each elastomeric member engaging said axle in an area between the axle intermediate point and the portion receiving a skate wheel; and

means of separately adjustably varying the compressive force applied by each said elastomeric member against deflection of said axle in the direction towards said skate body.

4,403,785

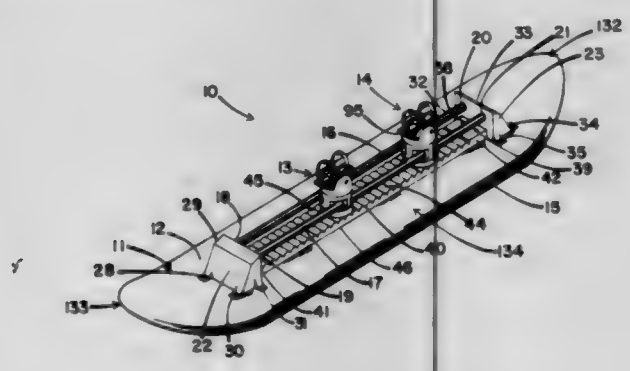
MONOSKI AND RELEASABLE BINDINGS FOR STREET SHOES MOUNTABLE FORE AND AFT OF THE SKI

John M. Hottel, 11 Broad Cove Rd., P.O. Box 35, Hingham, Mass. 02043

Continuation of Ser. No. 3,171, Jan. 15, 1979, abandoned. This application Jun. 4, 1981, Ser. No. 270,387

Int. Cl.[3] B62B *13/06*; A63C *5/04*

U.S. Cl. 280—12 H **14 Claims**



9. Bindings for use on skis for releasably binding a person's foot to the ski surface and being capable of binding a person's ordinary street shoes or boots thereby permitting freedom of ankle movement comprising a first foot plate for supporting said person's shoes or boots, fastener means on said foot plate for securing the person's shoe or boot to the said first footplate, a second boot plate capable of pivotal movement in vertical direction for releasably and pivotally supporting the first said foot plate, means capable of rotation in a horizontal direction supporting said pivotal foot plates, spring means connecting said foot plate and said means capable of rotation whereby the pivotal movement of said first and second foot plates are controlled, and means supporting said rotatable means for mounting on a ski.

4,403,786

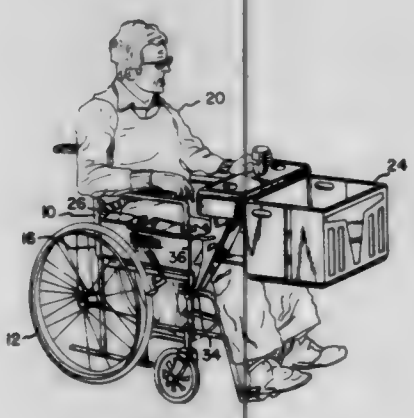
WHEELCHAIR SHOPPING BASKET

George Ulics, 1300 Venice, Dearborn, Mich. 48124

Filed Jan. 28, 1981, Ser. No. 229,186

Int. Cl.[3] A61G *5/02*

U.S. Cl. 280—289 WC **5 Claims**



1. A Combination comprising,
a wheelchair having a frame;
wheel means supporting the frame;
seating structure mounted on the frame;
the frame having an opening for receiving an occupant to a seated position on the seating structure;
a basket having opening means and a vertical wall having a pair of spaced slots;
support means comprising,
a pair of horizontal support arms each connected to the wheelchair frame in a horizontal position;
a pair of inclined arms each having a lower end mounted on the wheelchair frame and an upper arm connected to one of said horizontal arms;
a clip mounted on each of the inclined arms;
a vertically disposed finger carried on each of said clips, said fingers being removably received in the pair of spaced slots in the vertical wall of the basket on opposite sides of the frame opening so as to be disposed to receive the opening means in the basket to support it in a position adjacent the frame opening in front of an occupant seated therein.

4,403,787

COVERING APPARATUS FOR A HANDLE BAR OF A BICYCLE

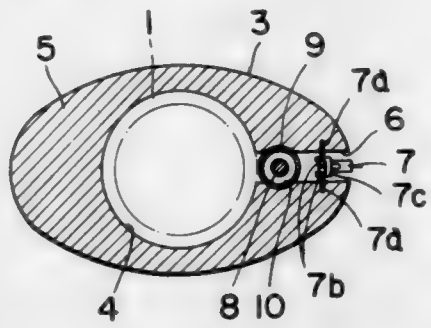
Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jun. 22, 1981, Ser. No. 275,665

Claims priority, application Japan, Jun. 27, 1980, 55-91243[U]

Int. Cl.[3] B62K *21/26*

U.S. Cl. 280—289 H **5 Claims**



1. A covering apparatus for a handle bar of a bicycle, comprising:
a longitudinally extending body having a hollow into which said handle bar is insertable, said body being formed of a resilient material and having at one side thereof an open groove through which said hollow is open to the body exterior, said body having an insertion bore formed therealong on an interior surface thereof for retaining a control cable; and
a slide fastener arranged within and extending longitudinally along said groove for opening and closing the same, said slide fastener comprising a pair of engaging members extending longitudinally along said groove and a slider means having a control portion for engaging and disengaging said engaging members.

4,403,788

SKI BRAKE

Jean Bernard; Jean Beyl, both of Nevers; Christian Campillo, Garchizy; Rene Guerreau, Montmarault; Daniel Le Faou, Varennes Vauzelles, and Henri Peyre, Nevers, all of France, assignors to STE Look, Nivers, France

Filed Jul. 23, 1981, Ser. No. 286,195

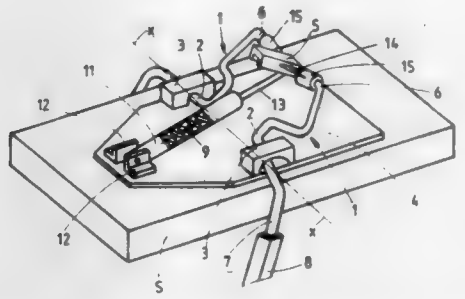
Claims priority, application France, Aug. 4, 1980, 80 17167

Int. Cl.[3] A63C *7/10*

U.S. Cl. 280—605 **5 Claims**

1. A ski brake comprising a pair of arms each having a control end and a braking end, means pivotally mounting said arms about a horizontal axis transverse to the ski, said pivotally mounting means surrounding a portion of each arm with sufficient play to permit angular displacement of said arms in the plane of the ski, a flexible resilient strip disposed transversely of the ski and interconnecting the control ends of said braking arms, an elastic restoring member connected at one end to said

ski and at its other end to the control ends of said braking arms through said flexible strip, whereby said restoring member continually urges said arms to the active braking position in which the braking ends project beneath the plane of the ski, and a control pedal fixedly attached to said flexible strip for pivotal movement about a horizontal axis transversely of said ski and concurrent rotational movement of said resilient strip, whereby in the braking position of said arms the line of action of said restoring member is inclined with respect to the face of the resilient strip at such an angle that said restoring member



causes flexural deformation of said strip thereby having the effect of inclining the control ends of said braking arms toward one another and therefore outwardly displacing the braking ends of said arms with respect to one another, and in the raised position of said arms and the depressed pivotal position of said pedal the line of action of the restoring member is approximately parallel to the face of said resilient strip which therefore assumes a flat configuration, thus having the effect of restoring the control ends of said braking arms to their position of relative outward displacement, and therefore inwardly displacing the braking ends of said arms with respect to one another.

4,403,789

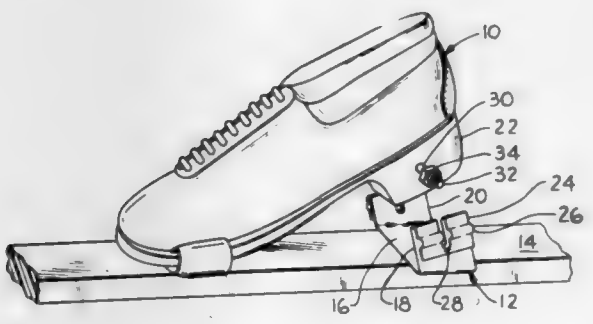
SKI TO BOOT ATTACHMENT MECHANISM

Robert J. Hickey, 2575 Blakely Rd., South Wales, N.Y. 14139

Continuation-in-part of Ser. No. 161,851, Jun. 23, 1980, abandoned. This application Dec. 10, 1981, Ser. No. 329,320

Int. Cl.³ A63C *9/08*

U.S. Cl. 280—614 **12 Claims**



1. A system for releasably securing a heeled ski boot to a ski, comprising: a pair of upstanding legs on the ski and adapted to laterally confine opposite sides of a boot heel, a transverse pin affixed to said boot, vertical slot means in said upstanding legs and extending downwardly from the top edge of said upstanding legs to receive respective ends of said transverse pin, said slot means being arranged to permit vertical separation of said boot heel from said ski and having sides which abut said transverse pin to prevent relative longitudinal movement between said ski boot and ski when said transverse pin is in said vertical slot means, the opposite end portions of said transverse pin being threaded and having threaded nuts thereon which tighten against said upstanding legs.

4,403,790

CONNECTING MEMBER IN PARTICULAR FOR A SAFETY SKI BINDING WHICH IS EQUIPPED WITH A SKI BRAKE

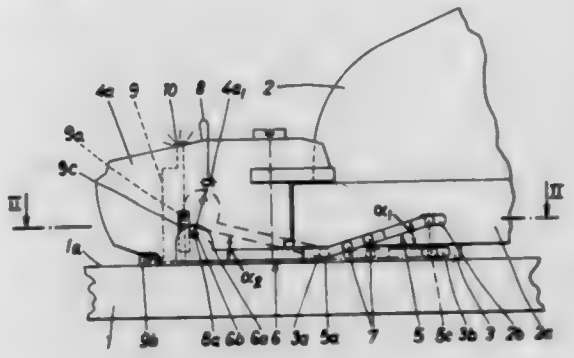
Helmut Bauer, and Tibor Szasz, both of Vienna, Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Feb. 2, 1981, Ser. No. 230,232

Claims priority, application Austria, Jan. 31, 1980, 493/80

Int. Cl.³ A63C *9/18*

U.S. Cl. 280—637 **11 Claims**



1. In an apparatus adapted to interconnect a ski boot and ski, including binding means adapted to be mounted on said ski and engageable with said ski boot for releasably securing said ski boot on the upper side of said ski, said binding means automatically releasing said ski boot in response to a force in excess of a predetermined value which urges relative movement of said ski boot and ski, and further means for interconnecting said ski boot and ski, said further means being adapted for manual engagement and release, the improvement comprising wherein said binding means includes a plate which is disposed between said ski boot and ski and has a first opening in each laterally facing side thereof, where in said further means includes said ski boot having a second opening in each side of the sole thereof, said second openings being disposed approximately above said first openings when said ski boot is releasably secured in said binding means, wherein said further means includes a generally U-shaped, resiliently flexible connecting member having a bight and two legs, said legs each having an inward projection thereon at the end thereof remote from said bight, said bight extending generally transversely of said ski and said connecting member being pivotally supported for movement about a transverse horizontal axis between first and second positions, said projections on said legs each being engageable with a respective said first opening when said connecting member is in said first position and a respective said second opening when said connecting member is in said second position, and wherein said further means includes manually actuable operating means cooperable with said connecting member for flexing said legs resiliently outwardly and facilitating pivotal movement of said connecting member between said first and second positions.

4,403,791

CARBONLESS DUPLICATING AND MARKING SYSTEMS

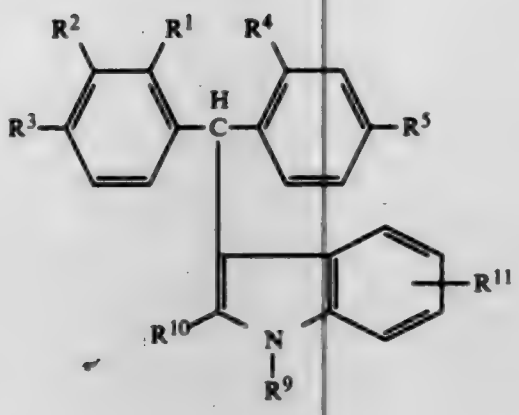
Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Filed Aug. 6, 1981, Ser. No. 290,657

Int. Cl.³ B41M *5/16, 5/18, 5/22*

U.S. Cl. 282—27.5 **12 Claims**

1. A pressure-sensitive carbonless duplicating system or thermal marking system containing a support sheet coated with a layer containing a color-forming substance comprising a compound having the formula



wherein:

R^1 represents hydrogen, C_1 to C_3 alkyl, non-tertiary C_1 to C_4 alkoxy, or halo;

R^2 represents hydrogen or nitro;

$R^{3'}$ represents hydrogen, C_1 to C_3 alkyl, non-tertiary C_1 to C_4 alkoxy, halo, or nitro;

R^4 represents hydrogen, non-tertiary C_1 to C_4 alkyl, non-tertiary C_1 to C_4 alkoxy, halo or dialkylamino in which alkyl is non-tertiary C_1 to C_4 alkyl;

R^5 represents dialkylamino or N-alkylbenzylamino in which alkyl is non-tertiary C_1 to C_4 alkyl and benzyl may be substituted in the benzene ring by one or two of halo or C_1 to C_3 alkyl;

R^9 represents hydrogen, non-tertiary C_1 to C_{18} alkyl, C_2 to C_4 alkenyl, benzyl or benzyl substituted in the benzene ring by one or two of halo or C_1 to C_3 alkyl;

R^{10} represents hydrogen, C_1 to C_3 alkyl or phenyl; and

R^{11} represents one or two of hydrogen, C_1 to C_3 alkyl, C_1 to C_3 alkoxy, halo or nitro.

4,403,792

NOVEL GLYCOLIC ACID ESTERS AND AMIDES OF BIS(P-DISUBSTITUTEDAMINOPHENYL)CARBINOL

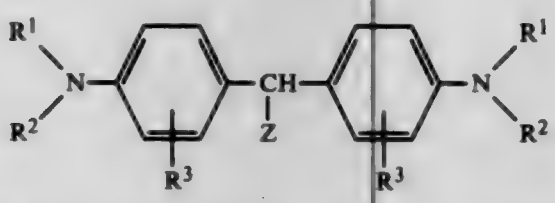
Frank F. Cesark, Bridgewater; Robert J. Manfre, Somerville, and Daniel W. Thomas, Bridgewater, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 256,353, Apr. 22, 1981, Pat. No. 4,343,939. This application Mar. 26, 1982, Ser. No. 362,367

Int. Cl.³ B41L *1/20*; B41M *5/00*

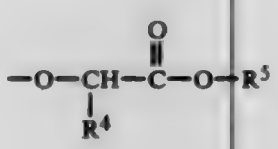
U.S. Cl. 282—27.5 **6 Claims**

1. A pressure-sensitive transfer copy set comprising a transfer sheet superimposed on an absorbent sheet, the transfer sheet having a coating on the surface thereof in contact with said absorbent sheet; said coating comprising a color former compound represented by the Formula (1):



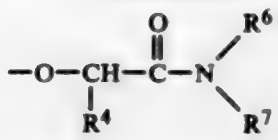
(1)

wherein R^1 and R^2, which may be the same or different, represent hydrogen, alkyl containing from about 1 to 4 carbon atoms, which may be substituted by a nitrile, hydroxyl or a 2 to 8 carbon alkoxy group, phenyl or alkyl (C_1–C_4) substituted phenyl, benzyl or alkyl (C_1–C_4) substituted benzyl; R^3 represents hydrogen or alkyl containing about 1 to 5 carbon atoms; and Z represents an ester or amide group represented by Formula (2) and (3), respectively:



(2)

-continued



(3)

wherein R^4 represents hydrogen, alkyl containing about 1 to 5 carbon atoms, phenyl or alkyl (C_1–C_4) substituted phenyl, or benzyl or alkyl (C_1–C_4) substituted benzyl; R^5 represents alkyl containing about 1 to 12 carbon atoms, either in a straight or branched chain, which chain may be interrupted by a hetero atom, phenyl or alkyl (C_1–C_4) substituted phenyl, or benzyl or alkyl (C_1–C_4) substituted benzyl; R^6 and R^7, which may be the same or different, represent hydrogen, alkyl containing about 1 to 12 carbon atoms in either a straight or branched chain, which chain may be interrupted by a hetero atom, phenyl or alkyl (C_1–C_4) substituted phenyl, benzyl, or alkyl (C_1–C_4) substituted benzyl, or wherein R^6 and R^7, taken together with the nitrogen atom to which they are attached, combine to form a heterocyclic ring, which forms a colored image when brought into contact with an electron acceptor, and a material normally insulating said color former compound in said coating to prevent contact with said absorbent sheet but being rupturable upon the application of pressure on said transfer sheet, whereby said color former compound is released and contacts said absorbent sheet; said absorbent sheet having a coating on a surface thereof in contact with said transfer sheet, said coating containing an electron acceptor.

4,403,793

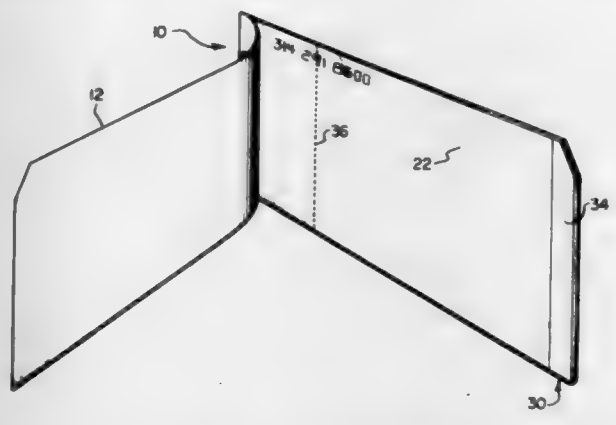
TRANSACTION SLIPS PACK

Joseph A. McCormick, Manhattan, Ill., and Lewis T. Hardin, Florissant, Mo., assignors to General Credit Forms, Inc., Earth City, Mo.

Filed Mar. 11, 1982, Ser. No. 357,182

Int. Cl.³ B42D *15/00*; B41L *1/20*

U.S. Cl. 283—105 **5 Claims**



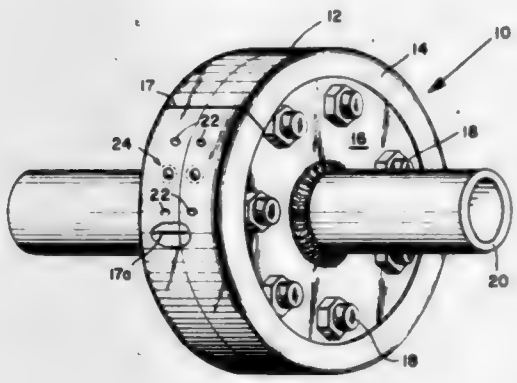
1. In a pack of credit card transaction slips for recording information thereon at defined positions on each transaction slip, including a customer position for receiving characters identifying a customer's account, said pack including at least two of said transaction slips with a duplicating carbon slip or duplicating medium slip therebetween joined at one end to said transaction slips and having an opposite free end, the improvement comprising a series of perforations in the form of a perforation strip placed on said duplicating slip at a location intermediate the joined end and the free end and adapted to align with the customer position on the transaction slips, enabling said characters identifying a customer's account, when recorded on said duplicating slip, to be split into two carbon sections by disjoining said duplicating slip at said perforation strip upon moving said one end away from said free end.

4,403,794

SAFETY SHIELD FOR FLANGED PIPE COUPLINGS

Donald G. Curran, Norwood, Pa., and Robert A. Anderson, Sewell, N.J., assignors to Bunnell Plastics, Incorporated, Mickelton, N.J.

Filed Jan. 28, 1981, Ser. No. 229,083
Int. Cl.[3] F16L *47/00*
U.S. Cl. 285—45 12 Claims



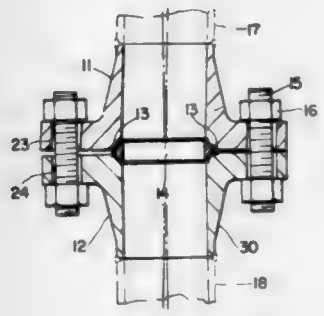
1. A safety shield for containing and deflecting a fluid leaking from a flanged pipe coupling comprising an elongated heat-shrinkable arcuate strip of transparent fluoropolymer, a flange along each longitudinal edge of said strip extending radially inward thereof, said flanges having been obtained by subjecting an annular section of heat-shrinkable tubing formed of said fluoropolymer to shrinking conditions while substantially restricting radial shrinkage thereof except along marginal edge portions of said section, said strip having a length sufficient to enable it to be wrapped around the circumference of the pipe coupling flanges to which it is applied, whereby one end of said strip overlaps the opposing end of said strip, and a width such that said flanges extend radially inward toward said pipe adjacent said pipe flanges, and means for coupling together the overlapping ends of said strip.

4,403,795

FLANGE UNION WITH IMPROVED RECESSED SEATS AND SEALING RING

Irwin H. Davlin, 714 S. Court St., Opelousas, La. 70570

Filed Dec. 9, 1980, Ser. No. 214,956
Int. Cl.[3] F16L *27/06*
U.S. Cl. 285—184 34 Claims



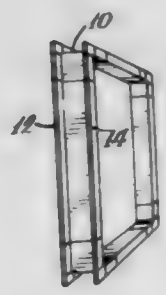
1. A flange union consisting essentially of first and second integrally constructed cooperating flange members having inner and outer ends and alignable annular bores extending longitudinally therethrough which serve as a passageway for fluid, the said first and second flange members having first and second annular recessed female seats respectively formed in their terminal inner end surfaces and extending around the terminal inner ends of the said bores, the said first and second female seats including first and second cooperating annular sealing surfaces which likewise extend around the said terminal inner ends of the bores, the said first and second flange members being positioned whereby their respective bores are in communication and the terminal inner end surfaces thereof are opposite each other whereby the said first and second female seats and the said first and second cooperating sealing surfaces thereon are in opposed relationship, a sealing ring having an annular convex sealing surface positioned between the said female seats, the said annular convex sealing surface of the sealing ring having a diameter greater than the internal diameters of the said bores and being located outside of the said bores, the said sealing ring being positioned whereby the said annular convex sealing surface thereof is in continuous contact with the said first and second opposed cooperating annular sealing surfaces of the first and second female seats, the configuration of the said convex sealing surface on the sealing ring and the said first and second sealing surfaces on the first and second female seats being such that an annular line seal of minimized surface area is formed outside of and surrounding the internal diameters of the said bores but being closely adjacent thereto, means carried by the said first and second flange members which includes means formed integrally therewith for applying inwardly directed forces to the said first and second opposed female seats to thereby urge the said first and second opposed sealing surfaces thereof into an effective sealing relationship with the said convex annular surface on the sealing ring and thereby form annular seals around the said terminal inner ends of each of the said bores and provide a fluid tight passageway for fluid through the flange union, the said inner ends being normally spaced apart a distance whereby when the first and second flange members are aligned and the said first and second sealing surfaces are in an effective sealing relationship with the said convex surface on the sealing ring the first and second flange members may be moved in and out of alignment, and means carried by the said first and second flange members for allowing the first and second flange members to move in and out of alignment and for preventing them from moving sufficiently far out of alignment to break the said annular seals, the last named means including a set of cooperating annular opposed projections extending from the said terminal inner ends of the first and second flange members, the said set of projections being outside of the said convex sealing surface on the sealing ring and normally being spaced apart longitudinally when the first and second flange members are properly aligned, and the said set of projections being positioned and arranged whereby they come into contact when the said first and second flange members are out of alignment a predetermined amount whereby the said projections serve as a stop means which prevents the said seal from being broken.

4,403,796

EXPANSION JOINTS

Stephen G. Ledbetter, Charleston; Michael P. Singleton, Goose Creek; Thomas J. Johns, Summerville, and James L. Fabian, Goose Creek, all of S.C., assignors to RM Industrial Products Company, Inc., North Charleston, S.C.

Continuation-in-part of Ser. No. 286,791, Jul. 27, 1981, abandoned, which is a continuation of Ser. No. 89,513, Oct. 30, 1979, abandoned. This application Aug. 26, 1982, Ser. No. 411,616
Int. Cl.[3] F16L *33/00*
U.S. Cl. 285—223 9 Claims



1. An expansion joint for connecting a pair of adjacent spaced ducts and the like in a fluid tight relationship, said expansion joint comprising a circumferentially continuous belt of flexible material and means for connecting said belt between said spaced ducts in a fluid tight relationship, said belt being

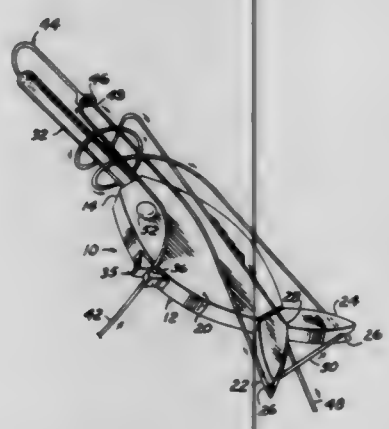
composed of a laminated sheet material comprising a layer of stretchable knit metallic wire mesh embedded on both sides with a cured fluoroelastomer sheet, said expansion joint being capable of recoverable elongation in excess of 75 percent and being capable of substantially continuous exposure to temperatures in the order of about 300 to about 400 degrees F. and excursions up to about 600 to about 700 degrees F. without substantial loss of flexibility.

4,403,797

FISHING LINE KNOT TYING TOOL

Ewing Ragland, Jr., 841 Scott, Del City, Okla. 73115

Filed Mar. 8, 1982, Ser. No. 355,980
Int. Cl.³ D03J *3/00*
U.S. Cl. 289—17 **4 Claims**



1. A hand held tool for tying a fishing line to the eye of a piece of fishing tackle, comprising:

an elongated planar body having a forward end and a rearward end;

a resilient projection protruding laterally from one side edge of the body and having a transverse slot therein normal to the plane of the body for frictionally holding an intermediate portionof a fishing line;

elongated tube means projecting longitudinally forward of the body for supporting a piece of fishing tackle and for threading a free end portion of a fishing line through the eye thereof and forming a forward doubled back line bight portion adjacent the tube and enable a free end portion of the line to be wrapped around the tube and doubled back line bight portion; and,

a pair of fins diverging rearwardly from the rearward end and in the plane of said body;

said fins each having a pointed rearward tip end transversely slotted parallel with the plane of the body for frictionally holding an intermediate portion of the fishing line when strung therebetween forming a rearward line bight portion defining an opening in combination with the rearward fins through which a free end portion of the fishing line is passed.

4,403,798

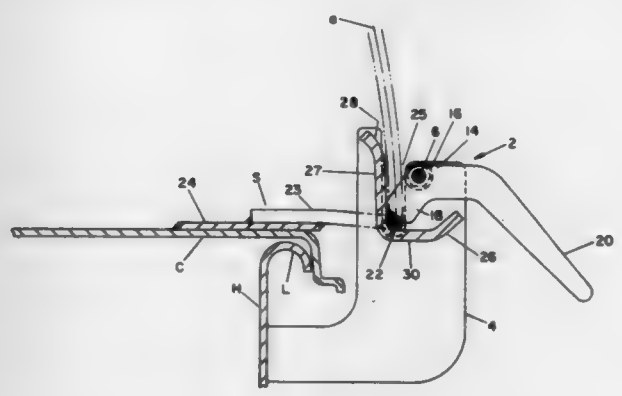
LATCH ASSEMBLY FOR RAILWAY CAR HATCH COVER

Robert J. Smith, Lansing, Mich., assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Jun. 15, 1981, Ser. No. 273,998
Int. Cl.³ E05C *3/14*
U.S. Cl. 292—256.5 **3 Claims**

1. A latch assembly for locking in place one end of a hold-down strap that secures a railway car hatch cover to a hatch frame, said latch assembly including a latch support means connected to said hatch frame, a latch member pivotally connected about a substantially horizontal axis to said latch support, said latch member having on one side of said pivot axis a latching portion engageable with said end of said hold-down strap and a counterweight portion on the other side of said pivot axis, said latching portion being positioned to swing downwardly and out of the way of said end of said hold-down strap in response to engagement by said hold-down strap end during the downward travel of said strap end, said counterweight portion being positioned to drop under the force of gravity when said hold-down strap end has moved to a position below said latching portion, so as to rotate said latch member and cause said latching portion to swing upwardly and over said hold-down strap end to prevent the return, upward movement of said hold-down strap, characterized by the improvement comprising:

a. a latch bar forming said end of said hold-down strap, said latch bar extending substantially parallel to said pivot axis of the latch member, and means connecting said latch bar to the remaining portion of said hold-down strap and holding said latch bar spaced from said remaining portion of said hold-down strap; and



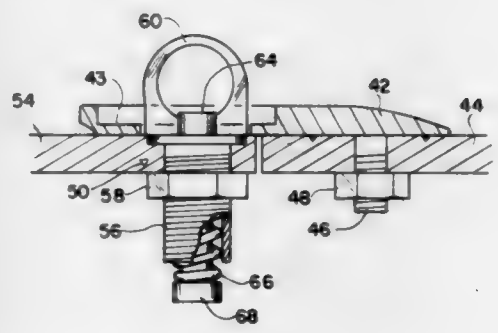
b. a hinge seat mounted on said latch support and located adjacent the position of said latch bar when said latching portion has swung over said bar to prevent the return, upward movement of said hold-down strap, said hinge seat extending around the side of said latch bar opposite from the side engaged by said locking portion of said latch member, so such extent that any space between said hinge seat and said latching portion on either side of said latch bar is too small for passage of said latch bar, said hinge seat and latching portion thus hinging said latch bar to said hatch frame and allowing said hold-down strap to be pivoted about said latch bar when the opposite end of said hold-down strap is unlatched.

4,403,799

FLUSH HASP HAVING FOLDABLE, UPSTANDING LATCHING PORTION, AND OPTIONALLY USABLE WITH PADLOCK

Robert S. Kafka, Maitland, and Charles F. Kafka, Bradenton, both of Fla., assignors to Meacham Marine Products, Inc., Sarasota, Fla.

Filed Aug. 6, 1980, Ser. No. 175,651
Int. Cl.³ E05C *19/08*
U.S. Cl. 292—285 **5 Claims**



1. A flush hasp especially adapted for marine use, said hasp having a base portion, and a portion movable toward and away from engagement with said base portion, said movable hasp portion having an aperture therein, and said base portion having a rotatable member adapted to enter said aperture when

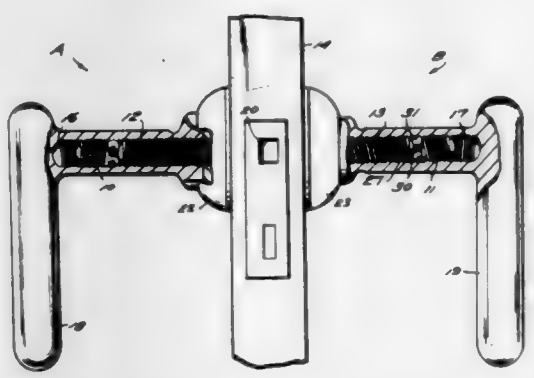
said movable hasp portion has been moved into contact with said base portion, said rotatable member adapted to be manually rotatable between a position aligned with said aperture, in which engagement and disengagement of said portions is readily permitted, and a latched position in which said rotatable member serves to inhibit removal of said movable hasp member from contact with said base portion, and locking means for preventing on occasion, said rotatable member from being moved away from a motion-inhibiting position, said rotatable member including a closed loop designed to receive the shackle member of a padlock, said closed loop being mounted so as to be readily moved into a relatively flat, nonprotruding position when a padlock is not being used therewith, in order to lessen the likelihood of someone tripping thereover.

4,403,800

DOOR HANDLE ASSEMBLY

Desmond H. Ward, 3071 Woodside Dr., Jackson, Miss. 39212

Filed Apr. 24, 1981, Ser. No. 257,119
Int. Cl.[3] E05C *13/00*
U.S. Cl. 292—350 12 Claims



1. An assembly for fixedly interconnecting a pair of door handles of the type requiring a specific normal predetermined orientation and for transmitting a turning movement in one direction applied to either of said door handles to a door latch mechanism to release the same, said assembly comprising:

an elongated spindle including a first male threaded end portion threadingly engaged within a first female threaded cavity of a first door handle, and a second male threaded end portion threadingly engaged within a second female threaded cavity within a second door handle, and a central portion engaged with the door latch mechanism in motion transmitting relationship therewith;

a first male threaded member threadingly engaged within said first female threaded cavity of said first door handle;

first means on one end of said first member defining surfaces for mating with a turning tool so that said first member can be threadingly engaged within said first female threaded cavity at a predetermined depth therein corresponding to the normal predetermined orientation of said first door handle with respect to said spindle;

first interengaging surface means on the terminal end of said first end portion of said spindle and on said one end of said first member engageable during the turning movement of said spindle with respect to said first door handle so that said first interengaging surface means are wedgingly engaged in rigid association by virtue of the threaded connections of said first spindle end portion and said first member with said first door handle therewith for preventing the transmission of turning movement of said spindle to said first member thereby insuring that said first handle will be normally maintained in said normal predetermined orientation;

a second male threaded member threadingly engaged within said second female threaded cavity of said second door handle,

second means on one end of said second member defining surfaces for mating with a turning tool so that said second member can be threadingly engaged within said second female threaded cavity at a predetermined depth therein corresponding to the normal predetermined orientation of said second door handle with respect to said spindle; and

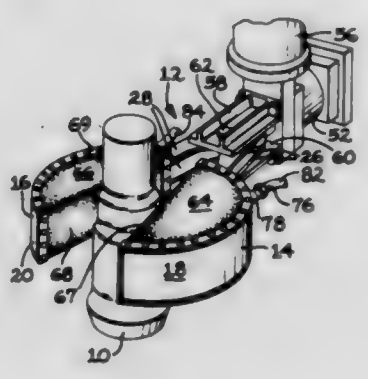
second interengaging surface means on the terminal end of said second end portion of said spindle and on said one end of said second member engageable during the turning movement of said spindle with respect to said second door handle so that said second interengaging surface means are wedgingly engaged in rigid association by virtue of the threaded connections of said second spindle end portion and said second member with said second door handle therewith for preventing the transmission of turning movement of said spindle to said second member thereby insuring that said second handle will be normally maintained in said normal predetermined orientation.

4,403,801

CLAMP ASSEMBLY

Edward R. Huff, Washington, and Hubert H. Warner, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00225, § 371 Date Feb. 24, 1981, § 102(e) Date Feb. 24, 1981, PCT Pub. No. WO82/02872, PCT Pub. Date Sep. 2, 1982
PCT Filed Feb. 24, 1981, Ser. No. 277,753
Int. Cl.[3] B66C *1/46*
U.S. Cl. 294—93 4 Claims



1. A clamp assembly (12) for controllably gripping an article, comprising:

a pair of opposed frame members (14,16) each including a rigid wall portion (18,20) and a support arm (26,28), each of said support arms (26,28) having a first end (30,32) attached respectively to one of said rigid wall portions (18,20) and a second end (34,36) spaced from said first end (30,32), said support arms (26,28) being pivotally interconnected at a point intermediate said first (30,32) and second ends (34,36) and said frame members (14,16) being pivotally movable about said point between a first position at which the frame members (14,16) are spaced apart and a second position at which the frame members (14,16) are adjacently disposed with respect to one another;

means (44) for pivotally moving said frame members (14,16) between said first and second positions;

a pair of pressurizable gripping members (64,66), each having a compliant article-contacting surface (67,68) and being respectively attached to said frame members (14,16); and

means (76) for controllably pressurizing at least one of said gripping members (64,66).

4,403,802

TRAILER UNIT

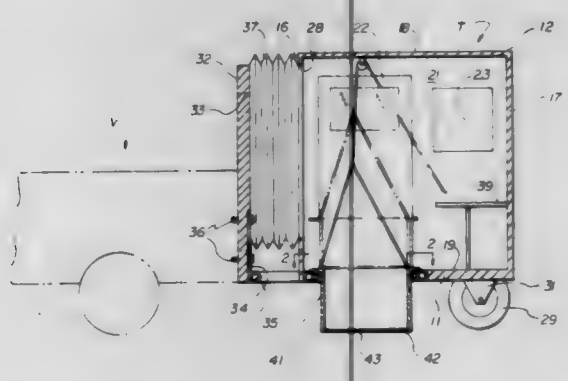
Russell P. Jones, 6958 Bradshaw, Sacramento, Calif. 95826

Filed May 12, 1980, Ser. No. 148,941
Int. Cl.[3] B62D *25/20;* B60P *3/32*
U.S. Cl. 296—25 14 Claims

1. A trailer unit comprising, in combination:

a frame,

an enclosure on said frame for accommodating at least one individual,
means for detachably coupling said frame to a towing vehicle such as a truck or the like,
means on said frame for supporting said trailer unit for travel on the ground,
said enclosure having a floor, side walls and a roof defining an interior,
said enclosure floor having an opening,
platform means disposed in said opening for vertical movement between an elevated travel position within said enclosure and a lower position within said enclosure including sealing means on said frame for sealing engagement with said platform means, said sealing means comprises elongated tubular gaskets of resilent material on said frame within said floor opening adjacent said platform means and releasable means for urging said gaskets into sealing engagement with said platform means wherein said releasable urging means comprises elastic cords each having free ends, one of said elastic cords extending through one of said gaskets adjacent said platform means and means on said frame opposide said platform means for detachable engagement with said one elastic cord free ends to tension said one cord for urging said gaskets into sealing engagement with said platform means,
and means for lifting said platform means from said lower operative position into said elevated travel position.

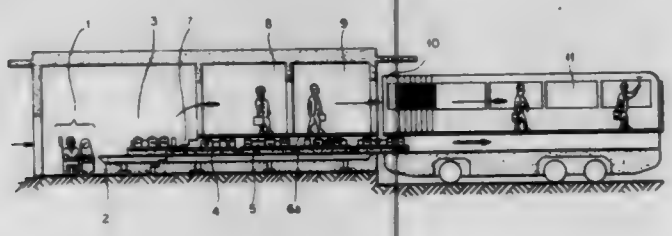


4,403,803

PASSENGER AND LUGGAGE TRANSFER SYSTEM

Valer Szendrödi; Gyula Radics; Tivadar Varga; Tibor Vass, and Karoly Gyurics, all of Budapest, Hungary, assignors to Ikarus Karosszeria es Jarmügyar, Budapest, Hungary

Continuation-in-part of Ser. No. 107,660, Dec. 27, 1979, Pat. No. 4,355,840. This application May 7, 1981, Ser. No. 261,644
Int. Cl.³ B64F *1/31*
U.S. Cl. 296—179 **15 Claims**



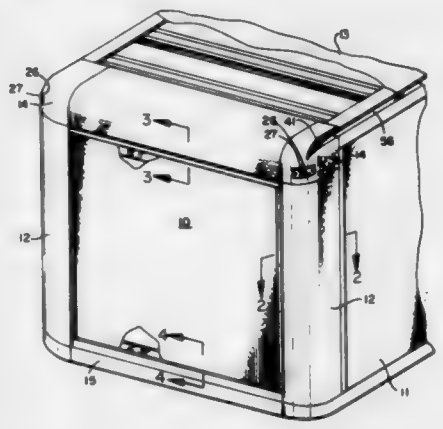
1. An airport boarding and deplaning bus, comprising an elongated self-propelled vehicle body formed with a passenger compartment extending at least over a major portion of the length of said body, a driver compartment at a front end of said body and an elevatable stairway adjacent said driver compartment at said front end of said body, said elevatable stairway comprising a doorway adapted to be disposed substantially in alignment with said passenger compartment during travel of the bus but elevatable with said stairway for alignment with a doorway of an aircraft, said elevatable stairway comprising a step most distal from said passenger compartment and formed at the bottom of said doorway of the bus, a succession of other steps of generally similar width lying between said distal step and said passenger compartment, means interconnecting said steps whereby elevation of said distal step will successively raise the steps disposed successively inwardly from said distal step toward said passenger compartment; and means for shifting said distal step on said body substantially vertically to raise said steps and the doorway of said bus and thereby form a staircase running between said passenger compartment and said doorway of said aircraft at said front end of said body adjacent said driver compartment.

4,403,804

TRUCK OR TRAILER BODY CONSTRUCTION

Elton Mountz, Morgantown; Paul Whiteman, East Earl; Roy C. Higginson, Honeybrook, and Marlin W. Hacker, Glenmoore, all of Pa., assignors to Morgan Trailer Mfg. Co., Morgantown, Pa.

Filed Apr. 12, 1982, Ser. No. 367,401
Int. Cl.³ B62D *33/00*
U.S. Cl. 296—183 **6 Claims**



1. A front portion for a truck or trailer body for reducing dynamic drag which comprises
an outer central panel section,
outer curved corner plates along the vertical sides of the panel section,
outer side panels extending rearwardly from said corner plates,
a roof section,
an upper curved plate extending from the central plate section to the roof section, and
means including a plurality of supporting members interposed between said outer central panel and said side panels for supporting said corner plates,
said last means comprising vertical supporting members having sockets for the reception for marginal edges of said curved plates.

4,403,805

SLIDING SUNROOF WITH POWER OPERATED VENTILATOR

Ervin H. Strem, Jr., Warren, and Gary L. Van Hulle, Woodhaven, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 6, 1982, Ser. No. 337,474
Int. Cl.³ B60J *7/04*
U.S. Cl. 296—221 **4 Claims**

1. A vehicle body sunroof comprising:
a roof panel having a roof opening;
a carrier frame adapted to underlie the roof panel around the edge of the roof opening and having a carrier frame opening therein;
a closure panel having a forward end pivotally mounted on the carrier frame so that the closure panel is pivotally movable between a closed position closing the carrier

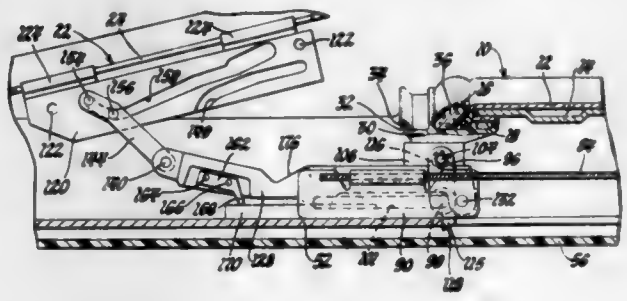
frame opening and an angularly raised ventilating position;

a track extending alongside the roof opening;

a guide block movable along the track by a drive mechanism;

a lifter link pivotally connected to the rear end of the carrier frame and having a vertical upstanding position closing the carrier frame against the roof panel;

means connecting the lifter link to the guide block to move the lower end of the lifter link rearwardly upon rearward guide block movement so that the lifter link collapses to



lower the carrier frame below the roof panel and then moves the carrier frame rearwardly to open the roof opening, said connecting means also permitting forward movement of the guide block while the lifter link remains poised at the vertical upstanding position closing the carrier frame against the roof opening; and

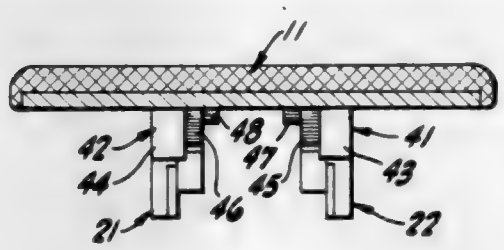
means interconnecting the guide block and the rearward end of the closure panel and adapted to pivot the closure panel to the angularly raised ventilating position upon forward movement of the guide block subsequent to the lifter link having attained the vertical upstanding position.

4,403,806

GOLF SEAT

Alex Stephen, 2130 El Camino, Turlock, Calif. 95380

Continuation-in-part of Ser. No. 2,898, Jan. 12, 1979, abandoned. This application Dec. 10, 1979, Ser. No. 74,873
Int. Cl.[3] A47C 7/62
U.S. Cl. 297—217 4 Claims



1. A portable seat adapted for removable mounting upon the tire of a golf cart wheel comprising a seat,

a rigid plate having an upper surface comprising a seat,

a first pair of projections depending from the under side of said plate with each projection having like inner surfaces inclined longitudinally thereon and abutting an outer vertical wall with said walls being spaced apart a predetermined distance substantially equal to the width of a golf cart tire, and

a second pair of projections depending from the under side of said plate in spaced relation to said first pair longitudinally of said plate and comprising substantially mirror images of said first pair, with the inclined surfaces of said pairs sloping upwardly toward each other, whereby

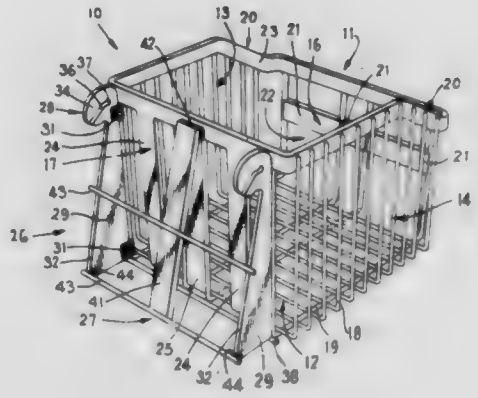
said projections are adapted to engage a golf cart tire with the inclined surfaces engaging the tire periphery and the walls engaging the sides of the tire to removably mount the seat thereon.

4,403,807

BABYSEAT ATTACHMENT FOR SHOPPING CART

Dawn G. Wilkinson, Rte. #1, Box 403, Fennville, Mich. 49408, and John D. Brush, Casco Township, Allegan County, Mich., assignors to Dawn G. Wilkinson, Fennville, Mich.

Filed Sep. 30, 1980, Ser. No. 192,168
Int. Cl.[3] A47C 31/00
U.S. Cl. 297—217 10 Claims



1. A baby carrier detachably mountable on a wheel-supported vehicle, comprising a seat assembly having downwardly converging side walls, a bottom wall extending between the lower edges of said side walls, and a pair of horizontally spaced leg openings in one of said walls; means for detachably supporting said baby carrier on said wheel-supported vehicle; and leveling means for maintaining said bottom wall substantially horizontal when said baby carrier is detachably supported on said wheel-supported vehicle, including at least one bearing member supported for movement between a retracted position adjacent one said side wall of said seat assembly for facilitating nested stacking of said baby carrier with similar carriers and a leveling position spaced from said one side wall for effecting said leveling of said bottom wall, and including spacer means cooperable with said one side wall and said bearing member for maintaining said bearing member and said one side wall in said spaced relationship when said bearing member is in said leveling position, said spacer means including a pair of horizontally spaced spacer elements, each supported on said one side wall for pivotal movement about an axis parallel to and adjacent said one side wall between a retracted position disposed against said one side wall generally parallel thereto and a leveling position substantially perpendicular to said one side wall; wherein said bearing member is a substantially horizontal rod; and wherein said spacer elements each have a portion of substantially triangular shape having one edge disposed against said one side wall coincident with said pivot axis and a second edge converging upwardly therewith, and including two said bearing members and a support member having one end supported on the upper portion of said one side wall intermediate said spacer elements for pivotal movement about a substantially horizontal axis, said bearing members being parallel to each other and perpendicular to said support member and being rigidly mounted to said support member at locations spaced from each other and from said one end, said bearing members being disposed against said second edges of said spacer elements when said spacer elements and said bearing members are in said leveling position, and one of said bearing members having means thereon for maintaining said spacer elements in said leveling position when said bearing members and said spacer elements are in said leveling position.

4,403,808

HAULING AND SHAVING PLANT

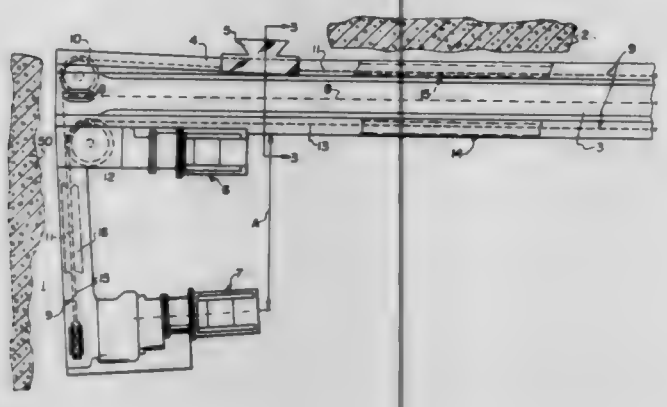
Gert Braun, and Ernst Braun, both of Essen-Heisingen, Fed. Rep. of Germany, assignors to Halbach and Braun, Fed. Rep. of Germany

Filed Aug. 29, 1980, Ser. No. 182,801

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936819

Int. Cl.³ E21C 27/32

U.S. Cl. 299—34 5 Claims



1. A hauling and planing plant for underground mining of a mining face, particularly a coal face which is adjacent a rock face and disposed at an angle thereto, comprising a longwall conveyor section adapted to be positioned alongside the coal face, a plane guide associated with said longwall conveyor, a plane movable along said plane guide, a plane chain guide associated with said longwall conveyor, a plane chain connected to said plane and movable along said guide, a rock wall section extending at an angle from said longwall conveyor along a head zone, a hauling chain having a pulling strand and a return strand guided along said longwall conveyor, a plane chain and hauling chain drive unit connected to said hauling chain and said plane chain and arranged adjacent said rock wall section, said longwall conveyor including at least one deflecting pulley over which said hauling chain pulling strand is directed and at least one return pulley over which said hauling chain pulling strand is directed located adjacent said rock wall section, means defining a return channel in said longwall conveyor in which said return strand is guided adjacent said rock face end, and a chain channel in said rock wall section extending at an angle to said longwall conveyor along said rock face in which said pulling strand is directed, said driving unit for said shaving chain being arranged in said rock section at a selected spacing from said longwall conveyor.

4,403,809

MINERAL WINNING PLOUGH

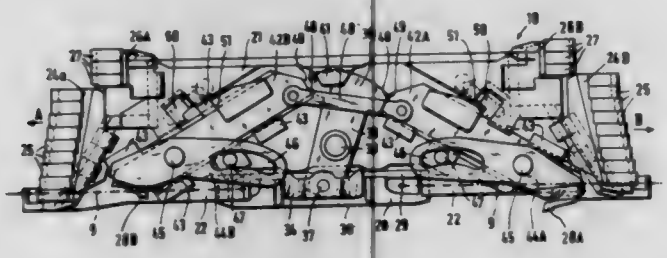
Alois Hauschopp, Werne; Oswald Breuer, Dortmund, and Bernd Steinkuhl, Lunen, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Oct. 23, 1981, Ser. No. 314,340

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1980, 3041485

Int. Cl.³ E21C 27/32

U.S. Cl. 299—34 22 Claims



1. A mineral winning plough having a plough body adapted to be moved to and fro alongside a mineral face on a plough guide, the plough body being provided with a pair of vertically-adjustable carriers each of which is provided with floor cutter means, and the plough body being provided with setting means for raising and lowering the carriers into rest and working positions respectively, the setting means comprising a setting member and an intermediate member, the setting member being mounted on the plough body for limited movement relative thereto, and being attachable to a plough drive chain, and the intermediate member forming a mechanical operative connection between the setting member and the two carriers, wherein the intermediate member is rotatably mounted on the plough body and is positioned between the two carriers, the arrangement being such that movement of the setting member relative to the plough body in a given direction forces one of the carriers to be lowered into its working position, and causes the other carrier to be raised into its rest position.

4,403,810

COUPLING FOR TRIPARTITE INJECTION OR COMPRESSION MOLD

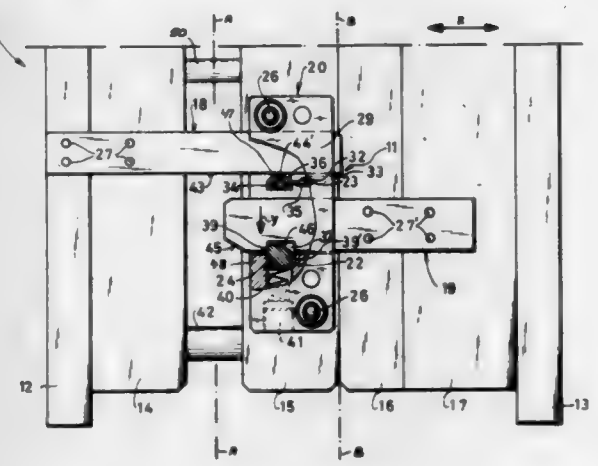
Gunther Bieneck, Langgöns, Fed. Rep. of Germany, assignor to Hasco-Normalien Hasenclever & Co., Lüdenscheid, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 223,839, Jan. 9, 1981, abandoned. This application Sep. 4, 1981, Ser. No. 299,644

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1980, 3000798

Int. Cl.³ B29F 1/00; B29C 1/16

U.S. Cl. 425—589 6 Claims



1. In a tripartite mold comprising a first outer plate, a second outer plate and an intermediate plate sandwiched between said outer plates, said plates having contact surfaces perpendicular to a direction of relative motion,

the combination therewith of coupling means for enabling two-stage separation of said plates from one another after the molding of a workpiece in a mold-closed position in which said plates are in mutual contact, said coupling means comprising:

a control bar rigid with said first outer plate extending transversely to said contact surfaces toward said second outer plate;

a locking bar rigid with said second outer plate extending parallel to said control bar toward said first outer plate;

a transverse guide block on said intermediate plate with a channel forming a track parallel to said contact surfaces, said channel intersecting two parallel passages in said guide block that are traversed by said bars with limited lateral play in said mold-closed position;

a generally U-shaped detent member slidable in said channel transversely to said direction of motion, said detent member having a first and a second leg straddling said locking bar, said first leg being provided with a beveled face confronting said second outer plate, said control bar having a camming face paralleling said beveled face, said

second leg having an angular cross-section and being positively engageable by a transverse shoulder of said locking bar whose width exceeds said play and which faces away from said first outer plate, said shoulder being coplanar with a transverse face of said second leg in said mold-closed position, said control bar extending past said detent member in said mold-closed position with said camming face spaced from said beveled face by a certain distance in the direction of said second outer plate; and

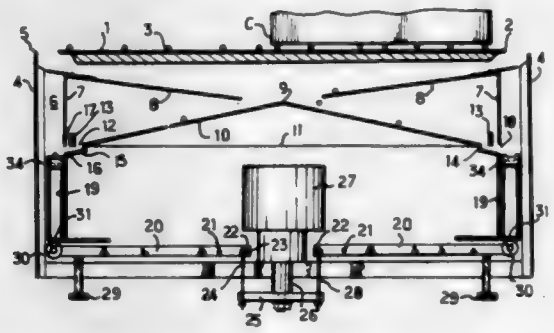
spring means effective in said mold-closed position to urge said detent member into latching engagement of said transverse face with said shoulder for preventing separation of said intermediate plate from said second outer plate, with said beveled face lying in the path of said camming face whereby relative displacement of said outer plates away from each other by said certain distance causes said camming face to repress said detent member through said beveled face against the force of said spring means with resulting disengagement of said second leg from said locking bar and separation of said intermediate plate from said second outer plate upon further relative displacement of said outer plates.

4,403,811

APPARATUS FOR HANDLING LOADS BY MEANS OF A BALL BEARING-MOUNTED TABLE

Jean-Benoit Duasud, 12 rue Champ Rochas, 38240 Meylan, France

Filed Dec. 29, 1980, Ser. No. 220,700
Claims priority, application France, Jan. 14, 1980, 80 00688
The portion of the term of this patent subsequent to Dec. 1, 1998, has been disclaimed.
Int. Cl.³ F16C *29/06*
U.S. Cl. 308—6 C **10 Claims**



1. Load-handling apparatus, comprising a table having a horizontal plate on which ball bearings roll freely, a gully along the side of the table and a means for returning to the plate any ball bearings which have fallen into the gully, wherein said means for returning ball bearings comprises an elevating means, the movement of which is such as to prevent the ball bearings from continuing beyond substantially the level of the plate and which is provided with means for emptying the ball bearings onto the plate as the ball bearings reach substantially the level of the plate.

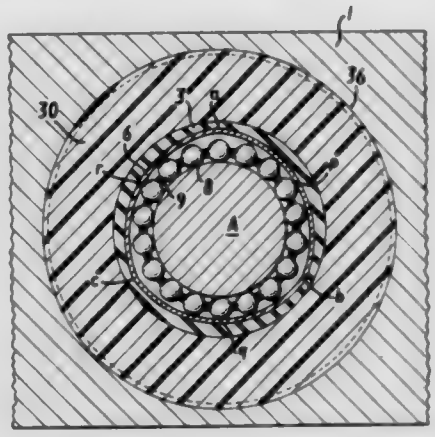
4,403,812

RADIAL BEARING ASSEMBLY

Gerard Stephan, Croissy, France, assignor to Nadella, France

Continuation of Ser. No. 272,289, Jun. 10, 1981, abandoned, which is a continuation of Ser. No. 38,847, May 14, 1979, abandoned. This application Jun. 1, 1982, Ser. No. 383,621
Claims priority, application France, May 23, 1978, 78 15228
Int. Cl.³ F16C *27/06*
U.S. Cl. 308—184 R **12 Claims**

1. A radial rolling bearing assembly with play take-up of the type comprising a sleeve of an elastomer within which is engaged an elastically deformable thin metal ring whose internal surface defines an outer race for cylindrical rolling elements to which the ring offers, on assembly, a reduced circulation clearance at angularly spaced zones; the improvement comprising a sheath encircling said sleeve and made of a plastics material which is harder and less elastic than the elastomer of said sleeve and has a radial thickness which is greater than the



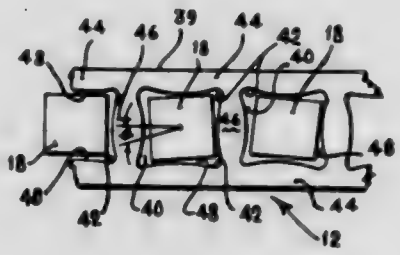
combined radial thickness of said sleeve and ring so that said sheath principally determines the overall radial size of the bearing assembly.

4,403,813

ROLLER BEARING CAGE DESIGN

James R. Schaefer, Juno Isles, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 14, 1981, Ser. No. 311,379
Int. Cl.³ F16C *33/46*
U.S. Cl. 308—207 R **4 Claims**



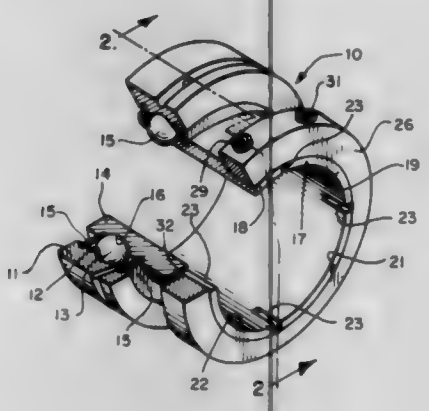
2. In a high speed anti-friction roller bearing having an outer ring, an inner ring having a pair of spaced apart guide rails, a plurality of rollers interposed between said outer ring and said inner ring and positioned between said guide rails, each of said rollers having an acceptable initial skew angle determined by said roller and said guide rail geometry, the improvement therein being in the form of a roller cage interposed between said outer ring and said inner ring and encompasing said rollers, said cage comprising an annular-shaped element, said element having a plurality of spaced apart openings therein, each of said openings being defined by a pair of side rails and a pair of cross rails, each of said rollers being positioned within a separate one of said openings, respectively, each of said side rails and said cross rails being of a convex configuration adjacent said rollers, said convex configuration having a curvature of predetermined size, and said side rails and said cross rails joining each other to form four concave corners, each of said concave corners being of a radius of predetermined size, said predetermined size of said curvature of said convex side rails and said cross rails and said predetermined size of said radius of each of said corners being established such that contact by said rollers at said corners of said cage will not occur until after wear between said rollers and said guide rails has developed to such an extent that said acceptable initial skew angle of said rollers is exceeded.

4,403,814

METHOD FOR LOCKING AN ANTI-FRICTION BEARING TO A SHAFT AND APPARATUS FOR ACCOMPLISHING THE SAME

William H. Koss, Waukesha, Wis., and Richard J. Smith, Valparaiso, Ind., assignors to McGill Manufacturing Company, Inc., Valparaiso, Ind.

Filed Jan. 25, 1982, Ser. No. 342,129
Int. Cl.[3] F16C 35/06
U.S. Cl. 308—236 7 Claims



4. In an anti-friction bearing having outer and inner race rings rotatable relative to one another, with said inner race ring having an axially slotted and correspondingly segmented axial extension integral therewith with at least four such slots and at least four intervening segments therein defined by said slots, the improvement comprising:

(a) means for centering a shaft in said axial extension and securing such a shaft therein against axial and rotational movement with respect to such inner race and integral axial extension on said inner race, said means comprising:

(b) a continuous ring collar around said integral axial extension having two set screws threadably maintained therein and spaced apart within an angle measured in a radial direction from an axial center of a shaft in said inner race which subtends an arc of substantially between 30° to 60°, with said ring collar being circumferentially positionable on said axial extension and with said two set screws being spaced apart therein so that when said collar is in position for securing a shaft and said axial extension together each said set screw is then over a corresponding segment, with such two segments being adjacent one another and having a slot between the same, and with each said set screw being spaced circumferentially away from said slot a substantially equal distance in opposite circumferential directions from one another;

(c) two radially extending threaded bores accommodating the respective two set screws in said collar, with each said set screw being tightenable into its threaded bore to engage its corresponding segment and move said segment into engagement with a side of a shaft when a shaft is positioned in said inner race while said collar engages two segments of said integral extension on the opposite side of said extension and shaft to move the latter two segments radially into engagement with said shaft on said opposite side, all said moved segments acting to position a shaft concentrically in said integral axial extension and to engage and secure such a shaft against axial and rotational movement relative to said inner race.

4,403,815

KNOCK DOWN PROJECTION TELEVISION CABINET

Virgil S. Runco, 878 Wharf Side, San Mateo, Calif. 94402

Filed Jan. 12, 1981, Ser. No. 224,305
Int. Cl.[3] A47B 81/06; H04N 5/74
U.S. Cl. 312—7.2 12 Claims

1. A knock down projection television cabinet comprising:

a plurality of planar panel members provided with knock down fastener pairs of the type including a first fastener and a second fastener removably engagable with said first fastener,

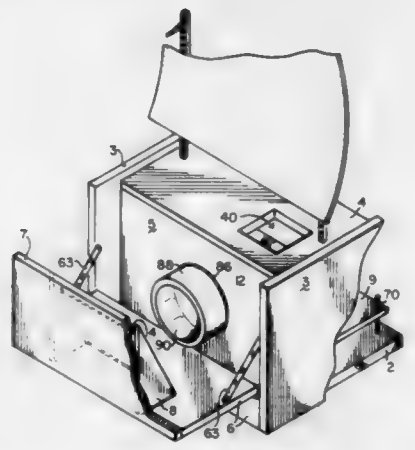
said panel members being assemblable into an enclosure having a hinged front drawer and being disassemblable for flat, compact storage and shipment, the panel members including

a base panel member having opposing left and right side edges, said opposing edges of said base panel member each being provided with at least one of said first fasteners,

a support panel member and attachment means for attaching said support panel member to an upper surface of said base panel member, whereby a television image source may be supported upon said support panel,

a front panel member provided with a centrally located aperture and having opposing left and right edges, said opposing edges of said front panel member each being provided with at least one of said first fasteners,

a hinged panel member having opposing left and right edges and a top edge, said opposing edges of said hinged panel member and said top edge being provided with at least one of said first fasteners, said hinged panel member including a lower sub-panel, an upper sub-panel, and hinge means attaching said upper sub-panel and said lower sub-panel together, said lower sub-panel being attached to said left side panel and said right side panel, and said upper sub-panel being attached at approximately right angles to said drawer front panel,



a top panel member having opposing left and right edges, each of said opposing edges of said top panel member being provided with one of said first fasteners,

a left side panel member having an inner surface provided with a plurality of said second fasteners for removably engaging said first fasteners of said left edges of said base panel member, said front panel member, said top panel member, and said hinged panel member,

a right side panel member having an inner surface provided with a plurality of said second fasteners for removably engaging said first fasteners of said right edges of said base panel member, said front panel member, said top panel member, and said hinged panel member, and

a drawer front panel member having an inner surface provided with a plurality of said second fasteners for engaging said first fastener of said top edge of said hinged panel member;

a lens assembly disposed through said aperture in said front panel;

mirror means removably attached to at least one of said hinged panel member and said drawer front panel member;

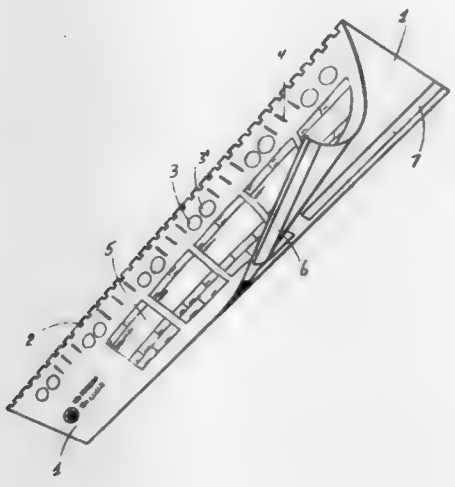
a projection screen; and

screen support means removably attached to said top panel member and to said projection screen.

4,403,816
SYSTEM OF VERTICAL FILING OF ARTICLES IN SHEETS AND MEANS EMPLOYED THEREFOR

Nelson Da Cruz Garcia, Rua Antonio Braune, 187/233-Rio de Janeiro, BJ, Brazil

Filed Nov. 7, 1980, Ser. No. 204,991
Claims priority, application Brazil, Nov. 8, 1979, 7258
Int. Cl.[3] A47B *63/00*; E05C *19/16*
U.S. Cl. 312—184 4 Claims

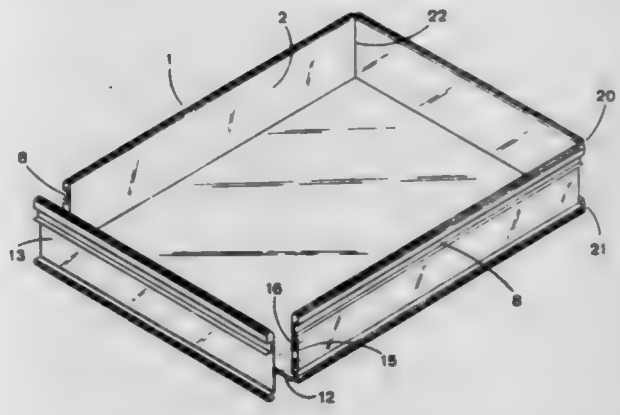


1. A system for filing sheet articles such as maps, engineering drawings and the like vertically, said system comprising a suspender comprising a pair of blades, said blades being elongated and in juxtapositioned and overlying relation to each other, said pair of blades being formed of a single strip of tape-like material folded in half along its length, and said strip being formed essentially entirely of non-magnetic material, said suspender being positioned with its length generally horizontal in use, means to join said blades together along upper horizontal zones thereof and along their length, hanger means formed in said upper zones of said blades, the remainder of said blades below said upper zones comprising lower zones and article supporting means, said lower zones of said blades being separable from each other over their entire length, magnetic means and means to mount said magnetic means on both of the facing surfaces of said lower zones of said blades, said magnetic means comprising a magnetic tape mounted on the lower zone of one of said blades and a non-magnetized metallic plate mounted on the lower zone of the other of said blades and in facing relation to said magnetic tape over substantially all of said lower zone, said magnetic means being sufficiently magnetically strong so as to tightly grasp an edge portion of an article therebetween and to support the entire weight of said article by said edge portion, means formed in said upper zones to permit said suspender with or without an article supported therein to be hung and filed, said last mentioned suspender filing means comprise holes formed in said upper zones, said holes being defined entirely within said upper zone and being free of any access slits or the like and adapted to cooperate with a plurality of pin means for hanging said suspender vertically, wherein said holes are formed in pairs spaced from each other and arranged on a line parallel to the length of said suspender, whereby in use said lower blade zones are separated from each other by normally overcoming the magnetic attraction of said magnetic means holding said lower zones of said blades together, an edge portion of an article to be filed is placed between the opened up lower blade zones and said lower blades zones are reclosed via said magnetic means to thereby grasp said article edge portion therebetween, and whereby said article edge portion is grasped solely by said magnetic means and is free of any damage as could be caused by glue, staples and the like heretofore used to mount sheet articles on vertical suspenders.

4,403,817
DRAWER FOR FURNITURE

Fernando H. Aidar, Sao Paulo, Brazil, assignor to Eucatex S.A. Industria e Comercio, Sao Paulo, Brazil

Filed Mar. 23, 1981, Ser. No. 246,326
Claims priority, application Brazil, Mar. 31, 1980, 6000363
Int. Cl.[3] A47B *88/00*
U.S. Cl. 312—330 R 6 Claims



1. A drawer for furniture, comprising:

(a) side and rear vertical walls each formed of sheet metal having an intermediate vertical wall portion, a bottom portion extending perpendicularly outward from the bottom end of the vertical wall portion and thence downward, inward and upward, terminating a spaced distance below the bottom end of the vertical wall portion to provide therebetween an inwardly facing recess for reception of a drawer bottom, and a top portion extending outward and downward from the upper end of vertical wall portion, thence inward, downward and outward to provide an outwardly facing recess for reception of a drawer support rail in said recess of each side wall,

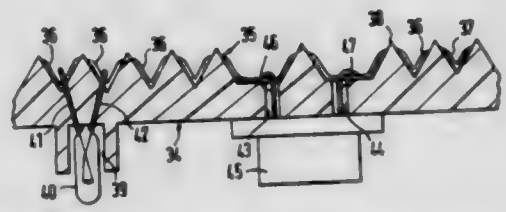
(b) a drawer bottom retained in said inwardly facing recesses, and

(c) a front wall secured to the front ends of said side walls.

4,403,818
INSTRUMENT PANEL FOR VEHICLES

Helmut Kleinböhl, Riedstadt, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 3, 1981, Ser. No. 269,879
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1980, 3023905
Int. Cl.[3] B60K *37/00*; H01R *33/00*
U.S. Cl. 339—10 2 Claims



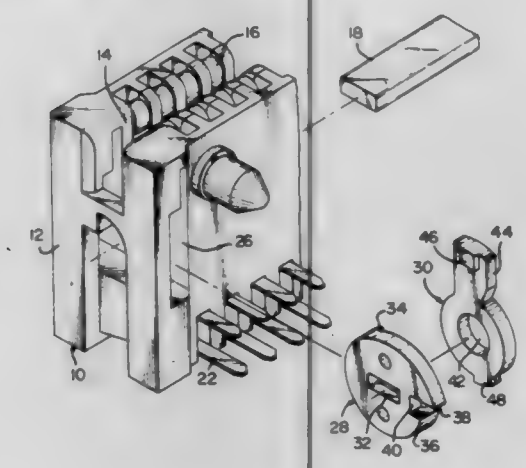
1. A vehicle instrument panel comprised of an insulating plastics material supporting individual indicating and control elements on the front side thereof and electric current paths on the rear side leading to the said elements, the rear side of the panel being corrugated or toothed to define a plurality of triangular cross-section grooves running in the direction of the desired paths, the grooves having apexes and flanks, and electrically conductive material coating the flanks of the grooves to form the current paths.

4,403,819

EDGE BOARD LOCK

Robert N. Weber, Hummelstown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 20, 1981, Ser. No. 323,210
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—75 MP 4 Claims



1. In combination with a zero insertion force edge board connector having an elongated housing defining an elongated circuit board receiving groove, a plurality of terminals mounted in fixed spaced relationship along at least one side of said groove, an elongated rotary cam member extending along the bottom of said groove and a cam follower mounted in said groove adapted to be driven by said cam member so as to drive said terminals between engaged and disengaged positions, a board lock preventing access to and egress from at least one end of said groove, said board lock comprising:

a hub member having an axial aperture profiled to receive said cam member therein in driving engagement, and first and second radially spaced lugs extending axially from one side surface of said hub member, and

a locking member having a central aperture profiled for free rotation on said cam member therein, a first radially directed arm of sufficient length to block said groove of said connector housing and an oppositely directed lug,

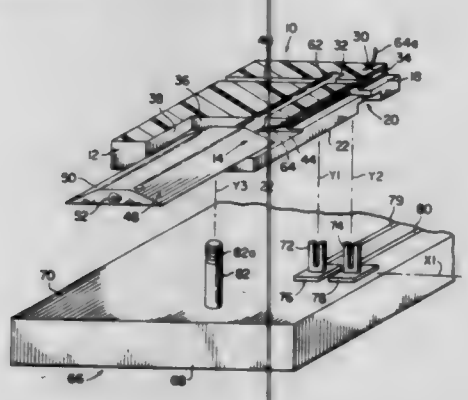
whereby rotary movement of said cam drives said hub member until one of said radially spaced lugs engages the lug of the locking member to drive it between a first position with said ram arm blocking an end of said housing groove and a second position with said arm free of said housing groove.

4,403,820

CONNECTOR FOR TERMINATING UNDERCARPET SIGNAL TRANSMISSION CABLE

Donald S. Rich, Long Valley, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Dec. 5, 1980, Ser. No. 213,310
Int. Cl.³ H01R *13/38*
U.S. Cl. 339—97 R 30 Claims



1. An electrical connector for terminating an electrical cable assembly of type having a protective body and an electrically insulated conductor extending through and beyond said body, said connector comprising:

(a) a first housing for supporting said body and such extending insulated conductor, said first housing defining an inlet passage for receiving said body and a guide passage communicating with said inlet passage for receiving said insulated conductor, said first housing defining a contact-receiving passage accessible exteriorly of said first housing and extending transversely therein into such conductor-receiving passage;

(b) a second housing joinable to said first housing and having an exterior surface supporting an insulation-piercing contact; and

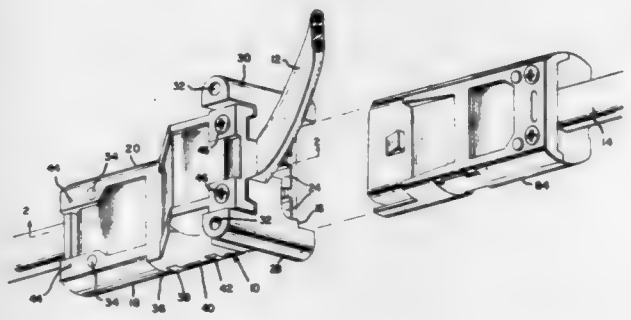
(c) housing interconnect means for joinder of said first and second housings and operably responsive to mechanical input for both applying strain-relieving force to said body and forcing said contact into electrical engagement with said conductor through said contact-receiving passage.

4,403,821

WIRING LINE TAP

John A. Zimmerman, Jr., Hershey, and William B. Long, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 17,632, Mar. 5, 1979, abandoned. This application Mar. 4, 1981, Ser. No. 240,523
Int. Cl.³ H01R *25/06*
U.S. Cl. 339—97 P 8 Claims



1. A power cable tap device for removably joining a secondary circuit to a primary cable run, said device comprising:

a housing of insulative material having a base member and a cover member, said base member and said cover member together defining therebetween a single power cable passage extending from one end of said housing to the other end and having offset parallel portions at the opposite ends thereof, a mating face on said base member adapted to receive a mating connector member terminating a tapping cable, at least two terminal passages in said base member intersecting said cable passage, extending parallel to at least a portion thereof and opening on said mating face;

at least two terminals each mounted in a respective terminal passage of said base member, each said terminal having a conductor engaging first end lying in said terminal passage directed toward said mating face;

whereby a power cable positioned in said cable passage is terminated by said terminals and a tap effected by engaging a mating connector member to said terminals at said mating face.

4,403,822

ELECTRICAL PROBE APPARATUS

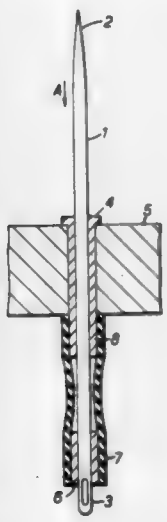
John L. Smith, St. Albans, England, assignor to Marconi Instruments Limited, Chelmsford, England

Filed Jul. 29, 1980, Ser. No. 173,368

Claims priority, application United Kingdom, Jul. 31, 1979, 7926635

Int. Cl.[3] H01R *13/24*; G01R *1/06*

U.S. Cl. 339—108 TP 11 Claims



1. An electrical probe apparatus comprising: a plurality of elongate electrically conductive probes; an apertured member in which said probes are slidably mounted, with one end of each said probe projecting from said member; and a plurality of resiliently deformable tubular sleeves each surrounding a portion of a respective one of said probes, with one end of each said sleeve being secured to a respective one of said probes and the other end of each said sleeve being secured to said member so as to form a gas tight seal between said one end of each said probe and said member, wherein when said apparatus is in use said plurality of probes can simultaneously contact a number of circuit points.

4,403,823

ELECTRICAL CONTACT FOR POSITION MEASURING INSTRUMENT

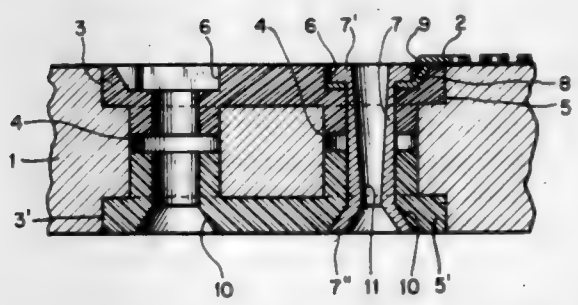
Wolfgang Reimar, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 240,901

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1980, 3009236

Int. Cl.[3] H01R *13/415*

U.S. Cl. 339—126 R 3 Claims



1. In a position measuring instrument comprising a first component which includes a first electrically conducting sensor conductor and a second component which includes a second electrically conducting sensor conductor, wherein one of the two components is mounted to move relative to the other component, the improvement comprising:

means for defining first and second opposed oblong recesses in opposed surfaces of the first component;

means for defining at least one opening extending through the first component between the first and second oblong recesses;

first and second oblong insulating members shaped to fit within the first and second recesses, respectively, such that each insulating member is substantially prevented from rotating in the first component, each insulating member defining a hole passing therethrough such that the holes of the first and second insulating members are aligned, the hole of the first insulating member terminates in a prismatic recess, and the hole of the second insulating member terminates in a conical recess;

a contact member disposed in the holes of the insulating members, said contact member defining an enlarged head, sized to fit within the recess in the first insulating member to prevent the contact member from rotating with respect to the first insulating member, and a conically expanded end section which extends into the conical recess in the second insulating member, thereby simultaneously securing the first and second insulating members in the respective oblong recesses of the first component and substantially preventing the contact member from being pulled from the first component; and

means for electrically connecting the contact member and the first sensor conductor.

4,403,824

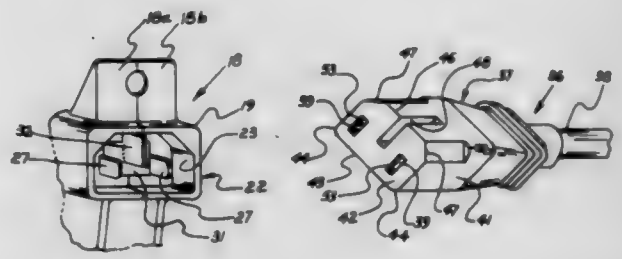
PLUG CONNECTOR AND RECEPTACLE

Ernest R. Scott, Mayfield Heights, Ohio, assignor to The Scott & Fetzer Company, Westlake, Ohio

Filed Mar. 2, 1981, Ser. No. 239,502

Int. Cl.[3] H01R *13/64*

U.S. Cl. 339—186 R 3 Claims



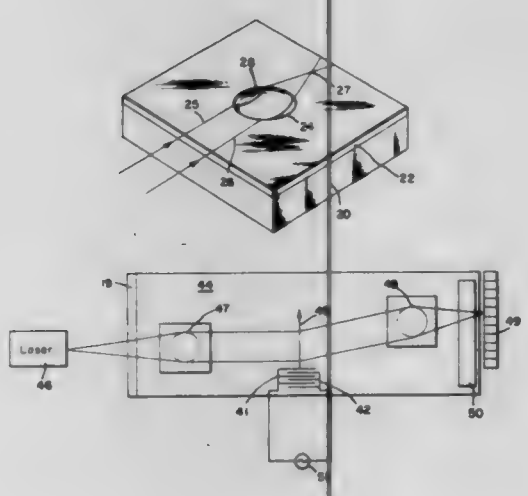
3. A detachable cord set for an electrical appliance having a receptacle with a geometrically coded cavity, the cord set including at one end a connector body for reception into the cavity, the connector body having a lead end face defining a perimetric profile complementary to the cavity with only one orientation acceptable thereto, a lead section of the connector body having a length at least generally equal to the depth of the cavity, the exterior of the lead section being defined by a generally prismatic projection of said lead end face profile, said lead end face profile including two mutually opposed straight long sides and two mutually opposed short sides, the corners joining one long side to the short sides being beveled, the corners joining the opposite long side to the two short sides being rounded, said end face being substantially the same as that of the standard European connector type CEE-22 but with the central grounding contact recess being replaced by a narrow rectangular keyway, said keyway extending through the mid-zone of the one long side, said end face being interrupted by a pair of recesses of relatively narrow rectangular form, the recesses being symmetrically spaced on opposite sides of the plane of said keyway and being in parallel alignment therewith, the keyway extending laterally inward from its associated long side into a plane common to said recesses, and an electrical contactor associated with each of said recesses within the body of the connector.

4,403,825

INTEGRATED OPTICS THIN FILM DEVICES AND FABRICATION THEREOF

Gregory L. Tangonan, Oxnard, and David L. Persechini, Santa Monica, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Continuation-in-part of Ser. No. 961,354, Nov. 16, 1978, abandoned. This application Nov. 14, 1980, Ser. No. 206,797
Int. Cl.[3] G02B *5/174*
U.S. Cl. 350—96.11 19 Claims



1. An integrated optical device including:
(a) a substrate having a deformation in a surface thereof; and
(b) a thin film on said surface of said substrate, said thin film comprising a chalcogenide glass, the region of said film in proximity to said deformation having a predetermined varying index of refraction profile, the combination of said deformation and said varying index of refraction profile providing an aberration-free optical element in said thin film, said profile having been determined by successive exposure of portions of said region to controlled amounts of radiation to produce corresponding changes in the index of refraction of said glass within said region.

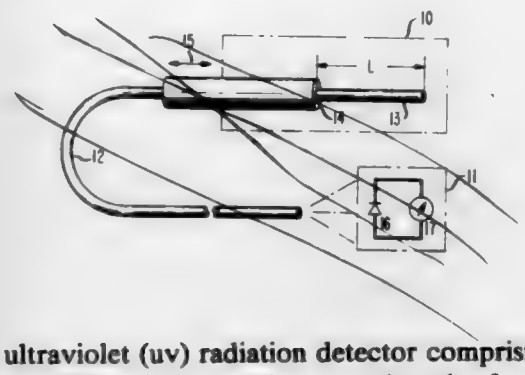
7. An integrated optic spectrum analyzer comprising:
(a) a substrate having a first and a second deformation on a surface thereof;
(b) a waveguiding layer on said surface of said substrate;
(c) means for introducing a beam of optical radiation into said waveguiding layer;
(d) means, in said waveguiding layer in the region of said first deformation, for collimating said beam;
(e) at least one surface acoustic wave-transducer on the surface of said waveguiding layer for generating an acoustic wave in said waveguiding layer transverse to said collimated beam to thereby interact with said beam;
(f) means for introducing RF signal to said at least one transducer;
(g) means, in said waveguiding layer in the region of said second deformation, for focusing said beam subsequent to its interaction with said acoustic wave;
(h) a detector; and
(i) means for introducing said focused beam to said detector, characterized in that (a) said waveguiding layer comprises a chalcogenide glass and (b) said collimating and said focusing means each comprise a region in said chalcogenide glass layer having a respective predetermined varying index of refraction profile, said profile having been predetermined by successively exposing portions of said region to controlled amounts of radiation to produce corresponding changes in the index of refraction of said glass, thereby forming an aberration-free geodesic lens.

4,403,826

ULTRAVIOLET RADIATION DETECTOR

Herman M. Presby, Highland Park, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 23, 1981, Ser. No. 246,699
Int. Cl.[3] G02B *5/14*; G01J *1/42*
U.S. Cl. 350—96.30 6 Claims



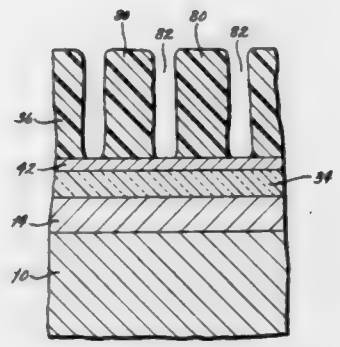
1. An ultraviolet (uv) radiation detector comprising:
a uv sensor (10), including at least one length of optical fiber having a core region made of a material which fluoresces at the uv wavelength of interest;
a visible light (v1) detector (11);
and a length of optical fiber (12) for coupling said uv sensor to said v1 detector.

4,403,827

PROCESS FOR PRODUCING A DIFFRACTION GRATING

David A. Bryan, St. Charles, and John K. Powers, St. Louis County, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Sep. 12, 1980, Ser. No. 186,584
Int. Cl.[3] G02B *5/18*
U.S. Cl. 350—162.17 17 Claims



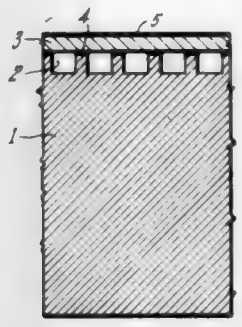
1. A process for forming a diffraction grating, said process comprising: applying an absorbing layer to a grating substance on which a grating pattern is to be produced, the absorbing layer being highly absorptive to radiation at a specific wavelength; applying a photoresist layer over the absorbing layer so that the absorbing layer is between the grating substance and the photoresist layer, the photoresist layer being photosensitive to radiation at the specific wavelength; directing beams of interfering coherent radiation of the specific wavelength onto the photoresist layer such that the photoresist layer is exposed in a series of closely spaced lines corresponding to the desired grating pattern; developing the exposed photoresist layer such that portions thereof are removed to provide alternate ridges and grooves in the photoresist layer which generally correspond to the desired grating pattern; and removing the absorbing material and some of the grating substance at the grooves so as to create corresponding grooves in the grating substance to thereby impart the grating pattern to the grating substance.

4,403,828

DAMAGE RESISTANT COATED LASER MIRROR

Jack W. Davis, East Hartford, and Paul R. Blaszuk, Lebanon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 1, 1981, Ser. No. 269,197
Int. Cl.³ G02B 5/08
U.S. Cl. 350—288 5 Claims



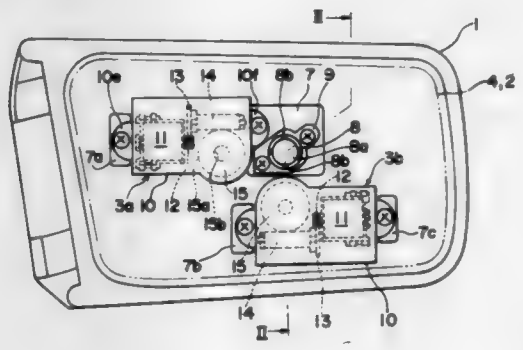
1. A damage resistant laser mirror comprising:
a copper substrate polished to an optical, laser radiation reflective finish; and
a thin film of molybdenum or tungsten coated on the copper substrate.

4,403,829

ANGLE ADJUSTING ARRANGEMENT FOR ADJUSTING AN ELEMENT ABOUT TWO AXES

Yoshio Thujiuchi, Nagoya, and Yorinobu Sumi, Gifu, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed May 4, 1981, Ser. No. 261,137
Claims priority, application Japan, May 8, 1980, 55-63626[U]
Int. Cl.³ B60R 1/06
U.S. Cl. 350—289 6 Claims



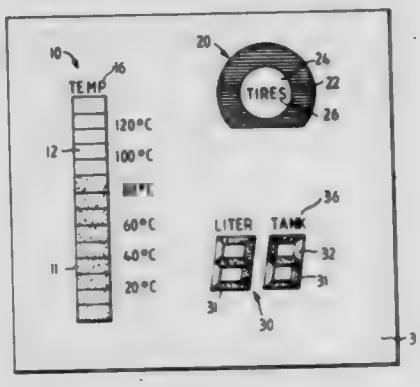
1. An apparatus for adjusting the angular position of an element about two axes, said apparatus comprising:
a case having a fixing base;
a back cover member supporting an element to be adjusted and including a rear face having approximately a central portion thereof pivotally connected to said fixing base at a pivot point;
a first driving unit positioned within said case on one side of a first axis extending through said pivot point for pivoting said back cover member and element about said first axis;
a second driving unit positioned within said case on one side of a second axis extending through said pivot point substantially at a right angle to said first axis for pivoting said back cover member and element about said second axis; and
said first and second driving units being of substantially identical construction, and each said driving unit comprising a housing fixed within said case and including first and second housing portions, a reversible motor within said housing, a push-pull control shaft extending from said housing and having an outer end connected to said rear face of said back cover member, and power transmitting means connecting said motor to said control shaft, such that selective reversible operation of said motor selectively advances and retracts said control shaft axially thereof with respect to said housing, thereby pivoting said back cover member and element in opposite directions about the respective said axis.

4,403,830

INDICATING DEVICE

Dieter Gerstner, Heilbronn, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Fed. Rep. of Germany

Filed Jul. 18, 1980, Ser. No. 170,992
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930507
Int. Cl.³ G02F 1/13
U.S. Cl. 350—331 R 4 Claims



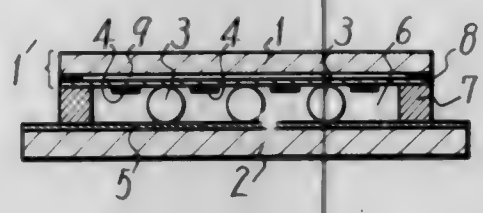
1. An indicating device comprising:
a first surface area having variable optical properties;
means for electronically varying an optical property of said first surface area between an inactive condition and an activated condition;
a second surface area having fixed optical properties including a first surface portion defining a bright area and a second surface portion defining a dark area, the dark area having an absorptivity of less than one hundred percent and the bright area having a reflectance of less than one hundred percent; and
means for transmitting light incident to said bright area and said dark area from a rear side of said second surface area;
said bright area having a first angle characteristic of light penetrating through the bright area from the rear side thereof, said first surface area having an active angle characteristic in its active condition equal to the first angle characteristic;
said dark area having a second angle characteristic of the light penetrating through the dark area from the rear side thereof, and said first surface area having an inactive angle characteristic in its inactive condition equal to said second angle characteristic;
said dark area having a first reflectance, the first surface area having a second reflectance in its inactive condition, and the first reflectance equaling the second reflectance; and
said dark area also having a first degree of transmission for a light incident from the rear side corresponding to said second reflectance, said bright area having a second degree of transmission for the light incident from the rear side, and said first surface area having a transmission in its active condition equal to said second degree of transmission.

4,403,831

DISPLAY APPARATUS

Yoshifumi Amano, Zushi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 10, 1981, Ser. No. 301,114
Claims priority, application Japan, Sep. 19, 1980, 55-131039
Int. Cl.³ G02F 1/13
U.S. Cl. 350—334 3 Claims



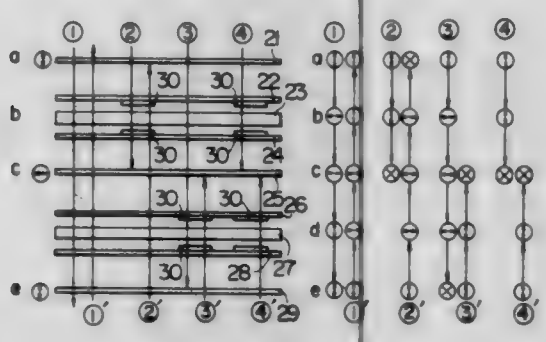
1. A display apparatus comprising:
(a) a first panel having an electrode provided on a surface thereof;
(b) a second panel having an electrode provided on a surface thereof;
(c) display material intervened between said electrodes of said first and second panels; and
(d) a spacer disposed between said first and second panels, peripheral portions of said first and second panels being sealed by sealing material characterized in that one of said first and second panels comprises a substrate and an elastic plate which is sealed to said substrate with its periphery, and fluid is sealed into a space defined by said substrate and elastic plate with such a pressure that said elastic plate contacts said spacer.

4,403,832

LIQUID CRYSTAL DISPLAY DEVICE

Masashi Tanaka, Koganei; Yutaka Nakajima, Mitaka; Takahiko Ihochi, Koganei, and Yoshimichi Shibuya, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 23, 1980, Ser. No. 199,978
Claims priority, application Japan, Oct. 24, 1979, 54-136406
Int. Cl.³ G02F 1/13
U.S. Cl. 350—335 8 Claims



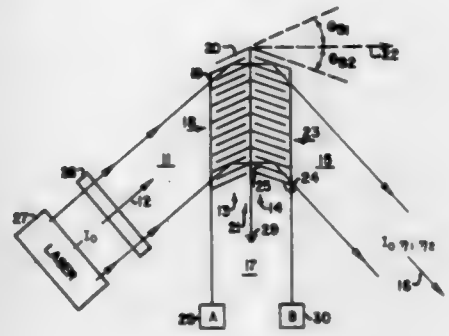
1. A liquid crystal display device comprising:
(a) a plurality of liquid crystal layers each for displaying a pattern, said liquid crystal layers being piled up;
(b) a pair of polarizers arranged above an uppermost liquid crystal layer and below a lowermost liquid crystal layer;
(c) electrode patterns provided for said liquid crystal layers and having predetermined shapes respectively; and
(d) at least one polarizer arranged between said liquid crystal layers in such a manner that a transmission axis of said polarizer is perpendicular to a transmission axis of each of two polarizers adjacent to said polarizer, so that said electrode patterns on different liquid crystal layers may be viewed in a darkened state at the same time without light areas being viewed where said electrode patterns overlap.

4,403,833

ELECTROOPTICAL MULTIPLIERS

Richard P. Kenan, Upper Arlington, and Carl M. Verber, Columbus, both of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Filed Aug. 18, 1981, Ser. No. 293,779
Int. Cl.³ G02F 1/03
U.S. Cl. 350—356 29 Claims



1. Apparatus for receiving light entering in a predetermined input direction therein and controlling the directions in which portions of the light travel through regions thereof so as to emerge therefrom in a selected output direction with intensity responsive to the product of a plurality of electrical potential differences multiplied together, comprising
an electrooptic waveguide,
first electrooptic reflective means, comprising a first electrode and a second electrode, on a first region in the waveguide, for forming a first Bragg grating in the first region positioned with a direction of Bragg incidence approximately in the predetermined input direction,
intermediate means for directing light reflected from the first Bragg grating in a predetermined intermediate direction into a second region in the waveguide,
second electrooptic reflective means, comprising a third electrode and a fourth electrode, on the second region in the waveguide, for forming a second Bragg grating in the second region positioned with a direction of Bragg incidence in approximately the predetermined intermediate direction,
light input means for directing light of known or controlled intensity to enter approximately in the predetermined input direction into the first electrooptic means,
first control means for applying a first electrical potential to the first electrode and a second electrical potential to the second electrode, to further direct a portion of the light entering into the first region by providing a first Bragg reflection thereof into the intermediate means, and
second control means for applying a third electrical potential to the third electrode and a fourth electrical potential to the fourth electrode, to further direct a portion of the light reflected into the second region by providing a second Bragg reflection thereof beyond the second region in the selected output direction.

4,403,834

ACOUSTIC-WAVE DEVICE

Victor B. Kley, Berkeley, Calif., assignor to Kley & Associates, Berkeley, Calif.

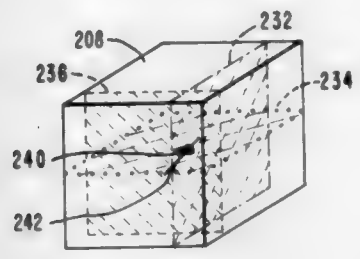
Continuation-in-part of Ser. No. 60,027, Jul. 23, 1979, abandoned. This application May 23, 1980, Ser. No. 152,630
Int. Cl.³ G02F 1/03, 1/11, 1/135
U.S. Cl. 350—371 2 Claims

1. An acoustic-wave device comprising:
a light modifying member having three dimensions, said member including layers of electret material and an electrooptic material associated with each layer of the electret material, said member being responsive to a combination of three mutually crossing acoustic waves and a non-acoustic energy condition, said energy condition being

applied momentarily at preselected times when said acoustic waves are at preselected intersection points in the member, such that a changed, electrically polarized condition is produced at said intersection points in the electrooptic material,

means applying the acoustic waves to the member in three, mutually perpendicular directions,

means momentarily applying the non-acoustic energy condition to the member at said preselected times,



wherein the changed, electrically polarized condition includes a spatial change in light impinging on said member producing a three-dimensional image and wherein said spatial change is not affected by subsequent applications of said non-acoustic energy condition, and

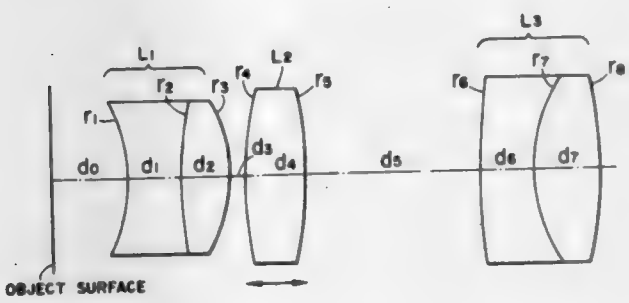
wherein the changed, electrically polarized condition produced at each preselected point during the momentarily applied non-acoustic energy condition is a change in birefringence.

4,403,835

OBJECTIVE LENS FOR MICROSCOPE

Kazuo Ushida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 27, 1981, Ser. No. 248,352
Claims priority, application Japan, Apr. 5, 1980, 55-44808
Int. Cl.³ G02B *21/02*
U.S. Cl. 350—414 **12 Claims**



10. An objective lens for microscope for observing an object through a parallel planar member disposed between said objective lens and said object to be observed, comprising in succession from the object side:

a first lens group;

a second lens group having a positive refractive power; and

a third lens group having a positive refractive power;

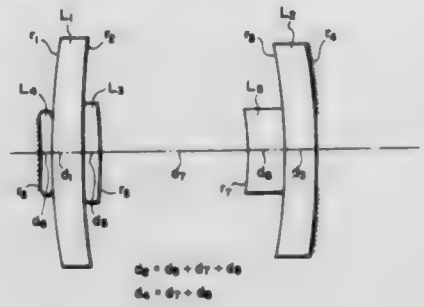
said second lens group being movable in the direction of the optical axis and relative to said first and third lens group so as to compensate aberrations varied by the parallel planar member.

4,403,836

CATA-DIOPTRIC TYPE TELEPHOTO LENS SYSTEM

Shin'ichi Mihara, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1981, Ser. No. 248,902
Claims priority, application Japan, Apr. 4, 1980, 55/43599
Int. Cl.³ G02B *17/08*
U.S. Cl. 350—444 **6 Claims**



1. A cata-dioptric type telephoto lens system comprising a first, second, third, fourth and fifth lens system in the order according to the advancing direction of rays, said first lens being a positive meniscus lens arranged convex toward the object side, said second lens being a negative meniscus lens arranged convex toward the image side and having a reflecting surface formed on the convex surface thereof by leaving a transparent central portion, said third lens being a biconvex lens cemented to the surface on the image side of said first lens, said fourth lens being a biconcave lens cemented to the surface on the object side of said first lens and having a reflecting surface formed on the surface on the object side thereof, said fifth lens being a negative meniscus lens cemented to the surface on the object side of said second lens, said cata-dioptric type telephoto lens system satisfying the following conditions:

$$0.45f < r_1 < 0.75f \quad (1)$$

$$0.29f < f_{12} < 0.33f \quad (2)$$

$$0.03f < d_8 + d_3 < 0.05f \quad (3)$$

$$n_3 > 1.73 \quad (4)$$

$$n_4 < 1.58 \quad (5)$$

wherein reference symbol f represents the focal length of the lens system as a whole, reference symbol f_{12} represents the total focal length of the first and second lenses, reference symbol r_1 represents the radius of curvature of the surface on the object side of the first lens, reference symbols d_3 and d_8 respectively represent thicknesses of the second and fifth lenses, and reference symbols n_3 and n_4 respectively represent refractive indices of the third and fourth lenses.

4,403,837

OBJECTIVE FOR ENDOSCOPES

Ken-ichi Nakahashi, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 7, 1981, Ser. No. 309,410
Claims priority, application Japan, Oct. 8, 1980, 55-139904
Int. Cl.³ G02B *5/16, 9/60*
U.S. Cl. 350—465 **14 Claims**

1. An objective for endoscopes comprising a first negative meniscus lens component having a convex surface on the object side, a second positive meniscus lens component having a concave surface on the object side, a third positive lens component, a fourth lens component consisting of a positive lens element and a negative lens element cemented to said positive lens element and a fifth positive lens component, said objective for endoscopes satisfying the following conditions:

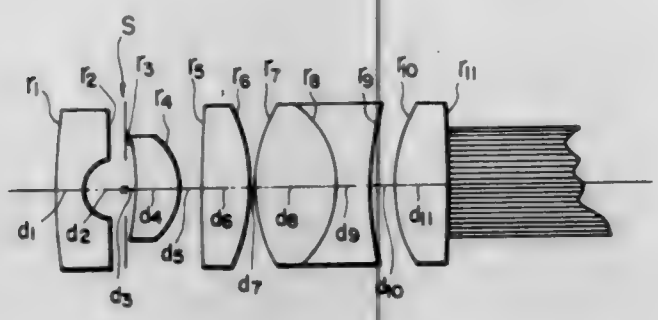
(1) $r_3 \leqq -3f$

(2) $-1.5 \leqq r_6/r_7 \leqq -0.5$

(3) $-4.0f \leqq r_6 \leqq -1.0f$

(4) $-3.0f<r_4<-0.8f$
(5) $1.0f<|r_8|<2.5f$
(6) $|n_4-n_5|>0.1$

wherein reference symbols r_3, r_4, r_6, r_7 and r_8 represent radii of curvature respectively of both surfaces of the second lens



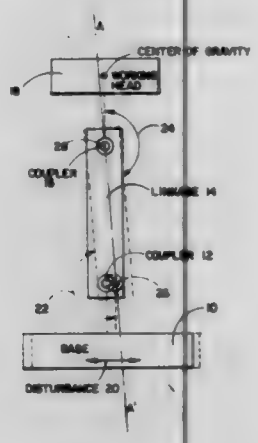
component, the surface on the image side of the third lens component and the surface on the object side and the cemented surface of the fourth lens component, reference symbols n_4 and n_5 represent respective refractive indices of both lens element of the fourth lens component, and reference symbol f represents a focal length of the entire system.

4,403,838

PRECISION POINTING AND STABILIZATION SYSTEM

Milton M. Bellock, Orange, and John M. Wuerth, Fullerton, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 30, 1980, Ser. No. 202,209
Int. Cl.³ G02B *23/16*
U.S. Cl. 350—500 **18 Claims**



1. Apparatus for controlling the spatial orientation of an angularly displacable working head supported by a base and relative to a given frame of reference, said apparatus comprising:

a linkage having terminal first and second articulate couplers coupling said working head to said base across the longitudinal axis of said linkage;

said first and second articulate couplers located relative to each other to effectively isolate said working head freely of components of acceleration of said base perpendicular to said linkage longitudinal axis;

means for sensing and providing control signals derived from said sensing, the relative angular positions and relative angular velocities between said working head and said linkage, and the existing spatial orientation of said working head relative to said given frame of reference;

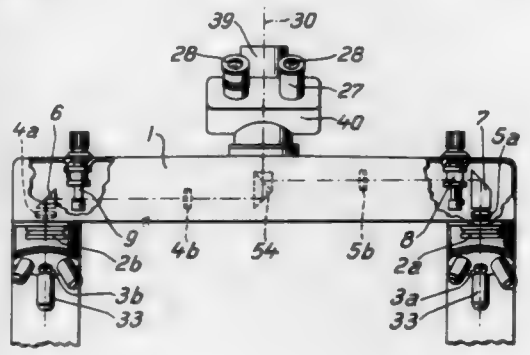
means for applying torque between said working head and said linkage and between said linkage and said base responsive to said derived control signals to control the spatial orientation of said working head relative to said given frame of reference.

4,403,839

COMPARATOR MACROSCOPE OR MICROSCOPE

Artur Reichel, Wetzlar, Fed. Rep. of Germany, assignor to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Feb. 20, 1981, Ser. No. 236,240
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006657
Int. Cl.³ G02B *21/20, 21/36*
U.S. Cl. 350—514 **6 Claims**



1. A comparator viewing device for simultaneously viewing objects to be compared, either macroscopically or microscopically, comprising:

a comparator bridge member arranged therein at each end thereof one of two similar optical systems, each of said optical systems including first and second optical elements and a refracting prism located between said first and second optical elements, each of said optical system providing a partial beam path and wherein the partial beam paths of said optical systems are brought together by means of said refracting prisms in said optical systems, said comparator bridge further comprising a first beam splitter prism provided between the second elements of said two optical systems for uniting the two partial beam paths in congruently superposed fashion on its splitter surface to provide a combined beam path;

a pair of individual optical viewing members attached to the two ends of said bridge member, each of said viewing members comprising at least one objective lens;

a binocular tube mounted on said bridge member in the combined beam path of said first beam splitter prism, said binocular tube carrying two occular lenses simultaneously lying in said combined beam path and being mounted on occular supports; and

a marking device comprising a light-emitting surface for producing a luminous spot on the objects to be viewed, said marking device being located in the combined beam path on the side of said first beam splitter opposite the objects to be viewed, whereby the same beam path serves for viewing of the objects and also for producing the luminous spot on the objects to be viewed, and the luminous spot is always produced on the location of the object which appears in the center of the field of vision, wherein said marking device is mounted on one of said occular supports and comprises a mounting member adapted for detachable mounting on said occular support and an upper member for supporting said light-emitting surface, said upper member being pivotably attached to said mounting member so that the marking device is selectively movable into and out of the beam path of the respective occular lens.

4,403,840

VARIABLE FOCUS EYEGLASSES

Milton R. Okun, P.O. Box 377, Canton, Mass. 02021

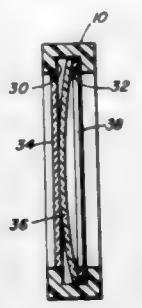
Filed Mar. 9, 1981, Ser. No. 241,781
Int. Cl.³ G02C *1/00*
U.S. Cl. 351—41 **19 Claims**

1. Apparatus for variable focus eyeglasses comprising:

(a) right and left frame means for holding a plurality of

optical components comprising forward and rear frame edges defining a single continuous interior track of generally circular shape; and

(b) a plurality of rigid and flexible optical components adapted to fit securely within the single interior track of



each frame means such that at least one of said flexible or rigid optical components is movable along an anterior-posterior axis within said track resulting in the distortion and restitution of a flexible component by one or more of the rigid components so as to vary the focal length of the eyeglasses.

4,403,841

APPARATUS FOR EXAMINING ANTERIOR PORTIONS OF THE EYE

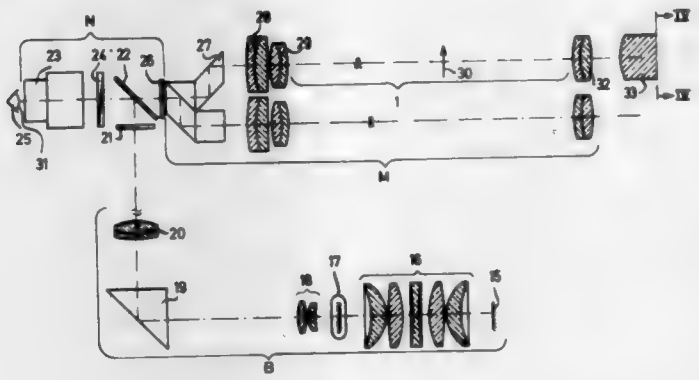
Walter H. Lang, and Franz Muchel, both of Konigsbronn, Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Nov. 12, 1980, Ser. No. 206,076

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 2946451

Int. Cl.³ A61B *3/10*

U.S. Cl. 351—215 **2 Claims**



1. An ophthalmological instrument for examination of anterior regions of an eye, comprising a binocular microscope, and a base establishing a vertical axis of rotary support for said microscope, said microscope including an objective offset from said rotary axis, and the microscope axis through said objective being aligned for intersection with said rotary axis, said microscope including a beam-splitter serving the respective binocular paths thereof from said microscope axis and said microscope also including in each of its binocular paths a first objective producing an intermediate image and a second objective focusing said intermediate image at infinity, a source of polarized illumination and optical elements directing its polarized light onto the microscope axis and in the direction of said objective at a location between said objective and said beam-splitter, a Nomarski prism interposed between said objective and the location of source-light introduction to the microscope axis, and an interference-contrast resolver interposed between said location and said beam-splitter.

4,403,842

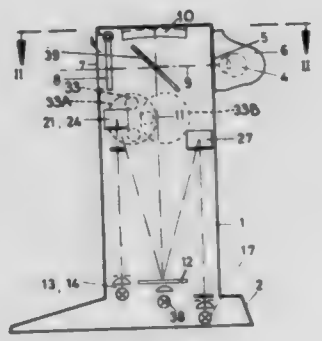
APPARATUS FOR TESTING TWILIGHT VISION AND BLINDING SENSITIVITY

Elfriede Aulhorn, Tuebingen; Jakob Kocher, Dusslingen, and Josef Reiner, Rodenkirchen, all of Fed. Rep. of Germany, assignors to Oculus Optikgeraete GmbH, Dutenhofen, Fed. Rep. of Germany

Filed Nov. 4, 1981, Ser. No. 318,242

Int. Cl.³ A61B *3/02*

U.S. Cl. 351—237 **6 Claims**



1. In an apparatus for testing twilight vision and blinding sensitivity, including a screen which is illuminated simultaneously by first and second projectors, a test figure being arranged in the beam of the first projector and including means for controlling the light intensity from both projectors with respect to one another so that the light intensity from the first projector increases in the same degree as the light intensity from the second projector is decreased and vice versa, and including a headlight source arranged next to the field of vision on the screen, the improvement comprising wherein the screen is arranged at the focal point of a concave mirror, wherein between the concave mirror and the screen there is arranged a semi-transparent mirror which is inclined with respect to the optical axis of the concave mirror, which semi-transparent mirror is opposite the eyes of the tested person, wherein the apparatus has an opening along the line of sight of the tested person which permits an unhindered looking out, and wherein the opening is provided with a filter for reducing the light entering from outside.

4,403,843

SWITCHING ASSEMBLY FOR FOCUSSING, PHOTOSENSITIVE ELEMENTS OF A CAMERA

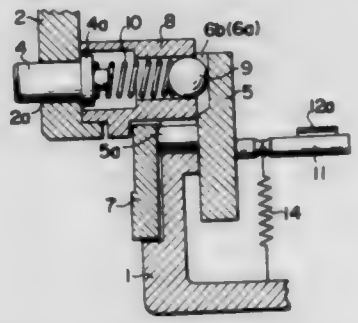
Yoshihisa Maitani, and Mitsuo Kawazoe, both of Hachioji, Japan, assignors to Olympus Optical Company Ltd., Japan

Filed Mar. 22, 1982, Ser. No. 360,553

Claims priority, application Japan, Jun. 10, 1981, 56-90155

Int. Cl.³ G03B *3/00*

U.S. Cl. 354—25 **6 Claims**



1. In a camera having an interchangeable lens mount which is capable of receiving lenses having different brightness levels, said combination comprising:

a brightness switch which is manually moveable between first and second brightness positions and will remain in the position in which it is placed when a lens is mounted on said lens mount and which is automatically biased into said

first brightness position whenever there is no lens mounted on said lens mount; and

an in-focus detector circuit for detecting an in-focus condition as a function of the amount of light which passes through a lens mounted on said lens mount, said in-focus detector operating in a first manner which presumes that a lens having a first brightness level is mounted on said lens mount when said brightness switch is in said first position and operating in a second manner which presumes that a lens having a second brightness level is mounted on said lens mount when said brightness switch is in said second brightness position.

4,403,844

MALFUNCTION PREVENTING DEVICE FOR CAMERA

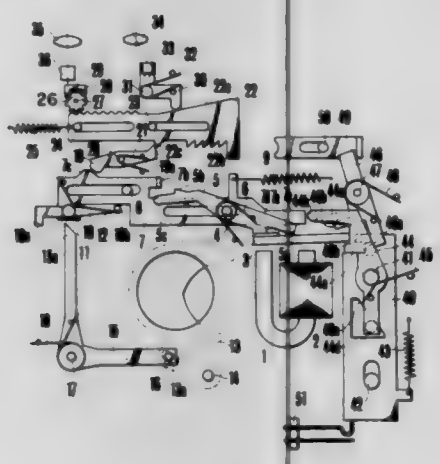
Akihiro Namai, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1982, Ser. No. 376,206

Claims priority, application Japan, May 18, 1981, 56-75477; May 18, 1981, 56-75478

Int. Cl.³ G03B *3/00, 9/08*

U.S. Cl. 354—234 **14 Claims**



1. A malfunction preventing device for a camera comprising:

(a) an electromagnet;

(b) control means for controlling the operation of said camera;

(c) latching means for engagement with said control means, said latching means when actuated by said electromagnet releasing said engagement to permit said control means to move; and

(d) prohibiting means for prohibiting said latching means from operating before actuation of a camera release, said prohibiting means being responsive to actuation of the camera release for rendering said latching means operative and, after an initiation of an operation of said control means, having its position maintained by said control means.

4,403,845

CASSETTE FOR HOLDING AND DISPENSING A ROLL OF WEB MATERIAL

Edward Buelens, Kontich, and Carolus C. Goossens, Berchem, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

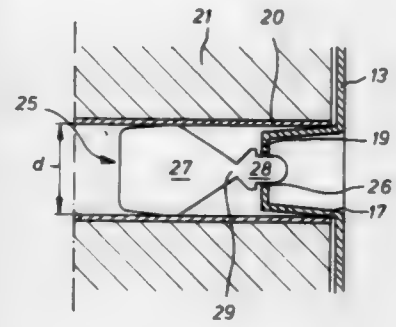
Filed Dec. 8, 1981, Ser. No. 328,626

Claims priority, application United Kingdom, Dec. 9, 1980, 8039456

Int. Cl.³ G03B *17/26*

U.S. Cl. 354—275 **10 Claims**

1. A cassette for holding and dispensing a roll of web material wound onto a tubular core, said cassette comprising a container having a tubular shell and two end walls with central hub portions, a tubular core carrying a roll of web material wound thereon and rotatably supported by said hub portions, the shell having a peripheral exit slot through which the material can be drawn from said roll, and a generally rigid locking member for preventing rotation of the core prior to the first use of the cassette, such member including two end portions connected by a weakened intermediate portion which can be ruptured by rotation of the core incidental to initial withdrawal of the web material from the cassette, one of said end portions of said locking member extending into the interior of said core in frictional engagement with the inner surface thereof, and the other end portion being in non-rotative engagement with one of said hub portions to thereby prevent rotation of the core until said weakened portion is ruptured.



4,403,846

ARRANGEMENT FOR INTRODUCING PHOTOSENSITIVE STRIPS INTO AND TRANSPORTING THE SAME THROUGH A DEVELOPING MACHINE

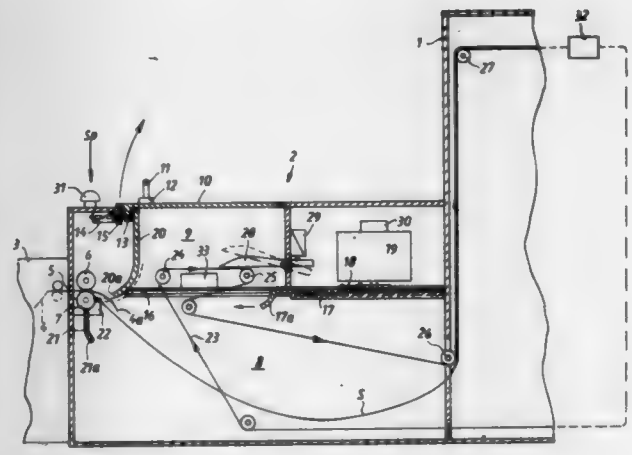
Viktor Osegowitsch, Taufkirchen; Werner Sperber, and Wolfgang Viehrig, both of Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Sep. 4, 1981, Ser. No. 299,771

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1980, 3034084

Int. Cl.³ G03D *13/06*

U.S. Cl. 354—310 **8 Claims**



1. An arrangement for introducing strips of photosensitive material, particularly such accommodated in cassettes, in a light-sealed manner into and for transporting such strips through the interior of a treating, especially developing, machine having at least one slot for the passage of the respective strip therethrough into a given region of the interior, comprising means for bounding an attaching compartment adjacent to the given region of the interior; means for light-impermeably separating said attaching compartment from the exterior of the machine, including a lid; means for transferring the leading end of the respective strip upon its passage through the slot into said attaching compartment, including a pivotable transferring member bounding a light-sealed path for the leading end between the slot and said attaching compartment at least upon the conclusion of the transferring operation; means for transporting the respective strip through said attaching compart-

ment and through the interior of the machine, including an endless band situated next to the respective strip and having a section passing through said attaching compartment, and means for attaching the leading end of the respective strip to said section; means for light-impermeably separating said attaching compartment from the interior of the machine while said lid is open, including a separating member mounted between said attaching compartment and the interior of the machine for movement between an open and a closed position and establishing a light-impermeable contact with said transferring member in said closed position; means for causing said separating member to move between said positions thereof, including drive means; means for latching said lid in its closing position; and means for releasing said latching means when said separating member is in the closed position thereof, including control means connected to said drive means and operative for detecting the closed position of said separating member and for generating a control signal indicative thereof; and means for displacing said latching means into its releasing position in response to said control signal.

4,403,847

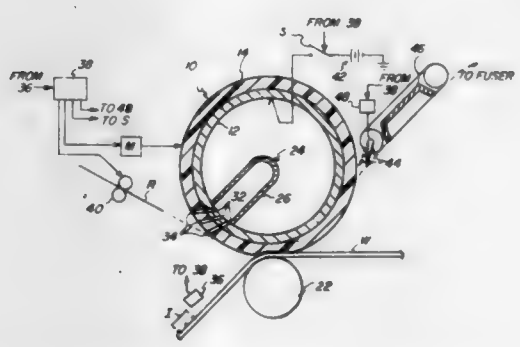
ELECTROGRAPHIC TRANSFER APPARATUS

Gene L. Chrestensen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 29, 1982, Ser. No. 362,735

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 TR **6 Claims**



1. Apparatus for electrostatically transferring a transferable image from an image-carrying member to a receiver member supported on and urged by said apparatus into pressure contact with such member, said apparatus comprising:

resilient, deformable, electrically conductive means, adapted to be coupled to a source of electrical image transferring potential, said conductive means having a passage connectible to a vacuum source for vacuum tacking a receiver member to a surface of said conductive means, such passage having a longitudinal axis which, at said surface defines an oblique angle to said surface whereby said passage is closed by deformation of said means during pressure contact with the image-carrying member so that an electrical transfer potential is uniformly applied to the receiver member.

4,403,848

ELECTRONIC COLOR PRINTING SYSTEM

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 17, 1982, Ser. No. 349,216

Int. Cl.³ G03G *15/00, 15/01*

U.S. Cl. 355—4 **19 Claims**

1. A system for producing color copies comprising:

(a) a movable photoreceptor;

(b) means to uniformly charge said photoreceptor in preparation for imaging;

(c) a beam of high intensity radiation impinging on said photoreceptor at a point downstream of said charge means;

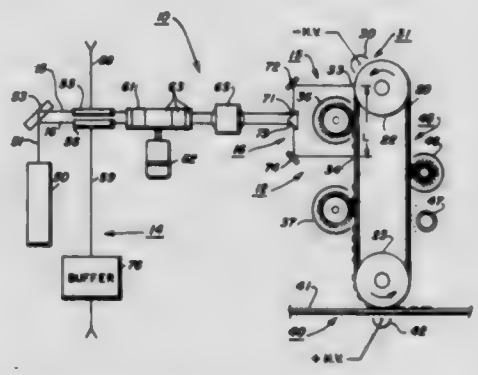
(d) means for scanning said beam across said photoreceptor;

(e) modulating means to modulate said beam in accordance with color image signals as said beam is scanned across said photoreceptor whereby to selectively reduce the charge on said photoreceptor and create a first color latent electrostatic image on said photoreceptor;

(f) first color developing means for developing said first color image;

(g) at least one additional beam of high intensity radiation impinging on said photoreceptor at a point downstream of said color developing means;

(h) means for scanning said additional beam across said photoreceptor;



(i) second modulating means to modulate said additional beam in accordance with color image signals as said additional beam is scanned across said photoreceptor whereby to selectively reduce the charge on said photoreceptor and create a second color latent electrostatic image on said photoreceptor;

(i) second color developing means for developing said second color image; and

(k) means for transferring said combined first and second color images to a copy substrate material to produce color copies.

4,403,849

ELECTROSTATIC COPYING DEVICE

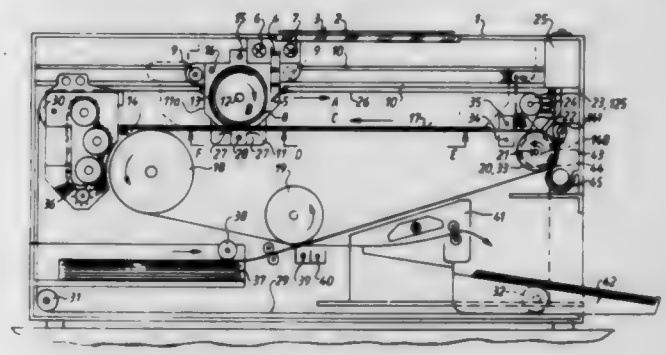
Erich Burger, Unterhaching; Horst Bickl, and Hans-Peter Huber, both of Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Dec. 18, 1981, Ser. No. 332,353

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048728

Int. Cl.³ G03G *15/28*

U.S. Cl. 355—8 **23 Claims**



1. An electrostatic copying device comprising support means, a planar transparent support plate mounted on said support means for receiving a stationary original of a predetermined size to be copied; a slide movable on a predetermined planar path beneath the transparent support plate; a recording cylinder having a photosensitive peripheral surface turnably mounted on said slide; raster objective means carried by said slide for producing an image of the original on said photosensitive surface of said cylinder; corona discharge means on said

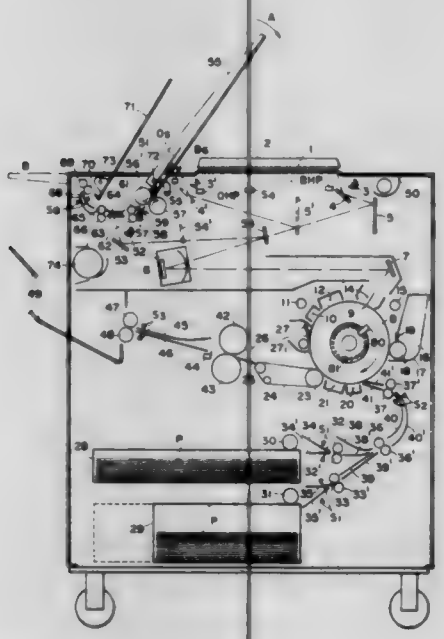
slide for uniformly charging said photosensitive surface before illuminating the same by said raster objective means; first drive means for moving said slide with a predetermined speed along said predetermined path from a starting to an end position and for rotating said cylinder with a peripheral speed corresponding to the speed of the image produced by said raster objective means on said photosensitive surface of said cylinder; a band-shaped dielectric recording carrier extending beneath said recording cylinder in the direction of said predetermined path and having at least over said predetermined length of the original a planar portion; means on said slide for transmitting the charge image from said recording cylinder to said planar portion of said band-shaped recording carrier during movement of said slide in one direction along said predetermined path from said starting to said end position; a plurality of treating stations arranged along said band-shaped recording carrier following said planar portion thereof for transmitting the image from said band-shaped recording carrier to a paper within a predetermined time period; and second drive means for moving, after transmission of the image from said recording cylinder to said band-shaped carrier, said recording cylinder in a direction opposite to said one direction back from said end position to said starting position and for simultaneously moving said band-shaped carrier in the same direction as said recording cylinder and both at the same speed corresponding to a speed according to said predetermined time period.

4,403,850

COPYING DEVICE HAVING PLURAL EXPOSURE MODES

Shunichi Masuda, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 16, 1981, Ser. No. 284,139
Claims priority, application Japan, Jul. 25, 1980, 55-102581
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **13 Claims**



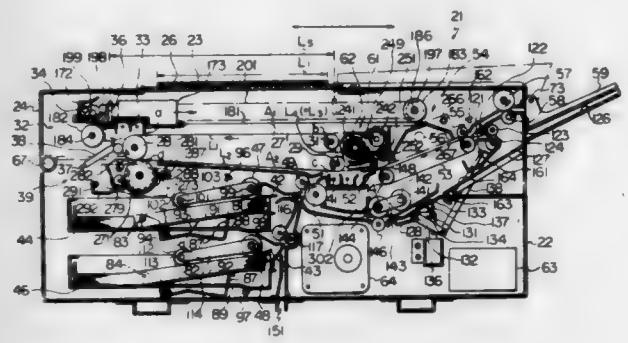
1. A copying device comprising:
a first scanning means for exposing an original while it is being fed;
a second scanning means comprising a reciprocally moving member for exposing the original;
process means for performing a copying operation based on the exposed original image;
a guide member for being set to feed the original so that a copying operation by said first scanning means is performed; and
control means responsive to said setting of said guide member, during a copying operation by said second scanning means, for suspending the copying operation being carried out so as to enable the copying operation by said first scanning means to be carried out, and to enable the copying operation by said second scanning means to be resumed after the completion of the copying operation by said first scanning means.

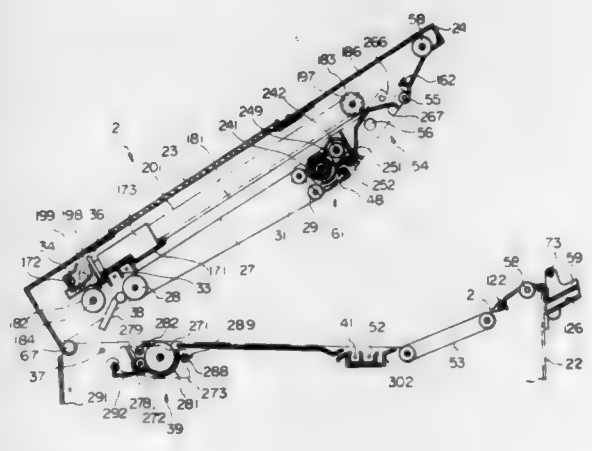
4,403,851

ELECTROSTATIC COPYING MACHINE COMPRISING IMPROVED ARRANGEMENT OF OPERATING UNITS

Nobuyuki Yanagawa, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 123,637, Feb. 22, 1980. This application Aug. 17, 1981, Ser. No. 293,539
Claims priority, application Japan, Mar. 9, 1979, 54-28009
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **24 Claims**





2. An electrostatic copying machine comprising:
a housing;
a cover provided on top of the housing and being movable between open and closed positions;
first and second parallel rollers rotatably supported by the cover;
an endless photoconductive belt trained around the first and second rollers;
imaging means provided in the cover for forming an electrostatic image of an original document on a portion of the belt between the first and second rollers;
developing means provided in the housing for developing the electrostatic image to produce a toner image, the developing means being adjacent to the first roller when the cover is in the closed position;
transfer means provided in the housing for transferring the toner image to a copy sheet, the transfer means being adjacent to the second roller when the cover is in the closed position;
drive means for rotating the first and second rollers and thereby the belt in a direction such that the portion of the belt on which the electrostatic image is formed moves around the first roller and then around the second roller; and
control means for controlling the imaging means, drive means and transfer means in such a manner that, for multiple copying operation, the belt is alternatingly stopped while the imaging means forms an electrostatic image thereon and driven for one half revolution;
the control means further controlling the imaging means,

drive means and transfer means in such a manner that, for single copying operation, the belt is stopped while the imaging means forms an electrostatic image thereon and then driven for one revolution.

4,403,852

DEVELOPER RECOVERING DEVICE FOR ELECTROSTATIC IMAGE REPRODUCING SYSTEM

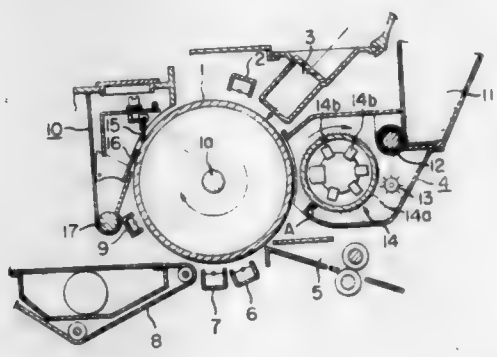
Tsugio Hirabayashi, and Junichi Koiso, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1981, Ser. No. 326,510

Claims priority, application Japan, Dec. 20, 1980, 55-179693

Int. Cl.³ G03G *15/09*

U.S. Cl. 355—15 **10 Claims**



1. In an electrostatic image reproducing system including a developing unit (4), a rotatable photosensitive drum (1) arranged to receive developer containing a magnetic ingredient from said developing unit, a cleaning unit (10) arranged to clean said developer off of said photosensitive drum, and a developer recovering device for recycling said developer from said cleaning unit to said developing unit,

the improvement wherein said developer recovering device comprises:

developer conveying means including a revolving element (19) made of a non-magnetic material and having an outer surface, and a plurality of magnets (18) arranged adjacent the inner surface of the circumference of said revolving element, and

a casing (21) encircling at least a portion of the outer surface of said revolving element (19) with a given spacing therebetween for receiving developer containing said magnetic ingredient;

said revolving element being arranged to pick up said developer from said casing by the magnetic power of said magnets,

said picked up developer being conveyed to said developing unit by said revolving element as ears of developer on said revolving element.

4,403,853

SLIT EXPOSURE DEVICE

Petrus J. P. Hovens, Tegelen, and Adrianus H. Willemse, Grubbenvorst, both of Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

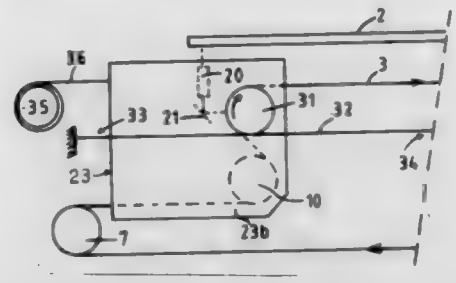
Filed Jul. 13, 1981, Ser. No. 282,423

Claims priority, application Netherlands, Jul. 24, 1980, 8004250

Int. Cl.³ G03G *15/04, 15/28*

U.S. Cl. 355—16 **4 Claims**

1. A slit exposure device for projecting an image of an original onto a moving photosensitive belt, comprising a stationary object plane, means for illuminating the original, an optical system movable back and forth in a path parallel to said object plane, at least two interconnected belt deflecting rollers and drive means for moving said rollers along and parallel to the object plane with the optical system, at least one of said rollers deflecting the photosensitive belt counterclockwise from its original direction of movement and at least one of said rollers deflecting the belt in clockwise direction, said optical system being arranged to project the image of an original in linear



portions onto the photosensitive belt at a location within the path formed by the portions of the belt on and between said deflecting rollers.

4,403,854

METHOD AND APPARATUS FOR MAKING COLOR PRINTS IN AUTOMATIC DEPENDENCE UPON THE FILM TYPE INVOLVED

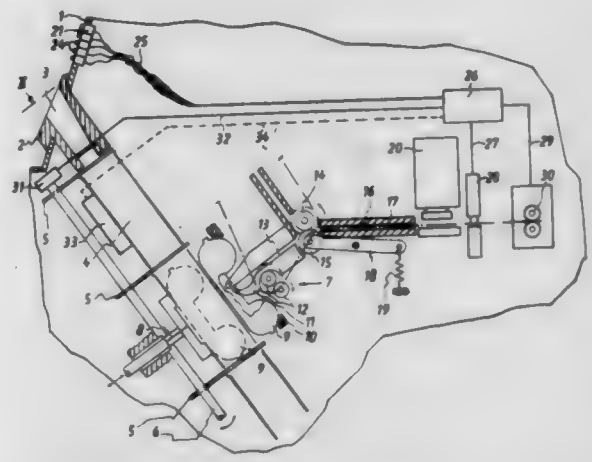
Werner von Stein, Hamburg, and Berthold Fergg, Taufkirchen, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Nov. 6, 1980, Ser. No. 204,757

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1977, 2749721

Int. Cl.³ G03B *27/78*

U.S. Cl. 355—41 **3 Claims**

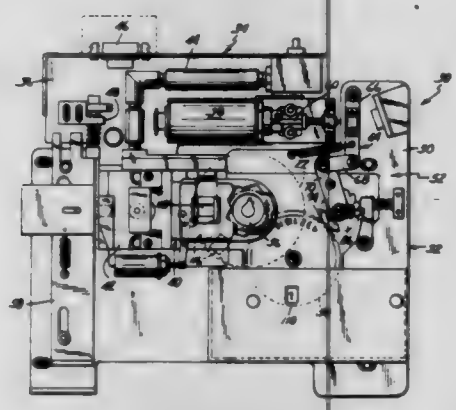


1. In a color print machine including an automatic exposure control system and an encoding station of the type comprising a memory storing control signal for adjusting the automatic exposure control system for predetermined differing color film types, and wherein the incoming color films are stored in cassettes provided with film type identification data so that it is not necessary to provide the data on each individual image field, in combination, an input unit for feeding in the memory input signals indicative of the type of a film in process identified by the data on the cassettes; means for addressing the memory to read out the stored control signals; means for activating the encoding station to provide on the film to be printed film-type identifying code markings; scanning means operative for sensing said markings and generating corresponding exposure adjusting signals; and means for applying the adjusting signals to the exposure control system for the particular color film involved.

4,403,855
DISC FILM FRAME POSITION INDICATOR

Richard D. Anderson, Maple Grove, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Feb. 18, 1982, Ser. No. 349,927
Int. Cl.³ G03B 27/32, 27/52
U.S. Cl. 355—64 8 Claims



1. An apparatus in combination with a photographic printer having a print gate aperture, the apparatus indicating which of a plurality of film frames of a disc-like film unit is positioned at the print gate aperture, the apparatus comprising:

a base positioned on the photographic printer;

means for holding the disc-like film unit for rotational indexing of the selected film frame to the print gate aperture including a first gear, the means for holding a disc-like film unit being rotatably attached to the base;

means for actuating the rotational indexing of selected film frames to the print gate aperture including a second gear, the means for actuating positioned on the base;

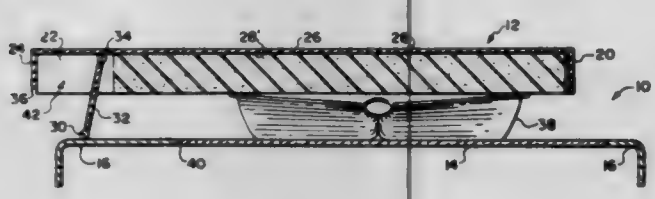
indicia display means having a third gear for displaying indicia to indicate which of the film frames in a disc-like film unit is at the print gate aperture, the third gear being rotatably positioned on the base between the first and second gear and cooperating with the first and second gear such that the disc-like film unit is rotationally indexed; and

cover means having a viewing portion for permitting viewing only the indicium that indicates the film frame positioned at the print gate aperture.

4,403,856
OFFICE COPIER WITH ARTICULATED HINGE COVER

Nicholas L. Torto, Burlington, and Samuel R. Di Nallo, Sr., Framingham, both of Mass., assignors to Coulter Systems Corporation, Bedford, Mass.

Division of Ser. No. 126,535, Mar. 3, 1980, Pat. No. 4,386,847.
This application Sep. 1, 1977, Ser. No. 413,977
Int. Cl.³ G03B 27/62
U.S. Cl. 355—75 12 Claims



1. In an electrostatic document copier chassis having a framing structure and an upwardly facing rectangular platen framed by said structure, said platen adapted to receive thereon an article such as a document or the like with a surface of said article facing downwardly against the platen in order to enable illumination of said surface from the interior of the chassis for imaging purposes, a cover member having an articulated connection with said framing structure and adapted for covering the article when the latter is in imaging position and accommodating to different thicknesses of respective articles being imaged, said cover member and articulated connection comprising:

A. a rigid inverted tray-like member having peripheral walls defining a downwardly opening chamber and of a size and configuration normally to overlie the platen,

B. a hinge link concealed within the traylike member and coupling said member to said framing structure for articulated swinging movement relative to said platen,

i. said hinge link having a first pivotal connection with said tray-like member on its interior defining a first axis parallel with an end peripheral wall thereof,

ii. and having a second pivotal connection with the framing structure at an end of said platen defining a second axis parallel with and spaced from said first axis,

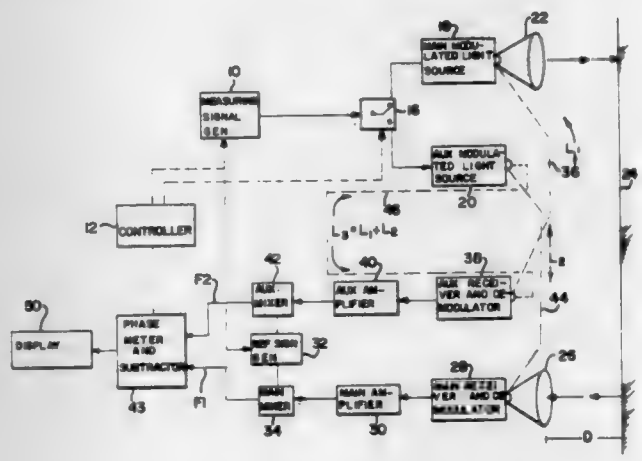
iii. said first pivotal connection being the higher and innermost one of said pivotal connections, the second pivotal connection being the lower and outermost of said pivotal connections, said first pivotal connection being in a plane spaced horizontally above the horizontal plane of the second pivotal connection, said pivotal connections being independently connected to said framing structure and inside of said cover member parallel said end peripheral wall,

C. the resulting articulated connection enabling accommodation of articles of different thickness on the platen covered by said tray-like member while said latter member remains substantially parallel with said platen with minimization of lateral translational movement of said cover relative to said platen.

4,403,857
DISTANCE MEASURING DEVICE AND METHOD

Hobbe D. Holscher, Randburg, South Africa, assignor to South African Inventions Development Corporation, Pretoria, South Africa

Filed Oct. 23, 1980, Ser. No. 199,880
Claims priority, application South Africa, Oct. 23, 1979, 79/5655
Int. Cl.³ G01C 3/08
U.S. Cl. 356—5 15 Claims



1. An apparatus for determining the distance between a first position at which the apparatus is located and a second position, which includes

a generating means for generating a measuring signal;

a first and a second transmitting means for transmitting the measuring signal;

a switching means for connecting the generating means between the first and the second transmitting means;

a first detecting means and a second detecting means responsive to signals transmitted by the first and second transmitting means;

a first path defining means defining a first path of fixed length between the first transmitting means and the second detecting means for conveying signals transmitted by the first transmitting means to the second detecting means;

a second path defining means defining a second path of fixed length between the second transmitting means and the first detecting means for conveying signals transmitted by the second transmitting means to the first detecting means;

a third path defining means defining a third path of fixed length between the second transmitting means and the second detecting means for conveying signals transmitted by the second transmitting means to the second detecting means;

with the first detecting means also being responsive to signals transmitted by the first transmitting means to the second position and returned to the first position; and

a phase difference determining means for determining the difference in phase angle between the output signals of the first and second detecting means, the phase difference determining means being adapted to determine the distance by determining the difference between the phase angle determined when the first transmitting means is connected to the generating means and that determined when the second transmitting means is connected to the generating means.

4,403,858

DEFECT INSPECTION SYSTEM

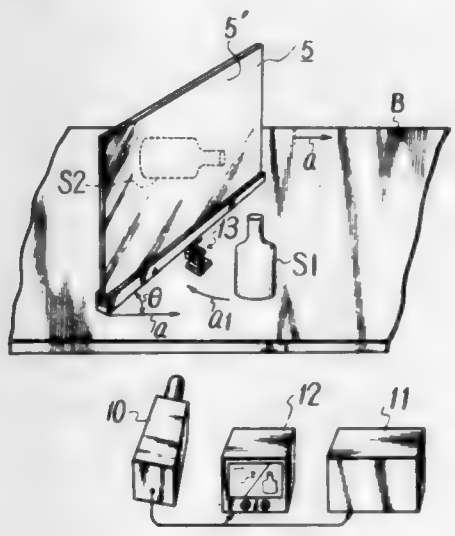
Hajime Yoshida, Tokyo, Japan, assignor to Hajime Industries Ltd., Tokyo, Japan

Filed Feb. 20, 1981, Ser. No. 236,229

Claims priority, application Japan, Feb. 21, 1980, 55-20965

Int. Cl.³ G01N *21/00*

U.S. Cl. 356—237 **6 Claims**



1. A defect inspection system comprising:

(a) an image sensing means for picking up an object to be inspected;

(b) means for providing an image of said object; said image providing means being so located that the image of said object provided thereby is not in parallel to said object, said image sensing means being so located that both of said object and said image thereof are picked up thereby; and

(c) means for receiving an output from said image sensing means and inspecting whether or not said object contains flaws.

4,403,859

PHOTOELECTRIC INCREMENTAL MEASURING APPARATUS

Alfons Ernst, Traunreut, Fed. Rep. of Germany, assignor to Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Dec. 11, 1980, Ser. No. 215,410

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952106

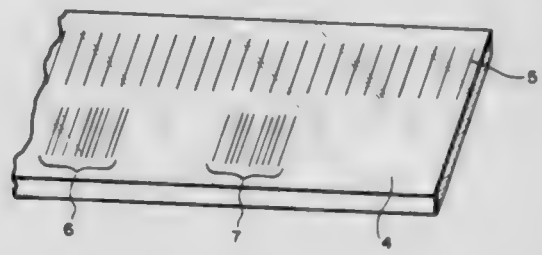
Int. Cl.³ G01D *5/245*

U.S. Cl. 356—374 **19 Claims**

1. In a photoelectric incremental measuring apparatus for measuring the relative displacement of two objects, the apparatus including a measuring scale and a scanning unit for scanning the scale having a reticle, the scale and reticle each carrying a measuring grid, the improvement comprising:

the scale having at least two nonidentical reference marks, each of which reference marks comprises a line group with an irregular line spacing pattern;

the reticle having at least two reading fields, each of which reading fields comprises a line group with an irregular line spacing pattern that is substantially identical to the line spacing pattern of a selected one of the reference marks, the reading fields positioned on the reticle such that each



reading field aligns simultaneously with its corresponding reference mark at only one relative position between the scale and the scanning unit as the scanning unit moves relative to the scale;

the scanning unit having at least two reference mark reading positions, each reference mark reading position comprising a respective detection means for detecting the alignment of the respective reading field with its corresponding reference mark and for generating respective individual detection signals in response thereto; and

means for combining the individual detection signals to generate a composite detection signal of higher accuracy than the individual detection signals.

4,403,860

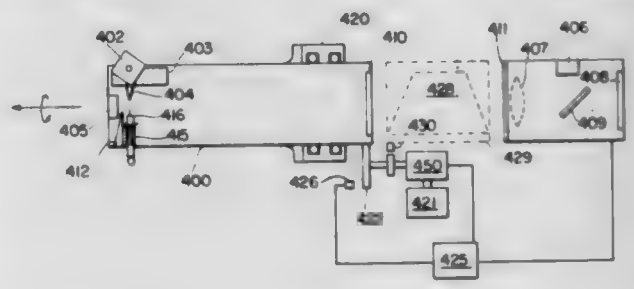
APPARATUS FOR DETERMINING DIMENSIONS

Timothy R. Pryor, Windsor, Canada, assignor to Diffracto Ltd., Windsor, Canada

Filed Mar. 27, 1980, Ser. No. 134,465

Int. Cl.³ B27G *23/00*; G01B *11/12, 11/14*

U.S. Cl. 356—375 **22 Claims**



1. Apparatus for working an object with a tool comprising:

means for supporting an object in a working position to be worked on by a tool;

a tool for working on the object;

means for monitoring a dimension of said object being worked on during normal operating of the apparatus comprising a member adapted to contact a surface being worked, said member comprising an edge located remote from the point at which said member contacts a surface being worked;

means for monitoring a dimension or position of said tool during normal operation of the apparatus comprising an edge provided on said tool at a point remote from the point at which said tool contacts a worked-upon surface;

said object monitoring means and said tool monitoring means comprising means for directing electromagnetic radiation onto said edges, electromagnetic radiation detec-

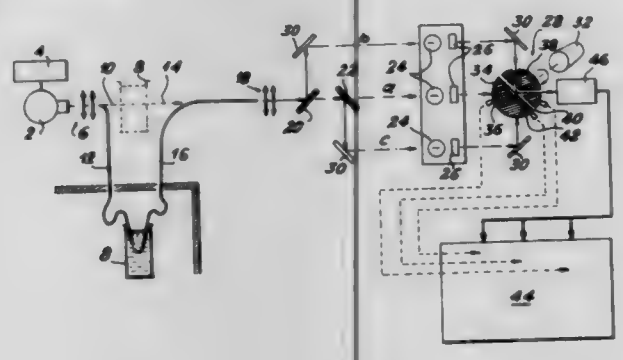
tor means comprising a plurality of discrete electromagnetic radiation sensitive elements disposed in an array, each element being capable of producing an output signal in response to incident electromagnetic radiation, lens means for focussing images of said edges on said light detectors, and means for analyzing the output signals from said radiation sensitive elements to monitor a dimension of a surface being worked upon and to monitor a dimension or position of said tool.

4,403,861

PHOTOMETRIC ANALYZER FOR AUTOMATICALLY STUDYING COMPLEX SOLUTIONS

Gilbert Boisde, Bures sur Yvette; Claude Bonnejean, Ris Orangis, and Jean J. Perez, Chatillon, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 29, 1980, Ser. No. 220,971
Claims priority, application France, Jan. 23, 1980, 8001408
Int. Cl.³ G01J *3/50*
U.S. Cl. 356—407 **9 Claims**



1. A photometric measuring device for automatically studying complex solutions with a variable background noise, wherein it comprises:

a regulated light source providing a light beam for illuminating by means of an optical system a measuring cell adapted to contain a solution to be studied;

means for splitting the light beam after it is affected by said solution into n individual light beams in which n is an integer higher than 2;

balancing means for balancing the light intensity of each of said n light beams;

means for making said n light beams monochromatic so as to associate with each of said n light beams a predetermined wavelength;

a discriminator for distinguishing said n wavelengths from one another;

a single detector able to transform the light beam from said discriminator into an electrical signal;

an analog computing system responsive to said electrical signal for calculating the concentration of the most n−1 chemical species present in the solution; and

means for the visual display of the results.

4,403,862

VISIBILITY MEASURING APPARATUS USING LIGHT CONDUCTORS

Folke Lofgren, and Sven-Erik Soderstrom, both of Västerås, Sweden, assignors to Asea Aktiebolag, Västeras, Sweden

Filed Nov. 13, 1978, Ser. No. 960,438
Claims priority, application Sweden, Nov. 18, 1977, 7713022
Int. Cl.³ G01N *21/00*
U.S. Cl. 356—437 **4 Claims**

1. Apparatus for measuring atmospheric visibility, comprising:

a plurality of light transmitters located at spaced apart points along a given path;

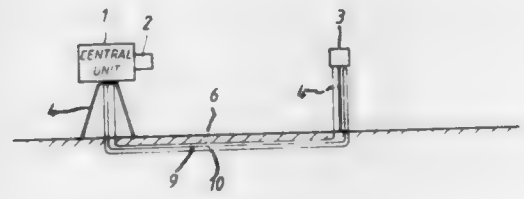
a corresponding plurality of light receivers, positioned within an area in which the atmospheric visibility is to be measured and each said light receiver being located in spaced relationship to a respective one of said plurality of light transmitters to form a plurality of measuring bases along said path;

control means for generating light pulses and receiving light pulses transmitted through each of said measuring bases independently of light transmitted through any other measuring base;

a plurality of first light conductors for transmitting said light pulses from said control means to respective ones of said plurality of light transmitters;

a plurality of second light conductors for transmitting light pulses from said plurality of light receivers to said control means;

each of said light transmitters including optical means for receiving light pulses from said control means through a respective one of said first light conductors and directing said light pulses towards a corresponding one of said light receivers;



each of said light receivers including optical means for receiving light pulses from a corresponding one of said light transmitters and for directing said light pulses through a respective one of said second light conductors to said control means;

said control means including means for evaluating the light pulses received from said plurality of light receivers to determine visibility along said path; and

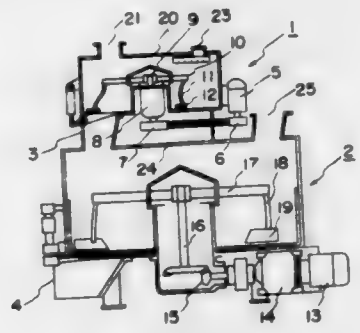
at least one coil of light conductors extending substantially in closely spaced parallel relationship with at least one of said plurality of first light conductors and at least one of said plurality of second light conductors and connected to said control means for compensating temperature-induced variations in the light transmission capacity of said at least one light conductor and said at least one second light conductor.

4,403,863

METHOD FOR PREPARING CONCRETE BY USE OF MULTI-LAYER PAN TYPE MIXER

Takeshi Fukushima, Ichikawashi; Kiyoshi Sakagami, Funabashi-shi, and Yoshihiro Ikegami, Chibashi, all of Japan, assignors to Pacific Metals, Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1981, Ser. No. 281,897
Claims priority, application Japan, Jul. 12, 1980, 55-95261
Int. Cl.³ B28C *5/16, 7/04*
U.S. Cl. 366—8 **6 Claims**



1. A method for producing concrete in a multi-layer pan type mixer comprising upper and lower mixing tanks driven by separate motors and a discharge gate communicating the upper mixing tank with the lower mixing tank, said method comprising supplying sand, cement and primary mixing water into the

upper mixing tank to perform primary mixing therein to obtain a mortar, said primary mixing water being in a quantity which is suitable for said primary mixing and necessary to ensure that said mortar has substantially predetermined properties, discharging said mortar into the lower mixing tank, simultaneously supplying gravel and secondary mixing water into the lower mixing tank to disperse the gravel in said mortar, said secondary mixing water being in a quantity which is equal to the quantity of water required to obtain desired properties, less that quantity primary mixing water introduced into the upper mixing tank, and performing secondary mixing in the lower mixing tank.

4,403,864

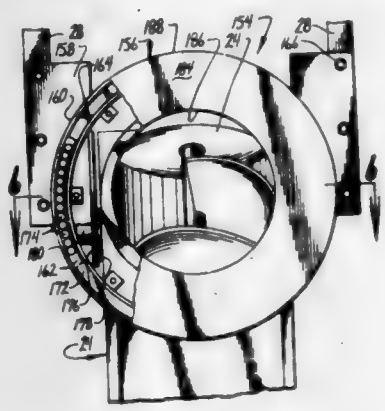
SUPPORT DEVICE FOR MIXER AUGER

Joseph F. Stastny, Indianola, Iowa, assignor to Cemen, Tech, Inc., Indianola, Iowa

Filed Apr. 16, 1982, Ser. No. 369,149

Int. Cl.³ B28C 7/06

U.S. Cl. 366—19 **5 Claims**



1. An auger support assembly comprising:

a support structure,

an outer circular collar having a vertical circular surface presented radially inwardly,

a first annular horizontal flange affixed to said inwardly presented vertical circular surface and protruding radially inwardly therefrom;

an inner circular frame having a vertical circular surface presented radially outwardly towards said inwardly presented vertical circular surface of said outer collar;

a second annular horizontal flange affixed to said outwardly presented surface and protruding outwardly therefrom;

said first and second annular flanges being in vertical alignment with one another,

a plurality of ball bearings positioned between said first and second annular flanges and being in rolling engagement with said first and second annular flanges whereby said outer collar and said inner collar may rotate about a vertical axis with respect to one another by virtue of the bearing engagement between said first and second flanges and said ball bearings,

said outer collar being fixed to said support structure;

auger means connected to said inner collar.

4,403,865

DEVICE IN CONNECTION WITH MIXING APPARATUSES

Bernhard V. Fejmert, Nordostpassagen 19, S-413 11 Göteborg, Sweden

PCT No. PCT/SE79/00138, § 371 Date Feb. 4, 1981, § 102(e) Date Feb. 4, 1981, PCT Pub. No. WO80/02808, PCT Pub. Date Dec. 24, 1980

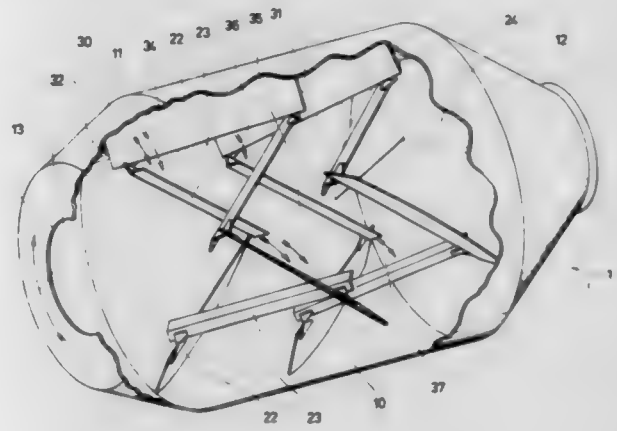
PCT Filed Jun. 18, 1979, Ser. No. 233,609

Claims priority, application Sweden, Dec. 19, 1977, 77/14394

Int. Cl.³ B28C 5/20

U.S. Cl. 366—44 **6 Claims**

1. A mixing apparatus having a rotatable drum with an essentially horizontal axis of rotation and having an input end for the input of material to be mixed, and a discharge end for the discharge of the mixed material, and with a shell which supports a plurality of first mixing wings in a screw-like arrangement, so that during rotation of the drum in a first direction, the mixing direction, said mixing wings convey the material in axial direction towards the input end and during the rotation in a second, opposite direction, the discharge direction, said mixing wings feed the material in axial direction towards the discharge end, and a plurality of second mixing wings having a V-shaped cross section so as to form a chute-shaped first side which is directed towards said discharge end, and a roof-like second side, said plurality of second mixing wings being respectively attached to said plurality of first wings in such a position that the chute-shaped first sides of said second wings are below the first wings when said second wings as a consequence of rotation of the drum in said first direction are in an angular position so that material carried along by said first wings slides off the same and hits the chute-



shaped first side of the second wings therebelow, said second wings having such a screw-form that because of their inclination they convey the material in a direction towards the discharge end whereby the material gets a double directed axial movement, one in a direction towards the input end by the action of the first wings and one in a direction towards the discharge end as a result of the action of the second wings, said second wings also being respectively attached to said first wings in such a position that the roof-like second sides of said second wings are below the first wings so that as a consequence of rotation of the drum in the second direction the material falling down on the roof-like second side from the first wings leaves the second wings in a movement that is transversal to the second wings, so that the transportation by means of the second wing takes place in axial direction in connection with a rotation in substantially the mixing direction only, and the movement of the material in the discharge direction during a corresponding rotation by action of the first wings is substantially unaffected by the second wings.

4,403,866

PROCESS FOR MAKING PAINTS

Allan F. Falcoff, Lake Orion, Mich.; Stephen W. Rementer, Toughkenamon, Pa., and Allan B. J. Rodrigues, Bloomfield Hills, Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 7, 1982, Ser. No. 376,233

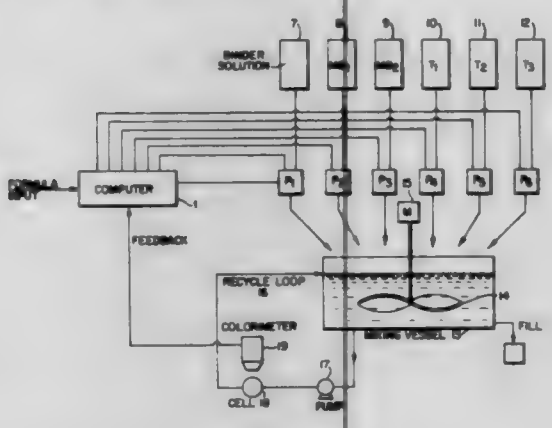
Int. Cl.³ B01F 5/10, 15/00, 15/02

U.S. Cl. 366—132 **20 Claims**

1. A process for making a paint that matches the color values of a standard liquid paint, said process utilizes a computer electrically connected to a multiplicity of metering pumps, each pump being individually connected to a supply of a component used in the paint, said components used in the paint being liquid containing binder for the paint, solvent for the paint and colorant in the form of dispersions or solutions, a vessel containing a recycle loop and mixing means, a pump tubularly connected to the vessel positioned in a recycle loop,

a cell having a viewing window positioned in the recycle loop, a colorimeter having means to determine L*, a* and b* values of the paint positioned to view the window of the cell and being electrically connected to the computer, said process being controlled by the computer comprises the following steps:

(1) providing the computer with
  (a) formula of the paint,
  (b) L*, a* and b* values of the liquid standard paint,
  (c) tolerance values of L*, a* and b* for the paint;
(2) metering exact amounts of components of the paint into the mixing vessel by the metering pumps which are being controlled by the computer;
(3) mixing said components to form a paint;
(4) circulating the paint through said cell at a uniform shear rate;
(5) measuring and determining L*, a* and b* values of the paint with the colorimeter;



(6) transmitting said L*, a* and b* values to the computer;
(7) determining color vectors of each colorant used to formulate said paint by adding a known amount of each colorant to the paint and for each addition repeating Steps (3)–(6) and determining the change in L*, a* and b* values;
(8) comparing by the computer the L*, a* and b* values of the paint to the L*; a* and b* values of the standard paint and calculating the difference between the values of the paint and the standard paint, and calculating the quantity of components to be added to the paint to bring the paint within L*, a* and b* tolerance values of the paint; and
(9) repeating steps (2)–(6) and (8) at least once in the event the paint is not within the L*, a* and b* tolerance values for the paint to bring the paint within these tolerance values.

4,403,867

INK AND WATER TESTER

Horace Duke, 1001 Massman Dr., Nashville, Tenn. 37217

Filed Oct. 20, 1980, Ser. No. 198,635

Int. Cl.³ B01F *15/00*

U.S. Cl. 366—142 **6 Claims**

1. Apparatus for testing the water absorption ability of a material comprising:

container means suitable for rotating, and receiving a selected quantity of water absorbent material and a selected quantity of water;

a base support suitable for rotating and supporting said container means;

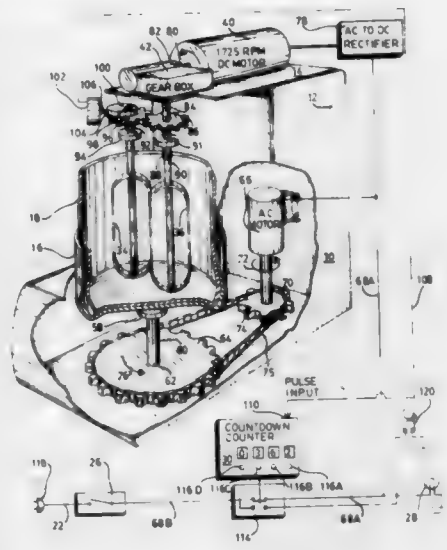
rotating agitator means suitable for being received by said container and for mixing and agitating said water absorbing material and water;

an upper support for rotatably supporting said agitator means, said upper support being mounted to said base support such that said agitator means is positioned within said container means at a position suitable for mixing and agitating said water absorbent material and water;

first drive means supported by said upper support for rotating said agitator means at a first selected rate;

means for counting the number of revolutions of said agitator means;

second drive means supported by said base support for rotating said container means at a second selected rate to assure said agitator means contacts all said water absorbent material in said container means; and



circuitry connected to said means for counting, for interrupting electrical power to said first drive means when said agitator has completed a selected number of revolutions.

4,403,868

AGITATOR WITH TWO SETS OF BLADES EACH DRIVEN IN AN OPPOSITE DIRECTION ABOUT A COMMON AXIS

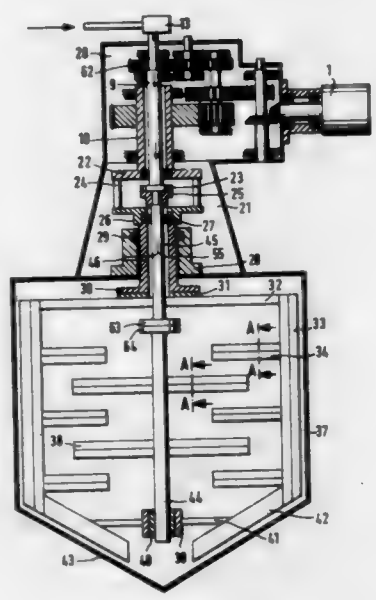
Dieter Kupka, Postfach 59, Binger Landstr. 37a, 6750 Kirn, Fed. Rep. of Germany

Filed Jul. 14, 1981, Ser. No. 283,126

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1980, 3027567

Int. Cl.³ B01F *7/18*

U.S. Cl. 366—295 **16 Claims**



1. An agitator for stirring flowable material, said agitator being arranged to be tightly positionable on a vessel, such as a pressure vessel, and comprising a first agitating element and a second agitating element each driven in an opposite rotational direction about a common axis, said first agitating element includes an inner agitating shaft, said second agitating element extends around said first agitating element and includes a tubular outer agitating shaft laterally enclosing said inner agitating shaft, each of said first and second agitating elements supporting agitating blades for producing different flow characteristics in the material to be stirred depending on the application of

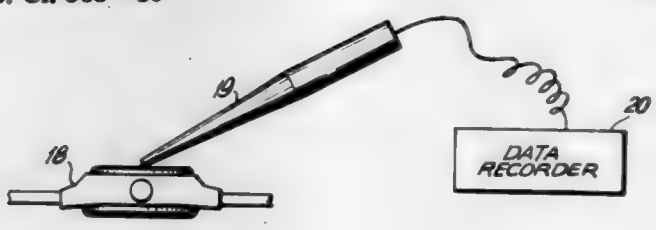
the material, a housing enclosing said inner and outer agitating shafts and within said housing said inner agitating shaft is sealed relative to said outer agitating shaft and said outer agitating shaft is sealed relative to said housing, wherein the improvement comprises that a slide ring seal unit provides the seal between said inner and outer agitating shafts and between said outer agitating shaft and said housing and comprises two axially coextensive plural component slide ring seals one located within the other and both enclosed by said housing with one of said plural component slide ring seals located between said inner agitating shaft and said outer agitating shaft and the other one of said plural component slide ring seal positioned between said outer agitating shaft and said housing.

4,403,869

ELECTRO-OPTIC IDENTIFICTION CODE SYSTEM IN A TIMEPIECE

William C. Crutcher, Middlebury, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Aug. 18, 1980, Ser. No. 179,383
Int. Cl.³ G04B *47/00*; G04C *17/00*
U.S. Cl. 368—10 **6 Claims**



1. In an electronic timepiece of the type having a timebase including an oscillator and countdown divider providing timing pulses, timekeeping means connected to said divider and periodically advanced by said pulses to keep time and to store time information, and display means connected to said timekeeping means and adapted to visually display the time, the improvement comprising:

an electro-optic portion on said timepiece actuable between at least two optical states wherein said electro-optic portion comprises a section of closely spaced, parallel, separately actuatable segments;

memory means inside the timepiece storing a plurality of identification codes in binary form;

means for selecting one of said identification codes to be transmitted and indicating the selection on said display means; and

means for selectively transferring at least one selected identification code from said memory means to said electro-optic display portion and optically displaying said code in machine-readable binary form on the electro-optic display portion so that the codes stored in said memory means separately actuate the segments in a bar code format adapted to be read by moving an opto-electronic scanner past the segments.

4,403,870

WATER-RESISTANT SHAPED CASE CONSTRUCTION FOR A WRISTWATCH

Harwell B. Thompson, Cheshire, and Paul Wuthrich, Watertown, both of Conn., assignors to Timex Corporation, Waterbury, Conn.

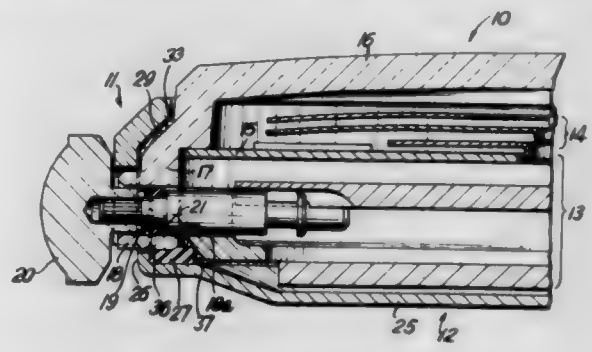
Filed Jan. 11, 1982, Ser. No. 338,762
Int. Cl.³ G04B *37/00, 39/00*
U.S. Cl. 368—294 **7 Claims**

1. In a wristwatch of the type having a bell-shaped crystal with a central viewing portion and an integral depending wall with an integral pendant, a bezel of thin substantially uniform wall thickness surrounding and generally conforming to portions of the crystal wall, and a caseback having a central portion and a peripheral wall surrounding and generally conforming to portions of the crystal wall, the improvement comprising:

a peripheral clamping shoulder on the crystal cooperatively associated with a clamping ledge on said bezel,

snap-fit attachment means between the bezel and the case back wall,

a gasket disposed between first and second sealing surface defined by spaced portions of the crystal and caseback,



whereby said gasket is compressed by being urged toward the gasket by the bezel acting on said clamping shoulder and retained by said snap-fit attachment between the bezel and the caseback,

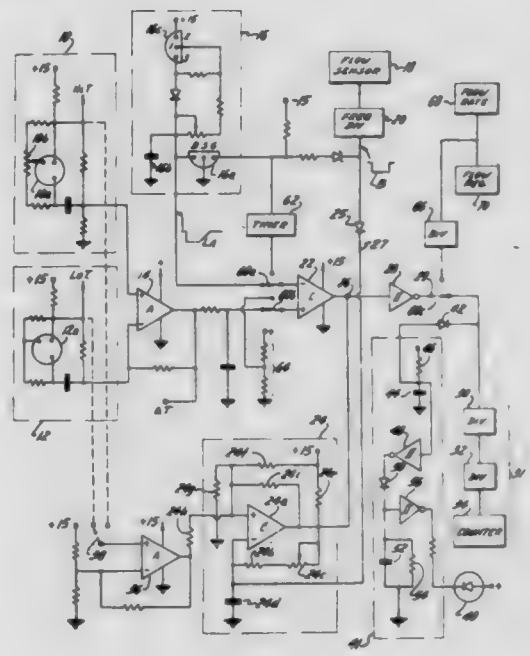
said crystal further including a movement-limiting shoulder defined on the crystal and adapted to cooperate with portions of the caseback to limit movement of the crystal toward the caseback and thereby control the spacing between said first and second sealing surfaces.

4,403,871

HEAT-METER AND FLOW-METER APPARATUS

Murray F. Feller, Dunnellon, Fla., assignor to Wilgood Corporation, Dunnellon, Fla.

Division of Ser. No. 258,521, Apr. 29, 1981. This application Sep. 22, 1982, Ser. No. 421,053
Int. Cl.³ G01F *19/00*
U.S. Cl. 374—1 **6 Claims**



1. Heat metering apparatus for a system having a heat exchanger, an inlet passage, an outlet passage and means for moving fluid through said inlet passage, said heat exchanger and said outlet passage serially, said heat metering apparatus including a flow sensor at one of said passages operative to produce a series of pulses in response to fluid flow, a pair of temperature sensors located at said inlet and outlet passages, respectively, temperature difference means for taking the difference between the outputs of said temperature sensors, an

oscillator, a heat meter, product-taking means responsive to both said flow sensor and said temperature difference taking means for enabling the oscillator to supply trains of pulses to the heat meter at intervals determined by said flow sensor for durations determined by said temperature difference taking means, and monitoring means including an indicator responsive to output pulses from said product-taking means for indicating whether the temperature sensors are virtually alike when both are subjected to the same temperature and for monitoring the flow rate.

4,403,872

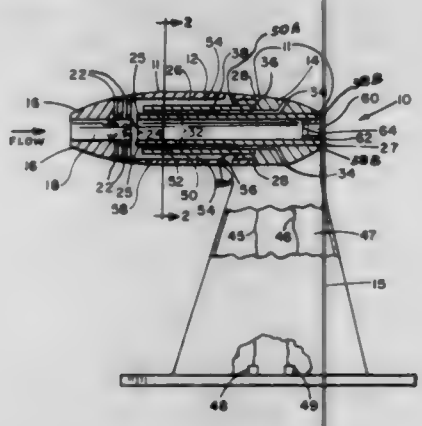
FLOW DEVICE FOR SENSORS

Richard V. DeLeo, Hopkins, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Continuation-in-part of Ser. No. 296,196, Aug. 25, 1981, abandoned, which is a continuation of Ser. No. 91,179, Nov. 5, 1979, abandoned. This application Nov. 3, 1982, Ser. No. 438,792

Int. Cl.³ G01K 3/02

U.S. Cl. 374—138 **17 Claims**



1. A device for measuring a parameter in a fluid stream comprising a housing having an exterior and having:

an elongated longitudinal exterior shape and a bore defined in the housing along the shape for flow of the fluid stream therethrough;

a leading portion at a first end of the bore;

a trailing portion at a second end of the bore;

the exterior shape being contoured convex at the leading portion;

restriction means in the bore for internal flow regulation;

first plurality of port means from the bore to the exterior of the housing in the leading portion for providing boundary layer control;

first annular fluid passageway means in the housing downstream of the first port means outboard of the bore and coupled to the bore upstream of the restriction means and ported to the exterior to cooperate with the bore to provide a lower pressure area for the fluid which flows into the first passageway means; and

sensor means to measure the parameter supported in the first passageway means between the coupling to the bore and the porting to the exterior.

4,403,873

TILTING PAD THRUST BEARING

Willis W. Gardner, Waukesha, Wis., assignor to Waukesha Bearings Corporation, Waukesha, Wis.

Filed Jan. 11, 1982, Ser. No. 338,753

Int. Cl.³ F16C 17/06

U.S. Cl. 384—306 **3 Claims**

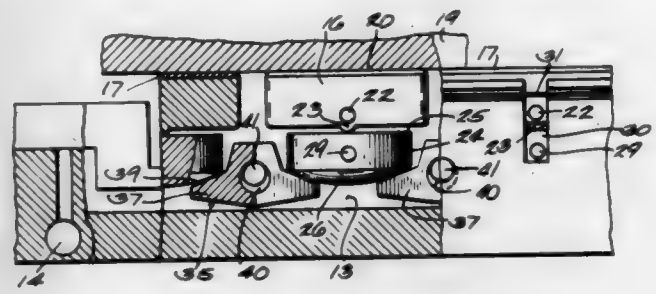
1. A tilting pad thrust bearing comprising:

retainer means,

a plurality of bearing pads arranged in said retainer means in circumferentially spaced apart relationship about an axis of rotation, each pad having a surface for interfacing with and supporting a planar rotating member when the bearing is in use and each pad having a rib projecting axially in a direction opposite of said surface and extending radially over a substantial portion of the radial width of the pad, said pads being tiltable to a limited extent relative to said planar rotating member to develop lubricant wedges when said member rotates,

a plurality of circumferentially spaced apart disks each having a planar surface on which the respective ribs make radial line contact and each having a spherical surface presented in a direction axially opposite of its planar surface,

a plurality of link members each of which is positioned between a pair of said disks, and each of which has a



radially extending round hole and wing portions extending in opposite circumferential directions away from the hole, the spherical surface of any disk being in tangential point contact with wing portions of two adjacent disks, and

round pins mounted to said retainer means and extending radially through the holes in the respective link members for supporting said link members pivotally, the outside diameter of the pins being substantially less than the diameter of the holes for the pins and holes to contact each other tangentially on a radially extending line.

4,403,874

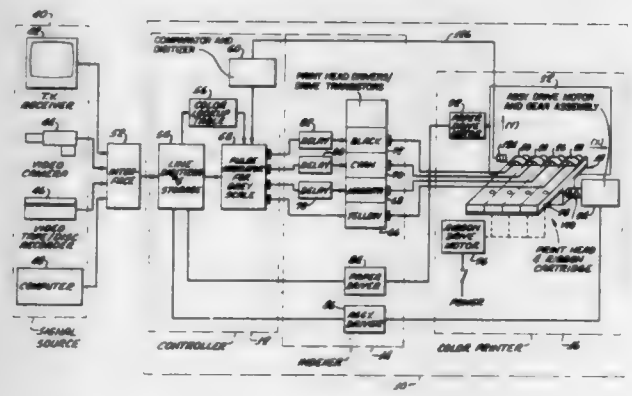
COLOR PRINTER AND MULTI-RIBBON CARTRIDGE THEREFOR

Errol G. Payne, Irvine; Charles D. McGregor, Santa Ana, and Tim M. Uyeda, South San Gabriel, all of Calif., assignors to Ramtek Corporation, Santa Clara, Calif.

Filed Mar. 25, 1980, Ser. No. 133,889

Int. Cl.³ B41J 33/14

U.S. Cl. 400—124 **14 Claims**



1. An impact printer for producing color characters and drawings on a media, comprising:

(a) a print head assembly including a plurality of independently actuable impact print heads serially arranged along a printing direction, each print head having a different colored printing ribbon associated therewith, each ribbon having a portion disposed between the associated print head and the media;

(b) means for causing relative movement between the print head assembly and the media along the printing direction such that each of said impact print heads is capable of impacting coextensive areas of the media;

(c) means for moving each ribbon past the associated print heads;

(d) a signal source for providing electronic signals which represent, on a point-by-point basis, the color content of the characters and/or drawing to be printed;

(e) indexing means for enabling each print head to sequentially mark the media at preselected positions; and,

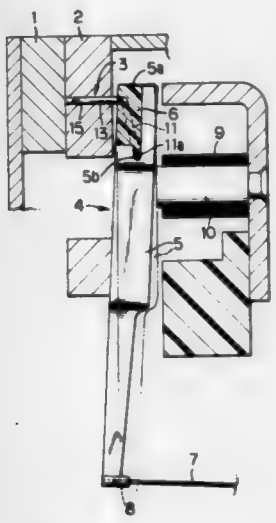
(f) control means responsive to said signal source for selectively causing said indexing means to actuate the print heads at each preselected position along the printing direction depending upon the color content of said electronic signals, thereby causing a preselected colored combination marked on the media.

4,403,875

ARMATURE SUPPORT DEVICE OF A PRINT HEAD

Kiyomitsu Asano, Musashino; Toshikatsu Kondo, Nagoya; Masao Jozuka, Nagoya, and Atsuo Sakaida, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi and Nippon Telecommunication Engineering Company, Tokyo, both of, Japan

Filed Nov. 20, 1981, Ser. No. 323,694
Claims priority, application Japan, Nov. 25, 1980, 55-165492
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **12 Claims**



1. An armature support device of a print head pivotally supporting an armature at one end thereof, the armature holding a print wire at the other end thereof and having a base portion adjacent said one end, said support device comprising:

a support member; and

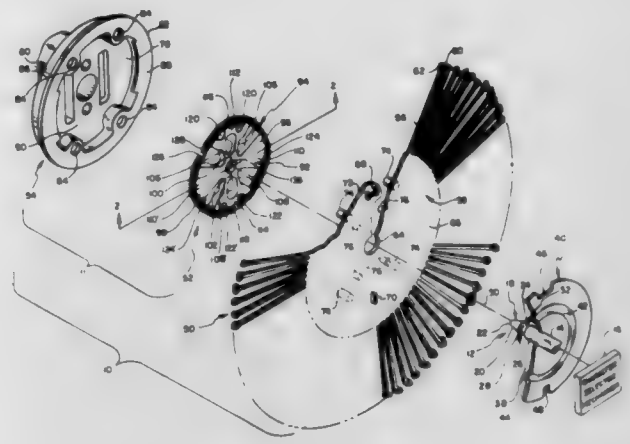
a spring member made of a resilient wire material and including a fixed portion secured to said base portion of the armature, a pair of coaxial arm portions extending in opposite directions from said fixed portion, and a pair of leg portions extending from said coaxial arm portions respectively and fixed to said support member, said fixed portion and substantive parts of the arm portions being imbedded in said base portion of the armature such that said substantive parts of the arm portions are twistable in said base portion, said spring member normally holding said armature at a predetermined position, said fixed portion being pivotable together with said base portion about said arm portions which act as a pivoting fulcrum when said armature is pivoted away from said predetermined position, whereby said arm portions are twisted to produce thereon a torsional force acting to restore said armature to said predetermined position.

4,403,876

PRINT ELEMENT MOUNTING APPARATUS

Kenneth D. Vought, Cortland, N.Y., assignor to SCM Corporation, New York, N.Y.

Filed Sep. 21, 1981, Ser. No. 304,527
Int. Cl.³ B41J *1/08*
U.S. Cl. 400—144.2 **1 Claim**



1. A print element mounting apparatus for enabling a print disc to be removably attached to a selector shaft in a printing machine, the shaft having a nose portion and a mounting portion, the apparatus comprising:

a flat disc-shaped flex member carried by the print disc,

said flex member including;

a pair of yieldable sections,

a pair of rigid sections, and

flex joint means connecting said yieldable sections to said rigid sections for permitting said yieldable sections to expandably move relative to each other;

said flex joint means comprising a first pair of bendable arms connecting one of said pair of yieldable sections to both of said rigid sections and a second pair of bendable arms connecting the other one of said pair of yieldable sections to both of said rigid sections; and

biasing means operatively engaging said flex member so as to continually urge said yieldable sections towards a closed position and, said yieldable sections engagingly clamping about the mounting portion of the shaft under tension when attached thereto and engagingly riding over the nose portion when axially removed therefrom, the tension from said biasing means easily overcome to afford easy removal of the print element from the shaft.

4,403,877

SNUBBED ANCHORING APPARATUS

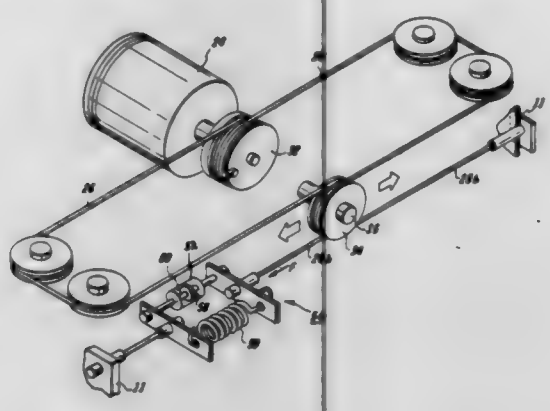
John E. Jones, Manhattan Beach, Calif., and Vittorio R. Castelli, Scarsdale, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 138,631, Apr. 8, 1980, abandoned. This application Apr. 29, 1982, Ser. No. 372,883
Int. Cl.³ B41J *19/00*
U.S. Cl. 400—335 **3 Claims**

1. In an apparatus including a flexible force transmitting member and a stationary member,

characterized in that an end of the flexible force transmitting member is connected to the stationary member by connector apparatus which maintains a substantially constant tension on said flexible force transmitting member, said connector apparatus consisting of a snubbing device containing a high viscosity material and a spring, the snubbing device being connected between the spring and the flexi-

ble force transmitting member such that the spring exerts a force along the length of said force transmitting member



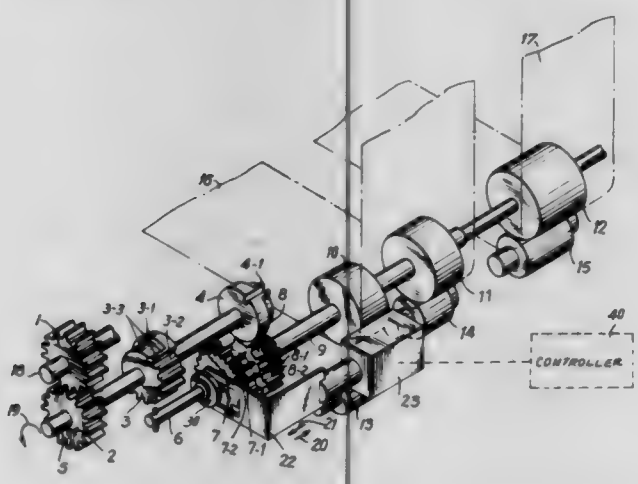
at all times whereby the tension on said force transmitting member remains substantially constant.

4,403,878

PAPER-FEEDING MECHANISM OF A SMALL-SIZED PRINTER

Hiroshi Hosogaya, Shiojiri, Japan, assignor to Epson Corporation, Shiojiri, Japan

Continuation of Ser. No. 11,722, Feb. 12, 1979, abandoned. This application Mar. 4, 1981, Ser. No. 240,450
Claims priority, application Japan, Feb. 10, 1978, 53-14598
Int. Cl.³ B41J *11/48, 11/50*
U.S. Cl. 400—585 **4 Claims**



1. A paper-feeding mechanism for a small sized printer having at least two paper sheets for printing thereon, comprising:

a first roller for frictional engagement with a first paper sheet, rotation of said first roller causing said first paper sheet to feed, said first roller being attached to a first shaft for rotation therewith;

a second roller for frictional engagement with a second paper sheet, rotation of said second roller causing said second paper sheet to feed, said second roller being attached to a second shaft for rotation therewith, said first shaft and said second shaft being coaxial;

a first gear attached to and rotating with said first shaft;

a second gear attached to and rotating with said second shaft;

a third gear, said third gear being adapted to selectively engage and drive either said first gear or said first and second gears in unison, and having teeth on only a minor portion of the circumference thereof, engagement between said first and third gears occurs only during a small angle of rotation of said third gear, and said paper sheets are stationary for printing thereon for substantially the entire rotation of said third gear;

a fourth gear, said fourth gear having teeth on only a minor portion of the circumference thereof, when said second and fourth gears are aligned, engagement between said second and fourth gears occurs only during a small angle of rotation of said fourth gear, and said second paper sheet remains stationary for printing thereon for substantially the entire rotation of said fourth gear;

means for rotating said third and fourth gears, attached to and rotating with a third shaft;

means for releasably engaging said first and second gears for rotation in unison; one rotation of said third gear producing a partial rotation of said first and second gears, whereby said first and second paper sheets are advanced;

means for translating said second gear out of engagement with said first gear and into alignment and releasable engagement with said fourth gear, one rotation of said fourth gear, when engaged to said second gear, producing rotation of said second gear exceeding the rotation produced by one rotation of said third gear; when said first and third gears are engaged and said second and fourth gears are engaged and third and fourth gears each make one rotation, said second paper sheet is advanced more than said first paper sheet is advanced; and

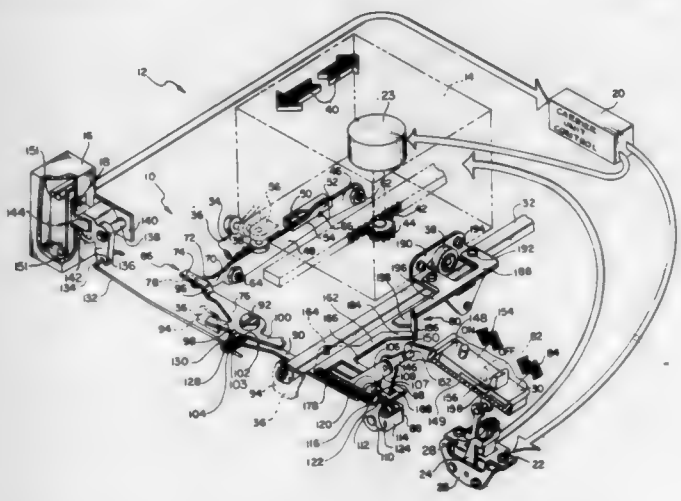
control means for timing the translation of said second gear, said control means translating said second gear to oppose the untoothed major portion of said fourth gear during toothed engagement of said first and third gears, while said second gear is translated to engage for said rotation in unison when teeth of said first and third gears are disengaged, said first paper is fed and said second paper is stationary during a full rotation in unison of said third and fourth gears.

4,403,879

CARRIER LOCKING DEVICE

Kenneth D. Vought, Cortland, and Steven M. Faes, Homer, both of N.Y., assignors to SCM Corporation, New York, N.Y.

Filed May 6, 1981, Ser. No. 261,324
Int. Cl.³ B41J *29/56*
U.S. Cl. 400—674 **24 Claims**



1. A carrier locking device for a typewriter having a frame structure, a carrier supported for movement along the frame structure, and means for moving the carrier and capable of stopping the carrier at a predetermined location along the frame structure, the carrier locking device comprising:

a carrier locking means supported on the frame structure and with the carrier stopped in the predetermined location said carrier locking means being operable between a locked position for preventing movement of the carrier from the predetermined location and released position for enabling the carrier moving means to move the carrier away from the predetermined location;

a lock control means operatively connected to said carrier locking means and selectively movable between a first position with said carrier locking means in said locked position and a second position to permit said carrier locking means to move from said locked position to said released position; and

sensor means interposed between the carrier and said lock

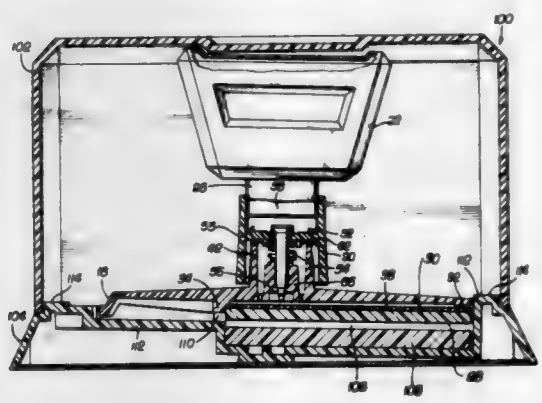
control means and operable to conjunction with the carrier at different locations for determining selective movement of said lock control means, said sensor means operable in response to the carrier being stopped in the predetermined location to permit selective movement of said lock control means between said first and said second positions, and with said lock control means in said second position said sensor means operable in response to the carrier being away from the predetermined location to block movement of said lock control means to said first position.

4,403,880

RECORD CLEANER/CONDITIONER

Joseph Sandor, Reseda, and Claude P. Davis, Woodland Hills, both of Calif., assignors to California Sounds Ltd., Chatsworth, Calif.

Continuation of Ser. No. 64,503, Aug. 7, 1979, abandoned, which is a continuation-in-part of Ser. No. 863,897, Dec. 23, 1977, Pat. No. 4,166,626. This application Mar. 13, 1981, Ser. No. 243,624
The portion of the term of this patent subsequent to Sep. 4, 1996, has been disclaimed.
Int. Cl.³ G11B *3/58*
U.S. Cl. 401—134 **14 Claims**



1. A record cleaning/conditioning device and associated container comprising:

a container for holding said device in a predetermined position;

an elongated arm member having cleaning means disposed on one side thereof for engaging and cleaning the surface of a record so as to remove dirt and other undesirable contaminants therefrom, said arm member configured such that when said device is disposed in said container, said arm member is inclined downwardly toward the outer periphery of said container;

a housing coupled to said arm member such that said device can be selectively rotated about a record to be cleaned;

a fluid reservoir coupled to said housing for supplying said cleaning means with a cleaning/conditioning fluid; and

means disposed in said housing for regulating the flow of said fluid to said cleaning means.

4,403,881

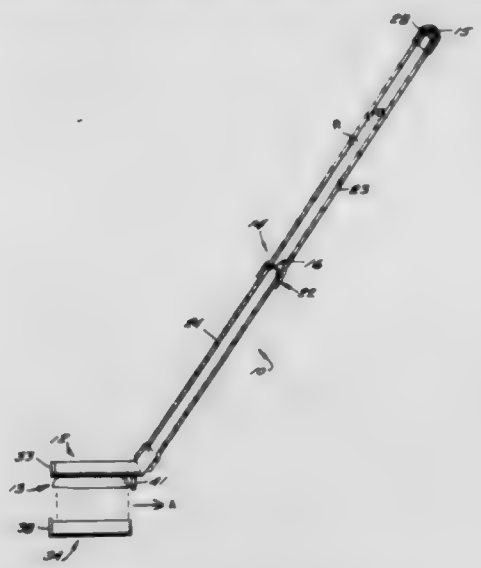
HAND HELD HERBICIDE APPLICATOR WITH FLEXIBLE CAP AND VALVE ELEMENT

John H. Keeton, P.O. Box 296, Campbellsville, Ky. 42718

Filed Jul. 16, 1981, Ser. No. 283,879
Int. Cl.³ B43K *5/00*; A01M *21/00*
U.S. Cl. 401—202 **8 Claims**

1. A liquid applicator comprising

a head portion including a sponge liquid applicator material and means for holding said sponge so that part of said sponge is within said head portion, and part of said sponge extends outwardly from the head portion, and said sponge has generally a figure 8 shape in end view, said means for holding said sponge comprising: means defining a slot in said head portion elongated in the same dimension as the dimension of elongation of said head portion; and further comprising a cover for said sponge portion extending outwardly from said head portion, said cover comprising an elongated generally tubular piece of plastic pipe circular in cross-section and open at one end and having means defining a slot therein, said slot elongated in the same dimension as the dimension of elongation of said cover; and wherein said head portion and said cover have means defining exterior surfaces thereof adjacent said slots, which surfaces substantially abut each other when said slots and said cover and said head portion are adjacent each other and extend in the same dimension, with said cover engaging and surrounding said portion of said sponge extending outwardly from said head portion;



a handle portion operatively connected at one end thereof to said head portion, the other end being free;

valve means consisting of fluid pressure responsive valve means operatively positioned between said liquid applicator material and said handle free end;

means defining a liquid reservoir adjacent said valve means, with liquid in contact with said valve means on the opposite side thereof as said liquid applicator material; and

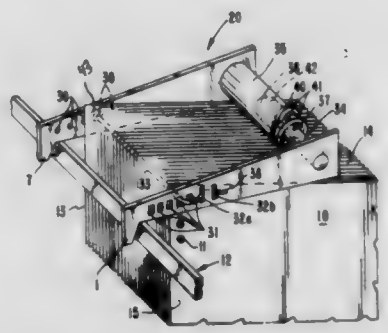
air pump means for pressurizing liquid in said reservoir to pass only a predetermined amount thereof through said pressure responsive valve means into contact with said liquid applicator material.

4,403,882

HANGER-BINDER

Michael P. Fleck, Grayrock Rd., Clinton, N.J. 08809

Filed Jul. 17, 1981, Ser. No. 284,325
Int. Cl.³ A47B *63/00*; B42F *15/00*
U.S. Cl. 402—4 **6 Claims**



1. A binder hanger for binding and hanging sheet materials comprising:

(a) Two side members each of which has a hook at one end to engage a suspension means;

(b) a binder member rotatably and slidably attached to one of the side members of sufficient length to span the distance between the side members for binding the sheets between the side members; and

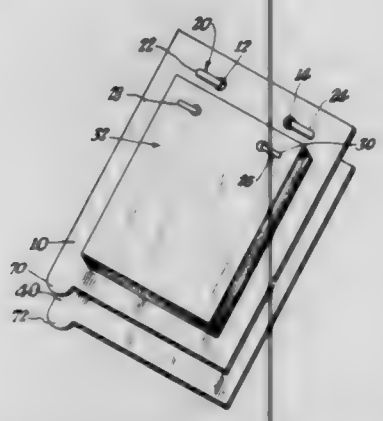
(c) a cross member which joins the side members at their ends opposite from where the hooks are located.

4,403,883

PAPER FASTENER DEVICE SYSTEM

Georgia L. Sorin, 2009 N. Park Rd., Hollywood, Fla. 33021

Continuation of Ser. No. 98,833, Nov. 30, 1979, abandoned. This application Sep. 11, 1981, Ser. No. 301,182
Int. Cl.[3] B42F *13/00*
U.S. Cl. 402—79 1 Claim



1. A paper fastener system for supporting filed items comprising:

file member for storing the filed items,

a plurality of carrier means each including a body portion,

a first connecting means connected to and between said file member and each said paper carrier means, and

a second connecting means connected to each said body portion and spaced apart from said first connecting means,

said first connecting means including a foldable metal fastener and holes in each body portion for removably connecting said paper carrier means to said file member, whereby the filed items removably connected on one said body portion may be removed separately without removal of other filed items on another paper carrier means,

at least two holes in each said body portion for removably connecting each said paper carrier means from said file member,

each said second connecting means includes at least two connecting openings spaced apart from said first connecting means, and a mating item fastener means for connecting each said body portion to said filed items on each said paper carrier means,

said mating item fastener means is a foldable flat metal paper fastener,

said body portion is a card, and

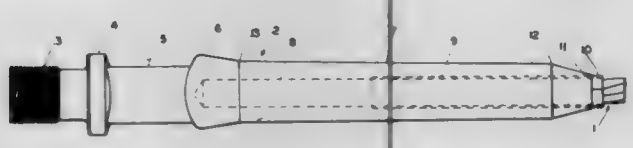
said card includes an index tab.

4,403,884

WIRE ASSEMBLIES FOR REPETITIVE, CONTINUOUS CYCLE, TENSILE LOAD CONDITIONS, PARTICULARLY SUCKER RODS FOR OIL WELLS

Kenneth C. Barnes, Orange Park, Fla., assignor to Florida Wire and Cable Company, Jacksonville, Fla.

Filed Mar. 18, 1981, Ser. No. 245,139
Int. Cl.[3] B25G *3/28*; F16G *11/00*
U.S. Cl. 403—284 21 Claims



1. A sucker rod section assembly for connection with other sucker rod sections to form a sucker rod string for use in actuating a pump in a well, said sucker rod section assembly comprising:

an elongate metallic member of multi-wire steel strand;

first and second end pieces mounted on the ends of said elongate member;

each end piece having means for connection with an end piece of an adjacent section to form a sucker rod string;

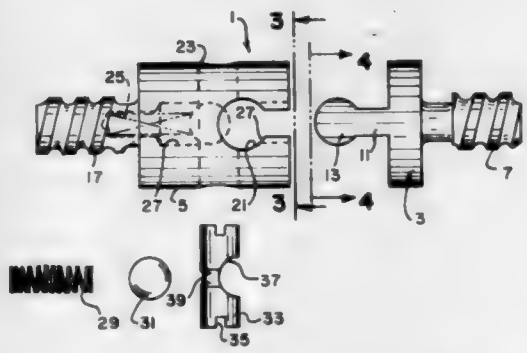
at least one of said end pieces comprising a steel body having a passageway formed therein and opening from one end thereof, one end portion of said steel strand being disposed in said passageway and embraced by the passageway walls, said steel body being substantially continuously deformed into gripping engagement with said end portion of said steel strand, said deformation being continuous but non-uniform such that the degree of gripping engagement over at least part of the length of said end portion continuously and progessively increases (in progressing) in the direction from the open end of said passageway toward the terminal end of said end portion of the steel strand such that when said one end piece and said steel strand are placed under tensile load there is a relatively gradual and continuously progressive transfer of load from the steel strand to said one end piece along said end portion, and hence a continuous relatively gradual load transition in the end portion of said steel strand so as to reduce the possibility of fatigue failure under repetitive tensile loading.

4,403,885

CABLE CONNECTOR

Larry F. Babb, Lorain County, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 9, 1981, Ser. No. 252,312
Int. Cl.[3] F16D *1/00*
U.S. Cl. 403—317 15 Claims



1. In a cable connector for flexible rods or the like, said connector including a first coupling member and a second coupling member, each of said coupling members including means at one axial end thereof for connecting said member to a flexible rod or the like,

said first member comprising, at the second axial end thereof, a transversely elongated male member having a neck and an enlarged head, said head having an aperture through it generally perpendicular to the direction of its elongation,

said second member comprising, at the second axial end thereof, a transverse slot proportioned to receive said head and neck of said first member for preventing axial separation of said first and second members when said head is in said slot, said second member further comprising a transverse bore extending generally perpendicular to said slot, said bore and said aperture in said head being at least partially aligned when said male member is received in said slot, and

a pin positionable through said bore and said aperture to lock said first and second members by preventing sliding movement of said male member in said slot,

the improvement wherein said aperture in said head of said first member extends through said second axial end of said first member, wherein said bore in said second member intersects a portion only of said slot, wherein said pin

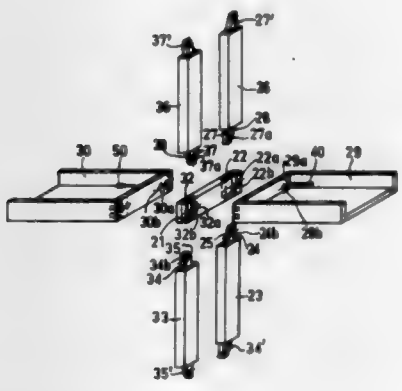
incudes a cut-out on a lateral side thereof, said cut-out being sized to permit said male member to slide out of said slot when said cut-out is generally aligned with said slot, wherein said pin is movable in said bore from a locking position in which it prevents separation of said male and female members to an unlocking position in which said cut-out is generally aligned with said slot, wherein said second member comprises an axially extending blind bore opening into said bore for said pin, and wherein said second member further comprises detent means for holding said pin in said bore, said detent means comprising a coil spring in said blind bore.

4,403,886

NOVEL MORTISE-AND-TENON TYPE JOINT FOR FURNITURE

Roland Haeusler, 14 rue Adrien Damalix, 94410 St Maurice, France

Filed Mar. 5, 1982, Ser. No. 355,111
Claims priority, application France, Mar. 10, 1981, 81 04746
Int. Cl.³ F16B *1/00*; F16D *1/00, 3/00*
U.S. Cl. 403—217 **13 Claims**



1. A mortise-and-tenon type joint system for assemblying three or more components together, said mortise-and-tenon joint system comprising mortise means defining at least one cavity means formed in a first component and a pair of tenon means formed on two other components, respectively, said cavity means and tenon means being of mating configuration, said pair of tenon means being received in said cavity means in opposed relation with a mutual contact surface inside said cavity means, and the volume of said pair of tenon means being substantially equal to the internal volume of said cavity means.

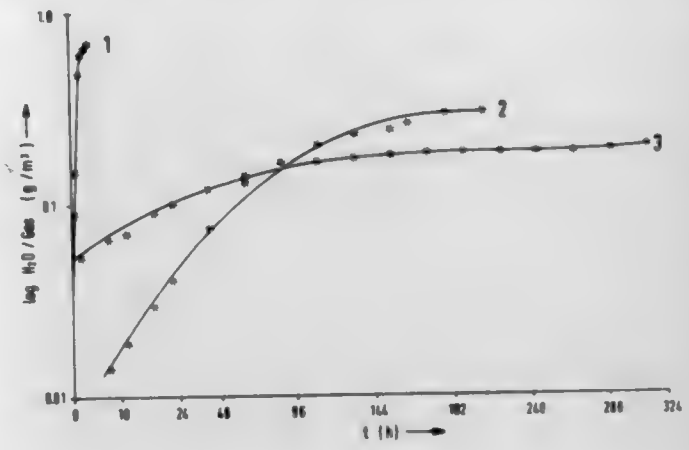
4,403,887

METHOD OF COVERING THE SUMP OF UNDERGROUND CAVITIES

Karl Gloria, Hattingen; Alexander-Barbu Costinescu-Tataranu, Essen; Wilhelm Schuster, and Jürgen Wittekind, both of Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Ruhrgas Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,736
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1980, 3021064
Int. Cl.³ B65G *5/00*
U.S. Cl. 405—53 **5 Claims**

1. A method of producing an underground cavity with a sump in a salt dome to store gaseous or liquid non-aqueous substances, said method comprising in combination the steps of introducing water into the salt dome to form brine, removing as much brine as possible leaving the sump therein, and covering said sump with a layer of highly viscous crude oil which is at least 1 cm thick below the stored substances to form a separation layer between the stored substances and the brine sump to prevent any transition of water respectively water vapor from the sump into the stored substances, said crude oil containing at most 7% hydrocarbons having up to 5 C-atoms in a molecule thereof, said crude oil being heavier than the stored



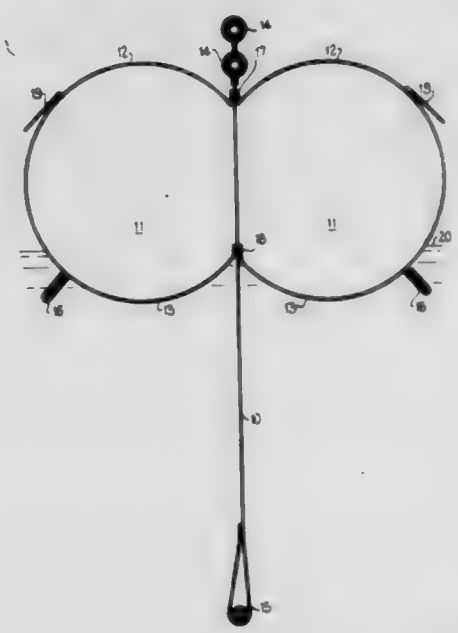
substances though lighter than the brine sump and having a specific gravity at 20° C. of at most 1.2 g/cm³.

4,403,888

OIL CONTAINMENT BOOMS

Raymond G. Teasdale, Bath, England, assignor to National Research Development Corporation, London, England

Division of Ser. No. 2,304, Jan. 10, 1979, Pat. No. 4,325,653.
This application Apr. 1, 1981, Ser. No. 249,862
Claims priority, application United Kingdom, Jan. 12, 1978, 1318/78
Int. Cl.³ E02B *15/04*
U.S. Cl. 405—68 **10 Claims**



6. A restowable oil containment boom including double side-by-side buoyancy chambers, each chamber having an outer wall consisting of upper and lower wall portions defining a longitudinal fold region therebetween, means for pressurizing the chambers, a longitudinal skirt having upper and lower portions extending respectively upwardly and downwardly from between respective points of attachment of the buoyancy chambers and an inner wall portion extending between said points of attachment, the upper and lower portions of said skirt having laterally thickened upper and lower edge regions respectively, the length of the upper wall portion exceeding the length of the lower wall portion by an amount equal to the length of said inner wall portion so that each chamber may lie substantially flat against a respective side of the skirt when the boom is deflated, the said upper and lower edge regions being thicker than and accommodating therebetween the buoyancy chambers when deflated and reeled thereby facilitating unreeling and reeling of the boom during deployment and recovery

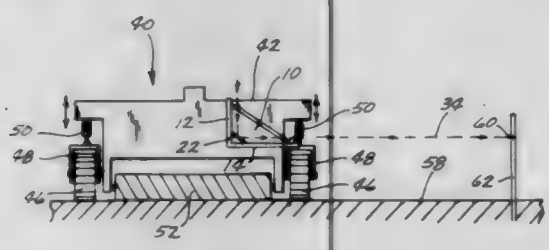
thereof, and means for tensioning the lower portion of the skirt after deployment of the boom.

4,403,889

GRADE CONTROL ALIGNMENT DEVICE AND METHOD

John A. Gillotti, 4103 SW. 34 St., Des Moines, Iowa 50315

Filed Jun. 8, 1981, Ser. No. 271,520
Int. Cl.³ E01C *19/00, 3/06*
U.S. Cl. 404—72 **8 Claims**



6. A method for controlling the grade of a working implement of a machine, wherein said machine includes means for automatically controlling the grade of a working implement of the machine as the machine travels over a surface and means for overriding said automatic grade control means, wherein the automatic grade control senses and is responsive to the relative position of the working implement with respect to a first grade reference line disposed on a first transverse side of the machine, and said first grade reference line being disposed substantially parallel to the direction of travel of the machine, the method comprising the steps of:

mounting a visual alignment device on said machine, said alignment device including a sighting reference and means for adjusting said alignment device to visually align a grade reference line and said sighting reference; said sighting reference including a support structure attached to said machine, a first sight pin attached to said support, and a second sight pin attached to said support and spaced from said first sight pin, such that said first and second sight pins are angularly sighted and visually aligned with a grade reference line; and said support including a first section and a second section angularly disposed with respect to said first section, and wherein said first sight pin is attached to said first section and said second sight pin is attached to said second section;

actuating the automatic grade control;

adjusting said alignment device to visually align said grade reference line and said sighting reference;

periodically viewing the alignment device to determine if the visual alignment of the grade reference line and the sighting reference is maintained as the machine travels over a surface; and

actuating said automatic grade control overriding means to adjust the grade of the working implement when said visual alignment is not maintained, to restore said visual alignment.

4,403,890

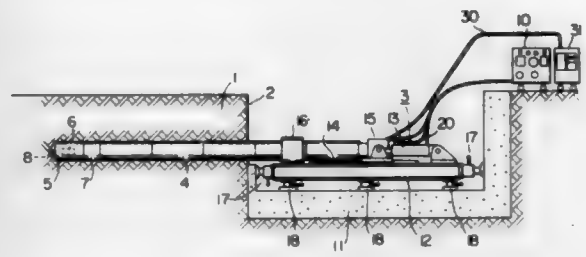
METHOD OF LAYING PIPE UNDERGROUND AND SYSTEM THEREFOR

Naoki Miyanagi, Chiyodamura, and Kojiro Ogata, Ishioka, both of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1982, Ser. No. 355,107
Claims priority, application Japan, Mar. 9, 1981, 56-32449
Int. Cl.³ F16L *1/00;* E21B *3/06*
U.S. Cl. 405—184 **5 Claims**

1. A method of laying a pipe underground wherein the pipe to be laid underground has attached to its leading end a head formed at its front surface with a pointed end to facilitate penetration of the earth and has a propelling force exerted on its rear end so as to obtain penetration of the earth by the pipe, characterized by the steps of:

causing said head to move in vibratory movement, measuring the vibration of the head; and



increasing the propelling force exerted on the pipe when the magnitude of the vibration of the head is high and decreasing the propelling force when the magnitude of the vibration of the head is low.

4,403,891

STABILIZER FOR EXCAVATED SURFACE

Shinkichi Ohoka, and Sakae Sano, both of Tokyo, Japan, assignors to Toa Grout Kogyo Co., Ltd. and Mitsui Toatsu Chemicals, Inc., both of Tokyo, Japan

Filed Oct. 9, 1980, Ser. No. 195,447
Int. Cl.³ E02D *3/12*
U.S. Cl. 405—264 **1 Claim**

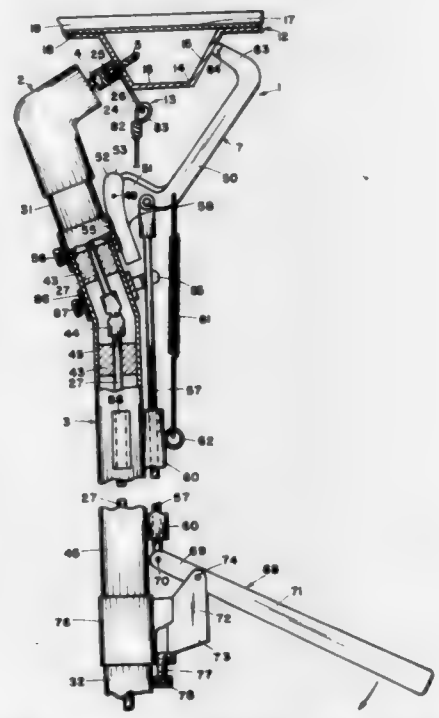
1. The process for stabilizing an excavated surface to provide good membrane formation ability therein and good strengthening and reinforcement of the soil structure adjacent to said surface, comprising adding to said excavated surface a stabilizer consisting of 300 parts by weight of water, 0.1 to 3.0% by weight of highly hydrated beaten natural cellulose fibers, based on the water content of the stabilizer, bentonite, a foaming agent and carboxymethylcellulose.

4,403,892

APPARATUS FOR DRIVING FASTENERS AND OTHER INSERTABLE OBJECTS INTO REMOTE STRUCTURES

Patrick J. Kane, 6725 Caris Rd., Vestaburg, Mich. 48891

Filed Nov. 3, 1980, Ser. No. 202,937
Int. Cl.³ B23B *39/14, 47/30;* E21C *9/00, 11/00*
U.S. Cl. 408—95 **32 Claims**



1. An apparatus for driving fasteners, drills, bits and other similar insertable objects into remote, overhead strutures, comprising:

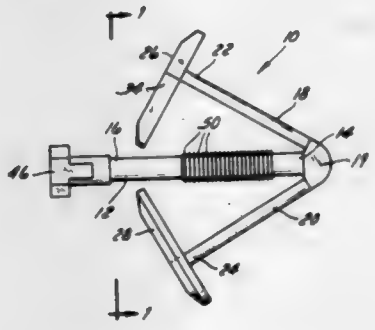
a drive head having means for detachably retaining one such insertable object therein at a predetermined orientation;
means for powering said retaining means to drive the object into a surface of a remotely disposed, overhead structure;
an elongate support having said drive head mounted on one end thereof, with the other support end adapted for grasping; said support having a length sufficient to permit a user to reach a remotely disposed, overhead structure with said drive head;
means for controlling said power means from said support other end;
a clamping arm mounted adjacent said drive head, and being movable with respect thereto for converging and diverging one end of said arm with said drive head; and
a clamping arm controller mounted on the other end of said support, operable connected with said clamping arm, and including means for opening and closing said clamping arm independently of movement of said support, whereby during object insertion, said support is held so that said clamping arm is positioned abutting a portion of the remote structure disposed generally opposite from the object surface, and said controller is manipulated to converge said clamping arm one end with said drive head to apply tip pressure to the object, and resist reaction forces developed therebetween.

4,403,893

PULL-OUT TYPE EXPANSION FASTENER

Burnell J. Wollar, Barrington, Ill., assignor to Phillips Plastics Corp., Phillips, Wis.

Filed Mar. 2, 1981, Ser. No. 239,315
Int. Cl.³ F16B *13/04*
U.S. Cl. 411—38 **2 Claims**



1. A one-piece, plastic fastener for lockable engagement in an opening in a workpiece, said fastener comprising a stem having an inner end and an outer end, a pair of arms formed integrally with and extending from said inner end, said arms positioned at an acute angle relative to said stem, said arms each having a free end which terminates in an integrally formed head portion, said head portions being cooperatively engageable to form a complete head having an orifice embracing said stem, said arms being swingable about said inner end of said stem and in a plane containing the axis of said stem, said arms further being biased radially outwardly from said stem in said plane and to said position at an acute angle relative to said stem, said arms being of a smaller width along said plane than in a direction transverse to said plane whereby said arms are readily deformable in said plane and resist deformation in said transverse direction, and wherein said head portions are cooperable along interengageable surfaces that are oblique to said plane, said oblique surfaces upon interengagement tending to translate forces by said radially outwardly biased arms and along said plane into forces transverse to said plane; said arms resisting said transverse forces to thereby resist shiftable movement of said head portions away from each other, said stem and arms being insertable into said opening in said workpiece to locate said head against an outer side of said workpiece, said stem being positively withdrawn outwardly through said opening and said orifice to thereby cause said arms to swing laterally and abut firmly against the inner side of said workpiece, said outer end of said stem having means for engagement by a tool for said outward withdrawal of said stem, and serration means formed on said stem and extending through said orifice and engaging said head to maintain said fastener in said lockable engagement with said workpiece when said stem is forcibly shifted through said opening and orifice.

4,403,894

ROCK BOLT EXPANSION ANCHOR HAVING WINDENED EXPANSION RANGE

Carl A. Clark, Liverpool, N.Y., assignor to The Eastern Company, Naugatuck, Conn.

Filed Feb. 9, 1981, Ser. No. 232,472
Int. Cl.³ F16B *13/06*
U.S. Cl. 411—47 **9 Claims**



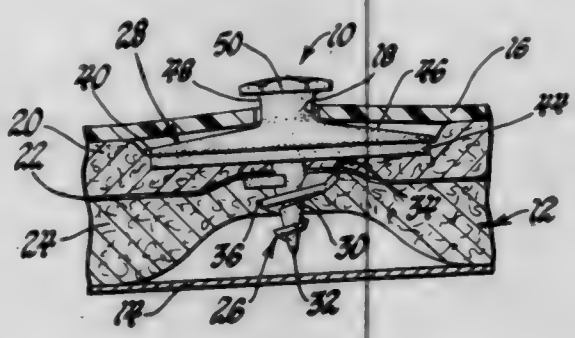
1. An expansion anchor assembly for insertion in a rock formation drill hole having a diameter which may vary between relatively wide dimensional limits, said assembly being effective to expand into engagement with the surrounding wall of said drill hole and provide at least a minimum desired holding force over the entire range of dimensional limits of said drill hole diameter, said assembly comprising:
(a) a hollow expansion shell having upper and lower ends and a plurality of portions arranged concentrically about a central axis;
(b) a nut having upper and lower ends and an internally threaded, central opening extending therethrough;
(c) each of said portions having an internal surface facing said central axis and tapered from said upper end of said shell toward said central axis at a first angle for a first axial portion of its length and at a second angle for a second axial portion of its length;
(d) said nut having an external surface tapered from said lower end thereof away from the axis of said opening at a third angle for a first axial portion of its length, substantially equal to the length of said first axial portion of said shell portions, and at a fourth angle for a second axial portion of its length;
(e) said first angle being greater than said second angle, and said third angle being greater than said fourth angle; and
(f) means retaining said shell portions and nut in assembled relation prior to expansion with said lower end of said nut inserted into said upper end of said shell by a distance substantially equal to said first axial portion of the length of each of said shell and nut, the surfaces of said shell and nut in said first axial portions of each being in contact;
(g) the relative lengths of said first and second axial portions of said shell portions and said nut, and the values of said first, second, third and fourth angles permitting expansion of said assembly from an initial diameter prior to expansion, to a minimum expanded diameter in engagement with the surrounding wall of a drill hole of a first diameter, and to a maximum expanded diameter in engagement with the surrounding wall of a drill hole of a second diameter, the difference between said minimum and maximum diameters being at least ¼".

4,403,895

VEHICLE FLOOR MAT RETAINER

David L. Caldwell, Sunfield, and Edward C. Schelling, Leslie, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 1, 1981, Ser. No. 269,345
Int. Cl.[3] F16B 5/02, 35/04
U.S. Cl. 411—378 2 Claims



1. A retainer for securing a floor mat to mass backed carpet of the type having a carpet layer and a padding layer and installed on a vehicle floor comprising,

a shank having a length less than the distance between the upper face of the carpet layer and the vehicle floor and including a self-piercing one end to pierce the layers,

a tapered high lead spiral thread on the shank and merging at its apical end into the self-piercing one end of the shank to self-thread the shank through the carpet layer and into the padding layer,

the thread merging at its basal end into a first partial shoulder extending radially of the shank and located between the carpet and padding layer when the shank is self-threaded through the carpet layer and into the padding layer,

a second radial extending shoulder on the shank spaced from the first shoulder a distance less than the thickness of the carpet layer to compress the carpet layer therebetween and recess the second shoulder into the upper face of the carpet layer and locate the self-piercing one end of the shank relative to the vehicle floor and avoid bulging of the carpet, and

a headed portion extending from the second shoulder and receivable in an opening in the floor mat to thereby seat the floor mat on the second shoulder and retain the floor mat against shifting relative to the carpet layer.

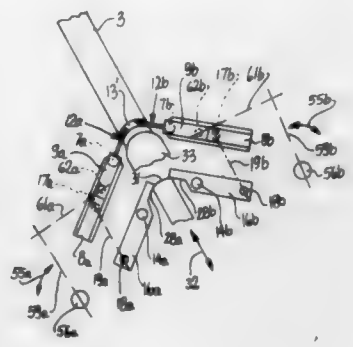
4,403,896

APPARATUS FOR CONVERTING HOLES IN A STACK OF OVERLAPPING LEAVES INTO ARCUATE PASSAGES

Paul Fabrig, Neuffen, Fed. Rep. of Germany, assignor to Womako Maschinenkonstrucktionen GmbH, Nürtingen, Fed. Rep. of Germany

Filed Jun. 17, 1980, Ser. No. 160,440
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952183
Int. Cl.[3] B42B 5/08
U.S. Cl. 412—38 28 Claims

1. Apparatus for converting elongated open-ended hole which extend transversely of an elongated edge face of a stack of overlapping leaves into arcuate passages each consisting of at least partly registering perforations in the leaves of the stack, comprising means for locating the stack in a predetermined position so that at least a portion of its edge face and the ends of at least some of its holes are accessible; first and second converting means disposed at the opposite sides of the stack in said position and each including at least one mandrel in register with the corresponding end of the hole at the respective side of the stack in said position, means for moving the respective mandrel into and from the registering hole, and means for supporting the respective mandrel for pivotal movement about an axis which is substantially parallel to the edge face of the stack in said position; and means for pivoting said mandrels about the respective axes through the medium of the leaves of the stack in said position, including a shaping member having a convex surface, and means for transporting said surface of said shaping member into engagement with the edge face of the stack in said position while said mandrels extend into the



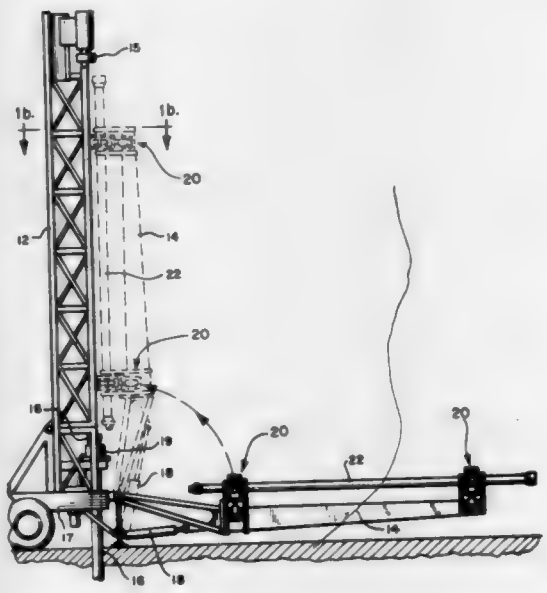
registering holes so that said edge face assumes a concave shape which is complementary to said convex surface as a result of shifting of at least some leaves of the stack in said position whereby the thus shifted leaves pivot said mandrels about the respective axes.

4,403,897

SELF-CENTERING CLAMP FOR DOWN-HOLE TUBULARS

Clyde A. Willis, Wichita Falls, Tex., assignor to Walker-Neer Manufacturing Co., Inc., Wichita Falls, Tex.

Filed Aug. 29, 1980, Ser. No. 182,770
Int. Cl.[3] E21B 19/14
U.S. Cl. 414—22 35 Claims



1. A self-centering clamp for clamping down-hole tubulars of various diameters, said clamp comprising:

first and second opposed clamping members;

means for guiding the first and second clamping members along a first line;

first and second opposed beams coupled to the first and second clamping members, respectively, each of said first and second beams having a pivot point;

means for pivotably supporting the first and second beams at the respective pivot points such that a constant separation is maintained between the pivot points;

means for guiding the support means along a second line; and

means for pivoting the first and second beams about the respective pivot points to move the first and second clamping members symmetrically along the first line.

4,403,898

PIPE PICK-UP AND LAYDOWN MACHINE

Carroll R. Thompson, 2818 W. 42nd St., Odessa, Tex. 79760

Filed Dec. 31, 1981, Ser. No. 336,250
Int. Cl.³ E21B *19/14*
U.S. Cl. 414—22 2 Claims



1. A pipe pick-up and lay-down machine for transporting joints of pipe between positions adjacent a pipe storage rack and a rig floor elevated above the pipe storage rack comprising:

(a) a longitudinally extending base support means adapted to be set in a generally horizontal position for receiving lengths of pipe from adjacent pipe storage racks;

(b) track means secured to the forward end of said longitudinally extending base support means and inclined upwardly and outwardly from the end of said base support means to a position adjacent one side of an elevator floor of a drilling rig;

(c) longitudinally extending trough trestle means having pipe receiving means telescopically mounted therein with means for telescopically extending and retracting said pipe receiving means with respect to said trough trestle means;

(d) a carriage pivotally secured to one end of said trough trestle means with roller means on said carriage for engaging said track means;

(e) hydraulic lift means connected to said carriage for moving said carriage and the forward end of said trough trestle means secured thereto upwardly and downwardly along said inclined track means from a position nested in said base support means to a position adjacent said side of the elevator rig floor;

(f) longitudinally extending rear track means near the end of said base support means opposite two said inclined track means and having stop means at the end of said track means nearest said inclined track means;

(g) articulated leg means having one end pivotally connected to said trough trestle means and the other end received in said longitudinally extending rear track means whereby said articulated leg means is moved along said longitudinally extending track means as the front end of said trough trestle means is elevated along an inclined track means until said articulated leg means is stopped by said stop means and thereafter continued upward movement of said carriage along said inclined track means will cause said articulated leg means to pivot upwardly raising the rear end of said trough trestle.

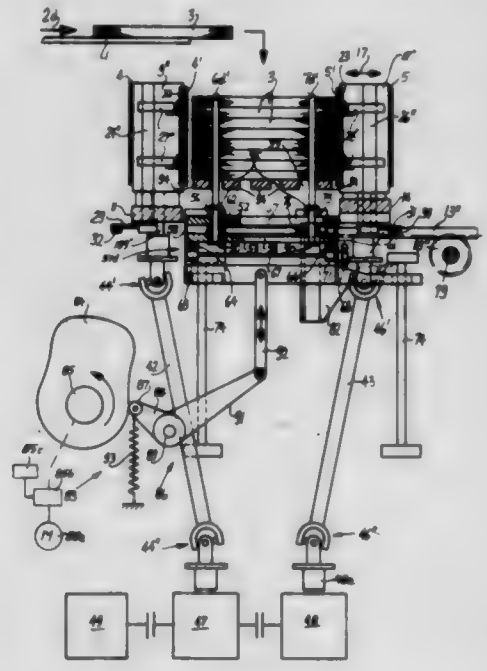
4,403,899

APPARATUS FOR GATHERING WRITING PADS OR THE LIKE

Siegfried Lampe, Ellerbek, and Heinz Lehmann, Hamburg, both of Fed. Rep. of Germany, assignors to E.C.H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,563
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1980, 3021124
Int. Cl.³ B65H *31/30*
U.S. Cl. 414—35 37 Claims

1. Apparatus for gathering stacks of pads or analogous commodities, comprising a row of neighboring receptacles having a stationary floor; means for feeding commodities into said receptacles so that the receptacles accumulate stacks of commodities; and means for removing the stacks from said receptacles, including first and second conveyor means flanking said row, each of said conveyor means comprising an endless flexible element and upright rotary guide members for such flexible element, each of said flexible elements having an elongated reach adjacent to the respective side of said row, at least a portion of at least one of said conveyor means being shiftable between a first position nearer to the other of said conveyor means to thereby establish motion transmitting contact be-



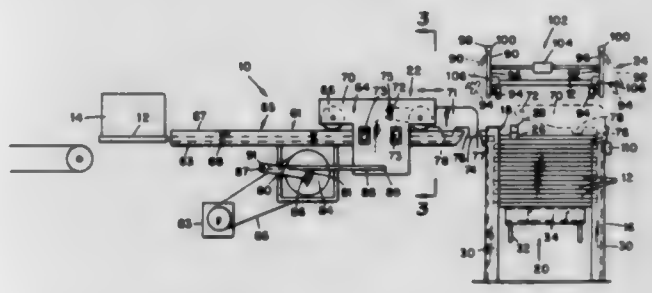
tween the stacks and said conveyor means and a second position distant from said other conveyor means, means for shifting said portion of said one conveyor means between said first and second positions including means for moving said reach of said one conveyor means toward and away from said other conveyor means, said moving means including a reciprocable back support adjacent to that side of the respective reach which faces away from said row, and means for advancing said conveyor means to remove the stacks from said receptacles in the longitudinal direction of said row on movement of said portion of said one conveyor means to said first position.

4,403,900

PALLET STORING AND DISTRIBUTING APPARATUS

Paul M. Thomas, Paradise Valley, Ariz., assignor to Builders Equipment Company, Phoenix, Ariz.

Filed Jan. 16, 1981, Ser. No. 225,713
Int. Cl.³ B65G *60/00*
U.S. Cl. 414—137 10 Claims



1. An apparatus for storing a plurality of pallets and for distributing pallets one at a time to a work station, comprising:

a vertically oriented magazine having an open top end for holding a plurality of pallets stacked one upon the other;

pallet lift means disposed for movement in the vertical direction to selectively move pallets stored in the magazine in a travel path upwardly to the open top end of said maga-

zine and downwardly away from the open top end of said magazine;

pallet unloading means movable in a horizontal direction disposed adjacent the open top end of the magazine for removing pallets one at a time from the top open end of the magazine;

said pallet unloading means including:

opposed pallet support means extending generally parallel to the plane of the pallets in the magazine; and;

reciprocating means for sliding the top pallet from the magazine onto said pallet support means;

pallet loading means disposed above the open top end of the magazine for selectively loading pallets downwardly into the magazine through its open top end; and,

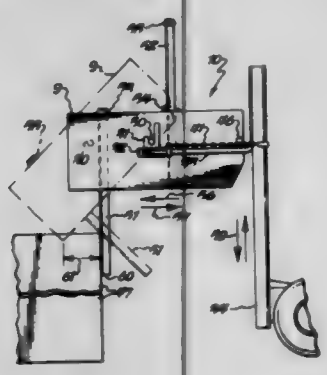
means disposed outside of the travel path of the pallets for sensing the position of the uppermost pallet relative to said pallet unloading means, and means operatively connecting said sensing means to said pallet lift means to raise said pallet lift means when the uppermost pallet is positioned below a predetermined low level and to lower said pallet lift means when the uppermost pallet is positioned above a predetermined high level to thereby maintain the uppermost pallet in position to slide onto said opposed pallet support means.

4,403,901

DUMP BIN

John F. Kopczynski, 1671 Sweeney St., North Tonawanda, N.Y. 14120

Filed Oct. 6, 1980, Ser. No. 194,612
Int. Cl.[3] B65G *65/23;* B66F *9/19*
U.S. Cl. 414—422 17 Claims



1. A dump bin comprising a housing including a floor and a plurality of sides extending upwardly from said floor, pivot means on said housing for permitting said housing to tip, bearing means for pivotally mounting said pivot means, means for receiving a device for lifting said bin, retractable-extensible means, and mounting means for mounting said retractable-extensible means relative to said housing for retaining said retractable-extensible means in a retracted higher position with respect to said floor when said bin is located on a supporting surface which engages a bottom portion of the bin and for permitting said retractable-extensible means to be moved by gravity to assume an extended position at a lower elevation with respect to said floor in response to lifting of said bin for dumping and for permitting movement of said retractable-extensible means to a retracted position aganst the force of gravity upon engagement of said retractable-extensible means with said supporting surface as said housing is being lowered, said retractable-extensible means in said extended position causing said housing to pivot about said pivot means as said bin is moved toward an external member after said retractable-extensible means has abutted said external member.

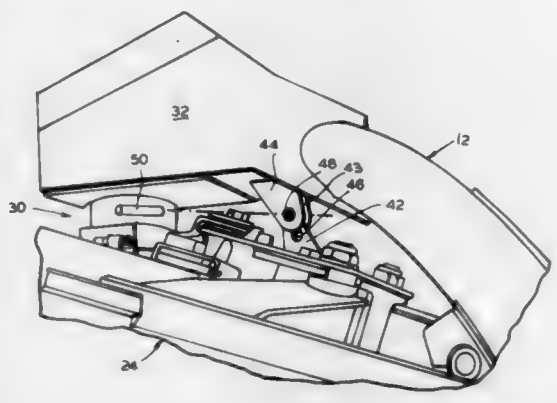
17. A dump bin comprising a housing including a floor and a plurality of sides extending upwardly from said floor, pivot means on said housing for permitting said housing to tip, bearing means for pivotally mounting said pivot means, means for receiving a device for lifting said bin, an elongated rod, means pivotally mounting said elongated rod on said housing for pivotal movement to a position wherein a portion of said elongated rod pivots to a predetermined lower elevation relative to said floor after said bin has been lifted by said device for lifting said bin than the elevation which said elongated rod occupies when said bin is resting on a supporting surface, and means on said housing for limiting pivotal movement of said elongated rod when said portion of said elongated rod has reached said predetermined lower elevation.

4,403,902

MEANS FOR CONVERTING A GRAPPLE SKIDDER TO A CABLE SKIDDER

Ronald Sapelak, Belmont, Canada, assignor to Clark Equipment Company, Buchanan, Mich.

Filed Jan. 26, 1982, Ser. No. 342,862
Int. Cl.[3] B66B *1/42*
U.S. Cl. 414—569 7 Claims



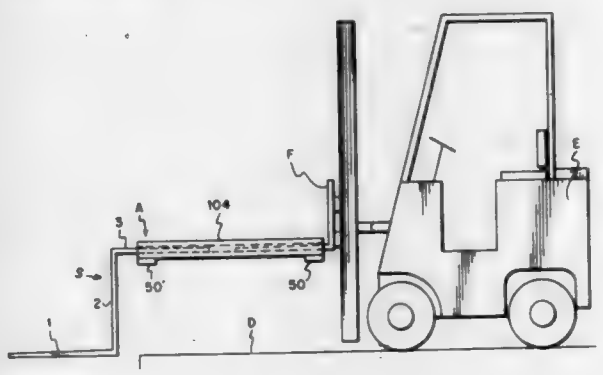
1. An improved grapple boom assembly for a skidder vehicle adaptable from a grapple skidder configuration to a cable skidder configuration wherein the grapple boom assembly comprises a boom having a relatively narrow support base mounted on the rear of the frame of the skidder vehicle, the support base having grapple mounting means at its upper end for a grapple mechanism mounted thereon, the grapple mechanism having grapple arms associated therewith, the grapple mechanism being pivotable on the grapple mounting means so that a side portion of the grapple mechanism may engage a lower portion of the mounting means to effect a solid connection therebetween to retain the grapple mechanism in a relatively parallel configuration with the grapple mounting means, and the juxtaposition of the grapple mechanism and the boom permitting the skidder vehicle to operate in a cable skidder configuration.

4,403,903

EXTENSION MEMBER FOR SURROGATE FORKS FOR A FORK LIFT TRUCK

Arthur P. Cary, P.O. Drawer AC, Hutchins, Tex. 75141

Continuation-in-part of Ser. No. 962,552, Nov. 20, 1978, Pat. No. 4,290,729. This application Sep. 21, 1981, Ser. No. 303,727
Int. Cl.[3] B66F *9/12*
U.S. Cl. 414—607 7 Claims



1. In a fork lift truck having forwardly extending forks,

a. surrogate fork members comprising an upper horizontal portion, a vertically extending central portion, and a lower surrogate fork portion, operatively positioned ahead of said forks,

b. said surrogate fork portions of said surrogate fork members extending forward and substantially parallel to said truck forks,

c. an extension member intermediate said truck forks and said surrogate fork members and joining them in operative relationship,

d. said extension members comprising channels overlying portions of said truck forks and portions of said upper horizontal portions of said surrogate fork members,

e. forward and rearward straps of a width shorter than their length attached to and extending across the underside of said channels near the ends thereof, wherein the rearward straps underlie said forks and the forward straps underlie said upper horizontal portion of said surrogate fork members.

4,403,904

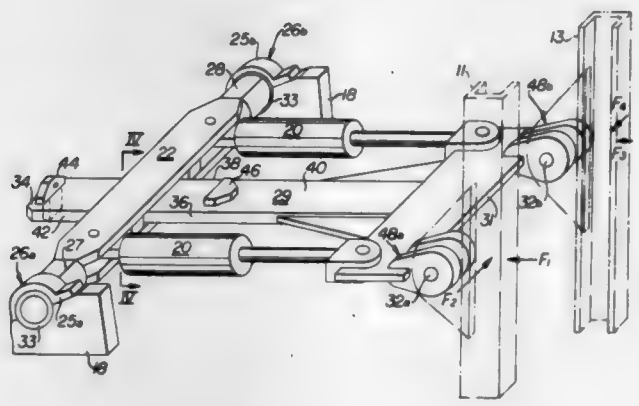
LIFT TRUCK GUIDE ASSEMBLY

Charles R. Chelin, Mentor, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Continuation-in-part of Ser. No. 142,300, Apr. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 787,818, Apr. 15, 1977, abandoned. This application Jun. 18, 1981, Ser. No. 274,937

Int. Cl.³ B65G *1/00, 65/00*

U.S. Cl. 414—634 **11 Claims**



1. In a material handling device having a frame, a mast assembly having a bottom end, first and second spaced upright members and a vertically movable material handling means mounted on said first and second spaced upright members, and connection means pivotally mounting said mast assembly adjacent the bottom end to said frame; the improvement comprising:

a guide bar having a pair of ends;

spaced support means pivotally mounting said pair of ends to said frame at a location spaced from said connection means;

an elongated movable guide tongue having a first end;

means pivotally mounting the first end of said tongue to said upright members at a location spaced from said connection means;

extensible power means for pivoting said mast assembly about said connection means, said extensible power means having first and second ends;

pivot means for mounting the first end of said power means to said first end of said tongue;

further pivot means for connecting the second end of said power means to said guide bar;

slide means for slidably receiving a portion of said guide tongue, said slide means being mounted on said guide tongue and operative to restrict movement of said power means and guide tongue in a substantially linear direction along their respective longitudinal dimension while pivoting said mast assembly about said connection means.

4,403,905

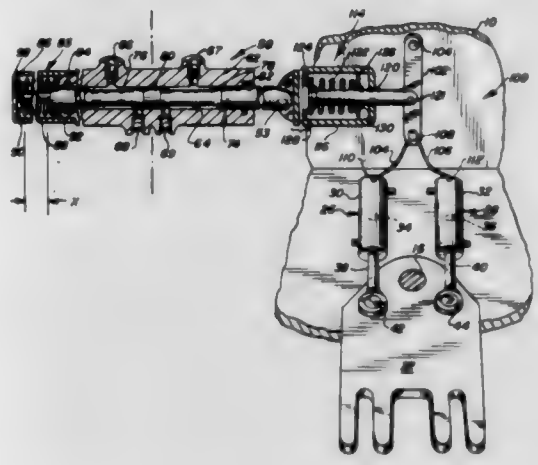
OPERATING MECHANISM FOR A SWING MECHANISM VALVE

Herman J. Maurer, and Carl O. Pedersen, both of Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Continuation-in-part of Ser. No. 180,311, Aug. 22, 1980, Pat. No. 4,341,501. This application Sep. 8, 1981, Ser. No. 300,183

Int. Cl.³ E02F *3/32*

U.S. Cl. 414—695.5 **6 Claims**



1. An improved hydraulic swing mechanism for a material handling implement having a frame, a swing tower pivotally supported by said frame for rotation about a vertical axis through an arc, and a boom supported by said swing tower, comprising:

first and second hydraulic motors each having one end pivotally connected to said frame and another end pivotally connected to said swing tower, each motor being extensible whereby extension and contraction of said motors pivot said swing tower relative to said frame,

control valve means operable by the implement operator to selectively supply pressurized hydraulic fluid in said first and second hydraulic motors for selectively rotating said swing tower relative to said frame,

sequencing valve means in fluid communication with said control valve means and said first and second hydraulic motors for selectively re-routing pressurized hydraulic fluid supplied from said control valve means to said first and second hydraulic motors, said sequencing valve means having a plurality of operating positions, and

valve operating means including an arm means pivotally connected to said frame and connected with each of said first and second hydraulic motors for pivotal movement of said arm means in response to pivoting of said motors with respect to said frame, and further including first and second flexible linkage means respectively connecting said arm means with said first and second hydraulic motor means whereby tensioning of one of said first and second flexible linkage means by pivoting movement of its respective hydraulic motor pivots said arm means, and

linkage means connecting said arm means to said sequencing valve means for selectively repositioning said sequencing valve means by pivotal movement of said arm means.

4,403,906

MATERIAL HANDLING APPARATUS

Vaino J. Holopainen, P.O. Box 806, Center Harbor, N.H. 03226

Filed Nov. 12, 1981, Ser. No. 320,462

Int. Cl.³ B66C *23/54*

U.S. Cl. 414—724 **7 Claims**

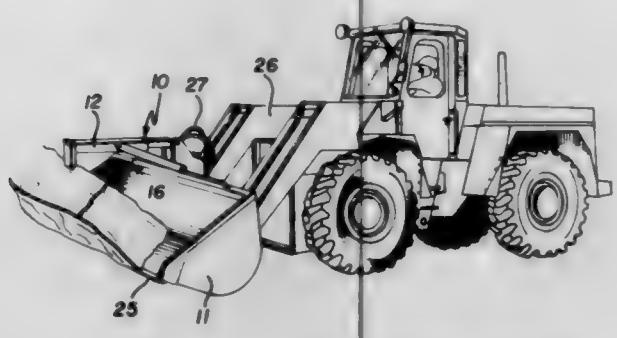
1. Material handling apparatus for use on a pivoted bucket, comprising:

(a) a bracket mounted on an upper edge of the bucket,

(b) a clamp arm mounted on the bucket for pivotal movement about one end, the clamp arm consisting of two

telescoping parts, one of said parts being pivotally connected at a first point to said bracket,

(c) a first hydraulic actuator located in the arm to produce telescoping movement between the parts, and



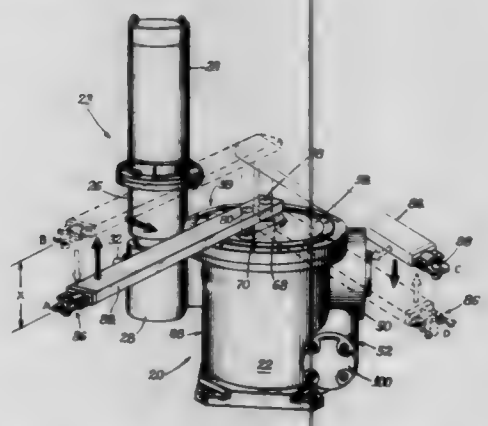
(d) a rigid non-extendable link pivotally connected at one end to the other of said parts and pivotally connected at its opposite end to the bracket at a second point which is spaced from said first point.

4,403,907

CAM-DRIVEN ROTARY PICK-AND-PLACE ASSEMBLY APPARATUS

Frank H. Koller, Norridge; Jeffrey P. Peterson, Evanston, both of Ill., and Robert E. Snizek, Colorado Springs, Colo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 18, 1981, Ser. No. 293,996
Int. Cl.³ B23Q *7/04*; B65G *47/90*
U.S. Cl. 414—744 R **7 Claims**



7. A rotary, pick-and-place assembly apparatus of the type including a housing; a constant-speed input shaft which carries a rotary cam and a lift cam; a follower wheel assembly rotatably-journaled on the housing and drivably-engaged with the rotary cam, the follower wheel assembly including a follower wheel and a pair of parallel guide shafts which are connected at their respective lower ends and which are slidably-received within bores formed in the follower wheel, whereby rotation of the rotary cam affects timed rotary oscillation of the follower wheel and the guide shafts along one direction; a lift shaft assembly rotatably-journaled on the housing and drivably-engaged with the lift cam, the lift shaft assembly including a radially-extending lift shaft clevis, whereby rotation of the lift cam affects timed oscillation of the lift shaft clevis along another direction which is generally normal to the one direction, the improvement comprising:

a toggle linkage assembly rotatably and pivotally connecting the guide shafts to the lift shaft clevis,

said toggle linkage assembly comprising bearing plate means and pivot clevis means,

said bearing plate means characterized as being rotatably movable with the guide shafts and pivotally connected to said pivot clevis means,

said pivot clevis means characterized as being pivotally mounted to the lift shaft clevis,

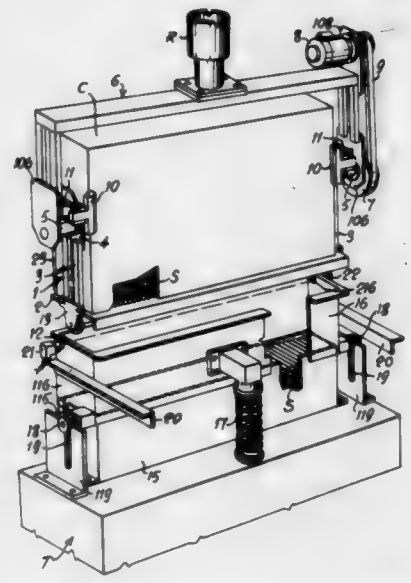
whereby said toggle linkage assembly transfers linear oscillation to the guide shafts when the lift shaft clevis is oscillated along the other direction, while permitting rotation of said guide shafts with and when the follower wheel assembly is oscillated along the one direction.

4,403,908

METHOD FOR THE EMPTYING OF CIGARETTE TRAYS INTO MAGAZINES

Italiano Cartoceti, Bologna, Italy, assignor to CIR S.p.A. Divisione Sasib, Bologna, Italy

Filed Jul. 23, 1980, Ser. No. 171,424
Claims priority, application Italy, Jul. 31, 1979, 12699 A/79
Int. Cl.³ B65G *65/24*
U.S. Cl. 414—786 **1 Claim**



1. A method for the emptying of trays filled with rod-like articles into hoppers, each tray presenting at least one discharge side for the discharge of the articles, characterized by the following steps:

(a) positioning a full tray, with the discharge side closed and directed downwardly, over the hopper;

(b) lowering said full tray until it reaches a lowered position at which the closed discharge side is substantially at the level of the articles already contained in the hopper;

(c) fully opening the discharge side of said full tray while maintaining said full tray at said lowered position; and

(d) raising the tray to its initial position.

4,403,909

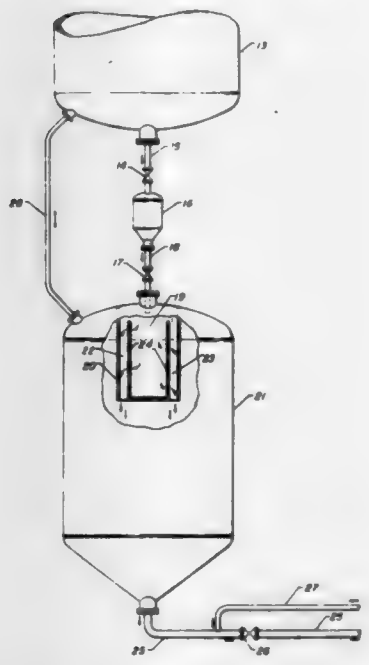
METHOD FOR DISCHARGING CATALYST PARTICLES FROM A MOVING BED SYSTEM AT A SUBSTANTIALLY STEADY FLOW RATE

Arthur R. Greenwood, Niles, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 132,970, Mar. 24, 1980, Pat. No. 4,308,238. This application Aug. 3, 1981, Ser. No. 289,575
Int. Cl.³ B01J *23/90, 4/00*; B65G *00/00*
U.S. Cl. 414—786 **4 Claims**

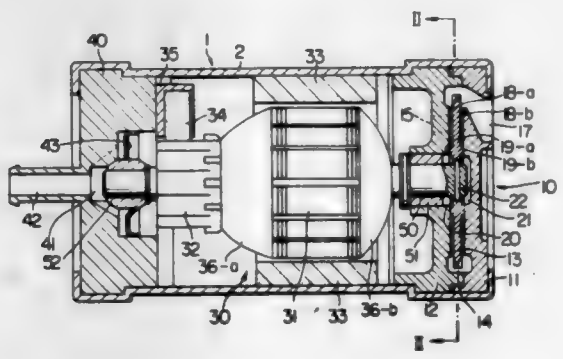
1. A method for the discharge of a periodic flow of a measured volume of catalyst particles in a moving bed catalyst system into a catalyst hopper, wherein said particles pass through a flow dampener vessel contained within said catalyst hopper, said dampener vessel comprising a cylindrical vessel having side walls possessing a pair of chordal formed catalyst passageways defined by a pair of spaced apart chordal baffles and said side walls of said vessel and a bottom outlet means below said passageways, said pair of spaced apart chordal baffles having a plurality of horizontally opposed and vertically spaced apart outlet means, said baffles being disposed on opposite sides of a plane containing the central axis of said vessel and being parallel thereto, and both connected with a horizontal plate, the space between said chordal baffles defining a central hold-up chamber above said horizontal plate; which method comprises:

(a) withdrawing said catalyst particles periodically from said moving bed system;
(b) introducing said particles into said hold-up chamber defined within said flow dampener vessel by said chordal baffles and interconnecting horizontal plate;
(c) withdrawing catalyst particles through said plurality of horizontally opposed and vertically spaced apart outlet



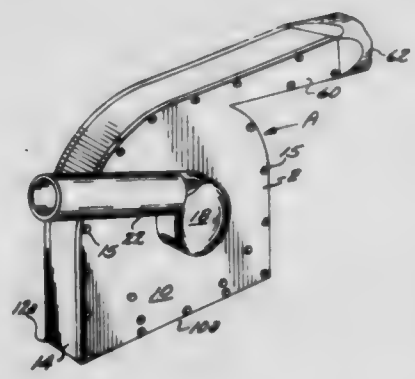
means into said catalyst passageways; wherein said withdrawal rate in any horizontal plane is controlled to equal up to about 50% of the average rate at which said particles are introduced to said catalyst particles hold-up chamber; and
(d) passing said catalyst particles in said catalyst passageways downward through said bottom outlet means and into said catalyst hopper.

4,403,910
PUMP APPARATUS
Kiyohiko Watanabe, Chiryu; Kazuma Matsui, Toyohashi; Yoshiyuki Hattori, Toyoake; Toshihiro Takei, Kariya; Toshiaki Nakamura, Anjo, and Shunaku Ohnishi, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Apr. 27, 1982, Ser. No. 372,377
Claims priority, application Japan, Apr. 30, 1981, 56-63071[U]
Int. Cl.³ F04D *5/00*
U.S. Cl. 415—53 T **1 Claim**



1. A pump apparatus comprising:
a regenerative pump means,
means operatively connected to said pump means for driving said pump means,
said pump means including a pump housing and a closed vane type impeller rotatably housed in said pump housing,
said pump housing cooperating with said impeller to define a substantial circumferential fluid passage surrounding outer peripheral portion of said impeller,
said pump housing provided therein with suction and discharge ports circumferentially spaced from each other and communicated with said circumferential fluid passage,
means disposed in said circumferential fluid passage between said suction and discharge ports to provide a circumferential seal therebetween,
said impeller having a substantially disc-like shape and provided with circumferential rows of radial vane grooves in side faces of said impeller adjacent to the outer peripheral surface thereof,
each of said circumferential rows comprising first vane grooves each of which has a depth at the outer peripheral surface equal to or greater than a half of the impeller thickness and second vane grooves each of which has a depth at the outer peripheral surface less than a half of the impeller thickness,
said first vane groove circumferentially alternating with said second vane groove in each of said rows and axially aligning with said second vane groove.

4,403,911
BLADELESS PUMP AND METHOD OF USING SAME
Clarence R. Possell, 4842 Viane Way, San Diego, Calif. 92110
Continuation of Ser. No. 858,654, Dec. 8, 1977, abandoned. This application May 27, 1980, Ser. No. 152,998
Int. Cl.³ F01D *1/36*
U.S. Cl. 415—90 **9 Claims**



1. A pump for use in transferring either a single phase or multiphase fluid from a first location to a second location which includes:
a. a housing assembly that includes first and second vertically disposed, laterally spaced first and second side walls and a continuous end wall that extends transversely therebetween to cooperate therewith to define a circular confined space, a centrally disposed first opening in said first side wall in communication with said first location, a discharge opening in said end wall that is at a higher elevation than said first opening and is in communication with said second location, and a second opening in said second side wall that is oppositely disposed from said first opening, said housing assembly formed from a rigid material resistant to action by said fluid;
b. a rotatable drive shaft that has first and second ends;
c. bearing and seal means supported in a fixed relationship from said second side wall and coaxially aligned with said second opening therein, said bearing and seal means rotatably supporting said drive shaft, with said first end of the latter disposed within said confined space and adjacent the latter;
d. a substantially smooth first circular disc in said confined space secured to said first end of said drive shaft and intermediately positioned between said first and second side walls with said second end of drive shaft when rotated at greater than a first rate causing a circular body of said fluid in said confined space to rotate due to a rotary force exerted on said body of fluid as a boundary layer of

said fluid on the exterior surface of said first circular disc is rotated relative to said body of water to be sheared therefrom, and said fluid entering said confined space through said first opening having increasing rotary velocity imparted thereto to sequentially move outwardly in a spiral path due to the centrifugal force imposed thereon and be sequentially ejected from said discharge opening to flow to said second location said first side wall and end wall at their junction defining a circumferentially extending recess that is in communication with said confined space; and

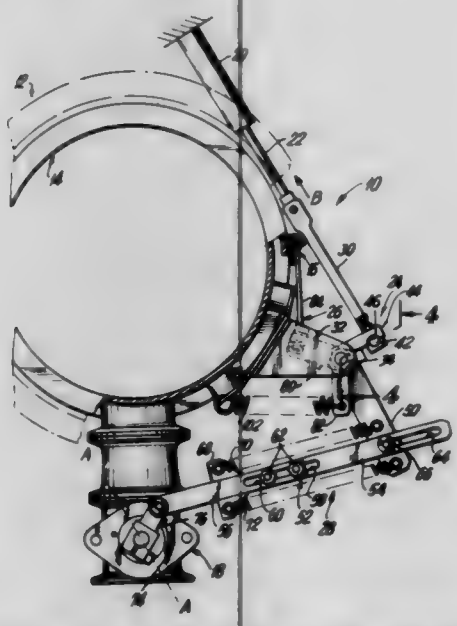
e. a first ring-shaped side plate rotatably supported in said confined space adjacent said first side wall, and said first side plate having the outer peripheral edge portion thereof rotatably supported in said recess, said first side plate including a centered opening axially aligned with said first opening in said first side wall, with said first side plate free to rotate with said circular body of liquid to minimize the frictional drag on said circular body of fluid as said circular body rotates relative to said housing.

4,403,912

INTEGRATED MULTIPLANE ACTUATOR SYSTEM FOR COMPRESSOR VARIABLE VANES AND AIR BLEED VALVE

Frederick J. Pekari, Trumbull, and Robert E. Johnson, Stepney, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Mar. 23, 1981, Ser. No. 246,657
Int. Cl.³ F01B *25/02*; F01D *17/00*
U.S. Cl. 415—150 **1 Claim**



1. An integrated multiplane actuator mechanism for sequentially controlling the bleed control valve and variable guide vanes of a generally horizontally extending compressor of a gas turbine engine comprising:

a first actuating linkage operatively connected to said bleed control valve, said bleed control valve being disposed adjacent the bottom portion of the compressor;

a single actuating means disposed adjacent the top portion of the compressor;

a second actuating linkage operatively connected to said variable guide vanes, said second actuating linkage being adjacent a side portion of the compressor;

intermediate crank means secured to the casing of the compressor and operatively connected to said first and second actuating linkages and to said actuating means, said intermediate crank means including a shaft secured to and extending in spaced, parallel relationship to the longitudinal axis of the compressor casing, a pair of crank cylinders rotatably mounted on said shaft, with the first of said crank cylinders being connected to said actuating means and to said first actuating linkage, said first crank cylinder being operatively connected for pivotal movement upon actuation of the single actuating means, said first crank cylinder including a connecting pin secured thereto and displaced radially outward therefrom, said pin extending generally parallel to the axis of the first crank cylinder into the vicinity of the second crank cylinder, the second of said crank cylinders including a connecting flange secured thereto and extending radially outward therefrom to intermittently engage the connecting pin;

said first crank cylinder further comprising a crank arm;

said first actuating linkage further comprising an adjustable link, one end of which includes an elongated slot therein, with said crank arm being connected to said adjustable link by a pin connection extending through and slidably mounted in said elongated slot thereby providing lost motion between said first crank cylinder and said first actuating linkage during sequential operation of the second actuating linkage, said crank arm of the first crank cylinder being connected to the first actuating linkage to transmit forces substantially within a first plane extending transverse to the axis of the gas turbine engine;

said second crank cylinder further comprising a crank arm;

said second actuating linkage being connected to the crank arm of the second crank cylinder to provide a transmission of forces substantially within a second plane extending parallel to said first plane; and

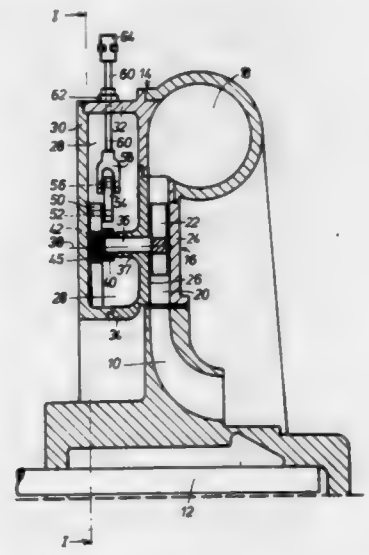
said crank arms and said connecting flange being relatively positioned on the first and second crank cylinders to provide a sequential actuation of the first actuating linkage, and then the second actuating linkage during a full movement of the actuating means.

4,403,913

GUIDE BLADE ARRANGEMENT FOR ADJUSTABLE GUIDE BLADES

Jens E. Fisker, Snekkersten, Denmark, assignor to Helsingoer Vaerft A/S, Elsinore, Denmark

Filed Nov. 3, 1981, Ser. No. 317,843
Int. Cl.³ F04D *27/00*
U.S. Cl. 415—150 **3 Claims**



1. A guide blade arrangement for devices for flowing media for use in connection with controlling a stream of fluid and having an annular passage, limited by an outer wall and an inner wall, a ring of angularly adjustable guide blades being arranged within said passage, said inner wall further limiting on the side thereof opposite to said passage a control chamber further limited by an annular inner wall and an annular outer wall as well as by a back wall, each said guide blade being provided with a supporting pin that is rotatably mounted in said inner wall extending through the inner wall into said control chamber, said supporting pins having mutually substantially parallel axes extending along an annular curvature line, and each said supporting pin being provided within said control chamber with an arm having a free end that is pivotably connected to a control member common to all said arms by

means of a stud having an axis that is substantially parallel to said supporting pin axes, wherein:

all said arms being mutually substantially parallel and having the same length measured as the distance between the axes of the corresponding one of said supporting pins and the corresponding one of said studs, and that said control member is constituted by a control ring that by means of said studs is carried by said arms, and which control ring is connected to an adjusting member adapted to provide a translatory displacement of said control ring and a first center point common to said annular curvature line and to said annular passage, and said control ring having a second center point being eccentric with respect to the first center point.

4,403,914

VARIABLE GEOMETRY DEVICE FOR TURBOMACHINERY

Casimir Rogo, Mt. Clements; Herman N. Lenz, and Michael Holbrook, both of Lambertville, all of Mich., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Jul. 13, 1981, Ser. No. 282,524
Int. Cl.³ F04D 27/00
U.S. Cl. 415—165 **11 Claims**

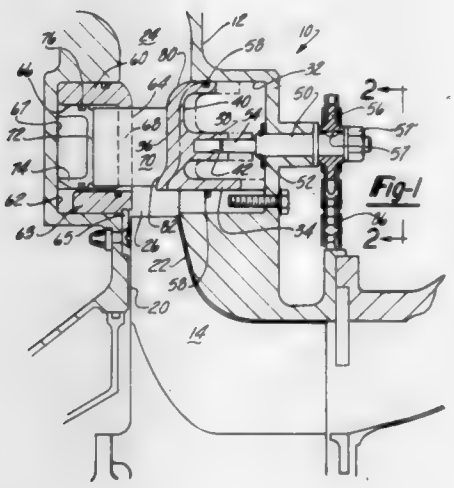


Fig-1

1. A variable geometry device for a turbine engine comprising:

a support housing,

said support housing having a pair of substantially radially extending spaced walls forming a radial flow passageway therebetween,

a first recessed channel formed along one of said support housing walls,

a second recessed channel formed along the other support housing wall, said channels facing and in registration with each other,

a first ring mounted in said first channel and a second ring mounted in said second channel,

a plurality of spaced vanes secured to and extending between said rings,

means for moving said first ring transversely across said passageway between a retracted position in which said first ring is nested within said first channel and an extended position in which said first ring protrudes into and restricts said passageway; and

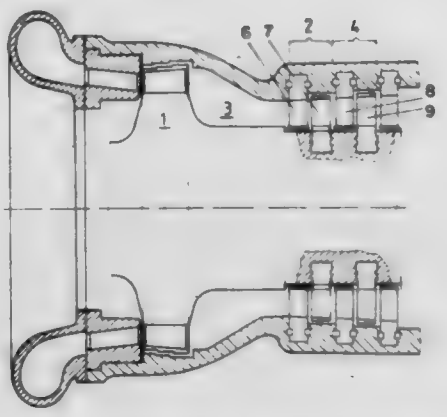
wherein the restriction of the passageway is substantially proportional to the transverse position of said first ring and wherein said first ring has one face which face is contoured by meridional constriction to reduce turbulence and secondary losses of fluid flow through the passageway.

4,403,915

EXCESS PRESSURE TURBINE WITH A CONSTANT PRESSURE REGULATION STAGE

Arnulf Teufelberger, Gebenstorf, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Dec. 15, 1980, Ser. No. 216,829
Claims priority, application Switzerland, Feb. 1, 1980, 823/80
Int. Cl.³ F01D 1/04
U.S. Cl. 415—199.5 **4 Claims**



1. In an excess pressure steam turbine containing a constant pressure regulation stage which is arranged forwardly of the reaction blading of the turbine and contains a regulation impeller and a rim of nozzles which throttles in sectors, the improvement which comprises:

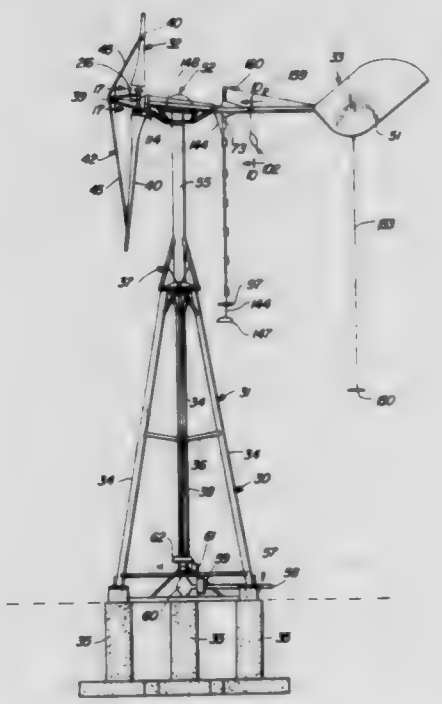
first stages following the impeller of the reaction blading, following the impellar wheel being structured so as to have stepwise increasing intermediate degrees of reaction, the value of which is between 0 and 0.5.

4,403,916

WIND TURBINES

David A. Skelskey, Chicago, Ill., assignor to Chicago Province of the Society of Jesus, Chicago, Ill.

Filed Sep. 2, 1980, Ser. No. 183,077
Int. Cl.³ F03D 7/04
U.S. Cl. 416—14 **38 Claims**



1. A wind turbine comprising:

(a) a vertically extending supporting tower having

(1) an upper end portion;

(b) a vertically extending power delivery shaft mounted on the said vertically extending supporting tower structure;

(c) a front and blade section including

(1) a generally horizontally extending tubular supporting

structure mounted on the said upper end portion of the said vertically extending supporting tower structure;

(2) a supporting bearing hub mounting assembly mounted on the said horizontally extending tubular supporting structure;

(3) a first and generally horizontally extending rotatable blade driven power shaft rotatably mounted within the said generally horizontally extending tubular supporting structure on the said hub mounting assembly and having a generally horizontally extending axis;

(4) a plurality of radially arranged wind-driven blade members mounted on the said hub mounting assembly and operatively connected to the said blade driven power shaft;

(5) means for coupling the said wind-driven blade members to the said first and generally horizontally extending rotatable blade-driven power shaft;

(6) power transmission means for transmitting rotating motion of the said first and generally horizontally extending rotatable blade-driven power shaft, under the force of wind applied against the said blade members, to the said vertically extending power shaft;

(d) a rear or tail section including

(1) a second generally horizontally extending tubular supporting structure;

(2) a second and generally horizontally extending tail-supporting shaft having a generally horizontally extending longitudinal axis and including

a. a front end portion; and

b. a rear end portion;

(3) means for rotatably mounting the said second and tail-supporting shaft within the said second and generally horizontally extending tubular supporting structure;

(4) a tail or tail fin member mounted on the said rear end portion of the said second and generally horizontally extending tail-supporting shaft and rotatable therewith;

(e) means for interconnecting the said front and blade section and the rear and tail section in a generally parallel and coplanar relationship;

(f) pivotal mounting means for pivotally mounting the said interconnecting means and the said front and blade section and the said rear and tail section for pivotal movement in a generally horizontal plane on the said pivotal mounting means for movement of the said rear or tail section out of the said generally parallel and coplanar position into a position at an angle of approximately ninety degrees (90°) relative to the said front or blade section; and

(g) manually operable latching means coacting with the said interconnecting means and with the said pivotal mounting means for selectively latching the said rear or tail section in a normal position parallel to the longitudinal axis of the said first and blade-driven power shaft or in a position extending generally rightangularly relative to the longitudinal axis of the said first and blade-driven power shaft.

4,403,917

TURBINE DISTRIBUTOR VANE

Denis R. G. Laffitte, Miramas; Guy H. Louis, Chartrettes, and Alain M. M. Raybaud, Verneuil l'Etang, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.", Paris, France

Filed Jan. 5, 1981, Ser. No. 222,624

Claims priority, application France, Jan. 10, 1980, 80 00458

Int. Cl.³ F01D *5/18*

U.S. Cl. 416—96 A **7 Claims**

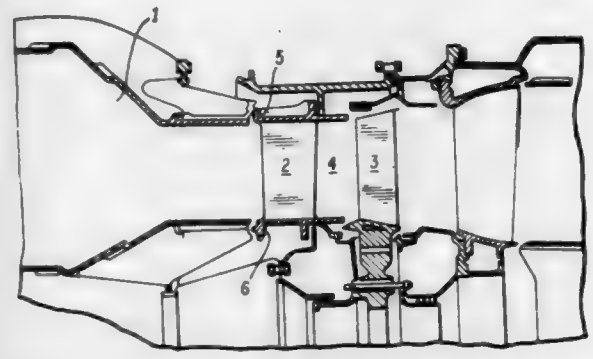
1. A turbine nozzle vane having at least one inner hollow chamber formed therein comprising:

a corrugated Y-shaped sleeve positioned against opposite sides of said hollow chamber;

a first and second radial rib extending from each of said opposite sides of said chamber;

a first and second row of protruding elements extending from each of said opposite sides;

longitudinal lock means disposed in said chamber for positioning said sleeve against said protruding elements and for elastically pressing end portions of said sleeve against said radial ribs, said first and second rows of protruding elements forming a zone of said elements extending from each of said opposite sides throughout most of the height



of each of said opposite sides of the vane, the width of the zone of said elements being maximal at a base portion of said zone and changing gradually along the entire height of said zone so as to become minimal at an upper portion thereof, said vane having an opening formed therein through which cooling fluid enters and which is located on a side of said opposite sides where the width of said zone of elements is minimal.

4,403,918

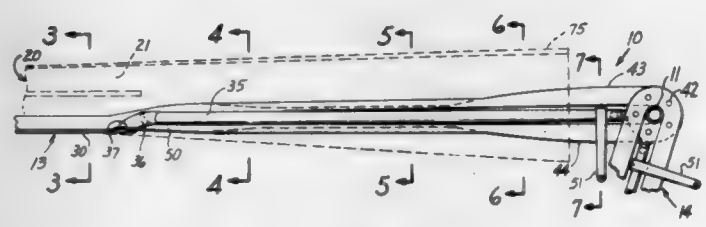
HUBLESS, HINGELESS AND BEARINGLESS HELICOPTER ROTOR SYSTEM

Buford J. Schramm, 1330 E. Fremont Dr., Tempe, Ariz. 85204

Filed Jan. 19, 1982, Ser. No. 340,774

Int. Cl.³ B64C *27/38*

U.S. Cl. 416—138 **10 Claims**



1. A helicopter rotor system comprising:

a rotary mast having an upright axis;

a plurality of rotor blades mounted to said rotary mast to be turned by said mast, each said blade having a respective longitudinal axis directed away from said mast, all of said rotor blades being substantially identical to one another, and being angularly spaced apart around said mast, each said blade comprising a skin forming an airfoil and an internal region, a counterweight rod and a spar extending longitudinally inside said region, said spar comprising a bundle of aligned fibers which, inside said region are bonded to each other, to said skin, and to said counterweight rod, said bundle being doubled so as to form a U-shaped bight portion with a bend and a pair of arms disposed inboard of said skin, said fibers inside said region constituting continuations of the fibers in said arms;

a longitudinally-extending torque tube rigidly attached to said counterweight rod at a first end of said torque tube, and a first bearing member adjacent to the other end of said torque tube, said torque tube having an axis;

a second bearing member mounted to said mast and engaged to said first bearing member, whereby said torque tube is rotatable around its own axis, and can move in any angular direction away from said longitudinal axis around the

center of said second bearing means, whereby to enable lead/lag and flapping movements;

the bight portion being progressively shaped from a flat portion bent directly around said mast, through a pair of separate channel sections, to a bundle adjacent to said counterweight rod;

pitch horn means attached to said torque tube to rotate said torque around the axis of said torque tube;

attachment means attaching said flat portions of said bight portion in a stack to transfer centrifugal loads to said mast; and

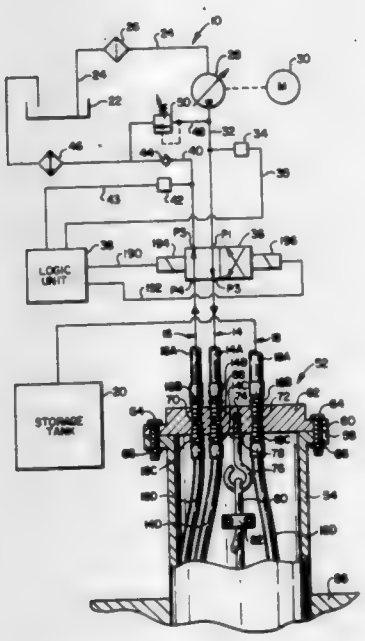
said bight portion being bendable adjacent to said mast.

4,403,919

APPARATUS AND METHOD FOR PUMPING A LIQUID FROM A WELL

George E. Stanton, Orient, and Patrick A. McFadden, Columbus, both of Ohio, assignors to Njuack Oil Pump Corporation, Columbus, Ohio

Filed Sep. 30, 1981, Ser. No. 306,953
Int. Cl.³ F04B *47/08*
U.S. Cl. 417—53 **25 Claims**



1. A method of pumping a liquid from a well, comprising:

providing a drive unit adjacent said well;

disposing a pump unit adjacent the bottom of said well such that said pump unit is at least partially immersed in the liquid in said well;

interconnecting said drive unit and said pump unit by first and second supply lines;

providing a liquid discharge line extending from said pump unit to adjacent the upper end of said well and through which liquid pumped by said pump unit can leave said well,

said drive unit comprising:

a pump for hydraulic fluid;

a high-pressure line connected to the outlet of said pump;

a return line for hydraulic fluid;

means for measuring at least one fluid flow parameter selected from the group consisting of pressure and flow rate in said return line and for generating a signal representative of said parameter;

a changeover valve having walls defining a first port connected to said high-pressure line, a second port connected to said first supply line, a third port connected to said second supply line and a fourth port connected to said return line, said changeover valve having a first position wherein it connects its first port to its second port and its third port to its fourth port, thereby connecting said high-pressure line to said first supply line and said second supply line to said return line, and a second position wherein it connects its first port to its third port and its second port to its fourth port, thereby connecting said high-pressure line to said second supply line and said first supply line to said return line; and

a logic unit for receiving said signal and for holding said changeover valve alternately in said first position for a first predetermined period and in said second position for a second predetermined period; and

said pump unit comprising:

a drive cylinder having walls defining first and second ports adjacent opposed ends of said drive cylinder, said first and second ports being connected to said first and second supply lines;

a drive piston slideable within said drive cylinder;

a driven cylinder;

a driven piston slideable within said driven cylinder and connected to said drive piston for movement therewith; and

inlet/outlet means allowing flow of said liquid from said well into said driven cylinder but not in the opposed direction and flow of said liquid from said driven cylinder into to said liquid discharge line but not in the opposed direction;

activating said pump, thereby raising the pressure in said high-pressure line;

retaining said changeover valve in one of its said positions until said signal changes substantially;

shifting said changeover valve to the other of its said positions and determining by means of said logic unit a first interval between said shifting of said changeover valve to said other position and a substantial change in said signal;

shifting said changeover valve back to said one of its said positions and determining by means of said logic unit a second interval between said shifting of said changeover valve back to its said one position and a substantial change in said signal;

calculating in said logic unit a first predetermined period equal to a predetermined multiple of said first interval;

calculating in said logic unit a second predetermined period equal to substantially the same multiple of said second interval;

permitting said logic unit to control the operation of said changeover valve to complete repeated pumping cycles, each said pumping cycle comprising one of said first predetermined periods wherein said logic unit holds said changeover valve in one of its said positions and one of said second predetermined periods wherein said logic unit holds said changeover valve in the other of its said positions.

4,403,920

DEVICE FOR REGULATING THE OUTPUT QUANTITY OF A COMPRESSED MEDIUM

Heinz Lantermann, Bottrop-Kirchhellen, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augburg-Nürnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed May 21, 1981, Ser. No. 267,907
Int. Cl.³ F04C *29/10*
U.S. Cl. 417—295 **2 Claims**

1. In a device for regulating the output quantity of a gaseous medium from a compressor system having at least one compressor with a suction for receiving the gaseous medium and a discharge for discharging compressed gaseous medium, the device having:

a flow control valve in the suction for throttling the flow of the gaseous medium to the compressor system;

a control piston connected to the flow control valve for actuating the throttling of the flow;

a cylinder;

the control piston having a piston part disposed within the cylinder defining a first and second chamber on opposite sides thereof;

a blowdown valve having a passage connected to the discharge and to atmosphere and valve seat means adjacent the passage;

valve means connected to the control piston and movable in the passage between a position in which the valve means engages said valve seat means for closing the passage and a position in which the valve means disengages from the valve seat means for opening the passage;

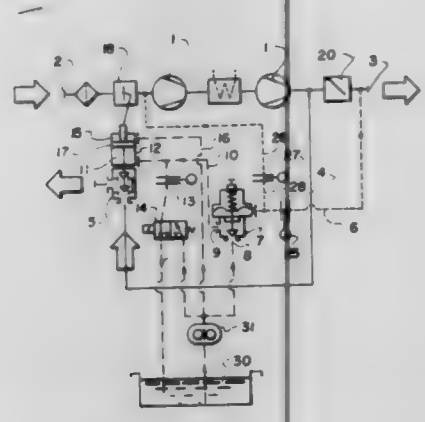
a reservoir for holding a liquid;

pump means for pressurizing and pumping at least part of the liquid from the reservoir;

conduit means connected between the pump means and the cylinder to provide a constant fluid pressure to the first chamber;

a pressure regulator connected between the pump means and the cylinder for passing the pressurized liquid from the pump means to the second chamber responsive to the gaseous pressure in the discharge, the pressure regulator being connected to the discharge;

a liquid throttle means between the pressure regulator and



the control piston for delivering liquid to the reservoir; and

the control piston being operable to open and close the passage of the blowdown valve and to actuate the flow control value responsive to the fluid pressure in the first and second chamber, in combination therewith, the improvement comprising;

a first measuring pipe (6) connected to the discharge;

a second measuring pipe (26) connected to the suction downstream of the flow control valve;

a balancing pipe (28) interconnecting said first measuring pipe and said second measuring pipe;

two throttle valves (25,27) in said balancing pipe; and

the pressure regulator (7) being connected to said balancing pipe intermediate said throttle valves for operation responsive to an intermediate pressure established in said balancing pipe as a function of the throttle cross section of said throttle valves.

4,403,921

MULTI-CYLINDER VARIABLE DELIVERY COMPRESSOR

Kimio Kato; Hiroya Kono, and Hisao Kobayashi, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Japan

Filed Oct. 21, 1981, Ser. No. 313,681

Claims priority, application Japan, Oct. 27, 1980, 55-151298; Dec. 10, 1980, 55-175027; Dec. 13, 1980, 55-176256

Int. Cl.³ F04B *49/08, 1/16, 1/18*

U.S. Cl. 417—296 **8 Claims**

1. A multi-cylinder compressor adapted for use in compressing a refrigerant gas of a cooling circuit comprising:

cylinder block means having therein a plurality of compression chambers;

housing means having therein a first and a second delivery chamber into which the refrigerant gas is delivered from said compression chambers, and at least a suction chamber from which the refrigerant gas is sucked into said compression chambers;

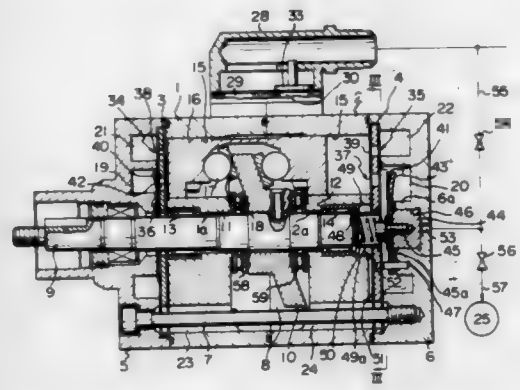
valve plate means arranged between said cylinder block means and said housing means, said valve plate means having therein suction ports providing a fluid communication between said compression chambers and said suction chamber, and delivery ports providing a fluid communication between said compression chambers and said first and second delivery chambers;

a suction means for introducing the refrigerant gas from said cooling circuit into said suction chamber;

a delivery means for delivering the refrigerant gas from said first and second delivery chambers to said cooling circuit;

first delivery valve means closing said delivery ports that provide a fluid communication between said compression chambers and said first delivery chamber, said first delivery valve means being opened by said refrigerant gas delivered from said compression chambers into said first delivery chamber;

second delivery valve means capable of moving between a first position for closing said delivery ports that provide a fluid communication between said compression chambers



and said second delivery chamber and a second position for opening said delivery ports that provide a fluid communication between said compression chambers and said second delivery chamber;

means for urging said second delivery valve means from said first position toward said second position;

a pressure inlet means for applying to said second delivery valve means either a high delivery pressure to move said second delivery valve means from said second position to said first position against said urging means, or a low suction pressure, permitting said second delivery valve means to be moved from said first position to said second position by said urging means, and;

valve means arranged between said second delivery chamber and said delivery means, said valve means being opened when said second delivery valve means is moved from said second position to said first position.

4,403,922

SEAL GLAND IMPROVEMENTS FOR HYDRAULICALLY ACTUATED DOWNHOLE PUMPS

George K. Roeder, P.O. Box 4335, Odessa, Tex. 79760

Filed Sep. 29, 1980, Ser. No. 191,673

Int. Cl.³ F16J *15/48*

U.S. Cl. 417—358 **8 Claims**

1. In a free-type downhole hydraulically actuated pump apparatus which is sealingly received within a collar located downhole in a borehole, a packer nose assembly located at the upper end of a housing of the pump apparatus, the combination with said pump apparatus and collar of a seal assembly which seals the annular area between the pump housing and the collar comprising:

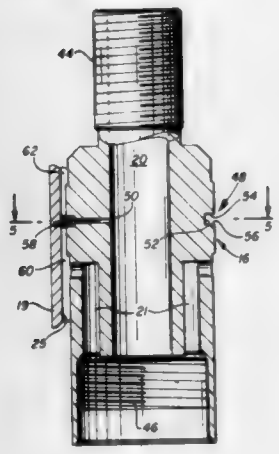
a connector body affixed to the pump housing and having a outer surface which is telescopingly received within the collar, a longitudinal extending passageway formed through the interior of said connector body through which power fluid can flow to an engine of the pump apparatus;

said connector body includes fastener means at each extremity thereof, one fastener means is adapted to be connected

to the upper end of the pump apparatus, the other fastener means is adapted to be connected to the packer nose assembly, said packer nose assembly has an axial passageway which is in communication with the passageway of the connector body at one end thereof and which has an opposed end opened for flow of power fluid thereinto;

a circumferentially extending outwardly opening seal receiving groove formed 360° about said connector body, said groove includes a bottom and opposed sidewalls, means forming a flow port from said longitudinally extending passageway to said groove to provide power fluid pressure at the bottom of said groove;

an annular resilient seal element having spaced sidewalls of a dimension to be received in close tolerance relationship within said groove, said resilient seal element having an inner circumferentially extending face spaced from an outer circumferentially extending face; said inner face is disposed adjacent to the bottom of the groove to thereby form a working chamber therebetween; said outer face is inwardly positioned respective to the outer surface of the connector body, and moves radially outwardly when fluid flows into said working chamber;



said connector body includes a plurality of longitudinally extending counterbores radially spaced about and parallel to said longitudinally extending passageway, means by which the lower end of each said counterbore is in fluid communication with said longitudinally extending passageway; said flow port having one end in communication with said longitudinal counterbore and the other end in fluid communication with said working chamber;

whereby, when the pump apparatus is seated downhole in a borehole and fluid pressure is applied to the pump apparatus, pressure is effected in said working chamber to bias the resilient seal element outwardly against the inner peripheral surface of the collar, whereupon the annular area between the pump apparatus and collar is sealed against flow therethrough; and, when the fluid pressure is reduced, the resilient seal element relaxes into a retracted position respective to the groove, and the outer face of the resilient seal element moves radially inwardly away from the inner peripheral surface of the collar, where the seal element is protected from abrasion when the pump apparatus is returned uphole.

4,403,923

SUBMERSIBLE PUMP

Herbert P. Korchin, 32 Friendship Ct., Red Bank, N.J. 07701

Filed May 12, 1981, Ser. No. 262,925

Int. Cl.³ F04B *39/14*

U.S. Cl. 417—360 **5 Claims**

1. A submersible pump comprising:

a volute having a discharge conduit connected thereto;

a motor housing having a motor therewithin, said motor coupled to an impeller;

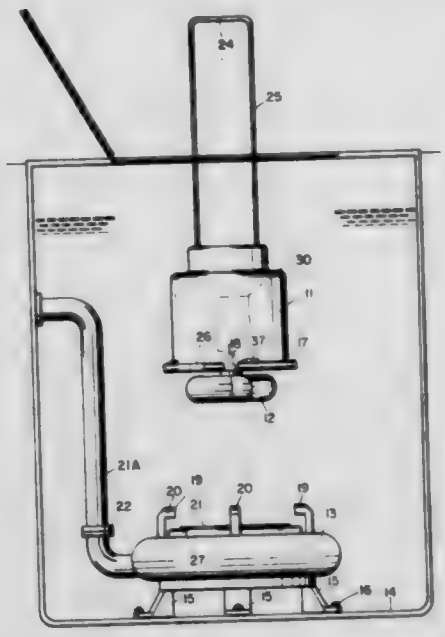
said motor housing further including a flange thereon having slots therein;

guide means extending from said volute aligned with and to extend into said flange slots;

means adjacent on said flange adjacent said slots for engaging said guide means;

said engaging means and said guide means coacting to secure said motor housing to said volute;

said engaging means and said guide means including coacting camming means and contact surfaces operative upon movement of said motor housing relative to said volute;



sealing means between the motor housing flange and the volute;

levering means, comprising a slot in said flange and an aperture in said volute aligned with said slot, into which a tool can be inserted to loosen said flange from said volute;

motor housing twisting means comprising a handle on the side of the motor housing remote from the volute to twist said motor housing relative to said volute so as to engage or disengage said motor housing from said volute.

4,403,924

METHOD AND DEVICE FOR REGULATING THE OUTPUT OF DIAPHRAGM PUMPS

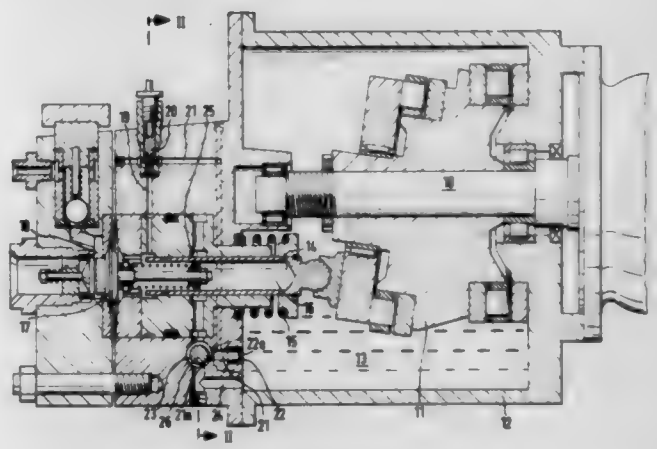
Gerhard Gebauer, Bermatingen, and Fritz Bachschmid, Friedrichshafen, both of Fed. Rep. of Germany, assignors to J. Wagner GmbH, Fed. Rep. of Germany

Filed Jun. 6, 1980, Ser. No. 157,273

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923284

Int. Cl.³ F04B *43/00*

U.S. Cl. 417—388 **9 Claims**



1. A method for regulating the output of a diaphragm pump

for delivering driven fluids, (particularly fluids for air-less spraying by means of high pressure spray guns), the pump comprising two chambers separated by a movable diaphragm, one of said chambers being a drive chamber filled with a drive fluid alternately loaded and unloaded by an oscillating piston and the second of said chambers a driven fluid chamber, the pump further including a pressure limiting valve from which drive fluid is discharged in pulsating flow from the drive chamber into a reservoir, and a closable intake aperture passageway for supplying drive fluid from the reservoir into the drive chamber, the method comprising the steps of: retaining a part of the drive fluid outside the drive chamber and reservoir, providing a restriction between the pressure limiting valve and the reservoir for dampening the pressure variations of said drive fluid, and using the dynamic pressure thereof to provide a pressure signal regulating the flow clearance of the intake aperture by controlling a throttleable valve in the intake aperture passageway whereby the intake aperture passageway is reduced in flow capacity with increasing signal pressure and is increased in flow capacity with decreasing signal pressure.

4,403,925

DIAPHRAGM FUEL PUMP AND ASSOCIATED METHOD

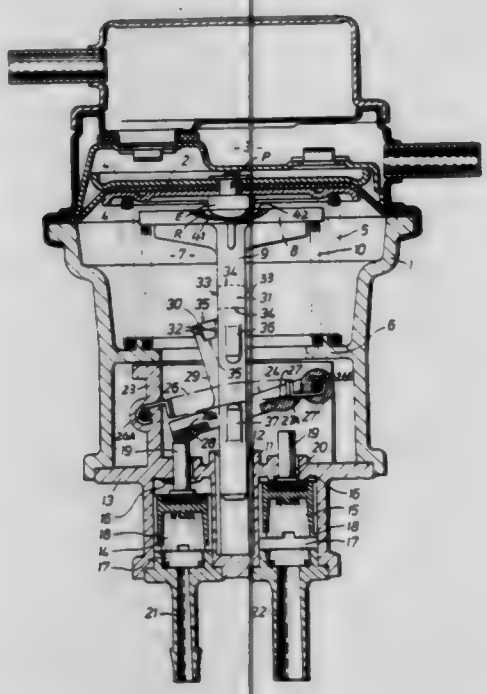
Ernst Kuhlen, Willich, and Manfred Winkels, Dusseldorf, both of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

Filed Aug. 3, 1981, Ser. No. 289,752

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034448

Int. Cl.³ F04B *43/06*

U.S. Cl. 417—395 **12 Claims**



1. A diaphragm fuel pump comprising a housing, a diaphragm in said housing forming a pump chamber and a drive chamber therein, said diaphragm being movable between first and second end of stroke positions to draw fuel into said pump chamber and discharge the fuel therefrom, resilient means acting on said diaphragm for urging the diaphragm to one of said end positions, a ram coupled to said diaphragm to undergo movement in opposite directions in accordance with the movement of said diaphragm between said end of stroke positions, first valve means for controlling supply of working fluid to said drive chamber, the supply of working fluid to said drive chamber applying force to said diaphragm to overcome the action of said resilient means and produce displacement of the diaphragm towards the other of said end of stroke positions, second valve means for controlling communication of said drive chamber with atmospheric air, the connection of said working chamber to atmospheric air causing the diaphragm to return to said one end of stroke position under the action of said resilient means, lever means pivotably mounted on said housing for selectively opening and closing said first and second valve means, control means on said lever means and said ram for blocking opening and closing of the first and second valve means until the diaphragm is at said end of stroke positions, said control means including a first segment on said lever means and a second segment on said ram, said segments being respectively positioned on the ram and lever means to face one another to block pivotal movement of the lever means, and actuator means on said ram for urging said lever means to undergo pivotal movement in accordance with the movement of the ram under the action of the diaphragm and resilient means, the positions of said segments on said ram and lever means being such to release the lever means and permit pivotal movement thereof when the diaphragm is at its end of stroke positions, said lever means comprising two lever arms in a common plane, one for actuating the first valve means, the other for actuating the second valve means, and a third lever arm carrying said first segment.

4,403,926

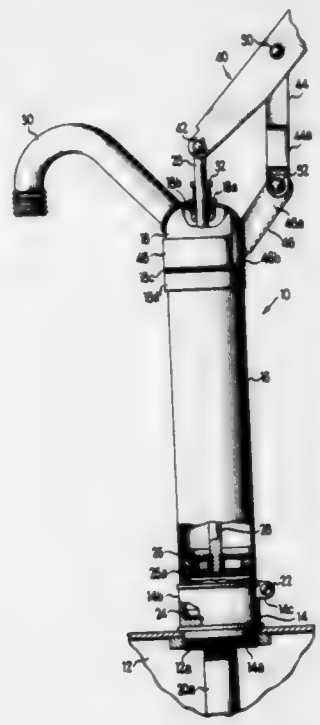
BARREL PUMP

Eugene E. Stamper, Spencer, Iowa, assignor to Witco Chemical Corporation, New York, N.Y.

Filed Feb. 17, 1981, Ser. No. 235,099

Int. Cl.³ F04B *7/04*

U.S. Cl. 417—553 **1 Claim**



1. In a upright mounted pump comprising a cylinder having an upper end provided with a head portion and a lower end provided with means for releasably securing the cylinder on a barrel or drum containing a fluid, said head portion being provided with an annular shoulder and having a spout extending outwardly therefrom in spaced relation to said annular shoulder, a piston and a piston rod for the cylinder, the upper end of the piston rod extending through and outwardly of the head portion on the upper end of the cylinder, a handle for the pump, said handle being pivotally joined at one end to the upper end of said piston rod, a ring-like member having a radius of curvature and a circumference of greater than ½ of the circumference of said head portion positioned on the head portion between the annular shoulder and the base of the spout extending outwardly therefrom, said shoulder and the base of the spout cooperating to limit the extent of the upward and downward movement of the ring-like member on the head portion, said ring-like member being freely turnable at all times on the head portion on the upper end of the cylinder, and interconnecting means comprising bifurcated ear extensions having end members having a radius of curvature substantially conforming to the radius of curvature of said ring-like member

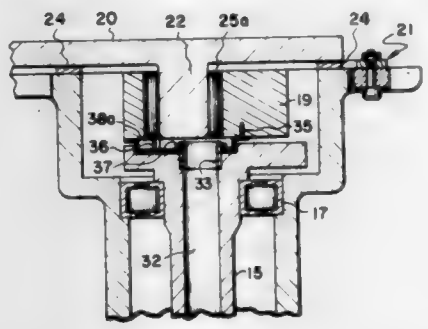
welded to the ring-like member at its extremities and to the handle whereby the handle can be freely swivelled with relation to the upper end of the pump to enable the handle to be operated at substantially any desired angle with relation to the spout on the head portion.

4,403,927

LUBRICANT DISTRIBUTION SYSTEM FOR SCROLL MACHINE

Arthur L. Butterworth, La Crosse, and Robert E. Utter, South Onalaska, both of Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Sep. 8, 1981, Ser. No. 300,075
Int. Cl.³ F01C *1/02, 21/04;* F01M *1/02, 9/00*
U.S. Cl. 418—55 **10 Claims**



1. An oil distribution system for lubricating bearings of a scroll machine, comprising

a rotatably driven vertical shaft having an oil pump on its lower end extending into a reservoir of oil, and including an internal oil passage through which oil is conveyed from the pump to the upper end of the shaft on which is mounted a swing link rotatably driven by the shaft;

an oil collector cup disposed adjacent the swing link, around the oil passage in said driven shaft and rotatably driven by the shaft, in receipt of oil flowing out of the oil passage in the shaft when the pump is operating, and operative to retain a small volume of oil when the pump stops so that the oil retained is immediately available to lubricate adjacent bearings of the scroll machine when the pump again starts; and

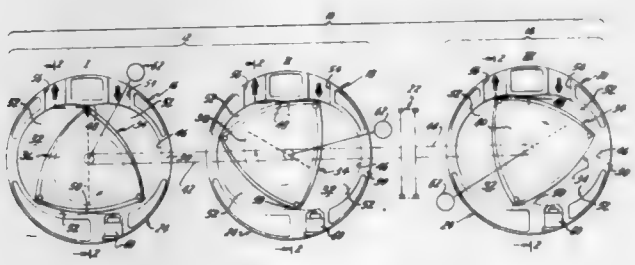
oil distribution means for distributing oil from the oil collector cup to the adjacent bearings including a thrust bearing and a swing link bearing and allocating the flow of oil between the adjacent bearings in proper proportion to insure adequate lubrication thereof, said oil distribution means including one or more passages in fluid communication with the collector cup for conveying oil to bearings outside the swing link.

4,403,928

MULTI-UNIT ROTARY MECHANISM

Charles Jones, Hillsdale, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Mar. 30, 1981, Ser. No. 248,950
Int. Cl.³ F01C *11/00*
U.S. Cl. 418—60 **3 Claims**



1. A three-rotor modular rotary piston mechanism consisting of a single rotor mechanism unit and a two-rotor mechanism unit with each mechanism unit having a mainshaft and wherein each unit has a housing forming a cavity for each rotor which is supported for planetary rotation in the cavity on an eccentric portion of its associated mainshaft so as to form a plurality of working chambers defined between the rotor and housing and which working chambers expand and contract in volumetric size as the rotor planetates relative to the housing, the three-rotor modular mechanism comprising:

(a) the mainshaft for the two-rotor mechanism unit having its associated eccentric portions angularly offset from each other by 120 degrees;

(b) counterweights for each of the single rotor and two-rotor mechanism units being arranged relative to the associated mainshaft to dynamically balance each rotor mechanism unit;

(c) coupling means for connecting the mainshaft of each rotor mechanism unit so as to permit angular, radial and endwise flexibility and torsional stiffness for torque transmission between the connected mainshafts; and

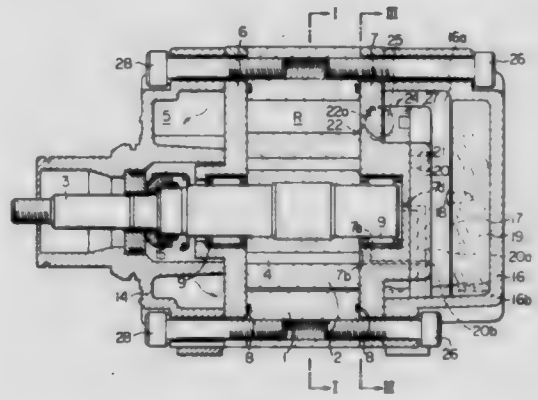
(d) said coupling means interconnecting the mainshafts so that the eccentric portion of the single unit is angularly offset 120 degress from the next adjacent eccentric portion of the mainshaft of the two-rotor mechanism unit to thus provide all eccentric portions of the three-rotor mechanism angularly displaced from each other 120 degrees.

4,403,929

ROTARY COMPRESSOR

Eiichi Nagasaku, Chiryu; Masao Yasunaga, and Kimihiro Kato, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 30, 1981, Ser. No. 229,852
Claims priority, application Japan, Feb. 4, 1980, 55-12882
Int. Cl.³ F04C *29/02*
U.S. Cl. 418—82 **9 Claims**



1. A rotary compressor comprising:

a housing having therethrough a cylindrical bore;

cover plates attached to the axial ends of said housing to close the open axial ends of said cylindrical bore, respectively;

a shaft extending within said cylindrical bore in said housing and rotatably supported by said end plates, said shaft having an axis thereof extending in eccentric relation to the axis of the cylindrical bore in said housing;

a rotor mounted on said shaft for rotation therewith and having a plurality of circumferentially spaced vane grooves, said rotor having axial end faces opposed to inner surfaces of said end plates, respectively;

a vane slidably received in each of said vane grooves, each of said vanes cooperating with the adjacent vane, the wall surface of said cylindrical bore in said housing, the inner surfaces of said end plates and the outer periphery of said rotor to define a working chamber;

one revolution of said rotor including a suction stroke section and a compression stroke section, said working chambers having their volumes increased during said suction stroke section and decreased during said compression stroke section;

an arcuate oil groove formed in the inner surface of at least one of said end plates, said arcuate oil groove extending in the area of the suction stroke section and being substantially coincident with an arcuate path described by the bottoms of said vane grooves;

a cover attached to said one end plate to define therebetween a discharge chamber receiving therein fluid compressed in said working chamber, said discharge chamber having defined at the bottom thereof an oil reservoir;

passage means having therein restrictive means and supplying oil from said oil reservoir to said oil groove through said restriction means so that the pressure of the oil in said oil groove is lower than that in said oil reservoir; and

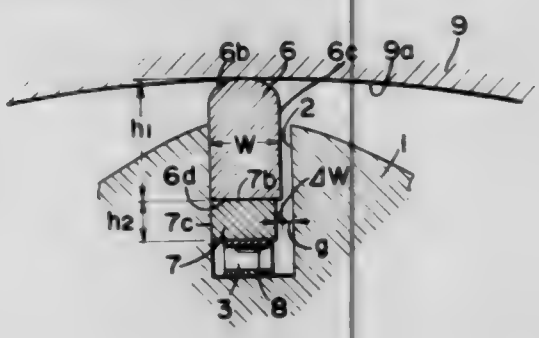
the oil being fed to said vane groove mainly when said vane is in said suction stroke section.

4,403,930

MULTI-PIECE APEX SEAL STRUCTURE FOR A ROTARY PISTON ENGINE

Hiroshi Kodama, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Sep. 2, 1980, Ser. No. 183,043
Claims priority, application Japan, Sep. 3, 1979, 54-122199[U]
Int. Cl.³ F01C *19/04*
U.S. Cl. 418—121 **8 Claims**



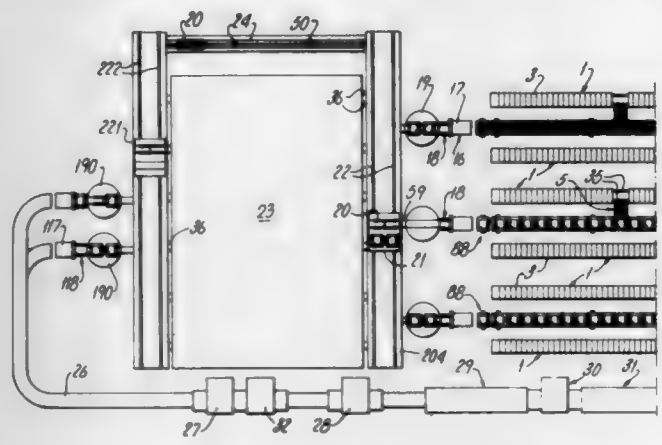
1. Rotary piston engine including a casing which comprises a rotor housing having an inner wall of trochoidal configuration and a pair of side housings attached to the opposite sides of the rotor housing, and a substantially polygonal rotor disposed in the casing with apex portions in sliding engagement with the inner wall of the rotor housing, said rotor having an apex seal structure in each apex portion thereof, said apex seal structure including an apex seal groove having side and bottom walls and a top opening and formed along each apex portion, an apex seal assembly comprised of seal means adapted to be brought into sliding contact with the inner wall of the rotor housing and resilient means for forcing the seal means toward the inner wall of the rotor housing, said apex seal assembly being disposed in said seal groove so that gas pressure is introduced through said top opening to the seal groove to thereby force the seal means toward the inner wall of the rotor housing, said seal means being comprised of a main piece adapted to be engaged with said inner wall of the rotor housing and an under piece located beneath the main piece, said main piece having a pair of side surfaces, a bottom surface which is substantially perpendicular to the side surfaces and a top sealing surface which is adapted to be brought into sliding engagement with the inner wall of the rotor housing, said under piece having a pair of side surfaces and a top surface which is substantially perpendicular to the side surfaces and adapted to be engaged with the bottom surface of the main piece, said main piece having a width between the side surfaces which is greater than that of the under piece.

4,403,931

SEMI-AUTOMATIC PLANT FOR MANUFACTURING SHAPED CONCAVE VITREOUS CHINA OBJECTS

Giorgio Cuman, Milan, and Mario Biadigo, Pordenone, both of Italy, assignors to Ideal Standard S.p.A., Milan, Italy

Filed Jan. 27, 1982, Ser. No. 343,237
Claims priority, application Italy, Feb. 6, 1981, 46813 A/81
Int. Cl.³ B28B *1/26, 15/00, 17/00*
U.S. Cl. 425—84 **14 Claims**



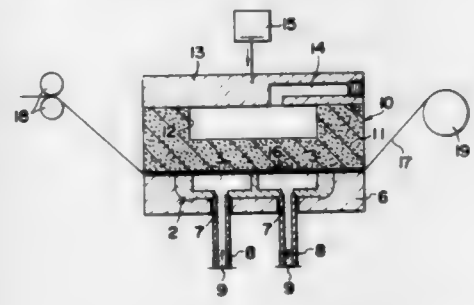
1. A plant for manufacturing shaped concave vitreous china articles, of the type comprising at least one casting line or bench on which there slides, and can be locked, a set of plaster moulds which can be clamped into a pack in order to define the casting cavities therebetween, characterised by comprising at least two parallel casting benches (1), each provided with means (13) for drying the respective plaster moulds (3), in combination with a parking structure (4) for the cast articles (6) which is disposed between said two benches, there being provided means (5) for transferring the articles from the casting benches to the central parking structure; means (18), (19) for withdrawing the articles from said parking structure and loading them on to suitable fork trucks (20), means (190), (118) for unloading the articles from said fork trucks (20), and means (21), (221), (50) for moving said fork trucks in a closed cycle within the drier (23).

4,403,932

APPARATUS FOR LOADING COSMETIC MATERIAL INTO A HOLLOW SPACE

Hirotake Ogasawara, Funabashi; Yoshiharu Hatakeyama, and Mitsuo Ishiguro, both of Tokyo, all of Japan, assignors to Shiseido Company, Ltd and Yoshida Industry Co., Ltd., both of Tokyo, Japan

Division of Ser. No. 204,255, Nov. 5, 1980, Pat. No. 4,374,796.
This application Jul. 13, 1981, Ser. No. 282,736
Int. Cl.³ B28B *1/26*
U.S. Cl. 425—85 **14 Claims**



1. An apparatus for molding a cosmetic material, said apparatus comprising:

a mold structure having therein a mold cavity partially defined by a porous absorbing material and partially defined by a casing structure;

means for injecting a fluent mixture of cosmetic material, formed by mixing powder cosmetic material with a binder

and a solvent, into said mold cavity, and thereby for filling said mold cavity with said mixture, whereby said solvent from said mixture is absorbed into said porous absorbing material, thus causing a bonding of said powder cosmetic material in a solid molded shape;

means for separating said porous absorbing material from said solid molded shape of cosmetic material and from said casing structure, thereby retaining said solid molded shape in said casing structure; and

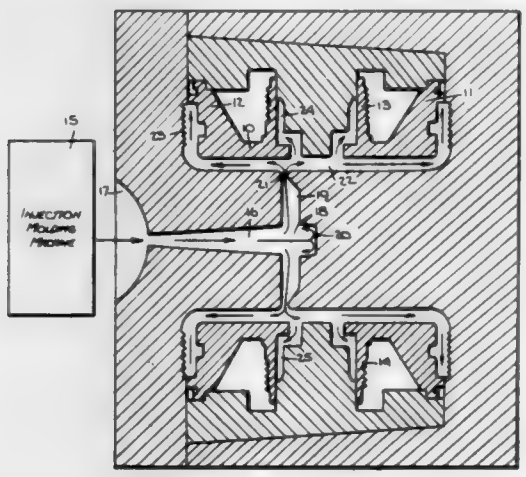
means for, after said porous absorbing material is separated from said solid molded shape, removing absorbed solvent from said porous absorbing material.

4,403,933

APPARATUS FOR INJECTION-MOLDING A LINER ONTO A METAL SPOOL

James W. Davis, New Britain, and Elmer D. Mannherz, Southampton, both of Pa., assignors to Fischer & Porter Company, Warminster, Pa.

Filed Apr. 14, 1982, Ser. No. 368,410
Int. Cl.³ B29F *1/10*
U.S. Cl. 425—129 R **7 Claims**



1. Apparatus for injection-molding an insulating liner onto the surface of a metal spool to be included in an electromagnetic flowmeter wherein fluid to be metered is conducted through the lined spool the spool being constituted by a cylindrical body having flanges at either end and a pair of diametrically-opposed circular bosses midway between the end flanges to receive the meter electrodes, said apparatus comprising:

A. a mold adapted to receive the spool to define therewith a liner cavity conforming to the inner surface of the cylindrical body and to the faces of the end flanges, the liner cavity communicating with cavities conforming to the inner surface of the electrode bosses, said mold further including a sprue extending from an inlet along the longitudinal axis of the spool toward the central hub of a runner extending radially from the hub to an annular flash gate opening into the liner cavity at a point adjacent the boss cavities, said annular gate being coaxial with said longitudinal axis and being axisymmetric with the sprue; and

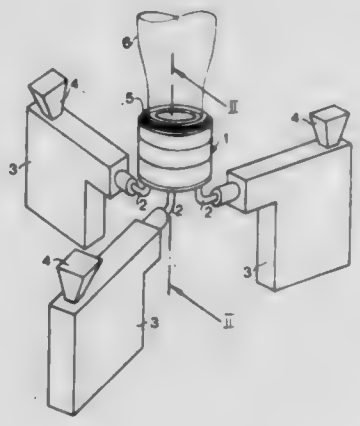
B. means to inject molten molding material containing reinforcing fibers which are randomly oriented into the inlet to cause the material to flow through the sprue into the hub from which it flows through the runner and the axisymmetric flash gate into the liner cavity wherein the material flows in opposite directions from the gate toward the flanges at either end of the spool body to fill the liner cavity and also the boss cavities, said flow being at a rate causing the reinforcing fibers to assume an orientation in the direction of flow whereby the fibers embedded in the molded in the liner are parallel to the spool.

4,403,934

COEXTRUSION DIE

Ole-Bendt Rasmussen, Forchwaldstrasse, CH-6318 Walchwil/-Zug, Switzerland, and Børge Jensen, Virum, Denmark, assignors to Ole-Bendt Rasmussen, Walchwil/Zug, Switzerland

PCT No. PCT/DK81/00023, § 371 Date Oct. 20, 1981, § 102(e) Date Oct. 20, 1981, PCT Pub. No. WO81/02406, PCT Pub. Date Sep. 3, 1981
PCT Filed Feb. 27, 1981, Ser. No. 314,070
Claims priority, application Denmark, Feb. 29, 1980, 891/80
Int. Cl.³ B29F *3/04*
U.S. Cl. 425—192 R **8 Claims**

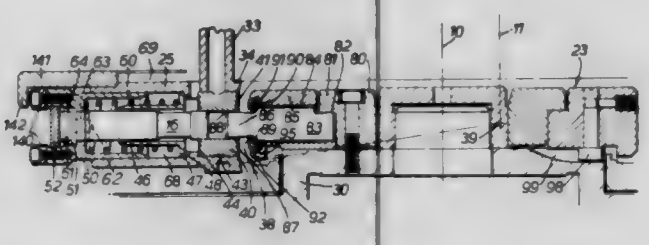


1. An extrusion die for the coextrusion of plural plastic materials into the form of a tubular film, said die comprising: (A) means for separately supplying at least two extrudable plastic materials in a fluid state; (B) a material distribution section comprising an array of annular elements providing a plurality of pairs of mutually contacting surfaces, at least one of said surfaces of each pair being recessed to define a labyrinthine distribution channel system for each such material, said system having an inlet opening connected to one of said supply means and dividing into opposite generally peripherally extending passages terminating in axially extending connecting passages which in turn divide into opposite peripherally extending passages terminating in axially extending connecting passages which in turn divide into oppositely peripherally extending passages terminating in axially connecting passages, the number of said passage divisions being sufficient to provide an array of at least eight peripherally spaced apart connecting passages for each extrudable material opening generally axially through an end wall of said distribution section, the plural distribution channel systems being arranged in radially displaced relation at different radial distances from the centre axis of the extrusion die; (C) an extrusion die section having one end wall contacting said distribution section end wall and comprising a plurality of concentric generally annular elements having generally spaced parallel concentric surfaces defining a plurality of continuous annular collecting chambers, one for each extrudable material, transition passage means communicating between the open ends of each array of said connecting passages from said distribution secton and the interior end of the corresponding collecting chamber, a common continuous annular extrusion slot axially downstream of said collecting chambers and opening through the opposite end wall of said die section, and delivery passage means merging the ends of the collecting chambers to form a common interior end of said extrusion slot spaced upstream from said slot opening; and (D) mechanical engagement means uniting the annular elements of said distribution and extrusion die sections, respectively, and connecting said sections together with said end faces in contact.

4,403,935
TABLETTING MACHINES

Jack Crossley, and David H. Wilson, both of Liverpool, England, assignors to Manesty Machines Limited, Liverpool, England

Filed Mar. 26, 1981, Ser. No. 247,810
Claims priority, application United Kingdom, Mar. 27, 1980, 8010324
Int. Cl.³ B30B 7/00, 11/00
U.S. Cl. 425—210 31 Claims



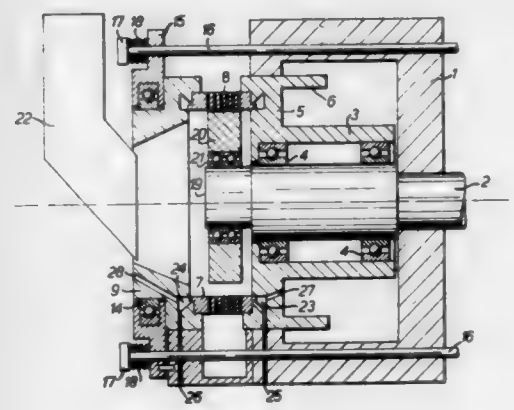
6. A tabletting machine comprising:
a rotatable die table having dies arranged at a surface thereof;
means coupled to the die table to rotate the die table about a first axis;
means to feed powdered or granulated material to be tabletted onto the die table surface to fill the dies;
first punches cooperably coupled with the dies;
first drive means coupled to the first punches to move the first punches to cause them to enter and exit the dies;
second punches cooperably coupled with the first punches and the dies;
second drive means coupled to the second punches and synchronized with the first drive means, the second drive means including means to drive the second punches into the dies to compress the material therein into a tablet between a respective pair of first and second punches, and means to eject the tablet from the die and the machine when the first punch of the pair has exited the die by driving the second punch of the pair through the die;
at least one punch of each pair of first and second punches is a reciprocating punch provided with an individual pump means;
means for slidably supporting the reciprocating punch at one end thereof; and
a sealing sleeve surrounding an intermediate portion of the reciprocating punch and being spaced therefrom in the radial direction thereof to define a substantially annular gap around the intermediate portion of the reciprocating punch;
the individual pump means being operably coupled to the reciprocating punch to be operated by the reciprocating punch to force air through the annular gap defined around the intermediate portion of the reciprocating punch, each time the reciprocating punch is driven in one direction.

12. A tabletting machine comprising:
a rotatable die table having dies arranged at a surface thereof, the die table including means for enclosing a hollow region in the vicinity of the dies;
means coupled to the die table to rotate the die table about a generally upwardly extending first axis;
means to feed powdered or granulated material to be tabletted onto the die table surface to fill the dies, the feed means including a stationary feeder plate disposed in said hollow region for supporting material to be tabletted at one side of the first axis, about the plane of the dies, which material is to be fed across the feeder plate onto the surface of the die table and over the dies on the opposite side of the first axis, and wherein the dies are movable between a position below said feeder plate and a position above said feeder plate as the die table rotates, the feeder plate engaging the surface of the die table to scrape the fill of material in each die level with surface of the die table as the dies move from above to below the feeder plate;
first punches cooperably coupled with the dies and being movable into and out of the dies in a direction substantially perpendicular to the first axis;
first drive means coupled to the first punches to move the first punches to enter and exit the dies;
second punches cooperably coupled with the dies and being associated with the first punches to form pairs of first and second punches, the second punches being movable into and out of the dies in a direction substantially perpendicular to the first axis; and
second drive means coupled to the second punches and synchronized with the first drive means, the second drive means including means to drive the second punches into the dies to compress the fill of material therein into a tablet between a respective pair of the first and second punches, and means to eject the tablet from the die radially inwardly of the die table when the first punch of the pair has exited the die by driving the second punch of the pair through the die.

4,403,936
PRESS FOR COMPRESSING A POWDERY MATERIAL

Theodorus J. Heesen, Selissen 6, Boxtel, Netherlands

Filed May 7, 1981, Ser. No. 261,084
Claims priority, application Netherlands, May 14, 1980, 8002783
Int. Cl.³ B29C 3/00
U.S. Cl. 425—331 24 Claims



1. A press for compressing powdery material to grains comprising a loosely arranged, rotatable, annular, perforated mould supported and guided by a rotatable mould holder and by an axially displaceable supporting member which supports the mould at the end remote from the mould holder, the side face of the mould engaging the mould holder being urged by the supporting member with a given force against the mould holder in the operational position of the press in a manner such that during the operation of the press the mould is caught along by the mould holder owing to the force produced between the mould holder and the mould, whilst a rotatable roller is arranged in the mould, characterized in that an uninterrupted channel is provided at least at the level of the side face of the mould engaging the drivable mould holder.

4,403,937
DEVICE TO SPREAD THE DOUGH FOR PIZZA

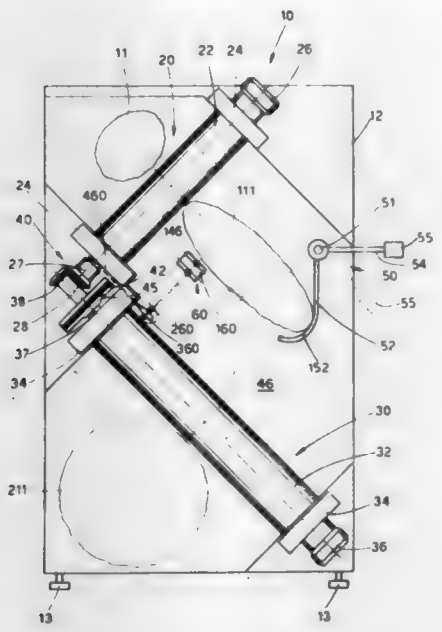
Walter Zamparelli, Udine; Antonio Cimenti, S. Dona' di Piave, and Giuseppe Muscariello, Udine, all of Italy, assignors to Zamuci Srl, Italy

Filed May 27, 1982, Ser. No. 382,551
Claims priority, application Italy, Jun. 18, 1981, 83410 A/81
Int. Cl.³ A21C 3/02; B29D 7/14
U.S. Cl. 425—337 9 Claims

1. Device for spreading the dough for pizzas in two mutually perpendicular directions comprising:
a carrying structure having a sloping working surface;
a first pair of rollers to roll the dough, supports for said rollers anchored to said sloping surface of the carrying structure;
a second pair of rollers to roll the dough which is positioned

substantially at an angle to said first pair, supports for said second pair of rollers anchored to said sloping surface of the carrying structure;

a metal sheet acting as a sliding surface for the dough and installed on said sloping surface in such a way that the lower rollers of said pairs of rollers protrude partially above said surface, whereby the protrusion of said lower



rollers can be regulated with suitable positioning means that anchor said surface; and

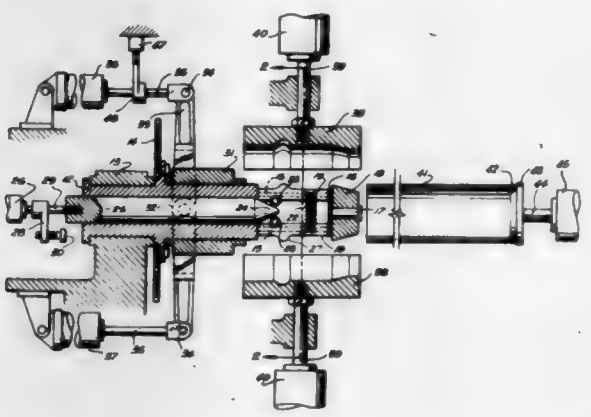
an oscillating supporting and guiding means fitted to said sliding surface in a zone between the two pairs of rollers and able to temporarily and movably support and guide the dough sliding down said surface only when said dough is engaged by said pair of rollers.

4,403,938

PIPE SOCKET FORMING

Barry G. Seach, Castle Hills; Hans Muller, Seven Hills, and Solomon E. Cohen, Eastwood, all of Australia, assignors to James Hardie & Coy. Pty. Limited, New South Wales, Australia

Filed Mar. 14, 1979, Ser. No. 20,545
Claims priority, application Australia, Mar. 20, 1978, 3758
Int. Cl.³ B29C *1/12*
U.S. Cl. 425—393 4 Claims



1. Apparatus for forming a socket on an end portion of a pipe in a plastically deformable condition, said apparatus comprising:

a contour die forming an envelope defining the external shape of said socket formed on said end portion of said pipe and adapted to encase said end portion of said pipe;

means disposed at a position remote from said end portion of said pipe for supporting said pipe;

a frusto-conical nose cone having an axis generally coincident with the axis of said pipe and being disposed adjacent an end of said contour die facing said supporting means, said nose cone having a diameter which increases moving in a direction axially away from an end thereof facing said supporting means;

means for thrusting said end portion of said pipe axially toward said contour die to drive said end portion of said pipe into said contour die and concurrently to drive said end portion of said pipe over said nose cone to enlarge said end portion of said pipe;

means for compressing said end portion of said pipe in an axial direction while said end portion of said pipe is disposed within said contour die;

a carrier sleeve having an axis substantially coincident with the axis of said pipe and being rotatable about its axis within saiid contoured die;

a plurality of levers, each lever being pivotally mounted to said carrier sleeve at a fulcrum, each of said levers having trowelling surfaces formed thereon;

means for biasing each of said levers about its respective fulcrum to urge its trowelling surfaces away from interior surfaces of said end portion of said pipe; and

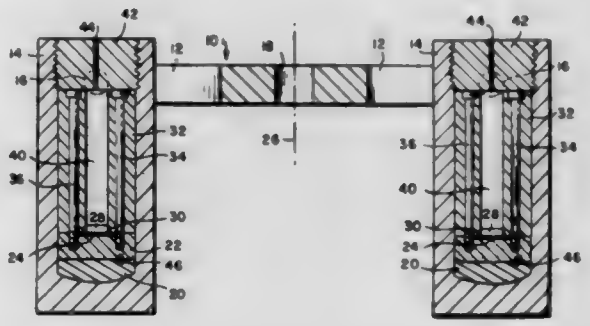
cam means for pivoting each of said levers about its respective fulcrum to urge said trowelling surfaces formed on each of said levers radially outwardly and against interior surfaces of said end portion of said pipe during rotation of said carrier sleeve for circumferential wiping of said interior surfaces of said end portion of said pipe, and for radial shaping of said end portion of said pipe.

4,403,939

PROCESS AND APPARATUS FOR PRODUCING A MOLECULARLY ORIENTED FILM

Kenneth J. Rothschild, Newton, Mass., and Noel A. Clark, Boulder, Colo., assignors to Trustees Boston University, Boston, Mass.

Division of Ser. No. 13,026, Feb. 21, 1979, Pat. No. 4,241,005.
This application Sep. 16, 1980, Ser. No. 187,644
Int. Cl.³ B29C *5/04*
U.S. Cl. 425—425 2 Claims



1. Apparatus for forming a film from a suspension or solution of molecules wherein said molecules are uniformly oriented in said film which comprises:

means to house said molecules adapted to be positioned within a centrifugation apparatus having a spin axis wherein said means is formed integrally into a bucket for a swinging bucket centrifugation apparatus;

said means having a cavity which includes a gravitational isopotential surface having a radius of curvature equal to the distance of said surface from said spin axis, said isopotential surface being the surface normal to the gravitational forces which are generated when spinning said centrifugation apparatus; and,

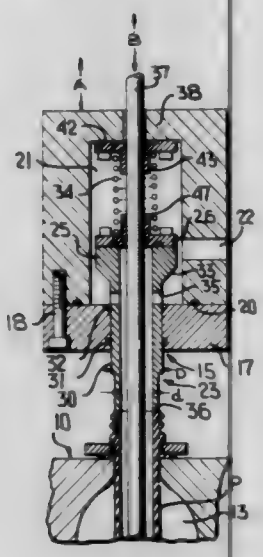
means for evaporating solvent or suspended liquid from said cavity while spinning said centrifugation apparatus.

4,403,940

BLOW HEAD VALVE

Suppayan M. Krishnamumar, Nashua, and Walter R. Jolly, Merrimack, both of N.H., assignors to The Continental Group, Inc., Stamford, Conn.

Filed Oct. 28, 1981, Ser. No. 315,843
Int. Cl.³ B29C *17/07*
U.S. Cl. 425—529 4 Claims



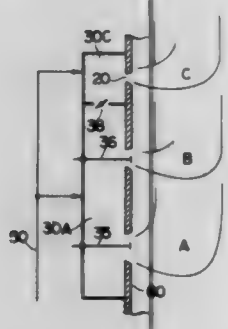
1. A blow head valve for introducing a high pressure blowing gas into a preform in a blow molding operation, said blow head valve comprising a housing defining a gas chamber, said housing including a bottom wall having an opening therethrough, a tubular spool extending through said opening in sealed relation to said bottom wall, said spool having a closed upper end and an open lower end, said spool upper end being disposed within said gas chamber, resilient means normally retaining said spool in a lowered position, and said spool having a blow gas port opening from the interior thereof through an intermediate portion thereof to the exterior thereof, and said blow gas port normally being closed by said bottom wall, said spool lower end forming means for engaging in sealed relation a preform and for moving said spool into said gas chamber and placing said blow gas port in communication with said gas chamber only in the presence of a preform, the seal between said spool and said bottom wall including an openable valve between said spool and said bottom wall, said valve including a tapered valve seat in said bottom wall surrounding said opening, and a valve member projecting from said spool for seating engagement on said valve seat.

4,403,941

COMBUSTION PROCESS FOR REDUCING NITROGEN OXIDES

Kunio Okiura; Iwao Akiyama; Hiroshi Terada; Yoshijiro Arikawa; Akira Baba, and Shigeki Morita, all of Kure, Japan, assignors to Babcock-Hitachi, Ltd., Tokyo, Japan

Filed Aug. 5, 1980, Ser. No. 175,823
Claims priority, application Japan, Aug. 6, 1979, 54-99487
Int. Cl.³ F23N *1/02*
U.S. Cl. 431—10 12 Claims



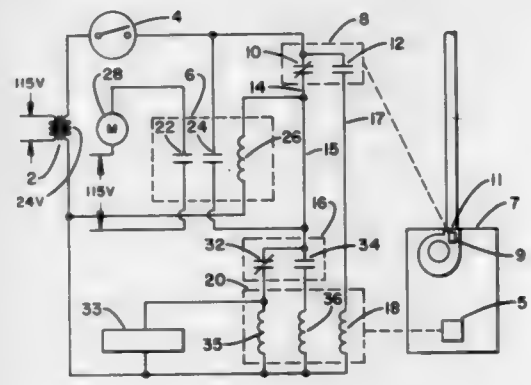
1. A combustion process for reducing nitrogen oxides in combustors which comprises arranging at least one primary burner, at least one secondary burner and at least one air port, successively in this order in the direction of gas stream in the hollow body of a combustor provided with a space for combustion and an exit for combustion exhaust gas; and burning fuels in a ratio of air to fuel less than 1 at said primary burner to form an incomplete combustion zone, burning fuels in a ratio of air to fuel lower than the above-mentioned ratio at said secondary burner to form a reducing combustion zone, and burning fuels at said air port where air is fed in excess amount required for a complete combustion of the fuels, to form a complete combustion zone, respectively, in the free space of the hollow body of the combustor.

4,403,942

SELF-CHECKING SAFETY SWITCH CONTROL CIRCUIT

Lloyd F. Copenhaver, Indianapolis, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 18, 1980, Ser. No. 207,854
Int. Cl.³ F23N *3/00*; F23Q *5/00*
U.S. Cl. 431—24 10 Claims



1. Electrical controls for a combustion system of the type having a vent system with a flow sensor for detecting flow of air and products of combustion through the vent system, a blower for mechanically assisting the flow of air and products of combustion through the combustion system, a fuel supply system including a main fuel valve which controls fuel flow to main burners of the combustion system and a pilot fuel valve which controls fuel flow to the main fuel valve and to a pilot burner, a sparker which operates to ignite fuel flowing from the pilot burner, and a thermostat for connecting the electrical controls to a main electrical power supply in response to a demand for combustion and for disconnecting the electrical controls from the main electrical power supply when the demand for combustion is satisfied, said electrical controls comprising:

safety switch circuit means for proving operation of the flow sensor when the electrical controls are connected to the main electrical power supply by the thermostat and for terminating operation of the combustion system when the flow sensor detects no flow through the vent system during operation of the combustion system;

ignition circuit means for operating the sparker to ignite fuel flowing from the pilot burner when the pilot fuel valve is opened;

blower circuit means for turning on the blower when operation of the pilot burner is established; and

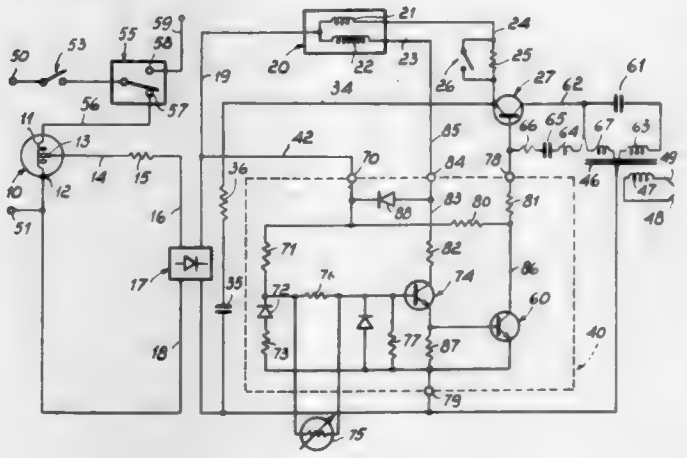
combustion circuit means for opening the pilot fuel valve only when the operation of the flow sensor is proven by the safety switch circuit means and for opening the main fuel valve only when the flow sensor detects flow through the vent system after operation of the pilot burner is established and the blower is turned on.

4,403,943

FLAME SURVEYING MEANS IN BURNER IGNITION

Antonio Stella, and Giuseppe Canova, both of Legnago, Italy, assignors to R.B.L. Riello Bruciatori Legnago S.p.A., Legnago, Italy

Filed Feb. 12, 1981, Ser. No. 233,761
Claims priority, application Italy, May 6, 1980, 21817 A/80
Int. Cl.[3] F23N *5/00*
U.S. Cl. 431—31 7 Claims



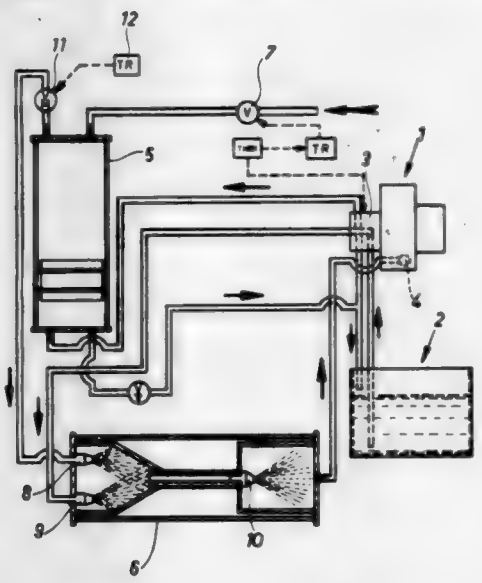
1. An ignition and flame surveying device for a liquid fuel burner comprising an electrically controlled valve which enables the feeding of fuel to said burner and which is provided with a retaining winding for rendering said feeding of fuel permanent during regular burner operation, and which further comprises a combustion chamber pre-purging means and a resistor which determines, after a preselected time period of its heating, the end of a pre-purging cycle, said device further comprising a flame detection photo-sensitive means comprising a photo-resistance which responds to a preset low light intensity to reduce the current which flows through said resistor to such an extent that its heating becomes insufficient to cause the end of said pre-purging cycle, while it responds to a light intensity corresponding to the presence of a flame in said combustion chamber to activate said retaining winding of said valve and to provide other signals necessary for causing said burner to pass to its regular operation mode.

4,403,944

AUXILIARY DEVICE FOR OIL BURNER FOR MIXING WATER AND OIL FOR COMBUSTION

Pentti Pyykkönen, Kangasalantie 6, Järvenpää, Finland

Filed Oct. 10, 1979, Ser. No. 83,406
Int. Cl.[3] F23J *7/00*
U.S. Cl. 431—90 1 Claim



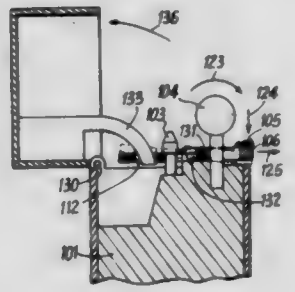
1. Apparatus for supplying a combustion mixture of oil and water to an oil burner having a combustion chamber, said apparatus including an oil supply, a tank and an oil pump and a discharge nozzle at the combustion chamber, said apparatus comprising: a piston mounted in said tank dividing said tank into two chambers, one for oil and one for water, said piston reciprocally movable lengthwise of said tank in response to pressure differentials acting on opposite sides thereof; a source of water under pressure connected to one of the chambers in said tank; a valve between said tank and its water source, means responsive to the firing of said oil burner for closing said valve while the oil burner is firing; conduit means connecting said oil pump to the other chamber in said tank to subject the water content of said tank to the same pressure as the oil being pumped by said pump; a first mixing chamber and a pair of adjacent nozzles, one of said nozzles being connected to said oil pump and the other being connected to said one chamber of said tank; for discharing both oil and water into said chamber to intermix the same; a second chamber and a third nozzle communicating with said first chamber for discharging the oil/water mix from said first chamber into said second chamber; conduit means interconnecting said second chamber with said discharge nozzle in said combustion chamber for conducting the oil/water mixture to said discharge nozzle.

4,403,945

GAS LIGHTER FOR SMOKERS

Imre Leitgib, Vesenaz, Switzerland, assignor to Usiflamme S.A., Villars-sur-Glane, Switzerland

Filed Oct. 21, 1980, Ser. No. 199,271
Claims priority, application France, Oct. 30, 1979, 79 26889
Int. Cl.[3] F23Q *2/00*
U.S. Cl. 431—150 8 Claims



3. Gas lighter comprising a body, a cover movable between an open position and a closed position relative to the body, and defining with the body, an interior space when the cover is in the closed position on the body, a valve mounted on the body in said space to be moved from a closed position, in which flow of gas is prevented, to an open position which permits the gas to flow, a valve lever mounted on said body to permit the opening of the valve, said valve lever being movable from a retracted position where it is entirely contained in said space to an operating position extending outside said space where it can be activated by the user to open the valve, and means to displace the valve lever from its retracted position to the operating position in response to displacement of the cover from its closed position to its open position.

4,403,946

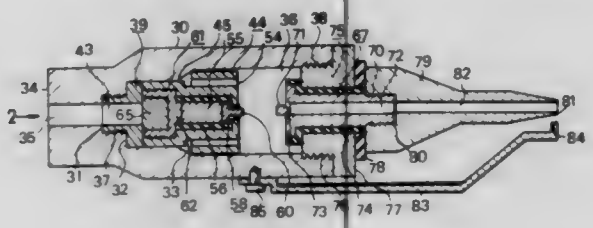
IGNITER UTILIZING PIEZO-ELECTRIC ELEMENT

Seiji Kagawa, No. 27-1-126, 3-Chome, Baba, Tsurumi-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Oct. 7, 1981, Ser. No. 309,426
Claims priority, application Japan, Oct. 23, 1980, 55/147638; Oct. 25, 1980, 55/149960; Jun. 16, 1981, 56/92782
Int. Cl.[3] F23Q *3/00*
U.S. Cl. 431—255 8 Claims

1. An igniter utilizing a piezo-electric element, comprising a cylindrical body having a gas passage, a movable piezo-electric unit provided in the space in said cylindrical body so as to be movable axially of said cylindrical body by the pressure of a gas flowing in said gas passage, a stator adapted to produce a

magnetic attraction between said stator and said movable piezo-electric unit, said stator being provided fixedly in said cylindrical body on its gas passage side and having a through-hole in communication with said gas passage, and a conductor disposed in said cylindrical body on its side opposite from said stator such that said movable piezo-electric unit will impinge thereagainst when said unit is moved, said conductor having a gas passage and fixed in its position while electrically insulated from said cylindrical body by an insulator, said conductor being also electrically connected to one of the discharging



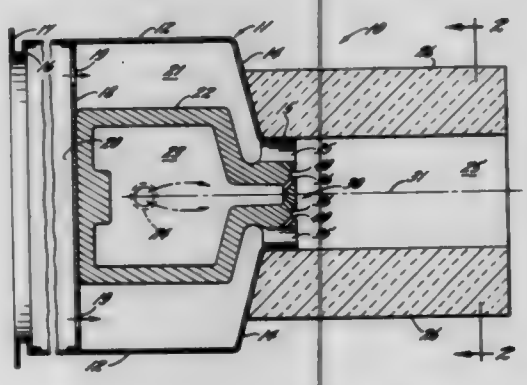
electrodes while the other discharging electrode is electrically connected to said cylindrical body in a spaced-apart relation with the first-said discharging electrode, said movable piezo-electric unit being provided with a piezo-electric element disposed in the space of said cylindrical body through an insulator, said piezo-electric element being held and fixed in position by a pressure-receiving terminal adapted to receive the pressing force of the gas flowing in the gas passage in said cylindrical body and an impact terminal provided at the impact receiving face of said conductor.

4,403,947

GAS MIXING BURNER

Lyle S. Spielman, Rockford, Ill., assignor to Eclipse, Inc., Rockford, Ill.

Filed Aug. 12, 1981, Ser. No. 292,229
Int. Cl.³ F23D *15/02*
U.S. Cl. 431—353 **13 Claims**



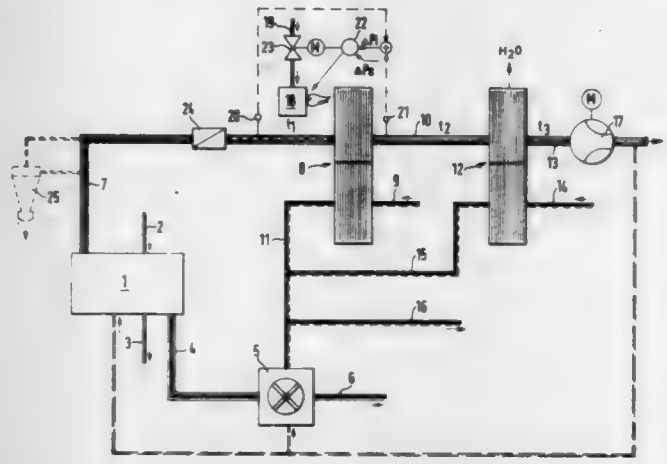
1. A gas mixing burner comprising means defining air, fuel and combustion chambers, means for supplying pressurized air and fuel to said air and fuel chambers, respectively, said air and fuel chambers each having an outlet end, said combustion chamber having an inlet end located adjacent the outlet ends of said air and fuel chambers, and mixing means located between the inlet end of said combustion chamber and the outlet ends of said air and fuel chambers, said mixing means comprising a structure having first and second spaced apart rows of combustion air passages leading from said air chamber to said combustion chamber, first and second rows of fuel passages formed through said mixing means between said rows of combustion air passages and leading from said fuel chamber to said combustion chamber, said rows of fuel passages diverging away from one another as such passages progress toward said combustion chamber, a first row of stabilizing air passages formed through said mixing means between said first row of combustion air passages and said first row of fuel passages and leading from said air chamber to said combustion chamber, and a second row of stabilizing air passages formed through said mixing means between said second row of combustion air passages and said second row of fuel passages and leading from said air chamber to said combustion chamber, said rows of stabilizing air passages converging toward one another as such passages progress toward said combustion chamber.

4,403,948

SYSTEM FOR SEPARATION OF VOLATILE SUBSTANCES FROM WASTE GASES

Günter Waldmann, Packenreiterstr. 18b, and Franz Plesch, Gotthord Str. 4, both of D-8000 Muenchen, Fed. Rep. of Germany

Filed Mar. 13, 1981, Ser. No. 243,335
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009938
Int. Cl.³ F26B *3/04*
U.S. Cl. 432—1 **54 Claims**



1. An apparatus for separation of carried combustible and/or condensable and/or precipitable substances from the waste gas of drying installations comprising a drying chamber; a supply line to the drying chamber for feeding material to be dried; an offtake line connected to the drying chamber for removing dried stock; an input line to said drying chamber for feeding in hot air; a waste has output line connectedd to said drying chamber for removing waste gas; a first heat exchanger connected to the waste gas output line and having a waste gas outlet; an inlet and an outlet for exchange fluid; said first heat exchanger providing for cooling of the hot waste gas coming from the drying chamber to a temperature sufficient for depositing volatile substances; heating means for evaporating and/or subliming the deposited volatile substances; and switching means to allow for alternately turning on the exchange fluid for cooling of the waste gas or the heating means.

4,403,949

ROSIN FLUX FILTRATION SYSTEM

Edward J. March, Lower Makefield Township, Bucks County, Pa., and George M. Wenger, Franklin Township, Somerset County, N.J., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,151
Int. Cl.³ F24H *7/00*; F27B *9/00*; B01D *9/04*
U.S. Cl. 432—29 **9 Claims**

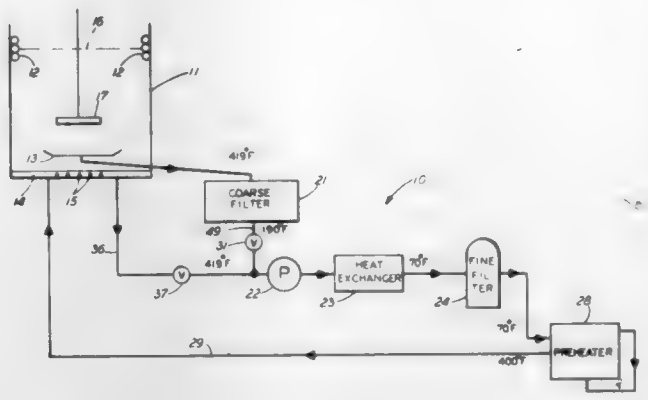
1. A method of removing flux from a liquid-flux mixture draining from an article subjected to condensing, hot, saturated vapor of the liquid from a boiling reservoir of the liquid in a condensation heating facility, the method comprising the steps of:

diverting the draining mixture, from the boiling liquid reservoir, into a first flux filter;

accumulating the mixture in the first flux filter to remove a portion of the flux therefrom;

alternately discharging the filtered mixture from the first flux filter and the liquid from the reservoir to provide a continuous flow into a heat exchanger to lower the tem-

perature thereof to precipitate out flux residue therein; and



passing the liquid with the precipitate therein, through a second flux filter resulting in a substantially flux free heat transfer liquid.

4,403,950

FIXING DEVICE

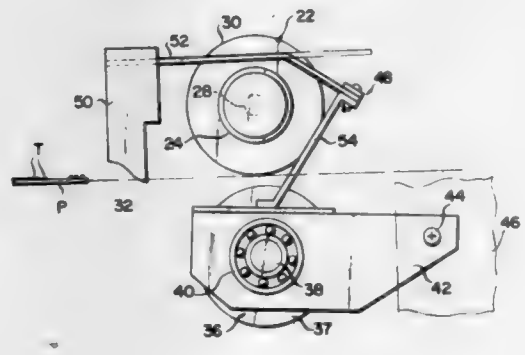
Michio Maeda, Ooiso, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 17, 1982, Ser. No. 419,604

Claims priority, application Japan, Oct. 9, 1981, 56-150294[U]

Int. Cl.³ G03G *15/20*

U.S. Cl. 432—60 **7 Claims**



1. A fixing device comprising:

a first rotatable roller in a fixed position;

heating means provided in the first roller for heating the same;

a second rotatable roller facing the first roller and capable of being in contact therewith; and

shifting means deformable by heat from the first roller and movably supporting the second roller for separating the second roller from the first roller at normal temperature, and for pressing the second roller against the first roller when the shifting means is deformed by heat from the first roller heated by the heating means.

4,403,951

SHAFT FURNACE FOR BURNING OR FIRING AND SINTERING MATERIAL IN LUMP FORM OR PELLET FORM AND WITH AN INTERNAL BURNER

Ulrich Beckenbach, Fontanestr. 13, and Helmuth Beckenbach, An den Linden 47, both of D-4005 Meerbusch 1, Fed. Rep. of Germany

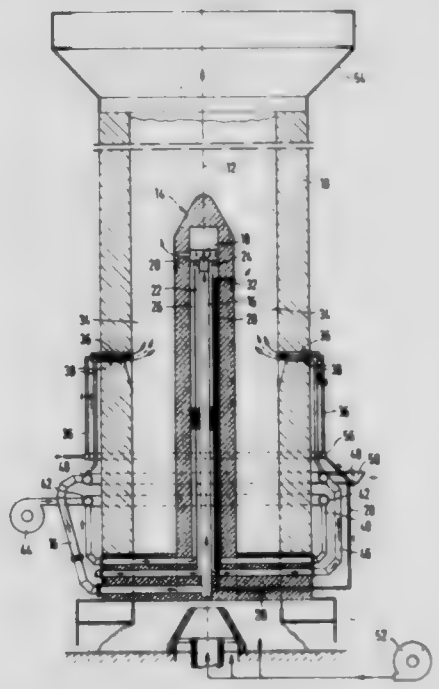
Filed Dec. 24, 1981, Ser. No. 334,429

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1981, 3125320

Int. Cl.³ F27D *1/08, 15/02*

U.S. Cl. 432—96 **22 Claims**

1. A shaft furnace for burning and sintering material in lump form, which material is selected from a group consisting of limestone, dolomite and the like, said furnace comprising a furnace shell, an upright internal burner being arranged centrally in the furnace shell in the vicinity of the furnace bottom, said furnace shell and burner having substantially rotationally symmetrical cross-sections at right angles to the longitudinal axis of the furnace and defining an annular space therebetween, said internal burner in a concentrically positioned manner to one another having a central combustion air duct with a combustion air distribution chamber being arranged in the vicinity of an upper end of the air duct and having a plurality of air outlets discharging laterally into the annular space, an internal cooling air duct surrounding said combustion air duct, an external cooling air duct surrounding the internal cooling air duct and being in communication therewith in the vicinity of



an upper end by means of a cooling air deflection chamber, means for introducing cooling air into a bottom of the external air duct being arranged in the vicinity of the furnace bottom with the cooling air flowing upward through the external cooling air duct and down through the intrnal air duct, said internal cooling air duct having an air outlet being positioned in the vicinity of the furnace bottom and extending to a first container being disposed outside of the shaft furnace, a supply line for supplying the combustion air duct with combustion air from the first container, and means for supply fuel including fuel gas supply lines being positioned within the external cooling air duct and haviang fuel gas outlets in the vicinity of the upper end of each fuel gas supply line and below the level of the air outlets of the combustion air distribution chamber.

4,403,952

APPARATUS FOR DRIVING A ROTARY DRUM, SUCH AS A ROTARY KILN

Per Birch, Copenhagen, and Christian Marcussen, Valby, both of Denmark, assignors to F. L. Smidth & Co., Cresskill, N.J.

Filed Nov. 2, 1981, Ser. No. 317,466

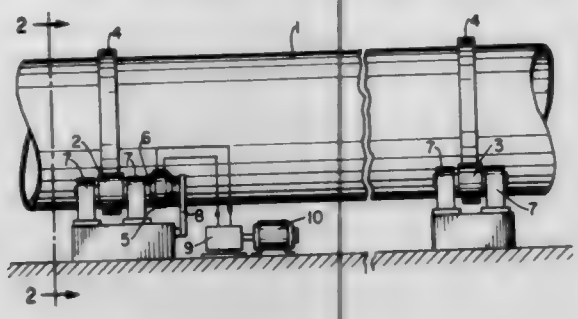
Claims priority, application Denmark, Nov. 4, 1980, 4668/80

Int. Cl.³ F27B *7/00*

U.S. Cl. 432—103 **8 Claims**

8. A rotary kiln comprising a rotary drum rotating about an axis, more than two spaced apart live rings adapted for being positioned about the drum, more than two roller pairs on which the drum is mounted, each pair of rollers being positioned for engagement with a respective live ring, at least two individual power circuits each including a hydrostatic motor, a variable displacement hydrostatic pump and a pump drive motor, at least two individual rollers of said roller pairs each being driven individually by its own respective hydrostatic motor, characterized in that the torque distribution for the

drum is provided by the hydrostatic motors distributed in the respective power circuits, the torque distribution being set at



predetermined levels such that the slip in any individual power circuit lies within predetermined limits.

4,403,953

APPARATUS AND PROCESS OF TRANSFERRING THE VESSELS IN A TUNNEL FURNACE

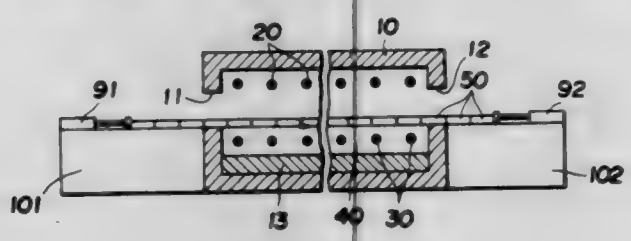
Sousuke Suzuki, Ichikawa, Japan, assignor to Furnace Industrial Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1981, Ser. No. 313,572

Claims priority, application Japan, Oct. 21, 1980, 55-147900; Apr. 1, 1981, 56-47256

Int. Cl.³ F27B *9/14*; F27D *3/04, 3/00*

U.S. Cl. 432—122 **3 Claims**



1. A transfer apparatus for transferring vessels through a tunnel furnace having a built-in heating apparatus, the vessels having predetermined widths, said transfer apparatus comprising:

carrier receiving means extending horizontally between an inlet and an outlet of the furnace for supporting carrier slide plates;

a plurality of carrier slide plates made from heat-resisting and abrasion-proof material and adjacently connected to each other, said carrier slide plates being slidably mounted on the carrier receiving means, having upper surfaces supporting said vessels, and having smaller widths than the widths of the vessels and being longitudinally reciprocative in the furnace on the carrier receiving means;

vertically movable lifting means for lifting vessels off of said carrier slide plates so that said carrier slide plates are horizontally movable with respect to the lifted vessels, said lifting means being operable to return the lifted vessels to the carrier slide plates;

supporting means mounted on the lifting means for engaging portions of the vessels protruding from side edges of said carrier slide plates to thereby support the vessels during lifting movement thereof; and

drive means for horizontally moving said carrier slide plates, said carrier slide plates being moved in a first direction to incrementally advance vessels through said tunnel furnace and being moved in a direction opposite said first direction after the vessels have been lifted off of said carrier slide plates.

4,403,954

APPARATUS FOR HEAT-TREATING PIPES

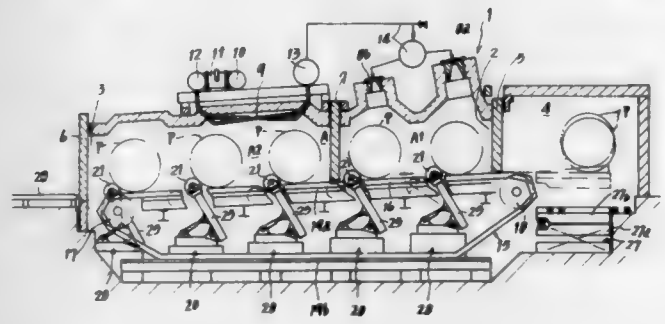
Hitoshi Kokeguchi, Takarazuka; Jiro Yamaguchi, Itami; Akinori Sakoda, Amagasaki; Mikio Umeda, Kawanishi; Tadashi Yamashita, Nishinomiya; Yoshimasa Katsuki, Takarazuka; Mitsuru Murakami, Kobe, and Yasuo Imamura, Amagasaki, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Jul. 24, 1981, Ser. No. 286,369

Claims priority, application Japan, Aug. 8, 1980, 55-109435; Aug. 8, 1980, 55-109437; Oct. 13, 1980, 55-143526; Oct. 13, 1980, 55-143527

Int. Cl.³ F27B *9/14, 3/04*; B65G *15/00, 15/64*

U.S. Cl. 432—124 **15 Claims**



1. An apparatus for heat-treating pipes comprising a furnace chamber having an inlet and an outlet and capable of accomodating a plurality of pipes arranged in parallel at suitable spacing, a plurality of main chains disposed in the furnace chamber and drivingly movable in a direction at right angles to the axes of the pipes for providing a path of transport of the pipes, a plurality of means for stopping the pipes intermittently at suitably spaced-apart positions in the path of transport to cause them to rotate about their own axes in cooperation with the main chains and for correcting the axial displacement of the pipes, and sensor means provided in corresponding relation to each of the stopping and correcting means for detecting the axial displacement of a corresponding pipe to control the stopping and correcting means so that the pipe is brought to a specified axial position on the path of transport.

4,403,955

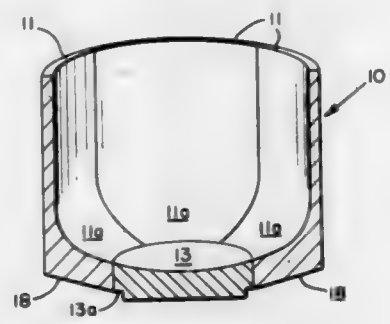
RECEPTACLE FOR SUPPORT OF A MELT CONTAINING CRUCIBLE

Nicola Sarno, Vancouver, Wash., assignor to General Signal Corporation, Stamford, Conn.

Filed Feb. 22, 1982, Ser. No. 350,797

Int. Cl.³ F27B *14/08, 14/14*

U.S. Cl. 432—158 **5 Claims**



1. A crucible recepticle adapted for complete contact support of a melt containing crucible in a softened state wherein an improved recepticle comprises:

(a) a segmented cup-shaped recepticle for completely supporting the softened crucible comprising a plurality of similar separate rigid elevational segments,

(b) the elevational segments being separable to relieve thermal stresses during cooling of the crucible and its supporting recepticle,

(c) the segments having inwardly formed lower portions adapted to bias the elevational segments to adjoining positions by gravity for support of sides of the crucible,

(d) a central annular base segment adjoining, but separate from lower ends of the elevational segments for supporting a central portion of a melt containing crucible, the base segment being of rigid material and having a generally concave upper surface conforming to a central complimentary bottom portion of the melt containing crucible, and

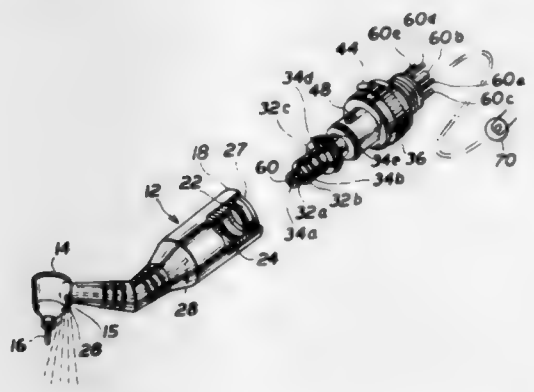
(e) an annular base plate of rigid material for supporting the elevational and base segments having a flange tapered inwardly and downwardly cooperating with a complimentary lower surface of the elevational segments to bias the elevational segments to adjoining positions.

4,403,956

DENTAL HANDPIECE HAVING AN OPTICAL FIBERSCOPE

Takasuke Nakanishi, Kanuma, Japan, assignor to Nakanishi Dental Mfg., Co., Ltd., Kanuma, Japan

Filed Jul. 13, 1981, Ser. No. 282,737
Claims priority, application Japan, Jul. 14, 1980, 55-99806[U]
Int. Cl.³ A61C *1/00*
U.S. Cl. 433—29 **3 Claims**



1. A dental handpiece for connection to a dental unit comprising:

an outer sleeve having a front end and a rear end;

a powerhead assembly, including means for holding a dental tool and an air-powered turbine wheel, supported on said front end of said outer sleeve, said powerhead assembly having an opening to the exterior thereof adjacent said holding means;

said outer sleeve having an inner circumferential surface defining an internal space;

a sleeve bearing including a circumferentially closed side wall, held in said space of said outer sleeve, said sleeve bearing also having:

a stepped rearwardly increasing diameter cylindrical internal surface including first, second and third stepped cylindrical surfaces and first, second and third radially extending surfaces respectively adjacent said first, second and third stepped cylindrical surfaces, enclosing a stepped cylindrical space,

a first central, axial passage having a front and a rear end, said rear end of said first central axial passage opening into said stepped cylindrical space,

first and second side passages, each respectively having front and rear ends, near and around said first central passage, the rear ends of said first and second side passages opening axially into said stepped cylindrical space, the front ends of said first and second side passages opening axially into the front end of said outer sleeve,

a third side passage opening at one end into the rear end of said first side passage and opening at the other end exteriorly of said side wall, and

a radially extending exhaust passage opening to the exterior of said sleeve bearing inside said outer sleeve and to the interior of said stepped cylindrical space rearward of said rear end of said second passage;

a first fiberscope having a front end and a rear end, extending axially through said first central passage, said front end of said fiberscope extending into said powerhead assembly and protruding slightly out of said opening in said powerhead assembly, said rear end of said first fiberscope protruding into said stepped cylindrical space;

a central pipe connecting the front end of said first central passage into the powerhead for supplying chip air thereto;

a first side pipe, connecting said front end of said first side passage to said air powered turbine wheel in said powerhead assembly, for supplying air under pressure thereto;

a second side pipe connecting said front end of said second side passage into said powerhead for supplying water thereto;

a second fiberscope;

means, having a front end and a rear end and including a forwardly reducing cylindrical plug at said front end thereof, for releasably connecting said sleeve to the dental unit, a rear internal portion of said sleeve bearing being so shaped as to form a socket for snugly and axially, rotatably receiving said plug, said connecting means being releasably connected into said sleeve bearing at said rear end thereof; said plug including:

first, second and third coaxial, respectively rearwardly increasing diameter cylindrical walls,

a first flat radially extending exterior front wall at the front end of said first cylindrical wall and,

second and third radially extending ring-shaped walls at the front ends of said second and third cylindrical walls, respectively,

each of said first, second and third radially extending walls respectively confronting said first, second and third radially extending surfaces in respective spaced relation thereto;

said plug having:

a radially large hollow portion defining a hollow space,

a second primary central axial passage, opening at opposite ends at the forward end of said hollow sapce and in said first radially extending wall at the forward end of said stepped cylindrical space, for holding said second fiberscope,

a fourth side passage having a rear end opening into said hollow space and a front end opening axially in one of said second and third radially extending walls in spaced communication with the rear end of said first side passage, to supply pressurized air thereto,

a fifth side passage having a rear end opening onto said hollow space and a front end opening axially in said first radially extending wall into the forward end of said stepped cylindrical space for supplying chip air thereto,

a sixth forwardly and radially outwardly angled side passage having a rear end opening into said hollow space and a front end opening through the other of said second and third radially extending walls into spaced communication with the rear end of said second side passage, and

a radially extending second exhaust passage coinciding with said first exhaust passage and opening to the exterior of said sleeve bearing and said rear end of said third side passage through said first exhaust passage and to the interior of said hollow space, for exhausting water and pressurized air;

said second fiberscope extending through said second central passage and having a front end abutting said rear end of said first fiberscope;

a mount insert having five axially extending insert passages, fitted to said connecting means rearward of said hollow space;

four insert pipes, three of said four insert pipes and the rear end of said second fiberscope respectively extending through four of said five insert passages, through said hollow space and into said fourth, fifth and sixth side

passages and said second central passage, respectively; and

a fifth insert pipe extending into the fifth of said five insert passages for exhausting water and pressurized air from said second exhaust passage; whereby fluid and light communication between said five insert pipes and said powerhead assembly is maintained irrespective of the axial rotation of said plug relative to said sleeve bearing, the front end face of said second fiberscope being slidingly rotatable against the rear end face of said first fiberscope.

4,403,957

DENTAL HANDPIECE HAVING OWN ELECTRICAL LIGHT SOURCE

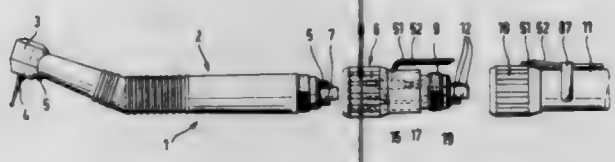
Walter Mössle, Bad Waldsee; Bernhard Lingenhole, and Eugen Eibofner, both of Biberach, all of Fed. Rep. of Germany, assignors to Kaltenbach & Voigt GmbH & Co., Biberach an der Riss, Fed. Rep. of Germany

Filed May 6, 1982, Ser. No. 375,766

Claims priority, application Fed. Rep. of Germany, May 18, 1981, 3119689

Int. Cl.³ A61C *1/00, 3/00*

U.S. Cl. 433—29 **18 Claims**



1. In a dental handpiece including a gripping sleeve; a drive aggregate arranged within said handpiece for a dental treatment worktool retained in a head portion; a built-in electrical light source for said handpiece; an intermediate member for said light source and conduits for supply media, said intermediate member being interchangeably arranged between the gripping sleeve and the end member of a supply hose for the supply media for the handpiece, the light of said light source being conducted to the region of the handpiece head portion through a strand-like light conductor arranged interiorly of said handpiece and extending from said gripping sleeve while being directed at said head portion onto the dental treatment tool; and compressed air-actuated pneumatic switch means for activating and deactivating said light source; the improvement comprising in that said cylindrical intermediate member contains said light source and said pneumatic switch means.

4,403,958

DENTAL COMPRESSED-AIR MOTOR

Gerd Löhn, Biberach, Fed. Rep. of Germany, assignor to Kaltenbach & Voigt GmbH & Co., Biberach an der Riss, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 242,051

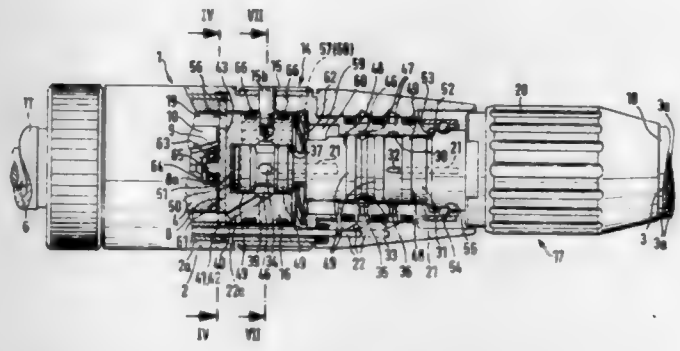
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1980, 3009337

Int. Cl.³ A61C *1/02*

U.S. Cl. 433—100 **18 Claims**

1. In a dental compressed-air motor, a housing; a rotatably supported rotor in said housing adapted to be rotated by compressed drive air introduced through a compressed drive air inlet conduit; a rotor shaft connectable with a work tool on said rotor, regulating means including externally operable handgrip means in said housing and being turnable through said regulating means for varying the rotational speed and/or the direction of rotation of said rotor; first coupling means at one end of said housing for connection with a dental handpiece mounting said work tool and second coupling means formed by an attachment element for connection with a supply hose conveying compressed air or other flow media towards or from said housing and said handpiece, said rotary slide valve being arranged intermediate said rotor and said attachment element, said attachment element including essentially axially entering and axially extending media through-passageways connected with media conduits leading to the location of use of the compressed-air motor and handpiece; the improvement comprising:

said attachment element including an axial guide spigot axially detachably insertable into a receiving aperature of said housing open towards the connecting side and into which there extends said media passageways and terminate in outlet openings at the side of said guide spigot, said outlet openings being sealed relative to each other and being at predetermined spacings, said housing including inlet openings on the side wall of the receiving aperture associated with the outlet openings of the guide spigot which are in communication with the outlet openings of said guide spigot upon insertion of the latter and from



which there extend the media conduits leading to a location of use for said handpiece; said rotary slide valve including a central cylindrical insertion aperture extending substantially along the entire axial length of the rotary slide valve for receiving a cylindrical end portion of said guide spigot, said end portion having at least one side outlet opening for compressed drive air which in each turned position of the rotary slide valve is in communication with at least one compressed drive air inlet opening on the side wall of the insertion aperture and from which there extends at least one media conduit representing the compressed drive air passageways in said rotary slide valve, and whose outlet openings are adapted to be superimposed on at least one inlet opening of at least one conduit leading to the displacement space of said rotor in said housing representing a location of use.

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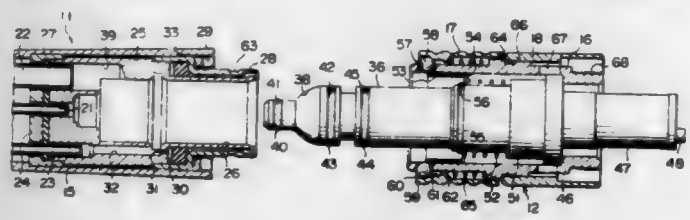
COUPLING DEVICE FOR A DENTAL INSTRUMENT

Narito Hatakeyama, Ichikawa, Japan, assignor to Kabushiki Kaisha Yoshida Seisakusho, Tokyo, Japan

Filed Jul. 31, 1981, Ser. No. 288,824

Int. Cl.³ A61C *1/08*

U.S. Cl. 433—126 **10 Claims**



1. A coupling device for a dental instrument comprising a dental instrument body having a drive means driven by a fluid medium, said instrument body having a first fluid passage for supplying said medium to said drive means disposed within a front half portion thereof and a fitting recess in communication with said first passage disposed within a rear half portion thereof; a hose portion having an insert cylinder inserted into said fitting recess disposed at the foremost end thereof, said hose portion having a supply hose for supplying said medium connected to a rear end thereof, said hose portion being interi-

orly formed with a second fluid passage to provide communication between said first passage and said supply hose, said second fluid passage extending in an axial direction; and a coupling device for detachably connecting said instrument body with said hose portion; said coupling device comprising a sleeve fitted over said hose portion, said sleeve having an opening, a ball-like stop member inserted into said opening and movable in a radial direction, said stop member having a larger diameter than the wall thickness of said sleeve, a connection cylinder inserted into said sleeve having an external diameter substantially equal to the internal diameter of said sleeve and having a front end coaxially mounted on the rear end of said instrument body, and an operating ring fitted over said sleeve and movable between a first position and a second position positioned axially of said sleeve with a clearance formed therebetween; said connection cylinder being formed on its outer peripheral surface with an annular groove to receive therein said stop member when said insert cylinder is inserted into said fitting recess into a locking position; said operating ring being formed in its inner periphery with a first annular surface at the front end thereof so that when said operating ring is positioned in said first position, the inner radial portion of said stop member is positioned in the same place as the inner peripheral surface of said sleeve, and a second annular surface on said operating ring having a smaller diameter than that of said first annular surface so that when said operating ring is positioned in said second position, the inner radial portion of said stop member extends into said annular groove to provide a lock fitting between said instrument body and said hose portion, said operating ring having an abutment which is engaged by said stop member when said operating ring is in said second position wherein the engagement of said abutment and said stop member determines said second position of said operating ring, said coupling device being released by manually grasping said operating ring to move the latter axially from said second position to said first position such that said abutment is disengaged from said stop member, said stop member being thereby released from said annular groove by said axial movement of said operating ring to thereby permit detachment of said instrument body from said hose portion.

4,403,960

EXTRACORONAL HOLDING MEMBER FOR DENTAL PROSTHESES

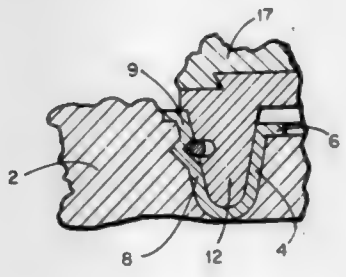
Robert Hauri, Bahnhofstrasse 33, Aarau, and Peter Reinhard, Weingartenstrasse 8, Spreitenbach, both of Switzerland

Filed Mar. 11, 1982, Ser. No. 357,274

Claims priority, application Switzerland, Jun. 18, 1981, 4043/81

Int. Cl.³ A61C *13/22*

U.S. Cl. 433—177 **20 Claims**



1. A holding member assembly for dental prostheses, comprising

a female member having an inner wall and an outer wall coupled by a bottom member defining a generally annular cavity therebetween, said outer wall having a radially outwardly extending flange reinforcing said female member;

a male member having a generally toroidal portion shaped and dimensioned to be closely received in said female member cavity;

an annular spring for releasably holding said members together;

means, in said cavity, for receiving said spring; and

means for securing one of said members to at least one tooth of a wearer and the other of said members to a prosthesis;

whereby the assembly securely couples a prosthesis to a tooth, is stable and has a reduced overall height.

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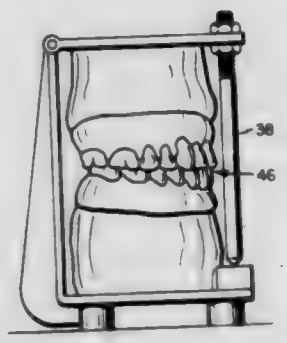
METHOD AND APPARATUS FOR FABRICATING DENTAL PROSTHETICS

John I. Gurney, 2921 Weathervane, Dallas, Tex. 75228

Filed Jan. 12, 1982, Ser. No. 339,004

Int. Cl.³ A61C *9/00*

U.S. Cl. 433—213 **5 Claims**



1. A method for fabricating three directional dental prosthetics comprising the steps of:

(1) preparing a wax setup containing artificial dentures of the patient's arches;

(2) trying the wax setup prepared in step (1) in the patient's mouth to determine centric occlusion;

(3) making a matrix of the setup prepared in step 1 when the result in step (2) is satisfactory;

(4) preparing a set of pumice teeth by pouring a pumice compound into the matrix formed in step (3) and allowing said compound to harden;

(5) preparing a duplicate setup containing pumice teeth by transferring the pumice teeth prepared in step (4) onto duplicate models of the patient's upper or lower arches;

(6) mounting the duplicate setup prepared in step 5 in the patient's mouth;

(7) abrasively milling incisal-occlusal surfaces in the pumice teeth corresponding to the patient's natural mandibular movements by exercising the duplicate setup containing pumice teeth in the patient's mouth; and

(8) mechanically reproducing the incisal-occlusal surfaces of said pumice teeth on said artificial dentures in said wax setup from said duplicate setup.

4,403,962

MANNEQUIN HEAD FOR TRAINING

Leonard A. La Vista, 185 Seminol Blvd., Melbourne, Fla. 32901

Filed Dec. 11, 1981, Ser. No. 329,762

Int. Cl.³ G09B *25/00*

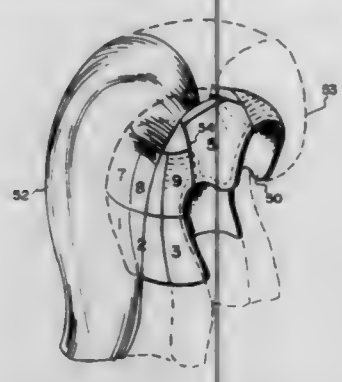
U.S. Cl. 434—94 **9 Claims**

2. An instructional aid for teaching hairstyling and the like comprising:

a cap formed from a thin, flexible material approximately the size and shape of the hair bearing portion of a human head;

a plurality of markings on the outer surface of said cap for providing a guide to a hairdresser in practicing a hairstyling technique; and

hair strands attached over said markings on the outer surface of said cap to simulate a human head of hair, said markings



formed to be visible during practicing of a hairstyling technique.

4,403,963

FOUNDATION COMPOSITION SUITABLE FOR USE IN MAKING UP A MANNEQUIN

Jun Yoshida, Kamakura; Toshiharu Tsunemitsu, Yokohama, and Masayoshi Nakano, Tokyo, all of Japan, assignors to Kanebo Cosmetics, Inc., Tokyo, Japan

Continuation of Ser. No. 181,847, Aug. 27, 1980, abandoned.
This application Dec. 2, 1981, Ser. No. 326,911
Claims priority, application Japan, Aug. 31, 1979, 54-111872
Int. Cl.³ G09B *25/00*
U.S. Cl. 434—100 **9 Claims**

1. A method for making-up an artificial mannequin with a make-up material for a human body, comprising undercoating a skin surface layer of an artificial mannequin made from a synthetic resin, with a foundation composition which comprises a dispersion or solution of a polymeric film-forming material in water, a water-insoluble white powder material and water, the particles of said water-insoluble white powder material having an average size of from 2 to 100 microns, and the content of said water-insoluble white powder material being in a range of from 20 to 60 based on the entire weight of said composition, and making up said undercoated skin surface layer with the make-up material for a human body.

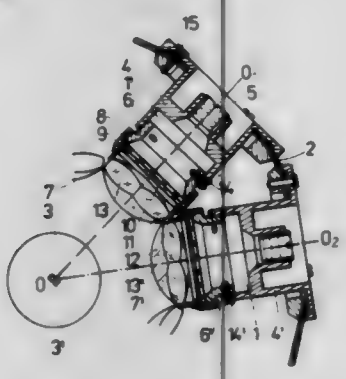
9. An artificial mannequin having a skin surface layer of a synthetic resin and made up by the method as claimed in claim 1.

4,403,964

STAR PROJECTORS FOR PLANETARIA

Ludwig Meier, Jena, German Democratic Rep., assignor to Jenoptik Jena G.m.b.H., Jena, German Democratic Rep.

Filed Oct. 20, 1981, Ser. No. 308,902
Claims priority, application German Democratic Rep., Dec. 1, 1980, 225598
Int. Cl.³ G09B *27/00*
U.S. Cl. 434—286 **2 Claims**



1. A projection device for projecting stars particular for use in planetaria comprising:

a substantially spherical housing,

a plurality of holes in said housing,

a light source being arranged substantially in the center of said spherical housing,

said light source emitting a plurality of radial beams,

a plurality of projectors, each of said projectors being located in one of said holes,

each of said projectors having a mount and a condenser lens and an objective in said mount,

each of said plurality of projectors having an optical axis coinciding with a respective one of said plurality of radial beams,

said objective and said condenser lens of said projectors being in optical alignment with a respective one of said optical axes,

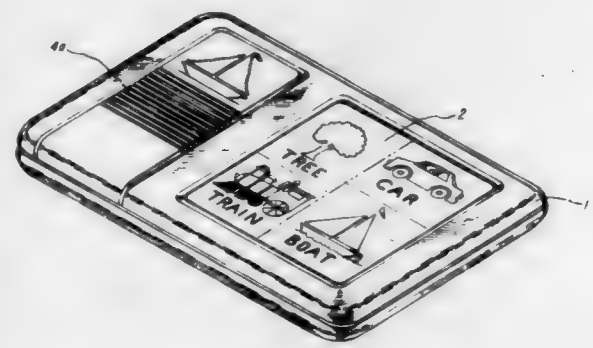
the condenser lenses being arranged in opposition to said light source, and having a polygonal circumferential face each side of said polygonal circumferential face contacting a respective side of neighbouring condenser lens circumferential faces.

4,403,965

ELECTRONIC TEACHING APPARATUS

William R. Hawkins, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 1, 1980, Ser. No. 192,978
Int. Cl.³ G09B *7/06*
U.S. Cl. 434—327 **12 Claims**



1. An electronic teaching apparatus comprising:

a housing having a substantially planar surface;

a plurality of overlays adapted to be individually disposed on said substantially planar surface of said housing, each of said overlays having a plurality of pictorial representations provided thereon;

coding means associated with each of said plurality of overlays and identifying each respective overlay;

keyboard means disposed in said housing and located in registration with said substantially planar surface thereof so as to be disposed beneath an overlay when placed upon said substantially planar surface of said housing, said keyboard means being programmable in accordance with said coding means associated with the particular overlay disposed on said substantially planar surface of said housing for establishing changeable individual boundaries comprising keys respectively corresponding to each of said plurality of pictorial representations of the overlay disposed on said substantially planar surface of said housing, said keyboard means being responsive to the touching by an operator of a particular one of said plurality of pictorial representations as provided by an overlay when disposed upon said substantially planar surface of said housing for generating an input signal;

memory means having digital data stored therein including digital speech data from which synthesized speech as descriptive words in a human language may be derived corresponding to each of said plurality of pictorial representations as provided by each of said plurality of overlays;

controller means responsive to said input signal generated by said keyboard means in accordance with the touching by

the operator of a particular one of said plurality of pictorial representations provided by the overlay disposed on said substantially planar surface of said housing to selectively access stored digital speech data from said memory means corresponding to the particular one of said pictorial representations touched by the operator;

speech synthesis means operably associated with said memory means for generating analog signals representative of human speech and corresponding to the particular one of said pictorial representations touched by the operator; and

audio means coupled to said speech synthesis means for converting said analog signals into audible human speech identifying the particular pictorial representation touched by the operator.

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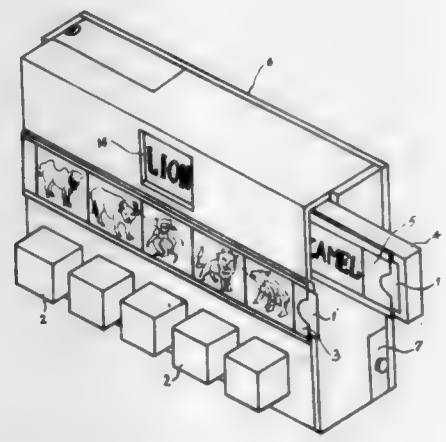
CHILDREN CONDUCTIVE INTELLIGENCE AUTOSUGGESTION MACHINE

Rong-Juh Yang, No. 242, Ta-Lung St., Taipei, Taiwan

Filed Apr. 20, 1981, Ser. No. 252,671

Int. Cl.³ G09B *3/00*

U.S. Cl. 434—335 **7 Claims**



1. An educational device comprising:

a machine box having a display window therein;

a first information bearing support having a plurality of information items;

a second information bearing support having a plurality of information bearing items, each item of said second support corresponding to an information item of said first support;

a first holding means fixed to said box and divided into a plurality of sections for holding said first information support, each section for displaying one item of information of said first information support, all times of said information support being displayed simultaneously;

a set of user actuated keys, one key being associated with each section of said first holding means and corresponding to one item of information of said first information support;

a second holding means, movable with respect to said machine box for holding said second information support for displaying one at a time, an item of information of said second information support via said display window; and

means associated with said keys for actuating an alarm when a key associated with an item of information of said first support corresponding to the item of information of said second support displayed via said display window is depressed; and

an alarm actuatable by said means for actuating to produce an alarm when a key is depressed corresponding to the item of information displayed via said display window.

4,403,967

SELF TEACHING INSTRUMENT

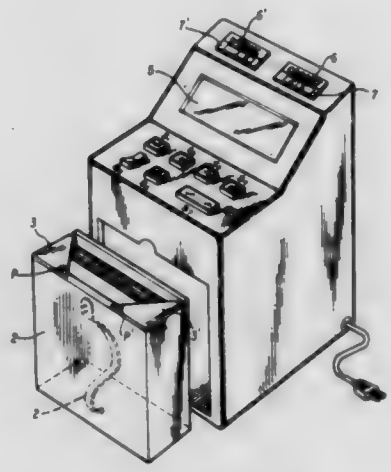
Kyu S. Cho, K. P. O. Box 341, Seoul, Rep. of Korea

Filed Sep. 21, 1981, Ser. No. 304,262

Claims priority, application Rep. of Korea, Sep. 26, 1980, 6262/1980[U]; Sep. 26, 1980, 6266/1980[U]; Oct. 21, 1980, 6745/1980[U]

Int. Cl.³ G09B *5/02*

U.S. Cl. 434—337 **1 Claim**



1. A self-teaching machine comprising:

a main body having a lower front portion, and an upper portion, said upper portion having a viewing screen therein;

a card compartment removeably fitted in said lower front portion, said compartment having a front wall and a rear wall;

a plurality of individual flexible cards vertically oriented in said card compartment, each card having a length, a pair of upper corners, and a pair of transport holes, each hole being adjusted one of said upper corners;

a plate spring mounted on said front wall biasing said vertically oriented cards towards said rear wall,

a collecting section in said main body receiving said individual cards;

means extending through said rear wall for moving one of said cards at a time vertically upwards;

means for individually conveying said cards to and past said viewing screen, said means for conveying receiving said cards one at a time from said means for vertically moving and, subsequently dropping said cards under the influence of gravity into said collecting section; said means for conveying comprising a plurality of rollers, a flexible belt disposed over said rollers, and a plurality of pairs of hooks on said belt spaced apart from each other at a distance greater than said pair of hooks being positioned to catch said pair of transport holes in one card; and

means for intermittently driving said means for vertically moving and said means for conveying upon a command by a user.

4,403,968

MARINE TRANSMISSION GEAR UNIT WITH DOUBLE DRIVE

Günther Heidrich, Burgberg, and Karl Stölzle, Sonthofen, both of Fed. Rep. of Germany, assignors to BHS-Bayerische Berg-, Hutten-und Salzwerke, Munich, Fed. Rep. of Germany

Filed Aug. 24, 1979, Ser. No. 69,303

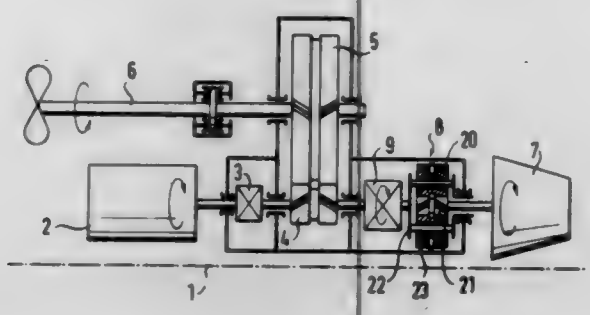
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1978, 2837044

Int. Cl.³ B63H *23/10*

U.S. Cl. 440—3 **28 Claims**

1. In a multiple-step marine transmission gear unit with double drive for use with a pair of driving engines arranged on one side of and parallel to the axis of a propeller shaft driven thereby and on both sides of a slow speed main step of a trans-

mission gearing assembly including a single common pinion and a greater gear, the pair of engines arranged to drive the greater gear of the slow speed main step of transmission by way of the single common pinion as the slow speed main step, the invention comprising at least one high speed secondary



gear means operably coupled between one of the driving engines and the single common pinion and at least one switching aggregate arranged directly coupled to the slow speed main step between the secondary gear means and the main step, the input from both of said engines being coaxial with said single common pinion.

4,403,969

OUTBOARD DRIVE

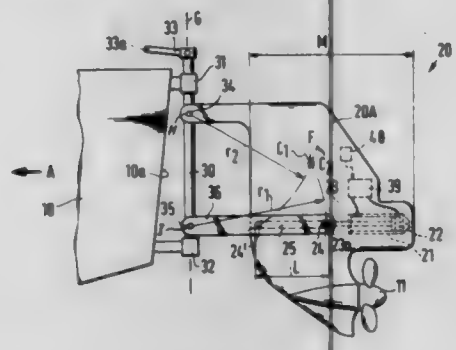
Heinz Pichl, Uppsala, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden

Filed Feb. 20, 1981, Ser. No. 236,208

Claims priority, application Sweden, Feb. 21, 1980, 8001353; May 27, 1980, 8003906

Int. Cl.³ B63H *5/12*

U.S. Cl. 440—56 **38 Claims**



1. An outboard drive, comprising a casing having propulsion means providing a forward force on said casing for forward drive; mounting means adapted for mounting said casing on a boat and having tilt pivot means for pivotally mounting said casing on a tilt axis on said mounting means for downward forward tilt movement to a drive position and for upward rearward tilt movement to tilt position and linkage means connecting said casing to said mounting means at points spaced below said tilt axis for transmitting forward force urging said casing toward said drive position from said casing to said mounting means and permitting said casing to tilt rearwardly in response to a predetermined rearward force to a tilt position and having hinge means on said mounting means with a hinge axis spaced below and parallel to said tilt axis, guide means fixed on said casing and having a front end, a rear end and a longitudinal guide extending from said rear end longitudinally forwardly to said front end closer to said hinge axis and front of said casing all fixed relative to each other and to said casing, connecting means mounted on said guide means for guided longitudinal movement along said fixed longitudinal guide of said guide means between said front end and said rear end, mechanical means connecting said casing to said connecting means and support arm means connected at one end to said connecting means and at the other end to said hinge means for pivotal movement on said mounting means about said hinge axis and said linkage means further including engagement means having an engaged position in response to forward force for transferring forward force from said casing through said linkage means with unvariable length to said mounting means and a disengaged position in response to rearward force for elongation of said linkage means for rearward tilt movement of said casing to a tilt position.

4,403,970

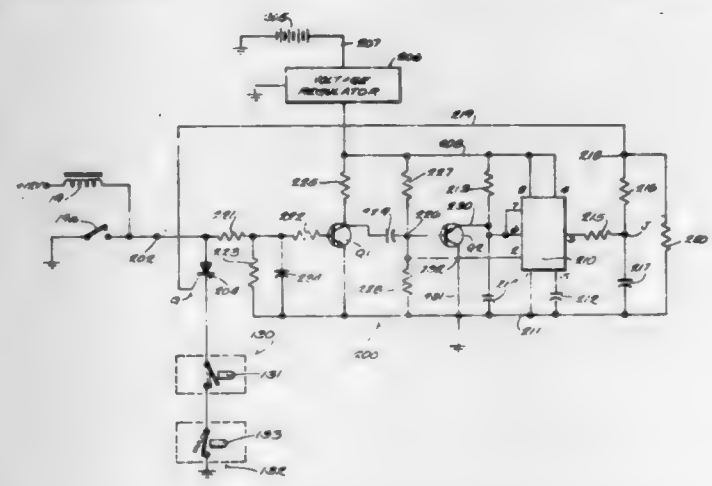
MARINE PROPULSION UNIT HAVING IGNITION INTERRUPTION MEANS TO ASSIST TRANSMISSION SHIFTING

Robert G. Dretzka, South Milwaukee; James L. Holt, Bristol, both of Wis., and Guy D. Payne, Lake Villa, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 30, 1981, Ser. No. 288,469

Int. Cl.³ B63H *23/08*

U.S. Cl. 440—75 **10 Claims**



10. An ignition interruption circuit for facilitating transmission shifting by reducing the speed of an internal combustion engine having an ignition circuit and included in a marine propulsion system comprising a propeller shaft, and a transmission having power input means coupled to the engine, power output means coupled to the propeller shaft, and a clutch element shiftable from an inactive neutral position to an active position for engaging the power input means with the power output means, said ignition interruption circuit comprising input means for receiving ignition pulses from said ignition system, a series circuit between said input means and ground, semiconductor switch means in said series circuit and having a control gate which, when energized, closes said semiconductor switch means to enable bypassing conduction of ignition pulses to ground, means for energizing said gate in response to engine speed above a predetermined speed, a normally open switch connected in said series circuit, means responsive to resistance to transmission shifting for closing said normally open switch to enable passage to ground of ignition pulses when said semiconductor switch means is closed, thereby to reduce engine speed, a normally closed switch in said series circuit, and means for opening said normally closed switch in response to the clutch element having effected complete engagement of the power input means to the power output means to thereby prevent said semiconductor switch means from bypassing any ignition pulses.

4,403,971

INTAKE DUCT FOR AN OUTBOARD ENGINE

Seiji Kobayashi, and Hiroshi Harada, both of Shizuoka, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed May 4, 1981, Ser. No. 260,168

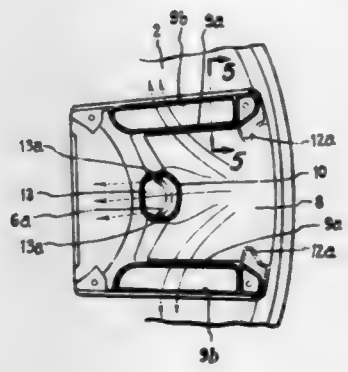
Claims priority, application Japan, Jun. 5, 1980, 55-59687

Int. Cl.³ B63H *5/12*

U.S. Cl. 440—88 **4 Claims**

1. An intake duct for an outboard engine, said engine having

a cowling atop it, said cowling having a recess in its rear top portion above said engine, a right and a left first side walls, an opening at the rear, and a back wall opposed to said opening; a cover plate enclosing the top of said recess, and completing, with said cowling, said rear opening; a side intake port above each of said first side walls and below said cover plate extending for a substantial length at an upper elevation adjacent to said cover plate, and opening into said cowling in a direction lateral to said cowling; an uprightly-standing annular wall rising from said cowling with an open end having a peripheral



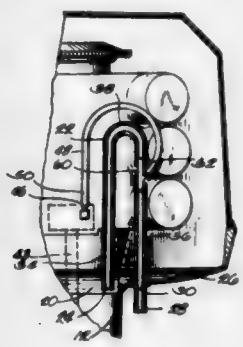
edge facing upwardly toward and spaced from said cover plate and passing through said cowling to form a central intake port, a notch is provided in the upper end of said annular wall at its left hand side and at its right hand side, said annular wall being in the path of air entering from said rear opening; air flow into said recess flowing through said rear opening and impinging on said back wall and on said annular wall, and then dividing to flow sidewardly to and through said side intake ports in an initial direction lateral to said cowling, and also flowing up and over said edge and said central intake port.

4,403,972

MARINE PROPULSION DEVICE INCLUDING ENGINE HOUSING PUMP MECHANISM

Gerald F. Bland, and Allen N. Ladwig, both of Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 5, 1982, Ser. No. 365,616
Int. Cl.³ B63H *5/12*
U.S. Cl. 440—88 **9 Claims**



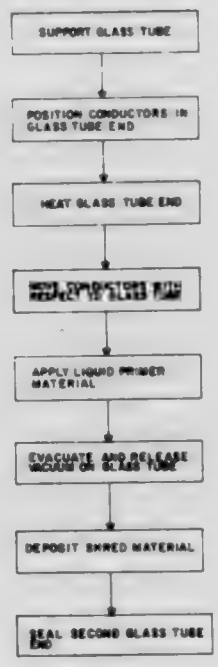
9. A marine propulsion device comprising an engine having cooling passages and a water pump for forcing cooling water through said cooling passages to cool said engine, a lower unit extending downwardly from said engine, a propeller supported by said lower unit and rotatably driven by said engine, a housing surrounding said engine and including a portion defining a chamber which may collect water, means for bleeding water from said cooling passages and for discharging water from said engine so as to provide a signal that said water pump is operating, said means for bleeding including a bleed conduit having one end connected to said cooling passages and an opposite end outside said engine housing, and siphon means for removing water from said chamber, said siphon means including a siphon conduit having an inlet end positioned in said chamber, and said siphon conduit being connected to said bleed conduit.

4,403,973

PHOTOFLASH LAMP STRUCTURE AND FABRICATION PROCESS

John W. Shaffer, Williamsport, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jun. 4, 1981, Ser. No. 270,288
Int. Cl.³ H01J *9/18*
U.S. Cl. 445—28 **6 Claims**



1. A photoflash lamp fabricating process comprising the steps of:

supporting an elongated glass tube with oppositely disposed first and second open ends;

positioning a pair of electrical conductors within said first open end of said glass tube, each of said electrical conductors having an inward end within said glass tube;

heating said first open end of said glass tube to collapse and provide a seal surrounding said pair of electrical conductors;

moving said pair of electrical conductors and said glass tube in opposite directions to cause said inward end of at least one of said pair of electrical conductors to form a recessed portion in said seal surrounding said electrical conductor with said recessed portion extending from said inward end of said electrical conductor to the interior of said glass tube;

applying a primer material in liquid form bridging said pair of electrical conductors internal of said glass tube;

evacuating and releasing the vacuum on said glass tube to cause said liquid primer material to contact said inward end of at least one of said pair of electrical conductors within said recessed portion of said seal of said glass tube and to extend to the other one of said electrical conductors;

depositing a quantity of combustible filamentary material within said glass tube having a sealed first end; and

sealing said second open end of said glass tube to provide a hermetically sealed glass envelope.

4,403,974

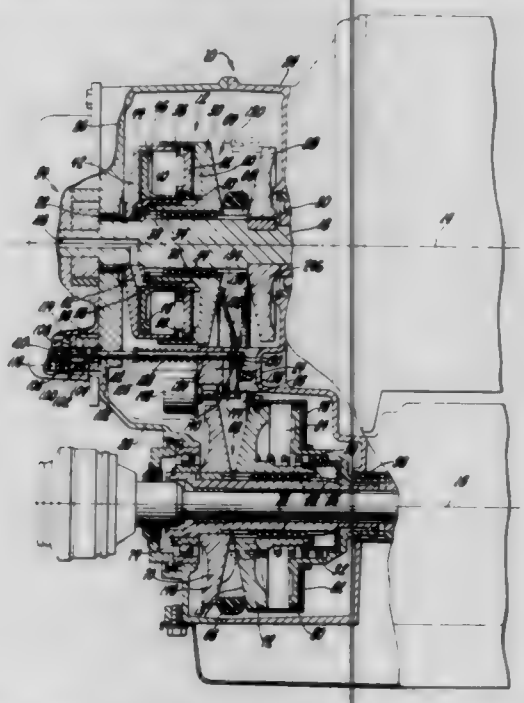
POSITION CONTROL MECHANISM FOR A VARIABLE DRIVE RATIO PULLEY SYSTEM

James F. Sherman, Brighton, and William J. Vukovich, Ypsilanti, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 7, 1980, Ser. No. 204,955
Int. Cl.³ F16H *11/06, 11/04*
U.S. Cl. 474—11 **2 Claims**

1. A position control mechanism for a variable drive mechanism having a sheave with an axially stationary member and an axially movable member, said axially movable member having a fluid pressure operated portion; said position control mechanism comprising: a source of fluid pressure; valve means opera-

tively connected to said source of fluid pressure for controlling the delivery of fluid pressure to said fluid pressure operated portion; reciprocable actuator means for controlling said valve means; resilient means for continuously urging said actuator means in one direction into abutment with said valve means; lever means having spaced ends and connecting means intermediate the ends for operatively connecting said lever means with said actuator means; one of said ends being maintained in contact with said axially movable member by said resilient means; and control means operatively maintained in abutment



with the other end of said lever means by said resilient means, said control means being operable to pivot said lever means about said one end when a change in the variable drive mechanism in one direction is desired so that said actuator means will be moved by movable connecting means to permit said valve means to direct fluid pressure to cause a change in the axial position of said axially movable member resulting in pivoting of the lever means about said other end which will permit said resilient means to move the actuator means to discontinue operation of said valve means when the position of the axial movable member desired by the control means is achieved.

4,403,975

CONE-PULLEY BELT-TYPE TRANSMISSION

Manfred Rattunde, Bad Homburg, Fed. Rep. of Germany, assignor to P.I.V. Antrieb Werner Reimers GmbH & Co. KG., Bad Homburg, Fed. Rep. of Germany

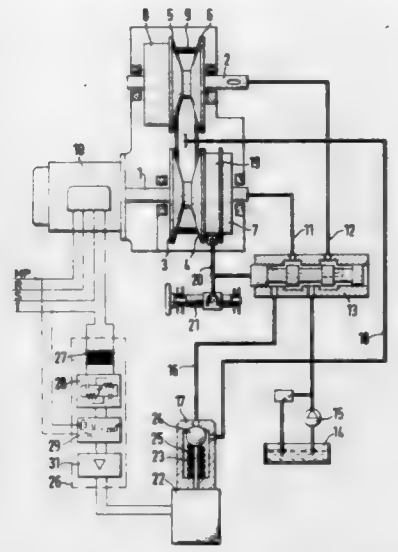
Filed Oct. 30, 1980, Ser. No. 202,420

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1979, 2946295

Int. Cl.³ F16H *11/02, 9/18*

U.S. Cl. 474—18 **6 Claims**

1. In an infinitely variable cone pulley transmission having a driving shaft connected to a source of driving power, a driven shaft, a pair of conical discs nonrotatably mounted on each shaft with at least one disc of each pair being axially displaceable on its associated shaft, an endless transmission element connecting and adapted to run between the two pairs of discs for transmitting power between the shafts, means defining a cylinder-piston unit associated with one axially displaceable disc of each pair for urging that disc toward the other disc of the same pair with a force proportional to the pressure of fluid in the unit, supply means of a pressure fluid, a distributing valve connected to act on the movable disc of one pair and additionally arranged to be arbitrarily adjusted to vary the speed ratio of the transmission, a line connecting the supply means to the distributing valve and conducting means connecting the distributing valve to each cylinder-piston unit for supplying pressure fluid thereto, and a normally-closed control valve connected in fluid flow communication with the distributing valve for controlling the fluid pressure in the cylinder-piston unit associated with the driven shaft, the control valve including means for controlling its closing force, the improvement wherein said closing force controlling means comprise: an electro-magnetic actuator having an energizing winding and connected to cause the closing force presented by said



control valve to be proportional to the current through said winding; and means connected to supply said winding with a current proportional to the torque being transmitted by said transmission, whereby the closing force presented by said control valve to fluid in said cylinder-piston unit associated with said driven shaft is proportional to the torque.

4,403,976

CLUTCH FOR BELT DRIVE

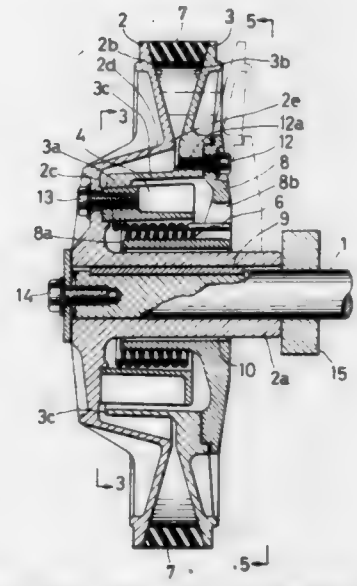
Izumi Takagi, Akashi, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Jun. 13, 1980, Ser. No. 159,411

Claims priority, application Japan, Jun. 13, 1979, 54-74898

Int. Cl.³ F16H *55/56*

U.S. Cl. 474—19 **4 Claims**



1. A driven clutch for a V-belt type automatic transmission adapted to be mounted on a rotatable shaft, said clutch comprising a fixed sheave adapted to be secured to said shaft, a movable sheave including a flange, said sheave and said flange being movable axially and rotatable relative to said shaft, said sheaves together forming an annular space therebetween for receiving a belt, said sheaves and flange forming another annular substantially enclosed space, cam means connected between said sheaves and including at least one cam surface for providing driving engagement between said sheaves and for changing the width of said annular space between said sheaves, and tension and torsion spring means connecting said sheaves for urging said movable sheave toward said fixed sheave and for angularly biasing said movable sheave relative to said fixed

sheave so as to be urged through said cam means toward said fixed sheave, both said spring means and cam means being located within said annular enclosed space.

4,403,977

BICYCLE CHAIN-SHIFTING DEVICE

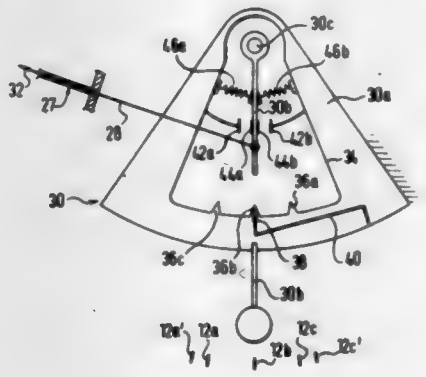
Eduard Bergles, Graz, Austria, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Apr. 1, 1981, Ser. No. 249,837

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1980, 3013771

Int. Cl.³ F16H *11/00*

U.S. Cl. 474—80 **9 Claims**



1. In a chain-shifting device for a bicycle or the like comprising

a switch unit (**30**), said switch unit (**30**) including a switch frame (**30*a***) to be attached to a part of the bicycle, an operating member (**30*b***) swingingly mounted on said switch frame (**30*a***) about a swinging axis (**30*c***), said operating member (**30*b***) being adjustable into a plurality of predetermined angular operating member positions (**12*a*–12*c***) about said swinging axis (**30*c***) with respect to said switch frame (**30*a***), said operating member positions (**12*a*–12*c***) being defined by releasable locking means;

a chain mover support member (**23**) to be attached to the bicycle frame;

a chain mover unit (**16–21**) mounted on said chain mover support member (**23**) by guiding means (**22**) guiding said chain mover unit (**16–21**) along a path of movement with respect to said chain mover support member (**23**);

first spring means (**32**) biasing said chain mover unit (**16–21**) towards one end of said path of movement;

transmission means (**27**) extending between said operating member (**30*b***) and said chain mover unit (**16–21**), said transmission means (**27**) including a pulling member (**28**), said chain mover unit (**16–21**) being movable by said operating member (**30*b***) via said transmission means (**27**) and against the action of said first spring means (**32**) into a plurality of chain shift positions corresponding to said plurality of operating member positions (**12*a*–12*c***),

the improvement which comprises that

(a) a switch member (**34**) is mounted on said switch frame (**30*a***) for swinging movement about said axis (**30*c***);

(b) said releasable locking means (**38**;**36*a*–36*c***) are provided in part on said switch frame (**30*a***) and in part on said switch member (**34**) and defining a plurality of angular switch member positions (**36*a*–36*c***) about said swinging axis (**30*c***) with respect to said switch frame (**30*a***), said releasable locking means (**38**; **36*a*–36*c***) being releasable by a predetermined locking means releasing torque acting onto said switch member (**34**);

(c) abutment means (**44*a***, **44*b***; **42*a***, **42*b***) are provided in part on said operating member (**30*b***) and in part on said switch member (**34**) for defining two angularly offset terminal positions of said operating member (**30*b***) with respect to said switch member (**34**) and for transmitting a locking means releasing torque from said operating member (**30*b***) to said switch member (**34**);

(d) said operating member (**30*b***) is elastically biased towards a rest position with respect to said switch member (**34**) by a biasing torque, said biasing torque resisting against deflection of said operating member (**30*b***) from said rest position towards at least one of said terminal positions, said biasing torque being smaller than said releasing torque;

(e) said predetermined operating member positions are defined by respective switch member positions (**36*a*–36*c***) when said operating member (**30*b***) is in said rest position with respect to said switch member (**34**).

4,403,978

DERAILLEUR FOR A CYCLE

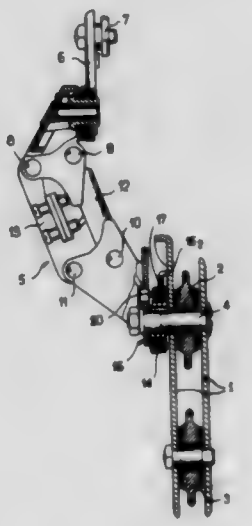
Roger H. M. Huret, Nanterre, France, assignor to Etablissements Huret & Fils, Nanterre, France

Filed Oct. 14, 1980, Ser. No. 196,515

Claims priority, application France, Oct. 5, 1979, 79 24903

Int. Cl.³ F16H *11/00*; B60G *13/00*

U.S. Cl. 474—82 **3 Claims**



1. Derailleur for a cycle comprising a yoke provided with a chain-guide pinion and a chain-tensioning pinion, said yoke being pivotably mounted by means of a pivot on a support, said support being provided with means for attachment to the fork lug of a cycle and with means enabling the yoke to undergo translational movement, a coil-type adjusting spring arranged around the pivot between the yoke and its support, said coil-type spring comprising a single metal wire forming sets of cylindrical coils uneven in number and arranged coaxially one around the other, each set of coils having several convolutions of said wire.

4,403,979

PULLEY FOR POSITIVE DRIVE SYSTEMS

Frank L. Wujick, Sao Paulo, Brazil, assignor to Uniroyal, Inc., New York, N.Y.

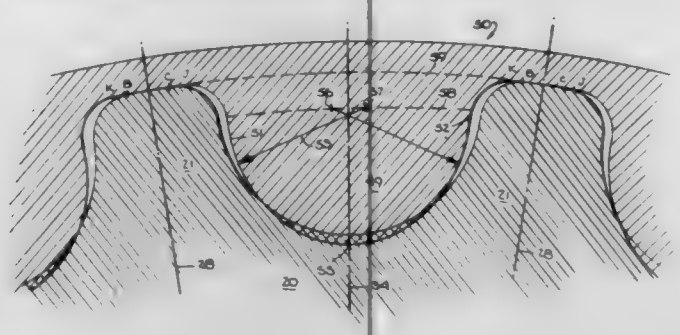
Continuation of Ser. No. 140,950, Apr. 16, 1980, abandoned, which is a continuation of Ser. No. 864,045, Dec. 23, 1977, abandoned. This application May 29, 1981, Ser. No. 268,426

Int. Cl.³ F16H *7/02*

U.S. Cl. 474—153 **13 Claims**

1. A power transmission system consisting of at least one small diameter toothed pulley in combination with a flexible toothed belt having belt teeth of cross-sectional contour substantially composed of two substantially circular arcs defining substantially curved belt tooth tips, the pulley teeth being composed of tip portions connected by cavity portions, each tip portion having a longitudinal cross-sectional contour partially composed of two substantially circular arcs, said arcs having centers of curvature displaced from each other, the center of curvature of each arc being located on the same side of the center line of said tip portion as its respective arc, the outermost portion of each tooth tip joining the two arcs forming a line segment, the length of the line segment being from

6% to 33% of the width of the belt teeth, and the distance between the outermost portion of the pulley teeth cavities and



the innermost portion of the pulley teeth cavities being less than the depth of the belt teeth which are not in contact with the pulley.

4,403,980

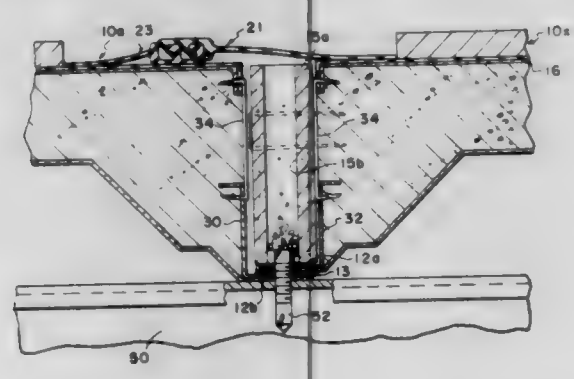
PREFABRICATED WATERTIGHT STRUCTURAL SYSTEM

Harold G. Simpson, Oklahoma City, and Michael L. Roberts, Norman, both of Okla., assignors to Star Manufacturing Company of Oklahoma, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 336,364, Feb. 27, 1973, Pat. No. 4,078,351. This application Oct. 22, 1975, Ser. No. 624,587

Int. Cl.³ E04D *3/362, 1/28*

U.S. Cl. 52—309.11 **2 Claims**



1. The prefabricated panel for a building system which comprises;

a rectangular lower sheet metal member having opposite side edges and opposite end edges, a rolled portion forming a side lip of multiple thickness along each side edge and an up-turned flange extending substantially the length of each side edge, each up-turned flange being inset from the outer edge of the side lip to provide an area of multiple thickness through which a self-tapping fastener may be passed to connect the lower sheet metal member to an underlying support structure;

a flat upper sheet metal member having down-turned flanges at each side edge thereof substantially aligned with the respective up-turned flanges of the lower sheet metal member and extending substantially the length of the upper sheet metal member, the edges of the down-turned flanges being spaced from the edges of the up-turned flanges;

a body of insulating material filling the space between the sheet metal members and between the up-turned and down-turned flanges;

the upper sheet metal member and the body of insulating material terminating short of one end of the lower sheet metal member such that the lower sheet metal member protrudes to form an end lip; and

a plurality of U-shaped staples disposed at spaced intervals along each side of the panel, each staple having points penetrating the respective aligned up-turned and down-turned flanges for establishing a tension connection between the upper sheet metal member and the lower sheet metal member while permitting substantially independent thermal expansion and contraction of the lower and upper sheet metal members in both directions of the plane of the respective members, the staples including barb means on the points for retaining the points in the respective flanges.

4,403,981

FOLDING MACHINE

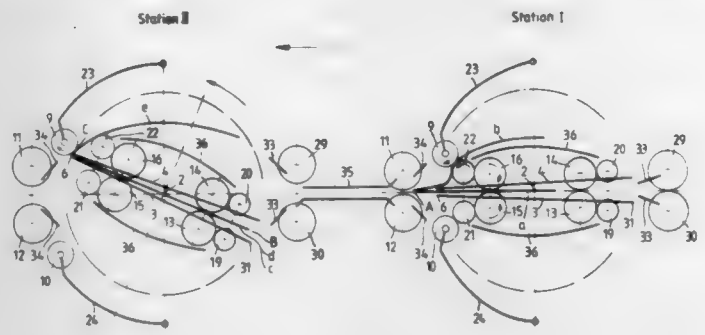
Werner Wüthrich, Gümligen, Switzerland, assignor to Hasler AG, Bern, Switzerland

Filed Feb. 24, 1982, Ser. No. 352,056

Claims priority, application Switzerland, Feb. 26, 1981, 1321/81

Int. Cl.³ B65H *45/14*

U.S. Cl. 493—419 **9 Claims**



1. A machine for folding material consisting of one or several sheets to be folded, jointly, having at least one folding station, comprising

a cartridge (1) including two guide walls (3,4) defining a space therebetween for receiving a portion (a; c,d) of the sheet material and having two opposite gap-like end openings each defined between a pair of coresponding edges of said walls (3,4);

means mounting said cartridge to rotate about an axis (2,41) transverse to said cartridge and to repeatedly turn said cartridge (1) by 180° from one rest position to another, said axis (2,41) being arranged along a center line between said end openings of said cartridge (1) so that said end openings move on a common circular path during turning of said cartridge (1);

a pair of supply rollers (29,30) connected adjacent said common circular path and operable for supplying said material to be folded toward said cartridge (1) for introducing said portion (a; c, d) of said sheet material into said space of said cartridge (1) through one of said end openings thereof;

at least one pressure roller (9,10), means (23,24) resiliently mounting said at least one pressure roller (9,10) adjacent said circular path for movement on a path crossing said circular path and resiliently urging said at least one pressure roller in an inward direction toward said axis thereof for rolling engagement with one of said pairs of edges of one of said guide walls (3, 4) and on an outer face of that guide wall (3, 4) adjacent that edge as the cartridge rotates about its axis, said portion (a;c,d) of said sheet material being introduced into said space in a substantially parallel position between said guide walls with said portion (b;e) to be folded extending outside of said walls, whereby the rotation of said cartridge causes said pressure roller to pre-fold said portion (b;e) of said sheet material to be folded about said one edge;

a pair of withdrawing and final folding rollers (11,12) connected adjacent said common circular path and operable for withdrawing said sheet material from said cartridge (1) and for finally folding said pre-folded material by said pressure roller (9,10);

said pair of supply rollers (29, 30) and said pair of withdrawing and final folding rollers (11,12) each adjoining one of said two end openings of said cartridge (1) in each of said rest positions thereof and said pressure roller (9, 10) being

situated beside said pair of pressure and final folding rollers (11,12); and

at least one pair of transport rollers (13,14,15,16) on said cartridge (1), means connected to operate said at least one pair of transport rollers in an advanced controlled manner during stand still of the cartridge (1) to transport within said space of said cartridge (1) said portion (a; c,d) of said sheet material supplied by said supply rollers (29, 30) and to move out of said space said portion (a; c, d), thereby moving said material (a, b; c, d, e) to said pair of withdrawing and final folding rollers (11,12), and during turning of said cartridge (1) to stand still for holding said portion (a; c,d) of said material stationary within said space.

4,403,982

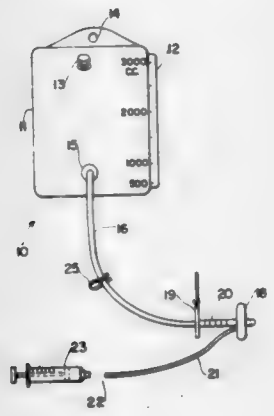
COLON CLEANSING SYSTEM AND TECHNIQUE

Ralph S. Clayton, 1309 Canterbury Dr., Abilene, Tex. 79602

Continuation of Ser. No. 937,591, Aug. 28, 1978, abandoned. This application Sep. 8, 1980, Ser. No. 185,037

Int. Cl.³ A61M *3/00*

U.S. Cl. 604—28 **62 Claims**



1. A method of cleansing a person's entire colon of solid and/or liquid materials therein, comprising the following steps:

in the absence of any prior colon cleansing treatment by means of orally taken laxatives, filling the colon completely with an aqueous liquid by introducing the liquid through the anal opening in sufficient quantity to fill the colon to the extent of distending the wall of the colon from the rectum to the cecum, wherein the liquid includes an ingredient which assists the liquid in loosening and removing the solid material,

assuring that the aqueous liquid is retained in the person's colon for a predetermined period of time,

while said liquid is being retained in the colon, causing motion of the liquid back and forth through the person's colon, such that the liquid moves relative to the walls of the colon to facilitate removal fo solid materials from the colon lining,

and removing all obstructions to permit the person to expel substantially the entire quantity of solids and liquids from the colon.

4,403,983

DUAL LUMEN SUBCLAVIAN CANNULA

William Edelman, Long Beach, and Michael Baranowski, Corona Del Mar, both of Calif., assignors to Shiley Incorporated, Irvine, Calif.

Filed Nov. 6, 1981, Ser. No. 318,715

Int. Cl.³ A61M *25/00*

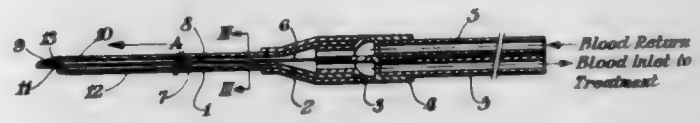
U.S. Cl. 604—43 **6 Claims**

1. A dual lumen subclavian cannula suitable for semi-permanent use, comprising:

a flexible tube divided into first and second flow lumens by a flexible longitudinal septum, centrally located within said tube;

the proximal end of said tube fitted to a manifold for separately collecting fluid from said first lumen and distributing fluid into said second lumen;

the distal end of the tube wall enclosing said second lumen tapered to a closed blunt point at the axis of said septum, and provided with a distal opening by at least one aperture proximal to the tapered section of the tube wall;



the distal end of the tube wall enclosing said first lumen extended to a position substantially opposite the proximal end of the tapered section of said second lumen and not closed, to provide a first distal opening for said first lumen; and

a second distal opening for said first lumen provided by at least one aperture in the tube wall proximal to said distal opening in said second lumen.

4,403,984

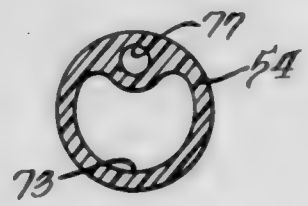
SYSTEM FOR DEMAND-BASED ADMINSTRATION OF INSULIN

Stephen R. Ash, Lafayette, Ind., and Marvin P. Loeb, Chicago, Ill., assignors to Biotek, Inc., Arlington Heights, Ill.

Continuation-in-part of Ser. No. 107,965, Dec. 28, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,710

Int. Cl.³ A61B *5/00*; G01N *27/26*

U.S. Cl. 604—50 **9 Claims**



1. The method for delivering insulin to a patient which comprises

implanting into said patient, and in contact with a body fluid of said patient, a transducer means responsive to a physical property of said body fluid and generating an output signal which is a function of said physical property;

providing said patient with an insulin dispenser means adapted to deliver insulin transcutaneously to said patient;

providing a dispenser control means operably associated with said dispenser means so as to regulate delivery of insulin to said patient in response to a control signal; and

applying the output signal generated by said transducer means to said dispensing control means as said control signal.

4,403,985

JET CONTROLLED CATHETER

John W. Boretos, Rockville, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed May 12, 1981, Ser. No. 262,806

Int. Cl.³ A61M *25/00*

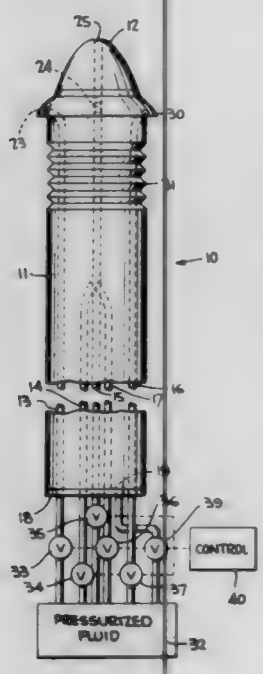
U.S. Cl. 604—53 **14 Claims**

1. An improved vascular catheter arrangement for use in traversing a network of tortuous blood vessel passages, comprising:

an elongated flexible catheter tube for traversing said blood vessel passages and having a forward end and a rearward end, said tube also having a circumferential periphery with a plurality of control ports defined therethrough at

predetermined angularly spaced locations proximate said forward end; and

control means for controllably bending said tube transversely of the length of the tube, within said blood vessel passage network, by selectively delivering pressurized fluid from said rearward end for issuance through selected



control ports to impart transversely directed reactive thrust forces on said tube proximate said forward end.

12. A method of controlling movement of a catheter tube through blood vessels comprising the step of selectively issuing pressurized fluid from different locations of said catheter tube to externally of said catheter tube so as to impart selective transversely-directed reactive forces to said catheter tube.

4,403,986

NEEDLE-LESS INJECTION INSTRUMENT

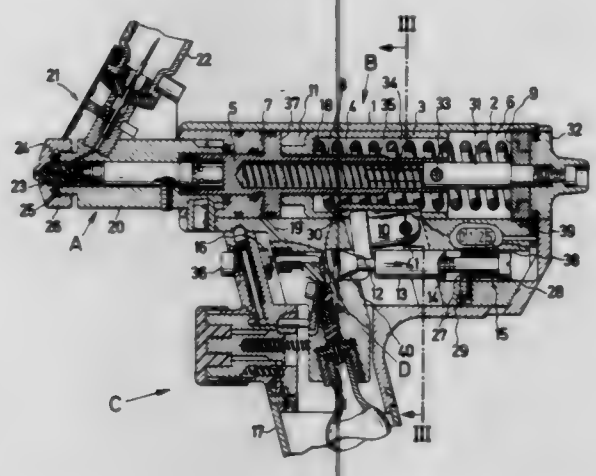
Hans-Jürgen Dettbarn, Marburg, and Josef Zimmermann, Sulzbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 14, 1982, Ser. No. 368,157

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1981, 3115377

Int. Cl.³ A61M *5/30*

U.S. Cl. 604—70 **6 Claims**



1. A needle-less injection instrument with a piston pump for the medium to be injected, which is connected to a drive motor, the working piston of which is arranged displaceably in a cylindrical bore of the motor housing, wherein the drive motor (B) has a spring housing (3) which is secured against rotation and in which is located a working spring (2) which is supported at one end on a supporting face (18) in the spring housing (3) and at the other end on an end face (9) limiting the bore (6) in the motor housing (1) and is guided by a part of the working piston (5) which is designed as a piston rod (4) and which is provided with a crank and a thread (8) engaging with a corresponding thread in the spring housing (3).

4,403,987

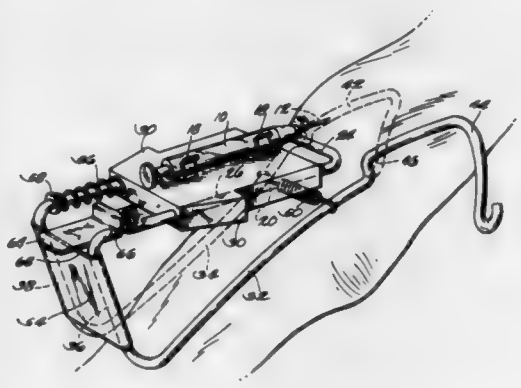
DEVICE FOR AIDING INJECTION OF A HYPODERMIC SYRINGE

John G. Gottinger, Fond du Lac, Wis., assignor to Gottinger Company, Inc., Fond du Lac, Wis.

Filed Jan. 25, 1982, Ser. No. 342,150

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—115 **12 Claims**



1. Apparatus for supporting a hypodermic syringe to facilitate injection of the needle of the hypodermic syringe into a limb, the apparatus comprising

a syringe supporting member having a syringe supporting surface adapted to support a syringe,

guide means for supporting the syringe supporting member for movement between a first position wherein the needle of the syringe is retracted from the limb and an injecting position, said means for supporting including a pair of guide rods for supporting said syringe supporting member for slideable movement between said first position and said injecting position, and

means for supporting said guide means on the limb and for pinching the flesh adjacent the syringe needle, said means for supporting said guide means including a pair of spaced apart generally parallel support rods having rearward ends adapted to rest on the limb and being integrally joined to said guide means, and said support rods including forward ends for pinching flesh therebetween to cause the flesh adjacent the syringe needle to pucker, and spring means for resiliently biasing said forward ends of said support rods together so as to cause said support rods to pinch the flesh therebetween.

4,403,988

SYRINGE ASSEMBLY

William J. Binard; Anthony J. Ciarico, both of Cary; Leonard R. Anglada, Arlington Heights, and Bhupendra C. Patel, Elgin, all of Ill., assignors to The Kendall Company, Boston, Mass.

Division of Ser. No. 180,071, Aug. 21, 1980, Pat. No. 4,284,084, which is a division of Ser. No. 53,482, Jun. 29, 1979, Pat. No. 4,240,430, which is a continuation of Ser. No. 853,962, Nov. 22, 1977, abandoned, which is a division of Ser. No. 776,147, Mar. 10, 1977, Pat. No. 4,074,714, which is a division of Ser. No. 702,164, Jul. 2, 1976, Pat. No. 4,030,497, which is a division of Ser. No. 627,982, Nov. 3, 1975, Pat. No. 4,000,741, which is a continuation-in-part of Ser. No. 509,757, Sep. 27, 1974, abandoned. This application Apr. 1, 1981, Ser. No. 249,600

Int. Cl.³ A61M *5/00*

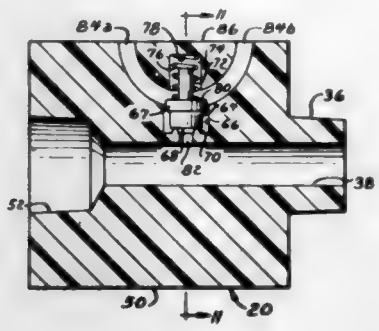
U.S. Cl. 604—118 **3 Claims**

1. A syringe assembly, comprising:

a barrel having a chamber for retaining fluid;

a plunger having one end received in the chamber for pumping fluid out of the chamber;

extension means having a passageway extending through the extension means and communicating with the syringe chamber; and



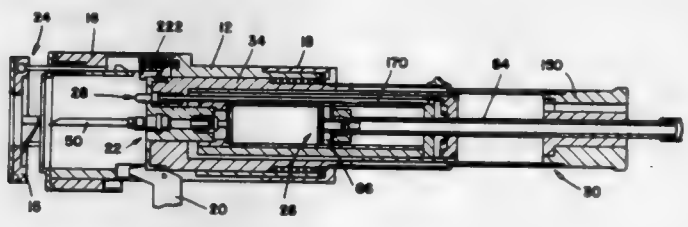
valve means associated with the extension means and communicating with said passageway, said valve means actuating at a predetermined pressure to relieve pressure in the passageway.

4,403,989

INJECTION DEVICE

Terrence B. Christensen; Allen D. McNaughton, both of Mountain View, and Steven R. Umbach, Menlo Park, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Sep. 14, 1981, Ser. No. 301,661
Int. Cl.³ A61M 5/00
U.S. Cl. 604—137 **42 Claims**



1. An injection device for injecting a host at an injection surface thereon comprising:

a base having a forward end and a rearward end;

needle carrying means supported on said base and operable to move a needle from a first, retracted position to a second, extended position relative to said forward end of said base; and

needle actuation means, operatively coupled to said needle carrying means and responsive to the orientation of said needle carrying means and the injection surface of the host, said needle actuation means being operative to permit movement of said needle carrying means from said first position to said second position only when said needle carrying means and the injection surface of the host are in a preferred orientation relative to each other.

4,403,990

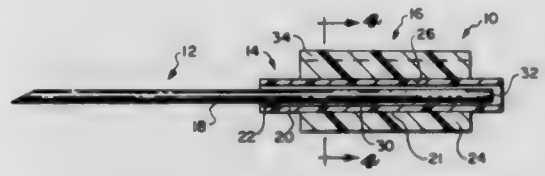
SUPPORT ASSEMBLY FOR A CANNULA AND THE LIKE

Edward B. Garver, Sr., Lindenhurst, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 2, 1981, Ser. No. 326,736
Int. Cl.³ A61M 5/00
U.S. Cl. 604—273 **6 Claims**

1. An autoclavable hub assembly for supporting a cannula comprising

a first member made of a thermoplastic material consisting essentially of a combination of first and second polymers, said first polymer being present in an amount of from about 50% to about 70% by combined weight of said first and second polymers and being an autoclavable thermoplastic copolyester material, said second polymer being present in an amount of from about 30% to about 50% by combined weight of said first and second polymers and being a nonautoclavable amorphous thermoplastic copolyester material based on polyethylene terephthalate, said combination being autoclavable and bondable to the cannula in response to exposure to heat which emanates from the cannula and which exceeds the temperature sufficient to sterilize the cannula and said first member, said first member including an open interior having a normal configuration which, prior to said exposure to heat, slidingly receives the cannula and which, during said exposure to heat, is deformable about the cannula, and



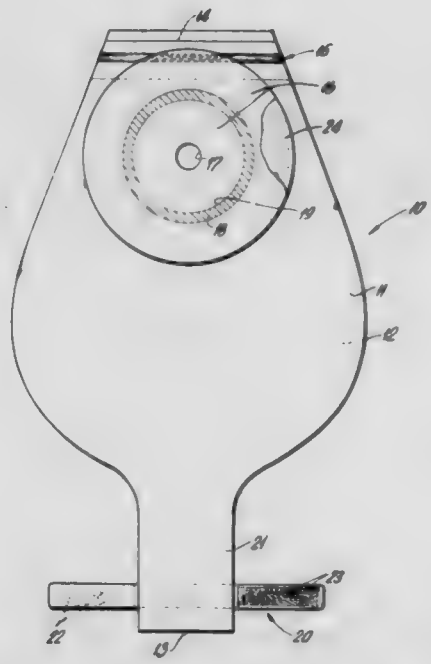
a second member made of an elastomeric material which is not heat deformable during said exposure to heat and which includes means for supporting said first member in an interference fit relationship within said second member and for deforming said first member during said exposure to heat to alter said normal configuration into a thermally bonded conformance fit configuration about the cannula.

4,403,991

CLOSURES FOR OPEN ENDED OSTOMY POUCH

John A. Hill, New Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 851,099, Nov. 14, 1977, abandoned. This application Dec. 27, 1977, Ser. No. 864,895
Int. Cl.³ A61F 5/44
U.S. Cl. 604—337 **4 Claims**



1. An ostomy appliance comprising a generally pear shaped pouch formed from two polymeric film surfaces permanently bonded along a majority of their length, each of said pouch polymeric film surfaces being a laminate of about 3 mils thickness of an outer and inner layer of ethylene vinyl acetate having a core of a copolymer of vinyl chloride and polyvinylidene chloride, one of said polymeric film surfaces being the skin side of said pouch and having an opening which fits around the stoma, the other polymeric film surface being the outer side of said pouch, a faceplate permanently bonded to the skin side of the pouch around said stomal opening, said faceplate having a centrally located opening which is expanded to fit the appliance snugly around the stoma and comprises a thin disk shaped film of polymeric material of from about 2 to 8 mils thickness

having an adhesive composition which includes a pressure sensitive adhesive component and one or more hydrocolloids on its exposed surface and wherein the bond between said disk shaped film and said skin side of the pouch does not extend to the outer peripheral edge of said faceplate, said pouch including a narrow tail portion having an open bottom through which the contents of said pouch can be drained, and resealable bottom closure means comprising a semi-rigid folding bar of high density polyethylene of about 5 mils thickness permanently attached to the outer side of said pouch at the narrow tail portion near said bottom opening, said folding bar extending traversely across and beyond the width of said pouch tail portion and having interlocking closure elements on said extended portions of said folding bar wherein said interlocking closure elements are a section of male hook elements attached to the skin side of one extending portion of said folding bar and a section of female loop elements attached to the outer side of the other extended portion of said folding bar and wherein said bottom opening is sealed by rolling the tail portion of said pouch over said folding bar and bending the extended portions of said folding bar so that said male hook and female loop elements can be pressed together.

4,403,992

CONTINUOUS PERITONEAL DIALYSIS BAG DEVICE

Gianfranco Bertellini, Maslianico, and Luigi Fabbri, Bologna, both of Italy, assignors to Sis-Ter S.p.A., Pignano, Italy

Filed Oct. 1, 1981, Ser. No. 307,386

Claims priority, application Italy, Oct. 6, 1980, 25139 A/80

Int. Cl.³ A61M *5/14, 1/03*

U.S. Cl. 604—410 **12 Claims**

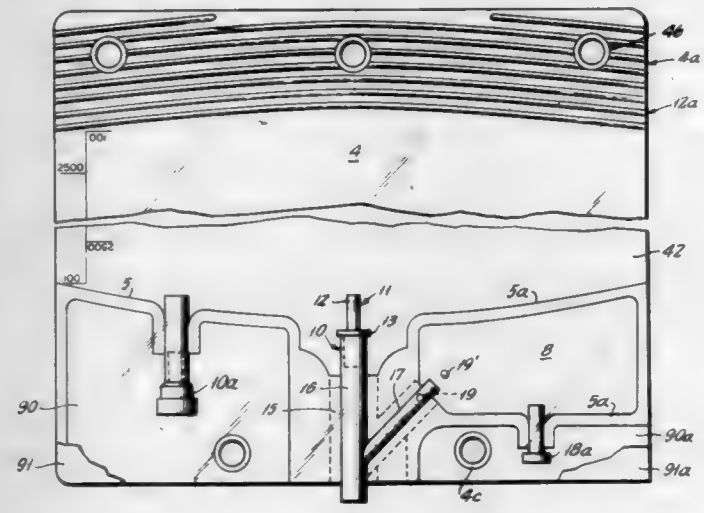
1. Continuous peritoneal dialysis bag, adapted for connection to a catheter associated with the abdominal cavity of a patient, comprising

a flexible bag (**4**) of heat soluble flexible plastic material, formed of two parallel plastic walls (**40**, **41**) secured together at heat weld connection lines (**4***a*, **5**, **5***a*) to define therebetween a plurality of chambers (**42**, **8**) and communication ducts (**16**, **17**) sealed into said connection lines to provide for fluid communication with the chambers,

wherein a first heat weld connection line (**5**) extends essentially transversely across the bag to define a dialysis fluid chamber (**42**) in the bag, and a second heat weld connection line (**5***a*) is spaced from said first connection line to define a disinfectant chamber (**8**) in the bag;

a first one (**16**) of the communication ducts extending from the dialysis fluid chamber (**42**) to the outside thereof;

a second one of the communication ducts (**17**) extending from the disinfectant chamber (**8**) and merging into the first communication duct (**16**), to permit injection of disinfectant fluid from the disinfectant chamber into the first communication duct for fluid delivery from the dialysis chamber;



a third communication duct (**10***a*) extending from the outside of the bag into the dialysis chamber (**42**);

a first manually releasable closure means (**12**, **13**) closing off the inside of said first communication duct (**16**) within said dialysis fluid chamber (**42**);

a second releasable closure means (**19**) closing off the inside of said second communication duct (**17**) located within the disinfectant chamber;

and externally accessible closing means closing the third communication duct (**10***a*).

4,403,993

PREPARATION OF WATER-SOLUBLE OR SELF-DISPERSING RESIN TANNING AGENTS

Dietrich Lach, Friedelsheim; Rolf Streicher, Worms, and Gerhard Bolz, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Apr. 9, 1982, Ser. No. 367,015

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1981, 3115646

Int. Cl.³ C14C *3/18*

U.S. Cl. 8—94.24 10 Claims

1. A process for preparing a water-soluble or self-dispersing tanning agent by heating from 5 to 30% by weight of melamine, from 15 to 45% by weight of urea, from 20 to 35% by weight (calculated as anhydrous material) of formaldehyde and from 15 to 55% by weight of sodium bisulfite or of a corresponding amount of some other salt of sulfurous acid for from two to twelve hours in aqueous solution at 40°–120° C. and a pH of from 5 to 9.

4,403,994

BLEACHING AGENTS

Geoffrey J. Hignett, Lymm, England, assignor to Interox Chemicals Limited, England

Division of Ser. No. 193,078, Oct. 2, 1980, Pat. No. 4,385,008. This application Sep. 7, 1982, Ser. No. 415,725

Claims priority, application United Kingdom, Oct. 18, 1979, 7936178; Dec. 22, 1979, 7944312

Int. Cl.³ D06L *3/02;* C11D *3/395, 7/54*

U.S. Cl. 8—111 6 Claims

1. Desensitised bleaching compositions comprising a magnesium salt of a compound selected from the group consisting of Class (1)-an aromatic carbocyclic compound substituted around the aromatic nucleus by a carboxylate group and a peroxycarboxylic acid group both groups being derivable from the corresponding aromatic carbocyclic anhydride by reaction with hydrogen peroxide, said aromatic carboxylic compound optionally being further substituted by at least one of the groups selected from alkyl, carboxylate, sulphonate, nitro, chloro and bromo groups or Class (2)-a cycloaliphatic compound substituted around the cycloaliphatic nucleus by a carboxylate group and a peroxycarboxylic acid group both groups being derivable from the corresponding cycloaliphatic carbocyclic anhydride by reaction with hydrogen peroxide, said cycloaliphatic carboxylic compound optionally being further substituted by at least one of the groups selected from alkyl, carboxylate, sulphonate, nitro, chloro and bromo groups or Class (3)-compounds other than those in Class 1 in which the carbonyl group of the peroxycarboxylic acid substituent is conjugated with the carbonyl group of a carboxylate substituent via olefinic unsaturation which carboxylate and peroxycarboxylic acid substituents are derivable from the corresponding anhydride by reaction with hydrogen peroxide in intimate mixture with a desenitising amount of one or more desensitising diluents.

4,403,995

SULPHUR DYESTUFFS, A PROCESS FOR THEIR MANUFACTURE AND THEIR USE FROM HYDROXY-DIPHENYLAMINE COMPOUNDS

Dieter Cornelius, Darmstadt, Fed. Rep. of Germany, assignor to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

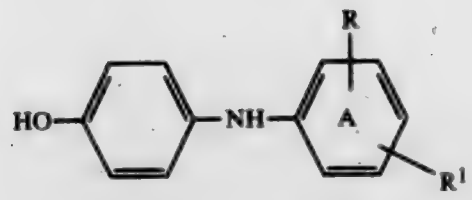
Filed Feb. 18, 1982, Ser. No. 350,116

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 3114033

Int. Cl.³ C09B *49/10;* D06P *1/30*

U.S. Cl. 8—652 9 Claims

1. Sulphur dyestuff prepared by first producing a thiazine by reacting sulphur with a 4-hydroxydiphenylamine of the formula



at a temperature from 160° to 190° C. with a molar ratio of 4-hydroxydiphenylamine to sulphur being from 1:(2 to 2.4) and wherein R and R^1 are hydrogen or alkyl having 1 to 4 carbon atoms and the ring nucleus A has at least one free ortho-position in relation to the imino moiety,

and then sulphurizing said thiazine compound in a water-soluble solvent at a temperature from 130° to 150° C. to produce the sulphur dyestuff.

4,403,996

METHOD OF PROCESSING LOW RANK COAL

Yoshio Matsuura, Funabashi; Michio Kurihara, Mitaka; Takao Kamei, Ashiya; Akira Nakamura; Keiichi Komai, both of Akashi, and Takeshi Wakabayashi, Kobe, all of Japan, assignors to Electric Power Development Co., Tokyo and Kawasaki Jukogyo Kabushiki Kaisha, Kobe, both of, Japan

Filed Feb. 10, 1982, Ser. No. 347,466

Int. Cl.³ C10L *9/08, 5/32, 1/32*

U.S. Cl. 44—1 G 5 Claims

1. Method of processing low rank coal which comprises steps of classifying crushed low rank coals, on the basis of a particle-size borderline point for separation on the order of millimeters, into coal-rich middle sized lumps and minute particles containing ash content at a rate greater than that of the ash content of the coal-rich middle sized lumps, subjecting the middle size lumps to a non-evaporating dehydration treatment to produce low moisture content coals, separating ash content from the minute particles and then at least partly liquefying the minute particles to produce liquefied oil, and mixing the liquefied oil with the low moisture content coals to thereby produce a mixture of low-moisture coal and oil.

2. Method in accordance with claim 1 in which the low rank coal is brown coal.

5. Method in accordance with claim 1 in which the mixture is oil coated coal.

4,403,997

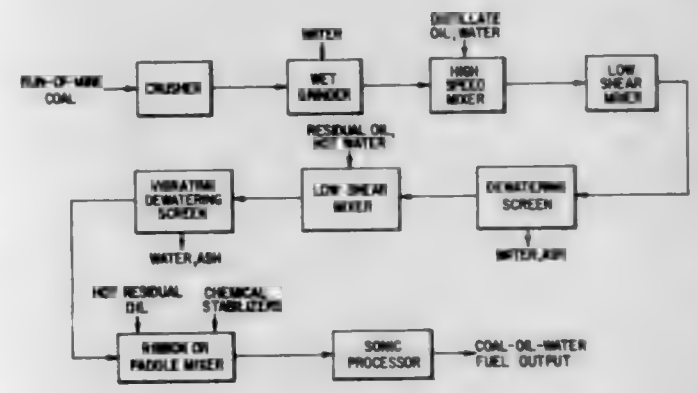
APPARATUS FOR MANUFACTURING FLUID COAL-OIL-WATER FUEL MIXTURE

Leonard E. Poetschke, Chester Basin, Canada, assignor to Scotia Recovery Systems Limited, Halifax, Canada

Continuation-in-part of Ser. No. 249,918, Apr. 1, 1981. This application Dec. 28, 1981, Ser. No. 334,538

Int. Cl.³ C10L *11/08, 1/32*

U.S. Cl. 44—2 11 Claims



1. Apparatus for manufacturing a coal-oil-water mixture for use as a fuel comprising

(a) a grinder for grinding coal to a relatively fine particle size;
(b) a mixer for mixing said coal particles with water and distillate oil;
(c) sub-apparatus for assisting in the formation of coal-oil-water agglomerates and the removal of ash and excess water, including a high shear mixture to assist in the formation of said agglomerates and a first screen for removing some of said ash and excess water; and
(d) a sonic agitator to stabilize the coal-oil-water mixture.

3. The apparatus of claim 1 wherein said grinder is capable of grinding said coal to an average particle size of less than 100 microns, said high molecular weight organic compound is contained in a heavy residual oil containing paraffinic fractions and said sonic agitator operates at less than 20,000 cycles per second.

4,403,998

PROCESS FOR PREPARING COAL SUSPENSIONS

Johann G. D. Schulz, Pittsburgh, and John A. Cobler, Harwick, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 24, 1981, Ser. No. 334,159
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—51 **17 Claims**

1. A process for preparing coal suspensions which comprises contacting coal with nitric acid and then mixing said contacted coal with an aqueous base solution.

4,403,999

PROCESS FOR PRODUCING OXYGENATED FUELS

Susan A. Bezman, Point Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 25, 1981, Ser. No. 277,439
Int. Cl.³ C10L *1/02, 1/18*
U.S. Cl. 44—56 **7 Claims**

1. A process for the production of an oxygenated fuel composition comprising:
(a) reacting a feedstock comprising propylene with water in the presence of a cation exchange catalyst under direct hydration conditions;
(b) separating the resulting product into a first stream comprising isopropanol and water and a second stream comprising propylene;
(c) contacting the second stream with an acid catalyst under oligomerization conditions in a second reaction zone to form an olefinic gasoline blending stock;
(d) distilling the first stream to produce a third stream consisting essentially of a water-isopropanol azeotrope;
(e) mixing the third stream at atmospheric pressure and ambient temperature with a fourth stream consisting essentially of a gasoline blending hydrocarbon stream;
(f) passing the resulting mixture through water coalescer means to rapidly coalesce water out of the mixture; and
(g) recovering an organic phase which is an oxygenated fuel composition comprising an isopropanol-containing gasoline blending hydrocarbon stream.

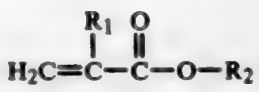
4,404,000

MIDDLE AND/OR HEAVY DISTILLATE COMPOSITION HAVING GOOD FLOW PROPERTY AND FILTERABILITY

Yoshiki Toyoshima; Sumio Hara, both of Niihama, and Masaki Nakazyo, Saijo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 26, 1982, Ser. No. 411,807
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—62 **2 Claims**

1. A middle and/or heavy distillate composition comprising a fuel oil of varying proportions of middle and/or heavy distillate of petroleum and 10–2000 ppm, based on the fuel oil, of a mixture of 1–99% by weight of (A) a copolymer of ethylene with an alkoxyalkyl acrylate or methacrylate represented by the formula,



wherein R_1 represents hydrogen or C_1–C_2 alkyl and R is $-C_mH_{2m}-O-C_nH_{2n+1}$, m and n each being an integer of 1–4, and 99–1% by weight of (B) a copolymer of ethylene with a vinyl ester of saturated carboxylic acid and/or an alkyl ester of ethylenic unsaturated carboxylic acid.

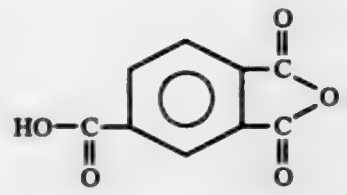
4,404,001

DETERGENT AND CORROSION INHIBITOR AND MOTOR FUEL COMPOSITION CONTAINING SAME

Benjamin J. Kaufman, Wappingers Falls; Sheldon Herbstman, Spring Valley, and Mark Levin, Fishkill, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 2, 1982, Ser. No. 414,270
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—63 **10 Claims**

1. As a detergent and corrosion inhibiting fuel additive the reaction product obtained by reacting an N-C_{10} to C_{25}-hydrocarbyl-1,3-diaminopropane with trimellitic anhydride of the formula:



wherein the ratio of said diaminopropane to said trimellitic anhydride ranges from about 1.5:1 to about 2.5:1.

4,404,002

ZIRCONIUM ADDITIVES FOR RESIDUAL FUEL OIL

Nicholas Feldman, Woodbridge, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 296,016, Aug. 25, 1981, abandoned. This application Aug. 6, 1982, Ser. No. 405,871
Int. Cl.³ C10L *1/30*
U.S. Cl. 44—68 **15 Claims**

1. A process for reducing the amount of particulate matter formed during the combustion of a residual fuel oil which comprises combusting a residual fuel oil which contains an effective trace amount of an additive selected from the group consisting of:
(i) an oil soluble zirconium salt of an alcohol or phenol having the formula:

ROH

where R is a hydrocarbyl group of 2 to 24 carbon atoms; or
(ii) an oil soluble zirconium salt of a sulfonic acid having the formula:

RSO_3H

where R is an alkyl, cycloalkyl, aryl, alkaryl or aralkyl group and said salt has a molecular weight of about 100 to about 2500; said amount being effective in reducing the amount of particulate matter formed during combustion.

4,404,003
MICROWAVE HEATING PROCESS FOR GRINDING WHEELS

Denis I. Harris, Nazeing, England, assignor to Norton Company, Worcester, Mass.

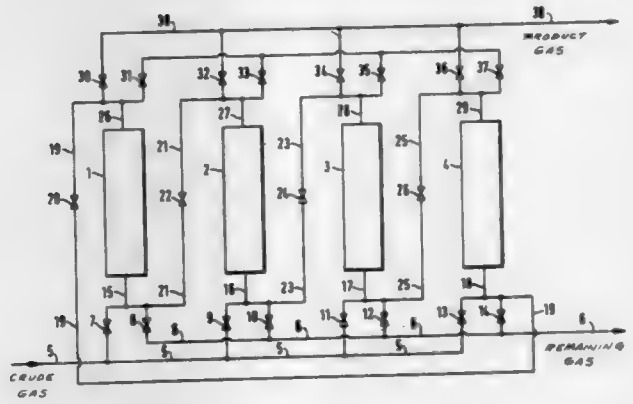
Filed Oct. 16, 1981, Ser. No. 312,061
Claims priority, application United Kingdom, Jul. 15, 1981, 8121831
Int. Cl.³ C09K 3/14
U.S. Cl. 51—298 13 Claims

1. A method for making a low porosity resin bonded product that contains abrasive grains, comprising mixing the grains with a powdered resin bonding composition, heating the resin in the mix by a dielectric heating field to soften at least part of the resin the maximum temperature achieved by the resin portion being below that at which significant curing takes place, cold pressing the preheated mix in a mould to produce a dense shape, removing the pressure and subsequently curing the resin in the compressed mix to form the bonded product.

4,404,004
METHOD FOR SEPARATING GAS MIXTURES BY MEANS OF PRESSURE CHANGING ADSORPTION TECHNIQUE

Karl Knoblauch; Ekkehard Richter, both of Essen; Klaus Giessler, Gelsenkirchen, and Werner Körbächer, Mühlheim, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Jun. 1, 1982, Ser. No. 384,157
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 8122701
Int. Cl.³ B01D 53/04
U.S. Cl. 55—25 5 Claims



1. A method using pressure adsorption technique for separating individual gas components from gas mixtures or adsorption agents in which a gas mixture is fed under increased pressure onto an adsorption agent layer in a separation reactor wherein undesirable gas components are adsorbed and thereafter the product gas is discharged whereby a subsequent build up of pressure to adsorption pressure takes place in the layer by gas flow in reverse direction with respect to the adsorption direction followed by a subsequent adsorption stage which comprising:

(a) causing the pressure release and rinsing action to occur in two stages using reverse direction of flow with respect to the direction of adsorption;

(b) using the relief gas obtained from the first reverse flow pressure relief stage as a rinsing gas for the first rinsing stage;

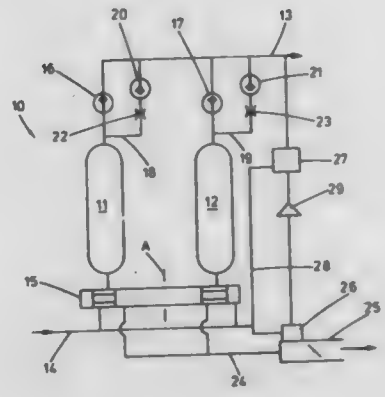
(c) discharging the relief gas obtained from the second reverse flow pressure relief stage as a remainder gas; and

(d) using the product gas as a rinsing gas for the second rinsing stage.

4,404,005
MOLECULAR SIEVE TYPE GAS SEPARATION SYSTEMS

Humphrey A. S. Hamlin, Montacute, near Yeovil, and James C. Taylor, Yeovil, both of England, assignors to Normalair-Garrett (Holdings) Limited, Yeovil, England

Filed Aug. 18, 1981, Ser. No. 294,004
Claims priority, application United Kingdom, Aug. 18, 1980, 8026843
Int. Cl.³ B01D 53/04
U.S. Cl. 55—163 5 Claims



1. A molecular sieve type gas separation system comprising:

a plurality of interconnected beds containing adsorptive material for retaining at least one constituent of a gaseous mixture supplied to the system to produce a product gas;

a control means for operating each said bed in a relatively phased cycle having a period of adsorption and a period of regeneration, said control means including

an inlet valve means for passing the gaseous mixture into each said bed sequentially,

back-flush valve means for passing a portion of the product gas delivered by an adsorping bed to back-flush another bed for desorption or regeneration of said another bed,

an adjustable vent valve means for discharging of the back-flushing gas from said another bed, and

a sensing means for monitoring a physical paramenter of the system gases and for precisely controlling said vent valve means to adjustably regulate the regenerating gas flow therethrough and hence the advance of the retained constituent in said another bed during regeneration thereof so that when said another bed is in a period of adsorption a product gas having an average concentration level of a chosen value is produced and only that amount of product gas necessary to back-flush said another bed for the desired position of the retained constituent is lost during regenerating of said another bed.

4,404,006
FILTER DEVICE

Charles D. Williams, 31 Harbor Site Dr., Rolling Hills Estate, Calif. 90274, and Knut H. Larsen, 7878 S. Poplar, Englewood, Colo. 80112

Filed Jun. 19, 1981, Ser. No. 275,279
Int. Cl.³ B01D 46/10
U.S. Cl. 55—502 6 Claims

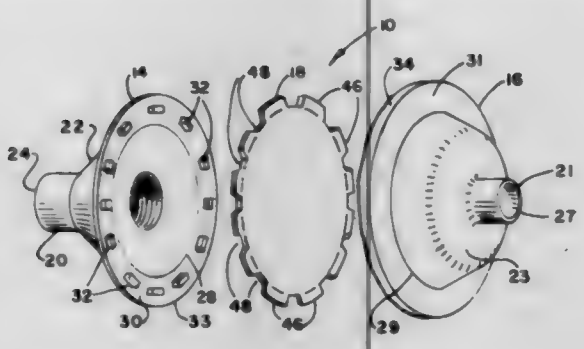
1. A filter device comprising:

a first housing having gas inlet means and a plurality of spaced ribs extending from a surface of said first housing, each of said ribs positioned on the periphery of said surface of said first housing;

a filter having a plurality of peripherally located projections which define open spaces therebetween, said open spaces being in alignment with said ribs; and

a second housing having gas outlet means and being joined to said first housing with said filter being positioned between said first housing and said second housing said second housing being joined to said first housing by said

ribs being fused so that at least portions of said ribs flow through said open spaces to said second housing and seals



said first and second housings and the pheriphery of said filter together.

4,404,007

EXHAUST GAS CLEANING ELEMENT

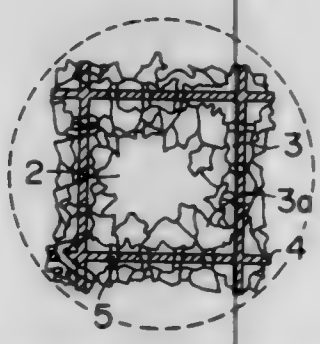
Toshiyuki Tukao, Okazaki, and Masahiro Tomita, Anjo, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 8, 1981, Ser. No. 328,797

Claims priority, application Japan, Dec. 11, 1980, 55-175464; Dec. 11, 1980, 55-175465; Mar. 30, 1981, 56-46756; Apr. 20, 1981, 56-60481; Jul. 16, 1981, 56-111633

Int. Cl.³ B01D *39/20*; C04B *21/06*

U.S. Cl. 55—523 **4 Claims**



1. A rigid ceramic element adapted for capturing and retaining carbon from the exhaust gas of a diesel engine, said element comprising a ceramic monolithic honeycomb structure having inner wall surfaces defining a plurality of cells extending throughout the length of said element, each cell having an open inlet end and an open outlet end defining therebetween a passageway through which said exhaust gas flows, and an irregular reticulate ceramic layer coated upon said inner wall surfaces defining each of said cells, said ceramic layer including a multiplicity of irregularly arranged projections extending into said exhaust gas passageway so as to disturb the exhaust gas flow therethrough to activate the interaction between the exhaust gas and said inner wall surfaces to enhance the capturing and retaining of carbon from the exhaust gas.

4,404,008

COMBINED CASCADE AND MULTICOMPONENT REFRIGERATION METHOD WITH REFRIGERANT INTERCOOLING

Robert J. Rentler, Macungie, Pa., and David D. Sproul, Houston, Tex., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 18, 1982, Ser. No. 349,786

Int. Cl.³ F25J *3/02*

U.S. Cl. 62—11 **7 Claims**

1. A method for cooling and liquefying a methane-rich gas stream which is at superatmospheric pressure comprising the steps of:

(a) initially cooling the methane-rich gas stream in a series of staged heat exchangers with a single component refrigerant,

(b) cooling and partially liquefying a pressurized multicomponent refrigerant in a series of staged heat exchangers with said single component refrigerant,

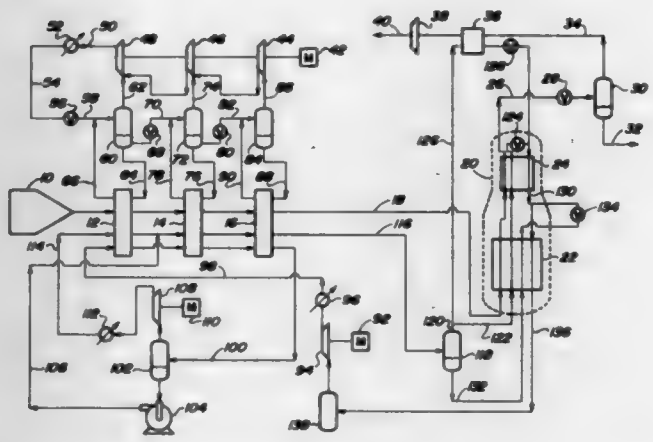
(c) separating the gas and liquid phases of the cooled multicomponent refrigerant,

(d) liquefying and subcooling said methane-rich gas stream in a series of heat exchangers with the gas phase and the liquid phase of said multicomponent refrigerant,

(e) recompressing said single component refrigerant in a series of staged compressions,

(f) aftercooling said compressed single component refrigerant against a non-hydrocarbon cooling fluid,

(g) initially recompressing said multicomponent refrigerant and aftercooling said refrigerant against a non-hydrocarbon cooling fluid,



(h) interstage cooling of said multicomponent refrigerant in a series of heat exchangers against the single component refrigerant to form a two phase multicomponent stream,

(i) compressing the gas phase of the multicomponent refrigerant and aftercooling the compressed refrigerant against a non-hydrocarbon cooling fluid before further cooling against the single component refrigerant,

(j) pumping the liquid phase of the multicomponent refrigerant to a pressure equal to the gas phase of step (i),

(k) combining the multicomponent refrigerant streams of step (i) and step (j) for further cooling as performed in step (b) above.

4,404,009

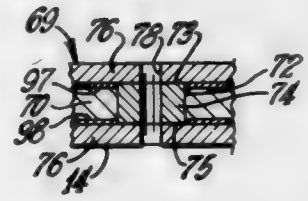
METHOD AND APPARATUS FOR FORMING GLASS FIBERS

Mohinder S. Bhatti; Alfred Marzocchi, and George W. Ritter, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 22, 1982, Ser. No. 452,274

Int. Cl.³ C03B *37/025*

U.S. Cl. 65—1 **10 Claims**



1. A feeder for supplying streams of glass to be drawn into filaments having an orificed wall comprising:

a refractory metal layer;

an oxygen impervious, precious metal layer;

a barrier layer located between said refractory metal layer and said precious metal layer, said layers being intimately bonded together by hot isostatic pressing to form a unitary laminate, said barrier layer substantially retarding the interdiffusion of the refractory metal and precious metal; said refractory metal or precious metal not forming a compound with said barrier layer having a melting point temperature

less than the temperature of the molten glass in contact with said laminate; said laminate having at least one aperture therethrough; and

an orificed element positioned in said aperture to prevent the oxidation of said refractory metal layer at elevated temperatures and to establish said streams of glass.

4,404,010

REPLACING OPTICAL FIBRE SHEATHING AFTER FUSION SPLICING

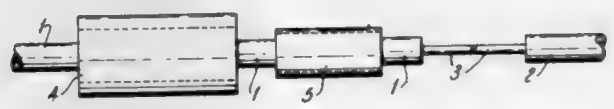
Terry Bricheno, Near Bishop's Stortford; Alexander J. Robertson, Hoddesdon, and Ross K. Finlay, Harlow, all of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,704

Claims priority, application United Kingdom, Nov. 14, 1980, 8036717

Int. Cl.³ G02B *5/14*; B29D *11/00*

U.S. Cl. 65—4.2 **9 Claims**



1. A method of forming a flexible splice between the ends of a pair of thermoplastic sheathed glass optical fibres comprising the steps of:

stripping a length of sheathing from one end of each of the two optical fibres;

forming a fusion splice between the sheathing stripped lengths of said fibres;

positioning a quantity of thermoplastic material of the type used for the sheathing around the entire circumference of the sheathing-stripped lengths, the volume of the quantity of said thermoplastic material being substantially equal to the volume of sheathing stripped from said lengths;

positioning a length of heat-shrinkable tubing around said quantity of thermoplastic material to contain and mold said material;

fusing said thermoplastic material to the ends of the unstripped sheathing of the two fibres to form a replacement length of sheathing having a diameter substantially equal to the diameter of the unstripped sheathing; and

removing said heat-shrinkable tubing.

4,404,011

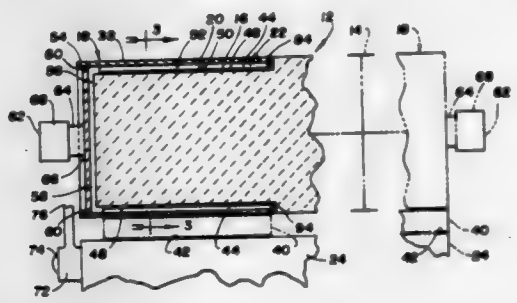
CONVEYOR ROLL END CAP

Ronald A. McMaster, 420 Water St., Woodville, Ohio 43469

Filed Jan. 6, 1981, Ser. No. 222,853

Int. Cl.³ C03B *35/18*

U.S. Cl. 65—181 **10 Claims**



1. A hot glass sheet conveyor roll made of thermally low expansive ceramic with an elongated shape including an intermediate conveying portion of a round cross-section and also including at least one end with an end cap comprising: a metal sleeve that receives the end of the roll to provide rotational support thereof; and a retention spring interposed between and engaged with both the end of the roll and the sleeve of the end cap to retain the sleeve on the roll end, and said retention spring having a sufficiently deflected condition at room temperature such that upon heating of the roll and its end cap the retention spring remains partially deflected in engagement with both the roll end and the end cap sleeve whereby the retention spring retains the end cap on the roll end and prevents relative rotation between the end cap and the roll end.

4,404,012

PROCESS FOR INCREASING SUGAR YIELD IN SUGARCANE

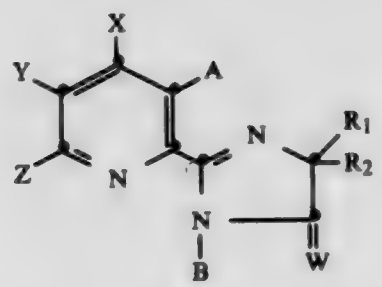
Philip L. Orwick, Morrisville, Pa., and Andrew R. Templeton, West Trenton, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 155,900, Jun. 2, 1980, abandoned. This application Apr. 20, 1981, Ser. No. 255,937

Int. Cl.³ A01N *43/42*

U.S. Cl. 71—92 **7 Claims**

1. A method for increasing sucrose yields from sugarcane comprising applying to the foliage of said sugarcane about 2 weeks to 4 weeks prior to first harvest an effective amount of a compound having the formula:



(I)

wherein

R_1 is C_1–C_3 alkyl;

R_2 is C_1–C_2 alkyl;

A is $COOR_3$;

R_3 is hydrogen, methyl or furfuryl;

C_3alkynyl; or,

A cation of alkali metals, alkaline earth metals, ammonium or organic ammonium;

B is H;

W is O;

X and Y are hydrogen;

Z is hydrogen chlorine or methyl; the optical isomers thereof, or except when R_3 is a salt-forming cation, the acid addition salts thereof.

4,404,013

PLANT GROWTH MEDIUM

Arnold Rainbow, Ipswich, England, assignor to Fisons Limited, England

Continuation of Ser. No. 167,685, Jul. 11, 1980, abandoned. This application Apr. 13, 1982, Ser. No. 368,008

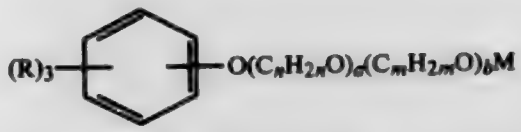
Claims priority, application United Kingdom, Jul. 17, 1979, 7924910

Int. Cl.³ C05F *11/02*

U.S. Cl. 71—24 **5 Claims**

1. A composition comprising peat and 0.01 to 2% by weight, based on the dry peat solids, of a wetting agent having the formula:

I



wherein each R is selected from an alkyl group containing from 1 to 12 carbon atoms; n and m each has a value selected from 2 and 3; the sum a+b is at least 1 and at least one of a and b has a value of at least 1; and M is selected from hydrogen, ammonium and alkali metal; and mineral acid esters thereof.

4,404,014

SALT-LIKE PRODUCTS OF THE ADDITION OF PHENOLS ONTO AMINO ORGANOSILANE ESTERS AND METHOD FOR THE PREPARATION THEREOF AND USE AS A PRESERVATIVE

Hans-Joachim Kötzsch, and Hans-Joachim Vahlensieck, both of Rheinfelden, Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

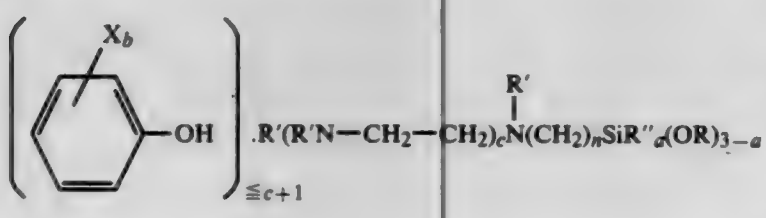
Division of Ser. No. 90,725, Nov. 2, 1979, Pat. No. 4,254,270. This application Jul. 30, 1980, Ser. No. 173,543

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847400

Int. Cl.³ A01N *31/08, 55/00*

U.S. Cl. 71—67 **46 Claims**

1. A process for preserving a material against biological attack and/or biological infection and/or biological infestation caused by fungi, bacteria, viruses, microphytes (e.g., algae), insects and other microorganisms which comprises applying thereto an effective amount of an adduct of phenol with an aminoorganosilane ester with salt-like charge-transfer-complex structure of the general formula



wherein

R represents an alkyl moiety of 1 to 8 carbon atoms or ethylene glycol or propylene glycol or up to 3 polyethylene or polypropylene glycol moieties terminally closed with a lower alkyl or acyl group of a lower alkanoic acid;

R′ represents hydrogen or alkyl moieties having 1 to 20 carbon atoms optionally containing one or more ether bridges or a cyclohexyl moiety;

R″ represents alkyl with 1 to 8 carbon atoms;

X represents halogen or C_{1-4} alkyl moieties or a nitro group;

a being a value of 0 to 3;

b a value of 0 to 5;

c a value of 0 to 20; and

n a value of 1 to 6.

4,404,015

PREPARATION OF MATERIAL USEFUL AS PLANT NUTRIENTS

Kuruvakkat K. G. Menon; Hariharan Raman; Vadali S. Sarma, and Bookinkere C. Subba, all of Maharashtra, India, assignors to Lever Brothers Company, New York, N.Y.

Filed Jul. 8, 1981, Ser. No. 281,531

Claims priority, application United Kingdom, Jul. 18, 1980, 8023593

Int. Cl.³ A01N *27/00*

U.S. Cl. 71—77 **9 Claims**

1. A process for the preparation of an aqueous composition useful as a plant growth stimulant, which process comprises the steps of:

(a) saponifying a plant wax selected from the group consisting of rice bran wax and carnauba wax to obtain a mixture of saponified and unsaponified material;

(b) recovering unsaponified material from the mixture by extraction with a water-immiscible organic solvent; and

(c) mixing the recovered unsaponified material with water and one or more emulsifying agents.

4,404,016

COMPOSITION AND METHOD FOR CONTROLLING GROWTH OF TOBACCO SUCKERS

Thomas C. Zinninger, and Joseph Deli, both of Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 28, 1981, Ser. No. 306,055

Int. Cl.³ A01N *37/12, 31/02, 43/58*

U.S. Cl. 71—78 **4 Claims**

1. In a method of controlling the growth of suckers on tobacco plants by sequentially treating the plants with one or more applications of C_6 to C_{18} saturated fatty alcohol followed by one or more applications of maleic hydrazide wherein the improvement resides in applying to the topped plants, following application of either said fatty alcohol or maleic hydrazide, an effective sucker controlling amount of a solution of isopropyl N-(3 chlorophenyl) carbamate in alkylene glycol so as to provide from about 10 to about 200 milligrams of carbamate compound per tobacco plant.

4,404,017

PHTHALIMIDOGUANIDINE PLANT GROWTH REGULATORS

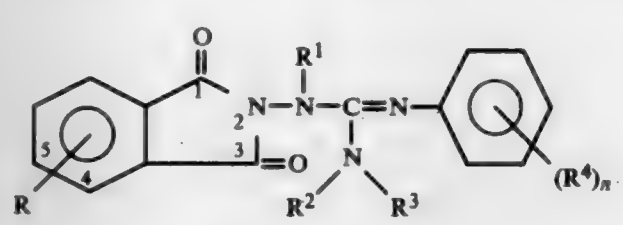
Jerry L. Rutter, Mentor, Ohio, assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jul. 3, 1980, Ser. No. 165,917

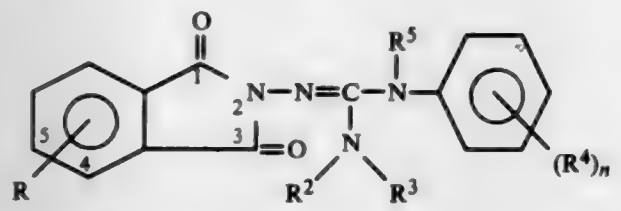
Int. Cl.³ A01N *43/38, 43/40, 43/84, 47/44*

U.S. Cl. 71—88 **11 Claims**

1. The method of regulating the growth of plants comprising applying to the plants, the seed or the soil an effective amount of a compound having one of the following structural formulas;



(1a)



(1b)

in which R, R^1 and R^5 are hydrogen or C_1 to C_5 alkyl, R^2 and R^3 are alike or unlike, one of which may be hydrogen but otherwise are substituents selected from branched or unbranched C_1 to C_5 alkyl, alkenyl, alkynyl, C_2 to C_5 hydroxyalkyl or alkoxyalkyl, C_3 to C_5 cycloalkyl, furfuryl, pyridyl, benzyl, phenyl, C_1 to C_5 alkyl-substituted phenyl, or $—NR^2R^3$ together may be 2,5-dimethyl-1-pyrryl, 4-morpholinyl, or 1-pyrrolidinyl, R^4 is halogen, nitro, cyano, trifluoromethyl or C_1 to C_5 alkyl and n is zero, one or two.

4,404,018

FURFURYL AMIDES OF PHENOXYPHENOXYALKANOIC ACIDS AND HERBICIDAL USE

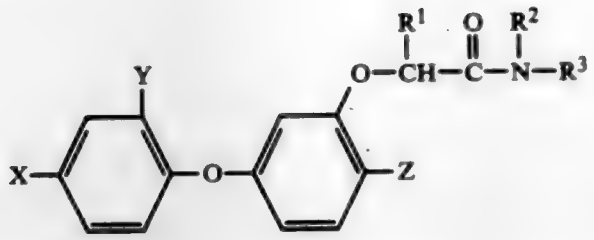
Leonard J. Stach, Riverside, and Takeo Hokama, Chicago, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Jun. 23, 1982, Ser. No. 391,088

Int. Cl.³ A01N *43/08*; C07D *307/16, 307/54*

U.S. Cl. 71—88 **10 Claims**

1. A compound of the formula



(I)

wherein X is halogen or trifluoromethyl; Y is selected from the group consisting of hydrogen, halogen, nitro and cyano; Z is selected from the group consisting of nitro, cyano and halogen; R^1 is alkyl; R^2 is hydrogen or alkyl; and R^3 is furfuryl or tetrahydrofurfuryl.

9. A herbicidal composition comprising an inert carrier and as the essential active ingredient, in a quantity toxic to weeds, a compound of claim 1.

4,404,019

3-CHLORO-1-PHENYL-1,2,4-TRIAZOLIN-5-ONES AND THEIR USE AS HERBICIDES

Tamon Uematsu, Funabashi; Shunichi Hashimoto, and Hiroshi Matsumoto, both of Sonehigashi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

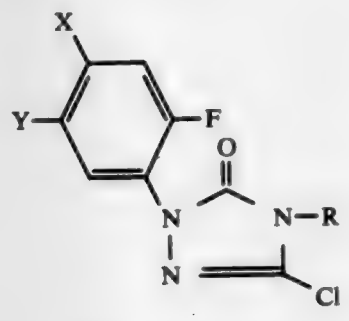
Filed Dec. 8, 1981, Ser. No. 328,719

Claims priority, application Japan, Dec. 24, 1980, 55-184515; Dec. 24, 1980, 55-184516

Int. Cl.³ A01N *43/64;* C07D *249/12*

U.S. Cl. 71—92 **8 Claims**

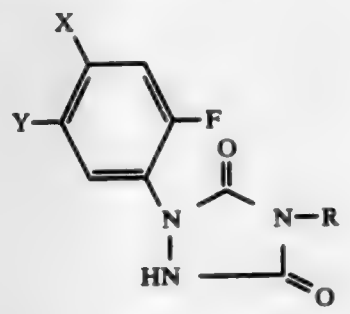
1. A compound of the formula:



wherein R is a C_1–C_4 alkyl group, a C_3–C_4 alkenyl group or a C_3–C_4 cycloalkyl group, X is a chlorine atom or a bromine atom and Y is a hydrogen atom or a C_1–C_4 alkoxy group.

7. A method for controlling weeds which comprises applying a herbicidally effective amount of the compound according to claim 1 to the locus where the control of undesired weeds is encouraged.

8. A compound of the formula:



wherein R is a C_1–C_4 alkyl group, a C_3–C_4 alkenyl group or a C_3–C_4 cycloalkyl group, X is a chlorine atom or a bromine atom and Y is a hydrogen atom or a C_1–C_4 alkoxy group.

4,404,020

CERTAIN ESTERS OF 2-[(2,6-DICHLORO-3-PYRIDYL)OXY]PROPIONIC ACID, COMPOSITIONS CONTAINING SAME AND THEIR HERBICIDAL PROPERTIES

Rolf Schurter, Binningen, Switzerland; Niels Clauson-Kaas, Farum, Denmark, and Hermann Rempfler, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 36,265, May 4, 1979, abandoned, which is a continuation of Ser. No. 862,697, Dec. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 715,352, Aug. 18, 1976, abandoned. This application Nov. 20, 1981, Ser. No. 323,604

Claims priority, application Switzerland, Aug. 25, 1975, 10964/75

Int. Cl.³ C07D *213/65;* A01N *43/40*

U.S. Cl. 71—94 **12 Claims**

1. 2-[(2,6-dichloro-3-pyridyl)-oxy-]-propionic acid 6'-chlorohexyl ester.

7. A method for inhibiting the growth of dicotyledonous plants which comprises applying to said plants a growth inhibiting effective amount of a compound according to claim 1.

4,404,021

HERBICIDAL α-CYANOBENZYL 3,6-DICHLORO-2-METHOXY-BENZOATE

Jerome A. Gourse, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Jul. 19, 1982, Ser. No. 399,550

Int. Cl.³ A01N *37/34;* C07C *121/75*

U.S. Cl. 71—105 **3 Claims**

1. The composition of matter, α-cyanobenzyl-3,6-dichloro-2-methoxybenzoate.

4,404,022

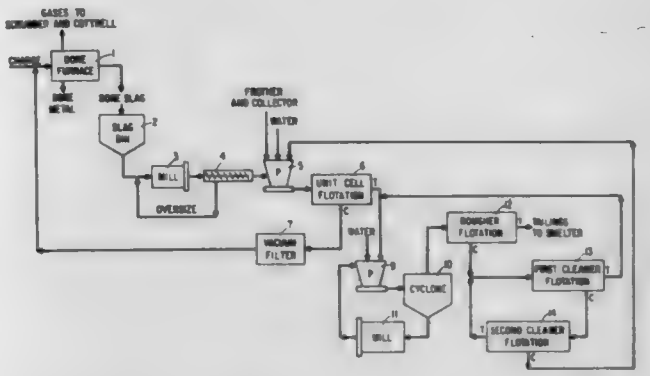
DORE SLAG TREATMENT

Peter W. Godbehere, Noranda, Canada, assignor to Noranda Mines Limited, Toronto, Canada

Filed Dec. 28, 1981, Ser. No. 334,897

Int. Cl.³ C22B *11/04, 1/00;* C01G *5/00, 7/00*

U.S. Cl. 75—2 **11 Claims**



1. A method of treating dore slag which comprises the steps of grinding the slag, mixing the obtained pulp with water to form a slurry, adding a suitable collector to the slurry for selective flotation of precious metals, adding a suitable frother, aerating the slurry to produce a precious metals concentrate in the form of a froth on top of the slurry, and separating said concentrate from the remainder of the slurry.

4,404,023

PROCESS FOR THE PRODUCTION OF A METAL OR METAL ALLOY POWDER

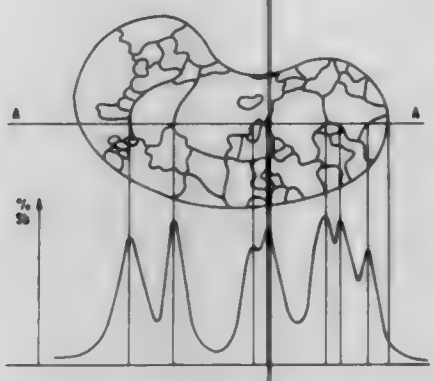
Wolfgang Glück, Neuhaus, Fed. Rep. of Germany, assignor to Eckart-Werke Standard Bronzepulver-Werke Carl Eckart, Furth, Fed. Rep. of Germany

Filed Mar. 30, 1982, Ser. No. 363,572

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1981, 3113886

Int. Cl.³ B22F *9/04*

U.S. Cl. 75—0.5 R 12 Claims



1. A process for the production of a metal powder having flake-like particles comprising mechanically grinding a ductile starting material and putting the material into flake form, wherein the starting material includes a foreign substance as an intermediate substance which at the temperatures occurring in the flake-forming process occurs substantially only at the boundary surfaces of the crystallites of the starting material, in order thereby to improve the crushability of the starting material.

4,404,024

PRODUCTION OF MAGNETIC POWDER

Shintaro Suzuki; Sadao Iizuka, both of Shibukawa, and Yoshimi Moriya, Gunma, all of Japan, assignors to Kanto Denka Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 18,125, Mar. 7, 1979, Pat. No. 4,306,921. This application Mar. 24, 1981, Ser. No. 247,149

Claims priority, application Japan, Mar. 16, 1978, 53/30151

Int. Cl.³ C22C *1/04*

U.S. Cl. 75—0.5 BA 18 Claims

1. A process for producing a magnetic powder consisting essentially of acicular iron particles, said particles being doped with at least one metal selected from the group consisting of Co, Mn, Ni, Ti, Bi, Mo, Ag, Cr, Zn, Si and Al and additionally containing an applied metal selected from the group consisting of cobalt, nickel, manganese and antimony and mixtures thereof, said iron particles being suitable for magnetic recording which comprises the steps of

(a) treating finely divided starting material in the form of acicular particles selected from the group consisting of (i) a doped iron oxyhydroxide containing a doping component selected from the group consisting of Co, Mn, Ni, Ti, Bi, Mo, Ag, Cr, Zn, Si, Al and mixtures thereof and (ii) a doped iron oxide containing a doping component selected from the group consisting of Co, Mn, Ni, Ti, Bi, Mo, Ag, Cr, Zn, Si, Al and mixtures thereof with an aqueous solution or suspension of an applied metal compound selected from the group consisting of cobalt, nickel, manganese and antimony compounds and mixtures thereof or a mixture of said solution and said suspension so that said applied metal compound is applied on said particles,

(b) filtering said treated particles from the liquid medium to form a cake comprising said treated particles and drying said cake and

(c) reducing said dry cake in a reducing gas stream at a temperature up to 600° C. to reduce said treated particles of doped iron oxyhydroxide or doped iron oxide containing said applied metal compound whereby the individual particles are not sintered and the initial shape of the micro-particles of the starting material is retained to form magnetic powder consisting essentially of acicular iron particles doped with at least one metal selected from the group consisting of Co, Mn, Ni, Ti, Bi, Mo, Ag, Cr, Zn, Si and Al.

4,404,025

PROCESS FOR MANUFACTURING SEMIFINISHED PRODUCT FROM A MEMORY ALLOY CONTAINING COPPER

Olivier Mercier; Dag Richter, both of Ennetbaden, and Günther Schröder, Birmenstorf, all of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Feb. 23, 1982, Ser. No. 351,530

Claims priority, application Switzerland, Mar. 13, 1981, 1728/81

Int. Cl.³ C21D *8/00*

U.S. Cl. 148—11.5 F 7 Claims

1. A process for manufacturing semifinished product comprising the steps of forming a memory alloy consisting of the Ni/Ti type, containing copper, starting from a cast bar, subjecting said cast bar to a homogenizing annealing treatment, for 1 to 200 hours at a temperature which is 10° to 200° C. below the solidus temperature of the alloy cooling machining, coating with a lubricant, and isothermally extruding at a temperature of 700° to 850° C., using a ram speed of at least 0.01 mm/s, a conically shaped extrusion die with rounded-off edges, and a reduction ratio of 4:1 to 20:1.

4,404,026

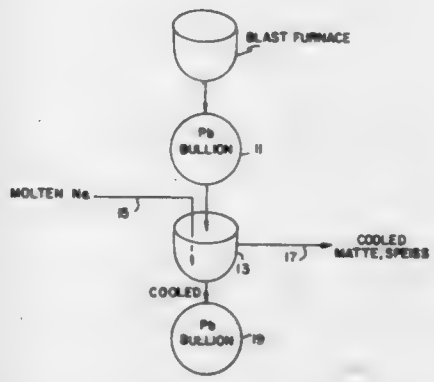
PROCESS FOR SEPARATION OF DROSS ELEMENTS COMBINING SODIUM ADDITION TO MOLTEN BULLION FOLLOWED BY CONTROLLED SOLIDIFICATION OF CASTING

Carl R. Di Martini, Piscataway, and John E. Casteras, Colonia, both of N.J., assignors to ASARCO Incorporated, New York, N.Y.

Filed Jul. 22, 1982, Ser. No. 400,777

Int. Cl.³ C22B *13/06*

U.S. Cl. 75—63 10 Claims



1. A process for the separation of elemental lead from blast furnace bullion containing a substantial amount of PbS comprising:

forming a pool of molten lead bullion;

casting the bullion into a heat resistant mold;

cooling the cast bullion to a predetermined temperature to form a partial matte crust covering the surface of the bullion;

adding a sodium-containing reagent selected from the group consisting of metallic sodium, Na_2CO_3 and Na_2CO_3/coke to the lead bullion, the sodium-containing reagent reacting with PbS to form elemental lead and Na_2S;

cooling the lead bullion to a predetermined solidification temperature a Na_2S-Cu_2S matte and a Cu_3As, Cu_3Sb and Fe_2As speiss forming on the surface of the molten lead pool during cooling with a substantial amount of the

mechanically entrained and chemically released elemental lead falling into the molten lead pool; and

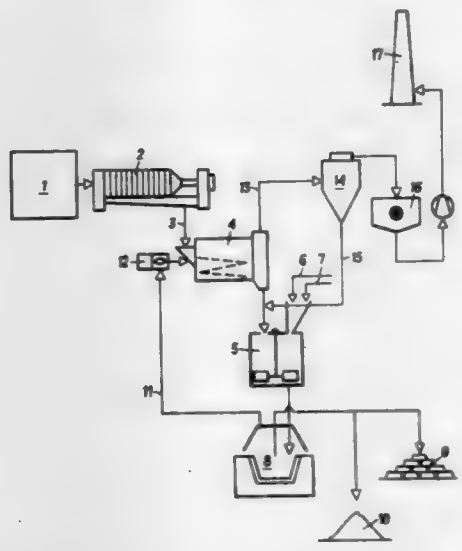
separating the solidified matte and speiss from the lead bullion.

4,404,027

METHOD OF RECOVERING HEAVY METALS

Ernst Eichberger, Wels, and Gerhard Lazar, Linz, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Feb. 22, 1982, Ser. No. 350,439
Claims priority, application Austria, Mar. 5, 1981, 1014/81
Int. Cl.³ C22B *15/00*
U.S. Cl. 75—72 **7 Claims**



1. In a method of recovering heavy metals, including nickel, cobalt, copper, silver, gold, tin, zinc and chromium, form filter residues containing at least one of metal oxides, metal hydroxides and metal carbonates, which comprises the steps of drying said filter residues, adding carbon-containing reducing agents to said dried filter residues to produce a mixture, and reducing said mixture in a furnace, the improvement wherein:

metal-containing filter residues having a water content of 30% to 80% are dried to obtain a product having a grain size of 0.1 mm to 5 mm and a packing density of 0.4 kg/l to 1.2 kg/l, and wherein the mixture of said dried filter residues and carbon-containing reducing agents

(a) is charged into a crucible furnace at a filling height of 0.4 m to 1.5 m;

(b) heated in said crucible furnace to a temperature higher than the melting point of the metal to be recovered; and

(c) maintained at an approximately constant height therein by refilling said furnace with said mixture as volume reductions occur.

4,404,028

NICKEL BASE ALLOYS WHICH CONTAIN BORON AND HAVE BEEN PROCESSED BY RAPID SOLIDIFICATION PROCESS

Viswanathan Panchanathan, Billerica; Ranjan Ray, Waltham, and Bill C. Giessen, Cambridge, all of Mass., assignors to Marko Materials, Inc., Billerica, Mass.

Filed Apr. 27, 1981, Ser. No. 257,778
Int. Cl.³ C22C *19/08*
U.S. Cl. 75—244 **3 Claims**

1. Fine grained nickel-base alloys containing dispersed borides in bulk form having composition $Ni_aCu_bAl_cM_dSi_eB_f$ wherein M is at least one element selected from the group consisting of Fe, Co, Vn Mn and Cr, and the subscripts represent atom percent having the values a=40–79, b=16–40, c=0–15, d=0–10, e=0–5, and f=5–15, with the provisos that the sum of b+c+d may not exceed 50 atom percent, the sum of e+f may not exceed 15 atom percent and the sum of a+b+c+d+e+f is 100, made by subjecting the powders of the said alloys to application of pressure and heat, said powders being made by the method comprising the following steps:

(a) forming a melt of said alloy

(b) depositing said melt against a rapidly moving quench surface adapted to quench said melt at a rate in the range of approximately 10^5 to 10^7 °C./second and form thereby a rapidly solidified brittle strip of said alloys characterized by predominantly a metastable single solid solution structure,

(c) comminuting said strip into powders.

4,404,029

NON-LINEAR POLYCRYSTALLINE BARIUM TITANATE-TYPE DIELECTRIC ELEMENT

Shoichi Iwaya; Hitoshi Masumura, both of Akita; Yoshifumi Midori, Honjo; Yasunobu Oikawa, and Hisao Abe, both of Akita, all of Japan, assignors to TDK Electronics Co., Ltd., Nihonbashi, Japan

Continuation of Ser. No. 210,590, Nov. 26, 1980. This application Feb. 19, 1982, Ser. No. 350,379
Claims priority, application Japan, Nov. 26, 1979, 54-152573
Int. Cl.³ C04B *35/00*
U.S. Cl. 501—139 **3 Claims**

1. A non-linear dielectric element which utilizes the non-linearity of a dielectric constant that depends on an electric field consisting of a sintered polycrystal mainly composed of $Ba(Ti_{0.90\text{-}9.98}Sn_{0.02\text{-}0.10})O_3$ and having an average grain diameter in the range of from 10 to $\alpha\mu m$.

4,404,030

ANTI-PLATING AGENT FOR ONE-SIDE HOT-DIP PLATING PROCESS

Hideo Komura, Ichihara; Kazuaki Kyohno, Chiba; Takahisa Yoshihara, Chiba; Syoji Shijima, Chiba, and Minari Goto, Kurashiki, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Mar. 23, 1982, Ser. No. 361,082
Claims priority, application Japan, Mar. 27, 1981, 56-45295; Oct. 26, 1981, 56-171264
Int. Cl.³ B05D *5/08*
U.S. Cl. 106—2 **7 Claims**

1. An anti-plating agent for use in one-side hot-dip plating process consisting of an aqueous slurry which is prepared by dissolving or dispersing the following substances in water: an alkali metal silicate; boric acid; a hydroxide of an alkali metal; at least one of magnesia and magnesium hydroxide; at least one of titania and titanium hydroxide; and at least one aluminium compound selected from a group consisting of alumina, aluminium hydroxide and alumina sol.

4,404,031

PROCESS FOR PRODUCING HYDRAULIC CEMENTS

Giichi Sudoh, Chichibu; Keiichi Minegishi, Kumagaya; Kanjiro Ishizaki, and Ikuo Uchida, both of Chichibu, all of Japan, assignors to Chichibu Cement Kabushikikaisha, Tokyo, Japan

Filed Jan. 4, 1982, Ser. No. 336,689
Claims priority, application Japan, Apr. 2, 1981, 56-48378
Int. Cl.³ C04B *7/14*
U.S. Cl. 106—90 **2 Claims**

1. A process for producing hydraulic cements characterized by mixing a first raw material which is 3 to 20% by weight of a clinker or cement having as a main component a calcium sulfoaluminate compound or calcium aluminate compound having a mol ratio of CaO/Al_2O_3 less than 3 as $3CaO.3Al_2O_3.CaSO_4$, $CaO.Al_2O_3$ or $12CaO.7Al_2O_3$ when expressed as a calcium sulfoaluminate compound or calcium aluminate compound, a second raw material which is 3 to 20% by weight of a clinker or cement having as a main component a tricalcium silicate $3CaO.SiO_2$ or dicalcium silicate $2CaO.SiO_2$ as a Portland cement or mixed cement when expressed as a calcium silicate compound, a third raw material which is 6 to 40% by weight of a gypsum as gypsum anhydride or gypsum dihydrate

when expressed as $CaSO_4$, a fourth raw material which is 20 to 88% by weight of a blast furnace granulated slag and a fifth raw material which is 0.1 to 1.5% by weight of an oxycarboxylic acid or sodium salt thereof which is sodium citrate, malic acid, tartaric acid or sodium tartarate so that a mol ratio of $(3Al_2O_3+1.5SiO_2)/(CaO—SO_3)$ may not be less than 1.

4,404,032

PROCESS FOR PRODUCING CEMENT CLINKER

Boris I. Nudelman; Mikhail G. Chepkalenko; Alevtina A. Gasanova; Guzal A. Galimova; Roza Khaichkis; Ravkhat E. Uraev, all of Tashkent; Turgun K. Tashpulatov, Navoi; Erkin M. Butaev, Tashkent; Fedor Y. Adam, Navoi; Arnold A. Kevvai, Tashkent; Rashida G. Bodyagina, Tashkent; Sunnat I. Ibragimov, Tashkent, and Alexandr P. Fedorov, Akhan-Garan, all of U.S.S.R., assignors to Tashkentsky Nauchnois-sledovatelsky I Proektny Institut Stroitelnykh Materialov, U.S.S.R.

Filed Mar. 23, 1982, Ser. No. 360,906
Int. Cl.³ C04B 7/44
U.S. Cl. 106—100 **10 Claims**

1. A process for producing cement clinker comprising:
dry grinding raw cement components to prepare a raw meal;
mixing said raw meal with a solid fuel to prepare a batch mixture;
pelletizing said batch with concurrent addition of calcium chloride thereto;
heat treating the resultant pellets of raw mix while in a drying zone in a dense layer to dry the raw mix;
subsequently roasting the layer of pellets while in a roasting zone by burning a solid fuel over the surface of said layer and maintaining the temperature of resultant gaseous combination products at a temperature between 1150° and 1250° C. for no longer than half of the period in which roasting is effected;
while roasting said layer of pellets of raw mix drawing fuel combustion gaseous products through said dense layer of pellets and removing exhaust gaseous products released therefrom;
lowering said temperature to between 900° in preparation for cooling said dense layer of pellets; and
cooling said dense layer of pellets in a cooling zone to prepare a cement clinker.

4,404,033

METHOD OF MAKING COLLAGEN FIBERS FOR SURGICAL USE

Wolfgang Steffan, Neustadt/Donau, Fed. Rep. of Germany, assignor to CHEMOKOL Gesellschaft zur Entwicklung von Kollagenprodukten, Stolberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 267,776, May 28, 1981, abandoned. This application Mar. 15, 1982, Ser. No. 358,025
Claims priority, application Fed. Rep. of Germany,
Int. Cl.³ A23J 1/10; C08L 89/00; D06M 3/02
U.S. Cl. 106—161 **7 Claims**

1. In a method for the manufacture of collagen fibers for surgical purposes, in which a starting material selected from the group consisting of Achilles tendons and hides from cattle is decomposed in an alkaline medium and are mechanically treated after treatment with an acid, deswelled, cross-linked and dried, the improvement comprising the steps of:
decomposing said starting material in an alkaline medium to an amino-nitrogen content of from 0.15 to 0.30 μmoles/g and after a hydrochloric acid treatment and washing to a pH value of from 2 to 4, the swollen collagen substance is reduced in thickness under pressure forming a two-dimensional network, then the individual longitudinal fibers are exposed by hackling, and then, after deswelling, the fibers are cross-linked with hexamethylene diisocyanate in the presence of a nonionic or cationic emulsifier and are dehydrated and further processed on textile machines.

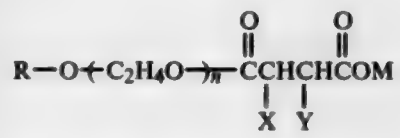
4,404,034

PROCESS FOR PREPARING AQUEOUS DISPERSION OF ROSIN-BASE MATERIALS

Kimio Kawatani, Suita, and Ryoji Kaji, Kawachinagano, both of Japan, assignors to Arakawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 15, 1981, Ser. No. 302,395
Int. Cl.³ C08L 93/04; C09F 1/04
U.S. Cl. 106—238 **5 Claims**

1. In a process for preparing an aqueous dispersion of a rosin-base material by mixing a melt of the rosin-base material, a dispersant and water to obtain a dispersion comprising a continuous phase of the rosin-base material and a dispersed phase of the water, and adding water to the dispersion to invert the dispersion to the contemplated aqueous dispersion comprising a dispersed phase of the rosin-base material and a continuous phase of the water; the improvement wherein
said dispersant comprises at least one compound represented by the formula



wherein R is straight-chain or branched-chain alkyl or alkenyl group having 10 to 24 carbon atoms, n is an integer of 7–18, one of X and Y is $—SO_3M$ and the other thereof is a hydrogen atom, and M is a monovalent cation.

4,404,035

COMPOSITIONS COMPRISING A WAX AND AN ORGANOPOLYSILOXANE

Isao Ona, Sodegaura; Masaru Ozaki, and Yoichiro Taki, both of Ichihara, all of Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Mar. 15, 1982, Ser. No. 358,161
Claims priority, application Japan, Mar. 19, 1981, 56-39902
Int. Cl.³ C08H 9/06; C08L 91/06
U.S. Cl. 106—271 **5 Claims**

1. A composition comprising a homogeneous mixture of
(A) from 0.5 to 99.5 parts by weight of a wax and
(B) from 0.5 to 99.5 parts by weight of an organopolysiloxane having the formula

$$Z(R_2SiO)_m(RQSiO)_nSiR_2Z$$

wherein R denotes a substituted or unsubstituted monovalent hydrocarbon group, Q denotes a hydrocarbon ester group having the formula $—R^1CO_2R^2$, Z denotes an R group or a Q group, R^1 denotes a divalent hydrocarbon group, R^2 denotes a saturated monovalent hydrocarbon group having at least 3 carbon atoms, m and n each has an average value of zero or more, the sum of m+n has an average value of from 1 to 2000, there being an average of at least one Q group per molecule of organopolysiloxane (B) and the total weight of component (A) plus component (B) being 100 parts by weight.

4,404,036

EASILY DISPERSING PHTHALOCYANINE BLUE

Thomas E. Donegan, Holland, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Oct. 15, 1981, Ser. No. 311,335
Int. Cl.³ C04B 31/00; C09C 1/00, 3/00
U.S. Cl. 106—308 M **12 Claims**

1. A process for producing an easily dispersible copper phthalocyanine blue pigment comprising:
(A) grinding
1. copper phthalocyanine blue crystals with
2. an inorganic salt and digesting the ground copper phthalocyanine blue in
water containing

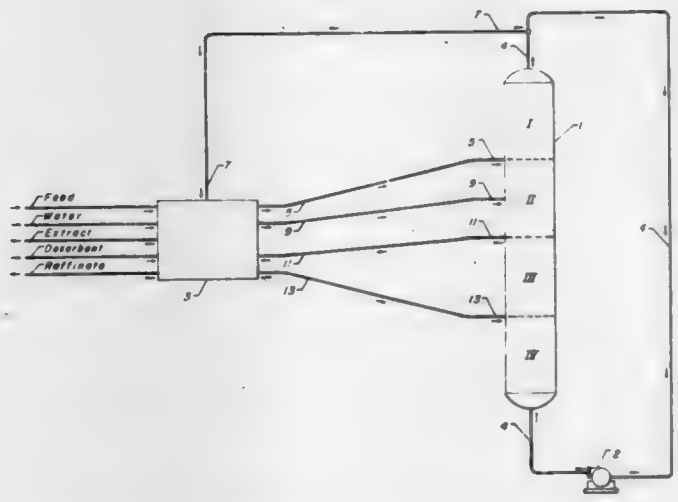
a strong mineral acid,
(B) separately preparing an emulsion by dissolving
1. a resin in
2. an organic solvent,
3. an emulsifying agent and
4. water
(C) mixing
1. said emulsified resin with
2. said digested ground copper phthalocyanine pigment and
(D) separating the pigment from the other materials.

4,404,037

SUCROSE EXTRACTION FROM AQUEOUS SOLUTIONS FEATURING SIMULATED MOVING BED

Donald B. Broughton, Evanston, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 12, 1982, Ser. No. 407,682
Int. Cl.³ C13D *3/12*
U.S. Cl. 127—55 **10 Claims**



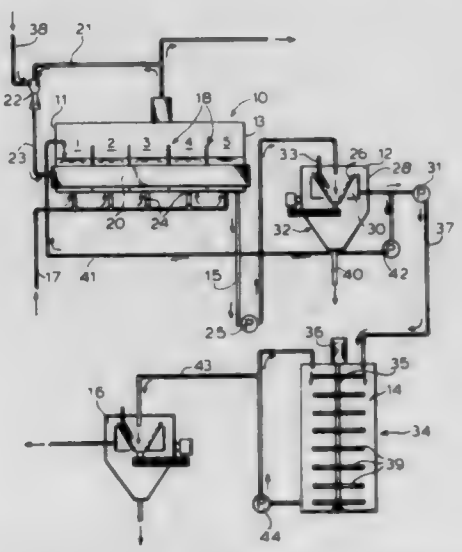
1. A process for separating sucrose from an aqueous solution of sucrose and at least one of the compounds comprising betaine and a mineral salt which process comprises contacting at adsorption conditions said mixture with a solid adsorbent exhibiting selectivity for said sucrose, which process comprises the steps of:
(a) providing net positive fluid flow through a column of said adsorbent in a single direction, which column contains at least three zones having separate operational functions occurring therein and being serially interconnected with the terminal zones of said column connected to provide a continuous connection of said zones;
(b) providing the first of said zones as an adsorption zone in said column, said zone defined by the adsorbent located between a feed inlet stream at an upstream boundary of said zone and a raffinate outlet stream at a downstream boundary of said zone;
(c) providing another of said zones as a purification zone immediately upstream from said adsorption zone, said purification zone defined by the adsorbent located between an extract outlet stream at an upstream boundary of said purification zone and said feed inlet stream at a downstream boundary of said purification zone;
(d) providing another of said zones as a desorption zone immediately upstream from said purification zone, said desorption zone defined by the adsorbent located between a desorbent inlet stream at an upstream boundary of said zone and said extract outlet stream at a downstream boundary of said zone;
(e) passing said feed stream into said adsorption zone at adsorption conditions to effect the selective adsorption of sucrose by said adsorbent in said adsorption zone and withdrawing a raffinate outlet stream from said adsorption zone;
(f) passing a desordent comprising alcohol into said desorption zone at desorption conditions to effect the displacement of said sucrose from the adsorbent in said desorption zone;
(g) withdrawing an extract stream comprising said sucrose and desorbent material from said desorption zone;
(h) passing a water inlet stream into said purification zone upstream of said feed inlet stream in an amount sufficient to cause the magnitude of said net positive flow in said column at the point of introduction of said water inlet stream to be not greater than zero; and,
(i) periodically advancing through said column of adsorbent in a downstream direction with respect to fluid flow in said adsorption zone the feed inlet stream, raffinate outlet stream, desorbent inlet stream, extract outlet stream and water inlet stream to effect the shifting of zones through said adsorbent and the production of extract outlet and raffinate outlet streams.

4,404,038

PROCESS AND INSTALLATION FOR PRODUCING LACTOSE CRYSTALS

Paul Credoz, Hellemmes Lille, and Pierre Beuneu, Roubaix, both of France, assignors to Fives-Cail Babcock, Paris, France

Filed Nov. 10, 1981, Ser. No. 319,909
Claims priority, application France, Nov. 10, 1980, 80 23958
Int. Cl.³ C13F *1/02, 1/06;* C13K *5/00*
U.S. Cl. 127—60 **10 Claims**



1. A process of producing crystallized lactose from lactoserum which comprises the steps of:
(a) continuously feeding small-size crystals of lactose to an inlet end of a crystallization apparatus comprising a succession of compartments extending from the inlet end to an outlet end of the crystallization apparatus, said small-size crystals constituting seeds of crystallization,
(b) continuously feeding lactoserum to one of the compartments of the crystallization apparatus while continuously feeding the small-size lactose crystals,
(c) continuously displacing the lactoserum and lactose crystals through the successive compartments to the outlet end of the crystallization apparatus,
(d) heating the lactoserum in the compartments so as to maintain its temperature at a maximum value compatible with the thermal sensibility of the lactoserum and cause a portion of water from the lactoserum to be evaporated,
(e) controlling the flow of lactoserum fed to the compartments so as to maintain the concentration of the lactoserum at a desired value and assure a regular growth of the lactose crystals, whereby a mixture of a mother liquor and lactose crystals is obtained,
(f) continuously removing said mixture from the outlet end of said crystallization apparatus and feeding the removed mixture to a first continuously operating centrifugal drier having a screen,
(g) continuously separating in said first drier the lactose crystals whose dimensions exceed the range of 40 to 90

microns from the mother liquor, the crystals having dimensions below said range being left in the mother liquor,

(h) continuously cooling the mother liquor discharged from said first drier to cause the crystals left in the mother liquor to grow,

(i) continuously feeding the mother liquor with the grown crystals to a second continuously operating centrifugal drier, and continuously separating the grown crystals from the mother liquor.

4,404,039

CLEANSER FOR ANODIZED SURFACES OF ALUMINUM AND ALLOYS THEREOF AND METHOD FOR USING SAME

Rainer Osberghaus, Düsseldorf; Hans Ellwanger, Leichlingen; Horst Marsen, Kerpen, and Harald Bossek, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Apr. 29, 1982, Ser. No. 373,295

Claims priority, application Fed. Rep. of Germany, May 16, 1981, 3119538

Int. Cl.³ C23G *1/06*; C25D *11/18*

U.S. Cl. 134—3 **15 Claims**

1. In a process for cleaning an anodized surface of aluminum or an alloy thereof where a cleaning agent is applied to the anodized surface and then the cleaning agent is removed after a sufficient period of contact,

the improvement which comprises applying to the anodized surface at ambient temperature a thin film of a cleaning composition comprising an acid solution consisting essentially of:

(a) from about 3 to 30 percent by weight, based upon the total weight of the acid solution, of nitric acid, calculated as a 65% aqueous solution;

(b) from about 0.1 to 20 percent by weight, based upon the total weight of the acid solution, of partial esters of phosphoric acid;

(c) from about 0.3 to 30 percent by weight, based upon the total weight of the acid solution, of a phosphonic acid or phosphonocarboxylic acid with complexing action;

(d) from about 0.5 to 30 percent by weight, based upon the total weight of the acid solution, of nonionic and/or anionic tensides;

(e) from 0 to about 30 percent by weight, based upon the total weight of the acid solution, of solubilizers and/or organic solvents; and

(f) from about 40 to 90 percent by weight, based upon the total weight of the acid solution, of water,

said solution having a pH of less than 2, and then rinsing off the cleaning composition with water.

4,404,040

SHORT CHAIN FATTY ACID SANITIZING COMPOSITION AND METHODS

Yueh Wang, Apple Valley, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.

Filed Jul. 1, 1981, Ser. No. 279,442

Int. Cl.³ B08B *9/00*; C11D *3/48, 7/08*; A61L *2/00*

U.S. Cl. 134—22.14 **26 Claims**

18. A low foaming, aqueous, antimicrobial, sanitizing composition which comprises:

(a) at least about 50 parts per million (ppm) short chain aliphatic fatty acid having about 6 to 14 carbon atoms;

(b) at least about 100 ppm of a hydrotrope-solubilizer for the fatty acid; and

(c) sufficient hydrotrope-solubilizer-compatible acid so that the composition has a pH in the range of 2.0 to 5.0.

22. A method of sanitizing substantially fixed "in-place" process facilitates comprising:

introducing into the process facilitates the composition of claim 18 at a temperature in the range of about 40° F. (4° C.) to 140° F. (60° C.);

circulating the composition through the process facilitates for a time sufficient to sanitize the process facilitates; and draining the composition .

4,404,041

METHOD OF PRODUCING ELONGATED LARGE-SIZE FORGED ARTICLE

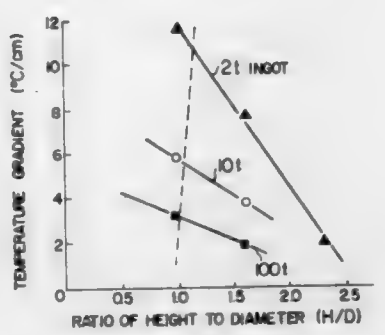
Kimihiko Akahori, Katsuta; Shigeo Maeno, Ibaraki; Hideyo Kodama, and Norio Morisada, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1982, Ser. No. 437,537

Claims priority, application Japan, Nov. 2, 1981, 56/174635

Int. Cl.³ C21D *8/00*

U.S. Cl. 148—2 **22 Claims**



11. A method of producing a steam turbine rotor shaft comprising: preparing molten metal of an alloy steel containing 0.08 to 0.25 wt% of carbon, 0.02 to 0.15 wt% of niobium, 9 to 12 wt% of chromium and more than 80 wt% of iron, pouring said molten metal and solidifying the same in a metal mold having a ratio H/D of the height H of the body neglecting the hot top portion to the diameter D at the height of ½ H falling within a range of not greater than 1, forging the ingot by applying pressure in the radial direction until the heightwise length of a forged article becomes greater than a diameter of the forged article, subjecting the forged article to an annealing, subjecting the annealed forged article to a machining to form a half-finished rotor shaft, subjecting the machined half-finished rotor shaft to a hardening/tempering treatment and subjecting the treated half-finished rotor shaft to a finish machining.

4,404,042

METHOD FOR COLOR-PAINTING ON CHROMIUM-PLATED SURFACE

Tomoyuki Okada, Tsu; Masuo Fukuda, Toda, and Hideki Sugihara, Tokyo, all of Japan, assignors to Sankei Giken Kogyo Kabushiki Kaisha, Akabaneminami, Japan

Filed Jun. 10, 1981, Ser. No. 272,275

Claims priority, application Japan, Aug. 21, 1980, 55-115170

Int. Cl.³ C23C *1/10*

U.S. Cl. 148—6.2 **5 Claims**

1. A method for color-painting on a chromium-plated surface of an object which comprises:

(a) effecting chromium plating on the surface of the object to be painted;

(b) applying to said chromium-plated surface a mixture of transparent paint and coloring matter, said transparent paint consisting of:

(1) methylphenyl silicon resin varnish containing methyl group and phenyl group at a ratio of 1:0.5 to 1.1: 45–63% by weight

(2) methylphenyl silicon resin varnish containing methyl group and phenyl group at a ratio of 1:0.3 to 0.4: 45 to 28% by weight

(3) silicon resin varnish modified with a resin selected from the group consisting of acryl, polyester, and epoxy resins: 9% by weight or below

(4) additional solvents:

xylol: 5% by weight

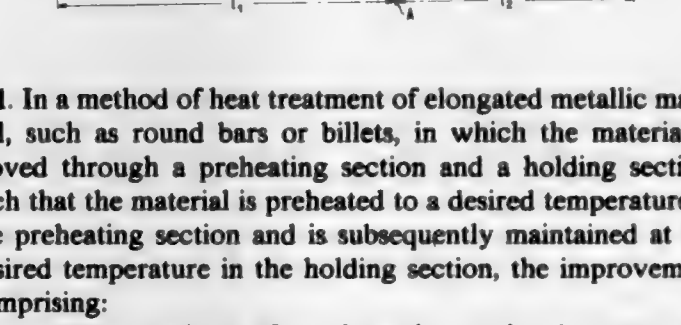
butyl "Cellosolve": 2% by weight
butanol: 2% by weight
(5) various adjuvants selected from the group consisting of adhesion promoter of silicon resin varnish, wetting agent, dispersing agent, and color-separation preventative agent: 1% by weight.

4,404,043

METHOD OF AND AN APPARATUS FOR CONTINUOUS HEAT TREATMENT OF SEPARATED ELONGATED METALLIC MATERIAL

Friedrich W. Elhaus, Jägerhofstr. 117 a, D-5600 Wuppertal 1, and Manfred Wäschle, Singen, both of Fed. Rep. of Germany, assignors to Friedrich W. Elhaus, Wuppertal, Fed. Rep. of Germany

Continuation of Ser. No. 34,356, Apr. 30, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,612
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1979, 2907960
Int. Cl.³ C22F *1/04*
U.S. Cl. 148—13 **21 Claims**



1. In a method of heat treatment of elongated metallic material, such as round bars or billets, in which the material is moved through a preheating section and a holding section, such that the material is preheated to a desired temperature in the preheating section and is subsequently maintained at the desired temperature in the holding section, the improvement comprising:

circulating a volume of gas through a gas heating area adjacent the holding section and through a gas chamber common to both the preheating section and the holding section for circulating the volume of gas, thereby both preheating the material and maintaining the material at the desired temperature with a single flow of circulating heated gas.

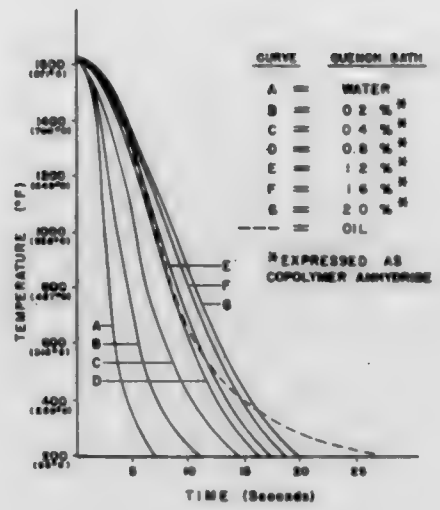
4,404,044

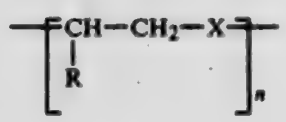
METHOD OF QUENCHING

Joseph F. Warchol, West Norriton, Pa., assignor to E. F. Houghton & Co., Valley Forge, Pa.

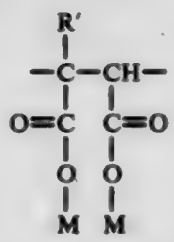
Filed Sep. 8, 1981, Ser. No. 299,961
Int. Cl.³ B23K *35/24*
U.S. Cl. 148—18 **6 Claims**

1. In a process of quenching which is useful in the heat treatment of metals wherein a metal is heated to an elevated temperature and then quenched in a bath comprising a liquid quenching medium to effect desirable metallurgical changes in the metal, the improvement which comprises using as said quenching medium an aqueous solution consisting essentially of from about 0.2% to about 10%, by weight, expressed as the anhydride, of a water-soluble salt of a copolymer containing recurring units of the general formula:

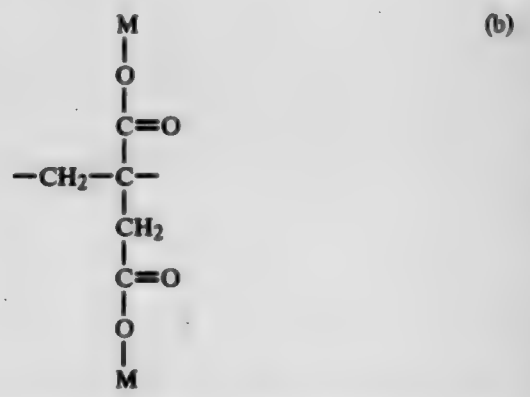




in which X is selected from the group consisting of:


(a)

and


(b)

in which R is a straight or branched chain alkyl group in which the backbone of the chain contains from about 8 to about 28 carbon atoms, R′ is hydrogen or methyl, M is a cation selected from the group consisting of an alkali metal cation, an ammonium ion, a lower alkyl amine ion, and a water-soluble alkanolamine ion, and n is an integer which provides said copolymer with a molecular weight of from about 25,000 to about 250,000.

4,404,045

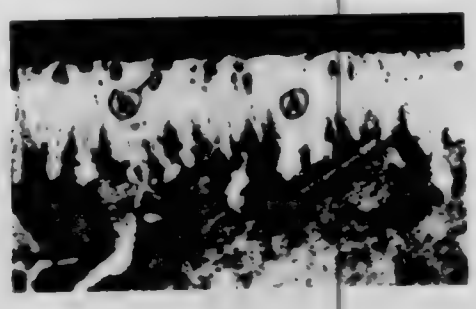
SURFACE-BORONIZED PIECES

Francois H. J. Thevenot, Saint-Etienne; Patrice M. V. Goeuriot, Firminy; Julian H. Driver, Saint-Etienne, and Jean-Paul R. Lebrun, Bougival, all of France, assignors to Association pour la Recherche et le Development des Methodes et Processus Industriels (Armines), Paris, France

Division of Ser. No. 123,425, Feb. 21, 1980, Pat. No. 4,289,545. This application May 8, 1981, Ser. No. 261,940
Claims priority, application France, Feb. 27, 1979, 79 04991
Int. Cl.³ C23C *9/00*
U.S. Cl. 148—31.5 **3 Claims**

1. A carbon steel piece which has been subjected to a boronising treatment that effects a first very thin layer about 10

microns in thickness of non-oriented FeB and Fe_2B crystals covering a second, thick layer of Fe_2B crystals about 170



microns in thickness and having an acicular formation at the interface between said second layer and said carbon steel.

4,404,046

METHOD OF MAKING PERMANENT MAGNET OF MN-AL-C ALLOY

Yoichi Sakamoto, Hirakata; Akihiko Ibata, Izumisano; Shigeru Kojima, Yawata, and Tadao Ohtani, Ise, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Feb. 5, 1981, Ser. No. 231,625

Claims priority, application Japan, Feb. 7, 1980, 55-14542; Feb. 27, 1980, 55-23905; Apr. 14, 1980, 55-49367

Int. Cl.³ H01F *1/02*

U.S. Cl. 148—101 **5 Claims**

1. A method of producing a polycrystalline permanent magnet, comprising the steps of

preparing a polycrystalline Mn-Al-C alloy magnet having a specified direction of easy magnetization; and

subjecting said magnet to compressive working in said direction at a temperature of 550° to 780° C., the degree of said compressive working being equivalent to a logarithmic strain of $\leqq -0.1$ and the working in said step, at least up to a logarithmic strain of -0.1, being free compression.

5. A permanent magnet of Mn-Al-C alloy having a specified plane of easy magnetization, the alloy being magnetically isotropic in said specified plane and anisotropic in planes perpendicular to said specified plane, which is produced by a method comprising the steps of

preparing a polycrystalline Mn-Al-C alloy magnet having a specified direction of easy magnetization; and

subjecting said magnet to compressive working in said direction at a temperature of 550° C. to 780° C., the degree of said compressive working being equivalent to a logarithmic strain of $\leqq -0.1$ and the working in said step, at least up to a logarithmic strain of -0.1, being free compression.

4,404,047

PROCESS FOR THE IMPROVED HEAT TREATMENT OF STEELS USING DIRECT ELECTRICAL RESISTANCE HEATING

Gerald W. Wilks, Calumet City, Ill., assignor to LaSalle Steel Company, Chicago, Ill.

Filed Dec. 10, 1980, Ser. No. 214,878

Int. Cl.³ C21D *1/40*

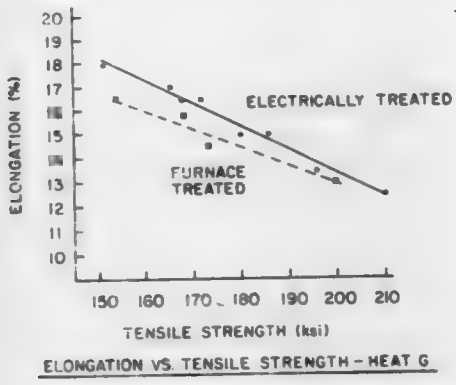
U.S. Cl. 148—131 **7 Claims**

1. A method for heat-treating a steel workpiece which substantially eliminates quench cracking and quench distortion, which method comprises

(a) affixing suitable electrical contacts to opposite ends of a single steel workpiece of finite length and uniform cross section that is susceptible to quench cracking and quench distortion when austenitized in a conventional furnace and severely quenched,

(b) rapidly electrically heating the entire workpiece to an austenitizing temperature above the A_3 temperature for said steel such that the heating time required between the A_1 and the austenitizing temperature is less than 100 seconds,

(c) immediately quenching the entire austenitized workpiece in a liquid quenching medium having a severity of quench factor equal to or greater than that of unagitated water to form a predominantly martensitic microstructure, and



ELONGATION VS. TENSILE STRENGTH - HEAT G

(d) tempering said hardened workpiece by rapidly electrically heating the entire workpiece to a temperature below the A_1 temperature for said steel while maintaining said workpiece in tension at a load level below the yield strength of the steel.

4,404,048

SEMICONDUCTOR DEVICE MANUFACTURE

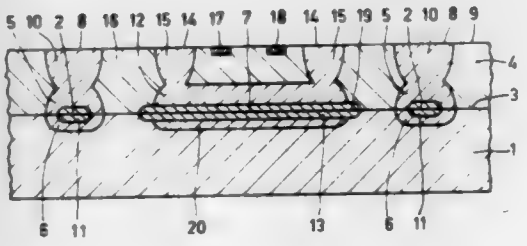
Dirk A. Vogelzang, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,500

Claims priority, application Netherlands, Dec. 17, 1980, 8006827

Int. Cl.³ H01L *21/20, 21/223*

U.S. Cl. 148—175 **4 Claims**



1. A method of manufacturing a semiconductor device, which comprises:

providing a p-type monocrystalline silicon substrate having a major surface;

providing a p-type dopant at a part of said major substrate surface and diffusing said dopant into the substrate;

providing an n-type dopant having a smaller diffusion coefficient than that of said p-type dopant at said part of the major substrate surface where the p-type dopant is provided in order to inhibit diffusion of said p-type dopant;

diffusing said n-type dopant into the substrate;

then forming an n-type epitaxial silicon layer having an upper surface on said major surface of the substrate;

providing a further p-type dopant at a part of said upper surface of the epitaxial layer opposite said part of the major surface of the substrate; and

then diffusing said p-type dopants into the epitaxial layer from both sides by a thermal treatment to form diffused p-type regions which meet in said epitaxial layer.

4,404,049

HARD FACING NICKEL-BASE ALLOY

Kanichi Tanaka, Yawata, and Kensuke Hidaka, Kyoto, both of Japan, assignors to Fukuda Metal Foil & Powder Co., Ltd., Kyoto, Japan

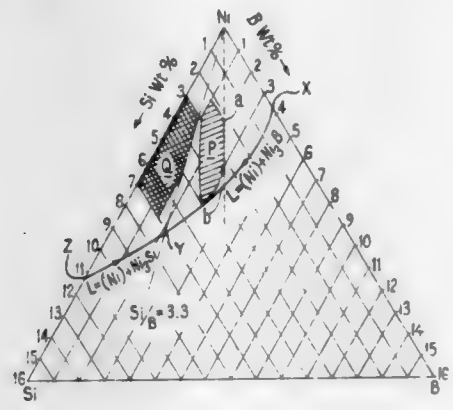
PCT No. PCT/JP79/00026, § 371 Date Oct. 24, 1979, § 102(e) Date Oct. 24, 1979, PCT Pub. No. WO79/00772, PCT Pub. Date Oct. 4, 1979

PCT Filed Feb. 5, 1979, Ser. No. 189,843

Claims priority, application Japan, Mar. 16, 1978, 53-30709; Aug. 24, 1978, 53-103402

Int. Cl.³ C22C *19/05*

U.S. Cl. 148—427 7 Claims



1. A hard-facing nickel-base alloy having an impact value of more than 0.9 kgm/cm^2 and a hardness times impact value of greater than 45, said alloy consisting essentially of 0.05 to 1.5% by weight boron, 3 to 7% by weight silicon, 7.5 to 35% by weight chromium, 0.05 to 1.5% by weight carbon, the balance being substantially nickel and the weight ratio of silicon to boron (Si/B) being more than 3.3 to avoid the formation of the binary eutectic Ni + Ni_3B.

4,404,050

WATER-IN-OIL EMULSION BLASTING AGENTS CONTAINING UNREFINED OR PARTLY REFINED PETROLEUM PRODUCT AS FUEL COMPONENT

William J. Yorke, St. Bruno de Montarville; Rejean Binet, St. Bruno; Ming C. Lee, Longueuil, and Howard A. Bampfield, Otterburn Park, all of Canada, assignors to C-I-L Inc., North York, Canada

Filed Sep. 29, 1982, Ser. No. 427,495

Int. Cl.³ C06B *45/00*

U.S. Cl. 149—2 8 Claims

1. A water-in-oil emulsion explosive composition comprising a continuous carbonaceous fuel phase and a discontinuous aqueous oxidizer salt solution phase wherein the said continuous carbonaceous fuel phase comprises an unrefined or partly refined petroleum product, the said petroleum product being characterised in that,

(a) the component molecules have between 20 and 80 carbon atoms and less than 50% of the said molecules having a number of carbon atoms within the same five carbon atom range, and,

(b) wherein the said unrefined or partly refined petroleum product comprises at least 10% by weight of flowable oil if the said petroleum product is in the form of a petroleum wax or comprises at least 10% by weight of a distillation residue if the said petroleum product is in the form of a petroleum oil or tar.

4,404,051

PRODUCTS AND PROCESSES

Georgina Kalu, Victoria, and Michael Markus, East Melbourne, both of Australia, assignors to ICI Australia Limited, Melbourne, Australia

Division of Ser. No. 40,451, May 18, 1979, abandoned. This application Sep. 2, 1981, Ser. No. 298,892

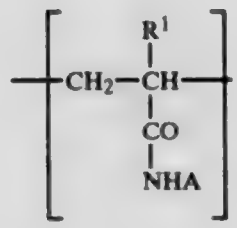
Claims priority, application Australia, May 25, 1978, PD4511

Int. Cl.³ C06B *33/00*

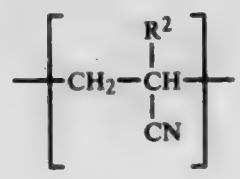
U.S. Cl. 149—37 5 Claims

1. A gelled water bearing explosive composition comprising at least one water soluble inorganic oxygen releasing salt; water; at least one fuel, and characterised in that said explosive composition contains from 0.1 to 3.0%, on a weight basis of the composition, of a copolymeric material comprising four different types of mer units and wherein the mer units are selected one from each of the types of mer units identified by the following formula:

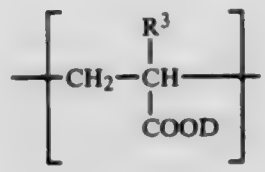
Formula I



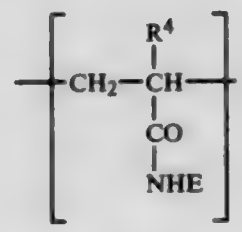
Formula II



Formula III



Formula IV



wherein R^1, R^2, R^3, R^4, A and D are independently chosen from the group of radicals consisting of hydrogen, C_1 to C_6 alkyl and C_1 to C_6 hydroxyalkyl radicals; and E is chosen from the group of radicals consisting of C_1 to C_6 hydroxyalkyl, sulphonyl and phosphonyl radicals.

4,404,052

DYNAMIC LAMINATING METHOD AND APPARATUS FOR ULTRASONICALLY BONDING JUXTAPOSED WEBS

Louis T. Persson, and Coenraad E. Riemersma, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

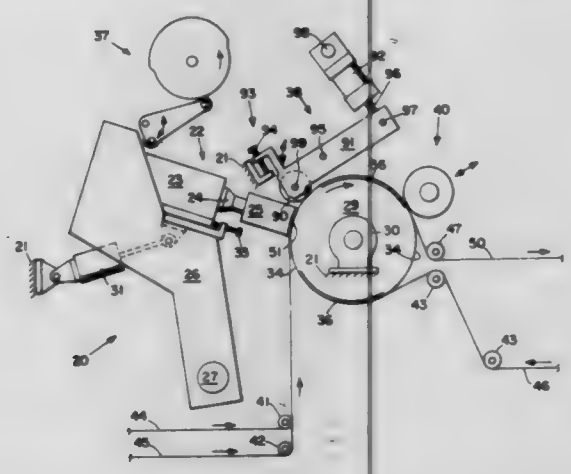
Filed Jan. 26, 1982, Ser. No. 342,700

Int. Cl.³ B29C *27/08*; B32B *31/20*

U.S. Cl. 156—73.1 6 Claims

2. A method of dynamically ultrasonically bonding together a plurality of webs while they are being forwarded in juxtaposed relation along a predetermined path at a predetermined velocity, and which webs are subject to being ultrasonically bonded into a laminate having bonded regions, said web comprising one web and a second web, said second web comprising an elastomeric film, said method comprising the steps of: subjecting the portions of said webs to be bonded to progressively

increasing compressive forces along an elongate portion of said predetermined path, said compressive forces being derived from biasing an ultrasonically powered ultrasonic horn towards a driven anvil; applying sufficient ultrasonic power



and biasing to said ultrasonic horn to effect said bonding; and elongating said second web in the machine direction up to about one-hundred-fifty percent prior to said bonding and constraining said second web to remain so elongated during said bonding.

4,404,053

METHOD OF MAKING A JAVELIN

Victor Saffire, 450 Regimental Rd., King of Prussia, Pa. 19406

Division of Ser. No. 122,126, Feb. 19, 1980, Pat. No. 4,333,643. This application Dec. 15, 1980, Ser. No. 217,202

Int. Cl.³ B32B *31/08;* A63B *65/02*

U.S. Cl. 156—86 **14 Claims**



1. A method of forming a javelin having a hollow body of generally circular cross-section which tapers from a small diameter rear end through a larger diameter middle section to a reduced diameter at its front end, the interior of said body tapering more or less in the same manner as the exterior of the javelin so as to keep the wall thickness of said body more or less constant, said javelin body comprising a plurality of cross-plied bias wound fiber plies, said method comprising:

(a) providing a removable mandrel for receiving said fiber plies;

(b) applying a first ply formed of a resin bonded tape onto said mandrel;

(c) reversing said mandrel and applying a second ply formed of a resin bonded tape over said first ply of resin bonded tape;

(d) alternately reversing said mandrel and applying additional plies of resin bonded tape thereto until a finished underlayer is produced;

(e) applying a first ply formed of a resin bonded graphite tape over said underlayer;

(f) reversing said mandrel and applying a second ply formed of a resin bonded graphite tape over said first ply of resin bonded graphite tape;

(g) alternately reversing said mandrel and applying additional plies of resin bonded graphite tape thereto until a finished javelin body is formed;

(h) applying a heat shrinkable tape over said body;

(i) removing said body from said mandrel;

(j) curing said body;

(k) affixing a metal tip to the front end of said body; and

(l) wrapping a cord grip around mid-portions of said body.

4,404,054

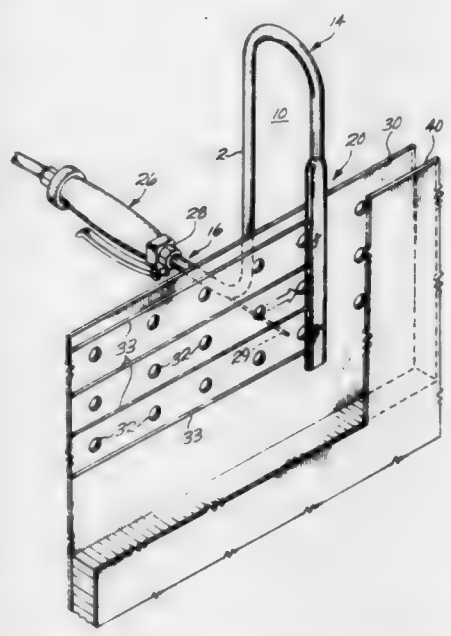
METHOD FOR APPLYING SEALANT BETWEEN FAYING SURFACES OF AIRCRAFT WING STRUCTURES

Jerald L. Dickson, Kirkland, and Harvey E. Green, Jr., Pacific, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 189,281, Sep. 22, 1980. This application Jul. 10, 1981, Ser. No. 282,117

Int. Cl.³ B32B *7/08*

U.S. Cl. 156—92 **2 Claims**



1. In the method of fastening together a wing skin and a spar chord of an aircraft wing structure, the improvement comprising:

opening the joint formed by said wing skin and spar chord a predetermined distance prior to installation of a plurality of fasteners therebetween;

inserting in the opening a thin profiled flattened end portion of a sealing tool, said tool comprising a u-shaped portion intermediate said end portion and a first end portion having means for receiving sealant from a sealant source with said flattened portion having a plurality of apertures distributed therealong in predetermined spaced apart relationship;

simultaneously depositing a plurality of beads of sealant through said apertures and between corresponding rows of fastener holes; and

withdrawing said end portion and closing said joint by installation of said plurality of fasteners between said wing skin and spar chord thereby spreading out said plurality of beads of sealant.

4,404,055

ELASTOMERIC SEAL

Fred B. McCarty, San Pedro, and Christopher M. Gibson, Fountain Valley, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 30, 1981, Ser. No. 259,761

Int. Cl.³ B65C *3/26;* B29C *17/04;* H02K *1/12;* B05D *1/18*

U.S. Cl. 156—156 **1 Claim**

1. The method of making and installing an elastomeric stator bore seal for electrical machines having a rotor, a rotor cavity, and a stator assembly which includes a stator and a stator bore, said method comprising the steps of:

a. obtaining a rigid mold tool similar to said rotor in dimensions and longer in length than said rotor, wherein said rigid mold tool has an opening therin for use in permitting entry of a pressurized gas;

b. coating said rigid mold tool with a release agent;

c. dipping, withdrawing and inverting, and dipping, withdrawing and inverting said rigid mold tool, in repeated

cycles, into and out of a solution of an elastomer dissolved in a solvent, until a thickness of approximately 0.025 of an inch of an elastomeric coating is obtained on said rigid mold tool and the solvent remaining in said coating has evaporated, wherein said elastomer used, and said elastomeric coating obtained, are capable of withstanding exposure to temperatures in the range of from approximately −65 degrees Fahrenheit to approximately +400 degrees Fahrenheit;

d. curing said elastomeric coating on said rigid mold tool, thereby attaining a final outer surface on said elastomeric coating;

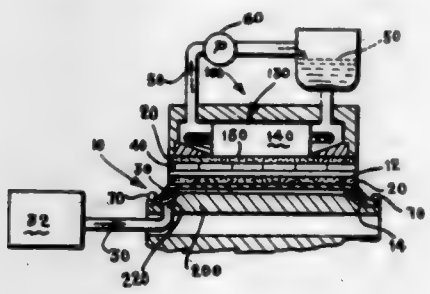
e. applying an adhesive to said stator bore;

f. applying glass cloth to said adhesive stator bore, thereby adhering said glass cloth to said adhesive and to said stator bore;

g. applying an adhesive to said final outer surface of said cured elastomeric coating;

h. placing the adhesive-covered elastomeric coating, with said rigid mold tool therein, into said stator bore;

i. inflating with a pressurized gas introduced through said



opening in said rigid mold tool, and thereby expanding, said adhesive-coated elastomeric coating until said coating is lifted from said mold rigid tool and said coating is in uniform pressure contact with said glass cloth covering said stator bore, with said coating thereby covering said glass cloth and said stator bore;

j. heating in a heating oven, and thereby curing, said adhesive on said stator bore and said adhesive on said outer surface of said elastomeric seal, thereby bonding said glass cloth to said stator bore and bonding said elastomeric seal to said glass cloth;

k. removing said pressurized gas and saaid rigid mold tool from within said elastomeric seal;

l. inserting said rotor into said elastomeric seal-covered stator bore;

m. assemblying said rotor and said elastomeric seal-covered stator bore, such that an electrical machine is formed; and

n. cooling said stator by circulating, with a sucking action, a dielectric fluid through said stator assembly, thereby said elastomeric seal excludes said dielectric fluid from said rotor cavity, and said cooling effected by said circulating dielectric fluid reduces loads on said adhesive bonds.

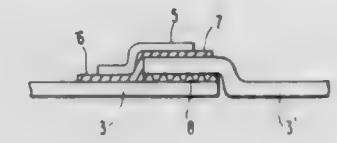
4,404,056

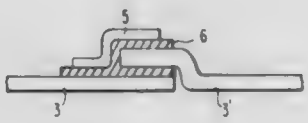
METHOD OF JOINING WATERPROOF VULCANIZED SYNTHETIC RUBBER SHEETS

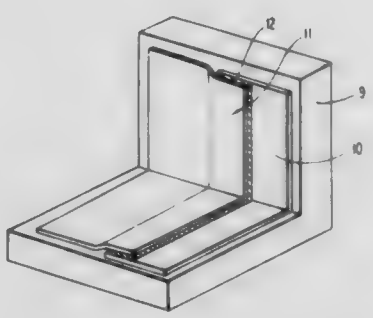
Masanori Kakehi, Kobe; Yoshitaka Higashida, Miki; Kenzo Iwamoto, and Hikaru Kano, both of Kobe, all of Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Feb. 25, 1981, Ser. No. 238,282
Int. Cl.³ B29C *19/00*; C09J *7/00*
U.S. Cl. 156—244.11 **6 Claims**

1. A method for joining waterproof vulcanized synthetic rubber sheets wherein a cold-vulcanizable adhesive tape having a Mooney viscosity (ML_{1+5} (100° C.)) of from 5 to 25 and an autoadhesion property, and which is prepared from a blend of (1) 100 parts by weight of a rubbery polymer, (2) from 1 to 2 parts by weight of an oxime vulcanizing agent or from 1 to 3 parts by weight of sulfur or a sulfur-containing vulcanizing agent, (3) from 3 to 4 parts by weight of a PbO_2 vulcanization accelerator in the case of using an oxime vulcanizing agent or from 2 to 6 parts by weight of a thiazole, thiuram, or dithiocarbamate vulcanization accelerator in the case of using a sulfur or sulfur-containing vulcanizing agent, (4) from 30 to 100 parts by weight of an adhesive agent, and (5) from 30 to 150 parts by







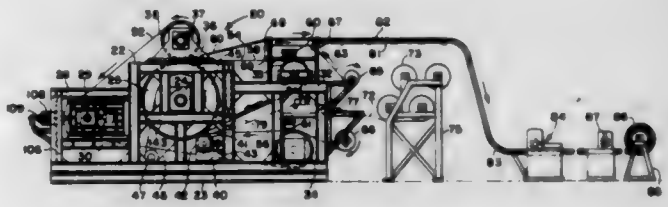
weight of a softening agent, is placed between overlapped areas of waterproof vulcanized synthetic rubber sheets and pressed to provide an initial adhesive strength of from 0.5 to 3 kg/25 mm, and the adhesive tape is cold-vulcanized to join the sheets.

4,404,057

REINFORCED PLASTIC SHEET MACHINE AND METHOD

Robert S. Morrison; Thomas A. DeLuca, both of Ashtabula, and Ernest Pasqualone, Geneva, all of Ohio, assignors to Molded Fiber Glass Companies, Ashtabula, Ohio

Filed Sep. 8, 1981, Ser. No. 300,197
Int. Cl.³ B31F *7/00*
U.S. Cl. 156—324 **27 Claims**



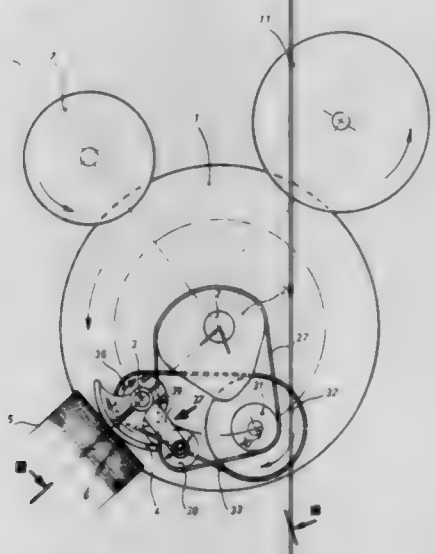
1. A process of continuously forming FRP sheet comprising the steps of depositing a liquid thermosetting resin on a film which is supported on a belt, thereafter depositing glass fiber components on the liquid thermosetting resin, impregnating the glass fiber components with the resin by drawing the glass fiber components and liquid thermosetting resin through a nip defined by a nip roll over which the belt is trained and a heating-curing drum against the periphery of which the belt presses the glass fiber components and resin, and establishing and maintaining a substantially uniform sheet thickness during impregnation of the glass fiber components with the resin and curing of the latter by adjusting the position of the nip roll relative to the drum and by adjusting the tension in the belt.

4,404,058

ROTARY SECTOR DEVICE TURNING AT A VARIABLE ANGULAR SPEED SUITABLE FOR THE WITHDRAWAL AND TRANSFERRING OF LABELS IN AUTOMATIC LABELLING MACHINES

Roberto Marchini, Marmirolo, Italy, assignor to O.C.E.A. S.r.l., Goito, Italy

Filed Apr. 9, 1982, Ser. No. 366,974
Claims priority, application Italy, Apr. 17, 1981, 18107 A/81
Int. Cl.³ B65H 3/20
U.S. Cl. 156—571 5 Claims



1. A rotary sector device turning at a variable angular speed suitable for the withdrawal and transferring of labels in automatic labelling machines, of the kind including a bearing plate (1), fitted on a vertical shaft (2), rotating at a constant angular speed, to which is integral a plurality of rotary sectors (4), turning, each about a corresponding vertical axis (A), at a variable angular speed according to a predetermined law of motion, said rotary sectors (4) coming sequentially into contact, by means of their curved side surface, with a first roller (7) provided with glue turning at a constant angular speed, with a label (6) disposed in a stationary container (5) acting as a magazine and with a second roller (11), provided with pliers suitable for catching said label (6) turning at a constant angular speed, characterized in that said predetermined law of motion is produced by means of a toothed belt (27) kinematically connected to a circular toothed pulley (36) coaxial to a corresponding rotary sector (4) and integral thereto, and to an asymmetric toothed pulley (26) fitted on said vertical shaft (2) and fixed in place, the generating straight lines of the side surface of said asymmetric pulley (26) being parallel to the longitudinal axis of said vertical shaft (2) and spaced therefrom of a variable distance based on the angular speed changes provided for each of said rotary sectors (4) according to the relative position of each of them with respect to said asymmetric pulley (26).

4,404,059

PROCESS FOR MANUFACTURING PANELS TO BE USED IN MICROELECTRONIC SYSTEMS

Vladimir I. Livshits, Izmailovsky bulvar, 55/16, kv. 3; Vladimir I. Golovin, Uralskaya ulitsa, 6, korpus 3, kv. 47, and Vladimir I. Meshkov, ulitsa Martenovskaya, 19/38, kv. 3, all of Moscow, U.S.S.R.

Filed May 26, 1982, Ser. No. 382,407
Int. Cl.³ C23F 1/02; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—629 5 Claims

1. A process for manufacturing a printed circuit board having at least two conductor layers, comprising the steps of:

disposing first and second masks on first and second opposed major surfaces of a substantially planar substrate comprising a metal etchable in a given etchant;

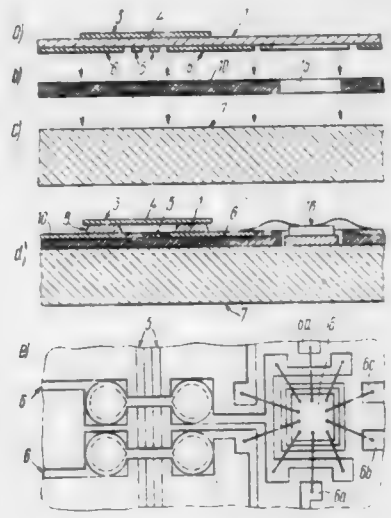
a first electrodeposition step of selectively electrodepositing a first layer comprising a first conductor pattern including bridging elements on said first major surface of said substrate through said first mask, said first layer comprising a metal substantially impervious to said etchant;

a second electrodeposition step, carried out simultaneously with said first electrodeposition step, of selectively electrodepositing a second layer comprising a second conductor pattern, including conductor elements below and oriented transverse to said bridging elements, on said second major surface of said substrate through said second mask, said second layer comprising a metal substantially impervious to said etchant;

said bridging elements having enlarged ends and a constricted portion between said enlarged ends;

removing said first and second masks from said substrate;

pre-etching said second major surface of said substrate by



immersing the same in said etchant, to etch said second major surface to a depth in the range of 0.01 to 0.5 times the width of said conductor elements comprising said second layer;

thereafter immersing said substrate and the first and second layers thereon in said etchant for a sufficient time so that said etchant removes the exposed portions of said substrate below said constricted portions of said bridging elements throughout the entire thickness of the substrate thereat; and

securing an adhesive layer comprising an insulating material to said second layer so that said second layer becomes imbedded in one major surface of said adhesive layer, and securing the other major surface of said adhesive layer to one major surface of a base having two major surfaces.

4,404,060

METHOD FOR PRODUCING INSULATING RING ZONES BY GALVANIC AND ETCH TECHNOLOGIES AT ORIFICE AREAS OF THROUGH-HOLES IN A PLATE

Güenter Trausch, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 21, 1982, Ser. No. 370,352
Claims priority, application Fed. Rep. of Germany, May 8, 1981, 3118335; Jan. 26, 1982, 3202447
Int. Cl.³ C23F 1/02; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—632 9 Claims

1. A method for structuring insulating ring zones by galvanic and etch techniques at respective orifice areas of through-holes in plates, comprising:

(a) applying a relatively thin metal layer onto all surfaces of a plate having a select pattern of through-holes therein, including on side walls of said through-holes;

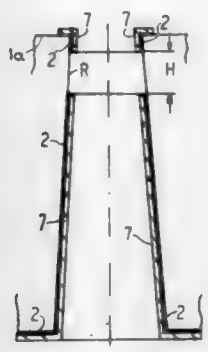
(b) laminating a negative dry resist layer onto a first surface of said plate, under which insulating ring zones are to be generated, in such a manner that a portion of the resist layer penetrates into the respective through-hole orifices;

(c) irradiating the resist layer portions within the through-hole orifices with ultraviolet light directed through said

holes from a second surface of said plate located opposite said first surface thereof;

(d) applying a dry resist layer to said second surface of said plate;

(e) irradiating said resist layers on the first and second surfaces of said plate through masks aligned relative to said through-holes so as to define areas for electrodes on both



of said plate surfaces and stripping-off non-irradiated resist areas in a developer solution; and

(f) galvanically precipitating a metal layer onto all uncovered thin metal layer areas, removing remaining resist layers and selectively etching-off uncovered thin metal layer areas positioned below the just removed resist area so as to define electrodes.

4,404,061

BLEACHING OF LIGNOCELLULOSIC MATERIALS WITH MONOPERSULFURIC ACID OR ITS SALTS

John J. Cael, Washingtonville, N.Y., assignor to International Paper Company, New York, N.Y.

Filed Aug. 17, 1981, Ser. No. 293,752
Int. Cl.³ D21C *9/10, 9/16*
U.S. Cl. 162—76 **2 Claims**

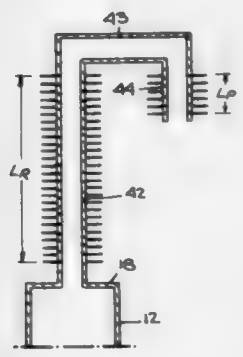
1. A process wherein wood pulp produced from wood chips in a standard alkaline pulping process is bleached with a bleaching agent containing a persulfate ion selected from the group consisting of monopersulfuric acid and its salts with cations in a pH range of from about 2.0 to about 12.0, said bleaching comprising treating said wood pulp with an equivalent of about 0.5 to 5% $KHSO_5$ based on oven dry pulp for 0.5 to 3.0 hours at a temperature between about 40° C. to 80° C.

4,404,062

CONDENSER

Brooks M. Whitehurst, 1983 Hoods Creek Dr., New Bern, N.C. 28560

Continuation of Ser. No. 225,400, Jan. 15, 1981, abandoned. This application Mar. 22, 1982, Ser. No. 360,646
Int. Cl.³ B01D *3/02*
U.S. Cl. 202—185 B **13 Claims**



1. A distillation apparatus comprising elements arranged, sized and dimensioned to provide a product condensate with a purity of at least 95% from a feed of ethanol and water, said elements including:

a still;

a rectifying column mounted over said still;

a reflux condenser mounted over said column to receive a flow of vapor therefrom, said condenser having a first product channel with a surface area for condensing at least some of the vapor thereon to form reflux, said product channel opening directly into said column at a lower end to deliver the reflux directly to said column; and

a product condenser in communication with said reflux condenser to receive the remainder of the vapor therefrom, said product condenser having a second product channel with a surface area for condensing the received vapor thereon to form a product, said surface area of said second product channel being smaller than said surface area of said first product channel.

4,404,063

METHOD FOR THE SEPARATION OF INDOLE

Tadatoshi Honda, Hiratsuka, Japan, assignor to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Sep. 24, 1982, Ser. No. 423,094
Claims priority, application Japan, Oct. 8, 1981, 56-159441
Int. Cl.³ B01D *3/34;* C07D *209/04*
U.S. Cl. 203—6 **10 Claims**

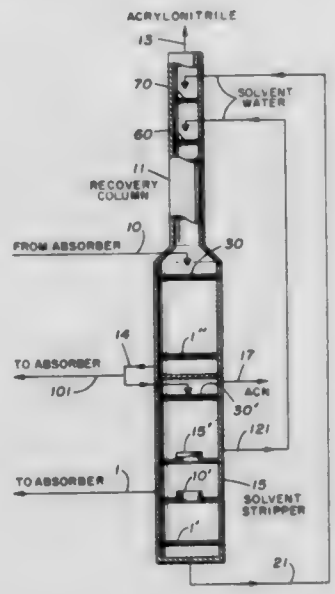
1. In a method for the separation of indole by distilling an indole-containing reaction fluid obtained by the reaction of aniline with ethylene glycol or by the reaction of N-(β-hydroxyethyl)aniline, the improvement which comprises bringing the reaction fluid into contact with a basic substance prior to and/or during the distillation, whereby the deterioration of indole during the distillation procedure is substantially prevented.

4,404,064

WATER EXTRACTIVE DISTILLATION OF OLEFINICALLY UNSATURATED NITRILES

Gordon H. Lovett, Kerrville, Tex., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 30, 1982, Ser. No. 454,752
Int. Cl.³ B01D *3/40;* C07C *120/32*
U.S. Cl. 203—84 **6 Claims**



1. A process for the recovery and purification of acrylonitrile from a feed stream comprising acrylonitrile, acetonitrile, and relatively heavy impurities consisting of

(a) adding said feed stream to a feed point of a recovery column having a top and a bottom operated at water extractive distillation conditions, the feed point being approximately in the middle of said recovery column;

(b) adding to the top of said recovery column a primary solvent water stream, from a source hereafter specified, and adding a secondary solvent water stream, from a

source hereafter specified, to a point intermediate said feed point and top of said recovery column;

(c) removing from the bottom of said recovery column a recovery column bottoms stream comprising water, acetonitrile and heavy impurities;

(d) adding said recovery column bottoms stream to a stripper column having a top and a bottom operated at solvent stripping conditions to remove acetonitrile from an upper portion of said stripper column;

(e) removing said primary solvent water stream from the bottom of said stripper column, and sending same to said recovery column, said primary solvent water being reduced in acetonitrile content, but containing at least a portion of said heavy impurities;

(f) removing, from a point intermediate the top and the bottom of said stripper column said secondary solvent water stream and sending same to said recovery column, said secondary solvent water stream containing relatively less heavy impurities than said primary water stream; and

(g) recovering a purified acrylonitrile stream from the top of said recovery column.

4,404,065

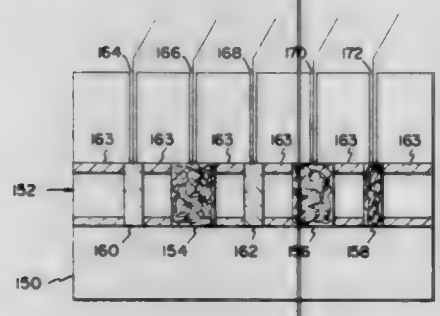
ELECTROCHEMICAL DETECTION SYSTEM AND METHOD OF ANALYSIS

Wayne R. Matson, Ayer, Mass., assignor to Enviromental Sciences Associates, Inc., Bedford, Mass.

Filed Jan. 14, 1980, Ser. No. 111,917

Int. Cl.³ G01N *27/30*

U.S. Cl. 204—1 T **68 Claims**



1. A flow cell for electrochemical testing a sample in solution, said cell comprising:

a holder assembly having an inlet for directing a stream of said sample to be tested into said cell, and an outlet for directing tested sample from said cell;

a plurality of electrode elements arranged in a stack in said holder assembly and including at least one active testing electrode, at least one reference electrode, and at least one counter electrode, at least one of said active testing electrodes comprising a solid phase electrode in the form of a solid disk of electrically conductive material having at least one bore extending therethrough and having an active electrode surface located in said at least one bore, said plurality of electrodes being arranged in said stack so that said electrodes are electrically insulated from one another with their respective bores aligned so as to define at least one flow channel connecting said inlet and said outlet; and,

a flow restrictor formed of electrically conductive material located in the bore of at least one of said disks and electrically connected to said disk.

23. In a chromatography apparatus having a chromatographic column through which a sample can be passed whereby species in said sample are separated to produce an eluant fluid stream, an electrochemical detector for analyzing said eluant stream, the improvement wherein said detector comprises a flow cell as defined by claim **1**.

34. In a method of electrochemically analyzing a sample material to identify selected substances therein, the steps of: dissolving said sample material in a carrier therefor to form a test fluid, and passing a stream of said test fluid through an electrolytic flow cell in contact with a detection electrode,

the improvement wherein said flow cell comprises a plurality of electrode elements including at least one solid phase testing electrode arranged in a stack in a holder, each of said electrode elements in said stack comprising a solid body having at least one bore extending therethrough and an active electrode surface located in said at least one bore, said plurality of electrodes being arranged in said stack so that said electrodes are electrically insulated from one another with their respective bores aligned so as to define at least one flow channel for said stream, said flow cell having a plug of electrically conductive material located in the bore of at least one of said solid phase testing electrodes and electrically connected to said electrode, passing said stream through said at least one flow channel in contact with said active electrode surfaces, applying electrical potentials across said stream between selected of said electrodes in said stack, deriving electrical signals resulting on selected of said electrodes in said stack, and sorting said signals to obtain signals which identify said selected substances.

41. In a method according to claim **34**, including the step of passing said test fluid through a chromatography column whereby to separate species of said sample material to produce, an eluant fluid stream, and passing said eluant fluid stream through said flow cell.

4,404,066

METHOD FOR QUANTITATIVELY DETERMINING A PARTICULAR SUBSTRATE CATALYZED BY A MULTISUBSTRATE ENZYME

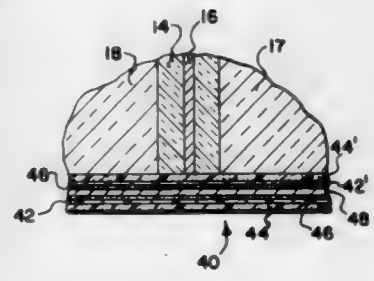
Jay M. Johnson, Dayton, Ohio, assignor to The Yellow Springs Instrument Company, Yellow Springs, Ohio

Continuation-in-part of Ser. No. 181,459, Aug. 25, 1980, Pat. No. 4,356,074. This application May 13, 1982, Ser. No. 377,765

The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.

Int. Cl.³ G01N *27/54*; C12N *9/04*

U.S. Cl. 204—1 T **9 Claims**



1. In a method for quantitatively determining the amount of a particular substrate, catalyzed by a multisubstrate enzyme (having a direct redox dependent activity) to react with oxygen and form hydrogen peroxide as a reaction product, wherein the improvement comprises the steps of: applying an electrical potential to said enzyme, said electrical potential being sufficient to control the activity of said multisubstrate enzyme, contacting said enzyme with a solution containing at least said particular substrate, and measuring for an electroactive reactant or product of the reaction mechanism whereby a rapid, direct quantitative analysis is obtained.

4,404,067
METHOD OF MANUFACTURING A TIMEPIECE COMPONENT

Tadao Enomoto, Tanashi, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Mar. 16, 1982, Ser. No. 358,750
Claims priority, application Japan, Mar. 24, 1981, 56-42645; Apr. 14, 1981, 56-55119
Int. Cl.³ C25D *1/00, 1/20*
U.S. Cl. 204—4 13 Claims



1. A method of manufacturing a timepiece dial component comprising the steps of:

preparing an electroforming matrix having a recessed portion formed into a predetermined shape formed therein;

forming a thin layer of an electrically conducting material upon the surface of said recessed portion;

forming a plurality of electroformed metal layers on said electrically conducting layer by performing at least a first electroforming processing step in a first electrolyte to deposit a first elelctroformed metal layer upon said electrically conducting layer and a second electroforming processing step in a second electrolyte to deposit a second electroformed metal layer upon said first electroformed metal layer, with said first electroforming step resulting in internal compressive stress being developed within said first electroformed metal layer and said second electroforming step resulting in internal tensile stress being developed within said second electroformed metal layer;

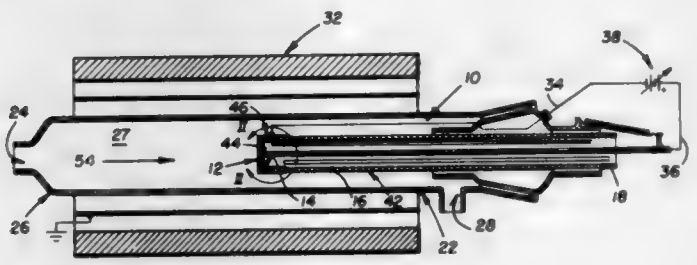
performing machining of said second electroformed metal layer by mechanical means to provide a desired surface finish thereon; and

removing said first and second electroformed metal layers from said electroforming matrix as a single unit constituting said timepiece dial component.

4,404,068
SOLID STATE METHOD FOR SYNTHESIS REACTIONS

Robert A. Huggins, Stanford, and Turgut M. Gur, Palo Alto, both of Calif., assignors to Stanford University, Stanford, Calif.

Filed Apr. 29, 1981, Ser. No. 258,656
Int. Cl.³ C25B *3/00, 11/00, 15/00*
U.S. Cl. 204—59 R 15 Claims



1. A method for synthesizing a reaction product comprising the steps of:

providing an electrochemical cell having a first electrode, a second electrode, and a solid state electrolyte intercommunicating said first and second electrodes, said electrolyte adapted to permit ions to flow thereacross;

contacting a first fluid reactant with said first electrode, said first fluid reactant having a first moiety, the contacting including electrochemically separating said first moiety from said first reactant at said first electrode to form an ionic withdrawn first moiety and a first reactant residue and pumping said ionic withdrawn first moiety away from said first electrode and toward said second electrode, the pumping of said withdrawn first moiety including transporting said withdrawn first moiety in said solid state electrolyte; and,

forming a reaction product at said first electrode in the presence of at least a second fluid reactant, said reaction product derived from said first reactant residue and at least said second reactant.

4,404,069
ELECTROLYTIC DESULFURIZATION OF ANILINO SULFUR COMPOUNDS

Richard D. Goodin, St. Louis; John P. Chupp, Kirkwood; Terry M. Balthazor, University City, and James P. Coleman, Maryland Heights, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 17, 1982, Ser. No. 358,771
Int. Cl.³ C25B *3/04;* C07C *85/20*
U.S. Cl. 204—59 R 17 Claims

1. A process of preparing ortho-alkylanilines which comprises electrolyzing at a cathode an orthoaminobenzyl sulfide, sulfoxide, or sulfone at a cathode potential sufficiently negative to effect reductive cleavage of the sulfur-containing moiety from the benzyl moiety producing an ortho-alkyl aniline.

4,404,070
ELECTROCHEMICAL PRODUCTION OF 2,6-DIAMINOBENZOBISTHIAZOLE

James E. Kuder, Fanwood, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Jul. 23, 1982, Ser. No. 401,437
Int. Cl.³ C25B *3/10*
U.S. Cl. 204—72 8 Claims

1. An electrochemical process for the production of 2,6-diaminobenzobisthiazole which comprises subjecting an acidic aqueous medium containing p-phenylenediamine and a thiocyanate salt to electrolysis conditions, adjusting the pH of the acidic medium to at least about 7 with an alkaline reagent, and recovering 2,6-diaminobenzobisthiazole as a precipitated product.

4,404,071
METHOD OF TREATING ELECTROLYTIC SOLUTION OF COPPER FOR PURIFICATION AND REUSE THEREOF

Hideki Abe, Honjyo; Kiyomi Yamaguchi, and Yuzo Asano, both of Kosaka, all of Japan, assignors to Dowa Mining Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 225,135, Jan. 14, 1981, abandoned. This application Apr. 26, 1982, Ser. No. 372,230
Claims priority, application Japan, Jun. 14, 1980, 55-80709
Int. Cl.³ C25R *1/12*
U.S. Cl. 204—108 11 Claims

1. A method of treating a spent electrolytic solution containing a major amount of copper and a minor amount of various metal ion impurities containing at least arsenic, which method comprises the steps of:

removing copper from said electrolytic solution in a pretreatment operation until the copper content is greatly reduced but still remains at a level which is substantially larger than the total of said impurities;

passing hydrogen sulfide gas into said pretreated solution at an elevated temperature of 40° C. or higher until the redox potential is at least equal to a certain predetermined value to precipitate substantially all the copper together with said metal ion impurities present in the solution;

filtering the thus treated solution to separate the precipitates as a residue which can be used as part of the raw material

in the process of copper smelting from a filtrate consisting essentially of sulfuric acid; and

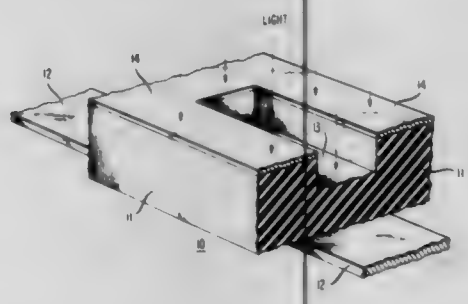
returning the filtrate to a copper electrolytic cell for reuse.

4,404,072

PHOTOELECTROCHEMICAL PROCESSING OF III-V SEMICONDUCTORS

Paul A. Kohl, and Frederick W. Ostermayer, Jr., both of Chatham, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 22, 1981, Ser. No. 275,805
Int. Cl.³ C25F *3/12*
U.S. Cl. 204—129.3 **16 Claims**



1. A process for fabricating a device comprising at least one semi-insulating III–V compound semiconductor, said semi-insulating III–V compound semiconductor having resistivities greater than 10^6 ohm-cm, comprising the step of photoelectrochemically etching the semi-insulating III–V compound semiconductor using an oxidation-reduction reaction in an electrolytic solution characterized in that

a. the oxidation reaction is carried out by illuminating the semi-insulating III–V compound semiconductor with radiation comprising photon energy at least as great as the bandgap of the compound semiconductor so as to produce holes that permit oxidation of the compound semiconductor,

b. the electrolytic solution comprises oxidizing agent with reduction potential in the electrolytic solution between the flat band potential of the Fermi level and the potential of the maximum of the valence band, and

c. the oxidizing agent is reduced on a metallic or p-type surface electrically connected to the III–V compound semiconductor.

4,404,073

PHOTOPOLYMERIZATION OF OLEFINICALLY UNSATURATED MONOMERS UTILIZING BENZIL DIMETHYLACETAL

Alain Bartissol, Clamecy; Jean Boutin, Mions, and Francois Wachowski, Clamecy, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Sep. 3, 1981, Ser. No. 299,223
Claims priority, application France, Sep. 4, 1980, 80 19100
Int. Cl.³ C08F *2/10, 2/50, 2/46*
U.S. Cl. 204—159.23 **14 Claims**

1. A process for the preparation of a high molecular weight water-soluble polymer essentially devoid of residual monomer content and having an increased rate of dissolution, comprising photopolymerizing a thin layer of a deoxygenated aqueous solution of an olefinically unsaturated monomer continuously deposited upon a travelling support substrate, said aqueous solution containing a photopolymerization photoinitiator and said photoinitiator comprising benzil dimethylacetal at from 0.001% to 0.5% by weight based upon the weight of the monomer photopolymerized.

4,404,074

ELECTROLYTIC STRIPPING BATH AND PROCESS

Lillie C. Tomaszewski, Dearborn, Mich., assignor to Occidental Chemical Corporation, Warren, Mich.

Filed May 27, 1982, Ser. No. 382,522
Int. Cl.³ C25F *5/00*
U.S. Cl. 204—146 **30 Claims**

1. An electrolytic stripping bath for stripping copper, copper alloy, or chromium deposits from a ferrous basis metal comprising an aqueous solution having a pH of from about 1 to about 14 and consisting essentially of a stripping component selected from the group consisting of (a) a bath soluble primary, secondary, and/or tertiary amine having a carbon content of C_1 to C_8, (b) a bath soluble inorganic nitrate and/or organic nitro compound, and mixtures of (a) and (b); and sodium glucoheptonate present in an effective amount to inhibit attack of the basis metal.

4,404,075

RADIATION CURABLE COATING COMPOSITION COMPRISING THREE OR MORE (METH) ACRYLOYL POLYFUNCTIONAL MONOMER, PHENOL NOVOLAK EPOXY (METH) ACRYLATE OLIGOMER, AND A PHOTOINITIATOR

Junji Ikeda, Ikoma; Keizi Saeki, Kadoma; Tamotsu Wakahata, Katano, and Takao Inoue, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation-in-part of Ser. No. 174,600, Aug. 1, 1980, abandoned. This application Nov. 30, 1982, Ser. No. 445,472
Claims priority, application Japan, Aug. 1, 1979, 54-98942
Int. Cl.³ C08F *2/00;* C09D *3/72*
U.S. Cl. 204—159.23 **10 Claims**

1. A coating composition (B) consisting essentially of:

a composition (A) and

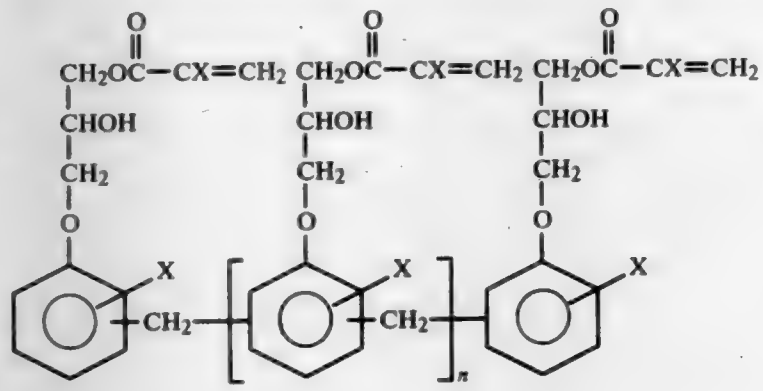
a photopolymerization initiating effective amount of a photoinitiator,

said composition (A) containing:

(i) 80 to 90% by weight of at least one polyfunctional monomer having three or more (meth)acryloyloxy radicals per molecule,

(ii) 5 to 10% by weight of at least one acrylic monomer having two or less functional groups and

(iii) 5 to 10% by weight of a phenol novolak epoxy (meth-)acrylate oligomer of the formula:



where,

X=H, CH_3,

X=H, CH_3, Br and

n=0–8

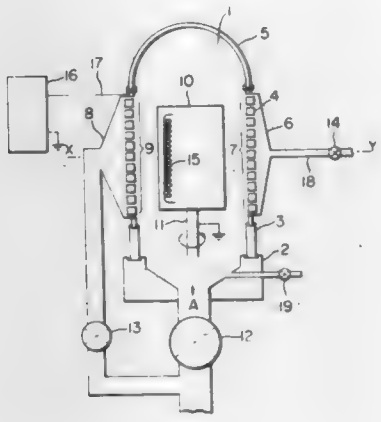
with the proportion of oligomer wherein n of $4 \leqq n \leqq 8$ is more than 20 wt% with respect to the total amount of the novolak epoxy (meth)acrylate.

4,404,076

FILM FORMING PROCESS UTILIZING DISCHARGE

Katsumi Nakagawa, Tokyo, and Tadaji Fukada, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 105,778, Dec. 20, 1979, abandoned. This application Aug. 27, 1982, Ser. No. 412,076
Claims priority, application Japan, Dec. 28, 1978, 53-165848
Int. Cl.³ C23C *13/08, 11/00;* H01L *31/15*
U.S. Cl. 204—164 **6 Claims**



1. A film forming process utilizing glow discharge which comprises positioning a drum shaped substrate for forming a film on a fixing member in a pressure-reducible deposition chamber so that a film-forming surface of the substrate is substantially parallel to a discharge surface of an electrode which is spaced around the substrate; reducing the pressure in the deposition chamber to a predetermined pressure; introducing a gas containing a source of silicon for forming an amorphous silicon film into said deposition chamber from a gas inlet, directing said stream substantially perpendicular to the central axis of said substrate; generating a glow discharge between said electrode and said substrate to decompose said gas and to form at least a substantially uniform film of the resulting amorphous silicon on the film forming surface of the substrate and exhausting unused gas from said deposition chamber through a gas outlet opposed to said gas inlet.

4,404,077

INTEGRATED SPUTTERING APPARATUS AND METHOD

Paul R. Fournier, 1027 San Andres #2, Santa Barbara, Calif. 93101

Continuation-in-part of Ser. No. 251,871, Apr. 7, 1981, abandoned. This application Mar. 8, 1982, Ser. No. 355,853
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 R **30 Claims**

1. An integrated sputtering means comprising

means defining a housing having a first cavity and a second cavity spaced a predetermined distance from said first cavity and means for defining a predetermined path which extends between said first cavity and said second cavity;

means for mounting in the interior of the housing defining means an ion target formed of at least one selected material, said ion target being positioned in said interior of the housing defining means with a selected surface of said ion target positioned contiguous said predetermined path and between said cavities thereby forming a lower boundary for said predetermined path, at least one of said mounting means and said ion target including means for containing electrons adjacent the ion target selected surface;

an electron emitter positioned in one of said first cavity and said second cavity;

an electron collector positioned in the other of said first and said second cavity; and

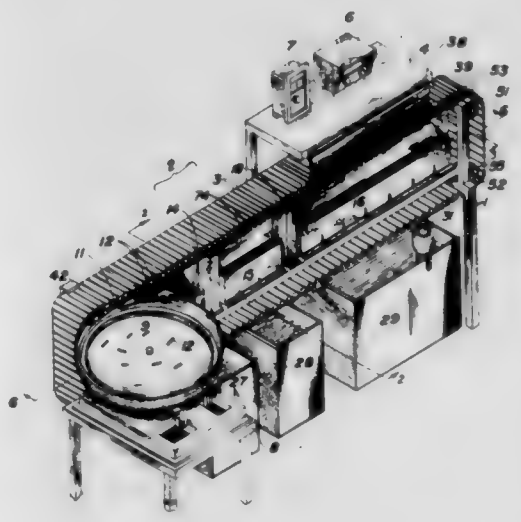
magnetic means positioned along said predetermined path and located in a predetermined spaced relationship from said selected surface for producing lines of magnetic flux which define a B field wherein the direction of the B field of the magnetic means is oriented in a predetermined direction relative to said first and second cavities and to said predetermined path adjacent said selected surface to produce a controlled magnetic field of flux having substantially linear shaped lines of force which define a magnetic flux pattern having at least one selected flux density adjacent said selected surface, said selected surface of said ion target, said electron containing means and said substantially linear lines of flux define a plasma containment envelope which entraps and contains a plasma adjacent said selected surface to obtain controlled uniform target erosion.

4,404,078

LOOSE PARTS PLATING DEVICE

William L. Francis, 18 Chimney Wood, Floyd Knobs, Ind. 47119

Filed Feb. 18, 1982, Ser. No. 349,764
Int. Cl.³ C25D *17/06, 17/28*
U.S. Cl. 204—202 **7 Claims**



1. Apparatus for continuous electroplating of selected portions of elongate metallic articles including a moving conveyor including pivotably connected conveyor plates to form said conveyor and sprocket means disposed at first and second ends of said conveyor in the path of travel of said conveyor whereby said conveyor means is moved wherein said plates have aperture means therein; feeder means to supply said articles to said apertures in generally upright orientation so that a portion of the articles to be electroplated extend through said conveyor plates; solution cell means disposed beneath said conveyor means to supply a selected level of the solution therein and positioned so that a portion of said articles contact said solution; electrical supply means to supply a selected potential to a first contact means which engages said parts where said articles are in said solution and second electrode means to supply an opposite electrical potential to said solution whereby an electrical circuit is completed from said solution to said first contact means to cause electrical current to flow through said articles to be plated.

4,404,079

PLATING MASK SUPPORT

Hooshang Jahani, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 8, 1982, Ser. No. 346,686
Int. Cl.³ C25D *17/00*
U.S. Cl. 204—224 R **3 Claims**

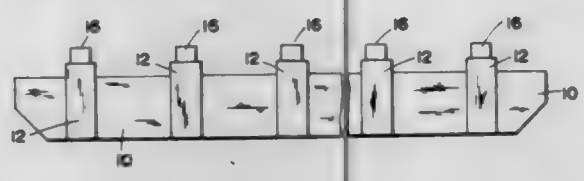
1. In combination with a plating system for plating selected portions of a web of material, a masking apparatus comprising:

a support member;

a plurality of support stations on said member at locations

aligned with selected areas on the web of material, which areas are to be protected from plating solution;

a die supporting cavity in each of said support stations; and



masking dies shaped to be removably insertable in said cavities.

4,404,080

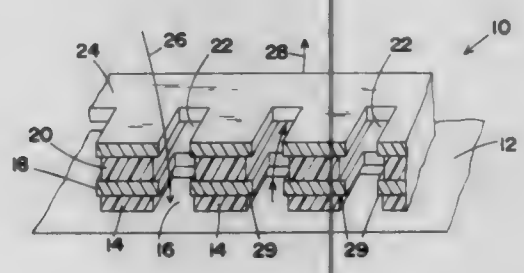
MOLDED PLATING MASK

Hooshang Jahani, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 22, 1982, Ser. No. 360,742

Int. Cl.³ C25D *17/00*

U.S. Cl. 204—224 R **4 Claims**



1. A plating mask having a first resilient layer forming a sealing face for facing contact with a surface to be plated, a backing structure supporting said sealing face, said backing structure comprising first and second planar rigidizing support members with a second resilient layer therebetween, first electrolyte fluid passageways extending through said first and second planar support members and said second resilient layer and said sealing face, to selected areas of said surface, second electrolyte passageways in said second resilient layer generally transverse to, and in communication with, said first passageways, said plating mask formed by the process of molding a resilient material between front and back molds held apart by removable spacers, said front and back molds containing therebetween first and second forms to exclude said resilient material from the passageways, the first forms creating said first passageways and being mounted on said front mold and the second forms creating said passageways and being held in place by being fastened in the first forms, said second planar support member being disposed between said first and second forms.

4,404,081

PHOTOELECTRODIALYTIC CELL

George W. Murphy, 2328 Ashwood, Norman, Okla. 73069, assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Aug. 14, 1981, Ser. No. 292,852

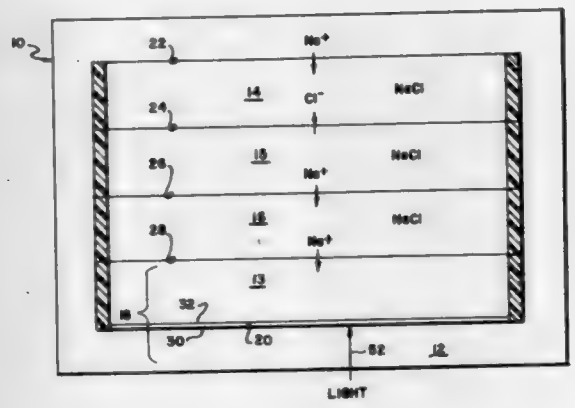
Int. Cl.³ C25B *9/00*; B01D *13/02*

U.S. Cl. 204—253 **2 Claims**

1. In a multicompartment electrodialytic cell including a wet junction photo cell assembly having at least one electrolyte compartment, the electrodialytic cell further including a product compartment bounded by at least one membrane, said product compartment permitting a concentration of a product therein when energized by an electric field, an improved means for preventing contamination from entering said product compartment, said contamination being contained in said electrolyte compartment, comprising:

a buffer compartment interposed between and immediately adjoining said product compartment and said electrolyte compartment;

first and second semipermeable membranes, each permeable to ions of a first predetermined type and permeable also to said contamination, said first membrane disposed between said product and said buffer compartments, and said second membrane disposed between said buffer and said electrolyte compartments;



said electrolyte compartment is in electrochemical communication with said product and said buffer compartments; and

means for flushing said buffer compartment to prevent said contamination from entering said product compartment.

4,404,082

BIPOLAR ELECTRODE FOR ANODIC PROCESSES IN UNDIVIDED CELLS

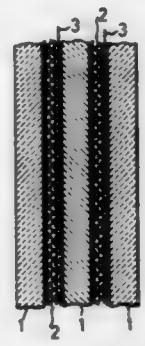
Jürgen Cramer, Eppstein; Rudolf Pistorius, Ober-Mörlen, and Michael Mitzlaff, Bad Homburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 7, 1979, Ser. No. 46,494

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1978, 2825494

Int. Cl.³ C25B *11/12*; C25R *11/04*

U.S. Cl. 204—290 R **10 Claims**



1. Bipolar electrode of carbon, characterized in that the cathode side of said bipolar electrode is covered with metal nets in contact therewith consisting of a material reducing the hydrogen overvoltage.

4,404,083

FLUID BED RETORTING PROCESS AND SYSTEM

Iacovos Vasalos, Downers Grove, Ill., assignor to Standard Oil Company(Indiana), Chicago, Ill.

Filed Aug. 17, 1981, Ser. No. 293,694

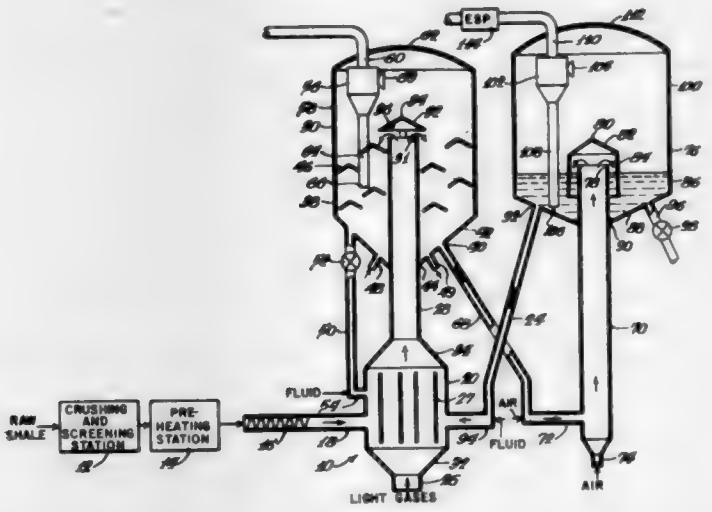
Int. Cl.³ C10G *1/00*; C10B *53/06*

U.S. Cl. 208—8 R **12 Claims**

1. A fluid bed process for use in producing synthetic fuels, comprising the steps of:

commencing retorting of raw solid, hydrocarbon-containing material selected from the group consisting of oil shale, tar

sands, uintaite, lignite and peat in a mixing chamber having a maximum transverse cross-sectional area substantially greater than the maximum transverse cross-sectional area of a vertical lift pipe extending substantially vertically above said mixing chamber by feeding said raw solid, hydrocarbon-containing material and substantially completely combusted solid heat carrier material into said mixing chamber through separate feed lines and injecting a fluidizing lift gas into said mixing chamber separately from said combusted material, in the absence of a sufficient amount of air and molecular oxygen to support



combustion, to fluidize and mix said raw and combusted material in said mixing chamber;

continuing retorting and fluidizing of said raw solid, hydrocarbon-containing material with said substantially completely combusted material and said fluidizing lift gas in said lift pipe located in vertical alignment above said mixing chamber; and

substantially completing retorting of said solid, hydrocarbon-containing material with said substantially completely combusted material in an overhead solids-containing vessel positioned in vertical and coaxial alignment above said lift pipe and said mixing chamber.

4,404,084

COAL HYDROGENATION AND DEASHING IN EBULLATED BED CATALYTIC REACTOR

Derk T. A. Huibers, Pennington, and Edwin S. Johanson, Princeton, both of N.J., assignors to Hri, Inc., Lawrenceville, N.J.

Filed Mar. 11, 1982, Ser. No. 357,230
Int. Cl.³ C10G *1/06*
U.S. Cl. 208—10 **15 Claims**

1. A process for coal hydrogenation and deashing to produce hydrocarbon liquid and gas products, comprising:

(a) mixing particulate coal containing ash with a hydrocarbon slurrying liquid to provide a flowable coal-oil slurry, and feeding the slurry with hydrogen into a reaction zone containing a bed of particulate hydrogenation catalyst;

(b) passing said coal-oil slurry and hydrogen upwardly through said catalyst bed at flow rate sufficient to expand the bed and provide an ebullated bed of said particulate catalyst, maintaining said reaction zone at 750°–900° F. temperature and 1500–5000 psig, hydrogen partial pressure, and at liquid upward superficial velocity and viscosity selected to permit agglomeration of fine ash particles released from the coal, whereby the coal is catalytically hydrogenated and the fine particulate ash is agglomerated to form increased particle sizes and the agglomerated ash is accumulated in an ash layer in the upper portion of the reaction zone above the catalyst bed;

(c) withdrawing said agglomerated ash along with a minimal amount of accompanying reaction zone liquid from said ash layer in said upper portion of said reaction zone;

(d) withdrawing a hydrogenated hydrocarbon effluent material product from the upper portion of said reaction zone above said agglomerated ash layer, and phase separating the effluent material into gaseous and liquid fractions, and

(e) withdrawing deashed hydrocarbon liquid and gaseous products from the process.

4,404,085

DRYING AND DEDUSTING PROCESS

Earl D. York, Engelwood; Milton B. Thacker, Aurora, and Paul B. Miller, Littleton, all of Colo., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 21, 1981, Ser. No. 285,564
Int. Cl.³ C10G *31/06*
U.S. Cl. 208—11 R **48 Claims**

1. A process for dedusting particulate laden oil derived from solid hydrocarbon-containing material, comprising the steps of:

feeding particulate laden heavy oil derived from solid hydrocarbon-containing material into a screw conveyor dryer;

feeding solid heat carrier material into said screw conveyor dryer; and

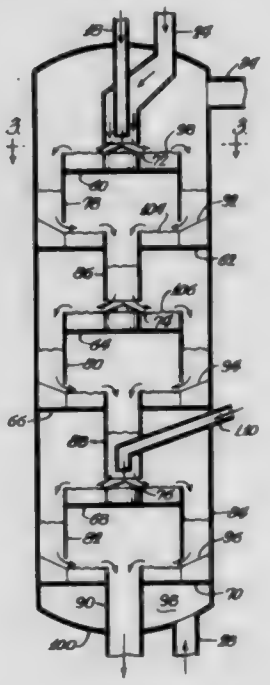
heating said particulate laden heavy oil in said screw conveyor dryer by contacting said solid hydrocarbon-containing material with said solid heat carrier material at a sufficient heating temperature in said screw conveyor dryer to separate said particulate laden heavy oil into a dedusted stream of hydrocarbons containing a substantially lower concentration of particulates than said particulate laden heavy oil and a residual stream containing a higher concentration of particulates than said particulate laden heavy oil.

4,404,086

RADIAL FLOW RETORTING PROCESS WITH TRAYS AND DOWNCOMERS

Robert D. Oltrogge, Wheaton, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 21, 1981, Ser. No. 333,039
Int. Cl.³ C10G *1/00*; C10B *49/06, 49/10, 53/06*
U.S. Cl. 208—11 R **24 Claims**



1. A process for retorting oil shale, comprising the steps of:

(a) feeding raw oil shale particles generally downwardly about the vertical axis of an overflow fluid bed retort against a conical portion of a baffle located generally along the vertical axis of said retort;

(b) feeding spent oil shale particles generally downwardly at a temperature greater than the minimum retorting temper-

ature of said row oil shale particles towards said conical portion of said baffle, concurrently with step (a);

(c) deflecting said raw and spent oil shale particles generally downwardly and radially outwardly off said conical portion into a radially outwardly moving fluid bed lying above a tray;

(d) overflowing said particles in said radially outwardly moving fluid bed over an upwardly extending mouth of and into at least one internal peripheral downcomer extending above said tray;

(e) radially moving said fluid bed generally outwardly above said tray from said conical portion to said peripheral downcomer in response to said overflowing in step (d);

(f) gravitatingly moving said particles downwardly through said peripheral downcomer to a radially inwardly moving fluid bed lying above another tray located below said first mentioned tray;

(g) overflowing said particles in said radially inwardly moving fluid bed over an upwardly extending mouth of and into a central downcomer generally along the vertical axis of said retort at a location above said other tray;

(h) radially moving said fluid bed generally inwardly from said peripheral downcomer over said other tray to said central downcomer in response to said overflowing in step (g);

(i) gravitatingly moving said particles downwardly through said central downcomer;

(j) repeating steps (c) through (i) for a plurality of trays for a sufficient time to liberate hydrocarbons from said oil shale particles;

(k) injecting fluidizing gas generally upwardly into said overflow retort separate and apart from said spent shale particles and in a direction generally opposite the feed direction of said spent shale particles to fluidize a substantial amount of said particles in said beds while preventing combustion in said retort and to strip and transport said liberated hydrocarbons upwardly and away from said particles into an outlet above said beds;

(l) conveying said particles from said retort to a combustor lift pipe; and

(m) fluidizing, combusting and transporting said particles generally upwardly through said lift pipe with an oxygen-containing combustion-sustaining gas to provide spent oil shale particles for step (b).

4,404,087

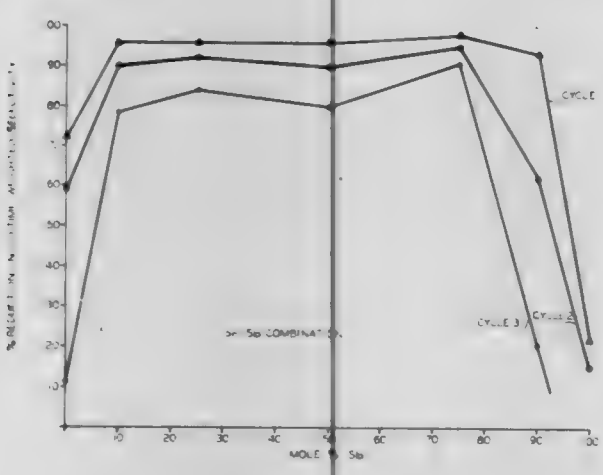
ANTIFOULANTS FOR THERMAL CRACKING PROCESSES

Larry E. Reed; Randall A. Porter; Floyd E. Farha, Jr., and Jack P. Guillory, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 348,614, Feb. 12, 1982, abandoned. This application Sep. 30, 1982, Ser. No. 424,889

Int. Cl.³ C10G *9/16*

U.S. Cl. 208—48 AA **43 Claims**



1. A method for reducing the formation of coke on the metals which are contacted with a gaseous stream containing hydrocarbons in a thermal cracking process comprising the step of contacting said metals with an antifoulant selected from the group consisting of a combination of tin and antimony, a combination of germanium and antimony and a combination of tin and germanium.

4,404,088

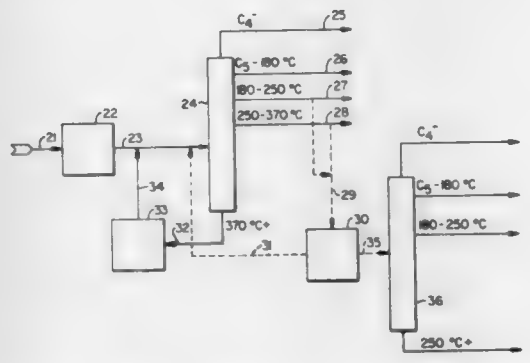
THREE-STAGE HYDROCRACKING PROCESS

Robert W. Bachtel, El Cerrito, and Dennis R. Cash, Novato, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 2, 1981, Ser. No. 307,901

Int. Cl.³ C10G *47/16*

U.S. Cl. 208—59 **4 Claims**



1. A three-stage hydrocracking process adapted for maximizing the yield of naphtha, or of maximizing the yield of certain other distillate fractions from a feedstock containing hydrocarbons boiling at temperatures greater than about 360° F. (180° C.), comprising the steps of:

(a) contacting said feedstock in a first hydroprocessing zone with a first hydroprocessing catalyst under conditions comprising a temperature of about 650°–850° F., a total pressure of about 1000–3000 psig, a hydrogen supply of about 500–2000 SCF per barrel of feedstock and a LHSV of 0.3–2.5,

(b) fractionating the effluent from said first hydroprocessing zone in a fractionating zone into a first fraction consisting of naphtha and lower boiling components, a second fraction, the residuum, consisting of components having a normal boiling point greater than about 700° F., and a third fraction, the middle and heavy distillate, consisting of the remainder of the effluent of said first hydroprocessing zone,

(c) contacting said second fraction in a second hydroprocessing zone with a hydrocracking catalyst under hydrocracking conditions comprising a temperature of about 600°–850° F., a total pressure of about 1000–3000 psig, a hydrogen supply of about 500–1500 SCF per barrel of feed and a total LHSV of about 0.8–3.0,

(d) recycling the effluent of said second hydroprocessing zone to said fractionation zone,

(e) contacting said third fraction in a third hydroprocessing zone with a zeolite-containing hydrocracking catalyst of higher cracking activity than the catalysts of said first and second hydroprocessing zones, under hydrocracking conditions comprising a temperature of about 550°–850° F., a total pressure of about 800–2500 psig and a hydrogen supply of about 300–1000 SCF per barrel of feedstock, and

(f) recycling at least a portion of the effluent from said third hydroprocessing zone to said fractionation zone.

4,404,089

PROCESS FOR THE REDUCTION OF THE EFFECT OF CONTAMINANT METALS IN CRACKING CATALYSTS

Fred S. Zrinscak, Woodbury Heights, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 275,001, Jun. 18, 1981. This application Sep. 29, 1982, Ser. No. 427,330
Int. Cl.[3] C10G *11/05*
U.S. Cl. 208—120 6 Claims

1. In the process for the catalytic cracking of a gas oil in the absence of added hydrogen over a hydrocarbon cracking catalyst comprising an antimony-containing acidic solid, the improvement which comprises contacting said antimony-containing acidic solid with hydrogen sulfide.

4. A method for passivating contaminating metals upon a hydrocarbon cracking catalyst comprising an antimony-containing acidic solid which comprises contacting said cracking catalyst with hydrogen sulfide.

4,404,090

PASSIVATION OF METAL CONTAMINANTS ON CRACKING CATALYST

Carmen Castillo, Memphis, and John C. Hayes, Palatine, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 209,073, Nov. 21, 1980, Pat. No. 4,364,848, which is a continuation-in-part of Ser. No. 132,602, Mar. 21, 1980, abandoned. This application Jul. 16, 1982, Ser. No. 399,162
Int. Cl.[3] C10G *11/18, 11/05*
U.S. Cl. 208—120 7 Claims

1. A process for the fluid catalytic cracking of hydrocarbons using a fluidized cracking catalyst which has been contaminated with a contaminating metal due to the use of said catalyst in a fluidized cracking system, and wherein said catalyst is cycled between a cracking zone, in which said catalyst is contacted at an elevated temperature with a hydrocarbon feedstock containing said metal which deposits on said catalyst, and a regeneration zone, in which carbon is oxidized and thereby removed from said catalyst, said metal being included in the group comprising nickel, vanadium, cobalt or iron, which process comprises contacting said catalyst, prior to the cycling of said catalyst to said cracking zone, with a gas or mixture of gases comprising hydrocarbons selected from the group consisting of hydrocarbons containing one, two and three carbon atoms which has been saturated with water at ambient pressure and a temperature from about 120° F. to about 212° F., said contacting occurring at passivation reactions conditions selected so as to first effect substantially complete reduction of said metal to its metallic state and then deactivation of said metal in its metallic state by carbonization.

4,404,091

TREATMENT OF SHALE OILS

Lillian A. Rankel, Plainsboro, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 26, 1981, Ser. No. 314,939
Int. Cl.[3] C10G *9/00, 31/00*
U.S. Cl. 208—131 19 Claims

1. An improved process for the treatment of shale oil to remove contaminants therefrom, comprising the steps of:

(a) admixing the shale oil with preformed, normally solid carbonaceous material; and

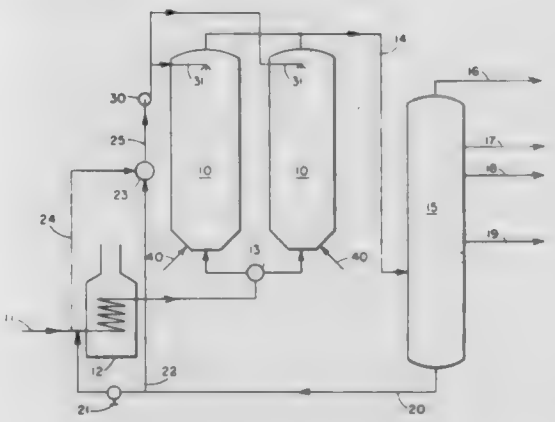
(b) subsequently thermally treating the mixture under delayed coking conditions to produce distillate products having reduced amounts of contaminants, wherein the reduction in contaminants is substantially greater than the reduction obtained by carrying out the thermal treatment in the absence of said preformed, normally solid carbonaceous material.

4,404,092

DELAYED COKING PROCESS

Costandi A. Audeh, Princeton, N.J., and Tsoung-Yuan Yan, Philadelphia, Pa., assignors to Mobil Oil Corporation, N.Y.

Filed Feb. 12, 1982, Ser. No. 348,483
Int. Cl.[3] C10G *9/14*
U.S. Cl. 208—131 7 Claims



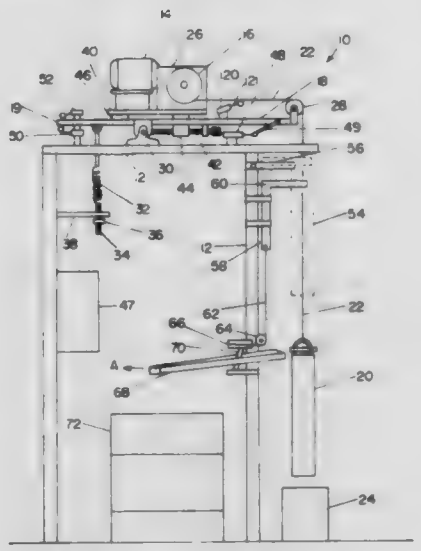
1. In a delayed coking process in which a heated heavy hydrocarbon feedstock is introduced into the bottom of a coker drum to form a carbonizing mass at a temperature of at least 450° C. in which the delayed coking reaction occurs to form coke and gas and vapor phase products which are removed from the vapor space above the carbonizing mass through an outlet the improvement which comprises: maintaining the temperature of the vapor space substantially below 450° C. by introducing a quenching liquid into the vapor space of the coker drum in the region of the outlet, whereby the temperature of vapor space is maintained at its lowest in the region of the outlet and at its highest in the region of the interface with the carbonizing mass and liquid products are obtained in improved yield.

4,404,093

AUTOMATIC WELL SKIMMER

Donald L. Moyer, Hummelstown, Pa., assignor to R. E. Wright Associates, Inc., Middletown, Pa.

Filed Jun. 8, 1982, Ser. No. 386,346
Int. Cl.[3] B02B *15/08*
U.S. Cl. 210—138 9 Claims



1. An automatic well skimmer for removal of floating contaminates from water wells comprising:

a supporting structure adjacent to a well;

a horizontal balance beam mounted upon the supporting structure and pivoting upon a fulcrum;

a motor and a winch mounted upon the balance beam;

adjustment means attached to the balance beam and capable of compensating for forces acting upon the balance beam to attain a balance under a variety of force conditions;

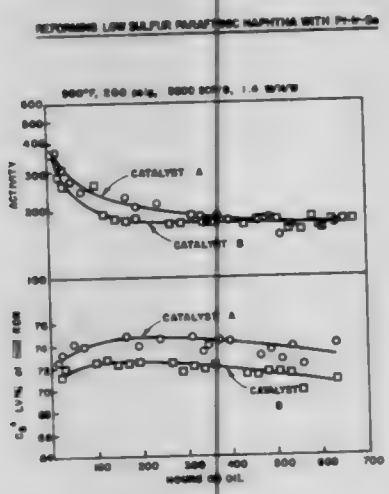
a pulley attached to one end of the balance beam;
a cable wound upon the winch and routed over the pulley and vertically downward at the end of the balance beam;
an open top bailer attached to the end of the cable and including unloading means;
stop means attached to the supporting structure and engaging the bailer to prevent raising the bailer beyond a certain point;
first electrical signaling means mounted adjacent to and acted upon by the balance beam, providing a first electrical signal when the bailer weight is reduced by flotation within the well and a second electrical signal when the bailer weight is subsequently increased to a selected weight as liquid enters the bailer;
second electrical signaling means acted upon by the bailer and providing a third electrical signal when the bailer engages the stop means;
motor reversing means connected to the motor; and
a control system, interconnected with the first electrical signaling means, the second electrical signaling means, the motor, and the motor reversing means, and comprising: first control means to initiate incremental lowering of the bailer within the well in increments which are a fraction of the total length of the bailer upon receiving the first electrical signal; second control means to reverse the motor and initiate raising the bailer to the surface upon receiving the second electrical signal; and third control means to initiate lowering of the bailer within a first preset time after receiving the third electrical signal.

4,404,094

CATALYTIC REFORMING PROCESS

Paul E. Eberly, Jr., and William C. Baird, Jr., both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jul. 2, 1982, Ser. No. 394,718
Int. Cl.³ C10G *35/085*
U.S. Cl. 208—139 **7 Claims**



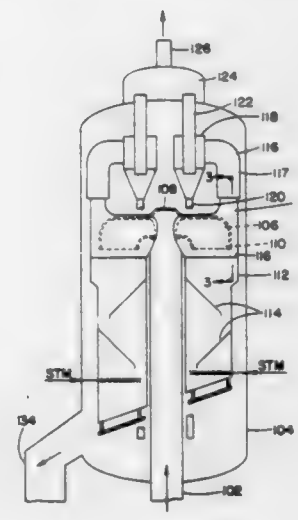
1. In a process for reforming a hydrocarbon feed at reforming conditions which comprises contacting said feed with a catalyst which comprises a platinum component, an iridium component, a component selected from the group consisting of copper, selenium and sulfur, and a halogen component, the improvement wherein the catalyst is contacted with dry hydrogen or a dry hydrogen-containing gas at temperatures ranging from about 600° F. to about 1000° F., at a hydrogen partial pressure ranging from about 1 atmosphere to about 40 atmospheres, at a flow rate sufficient to maintain the moisture level in the exit gas below about 500 ppm, and maintaining said contact for a period ranging at least 16 hours to increase the activity or selectivity, or both, as contrasted with a catalyst composition otherwise similar except that it has not been so-treated.

4,404,095

METHOD AND MEANS FOR SEPARATING GASEOUS MATERIALS FROM FINELY DIVIDED CATALYST PARTICLES

James H. Haddad, Princeton Junction, and Frederick J. Krambeck, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 22, 1982, Ser. No. 400,843
Int. Cl.³ C10G *11/18*; F27B *1/20*
U.S. Cl. 208—161 **21 Claims**



1. In a process for the fluid catalytic cracking of mineral oil whereby the mineral oil is catalytically cracked by passing a suspension of mineral oil and catalyst through a riser conversion zone under cracking conditions into a disengaging vessel and the catalyst recovered from said riser conversion zone is thereafter regenerated to remove carbonaceous deposits before return of the regenerated catalyst to said riser conversion zone and whereby the mineral oil-catalyst suspension is separated upon discharge from the riser conversion zone by

(a) discharging the suspension outwardly through an opening in the upper periphery of the riser and through a radially extending restricted passageway having an opening in the bottom side thereof whereby a substantially confined catalyst stream discharges in a downward direction generally separate from the cracked mineral oil vapors, said restricted passageway curved downwardly adjacent the outer end thereof to induce a downward movement on said confined catalyst stream in said passageway sufficient to direct said stream downwardly into the open upper end of a catalyst stripping passageway positioned beneath said outer end to maintain catalyst so collected and directed separate from said discharged cracked mineral oil vapors and

(b) passing the cracking mineral oil vapors through the disengaging vessel to the upper portion thereof and into the entrance of a cyclone separation means,

the improvement which comprises: discharging the cracked mineral oil vapors from the outer extremity of the radially extending restricted passageway to a vertically disposed elongated restricted passageway in fluid communication with the inlet of a first cyclone separation means whereby the cracked mineral oil vapors are directed from the outer extremity of the radially extending restricted passageway into the first cyclone separation means.

9. An apparatus for separation of catalyst particles from gasiform material which comprises:

(a) a disengaging vessel serving as a reservoir for collected catalyst particles,

(b) a vertically disposed elongated tubular conduit having an upstream end and a downstream end, the latter terminating within said vessel,

(c) a radially extending restricted passageway having an inlet communicating with said elongated tubular conduit at said downstream end and an opening along the bottom

of said radially extending restricted passageway, said bottom opening adapted to discharge catalyst particles in a downward direction as a substantially confined catalyst stream,

(d) a first cyclone separation means adapted to separate entrained catalyst from gasiform material, to discharge separated catalyst into said disengaging vessel and to discharge said gasiform material external to said disengaging vessel,

(e) a vertically disposed catalyst stripping passageway positioned below and in open communication with the bottom opening of the radially extending restricted passageway and adapted to receive the substantially confined catalyst stream into its upper end, and

(f) a vertically disposed elongated restricted passageway in direct fluid communication with the upper end of the catalyst stripping passageway and the inlet of the first cyclone separation means and in open fluid communication with the bottom opening of the radially extending restricted passageway, said vertically disposed restricted passageway surrounding and containing said radially extending restricted passageway in spaced relationship thereto.

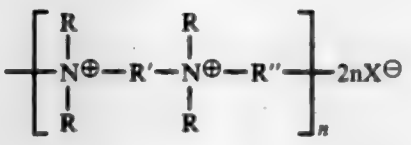
4,404,096

DEMULSIFICATION OF BITUMEN EMULSIONS USING IONENES

David R. McCoy, and Edward E. McEntire, both of Austin, Tex., assignors to Texaco, Inc., White Plains, N.Y.

Filed Dec. 2, 1981, Ser. No. 326,459
Int. Cl.³ C10G *33/04*
U.S. Cl. 208—188 **6 Claims**

1. A process for recovering petroleum from O/W bitumen emulsions by demulsifying said emulsions comprising contacting the emulsions at a temperature of from between about 25° and 160° C. with ionenes having the general structure



where the identity of the terminating groups is a tertiary amine or organo halo group, wherein R′ and R″ equal alkylene groups, cyclo aliphatic groups, ethers, amides and urea linkages and wherein R is a lower alkyl, X is an anion, and wherein the ionene has an average molecular weight greater than about 2,000 and the presence of greater than 5 meq/g quaternary amine in the neat polymer.

4,404,097

RESIDUA DEMETALATION/DESULFURIZATION CATALYST AND METHODS FOR ITS USE

Philip J. Angevine, West Deptford, and Stephen M. Oleck, Moorestown, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 187,685, Sep. 16, 1980, Pat. No. 4,328,127. This application Sep. 18, 1981, Ser. No. 303,335
Int. Cl.³ C10G *45/04*
U.S. Cl. 208—210 **6 Claims**

1. In a process for catalytically demetalizing and desulfurizing a residual oil by contacting said oil with hydrogen under hydrotreating conditions in the presence of a catalyst comprising a hydrogenating component selected from the group of oxides or sulfides of at least one Group VIB or Group VIII metal composited with an alumina base which comprises theta or delta phase alumina and which composite has a surface area of 40–150 m^2/g, a pore volume of 0.45–1.50 cc/g, and has not less than about 60% of its pore volume in pores with diameters of about 100 A to about 200 A; the improvement which comprises using as said catalyst one which is a composite having about 40 to 75% of its pore volume in pores with diameters of about 150 A to about 200 A and up to about 5% of its pore volume in pores with diameters greater than about 500 A.

4,404,098

MERCAPTAN EXTRACTION PROCESS WITH RECYCLED ALKALINE SOLUTION

George Asdigian, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 259,296, Apr. 30, 1981, Pat. No. 4,362,614. This application Dec. 6, 1982, Ser. No. 446,894
Int. Cl.³ C10G *19/02, 19/08*
U.S. Cl. 208—235 **12 Claims**

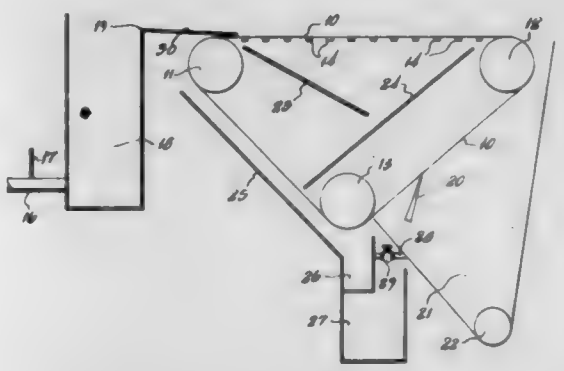
1. In a process for the removal of mercaptans from a hydrocarbon stream in which the feed stream is contacted with an alkaline solution comprising water and an alkaline reagent in an extraction zone to effect transfer of mercaptans from the feed stream to the alkaline solution; the resultant mercaptan-containing alkaline solution is heated and contacted with oxygen in an oxidation zone in the presence of an oxidation catalyst to effect oxidation of mercaptans to disulfides; the resultant disulfides are separated from the alkaline solution by decantation; and a stream of alkaline solution is contacted with a gas stream under conditions which promote transfer of water into the gas stream: the improvement which comprises contacting a portion of the heated mercaptan-containing alkaline solution with the gas stream prior to passing the portion directly into the oxidation zone.

4,404,099

SLUDGE THICKENING

Eric P. Austin, Sandbach, England, assignor to Simon-Hartley Limited, Staffordshire, England

Continuation-in-part of Ser. No. 148,479, May 9, 1980, abandoned, which is a continuation of Ser. No. 969,316, Dec. 14, 1978, abandoned. This application Feb. 1, 1982, Ser. No. 344,878
Int. Cl.³ B01D *33/04*
U.S. Cl. 210—205 **7 Claims**



1. A sludge thickening apparatus comprising means for dosing sludge to be thickened with a floc-producing agent, a tank for receiving and holding the dosed sludge for a sufficient period of time to allow for the development of a floc structure, means comprising a movable, sludge-receiving, liquid permeable band for draining all of the liquid to be removed from the floc-containing sludge solely under the influence of gravity to thicken the sludge without pressing or otherwise disturbing the floc-containing sludge, said band having a sludge-receiving, liquid drainage run which extends at least generally horizontally, means for conveying the floc-containing sludge from said tank to said run in such a manner that said floc structure is retained, means (a) for supporting said band for travel along an endless path and (b) for driving said band for conveying the floc-containing sludge along said run, and means for removing the sludge from the band after the sludge passes beyond said run, said sludge conveying means comprising (a) a weir located at a level lying above the level of said run and (b) a chute for delivering sludge from said weir to said run, said weir constituting a sludge outlet for said tank and having a discharge edge

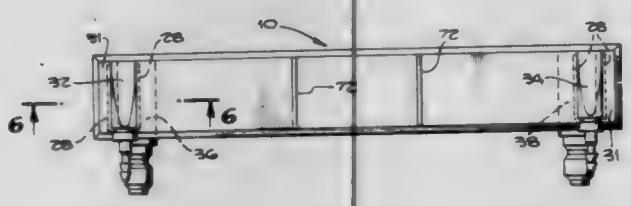
located at and at the same level as an upstream end of said chute for discharging the floc-containing sludge from said tank directly onto said chute, said chute being inclined relative to said run such that the angle included between said chute and said run is at an acute angle not exceeding approximately 5 degrees, and said chute extending directly from said discharge edge to nearly the level of said run immediately adjacent to said run for gently depositing the floc-containing sludge on said run, the slope of said chute being sufficiently shallow to deposite the floc-containing sludge on said run without substantial forward velocity relative to that of said run and substantially without change of direction at the region where the sludge is deposited on said run to prevent disturbance of said floc structure, said band providing for the gravity drainage of liquid from the sludge as the sludge is conveyed along said run.

4,404,100

HEMODIALYZER WITH PLEATED MEMBRANE

Adel A. Mikhail, Bloomington, Minn., assignor to Medical Incorporated, Inver Grove Heights, Minn.

Continuation of Ser. No. 149,303, May 13, 1980, abandoned.
This application May 5, 1982, Ser. No. 374,973
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—232 **11 Claims**



8. A device comprising:

a substantially rigid case including a preformed shell member having inlet and outlet ports and at least one preformed generally triangular shaped wedge element, said shell member being divided along a parting line into two parts, said shell member being approximately symmetrical about said parting line, an obtuse apex of said triangular shaped wedge element being positioned at about said parting line, the inner walls of said shell member and said wedge element together defining a generally rectangular cavity, said shell member and said wedge element having two pairs of generally coangularly extending wedgedly coacting surfaces; and

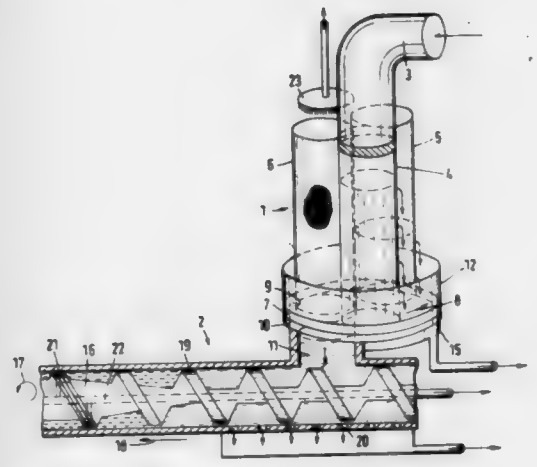
a semipermeable membrane folded in a plurality of pleats and confined within said cavity, a last pleat of said membrane extending over an acute apex of said triangular shaped wedge element and between a first pair of said coacting surfaces terminating short of said parting line in an edge which extends generally parallel to said parting line, one of said first pair of coacting surfaces including a first valley means for receiving said edge and encapsulating the entire length of said edge in a body of initially flowable cured in situ adhesive to seal said edge and first pair of coacting surfaces, said first valley means being spaced from and extending generally parallel to said parting line and extending for at least the entire length of said edge, one of said second pair of coacting surfaces including a second valley means for receiving a body of initially flowable cured in situ adhesive to seal said second pair of coacting surfaces, said second valley means being spaced from and extending generally parallel to said parting line and extending for the entire length of said second coacting surfaces, said first and second valley means being disposed on opposite sides of said parting line, and means associated with each of said first and second valley means for guiding on adhesive scraper along said valley means.

4,404,101

EXTRACTION DEVICE FOR REMOVING LIQUID FROM A LIQUID-SOLID MIXTURE

Klaus Koch; Hans-Joachim Schaeffer, both of Laatzen, and Gerhard Syrbius, Grossburgwedel, all of Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed May 7, 1982, Ser. No. 376,103
Claims priority, application Fed. Rep. of Germany, May 12, 1981, 3118715; Oct. 10, 1981, 3140341
Int. Cl.³ B01D *23/20, 33/18*
U.S. Cl. 210—232 **16 Claims**



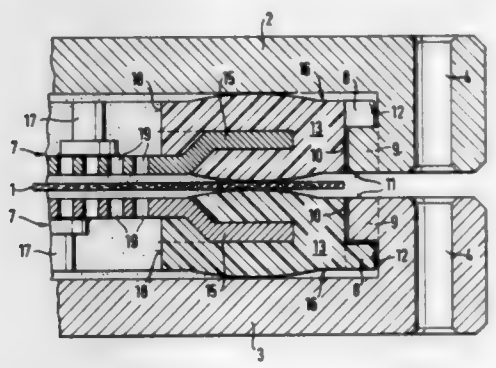
1. An extraction device for extracting solid matter from a solid-liquid mixture such as sewage sludge or paper pulp, said device comprising a preliminary treatment station, said treatment station including mixture feed means and mixture outlet means, and an extraction device located downstream of, and in fluid flow communication with, said outlet means of said preliminary treatment station, said preliminary treatment station comprising a plurality of perforated containers, each said container having an open first end and an open second end, each said first end being alignable with said mixture feed means, a receiver turntable supporting said second end of each said container, a plurality of through aperture defining means formed in said turntable, said second end of each said container being located in a respective one of said through aperture defining means, drive means associated with said turntable for displacing said first end of each said container into alignment with said mixture feed means, stationary disc means concentrically disposed beneath said turntable, eccentrically disposed aperture defining means formed in said disc means, said through aperture defining means in said turntable being alignable, by said drive means, with said aperture defining means in said disc means, the cross-sectional area of said second end of each said container corresponding to the cross-sectional area of said aperture defining means in said disc means, collection means associated with said disc means for collecting separated liquid passing through the perforations in said perforated container, and discharge means in fluid flow communication with said collection means for discharging said separated liquid.

3. A device as recited in claim **1** wherein said perforated containers are each detachably located in said aperture defining means in said turntable so as to be replaceable or interchangeable and mixture inlet means are formed in said extraction device, said container being cylindrical, conical, oval or rectangular in shape, said eccentrically disposed aperture defining means in said disc means and said mixture inlet means corresponding, in both shape and cross-sectional area, to said shape and cross-sectional area of said second end of said containers.

4,404,102
FILTRATION APPARATUS FOR FLAT FILTER PLATES CUT TO SIZE

Günter Pradel, and Ulrich Quaschning, both of Göttingen, Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

Filed Feb. 1, 1982, Ser. No. 344,506
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1981, 8102504[U]
Int. Cl.³ B01D *35/02*
U.S. Cl. 210—247 **13 Claims**



1. Filtration apparatus for holding a flat filter plate comprising:

(a) a casing comprising an upper part with an inlet and a fluid chamber, and a base part with an outlet and a further fluid chamber;

(b) each casing part having a permeable filter support which delimits the fluid chamber for the fluid, in which structure the flat filter plate can be inserted in a sandwich-like manner between the opposite surfaces of the filter supports of the two casing parts;

(c) both fluid chambers with inclusion of the flat filter plate being sealed against each other in a leakproof manner by at least one circumferential seal arranged in the area of the periphery of the casing parts, and both casing parts being tightened in sealing manner by detachable tightening means;

(d) the filter support being provided in the form of a disc with circular perforation;

(e) the circumferential seal being provided at its peripheral edge with several radially arranged fastening means.

(f) the casing part being provided at the periphery of the fluid chamber holding the filter support with mating means corresponding to the radially arranged fasten means of the filter support;

(g) the corresponding radially arranged fastening means and mating means engage one another to join the filter support and the casing part axially and radially.

4,404,103
ROCKING SWIVEL HOSE CONNECTORS AND METHOD

Edwin H. Drath, 1218 S. Patton, Arlington Heights, Ill. 60005

Filed Nov. 5, 1981, Ser. No. 318,558
Int. Cl.³ F16L *27/06*; B01D *35/02*
U.S. Cl. 210—446 **32 Claims**

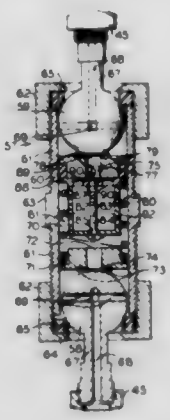
1. A rocking swivel hose connector, comprising:

a body having a passageway therethrough extending in part through axially outwardly facing shoulder means therein spaced inwardly from one end of said body and providing a bottom for a chamber which opens through said one end;

a spherical rocking and swivel member within said chamber and thrusting toward said shoulder means and having a hollow coupling stem thereon which projects outwardly relative to said one end of the body;

said member and said stem having a fluid passage therethrough in continous fluid flow communication with said passageway;

means for retaining said member in assembly within said chamber and permitting rocking and swivelling of said member and said projecting stem, and comprising a flanged clamping ring nut threadedy engaged on said one end of the body, and a combination packing ring and nut lock compressed by said ring nut sealingly against an



annular surface at said one end of said body and against the spherical surface of said rocking and swivel member and lockingly retaining said ring nut relative to said body; and bearing means facilitating rocking and swivelling movement of said member relative to said shoulder means.

4,404,104
CATIONIC ADSORPTION AGENT

Rudolf F. Wurster, Pfeffingen, and Jürg Merz, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 162,275, Jun. 23, 1980, Pat. No. 4,316,005. This application Sep. 11, 1981, Ser. No. 301,154
Claims priority, application Switzerland, Jun. 28, 1979, 6036/79; Feb. 4, 1980, 869/80
Int. Cl.³ B01D *15/04*
U.S. Cl. 210—684 **15 Claims**

1. A process for the removal of an anionic substance from an aqueous solution, which process comprises bringing said solution into contact with a cationic adsorption agent which has been obtained by reaction of

(a) an amino compound which contains at least one amino group and at least one free or methylolated carboxamide group, with

(b) an aminoplast precondensate which does not contain an amino group, in a ratio of 1 mole of component (a) per 0.2 to 10 moles of component (b), in an aqueous medium at a pH value between about 2 and 7.

4,404,105
PROCESS FOR TREATMENT OF WASTE

Serge H. Rysman de Lockerente, Alsemberg, and Norbert Van de Voorde, Mol, both of Belgium, assignors to Societe Internationale de Publicite et d'Agences Commerciales, Brussels, Belgium

Continuation of Ser. No. 873,440, Jan. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 704,481, Jul. 12, 1976, abandoned. This application Oct. 2, 1981, Ser. No. 308,177
Claims priority, application Belgium, Jul. 16, 1975, 158349
Int. Cl.³ C02F *1/52, 11/14*
U.S. Cl. 210—710 **36 Claims**

1. A process for the formation of a chemically stable solid aggregate of wastes containing at least one heavy metal or heavy metal compound which is at least partially water soluble under acid conditions comprising the sequential steps of:

(a) forming a low-polymerization-silicic-acid of molecular weight not exceeding 50,000 by reacting

(i) a silicate selected from at least one of the group consisting of alkaline earth metal silicates, aluminum silicates, and aluminosilicates,

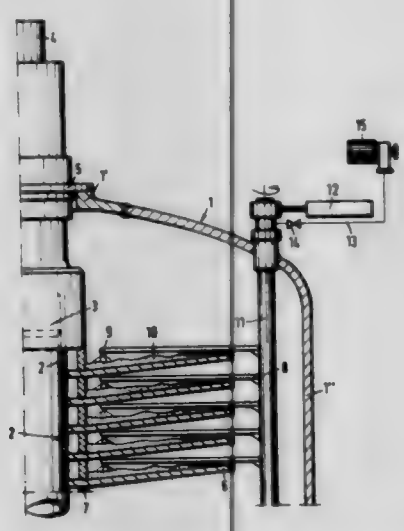
(ii) water, and
(iii) acid sufficient to provide the reaction mixture with a pH between about 0.5 and about 3;
(b) mixing
(i) the wastes containing heavy metals or heavy metal compounds, and
(ii) the low-polymerization-silicic-acid, with
(iii) sufficient water and acid, to adjust the mixture to one having at least 70% dissolved solids and a pH of less than 4;
(c) synthesizing a higher-polymerization-silicic-acid/hydrated-heavy-metal coprecipitate gel, by reacting
(i) the low-polymerization-silicic-acid, and
(ii) the cations of the heavy metal in the wastes,
(iii) in the presence of a base catalyst selected from at least one of the group consisting of sodium hydroxide, potassium hydroxide, calcium hydroxide, their carbonates or hydrocarbonates, in an amount sufficient to increase the pH of the mixture to progressively to at least 7; and
(d) hardening the coprecipitate gel into a chemically stable solid aggregate;
wherein the total amount of water in above steps (a) through (d) is at least 15 percent by weight based upon the total weight of solids.

4,404,106

FILTER APPARATUS AND A METHOD OF CLEANING FILTER ELEMENTS THEREOF

Hans Müller, Erlenbach, and Bruno Guazzone, Rapperswil, both of Switzerland, assignors to Chemap AG, Maennedorf, Switzerland

Division of Ser. No. 77,088, Sep. 19, 1979, Pat. No. 4,276,166, which is a division of Ser. No. 11,950, Feb. 13, 1979, Pat. No. 4,230,576, which is a continuation of Ser. No. 899,176, Apr. 24, 1978, abandoned. This application Jun. 2, 1980, Ser. No. 155,484
Claims priority, application Switzerland, May 9, 1977, 5738/77
The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.
Int. Cl.³ B01D *29/02*
U.S. Cl. 210—772 **10 Claims**



1. A method of cleaning substantially horizontal filter elements having a common vertical axis and provided with a filtering material upon an upper surface of which a cake is deposited during a filtering process and a closed lower surface, the method comprising the steps of providing nozzle elements having a further common vertical axis and horizontal arms located above the upper surface of the filtering material of the filter elements; supplying a cleaning medium to said nozzle elements; ejecting the cleaning medium from said nozzle elements at an adjustable elevated pressure towards said upper surface from above; rotating said filter elements about said first-mentioned axis during ejecting of the cleaning medium towards said upper surface under a desired elevated pressure; and turning the nozzle elements about said further axis relative to said upper surface during ejecting the cleaning medium toward said upper surface so that during the rotation and turning the entire upper surface is overlapped and thereby full removal of the cake from said surfaces and thereupon also full cleaning of the filter material of the filter elements are guaranteed.

4,404,107

WELL WORKING COMPOSITIONS, METHOD OF DECREASING THE SEEPAGE LOSS FROM SUCH COMPOSITIONS, AND ADDITIVE THEREFOR

Jack C. Cowan, Lafayette, La.; Tommy Thrash, Littlefield, Tex., and Jerry R. Rayborn, New Orleans, La., assignors to Venture Chemicals, Inc., Lafayette, La.

Filed Jun. 1, 1981, Ser. No. 269,493
The portion of the term of this patent subsequent to Oct. 26, 1999, has been disclaimed.
Int. Cl.³ C09K *7/06, 7/02*
U.S. Cl. 252—8.5 M **8 Claims**

1. Hydrophobic, organophilic, water wettable cotton for use in well working compositions having a particle size such that at least 95% by weight of said cotton present in a 10% by weight water suspension passes through a 100 mesh sieve produced by the process comprising:
(a) reacting raw cotton with dry, gaseous hydrochloric acid in an amount from about 0.3% to about 3% by weight of the cotton at a temperature in the range from about 75° F. to about 180° F.; and
(b) mechanically degrading the cotton.

4,404,108

ADDITIVE FOR DRILLING FLUIDS

Allen E. Cates, 501 Harwell Dr., Lafayette, La. 70503

Filed Sep. 8, 1981, Ser. No. 300,299
Int. Cl.³ C09K *7/02*
U.S. Cl. 252—8.5 A **4 Claims**

1. A water-based gas or oil well drilling fluid comprising an aqueous clay dispersion containing, as a thinner and water loss control agent, the essentially water-soluble product obtained by heating together at 100°–150° C. for a period of 120–30 minutes quebracho, lignite, gilsonite and sodium sulfite, paraformaldehyde and sodium hydroxide as sulfonating, methylating and causticizing agents, respectively, the percent by weight proportions of said components being as follows:

	% Solids
Quebracho	15–45%
Lignite	25–45%
Gilsonite	4–15%
Sodium Sulfite	10–25%
Paraformaldehyde	1–10%
Sodium hydroxide	2–10%.

4,404,109

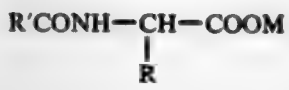
AQUEOUS MICRO-EMULSIONS OF ORGANIC SUBSTANCES

Jacques Tellier; Claude Chambu, both of Billere; Jean-Francois Coste, Muret, and Henri Grangette, Lyons, all of France, assignors to Societe Nationale Elf Aquitaine (Production), France

PCT No. PCT/FR79/00103, § 371 Date Jul. 13, 1980, § 102(e) Date Jul. 13, 1980, PCT Pub. No. WO80/00921, PCT Pub. Date May 15, 1980
PCT Filed Nov. 8, 1983, Ser. No. 201,384
Claims priority, application France, Nov. 13, 1978, 70 32005; Oct. 26, 1979, 79 26600
Int. Cl.³ E21B *43/22*
U.S. Cl. 252—8.55 D **15 Claims**

1. A process for the preparation of a micro-emulsion of

hydrocarbon and water which contains at least 60 g of NaCl per liter by the addition of an effective surface active amount of a surface-active agent and a cosurfactant, wherein the said agent is a salt of an N-acyl α-amino acid which corresponds to the formula:



wherein R and R′ are straight-chain or branched aliphatic hydrocarbon radicals or alkyl-aryl radicals, R being C_6 to C_{120}, R′ being C_1 to C_{18} and M being an alkali metal cation, an alkaline earth metal cation, ammonium, an amine group or hydrogen.

4,404,110

OZONATION OF PETROLEUM FEEDSTOCKS

Phillip M. Beazley, Littleton, and Frank L. Dormish, Denver, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Dec. 22, 1980, Ser. No. 219,272
Int. Cl.³ E21B *43/22*; C07C *139/00, 143/00*
U.S. Cl. 252—8.55 R **11 Claims**

1. A process for the sulfonation of a petroleum feedstock containing naphthenes and selected from the group consisting of crude oil, topped crude oil, gas oil and mixtures thereof, comprising steps of:

(a) ozonating said petroleum feedstock with about 0.02 to about 2 kilograms of ozone per 100 kilograms of feedstock, at a temperature of about 0° C. to about 100° C. and for a contact time sufficient to prevent excessive oxidation of the resulting ozonated feedstock; and

(b) sulfonating said ozonated feedstock with sulfur trioxide under conditions sufficient to sulfonate said ozonated feedstock without excessive oxidation of said ozonated feedstock.

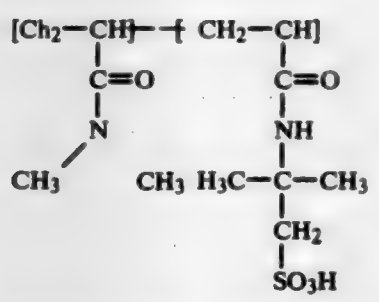
4,404,111

N,N-DIMETHYLACRYLAMIDE/2-ACRYLAMIDO-2-METHYLPROPANE SULFONIC ACID COPOLYMERS FOR ENHANCED PETROLEUM RECOVERY

Le-Khac Bi; Mary E. Dillon, and Clyde Sharik, all of West Chester, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 6, 1981, Ser. No. 232,456
Int. Cl.³ E21B *43/22*
U.S. Cl. 252—8.55 D **1 Claim**

1. In a process for enhancing petroleum recovery from a subterranean petroleum bearing formation which comprises injecting into the formation through an input well an aqueous composition having dissolved therein a polymeric viscosity control agent whereby petroleum is displaced in the formation toward at least one output well, the improvement comprising using as said agent, a random copolymer having a weight average molecular weight greater than about one million having the formula:



said random copolymer being produced by reacting from about 98 to about 99.5 weight percent N,N-dimethylacrylamide with from about 0.5 to about 2 weight percent 2-acrylamido-2-methylpropane sulfonic acid.

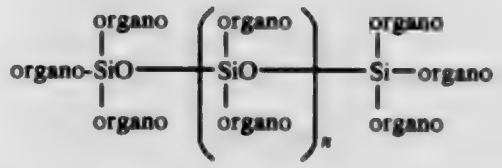
4,404,112

HYDROCARBON FOAMS AS WELL STIMULANTS

Gary A. Scherubel, University City, and Michael A. Thorne, Kirkwood, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 85,182, Oct. 15, 1979, Pat. No. 4,301,868. This application Jul. 8, 1981, Ser. No. 281,452
Int. Cl.³ E21B *21/14, 43/25, 43/267*
U.S. Cl. 252—8.55 B **4 Claims**

1. A composition consisting essentially of an organopolysiloxane-induced hydrocarbon foam mixture, suitable for use in well stimulation, said hydrocarbon being selected from the group consisting of kerosene, #2 diesel oil, well formation condensate and xylene, said siloxane having the formula



where organo is alkyl and where n has a value sufficient to define a polymer having a molecular weight of from about 5,770 to about 20,000, and being of a concentration of from about 0.5 to about 2% by volume in said hydrocarbon.

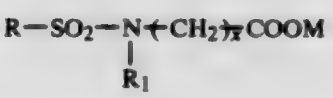
4,404,113

COOLING LIQUID WITH CORROSION-INHIBITING AND CAVITATION-INHIBITING ADDITIVES

Heinrich Peters, Burghausen, and Erich Surma, Garching, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

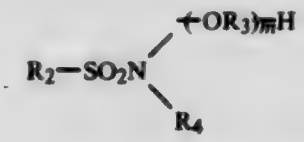
Filed Sep. 14, 1981, Ser. No. 301,735
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1980, 3035327
Int. Cl.³ C09K *5/00*; C23F *11/16*
U.S. Cl. 252—75 **8 Claims**

1. A cooling liquid with corrosion-inhibiting and cavitation-inhibiting additives consisting essentially of (A) 87–98% by weight of at least one polyhydric alcohol selected from glycerol, alkylene glycols having from 2 to 6 C atoms, or oxyalkylene glycols of oxyethylene or oxypropylene or combinations of oxyethylene and oxypropylene, said oxyalkylene glycols having a total of 4 to 12 carbon atoms; (B) 2–10% by weight of a corrosion inhibitor selected from the benzotrizoles; the alkanolamines and salts thereof; the alkali metal borates, benzoates, nitrites, nitrates, silicates, or phosphates; or mixtures of said corrosion inhibitors; and (C) 0.01 to 3.0% by weight of at least one compound of the formula



(I)

in which R is an alkyl or alkenyl radical having 4 to 25 C atoms or an aryl radical having 6 to 10 C atoms, R_1 is hydrogen or an alkyl radical having 1 to 4 C atoms, M is hydrogen or an alkali metal and x is an integer from 1 to 5, or of the formula



(II)

in which R_2 is an alkyl or alkenyl radical having 4 to 25 C atoms, R_3 is an alkylene radical having 2 to 4 C atoms, n is an

integer from 1 to 10 R_4 is hydrogen, an alkyl radical having 1 to 4 C atoms or a radical $—(OR_5)_mH$, in which R_5 is an alkylene radical having 2 to 4 C atoms and m is an integer from 1 to 10, the weight percentages in each case relating to the weight of the liquid.

4,404,114

ACRYLATE/SILICATE CORROSION INHIBITOR

Paul H. Mohr, Chappaqua, and William N. Matulewicz, Montgomery, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 17, 1982, Ser. No. 389,394

Int. Cl.³ C09K *5/00*; C23F *11/12, 11/14*; C22F *11/12*

U.S. Cl. 252—75 **35 Claims**

1. An aluminum corrosion inhibitor composition concentrate comprising;

(a) alcohol or water or mixtures thereof;

(b) a polymerizable-acid graft copolymer comprising an unsaturated grafting acid and having a percent acid graft of up to about 60% and a base polymer consisting of a poly(oxyalkylene) compound of the formula: $R''((OC_nH_{2n})_zOR')_a$ wherein R' is a member selected from the group consisting of a hydrocarbon radical, a hydrogen atom, or an acyl radical and R'' is a member selected from the group consisting of a hydrocarbon radical, a hydrogen atom, an amine-containing radical, or an acyl radical, a is an integer having a value of 1 to about 4, n has a value of 2 to 4 inclusive, z is an integer having a value of from 4 to 2300 inclusive, said base polymer having a number average molecular weight of between about 200 and about 100,000, and

(c) a silicate selected from the group consisting of organic silicates, inorganic silicates, and mixtures thereof, and wherein the amount of component (b) is between greater than about 0.01 wt. % and about 20 wt % based on the total amount of component (a) plus component (b) in said concentrate, and wherein the weight ratio of component (b) to component (c) ranges from 8000:1 to 1:20 based on the amount of silicon in component (c).

4,404,115

ENZYMATIC LIQUID CLEANING COMPOSITION

Ho T. Tai, Santes, France, assignor to Lever Brothers Company, New York, N.Y.

Filed Nov. 8, 1982, Ser. No. 439,961

Claims priority, application United Kingdom, Nov. 13, 1981, 8134310

Int. Cl.³ C11D *3/04, 3/386, 17/08*; C12N *9/96*

U.S. Cl. 252—135 **7 Claims**

1. Enzymatic liquid cleaning composition comprising:

(a) from 0.001 to 10% by weight of an enzyme selected from the group consisting of proteolytic, amylolytic and cellulolytic enzymes and mixtures thereof;

(b) from 1 to 15% by weight of an alkalimetal pentaborate;

(c) from 0 to 15% by weight of an alkalimetal sulphite;

(d) from 0 to 15% by weight of a polyol, containing from 2 to 6 hydroxy groups; and

(e) water.

4,404,116

NONCORROSIVE UREA-SULFURIC ACID REACTION PRODUCTS

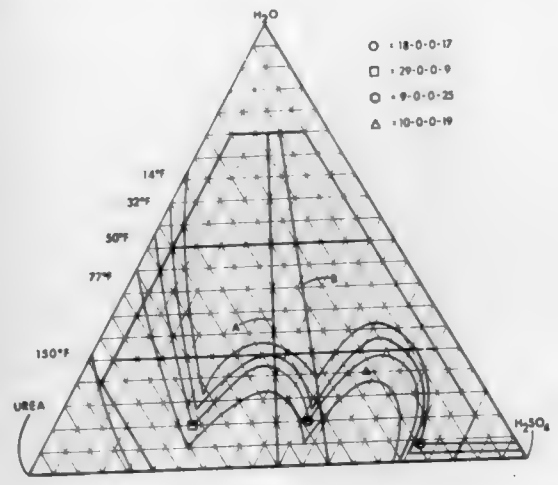
Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 15, 1981, Ser. No. 330,904

Int. Cl.³ C05C *9/00*; C23F *11/16, 11/18*

U.S. Cl. 252—182 **12 Claims**

1. A composition of matter comprising about 5 to about 75 weight percent urea, about 5 to about 85 weight percent sulfuric acid and about 0 to about 75 weight percent water in which said urea and sulfuric acid, in combination, constitute at least about 25 weight percent of said composition and in which at least a portion of said urea and sulfuric acid are present as a member selected from the group consisting of monourea sulfate, diurea sulfate, and combinations thereof, containing a



corrosion inhibiting amount of a cupric ion-containing compound sufficient to reduce the corrosivity of said composition to stainless steel.

4,404,117

CORROSION PROTECTION FOR NON-AMALGAMATED ZINC

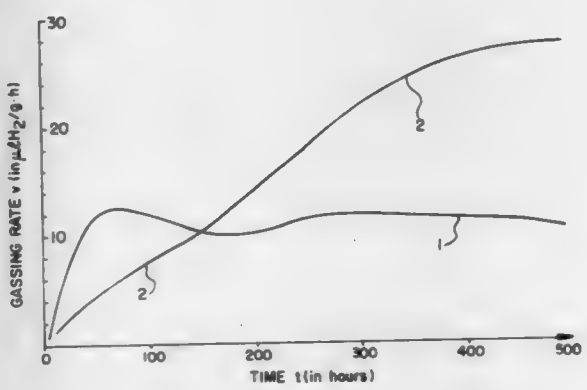
Thorolf Gugenberger, Kelkheim, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jun. 14, 1982, Ser. No. 388,089

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1981, 3128900

Int. Cl.³ H01M *4/26, 4/38, 4/42, 4/54*

U.S. Cl. 252—182.1 **11 Claims**



1. A negative, non-amalgamated zinc powder electrode for galvanic elements with alkaline electrolyte, characterized in that the zinc powder is doped with silver.

4,404,118

REGENERATION OF ADSORBENTS BY LOW TEMPERATURE HYDROGEN STRIPPING

Lily E. Herskovits, Glenview, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 28, 1981, Ser. No. 334,501

Int. Cl.³ B01J *20/34*; C10G *25/12*; C07C *7/13, 7/12*

U.S. Cl. 252—411 R **9 Claims**

1. A method of regenerating a solid adsorbent containing oxygenated hydrocarbonaceous impurities, said impurities being existent as a result of treating a process stream comprising a hydrocarbon having less than 12 carbon atoms per molecule with said adsorbent which comprises:

(a) contacting said solid adsorbent with a hydrogen-rich stream for at least one hour at a low temperature below about 200° F. to hydrogenate at least a portion of said

oxygenated hydrocarbonaceous impurities at said low temperature; and then

(b) increasing said low temperature to a high temperature above 400° F. at a uniform rate less than 50° F. per hour to complete regeneration of said solid adsorbent without loss of adsorption capacity.

6. The method of claim 1 further characterized in that the process stream comprises olefinic and diolefinic hydrocarbons having less than 6 carbon atoms per molecule.

7. The method of claim 1 further characterized in that the adsorbent is a naturally occurring material.

4,404,119

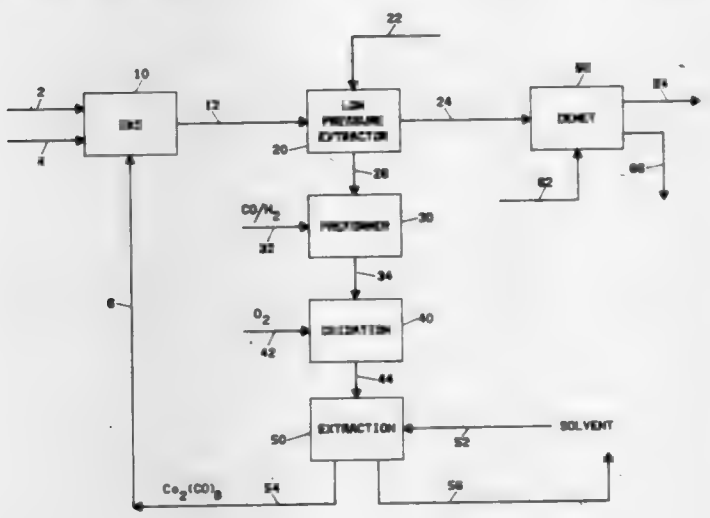
PROCESS FOR RECOVERY OF COBALT OXO CATALYSTS

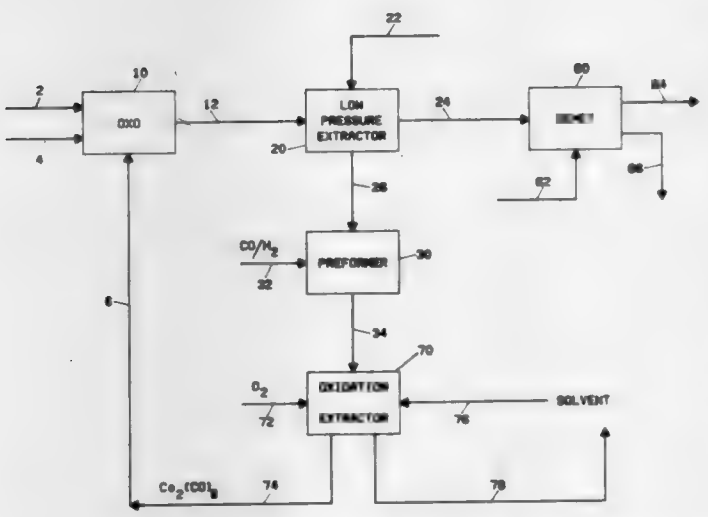
Linda S. Lagace, and David A. Young, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 23, 1981, Ser. No. 333,734

Int. Cl.³ B01J *31/40, 31/20;* C07C *27/22, 45/50*

U.S. Cl. 252—413 **23 Claims**





1. A process for forming an olefinic liquid containing dissolved dicobalt octacarbonyl suitable for use as feed to an olefin hydroformylation reaction, which comprises contacting an aqueous solution containing a water-soluble tetracarbonylcobaltate salt in an oxidation zone with a molecular oxygen-containing gas in the presence of a liquid olefinic extractant for dicobalt octacarbonyl to oxidize at least a portion of said tetracarbonylcobaltate to dicobalt octacarbonyl; and recovering said olefinic liquid containing dissolved dicobalt octacarbonyl from said oxidation zone, said recovered liquid being substantially free of oxidation by-products formed in said oxidation zone from any portion of said olefinic extractant.

10. An improved process for forming dicobalt octacarbonyl which comprises contacting an aqueous solution containing a water-soluble tetracarbonylcobaltate salt in an oxidation zone with a molecular oxygen-containing gas in the presence of gaseous CO charged thereto, to oxidize at least a portion of said tetracarbonylcobaltate to dicobalt octacarbonyl, the partial pressure of carbon monoxide in said oxidation zone being maintained within the range of from about 10 to 4500 psig and the total pressure provided by carbon monoxide and said oxygen-containing gas being within the range of from about 20 to 4500 psig, whereby improved yields of dicobalt octacarbonyl are obtained; and recovering a liquid phase from said oxidation zone containing said dicobalt octacarbonyl.

14. A process for demetalling an oxo product contaminated with cobalt-containing catalyst residues and recovering cobalt carbonyls therefrom which comprises:

(a) treating the oxo product in a first demetalling zone with a first aqueous solution of a Co^{++} salt of an organic or inorganic acid to extract at least a portion of the cobalt-containing catalyst residues from the oxo product into a first aqueous phase and to form products including said Co^{++} salt and $Co[Co(CO)_4]_2$ therein;

(b) substantially completing the demetalling of the thus treated oxo product by treatment in a second demetalling zone with an aqueous organic or inorganic acid in the presence of oxygen to form a Co^{++} salt of said acid;

(c) treating said first aqueous phase with synthesis gas in a high pressure reactor at a pressure in the range of from about 15 psig to about 1500 psig and at a temperature in the range of from about 0° to about 200° C., to form a second aqueous solution containing additional quantities of $Co[Co(CO)_4]_2$;

(d) contacting said second aqueous solution in an oxidation zone with molecular oxygen at a temperature of from about 0° to 90° C. to form $Co_2(CO)_8$;

(e) contacting the aqueous effluent of step (d) with an organic solvent to extract said $Co_2(CO)_8$; and

(f) passing said organic solvent extract to an oxo reaction zone as catalyst.

4,404,120

PROCESS FOR PREPARING HYDROXY-CONTAINING AMINE COMPLEXES WHICH ARE USEFUL AS CATALYSTS FOR TRIMERIZING ISOCYANATES AND PREPARING POLYURETHANES

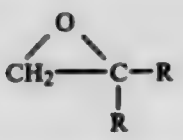
Howard P. Klein, Houston, and George P. Speranza, Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,138

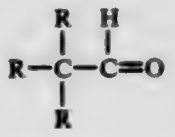
Int. Cl.³ C08G *18/18*

U.S. Cl. 252—426 **13 Claims**

1. A process for preparing catalysts for use in the trimerization of isocyanates and the preparation of urethanes from polyols and isocyanates which comprises reacting an amine with an epoxide of the formula



wherein both R's can be hydrogen or an organic radical in the presence of water and an aldehyde of the formula



wherein R is an alkyl, cycloalkylaryl or alkaryl radical or two R's are joined to form an aromatic or heterocyclic radical, and then stripping off the water.

4,404,121

PROCESS FOR PREPARING POLYOL-CATALYST MIXTURES USEFUL IN THE PREPARATION OF RIGID POLYURETHANE CELLULAR PRODUCTS

Howard P. Klein, Houston, and George P. Speranza, Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,947
Int. Cl.³ B01J *31/02*
U.S. Cl. 252—426 9 Claims

1. A process for preparing polyol-catalyst mixtures useful in the preparaton of rigid polyurethane cellular products which comprises heating a Mannich base compound with water and an epoxide and subsequently removing the water from the reaction mixture, said Mannich base compound being the reaction product of a phenol, an alkanolamine and formaldehyde.

4,404,122

PREPARATION OF SUPPORTED ALKALI METAL BOROHYDRIDE REAGENTS

Robert C. Wade, Ipswich, Mass., assignor to Thiokol Corporation, Chicago, Ill.

Filed Mar. 19, 1982, Ser. No. 360,075
Int. Cl.³ B01J *21/02, 23/04*
U.S. Cl. 252—432 11 Claims

1. A method for preparing a supported alkali metal borohydride reagent, comprising: contacting a high surface area solid support material that is essentially non-reactive with alkali metal borohydrides with a solution of an alkali metal borohydride in an anhydrous aprotic solvent so as to form a coating of said solution on the surface of said support material; and then removing the solvent so as to result in a thin residual coating composed predominantly of said borohydride on the surface of said support material.

4,404,123

CATALYSTS FOR PARA-ETHYLTOLUENE DEHYDROGENATION

Chin-Chiun Chu, North Brunswick, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 15, 1982, Ser. No. 449,913
Int. Cl.³ B01J *23/08, 23/16*
U.S. Cl. 252—463 4 Claims

1. A dehydrogenation catalyst composition especially suitable for promoting the dehydrogenation of para-ethyltoluene to selectively form para-methylstyrene, said catalyst composition comprising:

a. from about 30% to 60% by weight of iron oxide, calculated as ferric oxide;

b. from about 13% to 48% by weight of potassium compound, calculated as potassium oxide;

c. from about 0% to 5% of chromium compound, calculated as chromic oxide; and

d. from about 1% to 15% by weight of a gallium compound, calculated as gallium trioxide.

4,404,124

SELECTIVE HYDROGENATION CATALYST

Marvin M. Johnson; Darrell W. Walker, and Gerhard P. Nowack, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 6, 1981, Ser. No. 260,946
Int. Cl.³ C07C *5/08, 7/167*; B01J *23/48, 23/82*
U.S. Cl. 252—466 PT 9 Claims

1. A catalyst for the selective hydrogenation of acetylene consisting essentially of particles of alpha alumina containing metallic components consisting essentially of palladium and silver wherein the palladium is about 0.01 to about 0.025 weight percent of the catalyst, the weight percent silver is at least twice that of the palladium, the silver is distributed throughout said catalyst particles, and substantially all of the palladium is concentrated in an area within 300 microns of the exterior surface of at least 90 percent of the catalyst particles.

4,404,125

POLYPHENYLENE ETHER RESIN COMPOSITIONS FOR EMI ELECTROMAGNETIC INTERFERENCE SHIELDING

Visvaldis Abolins, Delmar; Richard C. Bopp, Ballston Lake; Joel M. Caraher, Pattersonville, and Eric M. Lovgren, Westerlo, all of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Oct. 14, 1981, Ser. No. 311,268
Int. Cl.³ H01B *1/06*
U.S. Cl. 252—511 20 Claims

1. A thermoplastic molding composition which comprises:

(a) a polyphenylene ether-styrene resin composition; and

(b) a conductive material selected from the group consisting of aluminum flakes, a combination of aluminum flakes with carbon fibers or conductive carbon black, a combination of carbon fibers and conductive carbon black, and carbon fibers, in an amount sufficient to render the composition when molded shielding against electromagnetic interference.

4,404,126

PREPARATION OF ELECTRICALLY CONDUCTIVE POLYMERIC SYSTEMS

Volker Muench, Ludwigshafen; Herbert Naarmann, Wattenheim, and Klaus Penzien, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 29, 1981, Ser. No. 278,668
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1980, 3027529
Int. Cl.³ H01B *1/02*
U.S. Cl. 252—512 3 Claims

1. A process for the preparation of electrically conductive polyacetylene polymers having conductivities greater than 10^{-2} S/cm, which polymers are substantially stable to oxygen degradation, wherein from 0.1 to 95% by weight of black phosphorus and from 0.5 to 25% by weight of sodium, potassium, rubidium or cesium or their amides, are added, in the absence of moisture and of oxygen, to polyacetylene, the percentages stated being based on the weight of the polymer.

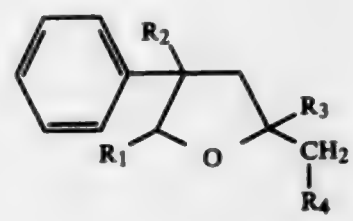
4,404,127

PERFUME COMPOSITIONS AND PERFUMED MATERIALS AND ARTICLES, CONTAINING PHENYL-TETRAHYDROFURANS AS A FRAGRANCE

Antonius J. A. van der Weerdt, Huizen; Roeland Plomp, Almere-Haven, and Willem Apeldoorn, Blaricum, all of Netherlands, assignors to Naarden International N.V., Naarden-Bussum, Netherlands

Filed Oct. 1, 1981, Ser. No. 307,613
Claims priority, application Netherlands, Oct. 6, 1980, 8005518
Int. Cl.³ A61K *7/46*; C11B *9/00*; C11D *17/00*
U.S. Cl. 252—522 R 7 Claims

1. Compounds having the formula



wherein R_1, R_2 and R_3 are selected from the group consisting of H and an alkyl group having 1–3 carbon atoms and R_4 is selected from the group consisting of H, CH_3 and C_2H_5, pro-

viding that R_1, R_2, R_3 and R_4 are not each H and further providing that when R_2 and R_4 are H, one of R_1 and R_3 is not H and the other a methyl group.

4,404,128

ENZYME DETERGENT COMPOSITION

Barry J. Anderson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 29, 1981, Ser. No. 268,215
Int. Cl.³ C11D *1/10, 3/12*
U.S. Cl. 252—546 **5 Claims**

1. A detergent composition substantially free of phosphate materials comprising:

(a) from about 5% to about 40% of a detergent surfactant selected from the group consisting of anionic, nonionic, zwitterionic, ampholytic and cationic surfactants and mixtures thereof;

(b) from about 0.005% to about 0.2% of pure proteolytic enzyme;

(c) from about 10% to about 50% of a hydrated sodium Zeolite A; and

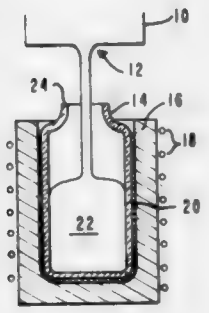
(d) from about 5% to about 30% of a water-soluble nitrilotriacetate, the ratio of the hydrated sodium zeolite A to the water soluble nitrilotriacetate being from about 1:3 to about 3:1.

4,404,129

SEQUESTERING OF RADIOACTIVE WASTE

H. Larry Penberthy, and Dennis J. Hotaling, both of Seattle, Wash., assignors to Penberthy Electromelt International, Inc., Seattle, Wash.

Filed Dec. 30, 1980, Ser. No. 221,376
Int. Cl.³ C09K *3/00, 11/04*
U.S. Cl. 252—629 **9 Claims**



1. A process for sequestering radioactive waste elements oxides in a leach resistant enclosure for prolonged storage comprising:

incorporating the radioactive elements oxides within the structure of a glass by melting said oxides under a batch blanket with suitable glass forming raw materials or premelted frit to form a substantially homogeneous radioactive molten glass having a selected coefficient of expansion;

providing a support mold having an opening and which is lined with inert leach-resistant cladding glass having a thermal expansion characteristic which is sufficiently close to the expansion characteristic of the said radioactive glass to permit annealing and cooling without cracking or spalling;

heating said mold and said cladding glass to at least the temperature at which said cladding glass does not crack excessively when molten glass contacts it during the casting step;

casting said radioactive glass within said cladding glass held in said mold;

sealing the opening in said cladding glass with inert leach-resistant glass to form a mass of radioactive glass clad substantially in inert leach-resistant glass;

annealing and cooling said mass in such a way as to avoid substantial cracking.

4,404,130

PROCESS FOR THE PLUTONIUM DECONTAMINATION OF AN ORGANIC SOLVENT

Richard Fitoussi, Paris, and Claude Musikas, Villebon, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 11, 1981, Ser. No. 242,656
Claims priority, application France, Mar. 13, 1980, 80 05626
Int. Cl.³ G21F *9/06*
U.S. Cl. 252—631 **12 Claims**

1. A process for the plutonium decontamination of an organic solvent, comprising adding to said organic solvent a reducing agent which is soluble therein and consists of a dialkyl dithiophosphoric acid, bringing the organic solvent containing the reducing agent into contact with an acid aqueous solution and separating the aqueous solution containing the plutonium from the decontaminated organic solvent.

4,404,131

METHOD OF PRODUCING A FACTOR-VIII(AHF)-HIGH-CONCENTRATE

Otto Schwarz, and Yendra Linnau, both of Vienna, Austria, assignors to Immuno Aktiengesellschaft für chemisch-medizinische Produkte, Vienna, Austria

Filed Jul. 29, 1981, Ser. No. 287,912
Claims priority, application Austria, Aug. 27, 1980, 4338/80
Int. Cl.³ C07G *7/00*
U.S. Cl. 260—112 B **8 Claims**

1. An improved method of producing a factor-VIII(AHF)-high-concentrate having a specific activity of at least 2.5 units AHF and a fibrinogen content of less than 0.25 mg/mg protein from human or animal plasma by a multi-step fractionation of said plasma, in particular by cryoprecipitation and purification by means of protein precipitating agents, such as polyethylene glycol, wherein the improvement comprises subjecting a solution fraction purified by these multi-step fractionation measures and enriched in factor VIII(AHF) to a deepfreezing and thawing operation in the presence of an alcohol and processing the resulting precipitate into a stable form.

4,404,132

BLOOD COAGULATION PROMOTING PRODUCT

Gautam Mitra, Kensington, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Continuation-in-part of Ser. No. 153,396, May 27, 1980, abandoned. This application Feb. 5, 1982, Ser. No. 345,988
Int. Cl.³ C07G *7/00;* A61K *35/14, 35/16, 37/02*
U.S. Cl. 260—112 B **4 Claims**

1. A sterile lyophilized storage stable concentrate for controlling bleeding in hemophilia, free of thrombin, heparin, thromboplastin activity, anticomplement activity, depressor activity, and activated Factor X, and containing coagulation Factors II, VII, IX, and X in non-activated form and containing no greater amounts of calcium-activated factors and Factor VIII Inhibitor Bypassing Activity substance than that found in concentrates of Factor II, VII, IX, and XI that have not been treated, respectively, with calcium or a water-insoluble inorganic coagulation-physiologically-surface-active material in the absence of calcium which would produce a Factor VIII Inhibitor Bypassing Activity substance in such concentrates and having a specific activity of at least about 1.5 Factor IX units per milligram of total protein and a Factor IX:Factor VII ratio of at least about 6:1, a Factor IX:Factor II ratio of about 1:1 to 2:1, a Factor IX:NAPTT ratio of at least about 5:1 on a Units per milliliter basis and a Factor II Specific Activity of about 1.0–4.0 Units per milligram of total protein.

4,404,133

PEPTIDES AND METHOD FOR SYNTHESIZING THE SAME

Noboru Yanaihara, Shizuoka, and Koji Konno, Iwaki, both of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1981, Ser. No. 272,979
Claims priority, application Japan, Jun. 25, 1980, 55-86952
Int. Cl.³ C07C *103/52*; G01N *33/00*
U.S. Cl. 260—112.5 R 6 Claims

1. A peptide with a primary structure represented by the general formula (I):

X-Ser-Gln-Gly-Gly-Ser-Asn-Y

wherein

(1) X represents H-Tyr-Gln-Ala-Lys and Y represents a hydroxyl group,

(2) X represents pGlu-Ala-Lys(N^{ϵ}-Tyr-H) and Y represents a hydroxyl group, or

(3) X represents pGlu-Ala-Lys and Y represents a Tyr-OH group. with the proviso that (a) —Lys(N^{ϵ}-Tyr-H) means that the amino group at the ϵ-position of the side chain of lysine has been bonded to tyrosine via a peptide bonding, and (b) pGln means a group formed by removing a hydroxy group of the carboxy group of pyroglutamic acid.

4,404,134

COLLAGEN SPONGE

Udo Becker, Munich; Konrad Braun, Ebedorfergrund, and Norbert Heimburger, Marburg an der Lahn, all of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg an der Lahn, Fed. Rep. of Germany

Division of Ser. No. 169,842, Jul. 17, 1980, Pat. No. 4,331,766.
This application Feb. 26, 1982, Ser. No. 352,954
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1979, 2929144
Int. Cl.³ C07G *7/00*
U.S. Cl. 260—112.5 R 2 Claims

1. A collagen sponge prepared by treating collagen-containing human or animal tissue with pepsin to form a pepsin-treated collagen, dialyzing said pepsin-treated collagen at a temperature in the range of 4° C. to 25° C. with a phosphate:buffered isotonic solution containing a basic amino acid at a concentration of 5 to 20 mmols/l to form a collagen solution, and heating said solution to precipitate sponge-forming collagen fibrillae therefrom.

4,404,135

ENKEPHALIN DERIVATIVES

David A. Jones, Evanston, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 284,428, Jul. 20, 1981, abandoned. This application Aug. 9, 1982, Ser. No. 405,975
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 E 2 Claims

1. 1-[N-[N-[N-(2,6-dimethyl-D-tyrosyl)-D-methionyl]-glycyl]-N-methyl-L-phenylalanyl]-2-pyrrolidinemethanol, monohydrochloride

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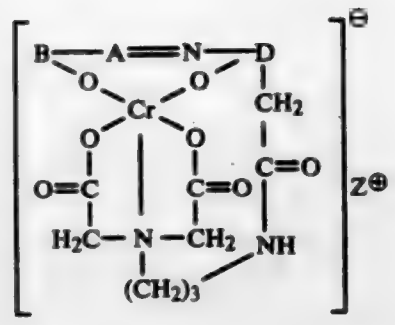
4,404,136

CHROME COMPLEXED AZO OR AZOMETHINE HEXADENTATE DYES

Elbert M. Idelson, West Newton, and Patrick F. King, Needham, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 14, 1981, Ser. No. 330,509
Int. Cl.³ C07C *107/04*; C09B *45/06*, *45/16*; G03C *5/54*
U.S. Cl. 260—147 4 Claims

1. An ortho, ortho'-dihydroxy azo or azomethine dye compound represented by the formula



wherein A is —N— or —CH; B is a radical of benzene or naphthalene; D is a radical of benzene, naphthalene, pyrazolone or pyrimidine provided that the methylene group connected to the radical represented by D is attached to the position ortho to that of the oxygen atom; and Z is a cation.

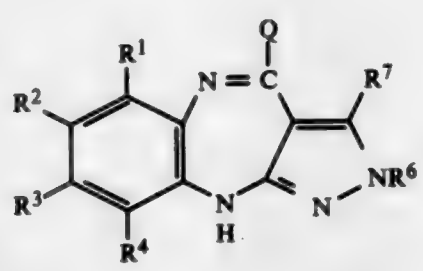
4,404,137

PYRAZOLO [3,4-b][1,5]BENZODIAZEPINE COMPOUNDS

Jiban K. Chakrabarti, Camberley, and Terrence M. Hotten, Farnborough, both of England, assignors to Lilly Industries Limited, London, England

Filed Oct. 2, 1980, Ser. No. 193,200
Claims priority, application United Kingdom, Oct. 16, 1979, 7935846
Int. Cl.³ A61K *31/55*; C07D *487/04*
U.S. Cl. 260—239.3 T 2 Claims

1. An intermediate compound of formula



in which R^1, R^2, and R^3 independently represent hydrogen, halogen, or C_{1-4} haloalkyl,

R^4 is hydrogen;

in which R^6 is hydrogen, C_{1-6} alkyl, C_{3-7} cycloalkyl, or C_{3-7} cycloalkyl C_{1-4} alkyl

in which R^7 is C_1–C_4 alkyl or hydrogen; and

Q is hydroxyl, thiol or amino.

4,404,138

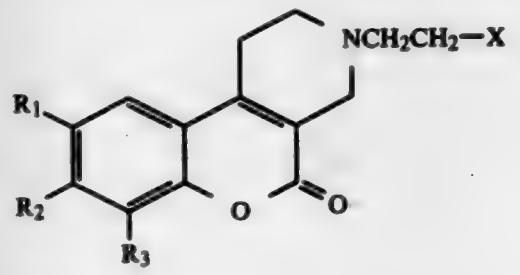
3-[2-(AZABICYCLO) ETHYL]-1,2,3,4-TETRAHYDRO-5H-[1]BENZOPYRANO[3,4-c]PYRIDIN-5-ONES

David T. Connor, Ann Arbor; Charles F. Schwender, Dexter; Roderick J. Sorenson, and Paul C. Unangst, both of Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

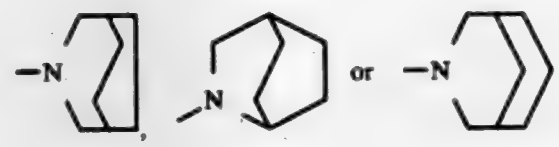
Filed Jun. 22, 1982, Ser. No. 391,197
Int. Cl.³ C07D *491/052*
U.S. Cl. 260—244.4 19 Claims

1. A compound having the structural formula I

I



wherein R_1 is H, alkyl of from 1 to 6 carbon atoms, alkoxy of from about 1 to 6 carbon atoms, hydroxy, nitro, halo, amino, or C_{1-4} alkanoylamine; R_2 is H, hydroxy, alkyl of from 1 to 6 carbon atoms, alkoxy of from 1 to 6 carbon atoms or phenyl; R_3 is H, or alkoxy of from 1 to 6 carbon atoms; R_1 and R_2 taken together are OCH_2O; R_2 and R_3 taken together are CH=CH—CH=CH; X is



and the pharmaceutically acceptable salts thereof, provided that R_1 is not hydroxy when R_2 is OC_2H_5 and X is



4,404,139

ADDITION PRODUCTS OF TERMINALLY UNSATURATED POLYIMIDE DERIVATIVES WITH A DIARYL CONJUGATED BUTADIYNE

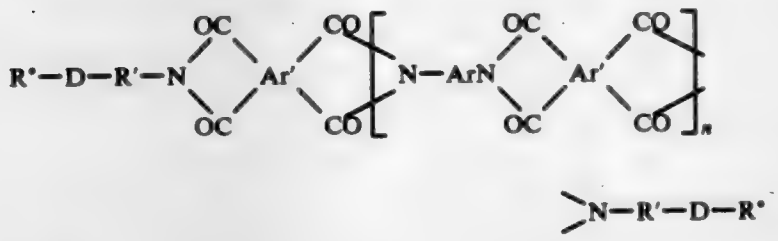
Gaetano F. D'Alelio, deceased, late of South Bend, Ind. (by St. Joseph Bank and Trust Company, executor), and Phillip A. Waitkus, Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

Continuation-in-part of Ser. No. 199,615, Oct. 22, 1980, abandoned. This application Mar. 2, 1982, Ser. No. 353,870

Int. Cl.³ C07D *209/34, 471/00;* C08F *22/40*

U.S. Cl. 548—423 **29 Claims**

1. The Diels-Alder addition product of (1) a conjugated diyne of the formula $Ar^*C{\equiv}C{-}C{\equiv}CAr^*$, with (2) an aromatic polyimide dienophile having the formula:



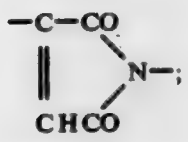
wherein:

Ar^* is a monovalent aromatic radical;

Ar′ is a tetravalent aromatic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to the adjacent carbon atoms in Ar′ except in the case of Ar′ being a naphthalene radical, one or both pairs of the carbonyl groups may be attached to peri-carbon atoms;

Ar is a divalent aromatic radical; and

D is a divalent dienophile group selected from the class consisting of —C(R)=C—, a non-conjugated —C≡C—, and



R is hydrogen or a hydrocarbon or two or three hydrocarbon groups joined by —O—, —S—, —COO—, —OOC— or $—SO_2—$, the hydrocarbon or joined hydrocarbon groups having one to 21 carbon atoms therein;

R′ is a divalent hydrocarbon group of 1–12 carbon atoms;

R^* is hydrogen or a hydrocarbon moiety containing one to 21 carbon atoms; and

n is zero or an integer having a value of one to 20.

4,404,140

MANUFACTURE OF ALKYLANTHRAQUINONES

William L. Evans, Turnersville, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 26, 1981, Ser. No. 314,869

Int. Cl.³ C07C *49/68*

U.S. Cl. 260—369 **10 Claims**

1. A process comprising adding one part by weight of an alkylbenzoylbenzoic acid, wherein the alkyl group contains from 2 to 5 carbon atoms as about a 10 to 40% by weight solution in a suitable solvent, to 7 to 15 parts by weight of 100% sulfuric acid or up to 12% oleum, removing the solvent by distillation at from 20° to 60° C., heating at 80° to 95° C. to cause the corresponding alkylanthraquinone to form, drowning the resulting sulfuric acid or oleum solution in water to dilute the sulfuric acid concentration to from 10 to 40% by weight and separating the alkylanthraquinone from the water.

4,404,141

$\Delta^{9(11)}$- AND Δ^{16}-21-CHLORO-20-KETO STEROIDS OF THE PREGNANE AND D-HOMOPREGNANE SERIES, THEIR PREPARATION AND USE AS INTERMEDIATES FOR THE SYNTHESIS OF HIGHLY EFFECTIVE CORTICOIDS

Klaus Annen; Henry Laurent, and Helmut Hofmeister, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin & Bergkamen, Fed. Rep. of Germany

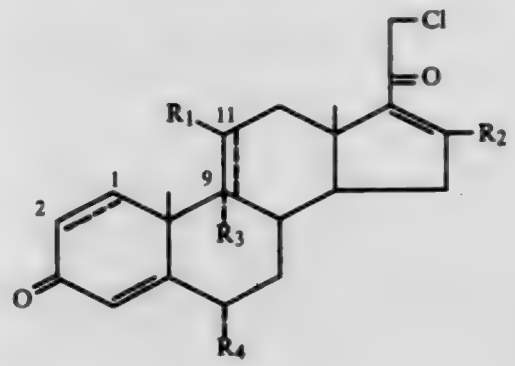
Filed Mar. 9, 1982, Ser. No. 356,615

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1981, 3109459

Int. Cl.³ C07J *7/00*

U.S. Cl. 260—397.3 **14 Claims**

1. A Δ^{16}-21-chloro-20-keto steroid, of the formula



wherein

$C_1{=}{=}{=}C_2$ and $C_9{=}{=}{=}C_{11}$ each independently is a CC-single or CC-double bond,

R_1 is hydrogen or hydroxy,

R_2 is hydrogen or methyl,

R_3 is hydrogen or fluorine, provided that when R_3 is fluorine, $C_9{=}{=}{=}C_{11}$ is a CC-single bond, and

R_4 is hydrogen, methyl, or fluorine.

4,404,142

PREPARATION OF CORTICOIDS FROM 17-KETO STEROIDS

Jerry A. Walker, Oshtemo Township, Kalamazoo County, and Edward J. Hessler, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

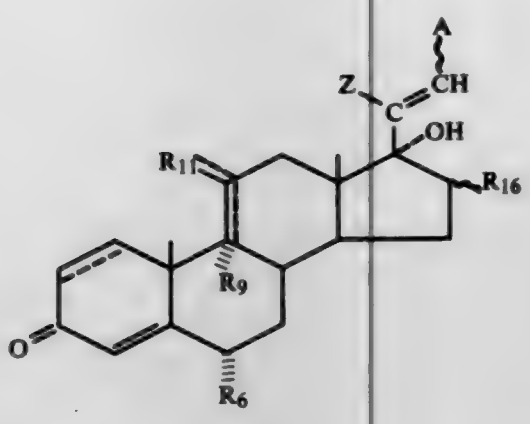
Division of Ser. No. 264,593, May 18, 1981, Pat. No. 4,357,279. This application May 17, 1982, Ser. No. 378,940

Int. Cl.³ C07J *5/00*

U.S. Cl. 260—397.45 **39 Claims**

1. A 20-substituted steroid of the formula

(IX)



where

A is a fluorine, chlorine, or bromine atom,

R_6 is a hydrogen or fluorine atom or methyl group,

R_9 is a hydrogen or fluorine atom, hydroxyl group, —O-Si(R)$_3$ or nothing,

R_{11} is (H); (H,H); (H, β-OH); (H, β-OSi(R)$_3$); or O,

R_{16} is a hydrogen atom or methyl group,

Z is —OR_{20} or —SR_{20},

~ indicates the attached group can be either the α or β configuration, and

. . . is a single or double bond.

4,404,143

PROCESS FOR PRODUCING HIGH CONCENTRATION SOLUTION OF SALT OF ALPHA-SULFO FATTY ACID ESTER

Shizuo Sekiguchi; Yozo Miyawaki, and Toshiaki Ogoshi, all of Funabashi, Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Jun. 16, 1981, Ser. No. 274,478

Claims priority, application Japan, Jun. 16, 1980, 55-80119

Int. Cl.^{3} C07C *139/14*

U.S. Cl. 260—400 **7 Claims**

1. A process for producing a high-concentration aqueous solution of the salt of an alpha-sulfo fatty acid ester comprising the steps of:

(a) neutralizing the sulfonated product of a fatty acid ester with an aqueous caustic alkali solution having a concentration of 15 through 50% by weight, in the presence of an alcohol having 1 to 4 carbon atoms in an amount of 5 through 20% by weight based on the weight of the sulfonated product, to form an acidic neutralized product having a pH of 2.5 through 4 and; then,

(b) adding an aqueous caustic alkali solution having a concentration of 1 through 5% by weight to the acidic neutralized product to adjust the pH of the acidic neutralized product to 6 through 7.

4,404,144

UNSATURATED ANALOGS OF β-ALKYL-β-HYDROXY GLUTARIC ACID AND ESTERS THEREOF

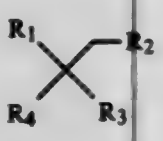
Chi-Dean Liang, Glenview, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 236,092, Feb. 20, 1981, abandoned. This application Dec. 7, 1981, Ser. No. 327,821

Int. Cl.^{3} C07C *69/675, 69/732, 59/185, 59/245, 59/58, 59/76, 49/175, 49/255*

U.S. Cl. 260—410.9 R **15 Claims**

1. A compound of the formula



wherein R_1 is C_9 to C_{19} alkenyl or alkadienyl; R_2 is dialkoxymethyl or carboxy; R_3 is hydroxy or alkoxy carbonylmethyl when R_4 is hydroxy, or R_3 and R_4 are taken together to form a carbonyl oxygen; and pharmaceutically acceptable salts thereof.

4,404,145

PROCESS FOR SEPARATING FATTY ACIDS FROM ROSIN ACIDS

Michael T. Cleary, Elmhurst; Santi Kulprathipanja, Hoffman Estates, and Richard W. Neuzil, Downers Grove, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 333,250, Dec. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 297,453, Aug. 28, 1981, abandoned, which is a continuation-in-part of Ser. No. 252,745, Apr. 10, 1981, Pat. No. 4,329,280. This application Aug. 12, 1982, Ser. No. 407,672

Int. Cl.^{3} C11C *1/08*

U.S. Cl. 260—419 **17 Claims**

1. A process for separating a fatty acid from a feed mixture comprising a fatty acid and a rosin acid, said process comprising contacting said feed mixture at separation conditions with a molecular sieve comprising silicalite, thereby selectively retaining said fatty acid, removing rosin acid from the fatty acid containing molecular sieve and recovering said fatty acid from the molecular sieve.

4,404,146

METAL OXYALKYLATES AND METHOD OF MAKING SAME

Joseph E. Lionelle, and Jeffrey A. Staffa, both of Salida, Colo., assignors to BioSystems Research Inc., Salida, Colo.

Continuation-in-part of Ser. No. 217,119, Dec. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 194,849, Oct. 7, 1980, abandoned. This application Sep. 21, 1981, Ser. No. 304,305

Int. Cl.^{3} C07F *3/06*

U.S. Cl. 260—429.9 **20 Claims**

1. A method of preparing a metal oxyalkylate which comprises reacting, in an aqueous reaction mixture at a temperature of below about 130° C., a metal, a carboxylic acid, and hydrogen peroxide to form said metal oxyalkylate, said hydrogen peroxide being utilized in said reaction mixture as a dilute aqueous solution of up to 10% H_2O_2, precipitating said metal oxyalkylate, and separating the precipitated metal oxyalkylate.

4,404,147

PROCESS FOR THE SYNTHESIS OF 1,1-DIPHOSPHAFERROCENES

Guillaume de Lauzon, and Francois Mathey, both of Paris, France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

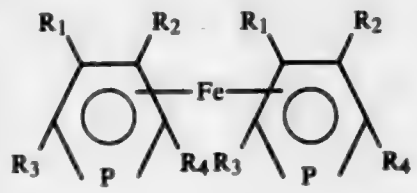
Filed Dec. 2, 1981, Ser. No. 326,615

Claims priority, application France, Dec. 10, 1980, 80 26168

Int. Cl.^{3} C07F *17/02*

U.S. Cl. 260—439 CY **9 Claims**

1. Process for the synthesis of 1,1'-diphosphaferrocenes of the general formula:



in which R_1, R_2, R_3 and R_4 are C_1 to C_6 alkyl, C_6 to C_{12} aryl, C_7 to C_{12} alkaryl, C_7 to C_{12} aralkyl or a hydrogen atom, R_1, R_2, R_3 and R_4 being the same or different, by reacting anhydrous ferrous chloride with a mixture of equimolar amounts of a substituted alkali metal phospholyl and an alkali metal phenyl, wherein before reacting the ferrous chloride with the mixture,

the latter is treated with a Lewis acid at a temperature between −80° C. and +50° C.

4,404,148

METHOD FOR THE PREPARATION OF DIFLUOROMETHOXYAROMATIC COMPOUNDS

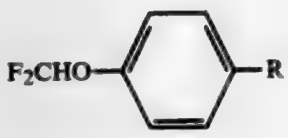
Jack K. Siddens, Princeton Junction, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sep. 20, 1982, Ser. No. 420,164

Int. Cl.³ C07C *121/75, 43/225, 69/712, 79/35*

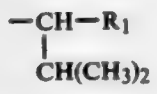
U.S. Cl. 260—465 F **9 Claims**

1. A method for the preparation of a compound of structural formula-(I)



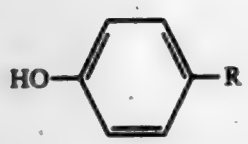
(I)

wherein R is C_1–C_3 alkyl, halogen, nitro, or the moiety



wherein R_1 is CN, $COOR_2$, OH or OR_3; R_2 is C_1–C_3 alkyl; R_3 is tosyl, mesyl or C_2–C_4 alkanoyl; comprising:

reacting one molar equivalent of a compound of structural formula-(II)



(II)

wherein R is as hereinabove defined, with two to three molar equivalents of chlorodifluoromethane added under a pressure of from about 0.4 to 2.5 kg cm^{-2} over a period of time from about 30 minutes to 1.0 hour at a temperature from about 20° to 40° C., and further maintained at the above pressure and temperature ranges for about 0.1 to 6 hours, or until said reaction is essentially complete, in the presence of from about 1740 to 2614 mol percent of added water, acetone used at a rate of 4 ml per gram of the compound of formula-(II), 10 mol percent of benzyltriethylammonium chloride, and simultaneously

adding to the pressurized reaction mixture an aqueous solution of four molar equivalents of an alkali metal hydroxide of sodium or potassium hydroxide over about a 1 to 4 hour period, wherein the concentration of said aqueous solution is such that on completion of the reaction the total amount of water added to the reaction mixture is from about 2614 to 3482 mol percent.

4,404,149

PROCESS FOR PREPARING 2,2-DICHLOROACETOACETYL CHLORIDE

Jean-Claude Perlberger, Miege, Switzerland, assignor to Lonza Ltd., Gampel, Switzerland

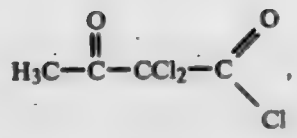
Division of Ser. No. 321,053, Nov. 13, 1981. This application Jun. 1, 1982, Ser. No. 383,935

Claims priority, application Switzerland, Nov. 19, 1980, 8549/80

Int. Cl.³ C07C *51/62*

U.S. Cl. 260—544 Y **6 Claims**

1. Process for producing 2,2-dichloroacetoacetyl chloride having the formula:



characterized in that acetyl chloride is reacted by means of a Lewis acid as a catalyst with chlorine at a temperature of 30° to 60° C., the mole ratio of acetyl chloride to the catalyst being from 1:0.005 to 1:0.5 and the mole ratio of acetyl chloride to the chlorine being from 1:0.1 to 1:1.5, whereby the 2,2-dichloroacetoacetyl chloride results.

4,404,150

CYCLIC PYROPHOSPHATE DERIVATIVES AND THEIR PREPARATION

Masayoshi Tsunekawa, Toyonaka; Nobuyoshi Miyoshi, Ibaraki, and Tamotsu Komura, Nara, all of Japan, assignors to Sankin Industry Co., Ltd., Osaka, Japan

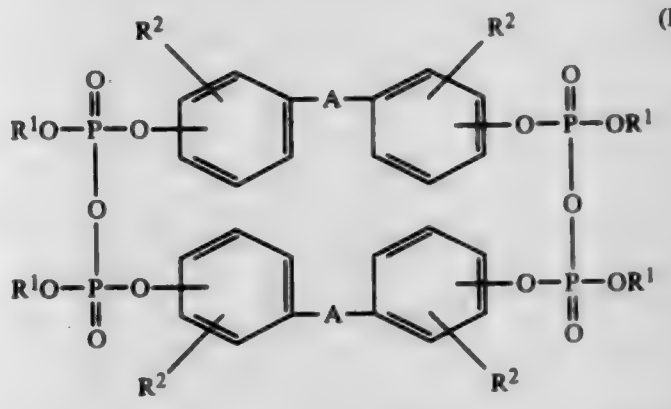
Filed Feb. 5, 1981, Ser. No. 231,914

Claims priority, application Japan, Aug. 20, 1980, 55-114995

Int. Cl.³ C07F *9/15*

U.S. Cl. 260—927 R **17 Claims**

1. A cyclic pyrophosphate derivative having the formula (I):



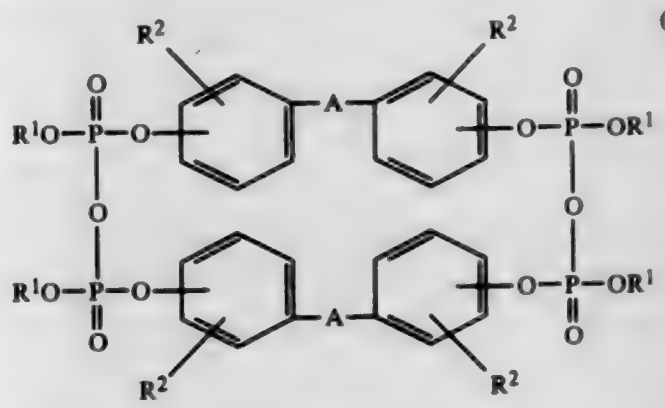
(I)

wherein A represents a direct bond between the two phenyl rings or a divalent moiety selected from the group consisting of lower alkylene, aryl substituted lower alkylene, cycloalkylidene, sulfonyl and oxy;

R^1 represents allyl, acryloyloxy lower alkyl or methacryloxy lower alkyl, in which the lower alkyl can be substituted with halogen; and

R^2 represents independently hydrogen, halogen, lower alkyl or lower alkoxy.

16. A process for the production of cyclic pyrophosphate derivatives having the formula (I)



(I)

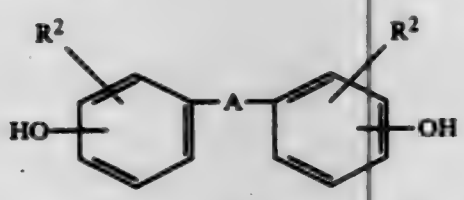
wherein A represents a direct bond between the two phenyl rings or a divalent moiety selected from the group consisting of lower alkylene, aryl substituted lower alkylene, cycloalkylidene, sulfonyl and oxy;

R^1 represents allyl, acryloyloxy lower alkyl or methacryloyloxy lower alkyl, in which the lower alkyl can be substituted with halogen; and

R^2 represents independently hydrogen, halogen, lower alkyl or lower alkoxy;

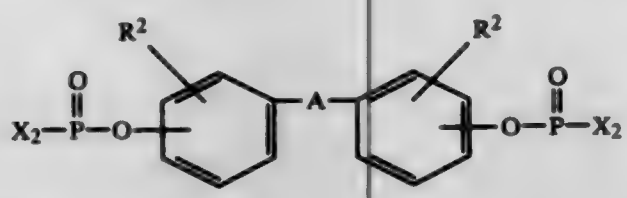
the process comprising:

reacting, under anhydrous conditions, a phenol derivative having the formula (II)



(II)

with a phosphoryl halide to give the phosphoryl dihalide derivative having the formula (III)



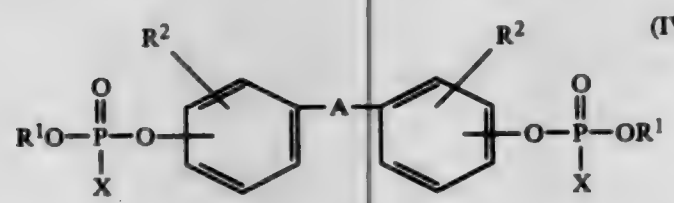
(III)

wherein X is halogen;

adding to the phosphoryl dihalide derivative having the formula (III), under anhydrous conditions, an alcohol having the formula

R^1—OH

to obtain a phosphoryl halide derivative having the formula (IV)



(IV)

which is then hydrolyzed, in the presence of a base, to provide the cyclic pyrophosphate derivative having the formula (I).

4,404,151

DOWN-DRAFT CARBURETOR

Terence Inkpen, Chelmsford, and Frank T. Newbury, Great Dunmow, both of England, assignors to Ford Motor Company, Dearborn, Mich.

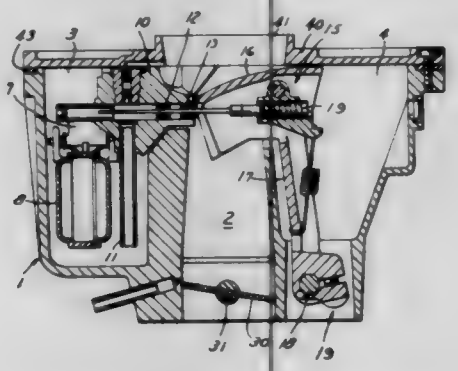
PCT No. PCT/US79/00613, § 371 Date Apr. 18, 1980, § 102(e) Date Apr. 18, 1980, PCT Pub. No. WO80/00470, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 15, 1979, Ser. No. 270,532

Claims priority, application United Kingdom, Aug. 19, 1978, 33965/78

Int. Cl.³ F02M *9/06*

U.S. Cl. 261—44 C **1 Claim**



1. A downdraft carburetor consisting of a one-piece unitary casting supporting the working components of the carburetor, and a non-supporting cover with an opening defining the upper end of an air induction passage, the casting having cavities and walls defining a centrally located induction passage aligned with the opening in the cover, a first cavity defining a float bowl to one side of the induction passage, an opening in the wall of the induction passage connecting the float bowl and induction passage for the passage of fuel therebetween, a one-piece fuel assembly jet block mounted in the opening consisting of a fuel supply inlet, a float, a fuel induction tube, a fuel passage, and a pair of fuel jet orifices in the fuel passage adapted to receive a fuel metering needle slidably therein, a second cavity on the opposite side of the induction passage and containing a movable wall, the induction passage containing a throttle valve at one end and a venturi-like portion adjacent the other end defined in part by the movable wall to together define a variable area venturi, the movable wall having secured thereto a fuel metering needle having an end movable and receivable within the orifices in the fuel passage to be capable of varying fuel flow upon movement of the movable wall to vary the venturi size, means connecting the movable wall cavity to the induction passage at a point between the throttle valve and venturi so as to subject the second cavity to the level of pressure in the induction passage, and a vacuum servomotor connected to the movable wall and mounted on the casting and communicating with the second cavity for moving the movable wall in response to changes in level of the pressure in the second cavity to vary the venturi size and fuel flow.

4,404,152

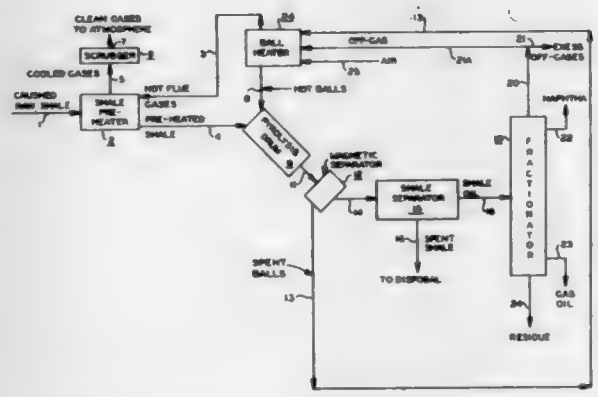
IRON-CONTAINING REFRACTORY BALLS FOR RETORTING OIL SHALE

Lyle W. Pollock, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 209,926, Nov. 24, 1980, Pat. No. 4,371,481, which is a division of Ser. No. 9,627, Feb. 6, 1979, Pat. No. 4,360,565, which is a division of Ser. No. 837,130, Sep. 28, 1977, Pat. No. 4,160,719. This application Sep. 30, 1982, Ser. No. 431,484

Int. Cl.³ B01J *2/00*

U.S. Cl. 264—15 **8 Claims**



1. A process for preparing iron-containing ceramic balls, containing about 10 to 90 weight percent iron and the balance a high refractory alumina, which comprises:

(a) leaching particles of spent aluminum-containing shale from a shale oil-retorting process with dilute alkali,

(b) washing the leached particles, to form an alumina-containing liquor and solid particles,

(c) separating the liquor,

(d) precipitating alumina from said liquor with alkali as a floc,

(e) admixing said alumina floc and sufficient water to form an extrudable wet admixture,

(f) extruding said wet extrudable admixture to provide wet cylinders of about ¼×¼ inch to ½×½ inch,

(g) tumbling said wet cylinders sufficiently to reshape said cylinders to ball-shape, thereby providing first size wet alumina balls of about ¼ inch to ½ inch in diameter,

(h) contacting said first size wet alumina balls with iron particles thereby substantially coating said first size wet alumina balls with iron particles,

(i) admixing said iron particle coated first size alumina balls with further water and alumina thereby over-coating further alumina over said iron particles and forming second size alumina over-coated iron particle-coated alumina balls,

(j) heating the resulting second-size over-coated balls to a temperature of about 2800° F. to 3400° F. for a time sufficient to convert said second-size balls to iron-containing ceramic balls, and

(k) cooling said fired ceramic balls in the substantial absence of molecular oxygen,

wherein said iron-containing ceramic balls contain an inner alumina-core, a shell of iron-particles around said core, and an outer coating of ceramic alumina.

4,404,153

PROCESS FOR THE PREPARATION OF POLY(DISILYL)SILAZANE POLYMERS AND THE POLYMERS THEREFROM

John H. Gaul, Jr., Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 225,274, Jan. 15, 1981, Pat. No. 4,340,619. This application Aug. 10, 1981, Ser. No. 291,539

The portion of the term of this patent subsequent to Jul. 20, 1989, has been disclaimed.

Int. Cl.³ D01C *5/00*

U.S. Cl. 264—29.2 **4 Claims**

4. A silicon carbide containing ceramic article prepared by a method which consists of

(A) adding and mixing a conventional ceramic filler with an R'_3SiNH—containing silazane polymer;

(B) forming an article of the desired shape from the filled R'_3SiNH—containing silazane polymer;

(C) heating the article formed in (B) in an inert atmosphere or in a vacuum to an elevated temperature of at least 750° C. until the silazane polymer is converted to silicon carbide containing ceramic, which silazane polymer is obtained by a process which consists of contacting and reacting in an inert, essentially anhydrous, atmosphere, a chlorine-containing disilane or a mixture of chlorine-containing disilanes, wherein the number of diorgano-substituted silicon atoms does not exceed the number of monorgano-substituted silicon atoms, of the general formula

$$(Cl_aR_bSi)_2$$

with a disilazane having the general formula

$$(R'_3Si)_2NH$$

at a temperature in the range of 125° C. to 300° C. while distilling by-produced volatile products, wherein

R is vinyl, an alkyl group of 1–3 carbon atoms or the phenyl group;

R′ is vinyl, hydrogen, an alkyl group of 1–3 carbon atoms or the phenyl group;

a has a value of 0.5–3;

b has a value of 0–2.5 and the sum of a+b is equal to three.

4,404,154

METHOD FOR PREPARING CORROSION-RESISTANT CERAMIC SHAPES

Richard M. Arons, Wheaton, and Joseph T. Dusek, Downers Grove, both of Ill., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Continuation of Ser. No. 101,363, Dec. 7, 1979, abandoned. This application Nov. 30, 1981, Ser. No. 326,088

Int. Cl.³ C04B *33/24*

U.S. Cl. 264—62 **6 Claims**

1. A method of preparing a refractory ceramic shape having an impermeable and corrosion-resistant metallic tungsten coating comprising:

preparing a ceramic casting slip consisting of a finely divided ceramic powder, 0.5 to 5.0 weight percent yttria powder and a suspending agent in a water vehicle, the particle size of the ceramic powder being such that a shape formed from the slip will fire to a density of at least 90% of theoretical and the shape will have a predetermined shrinkage rate during firing,

forming a green ceramic shape from the slip,

drying the green shape until it contains about 5 to 12 weight percent moisture,

preparing a coating slip consisting of finely divided tungsten powder and about 0.5 to 1.0 weight percent ammonium alginate as a suspending agent in a water vehicle, the particle size of the tungsten powder being such that the tungsten slip will fire to a density of at least 80% of theoretical and will have a shrinkage rate during firing which is about the same as the shrinkage rate of the ceramic slip,

applying a coating of the tungsten slip to the surface of the damp green ceramic shape to form a green composite shape, and

firing the green composite shape in a vacuum or reducing atmosphere at a temperature and for a period of time sufficient to sinter and densify the green ceramic and the tungsten coating, thereby forming a dense ceramic shape having an impermeable and corrosion-resistant metallic tungsten coating.

4,404,155

METHOD OF FORMING GAS CHROMATOGRAPHIC SUPPORTS

Christian J. Miga, Littleton, Colo., and Millard Mills, Santa Barbara, Calif., assignors to Manville Service Corporation, Denver, Colo.

Filed Feb. 3, 1982, Ser. No. 345,274

Int. Cl.³ C04B *35/64*

U.S. Cl. 264—67 **9 Claims**

1. A method of forming gas chromatographic supports comprising:

(a) blending together bentonite clay and diatomaceous earth wherein said bentonite clay is present in amounts between 0.5% to 3.0% by weight and said diatomaceous earth is present in amounts between 97% to 99.5% by weight;

(b) forming a water solution containing between 1% to 9% of a flux material;

(c) spraying said water solution onto said blended bentonite clay and diatomaceous earth in amounts between 36% and 50% by weight of said blended bentonite clay and diatomaceous earth and mixing to form a composition;

(d) forming said composition into a plurality of separate masses;

(e) drying said masses and crushing them to a predetermined mesh size;

(f) calcining said crushed masses for a period of time from about 20 to 45 minutes at temperatures of from about 1800° to 2100° F.; and

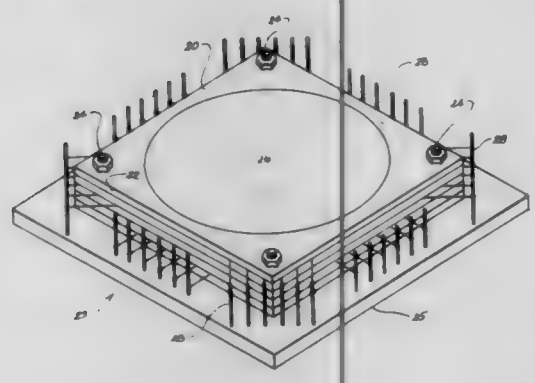
(g) crushing said calcined crushed masses and separating into various mesh sizes from about 30 to 140 mesh.

4,404,156

METHOD FOR MAKING CONTINUOUS FIBER REINFORCED CAST THERMOPLASTIC STRUCTURES

Ronald K. Ogletree, 392 Fairlane Dr., Spartanburg, S.C. 29302

Filed Aug. 3, 1981, Ser. No. 289,117
Int. Cl.[3] B29C *6/00*; B29D *3/02*
U.S. Cl. 264—162 12 Claims



1. A method for making a reinforced cast thermoplastic structure comprising: in a mold having a base member and a cavity of a desired shape, plural pins being disposed about said mold and projecting from said base member and perpendicular thereto;

selectively arranging continuous fiber reinforcing elements extending across said cavity to form a plurality of spaced fiber layers, securing said elements to said pins at a plurality of elevations corresponding to said spaced fiber layers;

adding a thermoplastic polymeric material to said mold in fluid form; and solidifying said material in said shape generally without deformation or change in arrangement of said reinforcing fibers in said mold cavity.

4,404,157

PROCESS FOR THE CONTINUOUS PRODUCTION OF VISCOSE RAYON YARNS HAVING HIGH DEGREE OF WHITENESS

Gianfranco Angelini, Buscate; Novello Leoncini, Limbiate; Bice Pallesi, Milan, and Ugo Paoletti, Monza, all of Italy, assignors to SNIA VISCOSA Societa' Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Jun. 17, 1981, Ser. No. 274,369
Int. Cl.[3] D01F *11/02*
U.S. Cl. 264—195 9 Claims

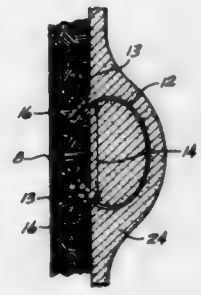
1. In a process for the continuous production of viscose rayon yarns, which comprises extruding a viscose solution into a coagulating bath, drawing and coagulating the resultant extruded filaments in said bath, and advancing said filaments in a substantially helical path while said filaments undergo treatments required for the production of a finished yarn, the improvement wherein, after said filaments are withdrawn from said coagulating bath, said filaments are further coagulated until a coagulation index not higher than 1 is attained, and said filaments having a coagulation index not higher than 1 are treated with water having a pH between 4.0 and 5.5, a Ca^{2+} content not higher than 1.5 mg/l, and a Mg^{2+} content not higher than 1.0 mg/l, until the content of the following elements in the yarn has been reduced to values not higher than indicated: total sulphur 0.2%, sulphur bound as sulphides 0.02%, elemental sulphur 0.06%, iron 40 ppm, zinc 700 ppm, and lead 30 ppm.

4,404,158

METHOD OF MAKING A BUILDING PANEL

Ralph C. Robinson, Redmond, Wash., assignor to Olympian Stone Company, Redmond, Wash.

Division of Ser. No. 884,437, Mar. 8, 1978, Pat. No. 4,223,502.
This application Nov. 26, 1979, Ser. No. 97,197
Int. Cl.[3] B28B *21/44, 21/70*; B29D *3/00*
U.S. Cl. 264—263 6 Claims



1. A method of forming a building panel from a plurality of relatively thin, pre-sized panels of a selected facing material such as granite or marble, comprising the steps of:

(a) placing the panels of the selected facing material face down into a supporting form;

(b) placing sealing means between adjacent edges of said panels and said form;

(c) securing anchors to the back surface of each panel of said facing material;

(d) applying connectional bond breaker to the back surface of each panel;

(e) forming a slurry of concrete and chopped glass fiber strands;

(f) spraying the slurry directly on the back surface of said panels of facing material to cover said panels and said anchors to form an integral, panel supporting frame; and,

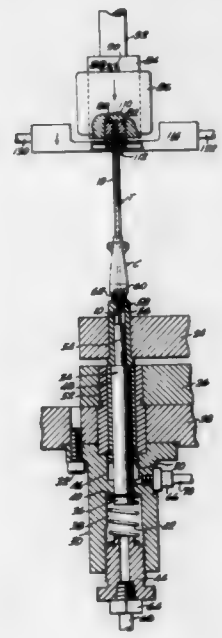
(g) curing said slurry and removing the completed building panel from said supporting form.

4,404,159

APPARATUS AND PROCESS FOR FORMING A TAPERED TIP END ON A PLASTIC TUBE

Richard H. McFarlane, 2571 Kaneville Rd., Geneva, Ill. 60134

Filed Mar. 16, 1981, Ser. No. 243,899
Int. Cl.[3] B29C *24/00*
U.S. Cl. 264—296 26 Claims



1. An apparatus for forming an open ended feathered tapered tip on a thin-walled plastic tube, said apparatus comprising:

a die assembly structured and configured to receive and shape the tip of said plastic tube, a mandrel fixedly at-

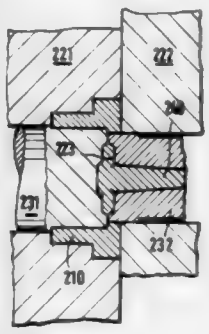
tached in supported relation to a movably mounted piston means, a support means structured for fixed positioning of said tube relative to said movable die assembly and movable mandrel, said mandrel disposed in aligned relation to said die assembly and structured to at least partially support said plastic tube thereon in slidable relation thereto; said die assembly comprising a heated die portion and a cooled die portion; activating means connecting to both said heated and cooled die portions and structured to dispose said die portions into and out of operative forming relation to said tube tip and in surrounding relation to said mandrel; said heated die portion including a cavity comprising a lower portion and an upper portion disposed in contiguous relation to one another, said upper portion having a tapered configuration and resultant decreasing diameter from its junction with said lower portion to a terminal end of said cavity, said terminal end defining a seat for engagement with the distal end of said mandrel protruding from said tube tip being formed, said mandrel and supporting piston movable relative to the substantially fixed position of said tube along with said die assembly, said tube tip being heated and forced into said upper portion of said cavity, whereby said tube tip is formed into an open ended feathered tapered configuration in conformance with the configuration of said cavity.

4,404,160

METHOD AND DEVICE FOR ELIMINATING THE FEEDER HEAD PORTION INJECTION MOULDING PROCESS

Giancarlo Bonissone, and Piero Mulas, both of Genoa, Italy, assignors to F.I.P. Formatura Iniezione Polimeri S.p.A., Genoa, Italy

Filed Mar. 27, 1981, Ser. No. 248,224
Claims priority, application Italy, Apr. 15, 1980, 12509 A/80
Int. Cl.³ B29F *1/05*
U.S. Cl. 264—328.9 **4 Claims**



1. A method for eliminating a circumferentially continuous feeder head portion which results at the end of the injection moulding of a tubular article of thermoplastic material, comprising filling a mould for forming the tubular article, and moving a movable obturator into a terminal portion of a thermoplastic material feed duct of the mould so as to block the feed duct, and further moving said obturator to compress the plastic material in the mould while maintaining the end of said obturator tangential to the surface of the tubular article which has just been formed.

2. A device for eliminating a circumferentially continuous feeder head portion at the end of the injection moulding of a tubular article of thermoplastic material, comprising: a mould body having a tubular cavity for forming a tubular article and a circumferentially continuous feed duct for injecting material into the tubular cavity; and at least one annular obturator movable between a rest position in which it leaves open the circumferentially continuous feed duct for the material being injected, and a working position in which it intercepts said feed duct and compresses the material injected into the tubular cavity; wherein said obturator is tangential to the cylindrical surface of the tubular article which is formed in the tubular cavity when said obturator is in the working position.

4,404,161

PROCESS FOR INJECTION MOLDING A RAPIDLY CRYSTALLIZING POLYETHYLENE TEREPHTHALATE COMPOSITION AT REDUCED MOLD TEMPERATURES

Peter Bier, New Martinsville, W. Va., assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 95,274, Nov. 19, 1979, abandoned. This application Apr. 15, 1981, Ser. No. 254,351
Int. Cl.³ B29F *1/08*
U.S. Cl. 264—328.16 **6 Claims**

1. A process for injection molding a thermoplastic composition comprising:

(a) intimately blending (i) a polyethylene terephthalate having an intrinsic viscosity of at least 0.3 dl/g measured as a 0.5% by weight solution in a 1:1 mixture of phenol and tetrachloroethane at 25° C.; and (ii) a multi-phase composite interpolymer comprising:

(A) about 25 to 95 weight percent of a first elastomeric phase polymerized from a monomer system comprising about 75 to 99.8% by weight C_1 to C_6 alkyl acrylate, 0.1 to 5% by weight crosslinking monomer, 0.1 to 5% by weight graftlinking monomer, said crosslinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups all of which polymerize at substantially the same rate of reaction, and said graftlinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups, at least one of which polymerizes at a substantially different rate of polymerization from at least one other of said reactive groups; and

(B) about 75 to 5 weight percent of a final, rigid thermoplastic phase which is polymerized in the presence of said elastomeric phase and which is free of epoxy groups; and

(b) injection molding said blend into a mold held at a temperature of no more than 120° C. and no less than 80° C.,

said molding temperature and the amount of interpolymer being selected to yield articles with crystallinities similar to those obtainable when the same article is molded from the same composition without the interpolymer at mold temperatures of 140° C.

5. A composition particularly suitable for injection molding into molds held at temperatures less than 120° C. comprising

(a) 35 to 75 wt % of a polyethylene terephthalate having an intrinsic viscosity of at least 0.3 dl/g measured as a 0.5% by weight solution in a 1:1 mixture of phenol and tetrachloroethane at 25° C.;

(b) 5 to 20 wt % of a multiphase composite interpolymer comprising:

(A) about 25 to 95 weight percent of a first elastomeric phase polymerized from a monomer system comprising about 75 to 99.8% by weight C_1 to C_6 alkyl acrylate, 0.1 to 5% by weight crosslinking monomer, 0.1 to 5% by weight graftlinking monomer, said crosslinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups all of which polymerize at substantially the same rate of reaction, and said graftlinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups, at least one of which polymerizes at a substantially different rate of polymerization from at least one other of said reactive groups; and

(B) about 75 to 5 weight percent of a final, rigid thermoplastic phase which is polymerized in the presence of said elastomeric phase and which is free of epoxy groups; and

(c) 20 to 45 wt % of glass fibers.

4,404,162

PROCESS FOR PRODUCING A THIN-WALL DEEP DRAWN CONTAINER OF THERMOPLASTIC RESIN

Kyosuke Miki, Yokohama; Masahiro Takeuchi, Yamato, and Toshio Suzuki, Yokohama, all of Japan, assignors to Sumitomo Bakelite Company Ltd., Japan

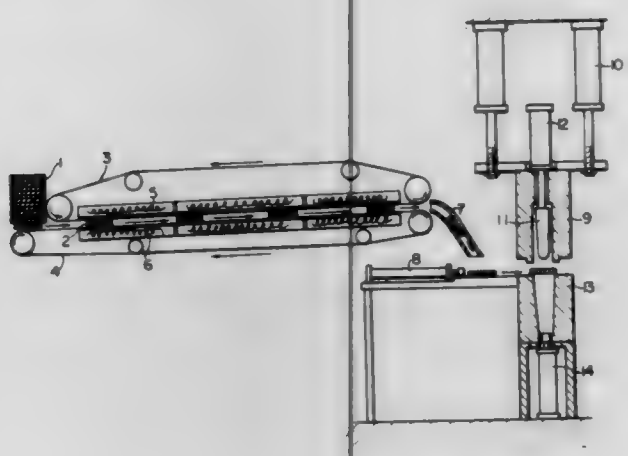
Filed Jul. 11, 1980, Ser. No. 167,588

Claims priority, application Japan, Jul. 16, 1979, 54-89231; Feb. 27, 1980, 55-22655

Int. Cl.[3] B29C *17/04*; B29D *9/04*

U.S. Cl. 264—514

2 Claims



1. A process for producing a thin-wall, deep-drawn container from a thermoplastic resin sheet by plug assist pressure-forming in a cavity of a female mold, comprising

precutting a mono-layer or multi-layer sheet having a thickness of 1.2 mm or more composed mainly of a crystalline polypropylene, extruded through a T-die by a melt-extrusion method to a tetragonal shape, having an area slightly larger than the area of the periphery of a ring-shaped flange part of the container to be formed,

feeding the thus precut tetragonal sheet between a pair of conveyor belts, and passing the resulting assembly between hot press plates by rotating the conveyor belts therebetween, thereby passing the assembly between the hot press plates while pressing the assembly so that the entire surfaces of both upside and downside of the sheet are uniformly contacted with the surfaces of the hot press plates through the conveyor belts to preheat uniformly the sheet to a moldable temperature within the range from the crystal melting point of the crystalline polypropylene (Tm) to (Tm-50)°C.,

moving the preheated sheet to a position over an aperture end of the cavity of the female mold,

subsequently applying a pressing pressure of 100 kg/cm^2 or more to the preheated sheet from the upside and the downside by means of a pair of ring-shaped forging means, the inner shape and size of the forging means being the same as those of the aperture end of the cavity of the female mold, whereby the somewhat inside of the peripheral part of the sheet is forged and cooled to form the ring-shaped flange part inside the peripheral part of the tetragonal precut sheet,

drawing the sheet, while firmly fixing said flange part of the sheet with said pair of forging means, into the cavity of the female mold to a depth of at least 80% of the depth of the cavity by means of a tapered metal plug maintained at a temperature of (Ts+10)°C. to (Ts−40)°C., wherein Ts is the temperature of the preheated sheet, which plug is composed of a front part and a rear part, and in which plug in all the plug cross-sections including a central axis along the movement direction of the plug and parallel to the central axis of the plug, the front part is substantially semi-elliptical; the central axis of the plug is on the short axis of the ellipse; the boundary line between the front part and the rear part nearly corresponds to the long axis of the ellipse; when the length of the long axis is expressed by a and the length of the short axis is expressed by b, the shape of the contour line of the front part of plug is in the range of $5 \geqq a/b \geqq 1$; the contour line of the front part and the contour line of the rear part are smoothly connected with each other; the contour line starting from the boundary line between the front part and the rear part and approaching the rear end involves a substantially linear part; the shape of contour of the cross-section perpendicular to the central axis of the plug coincides with the shape of contour of the aperture end of the female mold; and the size of the above cross-section contour of the plug is smaller than the aperture end of the female mold over the whole circumference by a degree substantially corresponding to the thickness of said sheet, at the same height as the aperture end of the female mold, so that at the final plug insertion position in the female mold the preheated sheet drawn into the cavity of the female mold can contact with the entire surface of the plug, and which plug decreases in diameter gradually from the rear part end to the front part, and in which plug the ratio between the length from the height of aperture end of the female mold to the front part of the plug on the central axis of the plug and the depth from the aperture end of the female mold to the bottom of the female mold is in the range of 0.85 to 0.98 at the final plug insertion position in the female mold, and the ratio between the outer diameter of the plug and the inner diameter of the female mold is 0.7 to 0.95 at the height of the boundary line between the front part of plug and the rear part of plug; thereby preliminarily stretching the part of the original sheet inside the flange part,

and then introducing a pressure fluid from the plug side onto the sheet, to stretch the part of the sheet inside the flange part by the pressure difference until the area stretch ratio reaches 9 or more based on the original sheet, whereby the sheet is formed on the surface of the cavity of the female mold so as to give a molding dapth vs. caliber ratio of at least 2.0.

4,404,163

NEUTRON GENERATOR TUBE ION SOURCE CONTROL SYSTEM

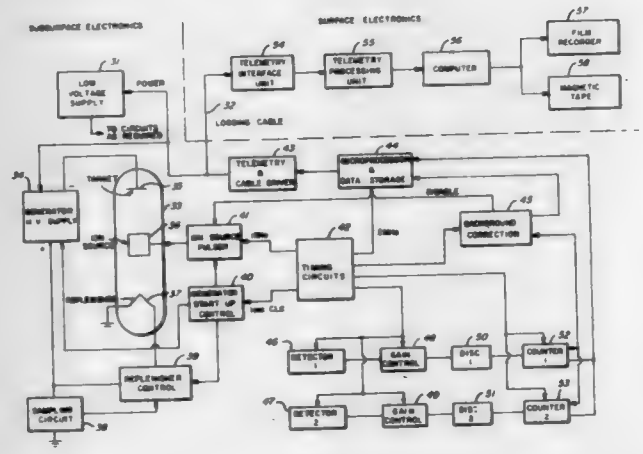
James R. Bridges, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Dec. 3, 1980, Ser. No. 212,915

Int. Cl.[3] G21G *4/02*

U.S. Cl. 376—119

5 Claims



1. A system for controlling the output of a neutron generator tube of the deuterium-tritium accelerator type and having a replenisher and an ion source to produce sharply timewise defined pulsed of neutrons for well logging use, comprising:

means for inputting a relatively low voltage input control pulse to said ion source said control pulse having approximately a square wave waveform;

means for amplifying said input control pulse to provide an amplified switching pulse;

first electronic switching means, responsive to said amplified switching pulse, for controlling a voltage source applied to a primary winding of a relatively high voltage pulse

transformer having a secondary winding operably connected to said ion source;

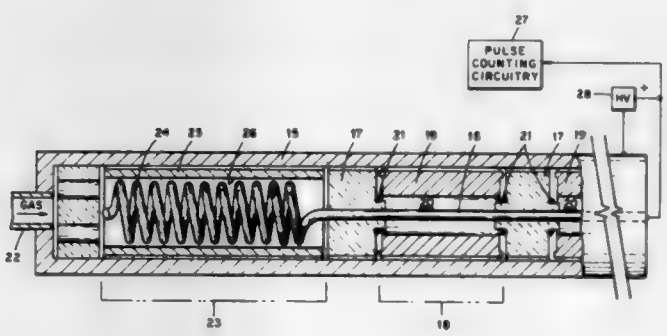
delay means responsive to said input control pulse for producing a time delayed secondary control pulse in response thereto; and second electronic switching means operably connected to said ion source and responsive to said time delayed control pulse for controlling an electronic quenching means operably connected to said secondary winding of said pulse transformer, whereby said first and second electronic switching means operate in timed relationship with each other to produce a rapidly rising relatively high voltage pulse in said secondary winding of said pulse transformer which is applied to said ion source and which is rapidly quenched in a timed relationship by said quenching means.

4,404,164

NEUTRON FLUX PROFILE MONITOR FOR USE IN A FISSION REACTOR

Manfred K. Kopp, Oak Ridge, and Kenneth H. Valentine, Lenoir City, both of Tenn., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Sep. 15, 1981, Ser. No. 302,338
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—154 **7 Claims**



1. A neutron flux profile monitor for use in a fission reactor core comprising:

a tubular housing;

a plurality of spaced apart fission counters disposed within and equally spaced along the axis of said housing formed about a common anode disposed along the axis of said housing;

a dielectric material disposed between each of said plurality of counters and about said common anode conductor thereby forming in combination with said anode a delay line;

a high voltage source connected to one end of said anode;

an LC terminating means for terminating the opposite end of said anode so that a first component of the current pulse induced in said anode from a fission event in one of said counters and propagating toward said opposite end thereof is reflected back along said anode to arrive at said one end of said anode at a time differing from the arrival of a second component of said current pulse propagating toward said one end of said anode; and

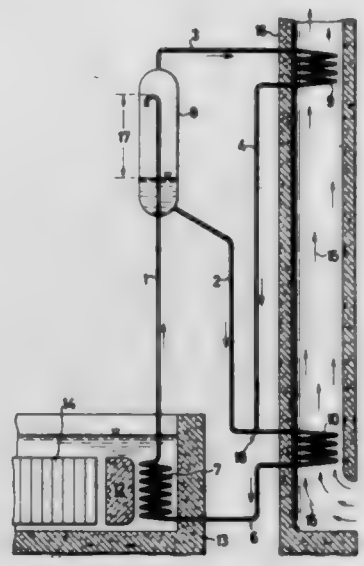
means for detecting the time difference of arrival of said first and second current pulse components at said one end of said anode as an indication of the counter location of said fission event along said anode.

4,404,165

PROCESS FOR CARRYING AWAY THE DECAY HEAT OF RADIOACTIVE SUBSTANCES

Hans Hesky, Runkel, and Armin Wunderer, Hofheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,806
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014289
Int. Cl.³ G21C *15/00*
U.S. Cl. 376—272 **15 Claims**



1. Process for carrying away decay heat of a radioactive substance contained in a storage container by means of a circulating liquid in a closed loop comprising

absorbing said decay heat by heat exchanger means in thermal communication with said radioactive substance;

vaporizing a portion of said liquid into a vapor;

receiving said liquid and said vapor and separating the same into respective phases in separator means including a chamber in which the separated liquid reposes at a liquid level, said liquid and vapor entering the chamber through an adjustable vertical riser conduit coupled with said heat exchanger means and extending an adjustable distance within said chamber for an adjustable height difference above said liquid level, the heat exchanger and riser conduit acting in concert to drive the circulation of said liquid and vapor by percolator pump action, with the height difference corresponding to the pressure drop in the closed loop;

receiving in condenser means the separated vapor from said separator means;

condensing said vapor to liquid phas by removal of heat therefrom;

combining in return conduit means the separated liquid from said separator means and the condensation liquid from said condenser means; and

returning the combined liquid to said heat exchanger means.

4,404,166

METHOD FOR REMOVING BINDER FROM A GREEN BODY

Raymond E. Wiech, Jr., San Diego, Calif., assignor to Witec Cayman Patents, Limited, Cayman Islands, Cayman Islands

Filed Jan. 22, 1981, Ser. No. 227,271
Int. Cl.³ B22F *3/00*
U.S. Cl. 419—36 **16 Claims**

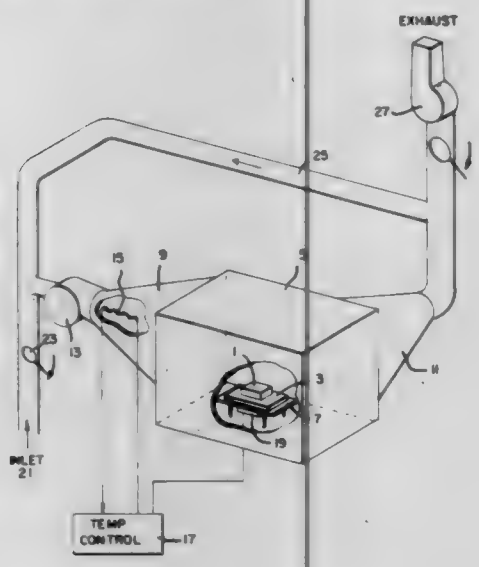
1. A method of producing an article from a fired particulate configuration whereby binder material is removed from the particulate configuration prior to firing without swelling the particulate configuration and consequent imparting of sheer or tensile force to the particulate configuration prior to the firing thereof, comprising the steps of:

(1) mixing together predetermined amounts of sinterable

particulate material and binder whereby the binder covers substantially all of the surface of the particles of said particulate material,

(2) forming said mixture from (1) into a desired configuration,

(3) heating said configuration to a temperature above the flow point of said binder,



(4) blowing a non-saturated, chemically inert atmosphere over said configuration at sufficient flow rate to cause atmosphere at the surface of said configuration to be turbulent and unsaturated to remove a predetermined amount of binder therefrom,

(5) removing said atmosphere in (4) from the vicinity of said configuration, and

(6) sintering said stripped and formed configuration from (4).

4,404,167

PROTECTING STEEL AND FERROUS METALS AGAINST H_2S CORROSION

Iosif L. Rozenfeld, ulitsa Gubkina, 4, kv. 96; Vera M. Brusnikina, Teply Stan, Mikroraion 9B, korpus 7, kv. 262; Larisa V. Frolova, Perekopskaya ulitsa, 18, kv. 80; Alevtina A. Lyashenko, Shelepikhinskoe shosse, 17, korpus 1, kv. 86; Jury V. Sokolov, ulitsa Shabolovka, 21, korpus 3, kv. 117; Boris V. Bocharov, Teply Stan, 9B, korpus D, kv. 148; Alexandr V. Fokin, Bolshoi Rzhevsky pereulok, 11, kv. 14; Nikolai E. Legezin, 9 Parkovaya ulitsa, 6, korpus 1, kv. 85, all of Moscow; Ekaterina V. Dergobuzova, ulitsa Sovetskaya, 10, kv. 59, Vidnoe Moskovskoi oblasti; Boris N. Altshuler, Kerchenskaya ulitsa, 24, kv. 119, Moscow; Saida A. Zelenaya, ulitsa Lermontova, 11, kv. 13, and Emma S. Korobova, ulitsa Lenina, 66, kv. 25, both of Volgodonsk Rostovskoi oblasti, all of U.S.S.R.

Continuation of Ser. No. 38,865, May 14, 1979, abandoned, which is a division of Ser. No. 944,150, Sep. 20, 1978, abandoned.

This application Mar. 23, 1981, Ser. No. 246,270

Int. Cl.³ C23F *11/04, 11/14*

U.S. Cl. 422—12 **5 Claims**

1. A method for protecting steel and other ferrous metals against corrosion in hydrogen sulfide containing media, by contacting said metal with an effective amount of an organic inhibitor also exhibiting antifoam and foam suppressing activity and having the general formula:

$$R''-(N(R')-R-CN)_n$$

where R is a divalent normal or branched chain saturated hydrocarbon radical, containing from 1 to 6 carbon atoms, n is an integer equal to 1 or 2;

when n=1,

R′ and R″ are selected from the group consisting of hydrogen, normal or branched alkyl containing from 1 to 20 carbon atoms, normal or branched alkenyl containing from 3 to 14 carbon atoms, oxyalkyl, containing from 1 to 20 carbon atoms, and cycloalkyl containing from 5 to 6 carbon atoms; or

R′ and R″ are $-(CH_2)_m-$, where m = 2–10, or $-(CH_2)_2-NH-(CH_2)_2-$ or $-(CH_2)_2-O-(CH_2)_2-$;

when n=2,

R′ is selected from the group consisting of hydrogen, normal or branched alkyl containing from 1 to 20 carbon atoms, and normal or branched alkenyl containing from 3 to 14 carbon atoms,

R″ is $-(CH_2)_k-$, where k=2–10, or $-(CH_2)_2-NH-(CH_2)_2-$.

4,404,168

APPARATUS FOR THE DISCONTINUOUS PRODUCTION OF ARTICLES FROM FOAMED PLASTICS

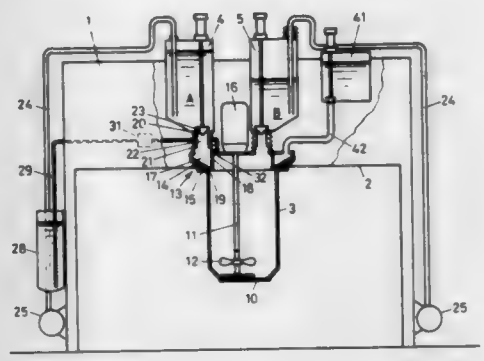
Beat Baumberger, St. Gallen, Switzerland, assignor to Mirabed AG, Zug, Switzerland

Filed Aug. 24, 1981, Ser. No. 295,562

Claims priority, application Switzerland, Sep. 26, 1980, 7246/80

Int. Cl.³ B01F *15/02*; B01J *4/02, 13/00*

U.S. Cl. 422—119 **7 Claims**



1. Apparatus for the discontinuous production of articles from a foamed plastic, having a mixing vessel and at least two metering vessels for the basic ingredients, which metering vessels are located above said mixing vessel, and characterized in that the mixing is supported for tilting movement to discharge its contents, a lid for the mixing vessel, said lid being provided with an annular space (17) communicating with a lower annular slot (19) which opens towards the inner wall of the mixing vessel, and one of the metering vessels (4,5) having an outlet opening (20) which discharges an ingredient into the annular space through said annular slot and onto the inner wall of said mixing vessel.

4,404,169

PROCESS FOR PRODUCING CUPRIC HYDROXIDE

Hartmut Ploss, and Jürgen Lehne, both of Hamburg, Fed. Rep. of Germany, assignors to Norddeutsche Affinerie AG, Hamburg, Fed. Rep. of Germany

Filed Nov. 18, 1982, Ser. No. 442,749

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1981, 3145995

Int. Cl.³ C01G *3/02*

U.S. Cl. 423—35 **13 Claims**

1. A process for producing cupric hydroxide which comprises the steps of:

(a) forming an aqueous suspension of copper oxychloride;

(b) adding to said suspension a stabilizing amount of phosphate ions;

(c) reacting said copper oxychloride in said suspension with an alkali metal hydroxide and/or an alkaline earth metal hydroxide in the presence of said phosphate ions to precipitate cupric hydroxide;

(d) washing the precipitate formed in step (c);

(e) suspending the precipitate washed in step (d) in an aqueous phase; and

(f) stabilizing the precipitate suspended in step (e) by adding thereto an acid phosphate to bring the pH to a value of 7.5 to 9.

4,404,170

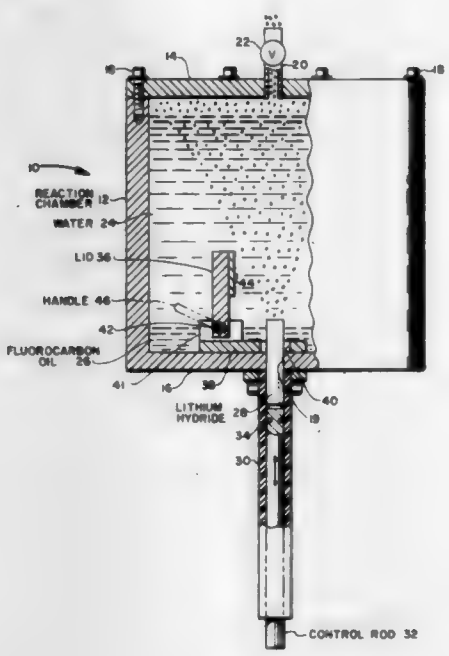
INSTANTANEOUS START AND STOP GAS GENERATOR

Don W. Caudy, Sunbury; Donald J. Hackman, Columbus, both of Ohio; Robert T. Hoffman, Kailua, Hi., and Dale G. Uhler, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 23, 1982, Ser. No. 371,142

Int. Cl.³ B01J *7/02*

U.S. Cl. 422—237 **9 Claims**



REACTION MODE

6. A gas generator which can be selectively switched between reaction and nonreaction modes comprising:

a reaction chamber having top and bottom ends with an opening in its bottom end;

said chamber containing reactive and nonreactive liquids, the nonreactive liquid having a greater specific gravity than the reactive liquid;

a solid reactant member;

means for projecting the solid reactant member through the bottom opening of the chamber, through the nonreactive liquid, and into the reactive liquid for generating gas; and

means for withdrawing the solid reactant member from the reactive liquid into the nonreactive liquid for terminating the generation of gas.

4,404,171

TOWER FOR DRYING GASEOUS CHLORINE

Hiroaki Satoh; Yasuyuki Tabata; Kouichi Gomikawa, all of Tokyo, and Masaru Hiruta, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

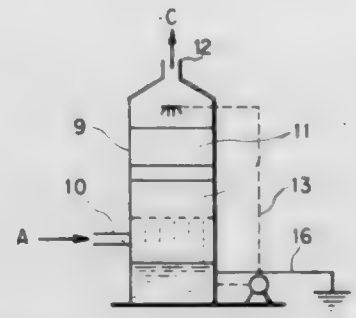
Filed Oct. 16, 1981, Ser. No. 312,150

Claims priority, application Japan, Oct. 28, 1980, 55-151079

Int. Cl.³ B01J *19/02*

U.S. Cl. 422—241 **5 Claims**

1. A tower for drying gaseous chlorine, comprised off a high polymeric composite material wherein said composite material is comprised of 10% to 30% by weight of carbon fibers, 5% to 20% by weight of electroconductive carbon black, and 50% to 85% by weight of a polymeric matrix, wherein said polymeric matrix is comprised of 5% to 25% by weight of modified polypropylene and 75% to 95% by weight of polypropylene;



said tower also having electrical grounding means associated therewith.

4,404,172

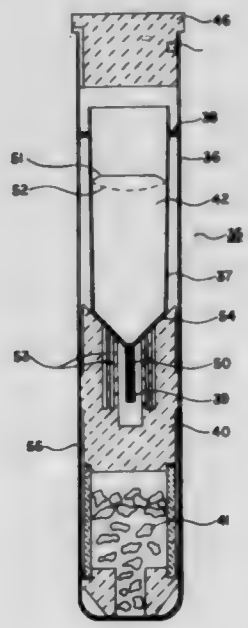
METHOD AND APPARATUS FOR FORMING AND GROWING A SINGLE CRYSTAL OF A SEMICONDUCTOR COMPOUND

William A. Gault, Ewing Township, Mercer County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,444

Int. Cl.³ C30B *21/02*

U.S. Cl. 422—248 **7 Claims**



1. An apparatus for growing a single crystal of a Group II-VI or III-V semiconductor compound by the gradient zone freeze method including:

(a) an autoclave having contained therein:

(i) a chamber provided with heating means for containing and volatilizing the volatile component of the compound to be grown:

(ii) a growth crucible communicating with the chamber so that an atmosphere of said volatile component is provided in the growth crucible during crystal growth and having a lower seed well region for containing a seed crystal and a transition region and main growth region extending therefrom for containing charge material of the compound; and

(iii) support means for supporting said crucible, said support means having a configuration so as to cause reduction of radial heat flow and an enhancement of axial heat flow at least around the seed well and transition regions of said crucible during crystal growth.

4,404,173

APPARATUS FOR CONTACTING SUBSTANTIALLY IMMISCIBLE LIQUIDS

Ernst C. Bailey, Lakeland; William E. Vickers, Brandon, and Donald B. Stain, Lakeland, all of Fla., assignors to UNC Recovery Corporation, Mulberry, Fla.

Filed Sep. 24, 1980, Ser. No. 190,266
Int. Cl.³ B01D 11/04; B01F 5/00
U.S. Cl. 422—257 9 Claims

1. An apparatus for forming a dispersion of a first liquid in a second liquid, said liquids being substantially immiscible, comprising a conduit having an upstream section divided into first and second channels of variable length and a downstream section for mixing said first and second liquids, means for varying the length of said first and second channels, means for varying the width of said first and second channels independently of said means for varying the length, means for flowing said first liquid into said first channel, and means for flowing said second liquid into said second channel whereby said liquids mix in said downstream section of said conduit to form said dispersion of said first liquid in said second liquid.

4,404,174

PURIFICATION OF SOLUTIONS OF GALLIUM VALUES BY SERIAL ION EXCHANGE-LIQUID/LIQUID EXTRACTION

Alain Leveque, Paris, and Michel Triollier, Gouvieux, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Nov. 30, 1981, Ser. No. 326,166
Claims priority, application France, Dec. 5, 1980, 80 25832
Int. Cl.³ C01G 15/00
U.S. Cl. 423—112 23 Claims

1. A process for the purification of an aqueous acid solution of gallium values, comprising:

(i) intimately contacting an impure aqueous acid solution of gallium values with a strongly basic ion exchange resin capable of selectively affixing gallium thereto, whereby said gallium values are affixed to said resin, the concentration of chloride ions in said starting aqueous acid solution ranging from about 3.5 to 8 M, and thereafter eluting the gallium from the resin with water to afford a partially purified concentrated solution of gallium chloride;

(ii) adjusting the concentration of the chloride ions in the resulting concentrated aqueous solution to a value ranging from about 4 to 6 M;

(iii) liquid/liquid extracting the adjusted aqueous solution of gallium chloride with an organic phase which comprises an essentially water-insoluble extractant capable of extracting gallium from the aqueous solution, whereby the gallium is transferred into the organic phase, and then separating the organic phase from the aqueous phase;

(iv) selectively washing said organic phase, whereby any remaining impurities are removed;

(v) next transferring the purified gallium from said organic phase into an aqueous solution thereof, and then separating said organic phase from the resulting aqueous phase, whereby said aqueous phase comprises pure gallium chloride.

4,404,175

PREPARATION OF ZEOLITES

Laszlo Marosi, Ludwigshafen; Hans-Ulrich Schlimper, Speyer; Matthias Schwarzmann, Limburgerhof, and Joachim Stabenow, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 29, 1981, Ser. No. 268,379
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1980, 3021580
Int. Cl.³ C01B 33/28
U.S. Cl. 423—329 6 Claims

1. A process for obtaining a crystalline ZSM-5 structural type zeolite of the hydrogen cation form directly which comprises reacting at from 100° to 200° C. in an aqueous solution under autogenous pressure in the absence of both alkali metal ions and quaternary nitrogen bases, and in the presence of a triamine, tetraamine and/or higher amine, an aqueous reaction mixture of SiO_2 and $Al(OH)_3$ formulated to have a SiO_2/Al_2O_3 molar ratio

$$\frac{96 - \frac{20\,n}{L_R + 4}}{\frac{4\,n}{L_R + 4}}$$

which depends on the chain length L_R and number of amine groups n of the amine employed, and an H_2O/amine molar ratio of from 0.4 to 100 and an amine/Al_2O_3 molar ratio of from 5 to 400, and removing the amine from the zeolite pores by combustion.

4,404,176

PREPARATION OF HYDROXYLAMMONIUM SALTS

Otto-Alfred Grosskinsky; Elmar Frommer, both of Ludwigshafen, Fed. Rep. of Germany; Günther Rapp, deceased, late of Ludwigshafen, Fed. Rep. of Germany (by Ruth E. Rapp, legal representative), and Erwin Thomas, Freinsheim, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 1, 1982, Ser. No. 344,615
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1981, 3108257
Int. Cl.³ C01B 21/14
U.S. Cl. 423—387 3 Claims

1. A process for the preparation of hydroxylammonium salts which comprises: catalytically reducing nitric oxide with hydrogen in a dilute aqueous solution of a mineral acid, in the presence of a suspended supported platinum catalyst, at elevated temperatures, wherein the reaction is carried out, in one or more reaction zones, under superatmospheric pressure and wherein the exit gases produced are let down to a lower pressure, and are reacted, in a downstream reaction zone, with the reaction mixture, containing the hydroxylammonium salt, the ammonium salt, the supported platinum catalyst and residual mineral acid, from the upstream reaction zone or zones, or with a fresh aqueous solution of the mineral acid, which contains the supported platinum catalyst in suspension.

4,404,177

METHOD FOR PRODUCING GRAPHITE CRYSTALS

Francis J. Derbyshire, Ewing, and Darrell D. Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,235
Int. Cl.³ C01B 31/04
U.S. Cl. 423—448 13 Claims

1. An improved process for continuously or semi-continuously producing highly oriented graphite crystals, said process comprising:

(A) introducing a source of carbon atoms to a first surface of an artifact comprising a Group VIII metal or mixture of Group VIII metals, said first surface being maintained at a temperature of from about 700° C. to 1800° C.,

(B) maintaining a temperature differential of at least 100° C. across said artifact such that carbon atoms diffuse through said artifact to a generally opposite solid second surface of said artifact, said second surface being maintained at a temperature of from about 500° C. to 1250° C.; and

(C) collecting graphite crystals which form on said second surface from carbon atoms which have diffused through said artifact.

4,404,178
APPARATUS AND METHOD FOR PRODUCING CARBON BLACK

Paul H. Johnson, Bartlesville, Okla., and Harwell E. Benjamin, Ang Thong, Thailand, assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 930,630, Aug. 3, 1978, abandoned. This application Feb. 15, 1980, Ser. No. 121,764

Int. Cl.³ C01B *31/02*; C09C *1/48*

U.S. Cl. 423—450 **34 Claims**

1. In a process for producing carbon black by pyrolysis of a feed hydrocarbon, wherein a gas stream containing carbon black is passed through a means defining a flow path of an indirect heat exchanger on which carbon black deposits are laid down reducing heat transfer efficiency, the improvement comprising cleaning carbon black deposits from said means defining a flow path by:

introducing a mixture containing fluid carrier and additional cleaning carbon black into said means defining a flow path of the heat exchanger, said mixture containing a sufficient amount of additional cleaning carbon black to increase the concentration of carbon black flowing through the means defining a flow path to a concentration effective to remove at least a portion of said carbon black deposits from said means defining a flow path; and by

flowing said mixture along with said gas stream through said means defining a flow path and thereby removing at least a portion of said carbon black deposits from said means defining a flow path.

28. In an apparatus for producing carbon black wherein a gas stream containing carbon black is cooled in means defining a flow path of an indirect heat exchanger on which carbon black deposits are laid down which reduce heat transfer efficiency, the improvement comprising:

means for flowing additional cleaning carbon black into the means defining a flow path to increase the concentration of carbon black flowing therethrough to a concentration effective to remove at least a portion of such carbon black deposits from the heat exchanger.

4,404,179
DESTRUCTION OF HYPOCHLORITE

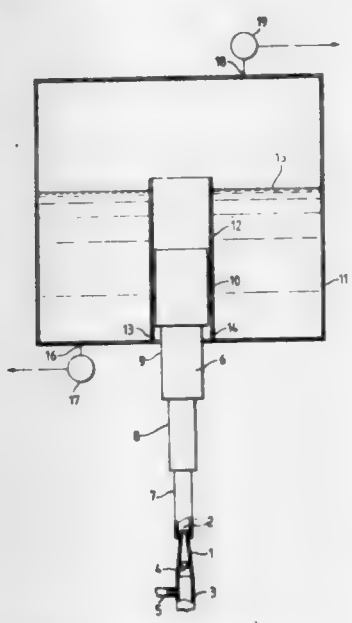
Stephen J. Eastwood, Wigan, and Kelvin S. Timms, Runcorn, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jul. 20, 1981, Ser. No. 284,949

Claims priority, application United Kingdom, Aug. 4, 1980, 8025353

Int. Cl.³ C01B *17/02*

U.S. Cl. 423—500 **16 Claims**



1. A process for the destruction of hypochlorite by reacting the hypochlorite with acid to produce chlorine in an apparatus of the type comprising

(1) a nozzle for converting pressure energy of a liquid into kinetic energy,

(2) at least one desorption tube extending from the nozzle and having a gas-tight connection thereto and having an inlet end of larger cross-sectional area than the outlet of the nozzle, and

(3) a vessel connected to the outlet end of the desorption tube and having a gas-tight connection thereto, the vessel being equipped with means for removing chlorine and liquid therefrom,

the process comprising causing pressured acidified liquid to be charged to the nozzle and to issue therefrom in the form of a jet which diverges downstream of the nozzle and comes into contact with the entire inner periphery of a part of the desorption tube to seal a totally enclosed space between the jet and the desorption tube, mixing hypochlorite solution with the acidified liquid before the liquid issues from the nozzle, and removing from the vessel gaseous chlorine and liquid which have passed to the vessel.

4,404,180
MANUFACTURE OF HYDROGEN SULFIDE

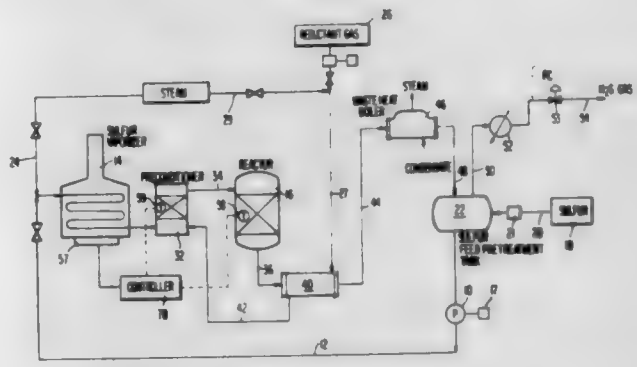
Ian Drum, Calgary, Canada; Richard S. Madenburg, Boise, Id.; Douglas M. Paulsrude, Eugene, Oreg.; Carroll H. Sherman, Monaca, Pa.; Frank G. Turpin, Boise, Id., and Gerry A. Wheatcroft, Calgary, Canada, assignors to Home Oil Company Limited, Calgary, Canada and Morrison-Knudsen Company, Inc., Boise, Id.

Continuation-in-part of Ser. No. 179,528, Aug. 19, 1980, Pat. No. 4,332,774. This application Aug. 13, 1981, Ser. No. 292,360

The portion of the term of this patent subsequent to Jun. 1, 1999, has been disclaimed.

Int. Cl.³ C01B *17/16*; C22B *17/00, 21/00*; C01G *9/00*

U.S. Cl. 423—563 **8 Claims**



1. Method for operating hydrogen sulfide manufacturing apparatus to eliminate requirements for storage of hydrogen sulfide product gases by providing for production of hydrogen sulfide on demand,

such hydrogen sulfide manufacturing apparatus including

an interconnected system for combining sulfur, sulfur reductant feedstock and steam for reaction to produce hydrogen sulfide,

a source of gaseous sulfur reductant feedstock having a predetermined temperature,

means for introducing gaseous sulfur-reducing feedstock to such system including means for interrupting such introduction of sulfur-reducing feedstock,

vaporizer and superheater means including separately controllable heat source means for vaporizing liquid sulfur and superheating such sulfur vapors,

means for supplying liquid sulfur at a predetermined temperature,

means for delivering such liquid sulfur into the vaporizer and superheater means,

means for quantitatively controlling delivery of liquid sulfur to the vaporizer and superheater means,

means for supplying steam at a predetermined temperature,

means for controlling supply of steam to the hydrogen sulfide manufacturing system including means for introducing steam into the vaporizer and superheater means to be superheated and means for introducing steam through such means for introducing gaseous sulfur-reducing feedstock,

reaction vessel means for reacting sulfur vapors with such sulfur-reducing feedstock and steam to produce product gases including hydrogen sulfide, and

discharge means for the product gases including valve means for interrupting discharge of product gases,

such method comprising the following steps for interrupting the production of hydrogen sulfide resulting from introduction of liquid sulfur, sulfur-reducing feedstock, and steam into such system and for placing the system in standby condition,

interrupting input of such sulfur-reducing feedstock to such system,

controllably continuing introduction of sulfur through such vaporizer and superheater at least until reductant feedstock has been removed from the system,

controlling the separately controllable heat source means for the vaporizer and superheater means to maintain temperatures within such system at a level related to system temperatures maintained during production of hydrogen sulfide, and

controllably continuing introduction of steam to such system with a major portion of the steam being introduced through such vaporizer and superheater means and a minor portion being introduced through such means for introducing sulfur-reducing feedstock to maintain a positive flow of steam to prevent back-flow of other gases being delivered by such vaporizer.

4,404,181

EXTENDED-LIFE TISSUE FIXATIVE COMPOSITION AND METHOD OF USING THE SAME

Thomas Mauthner, Livonia, Mich., assignor to Cambridge Chemical Products, Inc., Ft. Lauderdale, Fla.

Filed Oct. 15, 1981, Ser. No. 311,682

Int. Cl.³ G01N *1/28;* A01N *1/02;* A61K *35/12;* C12N *5/00*

U.S. Cl. 424—3 **14 Claims**

1. An extended-life aqueous tissue histological fixative composition or solution comprising components expressed as approximate percent by weight based on total weight of the solution: glutaraldehyde, 5.5 to 10.0; a boric acid-borate buffer expressed as sodium tetraborate-10H_2O, 0.010 to 0.1, and boric acid, 0.120 to 0.6; a buffer stabilizer comprising one or more water soluble ascorbic acid compounds expressed as ascorbic acid, 0.100 to 0.8; and a metal complexing agent comprising one or more water soluble citric acid compounds expressed as sodium citrate, 0.06 to 1.0; and water to make 100%.

4,404,182

ETHIODIZED OIL EMULSION FOR INTRAVENOUS HEPATOGRAPHY

Michael Vermess, Potomac; Dulal C. Chatterji, Germantown; George J. Grimes, Jr., Laurel, and Joseph F. Gallelli, Bethesda, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jan. 8, 1980, Ser. No. 110,293

Int. Cl.³ A61K *49/04*

U.S. Cl. 424—5 **4 Claims**

1. A method of showing opacification in the liver and spleen of animals by injecting intravenously a dosage of emulsified ethiodized oil which contains about 30–35% of oil particles in the size range of 2–3 microns to increase selectively the X-ray attenuation of liver and spleen in experimental animals.

4,404,183

SUSTAINED RELEASE PHARMACEUTICAL COMPOSITION OF SOLID MEDICAL MATERIAL

Hiroitsu Kawata, Kawagoe; Masayoshi Aruga, Ageo; Tadayoshi Ohmura, Niiza; Takashi Sonobe, Saitama; Satoru Yoneya, Omiya, and Chiharu Sone, Matsudo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 165,244, Jul. 2, 1980, Pat. No. 4,343,789. This application Jul. 29, 1982, Ser. No. 403,007

Claims priority, application Japan, Jul. 5, 1979, 54-85209; Mar. 22, 1980, 55-36514

Int. Cl.³ A61K *9/14, 9/26, 9/52, 9/58*

U.S. Cl. 424—19 **9 Claims**

1. A sustained release pharmaceutical composition comprising an effective amount of an amorphous form of indomethacin or a salt thereof, and polyethylene oxide in the form of a fine powder or fine particle granules.

4,404,184

FLAVORING WITH METHYL-THIO-2-METHYL-2-PENTENOATE

Alan O. Pittet, Atlantic Highland; Ranya Muralidhara, Fair Haven, and Manfred H. Vock, Locust, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 318,429, Nov. 5, 1981. This application Jan. 18, 1983, Ser. No. 458,892

Int. Cl.³ A61K *7/16;* A23L *1/226, 1/234, 1/235*

U.S. Cl. 424—49 **3 Claims**

1. A process for augmenting or enhancing the aroma or taste of a foodstuff, chewing gum, toothpaste or medicinal product comprising the step of adding to a toothpaste, chewing gum, foodstuff or medicinal product, an aroma or taste augmenting or enhancing quantity of at least one methyl-thio-2-methyl-2-pentenoate defined according to the structure:



wherein the wavy lines represent covalent bonds juxtaposed in a "cis" or "trans" configuration around the carbon-carbon double bond of the structure, the concentration of said methyl-thio-2-methyl-2-pentenoate in said foodstuff, chewing gum, toothpaste or medicinal product being from about 0.5 ppm up to about 100 ppm.

4,404,185

SLOW RELEASE FORMULATIONS OF PHEROMONES CONSISTING OF ALDEHYDES

Sergio Maccone; Anacleto Dal Moro, both of Milan; Mario Pirozzi, S. Donato Milanese, and Amedeo Capizzi, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed May 6, 1982, Ser. No. 375,549

Claims priority, application Italy, May 7, 1981, 21551 A/81

Int. Cl.³ A01N *25/00;* C07C *143/02*

U.S. Cl. 424—84 **14 Claims**

1. A slow release formulation of pheromones consisting of aldehydes, comprising bisulphite adducts of the aldehydes and a buffer solution having a pH value ranging from 2 to 10.

4,404,186

VACCINES OBTAINED FROM BACTERIAL MUTANT STRAINS

Eliora Z. Ron, Tel Aviv, Israel, assignor to Ramot University Authority for Applied Research and Industrial Development Ltd., Tel-Aviv, Israel

Filed Mar. 20, 1981, Ser. No. 245,954

Claims priority, application Israel, Mar. 9, 1980, 59663

Int. Cl.³ A61K *39/108;* C12N *1/20, 15/00, 13/00*

U.S. Cl. 424—92 **5 Claims**

1. A live vaccine for the vaccination of poultry and mam-

mals against variety of gram negative pathogens belonging to Enterobacteriaceae, comprising a bacterial deletion mutant *E. coli* LR-2 derived from a non-pathogenic strain of *E. coli*, and a carrier therefor.

4. A process for immunizing poultry and mammals against Enterobacteriaceae which comprises applying to the avian or to the mammal an effective dose of a vaccine according to claim 1, by oral route or as aerosol.

4,404,187

METHOD FOR RENDERING FACTORS II AND VII HEPATITIS-SAFE WITH A CHELATING AGENT

Horst Schwinn; Norbert Heimburger, both of Marburg; Gerhardt Kumpe, Wetter, and Hans M. Preis, Marburg, all of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Nov. 19, 1981, Ser. No. 323,116

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1980, 3043857

Int. Cl.³ A61K *35/14*

U.S. Cl. 424—101 **5 Claims**

1. A method for making a preparation containing at least one member selected from the group consisting of blood clotting Factor II and blood clotting factor VII virtually hepatitis-safe, which method comprises warming said preparation in the presence of an effective amount of a chelating agent and in the further presence of at least one member selected from the group consisting of amino acids, saccharides, and sugar alcohols.

4,404,188

PURIFIED MULLERIAN INHIBITING SUBSTANCE AND METHOD OF PURIFICATION

Patricia K. Donahoe, Weston; Gerald P. Budzik, Waltham, and David A. Swann, Lexington, all of Mass., assignors to Massachusetts General Hospital, Boston, Mass.

Filed Jul. 29, 1981, Ser. No. 287,943

Int. Cl.³ A61K *35/48*

U.S. Cl. 424—105 **6 Claims**

1. A process for purifying Mullerian Inhibiting Substance (MIS) from testicular tissue which comprises:

(A) incubating testicular tissue in an appropriate aqueous culture media in the presence of a protease inhibitor for a time sufficient to extract MIS from said tissue into said media while avoiding substantial cellular disruption;

(B) chromatographing an aqueous solution of the extracted MIS on an anionic exchange resin and collecting unbound fractions containing said biologically active MIS;

(C) chromatographing said unbound biologically active fractions from said anionic exchange resin on a cationic resin and collecting unbound fractions containing said biologically active MIS.

4,404,189

SYNERGISTIC ANTIMICROBIAL COMPOSITIONS

Gabor Kulcsar; Gyula Sebestyen; Agoston David, and Tibor Zilahi, all of Budapest, Hungary, assignors to Chinoin Gyogyszer Es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed Jan. 21, 1981, Ser. No. 226,615

Int. Cl.³ A61K *35/00*

U.S. Cl. 424—114 **2 Claims**

1. A synergistic antibacterial composition which consists essentially of a synergistic combination of pharmaceutically effective amounts of primycin or a pharmaceutically acceptable acid addition salt thereof in the range of 5 to 50% by weight and of sisomicin or a pharmaceutically acceptable acid addition salt thereof in the range of 95 to 50% by weight.

4,404,190

COMPOSITION OF MATTER AND PROCESS

Lester A. Dolak, Cooper Township, Kalamazoo County; Fritz Reusser, Portage; Thomas M. Castle, Cooper Township, Kalamazoo County; Betty R. Hannon, Kalamazoo Township, Kalamazoo County; Alice L. Laborde, Kalamazoo, and Charles K. Marschke, Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jan. 22, 1982, Ser. No. 341,437

Int. Cl.³ A61K *35/00*; C12P *1/06*

U.S. Cl. 424—118 **4 Claims**

1. Antibiotic U-64,846, which is active against Gram-positive bacteria, and which in its essentially pure form has the following characteristics:

(a) molecular weight of 486 (mass spectrometry);

(b) color and form of pure solid: white

(c) is highly soluble in 1:1 water:methanol and in glacial acetic acid and in water alone;

(d) a characteristic ^{13}C-NMR spectrum as shown in FIG. 3 of the drawings;

(e) a characteristic UV spectrum as shown in FIG. 2 of the drawings;

(f) a characteristic infrared absorption spectrum when dissolved in a mineral oil mull is shown in FIG. 1 of the drawings;

(g) has a molecular formula $C_{18}H_{35}ClN_4O_9$; and

(h) a melting point of 350° C. with decomposition.

4,404,191

VIRUCIDAL METHOD

Jutta Sporkenbach; Heinz Eggensperger, both of Hamburg; Lothar Bücklers, Norderstedt; Helmut H. Ehlers, Hamburg; Ulrich Eigener, Henstedt-Ulzburg, and Hans-Peter Harke, Hamburg, all of Fed. Rep. of Germany, assignors to Sterling Drug Inc., New York, N.Y.

Filed Nov. 18, 1981, Ser. No. 322,557

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1980, 3046769

Int. Cl.³ A01N *59/00*; A61K *33/40*; A01N *59/02*; A61K *33/04*; A01N *65/00*; A61K *33/00*

U.S. Cl. 424—130 **7 Claims**

1. A method for inactivating viruses which comprises contacting the viruses located on inanimate surfaces or on the skins of humans or non-human animals with an antivirally effective amount of a salt of peroxymonosulfuric acid selected from the group consisting of alkali metal salt, alkaline-earth metal salt and ammonium salt.

4,404,192

PROCESS FOR PREPARING COMPOSITIONS FOR PERFUSING ARTIFICIAL KIDNEY SYSTEMS FOR DIALYSIS

Takeshi Suzuki, Itano, Japan, assignor to Tomita Pharmaceutical Corporation, Limited, Tokushima, Japan

PCT No. PCT/JP80/00186, § 371 Date Apr. 27, 1981, § 102(e) Date Apr. 14, 1981, PCT Pub. No. WO81/00515, PCT Pub. Date Mar. 5, 1981

PCT Filed Aug. 20, 1980, Ser. No. 253,931

Claims priority, application Japan, Aug. 27, 1979, 54-109365

Int. Cl.³ A61K *33/06, 33/14*

U.S. Cl. 424—153 **2 Claims**

1. A process for preparing a composition having low hygroscopicity, in the form of uniform particles and useful for perfusing artificial kidney systems from compounds to give an electrolyte ion composition comprising 126–145 mEq/l of Na^+, 1.5—3.0 mEq/l of K^+, 2.5–4.0 mEq/l of Ca^{++}, 1.0–1.5 mEq/l of Mg^{++}, 98–108 mEq/l of Cl^- and 30–4.52 mEq/l of CH_3COO^-, said process comprising dissolving the compounds in warm water having a temperature of about 35° to 40° C., allowing the solution to stand for at least 6 hours, and thereafter spray-drying the resulting aqueous solution of mixed salts by spraying the solution into a drying chamber having an

inlet temperature of 200° to 400° C. from the orifice of a spray nozzle having an orifice diameter of 1.0 to 2.0 mm to form said composition.

4,404,193

METHYLDOPA COMPOSITION

Robert E. Dempski, Dresher, and Joseph L. O'Neill, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 965,462, Dec. 1, 1978, abandoned. This application Oct. 9, 1981, Ser. No. 309,956

Int. Cl.³ A61K *31/195, 31/715*

U.S. Cl. 424—176 **4 Claims**

1. A pharmaceutical composition for the oral treatment of hypertension comprising an aqueous suspension containing about 50 mg of methyldopa per ml of said suspension, about 500 mg of sucrose per ml of said suspension such that the weight ratio of methyldopa:sucrose is about 1:10.

4,404,194

IMMUNO-SUPPRESSIVE SUBSTANCE, ITS ISOLATION PROCESS, AND ITS THERAPEUTIC USE

Mario Arala-Chaves, Lisbon, Portugal, assignor to Berri-Balzac, Suresnes, France

Filed Jul. 21, 1981, Ser. No. 285,567

Claims priority, application France, Jul. 28, 1980, 80 16582

Int. Cl.³ C07G *7/00;* A61K *37/00*

U.S. Cl. 424—177 **5 Claims**

1. Protein obtained from the products secreted by microorganisms, having immuno-suppressive activity and the following physico-chemical properties:

(1) isoelectric point: 4.25,

(2) ultraviolet absorption spectrum: as shown in FIG. 1, with a maximum at 260 nm,

(3) molecular mass: about 90,000 daltons as estimated by measuring the migration on a polyacrylamide gel,

(4) can be stained by Coomasie blue but not by Methylene blue or PAS,

(5) desoxyribonuclease, ribonuclease A and neuraminidase proof and degradable by α, γ and δ chymotrypsins and trypsin.

4,404,195

POLY CATION SALTS OF MONOHEXOSETHIO (OR OXY) ALKYL DIAMIDES

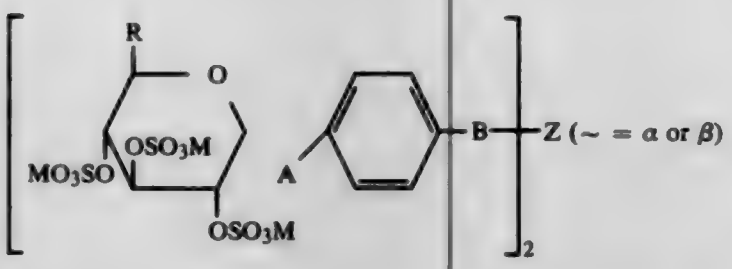
Robert E. Schaub, Upper Saddle River, N.J.; Janis Upesiacis, Pomona, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 16, 1982, Ser. No. 369,049

Int. Cl.³ A61K *31/70;* C07H *15/26*

U.S. Cl. 424—180 **29 Claims**

1. A compound selected from those of the formula:



wherein M is a nontoxic pharmaceutically acceptable cation salt, wherein the salt forming moiety is selected from the group consisting of alkali metal, alkaline earth metal, aluminum, ammonia and substituted ammonia selected from the group consisting of trialkylamine (C_1–C_6), piperidine, pyrazine, alkanolamine (C_2–C_6) and cycloalkylamine (C_3–C_6); A is selected from the group consisting of —S— and —O—; B is selected from the group consisting of —NHCO—, —$NHSO_2$— and —$NHCH_2$—; R is selected from the group consisting of CH_2OSO_3M, $COOCH_3$ and COOM; and Z is a straight or branched chain alkylidene group —$(CH_2)_m$—, where m is an integer 0–12, inclusive, with the proviso that when m is zero or one, B cannot be —$NHSO_2$—.

17. A method of modulating the complement system in a warm-blooded animal which comprises administering to said warm-blooded animal an effective complement modulating amount of a pharmaceutically acceptable compound selected from those of the formula of claim 1.

4,404,196

ANTIMICROBIAL OINTMENT

William H. Daudt; Cecil L. Frye, both of Midland, Mich., and James F. Hyde, Marco Island, Fla., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 78,415, Sep. 24, 1979. This application Jun. 26, 1981, Ser. No. 277,785

Int. Cl.³ A01N *55/00;* A61K *31/695;* A61L *23/00*

U.S. Cl. 424—184 **2 Claims**

1. An antimicrobial ointment which comprises a suitable ointment base and particles of amorphous materials, which amorphous materials are prepared by removing the volatiles from a solution prior to combining with an ointment base, which solution is an aqueous metal ammine siliconate solution which is comprised of the reaction products of (a) oxides and hydroxides of metal, metal derivatives or mixtures thereof which are selected from a group consisting essentially of metals of group IB and metals of group IIB of the Periodic Table of Elements, which are not more acidic than the silanols and siloxanols produced in (c), which dissolve in the reaction mixture to yield metal ammine cations in the presence of R—NH_2; (b) R—NH_2 where R is H, aminoalkyls with 2-6 carbon atoms, or mixtures thereof and wherein the —NH_2 molar concentration is equal to at least n times the molar concentration of the metal or metal derivative where n is the coordination number of the metal; (c) a mono-organosilicon material which can undergo hydrolysis in the presence of the other reactants to yield mono-organosilanols or siloxanols and hydrolysis products which are not more acidic than the silanols or sloxanols wherein the organo moiety in the mono-organosilicon material contains up to about 50 carbon atoms and is selected from the group consisting of saturated and unsaturated hydrocarbons having from 1 to 6 carbon atoms, halohydrocarbons having up to 6 carbon atoms and wherein the halo substitution is at a location other than the alpha or beta locations, aminohydrocarbons, radicals containing one or more ether or thioether linkages, hydroxyfunctional alkyl radicals, carbomethoxyalkyl radicals, carbamoylalkoxy radicals, quaternary ammonium or phosphonium bearing alkyl radicals and mixtures thereof, the mono-organosilicon material being present in an amount sufficient to yield a silicon/metal ratio of from about 1 to about 10; and (d) water.

4,404,197

ANTIMICROBIAL COMPOSITIONS CONTAINING 1-ETHYL-6-FLUORO-1,4-DIHYDRO-4-DIHYDRO-4-OXO-7-(1-PIPERAZINYL)-3-QUINOLINE CARBOXYLIC ACID OR METAL SALTS THEREOF AND SILVER SULFADIAZINE

Charles L. Fox, Jr., Saw Mill Rd., Sherman, Conn. 06784, and Shanta M. Modak, 184 Howland Ave., River Edge, N.J. 07661

Filed May 15, 1981, Ser. No. 264,096

Int. Cl.³ A61K *31/625*

U.S. Cl. 424—229 **2 Claims**

1. A composition useful in burn therapy which comprises about 3 mM silver salt of 1-ethyl-6-fluoro-1,4-dihydro-4-oxo-7-(1-piperazinyl)-3-quinoline carboxylic acid, about 30 mM silver sulfadiazine, and a physiologically acceptable carrier.

4,404,198
PHENYL SALICYLATE AS A TOPICAL ANTI-INFLAMMATORY

Kane L. Kelley, Roselle, N.J., assignor to Beecham Inc., Clifton, N.J.

Continuation-in-part of Ser. No. 142,873, Apr. 23, 1980, abandoned, which is a continuation of Ser. No. 5,963, Jan. 24, 1979, abandoned. This application Feb. 12, 1981, Ser. No. 233,767
Int. Cl.³ A61K *31/605, 31/60*
U.S. Cl. 424—235 16 Claims

1. A method of treating inflammation in humans and animals which comprises topically applying to the inflamed area an anti-inflammatory amount of a composition which comprises from about 0.1% to about 10.0% of phenyl salicylate in combination with a pharmaceutically acceptable carrier suitable for topical application to the skin of a human or animal.

4,404,199
SALIFICATION PRODUCTS OF CHOLIC ACIDS WITH TRIMETHOXY-3,4,5-BENZOIC ESTER OF 2-PHENYL-2-DIMENTHYLAMINOBUTANOL, HAVING PHARMACOTHERAPEUTIC ACTION, PROCESS FOR THEIR PREPARATION AND THERAPEUTIC COMPOSITIONS CONTAINING THEM AS ACTIVE PRINCIPLE

Antonio Bonaldi, Chiuduno; Egidio Molinari, Longone Al Segrino, and Vanna Springolo, Milan, all of Italy, assignors to Erregierre S.p.A., Bergamo, Italy

Filed May 3, 1982, Ser. No. 374,243
Claims priority, application Italy, May 21, 1981, 21867 A/81
Int. Cl.³ A61K *31/56*
U.S. Cl. 424—238 11 Claims

1. A salt of a cholic acid, selected from the group consisting of chenodeoxycholic acid and ursodeoxycholic acid, with the trimethoxy-3,4,5-benzoic ester of 2-phenyl-2-dimethylaminobutanol.

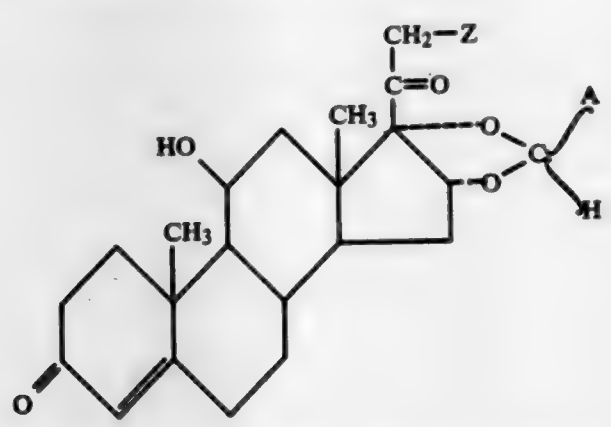
11. A therapeutic composition for the treatment of dis-kinesiae, biliary dyspepsiae, cholecystopathies, and for the normalization of the gastro-biliary tract kinesis, comprising a therapeutically effective amount of a salt of a cholic acid, selected from the group consisting of chenodeoxycholic acid and ursodeoxycholic acid, with the trimethoxy-3,4,5-benzoic ester of 2-phenyl-2-dimethylaminobutanol, in the molar ratio 1:1 or 2:1, and a pharmaceutically acceptable carrier.

4,404,200
4-PREGNENE-DERIVATIVES, A PROCESS FOR THEIR PREPARATION, COMPOSITION AND METHOD FOR THE TREATMENT OF INFLAMMATORY CONDITIONS

Bror A. Thalen, Bjärred, and Ralph L. Brattsand, Lund, both of Sweden, assignors to Aktiebolaget Draco, Lund, Sweden

Filed Nov. 17, 1981, Ser. No. 322,592
Claims priority, application Sweden, Dec. 4, 1980, 8008524
Int. Cl.³ A61K *31/58*
U.S. Cl. 424—241 22 Claims

1. A compound of the formula



(I)

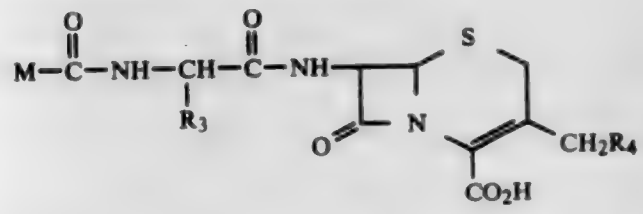
in the form of a stereoisomeric mixture or an epimer of the R or S type regarding the orientation of the substituents in the carbon atom at position 22, in which formula A is n-propyl or n-butyl and Z is hydroxyl or hydroxyl esterified with a fatty acid with a straight or branched hydrocarbon chain having 1–5 carbon atoms.

4,404,201
CEPHALOSPORINS

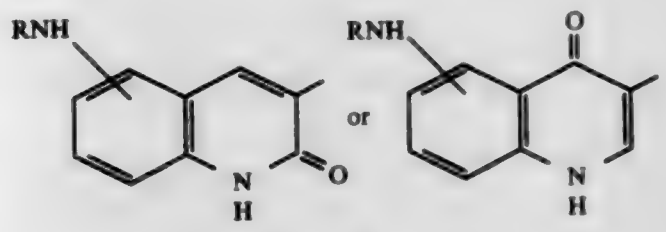
Theodore H. Haskell, Ann Arbor, and Marland P. Hutt, Saline, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Nov. 13, 1981, Ser. No. 321,021
Int. Cl.³ A61K *31/545*; C07D *501/34*
U.S. Cl. 424—246 15 Claims

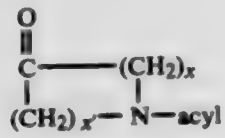
1. A compound of the formula



and pharmaceutically acceptable salts thereof; wherein M is



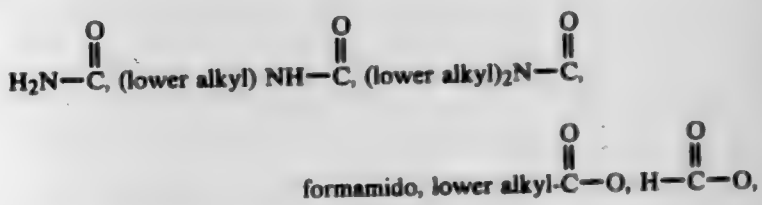
RNH is in the 6 or 7 position; R is



or R_1-(R_5N-acyl)$_n$; x is an integer from one to five, x' is zero, one or two; R_1 is hydrogen, lower alkyl, benzyl, or

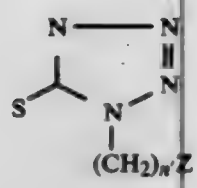


wherein R_2 is hydrogen; amino or a lower alkyl group of from one to four carbon atoms, optionally substituted by from one to three chlorine or fluorine atoms; R_5 is hydrogen or lower alkyl and N-acyl is an aminoacyl moiety derived from a carboxylic acid of from two to ten carbon atoms optionally substituted by from one to three of the following groups, hydroxyl, carboxy,

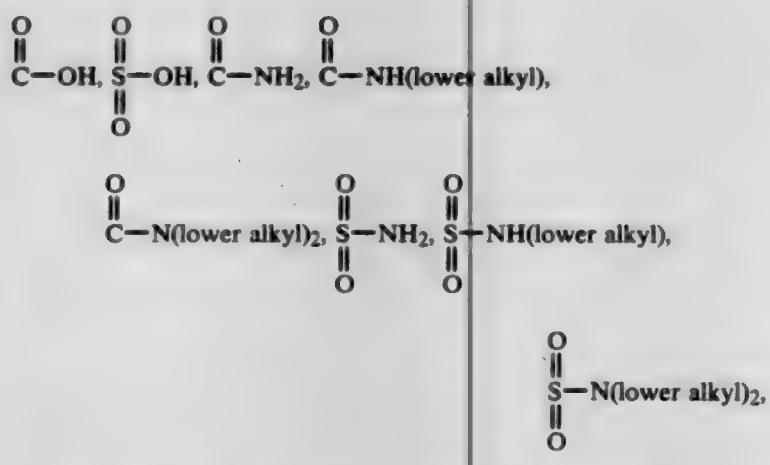


formamido, lower alkyl-C(=O)—O, H—C(=O)—O,

amino, alkylamido, carbamido, carbonyl oxygen, lower alkoxy, lower alkylthio or sulfonic acid, n is an integer of from one to four; R_3 is phenyl, 4-hydroxyphenyl, 2-thienyl or cyclohexa-1,4-dien-1-yl and R_4 is acetoxy, carbamoyloxy, or a heterocyclicthio group where the heterocyclic moiety is an optionally methyl substituted thiadiazolyl, tetrazolyl group or the heterocyclicthio group has the formula



wherein Z is



or CH_2-OH and n' is an integer of from one to four.

14. A pharmaceutical composition comprising an antibacterially-effective amount of a compound of claim 1 and a pharmaceutical carrier.

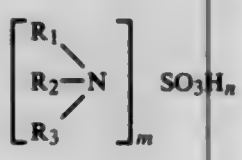
4,404,202

ANTIHYPERTENSION TREATMENT AND COMPOSITION THEREFOR

Jose A. A. Alvarez, Carpatos, Mexico, and Ralph B. Thompson, Oak Brook, Ill., assignors to T & R Chemicals, Inc., Clint, Tex.

Filed Jan. 5, 1982, Ser. No. 337,103
Int. Cl.³ A61K *31/13, 31/535, 31/44*
U.S. Cl. 424—248.5 **9 Claims**

1. A method of treating hypertension in a human suffering from said condition comprising introducing into said human an antihypertensively effective amount of at least one compound of the formula:



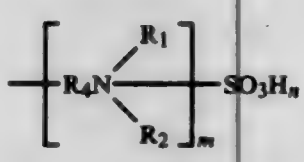
where:

R_1 is selected from the group consisting of lower alkyl radicals, cycloalkyl radicals containing from 6 to 10 carbon atoms each, lower monohydroxyalky radicals, and aralkyl radicals,

R_2 is selected from the group consisting of lower alkyl radicals, lower monohydroxyalkyl radicals, and hydrogen,

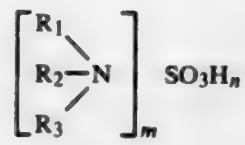
R_1 and R_2 together can constitute a ring selected from the group consisting of morpholine, piperidine, and hexamethyleneimine, provided that each such ring can be substituted on one of its carbon atoms by a lower alkyl radical,

R_3 is selected from the group consisting of lower alkyl radicals, lower monohydroxyalkyl radicals, hydrogen, and radicals of the formula:



in which R_4 is a divalent saturated lower aliphatic radical, m and n are integers, the sum of m and n is 2, and n is either 0 or 1.

6. A pharmaceutical composition for the treatment of hypertension consisting essentially of an antihypertensive-effective amount of a compound of the formula



where:

R_1 is selected from the group consisting of lower alkyl radicals, cycloalkyl radicals containing from 6 to 10 carbon atoms each, lower monohydroxyalky radicals, and aralkyl radicals,

R_2 is selected from the group consisting of lower alkyl radicals, lower monohydroxyalkyl radicals, and hydrogen,

R_1 and R_2 together can constitute a ring selected from the group consisting of morpholine, piperidine, and hexamethyleneimine, provided that each such ring can be substituted on one of its carbon atoms by a lower alkyl radical,

R_3 is selected from the group consisting of lower alkyl radicals, lower monohydroxyalkyl radicals, hydrogen, and radicals of the formula:



in which R_4 is a divalent saturated lower aliphatic radical, m and n are integers, the sum of m and n is 2, and n is either 0 or 1,

together with a pharmaceutically acceptable carrier or diluent.

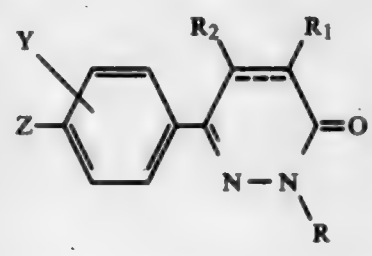
4,404,203

SUBSTITUTED 6-PHENYL-3(2H)-PYRIDAZINONES USEFUL AS CARDIOTONIC AGENTS

Ila Sircar, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed May 14, 1981, Ser. No. 263,643
Int. Cl.³ C07D *237/14, 237/04, 237/24;* **A61K** *31/50*
U.S. Cl. 424—250 **3 Claims**

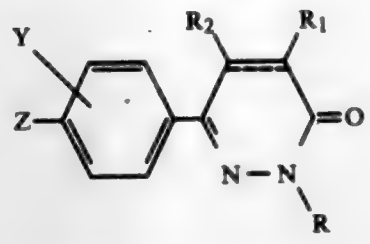
1. A compound having the structural formula:



wherein ═══ represents a double or single bond between two carbon atoms; R is hydrogen, lower alkyl, $—CH_2C_6H_5$ or $—C_6H_5$; and when R_1 is hydrogen, R_2 is CF_3, $—CH_2C_6H_5$, CN, CO_2H, $CON(R_3)_2$, $CH_2N(R_3)_2$, $—CH_2OH$, $N(R_3)_2$, and when R_2 is hydrogen, R_1 is $—CF_3$, —CN, $CON(R_3)_2$, $CH_2N(R_3)_2$, $N(R_3)_2$, wherein R_3 is hydrogen or lower alkyl; Y and Z are hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy, phenoxy, sulfonamido; wherein lower alkyl and lower alkoxy contain 1 to 3 carbon atoms; and the pharmaceutically acceptable acid addition salts thereof.

3. The method for increasing cardiotonic contractility in a patient requiring such treatment which comprises administering orally or parenterally in a solid or liquid dosage form in a

pharmaceutically acceptable carrier to such a patient an effective amount of a compound having the structure:



wherein ——— represents a single or double bond between two carbon atoms; R is hydrogen, lower alkyl, $—CH_2C_6H_5$ or $—C_6H_5$; and when R_1 is hydrogen, R_2 is CF_3, CN, CO_2H, $CON(R_3)_2$, $CH_2N(R_3)_2$,—CH_2OH, $N(R_3)_2$, and when R_2 is hydrogen, R_1 is $—CF_3$, —CN, $CON(R_3)_2$, $CH_2N(R_3)_2$, $N(R_3)_2$, wherein R_3 is hydrogen or lower alkyl Y and Z are hydrogen, halogen, lower alkyl, lower alkoxy, hydroxy, phenoxy, sulfonamido; wherein lower alkyl and lower alkoxy contain 1 to 3 carbon atoms; and the pharmaceutically acceptable acid addition salts thereof.

4,404,204

PYRIDAZINO[4,5-B]QUINOXALINE-5,10-DIOXIDE DERIVATIVES, A PROCESS FOR PREPARING SAME AND ANTI-MICROBIAL COMPOSITIONS CONTAINING SAME

Pal Benko; Daniel Bozsing; Janos Gundel, and Karoly Magyar, all of Budapest, Hungary, assignors to Patentbureau DANUBIA, Hungary

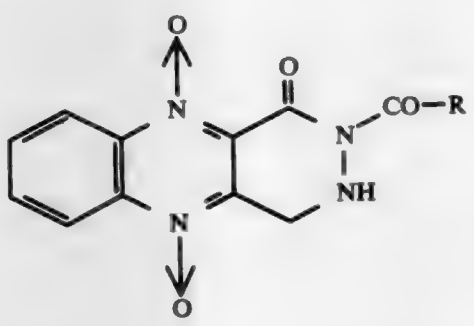
Filed Jun. 19, 1981, Ser. No. 275,393

Claims priority, application Hungary, Jul. 25, 1980, 1862/80

Int. Cl.³ C07D *487/04, 241/52, 401/12;* A61K *31/495*

U.S. Cl. 424—250 **6 Claims**

1. Pyridazino[4,5-b]quinoxaline-5,10-dioxide derivatives of the formula I



I

wherein

R represents a C_{1-20} alkyl, a C_{1-6} alkoxy group, a C_{6-10} aryl group optionally mono or disubstituted by C_{1-6} alkoxy, C_{1-6} alkyl, nitro, amino, hydroxy or halogen, a phenyl-C_{1-3} alkyl/, a C_{3-7} cycloalkyl or a 5 or 6 membered heterocyclic group containing one or two nitrogen and/or oxygen and/or sulfur atoms and selected from the group consisting of 2-, 3- or 4-pyridyl, pyrazinyl, pyridazinyl, furyl, thienyl, thiazolyl and imidazolyl groups, and biologically acceptable acid addition salts of the compouns of the formula I.

4. Compositions for use in animal husbandry as a fodder additive and/or as an anti-bacterial agent comprising as active ingredient an effective amount of a compound of the formula I, wherein R has the same meanings as defined in claim 1, or a biologically acceptable acid addition salt thereof in admixture with suitable inert solid or liquid carriers or diluents.

4,404,205

2-OXO-2,6,7,8,9,10 HEXAHYDRO-PYRIMIDO[1,2-a]AZEPINES AND ANTIANGINAL METHOD OF USE THEREOF AND OF 4-OXO-4,6,7,8,9,10-HEXAHYDROPYRIMIDO[1,2-a]AZEPINES

Jozsef Kökösi, Budaors; Istvan Hermecz, Budapest; Zoltan Meszaros, Budapest; Gyorgy Szasz, Budapest; Lelle Vasvari nee Debreczy, Budapest; Agnes Horvath, Budapest, and Tibor Breining, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT., Budapest, Hungary

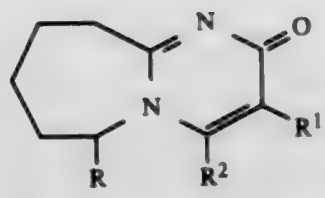
Filed May 9, 1980, Ser. No. 148,234

Claims priority, application Hungary, May 11, 1979, CI 1931

Int. Cl.³ C07D *487/04;* A61K *31/305*

U.S. Cl. 424—251 **5 Claims**

1. A compound of the formula II



(II)

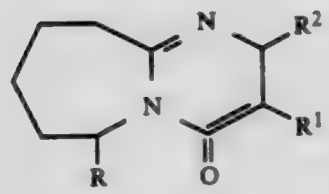
or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof wherein the quaternizing group is a lower alkyl, phenyl or lower alkyl phenyl group and wherein

R is hydrogen or lower alkyl,

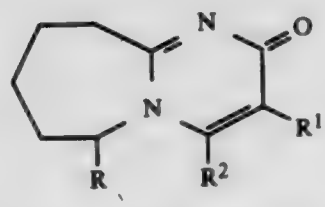
R^1 is C_1 to C_4 alkyl, phenyl, carboxyl, C_1 to C_4 alkoxycarbonyl, nitrile, carbamoyl or carbohydrazido; and

R^2 is hydrogen or C_1 to C_4 alkyl.

4. An anti-anginal method of treatment which comprises the step of administering to an animal suffering from angina a pharmaceutically effective amount of a compound of the formula (I)



or formula (II)



or a mixture thereof or a pharmaceutically acceptable acid addition or quaternary ammonium salt thereof wherein the quaternary group is a lower alkyl, phenyl or lower alkyl phenyl group; and

wherein

R^1 is C_1 to C_4 alkyl, phenyl, carboxyl, C_1 to C_4 alkoxycarbonyl, nitrile, carbamoyl, or carbohydrazido; and

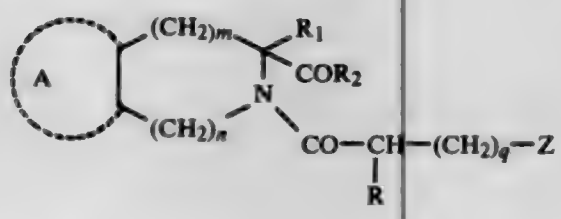
R^2 is hydrogen or C_1 to C_4 alkyl.

4,404,206
SUBSTITUTED IMINOACID DERIVATIVES, PROCESS FOR PREPARING THEM AND THEIR USE AS ENZYME INHIBITORS

Michel Vincent, Bagneux; Georges Remond, Versailles, and Michel Laubie, Vaucresson, all of France, assignors to Science Union et Cie, Suresnes, France

Filed Dec. 3, 1980, Ser. No. 212,607
Claims priority, application France, Dec. 7, 1979, 79 30046; Jul. 31, 1980, 80 16875
Int. Cl.³ A61K *31/47*; C07D *217/16*
U.S. Cl. 424—258 7 Claims

1. A compound selected from the group consisting of bicyclic iminoacids of the formula I



(I)

wherein

A, m, and n are selected to provide a perhydroquinoline or perhydroisoquinoline ring system,

q represents 0 or the number 1 or 2,

R is hydrogen, methyl, or benzyl,

R_1 is hydrogen or lower-alkyl of no more than 5 carbon atoms,

R_2 is hydroxyl or lower-alkoxy of no more than 5 carbon atoms, and

Z is carboxyl, cyano, hydroxyl, sulfhydryl, or amino, in racemic or optically-active form, and pharmaceutically-acceptable addition salts thereof, when R_2 is hydroxy with a mineral or organic base and, when Z is amino, with an acid.

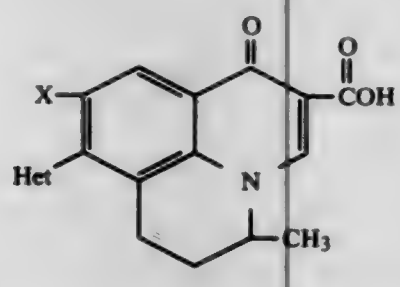
7. A method of treating high blood pressure and cardiac failure in a subject, which consists in administering to said subject an effective amount of a compound of claim 1 or a salt thereof together with a therapeutically suitable carrier.

4,404,207
ANTIMICROBIAL 8-SUBSTITUTED BENZO [IJ]QUINOLIZINES

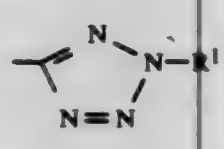
Richard M. Stern, Cottage Grove, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Filed Nov. 6, 1981, Ser. No. 318,929
Int. Cl.³ A01N *43/42*; A61K *31/47*; C07D *455/04*
U.S. Cl. 424—258 11 Claims

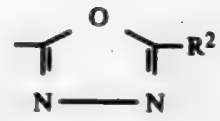
1. A compound of the formula



wherein Het is selected from the group consisting of 1-pyrryl, tetrazolyl of the formula



wherein R^1 is lower alkyl or benzyl, and oxadiazolyl of the formula



wherein R^2 is lower alkyl, trifluoromethyl or —NHϕ; X is hydrogen, or when Het is pyrryl, X may also be fluoro; or a pharmaceutically-acceptable carboxylate salt thereof, or an alkyl or alkylaminoalkyl ester thereof having one to four carbon atoms in the alkyl group.

11. A method of inhibiting the growth of microorganisms comprising contacting said microorganisms with an effective amount of a compound according to claim 1.

4,404,208
ANALGESIC MIXTURE OF NALBUPHINE AND TIFLAMIZOLE

William K. Schmidt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1982, Ser. No. 393,803
Int. Cl.³ A61U *31/415, 31/485*
U.S. Cl. 424—260 16 Claims

1. A pharmaceutical composition comprising a combination of (a) nalbuphine, or a pharmaceutically acceptable salt thereof, and (b) tiflamizole, or a pharmaceutically suitable salt thereof, in which the weight ratio of (a):(b) is from about 1:0.0046 to about 1:0.62.

4,404,209
ANALGESIC MIXTURE OF NALBUPHINE AND SULINDAC

William K. Schmidt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1982, Ser. No. 393,804
Int. Cl.³ A61K *31/19, 31/185, 31/485*
U.S. Cl. 424—260 16 Claims

1. A pharmaceutical composition comprising a combination of (a) nalbuphine, or a pharmaceutically acceptable salt thereof, and (b) sulindac, or a pharmaceutically suitable salt thereof, in which the weight ratio of (a):(b) is from about 1:0.1 to about 1:400.

4,404,210
ANALGESIC MIXTURE OF NALBUPHINE AND IBUPROFEN

William K. Schmidt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1982, Ser. No. 393,807
Int. Cl.³ A61K *31/19, 31/485*
U.S. Cl. 424—260 16 Claims

1. A pharmaceutical composition comprising a combination of (a) nalbuphine, or a pharmaceutically acceptable salt thereof, and (b) ibuprofen, or a pharmaceutically suitable salt thereof, in which the weight ratio of (a):(b) is from about 1:0.40 to about 1:79.

4,404,211
ANALGESIC MIXTURE OF NALBUPHINE AND FLURBIPROFEN

William K. Schmidt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1982, Ser. No. 393,809
Int. Cl.³ A61K *31/19, 31/485*
U.S. Cl. 424—260 16 Claims

1. A pharmaceutical composition comprising a combination of (a) nalbuphine, or a pharmaceutically acceptable salt thereof, and (b) flurbiprofen, or a pharmaceutically suitable salt thereof, in which the weight ratio of (a):(b) is from about 1:0.027 to about 1:15.

4,404,212
PROSTACYCLIN TREATMENT OF THROMBOSIS

Salvador E. Moncada, West Wickham, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 907,355, May 18, 1978, Pat. No. 4,337,254. This application Jul. 2, 1981, Ser. No. 280,263
Claims priority, application United Kingdom, Aug. 23, 1977, 35261/77
Int. Cl.³ A61K *31/505, 31/52, 31/44, 31/34*
U.S. Cl. 424—251 7 Claims

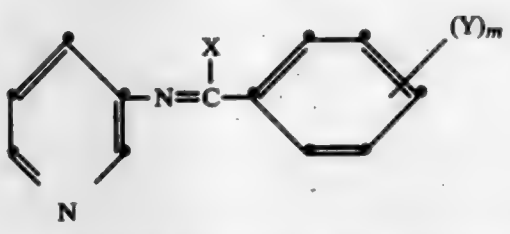
1. A method for the treatment or prophylaxis of thrombosis in a mammal in need thereof, which comprises simultaneously or sequentially internally administering 1 part by weight of (a) a compound selected from the group consisting of prostacyclin, dihydroprostacyclin, and their pharmaceutically acceptable salts, in an amount insufficient to cause vasodilation, and 1 to 200 parts by weight of (b) a phosphodiesterase inhibitor.

4,404,213
DERIVATIVES OF CERTAIN PYRIDYLIMINOMETHYL-BENZENES

Pieter Ten Haken, Eastling, Nr Faversham, and Shirley B. Webb, Sheldwich, Nr Faversham, both of England, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 228,427, Jan. 26, 1981, Pat. No. 4,355,035, which is a continuation of Ser. No. 130,681, Mar. 17, 1980, abandoned. This application Apr. 12, 1982, Ser. No. 367,210
Int. Cl.³ A01N *43/40;* C07D *213/74*
U.S. Cl. 424—263 7 Claims

1. A compound of the formula



wherein X is alkylthio of from one to six carbon atoms; m is 1 or 2; and Y is halogen, and acid-addition salts thereof.

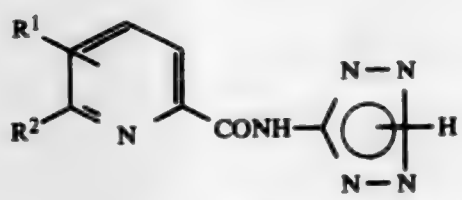
5. A method of protecting a crop from fungal attack comprising treating crops subject to or subjected to fungal attack, seeds of such crops or soil in which such crops are growing or are to be grown with a fungicidally effective amount of a compound according to claim 1, or a composition according to claim 4.

4,404,214
2-PYRIDINECARBOXAMIDE DERIVATIVES COMPOSITIONS CONTAINING SAME AND METHOD OF USING SAME

Mikio Takeda, Urawa; Yasushi Honma, Ageo, and Kei Tsuzurahara, Omiya, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Nov. 20, 1981, Ser. No. 323,289
Claims priority, application Japan, Dec. 5, 1980, 55-172246
Int. Cl.³ C07D *401/12;* A61K *31/455*
U.S. Cl. 424—266 24 Claims

1. A 2-pyridinecarboxamide derivative of the formula:



wherein R^1 is hydrogen, lower alkyl, lower alkoxy or halogen and is in the 3rd-, 4th- or 5th-position of the pyridyl group, and R^2 is hydrogen, lower alkyl, lower alkoxy, phenyl-lower alkyl, phenyl-lower alkenyl or halogen, or a pharmaceutically acceptable salt thereof.

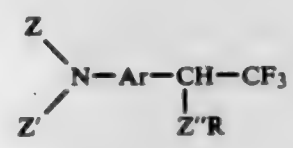
13. A method of treatment of allergic symptoms in a warm-blooded animal which comprises administering thereto a therapeutically effective amount of a derivative of claim 1.

4,404,215
PIPERIDYL PHENYL TRIFLUOROETHANOLS

Michel Vincent, Bagneux; Georges Remond, Versailles, and Jacques Bure, Neuilly-sur-Seine, all of France, assignors to Science Union et Cie, Suresnes, France

Division of Ser. No. 90,635, Nov. 2, 1979, abandoned. This application Nov. 18, 1981, Ser. No. 322,513
Claims priority, application France, Nov. 3, 1978, 78 31096
Int. Cl.³ A61K *31/445*
U.S. Cl. 424—267 10 Claims

1. The *aaa*-trifluoro (aminoaryl) ethanols having the formula I:



(I)

wherein
Z is an N-lower alkylpiperidine radical or an N-(phenyl lower alkyl)piperidine radical,
Z' is a hydrogen or a lower alkyl radical,
Z" is an oxygen atom,
Ar is phenyl, and
R is hydrogen.

5. A pharmaceutical composition useful for the treatment of inflammation incorporating as active ingredient an anti-inflammatory pain-alleviating effective amount of a compound of claim 1.

9. A method for the alleviation of pain and inflammation in a patient suffering therefrom, comprising the step of administering to said patient an effective anti-inflammatory pain-alleviating effective amount of a compound of claim 1.

4,404,216
ANTIFUNGAL 1,3-BIS-TRIAZOLYL-2-PROPANOL DERIVATIVE

Kenneth Richardson, Canterbury, England, assignor to Pfizer Inc., New York, N.Y.

Filed Jun. 1, 1982, Ser. No. 383,866
Claims priority, application United Kingdom, Jun. 6, 1981, 8117379; Oct. 17, 1981, 8131370; Mar. 4, 1982, 8206329
Int. Cl.³ A01N *43/64;* A61K *31/41;* C07D *249/08*
U.S. Cl. 424—269 3 Claims

1. An antifungal compound selected from the group consisting of 2-(2,4-difluorophenyl)-1,3-bis(1H-1,2,4-triazol-1-yl)propan-2-ol and the pharmaceutically acceptable acid addition salts thereof.

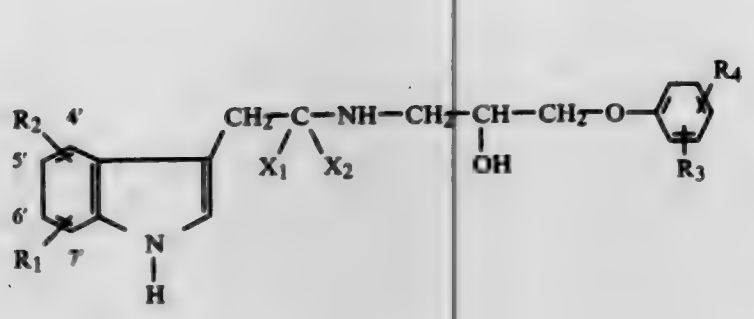
3. A method for treating fungal infections in a warm-blooded animal, which comprises administering to said animal an effective antifungal amount of a compound as claimed in claim 1.

4,404,217
3-INDOLYL ALKYLENE AMINO PROPANOLS AND CARDIOVASCULAR COMPOSITIONS THEREOF

Henri Demarne, and Jean Wagnon, both of Montpellier, France, assignors to C. M. Industries, Paris, France

Filed Aug. 15, 1980, Ser. No. 178,550
Claims priority, application France, Sep. 17, 1979, 79 20907
Int. Cl.³ A61K *31/40;* C07D *209/12, 209/19*
U.S. Cl. 424—274 8 Claims

1. A chemical compound having the formula:



I

in which

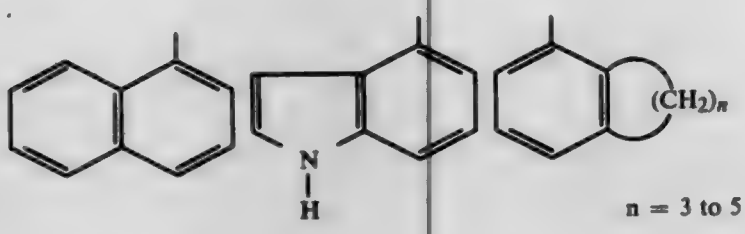
R_1 and R_2 each designate, independently, hydrogen, halo, a lower alkyl group having 1 to 5 carbon atoms, or a lower alkoxy group having 1 to 5 carbon atoms, occupying one of the positions 4' to 7' of the indole ring;

R_3 and R_4 considered independently designate hydrogen, a lower alkyl having 1 to 5 carbon atoms, a lower alkoxy having 1 to 5 carbon atoms, a halo group, or a nitro group;

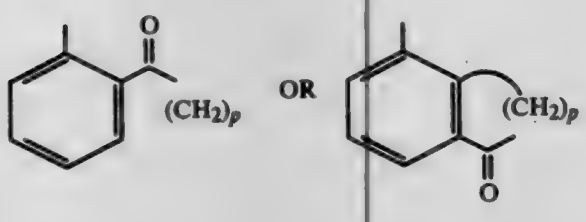
or one of R_3 or R_4, but not both, designates an acyl R_5CO— group, an alkylthio R_5S— group or alkylsulfinyl R_5SO— or alkylsulfonyl R_5SO_2— group in which R_5 designates a lower alkyl group having 1 to 5 carbon atoms or cycloalkyl group having 3 to 6 carbon atoms, a $-(CH_2)_nCOOR_6$ group, $-(CH_2)_nCONH-R_6$ or $-(CH_2)_nNHCOOR_6$ or $-(CH_2)_nNHCOR_6$ group in which n represents an integer from 0 to 2 and R_6 designates a lower alkyl group having from 1 to 5 carbon atoms;

and when R_1 and R_2 or R_3 and R_4 are adjacent alkyl or alkoxy radicals, they are linear radicals;

or R_3 and R_4 taken together are in the form of a ring structure to constitute with the benzene ring to which they are bonded, a fused ring structure designating:



n = 3 to 5



p = 2 to 4

X_1 represents a lower alkyl group having 1 to 5 carbon atoms, a hydroxymethyl group or a $-COOR_7$ group in which R_7 represents hydrogen or a lower alkyl group having 1 to 5 carbon atoms;

X_2 represents hydrogen

and the pharmaceutically acceptable acid addition salts thereof.

2. A pharmaceutical composition suitable for inducing β-blocking activity in a host comprising as an active ingredient, an effective quantity of a compound of claim 1 together with a pharmaceutically acceptable carrier.

4,404,218

ANTIBIOTIC SF-2103A SUBSTANCE AND PROCESS FOR PRODUCTION THEREOF

Tatsuo Ito, Isehara; Takashi Shomura, Yokohama; Michio Kojima, Tokyo; Norio Ezaki, Yokohama; Masaji Sezaki, Tokyo, and Tomizo Niwa, Yokohama, all of Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

Filed Aug. 17, 1981, Ser. No. 293,063

Claims priority, application Japan, Aug. 19, 1980, 55-112996; Nov. 11, 1980, 55-157631

Int. Cl.³ C07D *487/04;* A61K *31/40*

U.S. Cl. 424—274 **3 Claims**

1. An antibiotic SF-2103A substance or non-toxic salt thereof, wherein the trisodium salt thereof has the following properties:

(1) Color and Appearance: Obtained as a white powder by freeze-drying;

(2) Melting Point: Shows no distinct melting point, and turns brown and decomposes forming bubbles at 168° C.;

(3) Specific Rotation: $[\alpha]_D^{20} - 16.3°$ (c 1, water);

(4) Elemental Analysis: Calculated for $C_9H_8NO_{10}S_2Na_3.2H_2O$

	Calculated (%)	Found (%)
C	23.53	23.62
H	2.61	2.44
N	3.05	3.00
O	41.83	42.16 (balance)
S	13.94	13.81
Na	15.03	14.97 (as determined by atomic absorption analysis)

(5) Ultraviolet Absorption Spectrum: As shown in FIG. 1, the maximum absorptions in a 0.02 M phosphate buffer (pH 7.2) are present at 266 to 267 nm ($E_{1\ cm}^{1\%} = 126$) and 230 nm ($E_{1\ cm}^{1\%} = 118$);

(6) Infrared Absorption Spectrum: The infrared absorption spectrum as determined by the potassium bromide tablet method is shown in FIG. 2 with absorption bands at 3450, 1755, 1610, 1390, 1220, 1080, 1040, 940, 900, 780 cm^{-1};

(7) Nuclear Magnetic Resonance Spectrum: The 100 MHz nuclear magnetic resonance spectrum as determined in heavy water with tetramethylsilane as an external standard is shown in FIG. 3 and has signals at δ1.55 (d, 3H), δ2.99 (dd, 1H), δ3.44 (dd, 1H), δ3.94 (dd, 1H), δ4.48 (m, 1H), and δ4.94 (m, 1H);

(8) Thin Layer Chromatography:

(a) Rf values on a cellulose thin layer (Cellulose F_{254}, produced by Merck & Co.) as developed at 5° C. with the following solvents:

Solvent	Rf
n-butanol/isopropanol/water (7/7/6 by volume)	0.30
70% by vol. n-propanol aqueous solution	0.52
70% by vol. ethanol aqueous solution	0.62
80% by vol. acetonitrile aqueous solution	0.37

(b) When developed on DEAE-cellulose (Polygram CEL 300 DEAE, produced by Mercherry Nagel Corp.) at 5° C. with a 0.02 M phosphate buffer (pH 7.2) containing 0.1 M sodium chloride, MC 696-SY2-A Substance as a control shows an Rf value of 0.31, whereas the SF-2103A substance shows an Rf value of 0.14;

(9) Solubility: Freely soluble in water, soluble in methanol; insoluble in ethyl acetate, chloroform, and benzene; and

(10) Color Reactions: Positive for the Lemieux and Ehrlich reagents, and negative for the Ninhydrin reagent.

3. An antibiotic composition comprising an antibiotic SF-2103A substance or a non-toxic salt thereof as in claim 1 or 2.

4,404,219

PHENYLGUANIDINE THERAPEUTIC AGENTS

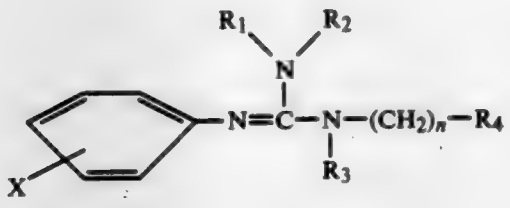
Jeffrey L. Ives, King of Prussia, Pa., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 135,374, Mar. 31, 1980, Pat. No. 4,281,004. This application Mar. 10, 1981, Ser. No. 242,200

Int. Cl.³ A61K *31/40*

U.S. Cl. 424—274 **6 Claims**

1. A method for lowering blood sugar in the treatment of a diabetic host, which comprises orally administering to said host an effective blood sugar lowering amount of a compound selected from the group consisting of phenylguanidine bases of the formula:



and the pharmaceutically acceptable acid addition salts thereof, wherein

X is a member selected from the group consisting of hydrogen, fluorine, chlorine, bromine, trifluoromethyl, lower alkyl and lower alkoxy;

R_1 and R_2, when taken together, complete a pyrrolidino ring;

R_3 is hydrogen or lower alkyl;

R_4 is a member selected from the group consisting of phenyl, and mono- and di-substituted phenyl wherein each substituent is chosen from the group consisting of fluorine, chlorine, bromine, trifluoromethyl, lower alkyl and lower alkoxy; and

n is an integer of from zero to four, inclusive.

4,404,220

XANTHENONE-YL ESTERS OF PHOSPHORIC AND PHOSPHONIC ACIDS

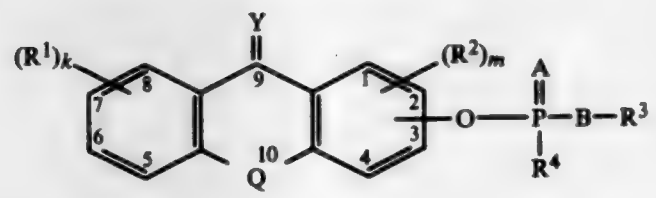
James T. Traxler, Evanston, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 127,007, Mar. 4, 1981, Pat. No. 4,299,772. This application Jul. 29, 1981, Ser. No. 287,839

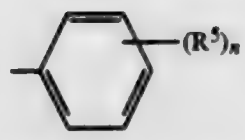
Int. Cl.³ C07D *335/14, 335/16;* A01N *43/18*

U.S. Cl. 424—275 **3 Claims**

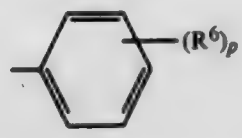
1. A compound of the formula:



Wherein R^1 and R^2 are each independently selected from the group consisting of halogen, lower alkyl, lower haloalkyl, nitro, lower alkylsulfinyl, lower alkylsulfonyl and cyano; k and m are integers from 0 to 3; Q is sulfur; Y is selected from the group consisting of oxygen and sulfur; R^3 is selected from the group consisting of lower alkyl and



wherein R^5 is selected from the group consisting of halogen, lower alkyl, lower haloalkyl, nitro and cyano; n is an integer from 0 to 3; R^4 is selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, amino, lower alkylamino, lower dialkylamino and



wherein R^6 is selected from the group consisting of halogen, lower alkyl, lower haloalkyl, nitro and cyano; p is an integer from 0 to 3; and A and B are each independently selected from the group consisting of oxygen and sulfur, with the proviso that if R^4 is lower alkoxy, then one of A and B must be sulfur.

3. A method of controlling insects which comprises contacting said insects with an insecticidal composition comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to insects, a compound of claim 1.

4,404,221

2'-SUBSTITUTED-SPIRO[BENZOFURAN-2(3H),1'-CYCLOHEXANES] AND ITS PHARMACEUTICAL USE

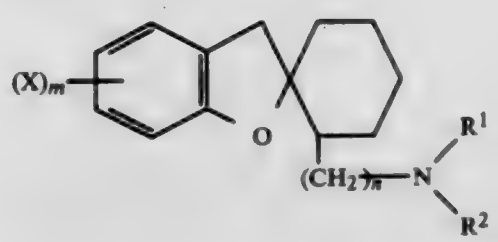
Edward J. Glamkowski, Warren, and Michael C. Jones, Somerville, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Oct. 19, 1981, Ser. No. 313,097

Int. Cl.³ A61K *31/34;* C07D *307/94*

U.S. Cl. 424—285 **103 Claims**

1. A compound of the formula



wherein X is hydrogen, halogen nitro, amino, alkyl-substituted amino, hydroxy, alkyl, and alkoxy, halogen being any of fluorine, chlorine, bromine and iodine; m is an integer of 1,2 or 3, X being the same or different when m is larger than 1; n is an integer of ∅, 1 or 2; and R^1 and R^2 are each independently hydrogen and alkyl; a stereoisomer thereof and a pharmaceutically acceptable acid addition salt of any of the foregoing.

96. A method of treatment which comprises administering to a depressed patient a pharmaceutically effective amount of a compound defined in claim 1.

4,404,222

PHENYLETHANOLAMINE DERIVATIVES AND ACID ADDITION SALTS THEREOF FOR ENHANCING THE GROWTH RATE OF MEAT-PRODUCING ANIMALS AND IMPROVING THE EFFICIENCY OF FEED UTILIZATION THEREBY

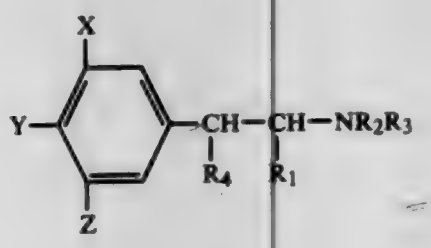
Pamela K. Baker, Hopewell, and Jane A. Kiernan, Kendall Park, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 181,254, Aug. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 143,069, Apr. 24, 1980, abandoned, which is a continuation-in-part of Ser. No. 66,908, Aug. 16, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 219,054

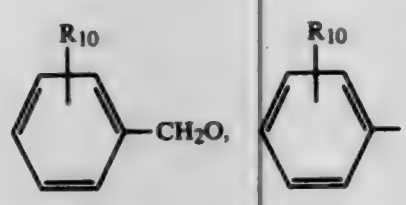
Int. Cl.[3] A61K *31/275, 31/135, 31/42, 31/40*

U.S. Cl. 424—304 17 Claims

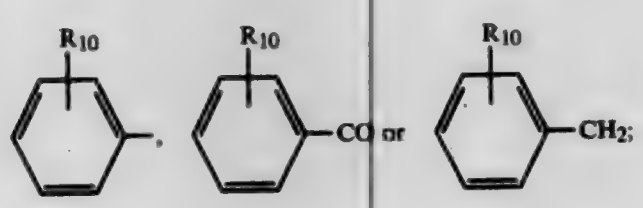
1. A method for increasing the growth rate of meat-producing animals and improving the efficiency of feed utilization comprising: orally or parenterally administering to said animals an effective amount to achieve the above-described body functions of a compound having the structure:



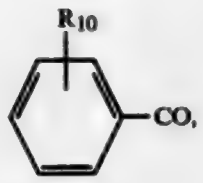
wherein, X is hydrogen, halogen or —CN; Y is hydrogen, NR_8R_9 or $NHCOR_5$; Z is hydrogen, halogen, OH, CN, CF_3, $COOR_1$, $CONH_2$, C_1–C_4 alkyl, C_1–C_4 alkoxy, NO_2, C_1–C_4 dialkylaminomethyl or hydroxymethyl; R_1 is hydrogen or C_1–C_4 alkyl; R_2 is hydrogen, C_3–C_6 alkyl or C_3–C_4 alkenyl; R_3 is hydrogen, C_1–C_6 alkyl, cyclohexyl, methoxypropyl, C_3–C_4 alkenyl or phenyl; with the provisos that when R_2 is C_3–C_5 alkyl or C_3–C_4 alkenyl, R_3 cannot be hydrogen, methyl or ethyl; when R_2 is hydrogen, R_3 cannot be C_1–C_5 alkyl and when R_3 is C_3–C_4 alkenyl, R_2 cannot be hydrogen; and when R_2 and R_3 are taken together with the nitrogen to which they are attached, they represent morpholino or N'—C_1—C_4 alkylpiperazino; R_4 is hydrogen, OH, OR_6 or SR_{11}; R_5 is hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy,



or $N(R_1)_2$; R_6 is C_1–C_6 alkyl, C_2–C_5 alkanoyl,



R_8 is hydrogen, C_1–C_4 alkyl or C_3–C_4 alkenyl; R_9 is hydrogen, C_1–C_6 alkyl, C_4–C_6 cycloalkyl, C_3–C_4 alkenyl, or benzyl; and when R_8 and R_9 are taken together with the nitrogen to which they are attached, they represent pyrrolidino; R_{10} is hydrogen, chloro, dichloro, methyl, dimethyl, methoxy, dimethoxy or nitro; R_{11} is C_1–C_6 alkyl, phenyl or benzyl; with the further provisos that when R_3 is phenyl, cyclohexyl or methoxypropyl R_2 is hydrogen; and when R_6 is alkanoyl or



R_2 and R_3 are substituents other than hydrogen, except when R_3 is an alkyl or substituted alkyl group which contains a tertiary carbon attached to nitrogen; and when R_8 is C_1–C_4 alkyl or C_3–C_4 alkenyl, R_9 is hydrogen, C_1–C_4 alkyl or C_3–C_4 alkenyl, and when Z is OH, X and Y are hydrogen; and that at least one of X, Y, and Z represents a substituent other than hydrogen; and when X is —CN, Z is —CN; and when Z is hydroxymethyl, R_4 is OH; and when Z is a group other than halogen, Y is NR_8R_9 or $NHCOR_5$; and when R_5 is $N(R_1)_2$, R_4 is OH; or racemic mixtures of the above-identified compounds, the optically active isomers or non-toxic, pharmacologically acceptable acid addition salts thereof.

4,404,223

PESTICIDAL FORMULATIONS

Michael D. Matthewson, Berkhamsted, England, assignor to Burroughs Wellcome Co., Raleigh, N.C.

Continuation of Ser. No. 43,491, May 29, 1979, abandoned. This application Apr. 6, 1981, Ser. No. 251,101

Claims priority, application United Kingdom, May 30, 1978, 24264/78; May 30, 1978, 24265/78

Int. Cl.[3] A01N *37/34, 37/00, 37/08*

U.S. Cl. 424—304 4 Claims

1. A pesticidal composition comprising the esters permethrin and decamethrin, each ester present in an amount to potentiate the other in a ratio of between 1:1 to 50:1 by weight respectively.

4,404,224

ALKANESULFONANILIDE DERIVATIVES AND PHARMACEUTICALLY ACCEPTABLE ACID ADDITION SALTS THEREOF FOR INCREASING THE GROWTH RATE AND/OR IMPROVING THE LEAN MEAT TO FAT RATIO OF WARM BLOODED ANIMALS

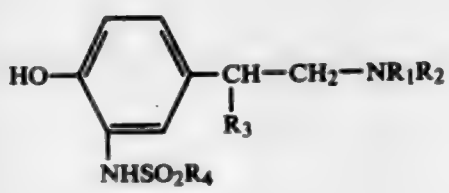
Goro Asato, Titusville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 2, 1981, Ser. No. 326,878

Int. Cl.[3] C07C *143/74;* A61K *31/18*

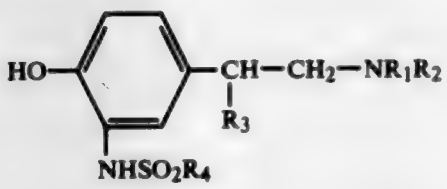
U.S. Cl. 424—321 7 Claims

1. A compound having the structural formula;



wherein R_1 is hydrogen or C_1–C_4 alkyl; R_2 is hydrogen, C_1–C_4 alkyl, benzyl, phenethyl or α,α-dimethylphenethyl; R_3 is SR_6, wherein R_6 is hydrogen, C_1–C_6 alkyl, benzyl, phenyl or allyl; R_4 is C_1–C_4 alkyl; with the condition that when R_2 is benzyl, phenethyl or α,α-dimethylphenethyl, R_1 is hydrogen; and the optically active isomers, and the pharmaceutically acceptable acid addition and metal salts thereof.

2. A method for increasing the growth rate and the lean meat to fat ratio of warm-blooded animals comprising administering either orally or parenterally to animals a growth-promoting and lean-meat-enhancing amount of a compound having the formula:



wherein R_1 is hydrogen or C_1–C_4 alkyl; R_2 is hydrogen, C_1–C_4 alkyl, benzyl, phenethyl or α,α-dimethylphenethyl; R_3 is OH, OR_5 or SR_6; R_4 is C_1–C_4 alkyl; R_5 is C_1–C_6 alkyl, benzyl, phenyl or allyl; R_6 is hydrogen, C_1–C_6 alkyl, benzyl, phenyl or allyl; with the proviso that when R_2 is benzyl, phenethyl, or α,α-dimethylphenethyl, R_1 is hydrogen; and the optically active isomers, and the pharmaceutically acceptable acid addition and metal salts thereof.

4,404,225

THIOUREA DERIVATIVES HAVING PESTICIDAL ACTIVITY

Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, and Jozef Drabek, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

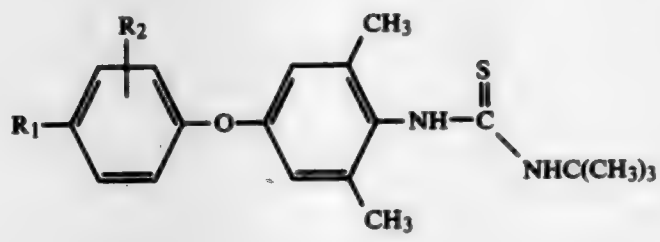
Continuation of Ser. No. 164,375, Jun. 30, 1980, abandoned. This application Jun. 5, 1981, Ser. No. 270,755

Claims priority, application Switzerland, Jul. 3, 1979, 6197/79; Jun. 11, 1980, 4490/80

Int. Cl.³ C07C *157/09*; A01N *47/30*

U.S. Cl. 424—322 **18 Claims**

1. A compound of the formula

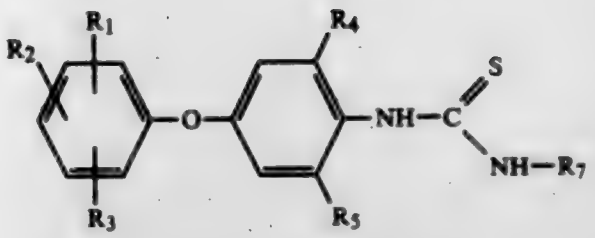


wherein

R_1 is hydrogen, methyl, methoxy, trifluoromethyl, chlorine, bromine or nitro, and

R_2 is hydrogen, chlorine, trifluoromethyl or nitro.

12. A method for combatting insects and acarids which comprises applying thereto an insecticidally or acaricidally effective amount of a compound of the formula



wherein

each of R_1, R_2 and R_3 is hydrogen, C_1–C_4 alkyl, methoxy, halogen, trifluoromethyl or nitro,

R_4 is hydrogen or methyl,

R_5 is C_1–C_3 alkyl, and

R_7 is C_1–C_{12} alkyl, C_3–C_5 alkenyl or C_3–C_8 cycloalkyl.

4,404,226

USE OF GUANFACINE IN TREATING SCHIZOPHRENIA

Milan Matejcek, Riehen; Carl Theohar, Basel, and Horst Kleinlogel, Hinterkappelen, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

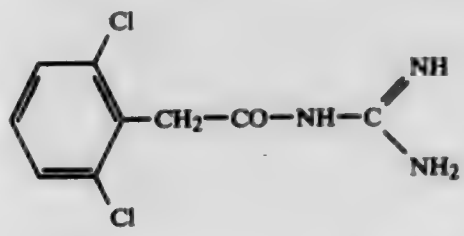
Filed Jul. 6, 1982, Ser. No. 395,724

Claims priority, application Switzerland, Jul. 9, 1981, 4512/81

Int. Cl.³ A61K *31/155*

U.S. Cl. 424—326 **3 Claims**

1. A method of treating schizophrenia which comprises administering to a subject in need of such treatment a therapeutically effective amount of Guanfacine of formula I:



I

in free base form or in pharmaceutically acceptable acid addition salt form.

4,404,227

BREAD MIX AND PROCESS

Seymour Pomper, Stamford, and Glenn D. La Baw, Greenwich, both of Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jun. 1, 1981, Ser. No. 268,701

Int. Cl.³ A21D *8/00, 10/00*

U.S. Cl. 426—19 **28 Claims**

1. A process for preparing bread which comprises: mixing water with a dry bread mix to form a dough, the dry mix comprising flour, from 1.5 to 2.5% quick-leavening active dry yeast, from 2 to 10% of a balanced chemical leavening system, and from 0.1 to 0.75% of a dough conditioner selected from the group consisting of calcium stearoyl-2-lactylate, sodium stearoyl-2-lactylate, and mixtures of these, all percentages based on the weight of the dry mix; shaping the dough into units for baking; proofing the shaped units for from about 15 to about 30 minutes; and baking.

4,404,228

LIPID AND PROTEIN CONTAINING MATERIAL IN PARTICULATE FORM AND PROCESS THEREFOR

Aloysius B. M. Cloosterman, Emmerich, Fed. Rep. of Germany, and Simon V. Kranenburg, Ijssel, Netherlands, assignors to Internationale Octrooi Maatschappij "Octropa" B.V., Rotterdam, Netherlands

Filed Jan. 20, 1982, Ser. No. 341,184

Claims priority, application United Kingdom, Jan. 21, 1981, 8101790

Int. Cl.³ A23D *5/00*; A23J *7/02*

U.S. Cl. 426—98 14 Claims

1. A process for preparing a free-flowing and non-caking lipid- and protein-containing material in particulate form comprising 95 to 35 wt.% of vegetable proteinaceous material, said proteinaceous material consisting of a porous particulate substance which comprises at least 30 wt.% of substantially water-insoluble protein and the balance of a lipid phase and 1 to 10 wt.% of water, said lipid phase comprising 80 to 99 wt.% of fats and/or oils and 1 to 20 wt.% of lecithin, said lipid phase being contained within interstitial spaces of individual particles of said porous substance, said process comprising preparing a suspension of either said proteinaceous matter or said lipid phase in an aqueous medium at elevated temperature, including therein the other component while ensuring that said lipid phase is molten, homogenizing the suspension obtained and drying the homogenized material.

4,404,229

METHOD FOR THE PRODUCTION OF MOLDED MEAT OR MEAT-LIKE PRODUCTS

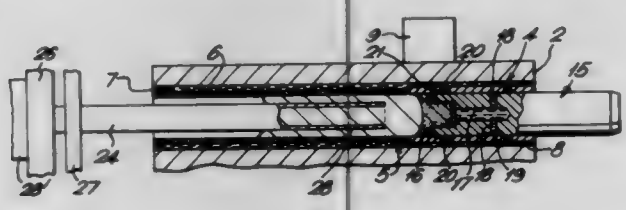
Timothy J. M. Treharne, East Grinstead, England, assignor to Tivet Developments Ltd., East Grinstead, England

Division of Ser. No. 941,872, Sep. 13, 1978, Pat. No. 4,280,803. This application Mar. 9, 1981, Ser. No. 241,818

Claims priority, application United Kingdom, Sep. 14, 1977, 38395/77

Int. Cl.³ A22C *11/00*; A23B *4/12*; A23L *1/31*

U.S. Cl. 426—513 13 Claims



1. A method of producing a skinless molded meat or meat-like product of predetermined shape having a fluid treated surface, said method comprising:

(a) providing a rigid mold cavity having side walls and oppositely disposed end walls defining a predetermined shape and having said side walls permeable over a major portion thereof,

(b) introducing a product into the mold cavity, which product conforms to the predetermined shape of the mold cavity, and

(c) introducing a fluid through said permeable side walls for treating at least a major portion of the surface of the product to form a coagulated surface layer on said product at least while in said predetermined shape.

4,404,230

4-HYDROXY-1,2-BENZISOTHIAZOL-3(2H)-ONE-1,1-DIOXIDES AND SALTS THEREOF

Günter Trummlitz, Warthausen; Wolfgang Eberlein, Biberach; Wolfhard Engel, Biberach, and Günther Schmidt, Biberach, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomae GmbH, Biberach an der Riss, Fed. Rep. of Germany

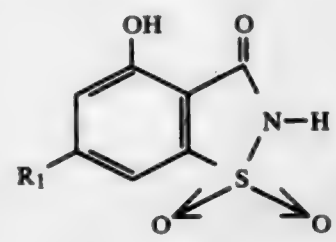
Filed Apr. 15, 1981, Ser. No. 254,546

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1980, 3015113

Int. Cl.³ C07D *275/06*; A23L *1/236*

U.S. Cl. 426—548 5 Claims

1. A compound of the formula



wherein R_1 is hydrogen or hydroxyl, or a non-toxic, pharmacologically acceptable salt thereof formed with an inorganic or organic base.

5. The method of sweetening foods or beverages, which comprises adding thereto an effective sweetening amount of a compound of claim 1.

4,404,231

PROCESS FOR PRODUCING A FAT-CONTINUOUS EMULSION SPREAD WITH IMPROVED PERCEIVED TASTE SENSATIONS OF WATER SOLUBLE FLAVORANTS

Cornelis den Hollander, Rotterdam, and Berend J. Arends, Vlaardingen, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 13, 1981, Ser. No. 321,027

Claims priority, application United Kingdom, Nov. 27, 1980, 8038026

Int. Cl.³ A23D *3/02, 5/02*

U.S. Cl. 426—602 16 Claims

1. A process for producing an edible water-in-oil emulsion spread which on consumption gives an improved perceived impression of water soluble flavorants, comprising (a) emulsifying an aqueous phase in at least a partially melted fatty phase containing a plastic fat blend to obtain a W/O emulsion; (b) subjecting the W/O emulsion thus obtained to working and cooling to at least partly crystallize the fat; (c) incorporating in the partly crystallized W/O emulsion a water-soluble flavouring ingredient in the form of a dispersion in an oil which is pourable or liquid at ambient temperature, and further cooling and working to obtain a spread.

4,404,232

METHOD OF DEPOSITING METAL COATING LAYERS CONTAINING PARTICLES ON THE WALLS OF CHILL MOULDS

Egon Evertz, Vorlander Strasse 23, 5650 Solingen, Fed. Rep. of Germany

Filed Oct. 6, 1981, Ser. No. 309,170

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1980, 3038289

Int. Cl.³ C23C *3/02*

U.S. Cl. 427—8 7 Claims

1. A method of depositing a metal coating on a wall of a chill mould for continuous casting, comprising the steps of: arranging said wall in approximately an upright position in a bath containing a solution of at least one nickel salt and particles of a hard material suspended in said solution, determining the critical deposition temperature range of said bath defined by an upper temperature limit and a lower temperature limit, and

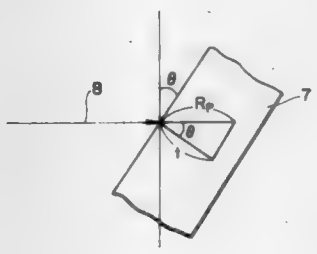
depositing a metallic layer containing nickel on said wall while maintaining said wall at a temperature in the vicinity of one of said upper and lower temperature limits and maintaining said solution at a temperature in the vicinity of the other of said upper and lower temperature limits, the temperature difference between said wall and said solution being within said critical deposition temperature range.

4,404,233

ION IMPLANTING METHOD

Tadashi Ikeda; Norikazu Tsumita, both of Kodaira, and Yutaka Sugita, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 13, 1981, Ser. No. 224,743
Claims priority, application Japan, Jan. 23, 1980, 55-5754
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—35 **6 Claims**



1. An ion implanting method of forming an ion-implanted region in a magnetic film to be ion-implanted by irradiating a desired portion of said film with an ion beam directed at an angle to said film,

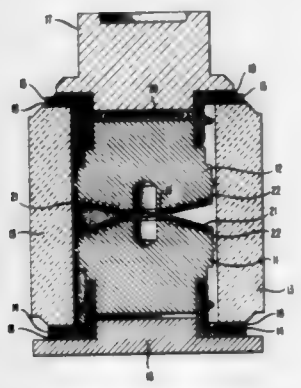
wherein the improvement resides in that the irradiation of said ion beam is performed in a manner to vary the angle between said ion beam and the desired portion of said film whereby the peak of the ion concentration is flattened.

4,404,234

ELECTRODE COATING PROCESS

Paul Zuk, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 23, 1981, Ser. No. 333,976
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—37 **9 Claims**



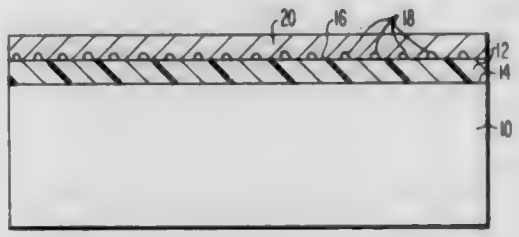
1. A method of fabricating a sealed gas surge limiter having two electrodes (11 and 12) and a spark gap (19) therebetween comprising the steps of depositing a coating (21) on a portion of the electrodes and thereafter applying a pulsed signal of controlled amplitude and pulse duration of the electrodes which causes conduction in the arc mode for several periods of time of less than 400 μsec so that for each of said periods a limited portion of the coating bonds with one of the electrodes.

4,404,235

METHOD FOR IMPROVING ADHESION OF METAL FILM ON A DIELECTRIC SURFACE

Ming L. Tarng, Mercerville, N.J., and Walter A. Hicinbothem, Jr., Levittown, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,415
Int. Cl.³ H01L *21/285*
U.S. Cl. 427—89 **8 Claims**



1. A method for depositing a metal film on a dielectric surface, comprising the steps of:

exposing the dielectric surface to gaseous WF_6 and H_2, at a temperature between approximately 500° C. and 650° C., so as to form an adherence layer without etching the dielectric surface, said adherence layer comprising a plurality of discontinuous tungsten islands on the dielectric surface; and thereafter

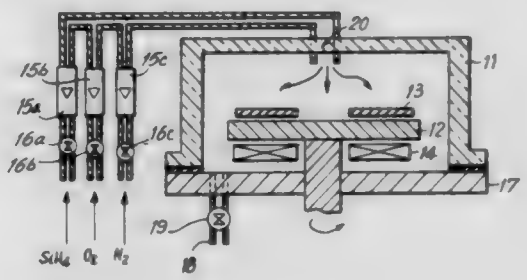
introducing said metal, in gaseous form, to said surface.

4,404,236

HIGH PRESSURE CHEMICAL VAPOR DEPOSITION

Shoichi Komatsu, and Seiichi Iwamatsu, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Oct. 23, 1981, Ser. No. 314,305
Claims priority, application Japan, Oct. 24, 1980, 55-149206
Int. Cl.³ H01L *21/316, 21/318*
U.S. Cl. 427—94 **13 Claims**



1. In a process of chemical vapor deposition wherein a thin SiO_2 film is formed on a substrate by chemical reaction of a vapor, the improvement which comprises carrying out the chemical vapor deposition at a pressure greater than at least 2 atmospheres.

4,404,237

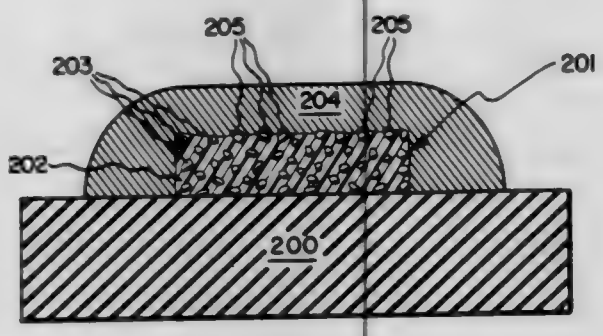
FABRICATION OF ELECTRICAL CONDUCTOR BY REPLACEMENT OF METALLIC POWDER IN POLYMER WITH MORE NOBLE METAL

Charles W. Eichelberger, Schenectady, and Robert J. Wojnarowski, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,342
Int. Cl.³ H05K *3/12, 3/18*
U.S. Cl. 427—96 **97 Claims**

1. A method for forming an electrical conductor in desired areas of a substrate, which comprises the steps of: applying a desired design to said substrate with an ink composition comprising a finely divided metallic powder having at least a first metal therein and a curable polymer; at least partially curing said curable polymer to cause volumetric shrinkage thereof; adjusting the amount of the finely divided powder to be about

60–80% by volume of said ink composition after the ink is at least partially cured; and contacting the at least partially cured ink composition of the desired design with a metal salt solution of a second metal in which the second metal cation is more noble that at least the first metal of finely divided powder and the anion of said metal salt forms soluble salts with both said



cation and at least the first metal of said finely divided powder, to cause said second metal of said metal salt solution to plate out as a contiguous layer on the surface of said ink composition and with a volume of said second metal on said surface greater than the volume of the metal of said powder removed from said surface.

4,404,238

PRECIPITATED ALUMINA FOR USE IN MAGNETIC RECORDING DISC MEDIA

Chandler M. Baldwin, Santa Clara, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Apr. 16, 1981, Ser. No. 254,935
Int. Cl.³ H01F *10/02*
U.S. Cl. 427—128 **7 Claims**

1. A method of manufacturing a magnetic recording medium comprising magnetic particles and alumina particles dispersed in a binder as a unitary coating upon a non-magnetic substrate wherein each of the alumina particles are disposed in said binder and are substantially equal to the thickness of the medium wherein said alumina particles are produced by first forming an aluminum hydrate from an alumina hydrate gel according to the following equation:

$$Al_2O_3.nH_2O \rightarrow Al_2O_3.3H_2O + (n-3)H_2O$$

wherein $n > 3$
and heating the aluminum hydrate above approximately 800° C. to form alumina according to the following equation:

$$Al_2O_3.3H_2O \rightarrow Al_2O_3 + 3H_2O$$

4,404,239

TREATMENT OF WOOD WITH WATER REPELLENT COMPOSITIONS

John F. Grunewalder, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 224,429, Jan. 12, 1981, Pat. No. 4,360,385. This application Aug. 2, 1982, Ser. No. 404,243
Int. Cl.³ B05D *3/02*; C09D *5/14*; C09K *3/18*
U.S. Cl. 427—393 **16 Claims**

1. A method of treating wood so as to provide the wood with water-repellency, comprising the steps of:

(a) applying to wood a water-repellent composition, said composition consisting essentially of;

(i) from about 1% to about 50% of an alpha olefin having from 20 to 24 carbon atoms, a narrow cut alpha olefin blend, a narrow cut paraffin blend, or a mixture thereof, wherein said olefin blend and paraffin blend consists essentially of a mixture of compounds of which at least about 50% have from 20 carbon atoms to 24 carbon atoms;

(ii) from about 0% to about 6% of a wood preservative;

(iii) from about 0% to about 20% of an alkyd resin;

(iv) from about 0% to about 5% of an organic ionizable compound; and

(v) from about 45% to about 98% of an organic solvent, and

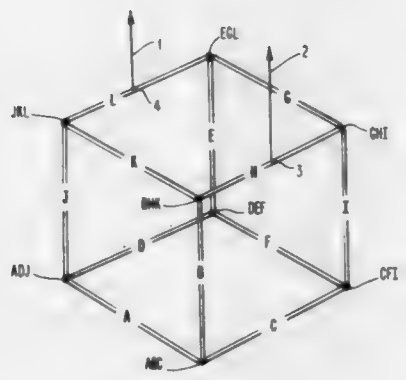
(b) drying the wood of step (a) so as to produce the treated wood.

4,404,240

MOBILE

Michael A. Varela, 2668 Ringneck Rd., Audubon, Pa. 19401

Filed Oct. 13, 1980, Ser. No. 310,638
Int. Cl.³ A63H *33/40*; G09B *23/04*; G09F *21/00*
U.S. Cl. 428—8 **6 Claims**



1. In a mobile:

twelve elongated members positioned with respect to one another to create the appearance of at least one hexahedron shape;

eight flexible joint means each respectively joining three members together to form four corners of said hexahedron shape and providing for the members to remain attached to one another and to pivot relative to each other;

support means;

connection means respectively connecting the support means to an opposite pair of members for suspending the mobile and providing for relative motion between the support means and the members connected thereto; and

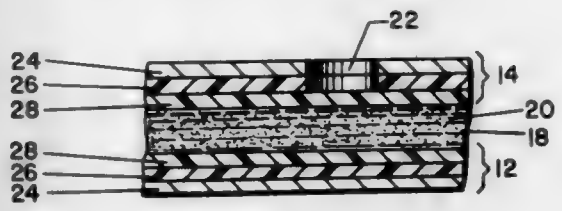
the elongated members, the flexible joint means, and the connection means providing for the mobile to assume a balanced, static condition whereby the members create the appearance of an hexahedron of one shape and also for the members to move relative to each other upon the application of forces thereto whereby to create the appearance of an hexahedron of a shape different from said one shape.

4,404,241

MICROWAVE PACKAGE WITH VENT

Robert L. Mueller, and Jerome A. Cherney, both of Appleton, Wis., assignors to James River-Dixie/Northern, Inc., S. Norwalk, Conn.

Filed Dec. 19, 1979, Ser. No. 105,413
Int. Cl.³ B65B *25/22*; B65D *51/16, 65/10, 65/38*
U.S. Cl. 428—35 **14 Claims**



1. A multilayered sheet material, adapted for use in a package or as a component thereof for venting vapor generated by

a material contained therein when subjected to cooking temperatures, which comprises: a substrate of heat-resistant material, capable of maintaining dimensional stability, when exposed to cooking temperatures and operations, and not interfering with said cooking operation, said substrate having at least one aperture formed therein that extends from its top surface to its bottom surface; and a continuous sealing layer of an extrudable hot melt material having a melt flow index of about 3 to 20 grams/minute at 125° C. bonded to a surface of said substrate and extending over the interstice defining said aperture said sealing layer extending over said interstice being operable to soften and flow when exposed to said cooking temperatures to vent the vapor generated by cooking.

7. A method for producing a multilayered sheet material comprising at least one sealed aperture, which comprises the steps of:

(a) providing a substrate comprising a first layer of a material capable of maintaining dimensional stability when exposed to cooking temperatures and operations, and not interfering with said cooking operations;

(b) forming apertures in said substrate that extend through the substrate;

(c) passing the apertured substrate into a nip formed between a chill roll and a pressure roll while simultaneously passing a hot melt extrusion of an ethylene-vinyl acetate-wax material having a melt flow index of about 3 to 20 grams/-minute at 125° C. into the nip between the substrate and the pressure roll, the extruded material being applied to said substrate material and passing through said apertures to release material on the underlying pressure, whereby when the rolls are pressed together, the extruded material is released from the pressure roll to bond as a layer to a surface of said substrate and extend over and seal the interstices defining the apertures, the sealing layer so formed being operable to soften and flow when exposed to said cooking temperatures to vent the vapor generated by cooking.

11. A package for containing vapor-generating material and adapted to vent such vapor while maintaining said package in a substantially uniform flat condition which comprises: a bottom portion bonded along its peripheral edges to a top portion and having a cavity therebetween for containing a vapor-generating material, said top portion comprising a multilayered sheet material formed from a first layer capable of maintaining dimensional stability when exposed to elevated temperatures bonded to a second layer of polyethylene, said polyethylene bonded substrate having at least one aperture formed therein that extends from its top surface to its bottom surface and a continuous layer of an extrudable hot melt material having a melt flow index of about 3 to 20 grams/minute at 125° C. bonded to said polyethylene surface of the substrate and sealing the interstice defining said aperture, said hot melt material sealing the aperture conveying moisture barrier properties to the package at other than cooking temperatures and softening when exposed to cooking temperatures to soften and flow to vent vapor generated by cooking prior to distortion of the package.

4,404,242

FILM LAMINATE FOOD WRAP AND FOOD POUCH THEREFROM

Joann H. Squier, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 2, 1982, Ser. No. 364,748

Int. Cl.³ B32B *27/08*

U.S. Cl. 428—35 **15 Claims**

1. A flexible film laminate comprising

(a) an oriented polyacrylonitrile film containing an adhesion promoting proportion of a polyalkylene glycol ether having the formula:

$$HO\leftarrow CH_2CH(R)-O\rightarrow_n H$$

wherein R is H or CH_3, and n is an integer of from 2 to 4;

(b) an adhesive layer contacting said polyacrylonitrile film, said adhesive layer being a combination of (1) a styrene-betadiene block copolymer having a monomer parts by weight ratio of from about 1:3 to about 3:1 and (2) a random terpolymer of from about 30 to about 40 parts by weight of 1,3-pentadiene; about 30 to about 40 parts by weight of a monocyclic terpene and from about 25 to about 35 parts by weight of alpha methylstyrene, said combination consisting essentially of from about 1 to about 3 parts by weight of the block copolymer to from about 3 to about 1 part by weight of the terpolymer; and

(c) either a second oriented polyacrylonitrile film containing said glycol ether or a heat-sealable polyolefin film contacting said adhesive layer.

13. The process for adhesively bonding two or more polyacrylonitrile films or a polyacrylonitrile film and a heat-sealable polyolefin film comprising:

(a) incorporating into said polyacrylonitrile film an adhesion-promoting proportion of a polyalkylene glycol ether having the formula

$$HO\leftarrow CH_2CH(R)-O\rightarrow_n H$$

wherein R is H or CH_3, and n is an integer of from 2 to 4;

(b) interposing between said films a layer of an adhesive composition comprising a combination of (1) a styrene-betadiene block copolymer having a monomer parts by weight ratio of from about 1:3 to about 3:1 and (2) a random terpolymer of from about 30 to about 40 parts by weight of 1,3-pentadiene; about 30 to about 40 parts by weight of a monocyclic terpene and from about 25 to about 35 parts by weight of alpha methylstyrene, said combination consisting essentially of from about 1 to about 3 parts by weight of the block copolymer to from about 3 to about 1 part by weight of the terpolymer; and

(c) applying pressure or pressure and heat to the film surfaces.

4,404,243

LATENT PRESSURE-SENSITIVE SHEET MATERIAL AND METHOD OF MAKING SAME USING SOLVENT-BASED PRESSURE-SENSITIVE ADHESIVE

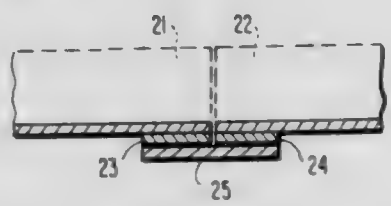
John M. Terpay, Danville, Va., assignor to Reeves Bros., Inc., Spartanburg, S.C.

Filed Aug. 3, 1982, Ser. No. 404,766

The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.

Int. Cl.³ E04B *2/00*

U.S. Cl. 428—62 **30 Claims**

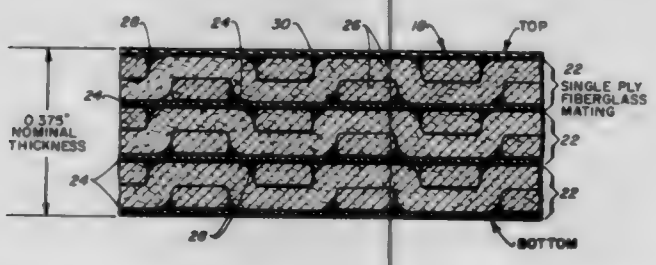


1. A latent pressure-sensitive sheet material having a discontinuous surface comprising a flocked pile surface adhered to a base material by a permanent adhesive, and a reservoir of a solvent-deposited pressure-sensitive adhesive adhering to and between the fibers forming said flocked pile surface.

4,404,244
SYSTEM FOR RAPID REPAIR OF DAMAGED AIRFIELD RUNWAYS

Preston S. Springston, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 27, 1982, Ser. No. 437,092
Int. Cl.[3] B32B *5/12*
U.S. Cl. 428—109 20 Claims



13. A low-profile fiberglass reinforced polyester laminate membrane trafficable cover for use over compacted backfilled bomb craters to rapidly repair crater damage airfield pavements, comprising:

a. a plurality of fiberglass mats, each fiberglass mat consisting of a layer of chopped fiberglass strands chemically bonded to a layer of woven fiberglass roving;

b. said fiberglass mats being laid in alternating directions to adjacent mats;

c. said plurality of fiberglass mats being saturated (without excess) with a polyester resin to fill all voids between the glass fibers and layers, and the laminate cured;

d. a plurality of anchoring holes provided around the perimeter of said cover;

e. a low profile bushing and anchor bolt provided for each of said anchoring holes for fastening said trafficable cover to corresponding anchor bolt holes in airfield pavement about the perimeter of a crater being repaired.

4,404,245
PROTECTIVE SHEET FOR CASSETTE HOLDING MAGNETIC RECORDING TAPE

Toshihiko Ishida, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed May 14, 1981, Ser. No. 263,599
Claims priority, application Japan, Jun. 2, 1980, 55-75181[U]
Int. Cl.[3] B32B *3/00, 27/14;* G11B *5/78*
U.S. Cl. 428—206 6 Claims



1. A protective sheet for a cassette holding a magnetic recording tape which comprises a transparent base which is coated with a hardened surface layer formed by bonded hard fine particles made of a mixture of Al_2O_3, TiO_2 and SiO_2 with a binder wherein a ratio of said hard fine particles to said binder is in a range of about ¼ to about 1/10 by weight.

4,404,246
STORABLE, CROSSLINKABLE PRESSURE-SENSITIVE ADHESIVE TAPE

Robert R. Charbonneau, Lake Elmo, and Gaylord L. Groff, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 22, 1982, Ser. No. 421,151
Int. Cl.[3] B05D *5/10, 3/06;* C09J *7/02*
U.S. Cl. 428—212 7 Claims

1. A tape comprising a carrier web and a pressure-sensitive adhesive layer comprising a copolymer of

(a) acrylic acid ester of nontertiary alcohol, the molecules of which have from 1–14 carbon atoms, at least a major proportion of said molecules having a carbon-to-carbon chain of 4–12 carbon atoms terminating at the hydroxyl oxygen atom, said chain containing at least about one-half the total number of carbon atoms in the molecule, said acrylic acid ester being per se polymerizable to a sticky, stretchable elastic adhesive polymer mass, and

(b) at least one copolymerizable monoethylenic monomer selected from the group consisting of acrylic acid, methacrylic acid and itaconic acid,

wherein the improvement comprises:

the copolymerizable monomer (b) comprises from 10 to 25 percent by weight of said monomers (a) and (b) and

the adhesive layer includes in an amount within the range of about 0.1 to 0.8 percent by weight of the copolymer, a lower-alkoxylated amino formaldehyde condensate having C_{1-4} alkyl groups, said copolymer being substantially uncrosslinked and hence retaining some tackiness until being heated.

3. A tape as defined in claim 1 wherein the carrier web has a low-adhesion surface from which the adhesive layer can be easily peeled off.

4. A tape as defined in claim 3 wherein the carrier has low-adhesion surfaces on both faces, and the tape is wound upon itself in roll form.

5. A tape as defined in claim 4 wherein the two low-adhesion surfaces are different so that the adhesive layer preferentially adheres to one surface.

4,404,247
PROTECTIVE COVERING FOR MAGNETIC RECORDING MEDIUM

Mario Dominguez-Burguette, Woodbury, Minn., and George D. Foss, River Falls, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 2, 1982, Ser. No. 394,531
Int. Cl.[3] G11B *5/82;* B32B *27/30*
U.S. Cl. 428—213 21 Claims

1. A magnetic recording medium having a magnetizable coating, the face of which is covered by a covering comprising

an inner layer of an insoluble polymer made from 80 to 95 parts by weight of a film-forming aromatic or heterocyclic polymerizable monomer having a plurality of polymerizable, ethylenically unsaturated groups and correspondingly 20 to 5 parts by weight of vinyl aromatic comonomer, and

an outer layer of insoluble polymer made from monomer having a perfluoropolyether segment which comprises a plurality of $—C_aF_{2a}O—$ repeating units, were subscript a is independently in each such units an integer from 1 to 4,

the thickness of said covering not exceeding 200 nm.

12. A magnetic recording medium having a metallic thin-film coating covered with an adherent, cohesive, protective covering having low surface energy, said covering comprising

an inner layer of an insoluble polymer made of 80 to 95 parts by weight 1,3-bis 3-[2,2,2-(tri- acryloyloxymethyl)ethoxy]-2-hydroxypropyl -5,5-dimethyl-2,4-imidazolidinedione or the dimethacrylate of hydroxypropoxylated bisphenol A and 20 to 5 partsby weight alpha-methyl styrene, and

an outer layer of an insoluble polymer made from monomer having a perfluoropolyether segment which is

$$—CF_2O(CH_2CF_2O)_m(CF_2O)_nCF_2—$$

wherein m and n denote randmonly distributed repeating units, the ration m/n is in the range of 0.2/1 to 5/1, the number average molecular weight of said segment is in the range of 800 to 10,000, and at least 75 weight percent of said outer layer is said segments,

the weight of said inner layer being from 1 to 40 times that of said outer layer, and the thickness of said covering being in the range of 10 to 100 nm.

13. Method of making a magnetic recording medium with a covering protecting the face of the magnetizable coating of said medium, comprising the steps of

(a) coating onto said face a first dilute solution of from 80 to 95 parts of a film-forming aromatic or heterocyclic polymerizable monomer having a plurality of polymerizable ethylenically unsaturated groups, and correspondingly from 20 to 5 parts by weight of vinyl aromatic monomer to provide an inner coating,

(b) coating over the inner coating a second dilute solution of polymerizable monomer having a perfluoropolyether segment comprising a plurality of $—C_aF_{2a}O—$ repeating units, where subscript a in each such unit independently is an integer from 1 to 4, to provide an outer coating,

(c) drying said coatings and polymerizing said monomers, the thickness of the resultant composite covering not exceeding 200 nm.

4,404,248

CLEAR COAT/COLOR COAT FINISH FROM A HIGH SOLIDS COATING COMPOSITION OF A BLEND OF A LOW MOLECULAR WEIGHT ACRYLIC POLYMER AND A MEDIUM MOLECULAR WEIGHT ACRYLIC POLYMER AND AN ALKYLATED MELAMINE CROSS-LINKING AGENT

Harry J. Spinelli, Wilmington, Del., and Alan L. Thompson, Rochester, Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 144,297, Apr. 28, 1980, Pat. No. 4,330,458. This application Dec. 28, 1981, Ser. No. 334,892

Int. Cl.³ B32B *7/02*

U.S. Cl. 428—215 **10 Claims**

1. A substrate having a finish of a clear coat top layer in firm adherence to a color coat layer in adherence to said substrate; wherein the clear coat consists essentially of a transparent film forming binder and the color coat consists essentially of a film forming binder and pigments in a pigment to binder weight ratio of about 1/100 to 150/100; wherein the color coat and the clear coat being from a high solids coating composition comprising at least 50% by weight of a binder of film-forming constituents and up to 50% by weight of a nonaqueous liquid carrier; in which the film-forming constituents consist essentially of

(A) about 5–45% by weight of a medium molecular weight acrylic polymer having a number average molecular weight, determined by gel permeation chromatography, of about 5,000–20,000, a hydroxyl content of about 2–10% by weight, a glass transition temperature of about −20° C. to +25° C.;

(B) about 10–50% by weight of a low molecular weight acrylic polymer having a number average molecular weight determined as above of about 500–7,500, a hydroxyl content of about 2–10% by weight, a glass transition temperature of about −20° C. to +25° C.;

wherein the acrylic polymers being the same or different consist essentially of

15–82% by weight of methyl methacrylate, 2–50% by weight of an alkyl methacrylate or an alkyl acrylate each having 2–18 carbon atoms in the alkyl group and 16–35% by weight of a hydroxy alkyl acrylate or a hydroxy alkyl methacrylate each having 2–4 carbon atoms in the alkyl group and wherein the difference in molecular weight between the acrylic polymers is at least 3000; and

(C) about 25–45% by weight of an alkylated melamine formaldehyde cross-linking agent having 1–4 carbon atoms in the alkyl group; and in addition to the above film-forming constituents contains about 0.1–2.0% by weight of an acid catalyst.

4,404,249

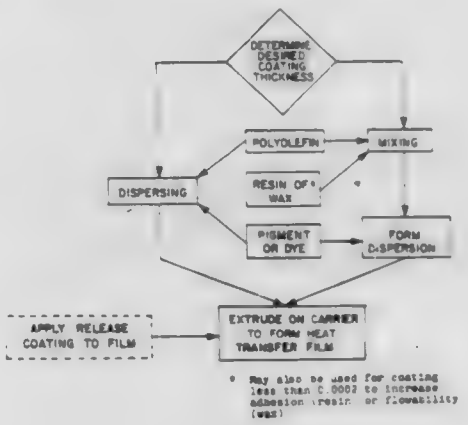
THERMAL IMPRINTING OF SUBSTRATES

Edward S. Margerum, Salem, and Norman A. Hiatt, Framingham, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Oct. 6, 1980, Ser. No. 194,694

Int. Cl.³ B41M *5/26*

U.S. Cl. 428—216 **21 Claims**



1. A heat transfer film comprising

(a) a plastic film carrier;

(b) a transfer layer consisting of a uniform blend of a pigmented polyolefin and a rosin ester applied as a single uniform hot melt coating to said carrier.

4,404,250

FIRE-RETARDANT HIGH PRESSURE CONSOLIDATED ARTICLES CONTAINING AN AIR-LAID WEB AND METHOD OF PRODUCING SAME

Theodore R. Clarke, Cincinnati, Ohio, assignor to Formica Corporation, Wayne, N.J.

Filed Sep. 23, 1982, Ser. No. 422,041

Int. Cl.³ D04H *1/58*

U.S. Cl. 428—220 **12 Claims**

1. A fire-retardant heat and pressure consolidated article comprising,

(a) a monostichous layer of randomly oriented, substantially non-hydrogen bonded, cellulosic fibers from about 0.5 mm to 2.5 mm in average length, said layer being from about 0.25 mm to 2.25 mm thick and containing from about 20% to 35%, by weight, based on the total weight of fiber, resin and flame retardant in (a), of a thermoset resin and a flame-retarding amount (a) of boric acid or ammonium pentaborate.

4,404,251

COPYING SYSTEMS, A PROCESS FOR THEIR PRODUCTION, AND SUITABLE PRINTING INKS FOR BOTH OFFSET AND BOOK PRINTING

Gert Jaba, Odenthal; Manfred Dahm, Levenkusen; Artur Haus, Overath; Ulrich Nehen, Leverkusen; Klaus Rath, Leverkusen, and Norbert Weimann, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 244,616, Mar. 17, 1981, abandoned. This application Feb. 24, 1982, Ser. No. 352,038

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011708; Mar. 26, 1980, 3011709; Feb. 4, 1981, 3103816

Int. Cl.[3] B41M *3/12;* B41L *1/20*

U.S. Cl. 428—320.6 16 Claims

1. A process for producing a donor sheet for a pressure-sensitive carbonless copying system by applying printing ink containing a binder on to a paper substrate and then hardening the same, said process comprising applying a printing ink which comprises microcapsules containing a dye precursor, spacers having a grain size from 1.5 to 10 times the diameter of the microcapsules and a binder comprising an air-drying alkyd resin, a vegetable oil or a mixture thereof to at least part of a surface of a paper substrate by a wet or a dry offset or book printing technique.

8. A printing ink which comprises microcapsules containing a dye precursor, spacers having a grain size from 1.5 to 10 times the diameter of the microcapsules and a binder comprising an air-drying alkyd resin, vegetable oil or a mixture thereof.

4,404,252

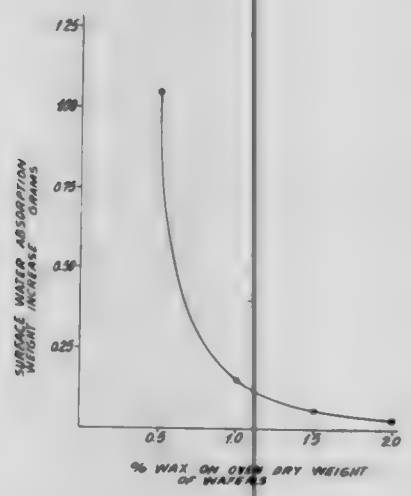
SURFACE STABILIZED WAFERBOARD

Bernard H. Hetzler, and Hugh V. Martin, both of British Columbia, Canada, assignors to MacMillan Bloedel Limited, Vancouver, Canada

Filed Sep. 16, 1981, Ser. No. 302,763

Int. Cl.[3] B32B *5/16*

U.S. Cl. 428—326 35 Claims



1. Waferboard having at least one surface rendered water resistant and stabilized against wafer loss, formed of wood wafers bonded together in a hot press with an adhesive resin and wax, and having a layer of porous paper bonded in the hot press to at least one surface of the waferboard, said paper retaining its porosity after said bonding in the hot press.

20. In a process for manufacturing waferboard wherein wood wafers are bonded together in a hot press with an adhesive resin and wax, the improvement of imparting water resistance and stabilizing at least one surface of the waferboard against wafer loss, comprising bonding a layer of porous paper to at least one surface of the waferboard while to wood wafers are being bonded together with the hot press, said paper remaining porous after said bonding.

4,404,253

MAGNETIC RECORDING MEDIUM

Robert Kohler, Wessling; Karlchristian Schilffarth, Sauerlach; Heinrich Kober, Hohenschaeftlarn, and Burkhard Nippe, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 137,745, Apr. 7, 1980, abandoned. This application Feb. 25, 1982, Ser. No. 352,208

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914659

Int. Cl.[3] H01F *10/02*

U.S. Cl. 428—327 3 Claims

1. A magnetic recording medium comprised of a flexible support and at least one magnetic layer on said support comprising a water dispersible binder and magnetic pigments wherein the improvement comprises the magnetic layer includes a binder comprised of anionic polyurethane ionomers particles containing from 0.02 to 13% by weight of SO_3^- groups, being dispersed in water with dispersing agents, and said magnetic pigments and said polyurethane ionomer particles having a particle size of 20 nm to 400 nm, the volumetric ratio of magnetic pigment to polyurethane, based on the solids content, being in the range of 0.7:1 to 1.4:1.

4,404,254

PRODUCTION OF LAMELLAR IRON OXIDE PIGMENTS

Gerhard Franz, and Franz Hund, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 112,383, Jan. 15, 1980, abandoned. This application Jul. 7, 1981, Ser. No. 281,134

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1979, 2904491

Int. Cl.[3] C01G *49/02;* C04B *35/26;* C01G *49/08*

U.S. Cl. 428—329 16 Claims

1. Synthetic, hexagonal, lamellar iron oxide particles substantially homogeneously about 0.1 to 12% by weight of at least one oxide of an element of the IVth, Vth or VIth Main and Secondary Groups and of the IInd Secondary Group of the Periodic System of elements.

15. Iron oxide particles according to claim 1 present as a corrosion-inhibiting or decorative colored pigment in a synthetic resin, plastic, glaze or enamel.

16. A magnetic recording support, magneto-optical display or storage device including a ferrite with the crystal structure of spinel or barium hexaferrite and made from iron oxide particles according to claim 1.

4,404,255

COLLOIDAL COATING FOR SMALL THREE DIMENSIONAL ARTICLES, AND PARTICULARLY FOR FUSION TARGETS HAVING GLASS SHELLS

Dennis G. Peiffer, East Brunswick, and Harry W. Deckman, Fanwood, both of N.J., assignors to The University of Rochester, Rochester, N.Y.

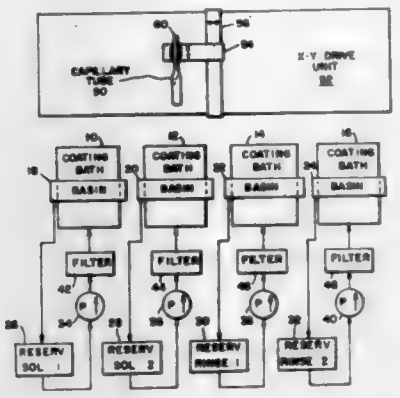
Division of Ser. No. 155,266, Jun. 2, 1980, Pat. No. 4,315,958. This application Apr. 20, 1981, Ser. No. 255,622

Int. Cl.[3] B32B *5/16*

U.S. Cl. 428—406 5 Claims

1. A three-dimensional glass microballoon of maximum dimensions from about 20 to 500 microns coated on all surfaces thereof and of material having an inherent surface charge of

one polarity, a multitude of alternate monolayers of particles of material of positive and negative opposite charge adhered to



said surfaces onto each other, the first of said monolayers being particles of polarity opposite to said one polarity.

4,404,256

SURFACE FLUORINATED POLYMERS

Madhu Anand, Cambridge; Raymond F. Baddour, Belmont, and Robert E. Cohen, Jamaica Plain, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 134,182, Mar. 26, 1980, Pat. No. 4,264,750, which is a continuation-in-part of Ser. No. 62,895, Aug. 1, 1979, abandoned. This application Dec. 1, 1980, Ser. No. 211,488

Int. Cl.[3] **C08F** *8/20, 8/22*

U.S. Cl. 428—409 **11 Claims**

1. A fluorinated polymeric article having a substantially completely fluorinated surface of low surface energy and substantially free of oxygen and having a thickness up to about 200 Angstroms, the remainder of said article comprising a non-fluorinated polymer, said fluorinated surface being formed by fluorinating the surface of said polymeric article comprising said non-fluorinated polymer.

4,404,257

COATED AND ULTRAVIOLET RADIATION STABILIZED POLYCARBONATE ARTICLE

Daniel R. Olson, Schenectady, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Apr. 13, 1981, Ser. No. 253,364

Int. Cl.[3] **B32B** *27/36*

U.S. Cl. 428—412 **19 Claims**

1. An improved coated polycarbonate resin article exhibiting improved resistance to degradation by ultraviolet radiation comprising a polycarbonate resin substrate having durably adhered to at least one surface thereof a coating comprised of (i) an adhesion promoting primer layer containing a thermoplastic acrylic polymer disposed on said surface, and (ii) adherently disposed on said primer layer a top coat layer containing a colloidal silica filled thermoset organopolysiloxane; the improvement consisting essentially of the surface layers of said surface of the substrate on which said coating is disposed being impregnated with at least one ultraviolet radiation absorbing compound.

4,404,258

COLOR STABILIZED WATER-DISPERSED POLYURETHANE COATING ON VINYL SURFACES

Peter Loewrigkeit, Wyckoff, and Shmuel Dabi, Highland Park, both of N.J., assignors to Witco Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 191,729, Sep. 29, 1980, abandoned. This application Mar. 26, 1982, Ser. No. 362,330

Claims priority, application Canada, Jul. 21, 1981, 383058

Int. Cl.[3] **B32B** *27/40;* **B05D** *3/02*

U.S. Cl. 428—424.6 **8 Claims**

1. A color stabilized polyurethane coated polyvinyl chloride surface, said polyurethane and said polyvinyl chloride each of which is substantially color stable at about over 100° C. but which become discolored at about 100° C. when combined, comprising:

a said polyvinyl chloride or copolymer surface; and

a coating cured on said surface, said coating comprising a water-dispersed latex of said polyurethane

said dispersed polyurethane being treated with a compound selected from the group consisting essentially of a mono-acid halide, mono-acid anhydride and carbethoxy cyclic imide.

4,404,259

MAGNETIC RECORDING MEDIUM

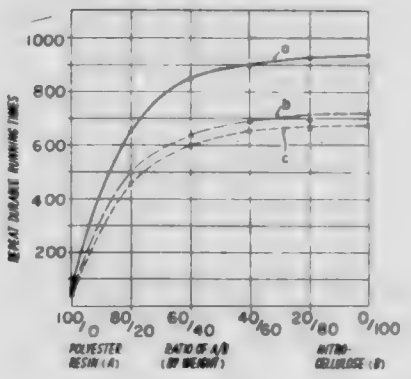
Akihiko Hosaka; Yukihiro Isobe, and Kiyotaka Okuyama, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1981, Ser. No. 313,611

Claims priority, application Japan, Oct. 21, 1980, 55-146341

Int. Cl.[3] **G11B** *5/70*

U.S. Cl. 428—425.9 **10 Claims**



1. A magnetic recording medium, comprising: a magnetic layer comprising a magnetic powder and a binder coated on a substrate, said binder consisting essentially of 40–80 wt % of a polyester resin, 60–20 wt % of an isopropyl alcohol or dibutyl phthalate free-nitrocellulose containing vinyl chloride-vinyl acetate copolymer as a protective component for the nitrocellulose and a polyisocyanate.

4,404,260

MAGNETIC RECORDING MEDIUM AND METHOD OF MANUFACTURE

Fujio Shibata, Komoro, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1982, Ser. No. 401,405

Claims priority, application Japan, Jul. 25, 1981, 56-116832

Int. Cl.[3] **H01F** *10/02*

U.S. Cl. 428—458 **10 Claims**

1. A magnetic recording medium having formed on the surface of a non-magnetic substrate, a layer comprising a binder vehicle having dispersed therein magnetic particles which are surface coated with a polyaminoamide phosphate.

4,404,261

METHOD OF MOLDING MULTI-PLY POLYMERIC COMPOSITES INCLUDING SIMULTANEOUS CURING OF PLURAL LAYERS HAVING DIFFERENT CATALYST POLYMERIZATION INITIATION TEMPERATURES AND PRODUCT THEREOF

John L. Canning, Newark, and John F. Kay, Columbus, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Oct. 13, 1981, Ser. No. 310,555

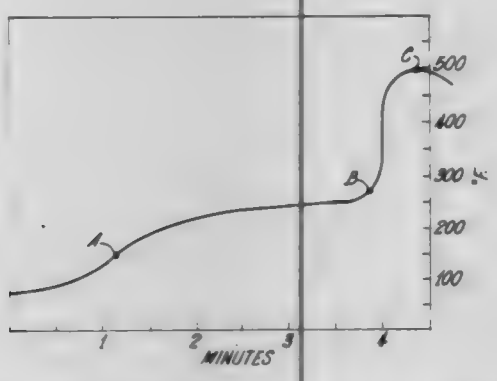
Int. Cl.[3] **B29C** *3/02;* **B29J** *1/02*

U.S. Cl. 428—480 **15 Claims**

1. A method for molding a plurality of polymeric plies to form a composite article, comprising:

(a) disposing a plurality of compatible polymeric plies in a mold in contact relationship, at least same of said plies

having catalyst systems with polymerization initiating temperatures different from polymerization initiation temperatures of catalyst systems of others of said plies, said initiation temperatures being such that when all of said plies are suitably heated within said mold, all of the catalyst systems reach their several different initiation temperatures substantially simultaneously; and



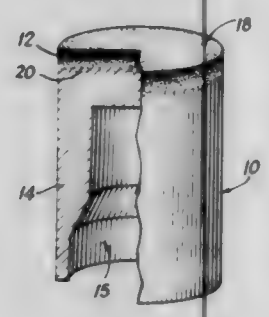
(b) molding said plurality of plies under pressure and heating for a period and in a manner such as to raise said polymeric plies and said catalyst systems to their several different polymerization initiation temperatures to informly crosslink said polymeric plies and form said polymeric article.

4,404,262

COMPOSITE METALLIC AND REFRACTORY ARTICLE AND METHOD OF MANUFACTURING THE ARTICLE

Thomas Watmough, Flossmoor, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Aug. 3, 1981, Ser. No. 289,586
Int. Cl.³ B22F *3/26*
U.S. Cl. 428—539.5 **1 Claim**



1. A method of manufacturing a composite article comprising a metallic portion and a refractory portion bonded together comprising:

disposing a first refractory member in contact with a molten metal, said refractory member having a predetermined thickness of a first solid refractory material extending from an exposed surface of said refractory member to define a refractory-metal interface within said refractory member, said refractory member including a second, porous refractory material extending from said refractory-metal interface to a metal contacting surface of said refractory member, where said second, porous refractory material has a porosity gradient generally increasing from said refractory-metal interface to said metal contacting surface and where the metal has a coefficient of thermal expansion at least twice the coefficient of thermal expansion of said second refractory material;

securing a second, distinct porous refractory member to said first refractory member, said second refractory member having a greater porosity than said second refractory material of said first refractory member;

applying a force between 140 and 1400 kilograms per square centimeter to said molten metal to cause said molten metal to penetrate through said second more porous refractory member and into said second, porous refractory material of said first refractory member; and

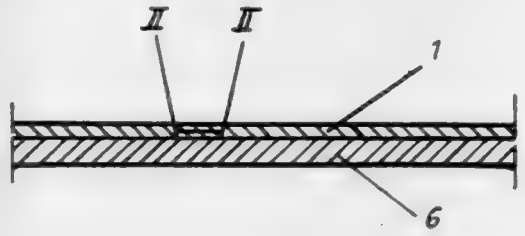
solidifying said molten metal.

4,404,263

LAMINATED BEARING MATERIAL AND PROCESS FOR MAKING THE SAME

Erich Hodes, Rosbach, and Michael Steeg, Oberolm, both of Fed. Rep. of Germany, assignors to Glyco-Metall-Werke Daelen & Loos GmbH, Wiesbaden-Schierstein, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 102,011, Dec. 10, 1979, abandoned. This application Oct. 16, 1981, Ser. No. 312,110
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1978, 2853724; Apr. 11, 1979, 2914618; Oct. 5, 1979, 2940376
Int. Cl.³ C23C *15/00*; F16C *33/00*
U.S. Cl. 428—564 **39 Claims**



1. Laminated bearing stock comprising, in combination:

(a) a substrate structure;

(b) a facing layer of material containing a matrix of antifriction substance which is sputtered by electrical discharge from a single, composite metallic target in a gas onto the said substrate structure,

(c) said matrix including particles of oxides of at least one metal,

(d) said particles being disposed in a fine suspension and constituting less than 1% by volume of said matrix substance,

(e) said selected metal and said oxide thereof being such that the volume of the oxide is greater than the volume of the respective metal,

(f) said facing layer also containing particles of at least one plastic substance having anti-friction properties, held in said matrix,

(g) said plastic substance having a dielectric constant of at most 2.6, and,

(h) means effected by said sputtering of the material of the facing layer against said substrate structure, for bonding and cohering the said facing layer thereto.

4,404,264

MULTI-GAUGE STRIP

Robert N. Tatum, Chesterfield, Mo.; Robert W. Hofer, Watertown, Conn., and S. Paul Zarlingo, Granite City, Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 26, 1981, Ser. No. 228,633
Int. Cl.³ H01B *5/14*
U.S. Cl. 428—573 **4 Claims**

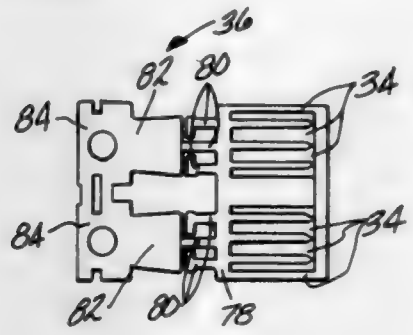
1. A multi-gauge strip useful in making leadframes for electronic devices, comprising:

a first strip of high strength metal suitable for forming electrical connectors having a first thickness and extending longitudinally for a given length;

a second strip of high conductivity metal, with a lower strength and higher conductivity than said first metal, having a second thickness greater than said first thickness, said second strip further being narrower in width than said first strip, and coextending longitudinally with said first strip of metal;

said first and second strips of metal being metallurgically bonded without the use of a welding or brazing material to form said multi-gauge strip;

the multi-gauge strip further having a first portion extending the given length, adapted to dissipate heat from an electronic device mounted thereto, said first portion formed from said first and second strips so as to have a third thickness substantially equal to the sum of the first and second thicknesses;



said multi-gauge strip also having a second portion adapted to form said electrical connectors, said second portion formed from said second strip so as to substantially extend the given length and have a fourth thickness substantially equal to the first thickness.

4,404,265

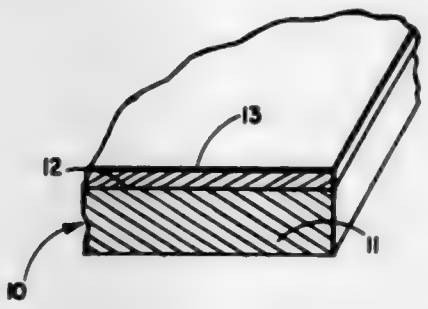
EPITAXIAL COMPOSITE AND METHOD OF MAKING

Harold M. Manasevit, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 385,028, Aug. 2, 1973, abandoned, which is a continuation of Ser. No. 64,835, Oct. 1, 1969, abandoned, which is a continuation-in-part of Ser. No. 705,213, Feb. 13, 1968, abandoned. This application Apr. 7, 1978, Ser. No. 894,368

Int. Cl.³ H01L *29/20*

U.S. Cl. 428—689 **75 Claims**



1. A composite comprising a monocrystalline, electrically insulating, oxide substrate and a single crystal film consisting of a Group III–V semiconductor epitaxially disposed on and in direct contact with said substrate in which the Group III constituent of the semiconductor comprises at least one element selected from the class consisting of gallium and indium.

4,404,266

MINIATURE AIR CELLS WITH SEAL

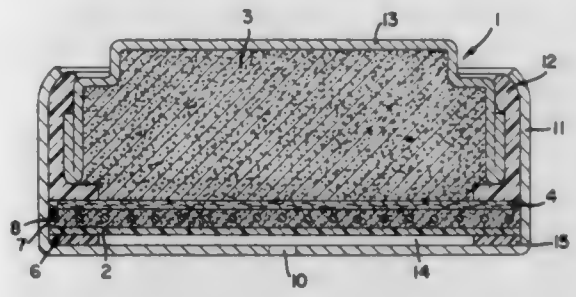
Nicholas J. Smilanich, Rocky River, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 15, 1982, Ser. No. 358,279

Int. Cl.³ H01M *4/00*

U.S. Cl. 429—27 **8 Claims**

1. A miniature air cell comprising a container having a base, an upright sidewall and an open-ended top and having at least one air opening in the base thereof; a cell assembly housed in said container having an air electrode in electrical contact with said container, an anode material situated above the air electrode, a separator layer therebetween, and an electrolyte in ionic contact with said air electrode and said anode material; a cell cover in electrical contact with said anode material; and an electrically insulating gasket interposed and compressed between said cell container and cover; the improvement being a resiliently deformable member having an aperture defined therein, said member coated on at least one surface with a sealing agent and compressively disposed between the base of said cell container and said air electrode such that the aperture defined in said member encompasses the at least one air opening in the base of said cell container thereby forming an air diffusion chamber between said air electrode and said container base and whereby electrolyte creepage past the air electrode and container base into said air diffusion chamber is effectively prevented, and which member provides support for the air electrode.



4,404,267

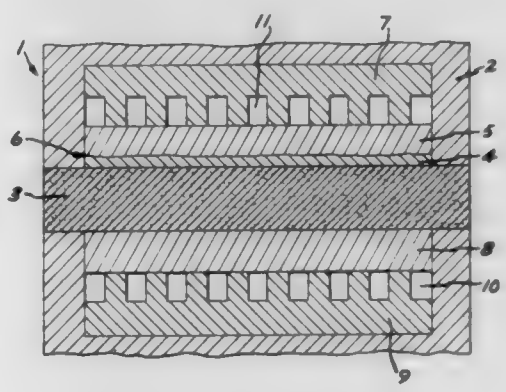
ANODE COMPOSITE FOR MOLTEN CARBONATE FUEL CELL

Charles D. Iacovangelo, Schenectady, and Kenneth P. Zarnoch, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,879

Int. Cl.³ H01M *4/86*

U.S. Cl. 429—41 **4 Claims**



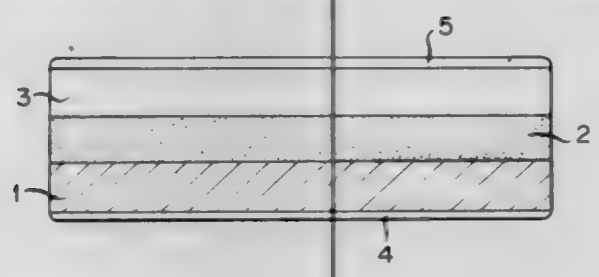
1. An anode composite useful for a molten carbonate fuel cell comprised of a porous sintered anode composed of metal or metal-covered ceramic particles having a porous sintered bubble pressure barrier integrally sintered to one face thereof covering said face, said barrier being comprised of a plurality of metal-coated ceramic particles enveloped by said metal coating sintered together and to said anode by means of said metal coating, said metal coating being selected from the group consisting of nickel, copper and alloys thereof, said ceramic particles being selected from the group consisting of lithium aluminate, strontium titanate, α-alumina and mixtures thereof, said barrier having a pore volume greater than 40% by volume but less than 85% by volume of said barrier, the pores of said barrier having a median pore size significantly less than that of said anode.

4,404,268

SOLID STATE LITHIUM CELL

Atsuo Imai, and Shigeru Matake, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaka, Japan

Filed Nov. 13, 1981, Ser. No. 320,883
Claims priority, application Japan, Nov. 26, 1980, 55-165282
Int. Cl.³ H01M *6/18*
U.S. Cl. 429—191 8 Claims



1. A solid state lithium cell comprising (a) a layer of a cathode-active material, (b) a layer of a solid electrolyte, and (c) a layer of an anode-active material comprised of a lithium metal, which are arranged in the order (a)-(b)-(c); wherein said cathode-active material comprises a solid solution comprised of lead iodide and a relatively very small amount sufficient to improve the discharge characteristic of the cell of at least one element selected from the group consisting of bismuth, antimony, thallium, indium and gallium and iodides thereof solid-solubilized as impurities in the crystal lattice of the lead iodide.

4,404,269

DEVELOPER CONTAINING MAGNETIC AND NON-MAGNETIC TONER

Nobuhiro Miyakawa, Suita; Kouzi Maekawa, Kyoto, and Masanori Fujii, Suita, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Nov. 13, 1981, Ser. No. 320,938
Claims priority, application Japan, Nov. 17, 1980, 55-160885
Int. Cl.³ G03G *9/14*
U.S. Cl. 430—106 8 Claims

1. In a two-component simultaneously consumable, dry-type composite developer which comprises a mixture of magnetic toner particles composed of a dispersion of a powdery magnetic material in an electrically insulating binder resin medium and non-magnetic toner particles composed of a dispersion of a coloring agent in an electrically insulating binder resin medium, the improvement wherein the magnetic toner particles comprise (a) a resin binder medium and (b) 40 to 70% by weight, based on the sum of the binder and powdery magnetic material, of magnetite having a bulk density of at least 0.45 g/ml, a number average maximum size as measured by an electron microscope of at least 0.5 μm and a maximum size/minimum size ratio of from 1.0 to 5.5, the magnetic toner particles have an electrostatic capacitance of 7 to 8.5 pF (picofarad), a dielectric constant of 3.59 to 4.36, and a volume resistivity of $1.2\times10^{-}$ to about 8.6×10^{14} Ω-cm, as determined under conditions of an electrode gap of 0.65 mm, an electrode sectional area of 1.43 cm^2 and an inter-electrode load of 105 g/cm^2, the non-magnetic toner particles comprise (i) a resin binder medium, (ii) 2 to 10% by weight, based on the resin binder medium, of a pigment, and (iii) a negative charge controlling agent composed of a chromium-, iron- or cobalt-containing complex salt dye, and have an electrostatic capacitance of 6.0 to 8.0 pF and a dielectric constant of 3.08 to 4.10, as determined under said conditions, the magnetic toner particles and the non-magnetic toner particles have a friction chargeability characteristic of the same polarity, and the magnetic toner particles and the non-magnetic toner particles are present in the developer at a weight ratio of from 100:1 to 100:30.

4,404,270

POSITIVELY CHARGEABLE POWDERED ELECTROPHOTOGRAPHIC TONER CONTAINING DIALKYL TIN OXIDE CHARGE CONTROL AGENT

Osamu Higashida; Isamu Moribe, both of Hitachi, and Hajime Yamamoto, Kyoto, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed May 21, 1981, Ser. No. 267,577
Claims priority, application Japan, May 22, 1980, 55-68651; May 22, 1980, 55-68652; May 22, 1980, 55-68653; Oct. 3, 1980, 55-139033; Oct. 3, 1980, 55-139034; Oct. 3, 1980, 55-139035
Int. Cl.³ G03G *9/08*
U.S. Cl. 430—110 5 Claims

1. A toner which can be charged positively comprising
(a) a resin,
(b) a colorant, and
(c) as a positive charge control agent, a compound selected from the group consisting of dialkyl tin oxides.

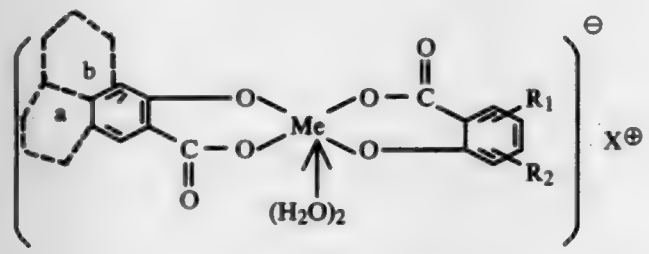
4,404,271

METAL COMPLEXES FOR USE IN DEVELOPERS FOR ELECTROSTATIC IMAGES, CHARGE CONTROL FUNCTION

Yoji Kawagishi, Yawata; Yukihiko Ishida, Neyagawa, and Kazuhiro Ishikawa, Nara, all of Japan, assignors to Orient Chemical Industries, Ltd., Japan

Filed Dec. 11, 1981, Ser. No. 329,996
Claims priority, application Japan, Dec. 22, 1980, 55-182388
Int. Cl.³ G03G *9/00*
U.S. Cl. 430—110 31 Claims

1. A toner composition for developing electrostatic images in the form of an admixture of a toner resin and a charge control agent comprising a metal complex having the formula



wherein a or b, only one of which is present, is a corresponding fused benzene or cyclohexene ring moiety which is optionally substituted with a least one alkyl substituent having 4 to 9 carbon atoms, R_1 and R_2 are hydrogen or alkyl substituents having 4 to 9 carbon atoms or together form a corresponding fused benzene or cyclohexene ring moiety which is optionally substituted with at least one alkyl substituent having 4 to 9 carbon atoms, provided that both R_1 and R_2 are not hydrogen at the same time, Me is Cr, Co or Fe, and X is a corresponding counter ion.

4,404,272

LIGHT-SENSITIVE MIXTURE AND COPYING MATERIAL PREPARED THEREFROM WITH NOVOLAK HAVING BROMINATED PHENOL UNITS

Paul Stahlhofen, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 23, 1982, Ser. No. 351,479
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1981, 3107109
Int. Cl.³ G03C *1/60, 1/68, 1/70, 1/727*
U.S. Cl. 430—192 4 Claims

1. A light-sensitive mixture comprising, as the light-sensitive compound, an o-quinone-diazide or, as a light-sensitive combination of compounds, a mixture of
(a) a compound which releases an acid on exposure, and
(b) a compound containing at least one C—O—C group which can be cleaved by an acid,

the solubility of which mixture in an aqueous-alkaline solution is increased upon exposure, and a novolak containing brominated phenol units wherein the brominated novolak contains about 15 to 50 percent by weight of bromine.

4,404,273

PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC COLOR IMAGES BY THE SILVER DYE BLEACH PROCESS

Eddy Forte, Lausanne; Mario Fryberg, Praroman-le-Mouret, and Gerald Jan, Fribourg, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

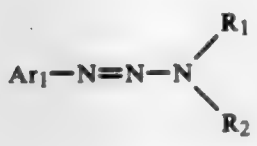
Filed Dec. 2, 1981, Ser. No. 326,786

Claims priority, application Switzerland, Dec. 15, 1980, 9248/80

Int. Cl.³ G03C *7/00, 1/76, 1/40*

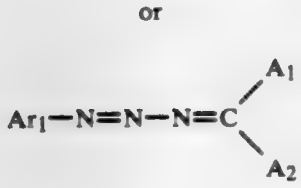
U.S. Cl. 430—377 **25 Claims**

1. A photographic material for the production of photographic colour images by the silver dye bleach process, which process comprises the steps of imagewise exposure, silver development, dye formation, dye bleach, silver bleach and fixing of the photographic material and wherein said process steps, after the development of the image silver are carried out in acid processing solution which contains a phase transfer catalyst capable of transferring cations said photographic material comprising an opaque or transparent base, having thereon at least one silver halide emulsion layer and, in the same layer or in an adjacent layer, containing a dispersion of the oil-soluble triazine of the formula



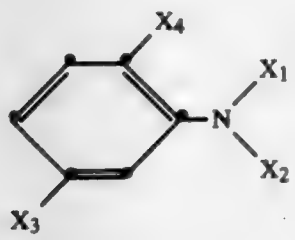
(1)

or



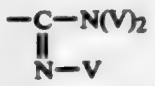
(2)

and an oil-soluble coupling component of the formula

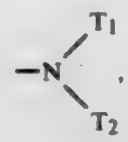


(3)

in a water-insoluble solvent or solvent mixture in which Ar_1 is substituted or unsubstituted aryl or a substituted or unsubstituted aromatic heterocyclic radical, R_1 is hydrogen, substituted or unsubstituted alkyl having 1 to 6 carbon atoms, $—(CH_2CH_20)_r—L_1$ or $—OL_1$, in which L_1 is alkyl having 1 to 12 carbon atoms and r is 1, 2 or 3, or R_1 is substituted or unsubstituted aryl, hydroxyl or a radical of the formula



in which V is hydrogen or alkyl having 1 to 12 carbon atoms, R_2 is substituted or unsubstituted alkyl having 1 to 6 carbon atoms, $—(CH_2CH_2O)_r—L_1$, with L_1 and r being as defined above, or substituted or unsubstituted aryl, or R_1 and R_2, conjointly with the nitrogen atoms to which they are bonded, form a substituted or unsubstituted, saturated or unsaturated 5-membered, 6-membered or 7-membered ring which may contain a further hetero-atom, A_1 and A_2 independently of one another are an amino group of the formula



in which T_1 and T_2 independently of one another are hydrogen, substituted or unsubstituted alkyl having 1 to 12 carbon atoms or substituted or unsubstituted aryl, X_1 and X_2 independently of one another are hydrogen or substituted or unsubstituted alkyl having 1 to 20 carbon atoms, X_3 is hydrogen, substituted or unsubstituted alkyl having 1 to 6 carbon atoms, substituted or unsubstituted alkoxy having 1 to 20 carbon atoms, $—O(C_2H_4O)_n—H$, $—O(CH_2)_m—OH$, $—O—(CH_2)_m—OZ_1$ or $—O—(C_2H_4O)_n—Z_1$, in which Z_1 is alkyl having 1 to 8 carbon atoms, n is an integer from 1 to 5, and m is 2, 3 or 4, or X_3 is substituted or unsubstituted aryloxy, hydroxyl, halogen, $—NHCO—Y_1$, $—NHCOH$, $—NHCO—OY_1$, $—NHP(O)(OY_1)_2$ or $—NHSO_2—Y_1$, in which Y_1 is substituted or unsubstituted alkyl having 1 to 16 carbon atoms, $—O(CH_2)_m—OH$, $—O—(C_2H_4O)_n—H$, $—O—(CH_2)_m—OZ_1$ or $—O—(C_2H_4O)_n—Z_1$, with Z_1, m and n being as defined above, or Y_1 is substituted or unsubstituted aryl, and X_4 is hydrogen, substituted or unsubstituted alkyl having 1 to 12 carbon atoms, $—O(C_2H_4O)_n—H$, $—O(CH_2)_m—OH$, $—O(CH_2)_m—OZ_1$ or $—O—(C_2H_4O)_n—Z_1$, m and n being as defined above, or X_4 is substituted or unsubstituted alkoxy having 1 to 16 carbon atoms, substituted or unsubstituted aryloxy or halogen, and the total of the carbon atoms in the substituents X_1, X_2, X_3 and X_4 is at least 10.

2. A process for the production of a photographic colour image by the silver dye bleach process, which process comprises imagewise exposure, silver development, dye formation, dye bleaching, silver bleaching and fixing of the photographic material, said photographic material being one of claim 1, and wherein said process steps, after the development of the image silver are carried out in an acid processing solution which contains a phase transfer catalyst capable of transferring cations.

4,404,274

PHOTOGRAPHIC LIGHT SENSITIVE ELEMENT CONTAINING YELLOW COLOR COUPLER AND METHOD FOR FORMING YELLOW PHOTOGRAPHIC IMAGES

Atsuaki Arai; Yasushi Oishi; Akio Okumura, and Kiyoshi Nakazyo, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

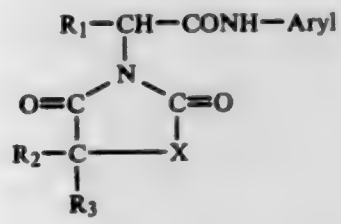
Continuation of Ser. No. 235,937, Mar. 20, 1972, abandoned. This application Apr. 6, 1981, Ser. No. 251,561

Claims priority, application Japan, Mar. 20, 1971, 46-15997

Int. Cl.³ G03C *7/00, 1/40*

U.S. Cl. 430—389 **47 Claims**

1. A silver halide emulsion containing a yellow dye-forming coupler of the formula



wherein X is oxygen or sulfur, R_1 is α-pivalyl, and R_2 and R_3 are each hydrogen or alkyl.

4,404,275

INSTANT FILMSTRIP AND METHOD OF MAKING

William J. Hutchinson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 215,889, Dec. 12, 1980, Pat. No. 4,374,195.
This application Jul. 9, 1982, Ser. No. 396,571
Int. Cl.³ G03B *17/50*; G03C *3/00, 9/02*
U.S. Cl. 430—501 4 Claims

1. A method for making a coated sheet of elastic material for photographic film for subsequent application to a relatively non-elastic support, said method comprising the steps of:

applying a layer of relatively elastic material to a relatively inelastic sheet to provide dimensional stability to the elastic layer;

coating at least one layer of photographic material onto said elastic layer; and

stripping said relatively inelastic sheet from said relatively elastic material.

4,404,276

POLYMER COMPOSITIONS CONTAINING CROSSLINKED SILICONE POLYCARBINOL AND HAVING A LOW COEFFICIENT OF FRICTION

David J. Steklenski, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 14, 1982, Ser. No. 388,321
Int. Cl.³ G03C *1/76, 1/78, 1/38*
U.S. Cl. 430—531 3 Claims

1. A photographic element comprising a support having on one side thereof a hydrophilic, radiation-sensitive layer and on the other side thereof, as the outermost layer, a layer comprising a blend of a major amount of a polymer or polymer blend and a minor amount of a crosslinked silicone polycarbinol.

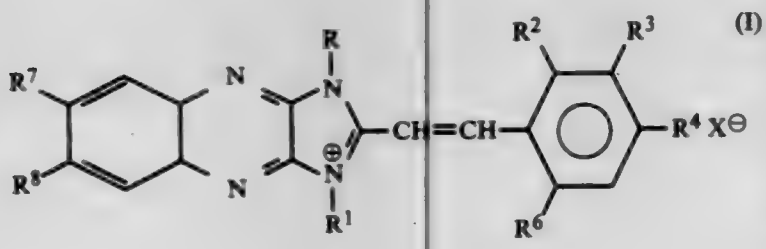
4,404,277

DESENSITIZING DYES FOR PHOTOGRAPHIC EMULSIONS

Ivan H. Skoog, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 21, 1981, Ser. No. 295,015
Int. Cl.³ G03C *1/36*
U.S. Cl. 430—597 13 Claims

1. A light-sensitive, fogged, direct positive silver halide emulsion characterized by having therein a desensitizing amount of cyanine dye corresponding to the following formula:



(I)

wherein:

R represents an alkyl group of up to 4 carbon atoms,

R^1 represents an alkyl group of 1 to 4 carbon atoms,

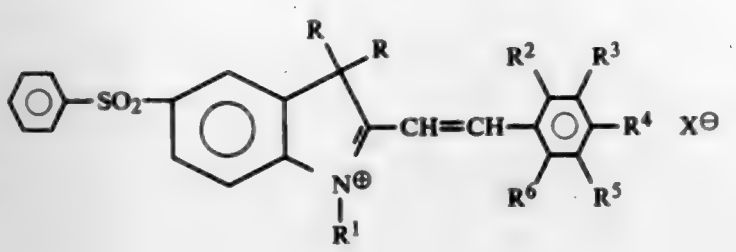
R^2, R^3, and R^4 each independently represent a hydrogen atom or an alkoxy group of up to 4 carbon atoms,

R^6 represents a hydrogen atom or an alkoxy group of up to 4 carbon atoms, with the proviso that at least one of R^2, R^3, R^4, and R^6 is selected from alkoxy groups,

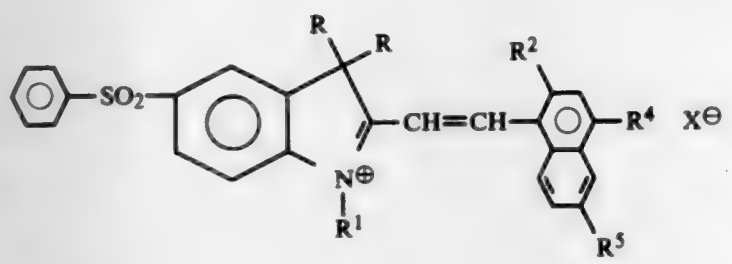
R^7 and R^8 each independently represent a hydrogen atom or an alkyl group of up to 4 carbon atoms, and

X represents an acid anion, selected from chloride, bromide, iodide, sulfonate, perchlorate, p-toluenesulfonate, and methylsulfate.

2. A light-sensitive, fogged, direct positive silver halide emulsion characterized by having therein a desensitizing amount of cyanine dye corresponding to the following formulae:



and



wherein:

R represents an alkyl group of up to 4 carbon atoms,

R^1 represents an alkyl group of 1 to 4 carbon atoms,

R^2, R^3, and R^4 each independently represent a hydrogen atom or an alkoxy group of up to 4 carbon atoms,

R^5 and R^6 each independently represent a hydrogen atom or an alkoxy group of up to 4 carbon atoms, or R^5 and R^6 may be the substituents necessary to form a fused benzene ring which may itself be further substituted by an alkoxy group of up to 4 carbon atoms,

with the proviso that at least two of R^2, R^3, R^4, R^5, and R^6 are selected from alkoxy groups, and

X represents an acid anion, selected from chloride, bromide, iodide, sulfonate, perchlorate, p-toluenesulfonate, and methylsulfate.

4,404,278

METHODS AND COMPOSITIONS FOR ASSAYING FOR THE PRODUCTION OF 1,4-DIHYDROPYRIDYL

Mae W. Hu, Sunnyvale; Floyd W. Colvin, Redwood City, and Edwin F. Ullman, Atherton, all of Calif., assignors to Syva Company, Palo Alto, Calif.

Filed Nov. 24, 1980, Ser. No. 209,365
Int. Cl.³ G01N *33/54*; C12N *9/96*
U.S. Cl. 435—7 6 Claims

1. In an assay employing the transformation from the oxidized to the reduced form of a coenzyme having an N-substituted pyridyl prosthetic group by measuring the change in fluorescence of said assay medium as related to the amount of analyte in said assay medium, wherein analyte is combined with receptor for said analyte and an enzyme label is employed requiring said co-enzyme and the amount of co-enzyme formed is related to the amount of analyte in said assay medium, and after combining said analyte and antisera in the presence of said label, said fluoresence is measured,

the improvement which comprises adding antisera capable of cross reacting with meta-substituted benzamide and the reduced form of the coenzyme and capable of binding to the reduced form of the coenzyme in the presence of the oxidized form to enhance the measurement of fluorescence.

4,404,279

METHOD OF CULTURING HYBRIDOMAS

Giulia C. B. A. Ricotti, Hoofddorp, and Willem P. Zeijlemaker, Roelofarendsveen, both of Netherlands, assignors to Stichting Vrienden van de Stichting Dr. Karl Landsteiner, Amsterdam, Netherlands

Filed Jan. 28, 1981, Ser. No. 229,272

Claims priority, application Netherlands, Jan. 29, 1980, 8000527

Int. Cl.³ C12P *21/00;* C12N *1/00, 1/38, 15/00*

U.S. Cl. 435—68 13 Claims

1. A method for improving the hybridization of different, hybridoma forming cells in an in-vitro culture and for increasing the production of substances formed by the resulting hybridomas, which comprises; culturing hybridomas adding to the culture at least one of endothelial cells or the supernatant of endothelial cells.

8. In a process for the production of monoclonal antibodies by culturing in-vitro an antibody producing hybridoma under antibody producing conditions, the improvement which comprises; employing as one of said conditions the presence of a production enhancing factor obtained from the in-vitro culture of an endothelial cell.

4,404,280

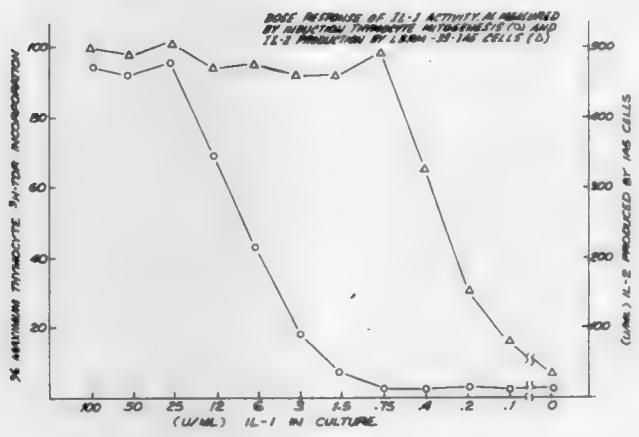
PROCESS FOR PREPARING MURINE INTERLEUKIN 2 IN THE PRESENCE OF INTERLEUKIN 1 FROM AN INTERLEUKIN 2 NONPRODUCER MALIGNANT CELL LINE AND CELL LINE THEREFOR

Steven Gillis, 15509 NE. 198th, Woodinville, Wash. 98072

Filed Jul. 16, 1981, Ser. No. 283,092

Int. Cl.³ C12P *21/00;* C12N *5/00, 5/02, 1/00;* A61K *37/00;* C12R *1/91;* C12P *1/00*

U.S. Cl. 435—68 13 Claims



1. A process for the production of IL-2, comprising culturing malignant murine T cells from a cell line which is incapable of producing IL-2 by T-cell mitogen stimulation alone, is capable of producing IL-2 and requires IL-1 for IL-2 production, in a culture medium containing a T-cell mitogen and IL-1; and recovering the IL-2 from the culture medium.

13. A malignant murine cell line which is incapable of producing IL-2 by T-cell mitogen stimulation alone but which produces IL-2 in the presence of both a T-cell mitogen and IL-1, having the identifying characteristics of ATCC CRL 8079.

4,404,281

PROCESS FOR ENZYME INHIBITORS

Sean C. O'Connor, Jamesville, N.Y., and Walter M. Nakatsukasa, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 19, 1982, Ser. No. 409,765

Int. Cl.³ C12P *17/12, 17/10;* C12R *1/465*

U.S. Cl. 435—122 4 Claims

1. In the process for producing angiotensin I converting enzyme inhibitor A-58365 factor A, which comprises culturing *Streptomyces chromofuscus* NRRL 15098 in an aqueous nutrient culture medium containing assimilable sources of carbon, nitrogen, and inorganic salts under submerged aerobic fermentation conditions, the improvement which comprises supplementing said culture medium with between about 1 g and about 6 g of proline per liter of said medium.

4,404,282

PROCESS FOR ENZYME INHIBITOR

Walter M. Nakatsukasa, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 19, 1982, Ser. No. 409,764

Int. Cl.³ C12P *17/12, 17/10;* C12R *1/465*

U.S. Cl. 435—122 4 Claims

1. In the process for producing angiotensin I converting enzyme inhibitor A-58365 factor B, which comprises cultivating *Streptomyces chromofuscus* NRRL 15098 in an aqueous nutrient culture medium containing assimilable sources of carbon, nitrogen, and inorganic salts under aerobic fermentation conditions, the improvement which comprises supplementing said culture medium with between about 1 g and about 6 g of proline per liter of said culture medium and with between about 1 g and about 3 g of lysine per liter of said culture medium.

4,404,283

LONG CHAIN WAX ESTERS AND METHOD OF MAKING SAME

Saul L. Neidleman, Oakland, and John Geigert, Clayton, both of Calif., assignors to Standard Oil Company (Ind.), Chicago, Ill.

Filed Oct. 10, 1980, Ser. No. 195,876

Int. Cl.³ C12P *7/64;* C12R *1/265*

U.S. Cl. 435—134 2 Claims

1. A process for the production of wax esters comprising at least 50% by weight unsaturated wax esters comprising aerobically cultivating a microorganism comprising Acinetobacter in an aqueous mineral salts solution on a saturated hydrocarbon feed comprising C_{16} n-alkanes at a temperature within the range of about 15° C. to about 21° C.

4,404,284

MEASUREMENT OF VOLATILE CONSTITUENTS OF A CULTURE MEDIUM

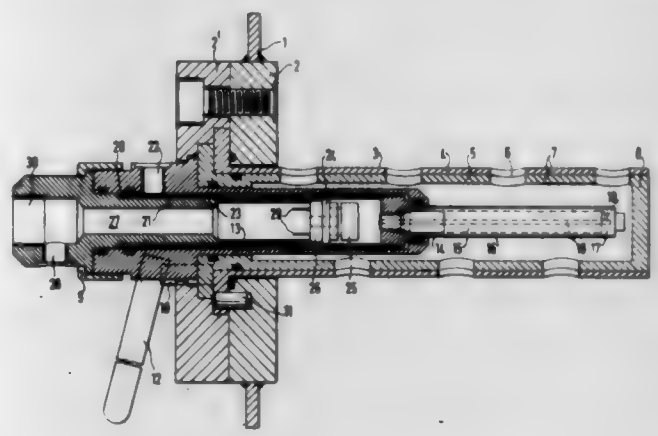
Manfred Heider, Brunn; Josef Hofschneider, Gramatneusiedl; Wolfgang Schallenberger, Graz; Franz Nodes, Vienna, and Eberhard Kempe, Hetzmannsdorf, all of Austria, assignors to Vogelbusch Gesellschaft m.b.H., Vienna, Austria

Filed Dec. 16, 1981, Ser. No. 331,226

Claims priority, application Austria, Dec. 17, 1980, 6153/80

Int. Cl.³ C12M *1/34*

U.S. Cl. 435—291 3 Claims



1. A probe for measuring volatile constituents of a culture medium in the fermentation industry comprising an axially elongated pin having a first end and a second end and having an outer surface extending in the first end - second end direc-

tion, at least one helical groove formed in said outer surface and extending in the first end - second end direction, a permeable membrane fitted over the outer surface of said pin and forming a closure over said at least one helical groove so that said helical groove forms a closed flow path, said pin is arranged to extend into a fermentation container and said permeable membrane is arranged to pass volatile constituents from the fermentation container into a carrier medium flowing through said at least one helical groove, said pin forming a blind end bore open at the second end and closed at the first end of said pin, said pin having at least one transverse bore adjacent the first end thereof and interconnecting said blind bore and said at least one helical groove, a probe member, a sensor located within said probe member for responding to the volatile constituents within the carrier medium, said probe member arranged to extend into the fermentation container, said pin supported by and extending from said probe member with the second end of said pin located within said probe member and with the open end of said blind bore opening into said probe member.

4,404,285

PROCESS FOR PREPARING A ZERO STANDARD SERUM

Kenneth C. Hou, San Antonio, Tex., assignor to AMF Incorporated, White Plains, N.Y.

Filed Jun. 24, 1981, Ser. No. 276,982

Int. Cl.³ G01N *33/78, 33/96*; B01D *39/18, 39/02, 39/04, 39/06*

U.S. Cl. 436—16 **17 Claims**

1. A method for the removal of thyroid hormones from human serum which comprises:

flowing, at a pressure differential higher than 1 psi, said serum through a column containing a composite sheet, said composite sheet comprising a matrix of self-bonding fibers having interdispersed therein carbon particles, such that better than 90% of said carbon particles have an average diameter less than about 50 microns;

thereby removing said thyroid hormones from said serum.

4,404,286

BILIRUBIN ASSAY

Bruce C. Shull, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 22, 1982, Ser. No. 351,073

Int. Cl.³ G01N *33/72, 33/92*

U.S. Cl. 436—97 **12 Claims**

1. A method for the assay of total bilirubin which comprises incubating a mixture of bilirubin containing biological fluid, diazo sulfanilic acid, tetramethylene sulfone and a nonionic surfactant, and subsequently measuring the color produced.

4,404,287

METHOD AND APPARATUS FOR DETERMINING CHEMICAL SPECIES

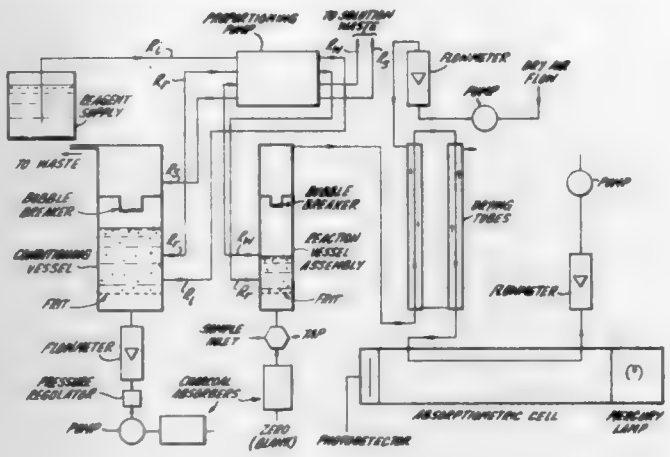
Geoffrey B. Marshall, Chessington, and Derek Midgley, Ashtead, both of England, assignors to Central Electricity Generating Board of Sudbury House, London, England

Filed Nov. 25, 1980, Ser. No. 210,438

Int. Cl.³ G01N *27/66, 33/00*

U.S. Cl. 436—109 **8 Claims**

1. A method for the quantitative determination of a chemical species selected from the group consisting of sulphite, cyanide, sulphur dioxide, aminopolycarboxylic acids and hydroxycarboxylic acids, said species being capable of promoting the disproportionation of Hg_2^{2+} to Hg^{2+} and Hg° in solution, which method comprises causing the species to react with a solution comprising a stable salt of Hg_2^{2+} to thereby produce a measurable concentration of Hg° in a gaseous phase above



the solution, and determining the Hg° present in the said gaseous phase.

4,404,288

METHOD AND APPARATUS FOR CONCENTRATING A VAPOR OF A MERCURY SAMPLE SOLUTION

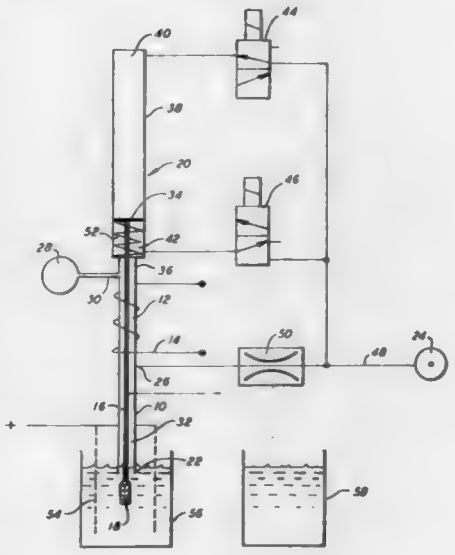
Bernhard Huber, Uberlingen, Fed. Rep. of Germany, assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 191,567, Sep. 29, 1980, abandoned. This application Apr. 26, 1982, Ser. No. 371,635

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1979, 2943092

Int. Cl.³ G01N *23/00, 27/00*

U.S. Cl. 436—177 **13 Claims**



1. A method of concentrating small amounts of mercury from a solution, said method comprising the steps of:

introducing a concentration of amalgam-forming material to said solution;

electrolyzing, by employing an electrode of amalgam-forming material, said solution to separate elemental mercury from said solution and form an amalgam thereof on said electrode;

heating said amalgam to form a concentrated mercury vapor; and

capturing said mercury vapor in a means for measuring said mercury.

3. An apparatus for concentrating small amounts of mercury from a test solution, said apparatus comprising:

a hollow tube having means associated therewith for heating a portion thereof;

a rod, slidably mounted within said tube, having an electrode of amalgam-forming material at one end thereof; and

means for positioning said rod within said tube between a

first position whereat said electrode can be inserted in said test solution whereby an amalgam can be formed on said electrode and a second position whereat said electrode is located in said portion of said tube having means for heating associated therewith, whereby, when said portion is heated, a concentrated mercury vapor is driven off from said amalgam.

4,404,289

METHOD FOR IMMUNOCHEMICAL MEASUREMENT OF TRACE COMPONENTS

Nobuhito Masuda; Shigeru Nagatomo, and Yuji Mihara, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 2, 1981, Ser. No. 298,719

Claims priority, application Japan, Sep. 2, 1980, 55-120597; Sep. 2, 1980, 55-120598

Int. Cl.³ G01N *33/54, 33/52*

U.S. Cl. 436—538 **8 Claims**

1. In a photochemical measurement method of a trace component(s) utilizing an immunological reaction which comprises:

labelling an antigen or antibody with a spectral sensitizer,

competitively reacting said antigen or antibody labelled with a spectral sensitizer and an antigen or antibody to be measured with an antibody or antigen which specifically reacts with the respective antigen or antibody,

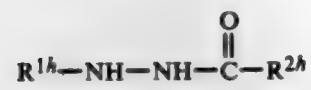
bringing either the reaction product or the unreacted component into contact with silver halide,

exposing the resulting product to light having a wavelength which said spectral sensitizer absorbs,

photographically developing the exposed silver, and,

measuring the resulting optical density of the formed silver image and/or colored dye formed by the photographic development,

said contact with silver halide being performed in the presence of a hydrazine compound of formula (H):



(H)

wherein R^{1h} is an aryl group and R^{2h} is a hydrogen atom, an alkyl group or an aryl group.

4,404,290

GLASSES OF HIGH REFRACTIVE INDEX, LOW DISPERSION, AND LOW DENSITY

Jean E. Boudot, Avon, France, assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 1, 1982, Ser. No. 445,956

Claims priority, application France, Jul. 16, 1982, 82 12447

Int. Cl.³ C03C *3/08*

U.S. Cl. 501—78 **3 Claims**

1. An optical glass exhibiting an index of refraction between about 1.695–1.705, a dispersive index between about 40.5–43.2, a density below about 3.2 g/cm³, a weight loss as measured in the AO test of less than 0.15 mg/cm², and a transmittance at 400 nm in 10 mm thickness of at least 75, said glass consisting essentially, expressed in terms of weight percent on the oxide basis, of

CaO	16–21.5
La_2O_3	6–15
TiO_2	3.5–<9
Al_2O_3	5.5–12
Nb_2O_5	3–11
ZrO_2	2–10
B_2O_3	20.5–25
SiO_2	16–20

4,404,291

LOW-DENSITY, OPEN-PORE MOLDED INORGANIC BODY WITH A HOMOGENEOUS PORE DISTRIBUTION

Werner Kiefer, Mainz, and Maria Sura, Ingelheim, both of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Feb. 3, 1982, Ser. No. 345,499

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1981, 3103749

Int. Cl.³ B32B *5/12*

U.S. Cl. 501—81 **20 Claims**

1. A molded sintered porous body comprising at least one of: a conventional glass, a solder glass or a crystallized solder glass, said body having more than 90% of the pores therein of the open-type, said pores being isotropically distributed, and said body having a density of less than 1.0 g/cm³.

4,404,292

REFRACTORY MATERIAL INTENDED ESPECIALLY FOR CONTACTING MOLTEN ALUMINUM AND PROCESS FOR ITS MANUFACTURE

Jean Daviot, St. Cheron, France, assignor to Novatome, Le Plessis Robinson, France

Filed Feb. 19, 1982, Ser. No. 350,532

Claims priority, application France, Mar. 4, 1981, 81 04277

Int. Cl.³ C04B *35/58, 35/65*

U.S. Cl. 501—97 **5 Claims**

1. Refractory material, intended especially for placing in contact with molten aluminum, said material consisting of an aggregate bonded by a cement, wherein the aggregate is consitituted by silicon nitride in a proportion comprising between about 50 percent and about 90 percent of the total weight of the final product, and the cement is constituted by calcium aluminate.

4,404,293

SELF-EXTINGUISHING EXPANDABLE POLYSTYRENE PARTICLES HAVING AN IMPROVED PROCESSABILITY

Giuseppe Cigna; Paolo Catarsi; Maria C. Mussatto; Fabrizio Vivaldini, all of Mantova, and Stefano Campolmi, Novara, all of Italy, assignors to Montedison S.p.A., Milan, Italy

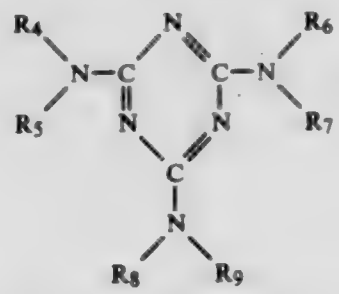
Filed Jun. 30, 1982, Ser. No. 393,547

Claims priority, application Italy, Jul. 3, 1981, 22731 A/81

Int. Cl.³ C08J *9/18*

U.S. Cl. 521—56 **6 Claims**

1. Self-extinguishing expandable polystyrene particles containing an expanding agent, a self-extinguishing organic halogen-containing compound and from 0.0001 to 0.1% by weight, referred to the polymer, of a 2,4,6-triamino-1,3,5-triazine derivative having the general formula:



(I)

wherein at least one of radicals R_4, R_5, R_6, R_7, R_8 and R_9 is hydrogen and each of them, independently of one another, may be: hydrogen; an alkyl radical having from 1 to 20 carbon atoms in which, optionally, a hydrogen atom in ω position may be substituted by a 2,4,6-triamino-1,3,5-triazine radical; a cyclo-alkyl radical having from 5 to 12 carbon atoms or an aryl radical having from 6 to 18 carbon atoms, said alkyl-, cycloalkyl- or aryl-radicals optionally containing functional groups such as halogens, hydroxyl groups, carboxylic groups and esters.

4,404,294

NONFLAMMABLE LIGHT FOAMS CONTAINING UREA AND URETHANE GROUPS IN WHICH A MONO- AND/OR OLIGO-SACCHARIDE DISSOLVED IN WATER IS REACTED WITH A POLYISOCYANATE IN THE PRESENCE OF A POLYOL, A CATALYST AND A FLAMEPROOFING AGENT

Rolf Wiedermann, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,547

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1981, 3113387

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—107 8 Claims

1. A process for the production of nonflammable light foams containing urea and urethane groups and having a density less than or equal to 0.025 g/cm³ in which a polyisocyanate is reacted with at least one equivalent of water in which a mono- and/or oligosaccharide has been dissolved in the presence of (a) an organic compound having at least two hydroxyl groups and an OH number of from 30 to 250, (b) a catalyst, and (c) a flameproofing agent.

4,404,295

POLYESTER RESINS FOR POLYURETHANE FOAMS

Carl Bernstein, Deerfield; James Stogis, Joliet; Travis Riddle, Justice, and Robert Kufrin, Chicago, all of Ill., assignors to Witco Chemical Corporation, Del.

Division of Ser. No. 263,224, May 13, 1981, Pat. No. 4,349,662. This application Jul. 14, 1982, Ser. No. 398,459

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—172 5 Claims

1. A flexible polyester foam produced from a polyester, liquid at 70° F., comprising the reaction product of a diacid, diethylene glycol, a viscosity increasing diacid replacing some of said diacid, and a poly(oxyethylene) glycol, wherein the resulting resin formulation of 100 parts by weight contains about 1–12 parts by weight of the viscosity increasing diacid, about 1–15 parts by weight of the poly(oxyethylene) glycol and about 0.2–5.5 parts of a cross-linking polyol.

4,404,296

GEL COMPOSITIONS WITH DEPOT ACTION BASED ON A POLYURETHANE MATRIX AND RELATIVELY HIGH MOLECULAR WEIGHT POLYOLS AND CONTAINING ACTIVE INGREDIENTS, AND A PROCESS FOR THEIR PREPARATION

Dietmar Schäpel, Cologne, Del.X, assignor to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Jan. 22, 1982, Ser. No. 342,035

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1981, 3103499; Feb. 3, 1981, 3103500

Int. Cl.³ C08L *75/08*

U.S. Cl. 523—105 14 Claims

1. A gel comprising:

(a) 15–62 wt. % (based on (a)+(b)) of a high molecular weight covalently cross-linked polyurethane matrix which polyurethane matrix is produced from an isocyanate and a polyol having functionalities such that the product of those functionalities is at least 5.2;

(b) 85–38 wt. % (based on (a)+(b)) of a liquid dispersing agent which is firmly bonded in the matrix by secondary valence forces; and

(c) 0–100 wt. % (based on (a)+(b)) of a compound selected from the group consisting of fillers, additives, catalysts suitable for an isocyanate polyaddition reaction and combinations thereof

in which the liquid dispersing agent is a polyhydroxyl compound having a molecular weight of between 1,000 and 12,000 and an OH number of between 20 and 112 and in which essentially no hydroxyl compounds having a molecular weight below 800 are present.

4,404,297

INTUMESCENT FIRE RETARDANT COMPOSITIONS

Theodor Fishler; Manny Ravey, and Leonard M. Shorr, all of Haifa, Israel, assignors to Bromine Compounds Ltd., Beer-Sheva, Israel

Filed Jan. 7, 1983, Ser. No. 456,344

Claims priority, application Israel, Feb. 8, 1982, 64952

Int. Cl.³ C09K *3/28*

U.S. Cl. 523—179 18 Claims

1. Intumescent fire retardant synthetic organic polymer compositions containing a thermolized product wherein the thermolysis is carried out above 160° C., said product being obtained from a system comprising P_2O_5 or a P_2O_5—precursor together with triethanolamine, the weight ratio of the components in said system being between 0.05 to 2.0 parts P_2O_5 to 1 part triethanolamine.

4,404,298

AQUEOUS DISPERSIONS BASED ON CELLULOSE NITRATES, POLYESTER OF ALKYD RESINS AND AMINOPLAST RESINS, PROCESSES FOR THE PRODUCTION THEREOF AND THE USE THEREOF FOR THE PRODUCTION OF COATINGS

Hans-Joachim Traenckner, Krefeld, and Wolfgang Kremer, Kerken, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 4, 1982, Ser. No. 337,020

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1981, 3100576

Int. Cl.³ C08L *1/18*

U.S. Cl. 524—31 8 Claims

1. Aqueous dispersion of:

(A) from 5 to 35 parts, by weight, of cellulose nitrate;

(B) from 5 to 30 parts, by weight, of polyester and/or alkyd resin;

(C) from 4 to 40 parts, by weight, of aminoplast resin;

(D) from 30 to 300 parts, by weight, of water; and

(E) from 0.5 to 10 parts, by weight, of emulsifier;

characterised in that aminoplast resin (C) is insoluble in water and a mixture of components (A), (B) and (C) is present within the particles of the disperse phase.

4,404,299

COMPOSITIONS FOR THE MANUFACTURE OF HOT-MELT ADHESIVES

Jean-Claude Decroix, Arras, France, assignor to Societe Chimique des Charbonnages-CDF CHIMIE, Paris, France

Filed Apr. 15, 1982, Ser. No. 368,686

Claims priority, application France, Apr. 30, 1981, 81 08736

Int. Cl.³ C08L *91/06*

U.S. Cl. 524—77 11 Claims

1. A composition comprising, per 100 parts by weight, (a) from 20 to 45 parts of at least one tackifying resin, (b) from 0 to 45 parts of at least one compound selected from paraffin, microcrystalline polymeric wax, and esters of a hydrogenated rosinic acid and of a lower alcohol, and (c) from 20 to 70 parts comprising a terpolymer of ethylene having a melt index between 5 and 500 dg/minute and comprising:

from 1 to 10 mol% of units derived from an ester selected from alkyl acrylates and methacrylates, said alkyl group having from 1 to 6 carbon atoms, and

from 0.3 to 3 mol% of units derived from maleic anhydride.

4,404,300

POLYSTYRENE PROCESS

Unto K. Koski; Hamdy Khalil, and Adrian Cassola, all of Sarnia, Canada, assignors to Polysar Limited, Ontario, Canada

Filed Feb. 16, 1982, Ser. No. 348,771

Int. Cl.³ C08K *5/34*

U.S. Cl. 524—91 5 Claims

1. An improved process for the preparation of impact polystyrene wherein polybutadiene having a 1,4-content of at least

about 80% is dissolved in styrene monomer and the resulting solution containing from about 1 to about 15 weight percent of polybutadiene based on the weight of polybutadiene plus styrene monomer is polymerized by a thermal process with or without added free radical polymerization initiators, said polymerization being such as to achieve 85 percent or more conversion of the styrene monomer to polymer, the improvement being that at least part of the polybutadiene contains from about 75 to about 300 parts per million by weight of the polybutadiene of an optical brightener selected from the group consisting of aryl substituted triazole substituted aryl coumarins and bis(benzoxazolyl) substituted thiophenes.

4,404,301

POLYMERIC LIGHT STABILIZERS HAVING AT LEAST ONE 2,2,6,6-TETRAALKYL PIPERIDYL GROUP AND SYNTHETIC RESIN COMPOSITIONS CONTAINING THE SAME

Naohiro Kubota, Ageo; Toshihiro Shibata, Omiya, and Ryozo Arata, Urawa, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

Filed Apr. 22, 1982, Ser. No. 370,900
Claims priority, application Japan, Apr. 23, 1981, 56-61764
Int. Cl.³ C08K *5/34*; C08L *67/00*; C07D *211/08*
U.S. Cl. 524—99 **26 Claims**

1. Polymeric light stabilizers for synthetic polymers comprising a polymer molecule made of polymer units having a molecular weight within the range from about 1000 to about 20,000 and including a plurality of polymer units having at least one 2,2,6,6-tetraalkyl piperidyl group, the polymer units being selected from the group consisting of unsaturated carboxylic acid ester units selected from the group consisting of unsaturated cycloaliphatic mono-, di-, and tricarboxylic acid ester units having from seven to about thirty carbon atoms; unsaturated branched-chain aliphatic di- and tricarboxylic acid ester units having from four to about thirty carbon atoms; sorbic acid ester units, 3,8-nonadienyl acid ester units, oleic acid ester units, linolenic acid ester units, and ricinoleic acid ester units; and copolymer units of at least one unsaturated monomer copolymerizable therewith.

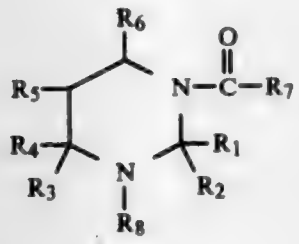
4,404,302

ACYLATED HINDERED HEXAHYDROPYRIMIDINES AND THEIR USE AS LIGHT STABILIZING AGENTS

Goutam Gupta, Homewood, Ill., and Chester E. Ramey, Chagrin Falls, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Filed May 27, 1982, Ser. No. 382,556
Int. Cl.³ C08K *5/34*; C07D *237/00, 237/02, 239/02*
U.S. Cl. 524—100 **35 Claims**

1. An acylated, hindered hexahydropyrimidine of the formula



wherein

R_1, R_2, R_3 and R_4 may be the same or different independently of each other and are selected from the group consisting of: alkyl having 1 to 6 carbon atoms, when unsubstituted, or substituted with one methyl, ethyl, or phenyl group, aryl, and aryl substituted with 1 to 3 substituents selected from the group consisting of lower alkyl, lower alkoxy, and hydroxyl, and wherein R_1 together with R_2, and R_3 together with R_4, each taken together with the respective ring carbon to which they are attached, may form respectively a cycloalkyl of ring size from 4 to 7 carbons;

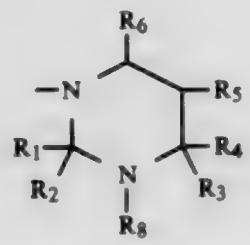
R_5 and R_6 may be the same or different and are selected from the group consisting of hydrogen, and alkyl having 1 to 6 carbon atoms, and arylalkyl, and R_5 together with R_6 and the two ring carbons to which they are attached respectively may form a cycloalkyl group of ring size from 5 to 7 carbon atoms;

R_7 is selected from the group consisting of: alkyl having 1 to 20 carbon atoms, substituted alkyl where the alkyl without substitution has 1 to 20 carbon atoms and where substituents may be up to five lower alkyl groups, arylalkyl, cycloalkyl having 3 to 12 carbon atoms, aryl, aryl substituted with 1 to 3 substituents selected from the group consisting of: lower alkyl, lower alkoxy, and hydroxyl;

$$-OR_9,\ -NHR_9,\ -ACOR_{10},\ \text{and}\ -\underset{\displaystyle H}{\overset{|}{N}}ANHCOR_{10},$$

wherein

R_9 is selected from the group consisting of alkyl having 1 to 20 carbon atoms unsubstituted, or substituted with up to 5 lower alkyl groups, and cycloalkyl having 5 to 11 carbons and phenyl; wherein A is: alkylene of 1 to 12 carbons; alkylene substituted with alkyl or alkenyl to have a total of up to 18 carbons; alkenylene of 2 to 4 carbons; cycloalkylene of up to 12 carbon atoms; cycloalkenylene of up to 12 carbon atoms; bicycloalkylene up to 8 carbon atoms; bicycloalkenylene up to 8 carbon atoms; or phenylene, and wherein R_{10} is selected from the group consisting of hydroxyl, lower alkoxy, phenoxy and the group

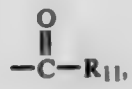


wherein

R_1, R_2, R_3, R_4, R_5 and R_6 are as defined above,

and

R_8 is selected from the group consisting of hydrogen, alkyl having 1 to 10 carbon atoms, substituted alkyl having 1 to 10 carbon atoms, arylalkyl, hydroxyl, oxyl and



wherein R_{11} is selected from the group consisting of alkyl having 1 to 20 carbon atoms unsubstituted, or substituted with up to five lower alkyl groups

wherein the substitution in substituted alkyl consists of from 1 to 3 substituent alkyl groups of up to 18 carbons each, which substituent groups may be the same or different,

and

wherein the substitution in substituted aryl consists of from 1 to 3 substituent groups that may be the same or different and that are selected from the group consisting of hydroxyl and lower alkyl.

4,404,303

CARBONATE POLYMERS CONTAINING A BARBITUATE AS AN IGNITION DEPRESSANT

Lowell S. Thomas, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 24, 1982, Ser. No. 361,318
Int. Cl.³ C08K *5/34*
U.S. Cl. 524—100 6 Claims

1. A composition comprising a carbonate polymer having dispersed therein a thermally stable barbituate in an amount sufficient to retard combustion when the composition is exposed to a low temperature ignition source.

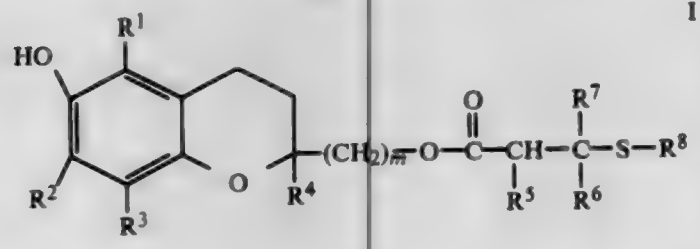
4,404,304

CHROMAN DERIVATIVES USEFUL AS STABILIZERS FOR POLYPROPYLENE AND β-CAROTIN

Michael Horner, Neustadt; Dieter Horn, Heidelberg; Erik Lueddecke, and Gernot Teege, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 28, 1982, Ser. No. 344,191
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1981, 3103707
Int. Cl.³ C07D *311/72*; C08K *5/09*
U.S. Cl. 524—110 7 Claims

1. A chroman derivative of the general formula I



I

where R^1, R^2, R^3, R^4 and R^5 are each H or C_1–C_4-alkyl, R^6 and R^7 are each H, C_1–C_4-alkyl or aryl, m is 1, 2 or 3, and R^8 is C_1–C_{30}-alkyl or alkenyl of up to 30 carbon atoms.

3. A method of stabilizing polypropylene and beta-carotin from the detrimental effects of light, heat and oxidizing agents which comprises: adding to said materials a stabilizing amount of a chroman derivative I as defined in claim 1.

4,404,305

FLAME RETARDANT POLYORGANOSILOXANE RESIN COMPOSITIONS

Beth I. Gutek, Freeland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Feb. 16, 1982, Ser. No. 349,214
Int. Cl.³ C08L *83/04*
U.S. Cl. 524—118 12 Claims

1. A translucent, flame retardant composition consisting essentially of

A. 100 parts by weight of a polyorganosiloxane resin,

B. from 1 to 10 parts by weight of an organic compound containing at least one halogen atom, selected from the group consisting of bromine and chlorine, and

C. from 10 to 100 parts by weight of glass particles having an average particle size are from 5 to 100 microns;

the weight ratio of said organic compound to the glass particles being from 0.05 to 0.4.

4,404,306

BLENDS OF WATER REDUCIBLE ORGANIC MATERIALS AND AQUEOUS METAL AMMINE SILICONATE SOLUTIONS

William H. Daudt; Cecil L. Frye, both of Midland, Mich., and James F. Hyde, Marco Island, Fla., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 78,415, Sep. 24, 1979. This application Jun. 26, 1981, Ser. No. 277,787
Int. Cl.³ C08L *1/08, 3/00, 5/00*; D05B *65/00*
U.S. Cl. 524—262 5 Claims

1. A blend which comprises water reducible organic materials and an aqueous metal ammine siliconate solution comprising the reaction products of

(a) oxides and hydroxides of metals, metal derivatives or mixtures thereof which are selected from a group consisting essentially of metals of group IB and metals of group IIB of the Periodic Table of the Elements, which are not more acidic than the silanols or siloxanols produced in (c), which dissolve in the reaction mixture to yield metal ammine cations in the presence of $R—NH_2$;

(b) $R—NH_2$ where R is H, aminoalkyls with 2–6 carbon atoms, or mixtures thereof and wherein the $—NH_2$ molar concentration is equal to at least n times the molar concentration of the metal or metal derivative where n is the coordination number of the metal;

(c) a mono-organosilicon material which can undergo hydrolysis in the presence of the other reactants to yield mono-organosilanols or siloxanols, and hydrolysis products which are not more acidic than the silanols or siloxanols, wherein the organo moiety in the mono-organosilicon material contains up to about 50 carbon atoms and is selected from the group consisting of saturated and unsaturated hydrocarbons having from 1 to about 6 carbon atoms, halohydrocarbons having up to 6 carbon atoms and wherein the halo substitution is at a location other than the alpha or beta locations, aminohydrocarbons, radicals containing one or more ether or thioether linkages, hydroxyfunctional alkyl radicals, carbomethoxyalkyl radicals, carbamoylalkoxy radicals, quaternary ammonium or phosphonium bearing alkyl radicals and mixtures thereof, the mono-organosilicon material being present in an amount sufficient to yield a silicon/metal ratio of from about 1 to about 10; and

(d) water.

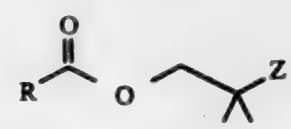
4,404,307

OXOALKYL ESTERS, ORGANOLEPTIC USES THEREOF AND PROCESS FOR PREPARING SAME

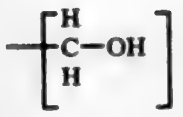
Michael Licciardello, Farmingdale; Richard M. Boden, Monmouth Beach; Hugh Watkins, Lincroft, and Marie R. Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 307,366, Oct. 1, 1981, Pat. No. 4,368,145. This application Jul. 8, 1982, Ser. No. 396,257
Int. Cl.³ C08K *5/09, 5/10, 5/12, 5/13*
U.S. Cl. 524—290 10 Claims

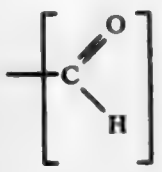
1. A process for augmenting or enhancing the aroma of a thermoplastic polymer comprising the step of intimately admixing with a polymer melt and aroma augmenting or enhancing quantity of at least one oxoalkyl ester defined according to the structure:



wherein Z is a moiety selected from the group consisting of carbinol having the structure:



and carboxyaldehyde having the structure:



and R is selected from the group consisting of 3-heptanyl and phenyl whereby a heterogeneous mixture is produced wherein the perfume base is in the form of microdroplets intimately dispersed throughout the polymer melt phase and then chilling the polymer at such a rate as to cause the microdroplets of perfume oil to be retained as microdroplets which are interconnected with micropores among the microdroplets and to the surface of the resulting polymer.

4,404,308

LOW TEMPERATURE CURING THERMOSETTING COATINGS FOR SOLVENT-SENSITIVE MOLDINGS

Frank J. Ragas, Willow Springs; Ralph L. Minnis, Des Plaines; Edward J. Murphy, Mt. Prospect, all of Ill., and Steve J. Vargo, Brighton, Mich., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed May 24, 1982, Ser. No. 381,175
Int. Cl.³ B05D *3/02*
U.S. Cl. 524—379 **11 Claims**

1. A low temperature curing solution coating composition adapted to be applied to solvent-sensitive thermoplastic moldings and cured at an elevated temperature without damaging said moldings comprising, a solvent medium consisting essentially of alcoholic solvents, said solvent medium having dissolved therein a self-curing solution copolymer of monoethylenically unsaturated monomers comprising nonreactive monomer and from 5% to 30% of the weight of the copolymer of an ether of an N-methylol functional monomer, said solution of copolymer in alcoholic solvent medium being catalyzed with from 3% to 12%, based on the weight of the copolymer, of a long chain dialkyl naphthalene disulfonic acid.

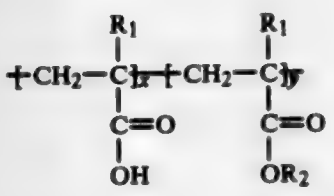
4,404,309

PROCESS OF PREPARING COPOLYMER OF LOWER CARBOXYLIC ACID AND ESTER THEREOF

William F. Masler, III, Hinckley, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 29, 1981, Ser. No. 288,225
Int. Cl.³ C08F *20/06*; C08K *5/05*
U.S. Cl. 524—379 **10 Claims**

1. A one-pot process for preparing an alcoholic solution of a copolymer of an unsaturated monocarboxylic acid and an ester thereof, said copolymer having the structure



wherein,

R_1 represents hydrogen and methyl;

R_2 represents methyl, ethyl, propyl, and butyl;

x represents from 2 to 50 weight percent (wt %) based on the combined weight of x and y;

y represents from 50 to 98 wt % based on the combined weight of x and y; and,

the sum of the numerical values of x+y is always 100 and the groups x and y are present in an heterogenous relative order, said process comprising,

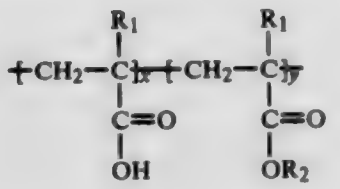
(a) reacting a reaction mixture comprising (meth)acrylic acid, and optionally ester(s) thereof, and a lower aliphatic monohydric alcohol R_2OH, wherein R_2 has the same meaning as above in the presence of an acid esterification catalyst and a polymerization initiator, at the reflux temperature of said reaction mixture,

(b) removing the water formed from the reaction, and

(c) recovering an alcoholic solution of said copolymer.

2. The process of claim 1 comprising, after removing said water, neutralizing said esterification catalyst in said reaction mixture, and removing a desired portion of said lower aliphatic alcohol by azeotropic distillation.

6. A one-pot process for preparing an alcoholic solution of a copolymer of an unsaturated monocarboxylic acid and an ester thereof, said copolymer having the structure



wherein,

R_1 represents hydrogen and methyl;

R_2 represents methyl, ethyl, propyl, and butyl;

x represents from 2 to 50 weight percent (wt %) based on the combined weight of x and y;

y represents from 50 to 98 wt % based on the combined weight of x and y; and,

the sum of the numerical values of x+y is always 100 and the groups x and y are present in a heterogenous relative order, said process comprising,

(a) esterifying by heating to reflux a mixture comprising (meth)acrylic acid and a lower aliphatic monohydric alcohol R_2OH, wherein R_2 has the same meaning as above, in the presence of an esterification catalyst to form an ester,

(b) removing the water formed from the esterification reaction, thereafter

(c) adding polymerization initiator and optionally (meth)acrylate to form a reaction mixture and reacting said reaction mixture at the reflux temperature of said reaction mixture, and

(d) recovering an alcoholic solution of said copolymer.

4,404,310

ORGANIC PIGMENTS

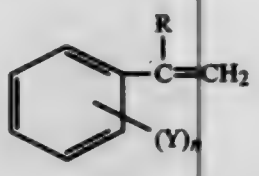
William W. Maslanka, London-Britain Township, Chester County, Pa., and Gavin G. Spence, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 153,743, Jun. 16, 1980, Pat. No. 4,311,809, which is a division of Ser. No. 909,606, May 25, 1978, Pat. No. 4,235,982, which is a continuation-in-part of Ser. No. 803,330, Jun. 3, 1977, abandoned. This application Oct. 13, 1981, Ser. No. 310,021
Int. Cl.³ C08K *3/20, 3/02*
U.S. Cl. 524—457 **8 Claims**

1. Water-insoluble graft copolymer particles consisting essentially of the free radical catalyzed graft copolymerization product of (1) at least one ethylenically unsaturted monomer and (2) a water-soluble cationic prepolymer having an RSV of about 0.1 to about 2.5 (1 M, NaCl, 1%, 25° C.), the prepolymer moiety of the graft copolymer particles being present on the surface of the particles,

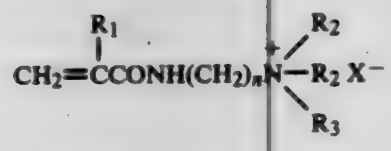
said monomer (1) being selected from the group consisting of methyl alpha-chloroacrylate, ethyl alpha-chloroacrylate, methyl methacrylate, isopropyl methacrylate, phenyl

methacrylate, vinyl chloride, acrylonitrile, methacrylonitrile, and monomers having the formula

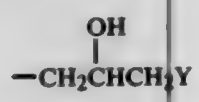


wherein R is hydrogen or methyl, Y is methyl or chlorine, and n is 0, 1, 2, or 3, and said prepolymer (2) being the addition polymerization product of

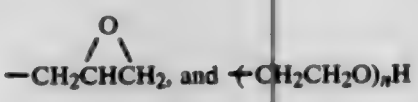
(i) about 5 mole percent to 100 mole percent of a cationic monomer having the formula



wherein n is an integer 1, 2, or 3,
R_1 is hydrogen or methyl,
R_2 is hydrogen or a C_1-C_4 alkyl,
R_3 is hydrogen, a C_1-C_4 alkyl,



where Y is selected from the group consisting of hydroxyl and halogen,



where n is an integer 1 or more and X^- is an anion, and

(ii) from about 95 mole percent to 0 mole percent of at least one monoethylenically unsaturated amide monomer,

the amount of prepolymer (2) employed in preparing the graft copolymer particles being from about 1 part to about 25 parts by weight for each 100 parts by weight of monomer (1) employed, said prepolymer moiety of the particles having chemically bonded thereto a cellulose reactive group said group being introduced by means of an aldehyde.

4,404,311

NOVEL COMPOUNDS AND THEIR USE IN ELASTOMER-CONTAINING COMPOSITIONS

Thomas C. Mathis, St. Louis, Mo., and Albert W. Morgan, Collinsville, Ill., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 290,621, Aug. 10, 1981, Pat. No. 4,368,341, which is a continuation-in-part of Ser. No. 187,232, Sep. 15, 1980, abandoned. This application Sep. 24, 1982, Ser. No. 422,620

Int. Cl.³ C08K *5/01, 5/03*

U.S. Cl. 524—486 **21 Claims**

1. A composition comprising a normally solid, essentially organic elastomer and at least one compound consisting of at least 5 hydrocarbon rings including at least one aromatic ring and at least one saturated ring free to rotate independently of at least one aromatic ring in the molecule of said compound, at least one divalent aliphatic radical linking two of said rings, and from zero to about two alkyl substituents on said rings, said compound having a molecular weight between about 400 and about 8,000.

4,404,312

FIBER-REINFORCED POLYMER BLEND COMPOSITION

Tokio Kokubu, and Katsuo Take, both of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Apr. 19, 1982, Ser. No. 369,671

Claims priority, application Japan, Apr. 17, 1981, 56-58849; Jul. 24, 1981, 56-116876; Jul. 30, 1981, 56-119615

Int. Cl.³ C08L *23/14, 77/00*

U.S. Cl. 524—504 **12 Claims**

1. A fiber-reinforced polymer blend composition comprising (a) a polyamide resin, (b) a modified polypropylene resin having a melt flow index of 1 to 50 g/10 minutes and at least one carboxyl group in the molecule and (c) a fiber-reinforcing agent, the weight ratio of the polyamide resin (a) and the polypropylene resin (b) being from 70:30 to 95:5 and a content of the fiber-reinforcing agent (c) being from 50 to 200% by weight on the basis of the total amount of the polyamide resin (a) and the polypropylene resin (b).

4,404,313

FLAME RETARDANT-SMOLDER RESISTANT TEXTILE BACKCOATING

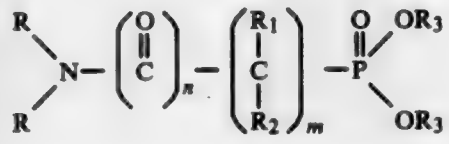
George J. Leitner, Peekskill, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 31, 1981, Ser. No. 297,549

Int. Cl.³ C08L *61/28*

U.S. Cl. 524—512 **6 Claims**

1. A flame and smolder retardant composition for back-coating textile material comprising an effective amount of an aminophosphonate ester in combination with a thermosetting nitrogen containing resin and a reactive latex copolymer compound wherein the aminophosphonate ester has the formula:



wherein R is an alkyl or hydroxyalkyl radical containing from 1 to 3 carbon atoms R_1 and R_2 are alkyl radicals containing from 1 to 6 carbon atoms or hydrogen, R_3 which may be the same or different is an alkyl, hydroxyalkyl, haloalkyl, alkoxyalkyl or hydroxyalkoxyalkyl radical containing from 1 to 6 carbon atoms, the terminus of an alkylene forming a six-membered ring or halogenated analogs, the terminus of an alkylene or alkyleneoxyalkylene bonded to a like phosphorus ester group, hydroxypolyoxyalkylene or hydroxy-substituted analogs thereof n is an integer from 0–1 and m is an integer from 1–2.

4,404,314

PREPARATION OF STABLE AQUEOUS DISPERSIONS OF POLYOLEFIN FIBERS

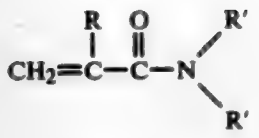
Harold Jabloner, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jan. 12, 1982, Ser. No. 338,931

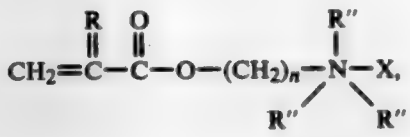
Int. Cl.³ C08L *33/26*

U.S. Cl. 524—519 **8 Claims**

1. A process of forming a stable aqueous dispersion of spurted polyolefin fibers comprising intimately contacting said fibers with an aqueous solution containing from about 0.25 to about 2.0% by weight, based on the weight of said fibers, of a cationic, water-soluble acrylic polymer formed by the copolymerization of from about 60 to about 85% by weight of an acrylamide having the formula



with from about 15 to about 40% by weight of an acrylate or methacrylate ester having the formula



the amount of each monomer being based on the total monomers charged, R being hydrogen or methyl, R′ being hydrogen, methyl or ethyl, R″ being methyl or ethyl, at least one R″ being methyl when X is the methyl sulfate anion, X alternatively being the chloride anion, and n is 1 to 4, the pH of said aqueous solution containing said acrylic polymer having been adjusted to be in the range of from about 9.5 to about 12 either prior to, during or after contacting said fibers with said solution, thereby forming modified fibers.

4,404,315

MOLDING COMPOSITIONS AND DIAPHRAGMS, ARM PIPES AND HEAD SHELLS MOLDED THEREFROM

Tsunehiro Tsukagoshi; Etsuro Nemoto; Shinichi Yokozseki; Sumio Hagiwara; Toshikazu Yoshino; Yasuyuki Arai, all of Ohmori-nishi, and Kazuyoshi Kobayashi, Tokorozawa, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 8, 1980, Ser. No. 147,866

Claims priority, application Japan, May 28, 1979, 54-06949; May 5, 1979, 54-069409; Jun. 5, 1979, 54-069410; Jun. 5, 1979, 54-069412

Int. Cl.³ C08L *31/04, 35/04, 27/04*

U.S. Cl. 524—521 **5 Claims**

1. A molding composition comprising 10–90% by weight of a thermoplastic resin mixture and 90–10% by weight of a flaky graphite, the resin mixture comprising a first thermoplastic resin having a glass transition temperature higher than room temperature and a second thermoplastic resin having a glass transition temperature lower than room temperature, said second resin being 10 to 50% by weight based on the total weight of said first and second thermoplastic resins,

said first thermoplastic resin being selected from the group consisting of polyvinyl chloride, a vinyl chloride-vinyl acetate copolymer and a vinyl chloride-acrylonitrile copolymer, and

said second thermoplastic resin being selected from the group consisting of polyvinylidene chloride, vinylidene chloride-vinyl chloride copolymer and a vinylidene chloride-acrylonitrile copolymer.

4,404,316

CHEMICALLY MODIFIED ASPHALT COMPOSITIONS

Alfred Marzocchi; Michael G. Roberts; Charles E. Bolen, and Edward L. Harrington, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 182,332, Aug. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 166,740, Jul. 7, 1980, abandoned, which is a continuation of Ser. No. 45,048, Jun. 4, 1979, abandoned. This application Nov. 3, 1981, Ser. No. 317,719

Int. Cl.³ C08L *95/00*

U.S. Cl. 524—522 **16 Claims**

1. A chemically-modified asphalt composition comprising an asphalt which has been reacted with (1) a polymerizable vinyl aromatic monomer, (2) a rubbery polymer which is at least partially uncured and/or unvulcanized and (3) reclaimed rubber.

4,404,317

POLYAMIDE BLENDS

Bennett N. Epstein, Wilmington, Del., and Rolando U. Pagilagan, Parkersburg, W. Va., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation of Ser. No. 281,907, Jul. 9, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 427,479

Int. Cl.³ C08L *77/00*

U.S. Cl. 524—538 **14 Claims**

1. A thermoplastic molding resin comprising

(a) about 5 to 98 percent by weight of at least one thermoplastic semicrystalline polyamide of film-forming molecular weight, and complementally,

(b) about 95 to 2 percent by weight of at least one thermoplastic amorphous copolyamide consisting essentially of

(i) 40–98 mole percent units of isophthalic acid based on total acids present,

(ii) 2–60 mole percent units of terephthalic acid based on total acids present,

(iii) 50–98 mole percent units of hexamethylene diamine based on total amines present; and

(iv) 2–50 mole percent units of bis(p-aminocyclohexyl)methane, based on total amines present

wherein in the amorphous copolyamide the mole percent phthalic acids present totals 100 percent and the mole percent diamines present totals 100 percent, and wherein up to 40 percent of the amorphous copolyamide may consist of units of a lactam, or an ω-aminoacid of 4–12 carbon atoms, or units derived from a 4–12 carbon atom aliphatic dicarboxylic acid and a 2–12 carbon atom aliphatic diamine.

4,404,318

PIGMENT DISPERSION

Tetsuo Higuchi; Teiitsu Takagi; Toshihide Fujitani, and Yasuhiko Haruta, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Japan

Continuation of Ser. No. 217,539, Dec. 17, 1980, abandoned. This application Feb. 26, 1982, Ser. No. 352,877

Claims priority, application Japan, Dec. 29, 1979, 54-172051; Dec. 29, 1979, 54-172053

Int. Cl.³ C08L *67/00*

U.S. Cl. 524—588 **5 Claims**

1. In a pigment dispersion comprising a pigment, a dispersing agent and an organic dispersing medium, the improvement wherein the dispersing agent is the reaction product of both an alkyd resin and an amino resin with a silane coupling agent.

4,404,319

THERMOSETTING MOLDING COMPOSITIONS

Hugh C. Gardner, Somerville, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 1, 1981, Ser. No. 279,438

Int. Cl.³ C08F *218/14*

U.S. Cl. 525—39 **19 Claims**

1. A curable liquid composition comprising:

(a) an unsaturated ester characterized by the following empirical formula:

$$[HOC—CH=CHC—O]_n—R-(OH)_m \quad (I)$$

wherein n is a number having an average value of about 1.5 to less than about 4, m is equal to the free valence of R less the average value of n, R is the hydroxyl-free residue of an organic polyol or polyester which contained from 2 to 4, inclusive, hydroxyl groups, OH, in formula (I), (b) maleic anhydride, (c) an ethylenically unsaturated monomer copolymerizable with (a) and (b), and (d) an initiator selected from the group consisting of peroxyketal, ketone peroxide and alkyl hydroperoxide, wherein the composition has an acid number greater than about 40.

11. A composition as defined in claim 1 which additionally contains an unsaturated polyester, said unsaturated polyester being different from (a).

4,404,320

POLYURETHANE COMPOSITION FOR POWDER COATING

Jugo Goto, Kawanishi; Kazutaka Mochizuki, Osaka; Tsutomu Kubota, Kyoto, and Reiji Miyamoto, Ichihara, all of Japan, assignors to Takeda Chemical Industries, Osaka, Japan

Filed Aug. 12, 1981, Ser. No. 292,187
Claims priority, application Japan, Aug. 18, 1980, 55-113703
Int. Cl.³ C08L *29/04, 75/06*
U.S. Cl. 525—58 11 Claims

1. A polyurethane based powder composition for powder coating uses, consisting essentially of a combination of a completely or partially blocked isocyanate compound or mixtures thereof and a hydroxyl-containing compound, the hydroxyl-containing compound being

(A) A hydroxyl-containing polymer, or its carboxyl-modified product, obtained by hydrolyzing a copolymer of a vinyl ester of a saturated monocarboxylic acid and other polymerizable vinyl monomers, and

(B) A polyester polyol of a softening point not lower than 40° C., containing not less than 30 weight % of cyclohexylene, cyclohexenylene groups or spiro rings.

4,404,321

COMPOSITIONS COMPRISING COPOLYMERS OF A VINYL AROMATIC COMPOUND AND AN UNSATURATED CYCLIC ANHYDRIDE AND IMPACT IMPROVERS

Visvaldis Abolins, Delmar, N.Y.; John C. Goossens, Mount Vernon, Ind.; Fred F. Holub, Schenectady, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 163,422, Jun. 27, 1980, abandoned, which is a division of Ser. No. 839,905, Oct. 6, 1977, Pat. No. 4,234,701. This application Dec. 23, 1981, Ser. No. 333,984
Int. Cl.³ C08L *61/04*
U.S. Cl. 525—68 12 Claims

1. A thermoplastic molding composition which comprises an intimate admixture of:

(a) a rubber modified copolymer of a vinyl aromatic compound and an α,β-unsaturated cyclic anhydride,

(b) an impact modifier consisting essentially of a graft copolymer consisting essentially of acrylic ester units in combination with vinyl aromatic units and a diene rubber,

(c) a polyphenylene ether resin, and

(d) an effective ductile impact strength improving amount of a low molecular weight normally liquid butadiene oligomer.

4,404,322

HEAT RESISTANT RESIN COMPOSITION

Kiyotaka Saito; Tomoyuki Kitsunai, both of Machida, and Shozo Hori, Ayase, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 20, 1982, Ser. No. 340,909
Claims priority, application Japan, Jan. 28, 1981, 56-11157; Jan. 28, 1981, 56-11158
Int. Cl.³ C08L *37/00, 51/04*
U.S. Cl. 525—74 10 Claims

1. A thermoplastic resin composition comprising:

(a) 20 to 90 parts by weight of an iminated polymer having imino groups prepared from a copolymer having a weight average molecular weight of not less than 10,000 and obtained by copolymerizing 40 to 90% by weight of an aromatic vinyl monomer, 5 to 40% by weight of maleic acid anhydride and 5 to 40% by weight of a vinyl monomer copolymerizable with said aromatic vinyl monomer and said maleic acid anhydride, said iminated polymer being obtained by reacting the copolymer with one selected from the group consisting of ammonia, a primary amine and mixtures thereof and said copolymerizable vinyl monomer selected from the group consisting of acrylonitrile, acrylic esters, methacrylic esters, acrylic acid, methacrylic acid and mixtures thereof;

(b) 10 to 60 parts by weight of a graft copolymer prepared by grafting 30 to 80 parts by weight of a monomer mixture consisting of 40 to 80% by weight of an aromatic vinyl monomer, 20 to 40% by weight of a cyanated vinyl monomer and 0 to 30% by weight of a vinyl monomer copolymerizable with said aromatic vinyl monomer and said cyanated vinyl monomer upon 20 to 70 parts by weight of a rubber-like polymer; and

(c) 0 to 80 parts by weight of a styrene base copolymer prepared from 40 to 100% by weight of an aromatic vinyl monomer, 0 to 40% by weight of a cyanated vinyl monomer and 0 to 40% by weight of a vinyl monomer copolymerizable with said aromatic vinyl monomer and said cyanated vinyl monomer.

4,404,323

POLYMER COMPOSITION OF α-METHYL STYRENE/ACRYLONITRILE COPOLYMER AND GRAFT COPOLYMER

Jozef L. M. van der Loos, Sittard, and Jan Tijssen, Geleen, both of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Jun. 23, 1981, Ser. No. 276,637
Claims priority, application Netherlands, Jul. 1, 1980, 8003799
Int. Cl.³ C08L *51/04, 25/16*
U.S. Cl. 525—86 6 Claims

1. A polymer composition composed of one or more graft copolymers of styrene and acrylonitrile on a rubber and a copolymer of α-methylstyrene and acrylonitrile, wherein the composition consists essentially of:

A. a graft copolymer obtained by polymerizing 50 to 80 parts by weight of
20 to 40% by weight of acrylonitrile,
50 to 80% by weight of styrene, and
0 to 30% by weight of one or more other monomers
in the presence of 20 to 50 parts by weight of rubber (with respect to 100 parts by weight of graft copolymer), and

B. a copolymer of α-methylstyrene and acrylonitrile obtained by polymerizing a mixture of 60–80 parts by weight of α-methylstyrene and 20–40 parts by weight of acrylonitrile, of which copolymer the spiral flow length (S) is at least 65 and the flow index (V) at most 45, and the ratio between spiral flow length and the flow index is at least 3.0,

and in which polymer composition 35 to 80% by weight of copolymer (B) of α-methylstyrene and acrylonitrile is present.

4,404,324

CURABLE ADHESIVE

Jürgen Fock, Düsseldorf, and Dietmar Schedlitzki, Essen, both of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Dec. 10, 1981, Ser. No. 329,413
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3047926
Int. Cl.³ C08G *18/62;* C08F *8/30;* C08L *75/00*
U.S. Cl. 525—123 8 Claims

1. A curable adhesive comprising as the active components:

(a) a copolymer obtained by the polymerization of:

(a_1) 25 to 64.8 weight percent of one or more alkyl esters of acrylic or methacrylic acid having 1 to 8 carbon atoms in the alkyl radical,

(a_2) 20 to 40 weight percent of acrylonitrile, methacrylonitrile or vinyl acetate,

(a_3) 15 to 35 weight percent of one or more ω-hydroxyalkyl esters of acrylic or methacrylic acid having 1 to 5 carbon atoms in the alkyl radical,

(a_4) 0.2 to 5 weight percent of glycidyl acrylate or glycidyl methacrylate, and

(a_5) 0 to 35 weight percent of monomers selected from the group consisting of vinyl propionate, styrene, acrylamide, and methacrylamide in the presence of mercapto group-containing controllers, which have at least one hydroxyl group in the molecule, the sum of the monomers (a_1) to (a_4) adding up to 100 weight percent and the copolymer having an average molecular weight of 800 to 2,500, and

(b) one or more polyisocyanates or their partial reaction products with polyols, in which the molecule possesses on the average, at least 2 isocyanate groups,

the components (a) and (b) being present in such a ratio that 1 to 1.3 isocyanate groups of component (b) correspond to one hydroxyl group of component (a).

4,404,325

HIGH IMPACT NYLON COMPOSITION CONTAINING COPOLYMER ESTERS AND IONIC COPOLYMERS

Charles D. Mason, Chatham, and Harold W. Tuller, Long Valley, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 11, 1981, Ser. No. 262,016
Int. Cl.³ C08F *8/30*
U.S. Cl. 525—179 **53 Claims**

1. A composition comprising:

about 46 percent to about 74 percent by weight of a polyamide;

about 15 percent to about 44 percent by weight of an ionic copolymer of an alpha-olefin of the formula $RCH{=}CH_2$ where R is H or alkyl radicals having from 1 to 8 carbon atoms, and an alpha,beta-ethylenically unsaturated carboxylic acid having from 3 to 8 carbon atoms, the ionic copolymer having at least 10 percent of the carboxylic acid groups neutralized with metal ions; and

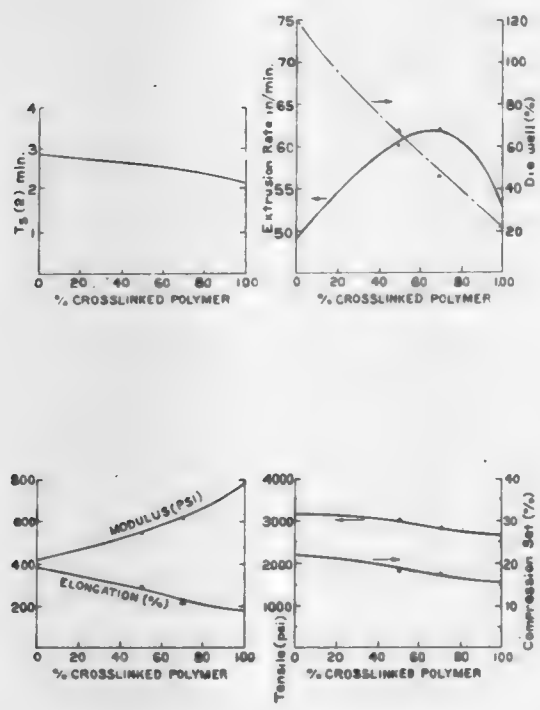
about 1 percent to about 12 percent by weight of an ester copolymer of ethylene and an ester selected from the group of alkyl esters of alpha,beta-ethylenically unsaturated carboxylic acids having 3 to 8 carbon atoms wherein the alkyl group contains 1 to 4 carbon atoms.

4,404,326

PRECROSSLINKED NITRILE RUBBER POLYMER BLENDS WITH LINEAR POLYMERS

Daniel M. Chang, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 93,652, Nov. 13, 1979, abandoned. This application Nov. 5, 1980, Ser. No. 204,111
Int. Cl.³ C08L *13/00*
U.S. Cl. 525—223 **6 Claims**



1. A polymer blend of a precrosslinked polymer and a linear polymer in a relative amount of from 5 to 95% precrosslinked polymer which blend can be coagulated to a free-flowing non-sticky powder, the precrosslinked polymer contains copolymerized therein a polyol polyacrylate derived from a polyol having 2 to 6 hydroxyl groups at least two of which are esterified to form an acrylate ester and is present in an amount sufficient to mildly precrosslink the precrosslinked polymer to the extent of improving compression set, faster extrusion rate, and lower die swell set without the expected sacrifice of modulus of elasticity, elongation, and tensile strength, the precrosslinked polymer consists essentially of at least 50% diene units with remainder being nitrile units, the diene units being derived from a diene monomer having the formula

$$CH_2{=}C(X){-}C(X){=}CH_2$$

where X is hydrogen, an alkyl radical of 1 to 5 carbon atoms, or an aryl radical, and the nitrile units being derived from a nitrile monomer having the formula

$$CH_2{=}C(R){-}C{\equiv}N$$

where R is hydrogen, a halogen, an alkyl radical of 1 to 8 carbon atoms, or an aryl radical; the linear polymer being defined same as the precrosslinked polymer but without the polyol polyacrylate.

4,404,327

ORTHOPAEDIC CEMENT FROM ACRYLATE POLYMERS

Aldo M. Crugnola, 51 Frederick St., Unit 85, Dracut, Mass. 01826, and Edward J. Ellis, 109 Jackman St., Georgetown, Mass. 01969

Continuation of Ser. No. 89,933, Oct. 31, 1979, abandoned. This application Mar. 1, 1982, Ser. No. 353,597
Int. Cl.³ C08L *33/12, 33/08*
U.S. Cl. 525—228 **10 Claims**

1. An improved orthopaedic cement comprising acrylate matrix polymer together with a powder formed of a second acrylate polymer which second polymer has a solubility parameter within about 0.2 units from the monomer from which said matrix polymer is formed, which has a glass transition temperature below human body temperature (37° C.) and which, at said human body temperature, is substantially more extensible than said matrix polymer:

said cement, when implanted in the human body, at body temperature being a composite material consisting of relatively rubbery polymer particles embedded in a rigid, glassy matrix of polymethyl methacrylate and having a setting time of about ten to fifteen minutes.

4,404,328

ORGANOMETALLIC POLYMER COMPOSITIONS USEFUL AS CONSTITUENTS OF ANTI-FOULING PAINTS FOR MARINE STRUCTURES AND THEIR METHODS OF MANUFACTURE

Francois Dawans, Bougival; Marguerite Devaud, Mont St. Aignan, and Denise Nicolas, Maurepas, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Continuation of Ser. No. 935,822, Aug. 22, 1978, Pat. No. 4,262,097. This application Nov. 19, 1980, Ser. No. 208,462

Claims priority, application France, Aug. 22, 1977, 77 25771

The portion of the term of this patent subsequent to Apr. 14, 1998, has been disclaimed.

Int. Cl.³ C08F *253/00*

U.S. Cl. 525—274 **13 Claims**

1. An organometallic polymer composition, comprising a graft copolymer formed of:

(a) a main chain consisting of a chlorinated polymer of a conjungated diene monomer;

(b) at least one grafted chain formed at least partly of recurrent units having at least one pendant tin or organotin carboxylate function; and

(c) at least one grafted chain containing recurrent units derived from at least one hydrophilic non-metallic unsaturated organic monomer;

wherein said chlorinated polymer of a conjugated diene monomer has a chlorine content such that the final graft copolymer contains from 20 to 65% by weight of chlorine.

4,404,329

RUBBER COMPOSITION CAPABLE OF GIVING VULCANIZATES HAVING IMPROVED OZONE CRACKING RESISTANCE AND OIL RESISTANCE

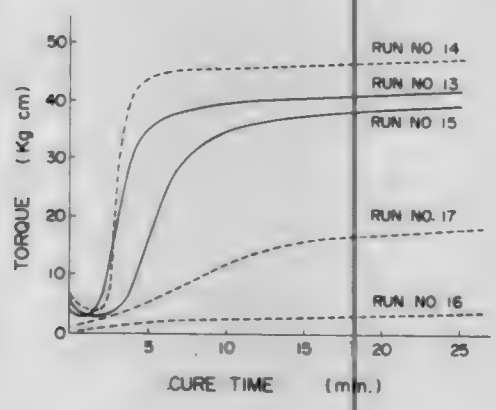
Akio Maeda; Kinro Hashimoto; Shigeru Yagishita, all of Yokohama; Masaaki Inagami, Kamakura, and Hiroshi Fukushima, Zushi, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 26,358, Apr. 2, 1979, abandoned. This application Jun. 10, 1980, Ser. No. 158,249

Claims priority, application Japan, Apr. 6, 1978, 53-5339744

Int. Cl.³ C08C *19/22, 19/20*

U.S. Cl. 525—329.2 **4 Claims**



1. A method of preventing deterioration of vulcanizable rubber products which come into contact with sour gasoline which comprises forming said product from a sulfur-vulcanized rubber article comprising a sulfur-vulcanized, filled partially hydrogenated random copolymer composed of 10 to 50% by weight of an acrylonitrile unit, 25 to 88% by weight of a hydrogenated conjugated diene unit and 2 to 25% by weight of a conjugated diene unit, and allowing said sulfur-vulcanized rubber article to come into contact with sour gasoline.

4. A rubber product such as hose or tube in combination with an internal combustion engine which generates sour gasoline from gasoline, said rubber product coming into contact with the sour gasoline and being formed from a sulfur-vulcanized, filled partially hydrogenated random copolymer composed of 10 to 50% by weight of an acrylonitrile unit, 25 to 88% by weight of a hydrogenated conjugated diene unit and 2 to 25% by weight of a conjugated diene unit.

4,404,330

CURABLE RESIN COMPOSITION

Nobuyuki Ikeguchi, Tokyo, Japan, assignor to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed May 6, 1981, Ser. No. 260,993

Claims priority, application Japan, May 6, 1980, 55-59630; Jun. 9, 1980, 50-77384; Feb. 5, 1981, 56-16040; Mar. 19, 1981, 56-39831

Int. Cl.³ C08F *8/30*

U.S. Cl. 525—374 **13 Claims**

1. A curable resin composition comprising:

(a) at least one cyanate ester compound selected from the group consisting of:

(1) a polyfunctional aromatic cyanate ester monomer having the formula:

$$R—(O—C{\equiv}N)_m$$

wherein m is 2 to 5 and R is an aromatic organic group, the cyanate groups being bonded to an aromatic ring of said aromatic organic group,

(2) a prepolymer of (1), and

(3) a coprepolymer of (1) and an amine; and

(b) at least one polymeric material selected from the group consisting of:

(1) a terpolymer of acrylonitrile, butadiene, and isoprene,

(2) a copolymer of acrylonitrile and butadiene or isoprene,

(3) a reaction product of (1) or (2) and a compound selected from the group consisting of an isocyanate compound, an epoxy compound, an acrylate, a methacrylate and an unsaturated acid anhydride, and

(4) the product formed by modifying (1) or (2) by introducing a methacryloyl group, an acryloyl group or an acid anhydride moiety thereinto,

said composition including a mixture of components (a) and (b), a preliminary reaction product of components (a) and (b), or the combination of said mixture and said preliminary reaction product.

4,404,331

ENAMEL HAVING IMPROVED COATABILITY AND INSULATED ELECTRICAL ARTICLES PRODUCED THEREFROM

Denis R. Pauze, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 183,857, Sep. 3, 1980, abandoned. This application May 21, 1982, Ser. No. 380,589

Int. Cl.³ C08L *77/00*

U.S. Cl. 525—424 **4 Claims**

1. In an enamel composition consisting essentially of a curable polyesterimide resin dissolved in a solvent therefor, the improvement wherein said composition additionally contains an amount of nylon polymer sufficient to enhance surface coatability and smoothness.

4,404,332

CROSS-LINKING AGENTS FOR CATIONIC POLYMERS

Girish G. Parekh, Fairfield; Werner J. Blank, Wilton, and Peter J. Schirmann, Fairfield, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 232,455, Feb. 9, 1981, abandoned, which is a continuation of Ser. No. 128,613, Mar. 10, 1980, abandoned, which is a division of Ser. No. 32,982, Apr. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 926,762, Jul. 21, 1978, abandoned. This application Oct. 26, 1982, Ser. No. 436,895

Int. Cl.³ C08G *12/32*

U.S. Cl. 525—428 **6 Claims**

1. A composition of matter comprising (A) a compound

having an average of at least two primary or secondary amine groups per molecule, and (B) a melamine compound, the amine groups of which contain as substituents an average of at least two glyoxylic acid ester groups per molecule.

4,404,333

THERMOPLASTIC POLYESTER RESIN, PRODUCTION OF SAME, AND ORTHOPEDIC CAST MATERIAL PRODUCED THEREFROM

Shoji Watanabe, Ohtake, and Michio Nakanishi, Niiza, both of Japan, assignors to Daicel Chemical Industries, Inc., Osaka, Japan

Filed Nov. 3, 1982, Ser. No. 438,954
Claims priority, application Japan, Nov. 6, 1981, 56-178808; Nov. 6, 1981, 56-178809
Int. Cl.³ C08F *283/00;* C08G *63/76*
U.S. Cl. 525—437 16 Claims

1. A thermoplastic polyester resin having the formula (I):

$$[A]_l[B]_m[C]_n \ldots \quad (I)$$

where A denotes a residue of straight or branched aliphatic dicarboxylic acid of carbon number 4 to 12 or 36; B denotes a residue of straight or branched aliphatic diol of carbon number 2 to 18; C denotes a residue of 6-hydroxycaproic acid; these residues are linked through the ester bond and distributed randomly and/or in block in the molecule; l, m, and n each has a value greater than 0; the residue of the 6-hydroxycaproic acid is 60 to 98 wt% and the sum of the residues of the aliphatic dicarboxylic acid and aliphatic diol is 40 to 2 wt%; and the residue of the aliphatic dicarboxylic acid and the residue of the aliphatic diol are contained in the equimolar amount; and having a number-average molecular weight of 5,000 to 200,000.

15. A process for the production of a thermoplastic polyester resin which comprises mixing (ii) a straight or branched aliphatic diol having 2–18 carbon atoms and (iii) a straight or branched aliphatic dicarboxylic acid having 4–12 or 36 carbon atoms, or anhydride or lower alkyl ester thereof; and subjecting the mixture in the presence of a catalyst for esterification to an esterification and condensation, to give a linear polyester resin having a number-average molecular weight of 2,000–100,000; and then reacting said polyester resin with (i) ϵ-caprolactone or 6-hydroxy-caproic acid in the presence of a catalyst for polymerization and ring opening.

4,404,334

THERMOSETTING RESINOUS POLYOL

Leopold F. Bornstein, Atlanta, Ga., assignor to Georgia-Pacific Corporation, Atlanta, Ga.

Filed Nov. 18, 1982, Ser. No. 442,634
Int. Cl.³ C08G *8/24, 8/28, 8/04, 8/10*
U.S. Cl. 525—504 11 Claims

1. A method for producing phenolic-aldehyde based resinous thermosetting polyol by

(a) co-reacting in a first reaction step at substantially atmospheric pressure, at a temperature between about 120° C. and 135° C. and under mildly acidic conditions a reaction mixture of:
  (i) primary phenolic component,
  (ii) substantially anhydrous aldehyde component, and
  (iii) polyhydroxyl component selected from the group consisting of: dihydric alcohols, polyhydric alcohols and salts of a lignosulfonic acid;
(b) continuing said co-reaction, while permitting volatile reaction constituents of the reaction mixture to evaporate freely therefrom, until the level of unreacted aldehyde component in the reaction mixture is below about 2.0 weight percent; and
(c) thereafter reacting in a second reaction step at substantially atmospheric pressure, and under mildly acidic conditions a secondary phenolic component with said first step resin product.

4,404,335

HYDROLYZING EPOXY RESINS IN ABSENCE OF SOLVENT AND IN PRESENCE OF OXALIC ACID AND A PHOSPHONIUM COMPOUND

Michael B. Cavitt, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 16, 1982, Ser. No. 408,348
Int. Cl.³ C08G *59/14*
U.S. Cl. 525—507 6 Claims

1. In a process for hydrolyzing epoxy resins by reacting one or more of said epoxy resins with water in the presence of a catalyst; the improvement which comprises conducting the reaction in the absence of substantial quantities of an organic solvent and in the presence of a catalytic quantity of a catalyst consisting essentially of (1) one or more dicarboxylic acids having from 2 to about 10 carbon atoms and (2) one or more phosphonium compounds wherein the molar ratio of (1) to (2) is from about 1:1 to about 20:1 respectively.

4,404,336

WATER SOLUBLE EPOXY ESTER COPOLYMERS FOR INTERIOR CAN USE

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Division of Ser. No. 153,429, May 27, 1980, Pat. No. 4,294,737, which is a continuation-in-part of Ser. No. 108,283, Dec. 28, 1979, abandoned. This application Aug. 20, 1981, Ser. No. 294,743
Int. Cl.³ C08F *283/10;* C08G *59/16*
U.S. Cl. 525—531 11 Claims

1. Epoxy ester copolymer dispersible in water with the aid of an amine comprising a polyepoxide having a 1,2-epoxy equivalency in excess of 1.0 and a molecular weight of from 350 to 8000 esterified with at least about 0.5% of a monoester of a saturated monohydric alcohol with a monoethylenically unsaturated dicarboxylic acid which resists homopolymerization to produce a polyepoxide ester, said polyepoxide ester being copolymerized with from 15% to 70% of monoethylenic monomers including carboxy functional monomer providing an acid number of from 20–150 in the copolymer, all of said proportions being based on the final copolymer of said monomers with said polyepoxide ester.

4,404,337

PROCESS FOR INHIBITING THE FORMATION OF SCALE IN THE SUSPENSION POLYMERIZATION OF VINYL CHLORIDE

Akio Hata, and Michifumi Tanga, both of Shinnan'yo, Japan, assignors to Tokuyama Sekisui Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 17, 1981, Ser. No. 274,663
Claims priority, application Japan, Jun. 17, 1980, 55-82240
Int. Cl.³ C08F *14/06, 2/20*
U.S. Cl. 526—62 5 Claims

1. In a process for suspension polymerizing vinyl chloride in which vinyl chloride or a mixture of vinyl chloride and a monomer or polymer copolymerizable therewith is dispersed in an aqueous medium in a polymerization vessel and polymerized in suspension in the presence of an oil-soluble polymerization initiator, the improvement which comprises applying a ternary reaction product of: (a) furfural; (b) a polyamine selected from the group consisting of ethylenediamine, a propylenediamine, trimethylenediamine, tetramethylenediamine, pentamethylenediamine, hexamethylenediamine, diethylenetriamine, tetraethylenepentamine, polyethyleneimine, cyclohexanediamine, phenylenediamine, toluenediamine, diaminophenylamine, N,N′-diphenylpropylenediamine and stilbendiamine; and (c) a phenol, the phenol being a benzene ring having at least one hydrogen atom on the benzene ring replaced by a hydroxy group, to the inner surfaces of the polymerization vessel in an amount of 0.0001 g/m^2 to 5 g/m^2 or adding the ternary reaction product to the polymerization

system in an amount of between 0.05 and 50 parts by weight per million parts of vinyl chloride monomer, whereby the formation of scale on the inner surfaces of the polymerization vessel is inhibited.

4,404,338

PROCESS FOR PREPARING COPOLYMERS OF VINYL-AROMATIC MONOMERS WITH ETHYLENICALLY UNSATURATED NITRILES HAVING LOW CONTENT OF UNREACTED RESIDUAL MONOMERS

Andrea De Toffol, Cerro Maggiore; Nicola Anfossi, Busto Arsizio, and Gianfranco Veroli, San Donato Milanese, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jul. 1, 1981, Ser. No. 279,581
Claims priority, application Italy, Jul. 2, 1980, 23182 A/80
Int. Cl.³ C08F *212/10*
U.S. Cl. 526—86 **9 Claims**

1. A process for preparing copolymers of vinyl-aromatic monomers with ethylenically unsaturated nitriles as starting monomers, which copolymers have a very low content of unreacted residual monomers, said process comprising polymerizing the mixture of starting monomers in an aqueous dispersion and, when at least 70% of the starting monomers have been converted to polymer, adding from 0.2% to 2% by weight, referred to the starting monomers, of another, different monomer reactive towards the unreacted starting monomers and selected from the group consisting of vinyl acetate, esters of acrylic acid, esters of methacrylic acid, styrene, methacrylonitrile and mixtures thereof, the aqueous dispersion containing, at the time of the addition of the monomers reactive with unreacted starting monomers, from 0.1 to 0.5% by weight of a compound capable of yielding free radicals.

4,404,339

SUSPENSION POLYMERIZATION PROCESS FOR MAKING VINYL RESINS FOR USE IN PLASTISOLS

Charles N. Bush, Bay Village, and Thomas J. Doyle, Lorain, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Oct. 15, 1979, Ser. No. 84,479
Int. Cl.³ C08F *2/20*
U.S. Cl. 526—88 **13 Claims**

1. A suspension polymerization process for producing homopolymers of vinyl halides and vinylidene halides and copolymers thereof with one or more vinylidene monomers having at least one terminal $CH_2{=}C<$ grouping comprising, forming a monomer reaction mixture containing the monomer(s) to be polymerized, the aqueous reaction medium, a polyvinyl alcohol suspending agent, and from about 0.1% to about 1.5% by weight, based on the weight of the monomer(s), of a nonionic and substantially water-insoluble surfactant having a hydrophile-lipophile balance of less than about 3.5, agitating said reaction mixture to form suspended droplets of monomer in the mixture, heating said mixture to the polymerization temperature in the range of about 30° C. to about 70° C., agitating said mixture at said temperature for a period in the range of about 1 minute to about 60 minutes at about 100 to about 450 rpm., adding from about 0.01% to about 0.50% by weight, based on the weight of the monomer(s), of an oil-soluble free-radical yielding catalyst to said heated agitated reaction mixture and continuing said agitation at said rpm. for a period of about ¼ to about 2 hours as the first stage, then reducing the rpm. to about 50 to about 300 rpm. as the second stage, said rpm. in the second stage being less than that in the first stage, thereby forming an aqueous slurry of dense, spherical and glassy polymer particles having a diameter in the range of about 10 to about 100 microns, and thereafter recovering said particles from said slurry.

4,404,340

PROCESS FOR POLYMERIZING OLEFINS IN THE PRESENCE OF A TITANIUM-PHOSPHORUS-CHROMIUM CATALYST

Anthony N. Speca; Stanley J. Katzen, both of Cincinnati, and Louis J. Rekers, Wyoming, all of Ohio, assignors to National Petro Chemicals Corporation, New York, N.Y.

Division of Ser. No. 228,391, Jan. 26, 1981, Pat. No. 4,328,124.
This application Dec. 24, 1982, Ser. No. 334,300
Int. Cl.³ C08F *4/02, 4/16, 4/24*
U.S. Cl. 526—97 **11 Claims**

1. A process for the polymerization of olefins which comprises contacting said olefin with a catalyst comprising an inorganic support material having deposited thereon the reaction product of (i) a trialkyl-dialkyl phosphato-titanate prepared from the reaction of $Ti(OR')_4$ and

$$(RO)_2{-}\overset{\overset{O}{\|}}{P}{-}CH,$$

wherein R and R' are the same or different and are alkyl of from 1 to 6 carbon atoms, and (ii) chromium trioxide and heat activated in a non-reducing atmosphere at a temperature of above about 300° C. up to the decomposition temperature of the support.

4,404,341

PROCESS FOR PRODUCING OLEFIN POLYMERS OR COPOLYMERS AND CATALYST THEREFOR

Yoshihisa Ushida, Ohtake; Akinori Toyota, and Norio Kashiwa, both of Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Feb. 4, 1980, Ser. No. 118,325
Claims priority, application Japan, Feb. 6, 1979, 54-11823
Int. Cl.³ C08F *4/64, 10/04*
U.S. Cl. 526—125 **6 Claims**

1. In a process for producing an olefin polymer or copolymer having a high degree of stereoregularity by polymerizing an alpha-olefin having at least 3 carbon atoms or copolymerizing such alpha-olefins with each other or such an alpha-olefin with up to 20 mole% of ethylene and/or a diene in the presence of a catalyst formed from (1) a solid titanium catalyst component and (2) an organoaluminum compound, at a temperature of about 20° to about 200° C. and a pressure of from atmospheric pressure to about 50 kg/cm^2, under the copresence of hydrogen as molecular weight controller, the improvement comprising using as said catalyst

(A) the solid titanium catalyst component (1) containing magnesium, halogen, titanium, phosphorus and carboxylic acid ester wherein magnesium is derived from a magnesium compound selected from the group consisting of magnesium halides, magnesium alkoxyhalides, magnesium aryloxyhalides, magnesium alkoxides and magnesium aryloxides, and wherein said phosphorus is derived from a phosphorus compound selected from the group consisting of compounds of the following formulas:

$$PX_mR^1{}_n(OR^2)_q$$

and

$$POX_rR^3{}_s(OR^4)_t$$

wherein X is a halogen atom, each of R^1, R^2, R^3 and R^4 is selected from hydrocarbon groups having 1 to 20 carbon atoms and the halogen-substituted derivatives thereof, and R^1 and R^2 are identical or different and R^3 and R^4 are identical or different, $m+n+q=3$, $0 \leqq m \leqq 3$, $0 \leqq n \leqq 3$, $0 \leqq q \leqq 3$, $r+s+t=3$, $0 \leqq r \leqq 3$, $0 \leqq s \leqq 3$, and $0 \leqq t \leqq 3$;

and said carboxylic acid ester being an ester having from 2 to 40 carbon atoms;

wherein the molar ratio of phosphorus to carboxylic acid ester is from 0.05 to 2, the molar ratio of the carboxylic acid ester to titanium is from about 0.2 to about 10, the molar ratio of the magnesium to titanium is from about 3 to about 40, and the molar ratio of the halogen to titanium is from about 4 to about 100; said component (1) having a specific surface area of not less than about 40 m^2/g, said component (1) being prepared by intensively pulverizing the magnesium compound, the carboxylic acid ester and the phosphorus compound by mechanical means in the absence or presence of at least one member selected from the group consisting of titanium compounds, inert carriers and pulverization aids, and contacting the pulverized product with a tetravalent titanium compound which is in the liquid state under the treating conditions in the absence of mechanical pulverization:

(B) the organolauminum compound (2); and (C) an ester as an electron donor;

wherein (i) the proportion of component (C) in the polymerization or copolymerization is about 0.01 to about 1 mole per gram-atom of the aluminum atom in catalyst component (B) and (ii) the proportion of the aluminum atom in component (B) is about 1 to about 1000 moles per gram-atom of titanium in component (A) whereby the melt flow index of said olefin polymer or copolymer can be substantially varied without substantially decreasing the stereoregularity of said polymer or copolymer.

4,404,342

PROCESS FOR PREPARING A COPOLYMER

Mituji Miyoshi, Kanagawa; Kazuo Matsuura, Kawasaki, and Yoshio Tajima, Tokyo, all of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 122,985, Feb. 20, 1980, abandoned. This application Aug. 31, 1981, Ser. No. 297,959

Claims priority, application Japan, Feb. 27, 1979, 54-21445

Int. Cl.³ C08F *4/02, 210/02*

U.S. Cl. 526—125 **13 Claims**

1. A process for preparing a low crystalline soft or semi-hard copolymer having a haze value of up to 30%, characterized in that 90 to 98 mole% of propylene, 0.2 to 5 mole% of ethylene and 0.2 to 5 mole% of a straight-chained α-olefin having from four to eighteen carbon atoms are copolymerized using a catalyst at a temperature in the range of from 20° to 300° C. and at a pressure in the range of from atmospheric pressure to 70 $Kg/Cm^2.G$, said catalyst comprising (1) a solid substance containing magnesium and titanium (2) an organometallic compound of Group I-IV of the Periodic Table and (3) at least 0.05 mole based on the amount of magnesium (gram atom) of an electron donor selected from the group consisting of ethers, ketones, organic acid esters, acid halides, and nitriles.

4,404,343

METHOD OF POLYMERIZING 1-OLEFINS

Raymond E. Hoff, Palatine, Ill., assignor to Chemplex Company, Rolling Meadows, Ill.

Continuation of Ser. No. 95,469, Nov. 19, 1979, abandoned, which is a continuation-in-part of Ser. No. 65,219, Aug. 9, 1979, abandoned, which is a division of Ser. No. 912,874, Jun. 5, 1978, abandoned. This application Dec. 11, 1981, Ser. No. 329,967

Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—142 **10 Claims**

1. A method of making polymers of one or more 1-olefins which comprises polymerizing said olefins under polymerizing conditions with a supported olefin polymerization and copolymerization catalyst active in the presence of an organometallic co-catalyst, said catalyst being prepared by the method which comprises the consecutive steps of:

(a) mixing a solvent, a lower alkyl aluminum halide, a dialkyl magnesium compound and a particulate organic polymer, said organic polymer comprising a graft copolymer of high density polyethylene which has chemically bonded to it up to about 5 weight percent of X-methyl bicyclo [2.2.1]hept-5-ene-2,3-dicarboxylic acid anhydride;

(b) adding a reducible, reactive titanium compound of the formula $Ti(OR)_4$, where R is an alkyl group, to the mixture of said solvent, said alkyl aluminum halide, said dialkyl magnesium compound and said organic polymer, to form a reaction product, regulating the respective quantities of said alkyl aluminum halide, said dialkyl magnesium compound, said titanium compound and said organic polymer such that said reaction product comprises less than about 30 percent of the total weight of said reaction product and said organic polymer particles; and,

(c) evaporating said solvent at a temperature which is less than the softening temperature of said organic polymer.

4,404,344

PREPARING ETHYLENE POLYMERS USING ZIEGLER CATALYST COMPRISING CYCLODIENYL COMPOUND OF ZIRCONIUM

Hansjörg W. Sinn, Hamburg; Walter O. Kaminsky, Pinneberg; Hans-Jürgen C. Vollmer, Hamburg, and Rüdiger O. H. H. Woldt, Lüneberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 238,955

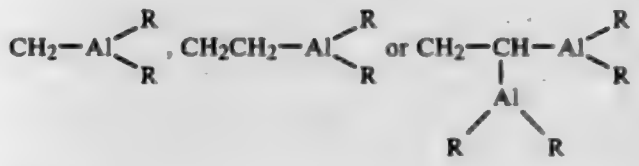
Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007725

Int. Cl.³ C08F *4/64*

U.S. Cl. 526—160 **17 Claims**

1. A process for preparing polymers of ethylene and propylene and of copolymers of ethylene and alpha olefins or alpha omega dienes, respectively by polymerizing the monomer(s) within a temperature range from −80° to 150° C. in the presence of a halogen free Ziegler type catalyst system consisting of a cyclopentadienyl compound containing zirconium and of an aluminum alkyl compound, characterized in that polymerization is made in the presence of catalyst system consisting of the following components:

(1) a compound containing zirconium and having the general formula $(cyclopentadienyl)_nMeY_n$, in which n is an integer from 1 to 4, Me is zirconium and Y is selected from the group consisting of hydrogen, a C_1-C_5 alkyl group or C_1-C_5 metal alkyl group or of a group of the following formula



in which R is a C_1-C_5 alkyl group or a C_1-C_5 metalloalkyl group, and

(2) an aluminum containing compound of the alumoxan type having the formula $(R\text{-}Al\text{-}O)_m$, in which m is an integer of 1 to 20 and R is a C_1-C_5 alkyl group.

4,404,345

NOVEL ADHESIVE COMPOSITIONS

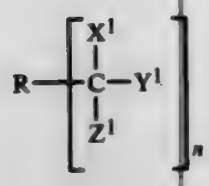
Edward W. Janssen, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 16, 1981, Ser. No. 302,781

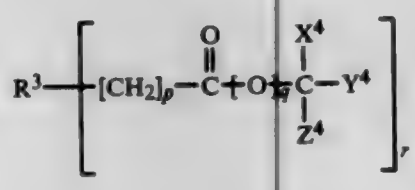
Int. Cl.³ C08F *20/04*

U.S. Cl. 526—206 **23 Claims**

1. An adhesive composition consisting of a first part and a second part which are contacted with one another when forming an adhesive bond between substrates using said adhesive composition, said first part consisting of (a) 100 parts by weight of a polymerizable monomer having at least one α,β-unsaturated carboxyl functionality; (b) about 0.05 to 20 parts by weight of an accelerator selected from the group consisting of compounds of the formula



wherein:
X^1 is selected from the group consisting of H, CH_3, Cl, and Br;
Y^1 and Z^1 are each selected independently from the group consisting of Cl and Br;
R^1 is selected from the group consisting of aromatic and heteroaromatic residues; and
n is an integer from 1 to 3 inclusive;
compounds of the formula



wherein:
X^4 is selected from the group consisting of H, Cl, Br and CN;
Y^4 and Z^4 are each selected independently from the group consisting of Cl and Br;
R^3 is selected from the group consisting of amino residues and organic radicals comprising 1 to about 10 carbons;
p is 0 or 1;
q is 0 or 1; and
r is 1 or 2;
1-trichloromethyl-cis-perhydropentalene and 1,1,1-trichloro-2-methyl-2-propanol hydrate; and (c) an inhibitor of free-radical polymerization; and said second part comprising a condensation reaction product of an aldehyde and a primary or secondary amine.

4,404,346

PRODUCTION OF POWDERED RESIN AND THE POWDERED RESIN SO PRODUCED

Marico G. Pirotta, and Giberto Garbagnati, both of Milan, Italy, assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Aug. 5, 1980, Ser. No. 176,732
Int. Cl.³ B01J *41/08*; A31K *31/74*
U.S. Cl. 521—29 **10 Claims**

1. A process for comminuting particles of cholestyramine resins comprising the steps of
(a) inducing strain into the particles by changing their dimensions through contact with water or an organic solvent, and
(b) subsequently grinding the particles in a rotary attrition mill until the size of the particles is reduced such that at least 90% by weight and/or number of the particles are below 30 microns in diameter.

4,404,347

POLYISOCYANATE CROSS-LINKED POLYMERS CONTAINING CELLULOSIC COMPONENT

Toshiomi Nakamura, Daito; Masakazu Okamura, Suita; Yoichiro Moriguchi, Hirakata, and Tamiki Hayase, Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Dec. 29, 1981, Ser. No. 335,476
Claims priority, application Japan, Jan. 9, 1981, 56-2268
Int. Cl.³ C08G *18/06, 18/28*; C08L *1/10*
U.S. Cl. 527—300 **23 Claims**

1. A cross-linked hybrid polymer comprising a first polymer block and a second polymer block cross-linked to each other via bonds to different reaction sites of a polyisocyanate compound, the bond of the first polymer block with the polyisocyanate compound being effected prior to the bond of the second polymer block thereto, said first polymer block being a film-forming cellulose derivative having at least one active hydrogen atom reactive with an isocyanato group of said polyisocyanate but not reactive with at least one remaining isocyanato group of said polyisocyanate, and said second polymer block being a preformed film-forming polymer having at least one active hydrogen atom which is reactive with said remaining isocyanato group of the polyisocyanate with which said active hydrogen atom of the cellulose derivative was unreactive, and said second film-forming polymer being an acrylic resin, an alkyd resin, a polyester resin, an epoxy resin, an aminoplast resin or a mixture of these resins; the ratio of the active hydrogen equivalent of said cellulose derivative to the isocyanate equivalent of said polyisocyanate being 1.0 to 200, and the ratio of the isocyanate equivalent of said polyisocyanate to the active hydrogen equivalent of said film-forming polymer being less than 1.0.

4,404,348

SOLVENTLESS ORGANOSILICON COATING/IMPREGNATING COMPOSITIONS

Alain Fau, Tassin la Demi-Lune, and Parasko Nicou, Francheville, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Aug. 10, 1982, Ser. No. 406,991
Claims priority, application France, Aug. 12, 1981, 81 15787
Int. Cl.³ C08G *77/06*
U.S. Cl. 528—15 **16 Claims**

1. An organopolysiloxane composition comprising (i) an α,ω-dihydroxypolydiorganopolysiloxane having a viscosity, measured at 25° C., ranging from 5 to 100,000 mPa.s and consisting essentially of recurring units of the formula Z_2SiO, in which the symbols Z, which are identical or different, are alkyl or halogenoalkyl radicals having from 1 to 8 carbon atoms and containing from 1 to 7 chlorine and/or fluorine atoms, alkenyl radicals having from 2 to 4 carbon atoms, cycloalkyl or halogenocycloalkyl radicals having from 3 to 8 carbon atoms and containing from 1 to 4 chlorine and/or fluorine atoms, aryl, alkylaryl and halogenoaryl radicals having from 6 to 8 carbon atoms and containing from 1 to 4 chlorine and/or fluorine atoms, or cyanoalkyl radicals having from 3 to 4 carbon atoms; (ii) a polyorganopolysiloxane having from 1.60 to 1.90 organic radicals per silicon atom, having a viscosity ranging from 30 mPa.s at 25° C. to 3,000 mPa.s at 25° C., having from 0.2 to 10% of hydroxyl groups and consisting essentially of the recurring units $RSiO_{1.5}$, R_2SiO and $R_3SiO_{0.5}$, in which the symbols R, which are identical or different, are alkyl or halogenoalkyl radicals having from 1 to 8 carbon atoms and containing from 1 to 7 chlorine and/or fluorine atoms, alkenyl radicals having from 2 to 4 carbon atoms, cycloalkyl or halogenocycloalkyl radicals having from 3 to 8 carbon atoms and containing from 1 to 4 chlorine and/or fluorine atoms, aryl, alkylaryl and halogenoaryl radicals having from 6 to 8 carbon atoms and containing from 1 to 4 chlorine and/or fluorine atoms, or cyanoalkyl radicals having from 3 to 4 carbon atoms; (iii) a crosslinking agent containing a polyalkoxysilyl group; and (iv) a catalytically effective amount of an organic iron or zirconium catalyst soluble in the organopolysiloxane medium.

4,404,349
POLYSILOXANES HAVING COMBINED THEREIN ORGANO TITANATES

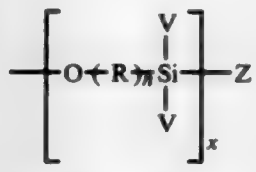
Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 192,319, Sep. 30, 1980, Pat. No. 4,328,323, which is a continuation-in-part of Ser. No. 70,785, Aug. 29, 1979, Pat. No. 4,291,136, which is a continuation-in-part of Ser. No. 892,153, Mar. 31, 1978, abandoned. This application Dec. 23, 1981, Ser. No. 334,046

Int. Cl.³ C08G 77/06, 77/18

U.S. Cl. 528—25 21 Claims

1. A polysiloxane, reactive with alkylene-alkyl acrylate copolymer, containing the repeating unit:



wherein R is a hydrocarbon radical or an oxy substituted hydrocarbon radical, each V is hydrogen, a hydrocarbon radical or a hydrolyzable group, Z is a hydrolyzable group, n is an integer having a value of 1 to 18 inclusive and x is an integer having a value of at least 2, said polysiloxane end blocked by an ester group and containing an organo titanate chemically combined therewith.

4,404,350
SILICONE-IMIDE COPOLYMERS AND METHOD FOR MAKING

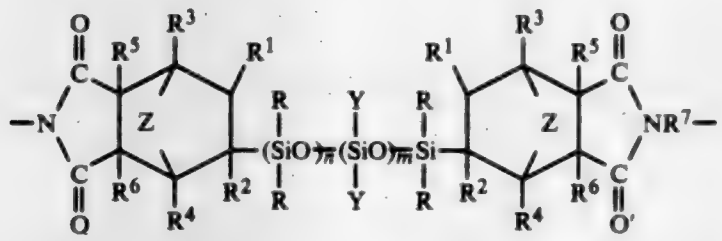
Hong-Son Ryang, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 7, 1982, Ser. No. 395,933

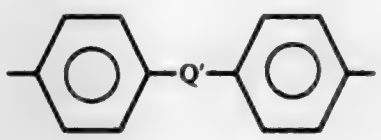
Int. Cl.³ C08G 77/04

U.S. Cl. 528—26 11 Claims

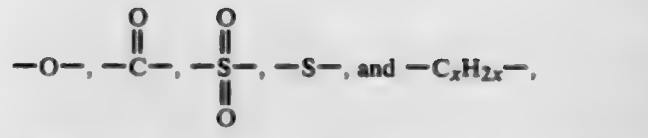
1. Silicone-imide copolymers comprising norbornane terminated polydiorganosiloxane groups of the formula



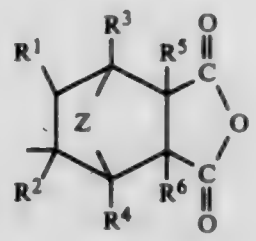
where R is selected from the group consisting of $C_{(1-13)}$ monovalent hydrocarbon radicals and substituted $C_{(1-13)}$ monovalent hydrocarbon radicals, R^1–R^6 are selected from the group consisting of hydrogen, halogen and the same or different $C_{(1-13)}$ monovalent hydrocarbon radicals and substituted $C_{(1-13)}$ monovalent hydrocarbon radicals, R^7 is a divalent $C_{(2-20)}$ organic radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals and cycloalkylene radicals having from 2–20 carbon atoms, $C_{(2-8)}$ alkylene terminated polydiorganosiloxane, and (c) divalent radicals included by the formula,



Q' is a member selected from the class consisting of



x is a whole number from 1 to 5 inclusive, Z is a divalent radical selected from —O— and $—C(R^1)_2—$, Y is a radical selected from R and



n is an integer equal to 0 to 2000 inclusive, m is a whole number equal to 0 to 500, and the sum of n+m is equal to 0 to 2000 inclusive.

4,404,351
PROCESS FOR THE ISOLATION OF POLYCARBONATES BASED ON 4,4'-DIHYDROXYDIPHENYL SULPHONES

Peter Käfer, Krefeld; Leo Morbitzer, Cologne; Dieter Neuray, Krefeld; Wolfgang Cohnen, Leverkusen, and Werner Nouvertne, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

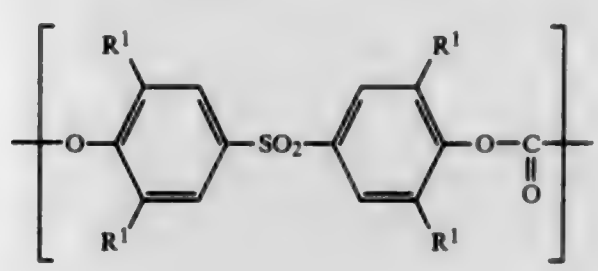
Filed Sep. 20, 1982, Ser. No. 420,438

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1981, 3138179

Int. Cl.³ C08G 63/62

U.S. Cl. 528—174 6 Claims

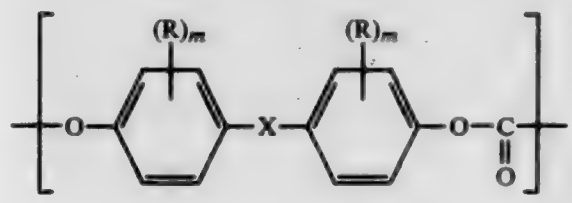
1. A process for the isolation of a polycarbonate containing 18 to 45 mol % of structural units of the general formula



(Ia)

in which

R^1 denotes a hydrogen atom or a C_1 to C_3 alkyl group, relative to the sum of polycarbonate structural units of the formula (I)+(Ia) in a polycarbonate of the general formula



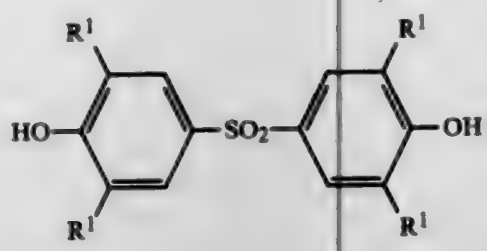
in which

X denotes a direct bond, a C_1 to C_8 alkylene, C_2 to C_8 alkylidene, cyclohexylene or cyclohexylidene radical, S, O or CO,

each R independently denotes a hydrogen, chlorine or bromine atom or an alkyl group having 1 to 3 carbon atoms, and

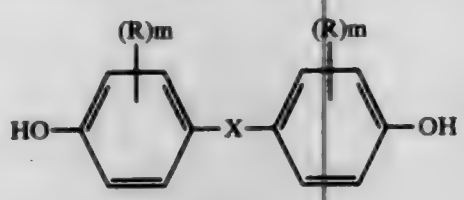
m is 0, 1 or 2,

comprising reacting, by the phase-boundary process, 18 to 45 mol % of a sulphone-bisphenol of the general formula



(IIa)

in which R^1 has the meaning given above, with 82 to 55 mol % of a bisphenol of the general formula



(II)

in which X, R and m have the meanings given above, said mol percentages in each case being relative to the total molar amount of the bisphenols of formula (IIA)+(II) used, in which reaction the bisphenol of the formula (II) is phosgenated to give an oligocarbonate containing chloroformic acid ester end groups and the oligocarbonate is then subjected to a polycondensation reaction with the sulphone-bisphenols of the formula (IIa) using an amine catalyst, separation of the phases in a separating vessel after the polycondensation has ended, and washing of the organic phase with phosphoric acid and water until the washings are neutral, and after further separation of the phases, isolation of the sulphone-bisphenol polycarbonate by precipitation or evaporation of the organic solvent.

4,404,352

METHOD OF PRODUCING POLYURETHANES

Koreyoshi Suenobu, Buzen; Masanori Kohara, Nakatsu; Yasuhiro Hidaka, Sakai; Kazuki Katsuyama, Nara, and Ryoichi Kinishi, Yoshitomimachi, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP81/00393, § 371 Date Aug. 4, 1982, § 102(e) Date Aug. 4, 1982, PCT Pub. No. WO82/02203, PCT Pub. Date Jul. 8, 1982

PCT Filed Dec. 17, 1981, Ser. No. 405,959

Claims priority, application Japan, Dec. 22, 1980, 55-182374; Apr. 17, 1981, 56-58963; Jul. 14, 1981, 56-110595; Jul. 17, 1981, 56-112565

Int. Cl.³ C08G *18/80*

U.S. Cl. 528—45 **12 Claims**

1. A method of producing polyurethanes which comprises reacting an at least partially blocked isocyanate compound with an active hydrogen-containing compound in the presence of at least one compound selected from the group consisting of dialkyltin, diaryltin, monoalkyltin and monoaryltin compounds, and at least one amine compound selected from the group consisting of 1,10-phenanthroline, bipyridyl, 4,4'-dimethyl-2,2'-bipyridyl, 2,4,6-tris(dimethylaminomethyl)-phenol, a morpholine compound, a piperidine compound and an alkanolamine compound of the formula

$$(R)_{3-n}N(CH_2CH_2OH)_n$$

wherein R is a hydrogen atom, a lower alkyl group having 1 to 4 carbon atoms, a phenyl group or a group of the formula $-(CH_2)_mNH_2$ in which m is an integer of 1 to 8, and n is an integer of 1 to 3 and wherein, when n is an integer of 1, the two Rs may be the same or different.

4,404,353

URETHANE ELASTOMER FOR PRINTING BELTS AND PROCESS THEREFOR

Edwin C. Slagel, Simi Valley, Calif., assignor to Dataproducts Corporation, Woodland Hills, Calif.

Filed Aug. 20, 1981, Ser. No. 294,716

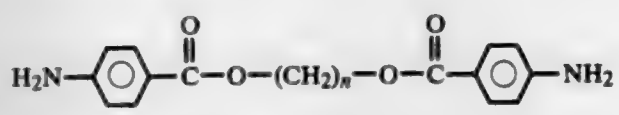
Int. Cl.³ C08G *18/42, 18/76, 18/32*

U.S. Cl. 528—67 **20 Claims**

1. A process for making a urethane elastomer comprising the steps of:

reacting a mixture of approximately 1.5 to 2.5 equivalents of toluene diisocyanate consisting essentially of approximately 84 wt.% to 96 wt.% 2,4 toluene diisocyanate and 16 wt.% to 4 wt.% 2,6 toluene diisocyanate, with approximately 1 equivalent of a member selected from the group consisting of polyethers having difunctional primary hydroxyl groups, saturated difunctional primary hydroxyl polyesters, and mixtures thereof, to form a urethane prepolymer, said member having a molecular weight selected such that the molecular weight of the resulting urethane prepolymer is between about 500 and 4,000; and

reacting approximately 1 equivalent of said prepolymer with approximately 1 equivalent of a diamine curing agent having the formula:



where n=2 through 6.

4,404,354

POLYPHENYLENE-TYPE POLYMERIC COMPOUND AND PROCESS FOR PRODUCTION THEREOF

Taku Kitamura, Tokyo, Japan, assignor to Dainippon Ink and Chemicals, Inc., Tokyo and Kawamura Institute of Chemical Research, Saitama, both of, Japan

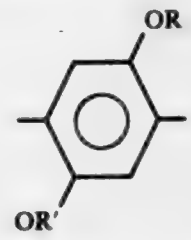
Filed Dec. 28, 1982, Ser. No. 453,837

Claims priority, application Japan, Dec. 28, 1981, 56-209655; Feb. 25, 1982, 57-29163; Mar. 29, 1982, 57-49004

Int. Cl.³ C08G *61/02, 61/12*

U.S. Cl. 528—86 **10 Claims**

1. A poly(dialkoxyphenylene) composed of recurring structural units of the general formula



wherein R and R′ each represent an alkyl group having 1 to 4 carbon atoms, and R and R′ may be identical or different, but in no case R and R′ are both methyl groups.

4,404,355

HEAT CURABLE EPOXY RESIN COMPOSITIONS

Sameer H. Eldin, Birsfelden, and Bruno Schreiber, Aesch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 28, 1981, Ser. No. 305,829

Claims priority, application Switzerland, Oct. 8, 1980, 7509/80

Int. Cl.³ C08G *59/68*

U.S. Cl. 528—89 **9 Claims**

1. A heat curable epoxy resin composition which contains

(a) an epoxy compound or an epoxy resin containing on average more than one epoxide group per molecule,

(b) a catalytic amount of an aromatic onium salt,

(c) a catalytic amount of an organic copper compound, wherein the copper is complexed, as co-catalyst, and
(d) from 0.05 to 2 parts, based on 100 parts of epoxy resin, of a light stabilizer selected from the group consisting of the 2-hydroxybenzophenones, the 2-hydroxyphenylbenzotriazoles, 2,4-dibenzoylresorcinol, the arylsubstituted acrylates and the salicylates.

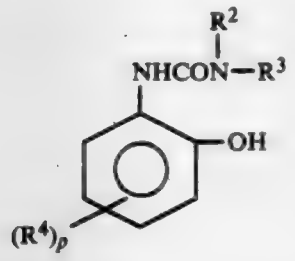
4,404,356

HEAT-CURABLE EPOXIDE RESIN COMPOSITIONS

Christopher M. Andrews, Cambridge, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 30, 1982, Ser. No. 412,740
Claims priority, application United Kingdom, Sep. 9, 1981, 8127233; Dec. 11, 1981, 8137555
Int. Cl.³ C08G *59/44, 59/46*
U.S. Cl. 528—99 **9 Claims**

1. Heat-curable compositions comprising
(a) an epoxide resin and
(b) an effective amount of a urea of formula



V

where
R^2 and R^3 each denote an alkyl, cycloalkyl, alkenyl, cycloalkenyl, or aralkyl group, which may be substituted by a halogen atom, a hydroxyl group, or a cyano group, with the proviso that R^2 may alternatively denote a hydrogen atom, or R^2 and R^3 together with the attached nitrogen atom denote a heterocyclic ring containing 3 to 5 carbon atoms, and optionally one oxygen atom, in the ring,
R^4 denotes—NH_2, —NO_2, —Cl, —Br, or alkyl of 1 to 10 carbon atoms, and
p denotes zero, 1, or 2.

4,404,357

HIGH TEMPERATURE NAPHTHOL NOVOLAK RESIN

Paul Taylor, No. Andover, and Michael Gulla, Sherborn, both of Mass., assignors to Shipley Company Inc., Newton, Mass.

Filed May 3, 1982, Ser. No. 374,054
Int. Cl.³ C08G *8/24*
U.S. Cl. 528—153 **10 Claims**

1. A resin comprising the product resulting from the condensation of an aldehyde and an aromatic alcohol mixture in the presence of an acid catalyst, said aromatic alcohol mixture comprising from 5 to 95 mole percent of a naphthol and from 95 to 5 mole percent of a phenol that is not a naphthol, said aromatic alcohol mixture being in molar excess of said aldehyde.

4,404,358

RESOLE COMPOSITIONS AND LAMINATES MADE THEREFROM

Bruce Q. Ballert, Coshocton, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 962,024, Nov. 20, 1978, abandoned. This application Oct. 30, 1980, Ser. No. 202,310
Int. Cl.³ C08G *8/32*
U.S. Cl. 528—158.5 **9 Claims**

1. In the process of preparing an oil modified resole laminating varnish by (a) reacting a phenol moiety with a drying oil in the presence of a strong acid, (b) reacting the product of (a) in an alcohol solvent with an aldehyde moiety in the presence of an amine catalyst and (c) adding a solvent, the improvement which consists of using a drying oil comprising (i) about 1 part by weight of linseed oil and (ii) about 1 part by weight of tung oil.

4,404,359

PREPARATION OF POLYPHENYLENE ETHERS

Herbert Naarmann, Wattenheim; Juergen Hambrecht, Heidelberg, and Norbert Rieber, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,211
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1981, 3129083
Int. Cl.³ C08G *65/44*
U.S. Cl. 528—216 **2 Claims**

1. A process for the preparation of a high molecular weight polyphenylene ether from a monohydric phenol which has alkyl substituents in both ortho-positions and may additionally have an alkyl substituent in one meta-position but not in the para-position, by an oxidative coupling reaction, employing oxygen, at from 10° to 25° C., in the presence of a catalyst complex comprising a copper salt and an organic amine, in the presence of from 1 to 20 parts by weight of an aromatic C_8-C_{10}-hydrocarbon solvent per part by weight of the monomeric phenol, and in the presence or absence of an activator, wherein the amine used is N-methylimidazole, N-ethylimidazole, N-isopropylimidazole, N-n-butylimidazole, N-cyclohexylimidazole, N-octylimidazole or N-phenylimidazole.

4,404,360

HOMOGENEOUS MOLDED ARTICLE PRODUCED FROM POLYLACTAM BY ACTIVATED ANIONIC POLYMERIZATION OF MEDIUM LACTAMS

Werner Hartmann, Immenstaad, Fed. Rep. of Germany, assignor to Harwe AG, Zurich, Switzerland

Filed Nov. 2, 1981, Ser. No. 317,119
The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.
Int. Cl.³ C08G *69/14, 69/18*
U.S. Cl. 528—326 **1 Claim**

1. A homogenous molded polylactam article formed of a lactam containing 13 to 15 carbon atoms in the lactam ring which are free of bubble formations and shrink holes and which does not show a melting point and crumbles after hardening when heated to a temperature from approximately 220° C. to 280° C. prepared by a process involving activated anionic polymerization and which comprises:
(a) adding to a first melt of the lactam contained in a first vessel at least one polymerization catalyst for the lactam with agitation and maintaining the mixture of the lactam melt and added catalyst under agitation and protected by an inery gas at a first temperature in the range from about 167.5° C. and about 169.5° C., and at a temperature deviation tolerance of about ±1° C. for said first temperature;
(b) adding, following the addition of the catalyst to the first melt of the lactam, at least one activator for the polymerization of the lactam to a second melt of the lactam under agitation and maintaining the mixture of the second melt of the lactam and activator stirred and protected by an inert gas at a second temperature which is lower than the temperature of the first mel and within a temperature range of from about 164° C. and about 166° C., and at a temperature deviation tolerance of about ±1° C. for said second temperature;
(c) pumping the first melt and second melt at about the melt temperatures by respective first and second gear pumps to a mixing zone through respective first and second essentially straight conveyor tube systems, each respectively at substantially the same temperature as said first and second melts and having an angle of incline to the horizontal plane of a maximum of about 10°, each conveyor tube having a volume at least one-third greater than the

volume-conveying capacity of the gear pump to which said tube is coupled;

(d) combining and mixing the melts in a mixing zone maintained between about 170° C. and about 175° C. to initiate a polumerization reaction;

(e) injecting the melt from the mixing zone into a mold for the molded article to form the article with attendant release of gas; and

(f) returning at least part of the released gas to at least one of the mixing vessels by the conveyor tube systems.

4,404,361

FLAME RETARDANT FOR POLYMERIC COMPOSITIONS

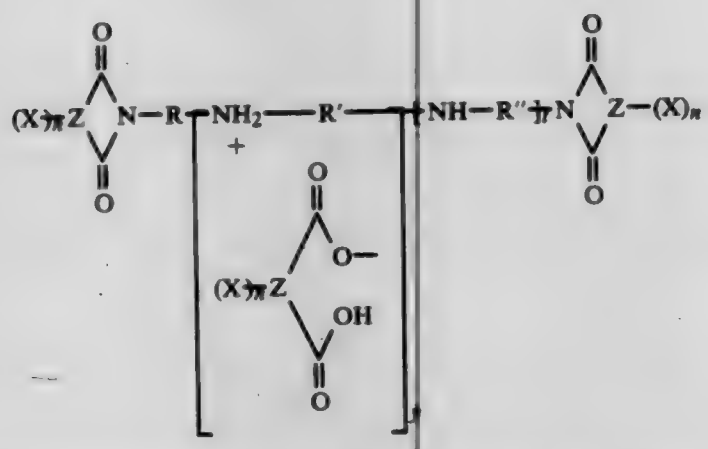
Henry J. Barda, North Brunswick, N.J., assignor to Saytech, Inc., Sayreville, N.J.

Filed Jan. 11, 1982, Ser. No. 338,531

Int. Cl.³ C07D *403/12*; C08G *73/06*

U.S. Cl. 528—342 **13 Claims**

1. An additive flame retardant halogen-containing bisimide having the formula:



wherein Z is a hydrocarbon group having the valence n+2 and is selected from the group consisting of benzene groups, naphthalene groups and alicyclic hydrocarbon groups containing 5–10 carbon atoms, X is selected from the group consisting of bromine and chlorine, n is an integer from 1–6, R, R′ and R″ are divalent hydrocarbon groups independently selected from the group consisting of aliphatic hydrocarbon groups and alicyclic hydrocarbon groups containing 2–12 carbon atoms, y is an integer from 1–50 and t is an integer from 0–49.

4,404,362

BLOCK POLYMERS OF ALKANOLAMINES

Thomas J. Bellos, Kirkwood, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Dec. 14, 1981, Ser. No. 330,118

Int. Cl.³ C08G *73/02*

U.S. Cl. 528—422 **19 Claims**

1. Block polymers of polyalkanolamines, wherein each block is a different alkanolamine dehydration condensation product.

4,404,363

SEPARATION OF DIPHASIC MIXTURES CONTAINING AROMATIC POLYESTERS

Dieter Freitag; Volker Serini, both of Krefeld; John Goossens, Cologne; Ludwig Bottenbruch, Krefeld, and Uwe Hucks, Alpen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 26, 1982, Ser. No. 371,532

Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117367

Int. Cl.³ C08G *63/74*

U.S. Cl. 528—486 **10 Claims**

1. A process for the separation of diphasic mixtures obtained from the synthesis of aromatic polyesters by the diphasic interface process into an aqueous and an organic phase, characterised in that the following are added to the diphasic mixture which is required to be separated:

A. 10–10,000 ppm, based on the weight of the aqueous phase, of at least one ammonium compound containing at least one quaternary nitrogen atom per molecule, which nitrogen atom carries as substituents one or two long-chained hydrocarbon groups having 6–40 C-atoms and two or three short-chained hydrocarbon groups having less than 6 C-atoms,

and in which two short-chained hydrocarbon groups together with the nitrogen atom may form an imidazolinyl, pyridyl or oxazolinyl group, and/or,

the long-chained hydrocarbon groups may be interrupted by 1–2 sulphonyl amino groups (—SO_2NH—) and, where more than one quaternary nitrogen atom is present, the nitrogen atoms may be linked by a hydroxyalkylene group, or

B. 0.1–1,000 ppm, based on the weight of the aqueous phase, of at least one water-soluble anionic organic polymer having an average molecular weight M_w of 2,000–5,000,000 and carboxyl, sulpho, acid phosphate or acid sulphate groups and/or their water-soluble salts corresponding to a charge density of from 0.0005–0.02.

4,404,364

OPTIMUM METHOD OF MILLING RUBBER

William C. Lang, Kent, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 173,940, Jul. 31, 1980, abandoned, which is a continuation-in-part of Ser. No. 103,128, Dec. 13, 1979, abandoned, which is a continuation of Ser. No. 971,977, Dec. 21, 1978, abandoned, which is a continuation of Ser. No. 871,291, Jan. 23, 1978, abandoned. This application Apr. 23, 1982, Ser. No. 371,346

Int. Cl.³ C08F *6/00*

U.S. Cl. 528—502 **1 Claim**

1. An energy efficient method of compounding a rubber stock on the rolls of an internally cooled rubber mill in a compounding zone on said mill comprising (1) optimizing the cooling water flow rate by varying the flow rate from 0.0159 m^3 water/m^2/min. of internal mill surface area per minute to 0.1233 m^3/m^2/min. (or 0.0111 m^3/m^2/min. of external mill surface area to 0.0855 m^3/m^2/min.) at a temperature above 20° C. to establish the flow rate at which further increases in water flow rate do not significantly decrease the difference between the stock temperature and the cooling water at constant temperature with stock temperature in the range of 74° C. (165° F.) to 121° C. (250° F.), (2) then increasing the temperature of the cooling water at said optimum constant flow rate at one or more additional different fixed temperatures of at least 20° C. to establish the temperature at which further increases in temperature do not materially descrease the differential between the stock temperature and the cooling water temperature and to obtain an optimum cooling water temperature with a stock temperature in the range of 74° C. to 121° C. and (3) operating said mill at said optimum cooling water flow rate and said optimum cooling water temperature to compound said stock at a temperature of the stock below the scorch temperature of the stock in the range of 74° C. to 121° C. and to conserve energy, said water being in turbulent flow.

4,404,365

MODULATORS OF THE COMPLEMENT SYSTEM

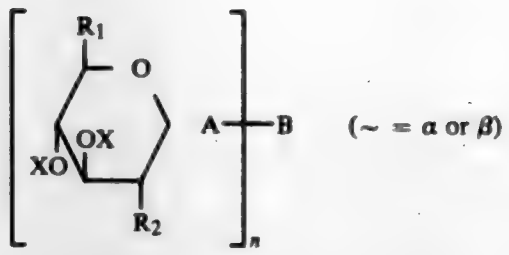
Thomas G. Miner, Sugarloaf, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 28, 1981, Ser. No. 334,938

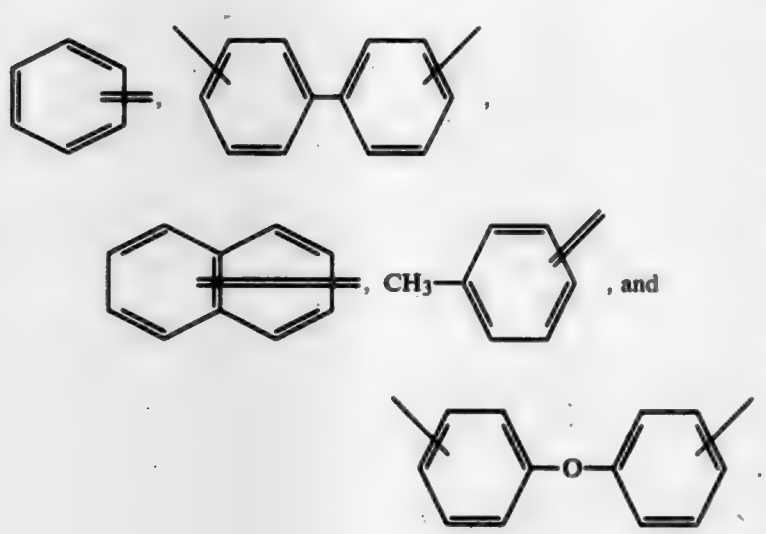
Int. Cl.³ C07H *15/00*

U.S. Cl. 536—4.1 **7 Claims**

1. A compound selected from those of the formula:



wherein X is $—SO_3M$ and M is a nontoxic pharmaceutically acceptable cation salt, wherein the salt forming moiety is selected from the group consisting of alkali metal, alkaline earth metal, ammonia and substituted ammonia selected from the group consisting of trialkylamine (C_1–C_6), piperidine, pyrazine, alkanolamine (C_2–C_6) and cycloalkylamine (C_3–C_6); R_1 is selected from the group consisting of CH_2OX, COOH and COONa; R_2 is selected from the group consisting of OX and $NHCOCH_3$; A is selected from the group consisting of S, SO, and SO_2; n is an integer 2; and B is an arylene selected from the group consisting of:



wherein R is a linking group and L is a hapten of molecular weight between 100 and 1000.

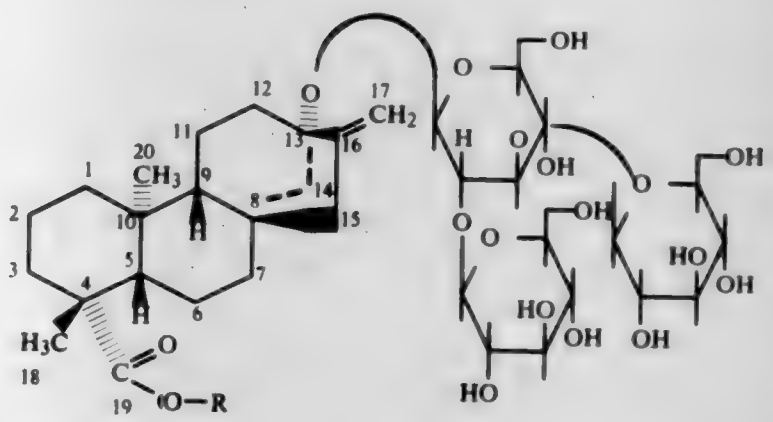
4,404,367

GLUCOSUBSTITUENTED DITERPENOID SWEETENERS

Rebecca A. G. Stephenson, Redwood City; Paul S. Dietrich, Mountain View; Grant E. DuBois, Palo Alto, and Leonard A. Bunes, San Carlos, all of Calif., assignors to Dynapol, Palo Alto, Calif.

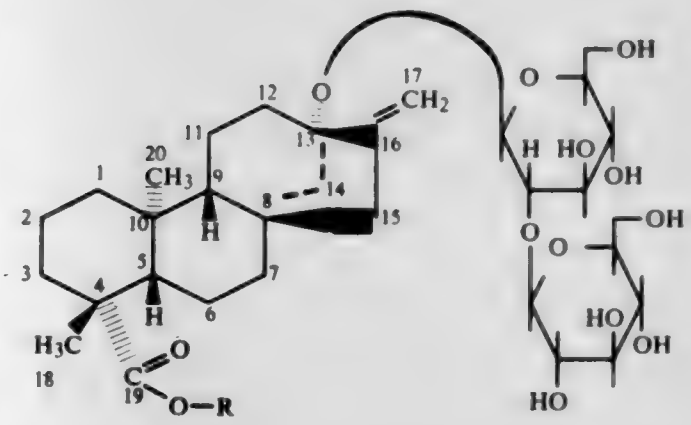
Filed Aug. 26, 1981, Ser. No. 296,566
Int. Cl.³ C07H *15/24*; A23L *1/236*
U.S. Cl. 536—18.1 **24 Claims**

1. A rebaudioside C analog compound based on the structure



wherein R is hydrogen or a physiologically acceptable noncarbohydrate α-carbon oxygen free 1 to 10 carbon atom polar organic group and each of the glucose rings has at least one of its OH units substituented to OR′ wherein R′ is a covalently bound physiologically acceptable noncarbohydrate polar organic group.

9. A steviolbioside analog compound based on the structure



wherein R is hydrogen or a physiologically acceptable noncarbohydrate α-carbon oxygen free 1 to 10 carbon atom polar organic group and each of the glucose rings has at least one of its OH units substituented to OR′ wherein R′ is a covalently bound physiologically acceptable noncarbohydrate polar organic group.

17. A steviolmonoside analog compound based on the structure

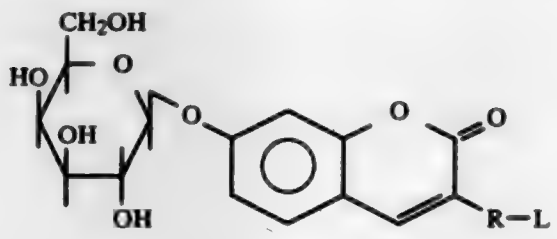
4,404,366

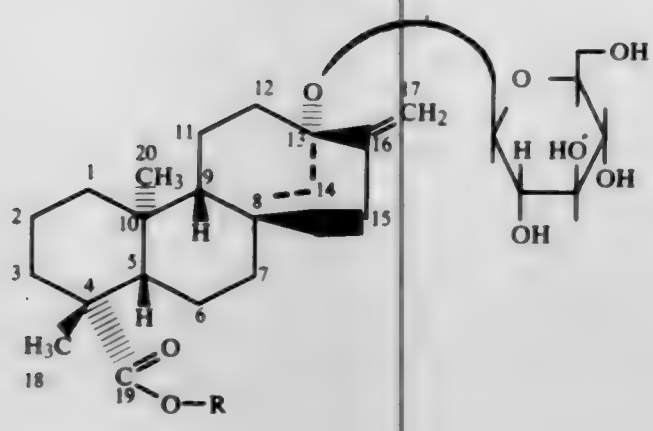
BETA-GALACTOSYL-UMBELLIFERONE-LABELED HAPTEN CONJUGATES

Robert C. Boguslaski; John F. Burd, and Robert J. Carrico, all of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 147,339, May 6, 1980, Pat. No. 4,331,590, which is a division of Ser. No. 87,819, Oct. 23, 1979, Pat. No. 4,279,992, which is a continuation-in-part of Ser. No. 886,094, Mar. 13, 1978, Pat. No. 4,226,978. This application Jul. 16, 1981, Ser. No. 284,137
The portion of the term of this patent subsequent to Oct. 7, 1997, has been disclaimed.
Int. Cl.³ C07H *15/24*
U.S. Cl. 536—18.1 **11 Claims**

9. A β-galactosyl-umbelliferone-labeled hapten conjugate of the formula:





wherein R is hydrogen or a physiologically acceptable noncarbohydrate α-carbon oxygen free 1 to 10 carbon atom polar organic group and the glucose ring has at least one of its OH units substituented to OR′ wherein R′ is a covalently bound physiologically acceptable noncarbohydrate polar organic group.

4,404,368

LYOPHILIZED PHOSPHORYLATED NUCLEOSIDES

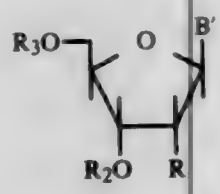
Gabriel G. Alvarado-Urbina, 5c, Banner Rd., Nepean, Ontario, Canada (K2H 8T3), and Kelvin K. Ogilvie, 54, Place de Bretagne, Candian, Quebec, Canada (J5R 3M8)

Filed Feb. 17, 1981, Ser. No. 234,788

Int. Cl.³ C07H *19/20, 19/10*

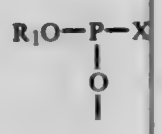
U.S. Cl. 536—27 **5 Claims**

1. A process for preparing lyophilized phosphorylated nucleotides of general formula I



I

where R is hydrogen, oxy-lower alkyl, oxyphenyl, oxybenzyl, oxysilyl, oxy-lower alkylsilyl, oxytrityl, oxy-loweralkoxytrityl or a halophosphite group



II

in which

X is fluorine, chlorine, bromine or iodine and R_1 is a chemical protecting group for hydroxyl and selected from lower alkyl, phenyl, benzyl, silyl, lower alkylsilyl, trityl and lower-alkoxytrityl;

R_2 and R_3 are independently selected from hydrogen, lower alkyl, phenyl, benzyl, silyl, lower alkyl silyl, trityl, lower-alkoxytrityl and halophosphite group $R_1O—P—X$ with the proviso that one of R, R_2 and R_3 is a halophosphite group;

B′ is a base selected from guanine, adenine, uracil, cytosine and thymine;

which comprises forming a solution of said nucleotide in dioxane solvent, subjecting the solution to low pressure conditions to cause sublimation of the dioxane solvent, and recovering lyophilized nucleotide compound of formula I in light, divided form, readily soluble in pyridine at room temperatures.

4,404,369

METHOD OF PRODUCING ALKALI-SOLUBLE CELLULOSE DERIVATIVE

Jouko Huttunen; Olli Turunen; Leo Mandell; Vidar Eklund, and Kurt Ekman, all of Porvoo, Finland, assignors to Neste OY, Finland

Filed Jan. 20, 1982, Ser. No. 341,133

Claims priority, application Finland, Jan. 27, 1981, 810226

Int. Cl.³ C08B *15/06*

U.S. Cl. 536—30 **8 Claims**

1. Method of producing alkali-soluble cellulose carbamate, which comprises treating cellulose with a solution consisting essentially of liquid ammonia having urea dissolved therein at a temperature below the temperature of reaction between cellulose and urea, to cause distribution of the urea throughout the cellulose, removing the ammonia at a temperature below the temperature of reaction between cellulose and urea, thereby obtaining cellulose having urea distributed therethrough, and heating the thus obtained cellulose with urea distributed therethrough to a temperature sufficiently high to cause reaction between the cellulose and the urea, thus obtaining an alkali-soluble cellulose carbamate.

4,404,370

PURIFICATION OF CELLULOSE AND STARCH ETHERS WITH COUNTER CURRENT WASHING

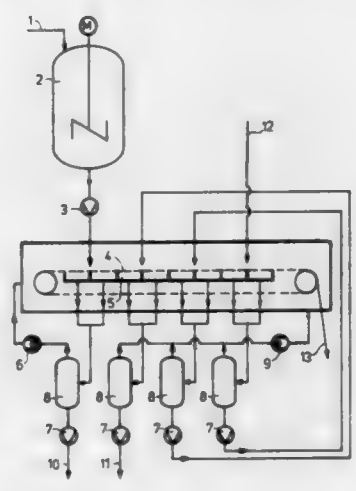
Claus-Rüdiger Bernert, Walsrode; Volker Hartwig, Fallingbostel; Christian Kords, Walsrode, and Detmar Redeker, Cologne, all of Fed. Rep. of Germany, assignors to Wolff Walsrode AG and Bayer AG, Leverkusen, Fed. Rep. of Germany

Filed Nov. 23, 1980, Ser. No. 323,576

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1980, 3044696

Int. Cl.³ C08B *11/20, 31/08*

U.S. Cl. 536—85 **6 Claims**



1. A process for the continuous purification and isolation of a cellulose or starch ether suspension which comprises filtering off the suspension agent, extracting the reaction product with a purifying agent different from the suspension agent and drying it under suction, wherein directly after the etherification step without any intermediate drying and the preparation of pastes the suspension agent is filtered off and the reaction product is extracted in countercurrent with the purifying agent at least once on the same continuously working filter.

4,404,371

CARBOXYMETHYLCELLULOSE WITH CARBONATE BRIDGES AND PREPARATION THEREOF

Günter Bellmann, Commugny; Celeste Cervini, Carouge, both of Switzerland, and Jean-Pierre Sachetto, Saint-Julien en Genevois, France, assignors to Battelle Memorial Institute, Carouge, Switzerland

Filed Dec. 28, 1981, Ser. No. 334,590
Claims priority, application Switzerland, Jan. 14, 1981, 202/81
Int. Cl.³ C08G *59/00*
U.S. Cl. 536—98 9 Claims

1. Cross-linked carboxymethylcellulose (CMC) having cross-linking intermolecular bridges consisting mainly of carbonate bridges involving the primary or secondary hydroxy functions of the CMC chains.

4,404,372

15-SUBSTITUTED-ω-PENTANORPROSTAGLANDIN DERIVATIVES

Michael R. Johnson, Gales Ferry; Thomas K. Schaaf, and Hans-Jurgen E. Hess, both of Old Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Jun. 13, 1977, Ser. No. 805,879
Int. Cl.³ C07C *333/38, 143/76*
U.S. Cl. 542—429 1 Claim

1. N-Methanesulfonyl-16,16-dimethyl-17-(2-furyl)-ω-trisnorprostaglandin E_2.

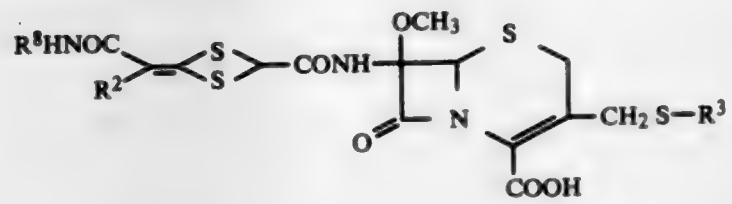
4,404,373

PROCESS FOR THE PREPARATION OF 7α-METHOXY-7β-(1,3-DIETHIETANE-2-CARBOXAMIDO)CEPHALOSPORANIC ACID DERIVATIVES

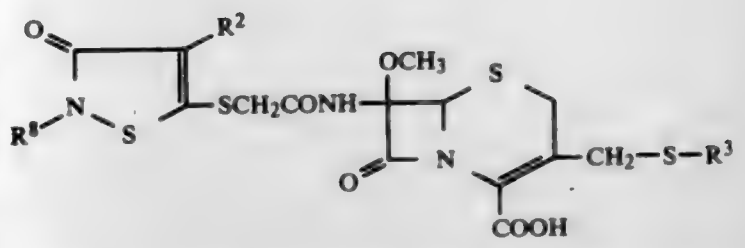
Masaru Iwanami, Yokohama; Tetsuya Maeda, Urawa; Yoshinobu Nagano, Niiza; Masaharu Fujimoto, Tokyo; Noriaki Nagano, Ageo, and Atsuki Yamazaki, Ichikawa, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 913,500, Jun. 7, 1978, Pat. No. 4,263,432.
This application Nov. 19, 1980, Ser. No. 208,298
Claims priority, application Japan, Jun. 10, 1977, 52-68699; Jul. 28, 1977, 52-90772; Feb. 2, 1978, 53-10772
Int. Cl.³ C07D *501/57;* A61K *31/54*
U.S. Cl. 544—21 2 Claims

1. A process for the preparation of a 7α-methoxy-7β-(4-substituted methylene-1,3-dithientane-2-yl) carboxamido-3-heterocyclic thiomethyl-Δ^3-cephem-4-carboxylic acid represented by the formula



wherein R^2 represents a hydrogen atom, a lower alkyl group, a lower alkoxy group, $R^4S(O)_n$ group wherein R^4 represents a lower alkyl gorup and n represents 0, 1 or 2, a lower alkanoyl group, a phenyl group, a naphthyl group, a benzoyl group, a napthoyl group, a lower alkenyl group a sulfamoyl group, or a pyridyl group, or a thiadiazolyl group, and R^3 represents a lower alkyl-substituted tetrazolyl group or a lower alkyl-substituted thiadiazolyl group, and R^8 represents a hydrogen atom or an alkyl group which may have substituents selected from N-monoalkyl carbamoyl, N-dialkyl carbamoyl, and alkoxy carbonyl amino, which comprises treating the 7α-methoxy-3-heterocyclic thiomethyl-cephalosporin derivatives represented by the formula



wherein R^2, R^3 and R^8 have the same significance as above, with a base.

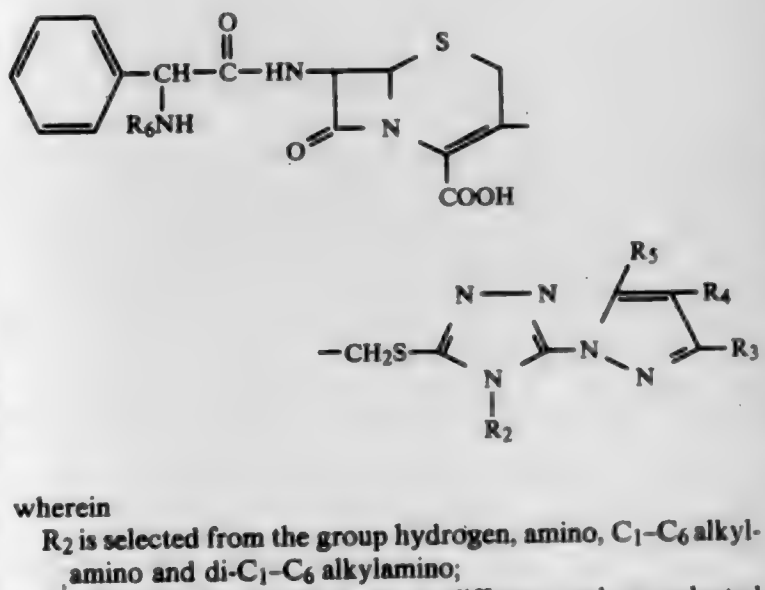
4,404,374

CEPHALOSPORANIC ACID DERIVATIVES

James H. Boothe, Montvale, N.J., and Adma S. Ross, Suffern, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 145,071, Apr. 30, 1980, Pat. No. 4,336,375.
This application Apr. 12, 1982, Ser. No. 367,502
Int. Cl.³ C07D *501/36;* A61K *31/545*
U.S. Cl. 544—26 7 Claims

1. A compound of the formula:



wherein

R_2 is selected from the group hydrogen, amino, C_1–C_6 alkylamino and di-C_1–C_6 alkylamino;

R_3, R_4, and R_5 are the same or different and are selected from the group hydrogen, hydroxy, C_1–C_6 alkyl, C_1–C_6 alkoxy, trifluoromethyl, phenyl, substituted phenyl, heterocyclic aryl, and R_3 and R_4 or R_4 and R_5 taken together are the moiety $—CH_2—(CH_2)_2—CH_2—$;

wherein the substituents on the phenyl are mono- or di-substituents which are the same or different and which are selected from the group C_1–C_3 alkyl, C_1–C_3 alkoxy, fluoro, chloro, bromo, and trifluoromethyl; and

wherein the heterocyclic aryl is selected from the group of five- and six-membered aromatic ring compounds containing one to three heteroatoms which are the same or different and which are selected from the group oxygen, nitrogen, and sulfur, and wherein said heterocyclic aryl is optionally substituted as defined above for substituted phenyl;

R_6 is hydrogen or C_1–C_6 alkoxycarbonyl;

and the pharmaceutically acceptable non-toxic salts thereof.

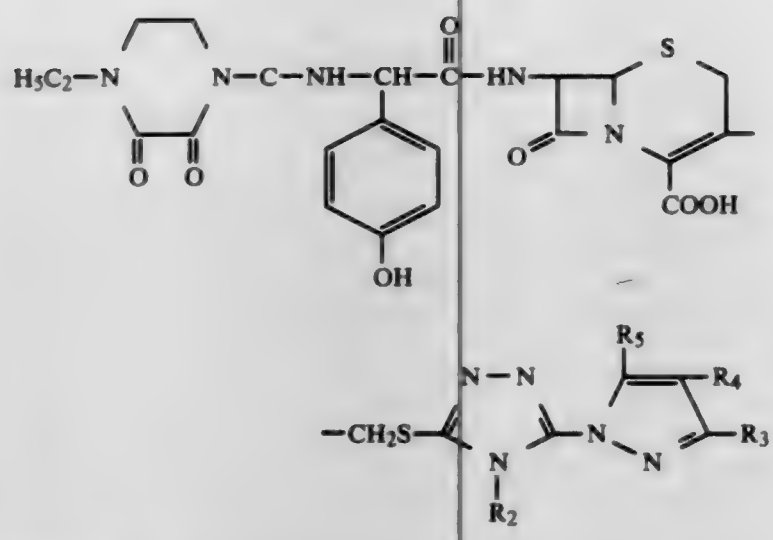
4,404,375

CEPHALOSPORANIC ACID DERIVATIVES

James H. Boothe, Montvale, N.J., and Adma S. Ross, Suffern, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 145,071, Apr. 30, 1980, Pat. No. 4,336,375.
This application Apr. 12, 1982, Ser. No. 367,501
Int. Cl.³ C07D *501/36;* A61K *31/545*
U.S. Cl. 544—27 9 Claims

1. A compound of the formula —



wherein

R_2 is selected from the group hydrogen, amino, C_1–C_6 alkylamino and di-C_1–C_6 alkylamino;

R_3, R_4, and R_5 are the same or different and are selected from the group hydrogen, hydroxy, C_1–C_6 alkyl, C_1–C_6 alkoxy, trifluoromethyl, phenyl, substituted phenyl, heterocyclic aryl, and R_3 and R_4 or R_4 and R_5 taken together are the moiety $—CH_2—(CH_2)_2—CH_2—$;

wherein the substituents on the phenyl are mono- or di-substituents which are the same or different and which are selected from the group C_1–C_3 alkyl, C_1–C_3 alkoxy, fluoro, chloro, bromo, and trifluoromethyl; and

wherein the heterocyclic aryl is selected from the group of five- and six-membered aromatic ring compounds containing one to three heteroatoms which are the same or different and which are selected from the group oxygen, nitrogen, and sulfur, and wherein said heterocyclic aryl is optionally substituted as defined above for substituted phenyl;

and the pharmaceutically acceptable non-toxic salts thereof.

4,404,376

CEPHALOSPORANIC ACID DERIVATIVES

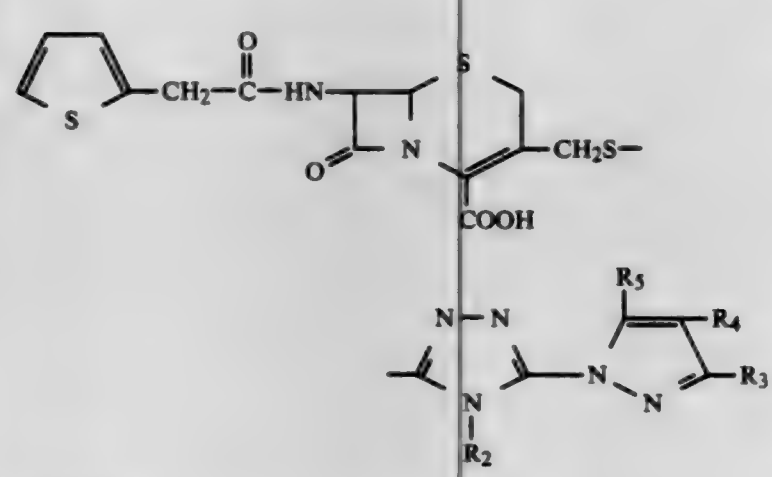
James H. Boothe, Montvale, N.J., and Adma S. Ross, Suffern, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 145,071, Apr. 30, 1980, Pat. No. 4,336,375. This application Apr. 12, 1982, Ser. No. 367,503

Int. Cl.³ C07D *501/36*; A61K *31/545*

U.S. Cl. 544—27 **5 Claims**

1. A compound of the formula:



wherein

R_2 is selected from the group hydrogen, amino, C_1–C_6 alkylamino and di-C_1–C_6 alkylamino;

R_3, R_4, and R_5 are the same or different and are selected from the group hydrogen, hydroxy, C_1–C_6 alkyl, C_1–C_6 alkoxy, trifluoromethyl, phenyl, substituted phenyl, heterocyclic aryl, and R_3 and R_4 or R_4 and R_5 taken together are the moiety $—CH_2—(CH_2)_2—CH_2—$;

wherein the substituents on the phenyl are mono- or di-substituents which are the same or different and which are selected from the group C_1–C_3 alkyl, C_1–C_3 alkoxy, fluoro, chloro, bromo, and trifluoromethyl; and

wherein the heterocyclic aryl is selected from the group of five- and six-membered aromatic ring compounds containing one to three heteroatoms which are the same or different and which are selected from the group oxygen, nitrogen, and sulfur, and wherein said heterocyclic aryl is optionally substituted as defined above for substituted phenyl;

and the pharmaceutically acceptable non-toxic salts thereof.

4,404,377

HETEROCYCLIC/AROMATIC FLUOROCARBON SURFACTANTS

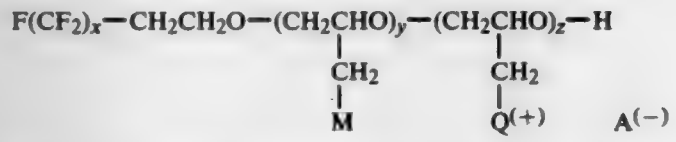
Virgil L. Seale, Houston, Tex.; James R. Stanford, Duncan, Okla.; James E. Briscoe, Duncan, Okla., and Glenn S. Penny, Duncan, Okla., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Mar. 8, 1982, Ser. No. 355,504

Int. Cl.³ C07C *95/02, 95/08*; C07D *295/08*; C07C *43/13*

U.S. Cl. 544—87 **6 Claims**

1. A composition represented by the formula:



wherein x is an integer or a fractional integer representing average values from 2–12; y and z are integers or fractional integers representing average values from 0–20 provided that the sum (y+z) is from 1–20; M is a halogen radical; Q is a nitrogen containing heterocyclic/aromatic cationic radical, and A is a halogen anion.

4,404,378

2-SUBSTITUTED OR UNSUBSTITUTED AMINOCARBONYLOXYALKYL-1,4-DIHYDROPYRIDINES

Tetsuji Miyano; Kunio Suzuki, both of Nagoya, and Nobuo Harada, Okazaki, all of Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1982, Ser. No. 366,137

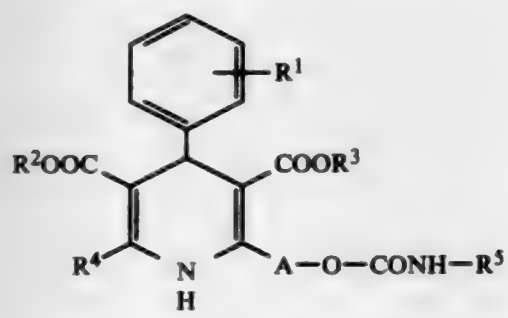
Claims priority, application Japan, Apr. 23, 1981, 56-60677

Int. Cl.³ C07D *413/12, 211/90*

U.S. Cl. 544—131 **9 Claims**

1. A 2-substituted or unsubstituted aminocarbonyloxyalkyl-1,4-dihydropyridine represented by the formula

(I)



where R^1 is halogen, nitro, cyano or lower alkoxy; each of R^2 and R^3 is lower alkyl, lower haloalkyl, lower alkoxyalkyl, aralkyloxyalkyl, aryloxyalkyl, lower alkenoxyalkyl, N,N-di-lower alkylaminoalkyl, N-lower alkyl-N-aralkylaminoalkyl, piperidylalkyl, 4-lower alkyl piperazinylalkyl, morpholinoalkyl or 1-pyrrolidinylalkyl; R^4 is lower alkyl; A is lower alkylene; and R^5 is hydrogen, lower alkyl, cycloalkyl of 3 to 7

carbon atoms, or carbocyclic aryl or pyridyl unsubstituted or substituted by one or two substituents selected from halogen, nitro, lower alkyl, lower alkoxy, di-lower alkylamino and cyano.

4,404,379

CYCLOAMINALS AND A PROCESS FOR THEIR PREPARATION

Manfred Hajek, Cologne; Kuno Wagner, Leverkusen; Walter Uerdingen, Bergisch-Gladbach, and Wolfgang Wellner, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

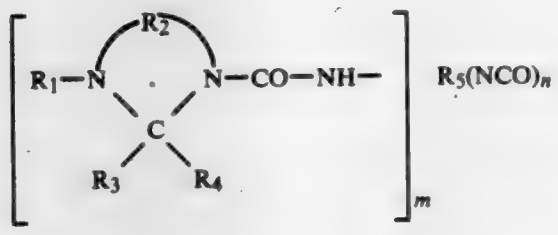
Filed Aug. 21, 1978, Ser. No. 935,439

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1977, 2739313

Int. Cl.³ C07D *239/04*

U.S. Cl. 544—231 **8 Claims**

1. Compounds corresponding to the following formula:



wherein

m represents an integer of from 1 to 3 and

n represents 0, 1 or 2 and the sum of m+n is 2 or 3;

R_1 represents an aliphatic hydrocarbon group which is optionally cyano-substituted and which has from 1 to 6 carbon atoms, a cycloaliphatic hydrocarbon group having from 5 to 10 carbon atoms or an araliphatic hydrocarbon group having from 7 to 10 carbon atoms;

R_2 represents a divalent aliphatic hydrocarbon group having from 2 to 6 carbon atoms, at least two carbon atoms being arranged between the two nitrogen atoms;

R_3 and R_4 are identical or different and represent hydrogen, aliphatic hydrocarbon groups having from 1 to 18 carbon atoms, cycloaliphatic hydrocarbon groups having from 5 to 10 carbon atoms or aromatic hydrocarbon groups having from 6 to 10 carbon atoms or the two groups R_3 and R_4 together with the carbon atom of the heterocyclic ring may form a 5-membered or 6-membered cycloaliphatic ring;

R_5 represents the (m+n)-valent group obtained by the removal of m+n isocyanate groups from an (m+n)-valent polyisocyanate.

4,404,380

TRIAZOLOPYRIMIDINES

Davis L. Temple, Jr., Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

Division of Ser. No. 17,771, Mar. 5, 1979, Pat. No. 4,298,734, which is a continuation-in-part of Ser. No. 869,203, Jan. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 768,291, Feb. 14, 1977, abandoned. This application Aug. 14, 1980, Ser. No. 178,201

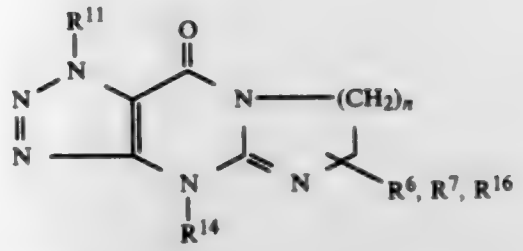
Claims priority, application Canada, Jan. 11, 1978, 294770

Int. Cl.³ C07D *487/12, 487/14*

U.S. Cl. 544—251 **10 Claims**

1. A compound selected from the group consisting of

Formula XI



wherein

Q is O, S, or NR^{10},

R^{10} is selected from the group consisting of hydrogen, lower alkyl having up to 8 carbon atoms, lower alkenyl or lower alkynyl each having 3 to 8 carbon atoms, dialkylaminoalkyl having 4 to 12 carbon atoms, cycloalkyl having 3 to 5 carbon atoms, cycloalkylalkyl having 4 to 12 carbon atoms, pyridylmethyl, aralkyl or substituted aralkyl each having 7 to 12 carbon atoms, aryloxyalkyl or substituted aryloxyalkyl each having 8 to 12 carbon atoms wherein each of said substituted aralkyl, and substituted aryloxyalkyl groups having 1 or 2 non-sterically hindering substituents selected from halogen, alkoxy, and alkyl, and each of said alkoxy and alkyl groups having up to 6 carbon atoms,

R^{11} is alkoxycarbonyl having 2 to 4 carbon atoms, aminoalkyl having 2 to 8 carbon atoms, or is independently selected from the foregoing group defined for R^{10},

R^6 and R^7 are attached to ring carbon atoms and are selected from hydrogen, methyl, and ethyl,

R^{16} represents hydrogen or a double bond between adjacent ring carbon atoms,

n is the integer 1, 2, or 3,

the pharmaceutically acceptable acid addition and quaternary ammonium salts of the foregoing compounds, and the pharmaceutically acceptable metal, ammonium, and amine salts of the foregoing compounds wherein R^{11} is hydrogen.

4,404,381

NOVEL 3,5-DIKETO-PIPERAZINYL COMPOUNDS CONTAINING EPOXIDE SUBSTITUTED IMIDES

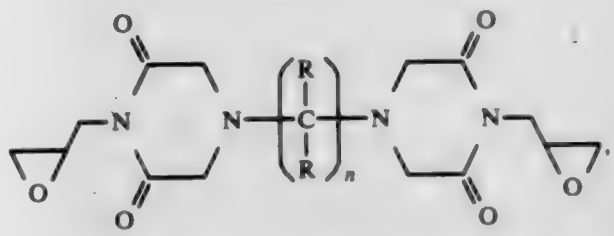
Edmund P. Woo, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 19, 1981, Ser. No. 275,471

Int. Cl.³ C07D *241/02*

U.S. Cl. 544—357 **4 Claims**

1. A compound corresponding to the formula



wherein each R is independently hydrogen or a C_1 to C_{12} alkyl group and n is an integer from 2 to 20.

4,404,382

PIPERAZINYL-SUBSTITUTED IMIDAZOLES

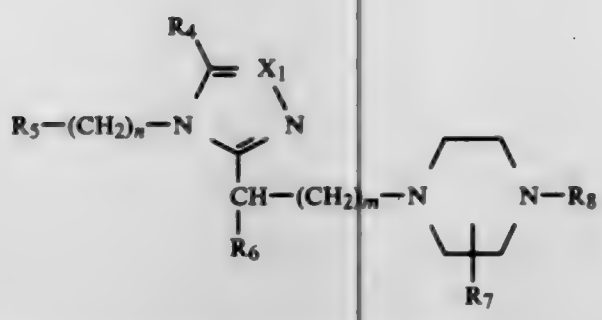
Martin Gall, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 187,920, Sep. 17, 1980, Pat. No. 4,338,453. This application Mar. 26, 1982, Ser. No. 362,447

Int. Cl.³ C07D *401/00, 403/00*; A61K *31/41*

U.S. Cl. 544—360 **15 Claims**

1. A compound according to formula I



or a pharmacologically acceptable salt thereof,

wherein X_1 is

(a) =CH—; or

(b) =C(CH_3)—;

wherein m is zero, one, 2 or 3;

wherein n is zero, one or 2,

wherein R_4 is:

(a) hydrogen;

(b) alkyl of one to three carbon atoms, inclusive;

(c) $R_{54}OCH_2$—, wherein R_{54} is defined below;

(d) —CH(R_{35})(OH); or

(e) —R_{35};

wherein R_5, R_{15}, R_{25} and R_{35} are the same or different and are

(i) 2,3, or 4 pyridinyl, or

(ii) phenyl substituted by zero to 2 chloro, fluoro, bromo, alkyl of from one to 3 carbon atoms, or alkoxy of from one to 3 carbon atoms, or

(iii) phenyl substituted by one trifluoromethyl and zero to one of the previous phenyl substituents,

wherein R_6 is:

(a) hydrogen;

(b) —OR_{54};

(c) alkanoyloxy of from one to 3 carbon atoms; or

(d) alkyl of from one to 3 carbon atoms; with the proviso that when m is zero, R_6 does not contain oxygen;

wherein R_7 is

(i) hydrogen,

(ii) methyl,

(iii) phenylmethyl, or

(iv) phenylethyl,

wherein R_8 is

(i) —R_{15};

(ii) —CH_2R_{15}, or

(iii) —$CHR_{15}R_{25}$;

wherein R_{17} is methyl, phenyl, benzyl, or 2-phenylethyl; and wherein R_{54} is hydrogen or alkyl of one to 3 carbon atoms; or an enantiomer (when R_4 is —CH(R_{35})OH or when R_6 is not hydrogen) or diastereomer (when R_4 is —CH(R_{35})OH and R_6 is not hydrogen) of such compound.

4,404,383

N,N'-BIS[5-HYDROXYMETHYLFURFURYL]PIPERAZINE

Andrew P. Dunlop, Riverside, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Continuation-in-part of Ser. No. 62,370, Jul. 31, 1979, abandoned. This application Jun. 26, 1981, Ser. No. 277,627

Int. Cl.[3] **C07D** *405/14*

U.S. Cl. 544—379 **1 Claim**

1. The new composition of matter, N,N'-bis[5-hydroxymethylfurfuryl]piperazine.

4,404,384

O-[3-(4-SUBSTITUTED-PIPERAZIN-1-YL)-2-HYDROXY-PROPYL]-HYDROXYLAMINES

Ulrich Gebert, Kelkheim; Werner Thorwart, Wiesbaden; Jaromir Komarek, Wiesbaden, and Carl Carthenser, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

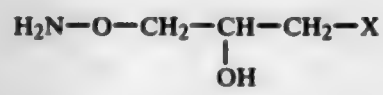
Continuation of Ser. No. 121,910, Feb. 15, 1980, abandoned, which is a continuation of Ser. No. 850,057, Nov. 9, 1977, abandoned. This application May 28, 1981, Ser. No. 267,722

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 2651083

Int. Cl.[3] **C07D** *295/08;* **A61K** *31/50*

U.S. Cl. 544—394 **6 Claims**

1. A compound of Formula I:



(I)

wherein X is piperazine substituted in a 4-position by a member selected from the group consisting of:

(a) alkyl and hydroxyalkyl having up to four carbon atoms; and

(b) phenylalkyl and diphenylalkyl having up to four carbon atoms in the alkyl moiety wherein the phenyl radicals are unsubstituted or are substituted by halogen; and

(c) 3-aminooxy-2-hydroxypropyl.

4,404,385

NOVEL MODIFICATION OF PERYLENETETRACARBOXYLIC ACID-BIS-(3,5-DIMETHYLPHENYL)IMIDE

Fridolin Bäbler, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 23, 1980, Ser. No. 161,965

Claims priority, application Switzerland, Jul. 4, 1979, 6242/79; Jul. 5, 1979, 6293/79

Int. Cl.[3] **C07D** *487/06;* **D06P** *3/79, 3/62, 3/26*

U.S. Cl. 546—37 **5 Claims**

1. Perylenetetracarboxylic acid-bis-(3,5-dimethylphenyl)-imide in a γ-modification which is characterised by an X-ray diffraction spectrum exhibiting very strong lines at interplanar spacings of 8.3, 3.61, 3.46 and 3.30 Å, and strong lines at interplanar spacings of 17.2, 10.3, 7.2, 6.7 and 4.09 Å.

3. A process for producing the γ-modification according to claim 1, wherein the known α- or β-modification or mixture thereof is treated with trifluoroacetic acid.

4,404,386

PROCESS FOR THE PREPARATION OF OPAQUE PERYLENETETRACARBOXYLIC ACID BIS-(3,5-DIMETHYLPHENYLIMIDE)

Fridolin Bäbler, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 12, 1981, Ser. No. 272,865

Claims priority, application Switzerland, Jun. 23, 1980, 4805/80

Int. Cl.[3] **C07D** *487/06;* **D06P** *3/79, 3/62, 3/26*

U.S. Cl. 546—37 **5 Claims**

1. A process for the preparation of opaque perylenetetracarboxylic acid bis-(3,5-dimethylphenylimide), which comprises heating the alpha-modification of perylenetetracarboxylic acid bis-(3,5-dimethylphenylimide) in at least one aliphatic monocarboxylic acid selected from the group consisting of formic acid, acetic acid, propionic acid and monochloroacetic acid.

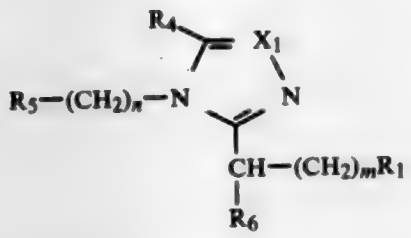
4,404,387

AMINOALKYL-SUBSTITUTED IMIDAZOLES

Martin Gall, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 187,920, Sep. 17, 1980, Pat. No. 4,338,453.
This application Mar. 26, 1982, Ser. No. 362,446
Int. Cl.³ C07D *233/54, 403/08;* A61K *31/445*
U.S. Cl. 546—193 13 Claims

1. A compound according to formula I



or a pharmacologically acceptable salt thereof,
wherein X_1 is
(a) =CH—; or
(b) =C(CH_3)—;
wherein m is zero, one, 2 or 3;
wherein n is zero, one or 2,
wherein R_1 is:
(a) 1-piperidinyl substituted at the 3 or 4 position by R_{15}, wherein R_{15} is defined as below;
(b) —N(CH_3)—(CH_2)$_p$—R_{15}, wherein R_{15} and p are as defined below; or
(c) —NH—(CH_2)$_p$—R_{15}, wherein p is 1, 2, or 3 and R_{15} is as defined below;
wherein R_4 is:
(a) hydrogen;
(b) alkyl of one to three carbon atoms, inclusive;
(c) $R_{54}OCH_2$—, wherein R_{54} is defined below;
(d) —CH(R_{35})(OH); or
(e) —R_{35};
wherein R_5, R_{15}, R_{25} and R_{35} are the same or different and are
(i) 2,3, or 4 pyridinyl, or
(ii) phenyl substituted by zero to 2 chloro, fluoro, bromo, alkyl of from one to 3 carbon atoms, or alkoxy of from one to 3 carbon atoms, or
(iii) phenyl substituted by one trifluoromethyl and zero to one of the previous phenyl substituents,
wherein R_6 is:
(a) hydrogen;
(b) —OR_{54};
(c) alkanoyloxy of from one to 3 carbon atoms; or
(d) alkyl of from one to 3 cabon atoms; with the proviso that when m is zero, R_6 does not contain oxygen;
wherein R_{17} is methyl, phenyl, benzyl, or 2-phenylethyl; and wherein R_{54} is hydrogen or alkyl of one to 3 carbon atoms; or an enantiomer (when R_4 is —CH(R_{35})OH or when R_6 is not hydrogen) or diastereomer (when R_4 is —CH(R_{35})OH and R_6 is not hydrogen) of such compound.

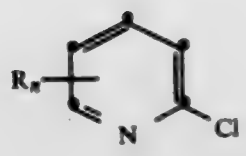
4,404,388

PROCESS FOR PRODUCING 2-CHLOROPYRIDINES

Hansjakob Fäh, Ormalingen, and Alfred Grieder, Böckten, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

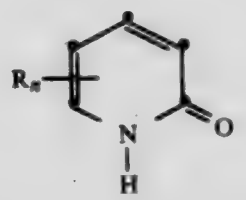
Filed Aug. 14, 1981, Ser. No. 292,847
The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.
Int. Cl.³ C07D *213/02, 213/26, 213/55*
U.S. Cl. 546—345 16 Claims

1. A process for producing a 2-chloropyridine of the formula I,



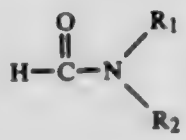
(I)

wherein
R independently of one another is C_1–C_4-alkyl, C_1–C_4-halogenalkyl, halogen or carboxyl and
n is zero or a number one to four, with the proviso that at most two substituents R can be alkyl, halogenalkyl or carboxyl at the same time, and that if R is chlorine and n is two one of them must not occupy the 3- or 5-position of the pyridine ring, by reacting a 2-pyridone of the formula (II)



(II)

wherein R and n have the meanings given above at 30°–150° C. with phosgene in the presence of an N,N-disubstituted formamide of the formula III



(III)

in which R_1 and R_2 can be identical or different and are each an alkyl group having 1 to 4 carbon atoms, or R_1 and R_2 together with the nitrogen atom form the pyrrolidino, piperidino or morpholino ring, and in the presence of an inert solvent.

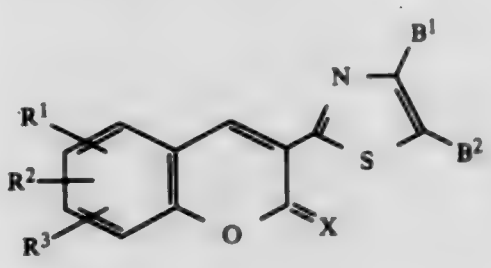
4,404,389

THIAZOLE CONTAINING COUMARIN COMPOUNDS

Christos Vamvakaris, Kallstadt; Manfred Patsch, Wachenheim, and Wolfgang Mach, Hockenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Continuation of Ser. No. 11,995, Feb. 14, 1979. This application Jul. 29, 1982, Ser. No. 403,118
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807761
Int. Cl.³ C07D *417/04*
U.S. Cl. 548—201 2 Claims

1. A compound of the formula:



Ia

wherein
B^1 and B^2 independently of one another are hydrogen; C_1–C_6 alkyl; C_1–C_6 alkoxy optionally interrupted by oxygen or sulfur; hydroxy; alkylmercapto; $C_6H_5SCH_2$— or $C_6H_5SC_2H_4$— optionallly substituted in the phenyl ring by chloro, bromo, hydroxy or alkoxy; $COOCH_3$, $COOC_2H_5$, $COOC_3H_7$, $COOC_4H_9$, $COOC_5H_{11}$, $COOC_6H_{13}$, $COOC_8H_{17}$, $COOCH_2$—CH=CH_2, $COOC_2H_4OCH_3$, $COOC_2H_4OC_2H_5$, $COOC_2H_4OC_4H_9$,

$COOC_2H_4OC_2H_4OCH_3$, $COOC_2H_4OC_2H_4OC_4H_9$, $COOCH_2CH_2CH_2OCH_3$, $COOCH_2CH_2CH_2OC_3H_7$, $COO(CH_2)_3OC_2H_4OC_6H_5$, $COO(CH_2)_3OCH_2C_6H_5$, $COOC_2H_4SC_2H_5$ OR $COOC_2H_4SC_6H_5$; carbamoyl or substituted carbamoyl;

B^2 in addition is cyano, C_2–C_4 alkanoyl, benzoyl, C_1–C_4 alkylsulfonyl or phenylsulfonyl;

R^1 is hydrogen, C_1–C_4 alkyl, hydroxy, C_1–C_4 alkoxy, C-acyloxy, chloro, bromo, amino or substituted amino;

R^2 is hydrogen; C_1–C_4 alkyl, hydroxy, C_1–C_4 alkoxy or C-acyloxy;

R^3 is hydrogen, chloro or bromo;

R^1 and R^2 together are —CH=CH—CH=CH— and X is NH or O.

4,404,390

MESOIONIC 1,2,4-TRIAZOLIUM SILVER HALIDE STABILIZER PRECURSORS

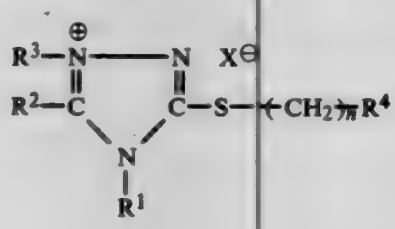
Henry W. Altland, Rochester, and Daniel D. Shiao, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 215,783, Dec. 12, 1980, abandoned. This application Nov. 9, 1981, Ser. No. 319,567

Int. Cl.³ C07D *249/10*

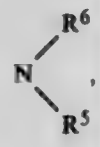
U.S. Cl. 548—263 **7 Claims**

1. A mesoionic 1,2,4-triazolium-3-thiolate precursor represented by the formula:



wherein:

R^1 is alkyl containing 1 to 18 carbon atoms,



alkenyl containing 3 to 18 carbon atoms, cycloalkyl containing 3 to 12 carbon atoms, or aryl containing 6 to 20 carbon atoms;

R^2 is alkyl containing 1 to 9 carbon atoms or aryl containing 6 to 12 carbon atoms;

R^3 is alkyl containing 1 to 18 carbon atoms, aryl containing 6 to 20 carbon atoms, or cycloalkyl containing 3 to 12 carbon atoms;

R^4 is carboxyaryl containing 7 to 13 carbon atoms, cyano (CN) or amido ($CONH_2$);

R^5 and R^6 are individually hydrogen, alkyl containing 1 to 18 carbon atoms, or aryl containing 6 to 20 carbon atoms, provided that when one of R^5 and R^6 is alkyl then both R^5 and R^6 are alkyl;

n is 1 or 2; and

X is an acid anion.

4,404,391

METHOD FOR THE PREPARATION OF N-METHYL AND -N-ETHYL-1-PYRROLIDONES

Peter J. N. Meyer, Munstergeleen, and Josef M. Penders, Maastricht, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Apr. 1, 1981, Ser. No. 249,983

Claims priority, application Netherlands, Apr. 4, 1980, 8002019

Int. Cl.³ C07D *207/267, 207/27*

U.S. Cl. 548—552 **7 Claims**

1. A process for the preparation of N-methyl-2-pyrrolidone or N-ethyl-2-pyrrolidone which consists essentially in the step of reducing the corresponding N-(α-hydroxyalkyl)-2-pyrrolidone in the liquid phase in a trifluoroacetic acid free inert solvent selected from the group consisting of water, N-methyl-2-pyrrolidone, or N-ethyl-2-pyrrolidone under an atmosphere of hydrogen gas at a partial hydrogen pressure of between 1 bar and 175 bar at a temperature of between 20° C. and 150° C. in the presence of a noble metal hydrogenation catalyst wherein the metal component thereof is selected from the group consisting of platinum, ruthenium, and palladium.

4,404,392

RESOLUTION OF α-PIVALOYLOXYETHYL-(S)-3-(3,4-DIHYDROXY-PHENYL)-2-METHYLALANTINATE INTO ITS α AND β ISOMERS

Ramon J. Alabaster, Puckeridge, and Stanley H. B. Wright, Sawbridgeworth, both of England, assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 16, 1981, Ser. No. 321,498

Int. Cl.³ C07C *101/32*

U.S. Cl. 560—40 **9 Claims**

1. A process for resolving alpha-pivaloyloxyethyl-(S)-3-(3,4-dihydroxyphenyl)-2-methylalaninate (POE Ester) into its alpha- and beta-isomers which comprises:

(a) reacting POE Ester with d(+)-tartaric acid to form a mixture of alpha-isomer POE Ester- and beta-isomer POE Ester-(+)-hydrogen tartrate salts;

(b) isolating said beta-isomer-(+)-hydrogen tartrate salt from said mixture by fractional crystallization, leaving mother liquor;

(c) treating said mother liquor from step (b) with first a mild base and second a mineral acid to form the crystalline alpha-isomer POE Ester mineral acid salt.

4,404,393

15-DEOXY-16-HYDROXY-16-(1'FLUOROVINYL) PROSTAGLANDINS AND DERIVATIVES

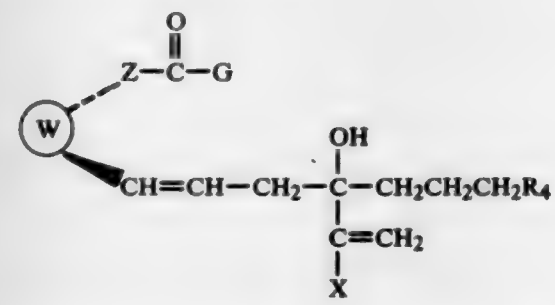
Middleton B. Floyd, Jr., Suffern, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 29, 1981, Ser. No. 268,179

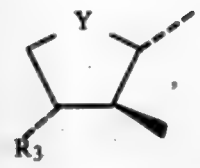
Int. Cl.³ C07C *181/00*

U.S. Cl. 560—121 **100 Claims**

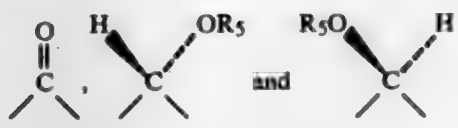
1. Compounds of the formula



or a racemic mixture thereof and the mirror image thereof wherein W is selected from the group:



wherein Y is a divalent moiety selected from the group consisting of:

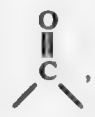


wherein R_5 is hydrogen or C_2 to C_6 alkanoyl;
R_3 is selected from the group hydrogen and hydroxy; R_4 is selected from the group hydrogen and C_1 to C_3 alkyl; G is selected from the group hydroxy, and C_1 to C_6 alkoxy; Z is selected from the group $-(CH_2)_n-$, $-(CH_2)_mOCH_2-$, $-(CH_2)_mSCH_2$ and

$$-CH_2CH=CH(CH_2)_p-,$$

cis

wherein n is the integer 5 to 8, m is the integer 3 to 6 and p is the integer 2 to 5; and X is selected from the group fluorine, chlorine and bromine with the proviso that when Y is



then Z must be

$$-CH_2CH=CH(CH_2)_p-;$$

cis or trans

and when G is hydroxy the pharmaceutically acceptable salts thereof.

4,404,394

PROCESS FOR PRODUCING ADIPIC ACID DIESTER

Nobuo Isogai; Motoyuki Hosokawa; Takashi Okawa; Natsuko Wakui, and Toshiyasu Watanabe, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 6, 1981, Ser. No. 318,980
Claims priority, application Japan, Nov. 25, 1980, 55-165718
Int. Cl.³ C07C *67/38*
U.S. Cl. 560—204 **6 Claims**

1. A process for producing an adipic acid diester which comprises:

the first step of reacting butadiene, carbon monoxide and an alcohol in the presence of a cobalt carbonyl catalyst and amine solvents at a temperature of from 80° to 160° C. to form a 3-pentenoic acid ester, the amount of the alcohol employed being more than 2 moles per 1 mole of butadiene, and the amount of the solvents employed being in the range of 0.05 to 10 parts by weight per 1 part by weight of butadiene; and

the second step of reacting the 3-pentenoic acid ester in the reacting mixture of the first step, carbon monoxide and the unreacted alcohol in the presence of the catalyst and the solvents at a temperature of from 160° to 220° C., said 3-pentenoic acid ester being subjected to the reaction of the second step without being separated from the reaction mixture,

wherein the amine solvents comprise at least two amine solvents selected from the group consisting of pyridine, quinoline, isoquinoline, substituted pyridine, substituted quinoline and substituted isoquinoline in which any substituent or substituents are selected from the group consisting of alkyl having 1–6 carbon atoms, alkenyl having 1–6 carbon atoms, aryl, alkaryl having 7–10 carbon atoms and aralkyl having 7–10 carbon atoms.

4,404,395

ACRYLATE PRODUCTION

Kenneth H. Markiewitz, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Continuation of Ser. No. 136,440, Apr. 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 97,932, Nov. 27, 1979, abandoned. This application Jun. 21, 1982, Ser. No. 390,662
Int. Cl.³ C07C *67/26*
U.S. Cl. 560—209 **7 Claims**

1. In a method for the preparation of a hydroxy compound selected from the group consisting of hydroxy alkyl acrylates and hydroxy alkyl methacrylates by the reaction of an alkylene oxide with an acrylic component selected from the group consisting of acrylic acid and methacrylic acid in the presence of a chromium compound and previously obtained hydroxy compound, the improvement which comprises the steps of initially mixing to form a solution in the substantial absence of water said acrylic or methacrylic acid with from about 0.05% to 5% based on the weight of the acid of chromium trioxide and from about 5 to 20% by weight of the acid of previously obtained hydroxy compound and subsequent thereto continually adding the alkylene oxide to the solution in a total amount of from about 0.90 to 1.5 mols of alkylene oxide per mol of acrylic or methacrylic acid.

4,404,396

PROCESS FOR THE PREPARATION OF 2-(2,4-DICHLOROPHENOXY)-PHENYLACETIC ACID

Colin Thomson, Loughborough, and Neil J. Tweddle, Thorngumbald, both of England, assignors to Reckitt & Colman Products Limited, London, England

Filed Jan. 11, 1982, Ser. No. 338,492
Claims priority, application United Kingdom, Jan. 24, 1981, #102197
Int. Cl.³ C07C *65/00*
U.S. Cl. 562—465 **4 Claims**

1. A process for the preparation of 2-(2,4-dichlorophenoxy)-phenylacetic acid in which equimolar proportions of the potassium salts of 2-chlorophenylacetic acid and 2,4-dichlorophenol are reacted in toluene, xylene, ethylbenzene, cumene or mixtures thereof, at a temperature in the range 100° C. to the boiling point of the reaction mixture, in the presence of a copper chloride catalyst, followed thereafter by acidification.

4,404,397

HIGH CONVERSION OF C_3 AND C_4 OLEFINS TO CORRESPONDING UNSATURATED ALDEHYDES AND ACIDS WITH STABLE MOLYBDENUM CATALYSTS

Chelliah Daniel, Columbus, Ohio, assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 133,045, Mar. 24, 1980, Pat. No. 4,272,408, which is a continuation-in-part of Ser. No. 952,177, Oct. 17, 1978, Pat. No. 4,212,767. This application Dec. 29, 1980, Ser. No. 221,130
Int. Cl.³ C07C *51/25, 57/05, 45/35, 47/22*
U.S. Cl. 562—546 **5 Claims**

1. The method of converting C_3 to C_4 monoolefins to the corresponding unsaturated carboxylic acids in a single stage operation with accompanying production of intermediate aldehydes, which comprises contacting such olefin at a temperature in the range of about 300° to about 450° C. with a

catalyst of the type defined as a stable active catalyst containing a heteropoly phosphomolybdate anion in which the molybdenum is in the anion defect state obtained by a chloride ion stabilization method, which method comprises combining a molybdic acid or soluble non-metallic molybdate with a water-soluble acid or non-metallic salt of phosphorus in aqueous solution, adding to the mixture an aqueous chloride ion, optionally phosphotungstic acid or a phosphotungstate in aqueous solution and drying and calcining the resulting combination to yield a catalytically active heteropoly phosphomolybdate precursor surface, said catalyst comprising said catalytically active precursor surface impregnated with at least one cation from the group consisting of iron and cobalt and with a compound containing a non-metallic ion selected from the group consisting of tellurium and selenium, wherein the resulting impregnated catalyst is one corresponding to an empirical formula of the group consisting of:

$$M_{2.3\text{-}5}R_{2\text{-}3}P_{1.5\text{-}2.5}Mo_{20}O_z$$

$$M_{1\text{-}3}R_{0.5\text{-}2}P_{1\text{-}1.5}W_{1\text{-}2}Mo_{10}O_z$$

$$M_{1\text{-}2}R_{1\text{-}3}P_{2\text{-}4}Mo_{20}W_{1\text{-}3}O_z$$

wherein M comprises one or more metal cations from the group consisting of iron and cobalt, R is at least one element from the group consisting of selenium and tellurium and z represents the residual valence to satisfy the formula.

4,404,398
PREPARATION OF UNSATURATED FLUOROCARBON ACIDS

Norman R. DeLue, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 868,787, Jan. 12, 1978. This application Nov. 25, 1981, Ser. No. 324,747

Int. Cl.³ C07C *57/04*

U.S. Cl. 562—598 7 Claims

1. A method of increasing the yield of perfluoroacrylic acid monomer prepared by the method comprising forming $CF_2{=}CF{-}COOLi$ and thereafter contacting the $CF_2{=}CF{-}COOLi$ with HCl, which method comprises contacting with HCl under substantially anhydrous conditions.

4,404,399
COPRODUCTION OF ANILINE AND DIPHENYLAMINE

Nand K. Kochar, Bronx, and Brian J. Ozero, New York, both of N.Y., assignors to The Halcon SD Group, Inc., New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 431,532

Int. Cl.³ C07C *85/06*

U.S. Cl. 564—402 7 Claims

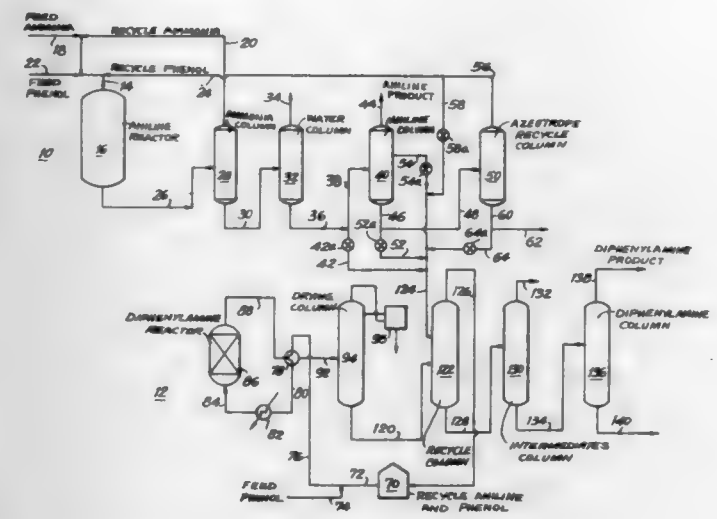
1. A process for the coproduction of aniline and diphenylamine from phenol and ammonia comprising the steps of

(a) forming an aniline reaction mixture containing ammonia and phenol;

(b) at least partially reacting said aniline reaction mixture in the presence of a catalyst and under aniline forming conditions and thereby forming an aniline reaction effluent mixture containing aniline, water and unreacted ammonia and phenol;

(c) separating at least a portion of said unreacted phenol and aniline formed in step (b) and at least partially reacting then under diphenylamine forming conditions to form a mixture containing diphenylamine and unreacted aniline and phenol;

(d) recovering product aniline from the said aniline reaction effluent mixture; and



(e) recovering product diphenylamine from the mixture formed in step (c).

4,404,400
PROCESS FOR THE PREPARATION OF 4-NITRODIPHENYLAMINES

Klaus-Peter Heise, Bergisch Gladbach, and Karlfried Wedemeyer, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

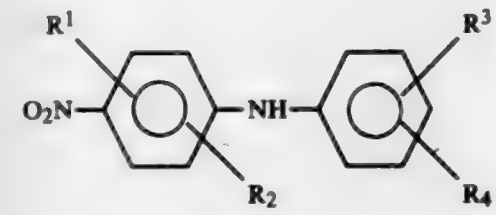
Filed Sep. 2, 1982, Ser. No. 414,224

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1981, 3137041

Int. Cl.³ C07C *85/04*

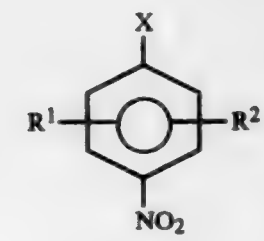
U.S. Cl. 564—406 12 Claims

1. In a process for the preparation of a 4-nitrodiphenylamine of the formula



wherein

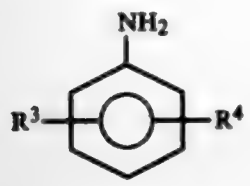
R^1, R^2, R^3 and R^4 are identical or different and independently represent hydrogen or an alkyl radical having 1 to 9 carbon atoms, by contacting a halogenonitrobenzene of the formula



wherein

X represents chlorine or bromine and

R^1 and R^2 have the abovementioned meaning, with a primary aromatic amine of the formula



wherein

R^3 and R^4 have the abovementioned meaning, in the presence of a neutralizing agent and in the presence of copper or a copper compound, the improvement wherein the process is carried out in the presence of a cyclic, 1,n-diaza compound wherein n=3, 4 or 5, wherein the nitrogen atoms of said diaza compound do not carry any hydrogen and at least one nitrogen atom is constituent of a double and at least one nitrogen atom is a constituent of a ring, and the 1,n-diaza compound is incapable of forming an anion in an aqueous-alkaline solution.

4,404,401

PROCESS FOR THE PREPARATION OF PARA-AMINO-DIPHENYLAMINE

Hans G. Zengel, Kleinwallstadt, and Manfred Bergfeld, Erlesbach, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Feb. 23, 1979, Ser. No. 14,672
Int. Cl.³ C07C *83/02*
U.S. Cl. 564—416 **11 Claims**

1. In an improved process for the preparation of para-amino diphenylamine in which para-nitroso-diphenylhydroxylamine is catalytically hydrogenated in the presence of an organic solvent and one or more metal compounds selected from the group consisting of ruthenium, rhodium, palladium, osmium, iridium, and platinum, and their sulfidic compounds, at temperatures from about 20° to 200° C., the improvement comprising utilizing as the organic solvent one or more members of the group consisting of aniline and aniline derivatives containing ring-alkyl groups, N-alkyl groups, and combinations thereof, wherein the ring-alkyl groups contain a total of 1 to 6 carbon atoms and the N-alkyl groups each contain from 1 to 6 carbon atoms.

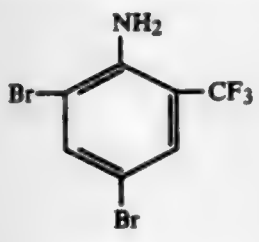
4,404,402

ANILINE INTERMEDIATES

David W. Ladner, Hamilton Square, and Barrington Cross, Rocky Hill, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 179,340, Aug. 18, 1980, abandoned. This application Mar. 4, 1982, Ser. No. 354,682
Int. Cl.³ C07C *87/60, 149/42, 91/40, 91/42*
U.S. Cl. 564—442 **1 Claim**

1. A compound having the following structural formula:



4,404,403

PROCESS FOR PRODUCING ALIPHATIC AMINES

Harold E. Swift, Gibsonia; Robert A. Innes, and Anatoli Onopchenko, both of Monroeville, all of Pa., assignors to Millmaster Onyx Group, Inc., New York, N.Y.

Filed Dec. 9, 1981, Ser. No. 328,640
Int. Cl.³ C07C *85/06, 85/08*
U.S. Cl. 564—473 **22 Claims**

1. A process for producing aliphatic amines which comprises reacting an aliphatic alcohol or an aliphatic aldehyde with an aminating agent selected from the group consisting of ammonia, a primary amine and a secondary amine in the liquid phase in the presence of an unsupported catalyst consisting essentially of (1) copper oxide or copper hydroxide and (2) an organo nickel compound, wherein the nickel to copper atomic range is from about 0.0005:1 to about 0.2:1.

4,404,404

PROCESS FOR PRODUCING ALIPHATIC AMINES

Harold E. Swift, Gibsonia; Robert A. Innes, and Anatoli Onopchenko, both of Monroeville, all of Pa., assignors to Millmaster Onyx Group, Inc., New York, N.Y.

Filed Dec. 9, 1981, Ser. No. 328,641
Int. Cl.³ C07C *85/06, 85/08*
U.S. Cl. 564—473 **37 Claims**

1. A process for producing amines which comprises reacting an aliphatic alcohol or an aliphatic aldehyde with an aminating agent selected from the group consisting of ammonia, a primary amine in the liquid phase in the presence of an unsupported catalyst consisting essentially of (1) copper oxide or copper hydroxide and (2) a Group II A metal oxide or hydroxide.

4,404,405

PROCESS FOR THE PREPARATION OF POLYETHYLENE POLYAMINES

John R. Winters, South Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1981, Ser. No. 307,243
Int. Cl.³ C07C *85/04, 85/06, 89/02*
U.S. Cl. 564—482 **14 Claims**

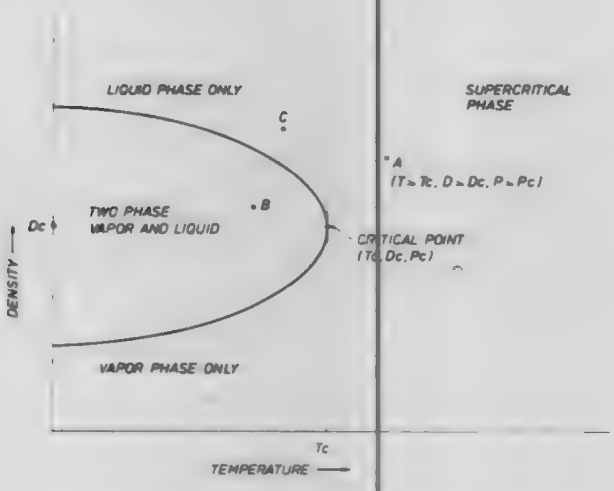
1. A continuous process for the manufacture of polyamines which comprises the joining of (I) a continuous process for the manufacture of ethylene amines including ethylenediamine which comprises; (A) providing (1) a continuous homogeneous fluid stream under pressure, which stream comprises ammonia, monoethanolamine, diethanolamine and triethanolamine as produced by the direct reaction of ethylene oxide and ammonia in which the number of moles of ammonia substantially exceeds the molar concentration of alcoholic hydroxyl groups present in such streams; (2) a continuous recycle stream consisting essentially of monoethanolamine; (3) an amination zone comprising a solid amination catalyst; and (4) a separation zone for separating monoethanolamine from the amination product stream removed from the amination zone which monoethanolamine forms said recycle stream; (B) feeding said recycle stream under pressure to said fluid stream to form a continuous amination feed stream under pressure; (C) feeding the amination feed stream to the amination zone under sufficient pressure to assure flow through the amination zone and to form an amination product stream containing ethylenediamine therein; (D) separating monoethanolamine from the amination product stream to form said recycle stream; and (E) continuously recovering ethylenediamine from said amination product stream; wherein said amination feed stream contains at least 70 weight percent monoethanolamine, based on the weight of the ethanolamines therein; the moles of ammonia in the amination feed stream exceeds the molar concentration of alcoholic hydroxyl groups in said amination feed stream; and the amination feed stream contains at least a 5% increase in the concentration of monoethanolamine over that contained in said fluid stream; with (II) a continuous process for the manufacture of polyethylene polyamines which comprises; (A) continuously feeding at least a portion of the ethylene amines produced by said continuous process (I) and ethylene dichloride, and optionally ammonia and water, to a polyamines reactor maintained at an elevated temperature; (B) optionally continuously recycling at least a portion of the ethyleneamines coming out of said polyamines reactor to the inlet feed of said polyamines reactor; and (C) continuously recovering polyethylene polyamines from the product stream.

4,404,406

OXIDATION OF ISOBUTANE UNDER SUPER-CRITICAL CONDITIONS

Eugene F. Lutz, and Elton G. Foster, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 5, 1981, Ser. No. 308,631
Int. Cl.[3] C07C 179/02
U.S. Cl. 568—571 16 Claims



1. A process for the preparation of tertiary-butyl hydroperoxide by direct reaction of isobutane and molecular oxygen characterized by enhanced production per unit of reaction volume per unit of time, which comprises reacting isobutane and molecular oxygen reactants in a reaction mixture comprising isobutane reactant in a partial density of at least about 12 lb/ft^3 at a temperature above the critical temperature of the mixture and greater than about 140° C. and at a pressure above the critical pressure of the mixture and greater than about 700 psig.

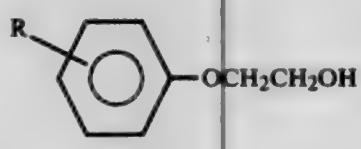
4,404,407

PROCESS FOR ENHANCING THE FRAGRANCE QUALITIES OF ETHYLENE GLYCOL MONOARYL ETHERS

Eugene G. Harris, West Chester, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

Filed Jun. 8, 1981, Ser. No. 271,730
Int. Cl.[3] C07C 41/34, 41/38
U.S. Cl. 568—648 6 Claims

1. A process for enhancing the fragrance qualities of ethylene glycol monoaryl ethers obtained by the reaction of phenol with ethylene oxide in an alkaline reaction medium and having the formula



wherein R is hydrogen, a C_{1-8} alkyl group or C_{1-8} alkoxyl group which comprises intimately contacting the ethylene glycol monoaryl ether with 0.01 to 1 weight percent alkali metal borohydride at a temperature up to about 100° C., sparging by subsurfacely introducing and dispersing up to 10 weight percent water into the ethylene glycol monoaryl ether at a temperature of 75° C. to 120° C. and pressure less than 100 mm Hg, and drying the ethylene glycol monoaryl ether to a moisture content less than 1 percent.

4,404,408

COMPLEXED COMPOUNDS, PROCESSES FOR THEIR MANUFACTURE AND THEIR USE

Hermann O. Wirth, Bensheim-Auerbach, and Hans-Helmut Friedrich, Lautertal-2, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 7, 1977, Ser. No. 831,309
Claims priority, application Switzerland, Sep. 8, 1976, 11391
Int. Cl.[3] C07C 31/18, 31/22
U.S. Cl. 568—680 6 Claims

1. A complexed compound of the formula

$$M_n^m.X_m^n.qZ$$

in which

M is a proton or a m-valent cation selected from the group consisting of Li^+, Na^+, K^+, Be^{++}, Mg^{++}, Ca^{++}, Ba^{++}, Al^{+++}, Ce^{+++}, Ti^{+4}, ZrO^{++}, Th^{+4}, Nb^{+5}, Cr^{+++}, Mo^{+5}, Mn^{++}, Fe^{++}, Fe^{+++}, Co^{++}, Ni^{++}, Cu^{++}, Ag^+, Zn^{++}, Cd^{++}, B^{+++}, Si^{+4}, Sn^{++}, Sn^{+4}, Pb^{++}, Sb^{+++}, Sb^{+5}, In^{+++}, Bi^{+++}, Hg^{++} and Y^{+3},

X is a n-valent anion selected from the group consisting of hydroxyl, fluoride, chloride, bromide, iodide, thiocyanate, perchlorate, sulfide, thiosulfate, sulfate, acetate, nitrate, hydrogen phosphite, borate, carbonate, sulfite, silicate, hydrogen phosphate, titanate, phosphate, metadisilicate, metasilicate, metatrisilicate, hypophosphinite, metatitanate, methoxy, dihydrogen phosphite, metaborate, zirconate, oxide, metaphosphite, phosphite, trithiocarbonate, methylsulfonate, trifluoromethylsulfonate, octoxycarbonylmethylmercaptide, 2-(octoxycarbonyl)ethylmercaptide and β-carboxyethylmercaptide;

m is an integer from 1 to 5,

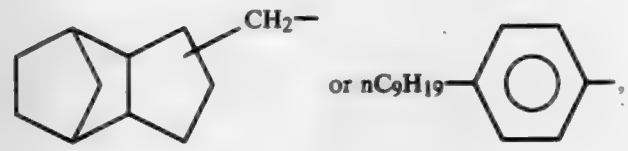
n is an integer from 1 to 4,

Z is a chelate-forming compound of the formula

$$R^3—L—(CH_2CHOHCH_2O)_x—H$$

where

R^3 is alkyl of 3 to 18 carbon atoms,



L is O or S,

x is an integer from 1 to 3, and

q is an integer from 1 to 12.

4,404,409

PROCESS FOR PREPARING METHYL TERTIARY-BUTYL ETHER

Yasuo Fujiwara, Tokyo, and Tetsuya Takezono, Kawasaki, both of Japan, assignors to Nippon Oil Co., Ltd., Japan

Filed Feb. 28, 1980, Ser. No. 125,655
Claims priority, application Japan, Mar. 5, 1979, 54-25349
The portion of the term of this patent subsequent to Jan. 8, 1997, has been disclaimed.
Int. Cl.[3] C07C 41/00, 41/06
U.S. Cl. 568—697 12 Claims

1. A process for continuously preparing methyl tertiary-butyl ether which comprises reacting an isobutylene-containing hydrocarbon with methanol by continuously passing the isobutylene and methanol, in a molar ratio of isobutylene to methanol of 1/0.6–1.4 at a temperature of 60° to 100° C. with a liquid space velocity of 0.1 to 50 l/hour and at a pressure of 1 to 50 atmospheres, through a first reactor filled with strong acid type cation exchange resin particles having an average particle diameter of 0.2 to 10 mm; dividing the mixture of reaction products into two streams, the flow rate of the first

stream being 3 to 15 times the flow rate of the second stream; recycling the first stream to the first reactor; passing the second stream, at a temperature of 20° to 55° C. with a liquid space velocity of 0.1 to 50 l/hour and at a pressure of 1 to 50 atmospheres, through a second reactor filled with strong acid type cation exchange resin particles having an average particle diameter of 0.2 to 10 mm; passing the stream from the second reactor through a fixed bed filled with a water-insoluble solid particulate acid neutralizing agent having an average particle diameter of 0.1 to 10 mm at a temperature of 0° to 55° C.; passing the resulting reaction mixture into a distillation tower whereby the unreacted hydrocarbon is removed; and recovering a mixture containing methyl tertiary-butyl ether from the bottom of the distillation tower.

4,404,410

PROCESS FOR PREPARING 2,3-DIMETHYL-2,3-BUTANEDIOL

Boy Cornils, Dinslaken; Jürgen Weber, Oberhausen; Wolfgang Bernhagen, Mülheim, and Helmut Springer, Oberhausen, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Continuation of Ser. No. 83,894, Oct. 11, 1979, abandoned. This application Jun. 10, 1981, Ser. No. 272,229

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1978, 2844637

Int. Cl.³ C07C *31/20*

U.S. Cl. 568—858 **8 Claims**

1. A process for preparing 2,3-dimethyl-2,3-butandiol which comprises introducing into a reaction vessel containing formic acid at 50° to 70° C. while stirred, 2,3-dimethylbutene and hydrogen peroxide, said 2,3-dimethylbutene and hydrogen peroxide being introduced into said formic acid simultaneously but separately and thereafter hydrolyzing pinacol monoformate so formed.

4,404,411

HYDROGENOLYSIS OF POLYOLS TO ETHYLENE GLYCOL IN NONAQUEOUS SOLVENTS

Murty S. S. R. Tanikella, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 1, 1982, Ser. No. 344,302

Int. Cl.³ C07C *21/20*

U.S. Cl. 568—861 **16 Claims**

1. Process for hydrogenolysis of polyols to a reaction product mixture consisting essentially of a major fraction of ethylene glycol and propylene glycol and a minor fraction of glycerol, other products and unreacted starting material, in which process the polyols are contacted and reacted with hydrogen in the presence of a substantially nonaqueous solvent, a hydrogenation catalyst and at least 10 mol percent of a base at a temperature of at least 225° C., said base selected from the oxide, hydroxide or alkoxide of an alkali metal, calcium, strontium or barium.

4,404,412

TRICHLOROETHYLENE COMPOSITION STABILIZED AGAINST OXIDATION

Nobuyuki Ishibe, and Jimmie K. Harden, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 4, 1982, Ser. No. 345,874

Int. Cl.³ C07C *17/42*

U.S. Cl. 570—109 **4 Claims**

1. A stable chlorinated solvent useful in degreasing operations which comprises trichloroethylene and a minor amount of a stabilizer which is an antioxidant consisting of α, 1,5-diazabicyclo-[5.4.0]undec-5-ene.

4,404,413

METHOD FOR THE PREVENTION OR INHIBITION OF POPCORN POLYMER IN ORGANIC MATERIAL CONTAINING VINYL COMPOUNDS

Weston W. Haskell, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jun. 30, 1982, Ser. No. 394,992

Int. Cl.³ C07C *7/20*

U.S. Cl. 585—2 **10 Claims**

1. A method for the inhibition or prevention of popcorn polymer growth in organic materials comprising at least 50%w of at least one vinyl compound which method comprises treating said organic material with a polymer-inhibiting amount of an inhibitor selected from the group consisting of solid white phosphorus, liquid phosphorus, and phosphorus vapor.

10. A method for the inhibition or prevention of popcorn polymer growth in organic material comprising at least 50%w of at least one vinyl compound which method comprises treating said organic material with a polymer-inhibiting amount of carbon disulfide.

4,404,414

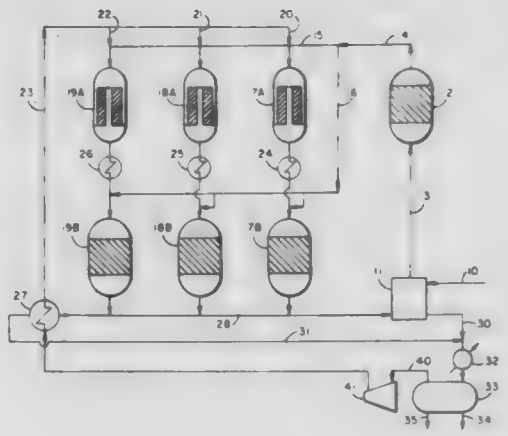
CONVERSION OF METHANOL TO GASOLINE

Joe E. Penick, Chappaqua, N.Y.; Sergei Yurchak, Media, Pa., and John C. Zahner, Princeton, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 28, 1982, Ser. No. 425,845

Int. Cl.³ C07C *1/20, 1/22*

U.S. Cl. 585—469 **13 Claims**



1. A process for the conversion of an oxygenated organic compound to a gasoline boiling range hydrocarbon product, which comprises:

(i) charging a portion of the oxygenated organic compound to each of a plurality of reaction zones containing a ZSM-5 type conversion catalyst in primary and secondary stages of a multi-stage reactor system,

(ii) contacting the portion of oxygenated organic compound with the conversion catalyst in each of the primary and secondary stages to form a hydrocarbon product in each reaction zone,

(iii) separating a recycle stream of light diluent gas from the hydrocarbon product, and

(iv) passing the recycle stream of diluent gas through each of the stages in sequence at an overall molar ratio of the diluent gas to the total amount of oxygenated organic compound fed to the reaction zones through which the diluent gas passes of about 4:1 to 6:1.

4,404,415
PROCESS FOR PRODUCING NONENES OR FOR SIMULTANEOUSLY PRODUCING NONENES AND DODECENES FROM PROPENE

Jean Gaillard, Lyons, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Apr. 21, 1982, Ser. No. 370,322
Claims priority, application France, Apr. 21, 1981, 81 08077
Int. Cl.³ C07C *2/24*
U.S. Cl. 585—512 **6 Claims**

1. A process for producing nonenes or a mixture of nonenes and dodecenes, comprising the steps of: introducing propylene into a liquid reaction phase comprising hexenes, in the presence of a soluble dimerization catalyst, at a temperature of 20°–60° C., the amount of propylene being controlled so as to maintain a propylene concentration in the liquid reaction phase of 0.05–1% by weight, withdrawing a portion of the liquid reaction phase, separating and recovering nonenes and higher olefins therefrom, and recycling at least a portion of the remaining withdrawn liquid phase of high hexenes content to the reaction zone.

4,404,416
ISOMERIZATION

John R. Adams, Sarnia, Canada; Abraham P. Gelbein, Morristown; Robert Hansen, West Caldwell, both of N.J.; Jimmy Y. Peress, Jamaica, N.Y., and Martin B. Sherwin, Potomac, Md., assignors to Polysar International S.A., Switzerland

Filed Jul. 24, 1981, Ser. No. 286,639
The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.
Int. Cl.³ C07C *5/27*
U.S. Cl. 585—671 **8 Claims**

1. A process for the skeletal isomerization of straight chain olefins having 4 to 6 carbon atoms to branched chain olefins by contact at a temperature of from about 350° to about 550° C. with a residence time of from about 0.1 to about 1 second over a catalyst comprising alumina activated with a chlorine-containing compound characterized in that the alumina catalyst has an average particle size of from about 0.5×10^{-3} cm to about 160×10^{-3} cm, at least about 10% of the pore volume of the catalyst as measured by mercury porosimetry is attributable to pores having radii between about 100 and about 10,000 Angstroms, has a surface area of from about 50 to about 300 m^2/g and a pore volume of from about 0.4 to about 1 cc/g, the catalyst is activated by exposure at a temperature of from about 400° to about 500° C. to the chlorine-containing compound and the straight chain olefin feed to the catalyst contains from about 50 to about 3000 ppm by weight based on the olefin of the chlorine-containing compound, said chlorine-containing compound being selected from chlorine, hydrogen chloride and C_1 to C_4 alkyl or alkylene chlorides.

4,404,417
ISOMERIZATION

John R. Adams, Sarnia, Canada; Abraham P. Gelbein, Morristown; Robert Hansen, West Caldwell, both of N.J.; Jimmy Y. Peress, Jamaica, N.Y., and Martin B. Sherwin, Potomac, Md., assignors to Polysar International S.A., Switzerland

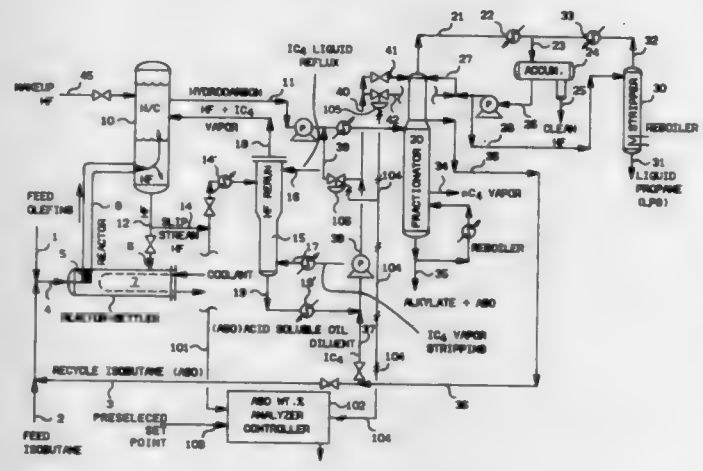
Filed Jul. 24, 1981, Ser. No. 286,643
The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.
Int. Cl.³ C07C *5/27*
U.S. Cl. 585—671 **5 Claims**

1. A process for the skeletal isomerization of straight chain olefins having 4 to 6 carbon atoms to branched chain olefins by contact at a temperature of about 350° to about 550° C. with a residence time of from about 0.6 to about 2 seconds over a catalyst comprising alumina activated with a chlorine-containing compound characterized in that the alumina catalyst has an average particle size of from about 0.5×10^{-3} cm to about 160×10^{-3} cm and from about 3 to about 9% of the pore volume of the catalyst as measured by mercury porosimetry is attributable to pores having radii between about 100 and about 10,000 Angstroms, has a surface area of from about 50 to about 300 m^2/g and a pore volume of from about 0.4 to about 1 cc/g, the catalyst is activated by exposure at a temperature of from about 400° to about 500° C. to the chlorine-containing compound and the straight chain olefin feed to the catalyst contains from about 50 to about 3000 ppm by weight based on the olefin of the chlorine-containing compound, said chlorine-containing compound being selected from chlorine, hydrogen chloride and C_1 to C_4 alkyl or alkylene chlorides.

4,404,418
HF ALKYLATION PROCESS

Thomas Hutson, Jr., and Paul D. Hann, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 4, 1982, Ser. No. 385,249
Int. Cl.³ C07C *3/54*
U.S. Cl. 585—710 **5 Claims**

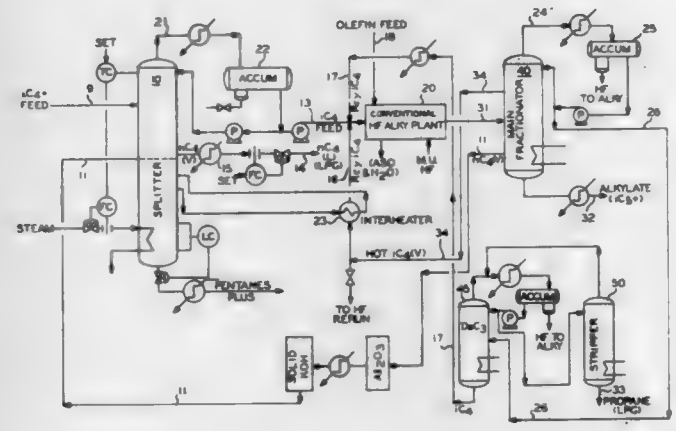


1. In an HF alkylation process wherein a preselected amount of acid soluble oils is described to be maintained in the alkylation system HF catalyst the improvement comprises returning a stream comprising acid soluble oils recovered from an HF rerun column and isobutane to the HF alkylation system so as to maintain said preselected amount of acid soluble oils in said system HF catalyst.

4,404,419
ALKYLATION PROCESS

Eldred J. Cabanaw, and John W. Mann, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 17, 1982, Ser. No. 408,590
Int. Cl.³ C07C *2/58*
U.S. Cl. 585—723 **9 Claims**



1. In an alkylation process which comprises the steps of:
(a) subjecting an isoparaffin-containing feed comprising isoparaffins and normal paraffins to fractionation under

conditions to separate same into an overhead stream enriched in isoparaffins, an intermediate side stream of high purity normal paraffins, and a bottoms stream comprising higher boiling isoparaffins and normal paraffins,

(b) passing said overhead stream enriched in isoparaffins to an alkylation zone and therein contacting same with an olefin and an alkylation catalyst under alkylation conditions to form an alkylation effluent and recovering from said effluent a hydrocarbon phase comprising alkylate, isoparaffins and normal paraffins,

(c) passing said hydrocarbon phase to a second fractionation operated under conditions to separately recover an isoparaffin vapor stream, a normal paraffin vapor stream, and an alkylate product stream; and

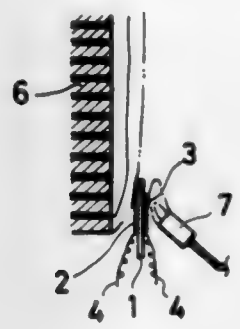
(d) passing said normal paraffin vapor stream to said fractionation in (a) at a locus below the point of withdrawal of said side stream of high purity normal paraffins.

4,404,420

COMBUSTION DETECTING ELEMENT

Toshifumi Yamana, Nagoya, Japan, assignor to Rinnai Kabushiki Kaisha, Aichi, Japan

Filed Aug. 14, 1981, Ser. No. 292,937
Claims priority, application Japan, Feb. 8, 1980, 55-13605
Int. Cl.[3] H01L *35/28*
U.S. Cl. 136—217 2 Claims



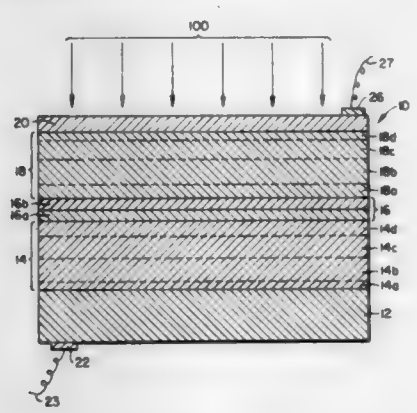
1. A combustion detecting element comprising an element body generating an electric change corresponding to a difference in oxygen concentration between a first surface and a second surface thereof, catalytic electrode layers on both surfaces for carrying out catalytic reaction with combustible gas and a lead wire connected to each layer, characterized in that the catalytic electrode layers have substantially different capabilities in catalytic reaction with combustible gas and in that the element body is so arranged such that one surface of the element body having the catalytic electrode layer of the comparatively smaller catalytic reaction capability is exposed to an interior of a combustion atmosphere of a standing burner and the other surface thereof having the catalytic electrode layer of the comparatively larger catalytic reaction capability faces a burner of which a combustion condition is to be monitored.

4,404,421

TERNARY III-V MULTICOLOR SOLAR CELLS AND PROCESS OF FABRICATION

Lewis M. Fraas, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 26, 1982, Ser. No. 352,680
Int. Cl.[3] H01L *31/06, 31/18*
U.S. Cl. 136—249 16 Claims



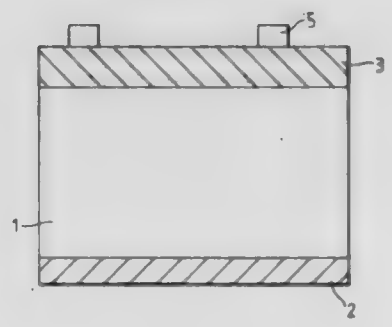
1. A photovoltaic device comprising:
a conductive substrate;
a layer of $GaAs_{1-y}Sb_y$ having regions of differing conductivity forming a homojunction therein contacting said substrate and lattice matching the substrate to within about ±1%;
a shorting junction layer contacting the surface of said GaAsSb layer opposite to the surface contacting said substrate;
a layer of $GaAs_{1-x}P_x$ having a larger bandgap than said GaAsSb layer, said semiconductor layer contacting the surface of said shorting junction layer opposite to said surface contacting said GaAsSb layer; and
means forming electrical contacts to said device to withdraw photogenerated current therefrom.

4,404,422

HIGH EFFICIENCY SOLAR CELL STRUCTURE

Martin A. Green, Sydney, and Andrew W. Blakers, Campbell, both of Australia, assignors to Unisearch Limited, Kensington, Australia

Filed Sep. 15, 1981, Ser. No. 302,650
Claims priority, application Australia, Sep. 26, 1980, 5773/80
Int. Cl.[3] H01L *31/06, 31/18*
U.S. Cl. 136—255 8 Claims



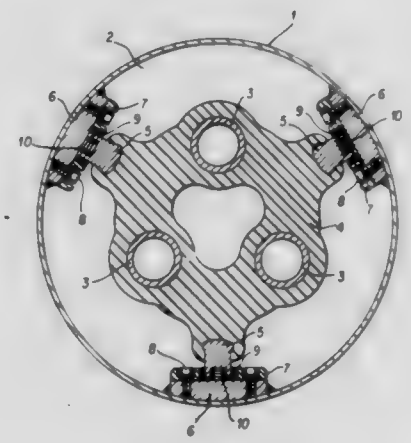
1. A solar cell comprising a body of semiconductor material having top and bottom metal contact layers, said body having two regions of different conductivity type forming a junction therebetween, namely a lower region containing a dopant of one conductivity type in contact with the bottom metal contact layer and an upper region containing a dopant of opposite conductivity type, said upper region being separated from said top metal contact layer by a thin insulating layer, said top metal contact being configured to allow the passage of incident radiation.

4,404,423

THREE-PHASE GAS INSULATED BUS

Takaaki Sakakibara, and Yoshihiro Kanno, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 24, 1981, Ser. No. 305,225
Claims priority, application Japan, Sep. 24, 1980, 55-134688[U]
Int. Cl.[3] H02G *5/06*
U.S. Cl. 174—27 3 Claims



1. A gas insulated bus having high voltage conductors inside a grounded cylindrical metal sheath filled with an insulating gas, comprising:
three, three-phase conductors arranged inside said sheath, each said conductor located at a respective vertex of a triangle within said sheath as seen in section;
an insulating means formed integrally about all of said conductors for supporting said conductors within said sheath,

said insulating means including at least two leg portions, each said leg portion having a supporting part;

fitting means fixed on the inner wall of said sheath for radially-slidably supporting each of said leg portions of said insulating means, said fitting means being electrically connected to each said supporting part of said insulating means; and

buffering means mounted between said supporting part of said insulating means and said fitting means for absorbing deformations of said sheath, said buffering means having a low friction characteristic,

wherein said fitting means and buffering means are annular and concentric, said supporting part being concentrically fitted into said buffering means.

4,404,424

SHIELDED TWISTED-PAIR FLAT ELECTRICAL CABLE

William A. King, Aurora, and John W. Kincaid, Batavia, both of Ill., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Oct. 15, 1981, Ser. No. 311,524
Int. Cl.³ H01B *7/08, 11/06, 11/10*
U.S. Cl. 174—34 **5 Claims**



2. A flat multi-conductor electrical cable comprising:

a film of laminating material;

a plurality of unshielded pairs of unshielded insulated conductor wires bonded to said film so that predetermined spacing between said pairs is maintained, said film and said pairs of insulated conductor wires extending longitudinally along the cable, said pairs of insulated conductor wires extending substantially side-by-side parallel to one another, the individual wires of each said pair being twisted about one another for at least one portion of their mutual length;

a shielding member including a conductive layer substantially surrounding collectively said film and said plurality of pairs and closely conforming to said pairs of insulated wires so as to extend part way between adjacent said pairs of insulated conductors, said shielding member being bonded to said film and said conductor wires; and

a sheath of insulating material encasing said shielding member and said plurality of pairs of insulated conductor wires.

4,404,425

CABLE ASSEMBLY FOR UNDERCARPET SIGNAL TRANSMISSION

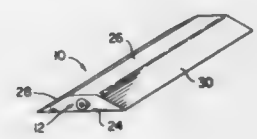
Donald S. Rich, Long Valley, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

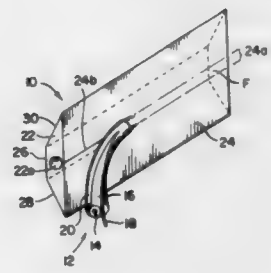
Filed Dec. 5, 1980, Ser. No. 213,311
Int. Cl.³ H01B *7/08*
U.S. Cl. 174—107 **16 Claims**

1. An electrical cable assembly comprising:

(a) a coaxial cable subassembly including a central electrical conductor, an electrical insulator concentric with said central conductor and an electrically conductive sheath encircling said insulator; and

(b) a resilient body of electrically insulative material contiguously engaging said sheath over at least a major part of the circumference of said sheath and imposing radial retentive force upon said subassembly, said body having a first expanse in one direction radially outwardly of said subassembly along an axis intersecting said central conductor less than a second expanse of said body radially outwardly of said subassembly along said axis in a direction opposite said one direction, said body having a pair of opposed, manually deflectable sidewalls extending laterally outwardly of said axis, said first expanse defining a thin, rupturable retention film extending continuously with said sidewalls, said second expanse defining a de-





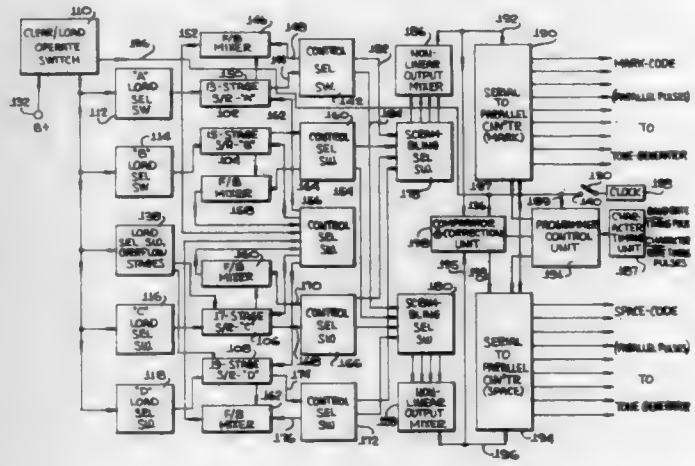
formable wall continuous with said sidewalls and about which said sidewalls are deflectable, said sidewalls being adapted to apply sufficient force to said thin retention film to rupture same upon manually deflecting said sidewalls about said deformable wall, whereby said coaxial cable subassembly may be released from said body through said ruptured film.

4,404,426

CRYPTOGRAPHIC TELEGRAPHY PROGRAMMING SYSTEM

Laurance F. Safford, Washington, D.C., assignor to American Standard Inc., New York, N.Y.

Filed May 23, 1962, Ser. No. 197,203
Int. Cl.³ H04L *9/00;* **G05B** *1/00;* **G06F** *7/02*
U.S. Cl. 178—22.03 **63 Claims**



1. Apparatus for producing multiple combinations of parallel output binary signals for controlling an anti-jam or other form of telegraphy system comprising four parallel feedback shift registers, a pair of serial to parallel converters, each having an input terminal, means for combining the output signals of said shift registers for producing two separate serial signals, means for coupling one of said serial signals to the input terminal of one of said converters, means for coupling the other of said serial signals to said input terminal of the other of said converters and means for changing the output signal of one of said

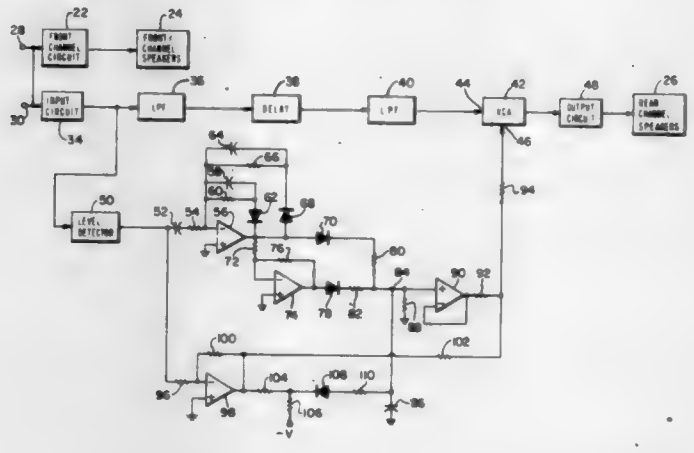
converters when said separate signals are identical for a predetermined number of binary digits, said feedback shift registers having pluralities of separate stages and a feedback mixer having input terminals connected to the last and certain other three of said stages, and an output terminal connected to the first of said stages.

4,404,427

AUDIO SIGNAL PROCESSING SYSTEM

David E. Blackmer, Wilton, N.H., assignor to Kintek, Inc., Newton, Mass.

Filed Nov. 30, 1979, Ser. No. 98,972
Int. Cl.³ H04B *3/04*; G10H *1/02*
U.S. Cl. 179—1 VL **15 Claims**



1. An audio signal processing system of the type for generating ambient effects, said system comprising:

at least two channels for respectively transmitting an audio signal to at least two speakers so that one of the speakers reproduces sound in response to the audio signal at a predetermined delay with respect to the other of said speakers;

means responsive to the signal level of said audio signal for producing a gain control signal as a function of the derivative of the signal level of said audio signal; and

gain control means electrically connected to receive the audio signal being transmitted to said one speaker for controlling the signal gain impressed on the audio signal being transmitted to said one speaker as a function of said gain control signal;

wherein said gain control means provides (A) gain reduction on (1) impulse noise transmitted in the channel for transmitting said audio signal to said one speaker and (2) audio signals of a first kind transmitted in said channel for transmitting said audio signal to said one speaker and adapted to be reproduced by said other speaker in a localized manner, and (B) signal expansion on audio signals of a second kind transmitted in said channel for transmitting said audio signal to said one speaker and adapted to be reproduced by said at least two speakers with a spatial depth.

4,404,428

DETECTOR FOR SUB SIGNAL OF MODULATED AM STEREOPHONIC SIGNAL

Hitoshi Hirata, and Akira Nishioka, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

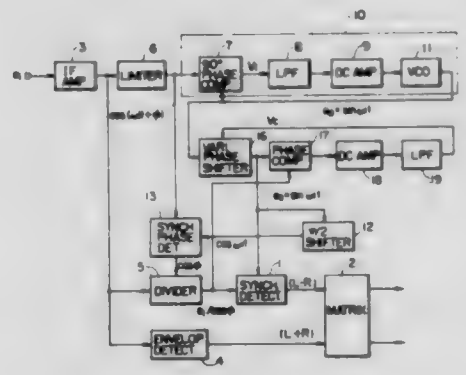
Filed Feb. 6, 1981, Ser. No. 232,270
Claims priority, application Japan, Feb. 7, 1980, 55-13963
Int. Cl.³ H04H *5/00*
U.S. Cl. 179—1 GS **7 Claims**

1. A detector for an AM stereophonic signal comprising:

a limiter, having an input coupled to receive an AM stereophonic IF signal, for producing an amplitude limited signal having a frequency and phase determined by a frequency and phase of said IF signal;

a phase-locked loop circuit for producing a first reference signal which is 90° out of phase with said amplitude limited signal, said phase-locked loop circuit comprising a 90° first phase comparator having a first input connected to receive said amplitude limited signal, a first low-pass filter having a input connected to an output of said 90° first phase comparator, a first DC amplifier having an input connected to an output of said first low-pass filter, and a voltage-controlled oscillator having an input connected to an output of said DC amplifier and an output connected to a second input of said 90° first phase comparator, said first reference signal being produced at said output of said voltage-controlled oscillator;

a phase correction circuit for correcting a phase of said first reference signal for producing a second reference signal having a phase substantially precisely 90° out of phase with a phase of said IF signal, said phase correction circuit comprising a variable phase shifter having a signal input connected to receive said first reference signal, a second phase comparator having a first input connected to an



output of said variable phase shifter and a second input connected to receive a signal having a phase determined by a carrier signal of said IF signal, a second DC amplifier having an input connected to an output of said second phase comparator, and a second low-pass filter having an input connected to an output of said DC amplifier and an output connected to a control input of said variable phase shifter, said second reference signal being produced on said output of said variable phase shifter;

a 90° phase shifter for producing a third reference signal by shifting a phase of said second reference signal 90°;

and demodulating circuit means receiving said IF signal and said second and third reference signals for producing a sub signal corresponding to a difference between first and second channel signals contained in said stereophonic AM signal.

4,404,429

MATCHING VOLUME CONTROL CHARACTERISTICS FOR TWO CHANNELS

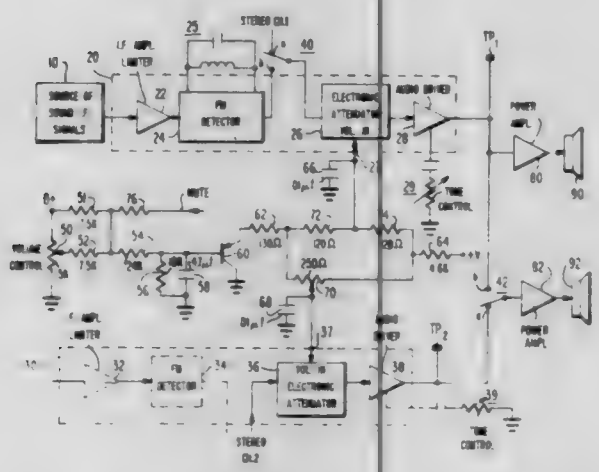
Patrick D. Griffis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 7, 1981, Ser. No. 261,362
Int. Cl.³ H03G *3/02*
U.S. Cl. 179—1 VL **10 Claims**

1. In a system for processing two channels of audio information, including first and second sources of audio information signals; first and second output terminals suitable for coupling to respective loudspeakers for reproducing said audio information; first and second amplifiers having respective inputs, and respective outputs coupled to respective ones of said output terminals; and first and second volume control means having respective audio signal inputs responsive to said first and second audio signals, respective control inputs responsive to respective D.C. control signals for controlling the volume of said reproduced audio information, and respective outputs coupled to respective inputs of said first and second amplifiers; apparatus for producing said D.C. volume control signals comprising:

a volume control potentiometer coupled across two terminals of a source of supply voltage and having a wiper arm; and

means, coupled between two terminals of a source of supply potential, for developing said D.C. volume control signals, and including a first voltage divider having a fixed tap coupled to said control input of said first volume control means, a second voltage divider coupled in parallel with said first voltage divider and having an adjustable tap coupled to said control input of said second volume control means, and an input means coupled to said wiper



arm of said volume control potentiometer for simultaneously controlling the flow of substantially equal currents through said first and second voltage dividers;

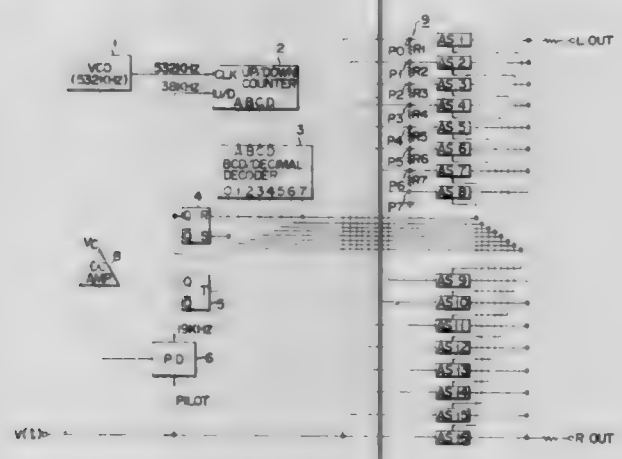
wherein said adjustable tap may be adjusted to provide compensation of any D.C. offset of the D.C. control voltage versus attenuation characteristic of said second volume control means with respect to the D.C. control voltage versus attenuation characteristic of said first volume control means.

4,404,430

FM STEREO DEMODULATION CIRCUIT WITH VOLTAGE DIVIDING AND MULTIPLEXING TECHNIQUES

Minoru Ogita, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 20, 1981, Ser. No. 323,374
Claims priority, application Japan, Nov. 28, 1980, 55-167744
Int. Cl.³ H04H *5/00*; H03B *19/00*
U.S. Cl. 179—1 GE **5 Claims**



1. An FM stereo demodulation circuit comprising:

a voltage dividing network connected to receive an FM stereo composite signal which contains a pilot signal of half the frequency of a subcarrier, said voltage dividing network having plurality of outputs which provide a plurality of different voltage levels;

a first switch circuit having a plurality of analog switches for respectively coupling said outputs of said voltage dividing network to a first output terminal;

a second switch circuit having a plurality of analog switches for respectively coupling said outputs of said voltage dividing network to a second output terminal; and

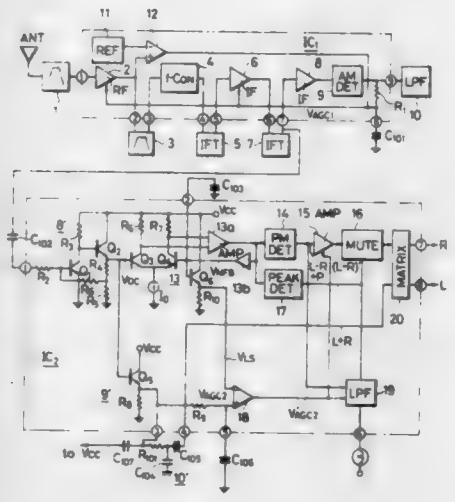
analog switch control circuit means responsive to the pilot signal for scanning said analog switches of said first and second switch circuits such that said analog switches of each of said first and second switch circuits are sequentially enabled in a reciprocating manner over one cycle period of said subcarrier and a switch scan cycle of said first switch circuit is 180° out of phase with that of said second switch circuit.

4,404,431

AM STEREO RECEIVER

Kazuo Watanabe, Takasaki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 18, 1981, Ser. No. 322,684
Claims priority, application Japan, Nov. 21, 1980, 55-163275
Int. Cl.³ H04M *5/00*
U.S. Cl. 179—1 GS **5 Claims**



1. In an AM stereo receiver, comprising:

a signal source circuit for producing a signal containing an amplitude modulation sum signal component and a phase modulation difference signal component;

an AM detector circuit connected to receive said signal from said signal source circuit for generating a signal proportional to said amplitude modulation sum signal component, including a detecting transistor formed in an integrated circuit;

a PM detector circuit connected to receive said signal from said signal source circuit for generating a signal proportional to said phase modulation difference signal component;

a variable gain circuit connected to receive said signal proportional to said phase modulation difference signal from said PM detector circuit;

a matrix circuit connected to receive the outputs of said AM detector circuit and said variable gain circuit for generating stereo reproduction signals by composing said signal proportional to said sum signal component and said signal proportional to said difference signal component received via said variable gain circuit;

means for producing an AGC voltage in response to said sum signal component obtained from said detecting transistor of said AM detector circuit;

a level shift transistor formed in said integrated circuit in which said detecting transistor is formed;

means for applying a voltage virtually equal to the base input d.c. voltage at the base of said detecting transistor to the base of said level shift transistor, thereby providing a level shift voltage from the emitter of said level shift transistor; and

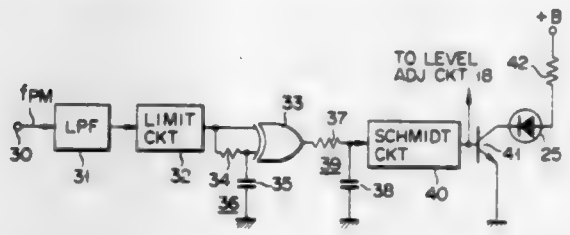
means for controlling the gain of said variable gain control circuit by a signal equal to the difference between said AGC voltage and said level shift voltage.

4,404,432

STEREO IDENTIFYING SIGNAL DETECTION DEVICE

Hiromi Kusakabe, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 4, 1981, Ser. No. 299,482
Claims priority, application Japan, Sep. 10, 1981, 55-125777
Int. Cl.³ H04H *5/00*
U.S. Cl. 179—1 GS **3 Claims**



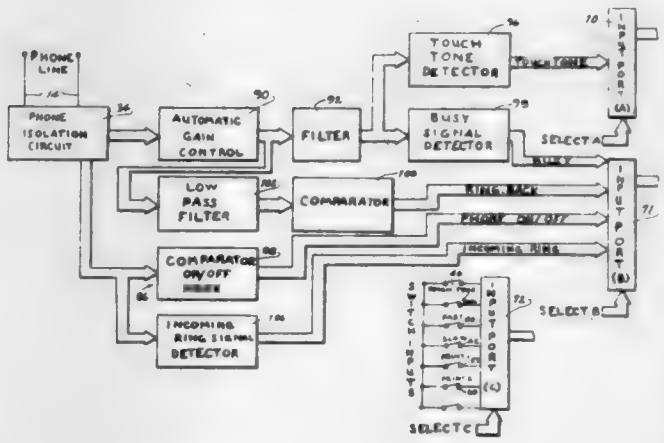
1. A stereo identifying signal detection device comprising means for extracting a stereo identifying signal from a received broadcast signal, means for limiting the level of the extracted stereo identifying signal, means for generating a pulse signal according to predetermined level variations of the output signal from said limiting means, and means for integrating said pulse signal, the output signal from said integrating means being used to switch a receiver between stereophonic and monophonic receiving modes.

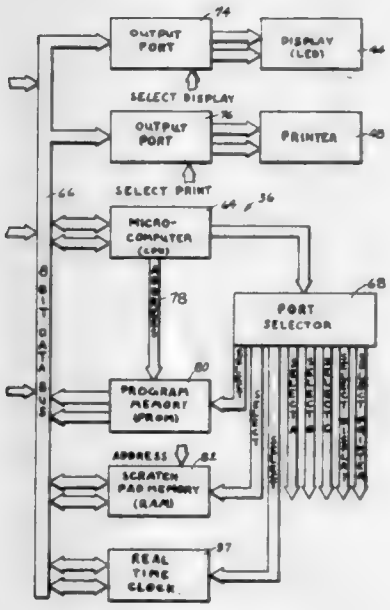
4,404,433

TELEPHONE CALL MONITORING APPARATUS

Leon Wheeler, P.O. Box 998, and Glenn A. Beusch, 128 Westwood, both of Post Falls, Id. 83854

Filed Apr. 13, 1981, Ser. No. 253,107
Int. Cl.³ H04M *15/08, 15/18, 15/22, 15/30*
U.S. Cl. 179—7.1 TP **17 Claims**





14. Telephone call monitoring apparatus for monitoring outgoing telephone calls from a selected telephone to determine: (1) whether the selected telephone is active or inactive; (2) the telephone numbers of called telephones; (3) the durations of completed telephone calls to the called telephones and to record the telephone numbers and the durations of the completed calls, in which the selected telephone is connected to a central telephone system by a telephone line in which the selected telephone is capable of generating a series of coded electrical signals on the telephone line to the central telephone system representing a desired called telephone number and wherein the central telephone system, in response to receiving the series of coded electrical signals, generates one or more ring back signals on the telephone line corresponding to ring signals made to the designated called telephone to generate one or more audible rings, wherein the ring back signals have a predetermined frequency, duration and period between individual ring back signals, and wherein the central telephone system generates a busy signal on the line when the called telephone is active, said apparatus comprising

connecting means operativey connecting the apparatus to the telephone line to receive the signals;

status means for determining whether the calling telephone is active or inactive;

clock means for determining the time of day that the calling telephone is active;

decoding means responsive to the series of electrical signals representative of the desired called telephone number when the calling telephone is active for decoding the series of electrical signal and generating decoded electrical signals corresponding to the desired called telephone number;

ring back signal detection means responsive to the frequency, duration and period between the ring signals for determining when valid ring back signals are generated and then terminated on the line and for generating a telephone answered signal in response thereto;

call duration means responsive to the ring signal detention means and the status means for determining the lapsed time between the generation of the telephone answered signal and the calling telephone become inactive to estimate the duration of the telephone call to the calling telephone;

a busy signal means for determining when a busy signal is generated on the telephone line; and

recording means operatively connected to the decoding means, the clock means and the call duration means for recording the telephone numbers of the called telephones and the estimated durations of the completed telephone calls to the called telephones and information that the telephone call was not completed because the called telephone was busy and the time of day in which the busy call was made.

4,404,434

COLLAPSIBLE STEREOPHONE

Thomas E. Pelt, Greenfield, and Joseph C. Besasie, Milwaukee, both of Wis., assignors to Koss Corporation, Milwaukee, Wis.

Filed Aug. 10, 1981, Ser. No. 291,248
Int. Cl.³ H04M *1/05*
U.S. Cl. 179—156 R **2 Claims**

1. A stereophone, the combination comprising:

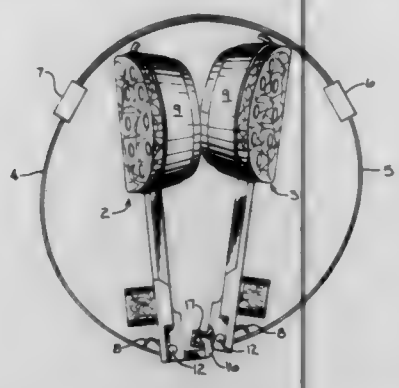
a flexible headband formed in an arc to fit over the head of a user and having a pair of ends;

a first cup assembly pivotally attached to one end of said headband for pivoted motion between an operating position in which it extends downward from the headband over the ear of a user and a transport position in which it is folded upward and within the arc formed by the headband;

a second cup assembly pivotally attached to the other end of said headband for pivotal motion between an operating position in which it extends downward from the headband over the other ear of a user and a transport position in

which it is folded upward and within the arc formed by the headband; and

fastening means for holding the ends of the headband together when both cup assemblies are pivoted to their



transport positions to thereby substantially enclose them within the headband, said fastening means including a hook formed adjacent one end of the headband and an eye formed near the other end of the headband.

4,404,435

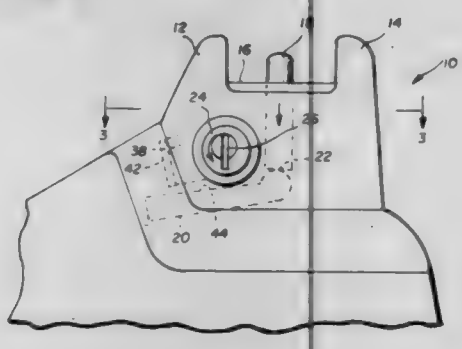
TELEPHONE LOCK

John J. Bonacci, and Theresa S. Bonacci, both of 368 True Hickory Dr., Rochester, N.Y. 14615

Filed Dec. 7, 1981, Ser. No. 328,379

Int. Cl.[3] H01M *1/66*

U.S. Cl. 179—189 R 5 Claims



1. In a telephone instrument of the type including a housing, a line switch within said housing movable between a connect position and a disconnect position, means biasing said line switch to said connect position, and handset receiving means outside said housing operative to urge said line switch to said disconnect position when a handset in place on said receiving means, the improvement for securing said instrument comprising:

a lock having a cylinder extending through said housing; and

means within said housing connected to said cylinder for engaging said line switch when said cylinder is in a locked position and holding said line switch in said disconnect position when said handset is removed from said receiving means.

4,404,436

PUSH-PUSH MECHANISM OF PUSHBUTTON OPERATING SHAFT

Hiroki Ohba, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

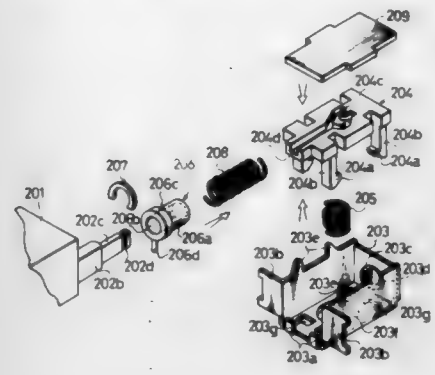
Filed Nov. 19, 1981, Ser. No. 323,034

Claims priority, application Japan, Nov. 19, 1980, 55-166012[U]

Int. Cl.[3] H01H *3/12*

U.S. Cl. 200—153 J 3 Claims

1. A mechanism for holding a pushbutton operating shaft in a latched condition and later enabling the shaft to be released from its latched condition, comprising a tubular driving member supported rotatably upon the operating shaft and provided with a protuberance extending orthogonally to the direction of axial movement of said operating shaft, means including a cam plate having an upper surface formed with a heart-shaped groove adapted to receive said protuberance for holding the operation shaft in its latched position and later enabling it to be released therefrom, a frame member receiving said cam plate therein so that the latter can move vertically while being



guided by an inner wall of the former, and means urging said cam plate upwardly within said frame member, said operating shaft being latched in a depressed state by the cooperation between said protuberance and said heart-shaped groove by holding an end of said protuberance in engagement with said heart-shaped cam groove.

4,404,437

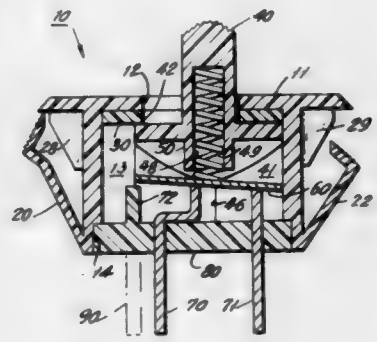
MOLDED SNAP-IN SWITCH HAVING MOVABLE CONTACT BLADE WHICH USES COMPOUND MOTION

Thomas J. Quigley, Newtown, Pa., assignor to Continental-Wirt Electronics Corporation, Southampton, Pa.

Filed Sep. 11, 1981, Ser. No. 301,150

Int. Cl.[3] H01H *15/02*

U.S. Cl. 200—16 C 9 Claims



1. A snap-acting slide switch comprising:

an elongated sliding contact blade slidably movable along its length;

a contact blade carrier; means pivotally connecting said blade to said carrier for rotation about an axis of rotation which is fixed to said carrier and which is in the plane of said blade and perpendicular to the direction of movement of said blade;

a fixed central conductive terminal member having a first support portion which slidably receives one surface of said sliding contact blade;

a fixed end conductive terminal having a second support portion which is spaced from said first support portion of said central terminal member and is disposed along the direction of movement of said sliding contact blade;

a stop member having a third support portion which is spaced from said first support portion on the side thereof opposite to said second support portion and disposed along the direction of movement of said contact blade;

said elongated contact blade having a length at least equal to the distance between said second and third support portions;

a biasing means connected to said sliding contact blade at its

said axis of rotation and pressing said blade against said first support portion;

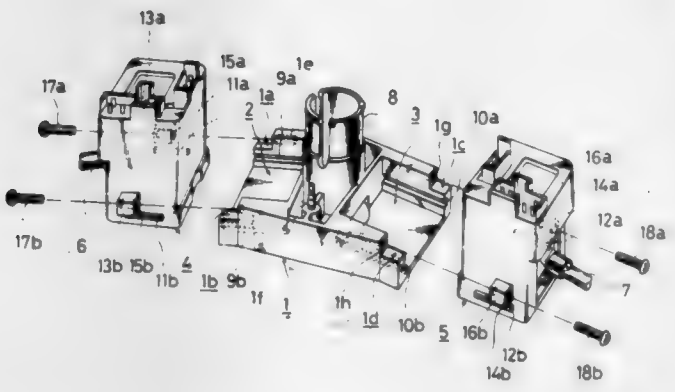
said first support portion being disposed above the extension of a straight line extending between said second and third portions whereby, when said axis of rotation of said blade slides to one side of said first support portion, said blade rotates with snap action about said axis to engage said second support portion and, when said blade slides to the opposite side of said first support portion, said blade rotates with snap action about said axis to engage said third support portion.

4,404,438

STRUCTURE FOR MOUNTING COLUMN SWITCHES FOR VEHICLES

Kazumi Honjo, Tokyo, Japan, assignor to Niles Parts Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1982, Ser. No. 357,909
Claims priority, application Japan, Mar. 3, 1982, 57-33249
Int. Cl.³ H01H *9/02*
U.S. Cl. 200—61.54 **9 Claims**



1. A mounting structure for mounting a column switch on a handle shaft of a vehicle, comprising the combination of:

a base board defining at least one generally U-shaped depression therein formed by a bottom member and a pair of opposed side walls, each having an inner side and an outer side, generally outwardly extending from said base board when said base board is fixed on the handle shaft of the vehicle, said depression being structurally adapted to receive a column switch therein, the inner sides of each of said side walls of said depression defining guide grooves on opposed interior portions thereof located so as to face each other inwardly, said U-shaped depression further having at least one opening therein for receiving a fastening member;

a column switch which includes a housing defined at least by opposed left and right walls thereof, and including guide projections on the respective left and right walls thereof for engaging said guide grooves in said U-shaped depression when said column switch is inserted in said U-shaped depression, said switch further defining at least one opening therein located in register with the opening in said U-shaped depression when said column switch is located therein, for also receiving said fastening member; and

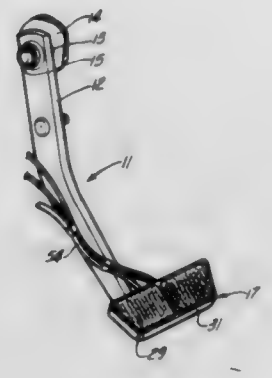
a fastening member extending through one of either of said opening in said U-shaped depression or said opening in said switch to engage securely the other of said openings, whereby said column switch is securely fixed by said fastening member to said base board.

4,404,439

METHOD AND CONSTRUCTION FOR VEHICLE BRAKE PEDAL AND SWITCH ASSEMBLY

John D. Leighton, 664 Rudgate, Bloomfield Hills, Mich. 48013

Continuation-in-part of Ser. No. 16,434, Mar. 1, 1979, Pat. No. 4,297,550. This application Jul. 29, 1981, Ser. No. 287,882
Int. Cl.³ H01H *3/14*
U.S. Cl. 200—61.89 **7 Claims**



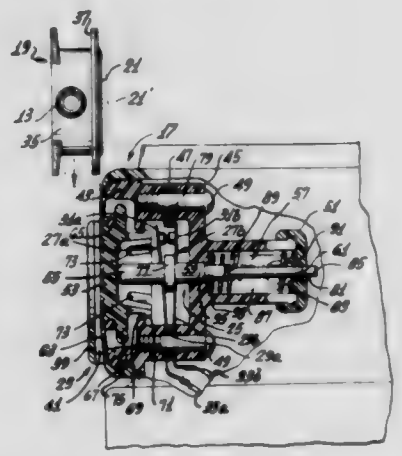
1. A signal mechanism for a pedal operated device comprising an actuating element for said device, a pedal pad detachably connected to said actuating element, first and second relatively movable signal parts carried by said pedal pad and having first and second relative positions for providing a signal in one of said relative positions, said pedal pad having a portion adaptable to be engaged by the foot of an operator, said first signal part being affixed for movement with said pedal pad portion, said pedal pad portion being movable relative to said actuating element upon actuation by the foot of an operator before said actuating element is operated to actuate said device, and means for moving said second signal part relative to said first signal part between its first relative position and its second relative position upon movement of said pedal pad portion relative to said actuating element.

4,404,440

APPARATUS FOR DETECTING WHEN THE PRESSURE DETECTOR IN A FLUID LINE EXCEEDS A PRESCRIBED THRESHOLD

William W. Busche, San Diego, Calif., assignor to IVAC Corporation, San Diego, Calif.

Filed Dec. 15, 1980, Ser. No. 216,764
Int. Cl.³ H01H *35/34*
U.S. Cl. 200—83 R **19 Claims**



1. Apparatus for detecting the pressure in a fluid line, comprising:

a pressure diaphragm communicating with a fluid line and having a flexible membrane that is movable in accordance with the pressure in the fluid line;

a frame having means for removably retaining the pressure diaphragm in a prescribed position;

follower means mounted on the frame and movable in accor-

dance with the position of the pressure diaphragm and the flexible membrane thereof; and

first and second electrical contact assemblies mounted on the frame and movable with respect to each other in accordance with movement of the follower means, the two contact assemblies providing a binary electrical signal, wherein the signal is in a first state whenever the pressure diaphragm is not retained in its prescribed position and whenever the pressure diaphragm is retained in its prescribed position and the pressure in the fluid line exceeds a prescribed threshold, and wherein the signal is in a second, opposite state whenever the pressure diaphragm is retained in its prescribed position and the pressure in the fluid line does not exceed the prescribed threshold.

4,404,441

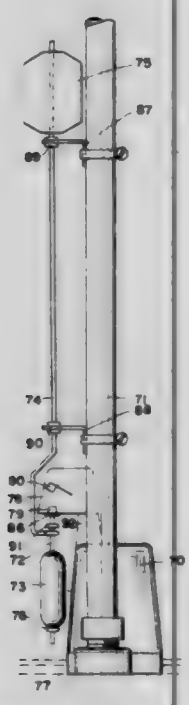
SWITCHING DEVICE WITH SEPARATE SWITCHING AND ACTUATOR RODS

David S. MacLaren, West Hill Dr., Gates Mills, Ohio 44040

Continuation of Ser. No. 185,321, Sep. 9, 1980, abandoned. This application Jun. 14, 1982, Ser. No. 387,791

Int. Cl.³ H01H *35/18*

U.S. Cl. 200—84 C **15 Claims**



1. A switching mechanism for a fluid pump comprising a switching rod having upper and lower end portions, said switching rod being movable between first and second vertical positions, a float stopper affixed to said lower end portion of said switching rod, a float slidingly connected to said switching rod above said float stopper, said float having a positive buoyancy when substantially in the fluid to be pumped and a weight when substantially out of the fluid to be pumped, an actuating snubber affixed to said upper end portion of said switching rod above said float, switching means for said switching rod to switch electricity, said switching means actuating in said first vertical position of said switching rod, magnetic means supporting said switching rod in said first vertical position when said float is substantially in the fluid to be pumped but not sufficient for supporting said switching rod when said float is substantially out of the fluid to be pumped, an actuator rod having upper and lower end portions, support means to slidingly support said actuator rod for movement between first and second vertical positions, a compensating part affixed to said upper end portion of said actuator rod, said positive buoyancy of said float being sufficient to float said switching rod, said actuator rod and said compensating part when said compensating part is substantially in the fluid to be pumped but not sufficient to float said switching rod, said actuator rod and said compensating part when said compensating part is substantially out of the fluid to be pumped, said lower end portion of said actuator rod being slidingly connected to said switching rod between said float and said actuating snubber, the entrance of said float in the fluid to be pumped causing said float to rise and engage said lower end portion of said actuator rod with insufficient force to move said actuator rod to said first vertical position and the entrance of said compensating part in fluid enabling said float to move said actuator rod and switching rod to said first vertical positions to actuate said switching means for said switching rod to switch electricity, removal of the fluid from said compensating part moving said lower end portion of said actuator rod and said float away from said actuating snubber and removal of the fluid from said float causing said float to bear on said float stopper creating a weight greater than the supporting abilities of said magnetic means supporting said switching rod in said first vertical position which causes said switching rod to move vertically to said second position to deactuate said switching means for said switching rod to switch electricity.

4,404,442

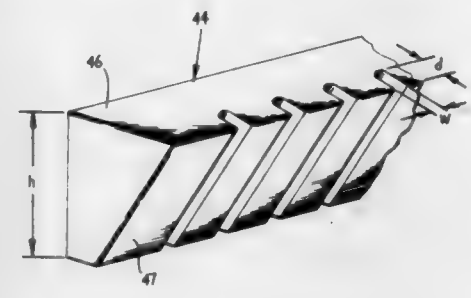
CIRCUIT INTERRUPTER HAVING FLASH PLATES WITH INTERRUPTED SURFACES

Frederick A. Stich, Milwaukee, Wis.; John D. Kleinecke, Wichita Falls, Tex., and Roger L. Robertson, Slidell, La., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Dec. 29, 1980, Ser. No. 220,374

Int. Cl.³ H01H *33/02*

U.S. Cl. 200—144 R **1 Claim**



1. In a circuit interrupter having separable contact means for breaking a circuit, operator means for causing said contact means to separate, an arc chute adjacent said contact means and enclosing a plurality of substantially parallel, insulative barrier plates having notches at the ends thereof adjacent said contact means, and a pair of substantially parallel flash plates disposed upon opposite sides of said contact means, the confronting surfaces of said flash plates being inclined so that the edges of said flash plates closest to said barrier plates are closer together than the edges of the flash plates remote from said barrier plates, said confronting surfaces of said flash plates being interrupted by a plurality of grooves extending in a direction generally perpendicular to a line extending between said contact means, the ratio of depth to width of said grooves being sufficient to prevent the accumulation of deposits resulting from the occurrence of arcs between said flash plates.

4,404,443

ELECTROMAGNETIC RELAY

Daniel Coynel, and Maurice Roussigne, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 2, 1981, Ser. No. 308,170

Claims priority, application France, Oct. 3, 1980, 80 21224

Int. Cl.³ H01H *33/18*

U.S. Cl. 200—147 A **8 Claims**

1. An electromagnetic relay comprising:

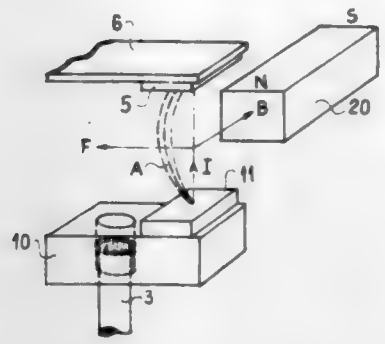
a base traversed by connection rods;

at least one fixed contact supported by a metallic member welded to one end of a connection rod, said fixed-contact support member being designed in the form of a solid block provided with a hollowed-out portion for receiving the end of the corresponding connection rod;

at least one strip subjected to an actuating element, the fixed

contact being operatively associated with a corresponding contact located at one end of the movable strip;

means for extinguishing the electric arc by lengthening said arc, said means being provided in the case of each pair of



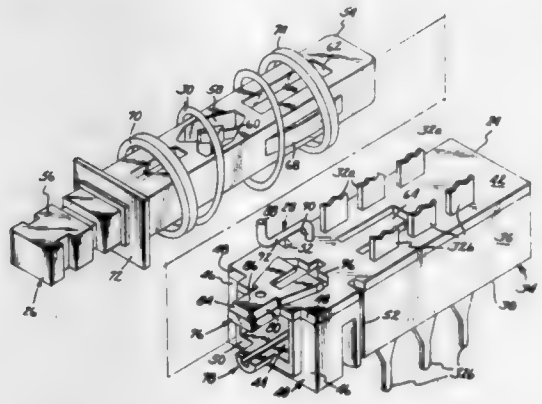
associated contacts in which one contact is fixed and the other contact is movable with at least one permanent magnet for producing a magnetic field in a direction at right angles to the direction of the current which flows between said associated contacts.

4,404,444

CONVERTIBLE ALTERNATE ACTION/MOMENTARY PUSHBUTTON SWITCH

Dwayne R. Kinney, Minnetonka, and Herman H. Sinn, Rockford, both of Minn., assignors to Electronic Components Groupe, Inc., Minneapolis, Minn.

Filed Feb. 4, 1982, Ser. No. 345,620
Int. Cl.³ H01H *13/56*
U.S. Cl. 200—153 J **17 Claims**



1. A pushbutton switch mechanism selectively capable of either momentary or alternate-action operation, the pushbutton switch mechanism comprising:

a housing including first and second generally parallel side walls, a bottom, and a top which define a longitudinal slider cavity which is open at a first end of the housing; the housing further including a lower tongue portion which extends outward from the first end; the top including an upper tongue which extends outward from the first end, which is generally parallel to and is spaced above the lower tongue, and which carries a vertical pivot hole which extends through the upper tongue; the top cover further including a longitudinally extending top opening which communicates with the cavity and which is connected to the pivot hole; and the top further including a raised cover connected to the upper tongue and covering a portion of the top opening;

an elongated slider adapted for actuating a switch, the slider extending between the upper and lower tongues and into the longitudinal slider cavity and being slidable along a longitudinal axis defined by the longitudinal slider cavity, the slider having an outer portion located outside the cavity and having an inner portion located within the cavity; the outer portion of the slider having a shoulder which is normally longitudinally spaced from the first end of the housing; inner portion of the slider having a heart-shaped cam groove in an upper surface of the slider which defines a pair of rest positions of the slider, the heart-shaped cam groove being located on the upper surface of the inner portion of the slider so that at least a portion of the heart-shaped cam groove is normally positioned below the top opening;

a removable alternate-action stop member having an upturned pivot leg, a downturned detent leg parallel to the pivot leg, and a crosspiece extending between and connecting the pivot leg and the detent leg; wherein the stop member is positioned with the pivot leg extending upward through the vertical pivot hole so that an upper end of the pivot leg is above the upper tongue and so that the stop member is permitted to pivot about a vertical pivot axis defined by the pivot hole, with the detent leg extending downward so that a lower end of the pivot leg extends into and cooperates with the heart-shaped cam groove, and with the crosspiece movable in a side-to-side arc in the top opening as the slider moves along the longitudinal axis and the lower end of the detent leg follows the heart-shaped cam groove; and wherein the stop member is selectively removable to permit momentary operation of the pushbutton switch mechanism; and

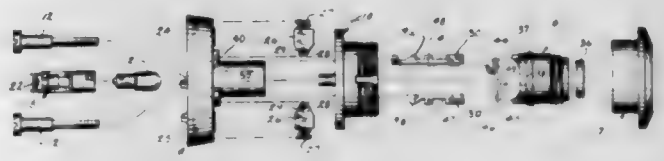
a helical compression spring surrounding the slider and extending between the shoulder on the slider and the first end of the housing to provide a longitudinal slider bias force tending to bias the slider outward, the helical compression spring having a first end which surrounds at least a portion of the upper and lower tongues and which abuts the upper end of the pivot leg to apply a generally longitudinal stop member bias force tending to bias the lower end of the detent leg of the stop member into engagement with the heart-shaped cam groove.

4,404,445

PUSHBUTTON SWITCH OPERATOR ASSEMBLY

Michael S. Baran, St. Francis; Arthur J. Felber, Muskego, and Gary C. Fillus, South Milwaukee, all of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Jul. 30, 1982, Ser. No. 403,595
Int. Cl.³ H01H *9/16, 13/62*
U.S. Cl. 200—314 **8 Claims**



1. A pushbutton switch operator assembly comprising:

a supporting, apertured base slidably receiving an axially movable switching member having a longitudinal cam profile, said cam profile defining first and second longitudinal operating switch positions;

spring-biased detent means engageable with said cam profile for alternatively maintaining said switching member in one of said first and second switch operating positions;

a manually operable actuator adapted for axial and rotatable movement relative to said base, and arranged to retain and rotatably receive said switch member;

cam means between said base and said actuator for providing axial movement to said actuator concurrently with manual rotation of the actuator;

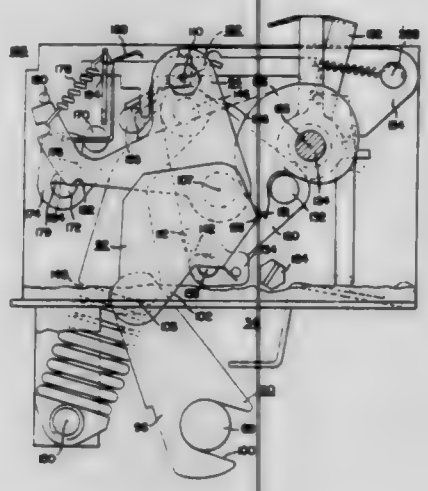
whereby said actuator may be manually moved axially in a direction away from said base either by rotative operation under the action of said cam means, or alternatively, by a manual pulling action on said actuator to thereby, in either case, cause said retained switch member to move longitudinally against the biasing action of said detent member.

4,404,446

STORED ENERGY CIRCUIT BREAKER WITH A CAM LATCH

Alfred E. Maier, and Louis N. Ricci, both of Chippewa, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 23, 1981, Ser. No. 324,298
Int. Cl.³ H01H *9/20*
U.S. Cl. 200—320 5 Claims



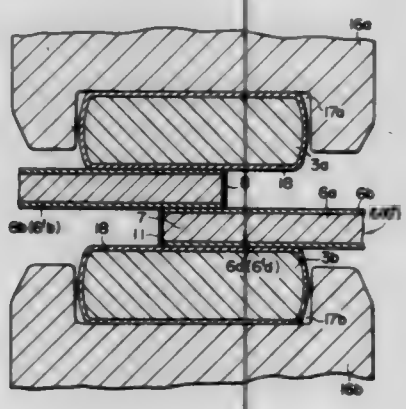
1. A circuit breaker comprising:
a stationary contact;
a movable contact operable between open and closed positions with respect to said stationary contact;
movement effecting means for effecting relative movement of said movable contact between said open and closed positions, said movement effecting means including a rotatable cam having a cam pin fixedly secured thereto and extending outwardly therefrom; and
releasable latch means for controlling closing operation of said movement effecting means, said latch means contacting said cam pin and preventing closing operation of said movement effecting means until said latch means are released;
said cam pin capable of contacting said latch means at a second location thereof to set said latch means in the latching position.

4,404,447

METHOD OF MANUFACTURING A WELDED CAN BODY

Yoichi Kitamura; Hisashi Hotta, both of Yokohama; Chikara Yurita, and Makoto Ito, both of Kawasaki, all of Japan, assignors to Toyo Seikan Kaisha, Limited, Tokyo, Japan

Filed Apr. 9, 1981, Ser. No. 252,330
Claims priority, application Japan, Apr. 22, 1980, 55-52370; Apr. 22, 1980, 55-52371
Int. Cl.³ B23K *11/32*
U.S. Cl. 219—64 10 Claims



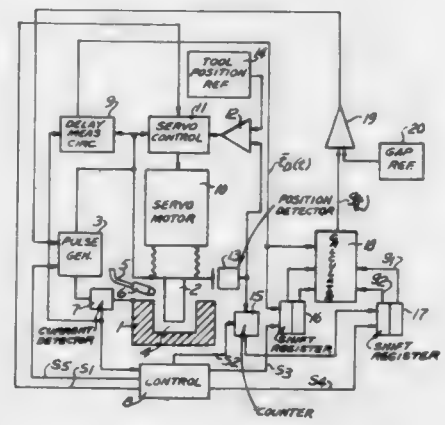
1. In a method of manufacturing a welded can body from a surface treated steel sheet selected from the group consisting of a tinplate with a tin-iron alloy plated steel sheet, said method including overlapping opposite marginal portions of a blank of said surface treated steel sheet to form a can body preform having an overlapping portion, said opposite marginal portions having cut edges, and disposing said overlapping portion between a pair of wire electrodes supported by a pair of supporting electrodes for electrical resistance seam welding, the improvement which comprises:
providing as said wire electrodes a pair of wire electrodes each having a flat surface facing said overlapping portion, and covered with metallic tin;
applying at least to the cut edges of said marginal portions of said blank a fluxing agent promoting wetting of steel with molten tin;
bringing said flat surfaces of said wire electrodes into contact with said overlapping portion; and
conducting said electrical resistance seam welding in a non-oxidizing atmosphere to form a welded portion, whereby tin transferred from the surfaces of said wire electrodes covers an extruded weld portion and a remaining cut edge surface portion of said welded portion.

4,404,448

PROCESS AND APPARATUS FOR GAP CONTROL OF AN EDM APPARATUS

M. Bernard Bommeli, Dully, Switzerland, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Jul. 20, 1981, Ser. No. 284,774
Claims priority, application Switzerland, Jul. 30, 1980, 5802/80
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 G 4 Claims



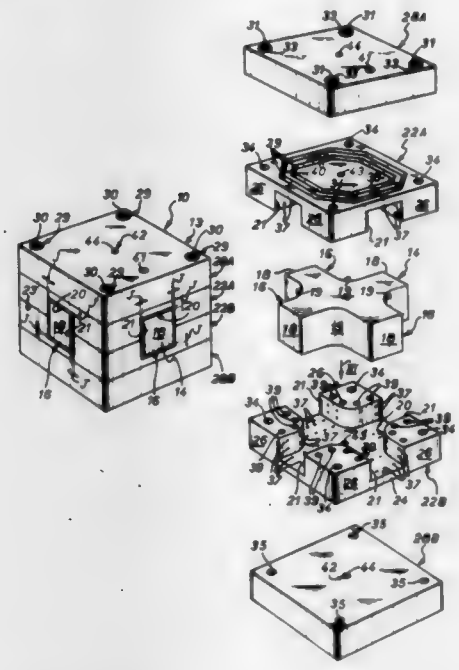
3. An apparatus for machining by electrical discharges an electrode workpiece by means of an electrode tool, wherein a machining fluid having electrically conductive particles in suspension therein is introduced in a machining gap between said electrodes and consecutive voltage pulses are applied across the electrodes for triggering said electrical discharges, said apparatus comprising a voltage pulse generator connected across the electrodes, a servo motor for displacing one electrode relative to the other in response to machining conditions, first means associated with said pulse generator for effecting at least two measurements of the average value of electrical discharge triggering delay while maintaining the concentration of particles in suspension in said machining fluid at a constant value, second means associated with said servo motor for effecting at least two measurements of the corresponding width of the gap between said electrodes, and means co-operating with said first and second means for calculating the instantaneous value of the average triggering delay according to a predetermined linear function between the inverse of the gap and the logarithm of the average triggering delay.

4,404,449

TRANSMISSION DEVICE AND MACHINE TOOL COMPRISING SAME

Jean-Francois Astier, Boisseuil-Feytiat, and Louis Bessaguet, Limoges, both of France, assignors to Legrand, Limoges, France

Filed Mar. 19, 1982, Ser. No. 350,238
Claims priority, application France, Feb. 23, 1981, 81 03511
Int. Cl.[3] B23P *1/08*; B06B *3/00*
U.S. Cl. 219—69 V 17 Claims



1. A transmission device designed to be placed between a first member, hereinafter referred to as the driving member, and a second member, hereinafter referred to as the driven member, said device comprising a hollow casing and a core member disposed in said casing and free to move therein in all directions, said core member having at least two arms with a non-aligned angular relationship to one another and extending to the outside of said casing and to each of which either said driving member or said driven member may be connected, said casing incorporating an internal housing with a configuration which is a homothetic replica of the configuration of said core member, with clearance between said core member and said housing in all directions, walls with at least part of each wall facing a respective one of said arms of said core member being formed with a recess or hole, and a network of internal conduits whereby each of said recesses or holes can communicate with a source of pressurized supporting fluid.

4,404,450

ROLL WELDING MACHINE AND METHOD OF RECONDITIONING CASTER ROLLS

John F. Weldon, 7473 Pebble Pointe, West Bloomfield, Mich. 48033

Filed Jan. 11, 1982, Ser. No. 338,391
Int. Cl.[3] B23K *9/04*
U.S. Cl. 219—76.12 23 Claims

1. A roll welding machine comprising a frame mountable upon a support surface;

a power driven head stock mounted on said frame;

a tail stock mounted on said frame for longitudinal adjustment relative to head stock, said headstock and tail stock defining a longitudinal axis and axially mounting an elongated steel caster roll having a crack therein;

an elongated gas manifold having a series of longitudinally spaced burner outlets, connected to a gas source under pressure spaced below said axis and underlying said roll for maintaining said roll at a predetermined temperature;

an upright support of inverted U-shape parallel to and laterally spaced from said axis, secured to said frame and including front and rear standards adjacent said heat stock and tail stock respectively;

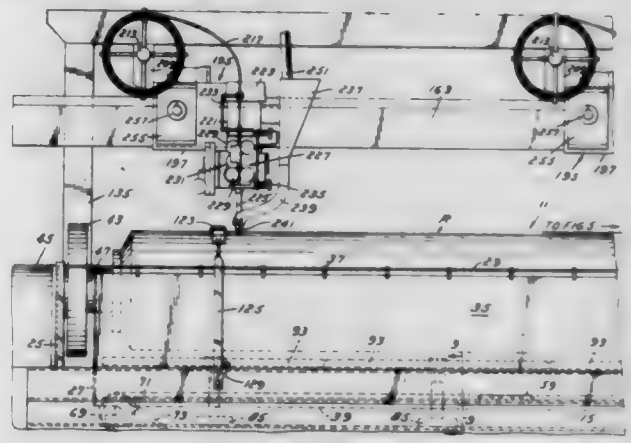
a pair of upright slide carriers slidably mounted upon said standards adapted for vertical adjustments thereon;

a cross support interconnecting said carriers;

a pair of spaced interconnected cross slide beams within said upright support extending at right angles to said axis and adjustably mounted upon said cross support for movements transversely of said axis;

a support beam spaced above and parallel to said axis and interconnecting the inner ends of said cross slide beams with its ends projection outwardly of said standards;

a travel carriage guidably and movably mounted upon said support beam along its length spaced above and parallel to said axis;



a welding head assembly mounted upon and depending from said travel carriage having a tubular electrode holder outletting adjacent said roll;

a welding wire drive feed head upon said welding head assembly for feeding welding wire through said electrode holder into registry with said roll;

and a coil of welding wire journalled upon said carrier adapted for continuously delivering welding wire to said drive feed head;

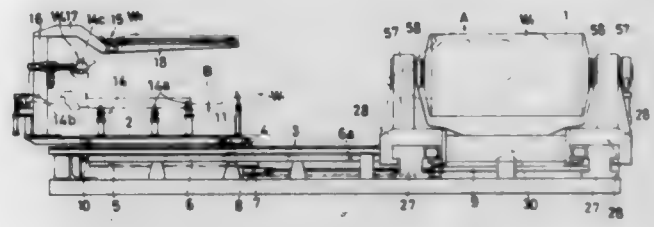
said welding head assembly being adjustable horizontally and vertically relative to said axis, and longitudinally movable reciprocally along the length of said roll, with intermittent rotation of said roll along said axis.

4,404,451

WELDING APPARATUS FOR MOTORCAR BODY

Ryo Niikawa, and Susumu Wakou, both of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1981, Ser. No. 268,572
Claims priority, application Japan, May 29, 1980, 55-70786; May 29, 1980, 55-70787; Jul. 4, 1980, 55-90572
Int. Cl.[3] B23K *37/04, 9/12*
U.S. Cl. 219—80 4 Claims



1. A welding apparatus for a motorcar body which includes a floor panel, a roof panel, and a pair of left and right-side panels, each having component parts, which comprises:

a setting station,

a combining station displaced from said setting station along a longitudinal axis;

a pair of welding jig means positioned on opposing sides of said combining station for moving said pair of side panels to said combining station and for holding said side panels

in a desired position at said combining station, said pair of welding jig means being moveable laterally of said axis; and

carrier means moveable along said axis from said setting station to said combining station for simultaneously moving both said roof panel and said floor panel from the setting station to the combining station and for positioning and holding both said roof panel and said floor panel in desired positions at said combining stations.

4,404,452

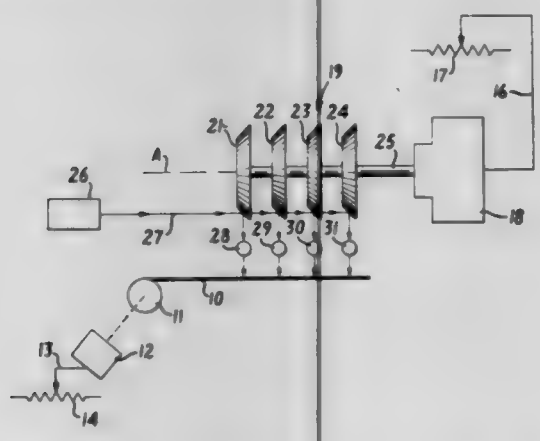
OPTICAL PERFORATING APPARATUS AND SYSTEM

Ernest Cashwell, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 46,808, Jun. 8, 1979, abandoned. This application May 6, 1982, Ser. No. 375,741

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LK **6 Claims**



1. Apparatus for perforating a web of sheet material comprising:

means for generating a beam of optical energy;

an assembly rotatable about a rotational axis parallel to the axis of said beam, said assembly including:

first and second light reflective means supported in immediate spaced succession along said rotational axis, said first light reflective means having first cupped light reflective elements arranged in a first locus about and at a non-orthogonal attitude to said rotational axis, said second light reflective means having second cupped light reflective elements arranged in a second locus about and at a non-orthogonal attitude to said rotational axis;

said first light reflective means further having first light transmissive portions each situated on said first locus between mutually disposed ones of said first light reflective elements and being disposed such that each of said first light transmissive portions is in registry with a corresponding one of the second cupped light reflective elements of said second light reflective means;

said rotational axis being spaced from said beam axis such that as the assembly rotates about said rotational axis the beam is successively alternately reflected by the first and second light reflective elements; and

means for transporting a web of sheet material in light receiving relation to said first and second reflective means and in parallel relation to said rotational axis.

4,404,453

LASER BONDING OF MICROELECTRONIC CIRCUITS

Alexander Gotman, Santa Monica, Calif., assignor to Asta, Ltd., Irvine, Calif.

Filed Sep. 10, 1981, Ser. No. 300,991

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LD **6 Claims**

1. The method of attaching a semiconductor chip to a substrate to form an electrical assembly, comprising the steps of:

(a) selecting a semiconductor chip having a plurality of metallic electrical connectors protruding therefrom;

(b) selecting a substrate having a substantially sheet-like configuration;

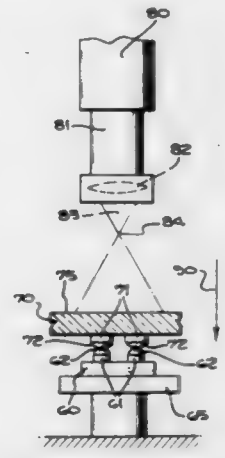
(c) selecting a plurality of conductive metallic members and securing them in such locations on one surface of the substrate as to receive respective connectors of the chip;

(d) then tinning both the connectors of the chip and the metallic members of the substrate;

(e) generating a laser beam having a wave length to which the substrate is substantially opaque;

(f) de-focusing the laser beam;

(g) then directing the de-focused laser beam upon the opposite surface of the substrate throughout an area which



encompasses all of the metallic members, so as to heat the substrate and thereby heat the metallic members;

(h) then, while continuing to direct the de-focused laser beam upon the substrate, moving the chip and the substrate together so as to bring each electrical connector of the chip into contact with the corresponding metallic member of the substrate;

(i) continuing to direct the beam upon the substrate until the tinned surface of each electrical connector becomes fused to the tinned surface of the associated metallic member; and

(j) then interrupting the laser beam and cooling both the chip and the substrate so that the fused contacts become permanently bonded together.

4,404,454

LIGHT ENERGY PERFORATION APPARATUS AND SYSTEM

George W. B. Taylor, Richmond, Va., and Richard B. Barber, Ann Arbor, Mich., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 944,081, Sep. 20, 1978, abandoned. This application Feb. 19, 1982, Ser. No. 350,275

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LK **9 Claims**

1. Apparatus for generation of pulsed light beams from a continuous light beam for perforating a moving web at certain predetermined spaced-apart locations, comprising:

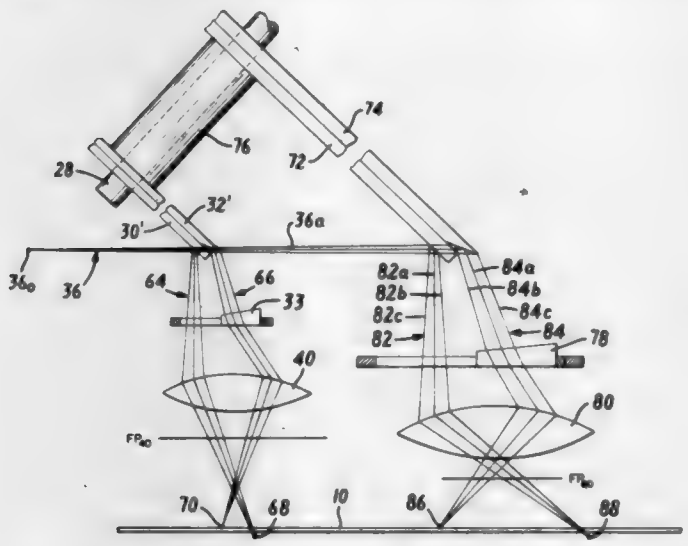
(a) first reflective means arranged to receive said continuous beam and supported for rotation about a preselected rotational axis, said first reflective means including a first disc

(1) having light reflective facets mutually spaced in a circular locus about the periphery of said disc to confront said continuous beam individually in the course of rotation of said first disc, each of said light reflective facets being disposed in a mutually identical first attitude with respect to said rotational axis, and

(2) having apertures between adjacent said light reflective facets to define light transmissive portions;

(b) second reflective means disposed mutually contiguously with said first reflective means, said second reflective

means including a second reflective disc having light reflective facets mutually spaced in a circular locus about the periphery of said second disc to confront said continuous beam individually in the course of rotation of said second disc, said light reflective facets of said second disc each being disposed in a mutually identical second attitude diverse from said first attitude with respect to said rotational axis, said second disc further having apertures between adjacent said light reflective facets to define light transmissive portions, said light reflective facets and said apertures of said second disc being in alignment respectively with said apertures and said light reflective facets of said first disc, whereby first and second pulsed light beams issue successively alternately from said first and second



discs, said diverse dispositions of said light reflective facets on said first and second discs cooperating to cause divergence of the paths of said first and said second pulsed beams;

(c) common focusing means for receiving said first and second pulsed light beams issuing from said first and second discs and focusing said pulsed beams at first and second predetermined spaced-apart locations on said moving web; and

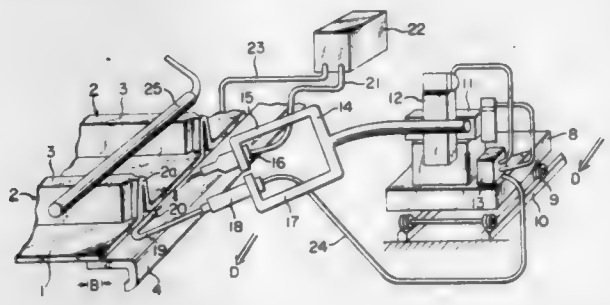
(d) light deviating means disposed between said second disc and said common focusing means for controlling the path of said second beam to said common focusing means, and thereby controlling the spacing of said second location relative to said first location on said moving web.

4,404,455

AUTOMATIC WELDING APPARATUS WITH WELD LINE DETECTING MEANS

Tohru Gotoh, Kasugai, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 15, 1981, Ser. No. 283,742
Int. Cl.³ B23K 9/12
U.S. Cl. 219—124.34 **4 Claims**



1. An automatic welding apparatus for welding two workpieces into overlapping relationship with the first workpiece having a substantially flat surface extending laterally away from the position of the overlapping a substantial distance relative to the size of the workpieces and the second workpiece lying on the first workpiece with the thickness thereof perpendicular to the flat surface of the first workpiece and having portions extending perpendicularly away from the flat surface of the first workpiece at intervals therealong and an edge lying along the flat surface of the first workpiece with the surface of the edge substantially perpendicular to the flat surface and having apertures in the edge at the portions extending perpendicularly away from the first workpiece, the apertures facing laterally of the edge along the flat surface of the first workpiece extending away from the position of the overlapping, said apparatus comprising:

a weld torch;

moving means on which said welding torch is mounted for moving said welding torch along a path parallel to the edge of the second workpiece and for moving the welding torch toward and away from the surface of the edge and toward and away from the flat surface;

a weld line detector means for engaging the flat surface of the first workpiece and the edge of the second workpiece and movable therealong for sensing a weld line along the position of overlapping and for producing an output representative of the position of the weld line, said detector means having probe consisting of a sensor extending toward the weld line and a straight portion integral with the end of said sensor and extending parallel with the weld line, said straight portion having a diameter substantially the same as the thickness of the second workpiece and being longer than the dimension of the apertures parallel to the weld line, the distance between the end of said straight portion and said welding torch being less than the distance between adjacent perpendicularly extending portions;

control means to which said weld line detector means is connected and in turn connected to said moving means for moving said moving means toward and away from the flat surface and the edge in response to said output for causing said welding torch to follow the weld line; and

a pressure means for exerting a pressure on the perpendicularly extending portions on the second workpiece, said pressure means comprising a flexible element deformable by a reactive force from the perpendicularly extending portions and positioned above the outer ends of the perpendicularly extending portions and directly engageable with the individual perpendicularly extending portions for exerting the reactive force individually thereon when the welding torch is along the weld line.

4,404,456

MICRO-ARC WELDING/BRAZING OF METAL TO METAL AND METAL TO CERAMIC JOINTS

Gordon L. Cann, P.O. Box 279, Laguna Beach, Calif. 92652

Filed Mar. 26, 1981, Ser. No. 247,770
Int. Cl.³ B23K 9/00
U.S. Cl. 219—137 PS **21 Claims**

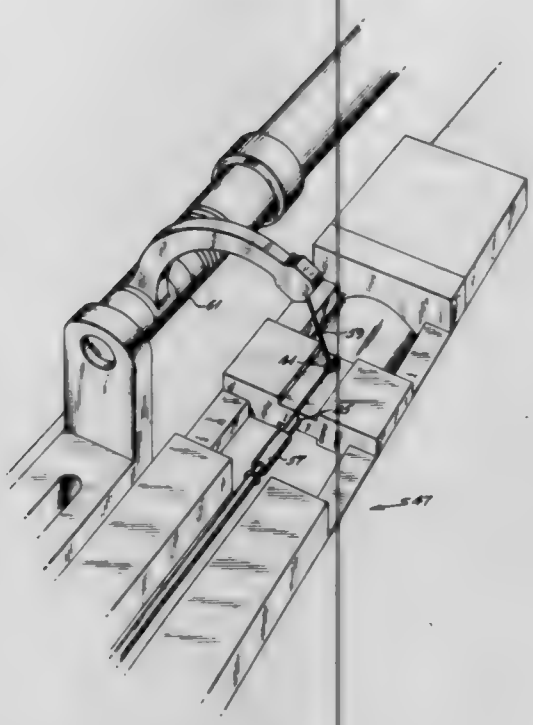
1. A method for welding a material at an anode juncture with an arc from a cathode so that at least some of the material is melted and flows together to form a unified weld, comprising the steps of

(a) determining an effective radius, the effective radius being a portion of the material which is to be heated to a desired temperature during the heating;

(b) determining the current level necessary to heat the material to the desired temperature over the effective radius at a desired gas pressure range, said current level being determined through calculation of the formula

$I =$

-continued



$$\left[\frac{A_R \epsilon a T_M^4 + A_c \phi M / L_{eff}}{\delta V_I + \chi_w}\right] \{(1 - \alpha)(1 - \tau a^4) + \alpha(1 - \tau a)\},$$

where

I=the current level

A_R=surface area of material that will be radiating power

ϵ=emissivity of material

α=the ratio of power conducted by the arc to total power losses at an attachment point of said anode juncture

T_M=melting point of the material

A_c=cross-sectional area through which heat is conducted away from the material

ϕ=heat flux potential for the material

M=Mass of material that must be raised to the desired temperature

L_{eff}=Effective conduction length-average length over which heat is conducted

$\tau a = Ta/T_M$ where Ta=ambient temperature in °K.

δ=parameter defining a proportion of electron energy discharged at the anode attachment point of said material

V_I=ionization potential of gas or vapor near said attachment point

X_w=work function of work material, that is, energy electrons absorb upon entering the material;

(c) said current level being maintained within the range of 10 milliamps to 10 amps;

(d) determining a pressure level within said gas pressure range necessary to maintain a stable arc at the determined current level and obtain the desired penetration of the weld through calculation of the formula

$$\text{atm} = \frac{p}{p_a} = \frac{kT_M}{P_a q_{ea}} \left[\frac{27}{4} \frac{I}{\epsilon_0 V_I^{3/2}} A_R \sqrt{\frac{m}{2|e|}}\right]^4,$$

where

atm=atmospheres of pressure

K=Boltzmann constant

P=pressure level

P_a=atmospheric pressure

q_{ea}=cross-section for atom electron collisions

ϵ_O=capacitivity of vacuum

m=mass of the electron

|e|=electron charge of the electron;

(e) determining a time for which the current must flow in order to heat the material at the effective radius to obtain the desired temperature;

(f) determining a cathode temperature necessary to maintain thermionic emission;

(g) determining a cross-sectional area of the cathode necessary to maintain the cathode temperature at said current value, said cross-sectional area corresponding to a cathode diameter greater than 0.0004 inches and less than 0.009 inches;

(h) positioning the material to be heated in a jig so that the portion of the material which is to be elevated to the desired temperature is in close proximity to a cathode of the determined cross-sectional area;

(i) establishing the determined pressure at the portion of the material which is to be elevated to the desired temperature;

(j) applying electrical potential across the cathode and the material to be heated to desired temperature so that the desired current flows through the cathode for a desired amount of time, the current flowing in an arc between the cathode and the material which is to be heated to the desired temperature; and

(k) maintaining the current flowing through the cathode in a stabilized condition.

4,404,457

WELDING CORE WIRE SUPPLY DEVICE

Masaharu Rokujio, Yamato; Takaaki Ogasawara, Kamakura, and Mitunori Usui, Fujisawa, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

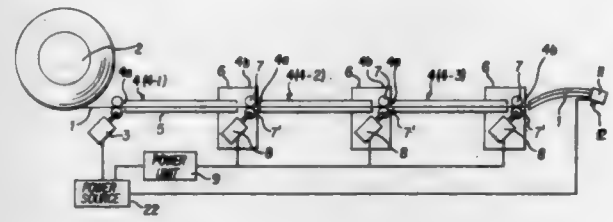
Continuation of Ser. No. 77,268, Sep. 20, 1979, abandoned. This application Apr. 27, 1982, Ser. No. 372,397

Claims priority, application Japan, Sep. 21, 1978, 53/130988

Int. Cl.³ B23K 9/12

U.S. Cl. 219—137.2

1 Claim



1. A welding core supply apparatus comprising:

a source of welding core wire;

means for consuming said welding core wires;

welding core wire conduit means extending between said source and said means for consuming and adapted to enclose said welding core wire, said conduit means comprising at least two conduit sections serially releasably connected together by releasable connecting means at the ends of each said section, each of said conduit sections containing at least one pair of positively driven rollers for advancing said welding core wire through said conduit means, wherein each of said conduit sections also houses a welding core wire guide tube section, a contol cable section, and a power cable section, each of said housed sections including releasable connecting means on both ends for connecting said housed sections to the housed sections of adjacent conduit sections, whereby a desired number of conduit sections may be connected together and the core wire is smoothly transported through said conduit sections by said rollers in each sections;

wherein each said conduit section includes a pull motor connected to said control cable section for rotating each of said pairs of rollers, each said pull motor including a constant motor torque control means;

a power on-off circuit and an inching circuit associated with said control cable and power cable sections for controlling said pull motors;

a pair of push rollers positioned between said source of

welding core wire and any of said conduit sections for introducing said welding core wire into said conduit means;

a push motor for rotating said push rollers; and

push motor control means actuated by said power on-off circuit and said inching circuit.

4,404,458

ATTACHMENT OF FORK FITTING TO FORK LEG

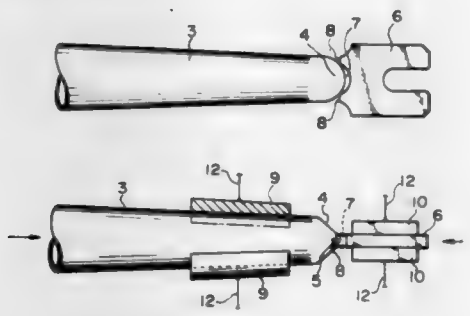
Yasuhiro Tange, Sakai, Japan, assignor to Tange Industries, Ltd., Osaka, Japan

Filed Jul. 1, 1981, Ser. No. 279,261

Claims priority, application Japan, Jul. 7, 1980, 55-93683

Int. Cl.³ B23P *13/00*; B21J *5/08*

U.S. Cl. 219—150 R **4 Claims**



1. A method for attaching a bicycle fork fitting to a fork leg comprising the steps of forming a steel pipe into a fork leg, closing the distal end of the pipe with a joint by shearing, providing a fork fitting with an indentation and a pair of projections on either side thereof at the distal end of said fitting, said indentation being the same shape as the closed distal end of said pipe but slightly smaller in its transverse dimension, butting said projections against said closed distal end of said pipe, applying two pairs of welding electrodes to said pipe and said fitting, passing electric currents by means of said electrodes through the closed portion of the fork leg and the projections of the fitting while bringing the same in contact with each other under pressure, and upsetting under greater pressure the thus integrated arrangement upon reaching a temperature suitable for welding, whereby the fitting is welded to the fork leg.

4,404,459

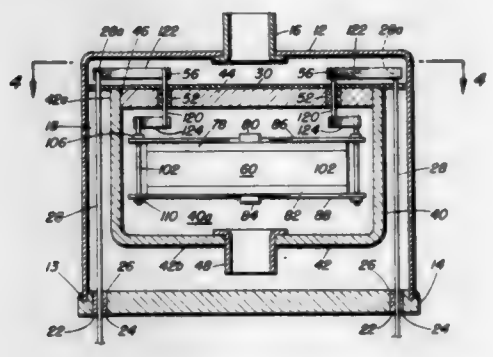
HOUSING AND MOUNTING ASSEMBLY PROVIDING A TEMPERATURE STABILIZED ENVIRONMENT FOR A MICROCIRCUIT

Donald L. Harton, Baltimore, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 19, 1981, Ser. No. 312,589

Int. Cl.³ H05B *1/00*

U.S. Cl. 219—209 **16 Claims**



1. A housing and mounting assembly providing a temperature stabilized environment for a microcircuit, comprising: a hermetically sealed outer enclosure having a plurality of electrical feedthroughs including a plurality of electrical leads, each said electrical lead extending from a first end exterior to said outer enclosure through a feedthrough and extending a substantial distance into the interior space of said outer enclosure to a second end;

an inner enclosure having a plurality of electrical feedthroughs including a plurality of electrical leads protruding therethrough to electrically communicate between the exterior and interior of said inner enclosure;

means electrically and structurally connecting said second ends respectively to the ends of said inner enclosure electrical leads exterior to said inner enclosure so that said inner enclosure is disposed within said outer enclosure substantially between said first and second ends;

mounting means supporting said microcircuit, said mounting means including a substrate, and means for sensing the temperature of said substrate, said mounting means being disposed inside said inner enclosure and supported by said inner enclosure electrical leads; and

means controlled by said temperature sensing means for heating the heat spreader means of said substrate.

4,404,460

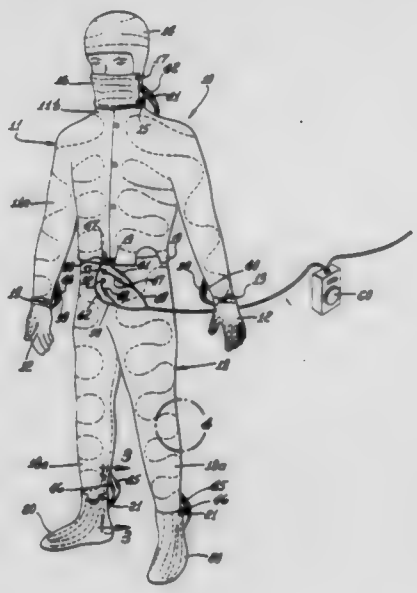
CONTROLLABLY HEATED CLOTHING

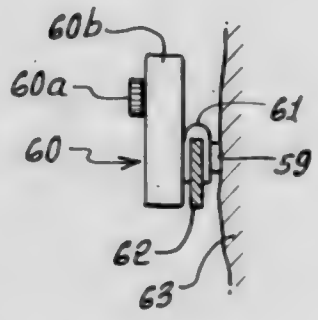
John F. Kerr, Reseda, Calif., assignor to Appleton Papers Inc., Appleton, Wis.

Filed Mar. 12, 1982, Ser. No. 357,404

Int. Cl.³ H05B *1/00*

U.S. Cl. 219—211 **11 Claims**





1. In heated clothing, the combination comprising

(a) multiple clothing sections adapted to cover different portions of the human body,

(b) electrical wires carried by said sections and including bus wires and heater wires, said bus and heater wires being electrically insulated, and

(c) means including a temperature control connected in series with said wires for controlling battery powered electrical current flow to said bus and heater wires, and including manually operable switch means connected in series with at least one of said heater wires for interrupting

current flow thereto without requiring disconnection of bus wires,

(d) there being a temperature sensor adapted to be carried by the wearer of the clothing to sense wearer's body heating of the clothing, said sensor connected in controlling relation with said temperature control to cause an increase in current flow to said wires in response to a predetermined lowering of sensed body generated heating of the clothing,

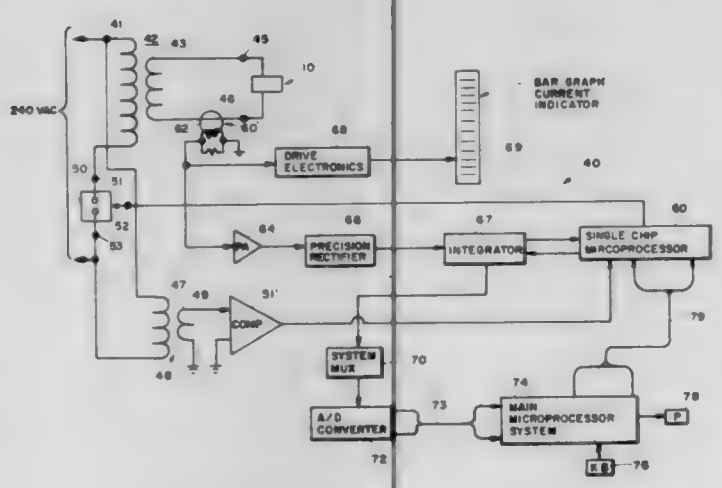
(e) and structure to contain said control and to attach the control to the wearer's clothing with the sensor carried by said structure to be exposed toward the wearer's body.

4,404,461

METHOD AND APPARATUS FOR CONTROLLING AN ANALYTICAL FURNACE

George J. Sitek, Stevensville, and Richard B. Haigh, Buchanen, both of Mich., assignors to Leco Corporation, St. Joseph, Mich.

Filed Sep. 24, 1980, Ser. No. 190,357
Int. Cl.[3] H05B *1/02*
U.S. Cl. 219—490 11 Claims



1. A control system for applying operating power to an analytical furnace for containing an analytical specimen for fusion in which the temperature of the furnace is increased in a predictable and selectable fashion for fusion of an analytical specimen such that specimen gases from different compounds are spatially released, said control system comprising:

power supply means for supplying periodically varying current;

controllable switch means coupled to said power supply means;

a furnace heating element coupled to said switch means;

storage circuit means for storing an array of predetermined memory bit patterns, each indicative of a cycle series pattern of the supply current, each comprising an array of binary bits including a predetermined number of bits corresponding to a cycle of supply current; and

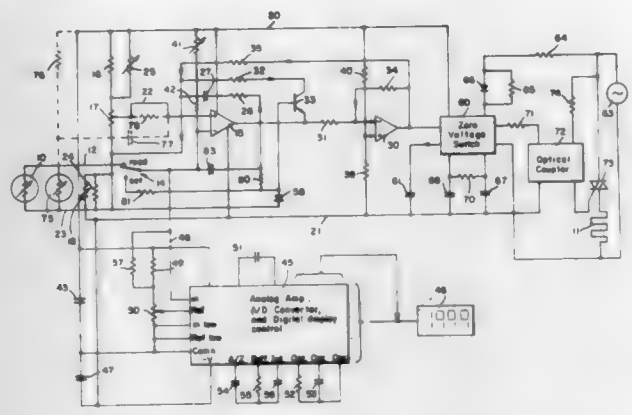
control circuit means coupled with said storage circuit means for selectively actuating said switch means according to a predetermined sequence of said memory bit patterns, each successive memory bit pattern being indicative of at least as many cycles per series pattern as the preceding memory pattern, said control means including a microprocessor for providing control signals for application to said switch means according to said predetermined sequence of said memory bit patterns whereby operating current which increases in cycles per unit time in a predetermined manner is applied to said heating element to supply increasing power to said heating element such that the temperature of said furnace is increased in a controlled fashion for fusion of an analytical specimen such that specimen gases from different compounds are spatially released.

4,404,462

UNIVERSAL TEMPERATURE CONTROL CIRCUITS

Wayne A. Murray, Sanger, Calif., assignor to Edsyn, Inc., Van Nuys, Calif.

Filed Mar. 30, 1981, Ser. No. 248,187
Int. Cl.[3] H05B *1/02*
U.S. Cl. 219—497 11 Claims



1. An electronic circuit for generating a digital output signal in response to the measured temperature of an object comprising:

(a) a temperature sensor for sensing the temperature of the object and generating a voltage signal representative of the temperature and varying non-linearly with temperature;

(b) an analog amplifier having a gain which varies with an applied reference voltage and having a reference and an input terminal;

(c) means for applying said voltage signal directly on said input terminal of said analog amplifier;

(d) a first operational amplifier acting as a comparator and having a positive and a negative input terminal;

(e) a sound operational amplifier having a positive and a negative input signal;

(f) a first negative feedback including a first resistor connected between the output and negative input of said second operational amplifier;

(g) a second, third, and fourth positive feedback for said first operational amplifier including a second resistor connected to the output of said second operational amplifier, a third feedback for said first operational amplifier including a third resistor and capacitor in series connected to the output of said first operational amplifier, a transitor having its emitter and collector connected between the output of said first operational amplifier in series with a fourth resistor, the free ends of said second, third, and fourth feedbacks being connected to a common summing point coupled in turn to the positive input terminal of said first operational amplifier, the base of said transistor being coupled to the output of said first operational amplifier and to said sensor;

(h) a first voltage divider network coupled to the positive input of said first operational amplifier, and said common summing point being connected to said first voltage divider network, whereby the voltage applied to the positive input of said first operational amplifier varies with the voltage signal;

(i) means for impressing said voltage signal directly on the negative input terminal of said first operational amplifier and on the base of said transistor;

(j) means for applying an adjustable reference voltage on said input terminal of said analog amplifier and including feedback means between said reference and input terminals of said analog amplifier to generate a substantially linear analog signal impressed on said analog amplifier; and

(k) an analog-to-digital converter coupled to said analog amplifier to generate a digital output signal suitable for a digital temperature display.

4,404,463

ELECTRICAL HEATING DEVICE

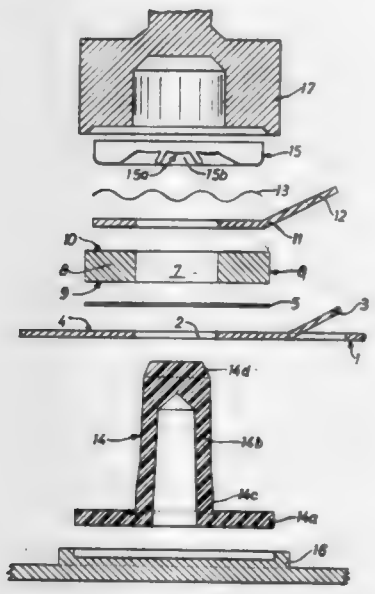
Bernd Eder, Wuppertal, and Eckehard Wosthoff, Wermelskirchen, both of Fed. Rep. of Germany, assignors to Kabelwerke Reinshagen GmbH, Wuppertal, Fed. Rep. of Germany

Filed Dec. 17, 1981, Ser. No. 331,730

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3048452

Int. Cl.³ H05B *3/08*

U.S. Cl. 219—541 3 Claims



1. For use in heating a plate, an electrical heating device including a resistor, the improvement comprising:

a plate to be heated having an opening therein,

said resistor being an electrically resistive body having first and second flat faces on opposite sides, said body defining an opening extending from one face to the other,

the first face of said resistive body being disposed in face-to-face relation with said plate to be heated with the opening in the body aligned with the opening in the plate,

said plate constituting a first electrical terminal on the resistive body,

a second electrical terminal being disposed in engagement with the second face of the resistive body and having an opening therein,

and fastening means including,

a pin of electrically non-conductive material having a head and a shank, said shank extending through the openings in the plate to be heated, the resistive body and the second terminal,

and a press-on nut being disposed over the end of said shank urging the plate to be heated, the second terminal and the resistive body against one another.

4,404,464

METHOD AND APPARATUS FOR ELECTRICALLY CONNECTING A REMOVABLE ARTICLE, IN PARTICULAR A PORTABLE ELECTRONIC CARD

Roland C. D. Moreno, 30-32, Bvd de Strasbourg, Paris, France (75010)

PCT No. PCT/FR79/00005, § 371 Date Sep. 24, 1978, § 102(e) Date Sep. 17, 1979, PCT Pub. No. WO79/00543, PCT Pub. Date Aug. 9, 1979

PCT Filed Jan. 23, 1979, Ser. No. 169,114

Claims priority, application France, Jan. 24, 1978, 7801876

Int. Cl.³ G06K *7/01*

U.S. Cl. 235—438 21 Claims

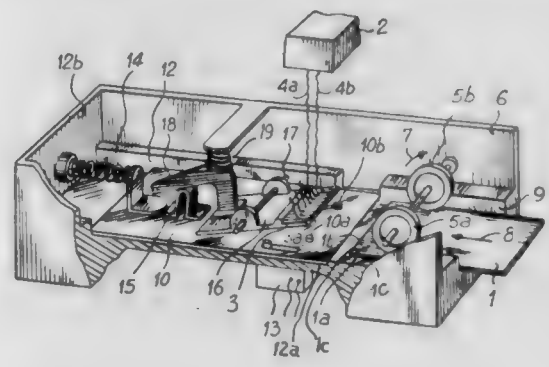
1. Method for electrically connecting a removable article having at least one electric circuit thereon, with an electric device, which cooperates with said removable article, said removable article having electrically conductive terminals and said electric device having conductor elements, both said electrically conductive terminals and said conductor elements having corresponding contact surfaces, the method comprising the steps of:

(a) bringing, respectively, said corresponding contact surfaces of said electrically conductive terminals into contacting relationship with said corresponding contact surfaces of said conductor elements;

(b) testing said corresponding contact surfaces for the existence of correct alignment and electrical contact between said corresponding contact surfaces; and

(c) displacing said corresponding contact surfaces relatively, in a direction tangential to said corresponding contact surfaces if said testing determines non-alignment and non-existence of correct electrical contact, and stopping the relative displacement of corresponding contact surfaces when said testing determines said alignment and existence of correct electrical contact.

10. Apparatus for electrically interconnecting an electric device with a removable article having at least one electric



circuit, said removable article having corresponding contact surfaces and said electric device having coresponding contact surfaces, contact between said corresponding contact surfaces serving to electrically connect said electric device with said removable article, said apparatus comprising:

(a) means for accepting said removable article in a predetermined position wherein said corresponding contact surfaces of said removable article generally correspond to said corresponding contact surfaces of said electric device;

(b) means for bringing said corresponding contact surfaces of said electric device into contacting relationship with said corresponding contact surfaces of said removable article;

(c) means for testing said corresponding contact surfaces for alignment and the existence of correct electrical contact between said corresponding contact surfaces; and

(d) means for displacing said corresponding contact surfaces relatively.

4,404,465

ARRAY POSITIONING SYSTEM

Arthur Miller, Princeton Junction, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 113,506, Jan. 21, 1980, Pat. No. 4,314,546. This application Aug. 11, 1981, Ser. No. 292,016

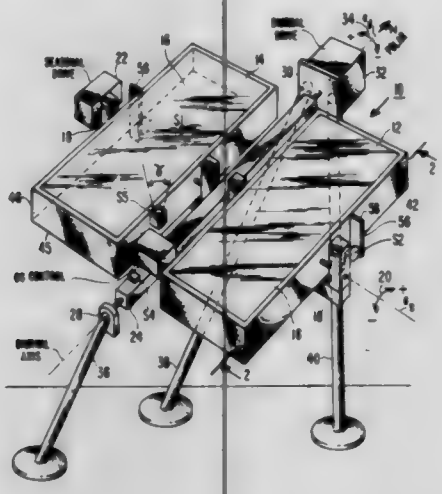
Int. Cl.³ G01J *1/20*

U.S. Cl. 250—203 R 2 Claims

1. In a solar tracking system including solar sensor means and control means arranged to track the sun in a diurnal cycle, said sensor means including spaced photovoltaic generator means and light diffusing means over said generator means wherein the improvement therewith comprises:

vane means adjacent each said generator means oriented and dimensioned to reduce the sensitivity of said generator means to the shadowing effect of partial obscuration of said light diffusing means by foreign matter, said diffusing

means including a hemispherical light integrating means having a given diameter, said vane means extending in



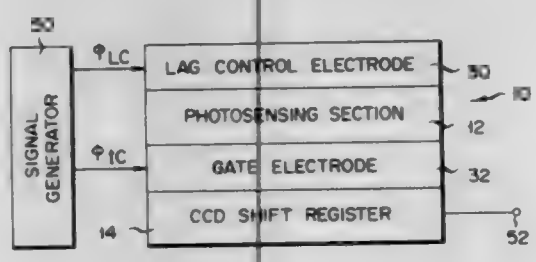
front of the hemisphere toward the sun a distance of about 2.5 times said diameter.

4,404,466

SOLID STATE IMAGE SENSOR WITH LAG CONTROL ELECTRODE

Nozomu Harada, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 7, 1981, Ser. No. 251,935
Claims priority, application Japan, Apr. 17, 1980, 55-49552
Int. Cl.[3] H01J *40/14*
U.S. Cl. 250—211 J 11 Claims



1. A solid state image sensor which comprises:

photosensing means for generating a signal charge in an amount corresponding to the intensity of a received picture light;

signal generating means for generating at least one electrical signal having a prescribed voltage waveform;

storage means connected to said signal-generating means for trapping a prescribed amount of the signal charge generated by said photosensing means in response to the electricl signal for a predetermined period of time; and

gate means for reading out the signal charge generated by at least said photosensing means;

wherein said photosensing means is mounted on one surface of a semiconductor substrate having one conductive type, and comprises a semiconductor layer having a conductivity type opposite to that of said semiconductor substrate; and said storage means comprises an electrode which is partly overlaid on said semiconductor layer and also connected to said signal-generating means;

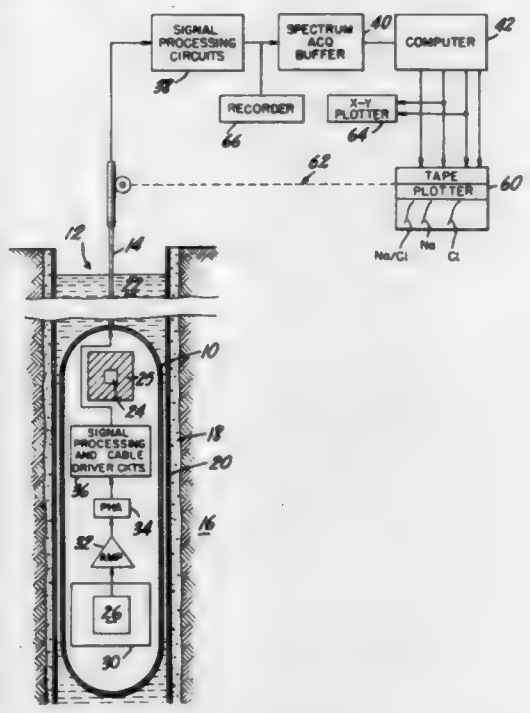
wherein said signal-generating means is formed of a signal generator for producing first and second control signals having a prescribed waveform; said storage means traps the signal charge in response to the first control signal; and said gate means allows for the readout of a signal charge generated by said photosensing means and a signal charge trapped by said storage means in response to the second control signal.

4,404,467

SALINITY AND LITHOLOGY DETERMINATION FROM THE SODIUM AND CHLORINE ACTIVATION LINES

Jeffrey S. Schweitzer, Ridgefield, Conn., and Ralph M. Taphorn, Boulder, Colo., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,454
Int. Cl.[3] G01V *5/10*
U.S. Cl. 250—270 12 Claims



1. A method for investigating the lithology and salinity of an earth formation traversed by a well bore, comprising the steps of:

(a) irradiating an earth formation with neutrons to produce therein the neutron activation reactions $^{23}Na(N,\gamma)^{24}Na$ and $^{37}Cl(n,\gamma)^{38}Cl$;

(b) selectively measuring, from among the total gamma ray activity resulting from said irradiation, the level of gamma ray activity resulting from the decay of ^{24}Na using a high resolution gamma ray detector;

(c) selectively measuring, from among the total gamma ray activity resulting from said irradiation, the level of gamma ray activity resulting from the decay of ^{38}Cl using a high resolution gamma ray detector; and

(d) combining said ^{24}Na gamma ray measurement and said ^{38}Cl gamma ray measurement to provide an indication of at least one of the lithology and salinity of the earth formation.

2. The method of claim 1 wherein the combining step comprises forming a ratio function of the ^{24}Na gamma ray measurement and the ^{38}Cl gamma ray measurement.

4,404,468

PYRODETECTOR

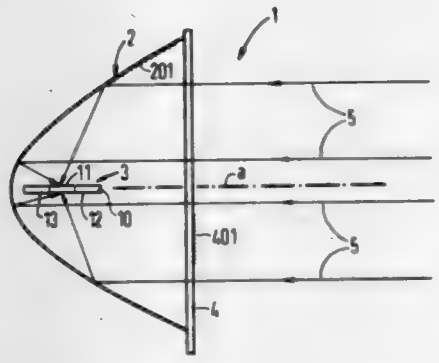
Peter Kleinschmidt, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 168,336, Jul. 14, 1980, abandoned. This application Jul. 27, 1981, Ser. No. 287,140
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1979, 2930632; Jul. 25, 1980, 3028252
Int. Cl.[3] G01J *1/00*
U.S. Cl. 250—342 25 Claims

1. A pyrodetector with a sharply limited directional range of detection sensitivity for the detection of a body entering into said directional range from a distance greater than the maximum sensing distance from the detector, said body having a temperature which deviates from that of its environment, comprising: a concave mirror means for focusing thermal radiation emanating from the body; a pyroelectric first sensor

element positioned at the focus of the predetermined directional range of the mirror means and formed as a flat body comprising an electrically non-conductive material with permanent orientation polarization and which is provided with a pair of electrodes; cover means transmissive to the incident thermal radiation from the body and ambient thermal radiation and being positioned for protecting the first sensor element against damage and air drafts; at least one further sensor element comprised of the same material as the first sensor element and having substantially a same thickness so as to provide substantially identical heating time constants for the first and further elements; the further sensor element having a pair of electrodes and being located outside a focal plane of the minor means containing the focus and perpendicular to a focus axis but adjacent the first sensor element at a locus such that both the further sensor element and the first sensor element are subjected to an equal extent to the ambient thermal radiation emanating from said cover means;

the first and further sensor elements comprising central portions of a single flat body having opposite major surfaces, and a mounting means holding the single body at edges thereof;



the single flat body being aligned such that its major surfaces are parallel to and the body lies on the focus axis passing through the focus and extending in the direction of the detection range so that the first sensor and further sensor lie adjacent one another along said focus axis;

the concave mirror means having a parabolic shape and the focus lying within an inner half of the mirror;

the first and further sensor elements formed by the body absorbing only radiation reflected by the concave mirror means at the opposite major surfaces;

the electrode pairs of all sensor elements being connected to an electrical evaluation means; the pairs of electrodes each being terminated with an impedance such that a time constant K of a decay time of the sensor element

$$R_X \cdot C_X = K$$

is valid for all pairs of electrodes, wherein C_X is a capacitance of a capacitor formed from the respective pair of electrodes, R_X is a respective terminating impedance, and $K < 10$ seconds; and an electronic evaluation means for forming a difference between an output signal of the first and of the further sensor elements.

4,404,469

REAL-TIME 3-D X-RAY AND GAMMA-RAY VIEWER

Lo I. Yin, Silver Spring, Md., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

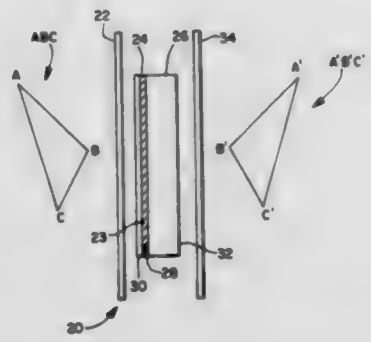
Filed May 22, 1981, Ser. No. 267,178
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—363 R **19 Claims**

1. An instrument for viewing x-ray and gamma-ray emitting objects, comprising:

means (22) for forming incident x-rays and gamma-rays emitted by an object into an array of mini-images of said object;

means (24) spatially displaced from said forming means (22) for converting said x-ray and gamma-ray mini-images into visible-light mini-images;

first means (26) coupled to said converting means (24) for intensifying said visible-light mini-images; and



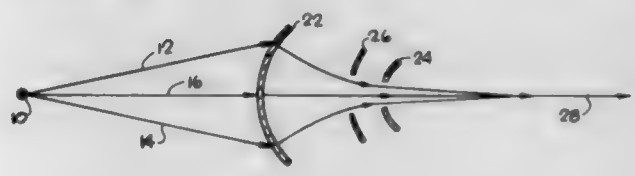
screening means (34/48) having a plurality of apertures, spatially displaced from said first intensifier means (26), for providing a reconstructed autostereoscopic visible-light image of said object having a continuum of perspective views.

4,404,470

NEUTRON STREAK CAMERA

Ching L. Wang, Livermore, Calif., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed May 14, 1981, Ser. No. 263,649
Int. Cl.³ G01T *3/00*
U.S. Cl. 250—390 **7 Claims**



1. A neutron streak camera electrode assembly for receiving neutrons from a point source of neutrons and providing secondary electrons indicative of said neutrons, comprising:

a cathode of neutron-sensitive material which emits slower secondary electrons when struck by neutrons from the point source, said cathode having a curved configuration and positioned along an axis with respect to said point source, the cathode being curved so that differences between the arrival times of neutrons, simultaneously emanating from the point source of neutrons but arriving at different times at the cathode, are compensated for by the transit times of the secondary electrons which are emitted from said curved cathode for each neutron striking the cathode;

an anode having a voltage impressed thereupon for accelerating the secondary electrons emitted by the cathode.

4,404,471

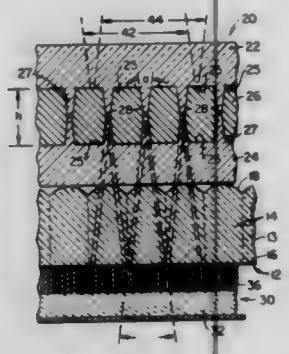
LENTICULAR X-RAY FILM WITH IMPROVED GRATING MASK AND INTENSIFYING SCREEN

Douglas F. Winnek, 10450 W. Loyola Dr., Los Altos Hills, Calif. 94022, and William J. McKee, P.O. Box 21247, San Jose, Calif. 95151

Filed Jan. 11, 1980, Ser. No. 111,152
Int. Cl.³ G03B *11/00, 35/00;* G21K *1/02*
U.S. Cl. 250—482.1 **4 Claims**

1. In combination, a lenticular film having a pair of opposed faces, a photographic emulsion on one face thereof, and a number of lenticulations on the opposite face thereof; an intensifying screen having a substrate provided with a pair of opposed, flat faces, one face of the substrate having a plurality of spaced phosphor segments extending thereinto, the substrate being transparent to x-rays and opaque to visible light, the

phosphor segments having end faces adjacent to the emulsion on the film and a grating mask for limiting the passage of x-ray beams directed toward the film, the mask being adjacent to the lenticulations of the film and having a body provided with a plurality of elongated, generally parallel grooves therewithin, each groove being filled with a material opaque to x-rays, the



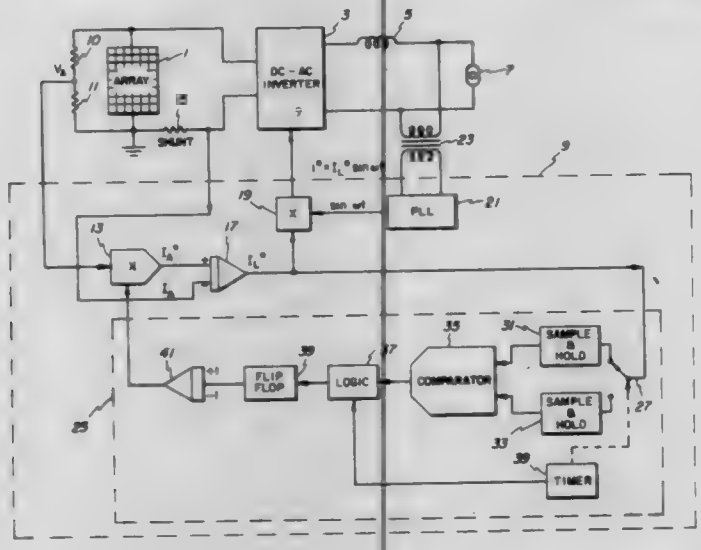
longitudinal axes of the grooves being generally parallel with each other, each pair of adjacent grooves having a gap therebetween to permit passage of x-ray beams through the mask, the width of each groove being greater at the center of the groove than at the ends thereof to permit the sides of each groove to converge toward each other as the ends are approached.

4,404,472

MAXIMUM POWER CONTROL FOR A SOLAR ARRAY CONNECTED TO A LOAD

Robert L. Steigerwald, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 28, 1981, Ser. No. 334,845
Int. Cl.³ H02J *3/38*
U.S. Cl. 307—46 **6 Claims**



1. A control for providing maximum power from a solar array for varying levels of insolation and temperature, said solar array interfaced to a load by a power converter, said control comprising:

means for providing a signal proportional to the array voltage;

means for providing a signal proportional to the array current;

variable gain means receiving said array voltage signal and providing a commanded array current proportional to the array voltage;

means for supplying a command to said power converter to draw commanded array current from said solar array;

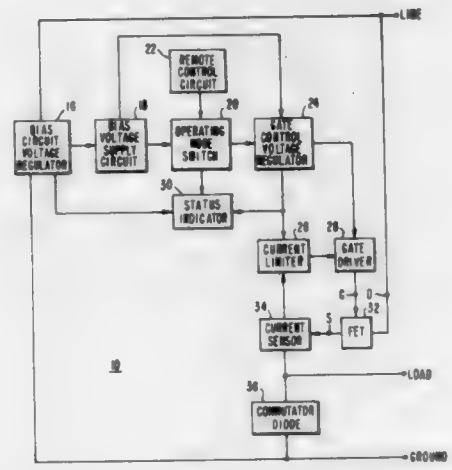
means for varying the gain of said variable gain means to draw maximum power from said array, said means including means for repeatedly sensing whether the power supplied by the power converter to the load is increasing or decreasing, and means for changing the gain of said variable gain means in one direction as long as the power to the load is sensed to be increasing and changing the gain of said variable gain means in an opposite direction whenever the power supplied to the load is sensed to be decreasing.

4,404,473

DIRECT CURRENT POWER CONTROLLER

David A. Fox, Shawnee Township, Allen County, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 17, 1981, Ser. No. 331,863
Int. Cl.³ H02H *9/02*
U.S. Cl. 307—125 **16 Claims**



9. A direct current control system comprising:

a direct current load;

a source of direct current;

a ground conductor connected to said load and said source of direct current;

a direct current power controller comprising a power field effect transistor (FET) with source, drain and gate terminals wherein said drain is connected to said source of direct current;

current sensing means connected between said FET source terminal and a load terminal which is connected to said direct current load;

a ground terminal connected to said ground conductor;

means for establishing a bias voltage which is greater than a line voltage supplied by said source of direct current to said FET drain terminal, where said line voltage and said bias voltage are both measured with reference to said ground terminal;

means for turning on said FET by applying a voltage to said gate terminal, wherein said means for turning on said FET is referenced to a common bus which is connected to said load terminal; and

current limiting means responsive to a voltage across said current sensing means for turning off said FET by removing voltage from said gate terminal, wherein said current limiting means is referenced to said common bus.

4,404,474

ACTIVE LOAD PULSE GENERATING CIRCUIT

Andrew G. F. Dingwall, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

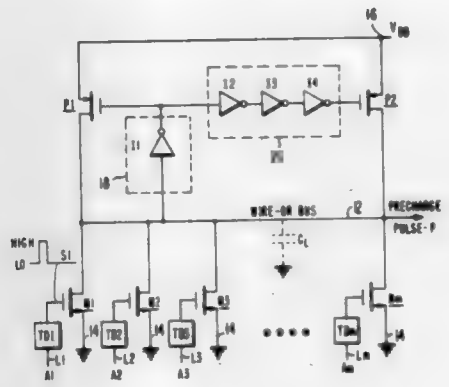
Filed Feb. 6, 1981, Ser. No. 232,359
Int. Cl.³ H03K *19/08, 19/34, 5/153*
U.S. Cl. 307—260 **19 Claims**

1. In combination with an input signal responsive transistor having its conduction path connected between an output line and a first point of operating potential, said signal responsive transistor, when turned-on, tending to clamp said output line to said first point of potential, means for generating a well defined pulse on said output line having relatively sharp leading and trailing edges in response to the turn-on of said signal responsive transistor, comprising:

a controllable impedance load means connected between said output line and a second point of operating potential; and

means responsive to the voltage on said output line coupled to said load means for:

(a) maintaining the impedance of said load means relatively high when said signal responsive transistor is OFF:



(b) switching the impedance of said load means to a very high value and substantially interrupting conduction therethrough for a given predetermined period of time when said signal responsive transistor is turned-on; and

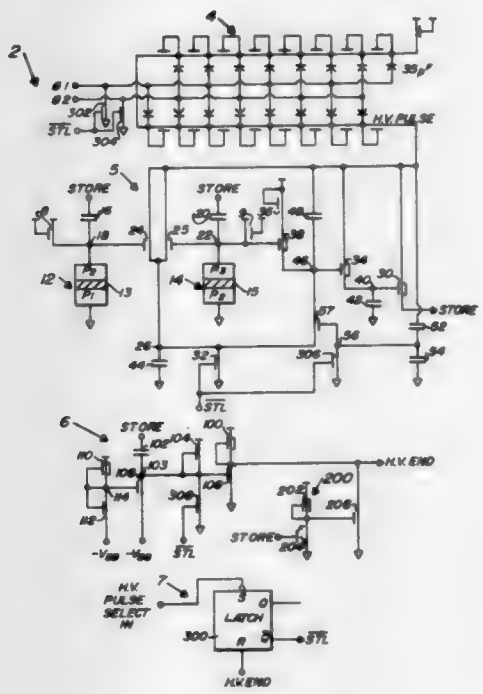
(c) switching the impedance of said load means to a very low value and enabling substantial conduction therethrough for a given time following said given predetermined period of time.

4,404,475

INTEGRATED CIRCUIT HIGH VOLTAGE PULSE GENERATOR SYSTEM

Joseph Drori, San Jose; William H. Owen, III, Mountain View, and Richard T. Simko, Los Altos, all of Calif., assignors to Xicor, Inc., Milpitas, Calif.

Filed Apr. 8, 1981, Ser. No. 252,231
Int. Cl.³ H03K *3/45, 3/01;* H03L *5/00*
U.S. Cl. 307—264 **16 Claims**



1. An integrated circuit device comprising:

means responsive to a first voltage pulse of increasing magnitude for generating a store signal of substantially equal amplitude;

means for capacitively coupling said store signal across a dielectric gap between a first region and a second region;

means for sensing when said store signal has reached a minimum voltage level so as to cause electron tunneling to begin across said dielectric gap from said first region to said second region;

means responsive to said sensing means for generating a reference voltage whose voltage amplitude reflects said minimum voltage level and;

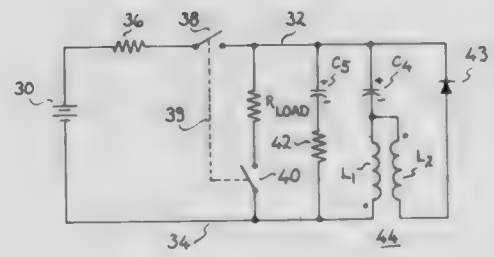
means responsive to the generation of said reference voltage for limiting said store signal to a predetermined voltage amplitude with respect to said reference voltage amplitude.

4,404,476

PULSE SHAPING AND AMPLIFYING CIRCUIT

Georges R. E. Lezan, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Sep. 24, 1981, Ser. No. 305,091
Int. Cl.³ H03K *5/01, 5/07, 5/12*
U.S. Cl. 307—268 **12 Claims**



1. A pulse shaping and amplifying circuit, adapted to be connected to a source of direct current power, for selectively supplying a pulse of electrical power to a load comprising:

(a) an oscillatory circuit including first inductive means and a charge storage means;

(b) first switch means operable to connect the source to said charge storage means to thereby develop an electrical charge on said charge storage means in a first direction;

(c) second switch means operable to connect said charge storage means in series circuit with the load whereby electrical power is delivered from said charge storage means to the load and said charge storage means is charged in a second direction; and,

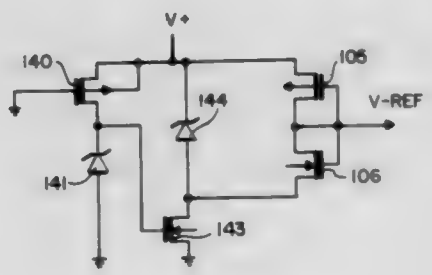
(d) a flyback path including a second inductive means closely magnetically coupled with said first inductive means, said flyback path connected in effective parallel with said charge storage means whereby electrical energy not dissipated in said load and said oscillatory circuit is utilized to charge said charge storage means in the first direction.

4,404,477

DETECTION CIRCUIT AND STRUCTURE THEREFOR

Robert L. Chao, Sunnyvale, Calif., assignor to Supertex, Inc., Sunnyvale, Calif.

Division of Ser. No. 880,035, Feb. 22, 1978, Pat. No. 4,215,281.
This application Nov. 13, 1979, Ser. No. 93,157
Int. Cl.³ H03K *3/01;* G05F *3/20*
U.S. Cl. 307—297 **3 Claims**



1. A reference voltage circuit, comprising, in combination; first and second voltage supply terminals;

a first zener diode and a first field effect transistor serially coupled, in the order recited, between said first and second voltage supply terminals;

a second field effect transistor and a second zener diode serially coupled, in the order recited, between said first and second voltage supply terminals, said second transistor being complementary to said first transistor and having a control electrode;

said control electrode being coupled to said first zener diode and said first transistor; and

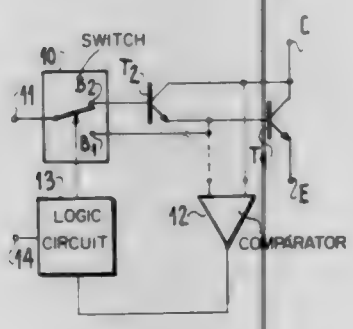
output means comprising third and fourth serially connected field effect transistors coupled to said second transistor and across said second zener diode for providing said reference voltage at a point between said third and fourth transistors.

4,404,478

PROCESS FOR CONTROLLING A DARLINGTON CIRCUIT AND A LOW-LOSS DARLINGTON CIRCUIT

Klaus Rischmüller, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 18, 1980, Ser. No. 208,062
Claims priority, application France, Nov. 23, 1979, 79 28979
Int. Cl.³ H03K *3/26, 17/60, 23/22*
U.S. Cl. 307—315 **4 Claims**



1. A process for controlling a Darlington circuit comprising a power transistor and a pilot transistor, comprising the following steps:

detecting the collector current in the power transistor,

comparing the detected value with a predetermined threshold value, and

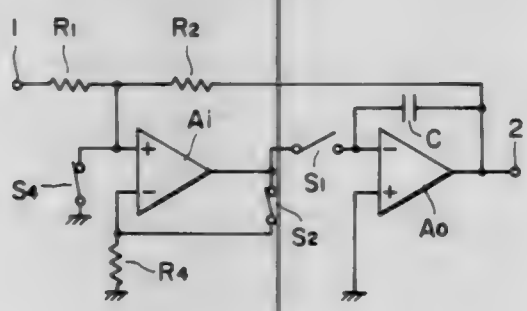
causing the power transistor to operate independently of the pilot transistor when the collector current is less than a predetermined threshold.

4,404,479

SAMPLE-AND-HOLD CIRCUIT

Kazuya Toyomaki, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Mar. 26, 1981, Ser. No. 247,973
Claims priority, application Japan, Mar. 27, 1980, 55-39215
Int. Cl.³ G11C *27/02*
U.S. Cl. 307—353 **6 Claims**



1. A sample-and-hold circuit comprising:

(a) a first voltage amplifier having a noninverting input terminal connected via a first resistor to an input terminal of said sample-and-hold circuit, an inverting input terminal connected via a second resistor to ground, and an output terminal;

(b) a second voltage amplifier having an inverting input terminal connected via a first switch to said output terminal of said first voltage amplifier, a noninverting input terminal connected to ground, and an output terminal connected to an output terminal of said sample-and-hold circuit;

(c) a hold capacitor interposed between said inverting input terminal and said output terminal of said second voltage amplifier;

(d) a third resistor interposed between said noninverting input terminal of said first voltage amplifier and said output terminal of said second voltage amplifier;

(e) a second switch interposed between said inverting input terminal and said output terminal of said first voltage amplifier, and arranged to perform on-off operations in opposite manner with respect to said first switch; and

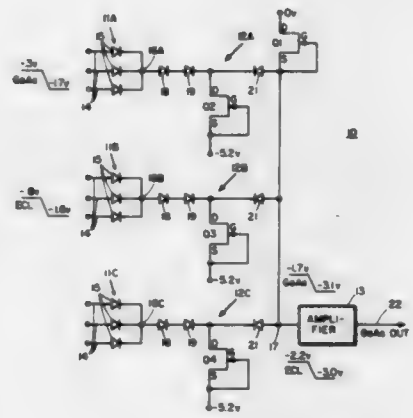
(f) a third switch interposed between said noninverting input terminal of said first voltage amplifier and ground, and arranged to perform on-off operations in opposite manner with respect to said first switch.

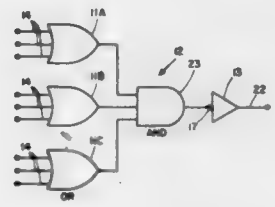
4,404,480

HIGH SPEED-LOW POWER GALLIUM ARSENIDE BASIC LOGIC CIRCUIT

Stephen A. Ransom, Huntingdon Valley, and Tedd K. Stickel, Chalfont, both of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Feb. 1, 1982, Ser. No. 344,585
Int. Cl.³ H03K *19/094, 19/017, 19/20*
U.S. Cl. 307—475 **10 Claims**





1. A high speed gallium arsenide basic logic circuit for processing either emitter coupled logic (ECL) or gallium arsenide (GaAs) signals comprising:

a plurality of OR gates each having a plurality of individual input lines with at least one forward biased diode connected in series with each input line,

each said OR gate having an output node connected to said input lines at the cathode side of said diodes,

said OR gates providing a voltage shift down across said diodes of said input lines,

a plurality of level shifting networks, each being connected in series with one of said OR gates,

each said level shifting network comprising at least three diodes of which at least two of said diodes are forward biased to provide a further voltage shift down,

said plurality of level shifting networks comprising a diode AND gate,

each said level shifting network having at least one diode which is connected in series to cause a level shift up,

each diode of said AND gate being forward biased by a pull-up transistor connected to the anode side and a pull-down transistor connected to the cathode side, and

an amplifier stage connected to the output of said level shifting network, whereby voltage signal levels applied to the input of said OR gates are processed through logic decisions while being shifted down and shifted up before being amplified, thus, providing enhanced speed power products in simplified GaAs logic circuitry.

4,404,481
CAPACITANCE TO VOLTAGE CONVERSION APPARATUS

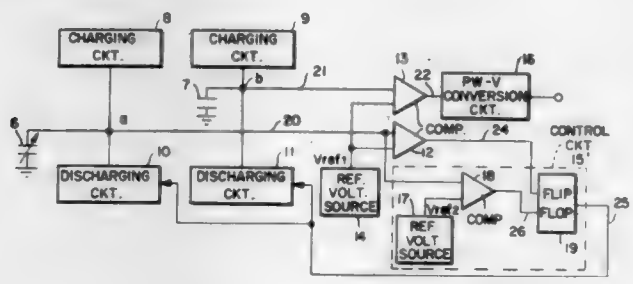
Toshimine Ide; Takeshi Shimamoto, both of Hirakata, and Yoshiaki Igarashi, Ikoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 19, 1981, Ser. No. 312,846

Claims priority, application Japan, Oct. 20, 1980, 55-147201; Nov. 21, 1980, 55-164980

Int. Cl.³ G06G *7/10*; H03K *3/017*

U.S. Cl. 307—491 **3 Claims**



1. A C-V conversion apparatus comprising:

a capacitive sensor whose capacitance is changed corresponding to a change of a physical parameter;

a reference capacitor;

a first charging circuit for charging said capacitive sensor;

a second charging circuit for charging said reference capacitor;

a first discharging circuit for discharging said capacitive sensor;

a second discharging circuit for discharging said reference capacitor;

a charging/discharging control means for controlling a charging and discharging cycle of said capacitive sensor and said reference capacitor;

a reference voltage source for generating a reference voltage;

a first comparator for comparing a voltage of said capacitive sensor with said reference voltage and for generating a control signal to control said charging/discharging control means;

a second comparator for comparing a voltage of said reference capacitor with said reference voltage and for generating a pulse signal whose mean value is proportional to a capacitance of said capacitive sensor; and

a pulse width-voltage conversion circuit for convertng said pulse signal to a d.c. voltage signal, said pulse width-voltage conversion circuit having a characteristic for compensating for a non-linear conversion characteristic of said capacitive sensor by selecting a charging time constant and a discharging time constant of said pulse width-voltage conversion circuit so that said d.c. voltage signal is proportional to said physical parameter.

4,404,482
ELECTRODES FOR MAGNETOHYDRODYNAMIC POWER GENERATION

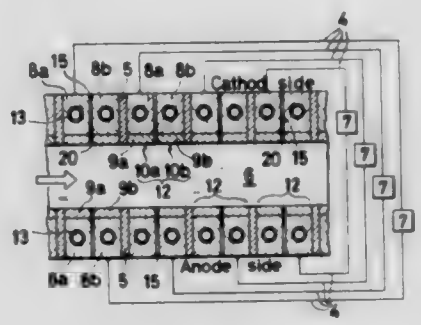
Takayasu Okuo, and Kiyonami Takano, both of Yatabemachi, Japan, assignors to Agency of Industrial Science and Technology and Ministry of International Trade and Industry, both of Tokyo, Japan

Filed Feb. 25, 1982, Ser. No. 352,464

Claims priority, application Japan, Mar. 2, 1981, 56-29700

Int. Cl.³ H02K *44/10*

U.S. Cl. 310—11 **3 Claims**



1. An electrode constituting a generating channel in the MHD generator and having an anode side and a cathode side, which comprises:

a plurality of unit electrodes arranged along the direction of the flow of a combustion gas plasma, each of said plurality of unit electrodes being divided into a plurality of electrode elements;

a plurality of resistors each said resistor for connecting the respective adjacent electrode elements of said plurality of electrode elements to one another;

leading-out means disposed on the electrode element on the anode side falling on the most downstream side of said plurality of electrode elements relative to the flow of plasma; and

leading-out means disposed on the electrode element on the cathode side falling on the most upstream side of said plurality of electrode elements.

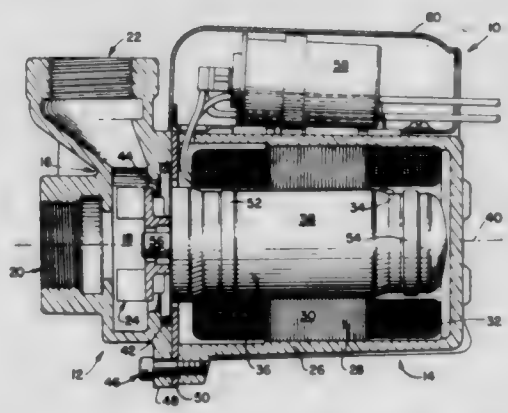
4,404,483
METHOD OF FABRICATING A WET-ROTOR CIRCULATOR AND CIRCULATOR PRODUCED THEREBY

Benno Lebkuchner, Warwick, R.I., assignor to Taco, Inc., Cranston, R.I.

Filed Feb. 26, 1981, Ser. No. 238,459

Int. Cl.³ H02K *15/00*

U.S. Cl. 310—42 **12 Claims**



1. A wet rotor assembly for a wet rotor pump, said assembly comprising:

a rotor having a core secured to a shaft for rotation therewith about an axis;

bearings journalled to said shaft to permit rotation of said rotor about said axis;

a fluid impermeable jacket with an open end and a closed

end fabricated from a material of low magnetic permeability, said rotor and bearings located within said jacket with said bearings supported against an inside diameter surface of said jacket;

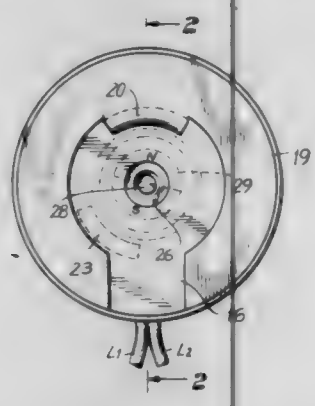
circumferential rings mounted about the outer diameter surface of said jacket in axial registration with said bearings within said jacket, said circumferential rings having been driven uniformly circumferentially inward by application of an applied magnetic field to circumferentially clamp said bearings in place in said jacket, said jacket having a surface structure at a location of said bearings which is structurally defined during the magnetic field application to said circumferential rings to secure the jacket to said bearings.

4,404,484

ELECTRIC ROTATING MACHINE

George L. Gillott, Prospect, Conn., assignor to Tri-tech, Inc., Waterbury, Conn.

Filed Mar. 6, 1981, Ser. No. 241,362
Int. Cl.[3] H02K *37/00*
U.S. Cl. 310—49 R 12 Claims



1. An electric rotating machine comprising a rotor assembly including a rotor shaft and a permanent magnet rotor magnetized to have at least one pair of magnetic poles of mutually opposite polarity arranged circumferentially about said shaft and being separated by an electrical angle of $n\pi$ where n is an odd integer; and a stator assembly generally surrounding said rotor and including a helical stator coil generally surrounding and coaxial with said rotor and through which electric current is to flow, a case surrounding said coil and having first and second ends corresponding to opposite ends of the shaft, first and second pole pieces of substantially the same size extending from respective ends of the case into the interior thereof between said coil and said rotor and disposed circumferentially at an electrical angle different from $n\pi$; and first and second biasing magnets arranged at the respective ends of said case so that the first and second pole pieces are given respective north and south quiescent polarizations.

4,404,485

DIRECT CURRENT MOTOR

Itsuki Ban, 829, Higashi-Oizumimach, Nerima-ku, Tokyo; Manabu Shiraki, 4451-171 Shimotsuruma, Yamato-shi, Kanagawa-ken, and Kazuhito Egami, 2-44-1 Chuo, Nakano-ku, Tokyo, all of Japan

Filed Jun. 15, 1981, Ser. No. 273,328
Int. Cl.[1] H02K *13/14*
U.S. Cl. 310—198 1 Claim

1. A direct current motor comprising:

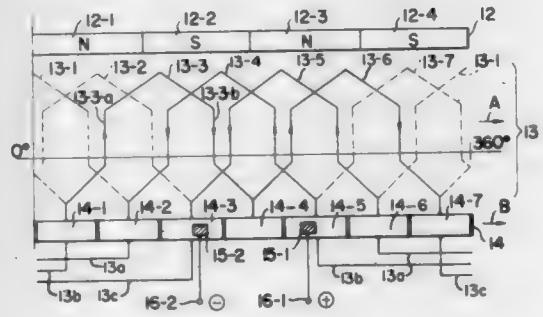
a field magnet provided with 2n magnetic poles which are magnetized with the same angular intervals as those of the magnetic poles N and S, where n is an integer of 1 or more;

a magnetic member for closing the magnetic circuit of said magnetic poles of said field magnet;

a plurality of armature coils disposed in such a manner that the angular intervals of the electrically conductive portions thereof, contributing to the generation of torque in said armature coils, are substantially equal to the magnetic pole width of said field magnet;

electric power supply control means to which the terminals of said armature coils are connected;

short-circuit means for short-circuiting the winding intiation terminals of predetermined armature coils directly to other of said terminals, in which at least one terminal is not shorted to any other, and the winding end terminals of other predetermined armature coils through said electric power supply control means;



an armature comprising armature coils in a first series and armature coils in a second series, through which said short-circuit means and said plurality of armature coils are connected in parallel to the positive pole and negative pole of a DC power source, said armature positioned so as to face said field magnet; and

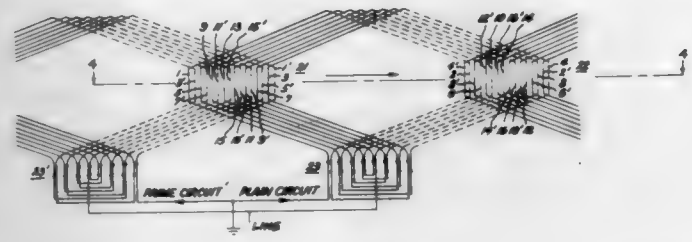
a rotating shaft for rotatably supporting said armature or said field magnet as a rotor, said rotating shaft rotatably supported by bearings disposed on an outer casing of said direct current motor.

4,404,486

STAR CONNECTED AIR GAP POLYPHASE ARMATURE HAVING LIMITED VOLTAGE GRADIENTS AT PHASE BOUNDARIES

Thomas A. Keim, Clifton Park, and Stephen H. Minnich, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 24, 1980, Ser. No. 220,203
Int. Cl.[3] H02K *19/00*
U.S. Cl. 310—198 20 Claims



1. A star-connected air gap polyphase armature winding for a dynamoelectric machine comprising:

a plurality of wound coils electrically interconnected into a plurality of different phase groups to form polyphase windings of an armature;

each of said plurality of coils being wound with the windings at each circumferentially-outer edge of the respective phase belt being at a low electrical potential relative to the windings at the circumferential center of the same phase belt;

one lead from each circuit of each phase at one circumferentially-outer edge of a respective phase belt being connected in common to form a neutral terminal; and

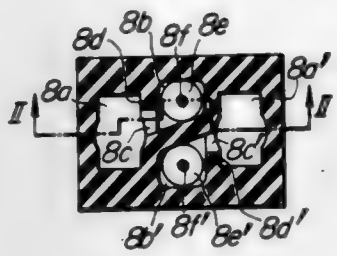
one lead from each circuit of each phase at approximately the circumferential center of a respective phase belt being connected in common to form a line terminal for that phase.

4,404,487

BRUSH HOLDING DEVICE FOR ALTERNATORS

Takayasu Nimura, Nagoya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 2, 1981, Ser. No. 326,655
Claims priority, application Japan, Dec. 26, 1980, 55-185262
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—239 9 Claims



1. A brush holding device for holding brushes in sliding contact with slip rings of an alternator, comprising:

a brush holder formed in one body from an electrically insulating material to include a pair of brush chambers open at one of their ends to face said slip rings;

a pair of brushes movably received in said brush chambers respectively;

coiled springs disposed in said chambers respectively for urging one end of said brushes into resilient sliding contact with said slip rings;

a pair of terminal plates fixed to said brush holder; and

pig tails electrically connecting said brushes and said terminal plates respectively,

said brush holder having a pair of pig tail chambers respectively adjacent said brush chambers and further having a pair of walls separating said pig tail chambers from said brush chambers respectively,

said terminal plates being in said pig tail chambers respectively,

there being a slit in each of said separating walls adjacent the other end of the respective brush,

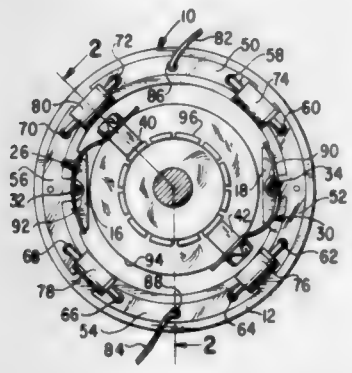
said pig tails being accomodated by said pig tail chambers and extending from said terminal plates through said slits respectively into adjacent brush chambers and being connected to respective sides of said brushes.

4,404,488

BRUSH BOARD ASSEMBLY FOR DYNAMOELECTRIC MACHINE

John A. Herr, Garwood, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jan. 12, 1982, Ser. No. 338,932
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—239 3 Claims



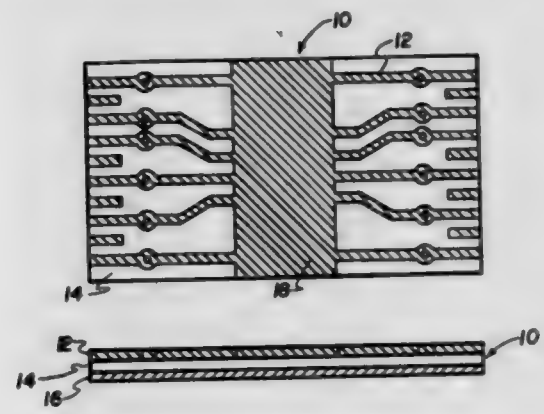
1. A brush board asssembly for a dynamoelectric machine comprising a non-conductive mounting board formed as a ring to extend around a commutator and including inwardly projecting portions, printed circuitry on the ring with portions extending onto the projecting portions of the ring where holes pass through the printed circuitry and ring, electrically conductive flat-type springs with slots through which said projecting portions of the ring and printed circuitry extend, electrically conductive pins in said holes and in tight engagement with the springs for securing the springs to the ring and electrically connecting said printed circuitry with the springs, and a commutator engageable brush affixed on each spring.

4,404,489

ACOUSTIC TRANSDUCER WITH FLEXIBLE CIRCUIT BOARD TERMINALS

John D. Larson, III, Palo Alto, Calif., and David G. Miller, Andover, Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 3, 1980, Ser. No. 203,409
Int. Cl.³ H01L *41/22*
U.S. Cl. 310—334 3 Claims



1. An apparatus for an acoustic transducer comprising:

a flexible circuit board having a first layer of a plurality of conductive traces and a second layer of insulation;

a piezoelectric block having a plurality of piezoelectric elements attached to a part of said circuit board first layer; and

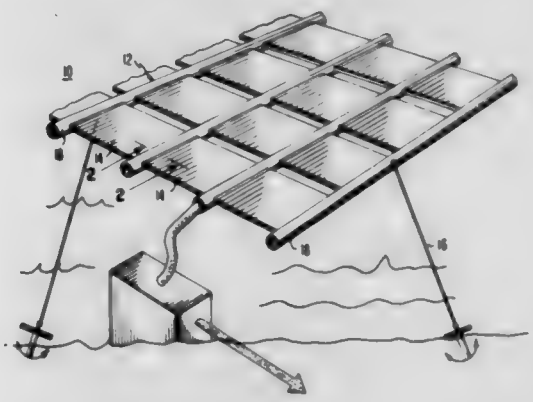
attachment means for directly attaching each of said plurality of piezoelectric elements to one of said plurality of conductive traces to form a plurality of individual transducer elements.

4,404,490

POWER GENERATION FROM WAVES NEAR THE SURFACE OF BODIES OF WATER

George W. Taylor, 305 Dodds La., Princeton, N.J. 08540, and Joseph R. Burns, 3 Queens La., Pennington, N.J. 08534

Filed Jul. 21, 1980, Ser. No. 170,858
Int. Cl.³ F03B *13/12*
U.S. Cl. 310—339 23 Claims



1. The use of a piezoelectric material member for converting the mechanical energy of the surface waves of a body of water to electrical energy, said use comprising disposing said member beneath the surface of the body of water for directly absorbing pressure variations caused by the surface waves, said

member including electrodes thereon between which an alternating voltage is generated in response to said pressure variations, the area of each of said electrodes being in excess of one square meter, means for preventing shorting of the electrodes by the surrounding water, and collecting, by means responsive to the alternating voltage at a frequency of said waves, the power generated by said member.

4,404,491

ELECTRIC INCANDESCENT LAMP

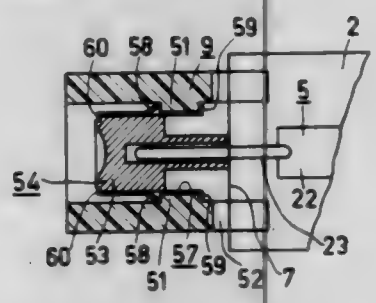
Gustaaf F. R. Sluens, and Johannes M. A. Van der Heijden, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 27, 1980, Ser. No. 200,713

Claims priority, application Netherlands, Nov. 9, 1979, 7908214

Int. Cl.³ H01J *5/50*

U.S. Cl. 313—318 **3 Claims**



1. An electric incandescent lamp having a tubular glass lamp envelope which is sealed in a vacuum-tight manner at each end by means of a pinch and in which an incandescent filament is accommodated between current supply conductors each of which extends through a respective pinch and emanates at the end face of the pinch extending transversely to the axis of the lamp envelope, each supply conductor being connected outside the pinch to a respective cylindrical contact cap which is mounted in an insulator sleeve, characterized in that the insulator sleeve is coupled to the contact cap, by means of a metal spring and further, characterized in that the insulator sleeve has an abutment on its inner surface and that the metal spring is in the form of a sleeve and has projecting lugs which together enclose the abutment in the insulator sleeve and has inwardly directed lugs which fix the spring relative to the contact cap.

4,404,492

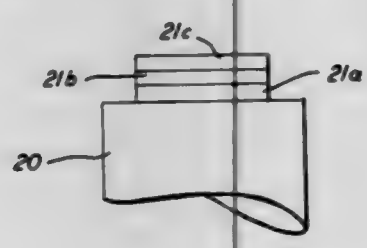
CATHODE STRUCTURE FOR CATHODE RAY TUBES AND METHOD FOR PRODUCING SAME

George Palty, Seneca Falls, N.Y., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Aug. 24, 1981, Ser. No. 295,878

Int. Cl.³ H01J *1/02*

U.S. Cl. 313—355 **14 Claims**



1. A cathode structure for cathode ray tubes comprising:
(a) a supporting substrate of a nickel alloy; and
(b) a multilayer structure adherent to the substrate, at least the innermost layer in contact with the substrate comprising Ni-containing material, and at least the outermost layer comprising electron emissive material, characterized in that the multilayer structure is formed from a laminate of at least two self-supporting layers, each layer comprised of particles of inorganic material dispersed in a fugitive organic binder matrix.

4,404,493

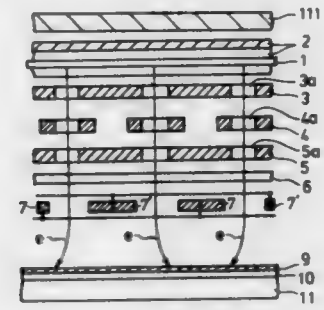
PICTURE IMAGE DISPLAY APPARATUS

Kinzo Nonomura, Hirakata; Masanori Watanabe, Katano; Yoshinobu Takesako, Neyagawa; Hiroyuki Irie, Osaka, and Susumu Ide, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 3, 1981, Ser. No. 250,713

Int. Cl.³ H01J *29/70*

U.S. Cl. 313—422 **4 Claims**



1. A picture image display apparatus comprising:
a flat type vacuum enclosure having a transparent face panel,
an electron beam emitter which emits a predetermined number of electron beams disposed in a row in selected positions,
a row of control electrodes to control intensities of said electron beams,
a row of parallel deflection electrodes, every other one of them being first electrodes commonly connected to each other, the other ones of them being second electrodes commonly connected to each other,
a phosphor screen formed on the inner face of said face panel, and
an anode of thin metal film formed on the surface of said phosphor screen,
wherein the apparatus is characterized in that
every one of said first electrodes and a neighboring one of said second electrodes form a deflection gap, neighboring one of said gaps have electric fields of opposite directions relative to each other, and said gaps are disposed in a manner such that said electron beams simultaneously pass through every said deflection gap.

4,404,494

TRAVELLING WAVE TUBE WITH PERIODIC-PERMANENT MAGNET FOCUSING SYSTEM

Hinrich Heynisch, Gräfelfing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,566

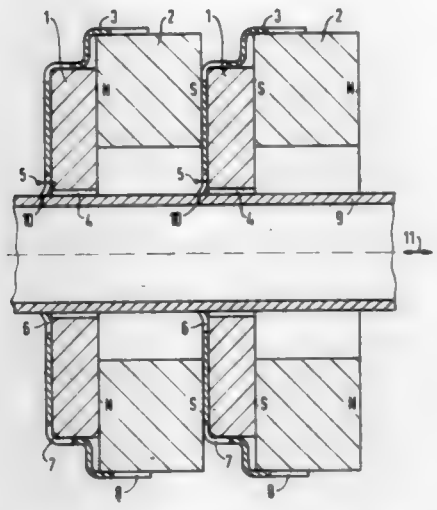
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1980, 3015231

Int. Cl.³ H01J *25/34*

U.S. Cl. 315—3.5 **6 Claims**

1. Travelling wave tube, comprising a cylindrical vacuum shell having an outer diameter, a permanent magnet system surrounding said cylindrical vacuum shell including ring-shaped pole shoes having inner and outer diameters, magnet rings having inner and outer diameters and forming pairs with said pole shoes, each of said magnet rings being alternatingly disposed between two pole shoes in axial direction and being poled in opposite sense with respect to the next magnet ring, said inner diameters of said pole shoes being closely fitted around said vacuum shell and being smaller than said inner diameters of said magnet rings, said outer diameters of said

magnet rings being larger than said outer diameters of said pole shoes, and a respective centering and retaining ring being disposed between and in contact with each of said pole shoe and magnet ring pairs for centralizing said inner diameters of



said pole shoes to said outer diameters of said magnet rings and for centralizing said inner diameters of said pole shoes and said outer diameters of said magnet rings to said outer diameter of said vacuum shell.

4,404,495

HIGH FREQUENCY RESONATOR

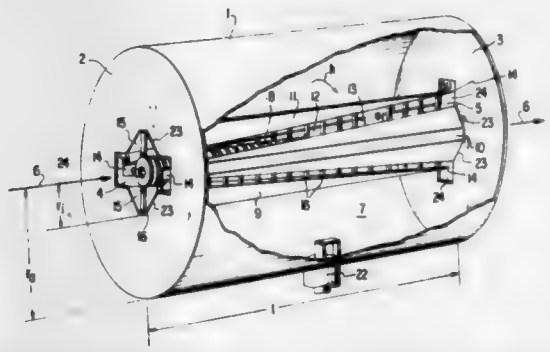
Rolf W. Müller, Dreieich, Fed. Rep. of Germany, assignor to Gesellschaft für Schwerionenforschung mbH, Darmstadt, Fed. Rep. of Germany

Filed Jan. 30, 1981, Ser. No. 230,273

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 3003258

Int. Cl.³ H01J *25/10*

U.S. Cl. 315—5.41 **10 Claims**



1. In a high frequency resonator for accelerating a beam of heavy ions in an accelerator, which resonator includes a cylindrical resonator housing having a beam inlet end via which the beam enters the housing, a beam outlet end via which the beam leaves the housing and a longitudinal axis defining a path for travel of the beam between the ends, means defining first and second opposed end walls each at a respective end of the housing, and an even number of elongate, conductive current collectors disposed within the housing, extending longitudinally thereof, and spaced apart equidistantly about the beam axis, with every other collector being connected to said first end wall and the intervening collectors being connected to said second end wall, the number of such collectors being at least four, the improvement wherein:

each said end wall is provided with a central opening surrounding the longitudinal axis of said housing;

each said current collector extends the full length of said housing;

each said collector has two longitudinal ends, one longitudinal end of each collector extends into said opening of that end wall to which that said collector is connected and the other longitudinal end of each collector extends into said opening of the other said end wall while being out of contact with the other said end wall; and

each said collector has a width in a direction transverse to its longitudinal extent, and the width of each collector decreases, along its longitudinal extent, from a maximum width at its said one longitudinal end to a minimum width at its said other longitudinal end in a manner to establish an at least approximately uniform current density on the surface of each said collector.

4,404,496

LIGHT SOURCE APPARATUS USING FLASH DISCHARGE TUBE

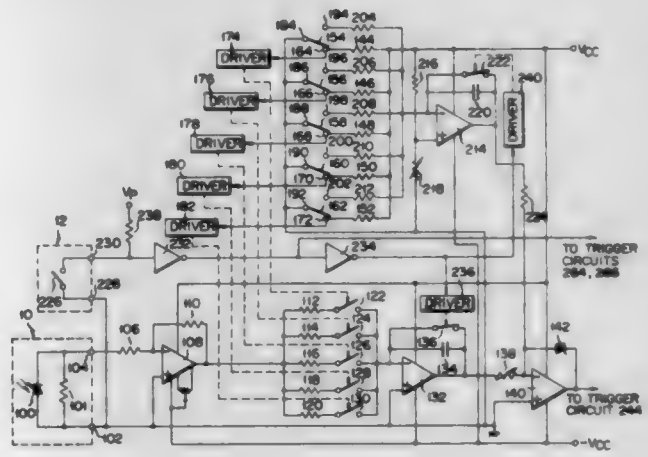
Seiichi Hosoda, Fuchu, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1981, Ser. No. 243,565

Claims priority, application Japan, Mar. 24, 1980, 55-37174

Int. Cl.³ H05B *41/32*

U.S. Cl. 315—151 **3 Claims**



1. A light source apparatus using a flash discharge tube operable to illuminate a foreground subject for photographing said foreground subject on a film of given sensitivity, comprising:

a power source;

a flash discharge tube and a switching element connected in series combination with said flash discharge tube, said series combination being connected across said power source;

light receiving means for receiving and photoelectrically converting light reflected by said foreground subject and integrating the received reflected light as a function of the sensitivity of the film being used to produce a signal corresponding to the incident light does;

compensation means for producing a compensation signal in accordance with a preset film sensitivity; and

decision means coupled to said compensation means and to said light receiving means for comparing the output signal of said compensation means with the output signal of said light receiving means, and for producing an interruption signal for rendering said switching element nonconductive when the difference between said two output signals reach a predetermined value.

4,404,497

POWER SUPPLYING APPARATUS

Yoshiyuki Takematsu, Tokyo, Japan, assignor to Fuji Koeki Corporation, Tokyo, Japan

Filed Apr. 16, 1980, Ser. No. 140,879

Claims priority, application Japan, Apr. 21, 1979, 54/049600

Int. Cl.³ H05B *41/32*

U.S. Cl. 315—241 P **12 Claims**

1. A power supplying apparatus, comprising:

a direct current power source for providing a direct current voltage;

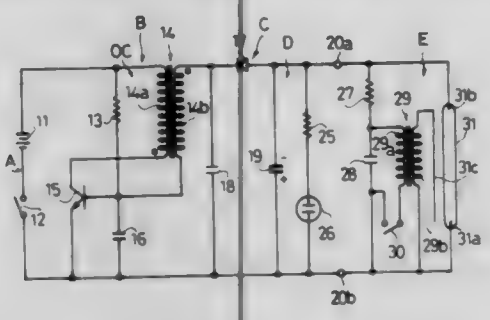
voltage converting means for converting said direct current voltage from said direct current power source into an alternating current voltage;

rectifying means for rectifying said alternating current voltage provided by said voltage converting means to provide a direct current voltage;

a load circuit; and

means for supplying said direct current voltage provided by said rectifying means to said load circuit;

said voltage converting means comprising an oscillating transformer having a primary winding connected to said direct current power source for receiving a flow of current, and a secondary winding electromagnetically coupled to said primary winding, an oscillator circuit connected to said oscillating transformer and including switch



means for controlling the current flowing in said primary winding of the oscillating transformer, and biassing means for controlling said switch means of the oscillator circuit;

wherein said switch means comprises a transistor having a collector-emitter circuit connected to said direct current power source via said primary winding, said transistor also having a base electrode, said biassing means comprising a resistor directly connecting said base electrode to a first terminal of said direct current power source, said resistor being directed connected to said base electrode to form a junction therebetween, said junction being directly connected to a first terminal of said secondary winding;

said apparatus further comprising a stabilizing capacitor connected between a second terminal of said secondary winding and a second terminal of said direct current power source.

4,404,498

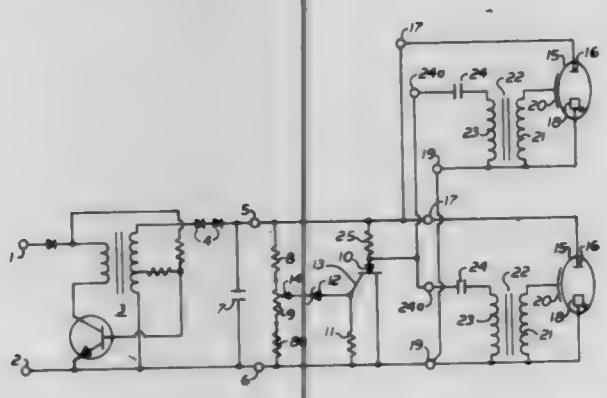
MULTIPLEX STROBE LIGHT

Joseph Spiteri, P.O. Box 158, Harborcreek, Pa. 16421

Filed Mar. 5, 1981, Ser. No. 240,798

Int. Cl.³ H05B *41/34*

U.S. Cl. 315—241 R **7 Claims**



1. Apparatus for the simultaneous energization of a plurality of gas discharge lamps each having an anode, a cathode and a control electrode, said apparatus comprising: capacitive discharge means for storing electric energy and releasing the stored electric energy to the anodes and cathodes of the lamps, trigger capacitor means for storing electric energy and releasing the stored electric energy to the control electrodes and cathodes of the lamps, each lamp having a transformer with a secondary winding connected across its control electrode and its cathode and a primary winding connected across said trigger capacitor means, circuit means for providing electric energy to said capacitive discharge means and to said trigger capacitor means, circuit means for connecting the primary windings in parallel with each other and in series with the trigger capacitor means and for connecting each secondary winding individually to its control electrode, and switch means for discharging the trigger capacitor means through said primary windings, the polarity of the windings being such that the initial voltage induced in the secondary windings is negative at said control electrodes.

4,404,499

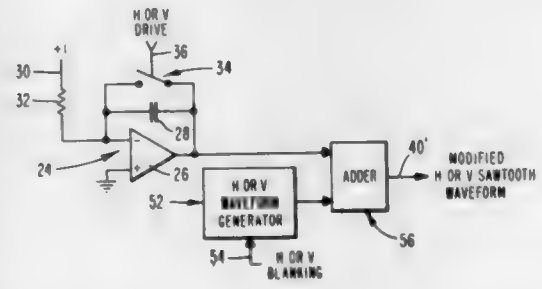
CIRCUIT FOR MINIMIZING EDGE HOOKING IN TELEVISION CAMERA PICKUP TUBES

John O. Ryan, Cupertino, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Mar. 30, 1981, Ser. No. 248,919

Int. Cl.³ H01J *29/56*

U.S. Cl. 315—371 **11 Claims**



1. A circuit for minimizing edge hooking in a photoelectric tube having a scanning electron beam and a scanned active picture area within a non-scanned tube target area, wherein the scanning electron beam describes a horizontal and vertical scan raster across the active picture area in response to means for generating horizontal and vertical sawtooth waveforms, comprising the combination of;

overscan voltage means integral with the means for generating sawtooth waveforms for selectively increasing the velocity of the electron beam scan only during the horizontal and vertical blanking intervals.

4,404,500

PROJECTION TELEVISION APPARATUS

Richard G. Stow, West Wickham, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 4, 1981, Ser. No. 270,667

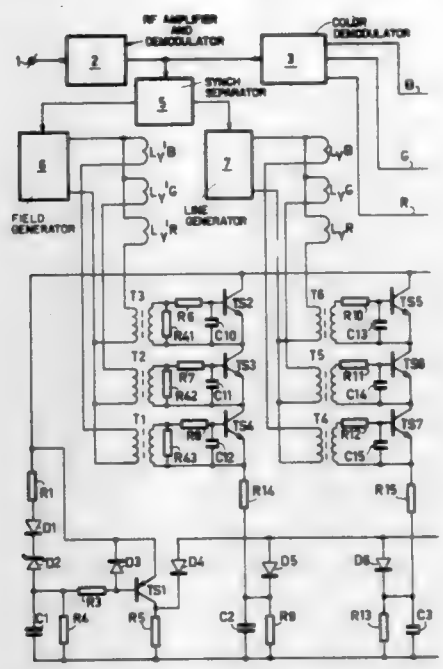
Claims priority, application United Kingdom, Jun. 10, 1980, 8018880

Int. Cl.³ H01J *29/52*

U.S. Cl. 315—386 **4 Claims**

1. Projection television apparatus having a plurality of projection television tubes each adapted to produce a display of a different colour for projection, each projection tube having a line deflection coil and a field deflection coil for deflecting an electron beam when generated in each projection tube in two orthogonal directions, the said line deflection coils being connected in parallel branches connected to a line output stage for providing line deflection current through said line deflection coils, the said field deflection coils being connected to a field output stage for providing field deflection current through said field deflection coils, and protection means for protecting a projection tube in the event of the cessation of or substantial reduction in the line deflection current through the line deflection coil corresponding to said projection tube, said projection means comprises sensing means connected in series with each line deflection coil for separately sensing the line deflection

current therethrough, and means responsive to said sensing means for preventing the electron beams from falling on the



screens of the projection tubes upon the occurrence of the said event.

4,404,501

APPARATUS FOR AUTOMATICALLY SWITCHING OFF AND DISCONNECTING AN ELECTRIC MOTOR SHAFT DRIVE ACCELERATING A WINDING BOBBIN ONCE A CIRCUMFERENTIAL CYLINDER DRIVE HAS BECOME EFFECTIVE

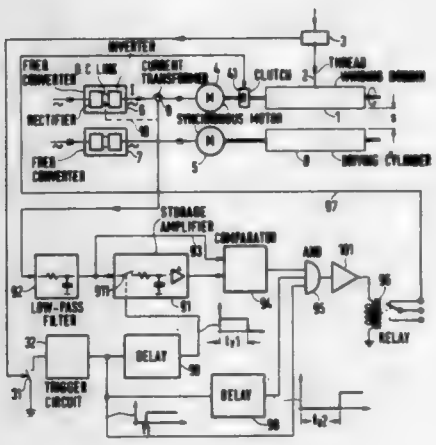
Dietrich Krampe, Neunkirchen, and Tilo Heyl, Stuttgart, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 24, 1982, Ser. No. 361,355

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3111990

Int. Cl.³ B65H *54/02*

U.S. Cl. 318—7 **10 Claims**



1. In a textile winding bobbin driving system which includes a first electric motor turning a shaft drive connected to a winding bobbin, a second electric motor driving a circumferential cylinder drive which engages said winding bobbin after textile has been wound thereon to a certain thickness and which is synchronized with the circumferential velocity of said bobbin, means for accepting a signal to switch-off the first motor and disconnect said shaft drive and means for producing a signal corresponding to the start of the winding of textile on said bobbin, an apparatus for automatically producing the signal to switch-off said first motor and disconnect said shaft drive after said circumferential drive has engaged said bobbin comprising:

(a) means for developing a signal proportional to the torque developed by the first motor;

(b) means for storing a value proportional to the torque developed by said first motor after textile has begun to wind on the bobbin but before the cylinder drive has engaged said bobbin and responsive to the means for producing, having an input coupled to said means for developing; and

(c) means for generating a signal which can be provided as an output to the means for accepting to switch-off said first motor and disconnect said shaft drive if said signal proportional to the torque of said first motor is greater than said stored value by a predetermined incremental value ΔI, having an input coupled to said means for developing and another input coupled to the output of said means for storing.

4,404,502

ENERGY SAVING CIRCUIT ARRANGEMENT FOR A PIEZOELECTRIC POSITIONING ELEMENT

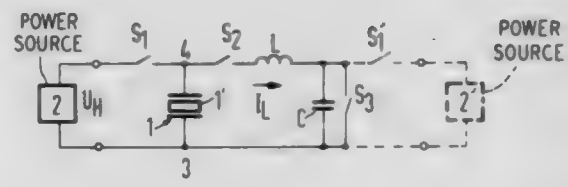
Valentin Magori, and Peter Kleinschmidt, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 8, 1981, Ser. No. 328,481

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048632

Int. Cl.³ H01L *41/08*

U.S. Cl. 318—116 **20 Claims**



14. A circuit arrangement, comprising: a positioning element having first and second piezoelectric bodies to be charged and discharged in reverse phase; a series circuit comprising a controllable switch means and a power source connected in parallel across the first piezoelectric body; a series circuit comprising another controllable switch means, an inductance and the second body being connected in parallel across the first body; and a short circuit switch means connected in parallel with the second body.

4,404,503

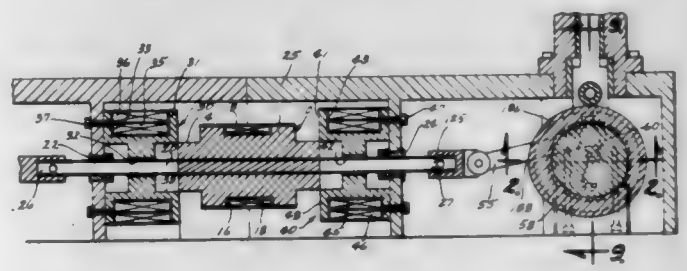
RECIPROCATING ELECTRIC MOTOR

William L. Ward, 2618 Amherst Dr., Wichita Falls, Tex. 76308, and Robert N. Ward, 1717 Midwestern Pkwy., #134, Wichita Falls, Tex. 76302

Filed Nov. 2, 1981, Ser. No. 317,153

Int. Cl.³ H02K *7/06*

U.S. Cl. 318—119 **18 Claims**



1. An electromagnetic motor having a frame and an electrical power source, comprising:

a first field coil having a first piston coil receiving cavity formed therein, secured to said frame and being electrically connectable to said power source;

a second field coil having a second piston coil receiving

cavity formed therein, secured to said frame and being electrically connectable to said power source;

a piston coil having end portions for temporary disposition within said first and second cavities of said first and second field coils during operation, said piston coil being adapted to move within said frame between said first and second field coils and being electrically connected to said power source, said power source generating a constant magnetic polarity in said piston coil; and

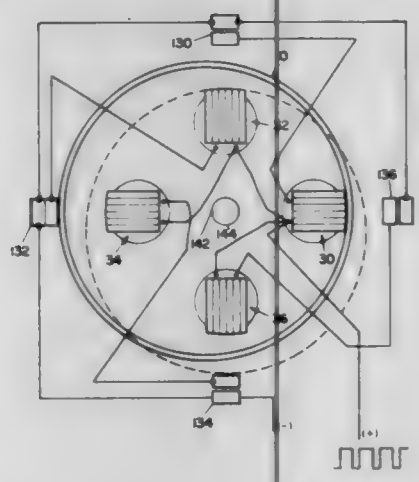
distributor means for selectively supplying electric current to said first and second field coils, said distributor means selectively supplying electric current to said first and second field coils to simultaneously generate opposite magnetic polarities in said field coils whereby said piston coil is simultaneously attracted towards one of said field coils and repulsed away from the other of said field coils, said distributor means including means for periodically reversing the polarity of said field coils.

4,404,504

HIGH-EFFICIENCY, LOW-SPEED ELECTRIC MOTOR SYSTEM

George J. Giel, Los Angeles, Calif., assignor to Leland R. Rowsell, Los Angeles, Calif.

Filed Mar. 19, 1981, Ser. No. 245,372
Int. Cl.[3] H02K *29/00*
U.S. Cl. 318—269 14 Claims



1. A simple, economical, low speed electric motor system comprising:

a plurality of three or more electromagnets mounted with their pole pieces defining a cylindrical driving circle for said motor;

a substantially rigid hollow cylindrical body of ferromagnetic material having an inner diameter slightly greater than said driving circle defined by said pole pieces;

means for mounting said cylindrical body for rotational movement with its axis parallel to and defining a circle rotating about the axis of said driving circle;

means for sequentially energizing said electromagnets to drive said cylindrical body around said electromagnets with said body successively engaging the pole pieces to roll around said driving circle;

an output shaft substantially aligned with the axis of said driving circle;

means for driving said output shaft from said rigid magnetic cylindrical body as it is actuated by said electromagnets; and

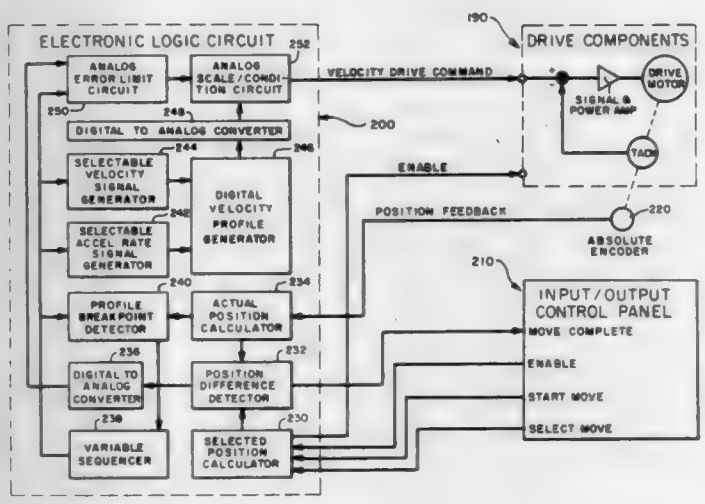
said means for driving said output shaft from said cylindrical body including an inner gear and an outer gear with the inner gear having a lesser diameter and number of teeth than the outer gear.

4,404,505

PROGRAMMABLE MULTIPLE POSITION MACHINE

Douglas L. Swanson, McKean, and Ronald K. Turk, Erie, both of Pa., assignors to Swanson Systems, Inc., Erie, Pa.

Filed Mar. 3, 1981, Ser. No. 240,146
Int. Cl.[3] G05B *13/00*
U.S. Cl. 318—561 6 Claims



1. A multiple position programmable movement machine comprising:

work transfer means mounted for incremental movement;

a drive shaft supporting said work transfer means;

drive means coupled to said work transfer means through said drive shaft for driving said work transfer means, said drive means including a servo-controlled drive motor;

encoder means coupled to said work transfer means to determine the actual position of said work transfer means;

control panel including means for selecting a plurality of rotary positions at which the work transfer means can be positioned; and

means for producing a drive velocity command to said drive motor to cause controlled incremental movement of said work transfer means including:

means, responsive to said encoder means and to said position selecting means, for producing a position difference signal indicating the difference between a selected position and the actual position of the work transfer means;

means, responsive to said encoder means, for triggering a variable sequencer to sequence along a profile breakpoint detector, a selectable acceleration rate signal generator, and a selectable velocity signal generator, thereby producing a plurality of paired velocity and acceleration signals;

velocity profile generation means, responsive to said velocity and acceleration signals for producing a velocity profile output;

means, responsive to said variable sequencer and to said position difference signal, for limiting the magnitude of the position difference signal and for producing a resulting modification signal; and

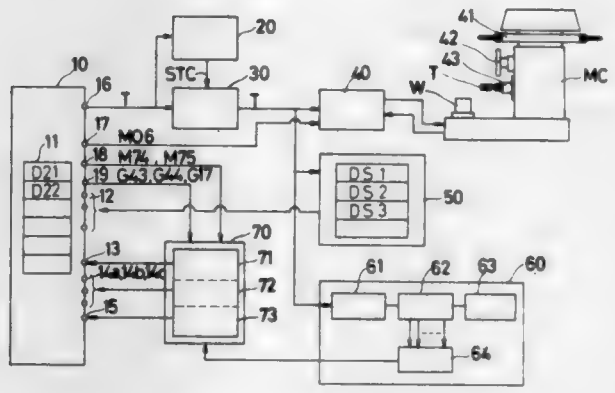
scaling means for receiving said velocity profile output and said modification signal to produce a scaled drive velocity command to said servo-controlled drive motor.

4,404,506

TOOL POSITION OFFSETTING SYSTEM FOR A SPARE TOOL

Hideo Nishimura, Aichi; Kuniyuki Niwa; Yasushi Yamamoto, both of Kariya, and Takao Yoneda, Toyoake, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 14, 1981, Ser. No. 330,667
Claims priority, application Japan, Dec. 16, 1980, 55/178631
Int. Cl.³ G05B *13/00*
U.S. Cl. 318—561 **6 Claims**



1. A tool position offsetting system comprising:

a numerically controlled machine tool having a tool spindle for inserting a tool therein;

a numerical controller connected to said machine tool for controlling machining operations of said machine tool;

a memory provided in said numerical controller for storing tool offset data for said tool;

said numerical controller being capable of offsetting the tool position of said tool in accordance with said tool offset data;

tool life detecting means connected to said numerical controller for detecting the end of the useful tool life of said tool and based thereon to output a first signal;

spare tool changing means connected to said numerical controller and said tool life detecting means for replacing said tool by a spare tool so as to insert said spare tool in said tool spindle in response to said first signal, said spare tool being the same type as the replaced tool;

dimensional data setting means connected between said spare tool changing means and said numerical controller for setting the dimensional data for said spare tool, said dimensional data corresponding to the dimensional difference between said replaced tool and said spare tool;

spare tool detecting means connected to said spare tool changing means for detecting whether a tool inserted in said tool spindle is said spare tool to output a second signal;

input controlling means connected between said spare tool detecting means and said numerical controller for effecting the introduction of the dimensional data for said spare tool to said memory in response to said second signal thereby to amend said tool offset data stored in said memory, whereby said numerical controller controls the machining operations in accordance with said amended tool offset data.

4,404,507

FORMING CONTOURS

Stanley K. Dean, Parkville, and Robert Dow, Oak Park, both of Australia, assignors to Commonwealth of Australia, Canberra, Australia

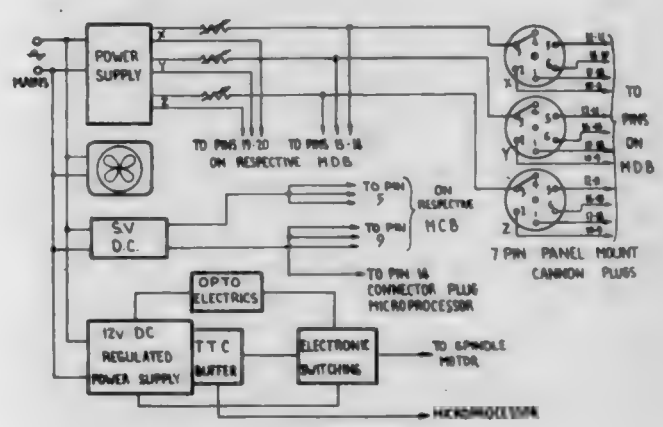
Filed Nov. 24, 1981, Ser. No. 324,671
Claims priority, application Australia, Nov. 25, 1980, PE 6623
Int. Cl.³ G05B *19/24*
U.S. Cl. 318—570 **6 Claims**

1. A method of controlling an apparatus for forming a straight configured contour, or a straight configured segment forming part of a curvilinear contour, and having coordinates in at least two directions, said apparatus incorporating a work piece support, a contour forming means, incremental drives to effect relative movement between said support and said contour forming means in said directions, said method comprising the steps of:

(a) determining the components of said contour or segment in said directions as a number of increments of length equal to a predetermined distance,

(b) for each said direction, producing a count to a predetermined number, the predetermined numbers for said directions being related to each other as the ratio of the inverses of said number of increments for each said direction, and

(c) feeding,



(i) a drive pulse to one of said incremental drives to effect movement in one of said directions over said predetermined distance each time the predetermined number relevant to that direction has been counter, and

(ii) a drive pulse to at least one other of said incremental drives to effect movement in one other of said directions over the same predetermined distance each time the predetermined number relevant to that direction has been counted,

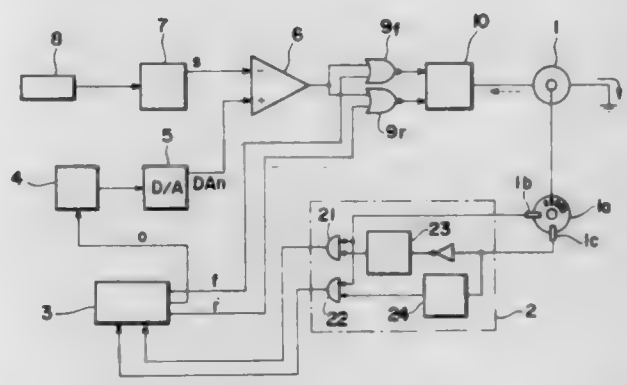
whereby said movements combine to form a relative movement between said support and said contour forming means such as to produce said contour or said segment.

4,404,508

CONTROL METHOD FOR STOPPING DC MOTOR AT PREDETERMINED POSITION

Koji Nishida, and Taneichi Kawai, both of Anjo, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 29, 1981, Ser. No. 306,737
Claims priority, application Japan, Oct. 6, 1980, 55-139707
Int. Cl.³ G05B *5/01*
U.S. Cl. 318—611 **5 Claims**



1. A control method for stopping a DC motor at a predetermined position, said DC motor having an output shaft, which method comprises the steps of:

(a) applying a drive voltage to the DC motor to rotate the DC motor in a first direction;

(b) interrupting the drive voltage impressed upon the DC

motor when the output shaft arrives at the predetermined stopping position;

(c) detecting whether the output shaft of the DC motor overshoots the prescribed stopping position;

(d) applying to the DC motor a reverse drive voltage, which has a polarity opposite to that of the interrupted drive voltage as well as a smaller magnitude, when the output shaft overshoots the predetermined stopping position; and

(e) repeating steps (a) through (d) to cause said DC motor to hunt the predetermined stopping position, while successively reducing the magnitude of the applied drive voltage and reverse drive voltage in accordance with the number of times the output shaft overshoots the predetermined stopping position as a result of the hunting operation, whereby the DC motor is stopped at the predetermined stopping position position by successively damping its kinetic energy with each application of the drive and reverse drive voltages of successively smaller amplitude.

4,404,509

DEVICE FOR CONTROLLING THE DRIVE OF A STEPPING MOTOR, TO ADJUST THE LATERAL STITCH BIGHT AND/OR THE FEED LENGTH OF A SEWING MACHINE

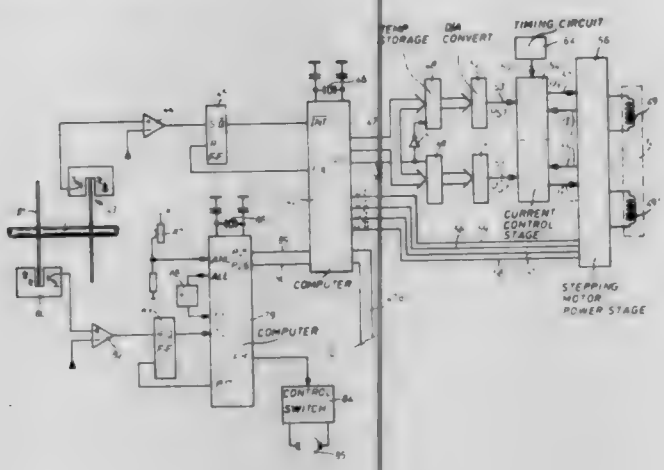
Jürgen Hartwig, Ettlingen, Fed. Rep. of Germany, assignor to Pfaff Hauschaltmaschinen GmbH, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 184,744

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2942844

Int. Cl.³ G05B *19/40*

U.S. Cl. 318—685 **3 Claims**



1. A sewing machine comprising:

a main shaft;

a needle bar operatively connected to said main shaft for performing strokes with rotation of said main shaft;

a swing arm engaged with said needle bar for vertically guiding said needle bar and movable to adjust a lateral stitch bight of said needle bar;

a feed dog movable with respect to said needle bar and having a setting member movable to adjust a feed length of said sewing machine;

a first microcomputer;

at least one of a stepping motor connected to said swing arm and a stepping motor connected to said setting member, said at least one stepping motor connected to said first microcomputer and controlled thereby to adjust at least one of the lateral stitch bight and feed length;

a second microcomputer connected to said stepping motor and operable to control variations in a stepping frequency of said stepping motor in proportion to speed variations of the sewing machine main shaft; and

a pulse transmitter connected to said second microprocessor and associated with said main shaft for generating pulses at a rate corresponding to an instantaneous speed of the main shaft.

4,404,510

ELECTRONIC TIMEPIECE

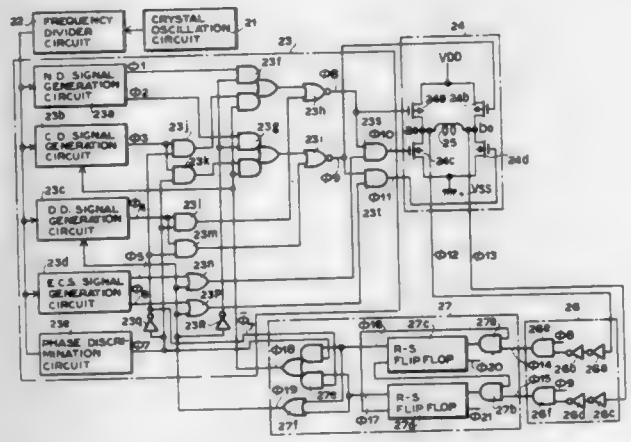
Fumio Nakajima, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1981, Ser. No. 231,861

Claims priority, application Japan, Feb. 6, 1980, 55-12848

Int. Cl.³ H02K *29/04*

U.S. Cl. 318—696 **5 Claims**



1. In an electronic timepiece comprising a step motor composed of an electromagnetic coil excited by a two phase alternating driving signal, a permanent magnet rotor and a stator, the improvement comprising means for changing over said electromagnetic coil from a closed circuit condition to an open circuit condition and vice versa, means for detecting shocks and operative to detect an induced voltage to be generated in the electromagnetic coil when said rotor under its standstill condition is subjected to an external shock, means for discriminating the shock direction and operative to discriminate the shock direction by the difference between the output delivered from said shock detection means and the driving signal, and means for controlling the driving signal on the basis of the output delivered from said shock direction discriminating means.

4,404,511

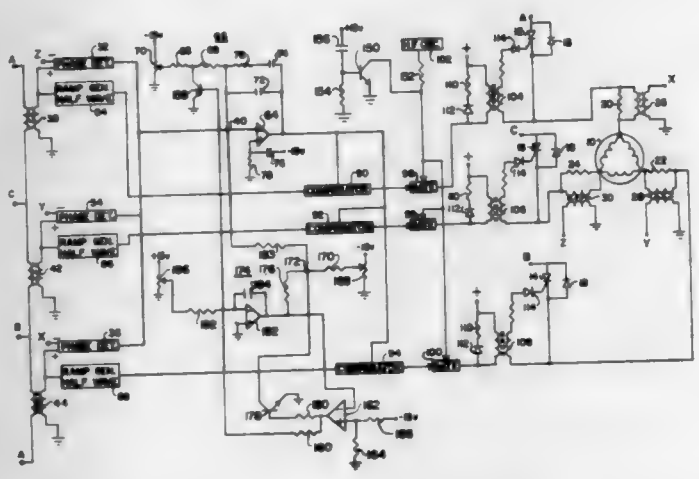
MOTOR POWER FACTOR CONTROLLER WITH A REDUCED VOLTAGE STARTER

Frank J. Nola, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 199,765, Oct. 23, 1980, abandoned. This application Oct. 13, 1981, Ser. No. 310,714

Int. Cl.³ H02P *1/26*

U.S. Cl. 318—729 **8 Claims**



1. A power factor control system for an A.C. induction motor comprising:

current sampling means, including means adapted to be placed in circuit with at least one phase winding of a said

motor, for providing an A.C. output signal representative of the timing of alternating current through said winding;

voltage sampling means adapted to sense the voltage of an electrical input applied to said winding for providing an output signal representative of the timing of alternating current voltage across said winding;

phase detection means responsive to the outputs of said current and said voltage sampling means for providing an output which varies in accordance with the difference in phase between said current and voltage;

signal means for providing a control signal comprising an increasing signal followed by a fixed level signal, the latter comprising a power factor command signal; and

control means adapted to be electrically connected in series with a said winding of a said motor, and responsive to the combined outputs of said phase detection means and signal means for varying the duration of "on" time of each cycle of input power to said winding as an inverse function of the output of said phase detection means and direct function of the output of said signal means;

whereby a gradually increasing power input may be effected to a said motor during a selected starting interval and thereafter the motor be controlled by said fixed power factor command signal.

4,404,512

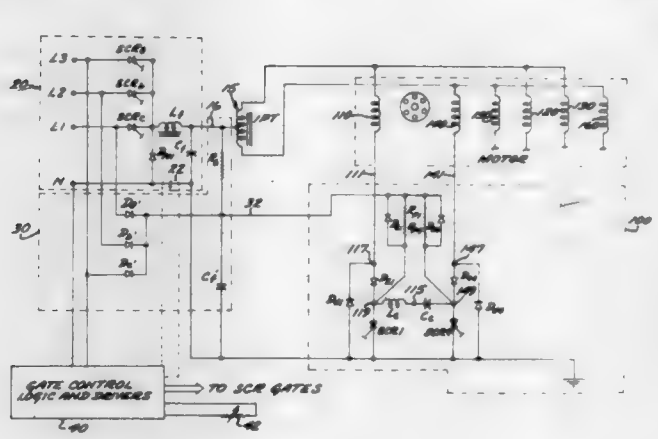
MOTOR DRIVE CIRCUIT

Jack Greenwell, Reno, Nev., assignor to LearAvia, Reno, Nev.

Continuation of Ser. No. 114,081, Jan. 21, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 363,291

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—807 **16 Claims**



1. A parallel-leg inverter circuit for variable frequency, variable voltage operation with a DC voltage supply and electrical loads having at least first and second windings comprising:

first and second current switch means arranged in parallel legs, said first switch means coupled to said first winding and said second switch means coupled to said second winding:

first and second reactance rectifier means coupled to said first and second windings, respectively;

commutating capacitor means coupled to said first and second switch means;

precharge voltage source coupled to said commutating means and adapted to provide a precharge bus voltage at least substantially twice the maximum DC voltage supply;

first and second clamping means, coupled respectively to said first and second current switch means for limiting the voltage applied across said current switch means to approximately the voltage level of said precharge means; and

control means for selective operation of said current switch means.

4,404,513

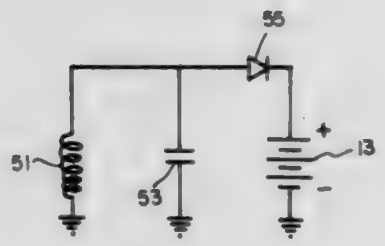
ECONOMICAL FLYWHEEL ALTERNATOR FOR TRICKLE CHARGING A SMALL LAWNMOWER BATTERY

Kenneth W. Campen, Kiel, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Division of Ser. No. 190,897, Sep. 25, 1980, Pat. No. 4,358,727. This application Jun. 7, 1982, Ser. No. 385,577

Int. Cl.³ H02K *7/02*

U.S. Cl. 322—90 **1 Claim**



1. In an ignition system for an internal combustion engine having a flywheel, a flywheel supported magnetic member comprising a single tangentially poled permanent magnet and a three legged E-shaped stator core with the three leg ends disposed closely adjacent the outer periphery of the flywheel to be magnetically coupled in pairs once furing each revolution of the flywheel by the magnetic member as the magnetic member rotates past the core wherein the three stator core legs are generally coplanar and extend generally parallel to one another with the angle subtended by adjacent "E" legs relative to the flywheel axis being substantially the same as the angular extent of the magnetic member, the improvement comprising a fourth stator core leg having one end closely adjacent the flywheel with the angle subtended by the fourth leg and the adjacent outer leg of the "E" relative to the flywheel axis being substantially the same as the angular extent of the magnetic member, a low voltage coil surrounding the fourth leg, a capacitor connected in parallel with the low voltage coil, storage battery means utilizing electrical energy induced in the low voltage coil by passage of the magnetic member and a rectifier in series with the parallel combination of the low voltage coil and capacitor comprising a diode for conveying a single primary charging pulse to the battery during each revolution of the flywheel to trickle charge the storage battery means.

4,404,514

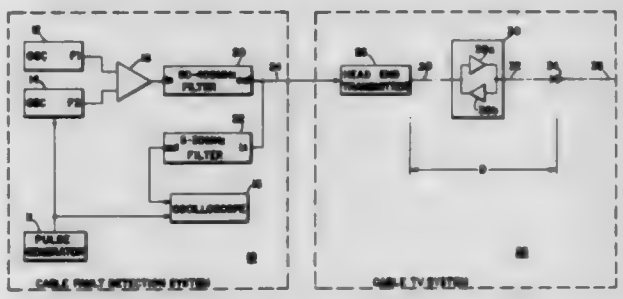
FAULT DETECTION SYSTEM AS FOR LOCATING FAULTY CONNECTIONS IN A CABLE TELEVISION SYSTEM

Harry J. Reichert, Jr., Warminster, Pa., assignor to General Instrument Corporation, New York, N.Y.

Filed Aug. 24, 1981, Ser. No. 295,565

Int. Cl.³ G01R *31/08*; H04B *3/46*

U.S. Cl. 324—52 **7 Claims**



1. A method for detecting a faulty connection between the mating surfaces of a connector in a cable television communication system, said method comprising;

transmitting a signal having energy content at respective

first and second frequencies through said communication system;

receiving a signal corresponding to a beat frequency between said first and second transmitted frequencies, said beat frequency signal being generated by heterodyning said first and second frequencies at said faulty connection; and

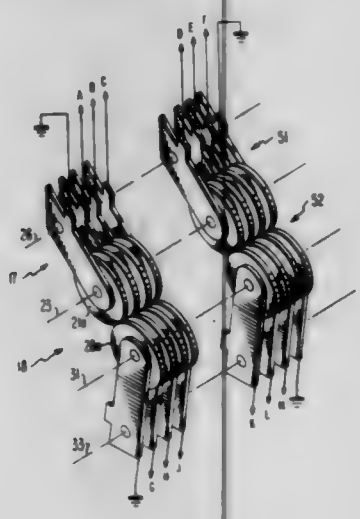
measuring the time interval between the transmission of said signal and the reception of said beat frequency signal.

4,404,515

SYSTEM AND METHOD FOR USE WITH APPARATUS FOR SENSING BARE METAL ON A MOVING STRIP OF INSULATIVELY COATED CONDUCTIVE MATERIAL

Craig E. Deyer, Akron, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,451
Int. Cl.³ G01R *31/12*; B65H *25/14*
U.S. Cl. 324—54 24 Claims



1. In combination with an apparatus for sensing bare metal on a moving strip of insulated conductive material, said apparatus including a plurality of sensors arranged on both sides of said strip, each of said sensors including a plurality of voltage biased electrical contacts and a grounded electrical contact; a control system for providing a bare metal output signal in response to the selective grounding of said voltage biased electrical contacts comprising:

a plurality of first means individually responsive to said sensors for providing a first signal when at least one of said voltage biased contacts of one sensor is electrically connected to said grounded contact of another of said sensors;

a plurality of second means, each of said second means being responsive to at least two of said first means for providing a second signal in response to the simultaneous reception of two of said first signals; and

third means responsive to said second means for providing said bare metal signal in reponse to the reception of said second signals.

4,404,516

SYSTEM FOR DETECTING LEAKS FROM LIQUID-CONTAINING RESERVOIRS AND CONDUITS

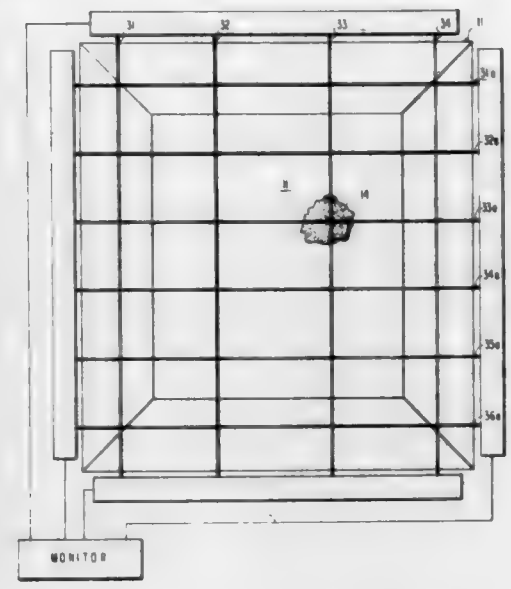
Victor R. Johnson, Jr., 2214 Villa Creek Dr., Kingwood, Tex. 77339

Continuation-in-part of Ser. No. 201,841, Oct. 29, 1980, abandoned, which is a continuation of Ser. No. 180,724, Aug. 25, 1980, abandoned. This application Sep. 1, 1981, Ser. No. 298,414
Int. Cl.³ G01R *31/08, 31/12*; G01M *3/16*
U.S. Cl. 324—54 18 Claims

1. A system for detecting leaks from liquid containment means such as a reservoir or conduit, said system comprising:

a geotextile fabric;

a detection network of a plurality of conductive members incorporated into said geotextile fabric, said conductive members being electrically insulated from one another and crossing one another at predictable locations, each said conductive member including a material which is selected to be degradable by the particular liquid to be detected; and



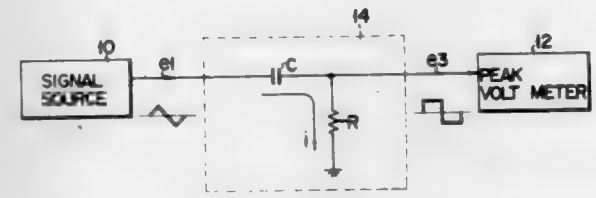
monitoring means connectable to each of said conductive members for separately monitoring at least one electrical property of individual ones of said conductive members and for detecting a change in said electrical property which occurs as a result of degradation of said material by said liquid to be detected.

4,404,517

IMPEDANCE MEASURING DEVICE

Kenji Machida, 2-3-3, Nishiogiminami, Suginami-ku, Tokyo, Japan

Filed Oct. 6, 1980, Ser. No. 194,604
Claims priority, application Japan, Oct. 9, 1979, 54-130177
Int. Cl.³ G01R *27/00*
U.S. Cl. 324—57 R 12 Claims



1. A reactance measuring device for determining an unknown capacitance comprising:

signal source means for generating a first voltage signal having a given frequency, a given voltage and a given waveform;

a capacitance element having said unknown cpacitance and having two ends with one end connected to said signal source means for receiving said first signal;

a known resistive element coupled between the other end of said capacitive element and a fixed reference potential, said capacitive and resistive elements constituting a differentiation circuit for differentiating said first signal to provide a second signal; and

measurement means coupled to said differentiation circuit for measuring the value of amplitude of said second signal which is substantially proportional to said unknown capacitance said measurement means including compensation means coupled to said differentiation circuit for compensating non-linearity of the amplitude value of said second signal versus said unknown capacitance so that the relation between the amplitude value of said second signal and said capacitance becomes linear.

4,404,518

METHOD AND DEVICE FOR THE MEASUREMENT OF THE CONTACT RESISTANCE OF GALVANIC SURFACE LAYERS

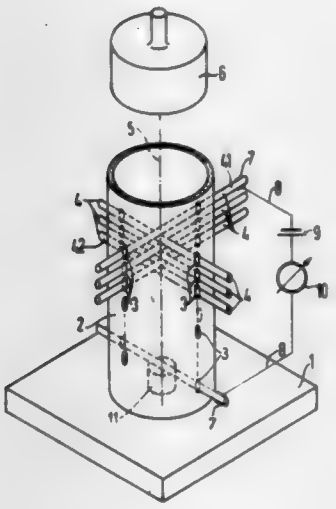
Didier Boone, Oostkamp, and Rolf Cousin, Loppem, both of Belgium, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 23, 1981, Ser. No. 256,795

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1980, 3028535

Int. Cl.³ G01R *27/02*

U.S. Cl. 324—62 6 Claims



1. A system for facilitating measuring contact resistance of galvanic surface layers on wire, comprising: a plurality of wire pieces provided with a galvanic surface layer being positioned through corresponding pairs of apertures of a hollow cylindrical body of insulating material; said pairs of apertures being displaced with respect to one another along a longitudinal axis of the hollow body, being oval or slot-shaped in a direction of the longitudinal axis, and adjacent pairs being positioned relative to one another in a circumferential direction such that the wire pieces in each case pass through the longitudinal axis of the hollow cylindrical body and lie crosswise with respect to one another with one directly above and adjacent to the other; and means for pressing the wire pieces against one another with a defined pressure, whereby total resistance may be measured between an uppermost and lowermost wire piece with other crossed wire pieces in between.

4,404,519

TESTING EMBEDDED ARRAYS IN LARGE SCALE INTEGRATED CIRCUITS

Douglas W. Westcott, Wappingers Falls, N.Y., assignor to International Business Machine Company, Armonk, N.Y.

Filed Dec. 10, 1980, Ser. No. 214,923

Int. Cl.³ G01R *15/12*

U.S. Cl. 324—73 R 10 Claims

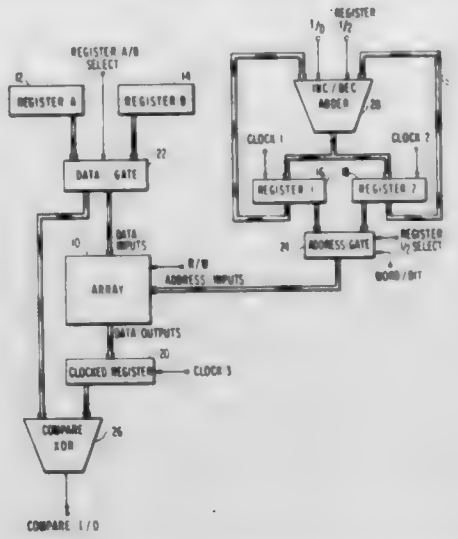
1. In an integrated circuit chip of the type having an embedded memory array surrounded by circuit components, and a plurality of primary input/output pins, said array not being directly accessible from said pins, said array having data inputs and address inputs, said address inputs comprising word lines and bit lines, the improvement comprising the following array-testing chip means which permit complete testing of the array while the array is embedded:

data register means on the chip for supplying test data patterns via the data inputs to be written in selected array cells as selected by addresses on said address inputs;

incrementing address counter means on the chip for providing sequential addresses of the cells in said array;

ripple gate means on the chip for rippling the bit and word addresses applied to said address inputs, said ripple gate means being coupled between said address counter means and said address inputs; and

comparison means on the chip for comparing data read out of the array with expected results and for generating a



signal indicative of the comparison on one of said primary input/output pins.

4,404,520

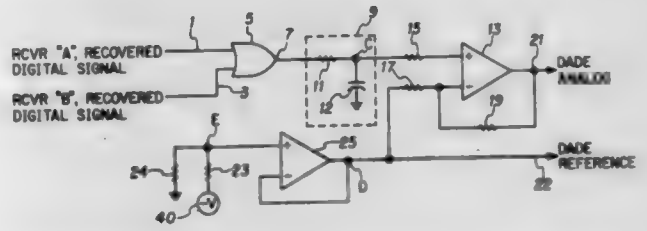
DIFFERENTIAL ABSOLUTE EQUALIZATION MEASUREMENT CIRCUIT

Richard A. Nichols, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 51,768, Jun. 25, 1979. This application Sep. 21, 1981, Ser. No. 304,428

Int. Cl.³ G01R *23/00, 23/12*

U.S. Cl. 324—82 6 Claims



1. A differential absolute delay equalization measuring circuit comprising:

OR gate means for comparing the phase relationship between two digital signals and to provide a first ouput signal thereby;

RC filter means for averaging the first output signal to obtain an average signal;

means for providing a replica pedestal signal; and

summing means for obtaining the difference between the average signal and the replica pedestal signal.

4,404,521

PILFER PROOFING SYSTEM AND METHOD FOR ELECTRIC UTILITY METER BOX

Robert B. Fennell, 241 Deerfield Rd., Bloomingdale, Ga. 31302

Filed Aug. 18, 1980, Ser. No. 179,205

Int. Cl.³ G01R *11/24, 1/04*

U.S. Cl. 324—110 7 Claims

1. Pilfer proofing apparatus for a plug-in utility meter and box of the type having a meter base box, a plug-in electric meter having a glass meter cover, rearwardly projecting male connectors and an annular flange, a plug-in terminal block set and a meter box cover having an opening therein through which said glass meter cover of said electric meter passes to plug and engage said rearwardly projecting male connectors in said terminal block set to pilfer proof same without electrically disconnecting the meter base box and terminal block set from the electrical power line, comprising,

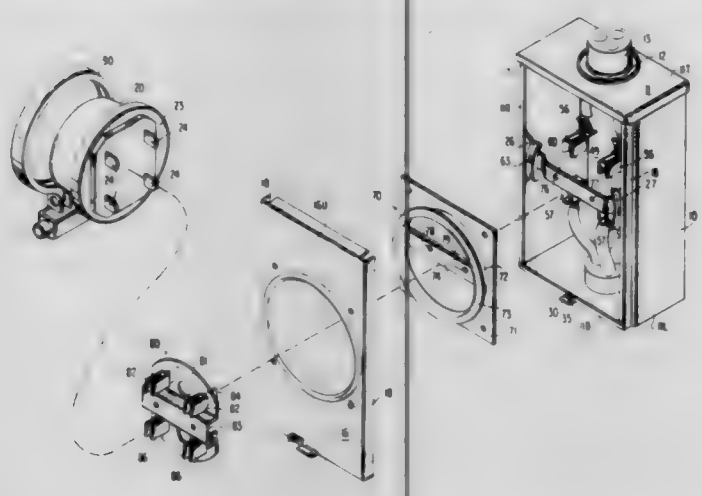
(a) a locking ring member constituted by a meter box cover engaging member and in integral annular locking ring

projection projecting outwardly from the plane of said meter box cover engaging member and through said opening in said meter box cover,

(b) anchor means adapted to be secured to said meter base box,

(c) means securing said locking ring member to said anchor means,

(d) removable insulated blade members releasably retained



in said terminal block set during the installation of elements (a), (b) and (c), and

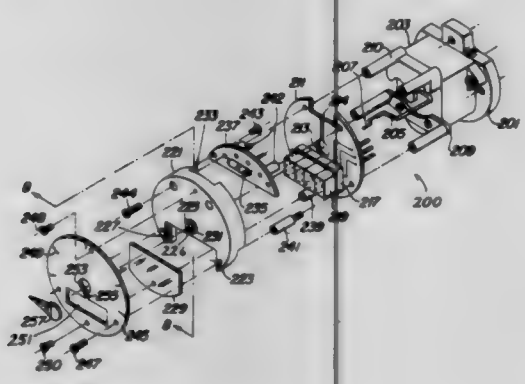
(e) an annular locking ring means engaging said annular flange on the base of said meter and said locking ring projection for securing said meter to said locking ring member and meter base box whereby said projecting male connectors are prevented from being unplugged from said contact terminal block set and said meter base box without removing said annular locking ring.

4,404,522

DISPLAY CONNECTION SCHEME FOR MODULAR ANALOG/DIGITAL INSTRUMENT

Frank Pucciarello, Newark, N.J., assignor to Sangamo Weston, Inc., Norcross, Ga.

Filed May 12, 1981, Ser. No. 262,848
Int. Cl.³ G01R *1/00, 1/04*
U.S. Cl. 324—114 **10 Claims**



1. A modular analog/digital instrument display for use in a cylindrical housing comprising:

a base adapted to fit within said housing;

an analog meter movement adapted to fit within said housing and mounted to said base, said meter movement including a rotatable shaft having a portion thereof extending in a direction substantially parallel to the longitudinal axis of said housing;

a circuit board adapted to fit within said housing and mounted in a spaced-apart relationship to said meter movement, said circuit board including electrical contacts formed on at least a portion thereof, said circuit board further having an opening formed therein for receiving said meter movement shaft;

a leadless digital display;

means for mounting said digital display to said circuit board including means for electrically connecting electrical contacts of said digital display with said contacts of said circuit board, said mounting means comprising spacer means disposed between said circuit board and said digital display, electrically conductive means disposed between said digital display and said circuit board for connecting said electrical contacts of said digital display with said electrical contacts of said circuit board, and means for clamping said digital display, electrically conductive means and spacer means to said circuit board;

an analog dial adapted to fit within said housing and mounted to said circuit board, said dial including a first opening for receiving said meter movement shaft and a second opening for exposing said digital display to view; and

a dial pointer mounted to the end of said meter movement shaft extending through said dial, said dial pointer being arranged adjacent to a face of said dial.

4,404,523

READOUT CIRCUIT FOR LINEAR DISPLACEMENT TRANSDUCER

Michael G. Hughes, Sharon, Vt.; Radu R. Tenenbaum, Hanover, N.H., and Al Bugay, Boulder, Colo., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jul. 10, 1980, Ser. No. 168,823
Int. Cl.³ G01B *7/14*
U.S. Cl. 324—207 **8 Claims**

1. A measurement circuit for a line displacement transducer, wherein the transducer comprises at least one magnet mounted to an object the displacement of which is to be measured, and a magneto-strictive probe disposed adjacent the at least one magnet, said measuring circuit comprising:

pulse generating means for exciting the probe such that a magnetic field is created in the probe which intersects with the magnetic field of the at least one magnet to create a corresponding at least one stress wave in the probe;

controllable counter means for counting at a predetermined rate, said counter means being responsive to a first control signal for commencing a counting and to a second control signal for stopping a counting;

means coupled to the probe and to said counter means for detecting said at least one stress wave and producing said second control signal;

control means coupled to said pulse generating means and to said counter means for controlling said pulse generating means and for producing said first control signal such that said counter begins counting in a predetermined time relationship to the generation of a pulse by said pulse generating means; and

controllable power supply means for supplying power to said pulse generating means, said counting means, and said

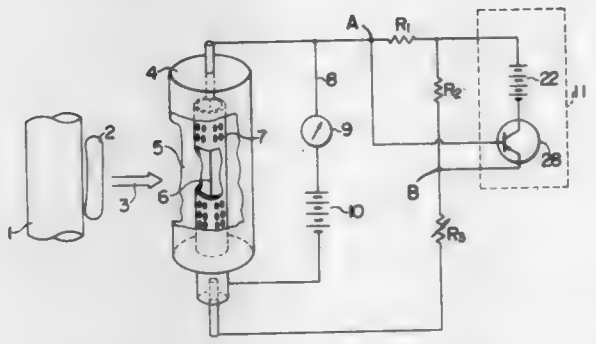
detecting means, and wherein said control means includes means for controlling said power supply such that power is supplied for a predetermined period of time during which a measurement is made.

4,404,524

IONIZATION DETECTOR

Hajime Yamamoto, Hitachi, and Yoshihiko Sato, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 221,019
Claims priority, application Japan, Jan. 7, 1980, 55-113
Int. Cl.³ G01N *27/62*
U.S. Cl. 324—459 **7 Claims**



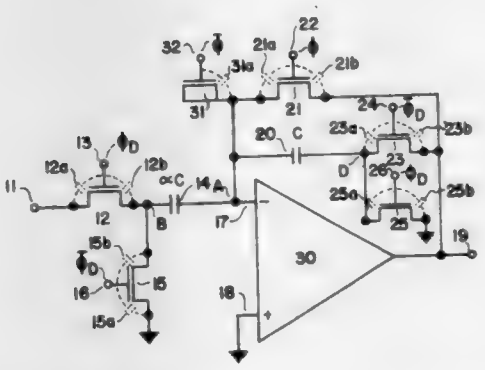
1. An ionization detecting element for ionizing a substance to be measured, comprising:
an insulating member in the form of a rod;
a filament electrode film provided on the surface of said insulating member; and
a thermocouple so supported by said insulating member as to be in contact with said filament electrode film.

4,404,525

SWITCHED CAPACITOR GAIN STAGE WITH OFFSET AND SWITCH FEEDTHROUGH CANCELLATION SCHEME

Gideon Amir; Yusuf Haque, both of San Jose, and Roubik Gregorian, Santa Clara, all of Calif., assignors to American Microsystems, Inc., Santa Clara, Calif.

Filed Mar. 3, 1981, Ser. No. 239,945
Int. Cl.³ H03F *1/34*
U.S. Cl. 330—9 **10 Claims**



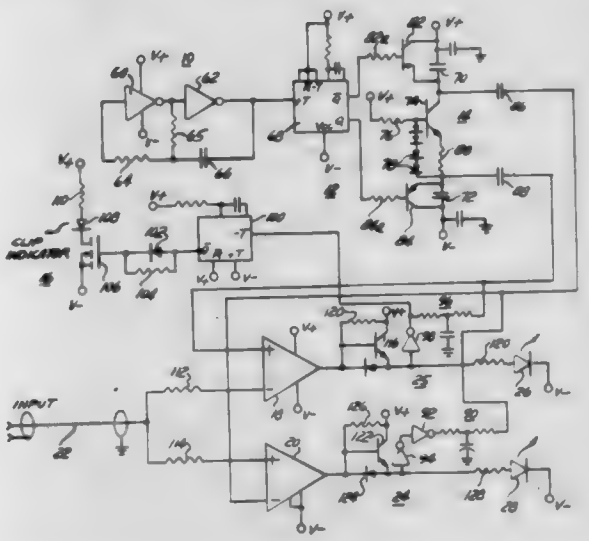
1. A gain stage having an input terminal and an output terminal, said gain stage comprising:
an operational amplifier having an inverting input terminal, a non-inverting input terminal connected to a voltage reference, and an output lead connected to said output terminal;
a switched-capacitor resistor equivalent circuit responsive to a first control signal having a first and a second phase, said switched-capacitor resistor equivalent circuit connected between said input terminal of said gain stage and said input inverting terminal of said operational amplifier;
a capacitor having a first and a second plate, said first plate connected to said inverting input terminal of said operational amplifier;
a first switch means responsive to said first control signal, said first switch means connected between said second plate of said second capacitor and said output terminal of said operational amplifier, whereby said first switch means is open during an initialization period;
a second switch means responsive to said first control signal, said second switch means connected between said second plate of said second capacitor and said voltage reference, whereby said second switch means is closed during said initialization period;
a third switch means responsive to a second control signal having a first and a second phase, said third switch means connected between said inverting input terminal of said operational amplifier and said output terminal of said operational amplifier, whereby said third switch means is closed during said initialization period;
wherein said first control signal is identical to said second control signal and delayed from said second control signal, thereby to provide two non-overlapping control signals and to provide an output voltage on said output terminal of said operational amplifier, said output voltage being free from error components caused by spurious voltages generated by the operation of said first switch means, said second switch means and said switched-capacitor resistor equivalent circuit.

4,404,526

HIGH FIDELITY AUDIO ENCODER/AMPLIFIER

Larry J. Kirn, 24614 Walden Rd. West, Southfield, Mich. 48034

Filed Feb. 2, 1981, Ser. No. 230,397
Int. Cl.³ H03F *3/38*
U.S. Cl. 330—10 **9 Claims**



1. An audio encoder/amplifier for coupling, modulating and amplifying an audio signal and providing it to operate a speaker or other load device, comprising: an audio input terminal; means for generating two common source complementary signals, one positive going and the other negative going, including a pair of capacitors, each connected to a common constant current source; comparator means for comparing each of said complementary signals to said audio input signal and producing two pulse width modulated output signals; and switching means having its input connected to said output signals and operably connected to said load device for operating it with relatively high current and high speed.

4,404,527

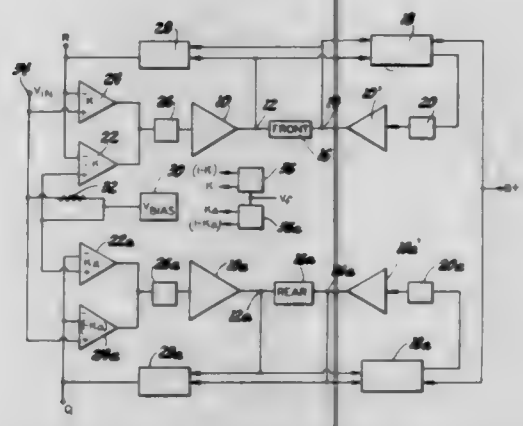
BRIDGE AUDIO AMPLIFIER INCLUDING LOW LEVEL FADE CONTROL

Burtron D. Schertz, and Jerry L. Glandon, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 3, 1980, Ser. No. 203,425
Int. Cl.³ H03F *3/68*
U.S. Cl. 330—84 **6 Claims**

1. An audio amplifier comprising an input stage, an output

stage providing inverting and non-inverting outputs for connection with a load, said input stage comprising a bias amplifier and a signal amplifier each having first and second inputs, means applying equal dc bias voltages to said bias and signal amplifiers, means for applying an audio signal to said first input of said signal amplifier, means for converting the combined output current of said bias and signal amplifiers to a voltage



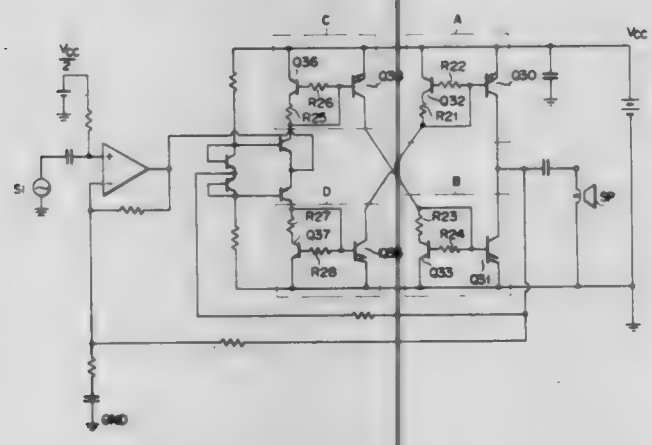
signal and for applying said voltage signal to said output stage, feedback means interconnecting said inverting and non-inverting outputs with said second inputs of said bias and signal amplifiers for establishing the maximum closed loop gain of the amplifier, and means responsive to a variable dc control voltage for reciprocably varying the transconductance of said bias and signal amplifiers to vary the ac gain of said input stage.

4,404,528

OUTPUT AMPLIFIER

Hiroyasu Yamaguchi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 11, 1981, Ser. No. 301,439
Claims priority, application Japan, Sep. 16, 1980, 55/128339
Int. Cl.³ H03F *3/04, 3/26*
U.S. Cl. 330—288 **3 Claims**



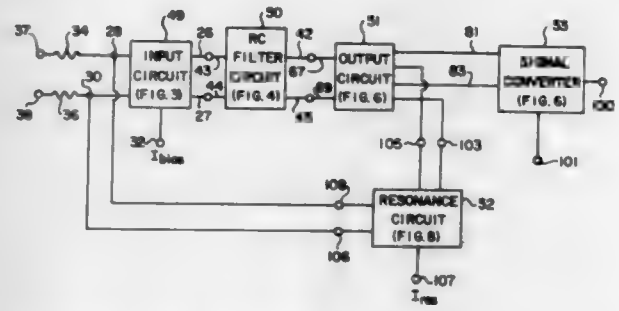
1. An output amplifier comprising:
an output transistor;
a biasing transistor whose emitter is connected to the emitter of said output transistor and whose polarity is the same as the polarity of said output transistor;
a first resistor connected to the collector of said biasing transistor; and
a second resistor connected to the base of said biasing transistor, the other end of said second resistor being connected to the other end of said first resistor, a node of said first and second resistors being connected to the base of said output transistor, and a signal being input at said node;
whereby a circuit comprising said biasing transistor and said first and second resistors operates as a current mirror circuit when a small current is applied and as a resistance circuit when a large current is applied.

4,404,529

LOWPASS FILTER WITH ELECTRONIC CONTROL OF CUTOFF AND RESONANCE

David P. Rossum, 1619 San Andreas Rd., La Selva Beach, Calif. 95076, and Ronald N. Dow, 575 Remington, Apt. 16E, Sunnyvale, Calif. 95087

Filed Dec. 30, 1980, Ser. No. 221,299
Int. Cl.³ H03G *5/22*
U.S. Cl. 330—303 **15 Claims**



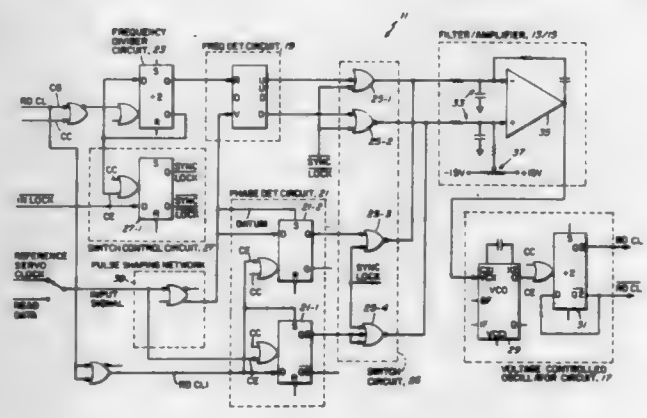
1. An electronic filter circuit, comprising:
a first stage having an input and a differential output for superimposing an input signal upon a bias signal to produce a first differential composite signal current at the output thereof;
a second stage having a differential input connected to said output of said first stage, an output and means connected to said input and said output for producing a second stage differential output current of substantially opposite polarity to the current at the input thereof;
said second stage having a variable input impedance associated therewith, the value of which is functionally related to the magnitude of said bias signal;
said second stage having a cutoff frequency associated therewith, the value of which is functionally related to the value of said input impedance; and
a third stage having first and second differential input terminals and first and second differential output terminals for receiving said second stage differential output current at said input terminals and for converting said current to a differential voltage at said first and second output terminals thereof.

4,404,530

PHASE LOCKED LOOP WITH COMPENSATION FOR LOOP PHASE ERRORS

Arthur N. Stryer, Winchester, Mass., assignor to Data General Corporation, Westboro, Mass.

Filed Oct. 22, 1980, Ser. No. 199,659
Int. Cl.³ H03L *7/08*
U.S. Cl. 331—1 A **2 Claims**



1. In a phase-locked loop circuit for use in a data recovery system of a rotating magnetic disk drive unit employing a phase encoded signal format and including a phase detector, a filter coupled to the output of the phase detector, an operational amplifier coupled to the filter and a voltage controlled

oscillator coupled to the output of the operational amplifier, in which the phase detector compares an input signal with the output signal of the voltage controlled oscillator and provides a control signal to the voltage controlled oscillator, the improvement comprising: adjustable voltage means for supplying a voltage signal to said operational amplifier sized to offset phase errors caused by the components in said phase locked loop circuit, said adjustable voltage means comprising a positive supply voltage source, a negative supply voltage source and a potentiometer, said potentiometer having a movable arm connected to an input of said operational amplifier and a main leg connected at one end to said positive supply voltage source and at the other end to said negative supply voltage source.

4,404,531

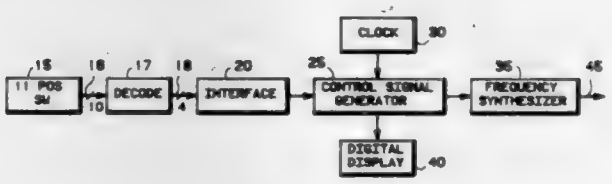
FREQUENCY SCANNING APPARATUS WHEREIN A SINGLE KNOB CONTROLS BOTH STEP SIZE AND DIRECTION OF CHANGE

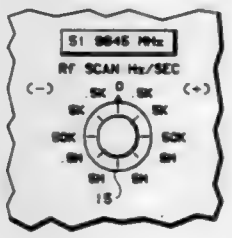
Thad J. Genrich, Mesa, and Robert H. Bickley, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 5, 1980, Ser. No. 156,886

Int. Cl.³ H03B *1/00*

U.S. Cl. 331—64 **9 Claims**





1. Frequency scanning apparatus comprising:

(a) frequency synthesizing means providing an output frequency within a range of frequencies and altering the output frequency in any of a variety of predetermined steps in response to a control signal;

(b) multimode switching means providing an output signal indicative of a selected mode of said switching means, each mode being representative of a different step change of frequency; and

(c) control signal generating means coupled to receive the output signal from said switching means and generating control signals representative of the selected step changes, said generating means including apparatus for supplying to said frequency synthesizing means a predetermined number of the control signals per unit of time to alter the output frequency the predetermined number of the selected step changes per unit of time.

4,404,532

MODULATOR HAVING IMPROVED BANDWIDTH AND POWER REQUIREMENTS

George R. Welti, Leesburg, Va., assignor to Communications Satellite Corporation, Washington, D.C.

Continuation of Ser. No. 947,313, Sep. 29, 1978, abandoned. This application Mar. 26, 1982, Ser. No. 362,326

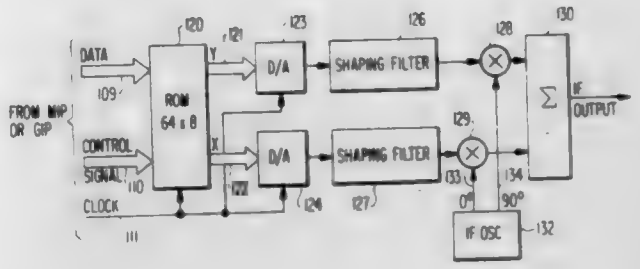
Int. Cl.³ H03C *5/00*; H03D *3/18*; H04J *9/00*

U.S. Cl. 332—17 **31 Claims**

1. In combination:

means for modulating a carrier signal during first time intervals with a first modulation type, said carrier signal being continuously produced during said first time intervals; and

means for modulating said carrier signal during second time intervals with a second modulation type, said first and second time intervals alternating consecutively with each other, said carrier signal being substantially extinguished



during said second time intervals when the corresponding signal with which said carrier is modulated is of substantially zero amplitude.

4,404,533

ELECTROMAGNETIC SWITCH DEVICE

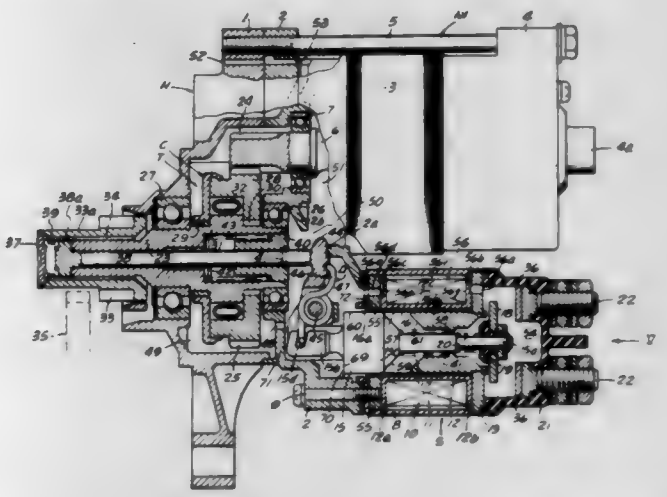
Norimitsu Kurihara, Wako; Katsuharu Kinoshita, Hanno; Masao Watanabe, Niiza, and Toyohiro Sato, Yabuzuka Hon, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1982, Ser. No. 362,997

Claims priority, application Japan, Mar. 27, 1981, 56-42215[U]; Mar. 27, 1981, 56-42217[U]

Int. Cl.³ H01H *50/02*

U.S. Cl. 335—131 **14 Claims**



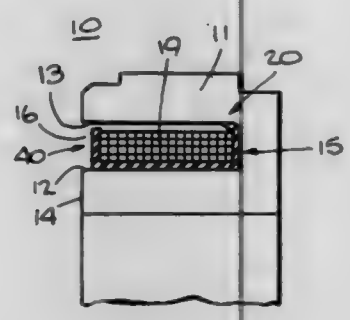
1. An electromagnetic switch device, comprising in combination: a cylindrical housing adapted to be fixed to a stationary member of a device to which said electromagnetic switch device is applied, said housing having a radially extending end wall located adjacent said stationary member; a bobbin accommodated within said housing, a solenoid carried by said bobbin, a cap member fixed to one end of said housing opposite to said end wall of said housing, an annular yoke member interposed between said housing and said cap member and extending radially of said housing, a stationary core positioned inside said bobbin, said cap member defining therein an internal space in cooperation with said yoke member and said stationary core, a movable core movable relative to said stationary core and extending in part through said stationary core into said internal space in said cap member, a fixed contact secured in said cap member, a moving contact mounted on said movable core in face-to-face relation to said fixed contact, resilient means interposed between said movable core and said stationary core and urging said movable core in a direction away from said stationary core; said yoke member, said bobbin and said end wall of said housing being juxtaposed axially of said housing, and air passage means extending through said yoke member, said bobbin and said end wall of said housing to establish communication between said internal space in said cap member with the atmosphere outside of said electromagnetic switch device.

4,404,534

ELECTROMAGNETIC ASSEMBLY

Robert B. Janvrin, Climax, Mich., assignor to General Signal Corporation, Stamford, Conn.

Filed Oct. 14, 1980, Ser. No. 196,888
Int. Cl.³ H01F *27/30*
U.S. Cl. 336—197 **9 Claims**



1. An electromagnetic apparatus comprising:

(a) an axially elongated metallic ferromagnetic core having

(i) inner and outer axially extending walls radially spaced from each other to thereby define a cavity for enclosing a coil assembly,

(ii) an annular opening in the core between the walls at one axial end thereof in order to permit the insertion or removal of a coil assembly.

(iii) an annular closure between the walls at the other axial end thereof defining the axial limit of the coil assembly cavity,

(iv) an axial bore extending radial outward from the longitudinal axis of the core to the inner wall, open at both ends of the core and adapted to accommodate a reciprocating armature.

(b) a coil assembly adapted to fit in the core cavity and including

(i) a cylindrical body,

(ii) radial flanges on each end of the cylindrical body and sized to easily pass axially into the annular opening and between the walls of the core and into the core cavity,

(iii) a coil of wire wound around the cylindrical body between the flanges thereof, and

(iv) interference means carried by the coil assembly extending radially beyond the flanges and positioned abutting against at least one core wall in order to primarily support and removably hold the coil assembly in the core cavity between the walls thereof.

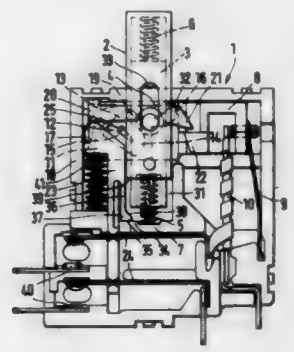
4,404,535

PUSH BUTTON POWER SWITCH

Ulrich Fastenrath, Kierspe, and Siegfried Schulte, Lüdenscheid, both of Fed. Rep. of Germany, assignors to Schulte-Elektrotechnik GmbH & Co., KG, Lüdenscheid, Fed. Rep. of Germany

Filed Jan. 13, 1982, Ser. No. 339,041
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1981, 3100789
Int. Cl.³ H01H *71/16*
U.S. Cl. 337—66 **6 Claims**

1. A push button power switch with snap-action contact braking and contact making movements comprising a switch housing, a push button with a hollow stem guided by the housing for vertical downward movements under a push-button-depressing force, a push button plunger guided for vertical movements within the stem, a comparatively weak compression spring serving as a push button return spring by biasing the push button plunger upwardly into the push button in relation to the housing, a comparatively strong compression spring serving as a cock spring between the push button and the upper extremity of the push button plunger, a generally horizontally oriented switching yoke carried by the push button plunger and extending from one side of the push button with a switching extremity and from the other side with a latching extremity, the switching yoke being pivotably connected to the push button plunger in the manner of a balance beam, a latch slide guided by the housing for horizontal movements into and out of engagement under the latching extremity of the switching yoke, including means for biasing the latch slide toward its engaged position, and a switching slide guided by the housing for vertical movements alongside the push button, the switching slide thereby controlling the contact making and contact breaking positions of at least one contact blade in relation to at least one associated stationary contact, the switching extremity of the switching yoke cooperating with the switching slide by pushing it downwardly, in opposition to a slide return spring weaker than the cock spring, when the push button is depressed, while the latching extremity of the switching yoke is engaged by the latch slide to serve as a yoke fulcrum; the switch further comprising a cam slide guided by the housing for horizontal movements into and out of pushing entrainment of the latch slide in the direction of disengagement, and caming means defined by the cam slide and the push button for the creation of a latch-slide-disengaging cam slide movement in a first portion of an upward release



movement of the push button from its fully depressed position, with the effect that the switching yoke is freed to pivot, thereby allowing a snap-action upward movement to be imparted to the switching slide by its return spring, the improvement in said switch comprising:

an abutment member which is movable transversely to the movement direction of the switching slide and which, in its normal position, cooperates with the switching slide and with the switch housing to block the downward movement of the switching slide in relation to the housing, thereby producing a compression of the cock spring, when the push button is depressed;

means for resiliently biasing the abutment member in the sense of a return to its normal blocking position; and

trigger means defined by the abutment member and the push button for the creation of an abutment member release movement, away from its normal position, in response to the push button reaching the vicinity of its fully depressed position, with the effect that the switching slide is freed to execute a snap-action downward movement imparted to it by the cock spring, via the push button plunger and the switching yoke.

4,404,536

ELECTRICAL FUSE

Wolfgang Still, Herdecke, Fed. Rep. of Germany, assignor to Wickmann-Werke AG, Witten-Annen, Fed. Rep. of Germany

Filed Sep. 3, 1980, Ser. No. 183,921
Claims priority, application Austria, Sep. 6, 1979, 5896/79
Int. Cl.³ H01H *85/02*
U.S. Cl. 337—201 **20 Claims**

1. In an electrical fuse comprising a carrier of electrically insulating material; a cover of electrically insulating material; means attaching said cover to said carrier to define therewith a housing of electrically insulating material; spaced contactors extending from within to outside of said housing for connecting said fuse into an electrical circuit; and a fusible conductor

connecting said contactors within said housing, the improvement wherein said carrier is in the form of a panel of flat material; said contactors are clamped firmly onto an edge of said carrier; and said cover has spacer projecting parts resting



against said carrier to provide a clearance between said cover and said carrier to accommodate said fusible conductor, and projecting catch members comprising said means for attachment of said cover to said carrier.

4,404,537

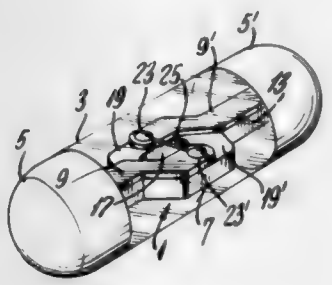
QUICK-ACTING FUSE

Hiroo Arikawa, Tokyo, Japan, assignor to San-O-Industrial Corp., Tokyo, Japan

Continuation of Ser. No. 131,075, Mar. 17, 1980, abandoned. This application Mar. 15, 1982, Ser. No. 357,982

Int. Cl.³ H01H *85/16*

U.S. Cl. 337—232 **8 Claims**



1. A quick-acting fuse comprising a fuse base encased within an insulated cartridge, said fuse base consisting of a lower insulating plastic layer and an upper conductive metallic layer coextensively bonded to said lower layer; said fuse base having an enlarged mid-section, a generally elliptical hole in said mid-section, said mid-section necking to a pair of laterally projecting arms on both sides thereof, the ends of said arms being soldered to end caps used to seal the ends of said insulated cartridge, and wherein said metallic layer is partly etched away around said hole to define a pair of spaced apart and opposed conductive terminals with curved tips, a pair of opposed grooves, one in each of said conductive terminals, and a fusible element stretched between said grooves, across said elliptical hole in said fuse base essentially perpendicular to the longitudinal axis of said fuse base.

4,404,538

TEMPERATURE SWITCH INCLUDING AMORPHOUS METAL SHEET

Kojiro Mori, Okazaki, Japan, assignor to Aisin Seiki Co., Ltd., Kariya, Japan

Filed Aug. 24, 1981, Ser. No. 295,375

Claims priority, application Japan, Aug. 29, 1980, 55-120099

Int. Cl.³ H01H *37/52*

U.S. Cl. 337—336 **6 Claims**

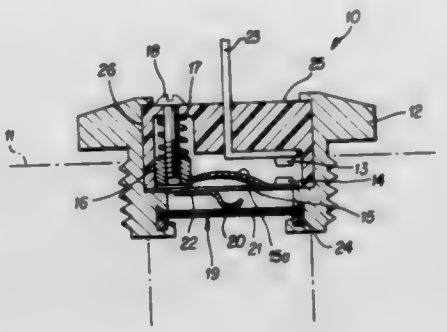
1. A water temperature switch comprising:

a housing;

a movable contact mounted in said housing for movement between a first and second position;

a fixed contact mounted in said housing and operatively associated with said movable contact for engagement with said movable contact in said second position, and

heat sensitive plate means mounted in said housing and including a thin, corrosion resistant low expansible, amorphous metal sheet and a thin, highly expansible alloy sheet integrally joined together, only said amorphous metal sheet side being exposed to a predetermined water region, the temperature of which is to be determined wherein



deflection of said heat sensitive plate means is caused by a temperature change in said region for a movement of said movable contact with respect to said fixed contact.

4,404,539

SEMICONDUCTOR STRAIN GAUGE

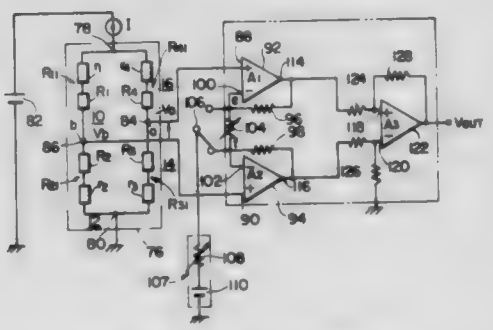
Kazuji Yamada, Hitachi; Motohisa Nishihara, Katsuta; Hideo Sato, Hitachi; Seiko Suzuki, Ibaraki, and Ryoichi Kobayashi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 23, 1981, Ser. No. 236,934

Claims priority, application Japan, Feb. 22, 1980, 55/20440

Int. Cl.³ G01L *1/22*

U.S. Cl. 338—3 **6 Claims**



1. A semiconductor strain gauge comprising:

a semiconductor substrate of one conductivity on which a pressure sensitive diagram is formed; and

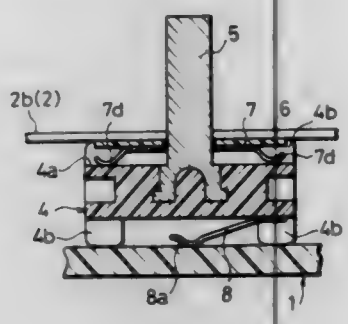
at least two piezoresistive elements formed in a major surface of said semiconductive substrate adjacent to said pressure sensitive diaphragm and having an opposite conductivity to said one conductivity,

wherein each of said piezoresistive elements includes at least one low impurity concentration diffused portion and at least one heavily-doped diffused portion connected in series, said low impurity concentration portion having a higher resistance temperature coefficient than that of the heavily-doped portion, and further wherein the resistance for each of the respective diffused portions of the piezoresistive elements is set to provide a resistance value of one low impurity concentration diffused portion in one of said piezoresistive elements higher than that of a low impurity concentration diffused portion in the other of said piezoresistive elements and a resistance value of one heavily-doped diffused portion in said one of said piezoresistive elements smaller than that of a heavily-doped diffused portion in said other of said piezoresistive elements, so that said two piezoresistive elements are substantially equal in their overall resistance but unequal in their overall resistance temperature coefficient, with the overall resistance temperature coefficient of said one piezoresistive element being greater than the overall resistance temperature coefficient of said other piezoresistive element.

4,404,540
SLIDE RHEOSTAT

Tsutae Okuya, and Nobuaki Anzai, both of Miyagi, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Apr. 12, 1982, Ser. No. 367,757
Claims priority, application Japan, Apr. 13, 1981, 56/52910
Int. Cl.³ H01C *10/30*
U.S. Cl. 338—161 1 Claim

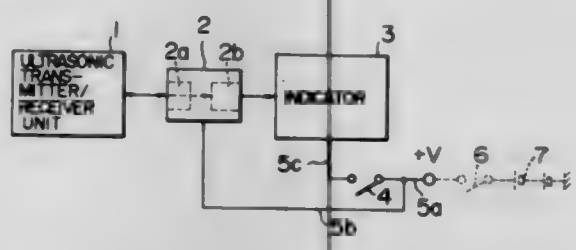


1. A slide rheostat comprising a case, receiver received in said case, a lever extending outwardly of said case from said receiver, a movable insulating plate having a central hole for receiving said lever therethrough, and a leaf spring including a central portion and resilient protuberant pieces disposed at peripheral portions of said central portion, said movable insultating plate and said leaf spring being made unitary by mounting said central portion of the latter on the former, the unitary movable insulating plate and leaf spring receiving said lever therethrough, said protuberant pieces being held in resilient contact with an upper surface of said case through the resiliency of said leaf spring.

4,404,541
REAR OBSTACLE DETECTING SYSTEM FOR AUTOMOTIVE VEHICLES

Masao Kodera; Sigeyuki Akita, and Yasuhisa Yoshino, all of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jun. 30, 1981, Ser. No. 279,014
Claims priority, application Japan, Jul. 3, 1980, 55-94336[U]
Int. Cl.³ G08G *1/00*
U.S. Cl. 340—32 7 Claims



1. A rear obstacle detecting system for an automotive vehicle comprising:

ultrasonic transmitting and receiving means having an electrically operable ultrasonic vibrator mounted at the rear exterior portion of said automotive vehicle;

electrically operable computing means in response to a received signal from said ultrasonic transmitting and receiving means for determining a distance to an obstacle in the backward direction of said automotive vehicle;

electrically operable utilizing means connected to said computing means for utilizing a result of the determination of said computing means;

first detection means for detecting whether said automotive vehicle is in an operating condition or not;

first power supply control means for energizing said ultrasonic transmitting and receiving means by an electric power source of said vehicle in response to the detection of said detecting means that said vehicle is in the operating condition, thereby to vibrate said ultrasonic vibrator so as to be maintained clean so long as said vehicle is operating;

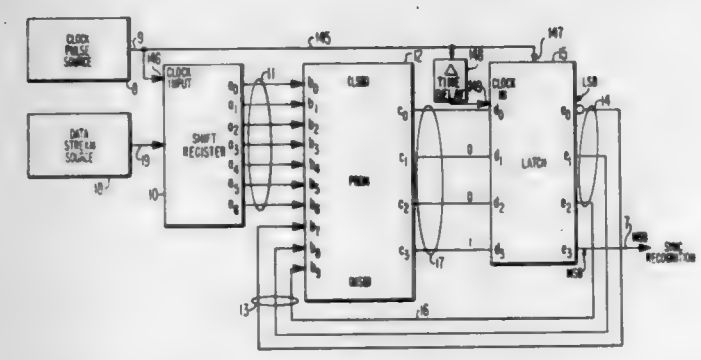
second detection means for detecting a backward movement of said vehicle; and

second power supply control means for energizing said utilization means by said electric power source in response to the detection of the backward movement of said vehicle, thereby to render said utilization means operable only when said vehicle is moving backwardly.

4,404,542
DIGITAL SEQUENCE DETECTOR

Caleb H. Thomas, Jr., Pennsauken, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 5, 1980, Ser. No. 213,394
Int. Cl.³ G06F *7/02*
U.S. Cl. 340—146.2 3 Claims



1. A digital sequence detector for detecting a predetermined serial sequence of L bits and comprising:

a shift register having N stages for serially receiving said serial sequence of L bits with the reception of each additional bit constituting a new group of N bits contained in said shift register;

memory means having X memory locations, N+M input terminals, and at least M output terminals;

first means for supplying the contents of said N stages of said shift register to said N input terminals of said memory means;

second means for supplying the signals on said M output terminals of said memory means to the M input terminals of said memory means;

said second means comprising means for delaying the supplying of the signals appearing on the M output terminals of said memory means to the M input terminals thereof until the next bit of said expected sequence has been entered into said shift register means to form a next successive group of N signals;

said memory means responsive to each next successive group of N signals supplied thereto from said shift register and the delayed signals on the M output terminals of said memory means to produce a predetermined sequence of binary patterns on said M output terminals thereof as long as the predetermined sequence of L bits is being correctly received into said shift register; and

means responsive to the last predetermined binary pattern supplied from said memory means to indicate the reception of the complete sequence of L binary bits received by said shift register;

said memory means being responsive to any group of N bits in said shift register which varies from any expected group of N bits to output the first binary pattern in said sequence of binary patterns.

4,404,543
DOWN MARKER INDICATOR FOR FOOTBALL COMPETITION

David L. Kracl, 14406 Tiburon Rd., San Leandro, Calif. 94577

Filed Aug. 3, 1981, Ser. No. 289,480
Int. Cl.[3] G08B *23/00*; A63B *71/06*
U.S. Cl. 340—323 R 2 Claims



1. Down marker indicator for use with football sideline chains and comprising, in combination:

(a) an inner cylinder, with a sleeve that rotates or moves up and down on a vertical axis, numerical down indicia printed on the outer surface of said cylinder,

(b) an outer cylinder having a dome top and bottom, three evenly spaced viewing openings around the outer circumference of the outer cylinder for viewing said numerical down indicia,

(c) a vertical axis center pole having a rounded tip at its base, said center pole attached to the outer cylinder dome top by means of male and female thread fittings and including a collar and push button release means for positioning said outer cylinder,

(d) means for illuminating said down marker indicator, switch means connecting said illuminating means to an external portable power source means for energizing said illuminating means,

(e) said outer cylinder further including two movable dials with numerical indicia printed thereon attached to the circumferential edge of the dome bottom.

4,404,544
μ-LAW/A-LAW PCM CODEC

Mirmira R. Dwarakanath, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 9, 1981, Ser. No. 252,600
Int. Cl.[3] H03K *13/02, 13/08*
U.S. Cl. 340—347 AD 9 Claims

1. In a PCM CODEC, a capacitor array designed to be configured for either μ-law or A-law coding, said array comprising

a binary-weighted set of capacitors,

an additional capacitor having the same value as the lowest-valued capacitor in said set,

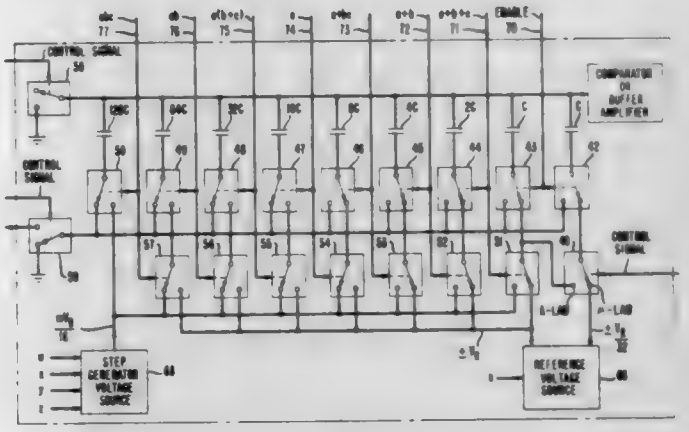
means connecting one plate of each of said capacitors to a common node point,

first means for connecting the other plate of said additional capacitor either to a fixed fraction of the opposite polarity of a reference voltage thereby to configure said array of capacitors for μ-law coding or for connecting said additional capacitor and the lowest-valued capacitor in said set in parallel thereby to configure said array of capacitors for A-law coding,

second means for connecting the other plate of the highest-valued capacitor in said set either to a point of reference potential such as ground or to a variable fraction of said reference voltage,

and third means for connecting the other plate of each of said capacitors in said set except the lowest-valued and highest-valued capacitors thereof to said point of reference potential, to a variable fraction of said reference voltage or to said reference voltage,

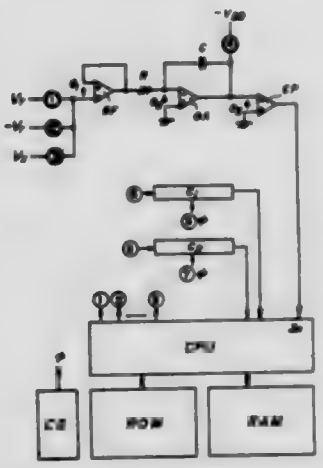
wherein said first, second and third means constitute a cascaded arrangement of switches for connecting the other plate of each of the capacitors in a consecutive subset of said set of capacitors to said reference voltage and at the same time automatically connecting the other plate of the next higher-valued capacitor of said set to a variable fraction of said reference voltage.



4,404,545
ANALOG-TO-DIGITAL CONVERTER OF THE DUAL SLOPE TYPE

Tousaku Nakanishi, Nara, and Hiroshi Tsuda, Uji, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 11,913, Feb. 13, 1979, abandoned. This application Apr. 28, 1981, Ser. No. 258,313
Int. Cl.[3] H03K *13/02*
U.S. Cl. 340—347 NT 4 Claims



1. A semiconductor electronic circuit for determining an unknown voltage value while compensating for an offset error voltage present in said circuitry comprising:

a first switched input means for selectively receiving a first reference voltage;

a second switched input means for selectively receiving a second reference voltage equal to said first reference voltage but reversed in polarity;

a third switched input means for selectively receiving an unknown voltage value;

an integrator including a differential amplifier and a feed-

back capacitor, said integrator being connected to said first, second, and third switched input means and having an output;

said first switched input means selectively receiving and providing said first reference voltage to said integrator during a first predetermined time period to produce a first integrated voltage value at the output of said integrator, said first predetermined time period beginning when said integrator produces an output greater than zero;

said second switched input means selectively receiving and providing said second reference voltage to said integrator after said first predetermined timed period is completed and until the output of said integrator equals zero;

means for measuring the duration of the integration of the input applied by said second switched input means after said first predetermined time period to form a first measured time period;

said third switched input means selectively receiving and providing said unknown voltage to said integrator during a second predetermined time period to produce a second integrated voltage value at the output of said integrator, said second predetermined time period beginning when said integrator produces an output greater than zero;

said second switched input means selectively receiving and applying said second reference voltage to said integrator after said second predetermined time period is completed and until output of said integrator is zero;

means for measuring the duration of the integration of the input applied by said second switched input means after said second predetermined time period to form a second measured time period; and

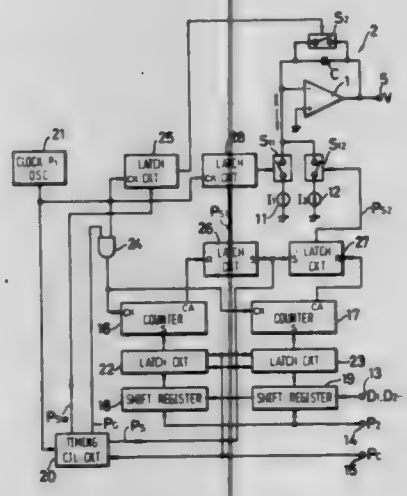
means for determining the value of said unknown voltage using said first and second predetermined time periods, said first and second measured time periods and said first reference voltage.

4,404,546

DIGITAL-TO-ANALOG CONVERTER

Ikuro Hata, Hiratsuka, and Masashi Takeda, Isehara, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 11, 1981, Ser. No. 329,698
Claims priority, application Japan, Dec. 15, 1980, 55-176888
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA 14 Claims



1. A digital to analog converter circuit for converting digital words of n bits into a corresponding analog level, comprising

integrating means having an input to which charging current is applied and an output from which said analog level is derived;

a plurality of current sources each providing a constant current at a different respective predetermined level;

a plurality of switching means each associated with a respective one of said current sources for coupling the same to said integrating means to provide charging current thereto;

a plurality of digital counters each corresponding to a respective one of said switching means and holding a predetermined portion of said n bits, the digital counters in the aggregate holding all said n bits, each said counter being coupled to its respective switching means to provide a switching signal when the contents thereof reach a predetermined count;

clock generator means providing clocking signals to said digital counters; and

means for receiving said n-bit digital words, dividing the same into a plurality of fragments, and loading each such fragment into a respective one of said counters;

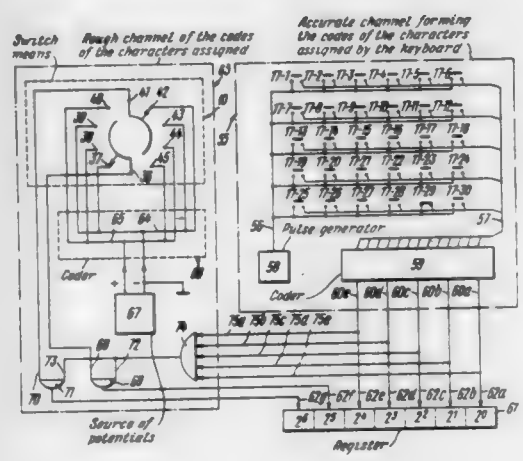
the circuit being so configured that when said fragments have been loaded into said counters, said counters begin counting said clocking signals and said switching means are closed for supplying said charging current to said integrating means, and when the contents of each of said counters reaches said predetermined count, that counter provides said switching signal to open the associated switching means to cut off the charging current from the respective current source.

4,404,547

DATA INPUT KEYBOARD

Valentin P. Zybailo, ulitsa Ya.Kolasa, 62, kv.20; Anatoly N. Kniga, ulitsa Volgogradskaya, 1, korpus 3, kv. 41; Ljudmila E. Kosyan, Leninsky prospekt, 104, kv. 28; Valentin P. Rudenko, ulitsa Knorina, 11/2, kv. 95, and Sergei A. Poltaev, 1 Junoshesky pereulok, 18/60, all of Minsk, U.S.S.R.

Filed Jun. 11, 1981, Ser. No. 270,417
Int. Cl.³ G06F *3/02;* H01H *19/58, 21/78*
U.S. Cl. 340—365 R 9 Claims



1. A data input keyboard comprising

a panel,

a plurality of keys arranged on said panel in the form of a matrix of "m" lines and "n" columns,

each of said keys being provided with a resilient member, a pusher and a contact pair coupled to said pusher,

said contact pairs of said keys defining an accurate channel of forming the codes of characters being assigned by the keyboard;

a switch means provided with a plurality of contact pairs, in each of which one of the contacts is movable, while the other is stationary,

said contact pairs of said switch means defining a rough channel of forming the codes of said characters; and

a rotation transfer mechanism provided with an input shaft with a rotation member and "m" output shafts,

said rotation transfer mechanism being coupled to said contacts of said contact pairs of said switch means for switching said rough channel,

each of said keys having the shape of a cylinder with faces

on peripheral surfaces thereof carrying the inscriptions of said characters,

each of said keys being capable of rotation about the longitudinal axis of the cylinder,

said keys of the "m" lines of said matrix being mounted on one of said output shafts of said rotation transfer mechanism, and

each of said keys being mounted on said output shaft of said rotation transfer mechanism to be capable of shifting towards its pusher.

4,404,548

METHOD FOR TRANSMITTING MEASURING VALUES IN A FIRE ALARM SYSTEM AND APPARATUS FOR THE PERFORMANCE OF THE AFORESAID METHOD

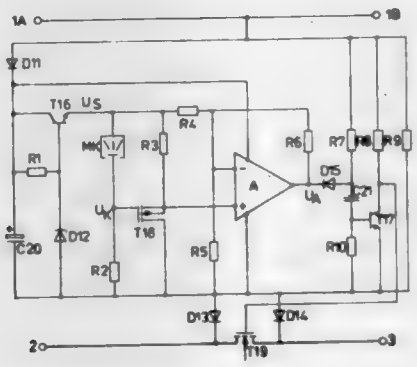
Peter Mueller, Oetwil am See; Eugen Schibli; Andreas Scheidweiler, both of Uerikon, and Jurg Muggli, Mannedorf, all of Switzerland, assignors to Cerberus AG, Männedorf, Switzerland

Filed Jun. 8, 1981, Ser. No. 271,187

Claims priority, application Switzerland, Jun. 23, 1980, 4803/80

Int. Cl.³ G08B *26/00*

U.S. Cl. 340—505 **12 Claims**



1. In a method of transmitting measuring values in a fire alarm installation wherein measuring values determined by individual fire alarms connected in series at alarm reporting lines are transmitted in recurrent interrogation cycles to a central signal station beginning with a fire alarm closest to the central signal station and terminating with a last fire alarm located furthest from the central signal station, the transmitted measuring values are linked at the central signal station for obtaining differentiated disturbance or alarm signals, whereby at the start of each interrogation cycle for all fire alarms there is disconnected the alarm reporting line by a voltage change, then there is again reconnected in a timewise staggered fashion the reporting lines such that each fire alarm after a certain time-delay connects a subsequently arranged fire alarm with the line voltage whereby there is caused an increase of current in the reporting line, and there is derived in an evaluation device from a number of preceding increases in the line current a momentary fire alarm address; the improvement which comprises the steps of:

returning the alarm reporting lines from the last fire alarm in each reporting line to terminals of the central signal station; and

upon absence of fire alarm signals reversing an interrogation direction for the affected alarm reporting line.

4,404,549

LATCHING PORTABLE PERSONAL SECURITY ALARM

Richard Berg, 12520 Easton Dr., Saratoga, Calif. 95070

Filed May 11, 1981, Ser. No. 262,307

Int. Cl.³ G08B *15/00*

U.S. Cl. 340—574 **12 Claims**

1. A portable alarm device comprising:

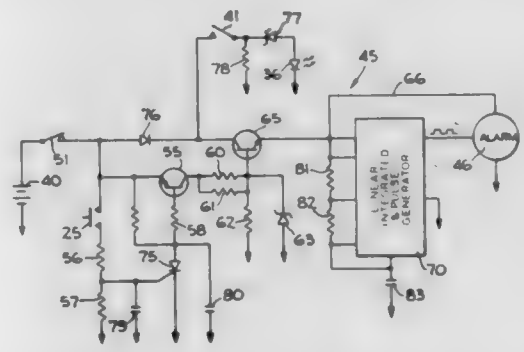
(a) a housing;

(b) means on said housing for supporting said housing on the person of an operator;

(c) an alarm on said housing; and

(d) a control circuit in said housing for controlling the operation of said alarm,

(e) said control circuit including a manually actuable switch



on said housing to activate said control circuit for operating said alarm, said control circuit once activated continuously operates said alarm until said control circuit is deactivated, said control circuit including an alarm deactivating switch on said housing manually actuable to deactivate said control circuit for discontinuing the operation of said alarm.

4,404,550

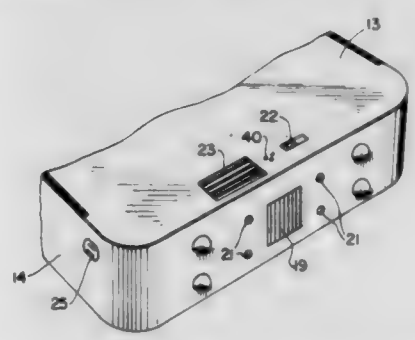
SMOKE DETECTOR - LUGGAGE COMBINATION

Jack B. Shaw, 2710 Bedford St., Johnstown, Pa. 15904

Filed Apr. 7, 1981, Ser. No. 251,931

Int. Cl.³ G08B *17/10*

U.S. Cl. 340—628 **9 Claims**



1. A luggage-type device including a smoke detector, said luggage comprising an upper and lower portion and side portion, said upper portion being hinged to said side portion, with means to join said upper and side portions when said luggage is transported, said side portion including a semi-rigid support portion having supported thereon a smoke detecting device, a vent means communicating said smoke detector to outside said luggage, said vent passing through said side portion of said luggage and power supply means to supply power to said smoke detector.

4,404,551

PLURAL VIDEO KEYBOARD ACCESS SYSTEM

Peter Howse, Pembury; Dennis Cookson, Chelmsford, and Stephen P. Lane, Gillingham, all of England, assignors to Reuters Limited, London, England

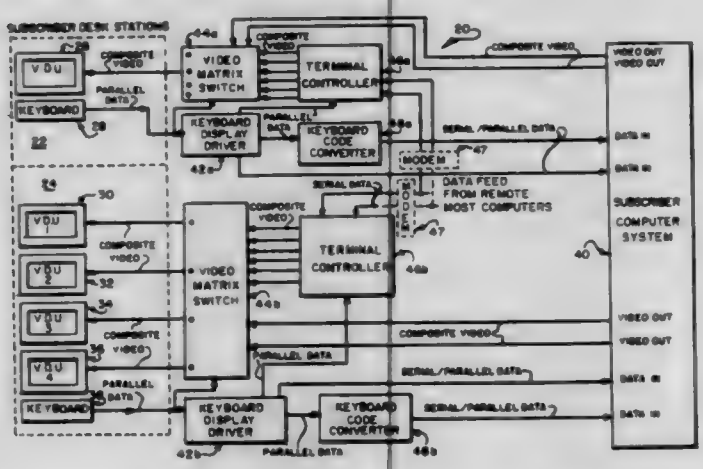
Filed Apr. 14, 1981, Ser. No. 254,136

Int. Cl.³ G06F *3/14*

U.S. Cl. 340—711 **24 Claims**

1. In a video communication network capable of providing a plurality of simultaneous different textual data video frames to a plurality of keystations, said video frames comprising textual data provided from a plurality of computer systems each capable of providing a portion of said plurality of simultaneous textual data video frames to said network, each keystation comprising a single keyboard means for inputting at least data

control signals to said plurality of computer systems for controlling the provision of said textual data from said computer systems, each keystation further comprising at least one associated video display means for selectively video displaying one of said plurality of simultaneously provided textual data video frames, each of said simultaneously provided different textual data video frames being definable by a different simultaneously provided composite video input signal to said keystation, each keystation comprising means for receiving said plurality of simultaneously provided composite video input signals; the improvement comprising keyboard display driver interface means selectively connected between said single keyboard means at each keystation and any one of said plurality of computer systems in an enabled state for dynamically selectively connecting said single keyboard means at any keystation to any one of said computer systems for enabling communication therewith in said enabled state, said plurality of computer systems comprising at least two different data bases having incompatible keyboard protocols or character codes; and video matrix switch means operatively connected to said video display means, to said keyboard means and to said composite video signal receiving means at at least one of said plurality of keystations in said network for multiplexing said plurality of simultaneously provided composite video input signals and detecting a plurality of unique keyboard generated character codes from said keyboard means of said one keystation for enabling dynamic selection of any one of said plurality of



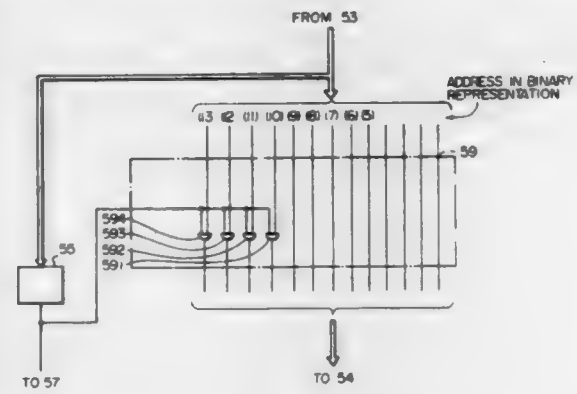
simultaneously provided different composite video input signals provided to said video matrix switch means in response to detection of at least a predetermined one of said unique keyboard generated character codes for dynamically routing any one of said simultaneously provided composite video input signals to said video display means of said one keystation for enabling said video display of said corresponding selected textual data video frame, said keyboard display driver interface means being capable of detecting a plurality of unique keyboard generated character codes from said keyboard means for enabling said dynamic selective connection of said keyboard means to one of said different data base computer systems for enabling said enabled state communication therewith, said network further comprising keyboard code conversion means operatively connected between said keyboard display driver interface means and said one keyboard means for converting incompatible keyboard character codes or protocols from said one keyboard means into keyboard character codes or protocols compatible with each of said different data bases dependent on the data base to be selectively communicated with through said one keyboard means; whereby a single keystation keyboard may be used both to selectively communicate with a plurality of different data base computer systems having incompatible keyboard protocols or character codes and to enable keyboard generated dynamic selection of a textual data video display from a plurality of simultaneously provided composite video signals from said plurality of different data base computer systems.

4,404,552

DISPLAY DEVICE FOR BOTH A CHARACTER DISPLAY AND A GRAPHIC DISPLAY

Shigeru Hirahata; Tetsuya Ikeda; Tsuguji Tachiuchi; Shigeru Komatsu, and Teruhiro Takezawa, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 23, 1980, Ser. No. 220,142
Claims priority, application Japan, Dec. 27, 1979, 54-169414
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—721 **5 Claims**



1. In a display device for both character display and graphic display including:

a display means having a display panel on which both the character information and the graphic information are displayed at areas, each area including pixels with the pixels arranged in a pixel line,

a display signal generating means for supplying said display means with display signals;

a central processor unit for controlling said display signal generating means,

a program memory means for storing an operating program for said display device, and

an address bus and a data bus for establishing communication between said central processor unit, said program memory means and said display signal generating means;

said display signal generating means comprising;

a timing pulse generating means,

an address switching means for switching address signals from said central processor unit and address signals from said timing pulse generating means,

a display memory means capable of storing picture information for each pixel, character information being stored in the form of character codes and the graphic information in the form of pixel pattern data in the predetermined addresses of the sections of the memory field, the same character codes being used for the pixel lines belonging to one character area and the respective pattern data being used for area including the contour of graphic figure,

a discrimination signal memory means for storing and supplying the signal indicating the kind of said picture information, either character or pattern,

a character pattern memory means receiving signals from said display memory means and producing pixel pattern data corresponding to the character information, and

a switching means for switching signals from said display memory means and signals from said character pattern memory means under the control of signals from said discrimination signal memory means,

the improvement comprising:

an address conversion means receiving inputs from said address switching means and providing outputs to said display memory means,

discrimination signals produced from said discrimination signal memory means being supplied to said address conversion means to control the address conversion in said address conversion means for supplying output signals to said display memory means, such that

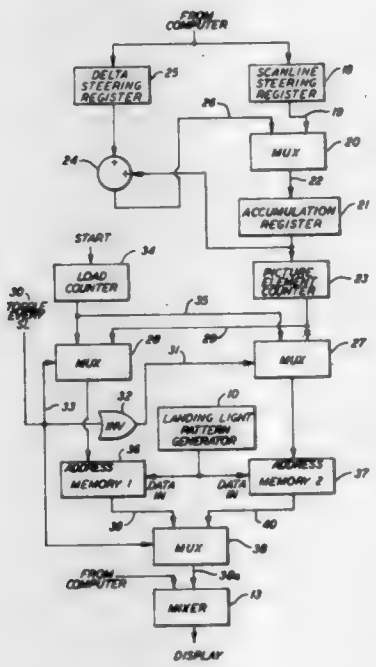
said address conversion means, when the output of said

discrimination memory means is indicative of a character, converting addresses of a plurality of pixel lines belonging to one character area into a single predetermined address or a number of addresses smaller than said plurality, and address signals produced from said address switching means being supplied both to said address conversion means and said discrimination signals memory means.

4,404,553
LANDING LIGHT PATTERN GENERATOR FOR SIMULATOR WITH SELECTIVE ADDRESSING OF MEMORY

Robert P. Cuffia, San Jose, Calif., assignor to The Singer Company, Binghamton, N.Y.

Filed Nov. 7, 1980, Ser. No. 204,975
Int. Cl.[3] G09G *1/00*
U.S. Cl. 340—728 10 Claims



1. In a system for developing a predetermined simulated scene at a time of reduced visibility from information obtained from data generated digitally and from data stored electronically, and for displaying said reduced visibility scene on a display device with portions of increased illumination as if by a spot light, said system comprising:

data storage means for receiving data representative of predetermined scenes,

control means for generating data in order to select a predetermined scene,

a display device connected to receive data from said data storage means and to display scenes selected by said control means,

means connected to said display device to increase the illumination intensity of portions of said displayed reduced visibility scene in accordance with a preselected pattern as if projected by a spot light and unrelated to the information in said scene, and

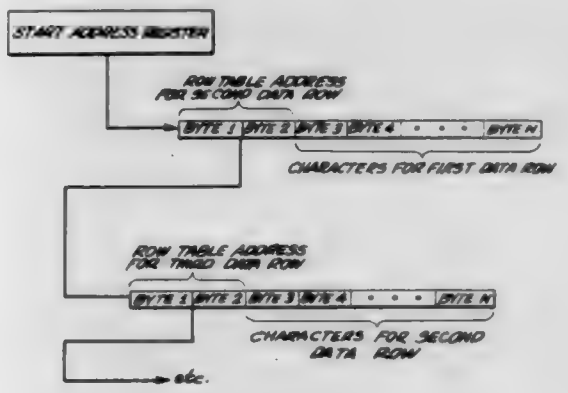
said means connected to said display device including memory circuit means to store data representative of a Table of Intensities with means for addressing the Table of Intensities at different points,

whereby the preselected spot light pattern of increased illumination intensity is moved in a predetermined manner.

4,404,554
VIDEO ADDRESS GENERATOR AND TIMER FOR CREATING A FLEXIBLE CRT DISPLAY

John F. Tweedy, Jr., Bellerose Villa, and Morton B. Herman, Huntington, both of N.Y., assignors to Standard Microsystems Corp., Hauppauge, N.Y.

Continuation of Ser. No. 194,435, Oct. 6, 1980, abandoned. This application Nov. 10, 1982, Ser. No. 440,598
Int. Cl.[3] G09G *1/16*
U.S. Cl. 340—750 9 Claims



1. In a CRT video display system including a microprocessor, a memory, a video processor and controller, a data bus coupling said video processor and controller to said microprocessor and to said memory, and an address bus coupling said video processor and controller to said microprocessor and to said memory, said video processor and controller comprising a plurality of registers programmable by said microprocessor to store selected address characters and control characters, a first portion of said register plurality being connected to said data bus and a second portion of said register plurality being connected to said data bus and to said address bus, said memory containing information for a plurality of data rows, the information for each of said data rows being in the form of a plurality of bytes defining the characters for the data row and at least one preceding byte defining the starting address of the succeeding data row, said second portion of said register plurality including a start address register for defining a memory address to commence an addressing procedure, an address register, and logic and control means for retrieving from said memory said at least one succeeding-row address byte and for storing said at least one succeeding-row address byte in said address register until the time for displaying the succeeding data row, and means for accessing said registers via said address bus and said data bus and for utilizing said selected address characters and control characters stored in said registers.

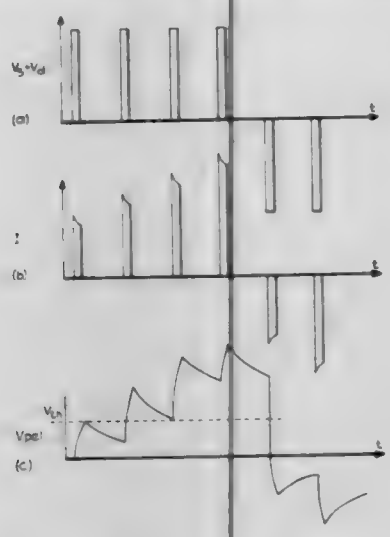
4,404,555
ADDRESSING SCHEME FOR SWITCH CONTROLLED LIQUID CRYSTAL DISPLAYS

John R. Long, Vanier; Carla J. Miner; Richard W. Streater, both of Nepean, and David R. Baraff, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 9, 1981, Ser. No. 271,973
Int. Cl.[3] G09G *3/36*
U.S. Cl. 340—784 6 Claims

1. A method for addressing individual picture elements of a matrix multiplexed liquid crystal electrical field dependent optical transmissivity display, the display comprising a pair of plates, at least one of the plates being transparent, the plates having sealed therebetween a layer of liquid crystal, a first row-column array of electrodes on an inside surface of one plate and a corresponding second row column array of electrodes on an inside surface of the other plate, the display having a plurality of picture elements, each element defined by a pair of electrodes one from said first array and one from said second array, the electrodes of one plate being electrically interconnected by column leads, the electrodes on the other plate being electrically interconnected by row leads, each

picture element having a series connected thin film switch, said switches being formed on the inside surface of at least one of the plates, said method for addressing individual picture elements comprising: applying scan voltage pulses to successive



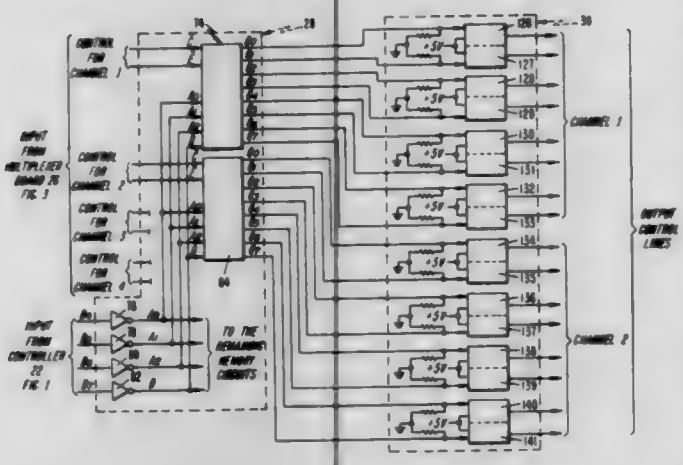
ones of the row leads and applying data voltage pulses of opposite polarity to selected ones of the column leads wherein the polarity of said scan and data pulses is periodically reversed, said periodic reversal taking place between successive series of unipolar pulses.

4,404,556

BIT EXPANSION CIRCUIT

Joseph A. Messina, North Andover, and William R. Sullivan, Andover, both of Mass., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Nov. 25, 1981, Ser. No. 325,152
Int. Cl.³ H04Q *9/00*; H04J *3/00*
U.S. Cl. 340—825.03 **16 Claims**



1. A bit expansion circuit for increasing the number of outputs available from a n-bit parallel output port of a programmable controller, comprising:

means for coupling the output port of the programmable controller to the bit expansion circuit;

a plurality of output channels each having a plurality of output lines wherein the total number of output lines of the plurality of channels exceeds the number of outputs available from the n-bit parallel output port;

a first means for decoding a plurality of channel-select bits fed from the programmable controller through the coupling means to the bit expansion circuit to select and enable any one of the plurality of output channels;

a second means for decoding a plurality of line-select bits fed from the programmable controller through the coupling means to the bit expansion circuit to select and enable any one of the plurality of output lines associated with the output channel enabled by the first decoding means; and

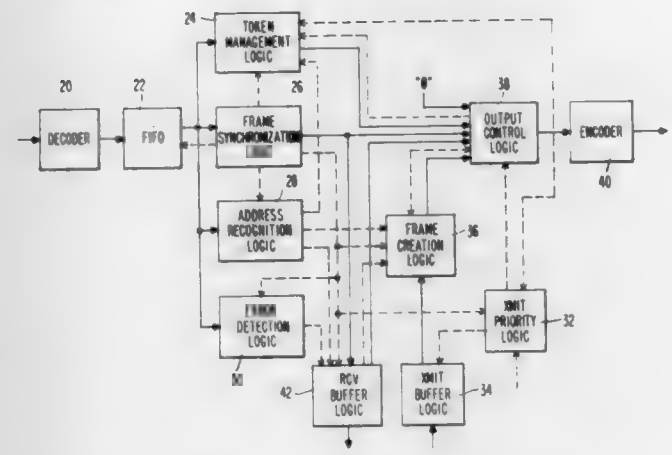
means for latching the output line selected by the second decoding means in the most recent output state when the first decoding means disables the selected channel.

4,404,557

TIMED TOKEN RING WITH MULTIPLE PRIORITIES

Robert M. Grow, Newtown, Conn., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 5, 1982, Ser. No. 355,021
Int. Cl.³ H04Q *9/00*; H04L *11/00*; H04J *6/02*
U.S. Cl. 340—825.05 **24 Claims**



1. A method of allocating bandwidth in a loop communications network, said network including a loop-connected set of stations providing data flow unidirectionally from one of said stations to the next, each of said stations being capable of passing data through itself along the loop, extracting data from the loop or injecting data into the loop, each of said stations having associated with it at least one identifier address, each of said stations being assigned a Class 1 priority, a Class 2 priority, or both of said Class 1 and Class 2 priorities, the right of each of said stations to source new information into the network controlled by passing a write token from one of said stations to another, said method comprising the steps of:

a. each of said Class 2 stations timing the rotation time of the write token to measure instantaneous load; and

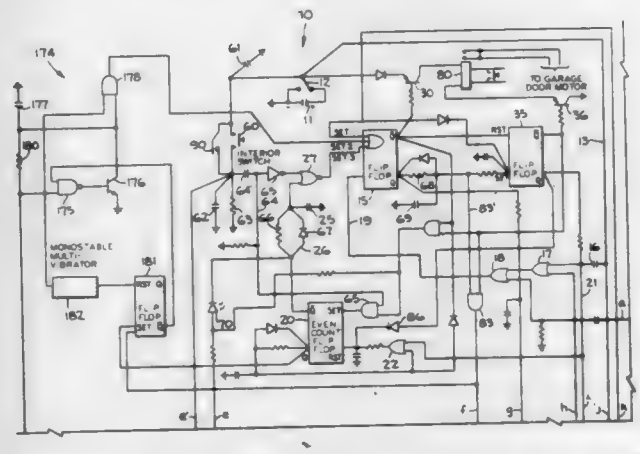
b. each of said Class 2 stations limiting the transmission of information onto the loop based on the observed write token rotation time.

4,404,558

ELECTRICAL CONTROL CIRCUIT FOR OPERATING A GARAGE DOOR OR SIMILAR DEVICE

Anderson Yen, 4011 Cranford Cir., San Jose, Calif. 95124

Filed Apr. 15, 1981, Ser. No. 254,453
Int. Cl.³ G08C *19/00*
U.S. Cl. 340—825.72 **25 Claims**



1. A circuit for controlling the operation of a garage door or the like through the activation of a garage door device or similar device comprising:

(a) means for activating the garage door device;

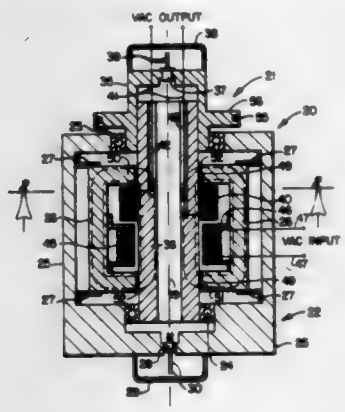
(b) a counting circuit including a timing circuit for activating said means in response to receiving a predetermined number of pulses within a predetermined time period; and
(c) switch means connected to said counting circuit for sending said predetermined number of pulses within said time period to said counting circuit for operating said garage door device.

4,404,559

ROTATIVE POWER AND SIGNAL COUPLING

G. Frederick Renner, Columbus, Ohio, assignor to Battelle Memorial Institute, Columbus, Ohio

Filed May 26, 1981, Ser. No. 267,206
Int. Cl.[3] H04B 9/00
U.S. Cl. 340—870.28 5 Claims



1. A rotative coupling for transferring electrical power and information between a rotating part and a stationary part, comprising:
a. a stationary core means mounted on the stationary part;
b. an annular, stationary coil mounted on the stationary part, and encircling a hollow, rotative core means of magnetic material constructed to rotate in the stationary core for establishing a flux path;
c. an annular, rotative coil mounted on the rotating part, encircling the hollow, rotative core means, the stationary core means including a core portion of magnetic material around the outer perimeter of the coils establishing continuous flux paths through the hollow rotative core means;
d. means for connecting one of the coils to a source of alternating electrical potential and means for connecting the other coil to an electrical load; and
e. a plurality of optical transceivers mounted at opposing positions on the axis of rotation of the hollow rotative core means, transmitting and receiving information to and from the stationary and rotating parts on a modulated beam of light passing through and along said axis of rotation of the hollow, rotative core means.

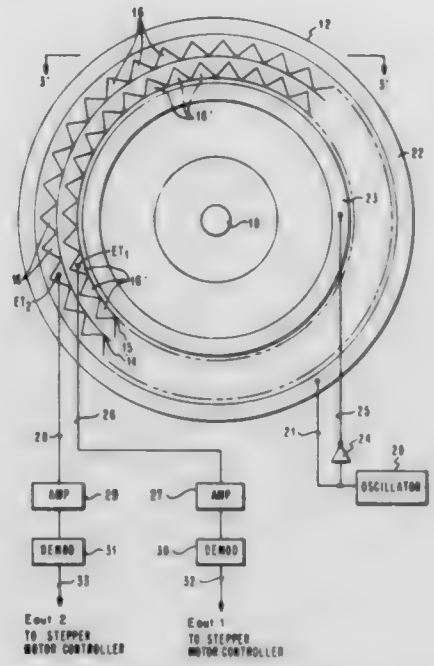
4,404,560

CAPACITIVE TRANSDUCER FOR PROVIDING PRECISE ANGULAR POSITIONAL INFORMATION

Errol R. Williams, Jr., Round Rock, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 7, 1981, Ser. No. 261,401
Int. Cl.[3] G08C 19/16
U.S. Cl. 340—870.37 6 Claims

1. A capacitive transducer comprising:
a first member having a first track of a plurality of sequential conductive segments of the same shape and size,
a second member having a second track of a plurality of sequential conductive segments spaced from and facing said first track,
means for rotating one of said members with respect to the other whereby the track on said rotating member rotates with respect to the track of the other member,
means for applying an alternating electrical signal to the first of said tracks of conductive segments, and
means connected to the second track of conductive segments for sensing the capacitive effect induced in said second track of conductive segments by said electrical signal,



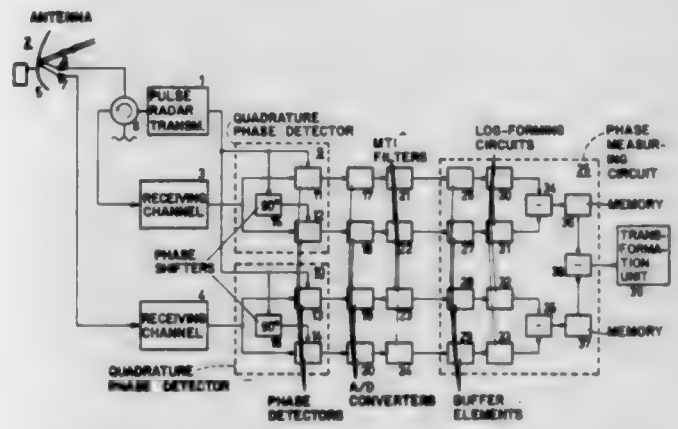
at least one of said tracks having a plurality of triangular shaped segments each having one side radial to the axis of rotation of said moving member.

4,404,561

RADAR SYSTEM

Willem Mulder, Borne; Gerrit van Rooyen, Haaksbergen, and Johan M. C. Zwarts, Borne, all of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

PCT No. PCT/NL80/00006, § 371 Date Nov. 10, 1980, § 102(e) Date Nov. 10, 1980, PCT Pub. No. WO80/01956, PCT Pub. Date Sep. 18, 1980
PCT Filed Feb. 13, 1980, Ser. No. 224,514
Claims priority, application Netherlands, Mar. 14, 1979, 7902009
Int. Cl.[3] G01S 3/48
U.S. Cl. 343—16 R 4 Claims



1. A radar system for determining the angle of elevation of a detected target, comprising:
(a) an antenna including a reflector and two vertically mounted receiving elements for cooperating to form almost coinciding, substantially cosecant-squared beam patterns;
(b) two receiving channels electrically-connected to the receiving elements for processing signals from the elements;
(c) a phase measuring circuit electrically-connected to the receiving channels for measuring the phase difference $\Delta\phi$ between signals processed by the channels; and
(d) a transformation unit electrically-connected to the phase

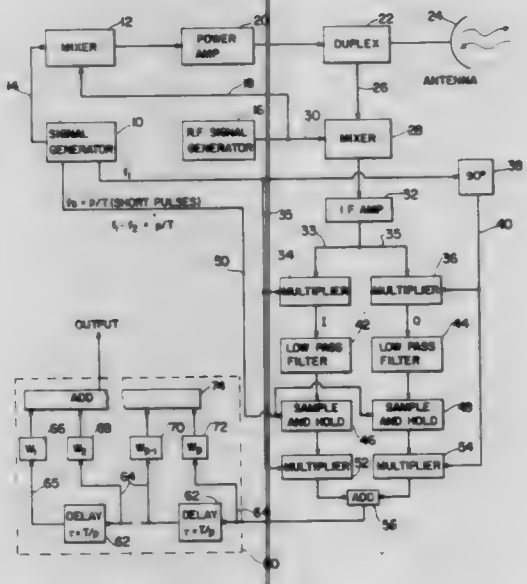
measuring circuit for converting the phase difference into a signal representative of the elevation angle ϵ of the target.

4,404,562

LOW SIDELOBE LINEAR FM CHIRP SYSTEM

Frank F. Kretschmer, Jr., Laurel, and Bernard L. Lewis, Oxon Hill, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 25, 1980, Ser. No. 180,548
Int. Cl.[3] G01S *13/28*
U.S. Cl. 343—17.2 PC 19 Claims



1. A pulse compression system for receiving and compressing the echos of long frequency modulate (FM) pulse waveforms of electromagnetic energy propagated by a transmitter comprising:

means for receiving a long FM pulse signal including means for converting the received signal to an intermediate frequency (I.F.) signal;

means for sampling the output signal from said receiving means and holding said sampled receiver output signal as its output until the next sampling time,

wherein said sampling and holding means comprises

a first electrical channel for generating a baseband I signal from said I.F. signal output from said converting means and sampling this signal at the Nyquist rate for said baseband signal and then reconverting this I signal back to an I.F. signal;

a second electrical channel for generating a baseband Q signal from said I.F. output from said converting means and sampling this signal at the Nyquist rate for said baseband signal and then reconverting this sampled Q signal back to an I.F. signal; and

first adding means for adding the I.F. signal outputs from said first and second electrical channels; and

discrete phase correlation compression means for compressing a predetermined number of sampled outputs from said first adding means in said sampling and holding means into a short pulse.

4,404,563

SYSTEM OF DIRECTIONAL ANTENNAS WITH MEANS FOR REDUCING FLUTTER

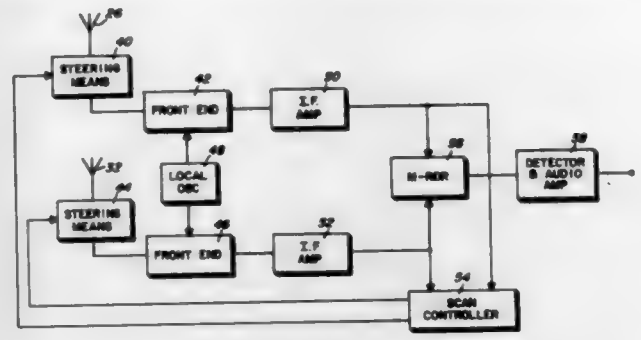
Roy A. Richardson, Skokie, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 12, 1980, Ser. No. 206,217
Int. Cl.[3] H04B *7/00*
U.S. Cl. 343—100 SA 17 Claims

1. A method of reducing flutter in received radio frequency signal transmissions comprising the steps of:

a. providing first and second antenna devices having selectable directional receiving patterns;

b. fixing the receiving pattern of one of the directional receiving antennas to receive a selected signal while sweeping the receiving pattern of the other directional receiving antenna to produce a second signal;



c. selecting the antenna pattern that is fixed at any particular time as the one producing the stronger signal; and

d. combining the received signals to produce an output.

4,404,564

ATTACHMENT FOR ANTENNAS TO IMPROVE RECEPTION AND TRANSMISSION

George P. Wilson, North Andover, Mass.

Continuation-in-part of Ser. No. 110,644, Jan. 9, 1980, Pat. No. 4,321,603. This application Feb. 8, 1982, Ser. No. 346,766
Int. Cl.[3] H01Q *1/32, 9/36*
U.S. Cl. 343—750 7 Claims



1. A device adapted to be attached to an omni-directional antenna having an elongated conductive element comprising:

an inner metallic sleeve disposed in spaced axial relationship about said elongated conductive element, and

an outer open-wound coil having coil turns disposed in spaced relationship about, said inner metallic sleeve,

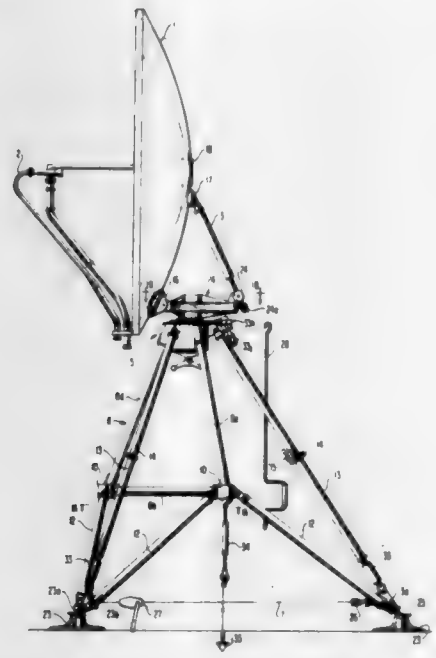
said inner metallic sleeve and said outer open-wound coil being electrically isolated from each other and from said elongated conductive element,

said outer open-wound coil turns being wound at an angle to said inner metallic sleeve.

4,404,565
QUICKLY ERECTABLE ANTENNA SUPPORT STRUCTURE

John W. Gurney, Reston; James N. Guerci, McLean, and Clifford Allison, Jr., Oakton, all of Va., assignors to Radiation Systems Incorporated, Sterling, Va.

Filed Nov. 18, 1981, Ser. No. 322,601
Int. Cl.³ H01Q *1/08*
U.S. Cl. 343—881 18 Claims

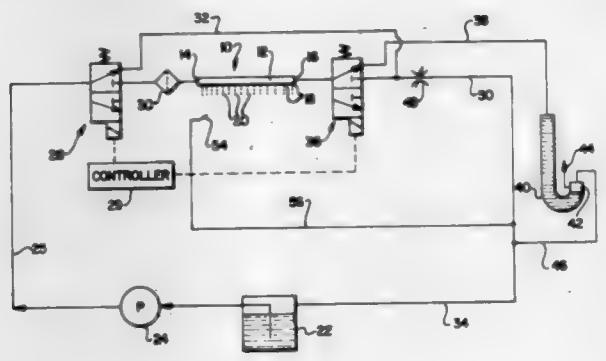


1. A collapsible support structure comprising:
an apex assembly;
at least three corner members positioned in co-planar relation with each other and at a preselected distance from the apex assembly;
a first plurality of frame members connected at opposite ends thereof between the apex assembly and the corner members;
at least three footpad means adapted to rest upon a surface;
a plurality of folding frame members pivotally connected between the apex assembly and respective footpad means;
a second plurality of frame members, each footpad means connecting first ends of at least two such frame members while opposite ends thereof are pivotally connected to the adjacent corner members in closest proximity to the footpad means; and
a tensioned cable engaging a point in proximity to each footpad means for maintaining the structure erect thus minimizing bending forces on the frame members.

4,404,566
FLUID SYSTEM FOR FLUID JET PRINTING DEVICE

Frederic L. Clark, Plano, and Scott D. Ayers, Garland, both of Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed Mar. 8, 1982, Ser. No. 355,421
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—1.1 21 Claims

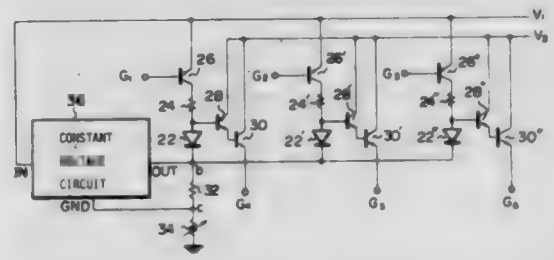


7. A method of starting up a jet printer having a print head with a manifold initially filled with a fluid, at least one jet orifice, and having a fluid inlet and a fluid outlet for fluid flow into and out of said manifold comprising the steps of,
connecting a source of reduced pressure to said fluid outlet sufficient to prevent the flow of fluid from said at least one orifice,
continuously supplying said fluid under pressure from a source of fluid supply to a fluid supply return line while bypassing said fluid inlet and said fluid outlet of said print head, and
redirecting said fluid under pressure to said fluid inlet of said print head while disconnecting said fluid outlet from said source of reduced pressure and connecting said fluid outlet to said fluid supply return line, whereby a jet stream of fluid commences flow through said at least one orifice and fluid is continuously supplied through said manifold.

4,404,567
PRINTING HEAD DRIVE CIRCUIT FOR THERMAL PRINTER

Shigeru Katsuragi, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 25, 1981, Ser. No. 305,428
Claims priority, application Japan, Oct. 3, 1980, 55-138280
Int. Cl.³ G01D *15/10*; H05B *3/00*
U.S. Cl. 346—76 PH 6 Claims



1. In a thermal printing apparatus comprising thermal printing head means including a plurality of heat generating elements which are energized by a power supply and heat generating elements drive means for selectively driving the heat generating elements in accordance with input data to be recorded on a heat-sensitive paper sheet, the improvement wherein said heat generating element drive means comprises:
a plurality of switching circuits for selectively energizing the heat generating elements;
a reference voltage generating circuit for generating a reference voltage which is commonly applied to the heat generating elements; and
a constant voltage circuit connected between the power supply and the reference voltage generating circuit for maintaining the reference voltage constant.

4,404,568
PRINTER

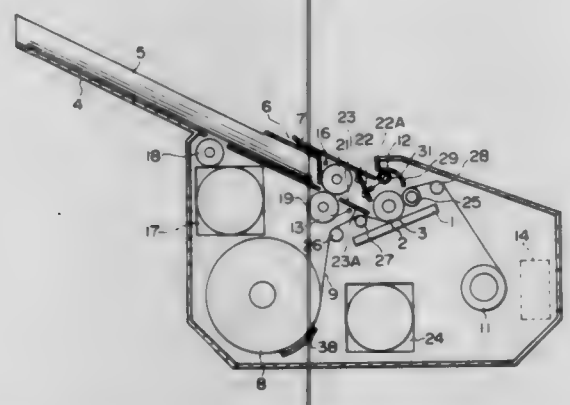
Yoshiki Kikuchi, and Takashi Ohmori, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Kanagawa, Japan

Filed Oct. 16, 1981, Ser. No. 312,023
Claims priority, application Japan, Dec. 19, 1980, 55-178918
Int. Cl.³ G01D *15/10, 15/24*; G03G *15/00*
U.S. Cl. 346—76 PH 6 Claims

1. In a thermosensitive image recording device of the type wherein an ink donor sheet having heat sensitive ink on one surface thereof is selectively heated in accordance with picture information at a recording station to melt and transfer selected portions of said ink to a recording paper in contact with said one surface of said ink donor sheet, said recording device comprising:
a source of recording paper;
a first transport mechanism for transporting said recording paper from said source through a first path which passes through said recording station;

a source of ink donor sheet;

a second transport mechanism for transporting said ink donor sheet from said donor sheet source through a second path which passes through said recording station, said first and second paths being different from one another but coinciding in the same direction of movement at least at said recording station;



means for detecting said recording paper at a predetermined position in said first path prior to said recording station; and

control means for operating said first and second transport mechanisms in accordance with said detection.

4,404,569

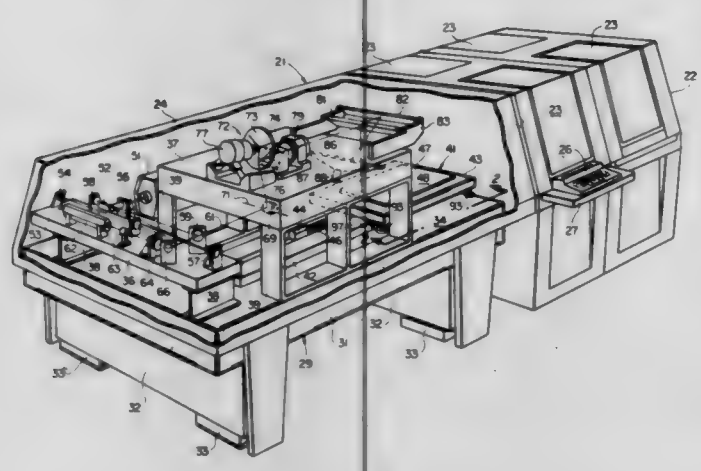
SYSTEM AND METHOD FOR PRODUCING ARTWORK FOR PRINTED CIRCUIT BOARDS

Don B. Neumann, Laguna Beach; Lyle K. Norton, Santa Ana, and Eric V. Olson, Long Beach, all of Calif., assignors to American Hoechst Corporation, Somerville, N.J.

Division of Ser. No. 42,133, May 24, 1979. This application Mar. 19, 1981, Ser. No. 245,696

Int. Cl.³ G01D *9/42*; H04N *1/22*; G03B *41/00*

U.S. Cl. 346—108 **3 Claims**



1. In a system for use in the manufacture of printed circuit boards: means for providing a beam of coherent radiation, means for modulating the beam with data representative of artwork to be formed on the circuit boards, a carriage movable along an axis for supporting an output medium, means for directing the beam along a predetermined path toward the output medium and deflecting the beam to effect repeated scanning of the beam along successive scan lines across the output medium in a direction perpendicular to the axis of carriage movement, means for driving the carriage continuously at a predetermined speed along the axis during scanning of the output medium, an electrically controlled mirror disposed in the path of the beam for adjusting the position of the beam on the output medium in a direction parallel to the axis of carriage movement, means for applying a signal to the electrically controlled mirror for deflecting the beam along the axis as the scan progresses across the output medium to maintain a trace substantially perpendicular to the axis notwithstanding the movement of the carriage during each scan line.

4,404,570

LASER RECORDER

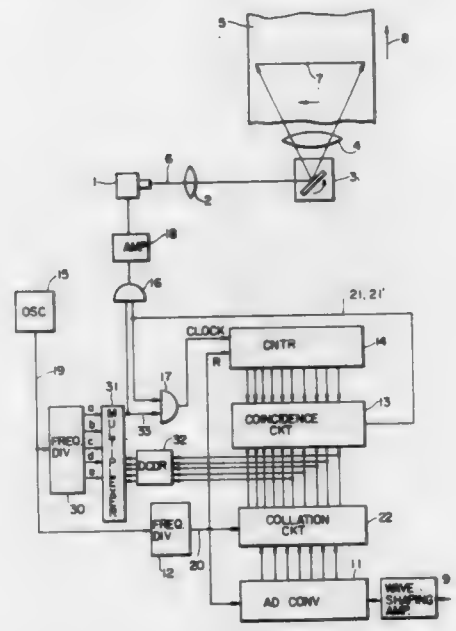
Masahiro Ohnishi; Yuji Ohara; Hiroshi Oono, and Shigenori Oosaka, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 3, 1981, Ser. No. 231,064

Claims priority, application Japan, Feb. 8, 1980, 55/14626

Int. Cl.³ G01D *15/14*

U.S. Cl. 346—108 **9 Claims**



1. A laser recorder device comprising: means for producing sampled digital values of an input signal; means for providing a digital output signal in response to a predetermined function of said sampled digital values of said input signal; a beam source; means for scanning an output beam of said beam source upon a recording medium; pulse generating means for producing an output pulse signal having a frequency substantially higher than the frequency at which said input signal is sampled; and means for applying pulses of said pulse signal to said beam generating means with the number of pulses applied being determined in accordance with the value of said digital output signal.

4,404,571

MULTIBEAM RECORDING APPARATUS

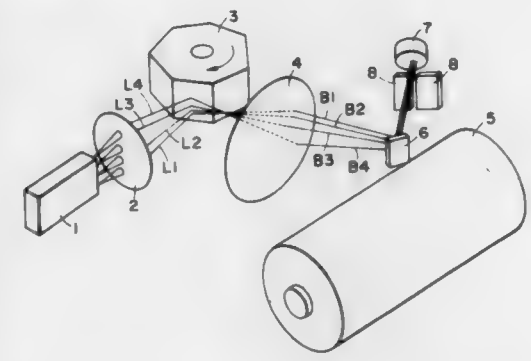
Takashi Kitamura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1981, Ser. No. 309,058

Claims priority, application Japan, Oct. 14, 1980, 55-143447; Oct. 14, 1980, 55-143448

Int. Cl.³ G01D *9/42, 15/10*

U.S. Cl. 346—108 **18 Claims**



1. A beam recording apparatus using a plural number of beams, said apparatus comprising:

means for scanning a recording medium with said beams;
beam detection means for receiving said beams and producing detection signals in response to receipt of said beams;
a beam selection member, associated with said detection means, through which only one of said beams of said plural number of beams can pass at one time to be incident on said detection means;
means for distributing said detection signals; and
means for controlling the start of recording with said beams individually by means of said distributed detection signals.

4,404,572

RECORDING APPARATUS

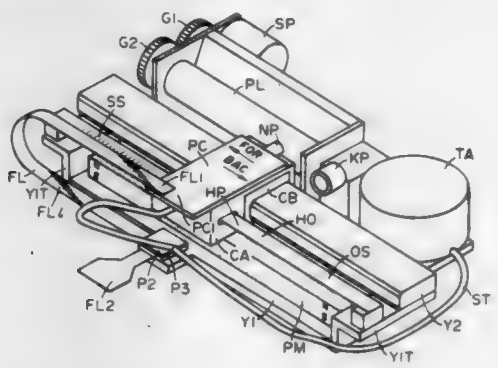
Shigeru Okamura, Yokohama; Hiroshi Kyogoku, Kawasaki, and Shigemitsu Tazaki, Matsudo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1980, Ser. No. 114,202

Claims priority, application Japan, Jan. 31, 1979, 54/10181; Feb. 21, 1979, 54/19227

Int. Cl.³ G01D *15/16, 15/24*

U.S. Cl. 346—140 R **10 Claims**



1. A recording apparatus comprising:
an elongated permanent magnet disposed perpendicular to a direction in which a recording paper is advanced;
a guide member of magnetic material disposed in parallel relation to said permanent magnet;
a carriage slidably movable along said guide member;
a coil mounted on said carriage and arranged to surround said guide member;
an ink nozzle mounted on said carriage;
a plate member of non-magnetic material having a plurality of slits, said plate member being surrounded by at least three internal faces of said carriage and being disposed in parallel with said permanent magnet; and
a light emitting and receiving element mounted on said carriage for detecting with the slits of said plate member each position of said carriage.

4,404,573

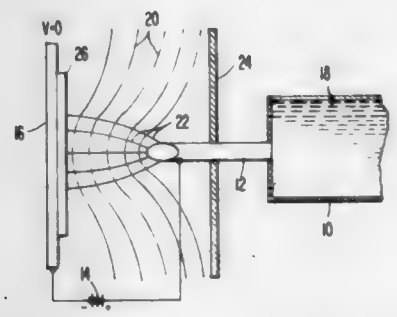
ELECTROSTATIC INK JET SYSTEM

Ray H. Kocot; Robert E. Rudd, III, both of Danbury, and Douglas R. Arnoldi, Southbury, all of Conn., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 28, 1981, Ser. No. 334,840

Int. Cl.³ G01D *15/16*

U.S. Cl. 346—140 R **21 Claims**



1. A low-head pressure, high flow, single filament ink jet system capable of delivering fluid to a particular point in a controlled manner comprising:
an ink reservoir containing conductive ink;
an ink jet nozzle of predetermined length conductively connected to said conductive ink;
a first conductive surface means;
a printing surface interposed between said first conductive surface means and said ink jet nozzle;
a second conductive surface means mounted on said ink jet nozzle; and
a potential source connected between said first conductive surface means and said ink jet nozzle, the application of said potential source creating an electrostatic field between said ink jet nozzle and said first conductive surface means, said second conductive surface means for reshaping the lines of force of said electrostatic field.

4,404,574

ELECTROGRAPHIC PRINTING SYSTEM USING DIELECTRIC FILM MEMBER

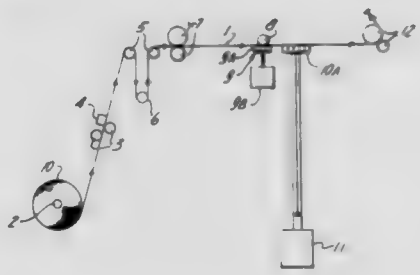
Herman Burwasser, Boonton, N.J., and John R. Wyhof, Latrobe, Pa., assignors to R.Q.O. Holding Company, Inc., Jamestown, N.Y.

Continuation-in-part of Ser. No. 17,131, Mar. 5, 1979, which is a continuation of Ser. No. 806,379, Jun. 14, 1977, abandoned, which is a division of Ser. No. 718,361, Aug. 27, 1976, Pat. No. 4,112,172, which is a continuation-in-part of Ser. No. 669,675, Mar. 23, 1976, abandoned. This application Nov. 28, 1980, Ser. No. 211,157

The portion of the term of this patent subsequent to Aug. 27, 1993, has been disclaimed.

Int. Cl.³ G01D *15/06*

U.S. Cl. 346—153.1 **5 Claims**



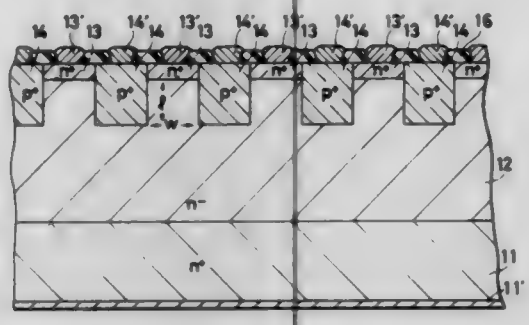


1. In an electrographic printing system wherein a latent image is electrographically transferred to a dielectric record member from an image-bearing electrode in close proximity to said member, which image may be subsequently rendered visible by application of a toner and permanently fixed into said member, the improvement which is characterized in that:
(a) said dielectric record member is a transparent dielectric film comprising:
(i) a transparent resin film base,
(ii) a transparent permanently conductive layer on said base, and
(iii) a transparent dielectric coating having a thickness of about 1.4–10 micrometers on said layer, and, wherein
(b) means are provided to transport said film record member at a controlled rapid rate across said electrode, thereby to provide clear, sharp, high contrast images on said film.

4,404,575
SEMICONDUCTOR DEVICE

Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Continuation of Ser. No. 96,649, Nov. 23, 1979. This application May 3, 1982, Ser. No. 374,301
Claims priority, application Japan, Jan. 22, 1979, 54-6356
Int. Cl.³ H01L *29/72, 29/80*
U.S. Cl. 357—22 10 Claims



1. In a semiconductor device containing at least one static induction transistor, said transistor including a source semiconductor region and a drain semiconductor region both having a first conductivity type and a low resistivity, a channel region having said first conductivity type and a high resistivity and a gate region having a second conductivity type opposite to said first conductivity type and having a low resistivity;

said source and drain region being disposed to define a main current path therebetween through said channel region, said gate region being disposed to substantially control the potential of an intermediate semiconductor region in said current path, the improvement wherein:

said intermediate semiconductor region is interposed in said current path contacting said source region, gate region and channel region, and is of said first conductivity type, and a resistivity higher than that of said channel region;

and said transistor further includes:

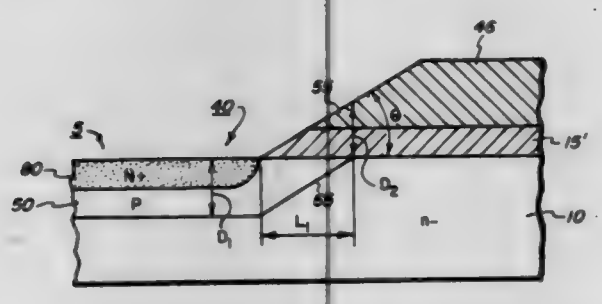
a first isolating insulator region disposed in contact with said gate region and disposed between said gate region and said drain region; and

a second insulator region disposed to isolate said souce region from said gate region.

4,404,576
ALL IMPLANTED MOS TRANSISTOR

Ram S. Ronen, Placentia, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 9, 1980, Ser. No. 157,744
Int. Cl.³ H01L *29/78*
U.S. Cl. 357—23 11 Claims



1. An all implanted MOS transistor having a DMOS-like structure formed in a substrate and having an implanted source area and an implanted drain area, comprising:

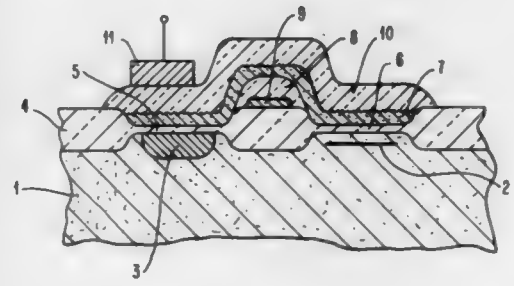
(a) a dielectric layer formed to a predetermined thickness on the surface of the substrate between the implanted source and drain areas, said dielectric layer having an edge adjacent to the source area which is beveled to a predetermined gradient with respect to said surface of said substrate; and

(b) channel area means in said substrate extending from an edge of said source area toward said drain area, said channel area being disposed relatively beneath at least the thinner portions of said beveled edge of said dielectric layer, said channel area having a fixed length measured along said surface of said substrate from said edge of said source area which is relatively proportional to the predetermined gradient of the beveled edge of said dielectric layer.

4,404,577
ELECTRICALLY ALTERABLE READ ONLY MEMORY CELL

Hayden C. Cranford, Jr., Apex; Charles R. Hoffman, Raleigh, and Geoffrey B. Stephens, Cary, all of N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,470
Int. Cl.³ H01L *29/78, 27/02*
U.S. Cl. 357—23 3 Claims



2. An electrically programmable and erasable MOS memory cell structure, comprising:

a silicon substrate having a source, a drain and a conductive channel means connecting said source and drain;

a diffused control gate region of semiconductive material separate from said conductive channel and located in the surface of said substrate; and

means for connecting a source of electrical potential to said source, said drain and said diffused control gate region;

a single crystal silicon oxide insulator layer overlying said diffused control gate region, said channel region and said substrate, said oxide insulator layer being thinner in the vertical direction over said diffused region and over said channel region than over other portions of said substrate;

an electrically floating conductive gate means deposited on the surface of said single crystal silicon oxide insulator layer in a zone overlying at least a portion of both said diffused control gate region and said conductive channel region;

a conductive programming gate means overlying said single crystal silicon oxide insulator and underlying said floating gate means in a region laterally between said control gate diffusion area and overlying at least a portion of said channel area in the surface of said oxide insulation;

a layer of polycrystalline silicon oxide insulating said programming gate from said floating gate and being provided with an electrical contact for connecting a source of electrical potential thereto; and

a conductive erase gate means overlying said insulating layer of polycrystalline oxide in a region generally overlying said diffused control gate region in said substrate beneath, said conductive erase gate means being supplied with an electrical contact for applying an erase voltage across said polycrystalline oxide to said floating gate means by capacitive coupling through said oxide insulator layers;

said single crystal silicon oxide and said polycrystalline silicon oxide are in the areas which overly said diffused control gate and said conductive channel, respectively of thicknesses related to one another by approximately the

ratio of one to four, said single crystal oxide thickness being represented by the numerator.

4,404,578

STRUCTURE OF THIN FILM TRANSISTORS

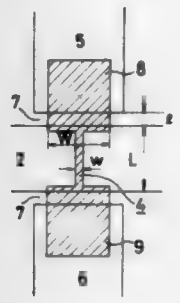
Yutaka Takafuji; Keisaku Nonomura, both of Nara; Sadatoshi Takechi, Tenri; Hisashi Uede, Wakayama, and Tomio Wada, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 30, 1980, Ser. No. 173,818

Claims priority, application Japan, Jul. 31, 1979, 54-98368; Jul. 31, 1979, 54-98370; Aug. 9, 1979, 54-101912

Int. Cl.³ H01L *29/78, 27/02*

U.S. Cl. 357—23 **10 Claims**



1. A thin film transistor for use in a display device comprising a support substrate having mounted thereon thin film transistor components comprising a gate electrode interpositioned between a drain electrode and a source electrode with an insulative layer overlying said gate electrode such that neither of said gate electrode nor the insulative layer overlying said gate electrode overlap either of said drain electrode or said source electrode relative to said substrate, said thin film transistor further including a semiconductor layer superimposed over each of said source electrode, said insulative layer overlying said gate electrode, and said drain electrode, said semiconductor layer further comprising a semiconductor channel portion which extends from the edge of said source electrode to the edge of said drain electrode across said gate electrode, a portion of said semiconductor channel being substantially narrower than the width of said semiconductor layer portion in contact with said drain and source electrodes such that the ratio of the narrow portion of said semiconductor channel to the width of the gate electrode is in the order of from several tenths to several hundredths, and at least one display element electrode as a material identical to that of at least one of said gate electrode, source electrode and drain electrode, said thin film transistor for switching display signals to be applied to said at least one display element electrode.

4,404,579

SEMICONDUCTOR DEVICE HAVING REDUCED CAPACITANCE AND METHOD OF FABRICATION THEREOF

Horst Leuschner, Austin, Tex., assignor to Inc. Motorola, Schaumburg, Ill.

Filed Oct. 28, 1980, Ser. No. 201,102

Int. Cl.³ H01L *29/78, 29/04, 29/34*

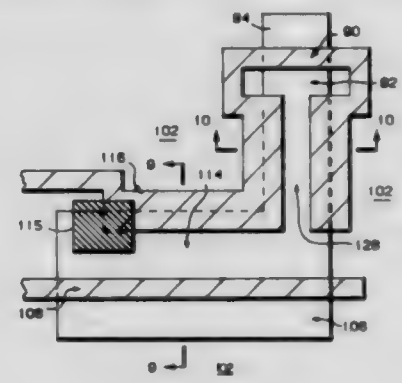
U.S. Cl. 357—23 **4 Claims**

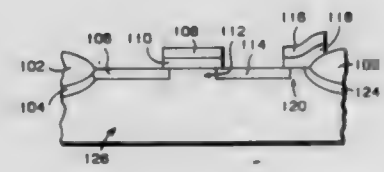
1. An inverter formed on a substrate of semiconductor material of a first conductivity type, said substrate having a field which defines the periphery of an active region and having a channel stop region of the first conductivity type but of a higher concentration of dopant than the substrate, said channel stop region being underneath the field, said inverter comprising:

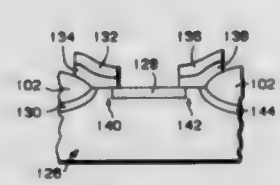
a first transistor having a source region doped to a second conductivity type, a channel region of the first conductivity type, and a drain region doped to the second conductivity type, formed in the active region, said drain region coupled to a first power supply terminal;

a second transistor having a source region doped to the second conductivity type, a drain region doped to the second conductivity type, and a channel region of the first conductivity type formed in the active region, said source coupled to a second power supply terminal wherein the source region of the first transistor is formed in common with the drain region of the second transistor to form an output of the inverter;

a first line on the surface of the substrate a first portion of which overlaps a portion of the active region and the field, a second portion of which overlies the channel region of the first transistor to form a gate thereof, said line comprising a lower insulating layer, and an upper electrically conductive layer, said upper electrically conductive layer







being physically continuous between said first and second portions and electrically connected to the drain region of the first transistor;

a spacer region of the first conductivity type and of substantially the same doping concentration as the substrate formed in the active region between the channel stop region and the source and drain regions of the first and second transistors, respectively, and underneath the first portion of the first line; and

a second line on the surface of the substrate comprising a lower insulating layer and an upper electrically conductive layer and overlying the channel region of the second transistor to form an input of the inverter.

4,404,580

LIGHT ACTIVATED SEMICONDUCTOR DEVICE

Nobutake Konishi; Masayoshi Naito; Tsutomu Yatsuo, and Yoshio Terasawa, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 24, 1980, Ser. No. 172,072

Claims priority, application Japan, Aug. 1, 1979, 54-97339

Int. Cl.³ H01L *29/74, 29/14, 29/12*

U.S. Cl. 357—38 **11 Claims**

1. In a light activated semiconductor device comprising:

(1) first and second semiconductor devices disposed in a semiconductor body having first and second major surfaces; each said device having four impurity regions formed as adjoining layers in said body between said

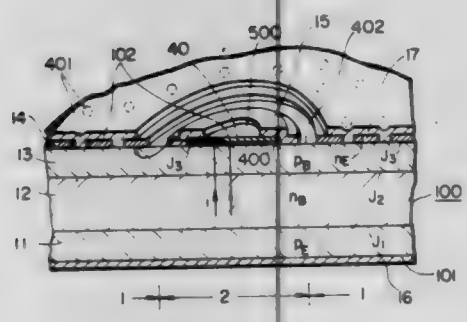
major surfaces, with adjacent impurity regions being of alternate carrier types to form PN junctions between said adjacent regions so that for each device an impurity region adjoining said first major surface forms a first emitter, an impurity region adjoining said second major surface forms a second emitter and the two impurity regions between said first and second emitters form first and second base regions with the first base region adjoining the first emitter and the second base region adjoining the second emitter, respectively;

(2) said second base, first base and first emitter regions of said first and second devices being common to both devices;

(3) said common second base region adjoining portions of said second major surface of said first device, and said second emitter regions of said first and second devices being spaced from each other;

(4) wherein an exposed portion of said second major surface, adjoining said second emitter region of said second device, activates said second device when electromagnetic radiation of wavelengths corresponding substantially to a bandgap energy of a semiconductor material of said body strikes said exposed portion of said second major surface;

(5) cathode and anode electrodes disposed on portions of said second and first major surfaces, respectively, of said semiconductor body to make ohmic contact with said



second emitter region of said first device and a common first emitter region of both devices;

(6) a floating contact positioned on a portion of said second major surface to make ohmic contact with said common second base region between said devices and said second emitter region of said second device, while leaving exposed for light activation said exposed portion of said second major surface adjoining said second emitter region of said second device; the improvement further comprising:

(a) said second emitter of said second device comprising first and second portions, said first portion abutting said second base region so that a p-n junction is formed therebetween,

(b) said first base region having an impurity density lower than that of said first emitter region, said second base region having an impurity density higher than that of said first base region, said first portion of said second emitter of said second device having an impurity density lower than a maximum value of an impurity density of said second base region, and said second portion of said second emitter region of said second device having an impurity density higher than said first portion, and

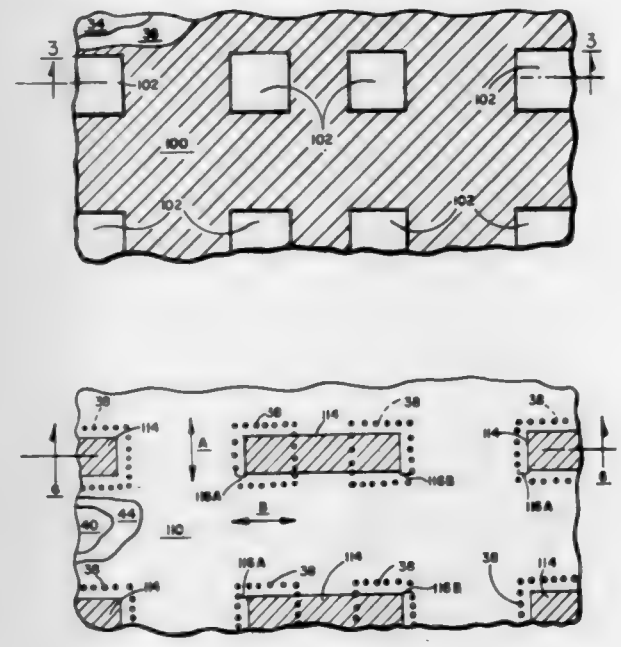
(c) a maximum value of said impurity density of said second base region being at least 10 times greater than the impurity density of said first portion.

4,404,581

ROM WITH REDUNDANT ROM CELLS EMPLOYING A HIGHLY RESISTIVE POLYSILICON FILM FOR PROGRAMMING THE CELLS

Matthias L. Tam, Monterey Park, and Frank Z. Custode, Norco, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 15, 1980, Ser. No. 216,578
Int. Cl.³ H01L *29/04, 29/12, 29/78, 27/02*
U.S. Cl. 357—59 **5 Claims**



1. A VLSI ROM with provision for redundancy comprising, in combination:

a plurality of ROM cells each comprising a transistor;

a plurality of surplus cells each having a transistor in series with a high resistance polysilicon resistor; and,

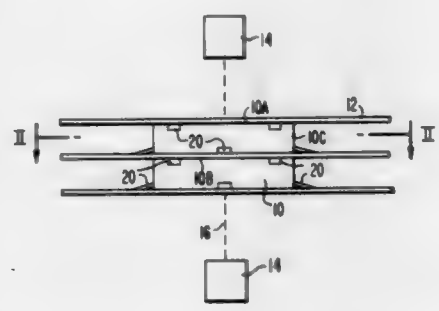
means for selecting a surplus cell to replace one of said ROM cells, said surplus cell being irreversibly programmable to conductive logic state by the application of programming bias voltage across its transistor and associated resistor to establish a highly conductive condition for the resistor, and being representative of the non conductive logic state with the resistor intact at high resistance due to the absence of any application of programming bias voltage.

4,404,582

MOUNTING ARRANGEMENT FOR DISC MOUNTED SEMICONDUCTOR DEVICES

David D. Pollard, Amanda, and Gary E. Krajci, American, both of Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 28, 1980, Ser. No. 211,170
Int. Cl.³ H01L *23/42*
U.S. Cl. 357—79 **2 Claims**



1. A semiconductor device assembly comprising:

a stack including a plurality of disc type semiconductor

devices in axial alignment and a plurality of metal sheets, serving as both heat sinks and electrical conductors, of which one is located at each major face of each of said devices including at least one metal sheet that is directly between two of said devices;

each of said metal sheets having a plurality of holding fingers stamped from the material thereof and deformed to grip the edge of the adjacent device, with said at least one metal sheet that is directly between two devices having holding fingers stamped and deformed away from both of the surfaces of said sheet; and,

means for applying a predetermined pressure along the axis of said devices.

4,404,583

METHOD AND APPARATUS FOR DETERMINING AND CONTROLLING THE SAMPLING PHASE IN SAMPLING THE BURST SIGNAL OF A COLOR TELEVISION SIGNAL

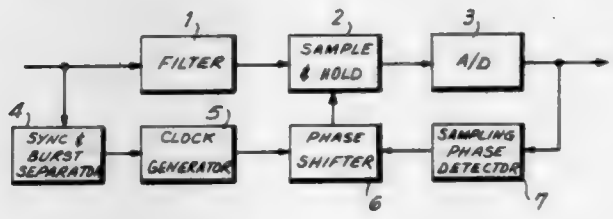
Mitsushige Tatami, Ebina, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 26, 1981, Ser. No. 277,895

Claims priority, application Japan, Jul. 2, 1980, 55-90179

Int. Cl.³ H04N 9/46

U.S. Cl. 358—13 **36 Claims**



1. In a system for digitizing a color television signal wherein the color television signal is sampled with a sampling signal whose rate is a multiple of the burst signal frequency and each sample is converted to a corresponding digital signal, a method for controlling the phase of the sampling signal comprising the steps of obtaining at least three samples of the burst signal included in said color television signal; determining a reference sampling phase as a function of at least two of said samples by deriving a calculated sample level from said at least two samples; sensing a phase error between the actual sampling phase of said sampling signal and said reference sampling phase by detecting the difference between said calculated sample level and the level of a predetermined one of said at least three samples; and adjusting the phase of said sampling signal in accordance with said detected difference in a direction to reduce said detected difference to a null value.

4,404,584

SIGNAL PROCESSING APPARATUS EFFECTING ASYMMETRICAL VERTICAL PEAKING

Dalton H. Pritchard, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 38,283, May 11, 1979, abandoned. This application Nov. 23, 1982, Ser. No. 443,926

The portion of the term of this patent subsequent to Jun. 20, 1995, has been disclaimed.

Int. Cl.³ H04N 9/535

U.S. Cl. 358—31 **6 Claims**

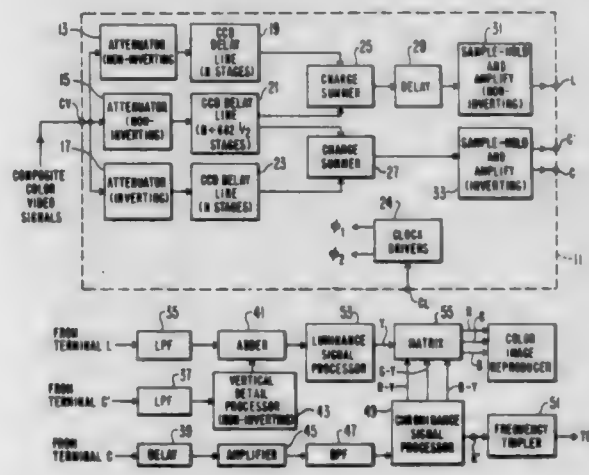
1. In a color television receiver subject to reception of input composite color video signals having a given line frequency, and inclusive of a luminance component, and a chrominance component sharing a portion of the band of frequencies occupied by said luminance component; signal processing apparatus comprising:

first, second and third clocked delay lines, each having an input and an output, with the inputs of said first and second clocked delay lines receiving a first version of said input composite color video signals and the input of said third clocked delay line receiving a second version of said input composite color video signals which is phase inverted relative to said first version thereof; the signal delay provided by said second clocked delay line exceeding each of the respective signal delays provided by said first and third clocked delay lines by a line interval;

first comb filter means for subjecting said input composite color video signals to a first frequency response characteristic exhibiting regularly spaced rejection notches recurring at odd multiples of half said line frequency, said first comb filter means comprising means for summing the output of said first clocked delay line with only the output of said second clocked delay line;

second comb filter means for subjecting said input composite color video signals to a second frequency response characteristic exhibiting regularly spaced rejection notches recurring at even multiples of half said line frequency, said second comb filter means comprising means for summing the output of said second clocked delay line with only the output of said third clocked delay line;

means for effecting asymmetrical vertical peaking of said luminance component in such manner that a transition-enhancing overtravel in the white direction is associated



only with a transition in the direction of vertical scanning of a black-to-white type and transition-enhancing overtravel in the black direction is associated only with a transition in the direction of vertical scanning of a white-to-black type, said asymmetrical vertical peaking means comprising:

(a) a signal adder;

(b) a first signal path, coupled between the output of said first-named summing means and an input of said signal adder, for translating the output of said first comb filter means with a first gain; and

(c) a second signal path, coupled between the output of said second-named summing means and an input of said adder, and including a low pass filter restricting signal passage to a band of frequencies substantially exclusive of said band portion occupied by said chrominance component, for translating at least a portion of the signal output of said second comb filter means with a second gain greater than said first gain; and

means for utilizing the output of said adder to control the luminance of displayed color images;

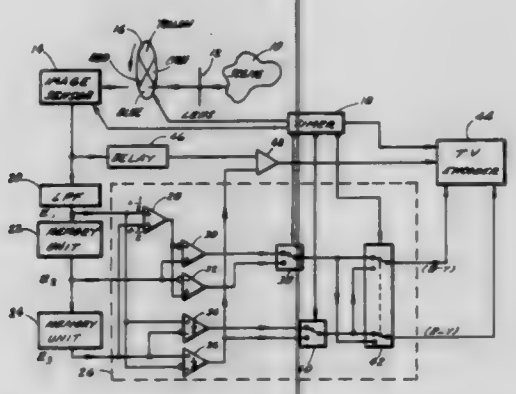
wherein one of said signal paths, to the exclusion of the other, effects its signal translation with a net polarity inversion.

4,404,585

VIDEO SEQUENTIAL COLOR SYSTEM

Bernhard A. Hjortzberg, 1320 Carmelita, Laguna Beach, Calif. 92691

Filed Oct. 8, 1981, Ser. No. 309,721
Int. Cl.³ H04N 9/04
U.S. Cl. 358—41 12 Claims



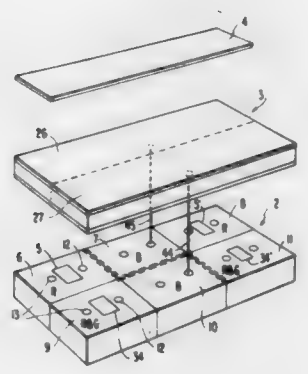
1. A video sequential color processing system comprising:
an image sensing device for sequentially receiving visual information and providing electrical read-out signals corresponding to the full resolution luminance and chroma information of each scan;
means for sequentially coloring the visual information received by said image sensing device, with a specific color during each scan of said image sensing device, so that the read-out signals are in sequential color flow relationship;
said sequential coloring means arranged in sets of complementary colors, so that a specific color is followed two scans later by the complement of the specific color;
means for separating low resolution luminance and chroma signals from the full resolution read-out signals;
a first memory unit for storing the low resolution signals from said separating means, and having an output corresponding in time to a field scan which is one field scan later than the output of said separating means;
a second memory unit for storing the low resolution signals received from said first memory unit, and having an output corresponding in time to a field scan which is one field scan later than the output of said first memory unit, and two field scans later than the output of said separating means;
a summing amplifier for receiving signals from said separating means, and from said second memory unit, resulting in an output of low resolution luminance;
a first pair of differential amplifiers, each receiving signals from said first memory unit, and signals from said summing amplifier, at opposite terminals, resulting in outputs of sequential chroma signals from each of said first pair of amplifiers;
a second pair of differential amplifiers, each receiving signals from said second memory unit, and signals from said separating means, at opposite terminals, resulting in outputs of sequential chroma signals from each of said second pair of amplifiers;
a timer means for synchronizing said sequential coloring means and said image sensing device;
a switching means which is controlled by said timer means and which selects the positive chroma signals from each of said first pair and each of said second pair of amplifiers into outputs of continuous low resolution primary chroma signals;
means for processing the full resolution read-out signals by canceling the chroma information signals, resulting in an output of full resolution luminance signal; and
a television encoder which receives the full resolution luminance signal and the low resolution chroma signals, and encodes the signals into standard broadcast color format.

4,404,586

SOLID-STATE COLOR IMAGER WITH STRIPE OR MOSAIC FILTERS

Masatoshi Tabei, Sunnyvale, Calif., assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 15, 1981, Ser. No. 330,927
Int. Cl.³ H04N 9/07
U.S. Cl. 358—44 9 Claims



1. A solid-state color imager, comprising:
a semiconductor switching matrix comprising a matrix of charge switching elements and a group of photodiodes, each photodiode being associated with one charge switching element, respectively, a first group of said charge switching elements being unassociated with any photodiodes, each said charge switching element alone or with an associated photodiode comprising a pixel of said semiconductor switching matrix;
a plurality of photoconductor segments overlying at least a portion of said semiconductor switching matrix, said segments being electrically connected respectively to charge switching elements unassociated with photodiodes, whereby the intensity of light sensed by any said segment is transferred to the electrically connected charge switching element as an electrical signal representing light intensity;
a mono color filter overlying a portion of said photoconductor segments and a portion of said semiconductor switching matrix;
said mono color filter, said photoconductor segments and said switching matrix being positioned relative to one another so that said pixels with photodiodes receive and convert into electrical signals light which impinges thereon after passing through one, both or neither of said filter and photoconductor segments, and said pixels without photodiodes receive electrical signals from photoconductor segments which convert light impinging thereon directly or via said filter.

4,404,587

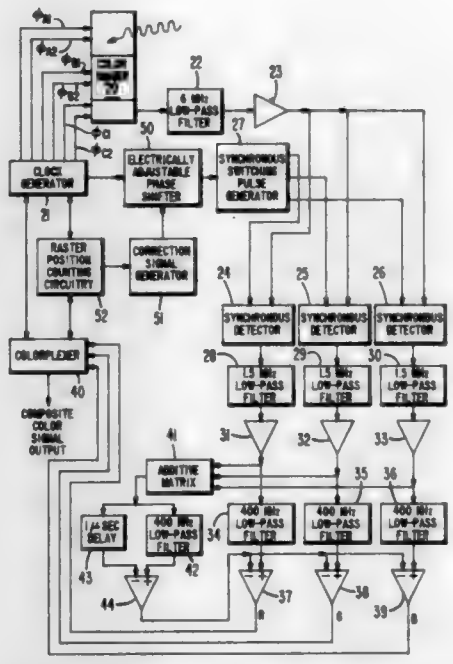
ELECTRICAL COMPENSATION FOR MISREGISTRATION OF STRIPED COLOR FILTER IN A COLOR IMAGER WITH DISCRETE SAMPLING ELEMENTS

Peter A. Levine, West Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 4, 1981, Ser. No. 327,594
Int. Cl.³ H04N 9/07
U.S. Cl. 358—44 6 Claims

1. A color television camera comprising:
an imager having discrete sensing elements arrayed in columns and rows;
a color stripe filter interposed in the optical path to said imager, so its stripes project to respective columns of sensing elements;
means for deriving from said imager discrete samples of the respective colors of the information imaged on the imager, which samples are subject to errors owing to misregistra-

tion of the projected stripes and the columns of sensing elements; and



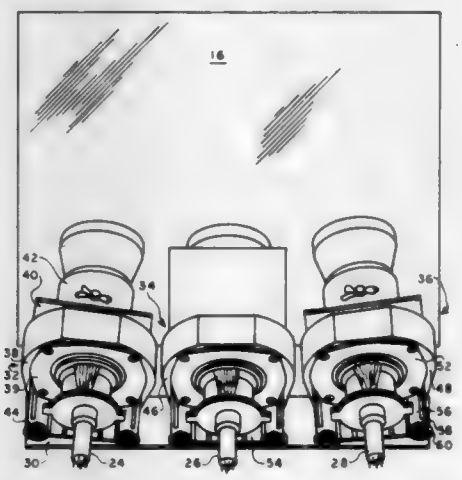
means for re-sampling said discrete samples to obtain further color samples with reduced hue error.

4,404,588

CRT HOLDING ASSEMBLY FOR PROJECTION TELEVISION

Michael A. Fanizza, Mt. Prospect, and Richard G. Schmid, Glenview, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Nov. 5, 1981, Ser. No. 318,309
Int. Cl.³ H04N *5/655, 5/74*
U.S. Cl. 358—60 **9 Claims**



1. In a television system having three CRTs each including an integral indexing tab, two of which CRTs have tilted faceplates, each of which faceplates is tilted opposite to the other, and wherein the image generated by each of said CRTs is projected through an associated lens onto a viewing screen, an assembly for holding said CRTs in proper optical alignment, comprising:

a platform;

three pods adapted to be mounted on the platform,

each of said pods comprising:

a generally cylindrical, hollow, one piece, non-conductive housing defining a generally circular rear opening for receiving the front piece of a CRT and defining a front opening through which the CRT's image projects and,

including indexing means engageable with the indexing tab of said received CRT for holding that CRT at a preselected rotational position;

said housing further including means for supporting said associated lens in a selected optical alignment relative to the faceplate of said received CRT;

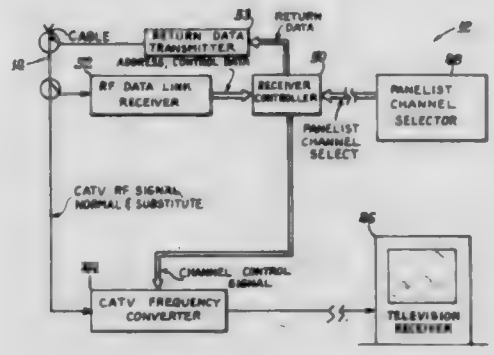
a cover having a central aperture therein sized to fit over a CRT neck, said cover being adapted to engage the funnel portion of the CRT and to mate with the rear opening of said housing so that the screen of said received CRT is substantially flush with the front opening of said housing.

4,404,589

CABLE TELEVISION WITH MULTI-EVENT SIGNAL SUBSTITUTION

W. Andrew Wright, Jr., Bethlehem, Pa., assignor to IRI, Inc., Chicago, Ill.

Filed Oct. 21, 1980, Ser. No. 199,258
Int. Cl.³ H04N *1/00*
U.S. Cl. 358—86 **8 Claims**



1. In a cable television system having head end means at a head end station, transmission cable, and a plurality of receiving means at respective panelist receiving stations, said head end means including means for applying normal television program signals in normal television channels to said transmission cable, and each of said receiving means including panelist channel selector means under control of a viewer for selecting a normal channel for viewing of a respective normal television program, said panelist channel selector means producing a panelist channel select signal indicative of said television channel, a television receiver, and a cable television frequency converter for receiving television program signals from said transmission cable and responsive to a channel select signal for selectively converting received television program signals in the respective television channel to converted television program signals acceptable to said television receiver and applying the respective converted television program signals to said television receiver:

a targetable signal substitution system comprising means at said head end station for applying substitute television program signals in at least one substitute channel to said transmission cable, and means at said head end station for applying signal substitution control signals to said transmission cable, said signal substitution control signals including a plurality of different terminal command signals and a plurality of different event command signals, each of said terminal command signals including a respective panelist address signal for identifying a respective panelist receiving station and a plurality of event identification signals identifying respective ones of a plurality of events, and each of said event command signals including a respective event address signal corresponding to a respective event and a normal channel identification signal for identifying a normal channel into which a substitute television program is to be switched; and

control means at each panelist receiving station responsive to said signal substitution control signals for selectively switching a substitute television program into a normal channel, said control means including means for generating a local panelist address signal, means for generating a plurality of local event address signals with each of said

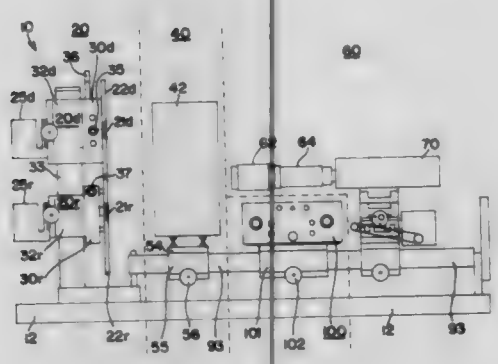
local event address signals corresponding to a local event address signal at each of the other panelist receiving stations, substitute channel selector means for producing a substitute channel select signal corresponding to a substitute channel, first comparison means for comparing the received panelist address signal of each terminal command signal with said local panelist address signal and producing a first match signal when said compared panelist address signals match, means responsive to said first match signal for storing event signals corresponding to said event identification signals of the respective terminal command signal, second comparison means for comparing a received event address signal with each of said local event address signals and producing a second match signal when said compared event address signals match, third comparison means responsive to said second match signal for comparing said received normal channel identification signal with said panelist channel select signal and producing a third match signal when said compared channel identification and channel select signals match, and means responsive to said stored event signals and said third match signal for switching a substitute channel select signal to said cable television frequency converter in lieu of the channel select signal selected by the viewer for a period determined by said event command signals, whereby for said period said television receiver receives the program in the corresponding substitute channel in lieu of the program of the channel to which the normal channel selector is set.

4,404,590

VIDEO BLINK COMPARATOR

Ben Mayer, Los Angeles, Calif., and Catherine A. Phillips, Manset, Me., assignors to The Jackson Laboratory, Bar Harbor, Me.

Filed Aug. 6, 1981, Ser. No. 290,569
Int. Cl.³ H04N 7/18
U.S. Cl. 358—106 64 Claims



1. A video blink comparator comprising:

data image presentation means including a first image carrier, first light source, and first lens means for establishing a data image light path;

reference image presentation means including a second image carrier, second light source, and second lens means for establishing a reference image light path;

optical means for superimposing said data image light path and reference image light path;

image forming lens means positioned in the superimposed data image and reference image light paths for forming a superimposed data image and reference image in a common focal plane spaced from said image forming lens means;

said data image and reference image being the same positive or negative image mode;

at least one of said image carriers operatively mounted for translation and at least one of said image carriers operatively mounted for rotation for accurate alignment and superimposition of the respective data image and reference image formed by the image forming lens means in said focal plane;

video camera means and camera mounting means for translating said camera along three dimensions or axes for positioning the video camera scanning surface in said focal plane for scanning of at least a selected portion of the image field of the superimposed data image and reference image and forming a video signal of said superimposed images;

extension means for coupling said image forming lens means and video camera means at desired spaced apart positions relative to each other;

blink control means for independently controlling said respective first and the second light sources for operation of said light sources at the same selected blink frequencies, but offset in phase so that when one light source is on the other is off whereby the data image and reference image are operatively superimposed in the same image field of the focal plane alternately and sequentially in time rather than simultaneously;

and video presentation means for integrating and summing the superimposed data image and reference image in time to provide a constant background from the common elements in the data image and reference image with blinking of variant portions of the data image and reference image against the constant background at said selected blink frequency;

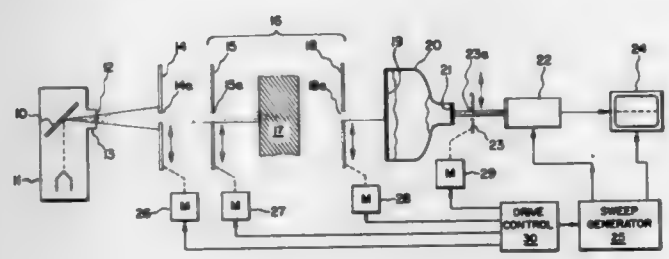
said video blink comparator thereby affording direct viewing of the alternately and sequentially superimposed data image and reference image for direct recognition by a viewer or operator on the video presentation means of variant portions blinking on the constant background.

4,404,591

SLIT RADIOGRAPHY

David C. Bonar, Shelton, Conn., assignor to North American Philips Corporation, New York, N.Y.

Filed Jan. 4, 1982, Ser. No. 337,031
Int. Cl.³ H04N 7/18
U.S. Cl. 358—111 16 Claims



1. In a radiography system which includes:

source means which function to direct X-ray radiation through an examination area;

an X-ray image intensifier having an input screen which is disposed to receive radiation from the source means which has passed through the examination area and an output screen for producing an intensifed visible image which corresponds to radiation impinging on the input screen;

television pickup means disposed to view the output screen which function to produce a television signal corresponding to an image thereon; and

first scanning means which define and move a first X-ray collimator slit disposed between the source means and the examination area and which functions to limit direct radiation from the source means to a limited portion of the input screen;

the improvement comprising second scanning means which function, in synchronism with the motion of the first collimator slit, to limit the view of the television pickup means to a limited area of the output screen on which the image corresponds to radiation on the limited area of the

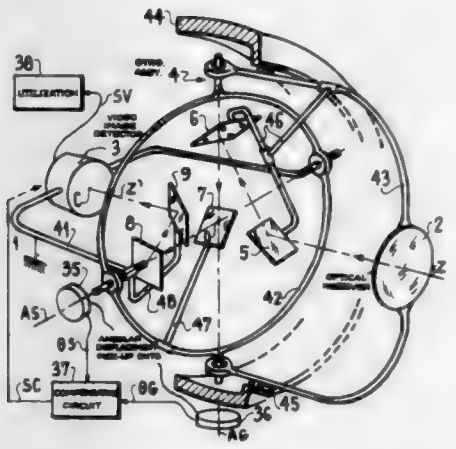
input screen which receives direct radiation from the source means through the first slit.

4,404,592

VIDEO IMAGERY DEVICE, ESPECIALLY FOR A HOMING UNIT

Christian Pepin, and Patrick Herlin, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 19, 1981, Ser. No. 312,917
Claims priority, application France, Oct. 21, 1980, 80 22458
Int. Cl.³ H04H *5/34*
U.S. Cl. 358—125 **14 Claims**



1. A video imagery device comprising a support means for a unit constituted by a receiving optical element for focusing the radiation on an image detector rigidly fixed to a support means, a gyroscopic assembly having two degress of freedom for stabilizing the receiving optic axis, said assembly being constituted by a gimbal suspension provided with two mechanical axes of rotation which pass through its center in order to produce angular displacements in elevation and in azimuth and to cause spatial rotation of the optic axis relatively to a reference axis associated with the support means and terminating at the detector, an optical deviating means for bringing the direction of the optic axis into a position corresponding to the reference axis, said gimbal suspension and said optical deviating means being so determined that the optical deviation path passes through a first mechanical axis of rotation aforesaid and then passes through the second mechanical axis of rotation via the center of the gimbal suspension.

4,404,593

BRIGHTNESS CONTROL CIRCUIT

Robert L. Shanley, II, Indianapolis, Ind., and Leopold A. Harwood, Bridgewater, N.J., assignors to RCA Corporation, New York, N.Y.

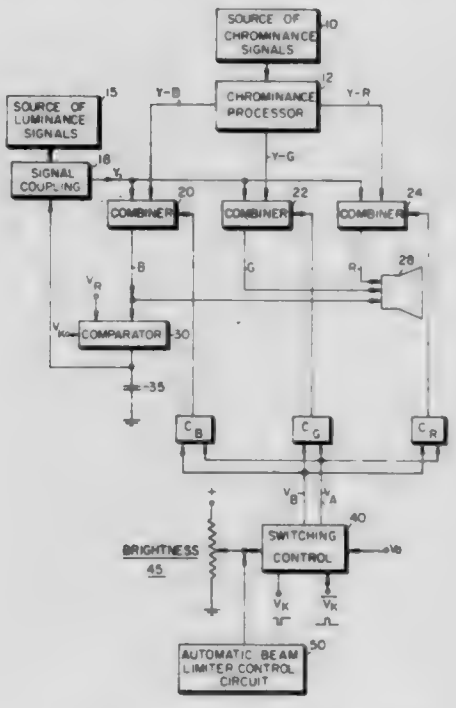
Filed Aug. 27, 1981, Ser. No. 296,863
Int. Cl.³ H04N *5/14*
U.S. Cl. 358—168 **2 Claims**

1. In a color television receiver system including a video signal transmission path for processing a color image representative video signal, said transmission path including a chrominance channel for processing a chrominance component of said video signal, and a luminance channel for processing a luminance component of said video signal having periodically recurring image intervals and image blanking intervals between adjacent image intervals and comparing a reference interval containing a black reference level; means for combining signals processed by said luminance and chrominance channels; and means for supplying output signals from said combining means to an image reproducing device; apparatus comprising:

clamping means, including charge storage means, responsive to an output signal from said combining means for maintaining a desired condition of said black reference level, said clamping means being operative during said reference intervals and inoperative during said image intervals;

a source of variable brightness control voltage; and

means for selectively coupling said brightness control voltage to said video signal transmission path during said image intervals for varying the DC level of said video signal to thereby vary the brightness of a reproduced image, and for decoupling said brightness control voltage from said signal transmission path during said black level reference intervals to prevent said clamping means from responding to said variable brightness control voltage; wherein



said combining means comprises a matrix amplifier responsive to said luminance and chrominance components for developing an output color image representative signal across a load impedance;

said brightness control voltage is selectively coupled to said load impedance during said image intervals independent of the signal gain of said matrix amplifier, and decoupled from said load impedance during said black level reference intervals; and

said clamping means is coupled to said load impedance for sensing the condition of said black reference level.

4,404,594

IMAGING SYSTEM WITH ENLARGED DEPTH OF FIELD

William J. Hannan, Concord, Mass., assignor to Itek Corporation, Lexington, Mass.

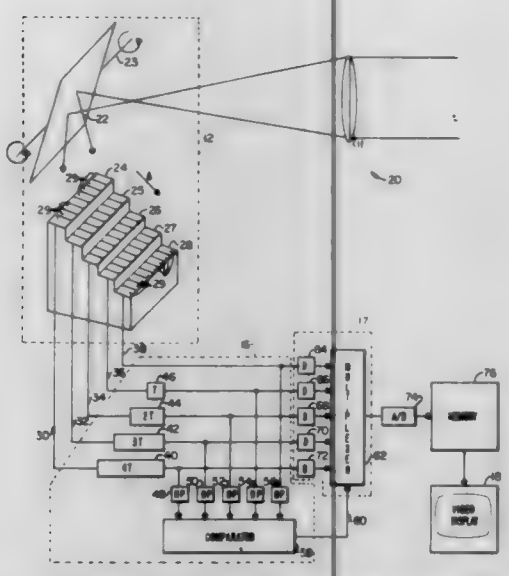
Filed Nov. 2, 1981, Ser. No. 317,363
Int. Cl.³ H04N *5/30, 3/08, 3/14*
U.S. Cl. 358—209 **20 Claims**

1. An imaging system with an enlarged depth of field for use with a means for focusing an image, said imaging system comprising:

means for sensing an image sample from each of a plurality of portions of said image at each of a plurality of optical distances from said means for focusing, said means for sensing including means for scanning said image in a first direction, and a plurality of sensor means extending generally transverse to said first direction for sensing a line of image samples of said image at said plurality of optical distances;

means for determining the relative focus of the image sam-

ples derived from a portion of said image at each of said plurality of optical distances; and



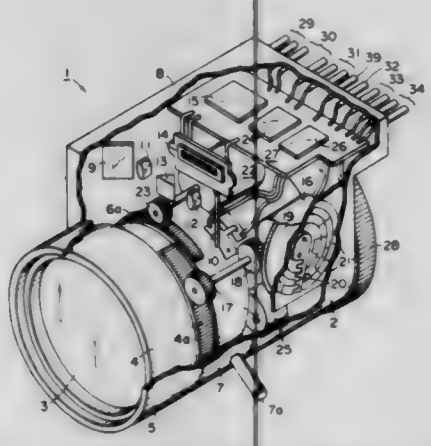
means, responsive to said means for determining, for choosing, for each of said plurality of portions of said image, the image sample having a desired focus.

4,404,595

LENS UNIT FOR A CAMERA

Tatsuzo Ushiro, Tokyo, and Hiroyuki Takimoto, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 31, 1980, Ser. No. 221,635
Claims priority, application Japan, Jan. 15, 1980, 55-2861[U]
Int. Cl.³ H04N *9/10*
U.S. Cl. 358—227 **37 Claims**



1. A lens assembly for use with a camera body having electrical power supply circuit means, measured light signal providing means and zooming control means, said lens assembly comprising:

(A) a focus adjustable zoom lens system for image pick-up;

(B) an automatic focusing device for automatically adjusting the focus of said lens system onto an object;

(C) an automatic diaphragm device for automatically adjusting a diaphragm aperture in accordance with the measured light signal provided by said light signal providing means;

(D) an automatic zooming device for driving, under the control of said zooming control means, said lens system to effect zooming;

(E) means for connecting said automatic focusing device to said electric power supply circuit means;

(F) means for connecting said automatic diaphragm device to said measured light signal providing means; and

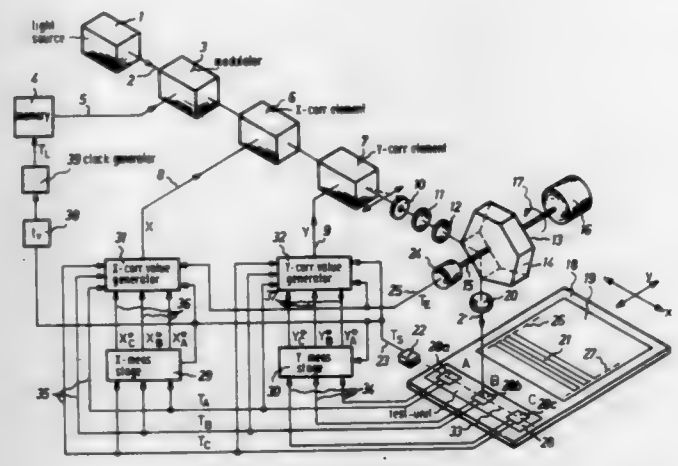
(G) means for connecting said automatic zooming device to said zooming control means.

4,404,596

METHOD AND APPARATUS FOR THE CORRECTION OF THE POSITION ERROR OF A MULTIFACETED ROTATING MIRROR

Heinrich Juergensen, Raisdorf, and Thomas Zelenka, Kiel, both of Fed. Rep. of Germany, assignors to Dr. Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Dec. 2, 1981, Ser. No. 326,526
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1980, 3046584
Int. Cl.³ H04N *1/04*
U.S. Cl. 358—293 **23 Claims**



1. A method for the correction of position errors of a light beam generated by light beam generating means and deflected point-wise and line-wise across a scanning surface by deflection means of said light beam generating means, said deflection means having at least one mirror surface, said scanning surface moving transversally to the deflection or line direction of the light beam relative to the deflection means, comprising the steps of:

before the actual reading or recording operation measuring a plurality of position errors of the light beam for each mirror surface in the deflection direction (X-direction) as X-position errors and at right angles thereto (Y-direction) as Y-position errors at points oriented in the line direction in the area of the scanning surface;

generating X-position and Y-position correction values for the position errors for each mirror surface;

altering the light beam incidence by applying the correction values to the light beam generating means while simultaneously measuring the actual position errors;

rechecking the actual position errors and altering the correction values until the actual position errors are compensated by specific correction values;

storing said specific correction values; and during actual operation applying said stored specific correction values to the light beam generating means synchronously with the movement of said deflection means.

4,404,597

TWO DIMENSIONAL RADIOMETRIC COMPENSATION FOR SCANNING APPARATUS

James C. Stoffel, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 2, 1981, Ser. No. 326,724
Int. Cl.³ H04N *1/10, 1/40*
U.S. Cl. 358—293 **2 Claims**

1. In a scanning apparatus having at least one array for scanning a document original line by line along a first axis, a platen for supporting said document original for scanning by said array, at least two independent scanning beams, each of said beams illuminating a line-like portion of said platen and the document original thereon, and means for sweeping each of said beams across at least a portion of said platen along a second axis substantially perpendicular to said first axis, said

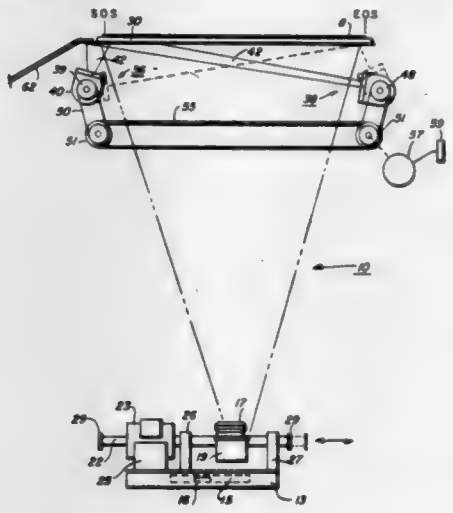
beams cooperating to progressively illuminate said platen and the document original thereon, the improvement comprising:

(a) first scanning beam generating means adjacent one end of said platen;

(b) second scanning beam generating means adjacent the opposite end of said platen;

(c) means for sweeping each of said beams output by said first and second scanning beam generating means across the entire length of said platen from said one end to said opposite end;

(d) means for correcting for deviations in the illumination intensities of said beams along both said first and second axes due to apparatus deficiencies and to overlapping of said beams including memory means for storing signals for compensating for illumination deviations along both said first and second axes, means for addressing said memory means in synchronism with scanning by said array and sweeping of said beams to provide a corrective signal, and



means to modify image signals output by said array in accordance with said corrective signal; said memory means including

(1) a first memory for storing signals for compensating for illumination deviations of said scanning beams along said first axis;

(2) a second memory for storing signals for compensating for illumination deviations of said scanning beams along said second axis;

(3) first digital to analog converter means for converting the signal output of said first memory to an analog signal;

(4) second digital to analog converter means for converting the signal output of said second memory to an analog signal; and

(5) means for combining the signal output of said first converter means with the signal output of said second converter means to provide said corrective signal.

4,404,598

COPYING AND ENGRAVING APPARATUS

Henry G. Sculli, 98-618C Kaonohi St., Aiea, Hi. 96701

Filed Jan. 9, 1981, Ser. No. 223,545
Int. Cl.³ H04N *1/22*
U.S. Cl. 358—296 24 Claims

1. A copying apparatus comprising

a base,

a first mounting means for mounting an article which is a subject of a copying process,

a second mounting means for mounting an object to be changed by the copying process,

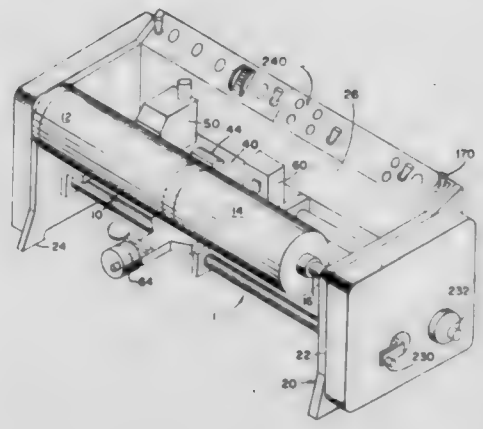
mounting fixing means for relatively fixing the first and second mounting means,

scanning means mounted adjacent the first mounting means for scanning the article,

changing means mounted adjacent the second mounting means for changing the object,

adjusting means connected to the scanning and changing means for adjusting relative longitudinal and transverse positions of the scanning and changing means,

moving means mounted on the base for moving the first and second mounting means with respect to the scanning and changing means,



stepping means mounted on the base for stepping the scanning and changing means with respect to the first and second mounting means,

elongated guide means mounted on the base and a carriage mounted on the base for moving along the guide means and wherein the scanning means and changing means and adjusting means are mounted on the carriage, and wherein the stepping means is connected to the carriage means and to the base for stepping the carriage means along the guide means.

4,404,599

LASER RECORDING INFORMATION AND PILOT SIGNALS FOR TRACKING ON A GROOVELESS RECORDING

Hisao Kinjo, and Keiji Ozawa, both of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

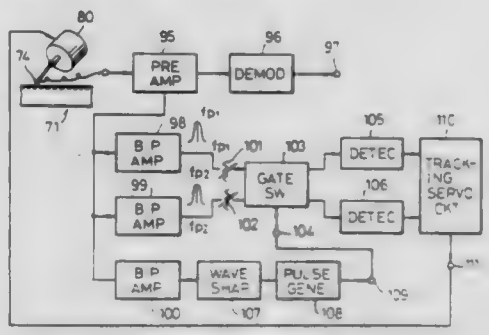
Division of Ser. No. 33,324, Apr. 25, 1979, Pat. No. 4,315,283, which is a continuation-in-part of Ser. No. 785,095, Apr. 6, 1977, Pat. No. 4,331,976. This application Jul. 8, 1981, Ser. No. 281,470

Claims priority, application Japan, Apr. 8, 1976, 51-38809; Oct. 26, 1976, 51-127767

The portion of the term of this patent subsequent to Mar. 23, 1999, has been disclaimed.

Int. Cl.³ H04N *5/76*

U.S. Cl. 358—342 3 Claims



1. A recording disc having: information signal tracks having an information signal recorded thereon; and reference signal tracks having reference signals recorded thereon,

each of said reference signal tracks being formed on an intermediate part of said recording disc located between center lines of adjacent information signal tracks,

first and second reference signals having different frequencies alternately recorded on each of said reference signal tracks responsive to each rotation of the recording disc,

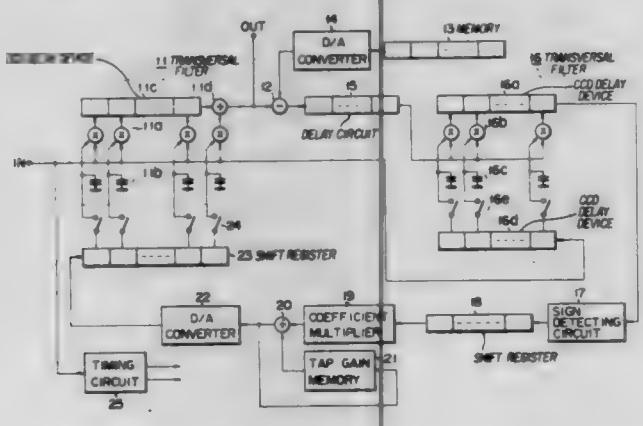
a third reference signal having a frequency which is different from the frequencies of the first and second reference signals, said third reference signal being recorded at predetermined positions on the information signal tracks responsive to each rotation of the recording disc.

4,404,600

GHOST SIGNAL CANCELLING APPARATUS

Junzo Murakami, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 12,485, Feb. 15, 1979, abandoned. This application Aug. 30, 1982, Ser. No. 412,874
Claims priority, application Japan, Feb. 16, 1978, 53-16825
Int. Cl.³ H04N *5/21*; H04B *1/10*
U.S. Cl. 358—905 **16 Claims**



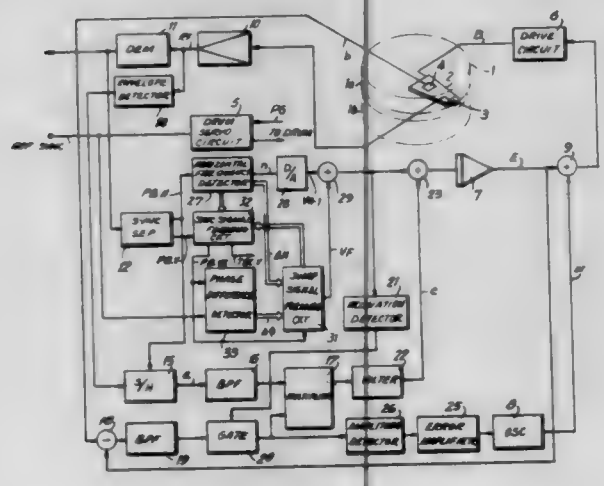
1. A ghost signal cancelling apparatus comprising means for applying an input video signal to a filter circuit including a first tranversal filter having a first set of weighting circuits for applying a first weighting signal to said filter circuit, means for supplying an output signal from the filter circuit to a second transversal filter having a second set of weighting circuits for applying a second weighting signal to said second transversal filter, means for determining coefficients of the second set of weighting circuits according to the input video signal, and means for producing coefficients of the first set of weighting circuits from an output signal of the second transversal filter.

4,404,601

HEAD TRACKING CONTROL SYSTEM

Hitoshi Sakamoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 6, 1981, Ser. No. 232,014
Claims priority, application Japan, Feb. 16, 1980, 55-18371
Int. Cl.³ H04N *5/783*
U.S. Cl. 360—10.3 **25 Claims**



1. Apparatus for reproducing information signals recorded in successive parallel tracks on a record medium in any of a plurality of different reproducing modes, said information signals including vertical synchronizing signals also recorded on said record medium, said apparatus comprising:

transducer means movable in a direction along the tracks for reproducing the signals recorded therein;

transducer deflecting means for deflecting said transducer means in a direction transverse to said direction along the tracks;

synchronizing signal forming means for producing substitute vertical synchronizing signals having correct vertical phase continuity for each of said plurality of different reproducing modes in response to one of synchronizing pulses and said recorded vertical synchronizing signals, regardless of any phase discontinuity in said recorded vertical synchronizing signals as reproduced; and

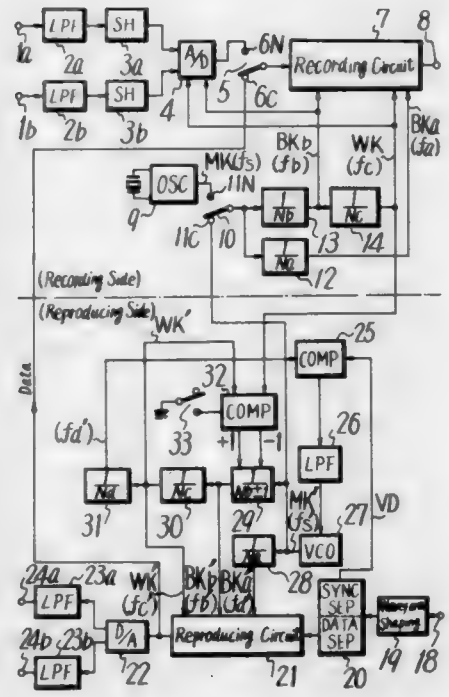
drive signal means for producing a drive signal in response to at least said substitute vertical synchronizing signals and for supplying said drive signal to said transducer deflecting means so as to control the latter to deflect said transducer means to accurately move along said tracks.

4,404,602

PCM SIGNAL RECORDING SYSTEM

Susumu Hoshimi, Yokohama, and Tadashi Kojima, Yokosuka, both of Japan, assignors to Sony Corporation and Tokyo Shibaura Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Nov. 17, 1981, Ser. No. 322,278
Claims priority, application Japan, Nov. 18, 1980, 55-162176
Int. Cl.³ G11B *27/02*, *5/00*
U.S. Cl. 360—13 **16 Claims**

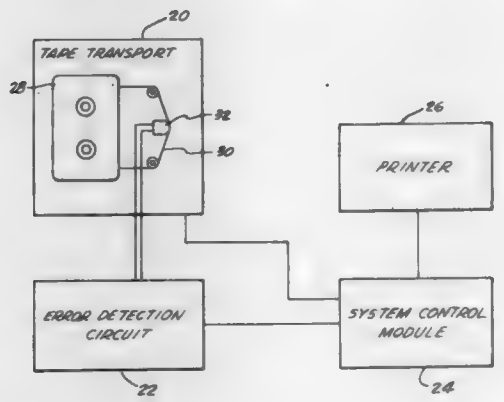


1. A PCM signal recording system comprising, first signal processing means for processing a recording signal into a predetermined PCM signal, second signal processing means for processing a reproduced PCM signal into said recording signal, first clock signal generating means for generating a master clock signal, second clock signal generating means for generating at least one recording clock signal from said master clock, said recording clock signal being supplied to said first signal processing means, third clock signal generating means for generating at least one reproducing clock signal related to said master clock, said reproducing clock signal being supplied to said second signal processing means, comparing means for digitally comparing the phases of said second clock signal and said third clock signal and for producing a control signal, and control means for controlling said second or third clock signal so that they are synchronized with each other receiving said control signal.

4,404,603
APPARATUS AND METHOD FOR INSPECTING MAGNETIC TAPE RECORDED MATERIAL FOR ALTERATIONS

Eugene D. Warren, 12966 Caminito en Flor, Del Mar, Calif. 92014; Lawrence M. Martin, 968 Santa Estella, Solana Beach, Calif. 92075, and Daniel L. Kinnaman, 4164 Terry St., Oceanside, Calif. 92054

Filed May 27, 1980, Ser. No. 153,383
Int. Cl.³ H04N 5/795
U.S. Cl. 360—33.1 16 Claims



1. Apparatus for inspecting the program material recorded on magnetic tape comprising:

a. sensing means for simultaneously detecting a plurality of recording tracks on said tape one of which contains a prerecorded fixed frequency signal added to the program material recorded on that track;

b. means for transporting said tape past said sensing means;

c. circuit means for processing signals detected by said sensing means so that the detection of a signal on a single track alone registers as an error in said tape's recorded program material;

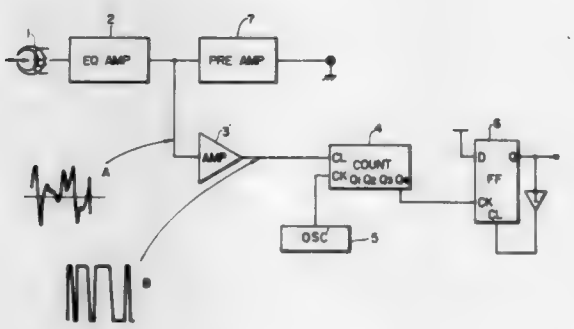
d. means for printing the type and location of errors detected on the tape; and

e. computer processor means for automatically controlling the operation of said tape inspection apparatus.

4,404,604
DEVICE FOR DETECTING A NON-RECORDED SEGMENT ON MAGNETIC TAPE

Yoshiharu Ueki, and Shouzaburou Sakaguchi, both of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 14, 1981, Ser. No. 254,326
Int. Cl.³ G11B 27/22, 19/10, 15/52
U.S. Cl. 360—71 3 Claims

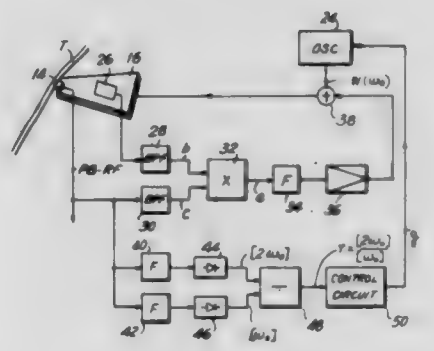


1. A device for detecting non-recorded segments of a predetermined minimum length on a magnetic tape comprising: oscillator means for producing clock pulses of a predetermined frequency; multi-bit counter means having a clear input terminal and a clock terminal, said clock pulses being applied to said clock input terminal; and means for applying a digital signal corresponding to a reproduced signal to said clear input terminal, an output signal indicative of the presence of a non-recorded segment being produced at a higher order bit output of said counter means.

4,404,605
HEAD TRACKING CONTROL SYSTEM

Hitoshi Sakamoto, Zama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 4, 1981, Ser. No. 259,959
Claims priority, application Japan, May 8, 1980, 55-60924
Int. Cl.³ G11B 5/52, 21/10, 21/18
U.S. Cl. 360—77 17 Claims



1. Apparatus for reproducing information signals recorded in successive parallel tracks on a record medium, comprising:

transducer means movable in a direction along the tracks for reproducing the signals recorded therein;

transducer deflecting means for controlling the position of said transducer means with respect to said tracks as the transducer means scans the latter;

controllable oscillator means for supplying a wobbling signal to said transducer deflecting means so as to cause the transducer deflecting means to effect oscillatory deflection of said transducer means in a transverse direction with respect to said tracks, said signals reproduced by said transducer means being amplitude modulated at the frequency of said wobbling signal;

tracking error detecting means for supplying to said transducer deflecting means a tracking error signal corresponding to deviation of said transducer means from any one of said tracks being scanned so as to control the transducer deflecting means for correcting said deviation;

signal detecting means for detecting at least a second harmonic component of the amplitude modulated signals reproduced by said transducer means; and

means for controlling the amplitude of the wobbling signal from said controllable oscillator means in accordance with the ratio of the level of at least said second harmonic component relative to a reference level.

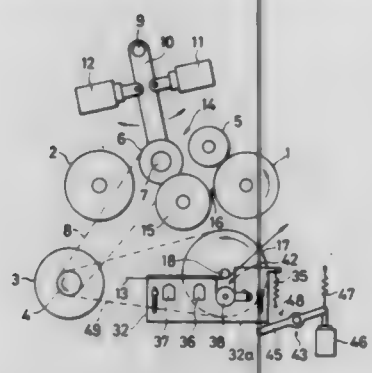
4,404,606
AUTOMATIC MUSIC SELECTING DEVICE FOR TAPE RECORDER

Hideo Watanabe, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 1, 1981, Ser. No. 259,624
Claims priority, application Japan, May 1, 1980, 55-61386[U]
Int. Cl.³ G11B 15/00
U.S. Cl. 360—105 10 Claims

1. An automatic music selecting device for a power assist type tape recorder comprising: a drive gear rotatable together with a flywheel; a reduction gear having a cutaway portion, said reduction gear being engageable with said drive gear; an eccentric cam mounted on said reduction gear for moving a head base between a stop position and a play position; said head base having a reproducing head mounted thereon for detecting a recorded signal on a tape as well as a pinch roller selectively engageable with a capstan, said eccentric cam abutting a rear side of said head base; a rotatation control mechanism for controlling a rotational position of said reduction

gear; and a music selection position stopping mechanism for moving said head base to a music selection position at which said reproducing head is in contact with said tape and said pinch roller is disengaged from said capstan, said music selec-



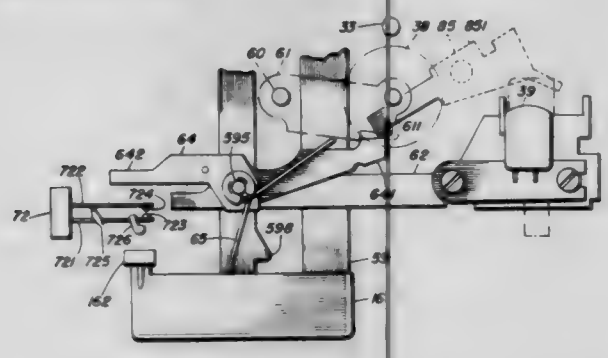
tion position stopping mechanism comprising a music selecting plunger and a stop lever coupled to said plunger, said head base being stopped at said music selecting position by said stop lever.

4,404,607

MAGNETIC REPRODUCING APPARATUS

Humio Itai, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 18, 1981, Ser. No. 265,076
Claims priority, application Japan, Jun. 13, 1980, 55-79796
Int. Cl.³ G11B 5/52
U.S. Cl. 360—105 4 Claims



1. A magnetic reproducing apparatus for recording and reproducing information on magnetic tape comprising:

a main chassis (30);

a reproducing operation slider (59) mounted on said chassis to slide in its longitudinal direction;

a reproducing button (16) attached to one end of said slider;

a head lever (62) positioned at substantially a right angle to said slider, said head lever being rotatably mounted on said slider;

magnetic head means (39) attached to said lever for engaging said magnetic tape;

bias means (63) linking said lever to said slider or said button; and

regulation means (598) on said slider for maintaining said lever at substantially a right angle to said slider.

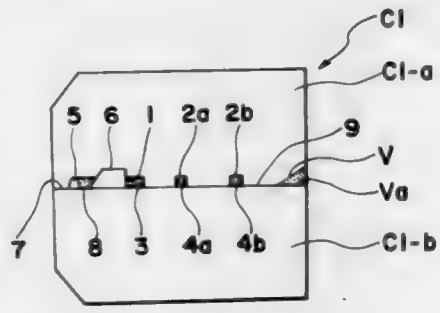
4,404,608

MAGNETIC HEAD WITH AN IMPROVED INNER CORE

Isao Yasuda, Katano; Kazuaki Koyama, Hirakata, and Yoshihiko Kawai, Moriguchi, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 4, 1981, Ser. No. 231,321
Claims priority, application Japan, Feb. 4, 1980, 55-12645; Apr. 16, 1980, 55-50809
Int. Cl.³ G11B 5/12, 5/22
U.S. Cl. 360—126 13 Claims

1. A magnetic head including an inner core of metallic magnetizable material sandwiched between a pair of outer reinforcing cores, each having a coil winding insertion opening formed therein, said inner core comprising a first core block which has a front gap defining surface and a back gap defining surface respectively provided at one side and the other side of said first core block and a coil winding recess provided in a position adjacent to said front gap defining surface, and which is formed, between said front gap defining surface and said coil winding recess, with a space for setting the lower end of said front gap defining surface and a brazing material layer connecting said space with said coil winding recess, and a second



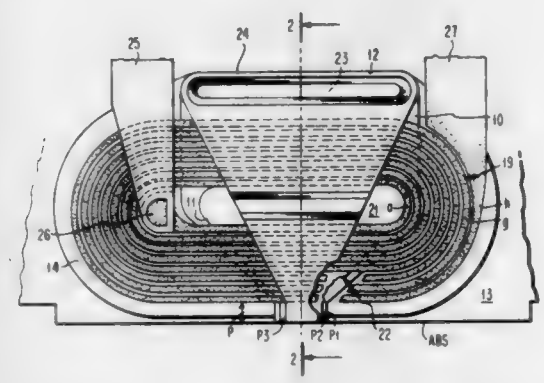
core block to be combined with said first core block so as to constitute said inner core, each of the reinforcing cores corresponding to the required size and shape of the inner core, as produced by machining, and being arranged, in a perspective view of the magnetic head as assembled, to be contactable with the inner core of magnetizable material so as to sandwich the front gap of the inner core therebetween with mechanical strength and for providing a stable magnetic head with high reliability.

4,404,609

THIN FILM INDUCTIVE TRANSDUCER FOR PERPENDICULAR RECORDING

Robert E. Jones, Jr., San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1981, Ser. No. 315,592
Int. Cl.³ G11B 5/12, 5/22
U.S. Cl. 360—126 10 Claims



1. A thin film inductive transducer, provided on a substrate having an air bearing surface, for perpendicular recording and reading of magnetic transitions on a movable magnetic recording medium, characterized by:

three thin film magnetic layers disposed in superposed spaced relation on the substrate, with the second layer intermediate the first and third layers, to define a pair of magnetic transducing gaps in a pole tip region adjacent the air bearing surface;

at least one single layer of conductive turns disposed between said first layer and second layer;

said first layer contacting said second layer in an area encircled by the conductive turns for forming a split ring enclosing the portion of said conductive turns between said area and the pole tip region to constitute a first magnetic closure; and

said first layer contacting said third layer outboard of the conductive turns for forming another split ring to constitute a second magnetic closure; thereby to provide pulses capable of being sensed by peak detection techniques.

4,404,610

MODE SELECTION ASSEMBLY FOR USE IN TAPE RECORDERS OR THE LIKE

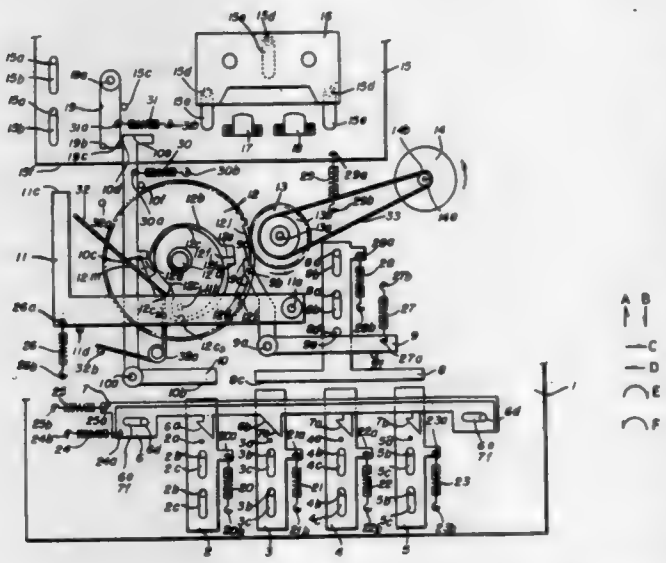
Satoru Koizumi; Hiroaki Nakao, and Takashi Tsuchitani, all of Higashihiroshima, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 14, 1981, Ser. No. 254,175

Claims priority, application Japan, Apr. 15, 1980, 55-51071; Apr. 15, 1980, 55-51072; Apr. 15, 1980, 55-51073

Int. Cl.³ G11B *15/24, 15/44*

U.S. Cl. 360—137 **15 Claims**



1. A power assisted mode selection assembly for a recording and playback tape machine comprising:

a main chassis;

a plurality of levers, individually, operatively, movably mounted on said main chassis;

a subchassis movably mounted on said main chassis;

actuating means being movably mounted on said main chassis for selectively imparting movement to said subchassis;

rotating means being intermittently driven for selectively imparting movement to said actuating means;

a cam surface including a plurality of humps being operatively affixed to said rotating means;

engaging means being operatively connected for selective movement to a predetermined number of said plurality of levers for selectively engaging one of said plurality of humps on said cam surface to stop the rotation of said rotating means;

wherein each of said plurality of levers may be manually, individually actuated to select one of a plurality of predetermined operating modes of said tape machine and said rotating means providing a power assist to impart movement to said actuating means and said subchassis, and said engaging means being selectively actuated to engage one of said plurality of humps on said cam surface to stop the rotation of said rotating means to maintain said subchassis in a predetermined operating mode and being selectively movable out of engagement with one of said plurality of humps to permit rotation of said rotating means for selection of another predetermined operating mode.

4,404,611

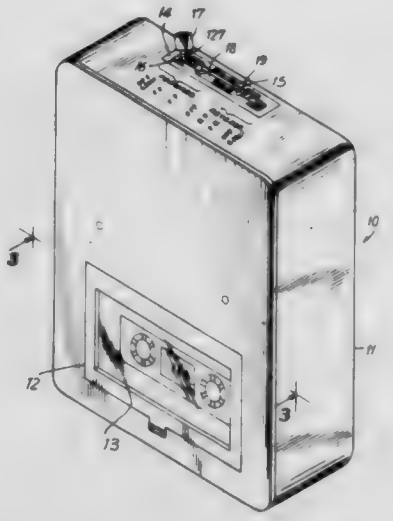
BIDIRECTIONAL CASSETTE TRANSPORT

Richard Demenus, New York, N.Y., assignor to Acoustiquide Corporation, New York, N.Y.

Filed Jul. 13, 1981, Ser. No. 282,664

Int. Cl.³ G11B *5/00, 15/00, 15/10*

U.S. Cl. 360—137 **12 Claims**



1. A bidirectional cassette tape player assembly comprising a base plate, a tape head carrier member mounted on said base plate for linear movement, a tape head member on said carrier member, a pair of spaced parallel capstans on said base plate, drive means operatively connected to said capstans for rotating the same in opposite directions about axes of rotation normal to the direction of linear movement of said carrier member, a pair of turntables rotatably mounted on said base plate in parallel spaced relation to said capstans, a pulley member coaxially aligned with each said turntable, a drive member coupling each said capstan with a pulley member, friction clutch means interposed between each said pulley and turntable and loosely frictionally coupling the same for conjoint rotation, a control lever mounted on said carrier member for rocking movement about an axis parallel to and positioned on a center line disposed between said capstans, said lever including spaced actuator arms, first and second cam members, each operatively associated with a respective said arm, each said cam member being disposed in proximate relation to one of said clutch means, each said arm member being effective to increase the frictional coupling forces of one of said turntable to one of said pulleys selectively responsive to rocking movements of said lever of a predetermined magnitude to opposite sides of said center line.

4,404,612

DC SOLID STATE OVERLOAD RELAY

Ronald W. Hughes, Madison, and Leonard J. Srnka, Independence, both of Ohio, assignors to Harvey Hubbell Incorporated, Orange, Conn.

Filed Dec. 14, 1981, Ser. No. 330,087

Int. Cl.³ H02H *7/085*

U.S. Cl. 361—31 **8 Claims**

1. An overload relay circuit for a DC motor having a constant potential contactor type control system or an adjustable voltage control system and a standard ammeter shunt comprising:

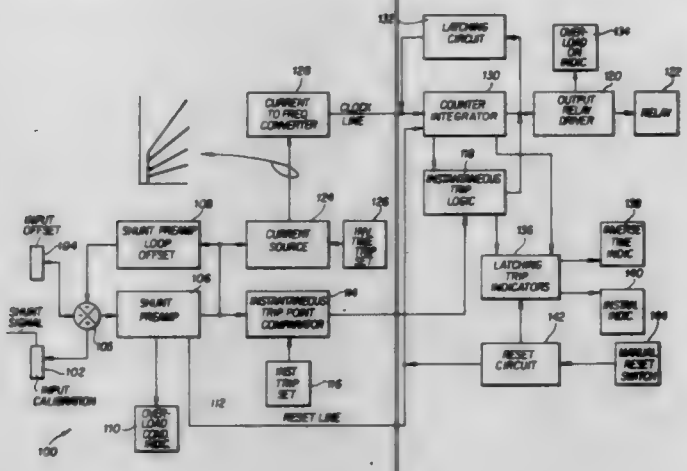
input circuit means for calibrating the output signal of said shunt and outputting an overload signal when said input signal exceeds a first predetermined value;

instantaneous adjustable trip comparator means for tripping said relay when said overload signal exceeds a second predetermined value;

delayed relay trip circuit means responsive to said overload signal for tripping said relay when said overload signal exceeds a third predetermined value for a predetermined period of time;

automatic-manual reset circuit responsive to said relay tripping signals to reset said delayed and instantaneous relay trip circuit; and

latching trip indicator circuit responsive to the output of said



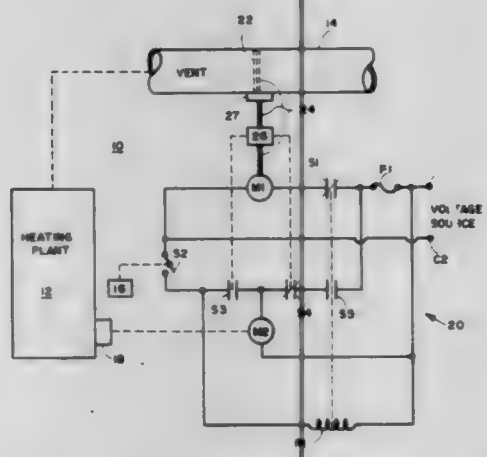
instantaneous trip comparator to indicate that said trip comparator circuit has output a relay trip signal and responsive to said delayed relay trip circuit means to indicate that said relay trip circuit means has output a signal whereby the cause of said trip relay is indicated.

4,404,613

DOUBLE SWITCH FUSE ASSEMBLY

Christopher P. Channing, Central Islip, and William Z. Rovinsky, Old Bethpage, both of N.Y., assignors to Flair Manufacturing Corp., Hauppauge, N.Y.

Filed Jun. 4, 1981, Ser. No. 270,245
Int. Cl.³ H02H *5/10*
U.S. Cl. 361—104 **5 Claims**



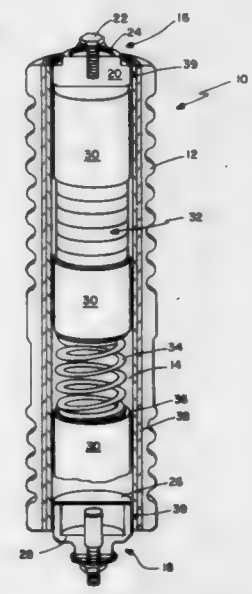
1. In an automatic control system for a heating plant having a burner, first motor means for supplying fuel to said burner, and a heating stack for discharging the products of combustion, said heating stack containing a damper vane moveable between a closed position wherein said stack is closed to flow and an open position wherein said stack is open to flow, the improvement comprising means for mechanically biasing said damper vane into its open position, second motor means upon energization for overcoming said biasing means and moving and maintaining said damper vane into and in its closed position, voltage source means for energizing said motor means, a normally closed first switch and said second motor means forming a first series circuit connected to said voltage source means thereby normally maintaining said damper vane in its closed position, a normally open second switch, solenoid means in response to closing of said second switch for opening said first switch thereby causing deenergization of said second motor means and movement of said damper vane by its biasing means into its open position, a third switch mechanically linked to said damper vane to be closed only when said damper vane is substantially fully in its open position, said third switch and said second switch being in series with each other and forming part of a second series circuit connected to said voltage source means, both of said series circuits being in parallel with each other, means in response to closing of said second switch and movement of said damper vane from its closed position into its open position for causing closing of said third switch for energizing said first motor means, and fuse means destructing in response to closing of said second switch at a time when said third switch is short circuited through for at least partially disabling said control system.

4,404,614

SURGE ARRESTER HAVING A NON-FRAGMENTING OUTER HOUSING

Robert E. Koch, Pittsfield, and Daniel D. Bergh, Lenox, both of Mass., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed May 15, 1981, Ser. No. 264,008
Int. Cl.³ H02H *9/04*
U.S. Cl. 361—128 **8 Claims**



1. A surge arrester comprising: an outer elongated housing of relatively resilient, electrically insulating and non-tracking material defining a longitudinal chamber extending from one end of the housing to an opposite end thereof; first and second chamber closing means respectively including electrical terminals located at said chamber ends; means including a plurality of arrester components in series relationship with one another within said housing chamber for providing a high or low electrical impedance path between said terminals depending upon the voltage across the latter; a high flexural strength thermal insulating inner liner disposed between said arrester components and the inner surface of said housing; and an intermediate moisture impervious liner constructed of glass flakes in epoxy resin between said inner liner and said elongated housing.

4,404,615

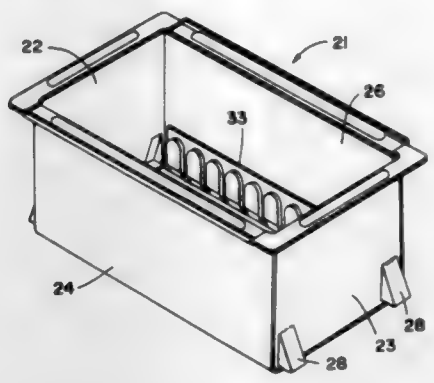
ANTI-STATIC CONTAINER FOR ELECTRONIC COMPONENTS

Barry Dep, Castro Valley, Calif., assignor to United Plastics, Corp., Oakland, Calif.

Filed Dec. 14, 1981, Ser. No. 330,432
Int. Cl.³ H05F *3/02*
U.S. Cl. 361—212 **6 Claims**

1. An anti-static device for supporting a plurality of electronic circuit boards, comprising; a container dimensioned to receive said plurality of circuit boards, liner means disposed within said container, said liner means formed of an anti-static material, said liner means comprising a liner having a bottom panel and side portions extending upwardly from opposed

edges of said bottom panel, slot means formed in said liner to receive and support edge portions of said circuit boards in



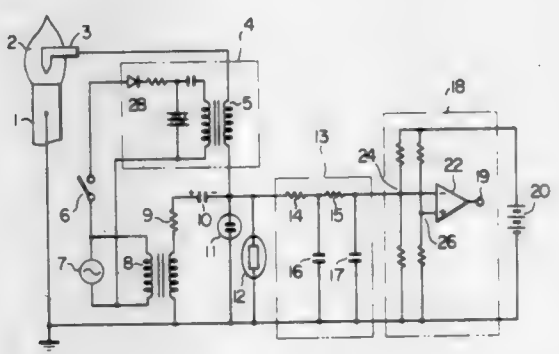
upwardly extending fashion, and means for connecting said liner to ground potential.

4,404,616

IGNITING AND FLAME DETECTING DEVICE

Motoshi Miyanaka, and Kenzi Toudo, both of Yanai, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 3, 1981, Ser. No. 250,643
Claims priority, application Japan, Apr. 16, 1980, 55/49211
Int. Cl.³ F23Q *3/00*
U.S. Cl. 361—253 **6 Claims**



1. An igniting and flame detecting device comprising:

electrode means disposed close to a burner for producing a spark for firing gas issuing from the burner;

high voltage pulse generating means connected in series with said electrode means through a discharge tube for applying a high voltage pulse to said electrode means through said discharge tube;

flame detecting means for detecting the presence or absence of a flame produced when the gas is fired based on rectifying effects of the flame, said detecting means including a series circuit composed of flame detection AC means, a resistor and a capacitor and connected in parallel with said discharge tube for applying an AC voltage to said flame through said high voltage pulse generating means, and a detection circuit connected to said series circuit for detecting a DC voltage component produced across said capacitor due to the rectifying effects of said flame; and

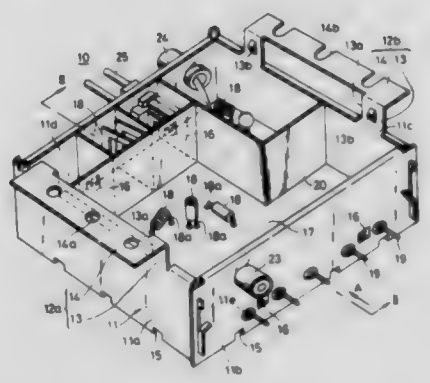
a gap discharge element connected in parallel with said discharge tube and designed to start its discharge at a voltage level which is higher than a voltage level at which said discharge tube normally starts its discharge.

4,404,617

HIGH-FREQUENCY CIRCUIT DEVICE HAVING A CIRCUIT BOARD FIXED TO A SHIELD CASING BY PROJECTIONS OF THE SHIELD CASING AND SOLDERING

Sadahiro Ohyama, No. 1474-12, Chigasaki, Chigasaki-City, Kanagawa-ken; Hiroshi Kato, No. 2-16-7, Tsurukawa, Machida-City, Tokyo, and Kazuo Matsukawa, No. 667, Takakura, Fujisawa-City, Kanagawa-ken, all of Japan

Continuation of Ser. No. 63,555, Aug. 3, 1979, abandoned. This application Jul. 10, 1981, Ser. No. 282,222
Claims priority, application Japan, Sep. 14, 1978, 53-112942; Aug. 3, 1979, 54-108173[U]
Int. Cl.³ H05K *5/04*
U.S. Cl. 361—424 **10 Claims**



1. A high-frequency circuit device comprising:

a metal shield casing with surrounding side walls;

a printed circuit board-shield plate segment assembly supported horizontally within said casing, comprising a printed circuit board having electrical elements thereon and shield plate segments which are perpendicular to said printed circuit board and define the electrical elements into a plurality of groups;

holding means for provisionally holding said assembly inside said casing so as to prevent displacement as between said case and said assembly through mechanical contact between said assembly and said casing; and solder parts for permanently fixing both the top of said shield plate segments and the bottom of said printed circuit board to said side walls of said casing by applying solder to corresponding positions in a state where said assembly is provisionally held to said casing by means of said provisional holding means, said provisional holding means comprising projection parts formed on said side walls of said casing, said projection parts bent from said side walls along a vertical axis and including vertex parts and said vertex parts of said projection parts making contact with the top of said shield plate segments of said assembly, said solder parts between the top of said shield plate segments and said projection parts being dip-soldered parts.

4,404,618

FLASH DEVICE

Tateo Yamada, Yokohama; Toshiharu Mamiya, Kawasaki, and Kazuo Ikawa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

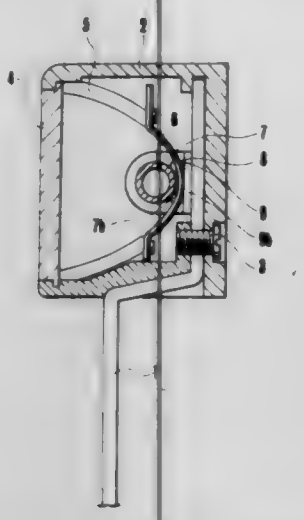
Filed Sep. 3, 1981, Ser. No. 299,183
Claims priority, application Japan, Sep. 12, 1980, 55-126865; Dec. 23, 1980, 55-183136; Dec. 23, 1980, 55-186510
Int. Cl.³ F21K *5/02*; G03B *15/02*
U.S. Cl. 362—17 **9 Claims**

1. A flash light emitting device including:

a flash tube, said flash tube being coated with a trigger electrode;

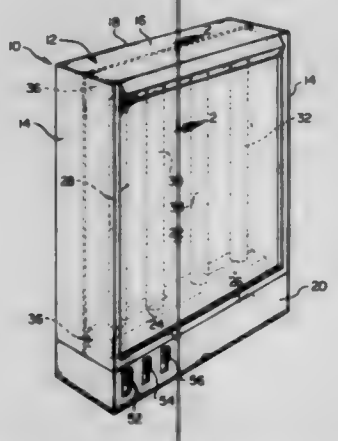
a back metal which serves as at least a portion of a reflection mirror and an electric current path for a triggering signal applied to said back metal, said back metal being provided with embossed portions; and

means for pressing said flash tube against said embossed portions so that the contact of the flash tube with the back metal



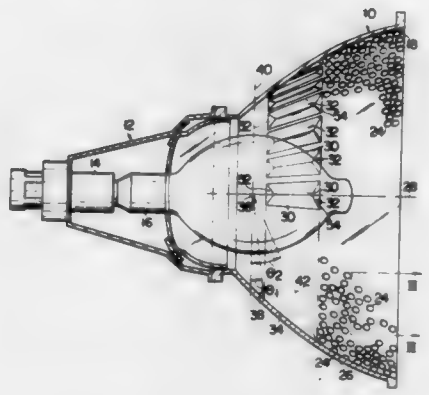
and the adjustment in position of said flash tube relative to the back metal are effected.

4,404,619
ILLUMINATOR BOX
Bruce A. Ferguson, 233 S. Quincy, Hinsdale, Ill. 60521
Filed Feb. 18, 1982, Ser. No. 349,827
Int. Cl.[3] F21S *3/00*
U.S. Cl. 362—222 10 Claims



1. A variable intensity illuminator box for reading x-rays and the like comprising:
a housing;
a translucent screen mounted on one side of the housing;
at least two sets of illuminating means supported within the housing, each of said sets being optically connected to and operable to illuminate the entire surface of the translucent screen;
at least two different illumination sources comprising each set of illuminating means;
control means operatively connected to each set of illuminating means to selectively energize one or more illumination sources of each set to illuminate the entire surface of the translucent screen, whereby variable degrees of intensity can be provided to read x-rays and the like supported on the translucent screen.

4,404,620
LUMINAIRE
Sadao Takahashi, Yokohama, and Nobuo Matsushita, Tokyo, both of Japan, assignors to Toshiba Electric Equipment Corporation, Tokyo, Japan
Filed Dec. 4, 1980, Ser. No. 213,023
Claims priority, application Japan, Dec. 11, 1979, 54-160983
Int. Cl.[3] F21V *7/00*
U.S. Cl. 362—304 30 Claims

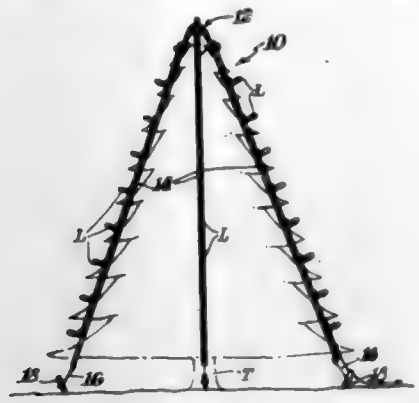


1. A luminaire comprising:
a light source;
a reflector surrounding said light source and reflecting light emitted by said light source to a desired direction;
said reflector including a first region formed on an inner surface of said reflector located at a first position adjacent a light projecting end portion;
a second region formed on said inner surface of said reflector located between said first region and a second position adjacent a base end portion of said reflector and having a smooth reflecting surface;
a plurality of substantially identical reflecting surface units positioned in said second region, each having slanted opposite side portions which intersect each other, wherein said plurality of reflecting surface units are arranged in a circumferential direction at fixed intervals such that a plurality of smooth reflecting surface portions are defined between each two adjacent reflecting surface units and each connect said first and second positions and wherein a first imaginary straight line segment connecting a first end of said reflecting surface units and a light center of said light source forms a first fixed angle with a reference plane normal to an axis of said reflector and containing said light center and a second imaginary straight line segment connecting a second end of said reflecting surface units and light center of said light source forms a second fixed angle with said reference plane; and
said first region further comprises a plurality of hammer tone finished reflecting surfaces.

4,404,621
METHOD AND DEVICE FOR MOUNTING LIGHTS TO CHRISTMAS TREES
Louis D. Mauro, 125 Weldin Park Dr., Wilmington, Del. 19803
Filed Sep. 10, 1981, Ser. No. 300,934
Int. Cl.[3] F21M *3/18*
U.S. Cl. 362—419 18 Claims

1. A device for mounting lights to an upstanding tree or the like comprising a crown for being positioned at the top of the tree, said crown including a closed loop collar, a plurality of elongated tracks pivotally mounted to and extending from said collar, each of said tracks having a pulley associated therewith mounted on said collar, guide means slidably mounted in each of said tracks, and said guide means including retaining means

whereby a string of lights or the like may be secured to said guide means and selectively moved toward and away from said



crown by a cord or the like secured to said string and positioned over a respective one of said pulleys.

4,404,622

STABILIZED POWER SUPPLY

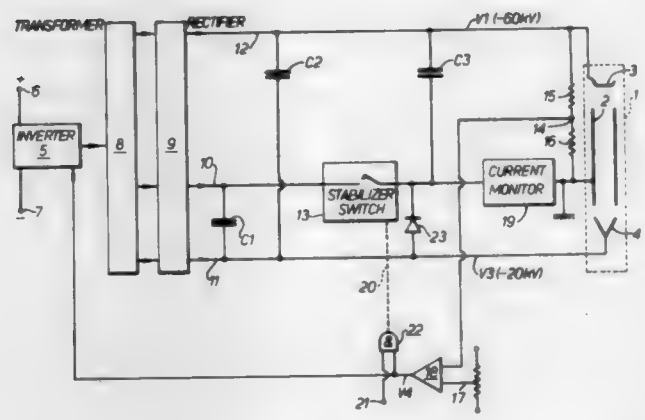
Peter J. Cherry, Huncote, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Mar. 8, 1982, Ser. No. 355,844

Claims priority, application United Kingdom, Mar. 6, 1981, 8107168

Int. Cl.³ H02M *3/315*; H02P *13/18*

U.S. Cl. 363—27 **10 Claims**



1. A stabilised power supply including a resonant inverter circuit arranged to generate an a.c. voltage from input d.c. power applied to it; a transformer for receiving the a.c. voltage and transforming it to a different a.c. voltage; a rectifier for converting the a.c. voltage to a corresponding d.c. voltage; and first and second capacitive smoothing stages which are charged by said d.c voltage and connected to said rectifier in series, with a controllable switch being positioned between the two stages; means for monitoring the voltage on the second capacitive stage and for rendering said switch non-conductive when said d.c. voltage reaches a reference level and for maintaining the switch open until the completion of the current cycle of the resonant inverter.

4,404,623

METHOD AND APPARATUS FOR BALANCING FLUX IN A POWER TRANSFORMER CIRCUIT

Charles S. Jourdan, Apopka, Fla., assignor to Florida Computer Graphics, Lake Mary, Fla.

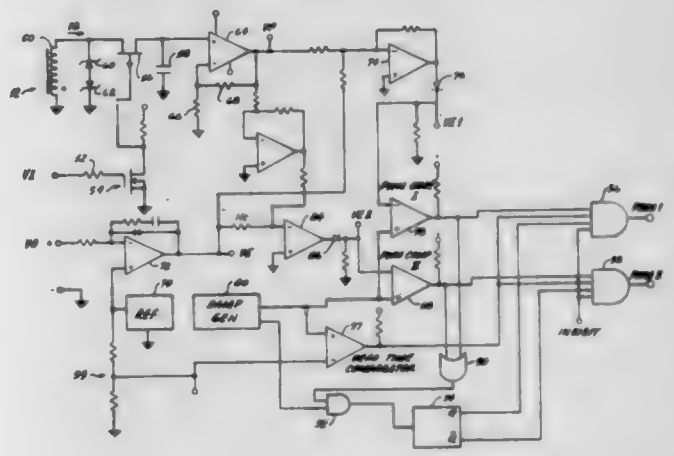
Filed Apr. 23, 1982, Ser. No. 371,443

Int. Cl.³ H02H *7/122*

U.S. Cl. 363—56 **10 Claims**

1. A method of balancing transformer flux in a switching power transformer circuit, which circuit employs pulse width modulation for regulation of output voltage and is driven by an input signal that approximates a square wave, that switches for each respective half cycle of operation between a first circuit section having during the active portion of its operation a first output signal with a first polarity and a second circuit section having during the active portion of its operation a second output signal with a polarity opposite the first polarity, which circuit includes a current sensing device connected in series with the primary winding of the power transformer, which circuit generates a voltage error signal by comparing the output voltage against a reference voltage, and which circuit includes a ramp signal generator for generating a ramp signal, said method comprising the steps of

generating a signal proportional to the current flowing in the primary winding of said power transformer during said active portion of each half cycle of operation of said



circuit that said current sensing device and said power transformer are being driven by said circuit;

integrating said power transformer current-proportional signal with time to generate a flux error signal;

combining said flux error signal with said voltage error signal to generate a first combined signal; and

comparing said first combined signal with said ramp signal and generating from said comparison a signal for controlling the operation of said first circuit section, whereby the duty cycle of that first circuit section controlled by the first pulse width control signal may be adjusted to drive the flux error signal, and thus the direct current flux in the power transformer, toward zero.

4,404,624

POWER CIRCUIT FOR ELECTRONIC TIMEPIECE

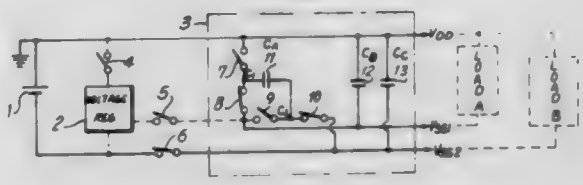
Suguru Yamazaki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jul. 31, 1981, Ser. No. 288,849

Claims priority, application Japan, Jul. 31, 1980, 55-105309

Int. Cl.³ H02M *3/18*

U.S. Cl. 363—59 **24 Claims**



1. A power circuit for an electronic timepiece, said timepiece being a variable load on said power circuit, comprising:

a power supply having a high internal impedance, the output voltage of said power supply being diminished under heavy load;

a voltage booster and reduction circuit for increasing the voltage above the power supply voltage in a first mode of operation, and for reducing the voltage below the power supply voltage in a second mode of operation;

a voltage regulation circuit for providing a stable output voltage;

switching means for selectively engaging with said power supply one of said voltage booster and reduction circuit operating in said second mode and a combination of said voltage regulation circuit and said voltage booster and reduction circuit operating in said first mode;

means for generating a signal in response to the level of said output voltage of said power supply, said signal activating said switching means,

said power circuit operating automatically in one or two operating conditions in response to the power supply voltage magnitude.

4,404,625

PROGRAMMABLE LOGIC CONTROLLER

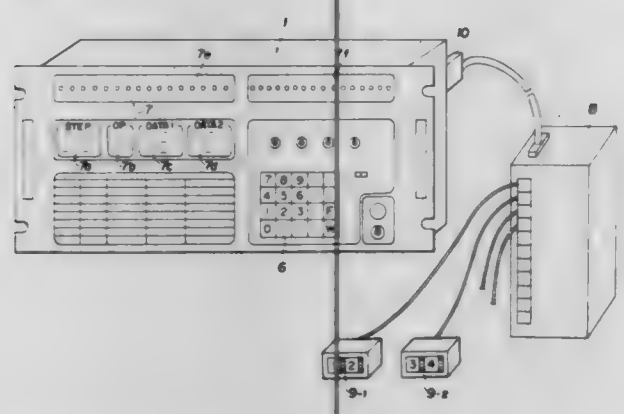
Yoshitane Saito, Kameoka; Akihiro Yamada, Kyoto, and Satoshi Yano, Nagaokakyo, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Mar. 25, 1981, Ser. No. 247,284

Claims priority, application Japan, Mar. 26, 1980, 55-38518

Int. Cl.³ G05B *19/04*; G06F *15/46*

U.S. Cl. 364—144 **4 Claims**



1. A programmable logic controller comprising:

(a) a program memory for storing a program expressed in the form of a combination of a first instruction code for indicating the kind of process operation and a second instruction code containing modified data to specify the operating conditions of the process operation of the kind expressed by said first instruction code;

(b) a plurality of external numerical data setters for manually entering numerical data relating to said operating conditions;

(c) an input device for writing any desired program into said program memory and for entering a specific code indicating external data has been entered in at least one of said data setters so that an external data reference command is stored in a predetermined area of said modified data;

(d) a central processing unit (CPU) for sequentially reading out such instructions stored in said program memory and for sending out control signals in conformity with said instructions, the CPU having connecting means for connecting said plural external numerical data setters to said CPU;

(e) reference command code detection means for checking whether external data reference command is present in said predetermined area of modified data of said instruction read-out prior to the execution of the instruction read-out from said program memory;

(f) numerical data read-out means to read-out the numerical data set at a data setter when such an external data reference command is detected; and

(g) replacement control means replacing the part or the whole of the modified data of that instruction containing said external data reference command code in the modified data with data readout from said external numerical data setter.

4,404,626

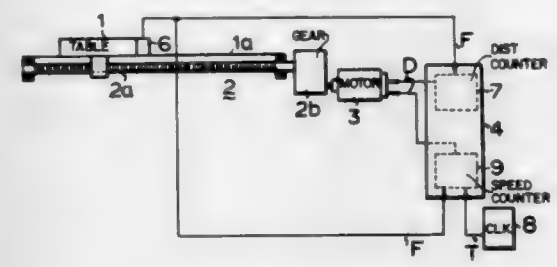
POSITIONING CONTROLLING METHOD

Tadamasa Aoyama, Yokohama, Japan, assignor to Kabushiki Kaisha Sanesu Shoko, Yokohama, Japan

Filed Feb. 2, 1981, Ser. No. 230,499

Int. Cl.³ G05B *13/02*

U.S. Cl. 364—174 **6 Claims**



1. Apparatus for controlling the deceleration of a motor driven body comprising:

means for detecting the present velocity of the body and for providing a first signal representative thereof;

means for detecting the present position of the body and for providing a second signal representative of the desired velocity of the body at the detected position;

means for comparing said first and second signals to provide an error signal and for controlling the motor driving the body in response thereto;

means for applying a first deceleration signal to the motor driving the body; and

means for detecting the instant at which the output energy of the motor driving the body equals the kinetic energy of the body and for applying a second deceleration signal to the motion driving the body in response thereto,

whereby the strain on the body is reduced and the precision of control of the body enhanced.

4,404,627

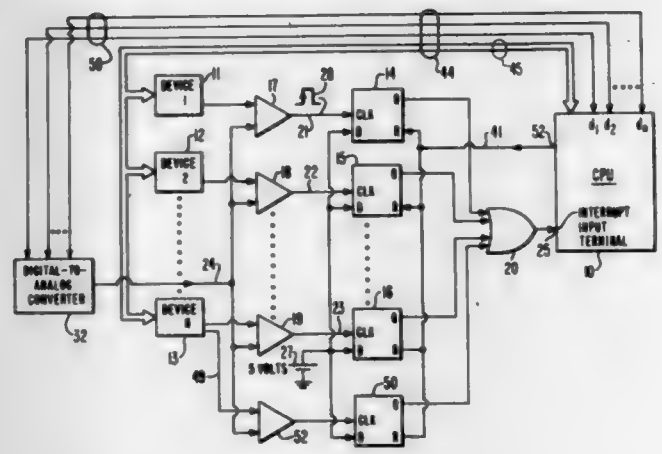
INTERRUPT SIGNAL GENERATING MEANS FOR DATA PROCESSOR

Angelo R. Marcantonio, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 11, 1979, Ser. No. 38,282

Int. Cl.³ G06F *13/00, 3/00*

U.S. Cl. 364—900 **5 Claims**



1. In a system comprising a plurality of devices each requiring periodic attention and indicating such requirement by generating a unique dc output voltage, a circuit for generating a first signal indicating that one of such devices has generated its unique output voltage and requires attention and for generating an address signal identifying which of the devices requires such attention and comprising:

first means for iteratively generating a predetermined series of binary values each consisting of N bits in parallel and

each defining an identifying address signal identifying one of said devices;

second means responsive to said binary values to generate a predetermined series of dc reference voltages each coincident with and corresponding to one of said binary values and having a value which is equal to one of said unique dc output voltages;

logic means comprising a plurality of voltage comparators each having first and second input terminals;

means for supplying each of said unique dc output voltages to a selected one of said first input terminals and for supplying said dc reference voltages to all of said second input terminals;

said logic means responsive to the occurrence of substantially equal voltages being supplied to the first and second input terminals of one of said voltage comparators to generate said first signal; and

utilization means responsive to the occurrence of each of said first signals to receive the binary value coincident therewith.

4,404,628

MULTIPROCESSOR SYSTEM

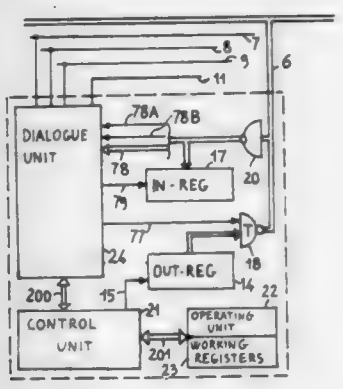
Bardotti Angelo, Peschiera Borromeo, Italy, assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 1, 1980, Ser. No. 211,962

Claims priority, application Italy, Dec. 3, 1979, 27787 A/79

Int. Cl.³ G06F *13/06*

U.S. Cl. 364—200 **1 Claim**



1. A multiprocessing system comprising a plurality of processors and a memory unit coupled to each other through a common bus to which each processor can gain access on request for an information exchange with said memory unit or for notification to another of said processors, said memory unit comprising:

a control section for granting bus access to one of said processors at a time on a priority basis and on request from said processors respectively;

a plurality of storage resources, each one related to one processor and accessible by all the processors for receiving and storing messages intended for the related processor;

timing means activated by a control signal received through a first bus lead for starting one memory cycle and for generation of a first end signal on a second bus lead on termination of said memory cycle;

said each processor comprising:

first means set by the bus access granted to said processor for loading said first bus with said control signal starting a memory cycle and holding said bus until reset by a signal received from said second bus lead;

second means for generating signals representative of its own processor name;

third means for loading third bus leads with signals representative of the name of a processor to which messages are intended to be notified, along with a notification signal;

fourth means for receiving through said third bus leads a signal representative of the name of a notified processor and said notification signal;

a comparator coupled to said second and said fourth means for comparing its own processor name with said notified processor name and for generating a notify signal when said names are equal;

storing means for storing said notify signal so that the notified processor is autonomously able to recognize said notify signal in said storing means at any time, without requiring attention of the notifying processor;

fifth means for the generation of a second end signal on said second bus lead concurrently with the storing of said notify signal in said storing means for resetting said first means in a notifying processor;

said memory further comrising:

sixth means for receiving said notification signals through one of said third bus leads and for inhibiting in response thereto the activation of a memory cycle by said control signal;

said plurality of storage resources each being operative to receive messages from said procesors intended for its related processor and to store said messages therein until access by its related processor upon said recognition of the notify signal in its related processor.

4,404,629

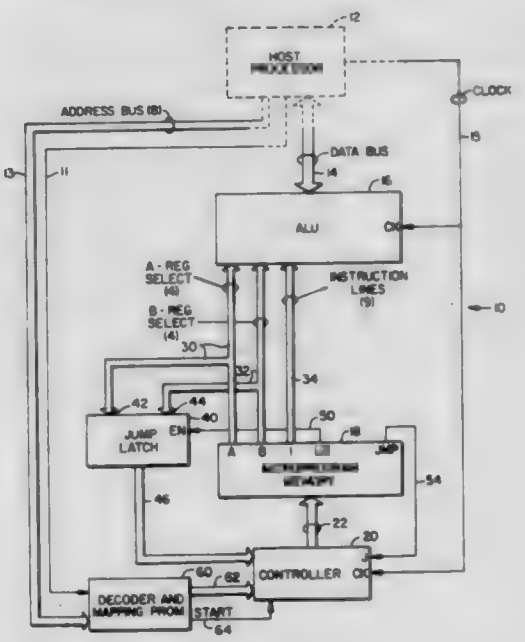
DATA PROCESSING SYSTEM WITH LATCH FOR SHARING INSTRUCTION FIELDS

Michael E. Albaugh, San Jose, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Jan. 26, 1981, Ser. No. 228,441

Int. Cl.³ G06F *9/28, 9/26, 9/42*

U.S. Cl. 364—200 **6 Claims**



1. A circuit for sharing a microinstruction bit field to control register selection of an arithmetic logic unit and to specify a jump address, the circuit comprising:

a memory element containing a plurality of addressable microinstructions, the microinstructions being addressed in response to address signals, the addressable microinstructions including a first field, a second field, a jump field, and a load field, at least one of the addressable microinstructions containing data in the load field corresponding to a load instruction and data in the jump field corresponding to a jump instruction, the first field selecting a data register for an arithmetic operation and containing a jump address simultaneously;

an arithmetic logic unit coupled to the memory element to receive the data in the first and second fields of the addressable microinstructions, the arithmetic logic unit having a plurality of selectable data registers, the arithmetic logic unit selecting a data register in response to data in the first field of the one addressed microinstruction, the arithmetic logic unit for performing an arithmetic operation on the data contained in the selected register, the

operation selected in response to data in the second field of the one addressed microinstruction;

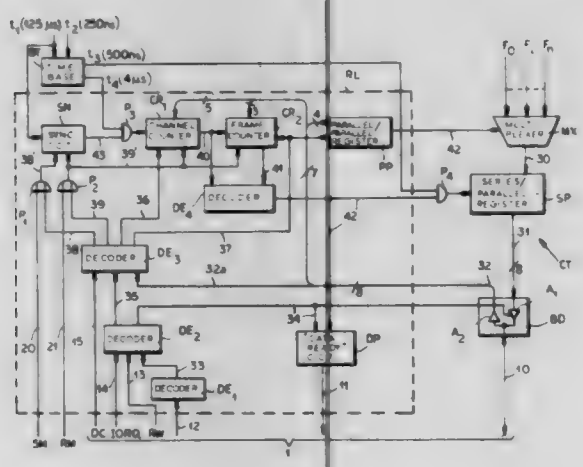
a storage element coupled to the memory element to receive the data in the first and the load fields of the addressable microinstructions and to store data contained in the first field in response to the data in the load field corresponding to a load instruction; and

an address circuit coupled to the memory element and to the storage element for receiving stored data from the storage element and the data in the jump field of the addressable microinstructions, the address circuit providing address signals to the memory element, the address signals provided in a sequence in response to the absence of data in the jump field corresponding to a jump instruction, address signals corresponding to the received stored data in response to the data in the jump field corresponding to a jump instruction.

4,404,630
DATA-EXTRACTION CIRCUITRY FOR PCM COMMUNICATION SYSTEM

Piero Belforte, and Renzo Bortignon, both of Turin, Italy, assignors to CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Feb. 19, 1981, Ser. No. 235,947
Claims priority, application Italy, Feb. 20, 1980, 67259 A/80
Int. Cl.[3] H04Q *11/04*; H04J *3/14*
U.S. Cl. 364—200 7 Claims



1. In a pulse-code-modulation communication system wherein a plurality of lines carry respective frames each composed of a multiplicity of multibit channels assigned to different time slots of a recurrent frame period,

the combination therewith of a data extractor delivering data bits of a selected channel from a designated line to a control device, said data extractor comprising:

a multiplexer with data inputs respectively connected to said lines and with an output connected to said control device via a normally inoperative data transmitter;

a normally blocked first data store in said output connection;

a second data store with an output connected to a switching input of said multiplexer;

a source of timing pulses coinciding with said time slots;

presettable counting means connectable to said source in response to a starting command from said control device for stepping by said timing pulses into a terminal state reached at an instant when a time slot assigned to the selected channel appears on the designated line, said counting means unblocking said first data store in said terminal state;

circuitry connected to said control device for loading said second data store with a first numerical code identifying the designated line and for presetting said counting means with a second numerical code representing the position of the selected channel in the corresponding frame, said numerical codes being available at an input connection emanating from said control device, said circuitry including decoding means for supplying said numerical codes from said input connection to said counting means and to said second data store in response to a writing command from said control device, said decoding means being responsive to a reading command from said control device for activating said data transmitter; and

signal-transmitting means responsive to the attainment of said terminal state by said counting means for informing said control device of the availability of extracted data in said first data store, preparatorily to the emission of said reading command by said control device.

4,404,631
METHOD OF AND DEVICE FOR CODING AND DECODING AN IMAGE OF AN OBJECT BY MEANS OF PENETRATING RADIATION

Hermann Weiss, and Klaus Pasedach, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

PCT No. PCT/NL80/00001, § 371 Date Jan. 21, 1981, § 102(e) Date Jan. 21, 1981, PCT Pub. No. WO81/01952, PCT Pub. Date Jul. 23, 1981
PCT Filed Jan. 10, 1980, Ser. No. 233,616
Int. Cl.[3] G06F *15/336*; A61B *6/02*
U.S. Cl. 364—414 11 Claims



1. In a method for coding and decoding an image of an object which comprises the steps of: forming superposed, coded shadow images of the object by irradiating the object with radiation emitted in different directions from point sources of radiation, recording the superposed images on a recording medium, and subsequently decoding the coded images formed by convolving of the superposed shadow images with a function which is representative of the distribution of the point sources used to irradiate the object; the improvement wherein:

the step of irradiating the object comprises irradiating the object with radiation which is emitted from point sources which are distributed in a regular matrix and are divided into at least three groups so that the position of the sources in a first combination of the groups is described by a first source distribution function and the position of the sources in a further combination of the groups is described by a second source distribution function and the sum of the autocorrelation functions of the first and second source distribution functions has a nonzero value at a single point and a zero value at all other points;

the step of forming the coded images includes successively activating each of the groups of point sources to form a corresponding number of successive superposition images and

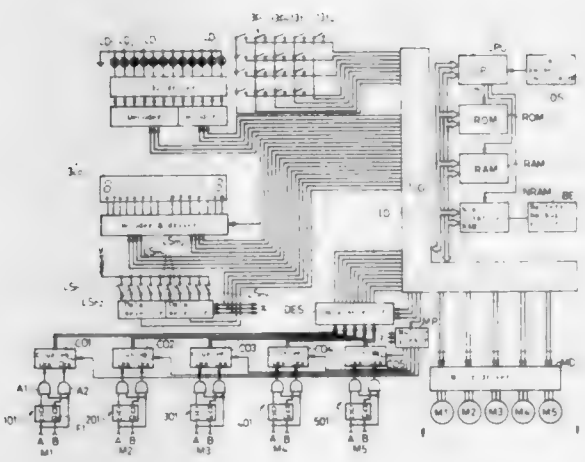
the step of decoding includes the steps of convolving positives and/or negatives of the superposition images, with point image functions of the groups of sources to form convoluted images; and summing the convoluted images to produce a decoded image.

4,404,632

ATTITUDE CONTROL SYSTEM FOR DRIVER'S SEAT

Kuniyoshi Harada, Takahama, and Naofumi Fujie, Tokyo, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Feb. 17, 1981, Ser. No. 235,173
Claims priority, application Japan, Mar. 31, 1980, 55/41338
Int. Cl.³ B60N *1/02*; G06F *15/20*
U.S. Cl. 364—425 7 Claims



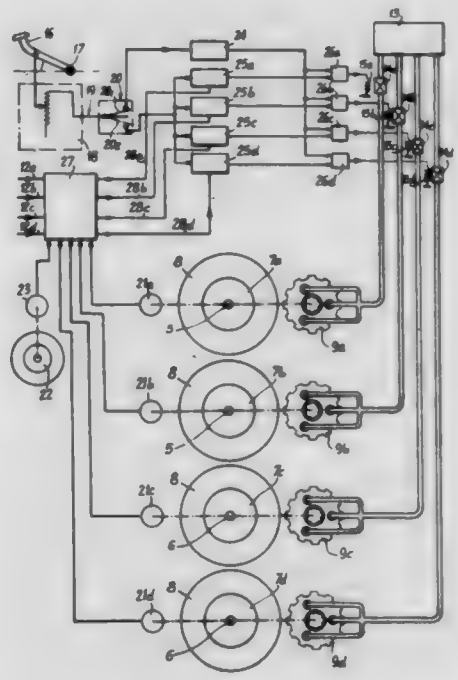
1. Attitude control system for driver's seat comprising:
seat attitude setting means;
driving means adapted to drive the seat attitude setting means;
signal generator means coupled to the seat attitude setting means for generating an electric pulse for each movement of the seat attitude setting means;
a plurality of key switches;
a character display; and
an electronic control device comprising electronic processor means and memory means including a read only memory, a read-write memory and a non-volatile, read-write memory, said memory means storing standard attitude data corresponding to human data indicative of the physical features of a driver,
said electronic control device being capable of reading standard attitude data which corresponds to the human data inputted with the key switches from the memory means and controlling the energization of the driving means for establishing an attitude indicated by the read-out standard attitude data with reference to actual attitude data based on the counting of electric pulses,
said electronic control device storing acutal attitude data at a predetermined address of the non-volatile, read-write memory when an identification code and a memory instruction are inputted by the key switches, said address corresponds to the identification code inputted,
said electronic control device being responsive to input of an identification code and a set instruction with the key switches, reading the attitude data at the address which corresponds to the inputted identification code, controlling the energization of the driving means for establishing an attitude indicated by the attitude data corresponding to the inputted identification code with reference to the actual attitude data based on the counting of the electric pulses, and
said electronic control device, during the energization of the driving means, forming the actual attitude data by counting up or down the electric pulses depending on the drive direction of the seat attitude setting means and storing the actual attitude data in the non-volatile, read-write memory as the current attitude data after it stops the energization of the driving means.

4,404,633

PROCESS AND DEVICE FOR BRAKING AN AIRCRAFT BY SEEKING AN OPTIMAL SLIDING OF THE BRAKED WHEELS

Jose R. Goicoechea, Blagnac, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Jan. 7, 1981, Ser. No. 223,220
Claims priority, application France, Jan. 11, 1980, 80 00558
Int. Cl.³ G06F *15/50*
U.S. Cl. 364—426 11 Claims



1. Process for braking an aircraft taxiing on the ground after landing, said aircraft comprising a plurality of braked wheels, comprising the steps of:
dividing said braking into a plurality of successive braking periods;
sub-dividing each of said braking periods into a first relatively short interval and a second substantially longer interval;
imposing on each of said wheels a predetermined different reference sliding value during said first interval;
determining for each wheel a coefficient of adherence corresponding to the sliding value imposed thereon;
establishing from said imposed sliding values and corresponding coefficients of adherence a relationship expressing the coefficient of adherence of said wheels as a function of the sliding value imposed thereon;
determining from said relationship an optimal sliding value resulting in the maximum value of the coefficient of adherence; and
imposing said optimal sliding value on all of said wheels during said second interval.

4,404,634

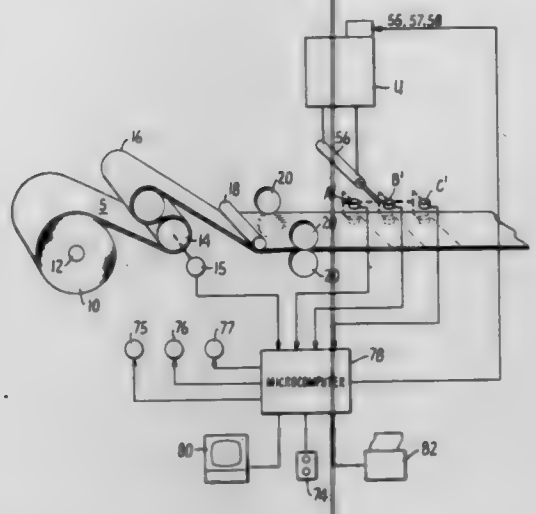
LATERAL WEAVE GAGING SYSTEM

James E. Bautz, Uplands, Calif., assignor to Kaiser Steel Corporation, Oakland, Calif.

Filed Apr. 27, 1981, Ser. No. 257,921
Int. Cl.³ G01B *7/34*
U.S. Cl. 364—472 6 Claims

1. Apparatus for determining sinusoidal variations in the edges of moving sheet metal as the sheet metal is passed from uncoiling means, subjected to on-line processing conditions while in flat form and while moving at a high rate of speed, and rewound in coil form, comprising,
means for measuring the line speed of said moving sheet,
sensor means located at three fixed spaced locations along the edges of said sheet and adapted to detect lateral displacement of said sheet edges within the plane of the sheet from a reference line in the form of sine waves,
means for measuring the time period for each said complete

sine wave whereby the period length of each said sine wave can be determined based on said time period and said line speed,



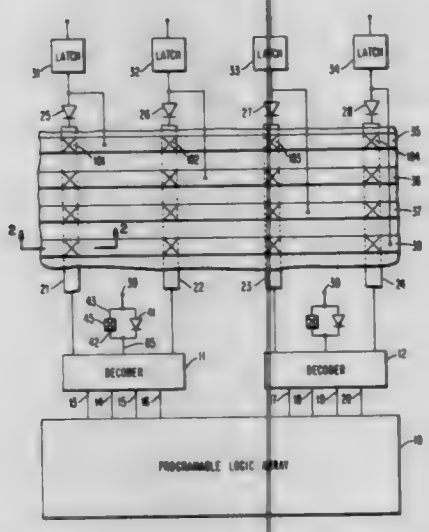
and means for determining the maximum amplitude of each said sine wave based on said time period and said detected lateral displacement at said three fixed spaced locations.

4,404,635

PROGRAMMABLE INTEGRATED CIRCUIT AND METHOD OF TESTING THE CIRCUIT BEFORE IT IS PROGRAMMED

Roy C. Flaker, Essex Junction, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 27, 1981, Ser. No. 248,646
Int. Cl.³ G01R *31/26, 15/12*
U.S. Cl. 364—481 **8 Claims**



1. A method of testing a programmable circuit prior to programming comprising;

providing a first element, having a selected impedance, integral with the circuit,

providing a second element, having a selected impedance, integral with the circuit,

said second element being in parallel with said first element,

said second element having an impedance substantially higher than the impedance of the first element,

measuring the electrical characteristics of the circuit by applying selected voltages to said circuit, and

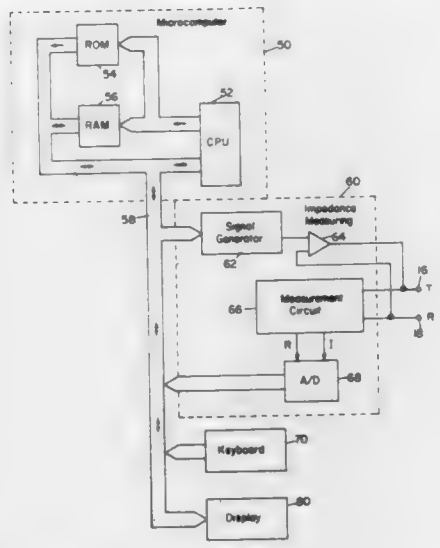
reducing the impedance of said second element to a value substantially below the impedance value of the first element it is in parallel with to alter the total impedance of the circuit.

4,404,636

PHASOR IMPEDANCE MEASURING TEST SET

Richard H. Campbell, Jr., Gilford, and John B. Noyes, Laconia, both of N.H., assignors to Wilcom Products, Inc., Laconia, N.H.

Filed Apr. 8, 1981, Ser. No. 252,260
Int. Cl.³ G01R *27/00*
U.S. Cl. 364—482 **6 Claims**



5. Test set apparatus, comprising:

measurement terminals for connection to a circuit under test;

means for measuring at a selected measurement frequency the phasor impedance of a circuit under test;

keyboard input means for entering test parameter information into the test set;

a microcomputer interfaced to the keyboard input means and the impedance measuring means, and including a memory for storing test parameter information entered into the test set by said keyboard input means, for storing phasor impedance measurement values, and for storing reference phasor impedance measurement values;

said microcomputer controlling said phasor impedance measuring means to measure the phasor impedance of a circuit under test at a plurality of measurement frequencies within a range of frequencies, and storing the phasor impedance measurements in memory;

said microcomputer calculating the ratio of return power to incident power at each measurement frequency using the stored phasor impedance measurement values and reference phasor impedance measurement values;

said microcomputer weighting each return power ratio with a weighting factor and summing the weighted return power ratios,

said microcomputer summing the weighting factors,

said microcomputer dividing the sum of the weighted return power ratios by the sum of the weighting factors to produce a weighted-average return power ratio;

said microcomputer calculating the logarithm of the weighted-average return power ratio and multiplying by −10 to calculate a weighted-average return loss over the range of measurement frequencies for the circuit under test; and

a display interfaced to the microcomputer for producing a visual readout of the calculated weighted-average return loss as a test result.

4,404,637

PROCESS CONTROL SYSTEM

John O. Walters, and William B. Bard, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 30, 1981, Ser. No. 258,969
Int. Cl.³ G05B *15/00;* F01D *17/02*
U.S. Cl. 364—494 **8 Claims**

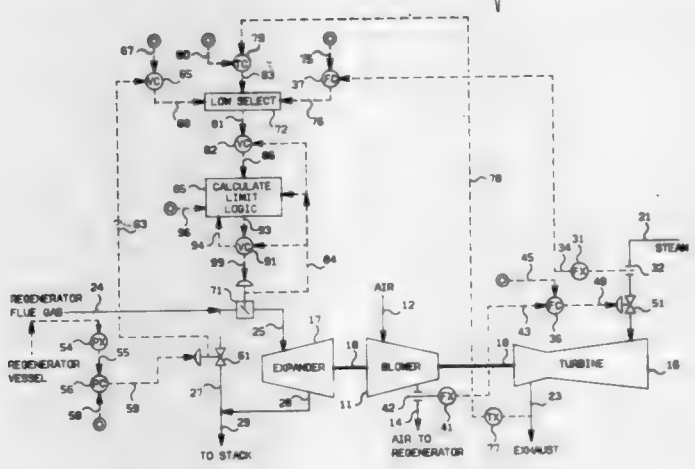
1. Apparatus comprising:

a first control valve means for manipulating the flow of a fluid;

means for establishing a first signal representative of the desired position of said first control valve means;

means for establishing a second signal representative of the actual position (P) of said first control valve means;

a velocity controller for comparing said first signal and said second signal and for establishing a third signal which is representative of any change (ΔP) which must be made in the position of said first control valve means in order for said first signal to remain substantially equal to said second signal;



a position controller which requires a velocity set point;

means for establishing a fourth signal which is representative of the position set point (A_n) generated by said position controller in response to said velocity set point;

means for establishing a fifth signal which is representative of a driving force limit (R);

means for establishing a sixth signal representative of the value of said fourth signal one time period earlier (A_{n-1});

means for calculating said velocity set point (ΔA) for said position controller in response to said second signal, said third signal, said fifth signal and said sixth signal, wherein said velocity set point is represented by

$$\Delta A = \begin{cases} P + R - A_{n-1} \text{ when } A_{n-1} + \Delta P > P + R \\ \Delta P \quad \text{when } P - R \leqq A_{n-1} + \Delta P \leqq P + R \\ P - R - A_{n-1} \text{ when } A_{n-1} + \Delta P < P - R \end{cases}$$

means for supplying said first signal to said position controller, wherein said position controller compares said first signal and said fourth signal to establish a seventh signal which is representative of the driving force which must be applied to said first control valve means; and

means for manipulating said first control valve means in response to said seventh signal.

4,404,638

FLOW RATE MEASURING DEVICE

Tetsuo Yada, Zama, and Takeo Wada, Kawasaki, both of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Dec. 17, 1980, Ser. No. 217,391

Claims priority, application Japan, Dec. 20, 1979, 54-176517[U]

Int. Cl.³ G01F *1/08*

U.S. Cl. 364—510 **10 Claims**

1. A flow rate measuring device, comprising:

first generating means for generating a pulse in response to a fluid flow to be measured,

counting means for counting the generated pulses from said first generating means and generating a counted value for said pulses,

detecting means for detecting the difference between the temperature of the fluid and a reference temperature,

arithmetic operating means for executing a digital operations as follows:

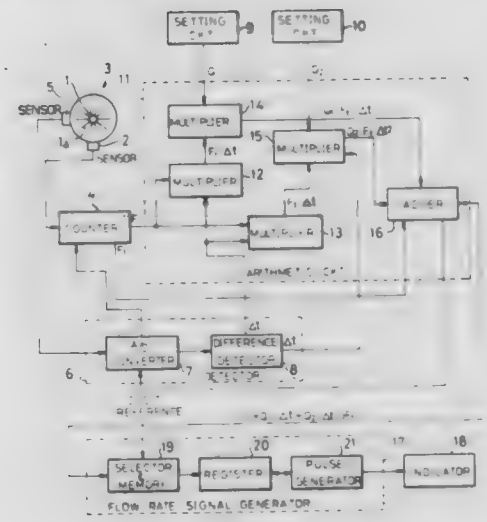
$$F_t + [(Q_1) \cdot \Delta T + (Q_2) \cdot \Delta T^2] \cdot F_t$$

where

F_t is the counted value from said counting means,

Q_1 and Q_2 are constant values defined with the specific gravity of the fluid respectively, and ΔT is a value from the temperature difference from said detecting means; and

second generating means having adding means for adding a



result value of the operation from the arithmetic operation means to a previous result value of the operation supplied thereto, the previous result value being smaller than a reference value, dividing means for dividing the added result value from said adding means by said reference value into a first value which is smaller than the reference value and a second value which it not less than the reference value, means for storing the first value from said dividing means and for supplying to said adding means the previously stored first value as said previous result value of the operation, and producing means for producing a flow rate signal based on the second value from said dividing means.

4,404,639

AUTOMOTIVE DIAGNOSTIC SYSTEM

John F. McGuire, Orinda; J. Steven Hurt, Alameda, and Ronald L. Wilkerson, Novato, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Dec. 2, 1980, Ser. No. 212,301

Int. Cl.³ G06F *11/32, 15/20*

U.S. Cl. 364—551 **25 Claims**

1. An apparatus for facilitating the diagnosing and servicing of an automotive vehicle from service request to completed servicing and invoicing comprising:

(a) diagnostic test equipment including means for attaching said equipment to said vehicle and means for measuring operating conditions of said vehicle;

(b) a display means;

(c) means for entering into said display means vehicle identification data unique to said vehicle;

(d) data base storage means, said data base including specifications for automotive vehicles including said vehicle to be serviced;

(e) means for selecting from said data base the specification data unique to said vehicle in accordance with said vehicle identification data and means for transferring said selected specifications to said diagnostic test equipment attached to said vehicle,

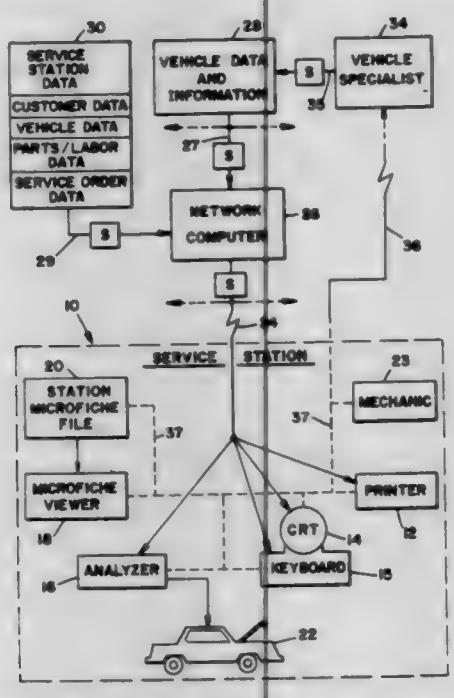
(f) means for transferring measured data representing the current operating condition of said vehicle from said diagnostic test equipment to said display means,

(g) means for producing a printed record and a stored record

of said transferred measured data and said specification data,

(h) means for selecting service manual index data unique to said vehicle from said data base in accordance with said vehicle identification data and means for transferring said indices to said display means,

(i) means for selecting parts data unique to said vehicle from said data base in accordance with said vehicle identification data and means for transferring said parts data to said display means,



(j) means for selecting diagnostic and service remarks unique to said vehicle from said data base in accordance with said vehicle identification data and means for transferring said diagnostic and service remarks data, to said display means, and

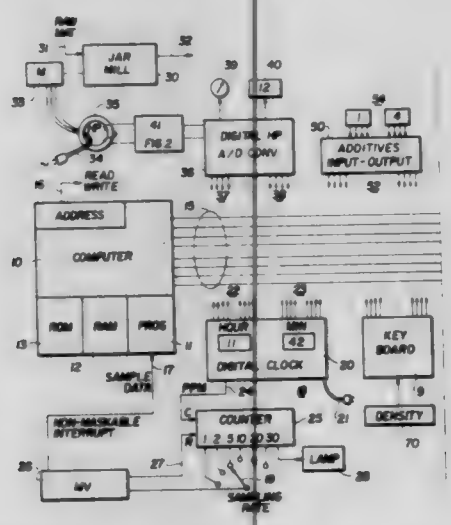
(k) means for producing a stored record and a printed record of said data supplied to said display means.

4,404,640

GRINDING MILL MONITORING INSTRUMENTATION

Robert F. Dumbeck, Elgin, and Phillip W. Welch, Houston, both of Tex., assignors to W. R. Grace & Co., Cambridge, Mass.

Continuation-in-part of Ser. No. 223,833, Jan. 9, 1981. This application Feb. 27, 1981, Ser. No. 238,710
Int. Cl.[3] B02C *25/00*
U.S. Cl. 364—551 18 Claims



1. Instrumentation for monitoring the operating performance of an electric motor driven grinding mill comprising in combination,

means for monitoring and indicating the electric motor current of the mill drive motor as the mill operates,

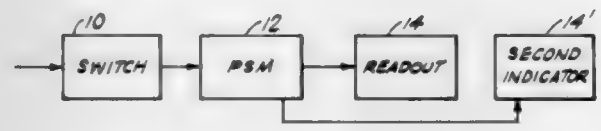
means for calculating from a range of variations of said motor current as an input signal mill operating performance indicia representative of the internal grinding status of the mill and means for displaying the mill grinding status in each of a range of mill loads derived from said performance indicia, so that the mill operating conditions may be adjusted in response to the displayed mill grinding status to operate the mill in a predetermined mill load range.

4,404,641

MAINTENANCE MONITOR

Louis M. Bazarnik, Jericho, N.Y., assignor to Dierckx Equipment Corporation, Long Island City, N.Y.

Filed Feb. 17, 1981, Ser. No. 234,769
Int. Cl.[3] G06F *15/20;* G08B *19/00*
U.S. Cl. 364—569 7 Claims



1. A running-time maintenance monitor for indicating when equipment to be operated is due for maintenance, said monitor comprising:

(a) user-settable means for manually setting a predetermined maintenance time indicative of when the equipment being operated is due for maintenance;

(b) running time sensor means for detecting only the running time of the equipment each time the latter is operated;

(c) control means responsive to the running time sensor means, and operative for accumulating each running time, and for generating a control signal when the accumulated running time corresponds to the predetermined maintenance time set by the user; and

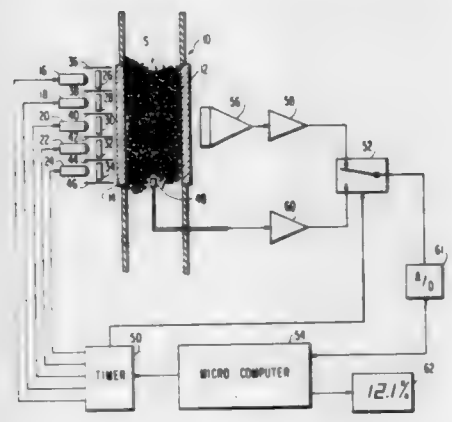
(d) indicator means responsive to generation of the control signal, and operative for indicating when the equipment is due for maintenance.

4,404,642

APPARATUS FOR NEAR INFRARED QUANTITATIVE ANALYSIS WITH TEMPERATURE VARIATION CORRECTION

Robert D. Rosenthal, Gaithersburg, Md., assignor to Trebor Industries, Inc., Gaithersburg, Md.

Filed May 15, 1981, Ser. No. 263,881
Int. Cl.[3] G06F *15/20;* G01N *21/00*
U.S. Cl. 364—571 6 Claims



1. An apparatus for near infrared quantitative analysis providing for correcting wide temperature variations of a sample, the apparatus comprising:

(a) means for holding a sample to be analyzed including at least a portion of a wall thereof being transparent to infrared energy,

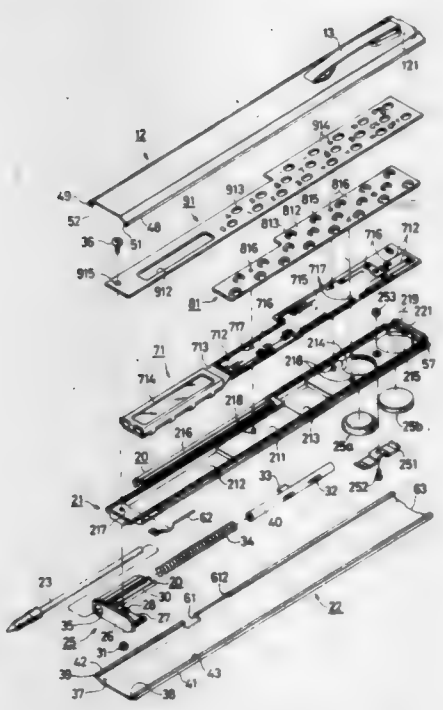
(b) a plurality of infrared emitting diodes positioned to transmit infrared energy toward the sample in the holding means,
(c) means for sequentially pulsing the infrared emitting diodes,
(d) a plurality of narrow bandpass filters between the infrared emitting diodes and the sample holding means to produce desired wavelengths required for quantitative analysis,
(e) sensor means positioned to receive and sense infrared energy transmitted through the sample to be analyzed contained in the holding means, said sensor means producing a signal related to the infrared energy received thereby,
(f) temperature measuring means positioned in the sample holding means to measure the temperature of the sample therein and to produce a signal related thereto,
(g) computer means for receiving the signals from the sensor means and the temperature measuring means and combining them in a multiple regression equation to compensate for variations in sample temperature, and
(h) means for reading out the results of the analysis from the computer means.

4,404,643

PORTABLE ELECTRONIC CALCULATOR WITH A WRITING INSTRUMENT

Shin Ojima; Kazutaka Watanabe, and Hiroshi Iwasaki, all of Yao, Japan, assignors to Hosiden Electronics Co., Osaka, Japan

Filed Feb. 12, 1981, Ser. No. 233,716
Claims priority, application Japan, Feb. 27, 1980, 55-24761[U]
Int. Cl.³ G06F *3/02*
U.S. Cl. 364—705 10 Claims



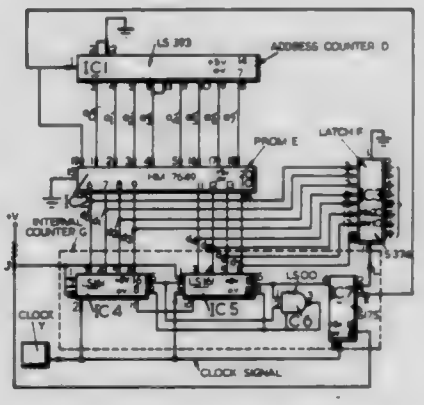
1. A portable electronic calculator with a writing instrument, comprising:
a rectangular, elongated, thin body having a plurality of calculator element housing portions respectively aligned with one another in the lengthwise direction of said body, said body also having an elongated, narrow writing element housing part formed between one of the side edges of said body and at least one of said calculator element housing portions and extending in the lengthwise direction of said body along said one of said side edges of said body;
a keyboard provided on one portion of a flat panel surface of said body for inputting numeric values and functions;
semiconductor integrated circuit means housed in one of said calculator element housing portions and connected to said keyboard for conducting a calculation corresponding to the input from the keyboard;
display means provided on another portion of said flat panel surface, said display means being housed in another one of said calculator element housing portions and connected to said semiconductor integrated circuit means for displaying the input numerical values and the calculation result;
battery means housed in at least one further one of said calculator element housing portions for supplying power to the semiconductor integrated circuit means;
writing means housed in said writing element housing part of said body and held therein in such a manner that said writing means can freely be projected out from one end face of the body; and
an elongated rectangular metal cover which is demountably mounted on said body for covering said panel surface of said body and for reinforcing said thin body when said cover is mounted on said body, both side edges of said elongated cover being bent inwardly to form U-shaped configurations in cross section which are adapted respectively to slidably engage the opposing elongated side edges of said body so that said cover may be slid along the body in its lengthwise direction for removal therefrom.

4,404,644

WAVEFORM GENERATOR

Ian H. Howie, Glasgow, Scotland, assignor to Barr & Stroud Limited, Glasgow, Scotland

Filed May 14, 1981, Ser. No. 263,516
Claims priority, application United Kingdom, May 22, 1980, 8017013
Int. Cl.³ G06F *1/02*
U.S. Cl. 364—718 1 Claim



1. A waveform generator for generating a plurality of repetitive rectangular wave type waveforms having a common repetition period which is an integral number of periods of a clock signal, each waveform being digital (i.e., either ON or OFF) and having transitions between ON and OFF occurring synchronously with pulses of the clock signal, said generator comprising:
a digital storage device preprogrammed with waveform data and with time interval data for said waveforms, said time interval data identifying the time intervals between successive transitions of the plurality of said waveforms over their common repetition period and said waveform data identifying the respective amplitudes of the plurality of waveforms during each said time interval,
address means including an address counter for addressing the storage device to deliver selected data at the output of the storage device,
an interval counter and a waveform-delivery latch connected in parallel to the output of the storage device, and
a clock pulse source connected to the count input of the interval counter to advance the count number in the interval counter,
wherein said interval counter includes a loading circuit which is intermittently activated by the interval counter attaining a predetermined count number, the activated loading circuit

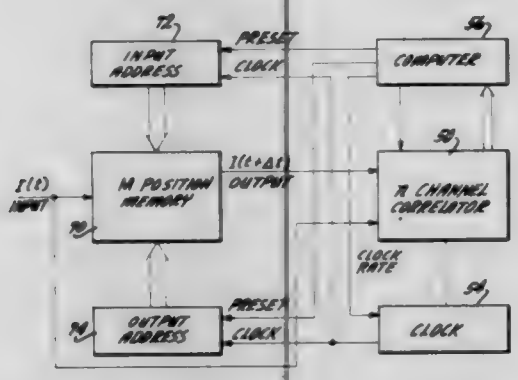
being effective to load data at the output of the storage device into the interval counter and to preset the count number therein to a value determined by the loaded data, means included in said loading circuit for delivering a first output signal to said latch to condition the latch to transfer the data at the output of the storage device to the latch output each time the count number for the interval counter equals a fixed small number of clock pulses less than said predetermined count number, for delivering a second output signal to the count input of the address counter to advance the count therein, and for delivering a third output signal as an address bit in addition to the address bits from the said address counter to address the storage device to deliver time-interval data for loading into said interval counter, and means for delivering a fourth output signal as an address bit in addition to the address bits from the said address counter to address the storage device to deliver waveform data for transfer to the latch output each time a fixed small number of clock pulses has been delivered to the interval counter after attainment of said predetermined count number.

4,404,645

CORRELATOR

Virgil B. Elings, P.O. Box 6463, Santa Barbara, Calif. 93111, and David F. Nicoli, 448 Mills Way, Goleta, Calif. 93017

Filed Aug. 18, 1980, Ser. No. 179,036
Int. Cl.[3] G06F *15/34*
U.S. Cl. 364—728 24 Claims



1. A correlator for producing a correlation function by processing input data over a large number M of correlation coefficients by time sharing a smaller number n of channels of processing electronics wherein $n>1$ and $M>n$, including

a temporary storage device for receiving input data and for providing the input data as output data at particular successive time delay intervals relative to the input data and with each time delay interval representing at least a plurality of channels,

an n-channel correlator comprising a storage device for storing n-channels of data, multiplying means for each channel and summing means for each channel to sum the outputs of the multiplying means, and with the n-channel correlator responsive to the output data from the temporary storage device and to additional data for correlating a group of n-channels of data where $n>1$ and for providing n output sums representing successive points of the correlation function, and

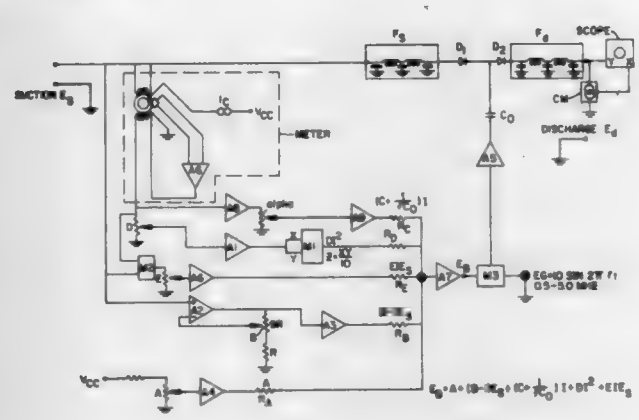
means coupled to the temporary storage device and the n-channel correlator for controlling the coupling of the output data from the temporary storage device to the n-channel correlator to have groups of output data at the successive time delay intervals coupled to the n-channel correlator to have the n-channel correlator repetitively correlate successive groups of n-channels for providing M coefficients of correlation built up from the repetitive correlation of groups of n-channels and wherein $M>n$.

4,404,646

PIPING NETWORK ANALOG APPARATUS

Carl E. Edlund, Castroville, and Cecil R. Sparks, San Antonio, both of Tex., assignors to Southern Gas Association, Dallas, Tex.

Filed Dec. 29, 1980, Ser. No. 220,287
Int. Cl.[3] G06G *7/57*
U.S. Cl. 364—803 1 Claim



1. An electrical analog of a piping network having a centrifugal compressor or pump therein comprising:

(a) a capacitor pump for simulating the pumping action of a centrifugal compressor and having circuits connected to its input and output simulating the piping upstream and downstream of said compressor:

(b) means for applying voltages to the input and output of said capacitor pump which are proportional to the suction and discharge pressures of said compressor:

(c) and electrical means for driving said capacitor pump to cause it to simulate the action of the centrifugal compressor in said piping network including:

i. means for scaling a constant voltage by a fourth factor A

ii. first means for sensing the suction voltage,

iii. means for scaling the output of said first means by a first factor (B-1)

iv. means for sensing and scaling the current flow through said capacitor pump by a second factor

$$\left(C+\frac{1}{fCo}\right)$$

v. means for squaring and scaling said current flow respectively by a third factor D

vi. means for multiplying the suction voltage by the current and means for scaling the result by a fifth factor E; and

means for adding the outputs of items (ii), (iii), (iv), (v) and (vi) to provide a sum voltage Eb; and

means for generating a sinusoidal voltage having an ampitude proportional to said sum voltage as the driving voltage for said capacitor pump.

4,404,647

DYNAMIC ARRAY ERROR RECOVERY

Darryl S. Jones; Donald W. Larkin; Michael F. Toner, and Carleton E. Werve, all of Poughkeepsie, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Mar. 16, 1978, Ser. No. 887,092
Int. Cl.[3] G06F *13/00, 11/00*
U.S. Cl. 364—900 10 Claims

1. For use in a data processing system:

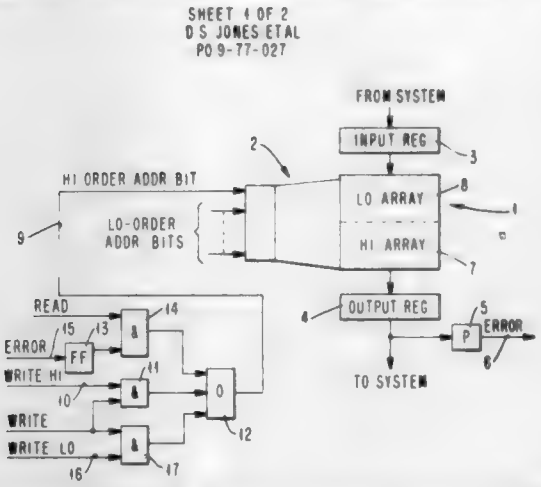
two logically distinct memory arrays, containing identical data in corresponding locations thereof;

selection means selectively and mutually exclusively logically connecting the outputs of said logically distinct memory arrays to other parts of said data processing system so the output of a first one of said logically distinct

memory arrays is logically connected to other parts of said data processing system;

detection means for detecting an error in data read from said logically distinct memory arrays; and

reversing means responsive to the detection of a first error by said detection means to cause reversal of said selection means thereby logically connecting the output of the



second of said logically distinct memory arrays to other parts of said data processing system;

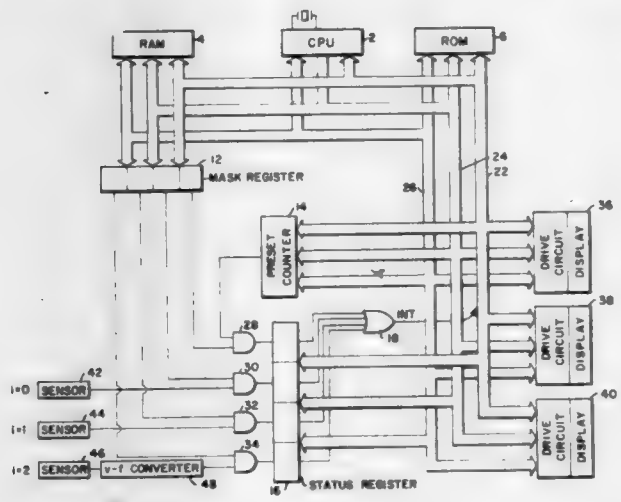
said reversing means being further responsive to the detection of another error by said detection means to again cause reversal of said selection means to logically reconnect the output of said first one of said logically distinct memory arrays to other parts of said data processing system.

4,404,648

METHOD FOR CONTROLLING AN INSTRUMENT PANEL DISPLAY

Nobuaki Miyakawa, and Masayuki Miki, both of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 10, 1979, Ser. No. 56,224
Claims priority, application Japan, Jul. 19, 1978, 53-87060
Int. Cl.[3] G06F 9/46, 3/14
U.S. Cl. 364—900 6 Claims



3. A display system for displaying a plurality of measured values comprising

a plurality of sensing means for generating a plurality of signals each consisting of a series of pulses at a frequency proportional to a respective one of said values;

a status register having a plurality of stages each individually settable by an applied pulse;

gate means for selectively connecting the output signal of each sensing means to a respective stage of said status register;

a mask register for controlling said gate means to selectively mask one or more output signals from said sensing means by preventing said signals from being applied to said status register;

interrupt request generating means for generating an interrupt request signal each time any one of the stages of said status register is set;

central processing means responsive to interrupt request signals for controlling said mask register to control said gate means so that said interrupt request generating means receives pulses from only one sensing means during successive periods of time and for measuring the intervals between interrupt request signals from the one sensing means in each of the successive periods for calculating measured values to be displayed;

a plurality of display means responsive to said central processing means for displaying said calculated measured values; and

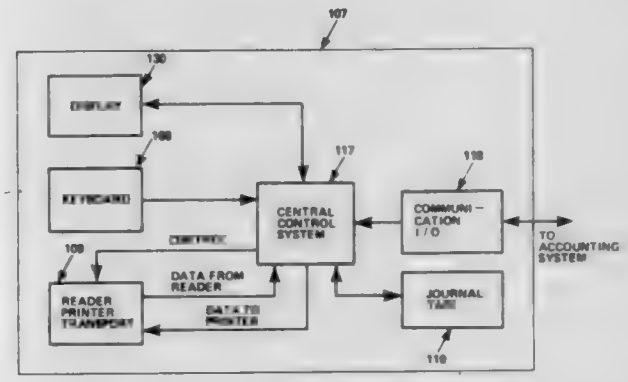
counter means controlled by said central processing means for setting a stage of said status register at periodic intervals, said central processing means being responsive to an interrupt request signal generated as a result of said counter means for applying said calculated measured values to said display means.

4,404,649

DOCUMENT PROCESSING SYSTEM

Leonard J. Nunley; Willis D. Simpson, both of Dallas, and William J. Reid, Richardson, all of Tex., assignors to Recognition Equipment Incorporated, Irving, Tex.

Filed Nov. 3, 1980, Ser. No. 202,970
Int. Cl.[3] G06F 3/30
U.S. Cl. 364—900 9 Claims



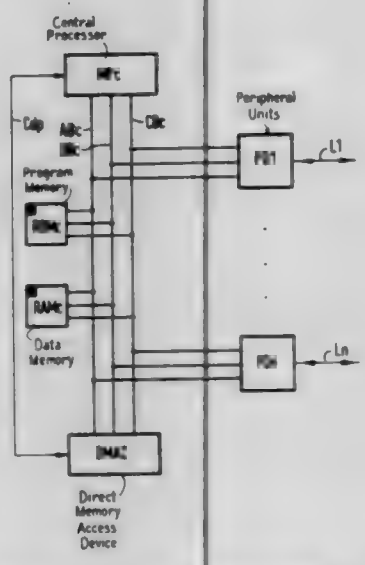
1. A system for processing documents having machine readable characters on the face of each document and for assigning a number unique to the document, comprising; terminal means for automatically and manually capturing data from documents, means within said terminal for generating a unique source item identification number of each document, the derviation of said identification number based in part upon the particular terminal usd, printer means within said terminal for printing the source item identification number on each document along with data manually input to said terminal, storage means in said terminal for creating a record for each document which may include all or part of the data captured from the document and the source item identification number, a controller unit for controlling the function of each of the above means and coordinating the operation of said terminal, and means interconnected with said controller means for transmitting the record of each document to an accounting system.

4,404,650

METHOD AND CIRCUIT ARRANGEMENT FOR TRANSMITTING BINARY SIGNALS BETWEEN PERIPHERAL UNITS WHICH ARE CONNECTED TO ONE ANOTHER VIA A CENTRAL BUS LINE SYSTEM

Helmuth Kleinert, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 27, 1981, Ser. No. 228,959
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 3003340
Int. Cl.³ G06F 9/00
U.S. Cl. 364—900 7 Claims



1. A circuit arrangement for transmitting binary signals comprising:

a plurality of peripheral units which are connected to signal generators and signal receivers and which may be conditioned to a transmitting state, a receiving state or a starting state;

a central bus line system interconnecting said peripheral units for carrying control, data and address signals on respective control, data and address bus lines;

a central control device connected to said bus line system and including a central microprocessor, a data memory, a program memory and a direct memory access device each connected to said bus line system;

request signal means in each of said peripheral units operable to transmit a request message to said central control device including a transmission request signal and addresses of other peripheral units which are to receive binary signals, said central microprocessor operable to poll said peripheral units for said request messages and transmit a respective setting-up signal to said other peripheral units;

each of said peripheral units comprising means responsive to the respective setting-up signal to transfer the respective peripheral unit from the starting state to the respective transmitting or receiving state;

each of said peripheral units including means operable in the transmitting state to transmit a signal transmission request signal to said direct memory access device, said transmission request signal indicating the number of binary signals to be transmitted, and said direct memory access device responsive to said transmission request signal to transmit a deactivation signal to said central microprocessor to prevent the transmission of signals therefrom to said bus line system;

each of said peripheral units comprising a buffer for intermediate storage of signals supplied thereto by other peripheral units and by the respective signal generator and an internal control device which is responsive to said request message to apply control signals to said buffer enabling the same for a respective read or write operation, said buffer including an address input connected to said internal control device and to an address bus line of said central bus line system;

said direct memory access device including means operable to transmit special control signals in an alternating sequence to the peripheral units together with the addresses which designate access to said buffer of a peripheral unit in the transmitting state for the transmission of binary signals to said buffers of those peripheral units in the receiving state; and

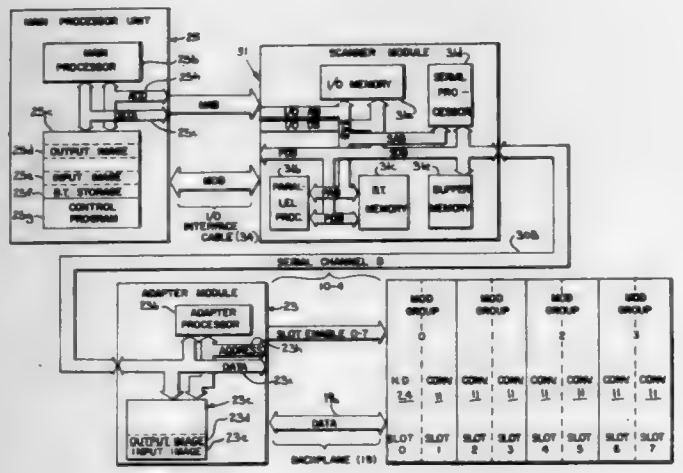
means in said direct memory access device for monitoring the number of binary signals transmitted and operable in response to the transmission of the number of binary signals indicated by said signal transmission request signal to transmit a reset signal to reset said peripheral units into their starting states.

4,404,651

PROGRAMMABLE CONTROLLER FOR USING CODED I/O DATA TECHNIQUE

Raymond A. Grudowski, S. Euclid, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Mar. 9, 1981, Ser. No. 242,048
Int. Cl.³ G05B 19/02; G06F 3/04
U.S. Cl. 364—900 10 Claims



1. A digital controller of a type having a main processor which executes a control program to examine and change I/O status data, and which senses and controls I/O devices on a controlled system through I/O modules which are located in an I/O interface rack and which communicate with the main processor via I/O status data, wherein the improvement comprises:

the I/O interface rack being located remotely from the main processor;

I/O memory means coupled to the main processor for storing I/O status data that has been examined and changed by the main processor during execution of the control program, wherein the I/O status data is stored in an I/O image table with memory locations corresponding to respective I/O modules in the I/O interface rack;

a serial data link extending from a near end proximate the main processor to a remote end at the I/O interface rack; and

a scanner electrically coupled to the I/O memory means and to the near end of the serial data link and an adapter located with the I/O modules and electrically coupled to the remote end of the serial data link, the scanner and the adapter each having

first means electrically coupled to a respective end of the serial data link for selectively transmitting I/O status data for one or more of the I/O modules together with an associated mask word over the serial data link;

second means electrically coupled to the first means for generating the associated mask work with a bit pattern that correlates the I/O status data to one or more respective I/O modules; and

third means electrically coupled to a respective end of the serial data link for receiving and selectively coupling I/O status data from the serial data link i) to the I/O

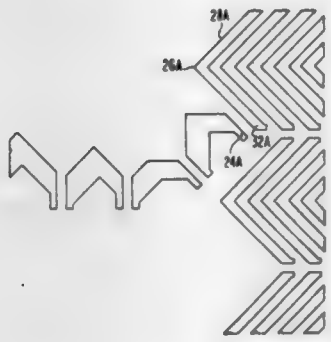
memory means at the near end of the serial data link and ii) to the I/O modules at the remote end of the serial data link, for the scanner and adapter respectively, according to the bit pattern of the associated mask word that is received with the I/O status data.

4,404,652

SIDE FEED EXPANDER

Richard D. Holmes, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 27, 1981, Ser. No. 296,620
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—8 **9 Claims**



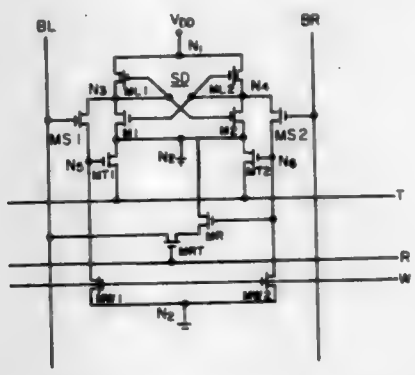
1. The combination comprising:
at least two expander bubble propagation elements arranged in a first row of an expander and having their surfaces uniformly spaced in juxtaposition including a first element at one end of said row and a second element at the other end of said row, said first expander element having a first side with a middle portion and first and second end portions, said second expander element having a first side with a middle portion and first and second end portions,
an input bubble propagation element associated with one of said first sides in said first row,
a second row of bubble propagation elements positioned in said expander on a first side of said first row, and
a third row of bubble propagation elements positioned in said expander on the second side of said first row whereby a bubble propagating from said input element to one of said expander elements first sides will expand to form a stripe in said expander.

4,404,653

ASSOCIATIVE MEMORY CELL AND MEMORY UNIT INCLUDING SAME

Smil Ruhman, and Isaac Scherson, both of Rechovot, Israel, assignors to Yeda Research & Development Co. Ltd., Rehovot, Israel

Filed Oct. 1, 1981, Ser. No. 307,664
Int. Cl.³ G11C *15/04, 11/40*
U.S. Cl. 365—49 **10 Claims**



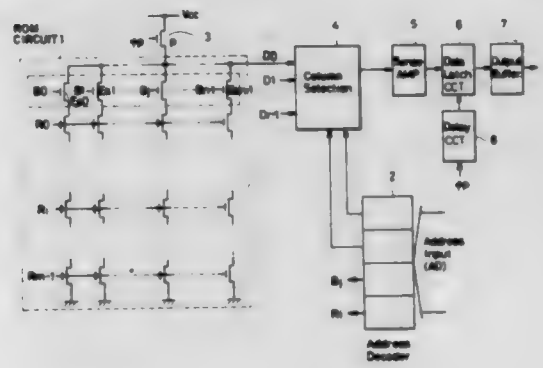
1. An associative memory cell including: a storage device having a pair of biasing nodes and a pair of output nodes; a plurality of access lines accessing said storage device and including a pair of BIT-lines and a TAG-line; and a plurality of gates controlling the accessing of said storage device by said access line; characterized in that said plurality of gates include:
a pair of sampling gates under the control of the BIT-lines and connecting the output nodes of the storage device to a pair of sampling nodes; and
a pair of TAG-gates under the control of said sampling nodes and connecting the TAG-lines to one of the pair of the storage device biasing nodes.

4,404,654

SEMICONDUCTOR DEVICE SYSTEM

Setsufumi Kamuro, Yamatokoriyama, and Yoshifumi Masaki, Tondabayashi, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 29, 1981, Ser. No. 229,508
Claims priority, application Japan, Jan. 29, 1980, 55-9549; Jan. 31, 1980, 55-11828
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—103 **12 Claims**



1. A semiconductor read only memory circuit comprising:
a row by column memory array having field effect transistors serially interconnected source to drain in columns, transistors in corresponding positions of respective columns having their bases interconnected to form address lines, each said transistor representing a bit in memory and being of an enhancement type to represent a first binary logic state and being of a depletion type to represent a second binary logic state;
output means for receiving information from each of said columns;
first means for selectively sampling desired ones of said columns; and
second means for selectively sampling desired ones of said address lines;
said first and second means collectively defining a desired bit in memory;
the logic state of said transistor representing said bit being determined by whether said transistor is said enhancement type or depletion type.

4,404,655

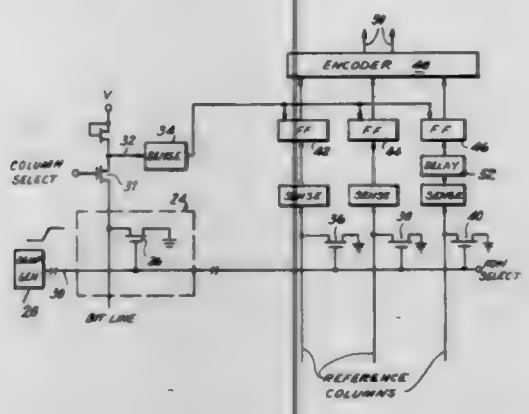
DATA SENSE APPARATUS FOR USE IN MULTI-THRESHOLD READ ONLY MEMORY

Kenneth L. Naiff, Hauppauge, N.Y., assignor to General Instrument Corporation, New York, N.Y.

Filed Jan. 28, 1981, Ser. No. 229,717
Int. Cl.³ G11C *7/00, 11/56, 17/00*
U.S. Cl. 365—104 **11 Claims**

1. A read only memory comprising a plurality of multi-state cells interconnected in a ROM matrix, each of said cells comprising a FET, and the FET of each ROM cell having substantially the same surface area and shape, and having one of at least three possible states; means for selecting a particular one of said cells to be read; means for applying to a selected cell, an input signal varying in amplitude with time for stimulating an output signal from said cell in accordance with the state of said

cell, said output signal being of one at least two possible amplitude levels; said input signal varies slowly with time, and said



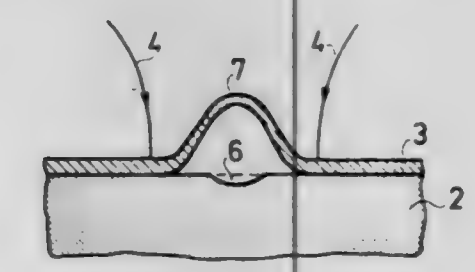
output signal being displaced in time depending upon the state of said cell.

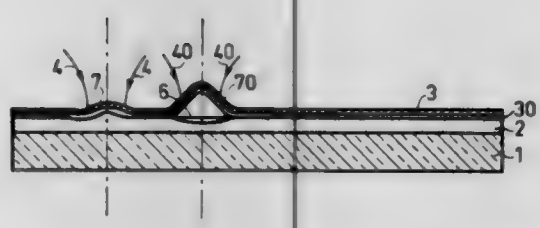
4,404,656

THERMO-OPTICAL DATA WRITING PROCESS AND DATA MEDIUM FOR PERFORMING THIS PROCESS

Jean Cornet, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 21, 1981, Ser. No. 226,803
Claims priority, application France, Jan. 23, 1980, 80 01423
Int. Cl.³ G11C *11/46, 13/04*
U.S. Cl. 365—126 **20 Claims**





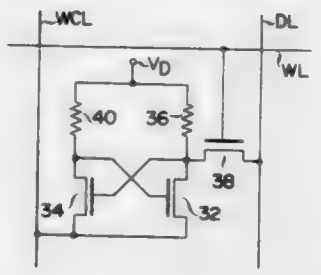
1. A thermo-optical data writing process consisting of the surface heating by means of an intensity-modulated, focused radiation beam of a thermosensitive data medium having a first metal layer of ductile material covering an organic intermediate layer, and separated therefrom by an intermediate metal layer wherein the thermal energy given off in the metal layers by the impact of the beam causes gas evolution by local degradation of the organic intermediate layer, this gas evolution and the loss of adhesion associated therewith lead to stretching in the metal layers beyond the elastic limit and less than the elongation required to break the ductile material constituting said metal layers, and the first metal layer is an alloy of metals selected to provide desired adhesion, range of deformation and shock resistance to rupture.

4,404,657

SEMICONDUCTOR MEMORY CIRCUIT

Tohru Furuyama, Yokohama, and Tetsuya Iizuka, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 16, 1980, Ser. No. 197,564
Claims priority, application Japan, Oct. 19, 1979, 54-134904
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—154 **6 Claims**



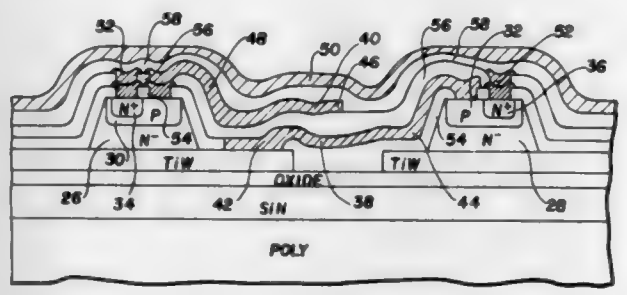
1. A semiconductor memory circuit which comprises:
at least one memory cell;
at least one word line;
at least one data line segment, only a single data line segment being provided for each memory cell; and
at least one control voltage line whose potential is set at one of different levels in accordance with a selected operation mode;
said at least one memory cell including a first MOS transistor whose source is connected to said control voltage line, a second MOS transistor whose gate and drain are connected to the drain and gate of said first MOS transistor and whose source is connected to said control voltage line, first and second load resistive means respectively connected to the drains of said first and second MOS transistors, and a third MOS transistor whose gate is connected to said word line, and whose current path is connected between the drain of said first MOS transistor and said data line segment, the drains of said first and second MOS transistors being connected to a power supply terminal impressed with a high voltage through the corresponding first and second load resistive means, and said at least one control voltage line being held at a high voltage for a predetermined period of time in the write mode and set at a low voltage during the read mode.

4,404,658

MESA BIPOLAR MEMORY CELL AND METHOD OF FABRICATION

Kenneth A. Ports, Indialantic, Fla., assignor to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 129,913, Mar. 12, 1980. This application May 21, 1981, Ser. No. 266,069
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—154 **2 Claims**



1. In a memory cell having a pair of bipolar transistors cross-coupled by their bases and collectors and an individual load resistor connected to the collectors of each transistor, the improvement comprising:
support means;

first and second metallic collector contact on said support means;

first mesa bipolar transistor on said first collector contact and second mesa bipolar transistor on said second collector contact, said first and second mesa bipolar transistors being separated by a valley and each having a collector, base and emitter;

a first resistor in said valley, connected at one end thereof to the collector of said first transistor and the base of said second transistor through apertures in an insulating material;

a second resistor in said valley, connected at one end thereof to the collector of said second transistor and the base of said first transistor through apertures on an insulating material;

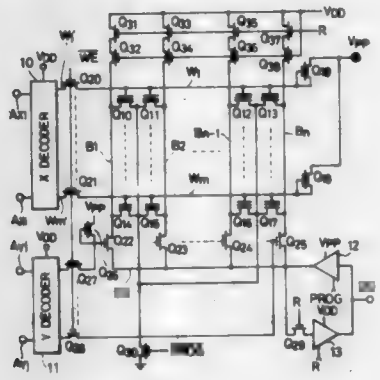
said first and second resistors being connected at their other ends through an aperture in an insulating material there between.

4,404,659

PROGRAMMABLE READ ONLY MEMORY

Toshimasa Kihara, Tachikawa, and Toshifumi Inoue, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 3, 1980, Ser. No. 193,411
Claims priority, application Japan, Oct. 5, 1979, 54-127913
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—185 **9 Claims**



8. A programmable read only memory comprising: a bit line; a common source line; a plurality of word lines; word line selection means; writing voltage generator means which applies a writing voltage to said bit line; a plurality of memory insulated gate field effect transistors, each having a control gate connected to a corresponding word line, a floating gate, a drain commonly connected to said bit line, and a source commonly connected to said common source line, an electric charge which serves as writing data being injected into the floating gate of selected insulated gate field effect transistors when the writing voltage and a word line selection voltage are fed to the drain and control gate thereof; and means coupled to said common source line for preventing a leakage current from flowing from said bit line to insulated gate field effect transistors which are not selected when the writing voltage and the word line selection voltage are fed to a selected insulated gate field effect transistor through said bit line and one of said word lines so that said non-selected insulated gate field effect transistors are non-conductive.

4,404,660

CIRCUIT AND METHOD FOR DYNAMICALLY ADJUSTING THE VOLTAGES OF DATA LINES IN AN ADDRESSABLE MEMORY CIRCUIT

Abraham Menachem, Herzlia, Israel, assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 23, 1980, Ser. No. 152,950
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—193 **16 Claims**

1. An integrated memory circuit for providing a logic level output signal representative of a bit of data comprising:

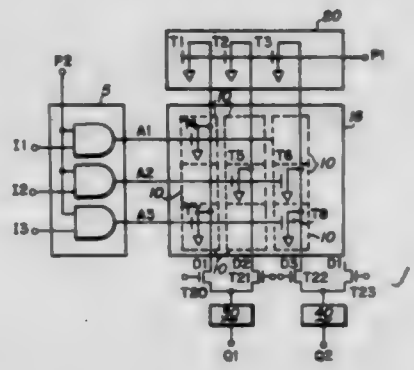
source means for providing first and second voltages;

clock means for providing alternating first and second clock signals;

a conductive data line associated with the bit of data;

memory cell means coupled to the data line, the source means and the clock means for selectively providing a current path between the data line and the first voltage in response to the value of the bit and the second clock signal;

reference means coupled to the data line, the source means and the clock means for providing a current path between the data line and the first voltage in response to the first clock signal, the resistance of the current path provided by the reference means being greater than the resistance of the current path selectively provided by the memory cell means;



amplifier means coupled to the data line and to the source means and characterized by a threshold voltage for providing a logic level output signal representative of the value of the bit in response to the voltage on the data line relative to the threshold voltage; and

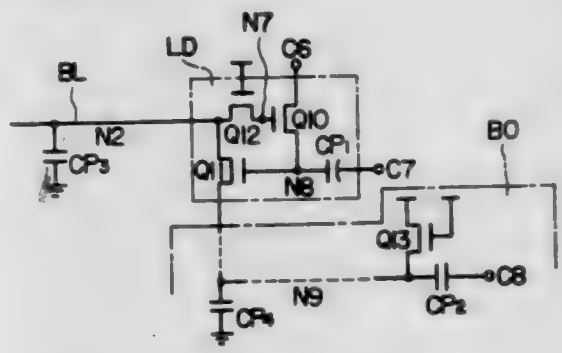
current source means coupled to the amplifier means, to the clock means, to the source means and to the data line for providing current to the data line, the amplitude of the current being adjusted in response to the output signal and the first clock signal such that the voltage of the data line is adjusted to be substantially equal to the threshold voltage during the first clock signal and the amplitude of the current is maintained during a subsequent second clock signal.

4,404,661

SEMICONDUCTOR MEMORY CIRCUIT

Yasuji Nagayama, and Makoto Taniguchi, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1980, Ser. No. 202,822
Claims priority, application Japan, Oct. 31, 1979, 54-141783
Int. Cl.³ G11C *7/00, 11/24*
U.S. Cl. 365—203 **5 Claims**



1. A semiconductor memory circuit of the MOSRAM type comprising:

a plurality of bit lines;

a sense amplifier provided for each bit line for sensing a state of a storage cell selectively coupled to said bit line and for

setting said bit line to one of first and second predetermined potentials in response to the sensed state;

a potential decision circuit provided for each bit line for sensing the potential on the corresponding bit line set by said sense amplifier; and

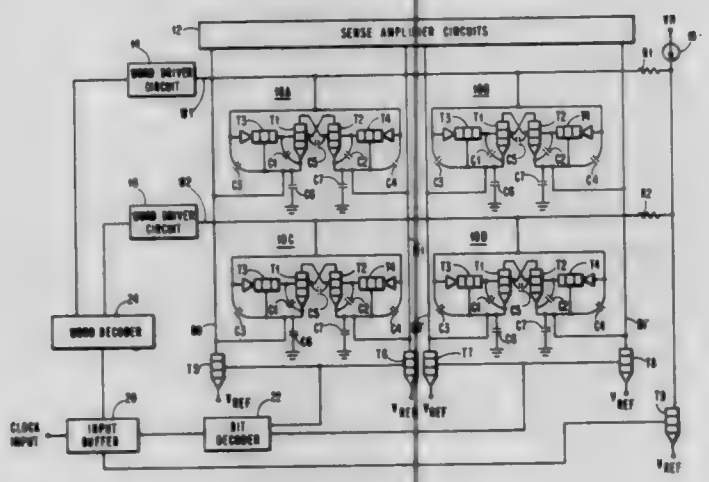
a boost circuit operating in response to an output from said potential decision circuit for increasing a potential on the corresponding bit line above a maximum supply potential when said potential decision circuit senses the presence of a predetermined one of said first and second potentials on said bit line for recharging said selected storage cell at a potential above said maximum supply potential.

4,404,662

METHOD AND CIRCUIT FOR ACCESSING AN INTEGRATED SEMICONDUCTOR MEMORY

Charles J. Masenas, Jr., Jericho, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,396
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—203 **16 Claims**



2. A memory system comprising

a plurality of cells arranged in a plurality of columns and in a plurality of rows,

a plurality of word lines, each connected to a respective row of said cells,

a plurality of pairs of bit/sense lines, each connected to a respective column of said cells,

means for discharging said word lines,

means for selecting one of said word lines and one of said pairs of bit/sense lines having a given cell coupled thereto,

means for electrically floating said one pair of bit/sense lines of said plurality of pairs of bit/sense lines during a given period of time,

means for energizing said one word line of said plurality of word lines to charge said given cell during said given period of time, and

means for detecting a signal between said one pair of bit/-sense lines during said given period of time when said given cell is being charged and the remaining cells connected to said one pair of bit/sense lines are being discharged.

4,404,663

INTEGRATED CIRCUIT

Yukihiro Saeki, Yokohama; Fuminari Tanaka, Kawasaki, and Yasoji Suzuki, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

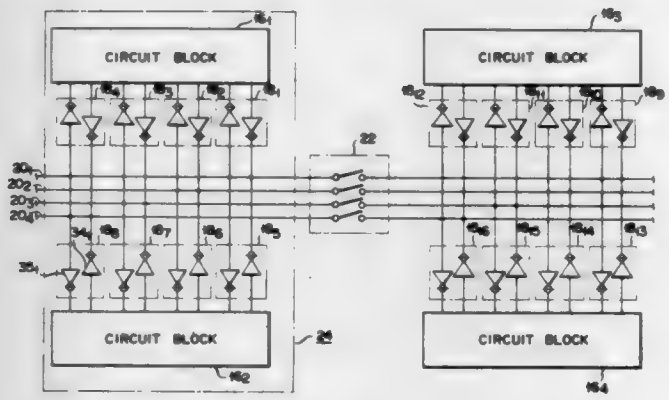
Filed Feb. 13, 1981, Ser. No. 234,438
Claims priority, application Japan, Mar. 6, 1980, 55-27309
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—206 **4 Claims**

1. An integrated circuit which comprises:

first, second and third circuit blocks for storing data;

a bus line;

first, second and third input-output means with said first input-output means connected between said bus line and said first circuit block, said second input-output means connected between said bus line and said second circuit block, and said third input-output means connected between said bus line and said third input-output block, for supplying data received from said bus line to said respective circuit blocks and for withdrawing data from said respective circuit blocks to said bus line, the connections of said first and second input-output means to said bus line



and the connection of said third input-output means to said bus line being spaced from each other along said bus line; and

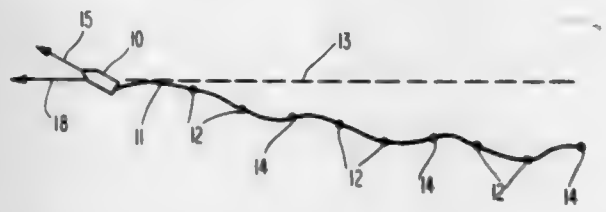
gate circuit means coupled to said bus line between said connections of said first and second input-output means and the connection of said third input-output means to said bus line, for separating said first and second circuit blocks from said third circuit block upon transmission of data over said bus line between said first and second circuit blocks.

4,404,664

SYSTEM FOR LATERALLY POSITIONING A TOWED MARINE CABLE AND METHOD OF USING SAME

Robert G. Zachariadis, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,733
Int. Cl.³ G01V *1/38*
U.S. Cl. 367—19 **1 Claim**



1. A system for controlling the lateral position of a marine cable being towed by a vessel and having adjustable control surfaces affixed to said marine cable at a plurality of spaced-apart positions along said cable for varying lateral thrust to said cable in response to control signals from the vessel, the improvement comprising:

(a) a motor associated with each control surface for rotating said control surface from a neutral position at which no lateral thrust is imparted to said cable to a second position at which a desired lateral thrust is imparted to said cable,

(b) receiving means associated with each control surface for decoding the control signals from said vessel and producing a first electric current of magnitude and direction necessary to cause said motor to rotate said control surface of said second position,

(c) means associated with each control surface for automatically returning said control surface to said neutral position after the desired lateral thrust has been imparted to said cable by said control surface, said means comprising:

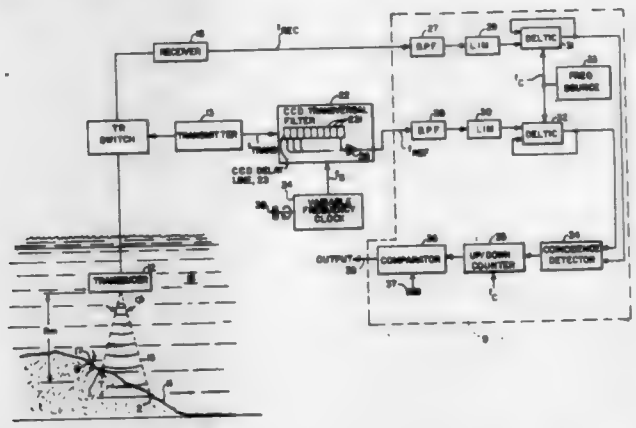
(i) a plurality of switches fixed in circular orientation,
(ii) a cam mounted within the circular orientation of said switches for rotational movement with control surface, the rotational movement of said cam sequentially activating said switches to provide an orientation signal representative of the direction and magnitude of the rotation of the control surface, and
(iii) means for converting said orientation signal to a second electric current of magnitude and direction necessary to cause said motor to rotate said control surface back to said neutral position.

4,404,665

SEA BOTTOM SLOPE COMPENSATION APPARATUS

Arent H. Kits van Heyningen, Newport, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 20, 1980, Ser. No. 198,559
Int. Cl.³ G01S *7/52, 15/02*
U.S. Cl. 367—100 **16 Claims**



1. A sonar transmitting and receiving system for comprising:
transmitter means for transmitting a sonic signal and for directing such transmitted sonic signal towards a reflecting surface;
receiver means for receiving the transmitted sonic signal which is reflected from said reflecting surface;
a transversal filter connected to said transmitter;
means connected to said transversal filter for producing first clock pulses having a controllable frequency;
said filter including means for sampling said transmitted sonic signal and for shifting said sample signal through said filter at a rate related to the frequency of said first clock pulses to provide a replica at the transversal filter output of the received signal;
a correlator circuit means connected to the output of said transversal filter and an output of said receiver means for providing an output signal having a magnitude related to the correlation between said replica of the received signal and the actually received signal.

4,404,666

QUICK DEPLOYMENT VEHICLE

Arthur P. Stevens, Jenkintown; John De Matteo, Doylestown, both of Pa., and Richard M. Beard, Ventura, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 2, 1981, Ser. No. 269,171
Int. Cl.³ B63B *21/28*
U.S. Cl. 367—131 **5 Claims**

1. A quick deployment vehicle for embedment in ocean sediment comprising, in combination:
a streamlined housing having separable fore and aft sections, said fore section including a core mass for imparting an inertial force for penetrating the sediment;
memory means within said housing for storing a programmed predetermined deceleration and for transmitting a signal indicative thereof, said memory means includes a vehicle condition sensor for initiating the predetermined deceleration signal and timing means initiated by said condition sensor for regulating the predetermined deceleration signal as a function of elapsed time;
decelertion sensing means within said housing responsive to the vehicle deceleration for transmitting a signal indicative thereof;



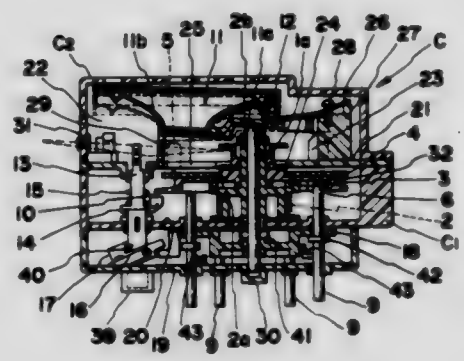
separating means connected to fore and aft sections and responsive to the vehicle deceleration and predetermined deceleration signals for separating said sections when the predetermined deceleration signal exceeds the vehicle deceleration signal.

4,404,667

SOUND REPRODUCING DEVICE DRIVEN BY A CONSTANT TORQUE PULL STRING TYPE SPRING AND STARTED BY SELECTIVE STARTER RODS FOR PLAYING MULTIPLE RECORD GROOVES

Eishi Koike, Sagamikara, Japan, assignor to Ozen Corporation, Tokyo, Japan

Filed Mar. 1, 1982, Ser. No. 353,613
Claims priority, application Japan, Oct. 30, 1981, 56-174221
Int. Cl.³ G11B *17/00*; A63H *3/33*; G11B *3/00*
U.S. Cl. 369—65 **3 Claims**



1. A sound reproducing device for selectively playing any desired one of a plurality of recorded grooves comprising, a constant torque spring wound by a winding string, a record disc driven by said constant torque spring capable of rotating only in a direction of sound reproduction and a pickup urged by a return spring to its directions upward away from said record disc and to the starting point of sound reproduction, wherein the improvement comprises:
a locking block projecting from the reverse face of the record disc and being rotatable together with said record disc;
a plurality of selective starter rods corresponding to the number of recorded grooves each of which rods being positioned at a location in a predetermined relationship to the guide portion of each record groove and capable of being advanced to be engaged with said locking block when depressed;
a retainer piece disposed on the periphery of the record disc being rotatable together with the record disc for temporarily stopping rotation of the record disc;
a speaker unit swingably supported at its one end and capa-

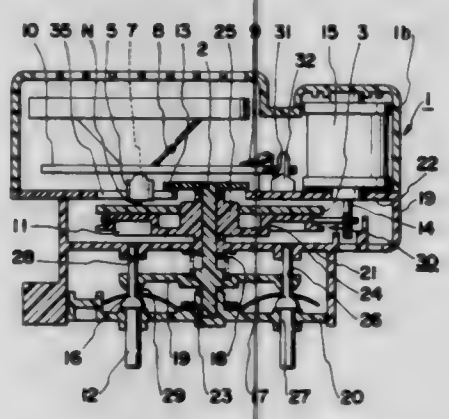
ble of imparting stylus pressure at the lower face of the other end;
a center shaft for receiving said record disc capable of being axially advanced to lift said speaker unit upward against the resilient force given by said stylus pressure;
a plunger upstanding alongside said record disc and being axially movable parallel to said center shaft;
a stopper block projecting from the side periphery of said plunger for engagement or disengagement with said retainer piece of the record disc for effecting temporary stopping or releasing of the record disc by the respective advancing or retracting motion of said plunger;
a first spring for urging said plunger to the direction of retraction of said stopper block from the engagement with said retainer piece of the record disc;
a lever swingably supported for see-saw like movement being urged by a second spring for locking said stopper block may engage said retainer piece of the record disc;
an intermediate starter member fixed around said center shaft capable of advancing or retracting together with said center shaft and being placed in engagement with said lever to swingably move the lever against the resilient force of the second spring thereby releases said plunger from its engagement with said lever caused by the advance of any one of said selective starter rod;
said winding string is passed correlated to both the speaker unit and said plunger so that the winding string when stretched under tension during the time of winding and after the sound reproduction has been finished, lifts said speaker unit to move away from the record face and releases the stylus pressure imparted thereon and causes said plunger to advance against the resilient force of the first spring so as to engage said stopper block with said retainer piece of the record disc, whereby release of the depression of said selective starter rod allows its retraction resulting in both application of stylus pressure to said pickup and the rotation of the record disc for starting sound reproduction.

4,404,668

SOUND REPRODUCING DEVICE

Katsumi Watanabe, Kawasaki, Japan, assignor to Ozen Corporation, Tokyo, Japan

Filed Jul. 1, 1981, Ser. No. 279,618
Claims priority, application Japan, Mar. 17, 1981, 56-38244
Int. Cl.³ G11B *17/00*; A63H *3/33*; G11B *3/00*
U.S. Cl. 369—65 **4 Claims**



1. A sound reproduction device comprising:
a casing;
a record disc disposed in the casing, the record disc having a recorded face with starting and end points of sound reproduction;
a thrust holder formed in the casing;
a center shaft movably held by the thrust holder and capable of advancing and retracting along its longitudinal axis;
means for normally biasing the center shaft toward its direction of retraction;
the record disc being rotatably supported by the center shaft;
a tone arm having forward and rearward ends, the tone arm being swingably supported at the rearward end on the casing;
return spring means mounted on the casing for normally biasing the tone arm away from the recorded face of the record disc and toward the starting point of sound reproduction;
a pickup carried on the forward end of the tone arm, the pickup being positioned for engagement with the recorded face of the record disc and capable of being swung between the starting and end points of sound reproduction;
a sound transmitting member slidably engageable with the pickup;
a speaker carried by the sound transmitting member;
a stylus force spring acting on the sound transmitting member for urging the sound transmitting member and the pickup engaged therewith into engagement with the recorded face of the record disc with predetermined stylus force;
a stopper member rotatable with the record disc, the stopper member being located adjacent to the face of the record disc opposite from the recorded face;
a plurality of locking bars, each independently manipulatable from outside of the casing, the locking bars being arranged in a circle about the center shaft and being capable of advancing into the plane of rotation of and engaging the stopper member so as to cause the stopper member to temporarily stop rotation of the record disc and retracting from the stopper member to permit rotation of the record disc;
means for biasing the locking bars toward a retracted position;
each locking bar having a projection formed thereon;
a manipulating member radially extending from and fixed to the center shaft; the manipulating member being engageable with the projections on the locking bars so as to be movable with advancing of the locking bars, the manipulating member, upon movement, causing advancing of the center shaft;
one end of the center shaft being engageable with the sound transmitting member upon advancing such that the sound transmitting member advances away from the recorded face of the record disc to release stylus force from the pickup;
an electric switch switchable to a closed state as the pickup moves away from the end point of sound reproduction;
an electric motor for rotating the record disc, the electric motor being connectable to a power source through the electric switch;
the electric motor having an output shaft; and
frictional engagement means for connecting the output shaft of the motor to the record disc.

4,404,669

STYLUS ASSEMBLY

Michael E. Miller, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

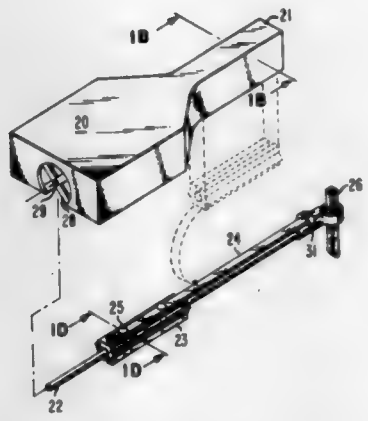
Filed Jan. 20, 1982, Ser. No. 341,144
Int. Cl.³ G11B *9/06, 3/46*
U.S. Cl. 369—170 **11 Claims**

1. An assembly for use in a player apparatus for recovering signal from a high density disc record, said assembly comprising:
a longitudinal stylus arm of relatively low mass;
a stylus holder secured to a first end of said stylus arm;
a stylus including a conductive electrode, said stylus being secured in said stylus holder;
a conductive leaf spring having a first end connected for making electrical connection to said electrode and fixedly secured proximate the first end of said stylus arm wherein

the length of said leaf spring is arranged to lie proximate and parallel to said stylus arm;

a terminal element releasably secured to said stylus arm and positioned proximate a second end of said leaf spring; and

means for securing the second end of said leaf spring to said terminal element;



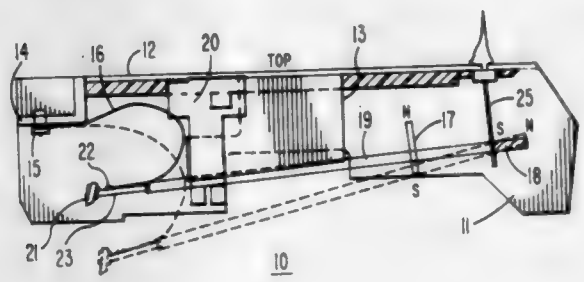
wherein said terminal element serves to hold the leaf spring in fixed relation to the stylus arm and is adapted to be detached from the stylus arm and attached to a predetermined location in said player apparatus to position the second end of said leaf spring in said predetermined location.

4,404,670

PICKUP ARM RETAINER FOR VIDEO DISC CARTRIDGE

Byron K. Taylor, Carmel, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 29, 1982, Ser. No. 363,392
Int. Cl.³ G11B *1/00*
U.S. Cl. 369—170 **9 Claims**



9. A cartridge for supporting a signal pickup stylus fixed to a first end of a stylus arm a second end of which is compliantly secured in said cartridge comprising:

a cartridge body having sidewalls spaced apart by a topwall defining a protective enclosure;

a generally flat support element having a top edge fixed to an inside surface of said topwall, said support element having a bottom edge configured to receive said stylus arm thereon; and

a retainer formed from resilient material for holding the stylus arm to the bottom edge of said support element, said retainer including;

a. a body element having first and second sidewalls spaced apart by a third sidewall each of said sidewalls having top and bottom edges;

b. first and second extensions, extending from the top edges of the first and second sidewalls respectively and angled to converge on each other, a portion of each extension crossing a plane substantially midway between the sidewalls; and

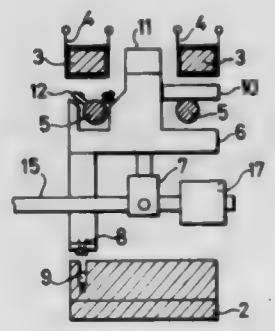
c. first and second spring tabs separated by a distance less than the thickness of said cartridge topwall arranged near the bottom edge of each of said first and second retainer sidewalls; wherein said retainer is inserted through an aperture in the cartridge top wall with said first and second extensions straddling the support member and converging to encompass said stylus arm thereon, and wherein the respective first and second spring tabs engage opposite surfaces of the cartridge top wall securing the retainer thereto.

4,404,671

LINEAR DRIVE MOTOR CONTROL SYSTEM

Hiroshi Kuribayashi, and Atsuo Ikeda, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation

Continuation of Ser. No. 30,981, Apr. 18, 1979, abandoned. This application Nov. 25, 1980, Ser. No. 210,185
Claims priority, application Japan, Apr. 20, 1978, 53-46798
Int. Cl.³ G11B *17/02*
U.S. Cl. 369—216 **6 Claims**



1. A drive control device for use in a linear motor having a stator and a sliding member capable of sliding along said stator comprising:

a tone arm assembly coupled to said sliding member;

means for detecting the position of said sliding member relative to said stator and producing an electrical position signal representative of displacement of said member from a reference position on said stator, said detecting means comprising at least one of a predetermined one of a light emitting element and a light detecting element arranged on said sliding member and at least one of the other one of said light emitting element and light detecting element being provided at at least one stationary reference position, said position signal being produced at an output of said light detecting element;

signal producing means for producing a reference electrical signal, a magnitude of said reference signal being an average of a maximum level and a minimum level of said position signal over all positions of said sliding member along said stator;

means for comparing said position signal with said reference signal to produce an output signal; and

means for controlling driving of said linear motor in response to said output signal to stop sliding movement of said sliding member when said reference signal exceeds said position signal.

4,404,672

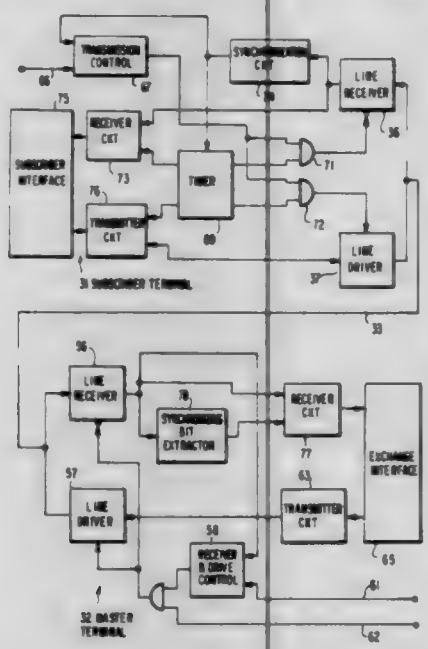
SUBSCRIBER TERMINAL FOR USE IN A TIME SHARED BIDIRECTIONAL DIGITAL COMMUNICATION NETWORK

Hiroshi Shimizu, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1981, Ser. No. 245,281
Claims priority, application Japan, Mar. 28, 1980, 55-40901; May 8, 1980, 55-60911; May 9, 1980, 55-61431
Int. Cl.³ H04J *3/00*
U.S. Cl. 370—29 **17 Claims**

1. A subscriber terminal for use in a bidirectional communication network in which said subscriber terminal is connected to a master terminal through a communication channel and in which said subscriber terminal receives a receive signal composed of a plurality of digital receive signal bursts from said

master terminal through said channel and sends a digital send signal burst to said master terminal through said channel on a time shared basis in each frame period to carry out communication with said master terminal in a communication interval following a call originating interval, said subscriber terminal comprising first means capable of being put once in each frame period in a first mode of producing digital receive signals with a first frame phase in response to the receive signal bursts received through said channel, second means capable of being put once in each frame period in a second mode of supplying digital send signals with a second frame phase to said channel as the send signal bursts, third means responsive to said receive signals for putting said first and said second means in said first mode and out of said second mode, respectively, and then out of said first mode and in said second mode, respectively, in each frame period to synchronize said second frame phase with said first frame phase, means responsive to said receive and said



send signals for carrying out said communication, and means for producing a call originating signal in said call originating interval, wherein the improvement comprises means responsive to said call originating signal for activating said third means to cause said third means to put said first and said second means temporarily out of said first mode and in said second mode, respectively, and then in said first mode and out of said second mode respectively, repeatedly until said call originating interval is followed by said communication interval, said second means supplying said call originating signal to said channel while being temporarily put in said second mode, said first means producing, while being continuously put in said first mode after being temporarily put out of said first mode, a digital receive signal with said first frame phase in response to each digital receive signal burst supplied to said channel by said master terminal in response to the call originating signal arriving thereat through said channel.

4,404,673

ERROR CORRECTING NETWORK

Roy K. Yamamoochi, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 9, 1981, Ser. No. 232,786
Int. Cl.[3] G06F *11/10*; G11C *29/00*
U.S. Cl. 371—13 8 Claims

1. A method for verifying the integrity of error correction of digital data and associated parity bits read from a digital storage system comprising the steps of:

reading the stored digital data and the associated parity bits;

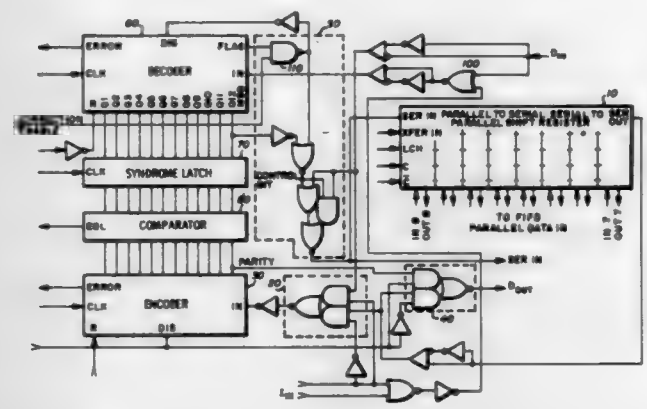
detecting a parity error in the digital data and the associated parity bits;

generating an error syndrome associated with the digital data, the associated parity bits and the location of the parity error;

storing the error syndrome;

rereading the stored digital data and the associated parity bits;

correcting the reread digital data in response to the error syndrome;



generating a reread error syndrome associated with the reread digital data, the associated parity bits and the location of any errors occurring during the reread step; and

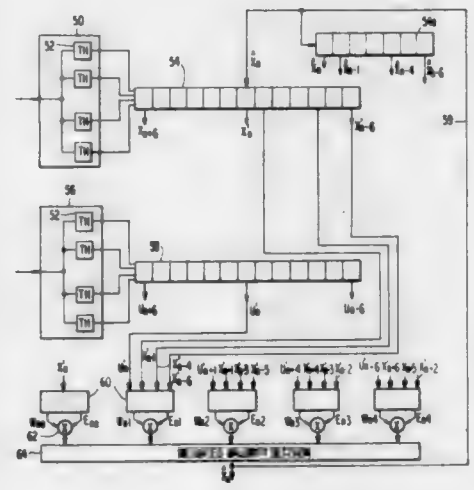
comparing the stored error syndrome and the reread error syndrome.

4,404,674

METHOD AND APPARATUS FOR WEIGHTED MAJORITY DECODING OF FEC CODES USING SOFT DETECTION

Smith A. Rhodes, Falls Church, Va., assignor to Communications Satellite Corporation, Washington, D.C.

Filed Jul. 10, 1981, Ser. No. 282,319
Int. Cl.[3] G06F *11/10*
U.S. Cl. 371—43 26 Claims



1. A method of weighted majority decoding of code symbol signals included in a forward error correcting (FEC) code, said code symbol signals including information symbol signals representing information symbols having at least first and second code values and parity symbol signals representing parity symbols generated from selected combinations of said information symbols, said method comprising the steps of:

receiving information symbol signals representing the code values of said information symbols,

receiving parity symbol signals representing the values of said parity symbols;

soft detecting said information symbol signals to detect the voltage of each information symbol signal;

generating a code value signal indicating the code value represented by each said information symbol signal;

generating an information symbol reliability signal representing the reliability of each said code value signal;

detecting said parity symbol signals and generating a parity

value signal corresponding to the detected value of each parity symbol;

generating a first estimate of the code value of a particular information symbol from the code value signal corresponding to that symbol;

assigning to said first estimate a symbol weighting factor in accordance with the information symbol reliability signal corresponding to the detected information symbol signal for said particular information symbol;

combining selected ones of said code and parity value signals to obtain at least one further estimate of the code value of said particular information symbol;

assigning to said at least one further estimate a fixed symbol weighting factor;

combining corresponding estimate weighting factors and code value estimates to obtain weighted estimates;

combining said weighted estimates to obtain a combined weighted estimate; and

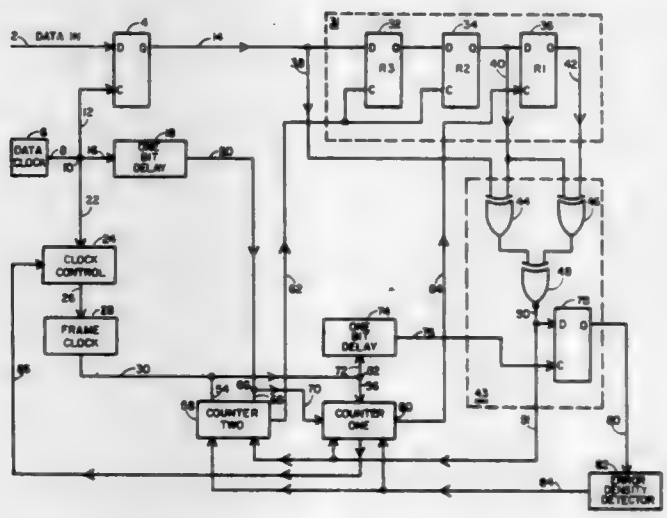
providing a decoded symbol in accordance with the value of said combined weighted estimate.

4,404,675

FRAME DETECTION AND SYNCHRONIZATION SYSTEM FOR HIGH SPEED DIGITAL TRANSMISSION SYSTEMS

Robert A. Karchevski, San Mateo, Calif., assignor to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Apr. 27, 1981, Ser. No. 258,192
Int. Cl.[3] H04J *3/06*
U.S. Cl. 371—47 3 Claims



1. In a high speed digital system, a framing detector and frame synchronization arrangement for a framing pattern other than that of a winking framing pattern consisting of alternating binary "1"s and "0"s, comprising:

a preview store having a plurality of stages each capable of storing a like number of bits;

timing means synchronized with the incoming binary data for clocking into each stage of said preview store said like number of bits, on the occurrence of each framing bit;

a comparator for comparing the state of the present incoming data bit with stored outputs from selected stages of said preview store to determine if these bits constitute a valid framing sequence, and providing a binary output of one state for a valid sequence and of the other state otherwise;

an error density detector for providing an error signal indication when a predetermined error rate is exceeded; and

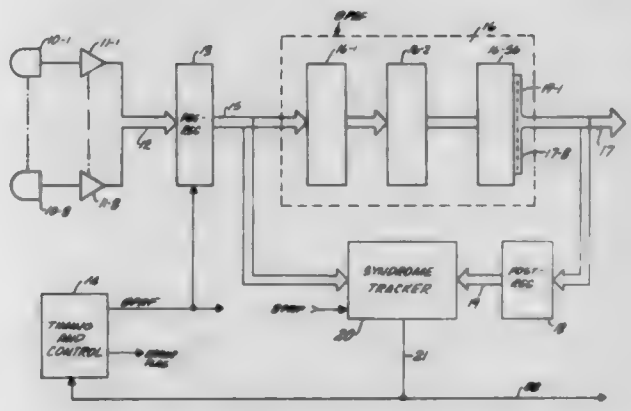
counting means adapted to be responsive both to the output signal from said error density detector and to the output signal from said comparator so as to permit either the clocking in of said like number of bits whenever the comparator output indicates that a valid framing sequence exists at a frame interval, or to permit a bit by bit comparison as the bits stored in the preview store are stepped one bit at a time for valid framing sequence comparison, the stepping sequence being stopped by the occurrence of a valid frame sequence as determined by the output of said comparator, or by stepping through said like number of bits, whichever occurs first; should the latter occur, the timing means reads into said preview store a like number of bits for comparison with the bit at the next frame bit location.

4,404,676

PARTITIONING METHOD AND APPARATUS USING DATA-DEPENDENT BOUNDARY-MARKING CODE WORDS

Erik P. DeBenedictis, Pasadena, Calif., assignor to Pioneer Electric Corporation, Tokyo, Japan

Filed Mar. 30, 1981, Ser. No. 248,907
Int. Cl.[3] H04L *17/00*; G06F *11/10*
U.S. Cl. 371—47 12 Claims



1. A process for decoding a data signal defining information, including data bits and redundancy bits, at spaced points in time, the data signal being characterized by a tolerance with respect to the points in time at which it defines the information, and being further characterized in that the data bits represent a plurality of blocks and the redundancy bits represent a plurality of data-dependent code words, each such code word bearing a predetermined mapping relationship to a respective one of the blocks and otherwise being indistinguishable from any arbitrarily selected groups of data bits, the process comprising the steps of:

(a) forming a plurality of individually identifiable clock signals, each such clock signal having reoccurring clock pulses therein, the clock pulses of each such clock signal differing from those of each other clock signal as to time of occurrence;

(b) sampling the data signal upon occurrence of the clock pulses to derive a plurality of sample bits;

(c) congregating a multiplicity of groups of sample bits as candidate cells, each such candidate cell including a block-length portion and a code-word-length portion with all sample bits of both portions being derived from the same clock signal;

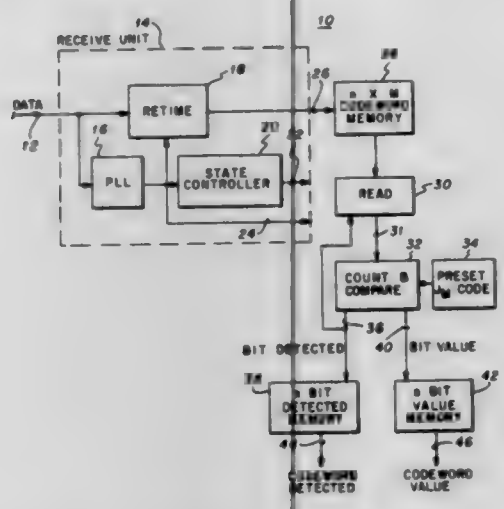
(d) testing each of the multiplicity of candidate cells to determine, as each candidate cell undergoes testing, whether its code-word-length portion bears the predetermined mapping relationship to its block-length portion as is characteristic of a valid cell; and

(e) generating a candidate-valid signal for each candidate cell that upon testing is determined to be a valid cell.

4,404,677
DETECTING REDUNDANT DIGITAL CODEWORDS USING A VARIABLE CRITERION

Johannes Grande, Richardson, and James H. Brown, Garland, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 8, 1981, Ser. No. 252,093
Int. Cl.³ G06F *11/08, 7/02*
U.S. Cl. 371—69 18 Claims

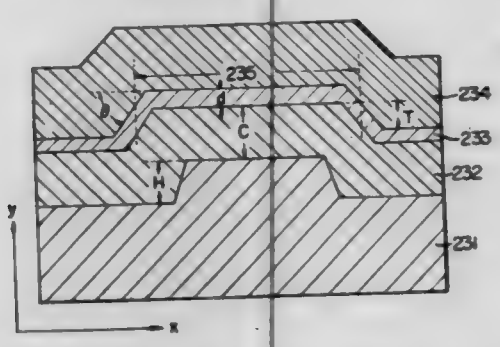


1. A method for detecting redundant digital codewords repeatedly transmitted over a digital transmission system, comprising checking the values of bits in corresponding bit-positions for a varying number of m of consecutive n bit codewords, and comparing to determine, for each bit-position, when a count of bits having equal values reaches a varying threshold j_m dependent upon m, thereby affording fast detection under low error conditions.

4,404,678
SEMICONDUCTOR LASER DEVICE

Kunio Aiki, Hachioji; Michiharu Nakamura, Nishitama, and Jun-ichi Umeda, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 786,758, Apr. 12, 1977, Pat. No. 4,326,176.
This application Apr. 5, 1982, Ser. No. 365,606
Claims priority, application Japan, Apr. 16, 1976, 51-42469; May 26, 1976, 51-60009; Jan. 24, 1977, 52-5944; Jan. 24, 1977, 52-5945; Jan. 24, 1977, 52-5946; Mar. 9, 1977, 52-24806; Mar. 9, 1977, 52-24807
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—45 10 Claims



1. In a semiconductor laser device comprising a semiconductor body of a first conductivity type having a major surface and a plurality of contiguous semiconductor layers disposed on said major surface of said body, said plurality of contiguous semiconductor layers being comprised of:

(i) a first semiconductor layer having a laser active region, a pair of end surfaces parallel to each other so as to form a cavity resonator, and two opposite plane surfaces, a first surface of which faces towards said major surface of said body and second surface of which faces away from said major surface of said body,

(ii) a second semiconductor layer disposed on said first surface, comprised of a material having a band gap broader than that of said first semiconductor layer,

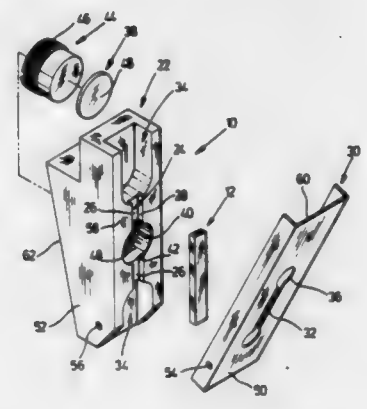
(iii) a third semiconductor layer disposed on said second surface disposed on said second surface comprised of a material having a band gap broader than that of said first semiconductor layer,

wherein said second and third semiconductor layers have a thickness larger than a distance r in which an evanescent wave along said first surface decays by 1/e, and further wherein said second semiconductor layer has a protrusive portion jutting out toward said first semiconductor layer, said first semiconductor layer covering said second semiconductor layer is protruberant along said protrusive portion of said second semiconductor layer, and said third semiconductor layer covering said first semiconductor layer is protuberant along the protrusive portion of said first semiconductor layer.

4,404,679
DYE CELL HOLDER FOR DYE LASER

Pay H. Chiu, and Andre J. Desroziers, both of London, Canada, assignors to Photochemical Research Associates Inc., London, Canada

Filed Jun. 11, 1981, Ser. No. 272,712
Int. Cl.³ H01S *3/20*
U.S. Cl. 372—54 11 Claims



1. In combination, a dye cell holder and a receptable therefor for use in a dye laser arrangement, said dye cell holder comprising means for supporting a thin fragile dye cell and means for retaining such dye cell against said supporting means, said retaining means having an aperture provided therein to permit an incoming laser beam to pump a dye solution in such dye cell, said support means and retaining means forming a wedge-shaped unit whereby said support means has a front face to support such dye cell and a rear face, said support front and rear faces converging to provide in conjunction with said retaining means the wedge-shaped unit having a narrower lower portion, said retaining means and support means being pivotally connected together about an axis at the narrower portion of said support means with said axis extending in a direction essentially parallel to the front face of said support means, said receptacle having a cooperating wedge-shaped receiving area with opposing surfaces for engaging the support rear face and the retaining means when said unit is placed in said receptacle for moving said support means and retaining means together to squeeze lightly and thereby hold such dye cell in said holder, said receptacle being provided with an aperture aligned with said aperture in said retaining means.

4,404,680
DIGITAL PHASE SYNCHRONIZER

Derrick O. Perkins, Raleigh, N.C., assignor to Telex Computer Products, Inc., Raleigh, N.C.

Filed Nov. 3, 1980, Ser. No. 203,457
Int. Cl.³ H04L *7/02*
U.S. Cl. 375—111 9 Claims

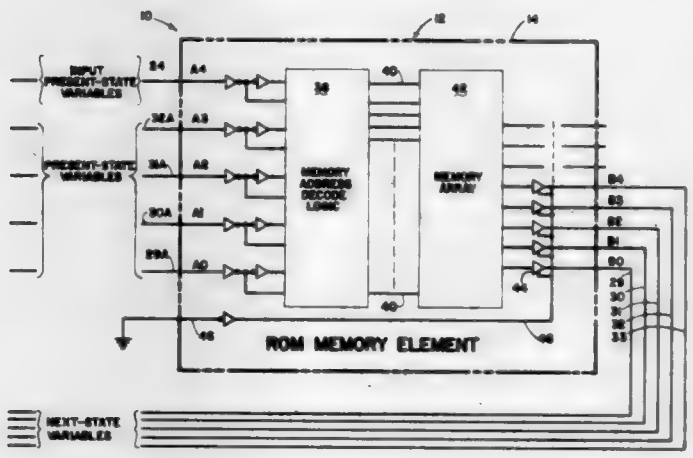
1. Apparatus for synchronizing a clock recovery signal to an

incoming phase-varying digital signal (input signal), comprising;

(a) state clock means to provide a bilevel signal of frequency N times the nominal frequency of said incoming signal where N is a selected even number;

(b) memory means having a selected number of independently addressable addresses in which are stored corresponding selected different binary numbers each having a selected number M of binary bits; and M output leads equal in number to the number of bits in each stored word;

(c) state latch means comprising M latch means responsive to said state clock for temporary storage of binary bits, said state latch means having at least M separate inputs to one of which each of the M output leads from said memory are connected; and means to set each of said M latch means on the rising transition of each cycle of said state clock;



(d) received data latch and means to set said received data latch on the falling transition of each cycle of said state clock for sampling said input signal;

(e) a selected number, say (M−Y) of the outputs of said M latches in said state latch means connected to M−Y input leads of said memory, the Yth output of said M latches carrying the output signal of said apparatus, where Y is the number of input and output signals;

(f) the output of said received data latch connected to the Yth input lead to said memory means, each of the M input signals comprising M bits of a binary word defining the address of a selected storage location in said memory;

whereby, dependent upon the particular polarities of the M input leads to said memory means, selected ones of the memory locations are determined and the M bit words stored therein are impressed on the M output leads, M−Y of which and the input signal are connected to the inputs of said state latch means, which are latched into said memory means on the next cycle of said state clock.

4,404,681

DEVICE FOR SETTING A SIGNAL PROCESSING CIRCUIT

Josef Hüllwegen, Altenbeken, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Fed. Rep. of Germany

Filed Nov. 7, 1980, Ser. No. 205,038

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945331

Int. Cl.³ H04B *3/06*

U.S. Cl. 375—102 **3 Claims**

1. A system for setting a signal processing circuit to an optimum response condition comprising:

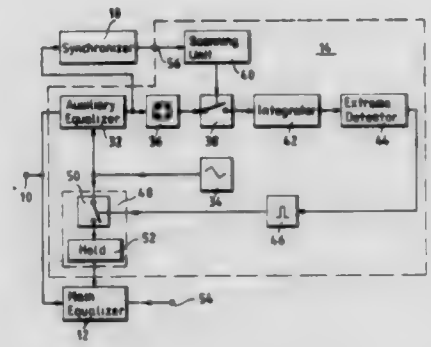
means (10) for receiving a transmitted data signal;

a main signal processor (12) having an input connected to means (10) for receiving the transmitted signal and having a regulable response characteristic;

an auxiliary signal processor (32) having an input also connected to said means (10) for receiving the transmitted data signal and also having a regulable response characteristic equal to that of the main signal processor (42);

means (34) having a control output quantity connected to the auxiliary signal processor (32) for varying the regulable response characteristic thereof over a predetermined range which includes at least one optimum response condition;

means (36, 38, 42, 44, 46) connected to the auxiliary signal processor for detecting the optimum response condition in the output thereof and for generating a signal when said condition occurs;



holding means (50, 52) connected to for varying (34) and to said means for receiving (36, 38, 42, 44, 46) for receiving and holding the control output quantity of means (34) on occurrence of the signal from means (36, 38, 42, 44, 46); and

said holding means (52) being connected to the main signal processor (32) to regulate the regulable response characteristic thereof to equal the response characteristic of the auxiliary signal processor (32) at which the optimum response condition occurred.

4,404,682

METHOD FOR FORESEEING RESIDUAL LIFE OF STRUCTURAL MEMBER MAKING USE OF X-RAY

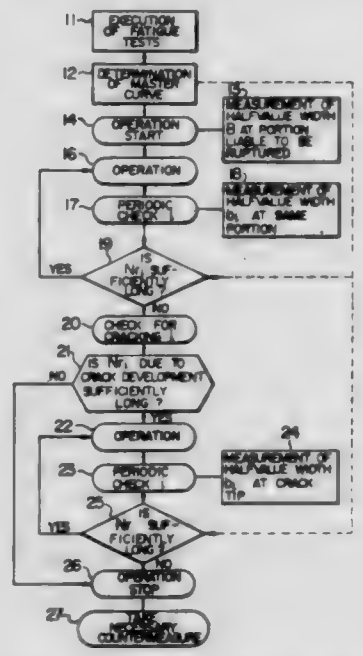
Makoto Hayashi, and Tasuku Shimizu, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 16, 1980, Ser. No. 217,083

Claims priority, application Japan, Dec. 19, 1979, 54/165246

Int. Cl.³ G01N *23/20*

U.S. Cl. 378—72 **6 Claims**



1. A method for determining the residual life of a structural member composed of a metal or alloy, making use of an X-ray, comprising:

preparing a plurality of test pieces made of the same material and subjected to the same working and heat-treating con-

ditions as the structural member to be examined of which the fatigue strength is in question;

executing fatigue tests with said test pieces till failure under a plurality of different stress conditions above the fatigue limit;

obtaining for each stress condition the relationship between the residual life of said test piece and the halfvalue width ratio of the X-ray diffraction profile;

determining, from the above-mentioned relationships, a substantially common relationship interval between the residual life and the halfvalue width ratio in the region of short residual life that is, therefore, independent of the stress conditions;

measuring said halfvalue width ratio of said structural member; and

determining the residual life of said structural member from the measured halfvalue width ratio in accordance with said common relationship interval.

4,404,683

BLOOD CELL IDENTIFICATION AND CLASSIFICATION SYSTEM

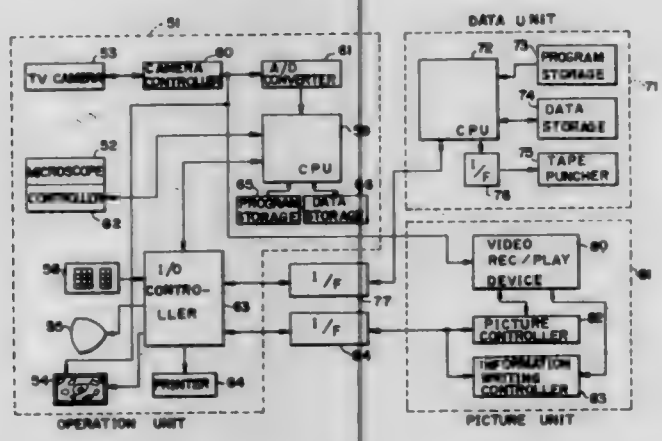
Shigeki Kobayashi, Otsu; Norio Iwasaki, Ichikawa; Yasunori Ikeda, Kameoka; Tamio Miyake, and Shigeru Tanimura, both of Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Oct. 10, 1980, Ser. No. 195,869

Claims priority, application Japan, Oct. 24, 1979, 54-138156

Int. Cl.³ G06K *9/00*

U.S. Cl. 382—6 5 Claims



1. A blood cell identification and classification system having a photographing means for producing magnified images of cells in blood smears and generating video signals and an automatic analytical means for analyzing cells based on said video signals, characterized in that said system comprises:

a video recording means for recording on a collective basis the magnified images of unknown cells which could not be identified by said automatic analytical means in conjunction with identification data for smears to which said unknown cells pertain,

a video reproduction means for reproducing the magnified images of unknown cells and identification data so recorded, and

an input means for entering analytical data derived from the magnified images of unknown cells so reproduced.

4,404,684

OBJECT SOLID FIGURE RECOGNIZING METHOD AND APPARATUS

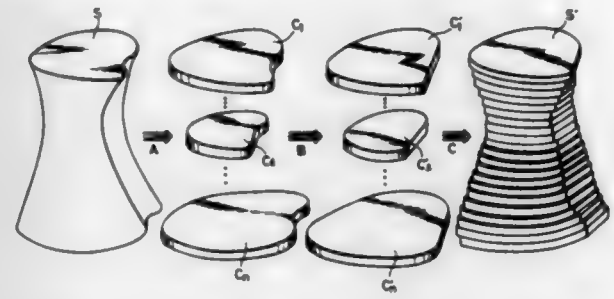
Munekazu Takeda, Uji, Japan, assignor to Unitika Ltd., Hyogo, Japan

Filed Jul. 31, 1980, Ser. No. 174,060

Int. Cl.³ G06K *9/00*

U.S. Cl. 382—25 11 Claims

1. A method for recognizing the shape of a three dimensional object comprising the steps of: rotating a hollow cylindrical rotary unit having an internal photoelectric sensor having a light source section and a light receiving section confronting with said light source section; moving an object through the hollow part of said cylindrical rotary unit on a transparent conveying means; applying light from said light source section



to said object to detect an actual projection pattern of said object; and analyzing an actual projection spectra forming said actual projection pattern by a computer to recognize the shape of said object.

4,404,685

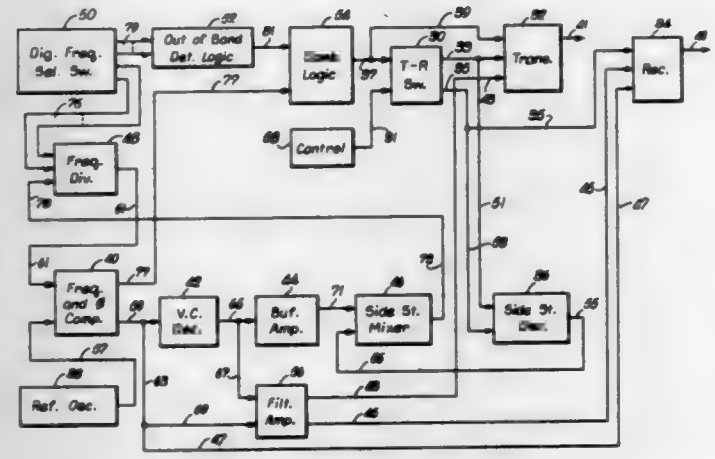
FREQUENCY CONTROL SYSTEM FOR RADIO APPARATUS EMPLOYING FILTER AMPLIFIER OPERATED AT HARMONIC OF FREQUENCY OF SYNTHESIZED SIGNAL SOURCE

Noel A. Rogers, Shawnee Mission, Kans., assignor to Terra Corporation, Albuquerque, N. Mex.

Filed Oct. 26, 1981, Ser. No. 314,717

Int. Cl.³ H04B *1/40*

U.S. Cl. 455—76 7 Claims



1. In radio apparatus having—

radio signal handling means adapted to have a frequency controlling signal applied thereto and operative to transmit or/and receive radio signals of selected frequency determined by and correlated in predetermined manner with the frequency of said frequency controlling signal,

signal comparator means adapted to have a reference frequency signal of predetermined frequency and a comparable frequency signal applied thereto and operative to provide a signal of variable electrical, magnitude determined by and correlated in predetermined manner with the relationship between the frequencies of said reference frequency signal and said comparable frequency signal,

reference signal producing means operative to provide said reference frequency signal and coupled with said comparator means for applying said reference frequency signal to said comparator means,

frequency divider means adapted to have a digitally encoded control signal and a synchronization frequency signal applied thereto, operative to provide said comparable signal with the latter having a frequency equal to the frequency of said synchronization frequency signal divided by a numeric factor determined by said encoded control signal, and coupled with said comparator means

for applying said comparable signal to said comparator means,

frequency selecting means having a plurality of selectable conditions, operative to provide said encoded control signal in accordance with a selected condition of said selecting means, and coupled with said divider means for applying said encoded signal to said divider means,

variable frequency signal producing means adapted to have said variable magnitude signal applied thereto and coupled with said comparator means for that purpose, and operative to provide a tunable frequency signal having a frequency determined by and correlated in predetermined manner with the magnitude of said variable magnitude signal, and

loop path means adapted to have said tunable frequency signal applied thereto and coupled with said variable frequency signal producing means for that purpose, operative to provide said synchronization frequency signal, and coupled with said divider means for applying said synchronization frequency signal to said divider means,

the improvement of which comprises the provision, in combination with the aforesaid, of:

signal processing means, including filter amplifier means having frequency selective tank circuits tuned to a frequency equal to an harmonic of the frequency of said tunable frequency signal, coupled with said variable frequency signal producing means and said comparator means for respectively receiving said tunable frequency signal and said variable magnitude signal to produce said frequency controlling signal with the latter having a frequency equal to an harmonic of said tunable frequency signal, and coupled with said signal handling means for applying said frequency controlling signal to said signal handling means,

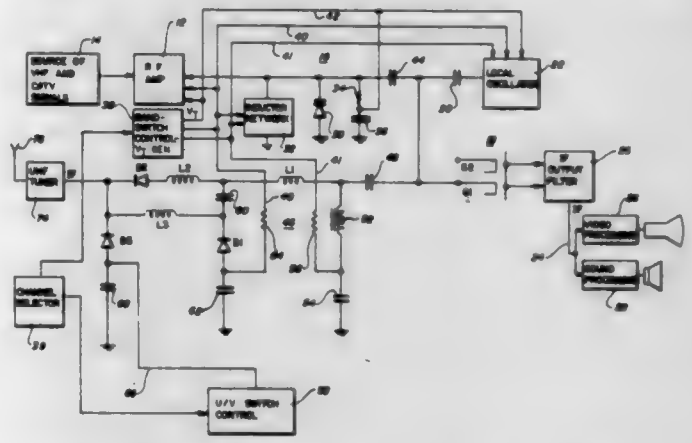
whereby said signal handling means may be operated at a relatively high selected frequency, while said comparator means, said reference signal producing means, said frequency divider means, said variable frequency signal producing means and said loop path means are being operated at substantially lower frequencies.

4,404,686

FOUR BAND VHF VARACTOR TUNER TO COVER EXTENDED CATV BAND UTILIZING TWO SWITCHING DIODES PER RESONANT CIRCUIT

Frederick H. Moon, Mt. Prospect, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Dec. 1, 1980, Ser. No. 211,494
Int. Cl.³ H04B *1/16*
U.S. Cl. 455—191 **4 Claims**



1. In a television receiver tuner operable for tuning a plurality of television signal bands, the improved apparatus comprising:

bandswitch means having a plurality of output conductors for developing a different set of bandswitch control signals defining each of said television signal bands;

a tuned circuit including a first band-switchable inductive network and a varactor diode, said first band-switchable inductive network being responsive to said bandswitch control signals for assuming a different effective inductance for tuning each of said television signal bands;

a mixer transistor having an input electrode;

capacitance means coupled in series between said input electrode and said tuned circuit; and

a second band-switchable inductive network coupled to said input electrode and responsive to said bandswitch control signals for connecting a different value of effective inductance in shunt with said input electrode for each of said television signal bands, each of said different values of inductance of said second inductive network providing, in association with said capacitance means, a resonant frequency below the lowest channel frequency of the corresponding one of said plurality of television signal bands

for matching the impedance coupled to said input electrode with the impedance of said mixer transistor at said input electrode at the low end of the respective television signal band.

DESIGN PATENTS

GRANTED SEP. 13, 1983

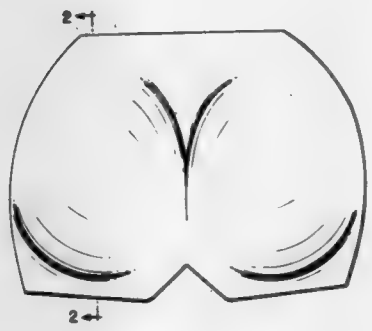
ERRATA

For CLASS	See PATENT NO.
D06–031	270,540
D07–020	270,544

DESIGNS

SEPTEMBER 13, 1983

270,489
FIGURE ENHANCER
Adriana M. Camus, Avenida El Bosque 3583, Santiago, Chile
Filed May 13, 1980, Ser. No. 149,512
Claims priority, application Chile, Dec. 28, 1979, 876
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—1



270,490
BRASSIERE
Rosalie Novitsky, Howard Beach, N.Y., assignor to Consolidated Foods Corporation, Winston-Salem, N.C.
Filed Jul. 9, 1981, Ser. No. 281,580
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24



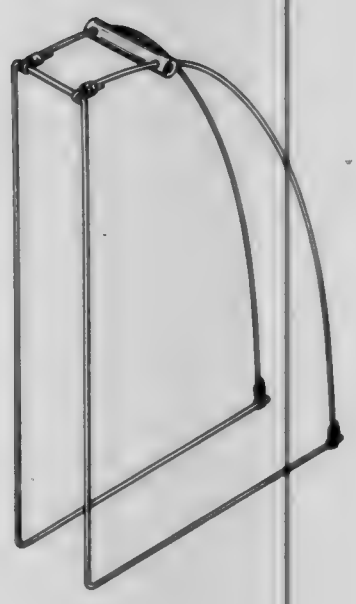
270,491
BRASSIERE
Rosalie Novitsky, Howard Beach, N.Y., assignor to Consolidated Foods Corporation, Winston-Salem, N.C.
Filed Jul. 9, 1981, Ser. No. 281,673
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24





270,492
Patent Not Issued For This Number

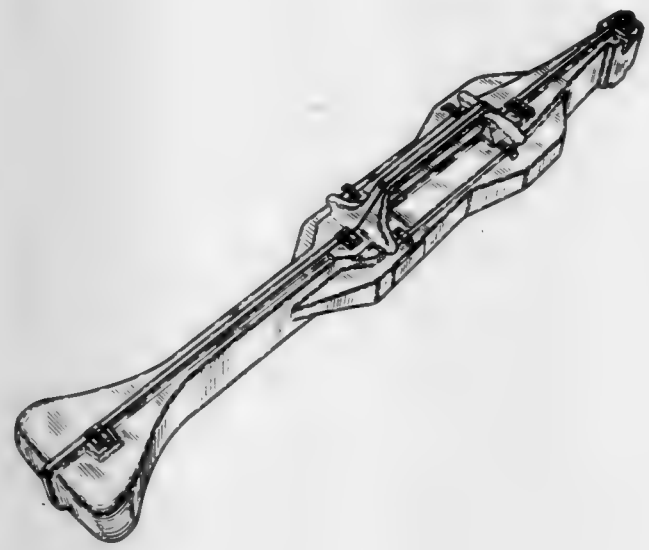
270,493
FIREWOOD CARRIER
Clarence A. Ose, Rte. 1, Box 160, Echo, Minn. 56237
Filed Feb. 2, 1981, Ser. No. 230,424
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—30.1



270,494
VIDEO RECORDER CASE
Andre Koszegi, South Bend, Ind., assignor to Koszegi Leather & Vinyl Products, Inc., S. Bend, Ind.
Filed Mar. 9, 1981, Ser. No. 242,026
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—33



270,495
PORTABLE SKI CARRIER
Michael D. Owings, Lake Oswego, Oreg., assignor to Sun International Ski Products, Inc., Wilsonville, Oreg.
Filed Aug. 6, 1981, Ser. No. 290,428
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—36



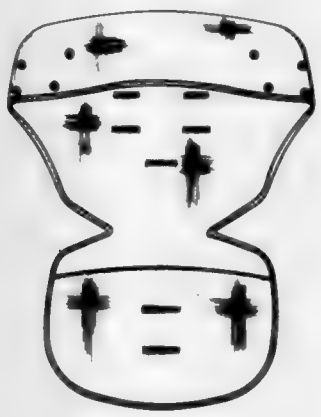
270,496
HANDBAG
Delores M. Hyers, 5417 Cary Street Rd., Richmond, Va. 23226
Continuation-in-part of Ser. No. 122,677, Feb. 19, 1980, Pat. No. Des. 262,587. This application Feb. 27, 1981, Ser. No. 239,149
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—50



270,497
CHAIR OR SIMILAR ARTICLE
Koni Ochsner, Wettingen, Switzerland, assignor to Giroflex-Entwicklungs AG, Koblenz, Switzerland
Filed Mar. 5, 1980, Ser. No. 127,374
Claims priority, application Switzerland, Sep. 10, 1979, DMA000007
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30



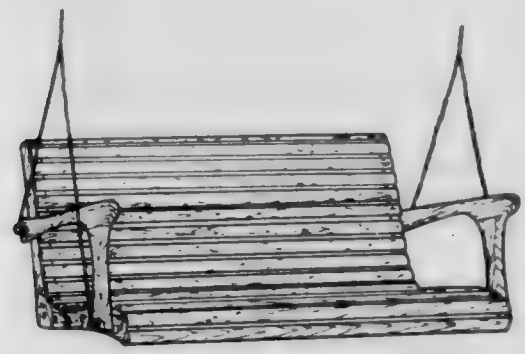
270,498
COVER FOR INFANT CAR SEAT
Bernard R. Schutz, New York, N.Y., assignor to Fine Art Pillow & Specialties Corp., New York, N.Y.
Filed Jun. 10, 1981, Ser. No. 272,318
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—48



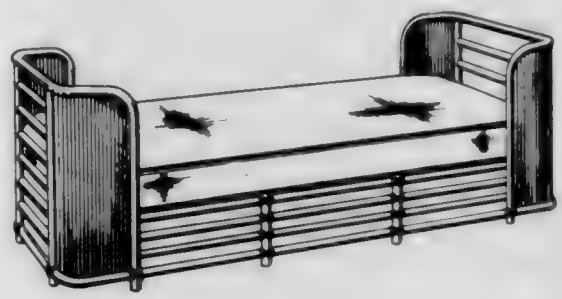
270,499
ROCKING CHAIR
Walter F. Harper, Jr., and Thomas W. Winecoff, both of P.O. Box 147, Eagle Springs, N.C. 27242
Filed Jul. 6, 1981, Ser. No. 280,452
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—49



270,500
SWING
Walter F. Harper, Jr., and Thomas W. Winecoff, both of P.O. Box 147, Eagle Springs, N.C. 27242
Filed Jul. 6, 1981, Ser. No. 280,451
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—54



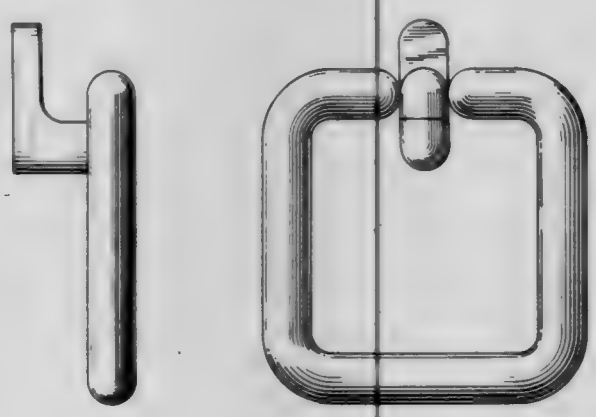
270,501
LOUNGE
Henry Olko, Chicken Valley Rd., Locust Valley, N.Y. 11650
Filed Oct. 23, 1980, Ser. No. 199,859
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57



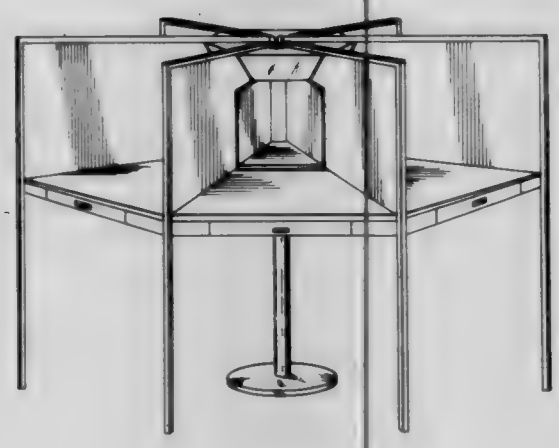
270,502
CHAIR OR THE LIKE
Hector M. Coronado, 2209 Via Cerritos, Palos Verdes Estates, Calif. 90274
Filed Jun. 4, 1981, Ser. No. 270,266
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—75



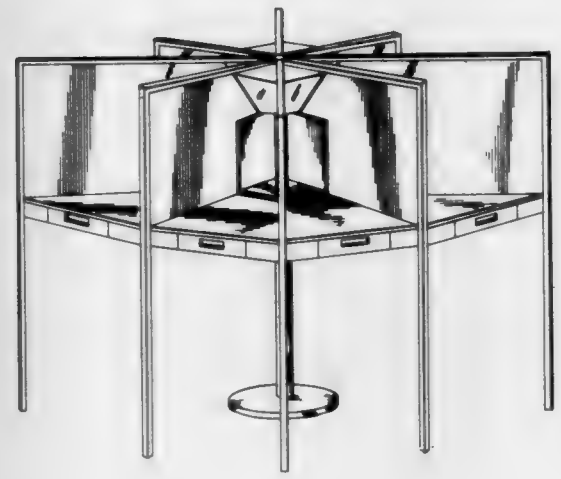
270,503
RING FOR TOWELS
Piet Cohen, Amsterdam, Netherlands, assignor to Materias Plasticas, Limitada, Leiria, Portugal
Filed Nov. 4, 1980, Ser. No. 204,062
Claims priority, application Portugal, May 9, 1980, 15.088
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—99



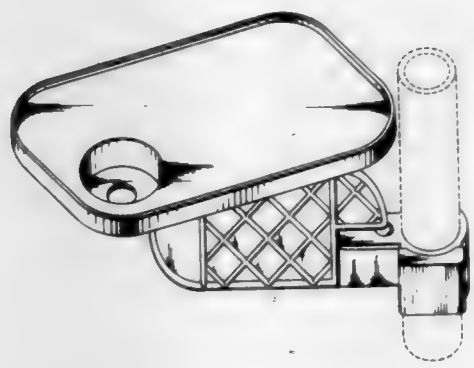
270,504
MULTIPLE DESK UNIT
Devere P. Kent, 5720 S. Jordan Canal Rd., Salt Lake City, Utah 84118
Filed Jul. 28, 1980, Ser. No. 172,890
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—146

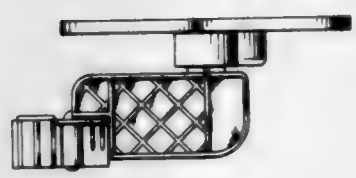


270,505
MULTIPLE DESK UNIT
Devere P. Kent, 5720 S. Jordan Canal Rd., Salt Lake City, Utah 84118
Filed Aug. 1, 1980, Ser. No. 174,382
The portion of the term of this patent subsequent to Sep. 13, 1997, has been disclaimed.
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—146

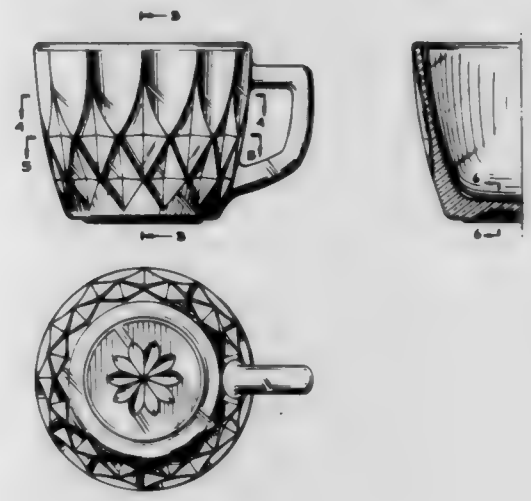


270,506
ROTATABLE TRAY AND SUPPORT
George W. Thorne, 2625 Sea Island, Fort Lauderdale, Fla. 33301
Filed Apr. 13, 1981, Ser. No. 253,792
Term of patent 14 years
Int. Cl. D06—*06*; D07—*99*
U.S. Cl. D6—199

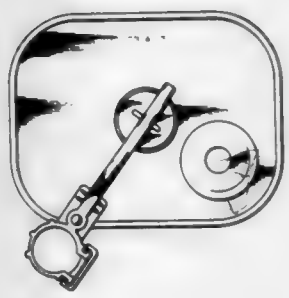


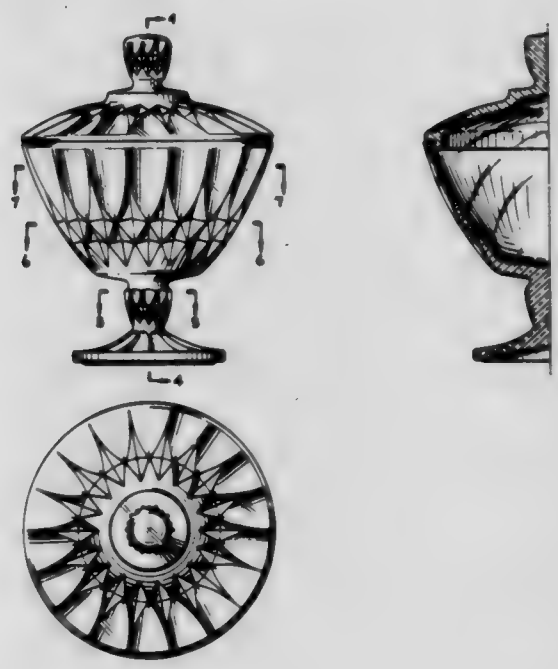


270,507
CUP OR SIMLAR ARTICLE
James L. Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 140,180, Apr. 14, 1980, Pat. No. Des. 267,697. This application Apr. 26, 1982, Ser. No. 371,936
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—9



270,508
COVERED PEDESTAL JAR OR SIMILAR ARTICLE
James L. Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 140,180, Apr. 14, 1980, Pat. No. Des. 267,697. This application May 10, 1982, Ser. No. 376,753
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—17





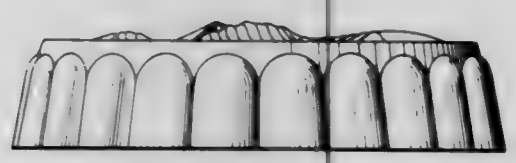
270,509
FOOD MOLD
David W. Miller, Salem, Mass., assignor to Benjamin & Medwin, Inc., New York, N.Y.
Filed Apr. 1, 1981, Ser. No. 249,868
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—43





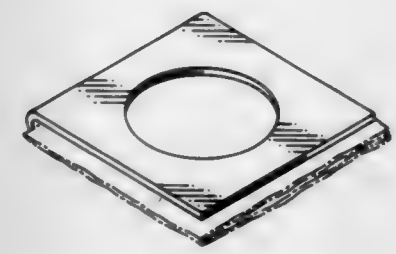
270,510
FOOD MOLD
David W. Miller, Salem, Mass., assignor to Benjamin & Medwin, Inc., New York, N.Y.
Filed Apr. 1, 1981, Ser. No. 249,870
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—44



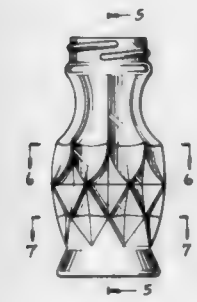


270,511
COASTER
Maxine C. Friedman, Atlanta, Ga., assignor to PCC Enterprises, Inc., Atlanta, Ga.
Filed Nov. 17, 1980, Ser. No. 207,121
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—45

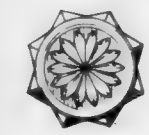




270,512
CONDIMENT SHAKER OR SIMILAR ARTICLE
James L. Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 140,180, Apr. 14, 1980, Pat. No. Des. 267,697. This application May 21, 1982, Ser. No. 380,607
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—54



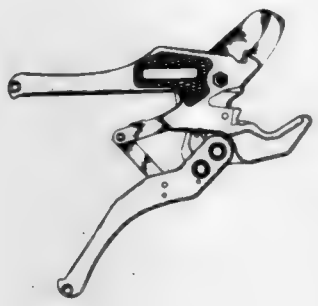




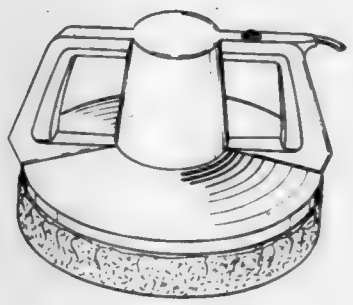
270,513
DISPOSABLE COFFEE FILTER OR THE LIKE
Hans I. Wallsten, Chemin di la Lisiére 6, CH-1018 Lausanne, Switzerland
Filed Aug. 5, 1980, Ser. No. 175,575
Claims priority, application Sweden, Feb. 6, 1980, 80-0261
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—400



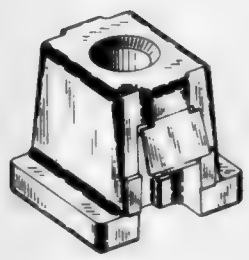
270,514
PIPE CUTTER
Osamu Muromoto, Neyagawa, Japan, assignor to Muromoto Tekko Kabushiki Kaisha, Japan
Filed Oct. 7, 1980, Ser. No. 194,912
Claims priority, application Japan, May 29, 1980, 55-21274
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—60



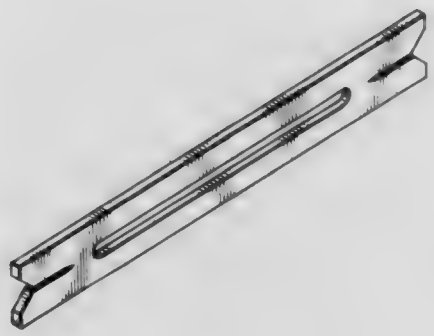
270,515
POLISHER
Jerald V. Dunlap, Pacific Palisades, Calif., assignor to M-D & Co., Mammoth Lakes, Calif.
Filed Aug. 25, 1980, Ser. No. 180,889
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—67



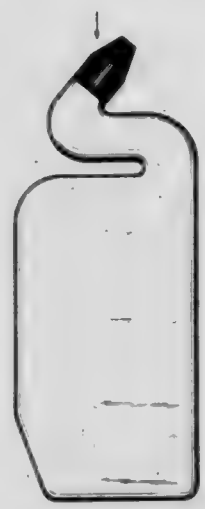
270,516
REVERSE SCREW GROMMET
Jean R. Achille, Forest Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Jan. 2, 1981, Ser. No. 221,957
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—354



270,517
AMBIDEXTROUS OPERATIVE CLAMP FOR DENTAL IMPRESSION TUBES
Paul D. Raskin, 1600 39th St., Sacramento, Calif. 95816
Filed May 4, 1981, Ser. No. 260,058
Term of patent 14 years
Int. Cl. D8—*08;* D24—*99*
U.S. Cl. D8—396



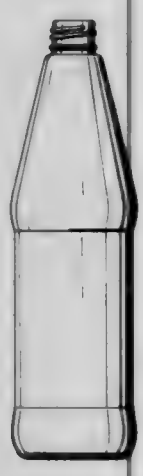
270,518
BOTTLE
Walter Duering, Zurich, Switzerland, assignor to Düring AG, Daellikon, Switzerland
Filed Jul. 31, 1981, Ser. No. 288,986
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—317



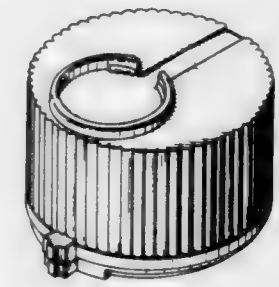
270,519
BOTTLE
John F. Post, 446 Oakdale Rd., Chester, N.J. 07930
Filed Apr. 1, 1981, Ser. No. 249,968
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—341



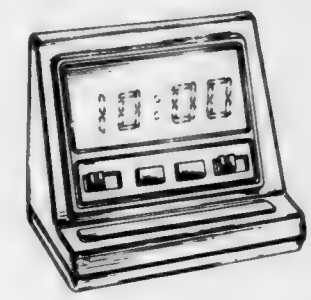
270,520
BOTTLE
Gordon A. Strand, Waterville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Jun. 15, 1981, Ser. No. 273,701
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—349



270,521
CHILD RESISTANT PUSH BUTTON CAP FOR CONTAINERS
Glenn H. Morris, 4203 Highwood Dr., Chattanooga, Tenn. 37415
Continuation-in-part of Ser. No. 169,881, Jul. 17, 1980. This application May 29, 1981, Ser. No. 268,171
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—443



270,522
DIGITAL ALARM CLOCK
William J. Cook, Trumbull, Conn., assignor to Timex Corporation, Waterbury, Conn.
Filed Aug. 28, 1981, Ser. No. 297,373
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



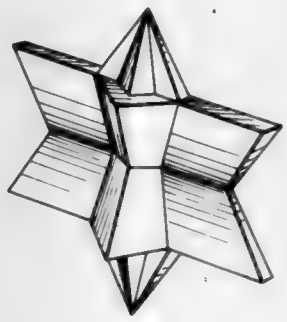
270,523
WALL CLOCK
Dana W. Mox, Elk Grove Village, Ill., assignor to Tricolor Corporation, Las Cruces, N. Mex.
Filed Jul. 28, 1980, Ser. No. 173,681
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—22



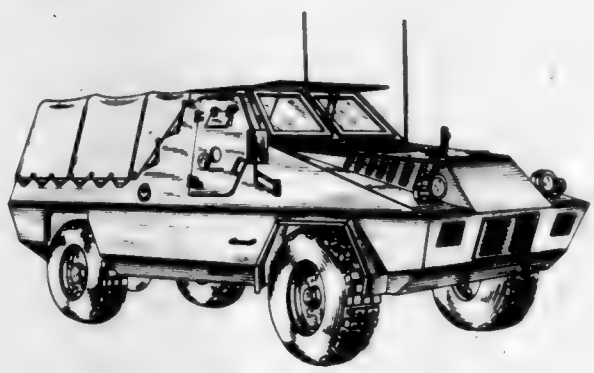
270,524
WEATHER INDICATING INSTRUMENT
Theodore S. Sloane, Palm Beach, Fla., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jun. 8, 1981, Ser. No. 271,423
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—53



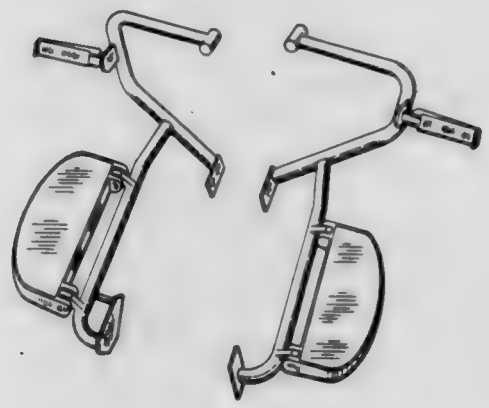
270,525
STAR OF DAVID ORNAMENT
Charles M. Bayusik, 29 Mohawk Dr., Easton, Conn. 06612
Filed Jun. 4, 1981, Ser. No. 270,638
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—125



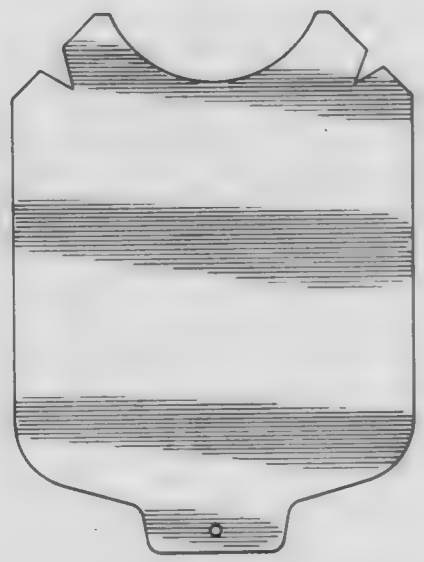
270,526
LIGHT ARMOURED VEHICLE
Paul Legueu, 85 avenue de Mazy, 44380 Pornichet, France
Filed Sep. 25, 1980, Ser. No. 190,838
Claims priority, application France, Apr. 15, 1980, 801247
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D12—12



270,527
PAIR OF COMBINED SAFETY BAR AND FOOT RESTS FOR A MOTOR CYCLE
James O'Rourke, Unit 4, 8131 Keele St., Concord, Ontario, Canada (L4K 1C8)
Filed Aug. 18, 1981, Ser. No. 293,796
Claims priority, application Canada, Mar. 20, 1981, 20-03-81-1
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114

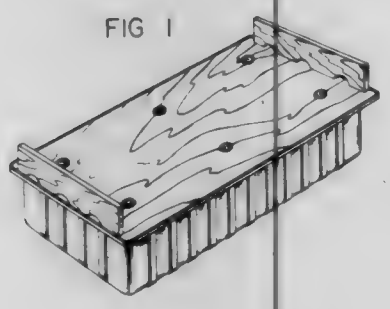


270,528
HOLDER FOR MATERIAL USED IN THE REPAIR OF AUTOMOTIVE VEHICLE BODIES
Thomas N. Bloomquist, Rte. 2, Harris, Minn. 55033
Filed May 26, 1981, Ser. No. 266,751
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155

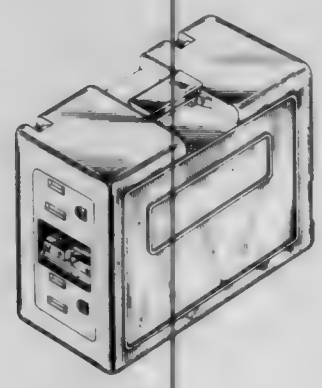


270,529
FLOAT APPARATUS FOR DOCKS AND THE LIKE
Thomas L. Thompson, 1645 Monrovia Ave., Costa Mesa, Calif. 92627
Filed Aug. 22, 1980, Ser. No. 180,498
Term of patent 14 years
Int. Cl. D12—*99*; D21—*99*
U.S. Cl. D12—316

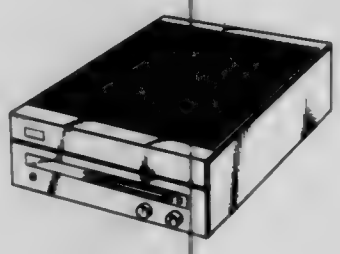
FIG 1



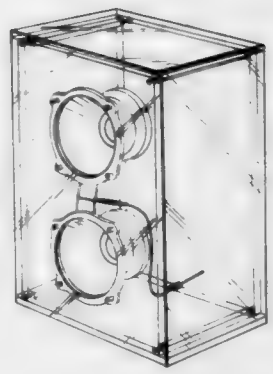
270,530
PORTABLE GROUND FAULT CIRCUIT INTERRUPTER
Wade R. Bowden, Jr., Northport, and George C. Hoehne, Glen Cove, both of N.Y., assignors to Slater Electric Inc., Glen Cove, N.Y.
Filed Mar. 13, 1981, Ser. No. 243,563
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—30



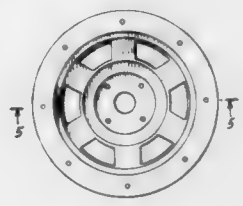
270,531
DECODER FOR A DIGITAL AUDIO DISCS PLAYER
Kenji Ekuan, Tokyo, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan
Filed May 12, 1981, Ser. No. 262,983
Claims priority, application Japan, Nov. 13, 1980, 55-47435
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—1



270,532
SPEAKER CABINET
Lee A. Weinstein, 6333 Calvert St., Philadelphia, Pa. 19149
Filed Aug. 22, 1980, Ser. No. 180,531
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—34



270,533
LOUDSPEAKER BASKET
William Piercy, Wilcox, Ariz., assignor to Tru-Die, Inc., Franklin Park, Ill.
Filed May 11, 1981, Ser. No. 262,438
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—37

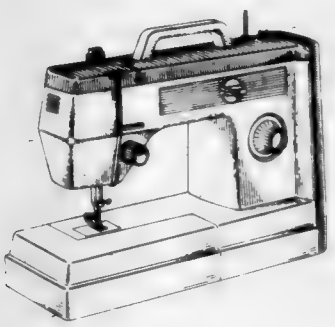


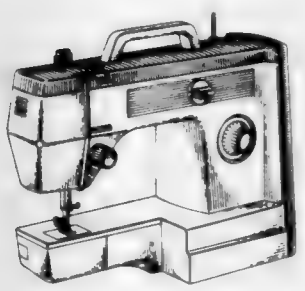


270,534
CORDLESS TELEPHONE
Richard E. Bloem, Sr., Arcadia, Calif., assignor to American Telecommunications Corporation, El Monte, Calif.
Filed Mar. 23, 1981, Ser. No. 246,432
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

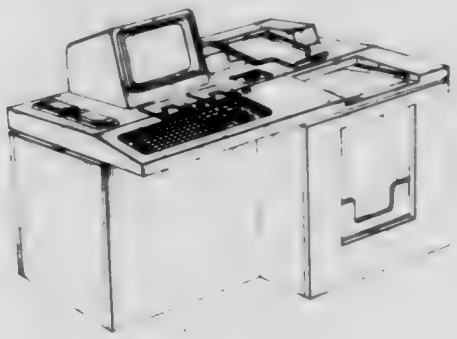


270,535
SEWING MACHINE
Yoshio Katsuzaki, Chita, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Mar. 11, 1981, Ser. No. 242,573
Claims priority, application Japan, Nov. 19, 1980, 55-48418
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—70

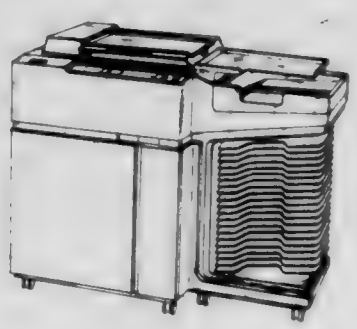




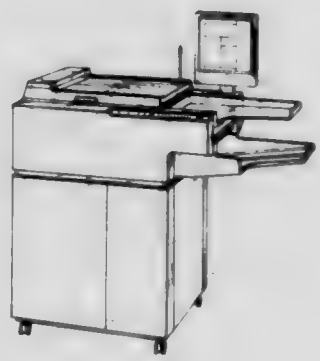
270,536
PICTURE IMAGE MEMORY-SEARCH APPARATUS WITH COPYING FUNCTION
Kunio Hara, Chiba, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Mar. 13, 1981, Ser. No. 243,606
Claims priority, application Japan, Sep. 17, 1980, 55-38065
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—28



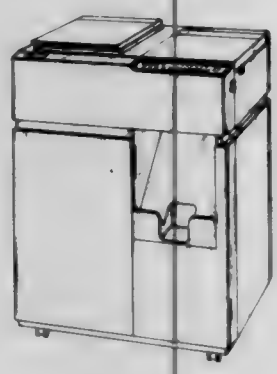
270,537
COMBINED ELECTRONIC COPYING MACHINE AND SORTER
Kunio Hara, Chiba, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Jun. 11, 1981, Ser. No. 272,646
Claims priority, application Japan, Dec. 16, 1980, 55-52233
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—30



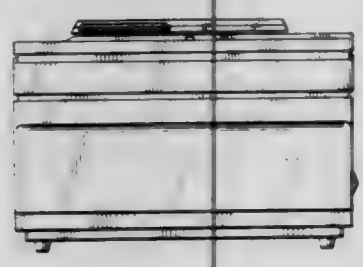
270,538
ELECTRONIC COPYING MACHINE OR THE LIKE
Shigeki Yasutani, Kashiwa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Jun. 16, 1981, Ser. No. 274,077
Claims priority, application Japan, Dec. 25, 1980, 55-53894
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—30



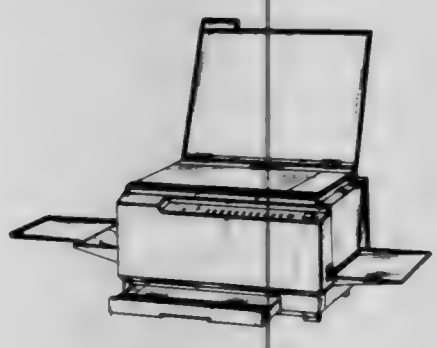
270,539
ELECTRONIC COPYING MACHINE OR THE LIKE
Hideyuki Horie, Kamagaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Jun. 16, 1981, Ser. No. 274,163
Claims priority, application Japan, Dec. 25, 1980, 55-53895
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—30



270,540
ELECTROPHOTOGRAPHIC COPYING MACHINE
Mitsuru Sakurai, Musashino, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 6, 1981, Ser. No. 251,091
Claims priority, application Japan, Oct. 9, 1980, 55-42195
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



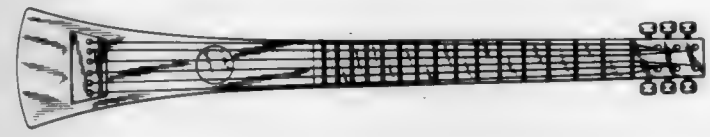
270,541
ELECTRONIC COPYING MACHINE OR THE LIKE
Yozo Matsuzaka, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Jun. 16, 1981, Ser. No. 274,078
Claims priority, application Japan, Dec. 16, 1980, 55-52234
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—31



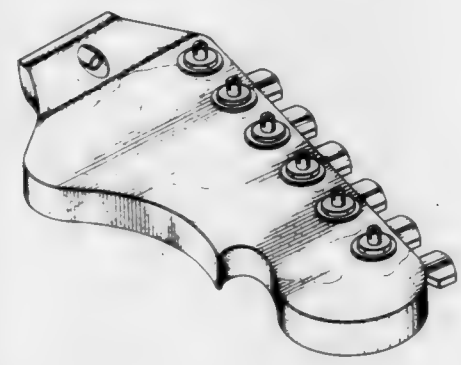
270,542
LENS MASK
Alphonse P. Cinque, 65 Earle Ave., Lynbrook, N.Y. 11563
Filed Jun. 13, 1980, Ser. No. 159,437
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—38



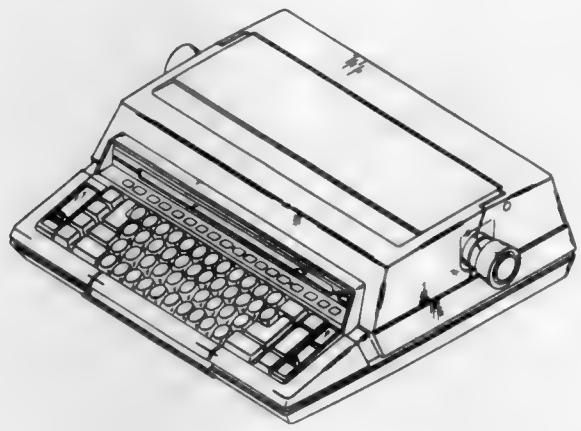
270,543
GUITAR
Robert F. McNally, 11 Longview Rd., Rockaway, N.J. 07866
Filed Jun. 2, 1981, Ser. No. 269,470
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—19



270,544
GUITAR HEAD
C. Leo Fender, 1510 Dana Pl., Fullerton, Calif. 92635
Filed Jun. 5, 1981, Ser. No. 270,908
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20



270,545
TYPEWRITER
Robert S. Metzner, Syracuse, N.Y., assignor to SCM Corporation, New York, N.Y.
Filed Mar. 23, 1981, Ser. No. 246,822
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—1



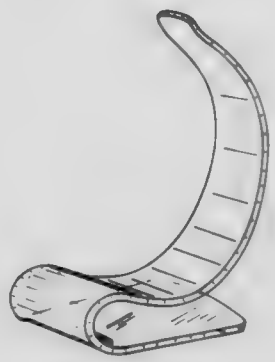
270,546
TRANSACTION IDENTIFICATION CARD
Thor A. H. Malmberg, Stockholm, Sweden, assignor to AB ID-Kort, Solna, Sweden
Filed Mar. 10, 1981, Ser. No. 242,235
Term of patent 14 years
Int. Cl. D19—*05*
U.S. Cl. D19—10



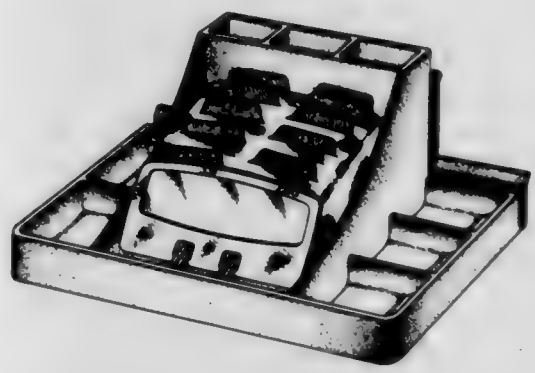
270,547
PEN
Harold F. Bajusz, Butler, N.J., assignor to Accutec, Inc., Wallington, N.J.
Filed Dec. 12, 1980, Ser. No. 215,865
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—51



270,548
SUPPORT STAND FOR A GLOBE
Alf Rimer, Herlev, Denmark, assignor to Scan-Globe A/S, Havdrup, Denmark
Filed Mar. 31, 1981, Ser. No. 249,591
Claims priority, application Denmark, Oct. 17, 1980, 860/80
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—61



270,549
COMBINED TELEPHONE LIST FINDER AND DESK TRAY
Robert W. Burton, Franklin Lakes; Joseph C. Crowley, Jr., Summit; Richard A. Davi, Glenwood, all of N.J., and Albrecht Goertz, New York, N.Y., assignors to Rolodex Corporation, Secaucus, N.J.
Filed Oct. 5, 1981, Ser. No. 308,481
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76



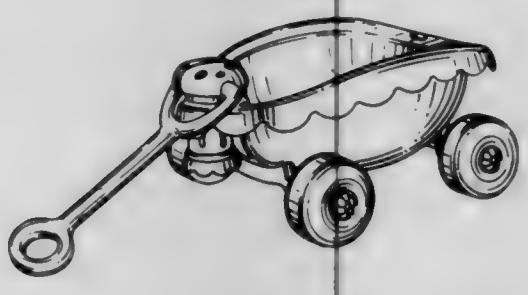
270,550
VEHICLE TOP SUPPORT FOR THREE-WAY SIGN DISPLAY
Charles S. Sax, 4061 SW. Flower, Portland, Oreg. 97221
Filed Mar. 16, 1981, Ser. No. 243,880
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—43



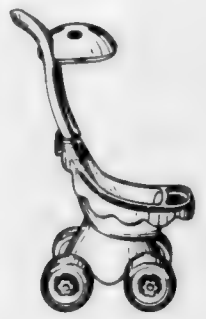
270,551
GAME CARD HOLDER
Lyman Thayer, Greenwood, S.C., assignor to Phil Kemp, Greenwood, S.C., a part interest
Filed May 22, 1981, Ser. No. 266,160
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—54



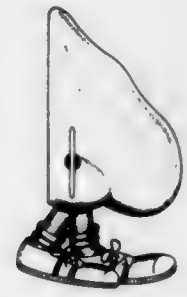
270,552
TOY WAGON
Eugene J. Echterling, 22740 Macfarlane Dr., Woodland Hills, Calif. 91364
Filed May 26, 1981, Ser. No. 267,266
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—76



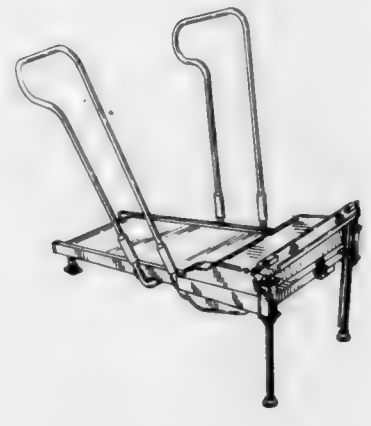
270,553
TOY STROLLER
Eugene J. Echterling, 22740 Macfarlane Dr., Woodland Hills, Calif. 91364
Filed May 26, 1981, Ser. No. 267,262
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—134



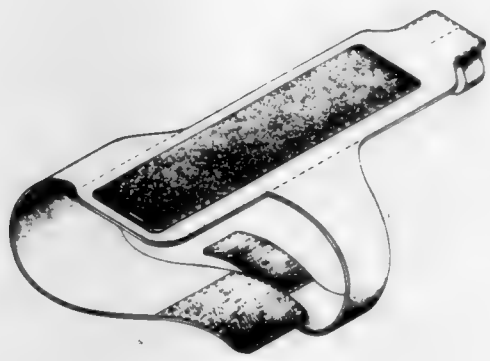
270,554
ACTION TOY NOSE
Glenn Messina, 19 Sylvia La., Plainview, N.Y. 11803
Filed Apr. 27, 1981, Ser. No. 257,766
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—190



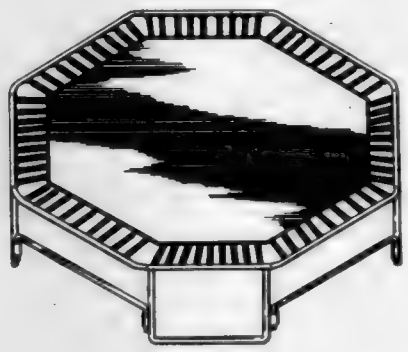
270,555
EXERCISE TREADMILL
Ralph Ogden, 1304 Fisher St., Munster, Ind. 46321
Filed Nov. 16, 1981, Ser. No. 321,466
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—192



270,556
SPORTS WRIST BRACE
Rick A. Kneisley, 1310 Chestnut Ridge, Humble, Tex. 77339
Filed May 18, 1981, Ser. No. 265,028
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—233



270,557
TRAMPOLINE
Johnie E. Williams, P.O. Box 788, Fayetteville, Ga. 30214
Filed May 5, 1981, Ser. No. 260,799
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—235



270,558
TEETER-TOTTER
Stanley D. Fuller, P.O. Box 71, Shiocton, Wis. 54170
Filed Oct. 5, 1981, Ser. No. 305,021
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—251



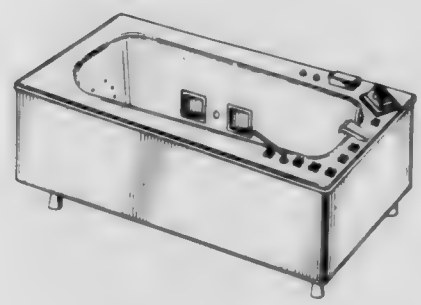
270,559
SPRAY HEAD
Franco Clivio, and Dieter Raffler, both of Ulm, Fed. Rep. of Germany, assignors to GARDENA Kress & Kastner GmbH, Fed. Rep. of Germany
Filed Jan. 30, 1981, Ser. No. 230,147
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1980, GRAIII1244/80
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



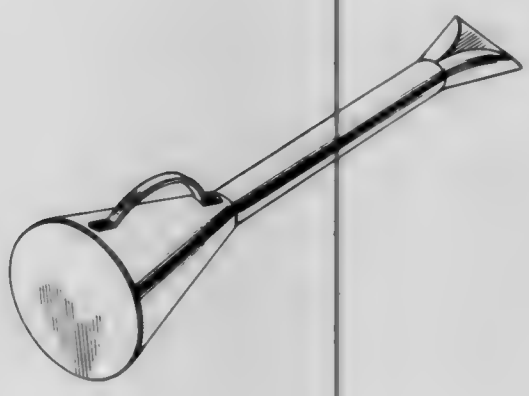
270,560
SPRAYER
Franco Clivio, and Dieter Raffler, both of Ulm, Fed. Rep. of Germany, assignors to GARDENA Kress + Kastner GmbH, Fed. Rep. of Germany
Filed Jan. 30, 1981, Ser. No. 230,149
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1980, 1244/80
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



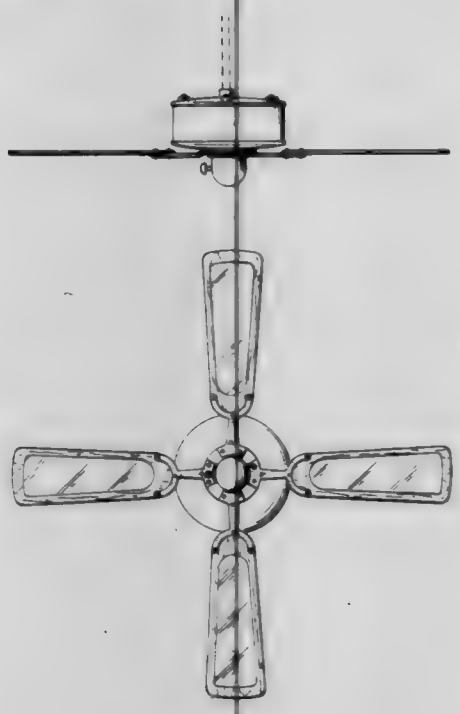
270,561
BATH TUB
Jean-Michel Brossier, 3081 Motor Ave., Los Angeles, Calif. 90064
Filed Sep. 29, 1980, Ser. No. 192,092
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



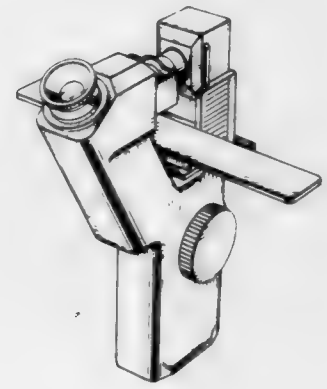
270,562
SHOVEL
Boyd D. Skeen, Rte. 5, Box 112, Asheboro, N.C. 27203
Filed Jan. 8, 1981, Ser. No. 223,278
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D23—138.2



270,563
COMBINED CEILING FAN AND LIGHT
Todd L. Phillips, Huntington Station, N.Y., assignor to Quoizel, Inc., Hauppauge, N.Y.
Filed Apr. 27, 1980, Ser. No. 257,957
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—158

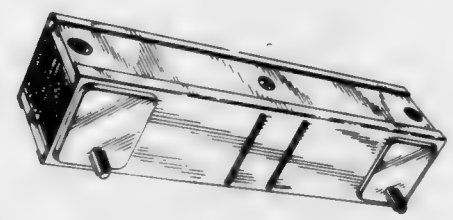


270,564
LENS METER
Takeshi Machida, Sakado, and Hiroshi Koyama, Otone, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 16, 1980, Ser. No. 169,247
Claims priority, application Japan, Apr. 30, 1980, 55-17214
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1.1

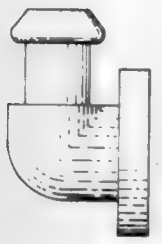


270,565
HAEMODIALYZER OR THE LIKE
Robert Benattar, Lyons, and Michel Cronenberger, Chassagny, both of France, assignors to Hospal-Sodip SA, Meyzieu, France
Filed Jan. 16, 1981, Ser. No. 225,859
Claims priority, application Benelux, Jul. 21, 1980, 70.521
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—21

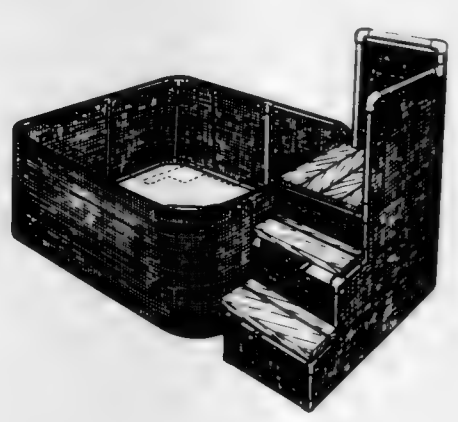




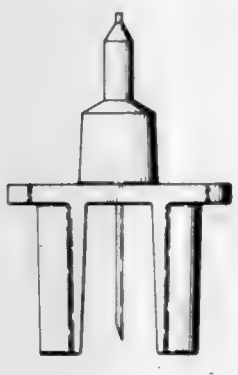
270,566
TUBE COUPLER FOR A HEARING AID EAR MOLD
Harry Bennett, 3544 N. Mariposa, Fresno, Calif. 93726
Filed Oct. 21, 1980, Ser. No. 199,318
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—35



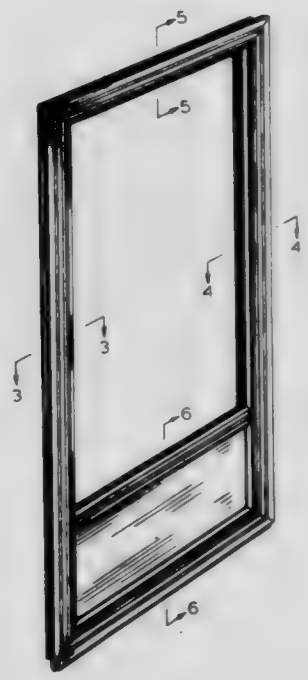
270,567
DECK SKIRTING FOR PORTABLE SPA
Michael L. Conlin, Merced, Calif., assignor to Conlin Hot Tubs/Spas, Crockett, Calif.
Filed May 22, 1981, Ser. No. 266,026
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—38



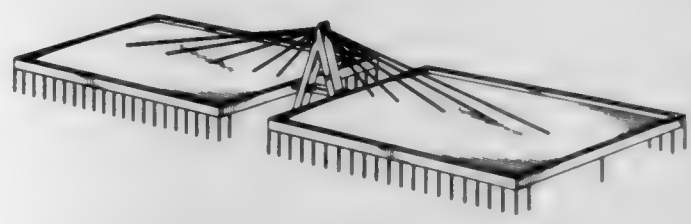
270,568
ADAPTER FOR MAKING CONNECTION INTO A CONTAINER THROUGH A PIERCEABLE TOP
Lee C. Armstrong, 2486 Baxter Rd. S.W., Atlanta, Ga.
Filed Jul. 1, 1980, Ser. No. 164,927
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—52



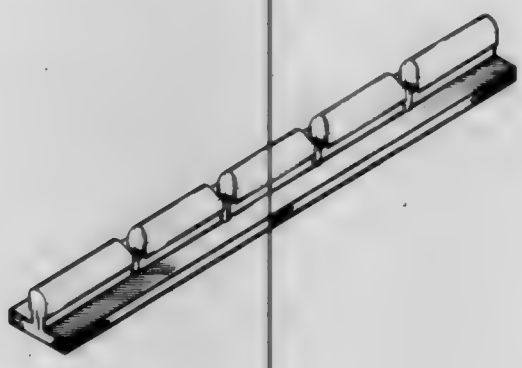
270,569
DOOR STRUCTURE
Ernesto Cascone, 279 Cocksfield Ave., Downsview, Ontario, Canada (M3H 3T8), and Vincent Cascone, 36 Mayvern Crescent, Richmond Hill, Ontario, Canada (L4C 5J4)
Filed Apr. 7, 1981, Ser. No. 251,991
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—48



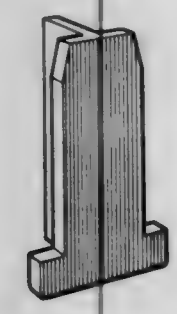
270,570
DUAL UNIT CABLE STAY BUILDING
Adam T. Schildge, Jr., 899 Green St., San Francisco, Calif. 94133
Filed Jun. 15, 1981, Ser. No. 272,672
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—56



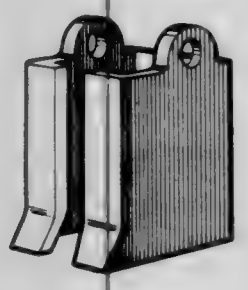
270,571
SPLICE ELEMENT FOR A LADDER SAFETY RAIL
Gary W. Havener, Mineral Wells, Tex., assignor to DHV, Inc., Mineral Wells, Tex.
Filed Jun. 8, 1981, Ser. No. 271,517
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—68



270,572
SCAFFOLD ANCHORAGE LUG
Allan N. Black, Cronulla, Australia, assignor to Guest Keen & Nettlefolds (Aust) Limited, Melbourne, Australia
Filed Aug. 20, 1981, Ser. No. 294,455
Claims priority, application United Kingdom, Mar. 7, 1981, 999279
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—68



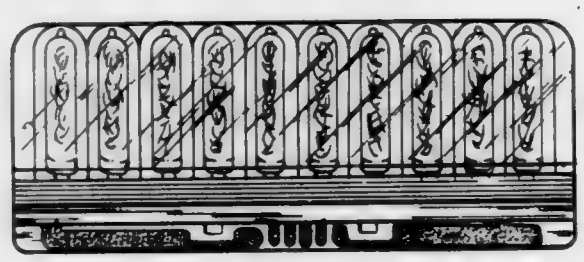
270,573
SCAFFOLD BRACE ANCHORAGE SOCKET
Allan N. Black, Cronulla, Australia, assignor to Guest Keen & Nettlefolds (Aust) Limited, Melbourne, Australia
Filed Aug. 20, 1981, Ser. No. 294,456
Claims priority, application United Kingdom, Mar. 7, 1981, 999278
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—68



270,574
SCAFFOLD SPRING WEDGE
Allan N. Black, Cronulla, Australia, assignor to Guest Keen & Nettlefolds (Aust) Limited, Melbourne, Australia
Filed Aug. 20, 1981, Ser. No. 294,457
Claims priority, application United Kingdom, Mar. 7, 1981, 999277
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—68



270,575
MULTILAMP PHOTOFLASH UNIT
David R. Broadt, Lewisburg, Pa., and Emery G. Audesse, Beverly, Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Aug. 27, 1980, Ser. No. 181,939
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—2



270,576
ELECTRONIC FLASHING PASTIE
Larry E. Thompson, 3505 Rochelle Rd., Irving, Tex. 75062
Filed Mar. 4, 1981, Ser. No. 240,589
Term of patent 14 years
Int. Cl. D10—*06;* D26—*02*
U.S. Cl. D26—39

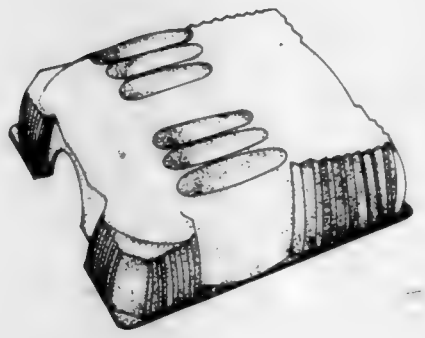




270,577
LUMINAIRE REFLECTOR

Hendrik A. J. DeVos, Swansea, Mass., and Ronald L. Sitzema, Jr., Ellsworth, Mich., assignors to GTE Products Corporation, Stamford, Conn.

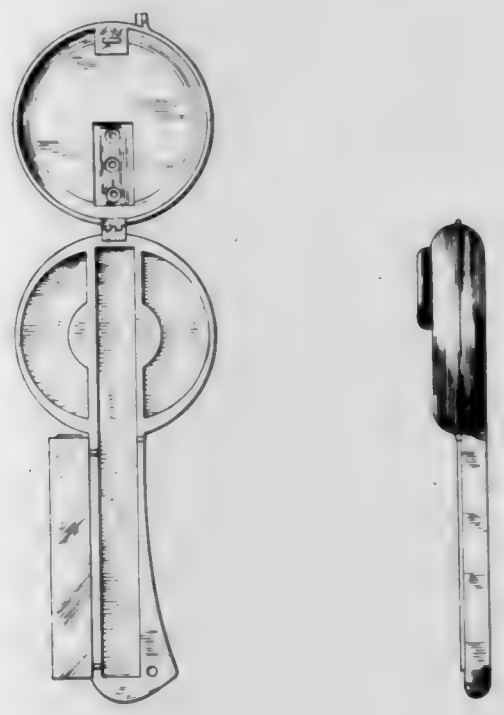
Filed Mar. 4, 1981, Ser. No. 240,344
Term of patent 14 years
Int. Cl. D26—*65*
U.S. Cl. D26—118



270,578
COMPACT

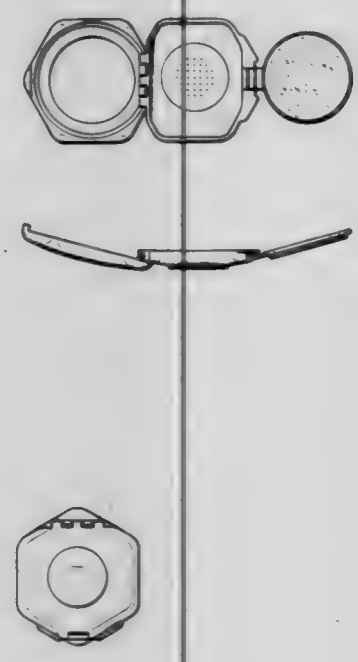
Leroy Washington, Jr., 1793 Regency Dr., Sierra Vista, Ariz. 85635

Filed Jul. 13, 1981, Ser. No. 283,076
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—78

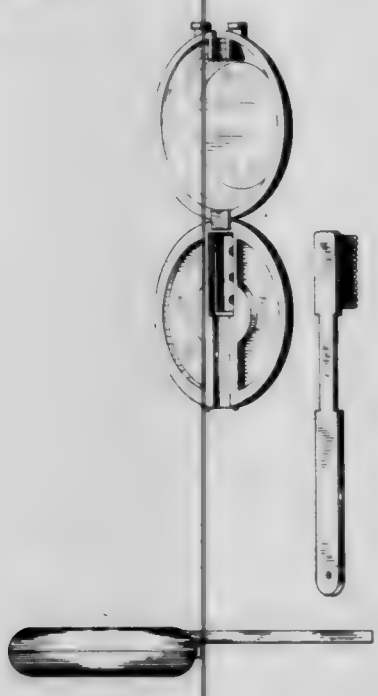




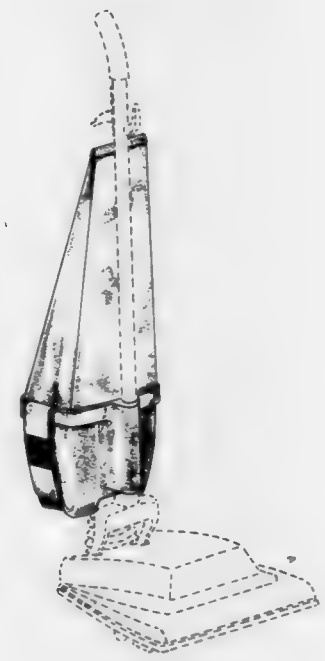
270,579
MAKEUP COMPACT
Jody L. Numbers, Scottsdale, Ariz., and Eva K. Hain, Los Angeles, Calif., assignors to RFA Corp., Beverly Hills, Calif.
Filed Jan. 28, 1982, Ser. No. 343,517
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—78



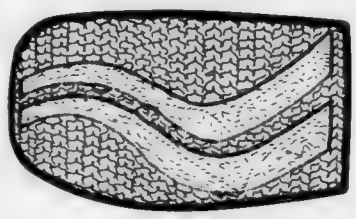
270,580
COMPACT
Leroy Washington, Jr., 1793 Regency Dr., Sierra Vista, Ariz. 85635
Filed Jul. 13, 1981, Ser. No. 283,074
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—82



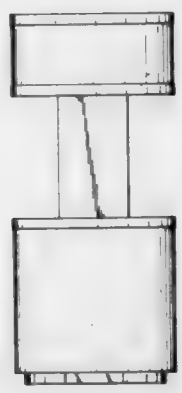
270,581
DIRT CUP UNIT FOR A VACUUM CLEANER OR THE LIKE
Richard A. Wareham, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Oct. 8, 1980, Ser. No. 195,231
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—31



270,582
CARPET CLEANING MIT
Joseph A. Pietrocola, 777 Cherry St., New Milford, N.J. 07646
Filed Aug. 6, 1981, Ser. No. 290,777
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—40



270,583
KIOSK FOR AUTOMATIC BANKING OR THE LIKE
Randall L. Elliott, and James A. Pickel, both of Oklahoma City, Okla., assignors to Liberty National Bank & Trust Co., Oklahoma City, Okla.
Filed Aug. 28, 1981, Ser. No. 297,145
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D99—28



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF SEPTEMBER, 1983

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See—*
Tokar, Thomas, 4,403,661, Cl. 169-38.000.

AB Volvo Penta: *See—*
Pichl, Heinz, 4,403,969, Cl. 440-56.000.

Abdullaev, Gasan M. B. O.; Maxudov, Faramaz G. O.; Kasimov, Dzhangir A. K. O.; Mamedov, Bakhtiyar M. R. O.; Aliev, Gabil G.; Gadzhiev, Yashar A. O.; Shakhmamedov, Rovshan I. O.; and Iljushin, Alexei A. Flexible pipe. 4,403,631, Cl. 138-130.000.

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Abe, Hisao: *See—*
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Abolins, Visvaldis; Goossens, John C.; Holub, Fred F.; and Lee, Gim F., Jr., to General Electric Company. Compositions comprising copolymers of a vinyl aromatic compound and an unsaturated cyclic anhydride and impact improvers. 4,404,321, Cl. 525-68.000.

Acoustiquide Corporation: *See—*
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Adachi, Shoichi, to N.C.A. Co., Ltd. Cloth-cutting machine. 4,403,416, Cl. 30-273.000.

Adam, Fedor Y.: *See—*
Nudelman, Boris I.; Chepkalenko, Mikhail G.; Gasanova, Alevtina A.; Galimova, Guzal A.; Khaichkis, Roza; Uraev, Ravkhat E.; Tashpulatov, Turgun K.; Butaev, Erkin M.; Adam, Fedor Y.; Kevvai, Arnold A.; Bodyagina, Rashida G.; Ibragimov, Sunnat I.; and Fedorov, Alexandr P., 4,404,032, Cl. 106-100.000.

Adams, James B., Jr., to Otis Engineering Corporation. Locking mandrel having dogs for latching to a landing nipple and lugs for latching to an operator reciprocal in the landing nipple. 4,403,657, Cl. 166-322.000.

Adams, John R.; Gelbein, Abraham P.; Hansen, Robert; Peress, Jimmy Y.; and Sherwin, Martin B., to Polysar International S.A. Isomerization. 4,404,416, Cl. 585-671.000.

Adams, John R.; Gelbein, Abraham P.; Hansen, Robert; Peress, Jimmy Y.; and Sherwin, Martin B., to Polysar International S.A. Isomerization. 4,404,417, Cl. 585-671.000.

Adeka Argus Chemical Co., Ltd.: *See—*
Kubota, Naohiro; Shibata, Toshihiro; and Arata, Ryozo, 4,404,301, Cl. 524-99.000.

Advanced Mechanical Technology, Inc.: *See—*
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Osegowitsch, Viktor; Sperber, Werner; and Viehrig, Wolfgang, 4,403,846, Cl. 354-310.000.
Rapp, Heinz, 4,403,370, Cl. 15-308.000.
von Stein, Werner; and Fergg, Berthold, 4,403,854, Cl. 355-41.000.

Agfa-Gevaert Aktiengesellschaft: *See—*
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Agfa-Gevaert N.V.: *See—*
Buelens, Edward; and Goossens, Carolus C., 4,403,845, Cl. 354-275.000.

Aidar, Fernando H., to Eucatex S.A. Industria e Comercio. Drawer for furniture. 4,403,817, Cl. 312-330.00R.

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Daniel, Chelliah, 4,404,397, Cl. 562-546.000.
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Iwasaki, Shinichiro, 4,403,515, Cl. 73-862.380.
Mori, Kojiro, 4,404,538, Cl. 337-336.000.

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Harada, Kuniyoshi; and Fujie, Naofumi, 4,404,632, Cl. 364-425.000.
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Woo, Savio L-Y.; Akeson, Wayne H.; and Page, Dan L., 4,403,607, Cl. 128-92.00D.

Akita, Sigeyuki: *See—*
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Akiyama, Iwao: *See—*
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Akzona Incorporated: *See—*
Patton, George A., 4,403,411, Cl. 29-879.000.
Zengel, Hans G.; and Bergfeld, Manfred, 4,404,401, Cl. 564-416.000.

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Rivelles Sabater, Maria D.; Alcala Perales, Maria T.; Manes Uso, Carmen; and Calabuig Sanchis, Maria A., 4,403,637, Cl. 150-12.000.

Alco Standard Corporation: *See—*
Lesher, M. Kenneth, 4,403,448, Cl. 49-225.000.

Aliev, Gabil G.: *See—*
Abdullaev, Gasan M. B. O.; Maxudov, Faramaz G. O.; Kasimov, Dzhangir A. K. O.; Mamedov, Bakhtiyar M. R. O.; Aliev, Gabil G.; Gadzhiev, Yashar A. O.; Shakhmamedov, Rovshan I. O.; and Iljushin, Alexei A., 4,403,631, Cl. 138-130.000.

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Allison, Clifford, Jr.: *See—*
Gurney, John W.; Guerci, James N.; and Allison, Clifford, Jr., 4,404,565, Cl. 343-881.000.

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Alps Electric Co., Ltd.: *See—*
Ohba, Hiroki, 4,404,436, Cl. 200-153.00J.
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Altshuler, Boris N.: *See—*
Rozenfeld, Iosif L.; Brusnikina, Vera M.; Frolova, Larisa V.; Lyashenko, Alevtina A.; Sokolov, Jury V.; Bocharov, Boris V.; Fokin, Alexandr V.; Legezin, Nikolai E.; Dergobuzova, Ekaterina V.; Altshuler, Boris N.; Zelenaya, Saida A.; and Korobova, Emma S., 4,404,167, Cl. 422-12.000.

Alvarado-Urbina, Gabriel G.; and Ogilvie, Kelvin K. Lyophilized phosphorylated nucleosides. 4,404,368, Cl. 536-27.000.

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Boothe, James H.; and Ross, Adma S., 4,404,376, Cl. 544-27.000.
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American Standard Inc.: *See*—
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Weber, Robert N., 4,403,819, Cl. 339-75.0MP.
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McCullough, John E., 4,403,494, Cl. 72-360.000.

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Kawata, Hiroitsu; Aruga, Masayoshi; Ohmura, Tadayoshi; Sonobe, Takashi; Yoneya, Satoru; and Sone, Chiharu, 4,404,183, Cl. 424-19.000.

Asano, Kiyomitsu; Kondo, Toshikatsu; Jozuka, Masao; and Sakaida, Atsuo, to Brother Kogyo Kabushiki Kaisha; and Nippon Telecommunication Engineering Company. Armature support device of a print head. 4,403,875, Cl. 400-124.000.

Asano, Shuichi, to Nippon Seiko Kabushiki Kaisha. Device for locking webbing for the seat belt of an automotive vehicle. 4,403,751, Cl. 242-107.200.

Asano, Yuzo: *See*—
Abe, Hideki; Yamaguchi, Kiyomi; and Asano, Yuzo, 4,404,071, Cl. 204-108.000.

ASARCO Incorporated: *See*—
Di Martini, Carl R.; and Casteras, John E., 4,404,026, Cl. 75-63.000.

Asato, Goro, to American Cyanamid Company. Alkanesulfonanilide derivatives and pharmaceutically acceptable acid addition salts thereof for increasing the growth rate and/or improving the lean meat to fat ratio of warm blooded animals. 4,404,224, Cl. 424-321.000.

Asdigian, George, to UOP Inc. Mercaptan extraction process with recycled alkaline solution. 4,404,098, Cl. 208-235.000.

Asea Aktiebolag: *See*—
Lofgren, Folke; and Soderstrom, Sven-Erik, 4,403,862, Cl. 356-437.000.

Ash, Stephen R.; and Loeb, Marvin P., to Biotek, Inc. System for demand-based adminstration of insulin. 4,403,984, Cl. 604-50.000.

Association pour la Recherche et le Development des Methodes et Processus Industriels (Armines): *See*—
Thevenot, Francois H. J.; Goeuriot, Patrice M. V.; Driver, Julian H.; and Lebrun, Jean-Paul R., 4,404,045, Cl. 148-31.500.

Asta, Ltd.: *See*—
Gotman, Alexander, 4,404,453, Cl. 219-121.0LD.

Astier, Jean-Francois; and Bessaguet, Louis, to Legrand. Transmission device and machine tool comprising same. 4,404,449, Cl. 219-69.00V.

Astral Industries, Inc.: *See*—
Hazelett, David A.; Shaw, Charles B.; and McCombs, Paul W., 4,403,380, Cl. 27-12.000.

Atari, Inc.: *See*—
Albaugh, Michael E., 4,404,629, Cl. 364-200.000.

Ateliers de la Motobecane S.A.: *See*—
Jaulmes, Christian, 4,403,672, Cl. 180-205.000.

Ateliers des Charmilles S.A.: *See*—
Bommeli, M. Bernard, 4,404,448, Cl. 219-69.00G.

Atkinson, Michael L., to Ball Corporation. Method for necking thin wall metallic containers. 4,403,493, Cl. 72-356.000.

Atlantic Richfield Company: *See*—
Bi, Le-Khac; Dillon, Mary E.; and Sharik, Clyde, 4,404,111, Cl. 252-8.55D.
Hurlbut, Roy B., 4,403,459, Cl. 52-103.000.

Audeh, Costandi A.; and Yan, Tsoung-Yuan, to Mobil Oil Corporation. Delayed coking process. 4,404,092, Cl. 208-131.000.

Aulhorn, Elfriede; Kocher, Jakob; and Reiner, Josef, to Oculus Optikgeraete GmbH. Apparatus for testing twilight vision and blinding sensitivity. 4,403,842, Cl. 351-237.000.

Austin, Eric P., to Simon-Hartley Limited. Sludge thickening. 4,404,099, Cl. 210-205.000.

Autoflug GmbH: *See*—
Palloks, Armin, 4,403,376, Cl. 24-205.170.

Automatisme et Technique: *See*—
Goutard, Rene-Michel; and Piry, Pierre, 4,403,461, Cl. 53-282.000.

Automotive Products Limited: *See*—
Norris, Peter J.; Parker, Frederick J.; and Windsor, Harry M., 4,403,682, Cl. 192-0.033.

Avco Corporation: *See—*
Pekari, Frederick J.; and Johnson, Robert E., 4,403,912, Cl. 415-150.000.

Ayers, Scott D.: *See—*
Clark, Frederic L.; and Ayers, Scott D., 4,404,566, Cl. 346-1.100.

B. F. Goodrich Company, The: *See—*
Bush, Charles N.; and Doyle, Thomas J., 4,404,339, Cl. 526-88.000.
Chang, Daniel M., 4,404,326, Cl. 525-223.000.
Masler, William F., III, 4,404,309, Cl. 524-379.000.

Baba, Akira: *See—*
Okiura, Kunio; Akiyama, Iwao; Terada, Hiroshi; Arikawa, Yoshijiro; Baba, Akira; and Morita, Shigeki, 4,403,941, Cl. 431-10.000.

Babb, Larry F., to Emerson Electric Co. Cable connector. 4,403,885, Cl. 403-317.000.

Babbitt, Gerald J.; and Kasap, Ahmet. Sinus evacuator apparatus. 4,403,611, Cl. 604-73.000.

Babcock-Hitachi, Ltd.: *See—*
Okiura, Kunio; Akiyama, Iwao; Terada, Hiroshi; Arikawa, Yoshijiro; Baba, Akira; and Morita, Shigeki, 4,403,941, Cl. 431-10.000.

Babler, Fridolin, to Ciba-Geigy Corporation. Novel modification of perylenetetracarboxylic acid-bis-(3,5-dimethylphenyl)imide. 4,404,385, Cl. 546-37.000.

Babler, Fridolin, to Ciba-Geigy Corporation. Process for the preparation of opaque perylenetetracarboxylic acid bis-(3,5-dimethylphenylimide). 4,404,386, Cl. 546-37.000.

Bach, Erik; and Ryaa, Jan, to Interlego A.G. Track assembly for toy trains. 4,403,733, Cl. 238-10.00E.

Bachner, George L., to Nimco Corporation. Method and device for closing and sealing gable shaped folding cartons. 4,403,465, Cl. 53-477.000.

Bachschmid, Fritz: *See—*
Gebauer, Gerhard; and Bachschmid, Fritz, 4,403,924, Cl. 417-388.000.

Bachtel, Robert W.; and Cash, Dennis R., to Chevron Research Company. Three-stage hydrocracking process. 4,404,088, Cl. 208-59.000.

Baddour, Raymond F.: *See—*
Anand, Madhu; Baddour, Raymond F.; and Cohen, Robert E., 4,404,256, Cl. 428-409.000.

Bader, Hans. Shut-down apparatus for diesel engines. 4,403,580, Cl. 123-198.0DB.

Bailey, Ben J.: *See—*
Bailey, Roy E.; and Bailey, Ben J., 4,403,531, Cl. 81-483.000.

Bailey, Ernst C.; Vickers, William E.; and Stain, Donald B., to UNC Recovery Corporation. Apparatus for contacting substantially immiscible liquids. 4,404,173, Cl. 422-257.000.

Bailey, Roy E.; and Bailey, Ben J. Preset torque wrench. 4,403,531, Cl. 81-483.000.

Baird, William C., Jr.: *See—*
Eberly, Paul E., Jr.; and Baird, William C., Jr., 4,404,094, Cl. 208-139.000.

Baker, Alan C.; Shiovitz, Nathan N.; and Whiting, George E., to Brunswick Corporation. Release and alignment mechanism for jet-propelled projectiles. 4,403,435, Cl. 42-1.00F.

Baker International Corporation: *See—*
Haynes, Andrew, 4,403,654, Cl. 166-73.000.

Baker, Pamela K.; and Kiernan, Jane A., to American Cyanamid Company. Phenylethanolamine derivatives and acid addition salts thereof for enhancing the growth rate of meat-producing animals and improving the efficiency of feed utilization thereby. 4,404,222, Cl. 424-304.000.

Baldwin, Chandler M., to Memorex Corporation. Precipitated alumina for use in magnetic recording disc media. 4,404,238, Cl. 427-128.000.

Ball Corporation: *See—*
Atkinson, Michael L., 4,403,493, Cl. 72-356.000.

Ball, Douglas. Powered vehicle. 4,403,673, Cl. 180-214.000.

Ballert, Bruce Q., to General Electric Company. Resole compositions and laminates made therefrom. 4,404,358, Cl. 528-158.500.

Balthazor, Terry M.: *See—*
Goodin, Richard D.; Chupp, John P.; Balthazor, Terry M.; and Coleman, James P., 4,404,069, Cl. 204-59.00R.

Bamber, George E.: *See—*
Valentine, Clark; and Bamber, George E., 4,403,554, Cl. 108-23.000.

Bampfield, Howard A.: *See—*
Yorke, William J.; Binet, Rejean; Lee, Ming C.; and Bampfield, Howard A., 4,404,050, Cl. 149-2.000.

Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito. Direct current motor. 4,404,485, Cl. 310-198.000.

Banerjee, Sujit; and Pack, Edward J., Jr. Apparatus and method for the reduction of interferences in chromatography. 4,403,503, Cl. 73-61.10C.

Banyu Pharmaceutical Co., Ltd.: *See—*
Miyano, Tetsuji; Suzuki, Kunio; and Harada, Nobuo, 4,404,378, Cl. 544-131.000.

Baraff, David R.: *See—*
Long, John R.; Miner, Carla J.; Streater, Richard W.; and Baraff, David R., 4,404,555, Cl. 340-784.000.

Baran, Michael S.; Felber, Arthur J.; and Fillus, Gary C., to Allen-Bradley Company. Pushbutton switch operator assembly. 4,404,445, Cl. 200-314.000.

Baranowski, Michael: *See—*
Edelman, William; and Baranowski, Michael, 4,403,983, Cl. 604-43.000.

Barber, Richard B.: *See—*
Taylor, George W. B.; and Barber, Richard B., 4,404,454, Cl. 219-121.0LK.

Bard, William B.: *See—*
Walters, John O.; and Bard, William B., 4,404,637, Cl. 364-494.000.

Barda, Henry J., to Saytech, Inc. Flame retardant for polymeric compositions. 4,404,361, Cl. 528-342.000.

Bardenstein, Albert, to Berlin, Irwin J. Automated wall panel frame manufacturing apparatus. 4,403,724, Cl. 227-76.000.

Barnes, Kenneth C., to Florida Wire and Cable Company. Wire assemblies for repetitive, continuous cycle, tensile load conditions, particularly sucker rods for oil wells. 4,403,884, Cl. 403-284.000.

Barr & Stroud Limited: *See—*
Howie, Ian H., 4,404,644, Cl. 364-718.000.

Bartissol, Alain; Boutin, Jean; and Wachowski, Francois, to Rhone-Poulenc Industries. Photopolymerization of olefinically unsaturated monomers utilizing benzil dimethylacetal. 4,404,073, Cl. 204-159.230.

Base, Terence E.: *See—*
Bleiweiss, Arthur F.; and Base, Terence E., 4,403,565, Cl. 116-63.00T.

Basey, Gene. Variable rack stair rail assembly. 4,403,767, Cl. 256-66.000.

BASF Aktiengesellschaft: *See—*
Grosskinsky, Otto-Alfred; Frommer, Elmar; Rapp, Gunther, deceased; and Thomas, Erwin, 4,404,176, Cl. 423-387.000.
Horner, Michael; Horn, Dieter; Lueddecke, Erik; and Teege, Gernot, 4,404,304, Cl. 524-110.000.
Lach, Dietrich; Streicher, Rolf; and Bolz, Gerhard, 4,403,993, Cl. 8-94.240.
Marosi, Laszlo; Schlimper, Hans-Ulrich; Schwarzmann, Matthias; and Stabenow, Joachim, 4,404,175, Cl. 423-329.000.
Muench, Volker; Naarmann, Herbert; and Penzien, Klaus, 4,404,126, Cl. 252-512.000.
Naarmann, Herbert; Hambrecht, Juergen; and Rieber, Norbert, 4,404,359, Cl. 528-216.000.
Sinn, Hansjorg W.; Kaminsky, Walter O.; Vollmer, Hans-Jurgen C.; and Woldt, Rudiger O. H. H., 4,404,344, Cl. 526-160.000.
Vamvakaris, Christos; Patsch, Manfred; and Mach, Wolfgang, 4,404,389, Cl. 548-201.000.

BASF Wyandotte Corporation: *See—*
Donegan, Thomas E., 4,404,036, Cl. 106-308.00M.

Bathgate, William S.: *See—*
Shevokas, Edward J.; and Bathgate, William S., 4,403,778, Cl. 277-1.000.

Batson, Bruce L. Mailbox stand. 4,403,730, Cl. 232-39.000.

Battelle Memorial Institute: *See—*
Bellmann, Gunter; Cervini, Celeste; and Sachetto, Jean-Pierre, 4,404,371, Cl. 536-98.000.
Kenan, Richard P.; and Verber, Carl M., 4,403,833, Cl. 350-356.000.
Renner, G. Frederick, 4,404,559, Cl. 340-870.280.

Bauer, Helmut; and Szasz, Tibor, to TMC Corporation. Connecting member in particular for a safety ski binding which is equipped with a ski brake. 4,403,790, Cl. 280-637.000.

Baugh, Robert T., to Allis-Chalmers Corporation. Row divider with flexible plastic sheath. 4,403,467, Cl. 56-119.000.

Baum, Frank. Combination camera bag. 4,403,638, Cl. 150-52.00J.

Baumann, James R.: *See—*
Tillotson, Henry B.; Thorud, Richard A.; and Baumann, James R., 4,403,466, Cl. 56-16.700.

Baumberger, Beat, to Mirabed AG. Apparatus for the discontinuous production of articles from foamed plastics. 4,404,168, Cl. 422-119.000.

Bautz, James E., to Kaiser Steel Corporation. Lateral weave gaging system. 4,404,634, Cl. 364-472.000.

Baxter Travenol Laboratories, Inc.: *See—*
Garver, Edward B., Sr., 4,403,990, Cl. 604-273.000.

Bayer Aktiengesellschaft: *See—*
Bier, Peter, 4,404,161, Cl. 264-328.160.
Ffanz, Gerhard; and Hund, Franz, 4,404,254, Cl. 428-329.000.
Freitag, Dieter; Serini, Volker; Goossens, John; Bottenbruch, Ludwig; and Hucks, Uwe, 4,404,363, Cl. 528-486.000.
Hajek, Manfred; Wagner, Kuno; Uerdingen, Walter; and Wellner, Wolfgang, 4,404,379, Cl. 544-231.000.
Heise, Klaus-Peter; and Wedemeyer, Karlfried, 4,404,400, Cl. 564-406.000.
Jabs, Gert; Dahm, Manfred; Haus, Artur; Nehen, Ulrich; Rath, Klaus; and Weimann, Norbert, 4,404,251, Cl. 428-320.600.
Kafer, Peter; Morbitzer, Leo; Neuray, Dieter; Cohnen, Wolfgang; and Nouvertne, Werner, 4,404,351, Cl. 528-174.000.
Schapel, Dietmar, 4,404,296, Cl. 523-105.000.
Traenckner, Hans-Joachim; and Kremer, Wolfgang, 4,404,298, Cl. 524-31.000.
Wiedermann, Rolf, 4,404,294, Cl. 521-107.000.

Bazarnik, Louis M., to Dierckx Equipment Corporation. Maintenance monitor. 4,404,641, Cl. 364-569.000.

BBC Brown, Boveri & Company Limited: *See—*
Mercier, Olivier; Richter, Dag; and Schroder, Gunther, 4,404,025, Cl. 148-11.50F.
Schwarzenbach, Alfred, 4,403,477, Cl. 60-659.000.
Teufelberger, Arnulf, 4,403,915, Cl. 415-199.500.

Beard, Richard M.: *See—*
Stevens, Arthur P.; De Matteo, John; and Beard, Richard M., 4,404,666, Cl. 367-131.000.

Beatty, Raymond I.: *See—*
Wilson, Stephen K.; and Beatty, Raymond I., 4,403,417, Cl. 30-360.000.

Beazley, Phillip M.; and Dormish, Frank L., to Marathon Oil Company. Ozonation of petroleum feedstocks. 4,404,110, Cl. 252-8.55R.

Beccaris, Carlo, to Valeo Societe Anonyme. Clutch release bearing. 4,403,685, Cl. 192-98.000.

Bechtel, Richard P., Jr.: *See*—
Raymoure, Russell A.; Bechtel, Richard P., Jr.; Carson, Ray; and Don Carlos, Alva G., 4,403,695, Cl. 206-497.000.

Beckenbach, Helmuth: *See*—
Beckenbach, Ulrich; and Beckenbach, Helmuth, 4,403,951, Cl. 432-96.000.

Beckenbach, Ulrich; and Beckenbach, Helmuth. Shaft furnace for burning or firing and sintering material in lump form or pellet form and with an internal burner. 4,403,951, Cl. 432-96.000.

Becker, Udo; Braun, Konrad; and Heimburger, Norbert, to Behringwerke Aktiengesellschaft. Collagen sponge. 4,404,134, Cl. 260-112.50R.

Beecham Inc.: *See*—
Kelley, Kane L., 4,404,198, Cl. 424-235.000.

Behringwerke Aktiengesellschaft: *See*—
Becker, Udo; Braun, Konrad; and Heimburger, Norbert, 4,404,134, Cl. 260-112.50R.
Schwinn, Horst; Heimburger, Norbert; Kumpe, Gerhardt; and Preis, Hans M., 4,404,187, Cl. 424-101.000.

Beilock, Milton M.; and Wuerth, John M., to Rockwell International Corporation. Precision pointing and stabilization system. 4,403,838, Cl. 350-500.000.

Belcher, Roy L. Automatic pallet-making machine and method. 4,403,388, Cl. 29-429.000.

Belforte, Piero; and Bortignon, Renzo, to CSELT-Centro Studi e Laboratori Telecommunicazioni S.p.A. Data-extraction circuitry for PCM communication system. 4,404,630, Cl. 364-200.000.

Bell & Howell Company: *See*—
Grant, Frederic F., 4,403,720, Cl. 226-190.000.

Bell Telephone Laboratories, Incorporated: *See*—
Dwarakanath, Mirmira R., 4,404,544, Cl. 340-347.0AD.
Kohl, Paul A.; and Ostermayer, Frederick W., Jr., 4,404,072, Cl. 204-129.300.
Presby, Herman M., 4,403,826, Cl. 350-96.300.
Zuk, Paul, 4,404,234, Cl. 427-37.000.

Bellmann, Gunter; Cervini, Celeste; and Sachetto, Jean-Pierre, to Battelle Memorial Institute. Carboxymethylcellulose with carbonate bridges and preparation thereof. 4,404,371, Cl. 536-98.000.

Bellos, Thomas J., to Petrolite Corporation. Block polymers of alkanolamines. 4,404,362, Cl. 528-422.000.

Belokin, Paul, Jr. Variable display merchandising rack. 4,403,702, Cl. 211-189.000.

Benaroya, Henry. Free piston internal combustion engines. 4,403,577, Cl. 123-46.00R.

Bendix Corporation, The: *See*—
Harton, Donald L., 4,404,459, Cl. 219-209.000.

Benjamin, Harwell E.: *See*—
Johnson, Paul H.; and Benjamin, Harwell E., 4,404,178, Cl. 423-450.000.

Benko, Pal; Bozsing, Daniel; Gundel, Janos; and Magyar, Karoly, to Patentbureau DANUBIA. Pyridazino[4,5-b]quinoxaline-5,10-dioxide derivatives, a process for preparing same and anti-microbial compositions containing same. 4,404,204, Cl. 424-250.000.

Bennett, Arthur J. R. Milking machine. 4,403,569, Cl. 119-14.180.

Berg, Richard. Latching portable personal security alarm. 4,404,549, Cl. 340-574.000.

Berger, Bernard B., to Ducane Heating Corporation. Heat trapping cooking grill. 4,403,541, Cl. 99-385.000.

Bergfeld, Manfred: *See*—
Zengel, Hans G.; and Bergfeld, Manfred, 4,404,401, Cl. 564-416.000.

Bergh, Daniel D.: *See*—
Koch, Robert E.; and Bergh, Daniel D., 4,404,614, Cl. 361-128.000.

Bergles, Eduard, to Fichtel & Sachs AG. Bicycle chain-shifting device. 4,403,977, Cl. 474-80.000.

Bergwerksverband GmbH: *See*—
Knoblauch, Karl; Richter, Ekkehard; Giessler, Klaus; and Korbacher, Werner, 4,404,004, Cl. 55-25.000.

Berlin, Irwin J.: *See*—
Bardenstein, Albert, 4,403,724, Cl. 227-76.000.

Berlin, J. Burton; and Schweizer, Erwin V., to Boeing Company, The. Bifurcated feel simulator for aircraft. 4,403,756, Cl. 244-223.000.

Bernard, Jean; Beyl, Jean; Campillo, Christian; Guerreau, Rene; Le Faou, Daniel; and Peyre, Henri, to STE Look. Ski brake. 4,403,788, Cl. 280-605.000.

Bernert, Claus-Rudiger; Hartwig, Volker; Kords, Christian; and Redeker, Detmar, to Wolff Walsrode AG and Bayer AG. Purification of cellulose and starch ethers with counter current washing. 4,404,370, Cl. 536-85.000.

Bernhagen, Wolfgang: *See*—
Cornils, Boy; Weber, Jurgen; Bernhagen, Wolfgang; and Springer, Helmut, 4,404,410, Cl. 568-858.000.

Bernstein, Carl; Stogis, James; Riddle, Travis; and Kufrin, Robert, to Witco Chemical Corporation. Polyester resins for polyurethane foams. 4,404,295, Cl. 521-172.000.

Bernstein, Seymour: *See*—
Miner, Thomas G.; and Bernstein, Seymour, 4,404,365, Cl. 536-4.100.
Schaub, Robert E.; Upeslacis, Janis; and Bernstein, Seymour, 4,404,195, Cl. 424-180.000.

Berri-Balzac: *See*—
Arala-Chaves, Mario, 4,404,194, Cl. 424-177.000.

Bertellini, Gianfranco; and Fabbri, Luigi, to Sis-Ter S.p.A. Continuous peritoneal dialysis bag device. 4,403,992, Cl. 604-410.000.

Besasie, Joseph C.: *See*—
Pelt, Thomas E.; and Besasie, Joseph C., 4,404,434, Cl. 179-156.00R.

Bessaguet, Louis: *See*—
Astier, Jean-Francois; and Bessaguet, Louis, 4,404,449, Cl. 219-69.00V.

Beuneu, Pierre: *See*—
Credoz, Paul; and Beuneu, Pierre, 4,404,038, Cl. 127-60.000.

Beusch, Glenn A.: *See*—
Wheeler, Leon; and Beusch, Glenn A., 4,404,433, Cl. 179-7.1TP.

Beyl, Jean: *See*—
Bernard, Jean; Beyl, Jean; Campillo, Christian; Guerreau, Rene; Le Faou, Daniel; and Peyre, Henri, 4,403,788, Cl. 280-605.000.

Bezman, Susan A., to Chevron Research Company. Process for producing oxygenated fuels. 4,403,999, Cl. 44-56.000.

Bhatti, Mohinder S.; Marzocchi, Alfred; and Ritter, George W., to Owens-Corning Fiberglas Corporation. Method and apparatus for forming glass fibers. 4,404,009, Cl. 65-1.000.

BHS-Bayerische Berg-, Hutten-und Salzwerke: *See*—
Heidrich, Gunther; and Stolzle, Karl, 4,403,968, Cl. 440-3.000.

Bi, Le-Khac; Dillon, Mary E.; and Sharik, Clyde, to Atlantic Richfield Company. N,N-Dimethylacrylamide/2-acrylamido-2-methylpropane sulfonic acid copolymers for enhanced petroleum recovery. 4,404,111, Cl. 252-8.55D.

Biadigo, Mario: *See*—
Cuman, Giorgio; and Biadigo, Mario, 4,403,931, Cl. 425-84.000.

Biance, Michael P. Trailer hitch snow plow. 4,403,432, Cl. 37-235.000.

BICC PLC: *See*—
Dewhurst, Paul E.; and Collier, John C., 4,403,383, Cl. 29-33.00M.

Bickl, Horst: *See*—
Burger, Erich; Bickl, Horst; and Huber, Hans-Peter, 4,403,849, Cl. 355-8.000.

Bickley, Robert H.: *See*—
Genrich, Thad J.; and Bickley, Robert H., 4,404,531, Cl. 331-64.000.

Biddle, Howard W., to Cambridge Consultants Limited. Torque wrench. 4,403,530, Cl. 81-478.000.

Bieneck, Gunther, to Hasco-Normalien Hasenclever & Co. Coupling for tripartite injection or compression mold. 4,403,810, Cl. 425-589.000.

Bier, Peter, to Bayer Aktiengesellschaft. Process for injection molding a rapidly crystallizing polyethylene terephthalate composition at reduced mold temperatures. 4,404,161, Cl. 264-328.160.

Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., to Kendall Company, The. Syringe assembly. 4,403,988, Cl. 604-118.000.

Binder, Hellmuth, to Daimler-Benz AG. Motor vehicle adapted for guidance along a track. 4,403,553, Cl. 104-245.000.

Binet, Rejean: *See*—
Yorke, William J.; Binet, Rejean; Lee, Ming C.; and Bampfield, Howard A., 4,404,050, Cl. 149-2.000.

BioSystems Research Inc.: *See*—
Lionelle, Joseph E.; and Staffa, Jeffrey A., 4,404,146, Cl. 260-429.900.

Biotek, Inc.: *See*—
Ash, Stephen R.; and Loeb, Marvin P., 4,403,984, Cl. 604-50.000.

Birch, Per; and Marcussen, Christian, to F. L. Smidth & Co. Apparatus for driving a rotary drum, such as a rotary kiln. 4,403,952, Cl. 432-103.000.

Blackmer, David E., to Kintek, Inc. Audio signal processing system. 4,404,427, Cl. 179-1.0VL.

Blakers, Andrew W.: *See*—
Green, Martin A.; and Blakers, Andrew W., 4,404,422, Cl. 136-255.000.

Blanco, Jeanne M.: *See*—
Blanco, Josephine; and Blanco, Jeanne M., 4,403,442, Cl. 46-163.000.

Blanco, Josephine; and Blanco, Jeanne M. Extendable nails for dolls. 4,403,442, Cl. 46-163.000.

Bland, Gerald F.; and Ladwig, Allen N., to Outboard Marine Corporation. Marine propulsion device including engine housing pump mechanism. 4,403,972, Cl. 440-88.000.

Blank, Werner J.: *See*—
Parekh, Girish G.; Blank, Werner J.; and Schirmann, Peter J., 4,404,332, Cl. 525-428.000.

Blaszuk, Paul R.: *See*—
Davis, Jack W.; and Blaszuk, Paul R., 4,403,828, Cl. 350-288.000.

Bleiweiss, Arthur F.; and Base, Terence E., to Dominion Auto Accessories Limited. Emergency triangular road safety device. 4,403,565, Cl. 116-63.00T.

Bloothoofd, William, to Hercules Incorporated. Apparatus for producing a printing plate. 4,403,566, Cl. 118-407.000.

Blum, Ronald D. Tying device. 4,403,375, Cl. 24-16.0PB.

Bocharov, Boris V.: *See*—
Rozenfeld, Iosif L.; Brusnikina, Vera M.; Frolova, Larisa V.; Lyashenko, Alevtina A.; Sokolov, Jury V.; Bocharov, Boris V.; Fokin, Alexandr V.; Legezin, Nikolai E.; Dergobuzova, Ekaterina V.; Altshuler, Boris N.; Zelenaya, Saida A.; and Korobova, Emma S., 4,404,167, Cl. 422-12.000.

Boden, Richard M.: *See*—
Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., 4,404,307, Cl. 524-290.000.

Bodine, Albert G. Sonic system for propelling pilings, drills and the like into the earth employing screw device. 4,403,665, Cl. 175-55.000.

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Nudelman, Boris I.; Chepkalenko, Mikhail G.; Gasanova, Alevtina A.; Galimova, Guzal A.; Khaichkis, Roza; Uraev, Ravkhat E.; Tashpulatov, Turgun K.; Butaev, Erkin M.; Adam, Fedor Y.; Kevvai, Arnold A.; Bodyagina, Rashida G.; Ibragimov, Sunnat I.; and Fedorov, Alexandr P., 4,404,032, Cl. 106-100.000.

Boeing Company, The: *See—*
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Dickson, Jerald L.; and Green, Harvey E., Jr., 4,404,054, Cl. 156-92.000.

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Boguslaski, Robert C.; Burd, John F.; and Carrico, Robert J., to Miles Laboratories, Inc. Beta-galactosyl-umbelliferone-labeled hapten conjugates. 4,404,366, Cl. 536-18.100.

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Bollinger, Frederic G., to Monsanto Company. Substituted 2-imino-1,3-dithio and 1,3-oxathio heterocyclic compounds as herbicidal antidotes. 4,403,444, Cl. 47-57.600.

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Bonacci, John J.; and Bonacci, Theresa S. Telephone lock. 4,404,435, Cl. 179-189.00R.

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Bonaldi, Antonio; Molinari, Egidio; and Springolo, Vanna, to Erregierre S.p.A. Salification products of cholic acids with trimethoxy-3,4,5-benzoic ester of 2-phenyl-2-dimenthylaminobutanol, having pharmacotherapeutic action, process for their preparation and therapeutic compositions containing them as active principle. 4,404,199, Cl. 424-238.000.

Bonar, David C., to North American Philips Corporation. Slit radiography. 4,404,591, Cl. 358-111.000.

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Booth, John A.: *See—*
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Boothe, James H.; and Ross, Adma S., to American Cyanamid Company. Cephalosporanic acid derivatives. 4,404,374, Cl. 544-26.000.

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Bopp, Richard C.: *See—*
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Boretos, John W., to United States of America, Health and Human Services. Jet controlled catheter. 4,403,985, Cl. 604-53.000.

Bornstein, Leopold F., to Georgia-Pacific Corporation. Thermosetting resinous polyol. 4,404,334, Cl. 525-504.000.

Bortignon, Renzo: *See—*
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Bossek, Harald: *See—*
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Bottka, Nicholas; and Hills, Marian E., to United States of America, Navy. Method of making avalanche photodiodes. 4,403,397, Cl. 29-572.000.

Boudot, Jean E., to Corning Glass Works. Glasses of high refractive index, low dispersion, and low density. 4,404,290, Cl. 501-78.000.

Boutin, Jean: *See—*
Bartissol, Alain; Boutin, Jean; and Wachowski, Francois, 4,404,073, Cl. 204-159.230.

Bowen, John G.; and Kovalenko, Eugene N. Spare tank system for motor vehicle. 4,403,589, Cl. 123-525.000.

Bower, Raymond M.; and Allard, Jules N., to Bush Universal, Inc. Techniques for stripping a sleeve from resin impregnated fibrous rovings. 4,403,361, Cl. 12-142.00R.

Bowers, Homer C.: *See—*
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Boyd, James W.: *See—*
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Bozsing, Daniel: *See—*
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Bradley, Gerald R. Buffer valve. 4,403,627, Cl. 137-508.000.

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Braun, Gert; and Braun, Ernst, to Halbach and Braun. Hauling and shaving plant. 4,403,808, Cl. 299-34.000.

Braun, Konrad: *See—*
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Braun, Peter. Wire basket, apparatus and method. 4,403,447, Cl. 47-76.000.

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Bricheno, Terry; Robertson, Alexander J.; and Finlay, Ross K., to International Standard Electric Corporation. Replacing optical fibre sheathing after fusion splicing. 4,404,010, Cl. 65-4.200.

Bridges, James R., to Halliburton Company. Neutron generator tube ion source control system. 4,404,163, Cl. 376-119.000.

Bridgewater, Bobbie D.: *See—*
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Broughton, Donald B., to UOP Inc. Sucrose extraction from aqueous solutions featuring simulated moving bed. 4,404,037, Cl. 127-55.000.

Brown, James H.: *See—*
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Brush, John D.: *See—*
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Brusnikina, Vera M.: *See—*
Rozenfeld, Iosif L.; Brusnikina, Vera M.; Frolova, Larisa V.; Lyashenko, Alevtina A.; Sokolov, Jury V.; Bocharov, Boris V.; Fokin, Alexandr V.; Legezin, Nikolai E.; Dergobuzova, Ekaterina V.; Altshuler, Boris N.; Zelenaya, Saida A.; and Korobova, Emma S., 4,404,167, Cl. 422-12.000.

Bryan, David A.; and Powers, John K., to McDonnell Douglas Corporation. Process for producing a diffraction grating. 4,403,827, Cl. 350-162.170.

BSD Medical Inc.: *See—*
Turner, Paul F.; and Gandhi, Om P., 4,403,618, Cl. 128-804.000.

Buck, James R., to Buck Tool Company. Push-type jaw chuck. 4,403,782, Cl. 279-121.000.

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Buelens, Edward; and Goossens, Carolus C., to Agfa-Gevaert N.V. Cassette for holding and dispensing a roll of web material. 4,403,845, Cl. 354-275.000.

Bugay, Al: *See—*
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Builders Equipment Company: *See—*
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Bunes, Leonard A.: *See—*
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Burger, Erich; Bickl, Horst; and Huber, Hans-Peter, to Agfa-Gevaert AG. Electrostatic copying device. 4,403,849, Cl. 355-8.000.
Burgin, Ralph; and Dadant, Timothy C., to Dadant & Sons, Inc. End bar. 4,403,358, Cl. 6-10.000.
Burndy Corporation: *See—*
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Burns, Joseph R.: *See—*
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Burroughs Corporation: *See—*
Grow, Robert M., 4,404,557, Cl. 340-825.050.
Kocot, Ray H.; Rudd, Robert E., III; and Arnoldi, Douglas R., 4,404,573, Cl. 346-140.00R.
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Moncada, Salvador E., 4,404,212, Cl. 424-251.000.
Burt, Howard N. M. Waste pipe support apparatus. 4,403,758, Cl. 248-49.000.
Burwasser, Herman; and Wyhof, John R., to R.Q.O. Holding Company, Inc. Electrographic printing system using dielectric film member. 4,404,574, Cl. 346-153.100.
Busche, William W., to IVAC Corporation. Apparatus for detecting when the pressure detector in a fluid line exceeds a prescribed threshold. 4,404,440, Cl. 200-83.00R.
Bush, Charles N.; and Doyle, Thomas J., to B. F. Goodrich Company, The. Suspension polymerization process for making vinyl resins for use in plastisols. 4,404,339, Cl. 526-88.000.
Bush Universal, Inc.: *See—*
Bower, Raymond M.; and Allard, Jules N., 4,403,361, Cl. 12-142.00R.
Butaev, Erkin M.: *See—*
Nudelman, Boris I.; Chepkalenko, Mikhail G.; Gasanova, Alevtina A.; Galimova, Guzal A.; Khaichkis, Roza; Uraev, Ravkhat E.; Tashpulatov, Turgun K.; Butaev, Erkin M.; Adam, Fedor Y.; Kevvai, Arnold A.; Bodyagina, Rashida G.; Ibragimov, Sunnat I.; and Fedorov, Alexandr P., 4,404,032, Cl. 106-100.000.
Butterworth, Arthur L.; and Utter, Robert E., to Trane Company, The. Lubricant distribution system for scroll machine. 4,403,927, Cl. 418-55.000.
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Cabanaw, Eldred J.; and Mann, John W., to Phillips Petroleum Company. Alkylation process. 4,404,419, Cl. 585-723.000.
Cael, John J., to International Paper Company. Bleaching of lignocellulosic materials with monopersulfuric acid or its salts. 4,404,061, Cl. 162-76.000.
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California Sounds Ltd.: *See—*
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Calmac Manufacturing Corporation: *See—*
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Cambridge Consultants Limited: *See—*
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Campbell, Richard H., Jr.; and Noyes, John B., to Wilcom Products, Inc. Phasor impedance measuring test set. 4,404,636, Cl. 364-482.000.
Campen, Kenneth W., to Tecumseh Products Company. Economical flywheel alternator for trickle charging a small lawnmower battery. 4,404,513, Cl. 322-90.000.
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Okamura, Shigeru; Kyogoku, Hiroshi; and Tazaki, Shigemitsu, 4,404,572, Cl. 346-140.00R.
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Cardwell, John A. Anti-theft device or system for vehicles. 4,403,675, Cl. 180-287.000.
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Carl Zeiss-Stiftung: *See—*
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Carlo Erba Strumentazione S.p.A.: *See—*
Sisti, Giorgio; Tosi, Bruno; Trestianu, Sorin; and Galli, Mario, 4,403,520, Cl. 73-864.810.
Carlson, Gerald I.; and Cook, Norman J. Automobile support rack. 4,403,716, Cl. 224-42.080.
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Cartoceti, Italiano, to CIR S.p.A. Divisione Sasib. Method for the emptying of cigarette trays into magazines. 4,403,908, Cl. 414-786.000.
Cary, Arthur P. Extension member for surrogate forks for a fork lift truck. 4,403,903, Cl. 414-607.000.
Cash, Dennis R.: *See—*
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Styok, Wayne G., 4,403,648, Cl. 165-76.000.
Cates, Allen E. Additive for drilling fluids. 4,404,108, Cl. 252-8.50A.
Cauchy, Charles J. Water heating apparatus for solid fuel firebox. 4,403,573, Cl. 122-20.00A.
Caudy, Don W.; Hackman, Donald J.; Hoffman, Robert T.; and Uhler, Dale G., to United States of America, Navy. Instantaneous start and stop gas generator. 4,404,170, Cl. 422-237.000.
Cave, Eric F.; and Cowden, James J., to RCA Corporation. Stylus coning fixture. 4,403,453, Cl. 51-124.00R.
Cavitt, Michael B., to Dow Chemical Company, The. Hydrolyzing epoxy resins in absence of solvent and in presence of oxalic acid and a phosphonium compound. 4,404,335, Cl. 525-507.000.
Celanese Corporation: *See—*
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Kuder, James E., 4,404,070, Cl. 204-72.000.
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Bellmann, Gunter; Cervini, Celeste; and Sachetto, Jean-Pierre, 4,404,371, Cl. 536-98.000.

Cesark, Frank F.; Manfre, Robert J.; and Thomas, Daniel W., to American Cyanamid Company. Novel glycolic acid esters and amides of bis(p-disubstitutedaminophenyl)carbinol. 4,403,792, Cl. 282-27.500.
Chakrabarti, Jiban K.; and Hotten, Terrence M., to Lilly Industries Limited. Pyrazolo [3,4-b][1,5]benzodiazepine compounds. 4,404,137, Cl. 260-239.30T.
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Chang, Daniel M., to B. F. Goodrich Company, The. Precrosslinked nitrile rubber polymer blends with linear polymers. 4,404,326, Cl. 525-223.000.
Channing, Christopher P.; and Rovinsky, William Z., to Flair Manufacturing Corp. Double switch fuse assembly. 4,404,613, Cl. 361-104.000.
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Chapman, Marion R., Jr.; and Chapman, Marion J. Suction dredge cutter head. 4,403,428, Cl. 37-57.000.
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Charbonneau, Robert R.; and Groff, Gaylord L., to Minnesota Mining and Manufacturing Company. Storable, crosslinkable pressure-sensitive adhesive tape. 4,404,246, Cl. 428-212.000.
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Bezman, Susan A., 4,403,999, Cl. 44-56.000.
Fraas, Lewis M., 4,404,421, Cl. 136-249.000.
McGuire, John F.; Hurt, J. Steven; and Wilkerson, Ronald L., 4,404,639, Cl. 364-551.000.
Ploeg, Johan F.; and Oden, Arlo L., 4,403,656, Cl. 166-179.000.
Chiasson, Robert H. Belt grinder for sharpening ice skate blades and the like. 4,403,455, Cl. 51-141.000.
Chicago Pneumatic Tool Company: *See*—
Wallace, William K.; and Giardino, David A., 4,403,532, Cl. 81-483.000.
Chicago Province of the Society of Jesus: *See*—
Skelskey, David A., 4,403,916, Cl. 416-14.000.
Chichibu Cement Kabushikikaisha: *See*—
Sudoh, Giichi; Minegishi, Keiichi; Ishizaki, Kanjiro; and Uchida, Ikuo, 4,404,031, Cl. 106-90.000.
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT.: *See*—
Kokosi, Jozsef; Hermecz, Istvan; Meszaros, Zoltan; Szasz, Gyorgy; Vasvari nee Debreczy, Lelle; Horvath, Agnes; and Breining, Tibor, 4,404,205, Cl. 424-251.000.
Kulcsar, Gabor; Sebestyen, Gyula; David, Agoston; and Zilahi, Tibor, 4,404,189, Cl. 424-114.000.
Chiu, Pay H.; and Desroziers, Andre J., to Photochemical Research Associates Inc. Dye cell holder for dye laser. 4,404,679, Cl. 372-54.000.
Cho, Kyu S. Self teaching instrument. 4,403,967, Cl. 434-337.000.
Chrestensen, Gene L., to Eastman Kodak Company. Electrographic transfer apparatus. 4,403,847, Cl. 355-3.0TR.
Christensen, Terrence B.; McNaughton, Allen D.; and Umbach, Steven R., to Syntex (U.S.A.) Inc. Injection device. 4,403,989, Cl. 604-137.000.
Chu, Chin-Chiun, to Mobil Oil Corporation. Catalysts for para-ethyltoluene dehydrogenation. 4,404,123, Cl. 252-463.000.
Chupp, John P.: *See*—
Goodin, Richard D.; Chupp, John P.; Balthazor, Terry M.; and Coleman, James P., 4,404,069, Cl. 204-59.00R.
Ciarico, Anthony J.: *See*—
Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,403,988, Cl. 604-118.000.
Ciba-Geigy AG: *See*—
Forte, Eddy; Fryberg, Mario; and Jan, Gerald, 4,404,273, Cl. 430-377.000.
Ciba-Geigy Corporation: *See*—
Andrews, Christopher M., 4,404,356, Cl. 528-99.000.
Babler, Fridolin, 4,404,385, Cl. 546-37.000.
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Boger, Manfred; and Drabek, Jozef, 4,404,225, Cl. 424-322.000.
Eldin, Sameer H.; and Schreiber, Bruno, 4,404,355, Cl. 528-89.000.
Fah, Hansjakob; and Grieder, Alfred, 4,404,388, Cl. 546-345.000.
Schurter, Rolf; Clauson-Kaas, Niels; and Rempfler, Hermann, 4,404,020, Cl. 71-94.000.
Wirth, Hermann O.; and Friedrich, Hans-Helmut, 4,404,408, Cl. 568-680.000.
Wurster, Rudolf F.; and Merz, Jurg, 4,404,104, Cl. 210-684.000.
Cigna, Giuseppe; Catarsi, Paolo; Mussatto, Maria C.; Vivaldini, Fabrizio; and Campolmi, Stefano, to Montedison S.p.A. Self-extinguishing expandable polystyrene particles having an improved processability. 4,404,293, Cl. 521-56.000.
Cimenti, Antonio: *See*—
Zamparelli, Walter; Cimenti, Antonio; and Muscariello, Giuseppe, 4,403,937, Cl. 425-337.000.
CIR S.p.A. Divisione Sasib: *See*—
Cartoceti, Italiano, 4,403,908, Cl. 414-786.000.
Pezzi, Giovanni, 4,403,501, Cl. 73-38.000.
Citizen Watch Company Limited: *See*—
Enomoto, Tadao, 4,404,067, Cl. 204-4.000.
Nakajima, Fumio, 4,404,510, Cl. 318-696.000.
Clark, Carl A., to Eastern Company, The. Rock bolt expansion anchor having windened expansion range. 4,403,894, Cl. 411-47.000.
Clark Equipment Company: *See*—
Sapelak, Ronald, 4,403,902, Cl. 414-569.000.
Clark, Frederic L.; and Ayers, Scott D., to Mead Corporation, The. Fluid system for fluid jet printing device. 4,404,566, Cl. 346-1.100.
Clark, Noel A.: *See*—
Rothschild, Kenneth J.; and Clark, Noel A., 4,403,939, Cl. 425-425.000.
Clarke, Theodore R., to Formica Corporation. Fire-retardant high pressure consolidated articles containing an air-laid web and method of producing same. 4,404,250, Cl. 428-220.000.
Clauson-Kaas, Niels: *See*—
Schurter, Rolf; Clauson-Kaas, Niels; and Rempfler, Hermann, 4,404,020, Cl. 71-94.000.
Clayton, Ralph S. Colon cleansing system and technique. 4,403,982, Cl. 604-28.000.
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., to UOP Inc. Process for separating fatty acids from rosin acids. 4,404,145, Cl. 260-419.000.
Cloosterman, Aloysius B. M.; and Kranenburg, Simon V., to Internationale Octrooi Maatschappij "Octropa" B.V. Lipid and protein containing material in particulate form and process therefor. 4,404,228, Cl. 426-98.000.
Cobler, John A.: *See*—
Schulz, Johann G. D.; and Cobler, John A., 4,403,998, Cl. 44-51.000.
Coburn Optical Industries, Inc.: *See*—
Rarick, Kimber W., 4,403,420, Cl. 33-174.00A.
Cogswell, James A., II; and Malen, Donald E., to General Motors Corporation. Low force transmissibility mount. 4,403,762, Cl. 248-559.000.
Cohen, Edgar C. Vacuum-compression injector. 4,403,609, Cl. 604-70.000.
Cohen, Robert E.: *See*—
Anand, Madhu; Baddour, Raymond F.; and Cohen, Robert E., 4,404,256, Cl. 428-409.000.
Cohen, Solomon E.: *See*—
Seach, Barry G.; Muller, Hans; and Cohen, Solomon E., 4,403,938, Cl. 425-393.000.
Cohnen, Wolfgang: *See*—
Kafer, Peter; Morbitzer, Leo; Neuray, Dieter; Cohnen, Wolfgang; and Nouvertne, Werner, 4,404,351, Cl. 528-174.000.
Coleman, James P.: *See*—
Goodin, Richard D.; Chupp, John P.; Balthazor, Terry M.; and Coleman, James P., 4,404,069, Cl. 204-59.00R.
Colgate-Palmolive Company: *See*—
Mark, Reuben, 4,403,623, Cl. 132-84.00R.
Collier, John C.: *See*—
Dewhurst, Paul E.; and Collier, John C., 4,403,383, Cl. 29-33.00M.
Colvin, Floyd W.: *See*—
Hu, Mae W.; Colvin, Floyd W.; and Ullman, Edwin F., 4,404,278, Cl. 435-7.000.
Combustion Engineering, Inc.: *See*—
Kochey, Edward L., Jr., 4,403,571, Cl. 122-1.00A.
Commissariat a l'Energie Atomique: *See*—
Boisde, Gilbert; Bonnejean, Claude; and Perez, Jean J., 4,403,861, Cl. 356-407.000.
Fitoussi, Richard; and Musikas, Claude, 4,404,130, Cl. 252-631.000.
Commonwealth of Australia: *See*—
Dean, Stanley K.; and Dow, Robert, 4,404,507, Cl. 318-570.000.
Commonwealth Scientific Corporation: *See*—
daCosta, Harry; Howerton, Hugh K.; Hughes, William E.; and Monk, Gaines W., 4,403,567, Cl. 118-500.000.
Communications Satellite Corporation: *See*—
Rhodes, Smith A., 4,404,674, Cl. 371-43.000.
Welti, George R., 4,404,532, Cl. 332-17.000.

Connor, David T.; Schwender, Charles F.; Sorenson, Roderick J.; and Unangst, Paul C., to Warner-Lambert Company. 3-[2-(Azabicyclo) ethyl]-1,2,3,4-tetrahydro-5H-[1]benzopyrano[3,4-c]pyridin-5-ones. 4,404,138, Cl. 260-244.400.

Connor, John T., to West Company, The. Combination container cap and closure seal. 4,403,707, Cl. 215-253.000.

Continental Disc Corporation: *See*—
Paul, Herman L., Jr., 4,403,626, Cl. 137-68.00R.

Continental Group, Inc., The: *See*—
Krishnamumar, Suppayan M.; and Jolly, Walter R., 4,403,940, Cl. 425-529.000.
Mahajan, Gautam K., 4,403,706, Cl. 215-1.00C.

Continental-Wirt Electronics Corporation: *See*—
Quigley, Thomas J., 4,404,437, Cl. 200-16.00C.

Cook, Norman J.: *See*—
Carlson, Gerald I.; and Cook, Norman J., 4,403,716, Cl. 224-42.080.

Cookson, Dennis: *See*—
Howse, Peter; Cookson, Dennis; and Lane, Stephen P., 4,404,551, Cl. 340-711.000.

Coone, Malcolm G., to MGC Oil Tools, Inc. Well packer and method of use thereof. 4,403,660, Cl. 166-387.000.

Coope, Robert L., to Stevens Engineering, Inc. Slide mechanism. 4,403,389, Cl. 29-561.000.

Cooper Industries, Inc.: *See*—
King, William A.; and Kincaid, John W., 4,404,424, Cl. 174-34.000.
Snider, Philip A., 4,403,679, Cl. 184-64.000.

Copenhaver, Lloyd F., to Carrier Corporation. Spillage damper for a combustion system. 4,403,599, Cl. 126-312.000.

Copenhaver, Lloyd F., to Carrier Corporation. Self-checking safety switch control circuit. 4,403,942, Cl. 431-24.000.

Corcoran, Patrick G. Expansible rack for locker baskets and garment storage. 4,403,701, Cl. 211-133.000.

Corlett, Alan H.: *See*—
Schiltz, Ronald M.; and Corlett, Alan H., 4,403,652, Cl. 165-167.000.

Cornelius, Dieter, to Cassella Aktiengesellschaft. Sulphur dyestuffs, a process for their manufacture and their use from hydroxy-diphenylamine compounds. 4,403,995, Cl. 8-652.000.

Cornell, Robert W., to Griffith-Hope Company. Dispenser for coiled material having improved transfer mechanism. 4,403,748, Cl. 242-55.530.

Cornet, Jean, to Thomson-CSF. Thermo-optical data writing process and data medium for performing this process. 4,404,656, Cl. 365-126.000.

Cornils, Boy; Weber, Jurgen; Bernhagen, Wolfgang; and Springer, Helmut, to Ruhrchemie Aktiengesellschaft. Process for preparing 2,3-dimethyl-2,3-butanediol. 4,404,410, Cl. 568-858.000.

Corning Glass Works: *See*—
Boudot, Jean E., 4,404,290, Cl. 501-78.000.

Coste, Jean-Francois: *See*—
Tellier, Jacques; Chambu, Claude; Coste, Jean-Francois; and Grangette, Henri, 4,404,109, Cl. 252-8.55D.

Costinescu-Tataranu, Alexander-Barbu: *See*—
Gloria, Karl; Costinescu-Tataranu, Alexander-Barbu; Schuster, Wilhelm; and Wittekind, Jurgen, 4,403,887, Cl. 405-53.000.

Couchman, Robert S.: *See*—
Johnson, Lloyd H.; Couchman, Robert S.; Spencer, Robert C., Jr.; Booth, John A.; and Holman, Russell J., 4,403,476, Cl. 60-652.000.

Coulter Systems Corporation: *See*—
Torto, Nicholas L.; and Di Nallo, Samuel R., Sr., 4,403,856, Cl. 355-75.000.

Cousin, Rolf: *See*—
Boone, Didier; and Cousin, Rolf, 4,404,518, Cl. 324-62.000.

Cowan, Jack C.; Thrash, Tommy; and Rayborn, Jerry R., to Venture Chemicals, Inc. Well working compositions, method of decreasing the seepage loss from such compositions, and additive therefor. 4,404,107, Cl. 252-8.50M.

Cowden, James J.: *See*—
Cave, Eric F.; and Cowden, James J., 4,403,453, Cl. 51-124.00R.

Cox, Ernest R.; and Snyder, Duane E., Jr., to Firestone Tire & Rubber Company, The. High accuracy slitter system. 4,403,533, Cl. 83-56.000.

Coynel, Daniel; and Roussigne, Maurice, to Thomson-CSF. Electromagnetic relay. 4,404,443, Cl. 200-147.00A.

Cramer, Jurgen; Pistorius, Rudolf; and Mitzlaff, Michael, to Hoechst Aktiengesellschaft. Bipolar electrode for anodic processes in undivided cells. 4,404,082, Cl. 204-290.00R.

Crane Packing Limited: *See*—
Wilkinson, Samual C. W., 4,403,779, Cl. 277-27.000.

Cranford, Hayden C., Jr.; Hoffman, Charles R.; and Stephens, Geoffrey B., to International Business Machines Corp. Electrically alterable read only memory cell. 4,404,577, Cl. 357-23.000.

Cranston Machinery Company, Inc.: *See*—
Lewis, Charles B., 4,403,542, Cl. 100-2.000.

Credoz, Paul; and Beuneu, Pierre, to Fives-Cail Babcock. Process and installation for producing lactose crystals. 4,404,038, Cl. 127-60.000.

Crepaco, Inc.: *See*—
Schiltz, Ronald M.; and Corlett, Alan H., 4,403,652, Cl. 165-167.000.

Critikon, Inc.: *See*—
Osborn, John J., 4,403,514, Cl. 73-861.520.

Cross, Barrington: *See*—
Ladner, David W.; and Cross, Barrington, 4,404,402, Cl. 564-442.000.

Crossley, Jack; and Wilson, David H., to Manesty Machines Limited. Tabletting machines. 4,403,935, Cl. 425-210.000.

Crugnola, Aldo M.; and Ellis, Edward J. Orthopaedic cement from acrylate polymers. 4,404,327, Cl. 525-228.000.

Crutcher, William C., to Timex Corporation. Electro-optic identifiction code system in a timepiece. 4,403,869, Cl. 368-10.000.

CSELT-Centro Studi e Laboratori Telecommunicazioni S.p.A.: *See*—
Belforte, Piero; and Bortignon, Renzo, 4,404,630, Cl. 364-200.000.

Cuffia, Robert P., to Singer Company, The. Landing light pattern generator for simulator with selective addressing of memory. 4,404,553, Cl. 340-728.000.

Cuman, Giorgio; and Biadigo, Mario, to Ideal Standard S.p.A. Semiautomatic plant for manufacturing shaped concave vitreous china objects. 4,403,931, Cl. 425-84.000.

Curran, Donald G.; and Anderson, Robert A., to Bunnell Plastics, Incorporated. Safety shield for flanged pipe couplings. 4,403,794, Cl. 285-45.000.

Curran, Patrick A., to Texas Instruments Incorporated. Monolithic integration of logic, control and high voltage interface circuitry. 4,403,395, Cl. 29-571.000.

Curtiss-Wright Corporation: *See*—
Jones, Charles, 4,403,928, Cl. 418-60.000.

Custode, Frank Z.: *See*—
Tam, Matthias L.; and Custode, Frank Z., 4,404,581, Cl. 357-59.000.

Cutter Laboratories, Inc.: *See*—
Mitra, Gautam, 4,404,132, Cl. 260-112.00B.

Cyclone International Incorporated: *See*—
Freehafer, Donald H., 4,403,570, Cl. 119-72.500.

Czelusniak, Paul A., Jr., to Fieldcrest Mills, Inc. Woven pile fabric. 4,403,633, Cl. 139-402.000.

Dabi, Shmuel: *See*—
Loewrigkeit, Peter; and Dabi, Shmuel, 4,404,258, Cl. 428-424.600.

daCosta, Harry; Howerton, Hugh K.; Hughes, William E.; and Monk, Gaines W., to Commonwealth Scientific Corporation. Workpiece holder. 4,403,567, Cl. 118-500.000.

Da Cruz Garcia, Nelson. System of vertical filing of articles in sheets and means employed therefor. 4,403,816, Cl. 312-184.000.

Dadant & Sons, Inc.: *See*—
Burgin, Ralph; and Dadant, Timothy C., 4,403,358, Cl. 6-10.000.

Dadant, Timothy C.: *See*—
Burgin, Ralph; and Dadant, Timothy C., 4,403,358, Cl. 6-10.000.

Dahlgrun, Rolf, to Hauni-Werke Korber & Co. KG. Method and apparatus for influencing the permeability of wrappers of filter cigarettes or the like. 4,403,619, Cl. 131-280.000.

Dahlquist, Arthur. Tree planter. 4,403,427, Cl. 37-2.00R.

Dahm, Manfred: *See*—
Jabs, Gert; Dahm, Manfred; Haus, Artur; Nehen, Ulrich; Rath, Klaus; and Weimann, Norbert, 4,404,251, Cl. 428-320.600.

Daicel Chemical Industries, Inc.: *See*—
Watanabe, Shoji; and Nakanishi, Michio, 4,404,333, Cl. 525-437.000.

Daimler-Benz AG: *See*—
Binder, Hellmuth, 4,403,553, Cl. 104-245.000.
Fischer, Dietrich, 4,403,588, Cl. 123-525.000.

Dainippon Ink and Chemicals, Inc.: *See*—
Kitamura, Taku, 4,404,354, Cl. 528-86.000.

Dal Moro, Anacleto: *See*—
Maccone, Sergio; Dal Moro, Anacleto; Pirozzi, Mario; and Capizzi, Amedeo, 4,404,185, Cl. 424-84.000.

D'Alelio, Gaetano F., deceased (by St. Joseph Bank and Trust Company, executor); and Waitkus, Phillip A., to Plastics Engineering Company. Addition products of terminally unsaturated polyimide derivatives with a diaryl conjugated butadiyne. 4,404,139, Cl. 548-423.000.

Daniel, Chelliah, to Air Products and Chemicals, Inc. High conversion of C_3 and C_4 olefins to corresponding unsaturated aldehydes and acids with stable molybdenum catalysts. 4,404,397, Cl. 562-546.000.

Danti, Bernard R. Packaging in extensible bands. 4,403,463, Cl. 53-398.000.

Data General Corporation: *See*—
Stryer, Arthur N., 4,404,530, Cl. 331-1.00A.

Dataproducts Corporation: *See*—
Slagel, Edwin C., 4,404,353, Cl. 528-67.000.

Daudt, William H.; Frye, Cecil L.; and Hyde, James F., to Dow Corning Corporation. Antimicrobial ointment. 4,404,196, Cl. 424-184.000.

Daudt, William H.; Frye, Cecil L.; and Hyde, James F., to Dow Corning Corporation. Blends of water reducible organic materials and aqueous metal ammine siliconate solutions. 4,404,306, Cl. 524-262.000.

David, Agoston: *See*—
Kulcsar, Gabor; Sebestyen, Gyula; David, Agoston; and Zilahi, Tibor, 4,404,189, Cl. 424-114.000.

Davidson, Maxwell W. Heat transfer elements. 4,403,653, Cl. 165-170.000.

Daviot, Jean, to Novatome. Refractory material intended especially for contacting molten aluminum and process for its manufacture. 4,404,292, Cl. 501-97.000.

Davis, Claude P.: *See*—
Sandor, Joseph; and Davis, Claude P., 4,403,880, Cl. 401-134.000.

Davis, Jack W.; and Blaszuk, Paul R., to United Technologies Corporation. Damage resistant coated laser mirror. 4,403,828, Cl. 350-288.000.

Davis, James P., to Rodew International. Engine fuel consumption reduction system. 4,403,590, Cl. 123-557.000.

Davis, James W.; and Mannherz, Elmer D., to Fischer & Porter Company. Apparatus for injection-molding a liner onto a metal spool. 4,403,933, Cl. 425-129.00R.

Davlin, Irwin H. Flange union with improved recessed seats and sealing ring. 4,403,795, Cl. 285-184.000.

Davy-Loewy, Limited: *See—*
Hope, Thomas, 4,403,492, Cl. 72-201.000.

Dawans, Francois; Devaud, Marguerite; and Nicolas, Denise, to Institut Francais du Petrole. Organometallic polymer compositions useful as constituents of anti-fouling paints for marine structures and their methods of manufacture. 4,404,328, Cl. 525-274.000.

De Vlieg Machine Company Ltd.: *See—*
Peacock, Colin J., Cl. 29-568.000.

Dean, Stanley K.; and Dow, Robert, to Commonwealth of Australia. Forming contours. 4,404,507, Cl. 318-570.000.

Dean, Weibley F.; Merrow, David L.; and Ragard, Phillip A., to Universal Instruments Corporation. Sequencer loading head for high speed radial component sequencing and inserting machine. 4,403,722, Cl. 29-76.000.

DeBon, Frank P., to Pioneer Electric Corporation. Partitioning method and apparatus using data-dependent boundary-marking code words. 4,404,676, Cl. 371-47.000.

Deckman, Harry W.: *See—*
Peiffer, Dennis G.; and Deckman, Harry W., 4,404,255, Cl. 428-406.000.

Delaroix, Jean-Claude, to Societe Chimique des Charbonnages-CDF CHIMIE. Compositions for the manufacture of hot-melt adhesives. 4,404,299, Cl. 524-77.000.

Degen, Hugo, to Inpaver AG. Reclining furniture. 4,403,357, Cl. 5-66.000.

de Lauzon, Guillaume; and Mathey, Francois, to Societe Nationale des Poudres et Explosifs. Process for the synthesis of 1,1-diphosphaferrocenes. 4,404,147, Cl. 260-439.0CY.

DeLeo, Richard V., to Rosemount Inc. Flow device for sensors. 4,403,872, Cl. 374-138.000.

Deli, Joseph: *See—*
Zinninger, Thomas C.; and Deli, Joseph, 4,404,016, Cl. 71-78.000.

Del Principe, Robert M.; Hostetler, David A.; and Ling, John, to Mattel, Inc. Electronic game using phototransducer. 4,403,777, Cl. 273-313.000.

DeLuca, Thomas A.: *See—*
Morrison, Robert S.; DeLuca, Thomas A.; and Pasqualone, Ernest, 4,404,057, Cl. 156-324.000.

DeLue, Norman R., to PPG Industries, Inc. Preparation of unsaturated fluorocarbon acids. 4,404,398, Cl. 562-598.000.

Demarne, Henri; and Wagnon, Jean, to C. M. Industries. 3-Indolyl alkylene amino propanols and cardiovascular compositions thereof. 4,404,217, Cl. 424-274.000.

De Matteo, John: *See—*
Stevens, Arthur P.; De Matteo, John; and Beard, Richard M., 4,404,666, Cl. 367-131.000.

Demenus, Richard, to Acoustiquide Corporation. Bidirectional cassette transport. 4,404,611, Cl. 360-137.000.

Dempski, Robert E.; and O'Neill, Joseph L., to Merck & Co., Inc. Methyldopa composition. 4,404,193, Cl. 424-176.000.

den Hollander, Cornelis; and Arends, Berend J., to Lever Brothers Company. Process for producing a fat-continuous emulsion spread with improved perceived taste sensations of water soluble flavorants. 4,404,231, Cl. 426-602.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Saito, Kiyotaka; Kitsunai, Tomoyuki; and Hori, Shozo, 4,404,322, Cl. 525-74.000.

Dennison Manufacturing Company: *See—*
Margerum, Edward S.; and Hiatt, Norman A., 4,404,249, Cl. 428-216.000.

Dep, Barry, to United Plastics, Corp. Anti-static container for electronic components. 4,404,615, Cl. 361-212.000.

Derbyshire, Francis J.; and Whitehurst, Darrell D., to Mobil Oil Corporation. Method for producing graphite crystals. 4,404,177, Cl. 423-448.000.

Dergobuzova, Ekaterina V.: *See—*
Rozenfeld, Iosif L.; Brusnikina, Vera M.; Frolova, Larisa V.; Lyashenko, Alevtina A.; Sokolov, Jury V.; Bocharov, Boris V.; Fokin, Alexandr V.; Legezin, Nikolai E.; Dergobuzova, Ekaterina V.; Altshuler, Boris N.; Zelenaya, Saida A.; and Korobova, Emma S., 4,404,167, Cl. 422-12.000.

Desjardins, Rene A., to Boeing Company, The. Three directional vibration isolator. 4,403,681, Cl. 188-379.000.

DeSoto, Inc.: *See—*
Ragas, Frank J.; Minnis, Ralph L.; Murphy, Edward J.; and Vargo, Steve J., 4,404,308, Cl. 524-379.000.
Sekmakas, Kazys; and Shah, Raj, 4,404,336, Cl. 525-531.000.

Desroziers, Andre J.: *See—*
Chiu, Pay H.; and Desroziers, Andre J., 4,404,679, Cl. 372-54.000.

De Toffol, Andrea; Anfossi, Nicola; and Veroli, Gianfranco, to Montedison S.p.A. Process for preparing copolymers of vinyl-aromatic monomers with ethylenically unsaturated nitriles having low content of unreacted residual monomers. 4,404,338, Cl. 526-86.000.

Dettbarn, Hans-Jurgen; and Zimmermann, Josef, to Hoechst Aktiengesellschaft. Needle-less injection instrument. 4,403,986, Cl. 604-70.000.

Devaud, Marguerite: *See—*
Dawans, Francois; Devaud, Marguerite; and Nicolas, Denise, 4,404,328, Cl. 525-274.000.

de Vries, Douwe. Liquid-gas accumulator and float valve. 4,403,629, Cl. 138-31.000.

deWalle, Stewart; Hamoen, Dirk W.; and Boyd, James W. Apparatus and method for ultrasonic inspection. 4,403,510, Cl. 73-644.000.

Dewhurst, Paul E.; and Collier, John C., to BICC PLC; and Burndy Corporation. Electrical lead transfer unit. 4,403,383, Cl. 29-33.00M.

Deyer, Craig E., to RCA Corporation. System and method for use with apparatus for sensing bare metal on a moving strip of insulatively coated conductive material. 4,404,515, Cl. 324-54.000.

Dickson, Jerald L.; and Green, Harvey E., Jr., to Boeing Company, The. Method for applying sealant between faying surfaces of aircraft wing structures. 4,404,054, Cl. 156-92.000.

Dierckx Equipment Corporation: *See—*
Bazarnik, Louis M., 4,404,641, Cl. 364-569.000.

Diesel Kiki Co., Ltd.: *See—*
Ohie, Tomonori, 4,403,585, Cl. 123 446.000.

Dietrich, Herbert, to Pfaff Industriemaschinen GmbH. Apparatus for letting out furskins. 4,403,557, Cl. 112-19.000.

Dietrich, Paul S.: *See—*
Stephenson, Rebecca A. G.; Dietrich, Paul S.; DuBois, Grant E.; and Bunes, Leonard A., 4,404,367, Cl. 536-18.100.

Dietrich, William J., Sr., to DMI, Inc. One-pass complete tillage system. 4,403,662, Cl. 172-156.000.

Diffracto Ltd.: *See—*
Pryor, Timothy R., 4,403,860, Cl. 356-375.000.

Dillon, Mary E.: *See—*
Bi, Le-Khac; Dillon, Mary E.; and Sharik, Clyde, 4,404,111, Cl. 252-8.55D.

Di Martini, Carl R.; and Casteras, John E., to ASARCO Incorporated. Process for separation of dross elements combining sodium addition to molten bullion followed by controlled solidification of casting. 4,404,026, Cl. 75-63.000.

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Fodera, Anthony W. Energy saving thermostat. 4,403,646, Cl. 165-11.00R.
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Foley, Michael S., to USM Corporation. Component position indicator for electronic component insertion station. 4,403,406, Cl. 29-721.000.

Forberger, Steven C., to RCA Corporation. Method of printing intelligible information. 4,403,547, Cl. 101-170.000.

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Inkpen, Terence; and Newbury, Frank T., 4,404,151, Cl. 261-44.00C.

Formica Corporation: *See*—
Clarke, Theodore R., 4,404,250, Cl. 428-220.000.

Forrest, John E. Pallet for use in handling material. 4,403,555, Cl. 108-51.100.

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Fort Lock Corporation: *See*—
Scherbing, Frank J., 4,403,485, Cl. 70-68.000.

Forte, Eddy; Fryberg, Mario; and Jan, Gerald, to Ciba-Geigy AG. Process for the production of photographic color images by the silver dye bleach process. 4,404,273, Cl. 430-377.000.

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Fournier, Paul R. Integrated sputtering apparatus and method. 4,404,077, Cl. 204-192.00R.

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Fox, David A., to Westinghouse Electric Corp. Direct current power controller. 4,404,473, Cl. 307-125.000.

Fox Valley Corporation (Breneman Div.): *See*—
Kufrin, Fred W., 4,403,415, Cl. 30-96.000.

Fraas, Lewis M., to Chevron Research Company. Ternary III-V multicolor solar cells and process of fabrication. 4,404,421, Cl. 136-249.000.

Francis, William L. Loose parts plating device. 4,404,078, Cl. 204-202.000.

Franz, Gerhard; and Hund, Franz, to Bayer Aktiengesellschaft. Production of lamellar iron oxide pigments. 4,404,254, Cl. 428-329.000.

Franzen, Paul, to Maschinenfabrik Buckau R. Wolf AG. Method of and apparatus for recovering heat energy contained in vapors of multistage evaporators installed for thermal material-separating processes. 4,403,480, Cl. 62-79.000.

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Fritz, Adolf R., to Robert Bosch GmbH. Engine ignition system with automatic timing shift. 4,403,592, Cl. 123-609.000.

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Weil, Robert A., Jr.; Eck, Gary A.; and Fritz, Gary R., 4,403,536, Cl. 84-1.010.

Froehlich, Harold E., to Minnesota Mining and Manufacturing Company. Medical stapling device. 4,403,693, Cl. 206-339.000.

Frolova, Larisa V.: *See*—
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Grosskinsky, Otto-Alfred; Frommer, Elmar; Rapp, Gunther, deceased; and Thomas, Erwin, 4,404,176, Cl. 423-387.000.

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Fuji Jukogyo Kabushiki Kaisha: *See*—
Takano, Toshio, 4,403,683, Cl. 192-0.052.

Fuji Koeki Corporation: *See*—
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Masuda, Nobuhito; Nagatomo, Shigeru; and Mihara, Yuji, 4,404,289, Cl. 436-538.000.
Ohnishi, Masahiro; Ohara, Yuji; Oono, Hiroshi; and Oosaka, Shigenori, 4,404,570, Cl. 346-108.000.
Tabei, Masatoshi, 4,404,586, Cl. 358-44.000.

Fuji Xerox Co., Ltd.: *See*—
Kikuchi, Yoshiki; and Ohmori, Takashi, 4,404,568, Cl. 346-76.0PH.

Fujie, Naofumi: *See*—
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Fujii, Masanori: *See*—
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Fukuda Metal Foil & Powder Co., Ltd.: *See*—
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Fukuhara, Shoetsu; Nakamura, Yoshiaki; Ibuki, Tadahiro; and Yamamoto, Masaichi, to Eisai Co., Ltd. Milk-claw including inspection means for milk sucked from cow's teats. 4,403,568, Cl. 119-14.140.

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Maeda, Akio; Hashimoto, Kinro; Yagishita, Shigelu; Inagami, Masaaki; and Fukushima, Hiroshi, 4,404,329, Cl. 525-329.200.

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Furuyama, Tohru; and Iizuka, Tetsuya, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory circuit. 4,404,657, Cl. 365-154.000.

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Liang, Chi-Dean, 4,404,144, Cl. 260-410.90R.

Gadzhiev, Yashar A. O.: *See*—
Abdullaev, Gasan M. B. O.; Maxudov, Faramaz G. O.; Kasimov, Dzhangir A. K. O.; Mamedov, Bakhtiyar M. R. O.; Aliev, Gabil G.; Gadzhiev, Yashar A. O.; Shakhmamedov, Rovshan I. O.; and Iljushin, Alexei A., 4,403,631, Cl. 138-130.000.

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Vermess, Michael; Chatterji, Dulal C.; Grimes, George J., Jr.; and Gallelli, Joseph F., 4,404,182, Cl. 424-5.000.

Galli, Mario: *See*—
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Gardner, Hugh C., to Union Carbide Corporation. Thermosetting molding compositions. 4,404,319, Cl. 525-39.000.

Gardner, Willis W., to Waukesha Bearings Corporation. Tilting pad thrust bearing. 4,403,873, Cl. 384-306.000.

Garrett Corporation, The: *See*—
Rise, Leif, 4,403,538, Cl. 92-94.000.

Garver, Edward B., Sr., to Baxter Travenol Laboratories, Inc. Support assembly for a cannula and the like. 4,403,990, Cl. 604-273.000.

Garvin, Robert E. Anchor. 4,403,564, Cl. 114-299.000.

Garza, Roberto M. Continuous loop film projecting apparatus. 4,403,746, Cl. 242-55.19R.

Garza, Roberto M. Continuous loop film projecting apparatus. 4,403,747, Cl. 242-55.19R.
Gasanova, Alevtina A.: *See—*
Nudelman, Boris I.; Chepkalenko, Mikhail G.; Gasanova, Alevtina A.; Galimova, Guzal A.; Khaichkis, Roza; Uraev, Ravkhat E.; Tashpulatov, Turgun K.; Butaev, Erkin M.; Adam, Fedor Y.; Kevvai, Arnold A.; Bodyagina, Rashida G.; Ibragimov, Sunnat I.; and Fedorov, Alexandr P., 4,404,032, Cl. 106-100.000.
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Gebauer, Gerhard; and Bachschmid, Fritz, to J. Wagner GmbH. Method and device for regulating the output of diaphragm pumps. 4,403,924, Cl. 417-388.000.
Gebert, Ulrich; Thorwart, Werner; Komarek, Jaromir; and Cartheuser, Carl, to Hoechst Aktiengesellschaft. O-[3-(4-Substituted-piperazin-1-yl)-2-hydroxypropyl]-hydroxylamines. 4,404,384, Cl. 544-394.000.
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Gelbein, Abraham P.: *See—*
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Gellert, Jobst U. Sprue bushing connector assembly method. 4,403,405, Cl. 29-611.000.
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Johnson, Lloyd H.; Couchman, Robert S.; Spencer, Robert C., Jr.; Booth, John A.; and Holman, Russell J., 4,403,476, Cl. 60-652.000.
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General Motors Corporation: *See—*
Caldwell, David L.; and Schelling, Edward C., 4,403,895, Cl. 411-378.000.
Cogswell, James A., II; and Malen, Donald E., 4,403,762, Cl. 248-559.000.
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Krage, Mark K.; and Meduvsky, Alexander, 4,403,504, Cl. 73-116.000.
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Sherman, James F.; and Vukovich, William J., 4,403,974, Cl. 474-11.000.
Strem, Ervin H., Jr.; and Van Hulle, Gary L., 4,403,805, Cl. 296-221.000.
Young, Robert E.; and Bridgewater, Bobbie D., 4,403,579, Cl. 123-146.50A.
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Lang, William C., 4,404,364, Cl. 528-502.000.
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Bornstein, Leopold F., 4,404,334, Cl. 525-504.000.
Gerstmann, Joseph; and Vasilakis, Andrew D., to Advanced Mechanical Technology, Inc. Combustion product condensing water heater. 4,403,572, Cl. 122-20.00B.
Gerstner, Dieter, to Licentia Patent-Verwaltungs-GmbH. Indicating device. 4,403,830, Cl. 350-331.00R.
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Giel, George J., to Leland R. Rowsell. High-efficiency, low-speed electric motor system. 4,404,504, Cl. 318-269.000.
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Trotta, Robert A., 4,403,413, Cl. 30-47.000.
Gillis, Steven. Process for preparing murine interleukin 2 in the presence of interleukin 1 from an interleukin 2 nonproducer malignant cell line and cell line therefor. 4,404,280, Cl. 435-68.000.
Gillott, George L., to Tri-tech, Inc. Electric rotating machine. 4,404,484, Cl. 310-49.00R.
Gillotti, John A. Grade control alignment device and method. 4,403,889, Cl. 404-72.000.
Gladden, John R., to Caterpillar Tractor Co. Ammonia/fuel ratio control system for reducing nitrogen oxide emissions. 4,403,473, Cl. 60-274.000.
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Glover, Betty L. Camera carrying device. 4,403,717, Cl. 224-252.000.
Gluck, Wolfgang, to Eckart-Werke Standard Bronzepulver-Werke Carl Eckart. Process for the production of a metal or metal alloy powder. 4,404,023, Cl. 75-0.50R.
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Godbehere, Peter W., to Noranda Mines Limited. Dore slag treatment. 4,404,022, Cl. 75-2.000.
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Goodin, Richard D.; Chupp, John P.; Balthazor, Terry M.; and Coleman, James P., to Monsanto Company. Electrolytic desulfurization of anilino sulfur compounds. 4,404,069, Cl. 204-59.00R.
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Gotoh, Tohru, to Mitsubishi Denki Kabushiki Kaisha. Automatic welding apparatus with weld line detecting means. 4,404,455, Cl. 219-124.340.
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Gould, William S.: *See*—
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Gourse, Jerome A., to Velsicol Chemical Corporation. Herbicidal α-cyanobenzyl 3,6-dichloro-2-methoxy-benzoate. 4,404,021, Cl. 71-105.000.
Goutard, Rene-Michel; and Piry, Pierre, to Automatisme et Technique; and Laboratoires Sophartex. Device for sealing hard gelatin capsules and for packing a liquid product dose in the thus sealed capsule. 4,403,461, Cl. 53-282.000.
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Grant, Frederic F., to Bell & Howell Company. Bidirectional tape advancing method and apparatus. 4,403,720, Cl. 226-190.000.
Graves, J. Robert, to Mead Corporation, The. Surface profile recorder. 4,403,419, Cl. 33-174.00P.
Gray, Robert C. Roller skate axle suspension. 4,403,784, Cl. 280-11.280.
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Green, Martin A.; and Blakers, Andrew W., to Unisearch Limited. High efficiency solar cell structure. 4,404,422, Cl. 136-255.000.
Greenwell, Jack, to LearAvia. Motor drive circuit. 4,404,512, Cl. 318-807.000.
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Amir, Gideon; Haque, Yusuf; and Gregorian, Roubik, 4,404,525, Cl. 330-9.000.
Grieder, Alfred: *See*—
Fah, Hansjakob; and Grieder, Alfred, 4,404,388, Cl. 546-345.000.
Grieve, Harold R.; and Andersen, Thomas S., to General Foods Corporation. Multi-compartmented display carton. 4,403,727, Cl. 229-27.000.
Griffis, Patrick D., to RCA Corporation. Matching volume control characteristics for two channels. 4,404,429, Cl. 179-1.0VL.
Griffith-Hope Company: *See*—
Cornell, Robert W., 4,403,748, Cl. 242-55.530.
Grimes, George J., Jr.: *See*—
Vermess, Michael; Chatterji, Dulal C.; Grimes, George J., Jr.; and Gallelli, Joseph F., 4,404,182, Cl. 424-5.000.
Groff, Gaylord L.: *See*—
Charbonneau, Robert R.; and Groff, Gaylord L., 4,404,246, Cl. 428-212.000.
Groke, Ulrich, to Julich Gesellschaft mit beschrankter Haftung. Heat-pipe with residual gas collector vessel. 4,403,651, Cl. 165-104.270.
Grosjean, Jean-Claude; and Landry, Jean-Marie, to Institut de Recherches de la Siderurgie Francaise (IRSID). Bottom of metallurgical container and process of forming the same. 4,403,768, Cl. 266-44.000.
Grosskinsky, Otto-Alfred; Frommer, Elmar; Rapp, Gunther, deceased (by Rapp, Ruth E., legal representative); and Thomas, Erwin, to BASF Aktiengesellschaft. Preparation of hydroxylammonium salts. 4,404,176, Cl. 423-387.000.
Grow, Robert M., to Burroughs Corporation. Timed token ring with multiple priorities. 4,404,557, Cl. 340-825.050.
Grudowski, Raymond A., to Allen-Bradley Company. Programmable controller for using coded I/O data technique. 4,404,651, Cl. 364-900.000.
Grunewalder, John F., to PPG Industries, Inc. Treatment of wood with water repellent compositions. 4,404,239, Cl. 427-393.000.
GTE Automatic Electric Incorporated: *See*—
Karchevski, Robert A., 4,404,675, Cl. 371-47.000.
GTE Automatic Electric Labs Inc.: *See*—
Koppensteiner, James V.; and Onesto, Joseph B., 4,403,408, Cl. 29-764.000.
GTE Laboratories Incorporated: *See*—
Stein, Richard J., 4,403,396, Cl. 29-571.000.
GTE Products Corporation: *See*—
Shaffer, John W., 4,403,973, Cl. 445-28.000.
Guazzone, Bruno: *See*—
Muller, Hans; and Guazzone, Bruno, 4,404,106, Cl. 210-772.000.
Guerci, James N.: *See*—
Gurney, John W.; Guerci, James N.; and Allison, Clifford, Jr., 4,404,565, Cl. 343-881.000.
Guerreau, Rene: *See*—
Bernard, Jean; Beyl, Jean; Campillo, Christian; Guerreau, Rene; Le Faou, Daniel; and Peyre, Henri, 4,403,788, Cl. 280-605.000.
Gugenberger, Thorolf, to Varta Batterie Aktiengesellschaft. Corrosion protection for non-amalgamated zinc. 4,404,117, Cl. 252-182.100.
Guillory, Jack P.: *See*—
Reed, Larry E.; Porter, Randall A.; Farha, Floyd E., Jr.; and Guillory, Jack P., 4,404,087, Cl. 208-48.0AA.
Gulf Oil Corporation: *See*—
Rutter, Jerry L., 4,404,017, Cl. 71-88.000.
Gulf Research & Development Company: *See*—
Schulz, Johann G. D.; and Cobler, John A., 4,403,998, Cl. 44-51.000.
Gulla, Michael: *See*—
Taylor, Paul; and Gulla, Michael, 4,404,357, Cl. 528-153.000.
Gundel, Janos: *See*—
Benko, Pal; Bozsing, Daniel; Gundel, Janos; and Magyar, Karoly, 4,404,204, Cl. 424-250.000.
Gunther, Wilhelm: *See*—
Ernst, Dieter; Forster, Hilmar; Gunther, Wilhelm; and Vahldiek, Ernst, 4,403,705, Cl. 213-1.300.
Gupta, Goutam; and Ramey, Chester E., to Ferro Corporation. Acylated hindered hexahydropyrimidines and their use as light stabilizing agents. 4,404,302, Cl. 524-100.000.
Gur, Turgut M.: *See*—
Huggins, Robert A.; and Gur, Turgut M., 4,404,068, Cl. 204-59.00R.
Gurney, Anthony R., to Donovan Wire & Iron Co. Headlamp door lever assembly. 4,403,524, Cl. 74-538.000.
Gurney, John I. Method and apparatus for fabricating dental prosthetics. 4,403,961, Cl. 433-213.000.
Gurney, John W.; Guerci, James N.; and Allison, Clifford, Jr., to Radiation Systems Incorporated. Quickly erectable antenna support structure. 4,404,565, Cl. 343-881.000.
Gutek, Beth I., to Dow Corning Corporation. Flame retardant polyorganosiloxane resin compositions. 4,404,305, Cl. 524-118.000.
Gutsche, Gunter E. Method and apparatus for use in harnessing solar energy to provide initial acceleration and propulsion of devices. 4,403,755, Cl. 244-53.00R.
Gyurics, Karoly: *See*—
Szendrodi, Valer; Radics, Gyula; Varga, Tivadar; Vass, Tibor; and Gyurics, Karoly, 4,403,803, Cl. 296-179.000.
H. Krantz GmbH & Co.: *See*—
Grafen, Karl, 4,403,379, Cl. 26-95.000.
Hacker, Marlin W.: *See*—
Mountz, Elton; Whiteman, Paul; Higginson, Roy C.; and Hacker, Marlin W., 4,403,804, Cl. 296-183.000.
Hackman, Donald J.: *See*—
Caudy, Don W.; Hackman, Donald J.; Hoffman, Robert T.; and Uhler, Dale G., 4,404,170, Cl. 422-237.000.
Haddad, James H.; and Krambeck, Frederick J., to Mobil Oil Corporation. Method and means for separating gaseous materials from finely divided catalyst particles. 4,404,095, Cl. 208-161.000.
Haeck, Paul J., to Wallace Murray Corporation. Fluid shear coupling apparatus. 4,403,684, Cl. 192-58.00B.
Haeusler, Roland. Novel mortise-and-tenon type joint for furniture. 4,403,886, Cl. 403-217.000.
Hagiwara, Sumio: *See*—
Tsukagoshi, Tsunehiro; Nemoto, Etsuro; Yokozseki, Shinichi; Hagiwara, Sumio; Yoshino, Toshikazu; Arai, Yasuyuki; and Kobayashi, Kazuyoshi, 4,404,315, Cl. 524-521.000.
Hahn & Clay: *See*—
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Haigh, Richard B.: *See*—
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Hajek, Manfred; Wagner, Kuno; Uerdingen, Walter; and Wellner, Wolfgang, to Bayer Aktiengesellschaft. Cycloaminals and a process for their preparation. 4,404,379, Cl. 544-231.000.
Hajime Industries Ltd.: *See*—
Yoshida, Hajime, 4,403,858, Cl. 356-237.000.
Halbach and Braun: *See*—
Braun, Gert; and Braun, Ernst, 4,403,808, Cl. 299-34.000.
Halbich, Frank. Plastic pill box and associated loading appliance. 4,403,462, Cl. 53-392.000.
Halcon SD Group, Inc., The: *See*—
Kochar, Nand K.; and Ozero, Brian J., 4,404,399, Cl. 564-402.000.
Halliburton Company: *See*—
Bridges, James R., 4,404,163, Cl. 376-119.000.
Hallmark Cards, Inc.: *See*—
Raymoure, Russell A.; Bechtel, Richard P., Jr.; Carson, Ray; and Don Carlos, Alva G., 4,403,695, Cl. 206-497.000.
Hambrecht, Juergen: *See*—
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Hamlin, Humphrey A. S.; and Taylor, James C., to Normalair-Garrett (Holdings) Limited. Molecular sieve type gas separation systems. 4,404,005, Cl. 55-163.000.
Hamoen, Dirk W.: *See*—
deWalle, Stewart; Hamoen, Dirk W.; and Boyd, James W., 4,403,510, Cl. 73-644.000.
Hancock, Homer H. Water-hose-powered garden/agricultural sprayers and special nozzle. 4,403,737, Cl. 239-154.000.
Hann, Paul D.: *See*—
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Hanna, Marie R.: *See*—
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Hannan, William J., to Itek Corporation. Imaging system with enlarged depth of field. 4,404,594, Cl. 358-209.000.

Hannon, Betty R.: *See—*
Dolak, Lester A.; Reusser, Fritz; Castle, Thomas M.; Hannon, Betty R.; Laborde, Alice L.; and Marschke, Charles K., 4,404,190, Cl. 424-118.000.

Hansen, Robert: *See—*
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Adams, John R.; Gelbein, Abraham P.; Hansen, Robert; Peress, Jimmy Y.; and Sherwin, Martin B., 4,404,417, Cl. 585-671.000.

Hansen, Robert S. Holding device for pencils and the like. 4,403,699, Cl. 211-69.100.

Hanson, Douglas R. Brush assembly for cleaning bread pans. 4,403,365, Cl. 15-56.000.

Haque, Yusuf: *See—*
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Hara, Sumio: *See—*
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Harada, Hiroshi: *See—*
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Harada, Kuniyoshi; and Fujie, Naofumi, to Aisin Seiki Kabushiki Kaisha. Attitude control system for driver's seat. 4,404,632, Cl. 364-425.000.

Harada, Nobuo: *See—*
Miyano, Tetsuji; Suzuki, Kunio; and Harada, Nobuo, 4,404,378, Cl. 544-131.000.

Harada, Nozomu, to Tokyo Shibaura Denki Kabushiki Kaisha. Solid state image sensor with lag control electrode. 4,404,466, Cl. 250-211.00J.

Harden, Jimmie K.: *See—*
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Hardin, Lewis T.: *See—*
McCormick, Joseph A.; and Hardin, Lewis T., 4,403,793, Cl. 283-105.000.

Haringer, Alois, to VEMA, S.p.A. Articulated arm for excavator machines. 4,403,429, Cl. 37-103.000.

Harke, Hans-Peter: *See—*
Sporkenbach, Jutta; Eggensperger, Heinz; Bucklers, Lothar; Ehlers, Helmut H.; Eigener, Ulrich; and Harke, Hans-Peter, 4,404,191, Cl. 424-130.000.

Harper, Orville R. Paint can support for ladders. 4,403,368, Cl. 15-257.00R.

Harrington, Edward L.: *See—*
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Harris Corporation: *See—*
Ports, Kenneth A., 4,404,658, Cl. 365-154.000.
Taylor, David L., 4,403,399, Cl. 29-574.000.

Harris, Denis I., to Norton Company. Microwave heating process for grinding wheels. 4,404,003, Cl. 51-298.000.

Harris, Eugene G., to Emery Industries, Inc. Process for enhancing the fragrance qualities of ethylene glycol monoaryl ethers. 4,404,407, Cl. 568-648.000.

Harris, Robert D.: *See—*
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Harsco Corporation: *See—*
Henderson, Frank E., 4,403,783, Cl. 280-5.00G.

Hartmann, Werner, to Harwe AG. Homogeneous molded article produced from polylactam by activated anionic polymerization of medium lactams. 4,404,360, Cl. 528-326.000.

Harton, Donald L., to Bendix Corporation, The. Housing and mounting assembly providing a temperature stabilized environment for a microcircuit. 4,404,459, Cl. 219-209.000.

Hartwig, Jurgen, to Pfaff Hauschaltmaschinen GmbH. Device for controlling the drive of a stepping motor, to adjust the lateral stitch bight and/or the feed length of a sewing machine. 4,404,509, Cl. 318-685.000.

Hartwig, Volker: *See—*
Bernert, Claus-Rudiger; Hartwig, Volker; Kords, Christian; and Redeker, Detmar, 4,404,370, Cl. 536-85.000.

Haruta, Yasuhiko: *See—*
Higuchi, Tetsuo; Takagi, Teiitsu; Fujitani, Toshihide; and Haruta, Yasuhiko, 4,404,318, Cl. 524-588.000.

Harvey Hubbell Incorporated: *See—*
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Harwood, Leopold A.: *See—*
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Hasco-Normalien Hasenclever & Co.: *See—*
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Hashimoto, Kinro: *See—*
Maeda, Akio; Hashimoto, Kinro; Yagishita, Shigelu; Inagami, Masaaki; and Fukushima, Hiroshi, 4,404,329, Cl. 525-329.200.

Hashimoto, Shunichi: *See—*
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Haskell, Theodore H.; and Hutt, Marland P., to Warner-Lambert Company. Cephalosporins. 4,404,201, Cl. 424-246.000.

Haskell, Weston W., to Shell Oil Company. Method for the prevention or inhibition of popcorn polymer in organic material containing vinyl compounds. 4,404,413, Cl. 585-2.000.

Hata, Akio; and Tanga, Michifumi, to Tokuyama Sekisui Kogyo Kabushiki Kaisha. Process for inhibiting the formation of scale in the suspension polymerization of vinyl chloride. 4,404,337, Cl. 526-62.000.

Hata, Ikuro; and Takeda, Masashi, to Sony Corporation. Digital-to-analog converter. 4,404,546, Cl. 340-347.0DA.

Hatakeyama, Narito, to Kabushiki Kaisha Yoshida Seisakusho. Coupling device for a dental instrument. 4,403,959, Cl. 433-126.000.

Hatakeyama, Yoshiharu: *See—*
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Hattori, Tadashi; Yamaguchi, Hiroaki; and Ozaki, Tadashi, to Nippon Soken, Inc. Ignition range detector for internal combustion engine. 4,403,505, Cl. 73-117.300.

Hattori, Tetuo: *See—*
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Hattori, Yoshiyuki: *See—*
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunaku, 4,403,910, Cl. 415-53.00T.

Hauni-Werke Korber & Co. KG: *See—*
Dahlgrun, Rolf, 4,403,619, Cl. 131-280.000.
Joseph, Horst D.; and Koch, Friedo, 4,403,620, Cl. 131-280.000.

Hauri, Robert; and Reinhard, Peter. Extracoronal holding member for dental prostheses. 4,403,960, Cl. 433-177.000.

Haus, Artur: *See—*
Jabs, Gert; Dahm, Manfred; Haus, Artur; Nehen, Ulrich; Rath, Klaus; and Weimann, Norbert, 4,404,251, Cl. 428-320.600.

Hauschopp, Alois; Breuer, Oswald; and Steinkuhl, Bernd, to Gewerkschaft Eisenhutte Westfalia. Mineral winning plough. 4,403,809, Cl. 299-34.000.

Hawkins, William R., to Texas Instruments Incorporated. Electronic teaching apparatus. 4,403,965, Cl. 434-327.000.

Hayase, Tamiki: *See—*
Nakamura, Toshiomi; Okamura, Masakazu; Moriguchi, Yoichiro; and Hayase, Tamiki, 4,404,347, Cl. 527-300.000.

Hayashi, Makoto; and Shimizu, Tasuku, to Hitachi, Ltd. Method for foreseeing residual life of structural member making use of X-ray. 4,404,682, Cl. 378-72.000.

Hayes, John C.: *See—*
Castillo, Carmen; and Hayes, John C., 4,404,090, Cl. 208-120.000.

Haynes, Andrew, to Baker International Corporation. Torque transmitting expansion joint and a hanger assembly incorporating same. 4,403,654, Cl. 166-73.000.

Hazelett, David A.; Shaw, Charles B.; and McCombs, Paul W., to Astral Industries, Inc. Casket bed. 4,403,380, Cl. 27-12.000.

Hebert, Raymond T. Method and apparatus for room temperature stabilization. 4,403,644, Cl. 165-1.000.

Heesen, Theodorus J. Press for compressing a powdery material. 4,403,936, Cl. 425-331.000.

Heider, Manfred; Hofschneider, Josef; Schallenberger, Wolfgang; Nodes, Franz; and Kempe, Eberhard, to Vogelbusch Gesellschaft m.b.H. Measurement of volatile constituents of a culture medium. 4,404,284, Cl. 435-291.000.

Heidrich, Gunther; and Stolzle, Karl, to BHS-Bayerische Berg-, Hutten-und Salzwerke. Marine transmission gear unit with double drive. 4,403,968, Cl. 440-3.000.

Heimburger, Norbert: *See—*
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Schwinn, Horst; Heimburger, Norbert; Kumpe, Gerhardt; and Preis, Hans M., 4,404,187, Cl. 424-101.000.

Heise, Klaus-Peter; and Wedemeyer, Karlfried, to Bayer Aktiengesellschaft. Process for the preparation of 4-nitrodiphenylamines. 4,404,400, Cl. 564-406.000.

Helsingoer Vaerft A/S: *See—*
Fisker, Jens E., 4,403,913, Cl. 415-150.000.

Henderson, Frank E., to Harsco Corporation. Liquid and granular hauling trailer. 4,403,783, Cl. 280-5.00G.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Osberghaus, Rainer; Ellwanger, Hans; Marsen, Horst; and Bossek, Harald, 4,404,039, Cl. 134-3.000.

Herbert Kannegiesser GmbH & Co.: *See—*
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Herbstman, Sheldon: *See—*
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Hercules Incorporated: *See—*
Bloothoofd, William, 4,403,566, Cl. 118-407.000.
Jabloner, Harold, 4,404,314, Cl. 524-519.000.
Maslanka, William W.; and Spence, Gavin G., 4,404,310, Cl. 524-457.000.

Herlin, Patrick: *See—*
Pepin, Christian; and Herlin, Patrick, 4,404,592, Cl. 358-125.000.

Herman, Morton B.: *See—*
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Hermann Berstorff Maschinenbau GmbH: *See—*
Koch, Klaus; Schaeffer, Hans-Joachim; and Syrbius, Gerhard, 4,404,101, Cl. 210-232.000.

Hermecz, Istvan: *See—*
Kokosi, Jozsef; Hermecz, Istvan; Meszaros, Zoltan; Szasz, Gyorgy; Vasvari nee Debreczy, Lelle; Horvath, Agnes; and Breining, Tibor, 4,404,205, Cl. 424-251.000.

Herr, John A., to Singer Company, The. Brush board assembly for dynamoelectric machine. 4,404,488, Cl. 310-239.000.

Herriau, Paul, to Societe SOGEFINA Societe de Gestion Financiere Armoricaine. Distributing device for so-called single-seed seed drills and seed drill comprising such a device. 4,403,713, Cl. 221-265.000.
Herschel, Ben B.; and Chaloka, Andrew, to Wing Industries, Inc. Omni-directional face-and-bypass coil. 4,403,649, Cl. 165-101.000.
Herskovits, Lily E., to UOP Inc. Regeneration of adsorbents by low temperature hydrogen stripping. 4,404,118, Cl. 252-411.00R.
Hesky, Hans; and Wunderer, Armin, to Hoechst Aktiengesellschaft. Process for carrying away the decay heat of radioactive substances. 4,404,165, Cl. 376-272.000.
Hess, Hans-Jurgen E.: *See*—
Johnson, Michael R.; Schaaf, Thomas K.; and Hess, Hans-Jurgen E., 4,404,372, Cl. 542-429.000.
Hess, John L. Pipe thread cleaner. 4,403,363, Cl. 15-104.040.
Hessler, Edward J.: *See*—
Walker, Jerry A.; and Hessler, Edward J., 4,404,142, Cl. 260-397.450.
Hetzler, Bernard H.; and Martin, Hugh V., to MacMillan Bloedel Limited. Surface stabilized waferboard. 4,404,252, Cl. 428-326.000.
Hewlett-Packard Company: *See*—
Larson, John D., III; and Miller, David G., 4,404,489, Cl. 310-334.000.
Heyl, Tilo: *See*—
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Heynisch, Hinrich, to Siemens Aktiengesellschaft. Travelling wave tube with periodic-permanent magnet focusing system. 4,404,494, Cl. 315-3.500.
Hiatt, Norman A.: *See*—
Margerum, Edward S.; and Hiatt, Norman A., 4,404,249, Cl. 428-216.000.
Hicinbothem, Walter A., Jr.: *See*—
Tarng, Ming L.; and Hicinbothem, Walter A., Jr., 4,404,235, Cl. 427-89.000.
Hickey, Robert J. Ski to boot attachment mechanism. 4,403,789, Cl. 280-614.000.
Hicks, Chester F. Cathodic corrosion resistant pipe saddle with low friction insert. 4,403,759, Cl. 248-55.000.
Hidaka, Kensuke: *See*—
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Hidaka, Yasuhiro: *See*—
Suenobu, Koreyoshi; Kohara, Masanori; Hidaka, Yasuhiro; Katsuyama, Kazuki; and Kinishi, Ryoichi, 4,404,352, Cl. 528-45.000.
Higashida, Osamu; Moribe, Isamu; and Yamamoto, Hajime, to Hitachi Chemical Company, Ltd. Positively chargeable powdered electrophotographic toner containing dialkyl tin oxide charge control agent. 4,404,270, Cl. 430-110.000.
Higashida, Yoshitaka: *See*—
Kakehi, Masanori; Higashida, Yoshitaka; Iwamoto, Kenzo; and Kano, Hikaru, 4,404,056, Cl. 156-244.110.
Higginson, Roy C.: *See*—
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Hignett, Geoffrey J., to Interox Chemicals Limited. Bleaching agents. 4,403,994, Cl. 8-111.000.
Higuchi, Tetsuo; Takagi, Teiitsu; Fujitani, Toshihide; and Haruta, Yasuhikō, to Kansai Paint Co., Ltd. Pigment dispersion. 4,404,318, Cl. 524-588.000.
Hill, John A., to E. R. Squibb & Sons, Inc. Closures for open ended ostomy pouch. 4,403,991, Cl. 604-337.000.
Hillesheimer, Walter. Hydraulically driven lifting, loading or tipping platform. 4,403,680, Cl. 187-18.000.
Hills, Marian E.: *See*—
Bottka, Nicholas; and Hills, Marian E., 4,403,397, Cl. 29-572.000.
Hills, Richard E., to Pittsburgh-Des Moines Corporation. Method of erecting an elevated tank using formwork. 4,403,460, Cl. 52-745.000.
Hirabayashi, Tsugio; and Koiso, Junichi, to Konishiroku Photo Industry Co., Ltd. Developer recovering device for electrostatic image reproducing system. 4,403,852, Cl. 355-15.000.
Hirahata, Shigeru; Ikeda, Tetsuya; Tachiuchi, Tsuguji; Komatsu, Shigeru; and Takezawa, Teruhiro, to Hitachi, Ltd. Display device for both a character display and a graphic display. 4,404,552, Cl. 340-721.000.
Hirata, Hitoshi; and Nishioka, Akira, to Pioneer Electronic Corporation. Detector for sub signal of modulated AM stereophonic signal. 4,404,428, Cl. 179-1.0GS.
Hirose, Mitsuhiro, to Brother Kogyo Kabushiki Kaisha. Programming system for a sewing machine. 4,403,559, Cl. 112-121.120.
Hirota, Kazumi; Tsutsumi, Yotaro; Ito, Senji; Katsura, Tadahiko; Matsuoka, Kikuo; and Hori, Ichiro, to Toyo Seikan Kaisha Ltd. Easily-openable heat seal lid. 4,403,710, Cl. 220-270.000.
Hiruta, Masaru: *See*—
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Hitachi Chemical Company, Ltd.: *See*—
Higashida, Osamu; Moribe, Isamu; and Yamamoto, Hajime, 4,404,270, Cl. 430-110.000.
Hitachi Construction Machinery Co., Ltd.: *See*—
Miyanagi, Naoki; and Ogata, Kojiro, 4,403,890, Cl. 405-184.000.
Hitachi, Ltd.: *See*—
Aiki, Kunio; Nakamura, Michiharu; and Umeda, Jun-ichi, 4,404,678, Cl. 372-45.000.
Akahori, Kimihiko; Maeno, Shigeo; Kodama, Hideyo; and Morisada, Norio, 4,404,041, Cl. 148-2.000.
Hayashi, Makoto; and Shimizu, Tasuku, 4,404,682, Cl. 378-72.000.
Hirahata, Shigeru; Ikeda, Tetsuya; Tachiuchi, Tsuguji; Komatsu, Shigeru; and Takezawa, Teruhiro, 4,404,552, Cl. 340-721.000.
Ikeda, Tadashi; Tsumita, Norikazu; and Sugita, Yutaka, 4,404,233, Cl. 427-35.000.
Kihara, Toshimasa; and Inoue, Toshifumi, 4,404,659, Cl. 365-185.000.
Konishi, Nobutake; Naito, Masayoshi; Yatsuo, Tsutomu; and Terasawa, Yoshio, 4,404,580, Cl. 357-38.000.
Makino, Kazuhiro, 4,403,704, Cl. 212-262.000.
Miyakawa, Nobuaki; and Miki, Masayuki, 4,404,648, Cl. 364-900.000.
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Hu, Mae W.; Colvin, Floyd W.; and Ullman, Edwin F., to Syva Company. Methods and compositions for assaying for the production of 1,4-dihydropyridyl. 4,404,278, Cl. 435-7.000.

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Ishida, Toshihiko, to TDK Electronics Co., Ltd. Protective sheet for cassette holding magnetic recording tape. 4,404,245, Cl. 428-206.000.
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Ishizuka, Hiroshi. Vacuum separator. 4,403,769, Cl. 266-149.000.
Isii, Kaniti: *See*—
Tomite, Tosio; Ogasawara, Nobuhiko; Isii, Kaniti; and Kanamaru, Hisanobu, 4,403,402, Cl. 29-598.000.
Isobe, Yukihiro: *See*—
Hosaka, Akihiko; Isobe, Yukihiro; and Okuyama, Kiyotaka, 4,404,259, Cl. 428-425.900.
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, to Mitsubishi Gas Chemical Company, Inc. Process for producing adipic acid diester. 4,404,394, Cl. 560-204.000.
Itai, Humio, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic reproducing apparatus. 4,404,607, Cl. 360-105.000.
Itek Corporation: *See*—
Hannan, William J., 4,404,594, Cl. 358-209.000.
Ito, Makoto: *See*—
Kitamura, Yoichi; Hotta, Hisashi; Yurita, Chikara; and Ito, Makoto, 4,404,447, Cl. 219-64.000.
Ito, Senji: *See*—
Hirota, Kazumi; Tsutsumi, Yotaro; Ito, Senji; Katsura, Tadahiko; Matsuoka, Kikuo; and Hori, Ichiro, 4,403,710, Cl. 220-270.000.
Ito, Tatsuo; Shomura, Takashi; Kojima, Michio; Ezaki, Norio; Sezaki, Masaji; and Niwa, Tomizo, to Meiji Seika Kaisha Ltd. Antibiotic SF-2103A substance and process for production thereof. 4,404,218, Cl. 424-274.000.
IVAC Corporation: *See*—
Busche, William W., 4,404,440, Cl. 200-83.00R.
Ives, Jeffrey L., to Pfizer Inc. Phenylguanidine therapeutic agents. 4,404,219, Cl. 424-274.000.
Iwai, Tomio; and Tobinaga, Motoi, to Yamaha Hatsudoki Kabushiki Kaisha; and Sanshin Kogyo Kabushiki Kaisha. Separate lubricating system for outboard engine. 4,403,578, Cl. 123-73.0AD.
Iwamatsu, Seiichi: *See*—
Komatsu, Shoichi; and Iwamatsu, Seiichi, 4,404,236, Cl. 427-94.000.
Iwamoto, Kenzo: *See*—
Kakehi, Masanori; Higashida, Yoshitaka; Iwamoto, Kenzo; and Kano, Hikaru, 4,404,056, Cl. 156-244.110.
Iwanami, Masaru; Maeda, Tetsuya; Nagano, Yoshinobu; Fujimoto, Masaharu; Nagano, Noriaki; and Yamazaki, Atsuki, to Yamanouchi Pharmaceutical Co., Ltd. Process for the preparation of 7α-methoxy-7β-(1,3-diethietane-2-carboxamido)cephalosporanic acid derivatives. 4,404,373, Cl. 544-21.000.
Iwasaki, Hiroshi: *See*—
Ojima, Shin; Watanabe, Kazutaka; and Iwasaki, Hiroshi, 4,404,643, Cl. 364-705.000.
Iwasaki, Norio: *See*—
Kobayashi, Shigeki; Iwasaki, Norio; Ikeda, Yasunori; Miyake, Tamio; and Tanimura, Shigeru, 4,404,683, Cl. 382-6.000.

Iwasaki, Shinichiro, to Aisin Seiki Company, Limited. Position sensor. 4,403,515, Cl. 73-862.380.

Iwaya, Shoichi; Masumura, Hitoshi; Midori, Yoshifumi; Oikawa, Yasunobu; and Abe, Hisao, to TDK Electronics Co., Ltd. Non-linear polycrystalline barium titanate-type dielectric element. 4,404,029, Cl. 501-139.000.

J. H. Fenner & Co. Ltd.: *See—*
Potter, Charles W., 4,403,780, Cl. 277-88.000.

J. I. Case Company: *See—*
Maurer, Herman J.; and Pedersen, Carl O., 4,403,905, Cl. 414-695.500.

J. Wagner GmbH: *See—*
Gebauer, Gerhard; and Bachschmid, Fritz, 4,403,924, Cl. 417-388.000.

Jabloner, Harold, to Hercules Incorporated. Preparation of stable aqueous dispersions of polyolefin fibers. 4,404,314, Cl. 524-519.000.

Jabs, Gert; Dahm, Manfred; Haus, Artur; Nehen, Ulrich; Rath, Klaus; and Weimann, Norbert, to Bayer Aktiengesellschaft. Copying systems, a process for their production, and suitable printing inks for both offset and book printing. 4,404,251, Cl. 428-320.600.

Jackson Laboratory, The: *See—*
Mayer, Ben; and Phillips, Catherine A., 4,404,590, Cl. 358-106.000.

Jackstone Froster Limited: *See—*
Fenner, Frank R., 4,403,482, Cl. 62-341.000.

Jahani, Hooshang, to National Semiconductor Corporation. Plating mask support. 4,404,079, Cl. 204-224.00R.

Jahani, Hooshang, to National Semiconductor Corporation. Molded plating mask. 4,404,080, Cl. 204-224.00R.

Jamar, Walker. Apparatus for wall mounted presentation boards. 4,403,761, Cl. 248-441.00B.

James Hardie & Coy. Pty. Limited: *See—*
Seach, Barry G.; Muller, Hans; and Cohen, Solomon E., 4,403,938, Cl. 425-393.000.

James River-Dixie/Northern, Inc.: *See—*
Mueller, Robert L.; and Cherney, Jerome A., 4,404,241, Cl. 428-35.000.

Jan, Gerald: *See—*
Forte, Eddy; Fryberg, Mario; and Jan, Gerald, 4,404,273, Cl. 430-377.000.

Jankovsky, Frantisek; and Lincke, Paul, to Sulzer Brothers Limited. Weft yarn storage device for weaving machines. 4,403,634, Cl. 139-452.000.

Janome Sewing Machine Co., Ltd.: *See—*
Makabe, Hachiro; Orii, Akira; and Takahashi, Yoshitaka, 4,403,560, Cl. 112-158.00E.

Janssen, Edward W., to Minnesota Mining and Manufacturing Company. Novel adhesive compositions. 4,404,345, Cl. 526-206.000.

Janssen, Harvey W., to Wolff Manufacturing Company. Power-operated torque wrench. 4,403,663, Cl. 173-12.000.

Janvrin, Robert B., to General Signal Corporation. Electromagnetic assembly. 4,404,534, Cl. 336-197.000.

Jaulmes, Christian, to Ateliers de la Motobecane S.A. Dual linkage coupling mechanism for a moped for engaging a motor driven pulley with the moped rear wheel. 4,403,672, Cl. 180-205.000.

Jenkins, Robert D., to Reilich, David G.; Unipak, Inc.; and Quinn, Jeffrey J., part interest to each. Picture frame assembly. 4,403,434, Cl. 40-152.000.

Jennie, Fred, to Weatherby, Inc. Trigger mechanism for multiple barrel firearm providing barrel selection. 4,403,436, Cl. 42-42.00R.

Jenoptik Jena G.m.b.H.: *See—*
Meier, Ludwig, 4,403,964, Cl. 434-286.000.

Jensen, Borge: *See—*
Rasmussen, Ole-Bendt; and Jensen, Borge, 4,403,934, Cl. 425-192.00R.

Johannes Heidenhain GmbH: *See—*
Ernst, Alfons, 4,403,859, Cl. 356-374.000.

Johanson, Edwin S.: *See—*
Huibers, Derk T. A.; and Johanson, Edwin S., 4,404,084, Cl. 208-10.000.

Johns, Thomas J.: *See—*
Ledbetter, Stephen G.; Singleton, Michael P.; Johns, Thomas J.; and Fabian, James L., 4,403,796, Cl. 285-223.000.

Johnson, Jay M., to Yellow Springs Instrument Company, The. Method for quantitatively determining a particular substrate catalyzed by a multisubstrate enzyme. 4,404,066, Cl. 204-1.00T.

Johnson, Lloyd H.; Couchman, Robert S.; Spencer, Robert C., Jr.; Booth, John A.; and Holman, Russell J., to General Electric Company. Method for operating a steam turbine with an overload valve. 4,403,476, Cl. 60-652.000.

Johnson, Marvin M.; Walker, Darrell W.; and Nowack, Gerhard P., to Phillips Petroleum Company. Selective hydrogenation catalyst. 4,404,124, Cl. 252-466.0PT.

Johnson, Michael R.; Schaaf, Thomas K.; and Hess, Hans-Jurgen E., to Pfizer Inc. 15-Substituted-ω-pentanorprostaglandin derivatives. 4,404,372, Cl. 542-429.000.

Johnson, Paul H.; and Benjamin, Harwell E., to Phillips Petroleum Company. Apparatus and method for producing carbon black. 4,404,178, Cl. 423-450.000.

Johnson, Robert E.: *See—*
Pekari, Frederick J.; and Johnson, Robert E., 4,403,912, Cl. 415-150.000.

Johnson, Victor R., Jr. System for detecting leaks from liquid-containing reservoirs and conduits. 4,404,516, Cl. 324-54.000.

Jolly, Walter R.: *See—*
Krishnamumar, Suppayan M.; and Jolly, Walter R., 4,403,940, Cl. 425-529.000.

Jones, Charles, to Curtiss-Wright Corporation. Multi-unit rotary mechanism. 4,403,928, Cl. 418-60.000.

Jones, Darryl S.; Larkin, Donald W.; Toner, Michael F.; and Werve, Carleton E., to International Business Machines Corp. Dynamic array error recovery. 4,404,647, Cl. 364-900.000.

Jones, David A., to G. D. Searle & Co. Enkephalin derivatives. 4,404,135, Cl. 260-112.50E.

Jones, John E.; and Castelli, Vittorio R., to Xerox Corporation. Snubbed anchoring apparatus. 4,403,877, Cl. 400-335.000.

Jones, Michael C.: *See—*
Glamkowski, Edward J.; and Jones, Michael C., 4,404,221, Cl. 424-285.000.

Jones, Robert E., Jr., to International Business Machines Corporation. Thin film inductive transducer for perpendicular recording. 4,404,609, Cl. 360-126.000.

Jones, Russell P. Trailer unit. 4,403,802, Cl. 296-25.000.

Josef, Michael J.: *See—*
Romanski, Eric R.; and Josef, Michael J., 4,403,632, Cl. 139-383.00A.

Joseph, Horst D.; and Koch, Friedo, to Hauni-Werke Korber & Co. KG. Method and apparatus for monitoring the functioning of testing devices in machines for the production and/or processing of smokers' products. 4,403,620, Cl. 131-280.000.

Jourdan, Charles S., to Florida Computer Graphics. Method and apparatus for balancing flux in a power transformer circuit. 4,404,623, Cl. 363-56.000.

Jozuka, Masao: *See—*
Asano, Kiyomitsu; Kondo, Toshikatsu; Jozuka, Masao; and Sakaida, Atsuo, 4,403,875, Cl. 400-124.000.

Juergensen, Heinrich; and Zelenka, Thomas, to Dr. Ing. Rudolf Hell GmbH. Method and apparatus for the correction of the position error of a multifaceted rotating mirror. 4,404,596, Cl. 358-293.000.

Julich Gesellschaft mit beschrankter Haftung: *See—*
Groke, Ulrich, 4,403,651, Cl. 165-104.270.

K-Med, Inc.: *See—*
King, George E., 4,403,616, Cl. 128-725.000.

Kabelwerke Reinshagen GmbH: *See—*
Eder, Bernd; and Wosthoff, Eckehard, 4,404,463, Cl. 219-541.000.

Kabushiki Kaisha Akashi Seisakusho: *See—*
Shibano, Makoto; Kakuma, Hideaki; and Yasuyama, Hisatake, 4,403,511, Cl. 73-665.000.

Kabushiki Kaisha Goal: *See—*
Miyake, Mitsunori, 4,403,486, Cl. 70-383.000.

Kabushiki Kaisha Johnan Seisakusho: *See—*
Ishii, Kinichi, 4,403,450, Cl. 49-352.000.

Kabushiki Kaisha Sanesu Shoko: *See—*
Aoyama, Tadamasa, 4,404,626, Cl. 364-174.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Komatsu, Shoichi; and Iwamatsu, Seiichi, 4,404,236, Cl. 427-94.000.
Yamazaki, Suguru, 4,404,624, Cl. 363-59.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Thujiuchi, Yoshio; and Sumi, Yorinobu, 4,403,829, Cl. 350-289.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Kato, Kimio; Kono, Hiroya; and Kobayashi, Hisao, 4,403,921, Cl. 417-296.000.

Kabushiki Kaisha Yoshida Seisakusho: *See—*
Hatakeyama, Narito, 4,403,959, Cl. 433-126.000.

Kafer, Peter; Morbitzer, Leo; Neuray, Dieter; Cohnen, Wolfgang; and Nouvertne, Werner, to Bayer Aktiengesellschaft. Process for the isolation of polycarbonates based on 4,4'-dihydroxydiphenyl sulphones. 4,404,351, Cl. 528-174.000.

Kafka, Charles F.: *See—*
Kafka, Robert S.; and Kafka, Charles F., 4,403,799, Cl. 292-285.000.

Kafka, Robert S.; and Kafka, Charles F., to Meacham Marine Products, Inc. Flush hasp having foldable, upstanding latching portion, and optionally usable with padlock. 4,403,799, Cl. 292-285.000.

Kagawa, Seiji. Igniter utilizing piezo-electric element. 4,403,946, Cl. 431-255.000.

Kageyama, Hidehei; and Suzuki, Takahiko, to Kotobuki & Co., Ltd. Spare lead holder. 4,403,691, Cl. 206-214.000.

Kaiser Steel Corporation: *See—*
Bautz, James E., 4,404,634, Cl. 364-472.000.

Kaji, Ryoji: *See—*
Kawatani, Kimio; and Kaji, Ryoji, 4,404,034, Cl. 106-238.000.

Kakehi, Masanori; Higashida, Yoshitaka; Iwamoto, Kenzo; and Kano, Hikaru, to Mitsuboshi Belting Ltd. Method of joining waterproof vulcanized synthetic rubber sheets. 4,404,056, Cl. 156-244.110.

Kakuma, Hideaki: *See—*
Shibano, Makoto; Kakuma, Hideaki; and Yasuyama, Hisatake, 4,403,511, Cl. 73-665.000.

Kaltenbach & Voigt GmbH & Co.: *See—*
Lohn, Gerd, 4,403,958, Cl. 433-100.000.
Mossle, Walter; Lingenhole, Bernhard; and Eibofner, Eugen, 4,403,957, Cl. 433-29.000.

Kalu, Georgina; and Markus, Michael, to ICI Australia Limited. Products and processes. 4,404,051, Cl. 149-37.000.

Kamei, Takao: *See—*
Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; and Wakabayashi, Takeshi, 4,403,996, Cl. 44-1.00G.

Kaminsky, Walter O.: *See—*
Sinn, Hansjorg W.; Kaminsky, Walter O.; Vollmer, Hans-Jurgen C.; and Woldt, Rudiger O. H. H., 4,404,344, Cl. 526-160.000.

Kamuro, Setsufumi; and Masaki, Yoshifumi, to Sharp Kabushiki Kaisha. Semiconductor device system. 4,404,654, Cl. 365-103.000.

Kanamaru, Hisanobu: *See*—
Tomite, Tosio; Ogasawara, Nobuhiko; Iii, Kaniti; and Kanamaru, Hisanobu, 4,403,402, Cl. 29-598.000.

Kane, David M. Collapsible tube compressing paste dispenser. 4,403,714, Cl. 222-101.000.

Kane, Patrick J. Apparatus for driving fasteners and other insertable objects into remote structures. 4,403,892, Cl. 408-95.000.

Kanebo Cosmetics, Inc.: *See*—
Yoshida, Jun; Tsunemitsu, Toshiharu; and Nakano, Masayoshi, 4,403,963, Cl. 434-100.000.

Kanno, Yoshihiro: *See*—
Sakakibara, Takaaki; and Kanno, Yoshihiro, 4,404,423, Cl. 174-27.000.

Kano, Hikaru: *See*—
Kakehi, Masanori; Higashida, Yoshitaka; Iwamoto, Kenzo; and Kano, Hikaru, 4,404,056, Cl. 156-244.110.

Kansai Paint Co., Ltd.: *See*—
Higuchi, Tetsuo; Takagi, Teiitsu; Fujitani, Toshihide; and Haruta, Yasuhiko, 4,404,318, Cl. 524-588.000.

Kanto Denka Kogyo Co., Ltd.: *See*—
Suzuki, Shintaro; Iizuka, Sadao; and Moriya, Yoshimi, 4,404,024, Cl. 75-0.5BA.

Kaplan, S. Richard. Heel lift. 4,403,426, Cl. 36-36.00R.

Karchevski, Robert A., to GTE Automatic Electric Incorporated. Frame detection and synchronization system for high speed digital transmission systems. 4,404,675, Cl. 371-47.000.

Karl Mengele & Sohne Maschinenfabrik und Eisengiesserei GmbH & Co.: *See*—
Holtschmidt, Arthur, 4,403,498, Cl. 72-455.000.

Kasahara, Junkichi; Nagashita, Mitsuyoshi; and Honda, Hiroyuki, to Konishiroku Photo Industry Co., Ltd. Copying apparatus with slidably attached sorter bin. 4,403,771, Cl. 271-294.000.

Kasap, Ahmet: *See*—
Babbitt, Gerald J.; and Kasap, Ahmet, 4,403,611, Cl. 604-73.000.

Kashiwa, Norio: *See*—
Ushida, Yoshihisa; Toyota, Akinori; and Kashiwa, Norio, 4,404,341, Cl. 526-125.000.

Kasimov, Dzhangir A. K. O.: *See*—
Abdullaev, Gasan M. B. O.; Maxudov, Faramaz G. O.; Kasimov, Dzhangir A. K. O.; Mamedov, Bakhtiyar M. R. O.; Aliev, Gabil G.; Gadzhiev, Yashar A. O.; Shakhmamedov, Rovshan I. O.; and Iljushin, Alexei A., 4,403,631, Cl. 138-130.000.

Kato, Hiroshi: *See*—
Ohyama, Sadahiro; Kato, Hiroshi; and Matsukawa, Kazuo, 4,404,617, Cl. 361-424.000.

Kato, Kimihiro: *See*—
Nagasaku, Eiichi; Yasunaga, Masao; and Kato, Kimihiro, 4,403,929, Cl. 418-82.000.

Kato, Kimio; Kono, Hiroya; and Kobayashi, Hisao, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Multi-cylinder variable delivery compressor. 4,403,921, Cl. 417-296.000.

Katsuki, Yoshimasa: *See*—
Kokeguchi, Hitoshi; Yamaguchi, Jiro; Sakoda, Akinori; Umeda, Mikio; Yamashita, Tadashi; Katsuki, Yoshimasa; Murakami, Mitsuru; and Imamura, Yasuo, 4,403,954, Cl. 432-124.000.

Katsura, Tadahiko: *See*—
Hirota, Kazumi; Tsutsumi, Yotaro; Ito, Senji; Katsura, Tadahiko; Matsuoka, Kikuo; and Hori, Ichiro, 4,403,710, Cl. 220-270.000.

Katsuragi, Shigeru, to Ricoh Company, Ltd. Printing head drive circuit for thermal printer. 4,404,567, Cl. 346-76.0PH.

Katsuyama, Kazuki: *See*—
Suenobu, Koreyoshi; Kohara, Masanori; Hidaka, Yasuhiro; Katsuyama, Kazuki; and Kinishi, Ryoichi, 4,404,352, Cl. 528-45.000.

Katz, Ami, to Electra (Israel) Ltd. Integrated heat pump and heat storage system. 4,403,731, Cl. 237-2.00B.

Katzen, Stanley J.: *See*—
Speca, Anthony N.; Katzen, Stanley J.; and Rekers, Louis J., 4,404,340, Cl. 526-97.000.

Kaufman, Benjamin J.; Herbstman, Sheldon; and Levin, Mark, to Texaco Inc. Detergent and corrosion inhibitor and motor fuel composition containing same. 4,404,001, Cl. 44-63.000.

Kawagishi, Yoji; Ishida, Yukihiko; and Ishikawa, Kazuhiro, to Orient Chemical Industries, Ltd. Metal complexes for use in developers for electrostatic images, charge control function. 4,404,271, Cl. 430-110.000.

Kawai, Taneichi: *See*—
Nishida, Koji; and Kawai, Taneichi, 4,404,508, Cl. 318-611.000.

Kawai, Yoshihiko: *See*—
Yasuda, Isao; Koyama, Kazuaki; and Kawai, Yoshihiko, 4,404,608, Cl. 360-126.000.

Kawamura Institute of Chemical Research: *See*—
Kitamura, Taku, 4,404,354, Cl. 528-86.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; and Wakabayashi, Takeshi, 4,403,996, Cl. 44-1.00G.
Takagi, Izumi, 4,403,976, Cl. 474-19.000.

Kawasaki Steel Corporation: *See*—
Komura, Hideo; Kyohno, Kazuaki; Yoshihara, Takahisa; Shijima, Syoji; and Goto, Minari, 4,404,030, Cl. 106-2.000.

Kawata, Hiroitsu; Aruga, Masayoshi; Ohmura, Tadayoshi; Sonobe, Takashi; Yoneya, Satoru; and Sone, Chiharu, to Yamanouchi Pharmaceutical Co., Ltd. Sustained release pharmaceutical composition of solid medical material. 4,404,183, Cl. 424-19.000.

Kawatani, Kimio; and Kaji, Ryoji, to Arakawa Kagaku Kogyo Kabushiki Kaisha. Process for preparing aqueous dispersion of rosin-base materials. 4,404,034, Cl. 106-238.000.

Kawazoe, Mitsuo: *See*—
Maitani, Yoshihisa; and Kawazoe, Mitsuo, 4,403,843, Cl. 354-25.000.

Kay, John F.: *See*—
Canning, John L.; and Kay, John F., 4,404,261, Cl. 428-480.000.

Keane, James W.; and Nordeen, Erwin E., to Whirlpool Corporation. Vacuum cleaner brush having string guard means. 4,403,372, Cl. 15-339.000.

Keeton, John H. Hand held herbicide applicator with flexible cap and valve element. 4,403,881, Cl. 401-202.000.

Keim, Thomas A.; and Minnich, Stephen H., to General Electric Company. Star connected air gap polyphase armature having limited voltage gradients at phase boundaries. 4,404,486, Cl. 310-198.000.

Kelley, Douglas P.: *See*—
Reichman, James M.; and Kelley, Douglas P., 4,403,667, Cl. 175-230.000.

Kelley, Kane L., to Beecham Inc. Phenyl Salicylate as a topical anti-inflammatory. 4,404,198, Cl. 424-235.000.

Kempe, Eberhard: *See*—
Heider, Manfred; Hofschneider, Josef; Schallenberger, Wolfgang; Nodes, Franz; and Kempe, Eberhard, 4,404,284, Cl. 435-291.000.

Kenan, Richard P.; and Verber, Carl M., to Battelle Memorial Institute. Electrooptical multipliers. 4,403,833, Cl. 350-356.000.

Kendall Company, The: *See*—
Binard, William J.; Ciarico, Anthony J.; Anglada, Leonard R.; and Patel, Bhupendra C., 4,403,988, Cl. 604-118.000.

Keogh, Michael J., to Union Carbide Corporation. Polysiloxanes having combined therein organo titanates. 4,404,349, Cl. 528-25.000.

Kern, Hans, to Lang Apparatebau GmbH. Device for spraying aqueous mixtures. 4,403,738, Cl. 239-313.000.

Kerr, John F., to Appleton Papers Inc. Controllably heated clothing. 4,404,460, Cl. 219-211.000.

Kevvai, Arnold A.: *See*—
Nudelman, Boris I.; Chepkalenko, Mikhail G.; Gasanova, Alevtina A.; Galimova, Guzal A.; Khaichkis, Roza; Uraev, Ravkhat E.; Tashpulatov, Turgun K.; Butaev, Erkin M.; Adam, Fedor Y.; Kevvai, Arnold A.; Bodyagina, Rashida G.; Ibragimov, Sunnat I.; and Fedorov, Alexandr P., 4,404,032, Cl. 106-100.000.

Khaichkis, Roza: *See*—
Nudelman, Boris I.; Chepkalenko, Mikhail G.; Gasanova, Alevtina A.; Galimova, Guzal A.; Khaichkis, Roza; Uraev, Ravkhat E.; Tashpulatov, Turgun K.; Butaev, Erkin M.; Adam, Fedor Y.; Kevvai, Arnold A.; Bodyagina, Rashida G.; Ibragimov, Sunnat I.; and Fedorov, Alexandr P., 4,404,032, Cl. 106-100.000.

Khalil, Hamdy: *See*—
Koski, Unto K.; Khalil, Hamdy; and Cassola, Adrian, 4,404,300, Cl. 524-91.000.

Kidde, Inc.: *See*—
Wuthrich, Werner, 4,403,981, Cl. 493-419.000.

Kiddie Products, Inc.: *See*—
Panicci, Richard L., 4,403,613, Cl. 128-360.000.

Kiefer, Werner; and Sura, Maria, to Schott Glaswerke. Low-density, open-pore molded inorganic body with a homogeneous pore distribution. 4,404,291, Cl. 501-81.000.

Kiernan, Jane A.: *See*—
Baker, Pamela K.; and Kiernan, Jane A., 4,404,222, Cl. 424-304.000.

Kihara, Toshimasa; and Inoue, Toshifumi, to Hitachi, Ltd. Programmable read only memory. 4,404,659, Cl. 365-185.000.

Kikuchi, Yoshiki; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Printer. 4,404,568, Cl. 346-76.0PH.

Kimball International, Inc.: *See*—
Fritz, Gary R.; and Robinson, John W., 4,403,537, Cl. 84-345.000.
Weil, Robert A., Jr.; Eck, Gary A.; and Fritz, Gary R., 4,403,536, Cl. 84-1.010.

Kincaid, John W.: *See*—
King, William A.; and Kincaid, John W., 4,404,424, Cl. 174-34.000.

King, George E., to K-Med, Inc. Expiratory breathing exercise device. 4,403,616, Cl. 128-725.000.

King, Patrick F.: *See*—
Idelson, Elbert M.; and King, Patrick F., 4,404,136, Cl. 260-147.000.

King, William A.; and Kincaid, John W., to Cooper Industries, Inc. Shielded twisted-pair flat electrical cable. 4,404,424, Cl. 174-34.000.

Kinishi, Ryoichi: *See*—
Suenobu, Koreyoshi; Kohara, Masanori; Hidaka, Yasuhiro; Katsuyama, Kazuki; and Kinishi, Ryoichi, 4,404,352, Cl. 528-45.000.

Kinjo, Hisao; and Ozawa, Keiji, to Victor Company of Japan, Ltd. Laser recording information and pilot signals for tracking on a grooveless recording. 4,404,599, Cl. 358-342.000.

Kinnaman, Daniel L.: *See*—
Warren, Eugene D.; Martin, Lawrence M.; and Kinnaman, Daniel L., 4,404,603, Cl. 360-33.100.

Kinney, Dwayne R.; and Sinn, Herman H., to Electronic Components Groupe, Inc. Convertible alternate action/momentary pushbutton switch. 4,404,444, Cl. 200-153.00J.

Kinoshita, Katsuharu: *See*—
Kurihara, Norimitsu; Kinoshita, Katsuharu; Watanabe, Masao; and Sato, Toyohiro, 4,404,533, Cl. 335-131.000.

Kintek, Inc.: *See*—
Blackmer, David E., 4,404,427, Cl. 179-1.0VL.

Kiraly, Ernest F.; and Ortiz, Ernest A., to Warner-Lambert Company. Socket device for a pivotal razor. 4,403,414, Cl. 30-57.000.

Kirk, Kenneth L., to Amtrol Inc. Process of preparing a double wall heat exchanger. 4,403,385, Cl. 29-157.3AH.

Kirn, Larry J. High fidelity audio encoder/amplifier. 4,404,526, Cl. 330-10.000.
Kitamura, Takashi, to Canon Kabushiki Kaisha. Multibeam recording apparatus. 4,404,571, Cl. 346-108.000.
Kitamura, Taku, to Dainippon Ink and Chemicals, Inc.; and Kawamura Institute of Chemical Research. Polyphenylene-type polymeric compound and process for production thereof. 4,404,354, Cl. 528-86.000.
Kitamura, Yoichi; Hotta, Hisashi; Yurita, Chikara; and Ito, Makoto, to Toyo Seikan Kaisha, Limited. Method of manufacturing a welded can body. 4,404,447, Cl. 219-64.000.
Kits van Heyningen, Arent H., to Raytheon Company. Sea bottom slope compensation apparatus. 4,404,665, Cl. 367-100.000.
Kitsunai, Tomoyuki: *See*—
Saito, Kiyotaka; Kitsunai, Tomoyuki; and Hori, Shozo, 4,404,322, Cl. 525-74.000.
Kiyooka, Katsumi, to Komatsu Zenoah Co. Debris collecting device. 4,403,371, Cl. 15-328.000.
Klaren, Dick G., to Esmil BV. Apparatus for flow of a liquid medium. 4,403,650, Cl. 165-104.160.
Klein, Howard P.; and Speranza, George P., to Texaco Inc. Process for preparing hydroxy-containing amine complexes which are useful as catalysts for trimerizing isocyanates and preparing polyurethanes. 4,404,120, Cl. 252-426.000.
Klein, Howard P.; and Speranza, George P., to Texaco Inc. Process for preparing polyol-catalyst mixtures useful in the preparation of rigid polyurethane cellular products. 4,404,121, Cl. 252-426.000.
Kleinbohl, Helmut, to General Motors Corporation. Instrument panel for vehicles. 4,403,818, Cl. 339-10.000.
Kleinecke, John D.: *See*—
Stich, Frederick A.; Kleinecke, John D.; and Robertson, Roger L., 4,404,442, Cl. 200-144.00R.
Kleinert, Helmuth, to Siemens Aktiengesellschaft. Method and circuit arrangement for transmitting binary signals between peripheral units which are connected to one another via a central bus line system. 4,404,650, Cl. 364-900.000.
Kleinlogel, Horst: *See*—
Matejcek, Milan; Theohar, Carl; and Kleinlogel, Horst, 4,404,226, Cl. 424-326.000.
Kleinschmidt, Peter, to Siemens Aktiengesellschaft. Pyrodetector. 4,404,468, Cl. 250-342.000.
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Magori, Valentin; and Kleinschmidt, Peter, 4,404,502, Cl. 318-116.000.
Kley & Associates: *See*—
Kley, Victor B., 4,403,834, Cl. 350-371.000.
Kley, Victor B., to Kley & Associates. Acoustic-wave device. 4,403,834, Cl. 350-371.000.
Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Schmahl, Theo, 4,403,671, Cl. 180-53.00R.
Knapp, Alfons: *See*—
Knapp, Francesco; and Knapp, Alfons, 4,403,739, Cl. 239-428.500.
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Kniga, Anatoly N.: *See*—
Zybailo, Valentin P.; Kniga, Anatoly N.; Kosyan, Ljudmila E.; Rudenko, Valentin P.; and Poltaev, Sergei A., 4,404,547, Cl. 340-365.00R.
Knoblauch, Karl; Richter, Ekkehard; Giessler, Klaus; and Korbacher, Werner, to Bergwerksverband GmbH. Method for separating gas mixtures by means of pressure changing adsorption technique. 4,404,004, Cl. 55-25.000.
Kobashigawa, Don: *See*—
Sanders, James B.; and Kobashigawa, Don, 4,403,625, Cl. 132-91.000.
Kobayashi, Hisamine, to Shikishima Tipton Mfg. Co., Ltd. Vibratory barrel finishing machine. 4,403,456, Cl. 51-163.200.
Kobayashi, Hisao: *See*—
Kato, Kimio; Kono, Hiroya; and Kobayashi, Hisao, 4,403,921, Cl. 417-296.000.
Kobayashi, Kazuyoshi: *See*—
Tsukagoshi, Tsunehiro; Nemoto, Etsuro; Yokozseki, Shinichi; Hagiwara, Sumio; Yoshino, Toshikazu; Arai, Yasuyuki; and Kobayashi, Kazuyoshi, 4,404,315, Cl. 524-521.000.
Kobayashi, Ryoichi: *See*—
Yamada, Kazuji; Nishihara, Motohisa; Sato, Hideo; Suzuki, Seiko; and Kobayashi, Ryoichi, 4,404,539, Cl. 338-3.000.
Kobayashi, Seiji; and Harada, Hiroshi, to Yamaha Hatsudoki Kabushiki Kaisha. Intake duct for an outboard engine. 4,403,971, Cl. 440-88.000.
Kobayashi, Shigeki; Iwasaki, Norio; Ikeda, Yasunori; Miyake, Tamio; and Tanimura, Shigeru, to Omron Tateisi Electronics Co. Blood cell identification and classification system. 4,404,683, Cl. 382-6.000.
Kobe Steel, Ltd.: *See*—
Rokujio, Masaharu; Ogasawara, Takaaki; and Usui, Mitunori, 4,404,457, Cl. 219-137.200.
Kober, Heinrich: *See*—
Kohler, Robert; Schilffarth, Karlchristian; Kober, Heinrich; and Nippe, Burkhard, 4,404,253, Cl. 428-327.000.
Koch, Friedo: *See*—
Joseph, Horst D.; and Koch, Friedo, 4,403,620, Cl. 131-280.000.
Koch, Klaus; Schaeffer, Hans-Joachim; and Syrbius, Gerhard, to Hermann Berstorff Maschinenbau GmbH. Extraction device for removing liquid from a liquid-solid mixture. 4,404,101, Cl. 210-232.000.
Koch, Robert E.; and Bergh, Daniel D., to Electric Power Research Institute, Inc. Surge arrester having a non-fragmenting outer housing. 4,404,614, Cl. 361-128.000.
Kochar, Nand K.; and Ozero, Brian J., to Halcon SD Group, Inc., The. Coproduction of aniline and diphenylamine. 4,404,399, Cl. 564-402.000.
Kocher, Jakob: *See*—
Aulhorn, Elfriede; Kocher, Jakob; and Reiner, Josef, 4,403,842, Cl. 351-237.000.
Kochey, Edward L., Jr., to Combustion Engineering, Inc. Boiler with economizer heat absorption reduction. 4,403,571, Cl. 122-1.00A.
Kocot, Ray H.; Rudd, Robert E., III; and Arnoldi, Douglas R., to Burroughs Corporation. Electrostatic ink jet system. 4,404,573, Cl. 346-140.00R.
Kodama, Hideyo: *See*—
Akahori, Kimihiko; Maeno, Shigeo; Kodama, Hideyo; and Morisada, Norio, 4,404,041, Cl. 148-2.000.
Kodama, Hiroshi, to Toyo Kogyo Co., Ltd. Multi-piece apex seal structure for a rotary piston engine. 4,403,930, Cl. 418-121.000.
Kodera, Masao; Akita, Sigeyuki; and Yoshino, Yasuhisa, to Nippon Soken, Inc. Rear obstacle detecting system for automotive vehicles. 4,404,541, Cl. 340-32.000.
Kohara, Masanori: *See*—
Suenobu, Koreyoshi; Kohara, Masanori; Hidaka, Yasuhiro; Katsuyama, Kazuki; and Kinishi, Ryoichi, 4,404,352, Cl. 528-45.000.
Kohl, Paul A.; and Ostermayer, Frederick W., Jr., to Bell Telephone Laboratories, Incorporated. Photoelectrochemical processing of III-V semiconductors. 4,404,072, Cl. 204-129.300.
Kohler, Robert; Schilffarth, Karlchristian; Kober, Heinrich; and Nippe, Burkhard, to Agfa-Gevaert Aktiengesellschaft. Magnetic recording medium. 4,404,253, Cl. 428-327.000.
Koike, Eishi, to Ozen Corporation. Sound reproducing device driven by a constant torque pull string type spring and started by selective starter rods for playing multiple record grooves. 4,404,667, Cl. 369-65.000.
Koiso, Junichi: *See*—
Hirabayashi, Tsugio; and Koiso, Junichi, 4,403,852, Cl. 355-15.000.
Koizumi, Satoru; Nakao, Hiroaki; and Tsuchitani, Takashi, to Sharp Kabushiki Kaisha. Mode selection assembly for use in tape recorders or the like. 4,404,610, Cl. 360-137.000.
Kojima, Michio: *See*—
Ito, Tatsuo; Shomura, Takashi; Kojima, Michio; Ezaki, Norio; Sezaki, Masaji; and Niwa, Tomizo, 4,404,218, Cl. 424-274.000.
Kojima, Shigeru: *See*—
Sakamoto, Yoichi; Ibata, Akihiko; Kojima, Shigeru; and Ohtani, Tadao, 4,404,046, Cl. 148-101.000.
Kojima, Tadashi: *See*—
Hoshimi, Susumu; and Kojima, Tadashi, 4,404,602, Cl. 360-13.000.
Kokeguchi, Hitoshi; Yamaguchi, Jiro; Sakoda, Akinori; Umeda, Mikio; Yamashita, Tadashi; Katsuki, Yoshimasa; Murakami, Mitsuru; and Imamura, Yasuo, to Kubota, Ltd. Apparatus for heat-treating pipes. 4,403,954, Cl. 432-124.000.
Kokosi, Jozsef; Hermecz, Istvan; Meszaros, Zoltan; Szasz, Gyorgy; Vasvari nee Debreczy, Lelle; Horvath, Agnes; and Breining, Tibor, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara RT. 2-Oxo-2,6,7,8,9,10 hexahydro-pyrimido[1,2-a]azepines and antianginal method of use thereof and of 4-oxo-4,6,7,8,9,10-hexahydropyrimido[1,2-a]azepines. 4,404,205, Cl. 424-251.000.
Kokubu, Tokio; and Take, Katsuo, to Toyo Boseki Kabushiki Kaisha. Fiber-reinforced polymer blend composition. 4,404,312, Cl. 524-504.000.
Koller, Frank H.; Peterson, Jeffrey P.; and Snizek, Robert E., to Emerson Electric Co. Cam-driven rotary pick-and-place assembly apparatus. 4,403,907, Cl. 414-744.00R.
Koltz, Irvine M. Collapsible gable top container. 4,403,728, Cl. 229-39.00R.
Komai, Keiichi: *See*—
Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; and Wakabayashi, Takeshi, 4,403,996, Cl. 44-1.00G.
Komarek, Jaromir: *See*—
Gebert, Ulrich; Thorwart, Werner; Komarek, Jaromir; and Cartheuser, Carl, 4,404,384, Cl. 544-394.000.
Komatsu, Shigeru: *See*—
Hirahata, Shigeru; Ikeda, Tetsuya; Tachiuchi, Tsuguji; Komatsu, Shigeru; and Takezawa, Teruhiro, 4,404,552, Cl. 340-721.000.
Komatsu, Shoichi; and Iwamatsu, Seiichi, to Kabushiki Kaisha Suwa Seikosha. High pressure chemical vapor deposition. 4,404,236, Cl. 427-94.000.
Komatsu Zenoah Co.: *See*—
Kiyooka, Katsumi, 4,403,371, Cl. 15-328.000.
Komura, Hideo; Kyohno, Kazuaki; Yoshihara, Takahisa; Shijima, Syoji; and Goto, Minari, to Kawasaki Steel Corporation. Anti-plating agent for one-side hot-dip plating process. 4,404,030, Cl. 106-2.000.
Komura, Tamotsu: *See*—
Tsunekawa, Masayoshi; Miyoshi, Nobuyoshi; and Komura, Tamotsu, 4,404,150, Cl. 260-927.00R.
Kondo, Hideo, to Muroran Institute of Technology. Wave energy absorber mountable on wave-facing structure. 4,403,475, Cl. 60-398.000.
Kondo, Toshikatsu: *See*—
Asano, Kiyomitsu; Kondo, Toshikatsu; Jozuka, Masao; and Sakaida, Atsuo, 4,403,875, Cl. 400-124.000.
Konishi, Nobutake; Naito, Masayoshi; Yatsuo, Tsutomu; and Terasawa, Yoshio, to Hitachi, Ltd. Light activated semiconductor device. 4,404,580, Cl. 357-38.000.
Konishiroku Photo Industry Co., Ltd.: *See*—
Hirabayashi, Tsugio; and Koiso, Junichi, 4,403,852, Cl. 355-15.000.

Kasahara, Junkichi; Nagashita, Mitsuyoshi; and Honda, Hiroyuki, 4,403,771, Cl. 271-294.000.
Konno, Koji: *See*—
Yanaihara, Noboru; and Konno, Koji, 4,404,133, Cl. 260-112.50R.
Kono, Hiroya: *See*—
Kato, Kimio; Kono, Hiroya; and Kobayashi, Hisao, 4,403,921, Cl. 417-296.000.
Koon, Randy G.: *See*—
Glore, Thomas G.; and Koon, Randy G., 4,403,454, Cl. 51-135.0BT.
Kopczynski, John F. Dump bin. 4,403,901, Cl. 414-422.000.
Kopp, Manfred K.; and Valentine, Kenneth H. Neutron flux profile monitor for use in a fission reactor. 4,404,164, Cl. 376-154.000.
Koppensteiner, James V.; and Onesto, Joseph B., to GTE Automatic Electric Labs Inc. Printed circuit card extracting tool. 4,403,408, Cl. 29-764.000.
Kopse, Odon: *See*—
Eblen, Ewald; Hofmann, Karl; and Kopse, Odon, 4,403,740, Cl. 239-533.400.
Korbacher, Werner: *See*—
Knoblauch, Karl; Richter, Ekkehard; Giessler, Klaus; and Korbacher, Werner, 4,404,004, Cl. 55-25.000.
Korchin, Herbert P. Submersible pump. 4,403,923, Cl. 417-360.000.
Kords, Christian: *See*—
Bernert, Claus-Rudiger; Hartwig, Volker; Kords, Christian; and Redeker, Detmar, 4,404,370, Cl. 536-85.000.
Korobova, Emma S.: *See*—
Rozenfeld, Iosif L.; Brusnikina, Vera M.; Frolova, Larisa V.; Lyashenko, Alevtina A.; Sokolov, Jury V.; Bocharov, Boris V.; Fokin, Alexandr V.; Legezin, Nikolai E.; Dergobuzova, Ekaterina V.; Altshuler, Boris N.; Zelenaya, Saida A.; and Korobova, Emma S., 4,404,167, Cl. 422-12.000.
Koski, Unto K.; Khalil, Hamdy; and Cassola, Adrian, to Polysar Limited. Polystyrene process. 4,404,300, Cl. 524-91.000.
Koss Corporation: *See*—
Pelt, Thomas E.; and Besasie, Joseph C., 4,404,434, Cl. 179-156.00R.
Koss, William H.; and Smith, Richard J., to McGill Manufacturing Company, Inc. Method for locking an anti-friction bearing to a shaft and apparatus for accomplishing the same. 4,403,814, Cl. 308-236.000.
Kosyan, Ljudmila E.: *See*—
Zybailo, Valentin P.; Kniga, Anatoly N.; Kosyan, Ljudmila E.; Rudenko, Valentin P.; and Poltaev, Sergei A., 4,404,547, Cl. 340-365.00R.
Kotobuki & Co., Ltd.: *See*—
Kageyama, Hidehei; and Suzuki, Takahiko, 4,403,691, Cl. 206-214.000.
Kotzsch, Hans-Joachim; and Vahlensieck, Hans-Joachim, to Dynamit Nobel AG. Salt-like products of the addition of phenols onto amino organosilane esters and method for the preparation thereof and use as a preservative. 4,404,014, Cl. 71-67.000.
Kovalenko, Eugene N.: *See*—
Bowen, John G.; and Kovalenko, Eugene N., 4,403,589, Cl. 123-525.000.
Kowal, Leonard J., to Imperial Clevite Inc. Tube bender construction. 4,403,496, Cl. 72-388.000.
Koyama, Kazuaki: *See*—
Yasuda, Isao; Koyama, Kazuaki; and Kawai, Yoshihiko, 4,404,608, Cl. 360-126.000.
Koyo-Jido-Ki Co., Ltd.: *See*—
Yamashita, Kyoichi, 4,403,719, Cl. 226-188.000.
Kracl, David L. Down marker indicator for football competition. 4,404,543, Cl. 340-323.00R.
Kraftwerk Union Aktiengesellschaft: *See*—
Kral, Rudolf; and Engelhardt, Reiner, 4,403,575, Cl. 122-451.100.
Krage, Mark K.; and Meduvsky, Alexander, to General Motors Corporation. Engine testing microwave transmission device. 4,403,504, Cl. 73-116.000.
Krajci, Gary E.: *See*—
Pollard, David D.; and Krajci, Gary E., 4,404,582, Cl. 357-79.000.
Kral, Rudolf; and Engelhardt, Reiner, to Kraftwerk Union Aktiengesellschaft. Device for preventing flashing to steam in an economizer of a flow through steam generator. 4,403,575, Cl. 122-451.100.
Krambeck, Frederick J.: *See*—
Haddad, James H.; and Krambeck, Frederick J., 4,404,095, Cl. 208-161.000.
Krampe, Dietrich; and Heyl, Tilo, to Siemens Aktiengesellschaft. Apparatus for automatically switching off and disconnecting an electric motor shaft drive accelerating a winding bobbin once a circumferential cylinder drive has become effective. 4,404,501, Cl. 318-7.000.
Kranenburg, Simon V.: *See*—
Cloosterman, Aloysius B. M.; and Kranenburg, Simon V., 4,404,228, Cl. 426-98.000.
Kraus, Hubert: *See*—
Almahmoud, Saad; Kraus, Hubert; and Riepl, Martin, 4,403,381, Cl. 29-25.420.
Kremer, Victor: *See*—
Mailliet, Pierre; and Kremer, Victor, 4,403,516, Cl. 73-863.110.
Kremer, Wolfgang: *See*—
Traenckner, Hans-Joachim; and Kremer, Wolfgang, 4,404,298, Cl. 524-31.000.
Kretschmer, Frank F., Jr.; and Lewis, Bernard L., to United States of America, Navy. Low sidelobe linear FM chirp system. 4,404,562, Cl. 343-17.2PC.
Kretz, Carl, to Kretztechnik Gesellschaft mbH. Ultrasonic equipment for examinations using section images. 4,403,509, Cl. 73-639.000.
Kretztechnik Gesellschaft mbH: *See*—
Kretz, Carl, 4,403,509, Cl. 73-639.000.
Krishnamumar, Suppayan M.; and Jolly, Walter R., to Continental Group, Inc., The. Blow head valve. 4,403,940, Cl. 425-529.000.
Kubota, Ltd.: *See*—
Kokeguchi, Hitoshi; Yamaguchi, Jiro; Sakoda, Akinori; Umeda, Mikio; Yamashita, Tadashi; Katsuki, Yoshimasa; Murakami, Mitsuru; and Imamura, Yasuo, 4,403,954, Cl. 432-124.000.
Kubota, Naohiro; Shibata, Toshihiro; and Arata, Ryozo, to Adeka Argus Chemical Co., Ltd. Polymeric light stabilizers having at least one 2,2,6,6-tetraalkyl piperidyl group and synthetic resin compositions containing the same. 4,404,301, Cl. 524-99.000.
Kubota, Tsutomu: *See*—
Goto, Jugo; Mochizuki, Kazutaka; Kubota, Tsutomu; and Miyamoto, Reiji, 4,404,320, Cl. 525-58.000.
Kuder, James E., to Celanese Corporation. Electrochemical production of 2,6-diaminobenzobisthiazole. 4,404,070, Cl. 204-72.000.
Kufrin, Fred W., to Fox Valley Corporation (Breneman Div.). Window shade roller with shade cutting assembly. 4,403,415, Cl. 30-96.000.
Kufrin, Robert: *See*—
Bernstein, Carl; Stogis, James; Riddle, Travis; and Kufrin, Robert, 4,404,295, Cl. 521-172.000.
Kuhlen, Ernst; and Winkels, Manfred, to Pierburg GmbH & Co. KG. Diaphragm fuel pump and associated method. 4,403,925, Cl. 417-395.000.
Kulcsar, Gabor; Sebestyen, Gyula; David, Agoston; and Zilahi, Tibor, to Chinoin Gyogyszer Es Vegyeszeti Termekek Gyara Rt. Synergistic antimicrobial compositions. 4,404,189, Cl. 424-114.000.
Kulprathipanja, Santi: *See*—
Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,404,145, Cl. 260-419.000.
Kummerlin, Walter. Hinge fitting for foldable ladders. 4,403,373, Cl. 16-327.000.
Kumpar, Zvonimir Z., to SKF Industrial Trading & Development Company B.V. Method for making a device for converting a rotary motion into a linear motion. 4,403,522, Cl. 74-89.000.
Kumpe, Gerhardt: *See*—
Schwinn, Horst; Heimburger, Norbert; Kumpe, Gerhardt; and Preis, Hans M., 4,404,187, Cl. 424-101.000.
Kunczynski, Jan K. Detachable grip assembly and method. 4,403,552, Cl. 104-206.000.
Kupka, Dieter. Agitator with two sets of blades each driven in an opposite direction about a common axis. 4,403,868, Cl. 366-295.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Satoh, Hiroaki; Tabata, Yasuyuki; Gomikawa, Kouichi; and Hiruta, Masaru, 4,404,171, Cl. 422-241.000.
Yanaihara, Noboru; and Konno, Koji, 4,404,133, Cl. 260-112.50R.
Kuribayashi, Hiroshi; and Ikeda, Atsuo, to Pioneer Electronic Corporation. Linear drive motor control system. 4,404,671, Cl. 369-216.000.
Kurihara, Michio: *See*—
Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; and Wakabayashi, Takeshi, 4,403,996, Cl. 44-1.00G.
Kurihara, Norimitsu; Kinoshita, Katsuharu; Watanabe, Masao; and Sato, Toyohiro, to Honda Giken Kogyo Kabushiki Kaisha. Electromagnetic switch device. 4,404,533, Cl. 335-131.000.
Kusakabe, Hiromi, to Tokyo Shibaura Denki Kabushiki Kaisha. Stereo identifying signal detection device. 4,404,432, Cl. 179-1.0GS.
Kusters, Eduard: *See*—
Kutz, Johannes, 4,403,359, Cl. 8-149.100.
Kutz, Johannes, to Kusters, Eduard. Method for washing out thickening from printed textile materials in web form. 4,403,359, Cl. 8-149.100.
Kyogoku, Hiroshi: *See*—
Okamura, Shigeru; Kyogoku, Hiroshi; and Tazaki, Shigemitsu, 4,404,572, Cl. 346-140.00R.
Kyohno, Kazuaki: *See*—
Komura, Hideo; Kyohno, Kazuaki; Yoshihara, Takahisa; Shijima, Syoji; and Goto, Minari, 4,404,030, Cl. 106-2.000.
Kyosuke, Kato. Oil splash and fire-proof lid. 4,403,711, Cl. 220-335.000.
L & H Designs Limited: *See*—
Richards, Edwin H., 4,403,409, Cl. 29-798.000.
L-N International, Inc.: *See*—
Locke, C. Joseph, 4,403,528, Cl. 81-3.46R.
La Baw, Glenn D.: *See*—
Pomper, Seymour; and La Baw, Glenn D., 4,404,227, Cl. 426-19.000.
Laboratoires Sophartex: *See*—
Goutard, Rene-Michel; and Piry, Pierre, 4,403,461, Cl. 53-282.000.
Laborde, Alice L.: *See*—
Dolak, Lester A.; Reusser, Fritz; Castle, Thomas M.; Hannon, Betty R.; Laborde, Alice L.; and Marschke, Charles K., 4,404,190, Cl. 424-118.000.
Lach, Dietrich; Streicher, Rolf; and Bolz, Gerhard, to BASF Aktiengesellschaft. Preparation of water-soluble or self-dispersing resin tanning agents. 4,403,993, Cl. 8-94.240.
Ladner, David W.; and Cross, Barrington, to American Cyanamid Company. Aniline intermediates. 4,404,402, Cl. 564-442.000.
Ladwig, Allen N.: *See*—
Bland, Gerald F.; and Ladwig, Allen N., 4,403,972, Cl. 440-88.000.
Laffitte, Denis R. G.; Louis, Guy H.; and Raybaud, Alain M. M., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.". Turbine distributor vane. 4,403,917, Cl. 416-96.00A.

Lagace, Linda S.; and Young, David A., to Exxon Research & Engineering Co. Process for recovery of cobalt oxo catalysts. 4,404,119, Cl. 252-413.000.
Lamborn, Calvin R., to Sandoz, Ltd. Method of selecting stringless beans. 4,403,445, Cl. 47-58.000.
Lampe, Siegfried; and Lehmann, Heinz, to E.C.H. Will (GmbH & Co.). Apparatus for gathering writing pads or the like. 4,403,899, Cl. 414-35.000.
Landry, Jean-Marie: *See*—
Grosjean, Jean-Claude; and Landry, Jean-Marie, 4,403,768, Cl. 266-44.000.
Lane, Stephen P.: *See*—
Howse, Peter; Cookson, Dennis; and Lane, Stephen P., 4,404,551, Cl. 340-711.000.
Lang Apparatebau GmbH: *See*—
Kern, Hans, 4,403,738, Cl. 239-313.000.
Lang, Walter H.; and Muchel, Franz, to Carl Zeiss-Stiftung. Apparatus for examining anterior portions of the eye. 4,403,841, Cl. 351-215.000.
Lang, William C., to General Tire & Rubber Company, The. Optimum method of milling rubber. 4,404,364, Cl. 528-502.000.
Langlois, Gary N. Locating interfaces in vertically-layered materials and determining concentrations in mixed materials utilizing acoustic impedance measurements. 4,403,508, Cl. 73-589.000.
Lantermann, Heinz, to M.A.N. Maschinenfabrik Augburg-Nurnberg Aktiengesellschaft. Device for regulating the output quantity of a compressed medium. 4,403,920, Cl. 417-295.000.
Larkin, Donald W.: *See*—
Jones, Darryl S.; Larkin, Donald W.; Toner, Michael F.; and Werve, Carleton E., 4,404,647, Cl. 364-900.000.
Larsen, Knut H.: *See*—
Williams, Charles D.; and Larsen, Knut H., 4,404,006, Cl. 55-502.000.
Larson, John D., III; and Miller, David G., to Hewlett-Packard Company. Acoustic transducer with flexible circuit board terminals. 4,404,489, Cl. 310-334.000.
LaSalle Steel Company: *See*—
Wilks, Gerald W., 4,404,047, Cl. 148-131.000.
Lattion, Andre, to Rieter Machine Works Limited. Method of cleaning spinning rotors and apparatus for carrying out the method. 4,403,472, Cl. 57-302.000.
Laubie, Michel: *See*—
Vincent, Michel; Remond, Georges; and Laubie, Michel, 4,404,206, Cl. 424-258.000.
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Sitek, George J.; and Haigh, Richard B., 4,404,461, Cl. 219-490.000.
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Lodge, Robert H.; Phillips, Ian R.; and Reynolds, Mervyn F., to N.J. Phillips Pty. Limited. Gun to implant pellets in animals. 4,403,610, Cl. 604-61.000.
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Lohn, Gerd, to Kaltenbach & Voigt GmbH & Co. Dental compressed-air motor. 4,403,958, Cl. 433-100.000.
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Lopez, Robin D. Laundry bag. 4,403,636, Cl. 150-1.000.
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Ludovissie, Anthony W. Device for dispensing a measured amount of a particulate material. 4,403,715, Cl. 222-361.000.
Lueddecke, Erik: *See—*
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Lutz, Eugene F.; and Foster, Elton G., to Shell Oil Company. Oxidation of isobutane under super-critical conditions. 4,404,406, Cl. 568-571.000.
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MacCracken, Calvin D., to Calmac Manufacturing Corporation. Compact storage of seat and coolness by phase change materials while preventing stratification. 4,403,645, Cl. 165-10.000.
Mach, Wolfgang: *See—*
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Machida, Kenji. Impedance measuring device. 4,404,517, Cl. 324-57.00R.
MacLaren, David S. Switching device with separate switching and actuator rods. 4,404,441, Cl. 200-84.00C.
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Maeda Metal Industries Ltd.: *See—*
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Maeda, Michio, to Tokyo Shibaura Denki Kabushiki Kaisha. Fixing device. 4,403,950, Cl. 432-60.000.
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Magori, Valentin; and Kleinschmidt, Peter, to Siemens Aktiengesellschaft. Energy saving circuit arrangement for a piezoelectric positioning element. 4,404,502, Cl. 318-116.000.
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Mahajan, Gautam K., to Continental Group, Inc., The. Plastic container with hollow internal rib reinforced bottom and method of forming the same. 4,403,706, Cl. 215-1.00C.
Maier, Alfred E.; and Ricci, Louis N., to Westinghouse Electric Corp. Stored energy circuit breaker with a cam latch. 4,404,446, Cl. 200-320.000.
Mailliet, Pierre; and Kremer, Victor, to Paul Wurth S.A. Furnace probe. 4,403,516, Cl. 73-863.110.
Maitani, Yoshihisa; and Kawazoe, Mitsuo, to Olympus Optical Company Ltd. Switching assembly for focussing, photosensitive elements of a camera. 4,403,843, Cl. 354-25.000.
Makabe, Hachiro; Orii, Akira; and Takahashi, Yoshitaka, to Janome Sewing Machine Co., Ltd. Electronic sewing machine. 4,403,560, Cl. 112-158.00E.
Makino, Kazuhiro, to Hitachi, Ltd. Vertically pivotable boom bending device for crane. 4,403,704, Cl. 212-262.000.
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Marathon Oil Company: *See—*
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Marcantonio, Angelo R., to RCA Corporation. Interrupt signal generating means for data processor. 4,404,627, Cl. 364-900.000.
March, Edward J.; and Wenger, George M., to Western Electric Company, Inc. Rosin flux filtration system. 4,403,949, Cl. 432-29.000.
Marchini, Roberto, to O.C.E.A. S.r.l. Rotary sector device turning at a variable angular speed suitable for the withdrawal and transferring of labels in automatic labelling machines. 4,404,058, Cl. 156-571.000.
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Margerum, Edward S.; and Hiatt, Norman A., to Dennison Manufacturing Company. Thermal imprinting of substrates. 4,404,249, Cl. 428-216.000.
Mark, Reuben, to Colgate-Palmolive Company. Combined toothbrush and gum massage device. 4,403,623, Cl. 132-84.00R.
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Maslanka, William W.; and Spence, Gavin G., to Hercules Incorporated. Organic pigments. 4,404,310, Cl. 524-457.000.

Masler, William F., III, to B. F. Goodrich Company, The. Process of preparing copolymer of lower carboxylic acid and ester thereof. 4,404,309, Cl. 524-379.000.

Mason, Charles D.; and Tuller, Harold W., to Allied Corporation. High impact nylon composition containing copolymer esters and ionic copolymers. 4,404,325, Cl. 525-179.000.

Massachusetts General Hospital: *See—*
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Masuda, Shunichi, to Canon Kabushiki Kaisha. Copying device having plural exposure modes. 4,403,850, Cl. 355-14.00R.

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Seach, Barry G.; Muller, Hans; and Cohen, Solomon E., 4,403,938, Cl. 425-393.000.

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Pittet, Alan O.; Muralidhara, Ranya; and Vock, Manfred H., 4,404,184, Cl. 424-49.000.
Muroran Institute of Technology: *See—*
Kondo, Hideo, 4,403,475, Cl. 60-398.000.
Murphy, Edward J.: *See—*
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Murphy, George W. Photoelectrodialytic cell. 4,404,081, Cl. 204-253.000.
Murray, Wayne A., to Edsyn, Inc. Universal temperature control circuits. 4,404,462, Cl. 219-497.000.
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Cigna, Giuseppe; Catarsi, Paolo; Mussatto, Maria C.; Vivaldini, Fabrizio; and Campolmi, Stefano, 4,404,293, Cl. 521-56.000.
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Adachi, Shoichi, 4,403,416, Cl. 30-273.000.
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Lodge, Robert H.; Phillips, Ian R.; and Reynolds, Mervyn F., 4,403,610, Cl. 604-61.000.
Naaktgeboren, Adrianus, to Sperry Corporation. Overload protection device for baler feeder mechanism. 4,403,544, Cl. 100-189.000.
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Pomper, Seymour; and La Baw, Glenn D., 4,404,227, Cl. 426-19.000.
Nadella: *See—*
Stephan, Gerard, 4,403,812, Cl. 308-184.00R.
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Nagano, Mitsuo, to Taiyo Shokai Co., Ltd. Method and apparatus for automatically controlling travel of two plastics film strips as a bag material or the like. 4,403,718, Cl. 226-27.000.
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Nagatomo, Shigeru: *See—*
Masuda, Nobuhito; Nagatomo, Shigeru; and Mihara, Yuji, 4,404,289, Cl. 436-538.000.
Nagayama, Yasuji; and Taniguchi, Makoto, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory circuit. 4,404,661, Cl. 365-203.000.
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Naiff, Kenneth L., to General Instrument Corporation. Data sense apparatus for use in multi-threshold read only memory. 4,404,655, Cl. 365-104.000.
Naito, Masayoshi: *See—*
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Nakagawa, Akira, to Nifco, Inc. Tape reel. 4,403,749, Cl. 242-71.800.
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Nakahama, Kazushi, to Tokyo Aircraft Instrument Co. Ltd. Servo-type capsule-equipped instrument. 4,403,512, Cl. 73-701.000.
Nakahashi, Ken-ichi, to Olympus Optical Co., Ltd. Objective for endoscopes. 4,403,837, Cl. 350-465.000.
Nakajima, Fumio, to Citizen Watch Co., Ltd. Electronic timepiece. 4,404,510, Cl. 318-696.000.
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Nakamura, Akira: *See—*
Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; and Wakabayashi, Takeshi, 4,403,996, Cl. 44-1.00G.
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Nakamura, Toshiaki: *See—*
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunaku, 4,403,910, Cl. 415-53.00T.
Nakamura, Toshiomi; Okamura, Masakazu; Moriguchi, Yoichiro; and Hayase, Tamiki, to Nippon Paint Co., Ltd. Polyisocyanate cross-linked polymers containing cellulosic component. 4,404,347, Cl. 527-300.000.
Nakamura, Yoshiaki: *See—*
Fukuhara, Shoetsu; Nakamura, Yoshiaki; Ibuki, Tadahiro; and Yamamoto, Masaichi, 4,403,568, Cl. 119-14.140.
Nakanishi Dental Mfg., Co., Ltd.: *See—*
Takasuke, Nakanishi, 4,403,956, Cl. 433-29.000.
Nakanishi, Michio: *See—*
Watanabe, Shoji; and Nakanishi, Michio, 4,404,333, Cl. 525-437.000.
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Nakano, Masayoshi: *See—*
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Nakatsukasa, Walter M., to Eli Lilly and Company. Process for enzyme inhibitor. 4,404,282, Cl. 435-122.000.
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O'Connor, Sean C.; and Nakatsukasa, Walter M., 4,404,281, Cl. 435-122.000.
Nakazyo, Kiyoshi: *See—*
Arai, Atsuaki; Oishi, Yasushi; Okumura, Akio; and Nakazyo, Kiyoshi, 4,404,274, Cl. 430-389.000.
Nakazyo, Masaki: *See—*
Toyoshima, Yoshiki; Hara, Sumio; and Nakazyo, Masaki, 4,404,000, Cl. 44-62.000.
Nalco Chemical Company: *See—*
Seale, Virgil L.; Stanford, James R.; Briscoe, James E.; and Penny, Glenn S., 4,404,377, Cl. 544-87.000.
Namai, Akihiro, to Canon Kabushiki Kaisha. Malfunction preventing device for camera. 4,403,844, Cl. 354-234.000.
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Speca, Anthony N.; Katzen, Stanley J.; and Rekers, Louis J., 4,404,340, Cl. 526-97.000.
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Menachem, Abraham, 4,404,660, Cl. 365-193.000.
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Neidleman, Saul L.; and Geigert, John, to Standard Oil Company (Ind.). Long chain wax esters and method of making same. 4,404,283, Cl. 435-134.000.
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Nelson, Thomas L., to Du Pont de Nemours, E. I., and Company. Process for making composite yarn of continuous filaments and staple fibers. 4,403,470, Cl. 57-5.000.
Nemoto, Etsuro: *See—*
Tsukagoshi, Tsunehiro; Nemoto, Etsuro; Yokozseki, Shinichi; Hagiwara, Sumio; Yoshino, Toshikazu; Arai, Yasuyuki; and Kobayashi, Kazuyoshi, 4,404,315, Cl. 524-521.000.
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Huttunen, Jouko; Turunen, Olli; Mandell, Leo; Eklund, Vidar; and Ekman, Kurt, 4,404,369, Cl. 536-30.000.
Neumann, Don B.; Norton, Lyle K.; and Olson, Eric V., to American Hoechst Corporation. System and method for producing artwork for printed circuit boards. 4,404,569, Cl. 346-108.000.
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Newbury, Frank T.: *See—*
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Newell, William C., to I-Tron, Inc. Envelope. 4,403,696, Cl. 206-623.000.
Nichols, Richard A., to Rockwell International Corporation. Differential absolute equalization measurement circuit. 4,404,520, Cl. 324-82.000.
Nicolas, Denise: *See—*
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Nicoli, David F.: *See—*
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Nicou, Parasko: *See—*
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Nifco Inc.: *See—*
Mizusawa, Akira, 4,403,377, Cl. 24-217.00R.
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Nijjar, Amrik S., to Wood George & Company. Inside blowout preventer. 4,403,628, Cl. 137-515.500.

Nikles, Walter G., Jr. Garment display and storage unit. 4,403,703, Cl. 211-193.000.

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Niles Parts Co., Ltd.: *See—*
Honjo, Kazumi, 4,404,438, Cl. 200-61.540.

Nilsson, Rolf E.: *See—*
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Nimco Corporation: *See—*
Bachner, George L., 4,403,465, Cl. 53-477.000.

Nimura, Takayasu, to Nippondenso Co., Ltd. Brush holding device for alternators. 4,404,487, Cl. 310-239.000.

Ninomiya, Masakazu: *See—*
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Nippe, Burkhard: *See—*
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Nippon Electric Co., Ltd.: *See—*
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Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Ogita, Minoru, 4,404,430, Cl. 179-1.0GE.

Nippon Kogaku K.K.: *See—*
Ushida, Kazuo, 4,403,835, Cl. 350-414.000.

Nippon Oil Co., Ltd.: *See—*
Fujiwara, Yasuo; and Takezono, Tetsuya, 4,404,409, Cl. 568-697.000.
Miyoshi, Mituji; Matsuura, Kazuo; and Tajima, Yoshio, 4,404,342, Cl. 526-125.000.

Nippon Paint Co., Ltd.: *See—*
Nakamura, Toshiomi; Okamura, Masakazu; Moriguchi, Yoichiro; and Hayase, Tamiki, 4,404,347, Cl. 527-300.000.

Nippon Seiko Kabushiki Kaisha: *See—*
Asano, Shuichi, 4,403,751, Cl. 242-107.200.

Nippon Soken, Inc.: *See—*
Hattori, Tadashi; Yamaguchi, Hiroaki; and Ozaki, Tadashi, 4,403,505, Cl. 73-117.300.
Kodera, Masao; Akita, Sigeyuki; and Yoshino, Yasuhisa, 4,404,541, Cl. 340-32.000.
Mizuno, Junzi; Fukami, Akira; Noguchi, Hiroki; and Ishii, Takeshi, 4,403,587, Cl. 123-519.000.
Tukao, Toshiyuki; and Tomita, Masahiro, 4,404,007, Cl. 55-523.000.

Nippon Telecommunication Engineering Company: *See—*
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Nippon Zeon Co., Ltd.: *See—*
Maeda, Akio; Hashimoto, Kinro; Yagishita, Shigelu; Inagami, Masaaki; and Fukushima, Hiroshi, 4,404,329, Cl. 525-329.200.

Nippondenso Co., Ltd.: *See—*
Mizuno, Junzi; Fukami, Akira; Noguchi, Hiroki; and Ishii, Takeshi, 4,403,587, Cl. 123-519.000.
Nagasaku, Eiichi; Yasunaga, Masao; and Kato, Kimihiro, 4,403,929, Cl. 418-82.000.
Nimura, Takayasu, 4,404,487, Cl. 310-239.000.
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Nishida, Koji; and Kawai, Taneichi, to Aisin Seiki Kabushiki Kaisha. Control method for stopping DC motor at predetermined position. 4,404,508, Cl. 318-611.000.

Nishihara, Motohisa: *See—*
Yamada, Kazuji; Nishihara, Motohisa; Sato, Hideo; Suzuki, Seiko; and Kobayashi, Ryoichi, 4,404,539, Cl. 338-3.000.

Nishimura, Hideo; Niwa, Kuniyuki; Yamamoto, Yasushi; and Yoneda, Takao, to Toyoda Koki Kabushiki Kaisha. Tool position offsetting system for a spare tool. 4,404,506, Cl. 318-561.000.

Nishioka, Akira: *See—*
Hirata, Hitoshi; and Nishioka, Akira, 4,404,428, Cl. 179-1.0GS.

Nishizawa, Jun-ichi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Semiconductor device. 4,404,575, Cl. 357-22.000.

Nissan Motor Company, Limited: *See—*
Yasuhara, Seishi, 4,403,582, Cl. 123-357.000.

Niwa, Kuniyuki: *See—*
Nishimura, Hideo; Niwa, Kuniyuki; Yamamoto, Yasushi; and Yoneda, Takao, 4,404,506, Cl. 318-561.000.

Niwa, Tomizo: *See—*
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Nixdorf Computer AG: *See—*
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Njuack Oil Pump Corporation: *See—*
Stanton, George E.; and McFadden, Patrick A., 4,403,919, Cl. 417-53.000.

Nodes, Franz: *See—*
Heider, Manfred; Hofschneider, Josef; Schallenberger, Wolfgang; Nodes, Franz; and Kempe, Eberhard, 4,404,284, Cl. 435-291.000.

Noguchi, Hiroki: *See—*
Mizuno, Junzi; Fukami, Akira; Noguchi, Hiroki; and Ishii, Takeshi, 4,403,587, Cl. 123-519.000.

Nola, Frank J., to United States of America, National Aeronautics and Space Administration. Motor power factor controller with a reduced voltage starter. 4,404,511, Cl. 318-729.000.

Nonomura, Keisaku: *See—*
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Nonomura, Kinzo; Watanabe, Masanori; Takesako, Yoshinobu; Irie, Hiroyuki; and Ide, Susumu, to Matsushita Electric Industrial Co., Ltd. Picture image display apparatus. 4,404,493, Cl. 313-422.000.

Noranda Mines Limited: *See—*
Godbehere, Peter W., 4,404,022, Cl. 75-2.000.

Norddeutsche Affinerie AG: *See—*
Ploss, Hartmut; and Lehne, Jurgen, 4,404,169, Cl. 423-35.000.

Nordeen, Erwin E.: *See—*
Keane, James W.; and Nordeen, Erwin E., 4,403,372, Cl. 15-339.000.

Normalair-Garrett (Holdings) Limited: *See—*
Hamlin, Humphrey A. S.; and Taylor, James C., 4,404,005, Cl. 55-163.000.

Norris, Peter J.; Parker, Frederick J.; and Windsor, Harry M., to Automotive Products Limited. Clutch control apparatus. 4,403,682, Cl. 192-0.033.

North American Philips Consumer Electronics Corp.: *See—*
Palty, George, 4,404,492, Cl. 313-355.000.

North American Philips Corporation: *See—*
Bonar, David C., 4,404,591, Cl. 358-111.000.

Northern Telecom Limited: *See—*
Long, John R.; Miner, Carla J.; Streater, Richard W.; and Baraff, David R., 4,404,555, Cl. 340-784.000.

Norton Company: *See—*
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Norton, Lyle K.: *See—*
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Nouvertne, Werner: *See—*
Kafer, Peter; Morbitzer, Leo; Neuray, Dieter; Cohnen, Wolfgang; and Nouvertne, Werner, 4,404,351, Cl. 528-174.000.

Novatome: *See—*
Daviot, Jean, 4,404,292, Cl. 501-97.000.
Le Baud, Patrice, 4,403,500, Cl. 73-19.000.

Nowack, Gerhard P.: *See—*
Johnson, Marvin M.; Walker, Darrell W.; and Nowack, Gerhard P., 4,404,124, Cl. 252-466.0PT.

Noyes, John B.: *See—*
Campbell, Richard H., Jr.; and Noyes, John B., 4,404,636, Cl. 364-482.000.

NP Marketing Corporation: *See—*
Van Gompel, James J., 4,403,556, Cl. 108-55.300.

Nudelman, Boris I.; Chepkalenko, Mikhail G.; Gasanova, Alevtina A.; Galimova, Guzal A.; Khaichkis, Roza; Uraev, Ravkhat E.; Tashpulatov, Turgun K.; Butaev, Erkin M.; Adam, Fedor Y.; Kevvai, Arnold A.; Bodyagina, Rashida G.; Ibragimov, Sunnat I.; and Fedorov, Alexandr P., to Tashkentsky Nauchnoissledovatelsky I Proektny Institut Stroitelnykh Materialov. Process for producing cement clinker. 4,404,032, Cl. 106-100.000.

Numazawa, Akio; and Arai, Hajime, to Mobil Oil Corporation. Manual transmission and hydraulically operated subtransmission. 4,403,526, Cl. 74-740.000.

Nunley, Leonard J.; Simpson, Willis D.; and Reid, William J., to Recognition Equipment Incorporated. Document processing system. 4,404,649, Cl. 364-900.000.

O.C.E.A. S.r.l.: *See—*
Marchini, Roberto, 4,404,058, Cl. 156-571.000.

Occidental Chemical Corporation: *See—*
Tomaszewski, Lillie C., 4,404,074, Cl. 204-146.000.

Oce-Nederland B.V.: *See—*
Hovens, Petrus J. P.; and Willemse, Adrianus H., 4,403,853, Cl. 355-16.000.

O'Connor, Sean C.; and Nakatsukasa, Walter M., to Eli Lilly and Company. Process for enzyme inhibitors. 4,404,281, Cl. 435-122.000.

Oculus Optikgeraete GmbH: *See—*
Aulhorn, Elfriede; Kocher, Jakob; and Reiner, Josef, 4,403,842, Cl. 351-237.000.

Oden, Arlo L.: *See—*
Ploeg, Johan F.; and Oden, Arlo L., 4,403,656, Cl. 166-179.000.

Ogasawara, Hirotake; Hatakeyama, Yoshiharu; and Ishiguro, Mitsuo, to Shiseido Company, Ltd; and Yoshida Industry Co., Ltd. Apparatus for loading cosmetic material into a hollow space. 4,403,932, Cl. 425-85.000.

Ogasawara, Nobuhiko: *See—*
Tomite, Tosio; Ogasawara, Nobuhiko; Isii, Kaniti; and Kanamaru, Hisanobu, 4,403,402, Cl. 29-598.000.

Ogasawara, Takaaki: *See—*
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Ogata, Kojiro: *See—*
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Ogilvie, Kelvin K.: *See—*
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Ogita, Minoru, to Nippon Gakki Seizo Kabushiki Kaisha. FM Stereo demodulation circuit with voltage dividing and multiplexing techniques. 4,404,430, Cl. 179-1.0GE.
Ogletree, Ronald K. Method for making continuous fiber reinforced cast thermoplastic structures. 4,404,156, Cl. 264-162.000.
Ogoshi, Toshiaki: *See*—
Sekiguchi, Shizuo; Miyawaki, Yozo; and Ogoshi, Toshiaki, 4,404,143, Cl. 260-400.000.
Ohara, Yuji: *See*—
Ohnishi, Masahiro; Ohara, Yuji; Oono, Hiroshi; and Oosaka, Shigenori, 4,404,570, Cl. 346-108.000.
Ohba, Hiroki, to Alps Electric Co., Ltd. Push-push mechanism of pushbutton operating shaft. 4,404,436, Cl. 200-153.00J.
Ohie, Tomonori, to Diesel Kiki Co., Ltd. Fuel injection nozzle system. 4,403,585, Cl. 123-446.000.
Ohmori, Takashi: *See*—
Kikuchi, Yoshiki; and Ohmori, Takashi, 4,404,568, Cl. 346-76.0PH.
Ohmura, Tadayoshi: *See*—
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Ohnishi, Masahiro; Ohara, Yuji; Oono, Hiroshi; and Oosaka, Shigenori, to Fuji Photo Film Co., Ltd. Laser recorder. 4,404,570, Cl. 346-108.000.
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Slight, John R., 4,403,551, Cl. 104-138.00G.
Potter, Charles W., to J. H. Fenner & Co. Ltd. Annular fluid seals. 4,403,780, Cl. 277-88.000.
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PPG Industries, Inc.: *See—*
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Reese, Walter J.; and Walker, Jimmy D., 4,403,744, Cl. 242-18.00G.
Sharp, Thomas K. R., 4,403,550, Cl. 101-452.000.
Zinninger, Thomas C.; and Deli, Joseph, 4,404,016, Cl. 71-78.000.
Pradel, Gunter; and Quaschning, Ulrich, to Sartorius GmbH. Filtration apparatus for flat filter plates cut to size. 4,404,102, Cl. 210-247.000.
Preis, Hans M.: *See—*
Schwinn, Horst; Heimburger, Norbert; Kumpe, Gerhardt; and Preis, Hans M., 4,404,187, Cl. 424-101.000.
Presby, Herman M., to Bell Telephone Laboratories, Incorporated. Ultraviolet radiation detector. 4,403,826, Cl. 350-96.300.
Primich, Theodore. Energy saving heat recycling system. 4,403,732, Cl. 237-50.000.
Pritchard, Dalton H., to RCA Corporation. Signal processing apparatus effecting asymmetrical vertical peaking. 4,404,584, Cl. 358-31.000.
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Anderson, Barry J., 4,404,128, Cl. 252-546.000.
Persson, Louis T.; and Riemersma, Coenraad E., 4,404,052, Cl. 156-73.100.
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Pryor, Timothy R., to Diffracto Ltd. Apparatus for determining dimensions. 4,403,860, Cl. 356-375.000.
Pucciarello, Frank, to Sangamo Weston, Inc. Display connection scheme for modular analog/digital instrument. 4,404,522, Cl. 324-114.000.
Pyykkonen, Pentti. Auxiliary device for oil burner for mixing water and oil for combustion. 4,403,944, Cl. 431-90.000.
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Pradel, Gunter; and Quaschning, Ulrich, 4,404,102, Cl. 210-247.000.
Quigley, Thomas J., to Continental-Wirt Electronics Corporation. Molded snap-in switch having movable contact blade which uses compound motion. 4,404,437, Cl. 200-16.00C.
Quinn, Jeffrey J.: *See—*
Jenkins, Robert D., 4,403,434, Cl. 40-152.000.
R.B.L. Riello Bruciatori Legnago S.p.A.: *See—*
Stella, Antonio; and Canova, Giuseppe, 4,403,943, Cl. 431-31.000.
R. E. Phelon Company, Incorporated: *See—*
Piteo, Michael J., 4,403,593, Cl. 123-651.000.
R. E. Wright Associates, Inc.: *See—*
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Radiation Systems Incorporated: *See—*
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Szendrodi, Valer; Radics, Gyula; Varga, Tivadar; Vass, Tibor; and Gyurics, Karoly, 4,403,803, Cl. 296-179.000.
Ragard, Phillip A.: *See—*
Dean, Weibley J.; Merithew, David L.; and Ragard, Phillip A., 4,403,723, Cl. 227-76.000.
Ragas, Frank J.; Minnis, Ralph L.; Murphy, Edward J.; and Vargo, Steve J., to DeSoto, Inc. Low temperature curing thermosetting coatings for solvent-sensitive moldings. 4,404,308, Cl. 524-379.000.
Ragland, Ewing, Jr. Fishing line knot tying tool. 4,403,797, Cl. 289-17.000.
Rainbow, Arnold, to Fisons Limited. Plant growth medium. 4,404,013, Cl. 71-24.000.
Rainin, Edgar A. Intraocular lens having a fixation mechanism. 4,403,354, Cl. 3-13.000.
Raman, Hariharan: *See—*
Menon, Kuruvakkat K. G.; Raman, Hariharan; Sarma, Vadali S.; and Subba, Bookinkere C., 4,404,015, Cl. 71-77.000.
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Ron, Eliora Z., 4,404,186, Cl. 424-92.000.
Ramsey, Rickey H. Stabilizing drill collar. 4,403,668, Cl. 175-325.000.
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Payne, Errol G.; McGregor, Charles D.; and Uyeda, Tim M., 4,403,874, Cl. 400-124.000.
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Ramun, Michael; and Ramun, John. Self-contained material handling and shearing attachment for a backhoe. 4,403,431, Cl. 37-117.500.
Randam Electronics, Inc.: *See—*
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Ransom, Stephen A.; and Stickel, Tedd K., to Sperry Corporation. High speed-low power gallium arsenide basic logic circuit. 4,404,480, Cl. 307-475.000.
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Rapp, Heinz, to AGFA-Gevaert AG. Arrangement for cleaning band-like data carriers. 4,403,370, Cl. 15-308.000.

Rapp, Ruth E., legal representative: *See—*
Grosskinsky, Otto-Alfred; Frommer, Elmar; Rapp, Gunther, deceased; and Thomas, Erwin, 4,404,176, Cl. 423-387.000.
Rarick, Kimber W., to Coburn Optical Industries, Inc. Digital gauge for measuring sagittal depth and thickness of lens, and related system and method. 4,403,420, Cl. 33-174.00A.
Rasmussen, Ole-Bendt; and Jensen, Borge, to Rasmussen, Ole-Bendt. Coextrusion die. 4,403,934, Cl. 425-192.00R.
Rasovich, Ivan, to Rasovich, Ivan. Quick freezing system. 4,403,479, Cl. 62-63.000.
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Jabs, Gert; Dahm, Manfred; Haus, Artur; Nehen, Ulrich; Rath, Klaus; and Weimann, Norbert, 4,404,251, Cl. 428-320.600.
Rattunde, Manfred, to P.I.V. Antrieb Werner Reimers GmbH & Co. KG. Cone-pulley belt-type transmission. 4,403,975, Cl. 474-18.000.
Ravey, Manny: *See—*
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Raybaud, Alain M. M.: *See—*
Laffitte, Denis R. G.; Louis, Guy H.; and Raybaud, Alain M. M., 4,403,917, Cl. 416-96.00A.
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Cowan, Jack C.; Thrash, Tommy; and Rayborn, Jerry R., 4,404,107, Cl. 252-8.50M.
Rayl, Richard L.: *See—*
Smith, Delmar A., 4,403,433, Cl. 37-243.000.
Raymoure, Russell A.; Bechtel, Richard P., Jr.; Carson, Ray; and Don Carlos, Alva G., to Hallmark Cards, Inc. Heat-shrinkable film wrapped packaging. 4,403,695, Cl. 206-497.000.
Raytheon Company: *See—*
Kits van Heyningen, Arent H., 4,404,665, Cl. 367-100.000.
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RCA Corporation: *See—*
Cave, Eric F.; and Cowden, James J., 4,403,453, Cl. 51-124.00R.
Deyer, Craig E., 4,404,515, Cl. 324-54.000.
Dingwall, Andrew G. F., 4,404,474, Cl. 307-260.000.
Forberger, Steven C., 4,403,547, Cl. 101-170.000.
Griffis, Patrick D., 4,404,429, Cl. 179-1.0VL.
Levine, Peter A., 4,404,587, Cl. 358-44.000.
Lin, Peter T., 4,403,369, Cl. 15-304.000.
Marcantonio, Angelo R., 4,404,627, Cl. 364-900.000.
Miller, Arthur, 4,404,465, Cl. 250-203.00R.
Miller, Michael E., 4,404,669, Cl. 369-170.000.
Pritchard, Dalton H., 4,404,584, Cl. 358-31.000.
Shanley, Robert L., II; and Harwood, Leopold A., 4,404,593, Cl. 358-168.000.
Tarng, Ming L.; and Hicinbothem, Walter A., Jr., 4,404,235, Cl. 427-89.000.
Taylor, Byron K., 4,404,670, Cl. 369-170.000.
Thomas, Caleb H., Jr., 4,404,542, Cl. 340-146.200.
Reckitt & Colman Products Limited: *See—*
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Recognition Equipment Incorporated: *See—*
Nunley, Leonard J.; Simpson, Willis D.; and Reid, William J., 4,404,649, Cl. 364-900.000.
Redeker, Detmar: *See—*
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Reed, Larry E.; Porter, Randall A.; Farha, Floyd E., Jr.; and Guillory, Jack P., to Phillips Petroleum Company. Antifoulants for thermal cracking processes. 4,404,087, Cl. 208-48.0AA.
Reeder, William M. Adjustable, quick installation, window covering device. 4,403,641, Cl. 160-263.000.
Reese, Walter J.; and Walker, Jimmy D., to PPG Industries, Inc. Method and apparatus for controlling strand tension during winding. 4,403,744, Cl. 242-18.00G.
Reeves Bros., Inc.: *See—*
Terpay, John M., 4,404,243, Cl. 428-62.000.
Reichel, Artur, to Ernst Leitz Wetzlar GmbH. Comparator macroscope or microscope. 4,403,839, Cl. 350-514.000.
Reichert, Harry J., Jr., to General Instrument Corporation. Fault detection system as for locating faulty connections in a cable television system. 4,404,514, Cl. 324-52.000.
Reichman, James M.; and Kelley, Douglas P., to Electric Power Research Institute, Inc. Cable following apparatus utilizing a releasable cable gripping mechanism. 4,403,667, Cl. 175-230.000.
Reid, William J.: *See—*
Nunley, Leonard J.; Simpson, Willis D.; and Reid, William J., 4,404,649, Cl. 364-900.000.
Reilich, David G.: *See—*
Jenkins, Robert D., 4,403,434, Cl. 40-152.000.
Reimar, Wolfgang, to Dr. Johannes Heidenhain GmbH. Electrical contact for position measuring instrument. 4,403,823, Cl. 339-126.00R.
Reiner, Josef: *See—*
Aulhorn, Elfriede; Kocher, Jakob; and Reiner, Josef, 4,403,842, Cl. 351-237.000.
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Rementer, Stephen W.: *See—*
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Renner, G. Frederick, to Battelle Memorial Institute. Rotative power and signal coupling. 4,404,559, Cl. 340-870.280.
Rentler, Robert J.; and Sproul, David D., to Air Products and Chemicals, Inc. Combined cascade and multicomponent refrigeration method with refrigerant intercooling. 4,404,008, Cl. 62-11.000.
REPA Feinstanzwerk G.m.b.H.: *See—*
Fohl, Artur, 4,403,752, Cl. 242-107.200.
Repplinger, Thomas J., to Otto Engineering, Inc. Method and apparatus for controlling flow of work materials. 4,403,764, Cl. 251-5.000.
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Dolak, Lester A.; Reusser, Fritz; Castle, Thomas M.; Hannon, Betty R.; Laborde, Alice L.; and Marschke, Charles K., 4,404,190, Cl. 424-118.000.
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Howse, Peter; Cookson, Dennis; and Lane, Stephen P., 4,404,551, Cl. 340-711.000.
Reynolds, Mervyn F.: *See—*
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Rhodes, Smith A., to Communications Satellite Corporation. Method and apparatus for weighted majority decoding of FEC codes using soft detection. 4,404,674, Cl. 371-43.000.
Rhone-Poulenc Industries: *See—*
Bartissol, Alain; Boutin, Jean; and Wachowski, Francois, 4,404,073, Cl. 204-159.230.
Leveque, Alain; and Triollier, Michel, 4,404,174, Cl. 423-112.000.
Rhone-Poulenc Specialites Chimiques: *See—*
Fau, Alain; and Nicou, Parasko, 4,404,348, Cl. 528-15.000.
Ricci, Louis N.: *See—*
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Rich, Donald S., to Thomas & Betts Corporation. Connector for terminating undercarpet signal transmission cable. 4,403,820, Cl. 339-97.00R.
Rich, Donald S., to Thomas & Betts Corporation. Cable assembly for undercarpet signal transmission. 4,404,425, Cl. 174-107.000.
Richards, Edwin H., to L & H Designs Limited. Fastening apparatus and control systems therefor. 4,403,409, Cl. 29-798.000.
Richardson, Kenneth, to Pfizer Inc. Antifungal 1,3-bis-triazolyl-2-propanol derivative. 4,404,216, Cl. 424-269.000.
Richardson, Roy A., to Motorola, Inc. System of directional antennas with means for reducing flutter. 4,404,563, Cl. 343-100.0SA.
Richmond, Moscow K. Gate-opening and closing apparatus and method. 4,403,449, Cl. 49-340.000.
Richter, Dag: *See—*
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Ricoh Company, Ltd.: *See—*
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Ricotti, Giulia C. B. A.; and Zeijlemaker, Willem P., to Stichting Vrienden van de Stichting Dr. Karl Landsteiner. Method of culturing hybridomas. 4,404,279, Cl. 435-68.000.
Riddle, Travis: *See—*
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Riemersma, Coenraad E.: *See—*
Persson, Louis T.; and Riemersma, Coenraad E., 4,404,052, Cl. 156-73.100.
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Almahmoud, Saad; Kraus, Hubert; and Riepl, Martin, 4,403,381, Cl. 29-25.420.
Rieter Machine Works Limited: *See—*
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Riker Laboratories, Inc.: *See—*
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Rischmuller, Klaus, to Thomson-CSF. Process for controlling a darlington circuit and a low-loss darlington circuit. 4,404,478, Cl. 307-315.000.

Rise, Leif, to Garrett Corporation, The. Turbocharger control actuator. 4,403,538, Cl. 92-94.000.

Ritter, George W.: *See*—
Bhatti, Mohinder S.; Marzocchi, Alfred; and Ritter, George W., 4,404,009, Cl. 65-1.000.

Rivelles Sabater, Maria D.; Alcala Perales, Maria T.; Manes Uso, Carmen; and Calabuig Sanchis, Maria A. Reinforced flexible container. 4,403,637, Cl. 150-12.000.

RM Industrial Products Company, Inc.: *See*—
Ledbetter, Stephen G.; Singleton, Michael P.; Johns, Thomas J.; and Fabian, James L., 4,403,796, Cl. 285-223.000.

Robbins, Roland W., to United States of America, Navy. Expander stroke delay mechanism for split stirling cryogenic cooler. 4,403,478, Cl. 62-6.000.

Robert Bosch GmbH: *See*—
Eblen, Ewald; Hofmann, Karl; and Kopse, Odon, 4,403,740, Cl. 239-533.400.
Eheim, Franz, 4,403,583, Cl. 123-387.000.
Fritz, Adolf R., 4,403,592, Cl. 123-609.000.
Lauterbach, Heinz, 4,403,506, Cl. 73-204.000.
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Roberts, Michael L.: *See*—
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Robertson, Roger L.: *See*—
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Robinson, John E., to International Computers Limited. Manufacture of printed circuit boards. 4,403,410, Cl. 29-830.000.

Robinson, John W.: *See*—
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Robinson, Ralph C., to Olympian Stone Company. Method of making a building panel. 4,404,158, Cl. 264-263.000.

Rockland, Ronald H.: *See*—
Engle, William R.; Moore, E. Neil, Jr.; Spear, Joseph F., Jr.; and Rockland, Ronald H., 4,403,614, Cl. 128-419.00D.

Rockwell International Corporation: *See*—
Beilock, Milton M.; and Wuerth, John M., 4,403,838, Cl. 350-500.000.
Grande, Johannes; and Brown, James H., 4,404,677, Cl. 371-69.000.
Manasevit, Harold M., 4,404,265, Cl. 428-689.000.
Nichols, Richard A., 4,404,520, Cl. 324-82.000.
Talbot, Terence R., 4,403,495, Cl. 72-383.000.
Tam, Matthias L.; and Custode, Frank Z., 4,404,581, Cl. 357-59.000.

Rodew International: *See*—
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Rodrigues, Allan B. J.: *See*—
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Roeder, George K. Seal gland improvements for hydraulically actuated downhole pumps. 4,403,922, Cl. 417-358.000.

Rogachevsky, George. Rotary vane internal combustion engine. 4,403,581, Cl. 123-239.000.

Rogers, Noel A., to Terra Corporation. Frequency control system for radio apparatus employing filter amplifier operated at harmonic of frequency of synthesized signal source. 4,404,685, Cl. 455-76.000.

Rogo, Casimir; Lenz, Herman N.; and Holbrook, Michael, to Teledyne Industries, Inc. Variable geometry device for turbomachinery. 4,403,914, Cl. 415-165.000.

Rohm and Haas Company: *See*—
Pirotta, Marico G.; and Garbagnati, Giberto, 4,404,346, Cl. 521-29.000.

Rokujio, Masaharu; Ogasawara, Takaaki; and Usui, Mitunori, to Kobe Steel, Ltd. Welding core wire supply device. 4,404,457, Cl. 219-137.200.

Rolls Royce Limited: *See*—
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Romanski, Eric R.; and Josef, Michael J., to Albany International Corp. Corrugator belt with high air permeability. 4,403,632, Cl. 139-383.00A.

RoMark Technology, Inc.: *See*—
Schroeder, Robert W., 4,403,364, Cl. 15-4.000.

Ron, Eliora Z., to Ramot University Authority for Applied Research and Industrial Development Ltd. Vaccines obtained from bacterial mutant strains. 4,404,186, Cl. 424-92.000.

Ronen, Ram S., to Xerox Corporation. All implanted MOS transistor. 4,404,576, Cl. 357-23.000.

Rose, Peter: *See*—
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Rosemount Inc.: *See*—
DeLeo, Richard V., 4,403,872, Cl. 374-138.000.

Rosenberry, George M., to General Electric Company. Method of making a dynamoelectric machine stator having concentric amorphous metal laminations. 4,403,401, Cl. 29-596.000.

Rosenthal, Robert D., to Trebor Industries, Inc. Apparatus for near infrared quantitative analysis with temperature variation correction. 4,404,642, Cl. 364-571.000.

Ross, Adma S.: *See*—
Boothe, James H.; and Ross, Adma S., 4,404,374, Cl. 544-26.000.
Boothe, James H.; and Ross, Adma S., 4,404,375, Cl. 544-27.000.
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Rossum, David P.; and Dow, Ronald N. Lowpass filter with electronic control of cutoff and resonance. 4,404,529, Cl. 330-303.000.

Rothschild, Kenneth J.; and Clark, Noel A., to Trustees Boston University. Process and apparatus for producing a molecularly oriented film. 4,403,939, Cl. 425-425.000.

Roussigne, Maurice: *See*—
Coynel, Daniel; and Roussigne, Maurice, 4,404,443, Cl. 200-147.00A.

Rovinsky, William Z.: *See*—
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Rozenfeld, Iosif L.; Brusnikina, Vera M.; Frolova, Larisa V.; Lyashenko, Alevtina A.; Sokolov, Jury V.; Bocharov, Boris V.; Fokin, Alexandr V.; Legezin, Nikolai E.; Dergobuzova, Ekaterina V.; Altshuler, Boris N.; Zelenaya, Saida A.; and Korobova, Emma S. Protecting steel and ferrous metals against H_2S corrosion. 4,404,167, Cl. 422-12.000.

Rudd, Robert E., III: *See*—
Kocot, Ray H.; Rudd, Robert E., III; and Arnoldi, Douglas R., 4,404,573, Cl. 346-140.00R.

Rudenko, Valentin P.: *See*—
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Ruhrgas Aktiengesellschaft: *See*—
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Runco, Virgil S. Knock down projection television cabinet. 4,403,815, Cl. 312-7.200.

Ruthven, William A. Hydrolic fluid-lubricated piston-combustion engine. 4,403,474, Cl. 60-396.000.

Rutter, Jerry L., to Gulf Oil Corporation. Phthalimidoguanidine plant growth regulators. 4,404,017, Cl. 71-88.000.

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Bach, Erik; and Ryaa, Jan, 4,403,733, Cl. 238-10.00E.

Ryan, John O., to Ampex Corporation. Circuit for minimizing edge hooking in television camera pickup tubes. 4,404,499, Cl. 315-371.000.

Ryang, Hong-Son, to General Electric Company. Silicone-imide copolymers and method for making. 4,404,350, Cl. 528-26.000.

Rycenga, Jacob L. Modular chute assembly. 4,403,686, Cl. 193-2.00C.

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Morimoto, Yoshinori, 4,403,750, Cl. 242-84.20G.

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Bellmann, Gunter; Cervini, Celeste; and Sachetto, Jean-Pierre, 4,404,371, Cl. 536-98.000.

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D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,404,139, Cl. 548-423.000.

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Fukushima, Takeshi; Sakagami, Kiyoshi; and Ikegami, Yoshihiro, 4,403,863, Cl. 366-8.000.

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Sammarco, Peter, to International Harvester Co. Adjustable drawbar. 4,403,670, Cl. 180-14.00R.

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Arikawa, Hiroo, 4,404,537, Cl. 337-232.000.

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Lamborn, Calvin R., 4,403,445, Cl. 47-58.000.
Matejcek, Milan; Theohar, Carl; and Kleinlogel, Horst, 4,404,226, Cl. 424-326.000.

Sanford, Lyell G.; and Ransom, Leslie, to General Signal Corporation. Printing mechanism. 4,403,546, Cl. 101-79.000.

Sangamo Weston, Inc.: *See*—
Pucciarello, Frank, 4,404,522, Cl. 324-114.000.

Sankei Giken Kogyo Kabushiki Kaisha: *See*—
Okada, Tomoyuki; Fukuda, Masuo; and Sugihara, Hideki, 4,404,042, Cl. 148-6.200.

Sankin Industry Co., Ltd.: *See*—
Tsunekawa, Masayoshi; Miyoshi, Nobuyoshi; and Komura, Tamotsu, 4,404,150, Cl. 260-927.00R.

Sano, Sakae: *See*—
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Yasuda, Isao; Koyama, Kazuaki; and Kawai, Yoshihiko, 4,404,608, Cl. 360-126.000.

Sapelak, Ronald, to Clark Equipment Company. Means for converting a grapple skidder to a cable skidder. 4,403,902, Cl. 414-569.000.

Sargent, Donald J., to E/M Lubricants, Inc. Metal forming lubricant and method of use thereof. 4,403,490, Cl. 72-42.000.

Sarma, Vadali S.: *See*—
Menon, Kuruvakkat K. G.; Raman, Hariharan; Sarma, Vadali S.; and Subba, Bookinkere C., 4,404,015, Cl. 71-77.000.

Sarno, Nicola, to General Signal Corporation. Receptacle for support of a melt containing crucible. 4,403,955, Cl. 432-158.000.

Sartorius GmbH: *See*—
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Sato, Hideo: *See*—
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Sato, Toyohiro: *See*—
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Satoh, Hiroaki; Tabata, Yasuyuki; Gomikawa, Kouichi; and Hiruta, Masaru, to Kureha Kagaku Kogyo Kabushiki Kaisha. Tower for drying gaseous chlorine. 4,404,171, Cl. 422-241.000.

Saytech, Inc.: *See*—
Barda, Henry J., 4,404,361, Cl. 528-342.000.

Scaffidi, Cono T. Heating element for an open fireplace. 4,403,598, Cl. 126-121.000.

Schaaf, Thomas K.: *See*—
Johnson, Michael R.; Schaaf, Thomas K.; and Hess, Hans-Jurgen E., 4,404,372, Cl. 542-429.000.

Schaefer, James R., to United States of America, Air Force. Roller bearing cage design. 4,403,813, Cl. 308-207.00R.

Schaeffer, Hans-Joachim: *See*—
Koch, Klaus; Schaeffer, Hans-Joachim; and Syrbius, Gerhard, 4,404,101, Cl. 210-232.000.

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Schallenberger, Wolfgang: *See*—
Heider, Manfred; Hofschneider, Josef; Schallenberger, Wolfgang; Nodes, Franz; and Kempe, Eberhard, 4,404,284, Cl. 435-291.000.

Schapel, Dietmar, to Bayer Aktiengesellschaft. Gel compositions with depot action based on a polyurethane matrix and relatively high molecular weight polyols and containing active ingredients, and a process for their preparation. 4,404,296, Cl. 523-105.000.

Scharfenberger, James A., to Ransburg Corporation. Uncontaminated purge solvent recovery system. 4,403,736, Cl. 239-112.000.

Scharfenbergkupplung GmbH: *See*—
Ernst, Dieter; Forster, Hilmar; Gunther, Wilhelm; and Vahldiek, Ernst, 4,403,705, Cl. 213-1.300.

Schaub, Robert E.; Upeslacis, Janis; and Bernstein, Seymour, to American Cyanamid Company. Poly cation salts of monohexosethio (or oxy) alkyl diamides. 4,404,195, Cl. 424-180.000.

Schedlitzki, Dietmar: *See*—
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Scheidweiler, Andreas: *See*—
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Schelling, Edward C.: *See*—
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Scherbing, Frank J., to Fort Lock Corporation. Slide fastener bag lock. 4,403,485, Cl. 70-68.000.

Schering Aktiengesellschaft: *See*—
Annen, Klaus; Laurent, Henry; and Hofmeister, Helmut, 4,404,141, Cl. 260-397.300.

Scherson, Isaac: *See*—
Ruhman, Smil; and Scherson, Isaac, 4,404,653, Cl. 365-49.000.

Schertz, Burtron D.; and Glandon, Jerry L., to General Motors Corporation. Bridge audio amplifier including low level fade control. 4,404,527, Cl. 330-84.000.

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Schibli, Eugen: *See*—
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Schifferly, Richard E. Tire mounting combination tool. 4,403,640, Cl. 157-1.300.

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Kohler, Robert; Schilffarth, Karlchristian; Kober, Heinrich; and Nippe, Burkhard, 4,404,253, Cl. 428-327.000.

Schiltz, Ronald M.; and Corlett, Alan H., to Crepaco, Inc. Plate heat exchanger. 4,403,652, Cl. 165-167.000.

Schirmann, Peter J.: *See*—
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Schlimper, Hans-Ulrich: *See*—
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Upchurch, James M., 4,403,659, Cl. 166-374.000.

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Schmale & Co.: *See*—
Schmale, Karl E., 4,403,694, Cl. 206-347.000.

Schmale, Karl E., to Schmale & Co. Guide strip for conveying fittings into a studding machine. 4,403,694, Cl. 206-347.000.

Schmeider, Adolf, to Gg. Noell GmbH. Block and pulley arrangement. 4,403,766, Cl. 254-399.000.

Schmid, Richard G.: *See*—
Fanizza, Michael A.; and Schmid, Richard G., 4,404,588, Cl. 358-60.000.

Schmidt, Gunther: *See*—
Trummlitz, Gunter; Eberlein, Wolfgang; Engel, Wolfhard; and Schmidt, Gunther, 4,404,230, Cl. 426-548.000.

Schmidt, Paul J.; and Hung, William M., to Sterling Drug Inc. Carbonless duplicating and marking systems. 4,403,791, Cl. 282-27.500.

Schmidt, William K., to Du Pont de Nemours, E. I., and Company. Analgesic mixture of nalbuphine and tiflamizole. 4,404,208, Cl. 424-260.000.

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Schmidt, William K., to Du Pont de Nemours, E. I., and Company. Analgesic mixture of nalbuphine and ibuprofen. 4,404,210, Cl. 424-260.000.

Schmidt, William K., to Du Pont de Nemours, E. I., and Company. Analgesic mixture of nalbuphine and flurbiprofen. 4,404,211, Cl. 424-260.000.

Schott Glaswerke: *See*—
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Schramm, Buford J. Hubless, hingeless and bearingless helicopter rotor system. 4,403,918, Cl. 416-138.000.

Schreiber, Bruno: *See*—
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Schroder, Gunther: *See*—
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Schroeder, Robert W., to RoMark Technology, Inc. Automatic brush cleaner. 4,403,364, Cl. 15-4.000.

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Schulz, Johann G. D.; and Cobler, John A., to Gulf Research & Development Company. Process for preparing coal suspensions. 4,403,998, Cl. 44-51.000.

Schurter, Rolf; Clauson-Kaas, Niels; and Rempfler, Hermann, to Ciba-Geigy Corporation. Certain esters of 2-[(2,6-dichloro-3-pyridyl)oxy]-propionic acid, compositions containing same and their herbicidal properties. 4,404,020, Cl. 71-94.000.

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Schwarz, Otto; and Linnau, Yendra, to Immuno Aktiengesellschaft fur chemisch-medizinische Produkte. Method of producing a factor-VIII(AHF)-high-concentrate. 4,404,131, Cl. 260-112.00B.

Schwarzenbach, Alfred, to BBC Brown, Boveri & Company Limited. Air storage installation blowout prevention device. 4,403,477, Cl. 60-659.000.
Schwarzmann, Matthias: *See*—
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Schweitzer, Jeffrey S.; and Tapphorn, Ralph M., to Schlumberger Technology Corporation. Salinity and lithology determination from the sodium and chlorine activation lines. 4,404,467, Cl. 250-270.000.
Schweizer, Erwin V.: *See*—
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Schwender, Charles F.: *See*—
Connor, David T.; Schwender, Charles F.; Sorenson, Roderick J.; and Unangst, Paul C., 4,404,138, Cl. 260-244.400.
Schwinn, Horst; Heimburger, Norbert; Kumpe, Gerhardt; and Preis, Hans M., to Behringwerke Aktiengesellschaft. Method for rendering factors II and VII hepatitis-safe with a chelating agent. 4,404,187, Cl. 424-101.000.
Science Union et Cie: *See*—
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Vincent, Michel; Remond, Georges; and Bure, Jacques, 4,404,215, Cl. 424-267.000.
SCM Corporation: *See*—
Vought, Kenneth D., 4,403,876, Cl. 400-144.200.
Vought, Kenneth D.; and Faes, Steven M., 4,403,879, Cl. 400-674.000.
Scotia Recovery Systems Limited: *See*—
Poetschke, Leonard E., 4,403,997, Cl. 44-2.000.
Scott, Ernest R., to Scott & Fetzer Company, The. Plug connector and receptacle. 4,403,824, Cl. 339-186.00R.
Scott & Fetzer Company, The: *See*—
Scott, Ernest R., 4,403,824, Cl. 339-186.00R.
Scuilli, Henry G. Copying and engraving apparatus. 4,404,598, Cl. 358-296.000.
Seach, Barry G.; Muller, Hans; and Cohen, Solomon E., to James Hardie & Coy. Pty. Limited. Pipe socket forming. 4,403,938, Cl. 425-393.000.
Seale, Virgil L.; Stanford, James R.; Briscoe, James E.; and Penny, Glenn S., to Nalco Chemical Company. Heterocyclic/aromatic fluorocarbon surfactants. 4,404,377, Cl. 544-87.000.
Sebestyen, Gyula: *See*—
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Seger, Fritz O., to Smith International, Inc. Reversible stepping actuator. 4,403,523, Cl. 74-128.000.
Sekiguchi, Shizuo; Miyawaki, Yozo; and Ogoshi, Toshiaki, to Lion Corporation. Process for producing high concentration solution of salt of alpha-sulfo fatty acid ester. 4,404,143, Cl. 260-400.000.
Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Water soluble epoxy ester copolymers for interior can use. 4,404,336, Cl. 525-531.000.
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Freitag, Dieter; Serini, Volker; Goossens, John; Bottenbruch, Ludwig; and Hucks, Uwe, 4,404,363, Cl. 528-486.000.
Serwatowski, Frank J. Vehicle transportable cordwood cutting machine. 4,403,535, Cl. 83-490.000.
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Abdullaev, Gasan M. B. O.; Maxudov, Faramaz G. O.; Kasimov, Dzhangir A. K. O.; Mamedov, Bakhtiyar M. R. O.; Aliev, Gabil G.; Gadzhiev, Yashar A. O.; Shakhmamedov, Rovshan I. O.; and Iljushin, Alexei A., 4,403,631, Cl. 138-130.000.
Shanley, Robert L., II; and Harwood, Leopold A., to RCA Corporation. Brightness control circuit. 4,404,593, Cl. 358-168.000.
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Koizumi, Satoru; Nakao, Hiroaki; and Tsuchitani, Takashi, 4,404,610, Cl. 360-137.000.
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Takafuji, Yutaka; Nonomura, Keisaku; Takechi, Sadatoshi; Uede, Hisashi; and Wada, Tomio, 4,404,578, Cl. 357-23.000.
Sharp, Thomas K. R., to PPG Industries, Inc. Process for planographic printing. 4,403,550, Cl. 101-452.000.
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Shaw, Jack B. Smoke detector - luggage combination. 4,404,550, Cl. 340-628.000.
Shell Oil Company: *See*—
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Ten Haken, Pieter; and Webb, Shirley B., 4,404,213, Cl. 424-263.000.
Shepard, Joseph F.; and Tsang, Paul J., to International Business Machines Corporation. Formation of bit lines for ram device. 4,403,394, Cl. 29-571.000.
Sheperd, Daniel R. Telescopic gun sight. 4,403,421, Cl. 33-246.000.
Shepherd, Michael, to Wallace Murray Corporation. Modulating fluid shear coupling. 4,403,757, Cl. 192-58.00B.
Sherman, Carroll H.: *See*—
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Shevokas, Edward J.; and Bathgate, William S., to Sundstrand Corporation. Face seal assembly and method of use. 4,403,778, Cl. 277-1.000.
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Shibano, Makoto; Kakuma, Hideaki; and Yasuyama, Hisatake, to Kabushiki Kaisha Akashi Seisakusho. Hydraulic vibration tester. 4,403,511, Cl. 73-665.000.
Shibata, Fujio, to TDK Electronics Co., Ltd. Magnetic recording medium and method of manufacture. 4,404,260, Cl. 428-458.000.
Shibata, Toshihiro: *See*—
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Shimano Industrial Company Limited: *See*—
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Shimano, Keizo, to Shimano Industrial Company Limited. Covering apparatus for a handle bar of a bicycle. 4,403,787, Cl. 280-289.00H.
Shimizu, Hiroshi, to Nippon Electric Co., Ltd. Subscriber terminal for use in a time shared bidirectional digital communication network. 4,404,672, Cl. 370-29.000.
Shimizu, Tasuku: *See*—
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Shinozaki, Nozomu; Neki, Shigeo; and Dohi, Takashi, to Matsushita Electric Industrial Co., Ltd. Electric sewing machine driving apparatus. 4,403,563, Cl. 112-275.000.
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Shipley Company Inc.: *See*—
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Shull, Bruce C., to Dow Chemical Company, The. Bilirubin assay. 4,404,286, Cl. 436-97.000.
Shuman, Ervin H. Torsionally loaded treble hook with pivotable weed guard. 4,403,437, Cl. 43-36.000.
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Siddens, Jack K., to American Cyanamid Company. Method for the preparation of difluoromethoxyaromatic compounds. 4,404,148, Cl. 260-465.00F.
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Kleinert, Helmuth, 4,404,650, Cl. 364-900.000.
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Krampe, Dietrich; and Heyl, Tilo, 4,404,501, Cl. 318-7.000.
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Simon-Hartley Limited: *See—*
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Simpson, Harold G.; and Roberts, Michael L., to Star Manufacturing Company of Oklahoma. Prefabricated watertight structural system. 4,403,980, Cl. 52-309.110.
Simpson, Willis D.: *See—*
Nunley, Leonard J.; Simpson, Willis D.; and Reid, William J., 4,404,649, Cl. 364-900.000.
Singer Company, The: *See—*
Cuffia, Robert P., 4,404,553, Cl. 340-728.000.
Glore, Thomas G.; and Koon, Randy G., 4,403,454, Cl. 51-135.0BT.
Herr, John A., 4,404,488, Cl. 310-239.000.
Schaeflern, Henry; and Szostak, Jan, 4,403,561, Cl. 112-237.000.
Tancs, Tibor L., 4,403,562, Cl. 112-275.000.
Singleton, Michael P.: *See—*
Ledbetter, Stephen G.; Singleton, Michael P.; Johns, Thomas J.; and Fabian, James L., 4,403,796, Cl. 285-223.000.
Sinn, Hansjorg W.; Kaminsky, Walter O.; Vollmer, Hans-Jurgen C.; and Woldt, Rudiger O. H. H., to BASF Aktiengesellschaft. Preparing ethylene polymers using Ziegler catalyst comprising cyclodienyl compound of zirconium. 4,404,344, Cl. 526-160.000.
Sinn, Herman H.: *See—*
Kinney, Dwayne R.; and Sinn, Herman H., 4,404,444, Cl. 200-153.00J.
Sircar, Ila, to Warner-Lambert Company. Substituted 6-phenyl-3(2H)-pyridazinones useful as cardiotonic agents. 4,404,203, Cl. 424-250.000.
Sis-Ter S.p.A.: *See—*
Bertellini, Gianfranco; and Fabbri, Luigi, 4,403,992, Cl. 604-410.000.
Sisti, Giorgio; Tosi, Bruno; Trestianu, Sorin; and Galli, Mario, to Carlo Erba Strumentazione S.p.A. Control valve for a direct on-column injector and injection method. 4,403,520, Cl. 73-864.810.
Sitek, George J.; and Haigh, Richard B., to Leco Corporation. Method and apparatus for controlling an analytical furnace. 4,404,461, Cl. 219-490.000.
Sjolund, John R., to Sundstrand Corporation. Capacitive differential pressure transducer. 4,403,513, Cl. 73-718.000.
Skelskey, David A., to Chicago Province of the Society of Jesus. Wind turbines. 4,403,916, Cl. 416-14.000.
SKF Industrial Trading & Development Company B.V.: *See—*
Kumpar, Zvonimir Z., 4,403,522, Cl. 74-89.000.
Skoog, Ivan H., to Minnesota Mining and Manufacturing Company. Desensitizing dyes for photographic emulsions. 4,404,277, Cl. 430-597.000.
Slagel, Edwin C., to Dataproducts Corporation. Urethane elastomer for printing belts and process therefor. 4,404,353, Cl. 528-67.000.
Slight, John R., to Post Office. Pneumatically propelled duct motor. 4,403,551, Cl. 104-138.00G.
Smilanich, Nicholas J., to Union Carbide Corporation. Miniature air cells with seal. 4,404,266, Cl. 429-27.000.
Smith, Delmar A., to Rayl, Richard L., a part interest. Snow blower auxiliary for rotary lawn mower. 4,403,433, Cl. 37-243.000.
Smith International, Inc.: *See—*
Seger, Fritz O., 4,403,523, Cl. 74-128.000.
Smith, John L., to Marconi Instruments Limited. Electrical probe apparatus. 4,403,822, Cl. 339-108.0TP.
Smith, Richard J.: *See—*
Koss, William H.; and Smith, Richard J., 4,403,814, Cl. 308-236.000.
Smith, Robert J., to General Tire & Rubber Company, The. Latch assembly for railway car hatch cover. 4,403,798, Cl. 292-256.500.
Smolik, Robert A. Electrical receptacle box assembly. 4,403,708, Cl. 220-3.500.
Snelling, Christopher, to Xerox Corporation. Electronic color printing system. 4,403,848, Cl. 355-4.000.
SNIA VISCOSA Societa' Nazionale Industria Applicazioni Viscosa S.p.A.: *See—*
Angelini, Gianfranco; Leoncini, Novello; Pallesi, Bice; and Paoletti, Ugo, 4,404,157, Cl. 264-195.000.
Snider, Philip A., to Cooper Industries, Inc. Angle drive lubricator. 4,403,679, Cl. 184-64.000.
Snizek, Robert E.: *See—*
Koller, Frank H.; Peterson, Jeffrey P.; and Snizek, Robert E., 4,403,907, Cl. 414-744.00R.
Snyder, Duane E., Jr.: *See—*
Cox, Ernest R.; and Snyder, Duane E., Jr., 4,403,533, Cl. 83-56.000.
Snyder, Michael D.; and Matson, Crawford A., to Universal Instruments Corporation. Insertion head for high speed radial lead component sequencing and inserting machine. 4,403,726, Cl. 227-149.000.
Societe Chimique des Charbonnages-CDF CHIMIE: *See—*
Decroix, Jean-Claude, 4,404,299, Cl. 524-77.000.
Societe Internationale de Publicite et d'Agences Commerciales: *See—*
Rysman de Lockerente, Serge H.; and Van de Voorde, Norbert, 4,404,105, Cl. 210-710.000.
Societe Nationale des Poudres et Explosifs: *See—*
de Lauzon, Guillaume; and Mathey, Francois, 4,404,147, Cl. 260-439.0CY.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A.": *See—*
Laffitte, Denis R. G.; Louis, Guy H.; and Raybaud, Alain M. M., 4,403,917, Cl. 416-96.00A.
Societe Nationale Elf Aquitaine (Production): *See—*
Tellier, Jacques; Chambu, Claude; Coste, Jean-Francois; and Grangette, Henri, 4,404,109, Cl. 252-8.55D.
Societe Nationale Industrielle Aerospatiale: *See—*
Goicoechea, Jose R., 4,404,633, Cl. 364-426.000.
Societe SOGEFINA Societe de Gestion Financiere Armoricaine: *See—*
Herriau, Paul, 4,403,713, Cl. 221-265.000.
Soderstrom, Sven-Erik: *See—*
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Sokolov, Jury V.: *See—*
Rozenfeld, Iosif L.; Brusnikina, Vera M.; Frolova, Larisa V.; Lyashenko, Alevtina A.; Sokolov, Jury V.; Bocharov, Boris V.; Fokin, Alexandr V.; Legezin, Nikolai E.; Dergobuzova, Ekaterina V.; Altshuler, Boris N.; Zelenaya, Saida A.; and Korobova, Emma S., 4,404,167, Cl. 422-12.000.
Sone, Chiharu: *See—*
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Sony Corporation: *See—*
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Hata, Ikuro; and Takeda, Masashi, 4,404,546, Cl. 340-347.0DA.
Hoshimi, Susumu; and Kojima, Tadashi, 4,404,602, Cl. 360-13.000.
Hosoya, Mitsuru; Onodera, Toshio; and Tanimura, Ken, 4,403,403, Cl. 29-602.00R.
Sakamoto, Hitoshi, 4,404,601, Cl. 360-10.300.
Sakamoto, Hitoshi, 4,404,605, Cl. 360-77.000.
Tatami, Mitsushige, 4,404,583, Cl. 358-13.000.
Sorenson, Roderick J.: *See—*
Connor, David T.; Schwender, Charles F.; Sorenson, Roderick J.; and Unangst, Paul C., 4,404,138, Cl. 260-244.400.
Sorin, Georgia L. Paper fastener device system. 4,403,883, Cl. 402-79.000.
Souma, Masahiro: *See—*
Moriya, Hisanori; Momono, Masakichi; Souma, Masahiro; and Nagano, Masami, 4,403,741, Cl. 239-585.000.
South African Inventions Development Corporation: *See—*
Holscher, Hobbe D., 4,403,857, Cl. 356-5.000.
Southern Gas Association: *See—*
Edlund, Carl E.; and Sparks, Cecil R., 4,404,646, Cl. 364-803.000.
Southwest Research Institute: *See—*
Dimitroff, Edward; and Vitkovits, John A., 4,403,576, Cl. 123-3.000.
Sparks, Cecil R.: *See—*
Edlund, Carl E.; and Sparks, Cecil R., 4,404,646, Cl. 364-803.000.
Spear, Joseph F., Jr.: *See—*
Engle, William R.; Moore, E. Neil, Jr.; Spear, Joseph F., Jr.; and Rockland, Ronald H., 4,403,614, Cl. 128-419.00D.
Speca, Anthony N.; Katzen, Stanley J.; and Rekers, Louis J., to National Petro Chemicals Corporation. Process for polymerizing olefins in the presence of a titanium-phosphorus-chromium catalyst. 4,404,340, Cl. 526-97.000.
Spence, Gavin G.: *See—*
Maslanka, William W.; and Spence, Gavin G., 4,404,310, Cl. 524-457.000.
Spencer, Robert C., Jr.: *See—*
Johnson, Lloyd H.; Couchman, Robert S.; Spencer, Robert C., Jr.; Booth, John A.; and Holman, Russell J., 4,403,476, Cl. 60-652.000.
Speranza, George P.: *See—*
Klein, Howard P.; and Speranza, George P., 4,404,120, Cl. 252-426.000.
Klein, Howard P.; and Speranza, George P., 4,404,121, Cl. 252-426.000.
Sperber, Werner: *See—*
Osegowitsch, Viktor; Sperber, Werner; and Viehrig, Wolfgang, 4,403,846, Cl. 354-310.000.
Sperling, Norman; and Loui, George. Star finder. 4,403,422, Cl. 33-268.000.
Sperry Corporation: *See—*
Naaktgeboren, Adrianus, 4,403,544, Cl. 100-189.000.
Ransom, Stephen A.; and Stickel, Tedd K., 4,404,480, Cl. 307-475.000.
Spielman, Lyle S., to Eclipse, Inc. Gas mixing burner. 4,403,947, Cl. 431-353.000.
Spinelli, Harry J.; and Thompson, Alan L., to Du Pont de Nemours, E. I., and Company. Clear coat/color coat finish from a high solids coating composition of a blend of a low molecular weight acrylic polymer and a medium molecular weight acrylic polymer and an alkylated melamine cross-linking agent. 4,404,248, Cl. 428-215.000.
Spiteri, Joseph. Multiplex strobe light. 4,404,498, Cl. 315-241.00R.
Sporkenbach, Jutta; Eggensperger, Heinz; Bucklers, Lothar; Ehlers, Helmut H.; Eigener, Ulrich; and Harke, Hans-Peter, to Sterling Drug Inc. Virucidal method. 4,404,191, Cl. 424-130.000.
Sprague Electric Company: *See—*
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Springer, Helmut: *See—*
Cornils, Boy; Weber, Jurgen; Bernhagen, Wolfgang; and Springer, Helmut, 4,404,410, Cl. 568-858.000.
Springolo, Vanna: *See—*
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Springston, Preston S., to United States of America, Navy. System for rapid repair of damaged airfield runways. 4,404,244, Cl. 428-109.000.
Sproul, David D.: *See—*
Rentler, Robert J.; and Sproul, David D., 4,404,008, Cl. 62-11.000.
Squier, Joann H., to Mobil Oil Corporation. Film laminate food wrap and food pouch therefrom. 4,404,242, Cl. 428-35.000.
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Stabenow, Joachim: *See—*
Marosi, Laszlo; Schlimper, Hans-Ulrich; Schwarzmann, Matthias; and Stabenow, Joachim, 4,404,175, Cl. 423-329.000.
Stach, Leonard J.; and Hokama, Takeo, to Velsicol Chemical Corporation. Furfuryl amides of phenoxyphenoxyalkanoic acids and herbicidal use. 4,404,018, Cl. 71-88.000.
Stacher, Miguel A., to Aktiengesellschaft Adolf Saurer. Apparatus for tensioning the warp thread sheet of a loom. 4,403,630, Cl. 139-102.000.
Staffa, Jeffrey A.: *See—*
Lionelle, Joseph E.; and Staffa, Jeffrey A., 4,404,146, Cl. 260-429.900.
Stahl, Michael L. Device for use in straightening or relaxing hair, and method therefor. 4,403,622, Cl. 132-43.00R.
Stahlhofen, Paul, to Hoechst Aktiengesellschaft. Light-sensitive mixture and copying material prepared therefrom with novolak having brominated phenol units. 4,404,272, Cl. 430-192.000.
Stain, Donald B.: *See—*
Bailey, Ernst C.; Vickers, William E.; and Stain, Donald B., 4,404,173, Cl. 422-257.000.
Stamicarbon B.V.: *See—*
Meyer, Peter J. N.; and Penders, Josef M., 4,404,391, Cl. 548-552.000.
van der Loos, Jozef L. M.; and Tijssen, Jan, 4,404,323, Cl. 525-86.000.
Stamper, Eugene E., to Witco Chemical Corporation. Barrel pump. 4,403,926, Cl. 417-553.000.
Standard Microsystems Corp.: *See—*
Tweedy, John F., Jr.; and Herman, Morton B., 4,404,554, Cl. 340-750.000.
Standard Oil Company (Ind.): *See—*
Neidleman, Saul L.; and Geigert, John, 4,404,283, Cl. 435-134.000.
Standard Oil Company (Indiana): *See—*
Oltrogge, Robert D., 4,404,086, Cl. 208-11.00R.
Vasalos, Iacovos, 4,404,083, Cl. 208-8.00R.
York, Earl D.; Thacker, Milton B.; and Miller, Paul B., 4,404,085, Cl. 208-11.00R.
Stanford, James R.: *See—*
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Stanford University: *See—*
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Stangle, Lynn B. Unitary self-contained physical conditioning structure. 4,403,772, Cl. 272-78.000.
Stanton, George E.; and McFadden, Patrick A., to Njuack Oil Pump Corporation. Apparatus and method for pumping a liquid from a well. 4,403,919, Cl. 417-53.000.
Star Manufacturing Company of Oklahoma: *See—*
Simpson, Harold G.; and Roberts, Michael L., 4,403,980, Cl. 52-309.110.
Stastny, Joseph F., to Cemen, Tech, Inc. Support device for mixer auger. 4,403,864, Cl. 366-19.000.
Stauffer Chemical Company: *See—*
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STE Look: *See—*
Bernard, Jean; Beyl, Jean; Campillo, Christian; Guerreau, Rene; Le Faou, Daniel; and Peyre, Henri, 4,403,788, Cl. 280-605.000.
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Steeg, Michael: *See—*
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Steffan, Wolfgang, to CHEMOKOL Gesellschaft zur Entwicklung von Kollagenprodukten. Method of making collagen fibers for surgical use. 4,404,033, Cl. 106-161.000.
Steigerwald, Robert L., to General Electric Company. Maximum power control for a solar array connected to a load. 4,404,472, Cl. 307-46.000.
Stein, Richard J., to GTE Laboratories Incorporated. Semiconductor device design and process. 4,403,396, Cl. 29-571.000.
Steinkuhl, Bernd: *See—*
Hauschopp, Alois; Breuer, Oswald; and Steinkuhl, Bernd, 4,403,809, Cl. 299-34.000.
Steklenski, David J., to Eastman Kodak Company. Polymer compositions containing crosslinked silicone polycarbinol and having a low coefficient of friction. 4,404,276, Cl. 430-531.000.
Stella, Antonio; and Canova, Giuseppe, to R.B.L. Riello Bruciatori Legnago S.p.A. Flame surveying means in burner ignition. 4,403,943, Cl. 431-31.000.
Stephan, Gerard, to Nadella. Radial bearing assembly. 4,403,812, Cl. 308-184.00R.
Stephen, Alex. Golf seat. 4,403,806, Cl. 297-217.000.
Stephens, Geoffrey B.: *See—*
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Stephenson, Rebecca A. G.; Dietrich, Paul S.; DuBois, Grant E.; and Bunes, Leonard A., to Dynapol. Glucosubstituented diterpenoid sweeteners. 4,404,367, Cl. 536-18.100.
Sterling Drug Inc.: *See—*
Schmidt, Paul J.; and Hung, William M., 4,403,791, Cl. 282-27.500.
Sporkenbach, Jutta; Eggensperger, Heinz; Bucklers, Lothar; Ehlers, Helmut H.; Eigener, Ulrich; and Harke, Hans-Peter, 4,404,191, Cl. 424-130.000.
Stern, Richard M., to Riker Laboratories, Inc. Antimicrobial 8-substituted benzo [IJ]quinolizines. 4,404,207, Cl. 424-258.000.
Stevens, Arthur P.; De Matteo, John; and Beard, Richard M., to United States of America, Navy. Quick deployment vehicle. 4,404,666, Cl. 367-131.000.
Stevens Engineering, Inc.: *See—*
Coope, Robert L., 4,403,389, Cl. 29-561.000.
Stevens, William M.; and Timperman, Eugene L., to Randam Electronics, Inc. Linkable sample-tube carrying tray with tabs and gears. 4,403,687, Cl. 198-472.000.
Stich, Frederick A.; Kleinecke, John D.; and Robertson, Roger L., to Siemens-Allis, Inc. Circuit interrupter having flash plates with interrupted surfaces. 4,404,442, Cl. 200-144.00R.
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Stoffel, James C., to Xerox Corporation. Two dimensional radiometric compensation for scanning apparatus. 4,404,597, Cl. 358-293.000.
Stogis, James: *See—*
Bernstein, Carl; Stogis, James; Riddle, Travis; and Kufrin, Robert, 4,404,295, Cl. 521-172.000.
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Stow, Richard G., to U.S. Philips Corporation. Projection television apparatus. 4,404,500, Cl. 315-386.000.
Streater, Richard W.: *See—*
Long, John R.; Miner, Carla J.; Streater, Richard W.; and Baraff, David R., 4,404,555, Cl. 340-784.000.
Streicher, Rolf: *See—*
Lach, Dietrich; Streicher, Rolf; and Bolz, Gerhard, 4,403,993, Cl. 8-94.240.
Strem, Ervin H., Jr.; and Van Hulle, Gary L., to General Motors Corporation. Sliding sunroof with power operated ventilator. 4,403,805, Cl. 296-221.000.
Stroh, Walter: *See—*
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Stryer, Arthur N., to Data General Corporation. Phase locked loop with compensation for loop phase errors. 4,404,530, Cl. 331-1.00A.
Styok, Wayne G., to Caterpillar Tractor Co. Engine radiator support and guard assembly. 4,403,648, Cl. 165-76.000.
Subba, Bookinkere C.: *See—*
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Subotics, Gyulane: *See—*
Subotics, Gyula; Subotics, Gyulane; and Nagy, Lajos, 4,403,776, Cl. 273-153.00R.
Sudoh, Giichi; Minegishi, Keiichi; Ishizaki, Kanjiro; and Uchida, Ikuo, to Chichibu Cement Kabushikikaisha. Process for producing hydraulic cements. 4,404,031, Cl. 106-90.000.
Suenobu, Koreyoshi; Kohara, Masanori; Hidaka, Yasuhiro; Katsuyama, Kazuki; and Kinishi, Ryoichi, to Yoshitomi Pharmaceutical Industries, Ltd. Method of producing polyurethanes. 4,404,352, Cl. 528-45.000.
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Livia, Michael R.; Gould, William S.; and Suhr, Peter J., 4,403,688, Cl. 198-785.000.
Sullinger, Richard. Earth boring machine and method. 4,403,664, Cl. 175-24.000.
Sullivan, William R.: *See—*
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Sulzer Brothers Limited: *See—*
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Sumi, Yorinobu: *See*—
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Sumitomo Bakelite Company Ltd.: *See*—
Miki, Kyosuke; Takeuchi, Masahiro; and Suzuki, Toshio, 4,404,162, Cl. 264-514.000.
Sumitomo Chemical Company, Limited: *See*—
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Uematsu, Tamon; Hashimoto, Shunichi; and Matsumoto, Hiroshi, 4,404,019, Cl. 71-92.000.
Sundstrand Corporation: *See*—
Shevokas, Edward J.; and Bathgate, William S., 4,403,778, Cl. 277-1.000.
Sjolund, John R., 4,403,513, Cl. 73-718.000.
Sunpower Systems Inc.: *See*—
Minto, Wallace L., 4,403,643, Cl. 165-1.000.
Supertex, Inc.: *See*—
Chao, Robert L., 4,404,477, Cl. 307-297.000.
Sura, Maria: *See*—
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Surma, Erich: *See*—
Peters, Heinrich; and Surma, Erich, 4,404,113, Cl. 252-75.000.
Suzuki, Atsushi; and Ninomiya, Masakazu, to Nippondenso Co., Ltd. Method and apparatus for optimum control for internal combustion engines. 4,403,584, Cl. 123-417.000.
Suzuki, Kunio: *See*—
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Yamada, Kazuji; Nishihara, Motohisa; Sato, Hideo; Suzuki, Seiko; and Kobayashi, Ryoichi, 4,404,539, Cl. 338-3.000.
Suzuki, Shintaro; Iizuka, Sadao; and Moriya, Yoshimi, to Kanto Denka Kogyo Co., Ltd. Production of magnetic powder. 4,404,024, Cl. 75-0.5BA.
Suzuki, Sousuke, to Furnace Industrial Co., Ltd. Apparatus and process of transferring the vessels in a tunnel furnace. 4,403,953, Cl. 432-122.000.
Suzuki, Takahiko: *See*—
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Suzuki, Takeshi, to Tomita Pharmaceutical Corporation, Limited. Process for preparing compositions for perfusing artificial kidney systems for dialysis. 4,404,192, Cl. 424-153.000.
Suzuki, Toshio: *See*—
Miki, Kyosuke; Takeuchi, Masahiro; and Suzuki, Toshio, 4,404,162, Cl. 264-514.000.
Suzuki, Yasoji: *See*—
Saeki, Yukihiro; Tanaka, Fuminari; and Suzuki, Yasoji, 4,404,663, Cl. 365-206.000.
Swann, David A.: *See*—
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Swann, David T. Exercising apparatus. 4,403,773, Cl. 272-134.000.
Swanson, Douglas L.; and Turk, Ronald K., to Swanson Systems, Inc. Programmable multiple position machine. 4,404,505, Cl. 318-561.000.
Swanson Systems, Inc.: *See*—
Swanson, Douglas L.; and Turk, Ronald K., 4,404,505, Cl. 318-561.000.
Swift, Harold E.; Innes, Robert A.; and Onopchenko, Anatoli, to Millmaster Onyx Group, Inc. Process for producing aliphatic amines. 4,404,403, Cl. 564-473.000.
Swift, Harold E.; Innes, Robert A.; and Onopchenko, Anatoli, to Millmaster Onyx Group, Inc. Process for producing aliphatic amines. 4,404,404, Cl. 564-473.000.
Syntex (U.S.A.) Inc.: *See*—
Christensen, Terrence B.; McNaughton, Allen D.; and Umbach, Steven R., 4,403,989, Cl. 604-137.000.
Syrbius, Gerhard: *See*—
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Hu, Mae W.; Colvin, Floyd W.; and Ullman, Edwin F., 4,404,278, Cl. 435-7.000.
Szasz, Gyorgy: *See*—
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Bauer, Helmut; and Szasz, Tibor, 4,403,790, Cl. 280-637.000.
Szendrodi, Valer; Radics, Gyula; Varga, Tivadar; Vass, Tibor; and Gyurics, Karoly, to Ikarus Karosszeria es Jarmugyar. Passenger and luggage transfer system. 4,403,803, Cl. 296-179.000.
Szostak, Jan: *See*—
Schaeflern, Henry; and Szostak, Jan, 4,403,561, Cl. 112-237.000.
T & R Chemicals, Inc.: *See*—
Alvarez, Jose A. A.; and Thompson, Ralph B., 4,404,202, Cl. 424-248.500.
Tabata, Yasuyuki: *See*—
Satoh, Hiroaki; Tabata, Yasuyuki; Gomikawa, Kouichi; and Hiruta, Masaru, 4,404,171, Cl. 422-241.000.
Tabei, Masatoshi, to Fuji Photo Film Co., Ltd. Solid-state color imager with stripe or mosaic filters. 4,404,586, Cl. 358-44.000.
Tachikawa Spring Co., Ltd.: *See*—
Urai, Muneharu, 4,403,356, Cl. 5-481.000.
Tachiuchi, Tsuguji: *See*—
Hirahata, Shigeru; Ikeda, Tetsuya; Tachiuchi, Tsuguji; Komatsu, Shigeru; and Takezawa, Teruhiro, 4,404,552, Cl. 340-721.000.
Taco, Inc.: *See*—
Lebkuchner, Benno, 4,404,483, Cl. 310-42.000.
Tai, Ho T., to Lever Brothers Company. Enzymatic liquid cleaning composition. 4,404,115, Cl. 252-135.000.
Taiyo Shokai Co., Ltd.: *See*—
Nagano, Mitsuo, 4,403,718, Cl. 226-27.000.
Tajima, Yoshio: *See*—
Miyoshi, Mituji; Matsuura, Kazuo; and Tajima, Yoshio, 4,404,342, Cl. 526-125.000.
Takada, Munekazu, to Unitika Ltd. Object solid figure recognizing method and apparatus. 4,404,684, Cl. 382-25.000.
Takafuji, Yutaka; Nonomura, Keisaku; Takechi, Sadatoshi; Uede, Hisashi; and Wada, Tomio, to Sharp Kabushiki Kaisha. Structure of thin film transistors. 4,404,578, Cl. 357-23.000.
Takagi, Izumi, to Kawasaki Jukogyo Kabushiki Kaisha. Clutch for belt drive. 4,403,976, Cl. 474-19.000.
Takagi, Teiitsu: *See*—
Higuchi, Tetsuo; Takagi, Teiitsu; Fujitani, Toshihide; and Haruta, Yasuhiko, 4,404,318, Cl. 524-588.000.
Takahashi, Sadao; and Matsushita, Nobuo, to Toshiba Electric Equipment Corporation. Luminaire. 4,404,620, Cl. 362-304.000.
Takahashi, Yoshitaka: *See*—
Makabe, Hachiro; Orii, Akira; and Takahashi, Yoshitaka, 4,403,560, Cl. 112-158.00E.
Takano, Kiyonami: *See*—
Okuo, Takayasu; and Takano, Kiyonami, 4,404,482, Cl. 310-11.000.
Takano, Toshio, to Fuji Jukogyo Kabushiki Kaisha. Electro-magnetic powder clutch system for automobiles. 4,403,683, Cl. 192-0.052.
Takasuke, Nakanishi, to Nakanishi Dental Mfg., Co., Ltd. Dental handpiece having an optical fiberscope. 4,403,956, Cl. 433-29.000.
Take, Katsuo: *See*—
Kokubu, Tokio; and Take, Katsuo, 4,404,312, Cl. 524-504.000.
Takechi, Sadatoshi: *See*—
Takafuji, Yutaka; Nonomura, Keisaku; Takechi, Sadatoshi; Uede, Hisashi; and Wada, Tomio, 4,404,578, Cl. 357-23.000.
Takeda Chemical Industries: *See*—
Goto, Jugo; Mochizuki, Kazutaka; Kubota, Tsutomu; and Miyamoto, Reiji, 4,404,320, Cl. 525-58.000.
Takeda, Masashi: *See*—
Hata, Ikuro; and Takeda, Masashi, 4,404,546, Cl. 340-347.0DA.
Takeda, Mikio; Honma, Yasushi; and Tsuzurahara, Kei, to Tanabe Seiyaku Co., Ltd. 2-Pyridinecarboxamide derivatives compositions containing same and method of using same. 4,404,214, Cl. 424-266.000.
Takei, Toshihiro: *See*—
Watanabe, Kiyohiko; Matsui, Kazuma; Hattori, Yoshiyuki; Takei, Toshihiro; Nakamura, Toshiaki; and Ohnishi, Shunaku, 4,403,910, Cl. 415-53.00T.
Takematsu, Yoshiyuki, to Fuji Koeki Corporation. Power supplying apparatus. 4,404,497, Cl. 315-241.00P.
Takesako, Yoshinobu: *See*—
Nonomura, Kinzo; Watanabe, Masanori; Takesako, Yoshinobu; Irie, Hiroyuki; and Ide, Susumu, 4,404,493, Cl. 313-422.000.
Takeuchi, Masahiro: *See*—
Miki, Kyosuke; Takeuchi, Masahiro; and Suzuki, Toshio, 4,404,162, Cl. 264-514.000.
Takezawa, Teruhiro: *See*—
Hirahata, Shigeru; Ikeda, Tetsuya; Tachiuchi, Tsuguji; Komatsu, Shigeru; and Takezawa, Teruhiro, 4,404,552, Cl. 340-721.000.
Takezono, Tetsuya: *See*—
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Taki, Yoichiro: *See*—
Ona, Isao; Ozaki, Masaru; and Taki, Yoichiro, 4,404,035, Cl. 106-271.000.
Takimoto, Hiroyuki: *See*—
Ushiro, Tatsuzo; and Takimoto, Hiroyuki, 4,404,595, Cl. 358-227.000.
Talbot, Terence R., to Rockwell International Corporation. Apparatus for bending channel section members. 4,403,495, Cl. 72-383.000.
Tam, Matthias L.; and Custode, Frank Z., to Rockwell International Corporation. ROM With redundant ROM cells employing a highly resistive polysilicon film for programming the cells. 4,404,581, Cl. 357-59.000.
Tanabe Seiyaku Co., Ltd.: *See*—
Takeda, Mikio; Honma, Yasushi; and Tsuzurahara, Kei, 4,404,214, Cl. 424-266.000.
Tanaka, Fuminari: *See*—
Saeki, Yukihiro; Tanaka, Fuminari; and Suzuki, Yasoji, 4,404,663, Cl. 365-206.000.
Tanaka, Kanichi; and Hidaka, Kensuke, to Fukuda Metal Foil & Powder Co., Ltd. Hard facing nickel-base alloy. 4,404,049, Cl. 148-427.000.
Tanaka, Masashi; Nakajima, Yutaka; Ihochi, Takahiko; and Shibuya, Yoshimichi, to Hitachi, Ltd. Liquid crystal display device. 4,403,832, Cl. 350-335.000.
Tancs, Tibor L., to Singer Company, The. Thread picker circuit for industrial sewing machine. 4,403,562, Cl. 112-275.000.
Tanga, Michifumi: *See*—
Hata, Akio; and Tanga, Michifumi, 4,404,337, Cl. 526-62.000.
Tange Industries, Ltd.: *See*—
Tange, Yasuhiro, 4,404,458, Cl. 219-150.00R.

Tange, Yasuhiro, to Tange Industries, Ltd. Attachment of fork fitting to fork leg. 4,404,458, Cl. 219-150.00R.

Tangonan, Gregory L.; and Persechini, David L., to Hughes Aircraft Company. Integrated optics thin film devices and fabrication thereof. 4,403,825, Cl. 350-96.110.

Taniguchi, Hiroyuki, to Yanmar Diesel Engine Co., Ltd. Fuel injection pump of internal combustion engine. 4,403,586, Cl. 123-509.000.

Taniguchi, Makoto: *See—*
Nagayama, Yasuji; and Taniguchi, Makoto, 4,404,661, Cl. 365-203.000.

Tanikawa, Kowji, to Olympus Optical Co., Ltd. Endoscope photographing system. 4,403,605, Cl. 128-6.000.

Tanikella, Murty S. S. R., to Du Pont de Nemours, E. I., and Company. Hydrogenolysis of polyols to ethylene glycol in nonaqueous solvents. 4,404,411, Cl. 568-861.000.

Tanimura, Ken: *See—*
Hosoya, Mitsuru; Onodera, Toshio; and Tanimura, Ken, 4,403,403, Cl. 29-602.00R.

Tanimura, Shigeru: *See—*
Kobayashi, Shigeki; Iwasaki, Norio; Ikeda, Yasunori; Miyake, Tamio; and Tanimura, Shigeru, 4,404,683, Cl. 382-6.000.

Taplin, John F.: *See—*
Fisher, Richard T., 4,403,765, Cl. 251-65.000.

Tapphorn, Ralph M.: *See—*
Schweitzer, Jeffrey S.; and Tapphorn, Ralph M., 4,404,467, Cl. 250-270.000.

Tarng, Ming L.; and Hicinbothem, Walter A., Jr., to RCA Corporation. Method for improving adhesion of metal film on a dielectric surface. 4,404,235, Cl. 427-89.000.

Tashkentsky Nauchnoissledovatelsky I Proektny Institut Stroitelnykh Materialov: *See—*
Nudelman, Boris I.; Chepkalenko, Mikhail G.; Gasanova, Alevtina A.; Galimova, Guzal A.; Khaichkis, Roza; Uraev, Ravkhat E.; Tashpulatov, Turgun K.; Butaev, Erkin M.; Adam, Fedor Y.; Kevvai, Arnold A.; Bodyagina, Rashida G.; Ibragimov, Sunnat I.; and Fedorov, Alexandr P., 4,404,032, Cl. 106-100.000.

Tashpulatov, Turgun K.: *See—*
Nudelman, Boris I.; Chepkalenko, Mikhail G.; Gasanova, Alevtina A.; Galimova, Guzal A.; Khaichkis, Roza; Uraev, Ravkhat E.; Tashpulatov, Turgun K.; Butaev, Erkin M.; Adam, Fedor Y.; Kevvai, Arnold A.; Bodyagina, Rashida G.; Ibragimov, Sunnat I.; and Fedorov, Alexandr P., 4,404,032, Cl. 106-100.000.

Tatami, Mitsushige, to Sony Corporation. Method and apparatus for determining and controlling the sampling phase in sampling the burst signal of a color television signal. 4,404,583, Cl. 358-13.000.

Tatum, Robert N.; Hofer, Robert W.; and Zarlingo, S. Paul, to Olin Corporation. Multi-gauge strip. 4,404,264, Cl. 428-573.000.

Taylor, Byron K., to RCA Corporation. Pickup arm retainer for video disc cartridge. 4,404,670, Cl. 369-170.000.

Taylor, David L., to Harris Corporation. Method of fabricating a vertical fuse utilizing epitaxial deposition and special masking. 4,403,399, Cl. 29-574,000.

Taylor, George W.; and Burns, Joseph R. Power generation from waves near the surface of bodies of water. 4,404,490, Cl. 310-339.000.

Taylor, George W. B.; and Barber, Richard B., to Philip Morris Incorporated. Light energy perforation apparatus and system. 4,404,454, Cl. 219-121.0LK.

Taylor, James C.: *See—*
Hamlin, Humphrey A. S.; and Taylor, James C., 4,404,005, Cl. 55-163.000.

Taylor, Paul; and Gulla, Michael, to Shipley Company Inc. High temperature naphthol novolak resin. 4,404,357, Cl. 528-153.000.

Tazaki, Shigemitsu: *See—*
Okamura, Shigeru; Kyogoku, Hiroshi; and Tazaki, Shigemitsu, 4,404,572, Cl. 346-140.00R.

TDK Electronics Co., Ltd.: *See—*
Hosaka, Akihiko; Isobe, Yukihiro; and Okuyama, Kiyotaka, 4,404,259, Cl. 428-425.900.
Ishida, Toshihiko, 4,404,245, Cl. 428-206.000.
Iwaya, Shoichi; Masumura, Hitoshi; Midori, Yoshifumi; Oikawa, Yasunobu; and Abe, Hisao, 4,404,029, Cl. 501-139.000.
Shibata, Fujio, 4,404,260, Cl. 428-458.000.

Teasdale, Raymond G., to National Research Development Corporation. Oil containment booms. 4,403,888, Cl. 405-68.000.

Tecumseh Products Company: *See—*
Campen, Kenneth W., 4,404,513, Cl. 322-90.000.

Teege, Gernot: *See—*
Horner, Michael; Horn, Dieter; Lueddecke, Erik; and Teege, Gernot, 4,404,304, Cl. 524-110.000.

Teledyne Industries, Inc.: *See—*
Rogo, Casimir; Lenz, Herman N.; and Holbrook, Michael, 4,403,914, Cl. 415-165.000.

Telex Computer Products, Inc.: *See—*
Perkins, Derrick O., 4,404,680, Cl. 375-111.000.

Tellier, Jacques; Chambu, Claude; Coste, Jean-Francois; and Grangette, Henri, to Societe Nationale Elf Aquitaine (Production). Aqueous micro-emulsions of organic substances. 4,404,109, Cl. 252-8.55D.

Temple, Davis L., Jr., to Mead Johnson & Company. Triazolopyrimidines. 4,404,380, Cl. 544-251.000.

Templeton, Andrew R.: *See—*
Orwick, Philip L.; and Templeton, Andrew R., 4,404,012, Cl. 71-92.000.

Tenenbaum, Radu R.: *See—*
Hughes, Michael G.; Tenenbaum, Radu R.; and Bugay, Al, 4,404,523, Cl. 324-207.000.

Ten Haken, Pieter; and Webb, Shirley B., to Shell Oil Company. Derivatives of certain pyridyliminomethyl-benzenes. 4,404,213, Cl. 424-263.000.

Tennant, Jerald L. Anterior chamber implant lens. 4,403,353, Cl. 3-13.000.

Terada, Hiroshi: *See—*
Okiura, Kunio; Akiyama, Iwao; Terada, Hiroshi; Arikawa, Yoshijiro; Baba, Akira; and Morita, Shigeki, 4,403,941, Cl. 431-10.000.

Terasawa, Yoshio: *See—*
Konishi, Nobutake; Naito, Masayoshi; Yatsuo, Tsutomu; and Terasawa, Yoshio, 4,404,580, Cl. 357-38.000.

Terpay, John M., to Reeves Bros., Inc. Latent pressure-sensitive sheet material and method of making same using solvent-based pressure-sensitive adhesive. 4,404,243, Cl. 428-62.000.

Terra Corporation: *See—*
Rogers, Noel A., 4,404,685, Cl. 455-76.000.

Teufelberger, Arnulf, to BBC Brown, Boveri & Company Limited. Excess pressure turbine with a constant pressure regulation stage. 4,403,915, Cl. 415-199.500.

Texaco Inc.: *See—*
Kaufman, Benjamin J.; Herbstman, Sheldon; and Levin, Mark, 4,404,001, Cl. 44-63.000.
Klein, Howard P.; and Speranza, George P., 4,404,120, Cl. 252-426.000.
Klein, Howard P.; and Speranza, George P., 4,404,121, Cl. 252-426.000.
McCoy, David R.; and McEntire, Edward E., 4,404,096, Cl. 208-188.000.

Texas Instruments Incorporated: *See—*
Curran, Patrick A., 4,403,395, Cl. 29-571.000.
Hawkins, William R., 4,403,965, Cl. 434-327.000.

Th. Goldschmidt AG: *See—*
Fock, Jurgen; and Schedlitzki, Dietmar, 4,404,324, Cl. 525-123.000.

Thacker, Milton B.: *See—*
York, Earl D.; Thacker, Milton B.; and Miller, Paul B., 4,404,085, Cl. 208-11.00R.

Thalen, Bror A.; and Brattsand, Ralph L., to Aktiebolaget Draco. 4-Pregnene-derivatives, a process for their preparation, composition and method for the treatment of inflammatory conditions. 4,404,200, Cl. 424-241.000.

Theohar, Carl: *See—*
Matejcek, Milan; Theohar, Carl; and Kleinlogel, Horst, 4,404,226, Cl. 424-326.000.

Thevenot, Francois H. J.; Goeuriot, Patrice M. V.; Driver, Julian H.; and Lebrun, Jean-Paul R., to Association pour la Recherche et le Development des Methodes et Processus Industriels (Armines). Surface-boronized pieces. 4,404,045, Cl. 148-31.500.

Thiele, Siegfried: *See—*
Altendorf, Kurt; and Thiele, Siegfried, 4,403,534, Cl. 83-100.000.

Thiokol Corporation: *See—*
Wade, Robert C., 4,404,122, Cl. 252-432.000.

Tholander, Lars H. G., to Aktiebolaget IRO. Thread storing and feeding device. 4,403,745, Cl. 242-47.010.

Thomas & Betts Corporation: *See—*
Rich, Donald S., 4,403,820, Cl. 339-97.00R.
Rich, Donald S., 4,404,425, Cl. 174-107.000.

Thomas, Caleb H., Jr., to RCA Corporation. Digital sequence detector. 4,404,542, Cl. 340-146.200.

Thomas, Craig R., to R. J. Thomas Manufacturing Co. Strong cantilevered park grill. 4,403,596, Cl. 126-25.00A.

Thomas, Daniel W.: *See—*
Cesark, Frank F.; Manfre, Robert J.; and Thomas, Daniel W., 4,403,792, Cl. 282-27.500.

Thomas, Erwin: *See—*
Grosskinsky, Otto-Alfred; Frommer, Elmar; Rapp, Gunther, deceased; and Thomas, Erwin, 4,404,176, Cl. 423-387.000.

Thomas, Lowell S., to Dow Chemical Company, The. Carbonate polymers containing a barbituate as an ignition depressant. 4,404,303, Cl. 524-100.000.

Thomas, Paul M., to Builders Equipment Company. Pallet storing and distributing apparatus. 4,403,900, Cl. 414-137.000.

Thomas, Sam S. Wheel balance indicator. 4,403,507, Cl. 73-457.000.

Thompson, Alan L.: *See—*
Spinelli, Harry J.; and Thompson, Alan L., 4,404,248, Cl. 428-215.000.

Thompson, Carroll R. Pipe pick-up and laydown machine. 4,403,898, Cl. 414-22.000.

Thompson, Harwell B.; and Wuthrich, Paul, to Timex Corporation. Water-resistant shaped case construction for a wristwatch. 4,403,870, Cl. 368-294.000.

Thompson, Ralph B.: *See—*
Alvarez, Jose A. A.; and Thompson, Ralph B., 4,404,202, Cl. 424-248.500.

Thomson, Colin; and Tweddle, Neil J., to Reckitt & Colman Products Limited. Process for the preparation of 2-(2,4-dichlorophenoxy)-phenylacetic acid. 4,404,396, Cl. 562-465.000.

Thomson-CSF: *See—*
Cornet, Jean, 4,404,656, Cl. 365-126.000.
Coynel, Daniel; and Roussigne, Maurice, 4,404,443, Cl. 200-147.00A.
Facoetti, Hugues; Petit, Patrick; Menoret, Philippe; Micheron, Francois; and Ravinet, Pierre, 4,403,382, Cl. 29-25.350.
Pepin, Christian; and Herlin, Patrick, 4,404,592, Cl. 358-125.000.
Rischmuller, Klaus, 4,404,478, Cl. 307-315.000.

Thomte, Magnus, to Interpower A/S. Liquid sampling. 4,403,517, Cl. 73-863.840.
Thorne, Michael A.: *See*—
Scherubel, Gary A.; and Thorne, Michael A., 4,404,112, Cl. 252-8.55B.
Thorud, Richard A.: *See*—
Tillotson, Henry B.; Thorud, Richard A.; and Baumann, James R., 4,403,466, Cl. 56-16.700.
Thorwart, Werner: *See*—
Gebert, Ulrich; Thorwart, Werner; Komarek, Jaromir; and Cartheuser, Carl, 4,404,384, Cl. 544-394.000.
Thrash, Tommy: *See*—
Cowan, Jack C.; Thrash, Tommy; and Rayborn, Jerry R., 4,404,107, Cl. 252-8.50M.
Thujiuchi, Yoshio; and Sumi, Yorinobu, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Angle adjusting arrangement for adjusting an element about two axes. 4,403,829, Cl. 350-289.000.
Tijssen, Jan: *See*—
van der Loos, Jozef L. M.; and Tijssen, Jan, 4,404,323, Cl. 525-86.000.
Tillotson, Henry B.; Thorud, Richard A.; and Baumann, James R., to Toro Company, The. Lawn mower engine oil drain. 4,403,466, Cl. 56-16.700.
Timex Corporation: *See*—
Crutcher, William C., 4,403,869, Cl. 368-10.000.
Thompson, Harwell B.; and Wuthrich, Paul, 4,403,870, Cl. 368-294.000.
Timms, Kelvin S.: *See*—
Eastwood, Stephen J.; and Timms, Kelvin S., 4,404,179, Cl. 423-500.000.
Timperman, Eugene L.: *See*—
Stevens, William M.; and Timperman, Eugene L., 4,403,687, Cl. 198-472.000.
Tivet Developments Ltd.: *See*—
Treharne, Timothy J. M., 4,404,229, Cl. 426-513.000.
TMC Corporation: *See*—
Bauer, Helmut; and Szasz, Tibor, 4,403,790, Cl. 280-637.000.
Toa Grout Kogyo Co., Ltd.: *See*—
Ohoka, Shinkichi; and Sano, Sakae, 4,403,891, Cl. 405-264.000.
Tobinaga, Motoi: *See*—
Iwai, Tomio; and Tobinaga, Motoi, 4,403,578, Cl. 123-73.0AD.
Toburen, Delmar K.; Toburen, Dennis L.; and Toburen, Steven R. Can crushing device. 4,403,545, Cl. 100-215.000.
Toburen, Dennis L.: *See*—
Toburen, Delmar K.; Toburen, Dennis L.; and Toburen, Steven R., 4,403,545, Cl. 100-215.000.
Toburen, Steven R.: *See*—
Toburen, Delmar K.; Toburen, Dennis L.; and Toburen, Steven R., 4,403,545, Cl. 100-215.000.
Todd, Gary J. Bow string release. 4,403,594, Cl. 124-35.00A.
Tokar, Thomas, to A-T-O Inc. Automatic spray nozzle. 4,403,661, Cl. 169-38.000.
Tokico Ltd.: *See*—
Yada, Tetsuo; and Wada, Takeo, 4,404,638, Cl. 364-510.000.
Tokuyama Sekisui Kogyo Kabushiki Kaisha: *See*—
Hata, Akio; and Tanga, Michifumi, 4,404,337, Cl. 526-62.000.
Tokyo Aircraft Instrument Co. Ltd.: *See*—
Nakahama, Kazushi, 4,403,512, Cl. 73-701.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Furuyama, Tohru; and Iizuka, Tetsuya, 4,404,657, Cl. 365-154.000.
Harada, Nozomu, 4,404,466, Cl. 250-211.00J.
Hoshimi, Susumu; and Kojima, Tadashi, 4,404,602, Cl. 360-13.000.
Imai, Atsuo; and Matake, Shigeru, 4,404,268, Cl. 429-191.000.
Itai, Humio, 4,404,607, Cl. 360-105.000.
Kusakabe, Hiromi, 4,404,432, Cl. 179-1.0GS.
Maeda, Michio, 4,403,950, Cl. 432-60.000.
Murakami, Junzo, 4,404,600, Cl. 358-905.000.
Oshima, Jiro; Aoyama, Masaharu; Yasuda, Seiji; and Yonezawa, Toshio, 4,403,392, Cl. 29-569.00R.
Saeki, Yukihiro; Tanaka, Fuminari; and Suzuki, Yasoji, 4,404,663, Cl. 365-206.000.
Sakakibara, Takaaki; and Kanno, Yoshihiro, 4,404,423, Cl. 174-27.000.
Yamaguchi, Hiroyasu, 4,404,528, Cl. 330-288.000.
Tomaszewski, Lillie C., to Occidental Chemical Corporation. Electrolytic stripping bath and process. 4,404,074, Cl. 204-146.000.
Tomita, Masahiro: *See*—
Tukao, Toshiyuki; and Tomita, Masahiro, 4,404,007, Cl. 55-523.000.
Tomita Pharmaceutical Corporation, Limited: *See*—
Suzuki, Takeshi, 4,404,192, Cl. 424-153.000.
Tomite, Tosio; Ogasawara, Nobuhiko; Isii, Kaniti; and Kanamaru, Hisanobu, to Hitachi, Ltd. Method for producing a magneto device for generating signals. 4,403,402, Cl. 29-598.000.
Toner, Michael F.: *See*—
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Top-Qua & Co., Ltd.: *See*—
Erkelenz, Johannes F., 4,403,540, Cl. 99-375.000.
Toray Silicone Company, Ltd.: *See*—
Ona, Isao; Ozaki, Masaru; and Taki, Yoichiro, 4,404,035, Cl. 106-271.000.
Toro Company, The: *See*—
Tillotson, Henry B.; Thorud, Richard A.; and Baumann, James R., 4,403,466, Cl. 56-16.700.
Torto, Nicholas L.; and Di Nallo, Samuel R., Sr., to Coulter Systems Corporation. Office copier with articulated hinge cover. 4,403,856, Cl. 355-75.000.
Toshiba Electric Equipment Corporation: *See*—
Takahashi, Sadao; and Matsushita, Nobuo, 4,404,620, Cl. 362-304.000.
Tosi, Bruno: *See*—
Sisti, Giorgio; Tosi, Bruno; Trestianu, Sorin; and Galli, Mario, 4,403,520, Cl. 73-864.810.
Toudo, Kenzi: *See*—
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Towmotor Corporation: *See*—
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Toyo Boseki Kabushiki Kaisha: *See*—
Kokubu, Tokio; and Take, Katsuo, 4,404,312, Cl. 524-504.000.
Toyo Kogyo Co., Ltd.: *See*—
Kodama, Hiroshi, 4,403,930, Cl. 418-121.000.
Toyo Seikan Kaisha Ltd.: *See*—
Hirota, Kazumi; Tsutsumi, Yotaro; Ito, Senji; Katsura, Tadahiko; Matsuoka, Kikuo; and Hori, Ichiro, 4,403,710, Cl. 220-270.000.
Kitamura, Yoichi; Hotta, Hisashi; Yurita, Chikara; and Ito, Makoto, 4,404,447, Cl. 219-64.000.
Toyoda Koki Kabushiki Kaisha: *See*—
Nishimura, Hideo; Niwa, Kuniyuki; Yamamoto, Yasushi; and Yoneda, Takao, 4,404,506, Cl. 318-561.000.
Toyomaki, Kazuya, to Victor Company of Japan, Limited. Sample-and-hold circuit. 4,404,479, Cl. 307-353.000.
Toyoshima, Yoshiki; Hara, Sumio; and Nakazyo, Masaki, to Sumitomo Chemical Company, Limited. Middle and/or heavy distillate composition having good flow property and filterability. 4,404,000, Cl. 44-62.000.
Toyota, Akinori: *See*—
Ushida, Yoshihisa; Toyota, Akinori; and Kashiwa, Norio, 4,404,341, Cl. 526-125.000.
Toyoto Jidosha Kabushiki Kaisha: *See*—
Fujii, Masao; and Hattori, Tetuo, 4,403,676, Cl. 180-297.000.
Traenckner, Hans-Joachim; and Kremer, Wolfgang, to Bayer Aktiengesellschaft. Aqueous dispersions based on cellulose nitrates, polyester of alkyd resins and aminoplast resins, processes for the production thereof and the use thereof for the production of coatings. 4,404,298, Cl. 524-31.000.
Trane Company, The: *See*—
Butterworth, Arthur L.; and Utter, Robert E., 4,403,927, Cl. 418-55.000.
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Traxler, James T., to Velsicol Chemical Corporation. Xanthenone-yl esters of phosphoric and phosphonic acids. 4,404,220, Cl. 424-275.000.
Treadwell, Stephen S.: *See*—
Martell, Charles R.; Leslie, Elmer N.; Isett, Don D.; and Treadwell, Stephen S., 4,403,558, Cl. 112-121.110.
Trebor Industries, Inc.: *See*—
Rosenthal, Robert D., 4,404,642, Cl. 364-571.000.
Treharne, Timothy J. M., to Tivet Developments Ltd. Method for the production of molded meat or meat-like products. 4,404,229, Cl. 426-513.000.
Trestianu, Sorin: *See*—
Sisti, Giorgio; Tosi, Bruno; Trestianu, Sorin; and Galli, Mario, 4,403,520, Cl. 73-864.810.
Tretinyak, Carl W., to Waters Instruments, Inc. Biopsy needle. 4,403,617, Cl. 128-754.000.
Tri-tech, Inc.: *See*—
Gillott, George L., 4,404,484, Cl. 310-49.00R.
Triollier, Michel: *See*—
Leveque, Alain; and Triollier, Michel, 4,404,174, Cl. 423-112.000.
Trotta, Robert A., to Gillette Company, The. Razor blade assembly. 4,403,412, Cl. 30-47.000.
Trotta, Robert A., to Gillette Company, The. Shaving implement. 4,403,413, Cl. 30-47.000.
Trout, Buster B. Draw works disabling device for use with a well drilling apparatus. 4,403,655, Cl. 166-75.00R.
Trummlitz, Gunter; Eberlein, Wolfgang; Engel, Wolfhard; and Schmidt, Gunther, to Dr. Karl Thomae GmbH. 4-Hydroxy-1,2-Benzisothiazol-3(2H)-one-1,1-dioxides and salts thereof. 4,404,230, Cl. 426-548.000.
Trustees Boston University: *See*—
Rothschild, Kenneth J.; and Clark, Noel A., 4,403,939, Cl. 425-425.000.
Tsang, Paul J.: *See*—
Shepard, Joseph F.; and Tsang, Paul J., 4,403,394, Cl. 29-571.000.
Tsuchitani, Takashi: *See*—
Koizumi, Satoru; Nakao, Hiroaki; and Tsuchitani, Takashi, 4,404,610, Cl. 360-137.000.
Tsuda, Hiroshi: *See*—
Nakanishi, Tousaku; and Tsuda, Hiroshi, 4,404,545, Cl. 340-347.0NT.
Tsukagoshi, Tsunehiro; Nemoto, Etsuro; Yokozseki, Shinichi; Hagiwara, Sumio; Yoshino, Toshikazu; Arai, Yasuyuki; and Kobayashi, Kazuyoshi, to Pioneer Electronic Corporation. Molding compositions and diaphragms, arm pipes and head shells molded therefrom. 4,404,315, Cl. 524-521.000.
Tsumita, Norikazu: *See*—
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Tsunekawa, Masayoshi; Miyoshi, Nobuyoshi; and Komura, Tamotsu, to Sankin Industry Co., Ltd. Cyclic pyrophosphate derivatives and their preparation. 4,404,150, Cl. 260-927.00R.

Tsunemitsu, Toshiharu: *See*—
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Tsuzurahara, Kei: *See*—
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Tukao, Toshiyuki; and Tomita, Masahiro, to Nippon Soken, Inc. Exhaust gas cleaning element. 4,404,007, Cl. 55-523.000.

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Turcotte, Roger; and Papillon, Vincent. Device for obtaining readings of statistical variables. 4,403,774, Cl. 273-143.00R.

Turk, Ronald K.: *See*—
Swanson, Douglas L.; and Turk, Ronald K., 4,404,505, Cl. 318-561.000.

Turner, Paul F.; and Gandhi, Om P., to BSD Medical Inc. Apparatus for electromagnetic radiation of living tissue and the like. 4,403,618, Cl. 128-804.000.

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Turunen, Olli: *See*—
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Tweddle, Neil J.: *See*—
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Tweedy, John F., Jr.; and Herman, Morton B., to Standard Microsystems Corp. Video address generator and timer for creating a flexible CRT display. 4,404,554, Cl. 340-750.000.

Uchida, Ikuo: *See*—
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Uede, Hisashi: *See*—
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Uematsu, Tamon; Hashimoto, Shunichi; and Matsumoto, Hiroshi, to Sumitomo Chemical Company, Limited. 3-Chloro-1-phenyl-1,2,4-triazolin-5-ones and their use as herbicides. 4,404,019, Cl. 71-92.000.

Uerdingen, Walter: *See*—
Hajek, Manfred; Wagner, Kuno; Uerdingen, Walter; and Wellner, Wolfgang, 4,404,379, Cl. 544-231.000.

Uhler, Dale G.: *See*—
Caudy, Don W.; Hackman, Donald J.; Hoffman, Robert T.; and Uhler, Dale G., 4,404,170, Cl. 422-237.000.

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Umbach, Steven R.: *See*—
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Unangst, Paul C.: *See*—
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UNC Recovery Corporation: *See*—
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Union Carbide Corporation: *See*—
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Keogh, Michael J., 4,404,349, Cl. 528-25.000.
Mohr, Paul H.; and Matulewicz, William N., 4,404,114, Cl. 252-75.000.
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Winters, John R., 4,404,405, Cl. 564-482.000.

Union Oil Company of California: *See*—
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Unisearch Limited: *See*—
Green, Martin A.; and Blakers, Andrew W., 4,404,422, Cl. 136-255.000.

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Air Force: *See*—
McCarty, Fred B.; and Gibson, Christopher M., 4,404,055, Cl. 156-156.000.
Schaefer, James R., 4,403,813, Cl. 308-207.00R.
Army: *See*—
fGeppert, Erwin, 4,403,521, Cl. 74-17.800.
Health and Human Services: *See*—
Boretos, John W., 4,403,985, Cl. 604-53.000.
Vermess, Michael; Chatterji, Dulal C.; Grimes, George J., Jr.; and Gallelli, Joseph F., 4,404,182, Cl. 424-5.000.
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Springston, Preston S., 4,404,244, Cl. 428-109.000.
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U.S. Philips Corporation: *See*—
Siaens, Gustaaf F. R.; and Van der Heijden, Johannes M. A., 4,404,491, Cl. 313-318.000.
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United Technologies Corporation: *See*—
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Unitika Ltd.: *See*—
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Woo, Savio L-Y.; and Akeson, Wayne H., 4,403,606, Cl. 128-92.00D.
Woo, Savio L-Y.; Akeson, Wayne H.; and Page, Dan L., 4,403,607, Cl. 128-92.00D.

University of Pittsburgh: *See*—
Lindt, Jan T., 4,403,502, Cl. 73-55.000.

University of Rochester, The: *See*—
Peiffer, Dennis G.; and Deckman, Harry W., 4,404,255, Cl. 428-406.000.

UOP Inc.: *See*—
Asdigian, George, 4,404,098, Cl. 208-235.000.
Broughton, Donald B., 4,404,037, Cl. 127-55.000.
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Cleary, Michael T.; Kulprathipanja, Santi; and Neuzil, Richard W., 4,404,145, Cl. 260-419.000.
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Herskovits, Lily E., 4,404,118, Cl. 252-411.00R.

Upchurch, James M., to Schlumberger Technology Corporation. Pressure controlled reversing valve. 4,403,659, Cl. 166-374.000.

Upeslacis, Janis: *See*—
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Upjohn Company, The: *See*—
Dolak, Lester A.; Reusser, Fritz; Castle, Thomas M.; Hannon, Betty R.; Laborde, Alice L.; and Marschke, Charles K., 4,404,190, Cl. 424-118.000.
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Uraev, Ravkhat E.: *See*—
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Urai, Muneharu, to Tachikawa Spring Co., Ltd. Seat cushions. 4,403,356, Cl. 5-481.000.

Urbanick, Burton A., to Met-L-Wood Corporation. Hardware attaching means for panel structures. 4,403,452, Cl. 49-501.000.

Ushida, Kazuo, to Nippon Kogaku K.K. Objective lens for microscope. 4,403,835, Cl. 350-414.000.

Ushida, Yoshihisa; Toyota, Akinori; and Kashiwa, Norio, to Mitsui Petrochemical Industries, Ltd. Process for producing olefin polymers or copolymers and catalyst therefor. 4,404,341, Cl. 526-125.000.

Ushiro, Tatsuzo; and Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Lens unit for a camera. 4,404,595, Cl. 358-227.000.

Ushiroyama, Nobuyasu: *See*—
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Usiflamme S.A.: *See*—
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Woodman, Daniel W., Jr., 4,403,390, Cl. 29-564.100.

Usui, Mitunori: *See—*
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Utter, Robert E.: *See—*
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Uyeda, Tim M.: *See—*
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Vagias, Ernest. Device to determine and record small dimensions. 4,403,418, Cl. 33-164.00R.

Vahldiek, Ernst: *See—*
Ernst, Dieter; Forster, Hilmar; Gunther, Wilhelm; and Vahldiek, Ernst, 4,403,705, Cl. 213-1.300.

Vahlensieck, Hans-Joachim: *See—*
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Valditerra, Sergio, to Matisa Materiel Industriel S.A. Plough with lateral ejectors for displacing railway track ballast. 4,403,430, Cl. 37-104.000.

Valente, Nicola J. Flower pot device. 4,403,443, Cl. 47-32.000.

Valentine, Clark; and Bamber, George E., to Good Thumb Company. Portable exhibit system. 4,403,554, Cl. 108-23.000.

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Valeo Societe Anonyme: *See—*
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Vamvakaris, Christos; Patsch, Manfred; and Mach, Wolfgang, to BASF Aktiengesellschaft. Thiazole containing coumarin compounds. 4,404,389, Cl. 548-201.000.

Van der Heijden, Johannes M. A.: *See—*
Sinens, Gustaaf F. R.; and Van der Heijden, Johannes M. A., 4,404,491, Cl. 313-318.000.

van der Loos, Jozef L. M.; and Tijssen, Jan, to Stamicarbon, B.V. Polymer composition of α-methyl styrene/acrylonitrile copolymer and graft copolymer. 4,404,323, Cl. 525-86.000.

van der Weerdt, Antonius J. A.; Plomp, Roeland; and Apeldoorn, Willem, to Naarden International N.V. Perfume compositions and perfumed materials and articles, containing phenyl-tetrahydrofurans as a fragrance. 4,404,127, Cl. 252-522.00R.

Van de Voorde, Norbert: *See—*
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Van Gompel, James J., to NP Marketing Corporation. Drum retainer. 4,403,556, Cl. 108-55.300.

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van Rooyen, Gerrit: *See—*
Mulder, Willem; van Rooyen, Gerrit; and Zwarts, Johan M. C., 4,404,561, Cl. 343-16.00R.

Varela, Michael A. Mobile. 4,404,240, Cl. 428-8.000.

Varga, Tivadar: *See—*
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Vargo, Steve J.: *See—*
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Varta Batterie Aktiengesellschaft: *See—*
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Vasalos, Iacovos, to Standard Oil Company(Indiana). Fluid bed retorting process and system. 4,404,083, Cl. 208-8.00R.

Vasilakis, Andrew D.: *See—*
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Vass, Tibor: *See—*
Szendrodi, Valer; Radics, Gyula; Varga, Tivadar; Vass, Tibor; and Gyurics, Karoly, 4,403,803, Cl. 296-179.000.

Vasvari nee Debreczy, Lelle: *See—*
Kokosi, Jozsef; Hermecz, Istvan; Meszaros, Zoltan; Szasz, Gyorgy; Vasvari nee Debreczy, Lelle; Horvath, Agnes; and Breining, Tibor, 4,404,205, Cl. 424-251.000.

Velsicol Chemical Corporation: *See—*
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Stach, Leonard J.; and Hokama, Takeo, 4,404,018, Cl. 71-88.000.
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VEMA, S.p.A.: *See—*
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Venture Chemicals, Inc.: *See—*
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Verber, Carl M.: *See—*
Kenan, Richard P.; and Verber, Carl M., 4,403,833, Cl. 350-356.000.

Vermess, Michael; Chatterji, Dulal C.; Grimes, George J., Jr.; and Gallelli, Joseph F., to United States of America, Health and Human Services. Ethiodized oil emulsion for intravenous hepatography. 4,404,182, Cl. 424-5.000.

Veroli, Gianfranco: *See—*
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Viall, Charles S., Jr.: *See—*
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Victor Company of Japan, Ltd.: *See—*
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Viehrig, Wolfgang: *See—*
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Vincent, Michel; Remond, Georges; and Laubie, Michel, to Science Union et Cie. Substituted iminoacid derivatives, process for preparing them and their use as enzyme inhibitors. 4,404,206, Cl. 424-258.000.

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Vitkovits, John A.: *See—*
Dimitroff, Edward; and Vitkovits, John A., 4,403,576, Cl. 123-3.000.

Vivaldini, Fabrizio: *See—*
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Vock, Manfred H.: *See—*
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Voest-Alpine Aktiengesellschaft: *See—*
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Vogelbusch Gesellschaft m.b.H.: *See—*
Heider, Manfred; Hofschneider, Josef; Schallenberger, Wolfgang; Nodes, Franz; and Kempe, Eberhard, 4,404,284, Cl. 435-291.000.

Vogelzang, Dirk A., to U.S. Philips Corporation. Semiconductor device manufacture. 4,404,048, Cl. 148-175.000.

Vollmer, Hans-Jurgen C.: *See—*
Sinn, Hansjorg W.; Kaminsky, Walter O.; Vollmer, Hans-Jurgen C.; and Woldt, Rudiger O. H. H., 4,404,344, Cl. 526-160.000.

von Stein, Werner; and Fergg, Berthold, to Agfa-Gevaert AG. Method and apparatus for making color prints in automatic dependence upon the film type involved. 4,403,854, Cl. 355-41.000.

Vought, Kenneth D., to SCM Corporation. Print element mounting apparatus. 4,403,876, Cl. 400-144.200.

Vought, Kenneth D.; and Faes, Steven M., to SCM Corporation. Carrier locking device. 4,403,879, Cl. 400-674.000.

Vukovich, William J.: *See—*
Sherman, James F.; and Vukovich, William J., 4,403,974, Cl. 474-11.000.

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Dumbeck, Robert F.; and Welch, Phillip W., 4,404,640, Cl. 364-551.000.

Wachowski, Francois: *See—*
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Wada, Takeo: *See—*
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Wada, Tomio: *See—*
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Wade, Robert C., to Thiokol Corporation. Preparation of supported alkali metal borohydride reagents. 4,404,122, Cl. 252-432.000.

Wagner, Kuno: *See—*
Hajek, Manfred; Wagner, Kuno; Uerdingen, Walter; and Wellner, Wolfgang, 4,404,379, Cl. 544-231.000.

Wagnon, Jean: *See—*
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Wahlstrom, Hans V.; Nilsson, Rolf E.; and Pihlgren, Kjell A., to Wahlstrom, Hans V.; and Nilsson, Rolf E. A drier cabinet for drying fire hoses or other similar hoses. 4,403,424, Cl. 34-104.000.

Waitkus, Phillip A.: *See—*
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,404,139, Cl. 548-423.000.

Wakabayashi, Takeshi: *See—*
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Wakui, Natsuko: *See—*
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Wallace, Leonard D. Integral fishing rod, handle and reel seat. 4,403,439, Cl. 43-18.100.
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Wallace, William K.; and Giardino, David A., to Chicago Pneumatic Tool Company. Ratchet nutrunner with audible torque signal. 4,403,532, Cl. 81-483.000.
Walters, John O.; and Bard, William B., to Phillips Petroleum Company. Process control system. 4,404,637, Cl. 364-494.000.
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Ward, Desmond H. Door handle assembly. 4,403,800, Cl. 292-350.000.
Ward, Robert N.: *See*—
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Ward, William L.; and Ward, Robert N. Reciprocating electric motor. 4,404,503, Cl. 318-119.000.
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Licciardello, Michael; Boden, Richard M.; Watkins, Hugh; and Hanna, Marie R., 4,404,307, Cl. 524-290.000.
Watmough, Thomas, to International Harvester Co. Composite metallic and refractory article and method of manufacturing the article. 4,404,262, Cl. 428-539.500.
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Gault, William A., 4,404,172, Cl. 422-248.000.
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Messina, Joseph A.; and Sullivan, William R., 4,404,556, Cl. 340-825.030.
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Maier, Alfred E.; and Ricci, Louis N., 4,404,446, Cl. 200-320.000.
Munsterman, Ronald S.; and Bowers, Homer C., 4,403,489, Cl. 72-16.000.
Pollard, David D.; and Krajci, Gary E., 4,404,582, Cl. 357-79.000.
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Wilks, Gerald W., to LaSalle Steel Company. Process for the improved heat treatment of steels using direct electrical resistance heating. 4,404,047, Cl. 148-131.000.

Willemse, Adrianus H.: *See*—
Hovens, Petrus J. P.; and Willemse, Adrianus H., 4,403,853, Cl. 355-16.000.

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Winkels, Manfred: *See*—
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Winnek, Douglas F.; and McKee, William J. Lenticular x-ray film with improved grating mask and intensifying screen. 4,404,471, Cl. 250-482.100.

Winters, John R., to Union Carbide Corporation. Process for the preparation of polyethylene polyamines. 4,404,405, Cl. 564-482.000.

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Wollar, Burnell J., to Phillips Plastics Corp. Pull-out type expansion fastener. 4,403,893, Cl. 411-38.000.

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Woo, Edmund P., to Dow Chemical Company, The. Novel 3,5-diketopiperazinyl compounds containing epoxide substituted imides. 4,404,381, Cl. 544-357.000.

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Nijjar, Amrik S., 4,403,628, Cl. 137-515.500.

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Wu, Marinda L., to Dow Chemical Company, The. Use of rod mill for initial stage of solder glass grinding. 4,403,742, Cl. 241-29.000.

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Wujick, Frank L., to Uniroyal, Inc. Pulley for positive drive systems. 4,403,979, Cl. 474-153.000.

Wulff, Virgil W., to Mattel, Inc. Toy vehicle accelerator. 4,403,440, Cl. 46-1.00K.

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Wuthrich, Werner, to Kidde, Inc. Folding machine. 4,403,981, Cl. 493-419.000.

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Ronen, Ram S., 4,404,576, Cl. 357-23.000.
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Stoffel, James C., 4,404,597, Cl. 358-293.000.

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Hattori, Tadashi; Yamaguchi, Hiroaki; and Ozaki, Tadashi, 4,403,505, Cl. 73-117.300.

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Iwanami, Masaru; Maeda, Tetsuya; Nagano, Yoshinobu; Fujimoto, Masaharu; Nagano, Noriaki; and Yamazaki, Atsuki, 4,404,373, Cl. 544-21.000.
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Yamanouchi, Roy K., to National Semiconductor Corporation. Error correcting network. 4,404,673, Cl. 371-13.000.
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Yamashita, Kyoichi. Variable diameter drum. 4,403,721, Cl. 226-191.000.
Yamashita, Tadashi: *See*—
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Yanagawa, Nobuyuki, to Ricoh Company, Ltd. Electrostatic copying machine comprising improved arrangement of operating units. 4,403,851, Cl. 355-14.00R.
Yanaihara, Noboru; and Konno, Koji, to Kureha Kagaku Kogyo Kabushiki Kaisha. Peptides and method for synthesizing the same. 4,404,133, Cl. 260-112.50R.
Yang, Rong-Juh. Children conductive intelligence autosuggestion machine. 4,403,966, Cl. 434-335.000.
Yanmar Diesel Engine Co., Ltd.: *See*—
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Yano, Satoshi: *See*—
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Yen, Anderson. Electrical control circuit for operating a garage door or similar device. 4,404,558, Cl. 340-825.720.
Yin, Lo I., to United States of America, National Aeronautics and Space Administration. Real-time 3-D x-ray and gamma-ray viewer. 4,404,469, Cl. 250-363.00R.
Yoder, Kermit L. Swath turning machine. 4,403,468, Cl. 56-370.000.
Yoho, Robert W., Sr. Combination roof mounting curb and plenum. 4,403,481, Cl. 62-259.100.
Yokozseki, Shinichi: *See*—
Tsukagoshi, Tsunehiro; Nemoto, Etsuro; Yokozseki, Shinichi; Hagiwara, Sumio; Yoshino, Toshikazu; Arai, Yasuyuki; and Kobayashi, Kazuyoshi, 4,404,315, Cl. 524-521.000.
Yoneda, Takao: *See*—
Nishimura, Hideo; Niwa, Kuniyuki; Yamamoto, Yasushi; and Yoneda, Takao, 4,404,506, Cl. 318-561.000.
Yoneya, Satoru: *See*—
Kawata, Hiroitsu; Aruga, Masayoshi; Ohmura, Tadayoshi; Sonobe, Takashi; Yoneya, Satoru; and Sone, Chiharu, 4,404,183, Cl. 424-19.000.
Yonezawa, Toshio: *See*—
Oshima, Jiro; Aoyama, Masaharu; Yasuda, Seiji; and Yonezawa, Toshio, 4,403,392, Cl. 29-569.00R.
York, Earl D.; Thacker, Milton B.; and Miller, Paul B., to Standard Oil Company (Indiana). Drying and dedusting process. 4,404,085, Cl. 208-11.00R.
York, Floyd L. Powered wood splitter with multiple work heads. 4,403,635, Cl. 144-366.000.
Yorke, William J.; Binet, Rejean; Lee, Ming C.; and Bampfield, Howard A., to C-I-L Inc. Water-in-oil emulsion blasting agents containing unrefined or partly refined petroleum product as fuel component. 4,404,050, Cl. 149-2.000.
Yoshida, Hajime, to Hajime Industries Ltd. Defect inspection system. 4,403,858, Cl. 356-237.000.
Yoshida Industry Co., Ltd.: *See*—
Ogasawara, Hirotake; Hatakeyama, Yoshiharu; and Ishiguro, Mitsuo, 4,403,932, Cl. 425-85.000.
Yoshida, Jun; Tsunemitsu, Toshiharu; and Nakano, Masayoshi, to Kanebo Cosmetics, Inc. Foundation composition suitable for use in making up a mannequin. 4,403,963, Cl. 434-100.000.
Yoshihara, Takahisa: *See*—
Komura, Hideo; Kyohno, Kazuaki; Yoshihara, Takahisa; Shijima, Syoji; and Goto, Minari, 4,404,030, Cl. 106-2.000.
Yoshino, Toshikazu: *See*—
Tsukagoshi, Tsunehiro; Nemoto, Etsuro; Yokozseki, Shinichi; Hagiwara, Sumio; Yoshino, Toshikazu; Arai, Yasuyuki; and Kobayashi, Kazuyoshi, 4,404,315, Cl. 524-521.000.
Yoshino, Yasuhisa: *See*—
Kodera, Masao; Akita, Sigeyuki; and Yoshino, Yasuhisa, 4,404,541, Cl. 340-32.000.
Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Suenobu, Koreyoshi; Kohara, Masanori; Hidaka, Yasuhiro; Katsuyama, Kazuki; and Kinishi, Ryoichi, 4,404,352, Cl. 528-45.000.
Young, David A.: *See*—
Lagace, Linda S.; and Young, David A., 4,404,119, Cl. 252-413.000.
Young, Donald C., to Union Oil Company of California. Noncorrosive urea-sulfuric acid reaction products. 4,404,116, Cl. 252-182.000.
Young, Robert E.; and Bridgewater, Bobbie D., to General Motors Corporation. Internal combustion engine ignition distributor drive arrangement. 4,403,579, Cl. 123-146.50A.
Yurchak, Sergei: *See*—
Penick, Joe E.; Yurchak, Sergei; and Zahner, John C., 4,404,414, Cl. 585-469.000.
Yurita, Chikara: *See*—
Kitamura, Yoichi; Hotta, Hisashi; Yurita, Chikara; and Ito, Makoto, 4,404,447, Cl. 219-64.000.
Zachariadis, Robert G., to Mobil Oil Corporation. System for laterally positioning a towed marine cable and method of using same. 4,404,664, Cl. 367-19.000.
Zahner, John C.: *See*—
Penick, Joe E.; Yurchak, Sergei; and Zahner, John C., 4,404,414, Cl. 585-469.000.
Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi, 4,404,575, Cl. 357-22.000.
Zamparelli, Walter; Cimenti, Antonio; and Muscariello, Giuseppe, to Zamuci Srl. Device to spread the dough for pizza. 4,403,937, Cl. 425-337.000.
Zamuci Srl: *See*—
Zamparelli, Walter; Cimenti, Antonio; and Muscariello, Giuseppe, 4,403,937, Cl. 425-337.000.
Zarlingo, S. Paul: *See*—
Tatum, Robert N.; Hofer, Robert W.; and Zarlingo, S. Paul, 4,404,264, Cl. 428-573.000.
Zarnoch, Kenneth P.: *See*—
Iacovangelo, Charles D.; and Zarnoch, Kenneth P., 4,404,267, Cl. 429-41.000.
Zeijlemaker, Willem P.: *See*—
Ricotti, Giulia C. B. A.; and Zeijlemaker, Willem P., 4,404,279, Cl. 435-68.000.
Zelenaya, Saida A.: *See*—
Rozenfeld, Iosif L.; Brusnikina, Vera M.; Frolova, Larisa V.; Lyashenko, Alevtina A.; Sokolov, Jury V.; Bocharov, Boris V.; Fokin, Alexandr V.; Legezin, Nikolai E.; Dergobuzova, Ekaterina V.; Altshuler, Boris N.; Zelenaya, Saida A.; and Korobova, Emma S., 4,404,167, Cl. 422-12.000.
Zelenka, Thomas: *See*—
Juergensen, Heinrich; and Zelenka, Thomas, 4,404,596, Cl. 358-293.000.
Zengel, Hans G.; and Bergfeld, Manfred, to Akzona Incorporated. Process for the preparation of para-amino-diphenylamine. 4,404,401, Cl. 564-416.000.
Zenith Radio Corporation: *See*—
Fanizza, Michael A.; and Schmid, Richard G., 4,404,588, Cl. 358-60.000.
Moon, Frederick H., 4,404,686, Cl. 455-191.000.
Zerbe, Lowell B. Apparatus for supporting portable hand tools. 4,403,457, Cl. 51-170.00T.
Zieg, Steven A., to Mansion Industries, Inc. Folding saw horse. 4,403,678, Cl. 182-153.000.
Zilahi, Tibor: *See*—
Kulcsar, Gabor; Sebestyen, Gyula; David, Agoston; and Zilahi, Tibor, 4,404,189, Cl. 424-114.000.
Zimmerman, John A., Jr.; and Long, William B., to AMP Incorporated. Wiring line tap. 4,403,821, Cl. 339-97.00P.
Zimmermann, Josef: *See*—
Dettbarn, Hans-Jurgen; and Zimmermann, Josef, 4,403,986, Cl. 604-70.000.
Zinninger, Thomas C.; and Deli, Joseph, to PPG Industries, Inc. Composition and method for controlling growth of tobacco suckers. 4,404,016, Cl. 71-78.000.
Zrinscak, Fred S., to Mobil Oil Corporation. Process for the reduction of the effect of contaminant metals in cracking catalysts. 4,404,089, Cl. 208-120.000.
Zuk, Paul, to Bell Telephone Laboratories, Incorporated. Electrode coating process. 4,404,234, Cl. 427-37.000.
Zwarts, Johan M. C.: *See*—
Mulder, Willem; van Rooyen, Gerrit; and Zwarts, Johan M. C., 4,404,561, Cl. 343-16.00R.
Zybailo, Valentin P.; Kniga, Anatoly N.; Kosyan, Ljudmila E.; Rudenko, Valentin P.; and Poltaev, Sergei A. Data input keyboard. 4,404,547, Cl. 340-365.00R.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF SEPTEMBER, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Avtex Fibers Inc.: *See—*
Smith, Frederick R., Re. 31,380, Cl. 106-164.000.

Bayer Aktiengesellschaft: *See—*
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 31,381, Cl. 549-526.000.

Bendix Corporation, The: *See—*
Burnett, Richard T., Re. 31,378, Cl. 188-79.5GT.

Bigelow-Sanford, Inc.: *See—*
Sheehan, Richard W.; Parlin, David B.; Jamrogowicz, Harry F.; and Patterson, John A., Re. 31,376, Cl. 57-208.000.

Burnett, Richard T., to Bendix Corporation, The. Drum brake adjuster. Re. 31,378, Cl. 188-79.5GT.

Demer, Joseph: *See—*
Mylrea, Kenneth C.; and Demer, Joseph, Re. 31,377, Cl. 128-642.000.

Deutsche Gold-und Silber-Scheideanstalt: *See—*
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 31,381, Cl. 549-526.000.

Dunham-Bush, Inc.: *See—*
Shaw, David N., Re. 31,379, Cl. 417-310.000.

Du Pont de Nemours, E. I., and Company: *See—*
Moore, Edward J.; and Owens, John E., Re. 31,382, Cl. 361-213.000.

Gerstenmeier, Jurgen: *See—*
Leiber, Heinz; Gerstenmeier, Jurgen; and Korasiak, Wolfgang, Re. 31,383, Cl. 364-426.000.

Jamrogowicz, Harry F.: *See—*
Sheehan, Richard W.; Parlin, David B.; Jamrogowicz, Harry F.; and Patterson, John A., Re. 31,376, Cl. 57-208.000.

Korasiak, Wolfgang: *See—*
Leiber, Heinz; Gerstenmeier, Jurgen; and Korasiak, Wolfgang, Re. 31,383, Cl. 364-426.000.

Leiber, Heinz; Gerstenmeier, Jurgen; and Korasiak, Wolfgang, to Teldix GmbH. Antilocking control system. Re. 31,383, Cl. 364-426.000.

Moore, Edward J.; and Owens, John E., to Du Pont de Nemours, E. I., and Company. Static charge neutralizer and process. Re. 31,382, Cl. 361-213.000.

Mylrea, Kenneth C.; and Demer, Joseph, to University Patents, Inc. Disposable esophageal and tracheal multi-probes. Re. 31,377, Cl. 128-642.000.

Owens, John E.: *See—*
Moore, Edward J.; and Owens, John E., Re. 31,382, Cl. 361-213.000.

Parlin, David B.: *See—*
Sheehan, Richard W.; Parlin, David B.; Jamrogowicz, Harry F.; and Patterson, John A., Re. 31,376, Cl. 57-208.000.

Patterson, John A.: *See—*
Sheehan, Richard W.; Parlin, David B.; Jamrogowicz, Harry F.; and Patterson, John A., Re. 31,376, Cl. 57-208.000.

Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, to Bayer Aktiengesellschaft; and Deutsche Gold-und Silber-Scheideanstalt. Process for the preparation of propylene oxide. Re. 31,381, Cl. 549-526.000.

Schreyer, Gerd: *See—*
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 31,381, Cl. 549-526.000.

Schwerdtel, Wulf: *See—*
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 31,381, Cl. 549-526.000.

Seifert, Hermann: *See—*
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 31,381, Cl. 549-526.000.

Shaw, David N., to Dunham-Bush, Inc. Combined pressure matching and capacity control slide valve assembly for helical screw rotary machine. Re. 31,379, Cl. 417-310.000.

Sheehan, Richard W.; Parlin, David B.; Jamrogowicz, Harry F.; and Patterson, John A., to Bigelow-Sanford, Inc. Yarn structure and method for producing same. Re. 31,376, Cl. 57-208.000.

Smith, Frederick R., to Avtex Fibers Inc. Rayon fibers containing starch. Re. 31,380, Cl. 106-164.000.

Swodenk, Wolf: *See—*
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 31,381, Cl. 549-526.000.

Teldix GmbH: *See—*
Leiber, Heinz; Gerstenmeier, Jurgen; and Korasiak, Wolfgang, Re. 31,383, Cl. 364-426.000.

University Patents, Inc.: *See—*
Mylrea, Kenneth C.; and Demer, Joseph, Re. 31,377, Cl. 128-642.000.

Waldmann, Helmut: *See—*
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 31,381, Cl. 549-526.000.

Weiberg, Otto: *See—*
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 31,381, Cl. 549-526.000.

Wirthwein, Rolf: *See—*
Prescher, Gunter; Schreyer, Gerd; Weiberg, Otto; Wirthwein, Rolf; Waldmann, Helmut; Seifert, Hermann; Schwerdtel, Wulf; and Swodenk, Wolf, Re. 31,381, Cl. 549-526.000.

LIST OF DESIGN PATENTEES

AB ID-Kort: *See—*
Malmberg, Thor A. H., 270,546, Cl. D19-10.000.

Accutec, Inc.: *See—*
Bajusz, Harold F., 270,547, Cl. D19-51.000.

Achille, Jean R., to Illinois Tool Works Inc. Reverse screw grommet. 270,516, 9-13-83, Cl. D8-354.000.

American Telecommunications Corporation: *See—*
Bloem, Richard E., Sr., 270,534, Cl. D14-53.000.

Anchor Hocking Corporation: *See—*
Thrush, James L., 270,507, Cl. D7-9.000.
Thrush, James L., 270,508, Cl. D7-17.000.
Thrush, James L., 270,512, Cl. D7-54.000.

Armstrong, Lee C. Adapter for making connection into a container through a pierceable top. 270,568, 9-13-83, Cl. D24-52.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Machida, Takeshi; and Koyama, Hiroshi, 270,564, Cl. D24-1.100.

Audesse, Emery G.: *See—*
Broadt, David R.; and Audesse, Emery G., 270,575, Cl. D26-2.000.

Bajusz, Harold F., to Accutec, Inc. Pen. 270,547, 9-13-83, Cl. D19-51.000.

Bayusik, Charles M. Star of David ornament. 270,525, 9-13-83, Cl. D11-125.000.

Benattar, Robert; and Cronenberger, Michel, to Hospal-Sodip SA. Haemodialyzer or the like. 270,565, 9-13-83, Cl. D24-21.000.

Benjamin & Medwin, Inc.: *See—*
Miller, David W., 270,509, Cl. D7-43.000.
Miller, David W., 270,510, Cl. D7-44.000.

Bennett, Harry. Tube coupler for a hearing aid ear mold. 270,566, 9-13-83, Cl. D24-35.000.

Black, Allan N., to Guest Keen & Nettlefolds (Aust) Limited. Scaffold anchorage lug. 270,572, 9-13-83, Cl. D25-68.000.

Black, Allan N., to Guest Keen & Nettlefolds (Aust) Limited. Scaffold brace anchorage socket. 270,573, 9-13-83, Cl. D25-68.000.

Black, Allan N., to Guest Keen & Nettlefolds (Aust) Limited. Scaffold spring wedge. 270,574, 9-13-83, Cl. D25-68.000.

Bloem, Richard E., Sr., to American Telecommunications Corporation. Cordless telephone. 270,534, 9-13-83, Cl. D14-53.000.
Bloomquist, Thomas N. Holder for material used in the repair of automotive vehicle bodies. 270,528, 9-13-83, Cl. D12-155.000.
Bowden, Wade R., Jr.; and Hoehne, George C., to Slater Electric Inc. Portable ground fault circuit interrupter. 270,530, 9-13-83, Cl. D13-30.000.
Broadt, David R.; and Audesse, Emery G., to GTE Products Corporation. Multilamp photoflash unit. 270,575, 9-13-83, Cl. D26-2.000.
Brossier, Jean-Michel. Bath tub. 270,561, 9-13-83, Cl. D23-55.000.
Brother Kogyo Kabushiki Kaisha: *See*—
Katsuzaki, Yoshio, 270,535, Cl. D15-70.000.
Burton, Robert W.; Crowley, Joseph C., Jr.; Davi, Richard A.; and Goertz, Albrecht, to Rolodex Corporation. Combined telephone list finder and desk tray. 270,549, 9-13-83, Cl. D19-76.000.
Camus, Adriana M. Figure enhancer. 270,489, 9-13-83, Cl. D2-1.000.
Canon Kabushiki Kaisha: *See*—
Sakurai, Mitsuru, 270,540, Cl. D16-31.000.
Cascone, Ernesto; and Cascone, Vincent. Door structure. 270,569, 9-13-83, Cl. D25-48.000.
Cascone, Vincent: *See*—
Cascone, Ernesto; and Cascone, Vincent, 270,569, Cl. D25-48.000.
Cinque, Alphonse P. Lens mask. 270,542, 9-13-83, Cl. D16-38.000.
Clivio, Franco; and Raffler, Dieter, to GARDENA Kress & Kastner GmbH. Spray head. 270,559, 9-13-83, Cl. D23-35.000.
Clivio, Franco; and Raffler, Dieter, to GARDENA Kress + Kastner GmbH. Sprayer. 270,560, 9-13-83, Cl. D23-35.000.
Cohen, Piet, to Materias Plasticas, Limitada. Ring for towels. 270,503, 9-13-83, Cl. D6-99.000.
Conlin Hot Tubs/Spas: *See*—
Conlin, Michael L., 270,567, Cl. D24-38.000.
Conlin, Michael L., to Conlin Hot Tubs/Spas. Deck skirting for portable spa. 270,567, 9-13-83, Cl. D24-38.000.
Consolidated Foods Corporation: *See*—
Novitsky, Rosalie, 270,490, Cl. D2-24.000.
Novitsky, Rosalie, 270,491, Cl. D2-24.000.
Cook, William J., to Timex Corporation. Digital alarm clock. 270,522, 9-13-83, Cl. D10-15.000.
Coronado, Hector M. Chair or the like. 270,502, 9-13-83, Cl. D6-75.000.
Cronenberger, Michel: *See*—
Benattar, Robert; and Cronenberger, Michel, 270,565, Cl. D24-21.000.
Crowley, Joseph C., Jr.: *See*—
Burton, Robert W.; Crowley, Joseph C., Jr.; Davi, Richard A.; and Goertz, Albrecht, 270,549, Cl. D19-76.000.
Davi, Richard A.: *See*—
Burton, Robert W.; Crowley, Joseph C., Jr.; Davi, Richard A.; and Goertz, Albrecht, 270,549, Cl. D19-76.000.
DeVos, Hendrik A. J.; and Sitzema, Ronald L., Jr., to GTE Products Corporation. Luminaire reflector. 270,577, 9-13-83, Cl. D26-118.000.
DHV, Inc.: *See*—
Havener, Gary W., 270,571, Cl. D25-68.000.
Duering, Walter, to During AG. Bottle. 270,518, 9-13-83, Cl. D9-317.000.
Dunlap, Jerald V., to M-D & Co. Polisher. 270,515, 9-13-83, Cl. D8-67.000.
During AG: *See*—
Duering, Walter, 270,518, Cl. D9-317.000.
Echterling, Eugene J. Toy wagon. 270,552, 9-13-83, Cl. D21-76.000.
Echterling, Eugene J. Toy stroller. 270,553, 9-13-83, Cl. D21-134.000.
Ekuan, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Decoder for a digital audio discs player. 270,531, 9-13-83, Cl. D14-1.000.
Elliott, Randall L.; and Pickel, James A., to Liberty National Bank & Trust Co. Kiosk for automatic banking or the like. 270,583, 9-13-83, Cl. D99-28.000.
Fender, C. Leo. Guitar head. 270,544, 9-13-83, Cl. D17-20.000.
Fine Art Pillow & Specialties Corp.: *See*—
Schutz, Bernard R., 270,498, Cl. D6-48.000.
Friedman, Maxine C., to PCC Enterprises, Inc. Coaster. 270,511, 9-13-83, Cl. D7-45.000.
Fuller, Stanley D. Teeter-totter. 270,558, 9-13-83, Cl. D21-251.000.
GARDENA Kress & Kastner GmbH: *See*—
Clivio, Franco; and Raffler, Dieter, 270,559, Cl. D23-35.000.
Clivio, Franco; and Raffler, Dieter, 270,560, Cl. D23-35.000.
Giroflex-Entwicklungs AG: *See*—
Ochsner, Koni, 270,497, Cl. D6-30.000.
Goertz, Albrecht: *See*—
Burton, Robert W.; Crowley, Joseph C., Jr.; Davi, Richard A.; and Goertz, Albrecht, 270,549, Cl. D19-76.000.
GTE Products Corporation: *See*—
Broadt, David R.; and Audesse, Emery G., 270,575, Cl. D26-2.000.
DeVos, Hendrik A. J.; and Sitzema, Ronald L., Jr., 270,577, Cl. D26-118.000.
Guest Keen & Nettlefolds (Aust) Limited: *See*—
Black, Allan N., 270,572, Cl. D25-68.000.
Black, Allan N., 270,573, Cl. D25-68.000.
Black, Allan N., 270,574, Cl. D25-68.000.
Hain, Eva K.: *See*—
Numbers, Jody L.; and Hain, Eva K., 270,579, Cl. D28-78.000.
Hara, Kunio, to Tokyo Shibaura Denki Kabushiki Kaisha. Picture image memory-search apparatus with copying function. 270,536, 9-13-83, Cl. D16-28.000.
Hara, Kunio, to Tokyo Shibaura Denki Kabushiki Kaisha. Combined electronic copying machine and sorter. 270,537, 9-13-83, Cl. D16-30.000.
Harper, Walter F., Jr.; and Winecoff, Thomas W. Rocking chair. 270,499, 9-13-83, Cl. D6-49.000.
Harper, Walter F., Jr.; and Winecoff, Thomas W. Swing. 270,500, 9-13-83, Cl. D6-54.000.
Havener, Gary W., to DHV, Inc. Splice element for a ladder safety rail. 270,571, 9-13-83, Cl. D25-68.000.
Hoehne, George C.: *See*—
Bowden, Wade R., Jr.; and Hoehne, George C., 270,530, Cl. D13-30.000.
Hoover Company, The: *See*—
Wareham, Richard A., 270,581, Cl. D32-31.000.
Horie, Hideyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Electronic copying machine or the like. 270,539, 9-13-83, Cl. D16-30.000.
Hospal-Sodip SA: *See*—
Benattar, Robert; and Cronenberger, Michel, 270,565, Cl. D24-21.000.
Hyers, Delores M. Handbag. 270,496, 9-13-83, Cl. D3-50.000.
Illinois Tool Works Inc.: *See*—
Achille, Jean R., 270,516, Cl. D8-354.000.
Katsuzaki, Yoshio, to Brother Kogyo Kabushiki Kaisha. Sewing machine. 270,535, 9-13-83, Cl. D15-70.000.
Kent, Devere P. Multiple desk unit. 270,504, 9-13-83, Cl. D6-146.000.
Kent, Devere P. Multiple desk unit. 270,505, 9-13-83, Cl. D6-146.000.
Kneisley, Rick A. Sports wrist brace. 270,556, 9-13-83, Cl. D21-233.000.
Koszegi, Andre, to Koszegi Leather & Vinyl Products, Inc. Video recorder case. 270,494, 9-13-83, Cl. D3-33.000.
Koszegi Leather & Vinyl Products, Inc.: *See*—
Koszegi, Andre, 270,494, Cl. D3-33.000.
Koyama, Hiroshi: *See*—
Machida, Takeshi; and Koyama, Hiroshi, 270,564, Cl. D24-1.100.
Legueu, Paul. Light armoured vehicle. 270,526, 9-13-83, Cl. D12-12.000.
Liberty National Bank & Trust Co.: *See*—
Elliott, Randall L.; and Pickel, James A., 270,583, Cl. D99-28.000.
M-D & Co.: *See*—
Dunlap, Jerald V., 270,515, Cl. D8-67.000.
Machida, Takeshi; and Koyama, Hiroshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Lens meter. 270,564, 9-13-83, Cl. D24-1.100.
Malmberg, Thor A. H., to AB ID-Kort. Transaction identification card. 270,546, 9-13-83, Cl. D19-10.000.
Materias Plasticas, Limitada: *See*—
Cohen, Piet, 270,503, Cl. D6-99.000.
Matsuzaka, Yozo, to Tokyo Shibaura Denki Kabushiki Kaisha. Electronic copying machine or the like. 270,541, 9-13-83, Cl. D16-31.000.
McNally, Robert F. Guitar. 270,543, 9-13-83, Cl. D17-19.000.
Messina, Glenn. Action toy nose. 270,554, 9-13-83, Cl. D21-190.000.
Metzner, Robert S., to SCM Corporation. Typewriter. 270,545, 9-13-83, Cl. D18-1.000.
Miller, David W., to Benjamin & Medwin, Inc. Food mold. 270,509, 9-13-83, Cl. D7-43.000.
Miller, David W., to Benjamin & Medwin, Inc. Food mold. 270,510, 9-13-83, Cl. D7-44.000.
Morris, Glenn H. Child resistant push button cap for containers. 270,521, 9-13-83, Cl. D9-443.000.
Mox, Dana W., to Tricolor Corporation. Wall clock. 270,523, 9-13-83, Cl. D10-22.000.
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65 4,403,765

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11.28 4,403,784
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D6—	30	270,497
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	54	270,500
	57	270,501
	75	270,502
	99	270,503
	146	270,504
		270,505
	199	270,506
D7—	9	270,507
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	43	270,509
	44	270,510
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	54	270,512
	400	270,513
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	155	270,528
	316	270,529
D13—	30	270,530
D14—	1	270,531
	34	270,532
	37	270,533
	53	270,534
D15—	70	270,535
D16—	28	270,536
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		270,541
	38	270,542
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	20	270,544
D18—	1	270,545
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	76	270,549
D20—	43	270,550
D21—	54	270,551
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	192	270,555
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	235	270,557
	251	270,558
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	55	270,561
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	158	270,563
D24—	1.1	270,564
	21	270,565
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	38	270,567
	52	270,568
D25—	48	270,569
	56	270,570
	68	270,571
		270,572
		270,573
		270,574
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	39	270,576
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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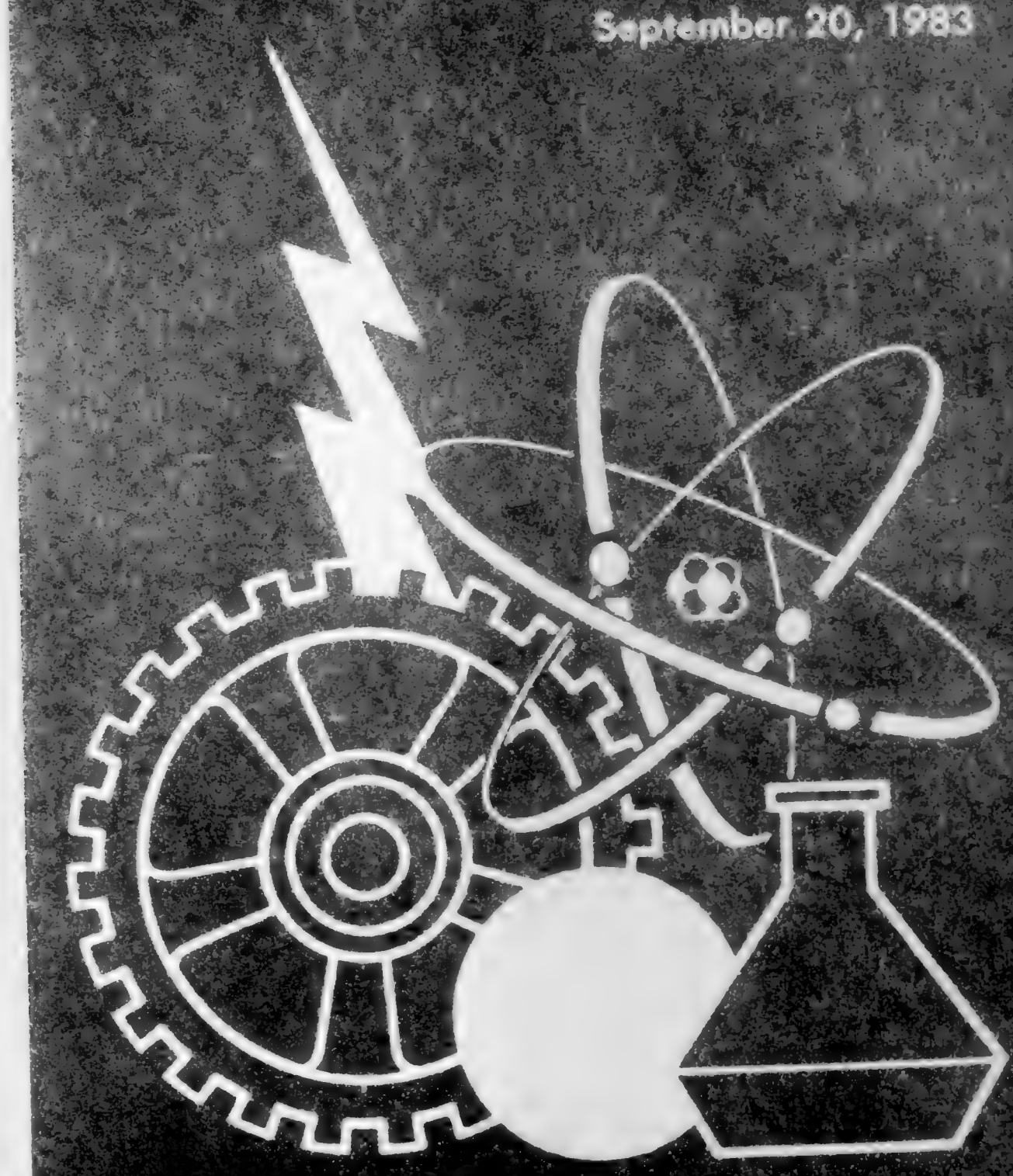
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
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U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
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International Fees	
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Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

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Dec. 3, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,120,003, Re. S.N. 496,485, Filed May 20, 1983, Cl. 358/142, MULTIPLE CHANNEL CATV SYSTEM UTILIZING ROW GRABBER INTERFACE AS CATV INPUT, David S. Mitchell, et al., Owner of Record: *IDR, Inc., Farmingdale, N.Y.,* Attorney or Agent: Lawrence G. Kurland, et al., Ex. Gp.: 233

4,125,613, Re. S.N. 478,756, Filed Mar. 25, 1983, Cl. 424/250, PESTICIDAL CINNOLINES, John S. Badmin, et al., Owner of Record: *Shell Oil Co., Houston, Tex.,* Attorney or Agent: Frank R. Lafontaine, Ex. Gp.: 125

4,146,657, Re. S.N. 510,967, Filed July 5, 1983, Cl. 427/126, METHOD OF DEPOSITING ELECTRICALLY CONDUCTIVE, INFRA-RED REFLECTIVE, TRANSPARENT COATINGS OF STANNIC OXIDE, Roy G. Gordon, Owner of Record: *Inventor,* Attorney or Agent: Andrew F. Kehoe, et al., Ex. Gp.: 162

4,242,033, Re. S.N. 507,224, Filed June 23, 1983, Cl. 414/662, MACHINE AND METHOD FOR VERTICAL TRANSPORTATION OF CONTAINERS, Stephen H. Aidlin, et al., Owner of Record: *Aidlin Automation, Inc., Brooklyn, N.Y.,* Attorney or Agent: Erwin S. Teltscher, Ex. Gp.: 312

4,252,914, Re. S.N. 512,301, Filed July 11, 1983, Cl. 525/098, THERMOPLASTIC ELASTOMER BLENDS OF HYDROGENATED POLYBUTADIENE BLOCK COPOLYMERS WITH ALPHA-OLEFIN POLYMERS AND COPOLYMERS, Adel F. Halasa, et al., Owner of Record: *Firestone Tire and Rubber Co., Akron, Ohio,* Attorney or Agent: D. A. Thomas, et al., Ex. Gp.: 143

4,272,484, Re. S.N. 500,772, Filed June 3, 1983, Cl. 422/58, FILLING FOR OPTODES, Dietrich W. Lubbers, Owner of Record: *Max-Planck-Gesellschaft Zur Forderung der Wissenchaften E.V., Gottingen, Germany,* Attorney or Agent: Gordon L. Peterson, Ex. Gp.: 177

4,274,994, Re. S.N. 506,558, Filed June 21, 1983, Cl. 260/40R, REACTIVE TERMINALLY UNSATURATED LIQUID POLYMERS IN UNSATURATED POLYESTERS, Changkiu Keith Riew, Owner of Record: *B. F. Goodrich Co., New York, N.Y.,* Attorney or Agent: Nestor W. Shust, et al., Ex. Gp.: 142

4,278,874, Re. S.N. 512,434, Filed July 8, 1983, Cl. 219/505, HEATING CIRCUITS, Graham Malcolm Cole, Owner of Record: *Dreamland Electrical Appliances Ltd., Southampton, England,* Attorney or Agent: Thomas B. van Poole, Ex. Gp.: 213

4,286,766, Re. S.N. 507,755, Filed June 27, 1983, Cl. 249/144, COLLAPSIBLE MOLD CORE, John W. von Holt, Owner of Record: *Inventor,* Attorney or Agent: Charles F. Pigott, Ex. Gp.: 147

4,295,429, Re. S.N. 502,423, Filed June 8, 1983, Cl. 105/197DB, RAILWAY TRUCK BOLSTER FRICTION ASSEMBLY, Donald Wiebe, Owner of Record: *A. Stucki Co., Pittsburgh, Pa.,* Attorney or Agent: E. Wallace Breisch, Ex. Gp.: 312

4,353,320, Re. S.N. 497,059, Filed May 23, 1983, Cl. 114/267, UTILITY DISTRIBUTION SYSTEM FOR MARINE FLOATS, Wesley W. Sluys, Owner of Record: *Builders Concrete, Inc., Bellingham, Wash.,* Attorney or Agent: Richard W. Seed, et al., Ex. Gp.: 315

4,372,270, Re. S.N. 510,455, Filed July 1, 1983, Cl. 123/440, METHOD AND APPARATUS FOR CONTROLLING THE COMPOSITION OF THE COMBUSTIBLE MIXTURE OF AN ENGINE, Reinhard Latsch, et al., Owner of Record: *Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany,* Attorney or Agent: Edwin E. Greigg, Ex. Gp.: 342

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,337,805, Reexam. No. 90/000,436, Requested: Aug. 22, 1983, Cl. 141/71, AGRICULTURAL BAG LOADING APPARATUS, William C. Johnson, et al., Owner of Record: *AG-Bag Corp., Arlington, Nebr.,* Attorney or Agent: Richards, Harris & Medlock, Ex. Gp.: 243, Requester: American Bag All Corp., Fawn Grove, Pa.

PATENT NOTICES

Certificates of Correction for the Week of Sept. 20, 1983

3,874,422	4,371,955	4,381,014	4,390,558
4,180,854	4,372,403	4,381,230	4,390,613
4,200,603	4,372,645	4,381,253	4,390,725
4,202,697	4,373,357	4,381,991	4,391,157
4,231,782	4,373,459	4,382,664	4,391,308
4,259,086	4,373,862	4,382,872	4,391,316
4,261,497	4,374,200	4,382,873	4,391,373
4,307,149	4,374,759	4,383,057	4,391,488
4,307,224	4,375,096	4,383,094	4,391,751
4,316,869	4,375,615	4,383,648	4,391,866
4,318,688	4,375,734	4,384,379	4,392,011
4,343,928	4,375,945	4,384,993	4,392,987
4,347,149	4,376,105	4,385,044	4,392,997
4,349,650	4,376,583	4,385,988	4,393,094
4,351,031	4,377,193	4,386,881	4,393,240
4,358,582	4,377,440	4,387,022	4,393,562
4,358,860	4,378,142	4,387,109	4,393,799
4,362,040	4,378,346	4,388,002	4,393,878
4,363,859	4,378,386	4,388,289	4,393,959
4,366,257	4,379,398	4,388,618	4,394,200
4,369,712	4,379,832	4,389,443	4,394,202
4,369,838	4,380,279	4,389,619	4,394,262
4,370,302	4,380,542	4,389,726	4,394,722
4,370,330	4,380,616	4,389,865	4,394,738
4,370,878	4,380,696	4,389,908	4,395,476
4,371,530	4,380,909	4,389,914	
4,371,587	4,380,945	4,390,052	

Disclaimers

3,524,484.—*Richard G. Miller,* Elgin, Ill. ADJUSTABLE NOSEPIECE FOR POWER SCREWDRIVER. Patent dated Aug. 18, 1970. Disclaimer filed July 18, 1983, by the assignee, *Illinois Tool Works, Inc.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,061,755.—*Larry R. McDougald,* Greenfield, Ind. COCCIDIOCIDAL COMBINATION OF MONENSIN AND METICHLORPINDOL. Patent dated Dec. 6, 1977. Disclaimer filed Aug. 8, 1983 by the assignee, *Eli Lilly and Co.*

Hereby enters this disclaimer to all claims of said patent.

4,144,690.—*Peter J. Avery,* Toronto, Canada. CONCRETE FORMING STRUCTURES. Patent dated Mar. 20, 1979. Disclaimer filed Jan. 11, 1983, by the assignee, *Aluma Systems, Inc.*

Hereby enters this disclaimer to claims 1 through 5 of said patent.

4,309,033.—*Charles L. Parker, Jr.* and *George A. Vaughn,* Princeton, N.J. CLAMPING APPARATUS. Patent dated Jan. 5, 1982. Disclaimer filed Aug. 8, 1983, by the assignee, *AMF Inc.*

Hereby enters this disclaimer to claims 1–7 and 12–14 of said patent.

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Parts 1 and 2

[Docket No. 30719-138]

Attorney Disciplinary Rules

AGENCY: Patent and Trademark Office, Commerce

ACTION: Notice of proposed rulemaking

SUMMARY: The Patent and Trademark Office proposes to revise the rules of practice in patent and trademark cases, concerning standards of conduct and disciplinary procedures for attorneys and agents recognized to practice before the Office. The present rules do not go into detail as to the obligations arising under the standards of conduct, or as to the procedures for investigating complaints and conducting disciplinary actions. The proposed rules would spell out the obligations of those who practice before the Office, and the procedures for enforcing them, in sufficient detail to better achieve an even-handed regulation of the practice of attorneys and agents before the Office. The proposed rules would also reassign responsibility for administering these rules. However, the proposed rules would not change the current requirements and procedures for gaining recognition to represent applicants or other parties before the Office.

DATES: Comments must be received on or before September 29, 1983; a public hearing will be held September 29, 1983, beginning at 9:00 AM. Requests to present oral testimony should be received by September 22, 1983.

ADDRESS: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, marked to the attention of William Feldman. The hearing will be held in Room 11C24 of Building 3, Crystal Plaza, located at 2021 Jefferson Davis Highway, Arlington, Virginia. Written comments and a transcript of the public hearing will be available for public inspection in Room 11A13 of Building 3, Crystal Plaza, 2021 Jefferson Davis Highway, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: William Feldman, by telephone at (703) 557-2012 or by mail marked to his attention and addressed as indicated above.

SUPPLEMENTARY INFORMATION: This proposed rule change is designed in part to clarify the standards of professional conduct to which attorneys and agents must conform in representing applicants or other parties before the Patent and

Trademark Office. Sections 1.344 and 2.13, if amended as proposed, would require attorneys, agents and other persons appearing before the Office in patent and trademark cases, respectively, to conform to the standards of ethical and professional conduct set forth in the American Bar Association's current Code of Professional Responsibility. This change, coupled with the removal of §§1.345 and 2.14 which prohibit advertising, and the addition of §1.349, would make the rules consistent with the decisions of the United States Supreme Court in Bates v. State Bar of Arizona, 433 U.S. 350 (1977); Ohralik v. Ohio State Bar Association, 436 U.S. 447 (1978); and In re Primus, 436 U.S. 412 (1978).

Additional changes in §§1.344 and 2.13 are proposed which would specifically prohibit patent agents registered to practice under §§1.341(b) or 1.341(e) and persons recognized to practice under §§2.12(b) or 2.12(c), from holding themselves out to be an attorney, solicitor or lawyer. The prohibition would include all forms of communication since such representation would not only be false, deceptive and misleading but a misrepresentation of the authority granted the individual by virtue of their recognition to represent clients in patent and trademark cases. This prohibition has been added so that non-lawyers bound by a lawyer's code of responsibility will not mistakenly assume they can style themselves as lawyers.

A new §1.349 is proposed to prohibit advertising and solicitation specifically proscribed in 35 U.S.C. 32.

A new §1.360 is proposed to define the Commissioner's authority to conduct disciplinary proceedings.

The addition of a new §1.361 further concerning professional conduct is proposed. This proposed new section defines by means of a non-exclusive listing, conduct which is considered prima facie disreputable and would result in suspension or exclusion from practice. The purpose of this section is to augment §§1.344 and 2.13 which require adherence to the standards of ethical and professional conduct set forth in the Code of Professional Responsibility of the American Bar Association.

New §1.362 is proposed to replace §1.348(a). This section provides for a Director of Enrollment and Discipline. Under §1.362(b) the Director is assigned the responsibility previously assigned to the Solicitor for conducting investigations, preparing charges, collecting and presenting testimony, and presenting cases for suspension or exclusion from practice of attorneys and registered agents admitted to practice before the Office. Establishing the position of Director of Enrollment and Discipline will provide separation of the discipline function from the duties of the Solicitor and a full time investigative office to which complaints can be specifically directed. Moreover, the Solicitor will be available to counsel the Commissioner on disciplinary matters without conflict of

interest problems since the Solicitor will not have been involved in the investigation or presentation of the case for suspension or exclusion.

Proposed §§1.363-1.379 would specify in detail the procedures for initiation and conduct of disciplinary proceedings and would replace §1.348(b)-(e). Specifically, §1.363(a) would require disreputable conduct to be reported to the Director of Enrollment and Discipline. Section 1.363(b) would impose a duty on attorneys and registered agents to supply information concerning violation of the regulations to the Director of Enrollment and Discipline. Sections 1.363(c) and 1.364(a) would encourage the Director of Enrollment and Discipline to correspond and confer with a proposed respondent prior to instituting disciplinary proceedings. Section 1.364(b) would allow the Director of Enrollment and Discipline to accept resignations or voluntary suspensions in lieu of instituting disciplinary proceedings.

Proposed §1.363(c) would replace §1.348(b) and require the Director of Enrollment and Discipline to file a formal complaint to institute disciplinary proceedings. Section 1.365 would require the complaint to be plain and concise, and sets forth a time limit for respondent to file an answer to the complaint. This is not a significant departure from existing practice.

Proposed §1.366(a) is new to the rules and would provide methods for serving the complaint and obtaining proof of service. Section 1.366(b) similarly would provide for service of papers other than the complaint and would authorize the Administrative Law Judge or Commissioner to require express mail or hand delivery if warranted.

Proposed §1.367 would replace §1.348(c) and require the respondent to file an answer to the complaint which fully responds to each allegation of the complaint and also states any affirmative defenses. This would not be a significant departure from existing practice.

Proposed §1.367(e) would authorize use of a subpoena under 35 U.S.C. 24 to obtain evidence once an answer to the complaint has been filed.

Proposed §1.370 would provide for the filing of motions. Under this section the moving party would be required to confer with the opposing party and make a good faith effort to resolve the issue raised by the motion before making the motion. This section is new and is designed to expedite disciplinary proceedings by reducing issues.

Proposed §1.372 would replace §1.348(e) and provide for the appointment of an Administrative Law Judge to preside over disciplinary proceedings. Specific responsibilities of the Administrative Law Judge are delineated in §1.372(b). Requiring an Administrative Law Judge to preside over disciplinary

proceedings is designed to insure that the presiding official will be competent and experienced in deciding matters such as admissibility of evidence, etc.

Under proposed §1.373, disciplinary hearings would be held in all cases. The hearings would be recorded and transcribed. This section would replace §1.348(d) but would not depart significantly from present practice.

Under proposed §1.374, disciplinary hearings would not be open to the public unless the respondent requests an open hearing and the Director of Enrollment and Discipline does not object. Although the current rules are silent on this point, this is consistent with present practice.

Proposed §1.375 would provide general rules of evidence to be followed in hearings in disciplinary proceedings. Specific guidelines for taking depositions are set forth in proposed §1.376. This section would replace §1.348(d)(3) and specifically set time limits and conditions broadly referenced in the predecessor section.

Under proposed §1.377, specific guidelines for discovery and limitations on discovery are set forth. This section would depart from past practice but is consistent with the Court of Appeals' decision in Silverman v. Commodity Futures Trading Commission, 549 F.2d 28 (7th Cir. 1977).

Under proposed §1.378, the parties would have the right to file proposed findings and conclusions and a post-hearing memorandum prior to the initial decision of the Administrative Law Judge.

Under proposed §1.379, the Administrative Law Judge would be required to file a written initial decision in the case within six months from the date the complaint is served. This would be a significant departure from present practice under which no time limit is prescribed for filing the initial decision. This section is designed to expedite disciplinary proceedings.

Under proposed §1.380, either party may appeal the initial decision of the Administrative Law Judge to the Commissioner within thirty days of the initial decision. The Commissioner would make a final decision under proposed §1.381 after allowing the other party thirty days to file a reply brief. As in the past the respondent may seek review of the Commissioner's decision by petitioning the United States District Court for the District of Columbia.

Proposed §1.382(a) and (b) set forth the consequences of suspension or exclusion from practice as they now exist. Under proposed §1.382(c) a further sanction of revocation of privileges would be possible. This sanction is designed to prevent suspended or excluded practitioners from circumventing

the disciplinary action taken by the Office. Proposed §1.382(d) would provide for publication of the final order of suspension or exclusion from practice. Such publication is believed necessary to effect the disciplinary sanction under §1.382 and discourage disreputable conduct under proposed §1.361(f).

Under proposed §1.383 an excluded practitioner may petition for reinstatement after five years. In addition, this section suggests that a further penalty, the costs of the disciplinary proceeding plus interest, may be levied against an excluded or suspended practitioner as a condition for reinstatement.

Under proposed §2.16 attorneys and other persons representing applicants in trademark cases would be held to the same standards of professional conduct as registered attorneys and agents representing applicants in patent cases. Procedures governing disciplinary proceedings and reinstatement as specifically provided in §§1.362-1.383 would apply as well to trademark practitioners.

Environmental, energy, and other considerations: The proposed rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The proposed rule change is in conformity with requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.SC. 3501 et seq.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq., since no significant additional record keeping or reporting requirements are placed upon the public.

List of Subjects in 37 CFR Parts 1 and 2

Administrative practice and procedure, Advertising, Courts, Freedom of Information, Inventions and patents, Investigations, Lawyers, Legal Services, Trademarks.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, 31 and 32, the Patent and Trademark office proposes to

amend Title 37 of the Code of Federal Regulations as set forth below.

It is proposed to amend 37 CFR Parts 1 and 2 as follows with deletions indicated by brackets and additions by arrows.

PART I - [AMENDED]

1. §1.344 is proposed to be amended by designating the existing paragraph as paragraph (a), revising newly designatedparagraph (a) and adding a new paragraph (b) to read as follows:

§1.344 PROFESSIONAL CONDUCT

▶(a)◀ Attorneys and agents appearing before the Patent and Trademark Office must conform to the standards of ethical and professional conduct set forth in the Code of Professional Responsibility of the American Bar Association [as amended February 24, 1970,] insofar as such code is not inconsistent with ▶Chapter I of◀ this ▶title◀ [part] . A copy of the said code is available for inspection in the Office of the [Solicitor] ▶Director of Enrollment and Discipline◀, U.S. Patent and Trademark Office, Room [11C04] ▶11E14◀, Building [3] ▶4◀, Crystal Plaza, [2021] Jefferson Davis Highway, Arlington, Va. Copies of the code are available upon request to the American Bar Center, 1155 E. 60th Street, Chicago, Ill. 60637.

▶(b) An agent registered to practice under §§1.341(b) or 1.341(e) shall not hold himself or herself out to be an attorney, solicitor or lawyer.◀

2. §1.345 is proposed to be removed as follows:

§1.345 [Advertising.] ▶Reserved◀

[(a) The use of advertising, circulars, letters, cards, and similar material to solicit patent business, directly or indirectly, is forbidden as unprofessional conduct, and any person engaging in such solicitation, or associated with or employed by others who so solicit, shall be refused recognition to practice before the Patent and Trademark Office or may be suspended, excluded or disbarred from further practice.

(b) The use of simple professional letterheads, calling cards, or office signs, simple announcements necessitated by opening an office, change of association, or change of address, distributed to clients and friends, and insertion of listings in common form (not display) in a classified telephone or city directory, and listings and professional cards with biographical data in standard professional directories shall not be considered a violation of this rule.

(c) No agent shall, in any material specified in paragraph (b) of this section or in papers filed in the Patent and

Trademark Office, represent himself to be an attorney, solicitor or lawyer.]

3. §1.348 is proposed to be removed as follows:

§1.348 [SUSPENSION OR DISBARMENT PROCEEDINGS] ▶Reserved◀

[Except as otherwise provided, proceedings for suspension, disbarment or exclusion from practice are before a Commissioner.

(a) Investigating and prosecuting officer. The duties of investigation, preparing charges, collecting and presenting testimony, and presenting a case for suspension, exclusion from practice or disbarment shall be performed by the Solicitor of the Patent and Trademark Office or, at his direction, by a designated law examiner or other person, and neither the Solicitor nor such law examiner or other person shall participate in any manner in the decision of the case. If, upon investigation of a complaint or other information concerning an attorney or agent, it shall appear to the Solicitor that grounds for suspension, exclusion from practice, or disbarment exist, he shall prepare and forward the necessary notice and statement.

(b) Notice of proceedings. Proceedings for suspension or disbarment shall be instituted by the Solicitor by mailing to, or otherwise serving on, the respondent a notice of such proceeding with a statement of the charges against him, at the same time forwarding a copy to the Commissioner. It shall be the duty of the respondent to answer the charges as specified in paragraph (c) of this section.

(c) Answer. The respondent's answer shall be filed in writing with the Commissioner within one month from the time the notice is served on the respondent, or within such extension of time as may be allowed by the Commissioner for good cause shown. The answer shall be under oath or declaration. Failure to answer within the time allowed will be taken as an admission of the charges. The respondent in his answer should specifically admit or deny every material allegation of fact in the statement of charges; every allegation not denied shall be deemed admitted, unless the respondent states that he has no knowledge thereof sufficient to form a belief, which statement shall be considered a denial. Any special matters of defense shall be stated affirmatively in the answer. False statements in the answer may be made the basis of supplemental charges.

(d) Hearing. (1) Unless the Commissioner finds the answer sufficient to dispose of the charges, he will set the case for hearing before him, notifying the respondent and the Solicitor of the place, day and time of commencement of the hearing. Evidence as to the matters in issue may be submitted at the hearing, the testimony of witnesses being presented orally, under oath and reported.

(2) The hearing may be advanced and continued by the Commissioner as far as may be deemed convenient and proper.

(3) Depositions for use at the hearing in lieu of personal appearance of witnesses may be taken by either the Solicitor or the respondent on application to and with the written consent of the Commissioner within such times and under such conditions as the Commissioner may prescribe.

(e) Hearing Officer. The Commissioner may, in his discretion, delegate the conduct of the hearing to a hearing or trial examiner who shall be the presiding officer and who shall make a recommended decision.

(f) Administrative Procedure Act. Proceedings shall be governed, in matters not specifically set forth herein, by the provisions of the Administrative Procedure Act, 60 Stat. 237; 5 U.S.C. 1001-1011, which may be applicable.]

4. §1.349 is proposed to be added and reads as follows:

▶§1.349 ADVERTISING AND SOLICITATION◀

▶No attorney or registered agent shall with respect to any prospective business before the Patent and Trademark Office, by word, circular, letter, or advertising, with intent to defraud in any manner, deceive, mislead or threaten any prospective applicant or other person having prospective business before the Office.◀

§1.351 [Redesignated as §1.391]

5. §1.351 is proposed to be redesignated as §1.391. The center heading "Amendment of Rules" is transferred to appear above §1.391.

§1.352 [Redesignated as §1.392.]

6. §1.352 is proposed to be redesignated as §1.392.

7. §1.360 is proposed to be added and reads as follows:

▶§1.360 SUSPENSION OR EXCLUSION FROM PRACTICE◀

▶The Commissioner, after notice and opportunity for hearing, may suspend or exclude from practice before the Patent and Trademark Office either generally or in any particular case, any person, attorney or registered agent shown to be incompetent, disreputable or guilty of unethical or unprofessional conduct or gross misconduct, or who does not comply with the rules and regulations in Chapter I of this title.◀

8. §1.361 is proposed to be added and reads as follows:

▶§1.361 DISREPUTABLE CONDUCT◀

▶Disreputable conduct for which an attorney or registered agent may be suspended or excluded from practice before the Patent and Trademark Office includes, but is not limited to:

(a) Conviction of any criminal offense under any law of the United States or any state thereof or for any offense involving dishonesty or breach of trust.

(b) Giving false or misleading information, or participating in any way in the giving of false or misleading information, to the Patent and Trademark Office or any employee thereof, or to any tribunal authorized to pass upon matters administered by the Patent and Trademark Office in connection with any matter pending or likely to be pending before them, knowing the information to be false or misleading. Facts or other matters contained in testimony, applications for patents or trademarks, affidavits, declarations, or any other document or statement, written or oral, are included in the term "information."

(c) Misappropriation of, or failure properly and promptly to remit funds received from a client for the purpose of payment of fees to the Commissioner.

(d) Directly or indirectly attempting to influence, or offering or agreeing to attempt to influence, the official action of any employee of the Patent and Trademark Office by the use of threats, false accusations, duress or coercion, by the offer of any special inducement or promise of advantage or by the bestowing of any gift, favor, or thing of value.

(e) Disbarment or suspension from practice as an attorney by any duly constituted authority of any State, Possession, Commonwealth, the District of Columbia, or by any Federal Court.

(f) Knowingly aiding and abetting another person to practice before the Patent and Trademark Office during a period of suspension, exclusion, or ineligibility of the other person. Maintaining a partnership for the practice of law, or other related professional service with a person who is under suspension or exclusion from practice before the Patent and Trademark Office is presumed to be a violation of this provision.

(g) Contemptuous conduct in connection with practice before the Patent and Trademark Office, including the use of abusive language, making false accusations and statements knowing them to be false, or circulating or publishing malicious or libelous matter.

(h) Knowingly withholding from the Patent and Trademark Office information identifying a patent from which a claim(s) has (have) been copied.

(i) Refusing or neglecting to forward correspondence received on behalf of a former client to that client or to notify the Patent and Trademark Office of the inability to forward such correspondence.◀

9. §1.362 is proposed to be added and reads as follows:

▶§1.362 DIRECTOR OF ENROLLMENT AND DISCIPLINE◀

▶(a) Appointment. The Commissioner shall appoint a Director of Enrollment and Discipline. In the event of the absence of the Director of Enrollment and Discipline or a vacancy in that office the Commissioner shall designate an employee of the Patent and Trademark Office to act as Director of Enrollment and Discipline.

(b) Duties. The Director of Enrollment and Discipline shall: conduct investigations; prepare charges; collect and present testimony and present cases for suspension or exclusion from practice of the attorneys and registered agents admitted to practice before the Patent and Trademark Office. The Director may perform other duties as are necessary and appropriate to carry out the Director's functions under this part or as prescribed by the Commissioner. The Director shall not participate in deciding any case.◀

10. §1.363 is proposed to be added and reads as follows:

▶§1.363 INITIATION OF DISCIPLINARY PROCEEDINGS◀

▶(a) Receipt of information. If an employee of the Patent and Trademark Office has reason to believe that an attorney or registered agent has violated any of the provisions of this part, the employee shall promptly make a report thereof which will be forwarded to the Director of Enrollment and Discipline. Any other person possessing information concerning violations or disreputable conduct may make a report thereof to the Director of Enrollment and Discipline or to any employee of the Patent and Trademark Office.

(b) Furnishing information. It is the duty of an attorney or registered agent who practices before the Patent and Trademark Office, when requested by the Director of Enrollment and Discipline, to provide the Director with any information the person may have concerning violation of the regulations in this part by any other person, and to testify thereto in any proceeding instituted under this part for the suspension or exclusion from practice of an attorney or registered agent, unless the person believes in good faith and on reasonable grounds that that information is privileged or that the request is of doubtful legality.

(c) Institution of proceeding. When the Director of Enrollment and Discipline has reason to believe that any attorney or registered agent has violated any provisions of the

laws or regulations governing practice before the Patent and Trademark Office, the Director may reprimand the person or institute a disciplinary proceeding for the suspension or exclusion from practice of that person. The proceeding will be instituted by a complaint which names the respondent and is signed by the Director of Enrollment and Discipline and filed in the Director's office. Except in cases of willfulness, or when time, the nature of the proceeding, or the public interest does not permit, the Director of Enrollment and Discipline may not institute a proceeding until the Director has called to the attention of the proposed respondent, in writing, facts or conduct which warrant institution of a proceeding, and has accorded the proposed respondent the opportunity to demonstrate or achieve compliance with all lawful requirements. An Administrative Law Judge will be appointed at the time the complaint is filed. A copy of the complaint will be given to the Administrative Law Judge.◀

11. §1.364 is proposed to be added and reads as follows:

▶§1.364 CONFERENCES◀

▶(a) General. The Director of Enrollment and Discipline may confer with an attorney or registered agent concerning allegations of misconduct whether or not a proceeding for suspension or exclusion from practice has been instituted.

(b) Resignation or voluntary suspension. An attorney or registered agent may avoid the institution or conclusion of a suspension or exclusion proceeding by offering his or her consent to suspension from practice before the Patent and Trademark Office. A registered agent may also offer a resignation. The Director of Enrollment and Discipline, at his or her discretion, may accept the offered resignation of a registered agent and may suspend an attorney or registered agent in accordance with the consent offered. Revocation of the privilege of using the Public Search Room and other facilities of the Patent and Trademark Office to perform work on behalf of others may be a condition of suspension or acceptance of resignation.◀

12. §1.365 is proposed to be added and reads as follows:

▶§1.365 CONTENTS OF COMPLAINT◀

▶(a) Charges. A complaint will give a plain and concise description of the allegations which constitute the basis for the proceeding. A complaint will be deemed sufficient if it fairly informs the respondent of the charges so that respondent is able to prepare a defense.

(b) Demand for answer. The complaint will state the place and time for filing an answer by the respondent. The time will be not less than fifteen (15), and no more than thirty (30), calendar days from the date of service of the complaint. Notice

will be given that a decision by default may be rendered against the respondent if the complaint is not answered as required.◀

13. §1.366 is proposed to be added and reads as follows:

▶§ 1.366 SERVICE OF COMPLAINT AND OTHER PAPERS◀

▶(a) Complaint. A copy of the complaint may be served upon the respondent by certified mail or by first-class mail sent to respondent's last address known to the Director of Enrollment and Discipline. The copy of the complaint may be delivered to the respondent or the respondent's attorney of record either in person or by leaving it at the office of the respondent, or attorney, or the complaint may be delivered in any manner which has been agreed to by the respondent. If service is by certified mail, the post office receipt signed by or on behalf of the respondent will be proof of service. If the certified mail is not claimed or accepted by the respondent and is returned undelivered, complete service may be made upon the respondent by mailing the complaint to respondent by first-class mail, addressed to the respondent at the address on file with the Committee on Enrollment or at the last address known to the Director of Enrollment and Discipline. If service is made upon the respondent or the respondent's attorney in person, or by leaving the complaint at the office of the respondent, or attorney , the verified return by the person making service, setting forth the manner of service, will be proof of service. If respondent is a registered agent or attorney a letter pursuant to §1.347 may be sent with the complaint. Respondent shall respond to said letter within fifteen (15) days from the date of the letter and such response shall constitute proof of service.

(b) Service of other papers. Any paper other than the complaint may be served upon an attorney or registered agent as provided in paragraph (a) of this section, or by mailing the paper by first-class mail to the respondent's attorney of record or if respondent is not represented by an attorney by mailing the paper by first-class mail to the respondent at the address on file with the Committee on Enrollment or at the last address known to the Director of Enrollment and Discipline. This mailing will constitute complete service. The Administrative Law Judge or Commissioner may require that service of papers be made by express mail or hand delivery.

(c) Filing of papers. When the filing of a paper is required or permitted in connection with a disciplinary proceeding, and the place of filing is not specified by this section or by rule or order of the Administrative Law Judge or by direction of the Director of Enrollment and Discipline, the papers should be filed with the Director of Enrollment and Discipline, Patent and Trademark Office, Washington, D.C. 20231. All papers will be filed in duplicate.◀

14. §1.367 is proposed to be added and reads as follows:

▶§1.367 ANSWER◀

▶(a) Filing. The respondent shall file an answer in writing with the Administrative Law Judge within the time specified in the complaint or notice of institution of the proceeding, unless, on application, the time is extended by the Director of Enrollment and Discipline or the Administrative Law Judge. A copy of the answer shall be served on the Director of Enrollment and Discipline.

(b) Contents. The respondent shall include in the answer a statement of facts which constitute the grounds of defense, and shall specifically admit or deny each allegation set forth in the complaint, except that the respondent shall not deny a material allegation in the complaint which respondent knows to be true, or state that respondent is without sufficient information to form a belief when in fact the respondent possesses that information. The respondent shall also state affirmatively special matters of defense.

(c) Failure to deny or answer allegations in the complaint. Every allegation in the complaint which is not denied in the answer is deemed to be admitted and may be considered proven, and no further evidence in respect of that allegation need be adduced at a hearing. Failure to file an answer within the time prescribed in the notice to the respondent, except as the time for answer is extended by the Director of Enrollment and Discipline or the Administrative Law Judge, will constitute an admission of the allegations of the complaint and a waiver of hearing, and the Administrative Law Judge may render a decision by default without a hearing or further procedure.

(d) Reply by Director of Enrollment and Discipline. No reply to the respondent's answer is required, and new matter in the answer shall be deemed to be denied, but the Director of Enrollment and Discipline may file a reply at the Director's discretion or at the request of the Administrative Law Judge.

(e) Contested Case. Upon the filing of an answer by respondent the proceeding shall be regarded as a contested case within the meaning of 35 U.S.C. §24. Evidence obtained by subpoena shall not be admitted into the record or considered unless the subpoena was previously authorized by the Administrative Law Judge.◀

15. §1.368 is proposed to be added and reads as follows:

▶§1.368 SUPPLEMENTAL CHARGES◀

▶If it appears that the respondent's answer, falsely and in bad faith, denies a material allegation of fact in the complaint or states that the respondent has no knowledge or information

sufficient to form a belief, when respondent in fact possesses knowledge or that information, or if it appears that the respondent has knowingly introduced false testimony during proceedings for respondent's suspension or exclusion from practice the Director of Enrollment and Discipline may file supplemental charges against the respondent. These supplemental charges may be tried with other charges in the case, provided the respondent is given notice and is afforded an opportunity to prepare a defense to them.◀

16. §1.369 is proposed to be added and reads as follows:

▶§ 1.369 PROOF; VARIANCE; AMENDMENT OF PLEADINGS◀

▶In case of a variance between the evidence and the allegations in a pleading, the Administrative Law Judge may order or authorize amendment of the pleading to conform to the evidence. The party who would otherwise be prejudiced by the amendment will be given reasonable opportunity to meet the allegation of the pleading as amended, and the Administrative Law Judge shall make findings on an issue presented by the pleadings as so amended.◀

17. §1.370 is proposed to be added and reads as follows:

▶§ 1.370 MOTIONS◀

▶Motions may be filed with the Administrative Law Judge. The Administrative Law Judge will determine on a case-by-case basis the time period for response to a motion. No motion will be considered by the Administrative Law Judge unless such motion is supported by a written statement by the moving party that the moving party or attorney for the moving party has conferred with the opposing party or attorney for the opposing party in an effort in good faith to resolve by agreement the issues raised by the motion and has been unable to reach agreement. If issues raised by the motion are subsequently resolved between the parties the moving party should advise the Administrative Law Judge in writing of the matters in the motion which no longer require a decision.◀

18. §1.371 is proposed to be added and reads as follows:

▶§1.371 REPRESENTATION◀

▶A respondent or proposed respondent may appear in person or be represented by an attorney who need not be registered to practice before the Patent and Trademark Office. The Director of Enrollment and Discipline may be represented by an attorney or other employee of the Patent and Trademark Office.◀

19. §1.372 is proposed to be added and reads as follows:

▶§1.372 ADMINISTRATIVE LAW JUDGE◀

▶(a) Appointment. An Administrative Law Judge, appointed as provided by 5 U.S.C. 3105, shall conduct disciplinary proceedings.

(b) Responsibilities. The Administrative Law Judge shall have authority to:

(1) Administer oaths and affirmations;

(2) Make rulings upon motions and requests; these rulings may not be appealed prior to the close of the hearing except at the discretion of the Administrative Law Judge or the Commissioner in extraordinary circumstances;

(3) Rule upon offers of proof, receive relevant evidence, and examine witnesses;

(4) Take or authorize the taking of depositions;

(5) Determine the time and place of hearing and regulate its course and conduct;

(6) Hold or provide for the holding of conferences to settle or simplify the issues by consent of the parties;

(7) Receive and consider oral or written arguments on facts or law;

(8) Make initial decisions;

(9) Adopt procedures and modify them from time to time as occasion requires for the orderly disposition of proceedings; and

(10) Perform acts and take measures as necessary to promote the efficient and timely conduct of any proceeding.◀

20. §1.373 is proposed to be added and reads as follows:

▶§1.373 HEARINGS◀

▶(a) Conduct. The Administrative Law Judge shall preside at hearings in disciplinary proceedings. Hearings will be stenographically recorded and transcribed and the testimony of witnesses will be received under oath or affirmation. The Administrative Law Judge shall conduct hearings in accordance with 5 U.S.C. 556. A copy of the transcript of the hearing shall become part of the record. A copy of the transcript shall be provided to the Director of Enrollment and Discipline and the respondent.

(b) Failure to appear. If either party to a disciplinary proceeding fails to appear at the hearing, after notice has been sent, the Administrative Law Judge may deem the absent party to have waived the right to a hearing and may make a decision against the absent party by default.◀

21. §1.374 is proposed to be added and reads as follows:

▶§1.374 HEARINGS AND RECORDS◀

▶A hearing in a disciplinary proceeding will not be open to the public except that the Director of Enrollment and Discipline may grant a request by a respondent to open his or her hearing to the public and make the record of the proceeding available for public inspection provided agreement is reached by stipulation in advance to exclude from public disclosure information which is privileged or confidential under applicable laws and regulations. However, if the hearing results in disciplinary action against an attorney or registered agent, the record of the proceeding will be available for public inspection.◀

22. §1.375 is proposed to be added and reads as follows:

▶§1.375 EVIDENCE◀

▶(a) Rules of evidence. The rules of evidence prevailing in courts of law and equity are not controlling in hearings in disciplinary proceedings. However, the Administrative Law Judge shall exclude evidence which is irrelevant, immaterial, or unduly repetitious.

(b) Depositions. Depositions of witnesses taken pursuant to §1.376 may be admitted as evidence.

(c) Government documents. Official documents, records, and papers of the Patent and Trademark Office are admissible in evidence without extrinsic evidence of authenticity. These documents, records and papers may be evidenced by a copy certified as correct by an employee of the Patent and Trademark Office.

(d) Exhibits. If any document, record, or other paper is introduced in evidence as an exhibit, the Administrative Law Judge may authorize the withdrawal of the exhibit subject to any conditions the Administrative Law Judge deems appropriate.

(e) Objections. Objections to evidence will be in short form, stating the grounds of objection and the record may not include arguments thereon, except as ordered by the Administrative Law Judge. Rulings on objections will be a part of the record. No exception to the ruling is necessary to preserve the rights of the parties.◀

23. §1.376 is proposed to be added and reads as follows:

▶§1.376 DEPOSITIONS◀

▶Depositions for use at a hearing may, with the approval of the Administrative Law Judge, be taken by either the Director of Enrollment and Discipline or the respondent or their authorized

representatives. Depositions may be taken upon oral or written questions, upon not less than ten (10) days written notice to the other party, before any officer authorized to administer an oath for general purposes or before an employee of the Patent and Trademark Office authorized to administer an oath. The written notice will state the names of the witnesses and the time and place where the depositions are to be taken. The requirement of ten (10) days notice may be waived by the parties in writing, and depositions may then be taken from the persons and at the times and places mutually agreed to by the parties. When a deposition is taken upon written questions, any cross-examination will be upon written questions. Copies of the written questions will be served upon the other party with the notice, and copies of any written cross-interrogatories will be mailed or delivered to the opposing party at least five (5) days before the date of taking the deposition, unless the parties mutually agree otherwise. A party on whose behalf a deposition is taken must file a transcript thereof with the Administrative Law Judge and serve one copy upon the opposing party. Expenses in the reproduction of depositions will be borne by the party at whose instance the deposition is taken.◀

24. §1.377 is proposed to be added and reads as follows:

▶§1.377 DISCOVERY◀

▶Discovery shall not be authorized except as follows:

(1) The Administrative Law Judge may require parties to file and serve, prior to any hearing, a pre-hearing statement which contains

(a) a list (together with a copy) of all proposed exhibits to be used in connection with a party's case-in-chief,

(b) a list of all proposed witnesses,

(c) the identity of government employees who have investigated the case and,

(d) copies of memoranda reflecting respondent's own statements to administrative representatives;

(2) After a witness testifies for a party, if the opposition requests, the party may be required to produce, prior to cross-examination, any written statement made by the witness;

(3) Requests for admissions, filed within such time as may be authorized by the Administrative Law Judge, which are to be admitted or denied and if denied a brief reason given for denial.◀

25. §1.378 is proposed to be added and reads as follows:

▶§1.378 PROPOSED FINDINGS AND CONCLUSIONS◀

▶Except in cases when the respondent has failed to answer the complaint, or when a party has failed to appear at the hearing, the Administrative Law Judge, prior to making an initial decision, shall afford the parties a reasonable opportunity to submit proposed findings and conclusions and a post-hearing memorandum in support of the proposed findings and conclusions.◀

26. §1.379 is proposed to be added and reads as follows:

▶§1.379 DECISION OF ADMINISTRATIVE LAW JUDGE◀

▶Within six (6) months from the date charges are served, the Administrative Law Judge shall make an initial decision in the case. The decision will include (a) a statement of findings and conclusions, as well as the reasons or basis therefor, upon all the material issues of fact, law, or discretion presented on the record, and (b) an order of suspension, exclusion from practice or reprimand or an order of dismissal of the complaint. The Administrative Law Judge shall file the decision with the Director of Enrollment and Discipline and shall transmit a copy to the respondent or the respondent's attorney of record. In the absence of an appeal to the Commissioner or review of the decision upon motion of the Commissioner, the decision of the Administrative Law Judge will, without further proceedings, become the decision of the Commissioner of Patents and Trademarks thirty (30) days from the date of the decision of the Administrative Law Judge.◀

27. §1.380 is proposed to be added and reads as follows:

▶§1.380 APPEAL TO THE COMMISSIONER◀

▶Within thirty (30) days from the date of the initial decision of the Administrative Law Judge, either party may appeal to the Commissioner. An appeal by the respondent will be filed with the Director of Enrollment and Discipline in duplicate and will include exceptions to the decision of the Administrative Law Judge and supporting reasons for those exceptions. If the Director of Enrollment and Discipline files the appeal, the Director shall transmit a copy of it to the respondent. Within thirty (30) days after receipt of an appeal or copy thereof, the other party may file a reply brief in duplicate with the Director of Enrollment and Discipline. If the Director files the reply brief, the Director shall transmit a copy of it to the respondent. Upon the filing of an appeal and a reply brief, if any, the Director of Enrollment and Discipline shall transmit the entire record to the Commissioner.◀

28. §1.381 is proposed to be added and reads as follows:

▶§1.381 DECISION OF THE COMMISSIONER◀

▶On appeal from or review of the initial decision of the Administrative Law Judge, the Commissioner shall make a final decision. In making this decision, the Commissioner shall review the record or those portions of the records as may be cited by the parties in order to limit the issues. The Director of Enrollment and Discipline shall transmit a copy of the Commissioner's decision to the respondent. Review of the Commissioner's action may be had by petition to the United States District Court for the District of Columbia.◀

29. §1.382 is proposed to be added and reads as follows:

▶§1.382 EFFECT OF SUSPENSION OR EXCLUSION◀

▶(a) Exclusion. If the final order against the respondent is for exclusion from practice, the respondent will not thereafter be permitted to practice before the Patent and Trademark Office in patent and trademark cases unless authorized to do so by the Committee on Enrollment or the Commissioner.

(b) Suspension. If the final order against the respondent is for suspension, the respondent will not thereafter be permitted to practice before the Patent and Trademark Office in patent and trademark cases during the period of suspension.

(c) Revocation of privileges. Revocation of the privilege of using the Public Search Room and other facilities of the Patent and Trademark Office, for work to be performed on behalf of others may be a condition of suspension or exclusion from practice.

(d) Notice of suspension or exclusion. Upon the issuance of a final order for suspension or exclusion from practice, the Director of Enrollment and Discipline shall give notice of the order to appropriate employees of the Patent and Trademark Office and to interested departments and agencies of the Federal Government. The Director of Enrollment and Discipline may also give notice to the proper authorities of the State in which, and any Courts before which, the suspended or excluded person is licensed to practice as an attorney.◀

30. §1.383 is proposed to be added and reads as follows:

▶§1.383 PETITION FOR REINSTATEMENT◀

▶The Committee on Enrollment may entertain a petition for reinstatement from any person excluded from practice before the Patent and Trademark Office after the expiration of five (5) years following exclusion. The Committee on Enrollment may grant reinstatement if it is satisfied that the petitioner will conduct himself or herself in accordance with these regulations, and that granting reinstatement would not be contrary to the public interest. In issuing a final order, the Commissioner may impose as a condition for reinstatement that the person seeking reinstatement pay all or a portion of the costs and expenses of

the proceedings which led to suspension or exclusion, plus interest thereon from the date of suspension.◀

31. §1.384 is proposed to be added and reads as follows:

▶§ 1.384 SAVING CLAUSE◀

A proceeding for suspension or exclusion based on conduct engaged in prior to the effective date of these regulations may be instituted subsequent to such effective date, if such conduct would continue to justify suspension or exclusion under the provisions of these revised regulations.

32. §1.385 is proposed to be added and reads as follows:

▶§1.385 SPECIAL ORDERS◀

The Commissioner reserves the power to issue such special orders as he may deem proper in any disciplinary proceeding.

PART 2 - [AMENDED]

33. §2.13 is proposed to be amended by designating the existing paragraph as paragraph (a), revising newly designated paragraph (a) and adding new paragraph (b) to read as follows:

§ 2.13 PROFESSIONAL CONDUCT

▶(a)◀ Attorneys and other persons appearing before the Patent and Trademark Office in trademark cases must conform to the standards of ethical and professional conduct set forth in the Code of Professional Responsibility of the American Bar Association [as amended February 24, 1970,] insofar as such code is not inconsistent with this part. A copy of the said code is available for inspection in the Office of the [Solicitor] ▶Director of Enrollment and Discipline◀, U.S. Patent and Trademark Office, Room [11C04] ▶11E14◀, Building [3] ▶4◀, Crystal Plaza, [2021] Jefferson Davis Highway, Arlington, Va. Copies of the code are available upon request to the American Bar Center, 1155 East 60th Street, Chicago, Ill. 60637.

▶(b) Any person recognized to practice under §§ 2.12(b) and 2.12(c) is required to conform to the standards set forth in said Code of Professional Responsibility, and such person shall not hold himself or herself out to be an attorney, solicitor or lawyer.◀

34. §2.14 is proposed to be removed as follows:

§2.14 [Advertising] ▶Reserved .◀

[(a) The use of display advertising, circulars, letters, cards, and similar material to solicit trademark business,

or employed by others who so solicit, shall be refused recognition to practice before the Patent and Trademark Office or suspended or excluded from further practice.

(b) The use of simple professional letterheads, calling cards, or office signs; simple announcements necessitated by opening an office, change of association, or change of address, distributed to clients and friends, and insertion of professional cards, listings in common form (not display) in a classified telephone or city directory, and listings and professional cards with biographical data in standard professional directories are not prohibited.

(c) No person not an attorney, solicitor or lawyer shall, in any material specified in paragraph (b) of this section or in papers filed in the Patent and Trademark Office represent himself to be an attorney, solicitor or lawyer.]

35. §2.16 is proposed to be revised to read as follows:

§2.16 SUSPENSION OR EXCLUSION FROM PRACTICE

The Commissioner of Patents and Trademarks may, after notice and opportunity for a hearing, suspend or exclude, either generally or in any particular case, from further practice before the Patent and Trademark Office, any person, attorney, or agent shown to be incompetent or disreputable, or guilty of unethical or unprofessional conduct or gross misconduct, or who refuses to comply with the rules and regulations ▶as provided in §§1.349, 1.361 and otherwise in part 1 or this part.◀ [or who shall, with intent to defraud in any manner, deceive, mislead, or threaten any applicant or prospective applicant or other person having immediate or prospective business before the Patent and Trademark Office by word, circular, letter, or in any other manner.] The reasons for any such suspension or exclusion shall be duly recorded. Proceedings for suspension, [disbarment] or exclusion from practice are conducted as provided ▶in §§1.362 - 1.383.◀ [§1.348. (See 35 U.S.C. 1958, sec. 32 for review of the Commissioner's action by the United States District Court for the District of Columbia.)]

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Gerald J. Mossinghoff
Commissioner of Patents
and Trademarks

the proceedings which led to suspension or exclusion, plus interest thereon from the date of suspension.◀

31. §1.384 is proposed to be added and reads as follows:

▶§ 1.384 SAVING CLAUSE◀

A proceeding for suspension or exclusion based on conduct engaged in prior to the effective date of these regulations may be instituted subsequent to such effective date, if such conduct would continue to justify suspension or exclusion under the provisions of these revised regulations.

32. §1.385 is proposed to be added and reads as follows:

▶§1.385 SPECIAL ORDERS◀

The Commissioner reserves the power to issue such special orders as he may deem proper in any disciplinary proceeding.

PART 2 - [AMENDED]

33. §2.13 is proposed to be amended by designating the existing paragraph as paragraph (a), revising newly designated paragraph (a) and adding new paragraph (b) to read as follows:

§ 2.13 PROFESSIONAL CONDUCT

▶(a)◀ Attorneys and other persons appearing before the Patent and Trademark Office in trademark cases must conform to the standards of ethical and professional conduct set forth in the Code of Professional Responsibility of the American Bar Association [as amended February 24, 1970,] insofar as such code is not inconsistent with this part. A copy of the said code is available for inspection in the Office of the [Solicitor] ▶Director of Enrollment and Discipline◀, U.S. Patent and Trademark Office, Room [11C04] ▶11E14◀, Building [3] ▶4◀, Crystal Plaza, [2021] Jefferson Davis Highway, Arlington, Va. Copies of the code are available upon request to the American Bar Center, 1155 East 60th Street, Chicago, Ill. 60637.

▶(b) Any person recognized to practice under §§ 2.12(b) and 2.12(c) is required to conform to the standards set forth in said Code of Professional Responsibility, and such person shall not hold himself or herself out to be an attorney, solicitor or lawyer.◀

34. §2.14 is proposed to be removed as follows:

§2.14 [Advertising] ▶Reserved .◀

[(a) The use of display advertising, circulars, letters, cards, and similar material to solicit trademark business, directly or indirectly, is forbidden as unprofessional conduct, and any person engaging in such solicitation, or associated with

or employed by others who so solicit, shall be refused recognition to practice before the Patent and Trademark Office or suspended or excluded from further practice.

(b) The use of simple professional letterheads, calling cards, or office signs; simple announcements necessitated by opening an office, change of association, or change of address, distributed to clients and friends, and insertion of professional cards, listings in common form (not display) in a classified telephone or city directory, and listings and professional cards with biographical data in standard professional directories are not prohibited.

(c) No person not an attorney, solicitor or lawyer shall, in any material specified in paragraph (b) of this section or in papers filed in the Patent and Trademark Office represent himself to be an attorney, solicitor or lawyer.]

35. §2.16 is proposed to be revised to read as follows:

§2.16 SUSPENSION OR EXCLUSION FROM PRACTICE

The Commissioner of Patents and Trademarks may, after notice and opportunity for a hearing, suspend or exclude, either generally or in any particular case, from further practice before the Patent and Trademark Office, any person, attorney, or agent shown to be incompetent or disreputable, or guilty of unethical or unprofessional conduct or gross misconduct, or who refuses to comply with the rules and regulations ▶as provided in §§1.349, 1.361 and otherwise in part 1 or this part.◀ [or who shall, with intent to defraud in any manner, deceive, mislead, or threaten any applicant or prospective applicant or other person having immediate or prospective business before the Patent and Trademark Office by word, circular, letter, or in any other manner.] The reasons for any such suspension or exclusion shall be duly recorded. Proceedings for suspension, [disbarment] or exclusion from practice are conducted as provided ▶in §§1.362 - 1.383.◀ [§1.348. (See 35 U.S.C. 1958, sec. 32 for review of the Commissioner's action by the United States District Court for the District of Columbia.)]

Date: JUL 15 ..-1

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Commissioner of Patents
and Trademarks

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Austin: McKinney Engineering Library, University of Texas....	(512) 471-1610
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L, SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,243,822 to 3,248,737, inclusive

Plant Patents ..... Numbers 2,616 to 2,627 inclusive

REISSUES

SEPTEMBER 20, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,384
BED FRAME ASSEMBLY

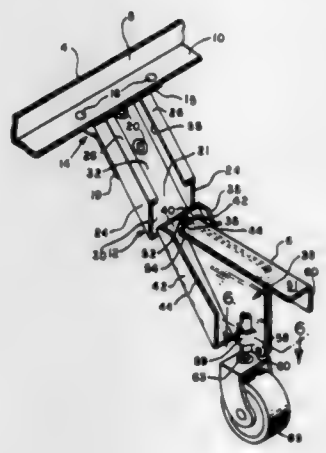
Frank J. Mis, Oaklawn, Ill., assignor to Harris-Hub Company, Inc., Harvey, Ill.

Original No. 4,007,502, dated Feb. 15, 1977, Ser. No. 636,360, Dec. 1, 1975. Application for reissue Dec. 3, 1979, Ser. No. 99,860

Int. Cl.[3] A47C *19/02, 21/00*

U.S. Cl. 5—202

4 Claims



1. A bed frame adapted to support a spring and mattress assembly comprising a pair of spaced, parallel side-frame member means and at least one cross-frame member means extending between said side-frame member means, *said side frame member means and said cross-frame member means each including a horizontal flange and a vertical flange,* and means releasably securing the ends of said cross-frame member means to said side-frame member means, comprising:

female elements connected to one of said cross-frame and side-frame member means *by a V-shaped bracket, each bracket including a first leg connected in surface abutting engagement with the horizontal flange of said one of said cross-frame and said side-frame member means, each bracket including a second leg extending downwardly and inwardly of said first leg and at an acute angle with respect thereto,* and male elements connected to the other of said side and cross-frame member means, said male-female elements disposed in sliding telescoping engagement with each other and sloping downwardly and inwardly from the lateral sides of the bed frame, said male-female elements defining bed-frame corner supports and being extendable and contractible laterally of said bed frame whereby said side-frame [members] *member means* being movable with the securing [elements] *means* connected thereto are spreadable apart different distances widthwise of the bed frame, and the telescoping male-female elements being cross-wise vertically superposed and mutually supportive to each other and resisting bending moments imposed thereon, *said female elements each including a botton wall and a pair of spaced upstanding side walls respectively extending from opposite edge portions of said bottom wall, each of said side walls having an inwardly extending flange portion spaced from said bottom wall, said bottom and side walls and said flange portions defining a generally channel-shaped passageway for receiving a respective male element, means connecting the bottom wall of each female element in surface abutting engagement with the second leg of one of said V-shaped brackets, and each male element comprisng two plates arranged back to back and secured together, each plate having a generally vertical plate portion, and a bottom section extending outwardly of the bottom edge of the plate portion including an upturned side wall, said bottom sections together forming a bottom wall of the male element, said male elements being slidably receivable in said female elements so that said upturned side walls of each male element are disposed between said bottom wall and flange portions of each female element and adjacent to a side wall of each female element.*

Re. 31,385
MACHINE FOR TESTING BOTTLES

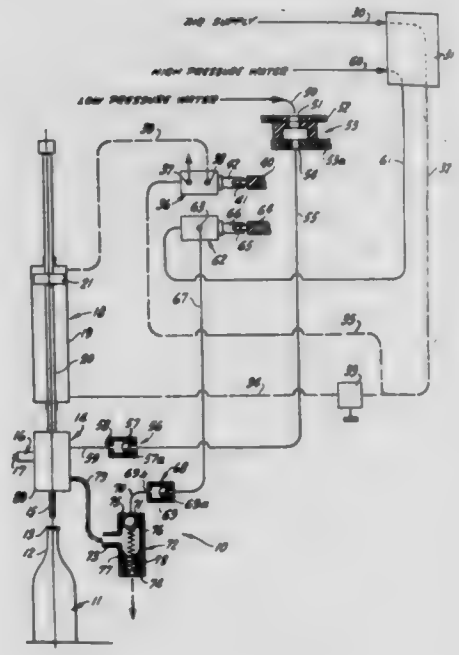
Dieter K. Schmidt, and Josef J. Buschor, both of Los Gatos, Calif., assignors to New Century Beverage Company, San Francisco, Calif.

Original No. 4,144,742, dated Mar. 20, 1979, Ser. No. 854,240, Nov. 23, 1977. Application for reissue Jun. 30, 1980, Ser. No. 164,051

Int. Cl.[3] G01M *3/02*

U.S. Cl. 73—37

9 Claims



2. A test apparatus for supplying low pressure and high pressure water to a bottle to be pressure tested at a testing station said apparatus comprising:

(a) a test head movable between a first retracted position separated from a bottle at the test station and a second sealing position in sealing contact with such bottle, said head having a sealing portion

(b) a tube carried by the test head and projecting from the sealing portion thereof to penetrate the bottle when the test head is in its second position, said tube providing a first, central passage for low pressure water into a bottle and forming with the head a second [, annular] passage between the test head and the tube for passage of high pressure water into the bottle,

(c) said head being provided with a first duct for communicating said [annular] *second* passage with a source of high pressure water

(d) said head being also provided with a second duct for communicating said tube with a source of low pressure water

(e) a valve member reciprocable within said head between a first position closing said second duct and a second position opening said second duct and

(f) means normally holding said valve in its first position but acting to move the valve to its second position when the body is in sealing engagement with a bottle.

Re. 31,386

FLUID BRAKE CONTROL SYSTEM

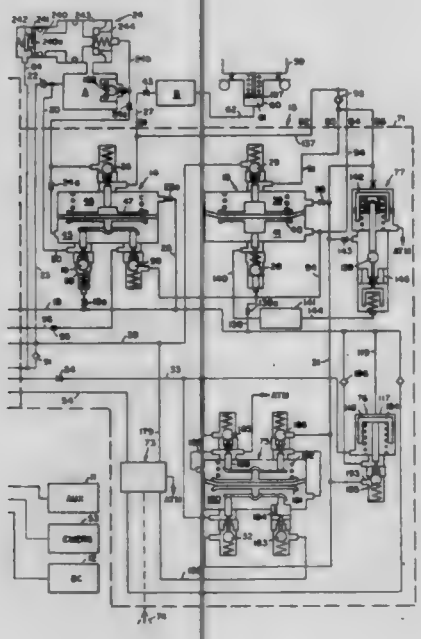
Eugene D. McEathron, Watertown, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Original No. 4,127,308, dated Nov. 28, 1978, Ser. No. 842,761, Oct. 17, 1977. Continuation of Ser. No. 731,618, Oct. 13, 1976, abandoned. Application for reissue Nov. 25, 1980, Ser. No. 210,441

Int. Cl.[3] B60T *15/22*

U.S. Cl. 303—35

95 Claims



1. A fluid brake control system for governing application and release of brakes of an interchange vehicle having a brake control pipe, [an auxiliary] *a first* fluid reservoir, a fluid brake cylinder, and a brake control device sensing changes in fluid pressure in the brake pipe for at times governing application of fluid to the brake cylinder from [the auxiliary] *said first* reservoir and at other times for releasing fluid from the brake cylinder wherein improvements in the brake control device [comprises] *comprise*;

(a) first and second volume chambers [bath proportionally substantially] *both proportionately* smaller in volume than the respective [auxiliary] *first* reservoir and brake cylinder displacement volumes,

(b) means including the brake control device for charging the first volume chamber from the brake pipe and for preventing fluid flow from the [auxiliary] *first* reservoir to the first volume chamber,

(c) means including the brake control device for charging the second volume chamber from the first volume chamber upon sensing a reduction of pressure in the brake pipe, and

(d) relay valve means sensing a difference in fluid pressure between brake cylinder pressure and pressure in the second volume chamber for governing [flow of fluid from the auxiliary reservoir to] *the degree of braking force applied by* the brake cylinder.

Re. 31,387

ANTI-SKID VEHICLE BRAKING SYSTEM

John P. Bayliss, Redditch, England, assignor to Girling Limited, Birmingham, England

Original No. 4,073,546, dated Feb. 14, 1978, Ser. No. 713,816, Aug. 12, 1976. Application for reissue Feb. 14, 1980, Ser. No. 121,506

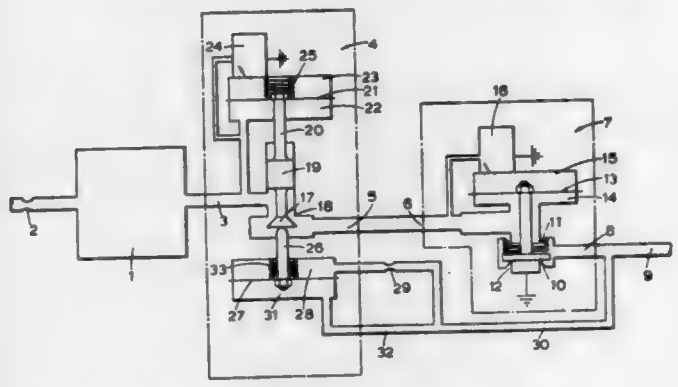
Claims priority, application United Kingdom, Aug. 30, 1975, 35854/75; May 11, 1976, 19240/76

Int. Cl.[3] B60T *8/02*

U.S. Cl. 303—115

22 Claims

12. A fluid-pressure-operated anti-skid braking system for rail and other vehicles comprising at least one actuator for applying a wheel brake, a supply of operating fluid for operating said actuator, fluid flow control valve means interposed between said supply and said brake, fluid from said supply being supplied to said actuator through said valve means, and means responsive to a skid detection signal for operating said valve means to relieve brake skid pressure applied to said actuator when said skid detection signal exceeds a predetermined value to signal a skid condition, said valve means incorporating a fluid-pressure memory chamber for storing a pressure corresponding to said skid pressure, means through which said memory pressure decays during a skid condition by an amount dependent on the duration of said skid condition, said valve means also incorporating a second chamber, said



second chamber containing a pressure corresponding to existing brake pressure, a predetermined relationship between said pressures in said memory chamber and said second chamber determining a changeover point between first and second stages of re-application of fluid from said supply to said actuator, said first stage comprising re-application of said fluid at a rapid rate of pressure increase until an intermediate pressure less than said skid pressure is attained at said changeover point, said second stage comprising continued re-application of said fluid at a reduced rate of pressure increase, and means for restoring pressure in said memory chamber upon re-application of fluid to said actuator.

Re. 31,388

AIR-BAKEABLE WATER-PROOF GETTER DEVICE AND METHOD OF MANUFACTURING

Stephen J. Hellier, and Anselmo G. Passoni, both of Milan, Italy, assignors to SAES Getters, S.p.A., Milan, Italy

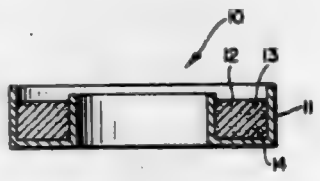
Original No. 4,127,361, dated Nov. 28, 1978, Ser. No. 745,982, Nov. 29, 1976. Application for reissue Sep. 24, 1980, Ser. No. 190,392

Claims priority, application Italy, Dec. 12, 1975, 30240 A/75

Int. Cl.[3] F04B *37/04;* H01J *7/18;* H01K *1/56*

U.S. Cl. 417—48

19 Claims



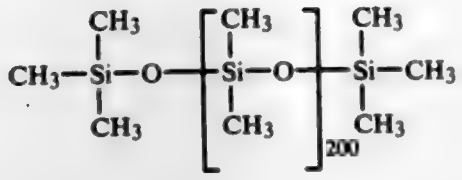
1. A getter device comprising a barium alloy; a metal capable of reacting exothermically admixed with the barium alloy and having an organosilane coating.

9. A getter device of claim 1 comprising:

A. an annular ring;

B. a pulverulent intimate mixture of a barium-aluminium alloy and nickel held by the ring;

C. an organosilane coating covering the entire getter device wherein said coating is an organosilane of Formula II



12. A method of manufacturing an exothermic getter device comprising the steps of pressing a pulverulent mixture comprising a barium-aluminum alloy together with a metal capable of reacting exothermically with the barium-aluminum alloy into a holder, then exposing the pulverulent mixture in the holder to an organosilane, thereby producing a coating.

Re. 31,389

NON-WICKING POLYURETHANE CASTING SYSTEMS

Melvin Brauer, East Brunswick; Barton C. Case, Andover, and Thaddeus F. Kroplinski, Old Bridge, all of N.J., assignors to CasChem, Inc., Bayonne, N.J.

Original No. 4,224,164, dated Sep. 23, 1980, Ser. No. 953,112, Oct. 20, 1978. Division of Ser. No. 890,212, Mar. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 741,275, Nov. 12, 1976, abandoned. Application for reissue Sep. 2, 1981, Ser. No. 298,675

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.3 **8 Claims**

1. A hollow fiber separatory device capable of use in biomedical applications comprising a hollow fiber bundle consisting of a plurality of fine hollow fibers whose end portions are potted in a tube-sheet and whose open fiber ends terminate in a tube-sheet face, the resulting bundle being sealed within a casing to form a separatory cell having [one] *two* or more fluid ports which allow for the passage of one fluid through the fibers and another around the fibers without mixing of the two fluids, said tube-sheet comprising a cured polyurethane composition comprising the reaction product of (1) a polyol mixture of (a) at least one polyol, and (b) N-N-N′-N′-tetrakis (2-hydroxypropyl) ethylene diamine, and (2) an isocyanate terminated polyurethane based prepolymer, said diamine being present in said polyol mixture in an amount sufficient to cause the viscosity of the urethane system to increase rapidly upon mixing of said polyol containing mixture and said prepolymer to form a gel which turns to a solid upon standing without markedly increasing the initial mix viscosity of the urethane system, thereby permitting placement of said urethane system and substantially reducing wicking of said urethane system after placement, said amount providing a ratio of equivalents of the N-N-N′-N′-tetrakis (2-hydroxypropyl) ethylene diamine to the polyol of from 5:95 to 40:60, and said polyol and said prepolymer being reacted in amounts to provide an NCO-OH equivalent ratio of about 1 to 1.1:1.

Re. 31,390

TREATMENT OF SILICA

Max P. McDaniel, and Melvin B. Welch, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Original No. 4,248,735, dated Feb. 3, 1981, Ser. No. 44,809, Jun. 1, 1979. Continuation-in-part of Ser. No. 857,552, Dec. 5, 1977, abandoned. Application for reissue May 3, 1982, Ser. No. 374,459

Int. Cl.³ B01J *31/02, 31/12, 27/06, 27/20*

U.S. Cl. 252—428 **52 Claims**

1. A method for producing a catalyst comprising subjecting a silica-containing support at an elevated temperature to a treating ambient selected from (1) [carbon monoxide, (2)] a halogen-containing component selected from bromide, iodine, HBr, HI, organic bromides, and organic iodides, which halogen-containing component also either contains air or is followed by air or [(3)] (*2*) a carbon, oxygen and sulfur-containing composition, thereafter incorporating a chromium compound under anhydrous conditions to thus form said catalyst and thereafter activating said catalyst in an oxygen ambient.

Re. 31,391

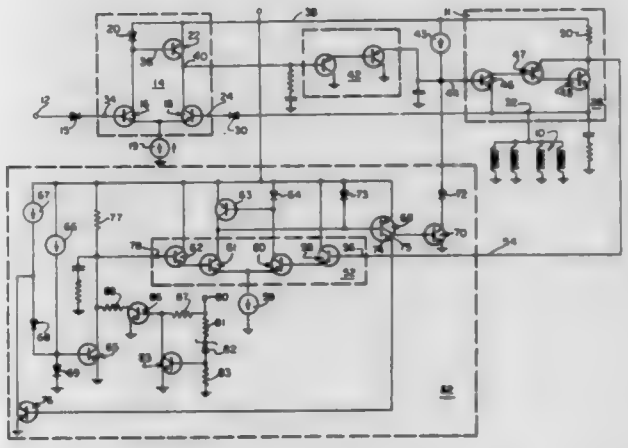
VOLTAGE AND CURRENT REGULATOR WITH AUTOMATIC SWITCHOVER

William F. Davis, Tempe, Ariz.; Ronald W. Russell, Sunnyvale, Calif.; Thomas M. Frederiksen, and Ernest L. Long, both of San Jose, Calif., assignors to Motorola, Inc., Del.

Original No. 3,786,344, dated Jan. 15, 1974, Ser. No. 185,939, Oct. 4, 1971. Application for reissue Jan. 14, 1976, Ser. No. 649,005

Int. Cl.³ F02D *5/00;* **H01F** *7/18*

U.S. Cl. 361—154 **21 Claims**



16. An integrated circuit for controlling the supply of current from a power supply to a load, the integrated circuit being adapted to control a power stage, the power stage having a power input terminal for being coupled to the power supply, a control terminal and an output terminal, the output terminal of the power stage being adapted to be connected to the load to supply current thereto, the integrated circuit including in combination:

first and second power supply conductors;

voltage regulator means for controlling the power stage to maintain a substantially constant voltage at the output terminal thereof during a voltage regulation operating mode;

first circuit means for coupling said voltage regulator means to said power stage control terminal, said first circuit means being directly connected between said power stage control terminal and said second power supply conductor;

means adapted to supply a signal representative of the magnitude of the load current;

current regulator means having input, output and control terminals, said control terminal of said current regulator means being connected to said means for applying said signal representative of the magnitude of the load current;

second circuit means coupling said output terminal of said current regulator means to said power stage control terminal for controlling the current supplied by the power stage to the load, said second circuit means being directly connected between said power stage control terminal and said second power supply conductor so that said second circuit means includes a current path in parallel with said first circuit means; and

current source means coupled to said power stage control terminal for energizing said first and second circuit means to enable regulation of the load current and voltage.

PLANT PATENTS

GRANTED SEPTEMBER 20, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,105

ROSE PLANT — MEIDOMONAC VARIETY

Marie L. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Jan. 20, 1982, Ser. No. 341,103
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—1 1 Claim

1. A new and distinct variety of rose plant, substantially as illustrated and described, characterized by (a) a free-branching low growing shrub growth habit, (b) abundant formation of very double flowers of Neyron pink coloration, (c) extreme hardiness, (d) exceptional vigor, and (e) good disease resistance, whereby the plant is particularly suited for growing as a landscape planting.

5,106

POTENTILLA FRUTICOSA — BLINK VARIETY

Robert Blair, Dawyck Gardens, Scotland, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Jan. 20, 1982, Ser. No. 341,104
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—54 1 Claim

1. A new and distinct variety of *Potentilla fruticosa* substantially as herein shown and described which exhibits (a) attractive pink blossoms which are a truer pink than those of the Royal Flush variety, (b) a more vigorous growth than the Royal Flush variety, and (c) a more upright growth habit than the Royal Flush variety.

5,107

CHRYSANTHEMUM PLANT

Jack M. Meek, deceased, late of Salinas, Calif.; by Saundra J. Meek, executrix, Canyon, Tex., and William E. Duffett, Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Jan. 7, 1982, Ser. No. 337,724
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—74 1 Claim

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., plant known by the cultivar name of Russet, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form, with excellent form retention; anemone capitulum type; light yellow ray floret color; diameter across face of capitulum ranging from 70 to 90 mm. at maturity; uniform eight week flowering response; medium plant height, and spreading branching pattern.

5,108

CHRYSANTHEMUM PLANT

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Jan. 18, 1982, Ser. No. 340,107
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—79 1 Claim

1. A new and distinct plant of *Chrysanthemum morifolium*, Ramat., known by the cultivar name of Win, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; orange-bronze ray floret color; diameter across face of capitulum ranging from 80 to 100 mm. at maturity; uniform ten week flowering response; tall plant height when grown single stem; 17 to 24 cm. peduncles on open, normally terminal sprays, and 13° C. minimum temperature tolerance for initiation and development of flowering buds.

PATENTS

GRANTED SEP. 20, 1983

ERRATA

For CLASS	See PATENT NO.
184–001	4,405,035
181–110	4,405,036
494–001	4,405,079
249–097	4,405,083
414–021	4,405,186
548–423	4,405,519
548–423	4,405,520
548–423	4,405,521
424–321	4,405,743
528–266	4,405,771

PATENTS

GRANTED SEPTEMBER 20, 1983

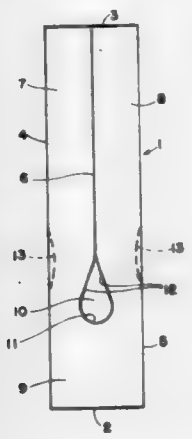
GENERAL AND MECHANICAL

4,404,687
CONVERTIBLE OUTERWEAR AND CARRYING BAG
Markus Hager, 701 Avenue K, Brooklyn, N.Y. 11230
Filed Sep. 24, 1982, Ser. No. 438,963
Int. Cl.³ A41D *23/00, 3/02*
U.S. Cl. 2—94 **16 Claims**



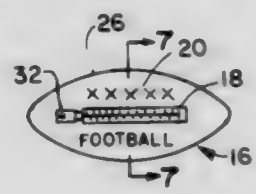
1. A convertible outerwear and carrying bag combination comprising:
an outer garment having interior and exterior surfaces,
a carrying bag pocket attached to the outer garment, and
a garment opening defined in the exterior surface of the outer garment, the carrying bag pocket and the outer garment being disposed in topologically continuous relation such that the carrying bag pocket may be inverted through the garment opening and arranged to receive the outer garment, the carrying bag pocket when inverted through the garment opening providing a carrying bag enclosing a space substantially larger than that required for receiving the outer garment.

4,404,688
COMBINATION SCARF
Phyllis Knight, 505 N. Lake Shore Dr., Chicago, Ill. 60611
Filed Feb. 3, 1982, Ser. No. 345,216
Int. Cl.³ A42B *5/00*; A42D *23/00*; A42B *1/04*
U.S. Cl. 2—207 **6 Claims**



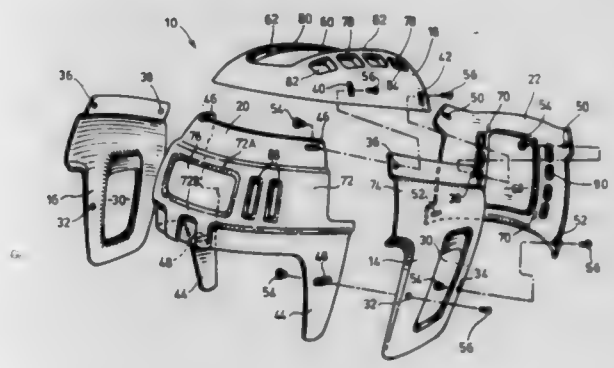
1. A combination scarf as fashionable wearing apparel for the human body comprising an elongated, generally rectangular, one-piece fabric member having:
a proportionately short front panel section at one end of the fabric member which is adapted to cover at least a portion of the breast of said body;
a proportionately long trailing panel section extending to the other end of the fabric member and being separated into two essentially rectangular, longitudinal panel segments with parallel inner facing edges and outer limiting edges which define each panel segment; and
a collar-forming yoke section joining said front panel section with said trailing panel section and containing a teardrop center opening with a substantially circular leading edge adjacent the front panel section and a tapering trailing edge extending from each side of the circular leading edge to join with one of the parallel inner facing edges of said longitudinal panel segments.

4,404,689
FLEXIBLE CONTAINER
Thomas E. DeWan, 1210 E. Oakwood St., Tarpon Springs, Fla. 33589
Continuation-in-part of Ser. No. 175,135, Aug. 4, 1980, abandoned. This application Dec. 22, 1980, Ser. No. 219,138
Int. Cl.³ A41D *27/20, 3/08, 1/00*
U.S. Cl. 2—247 **15 Claims**



1. A three-dimensional flexible container for an article which is complete and functional apart from the container, comprising:
at least one flexible forming piece encompassing a volume by construction and defining thereby a predetermined shape which is continuous and self-sustaining, and which represents the reproduction of a desired three-dimensional item, the function of which is unassociated with the function of a container;
said flexible container being attached to the article and, upon assuming its predetermined shape, being adaptable to enclose the article.

4,404,690
HOCKEY HELMET
Charles R. Farquharson, Toronto, Canada, assignor to Amer Sport International Inc., Lachine, Canada
Filed Aug. 21, 1981, Ser. No. 295,219
Int. Cl.³ A42B *3/00*
U.S. Cl. 2—420 **26 Claims**



1. A helmet adapted to be placed over a human head, and having a shell and a liner, where said shell comprises:
a pair of side pieces each having respective forward, upper and rear portions, and being adapted to generally accommodate each side, respectively, of a human head;
a top piece being generally downwardly concave and having forward, rear and side portions, each of which has a lower portion; said top piece being adapted to generally accommodate at least the upper portion of the human head;

a front piece being generally rearwardly curved and adapted to generally accommodate at least the forehead portion of a human head; said front piece having an upper portion, and a rear portion at each side thereof;

and a back piece being generally forwardly curved and adapted to generally accommodate the rear portion of a human head; said back piece having an upper portion, and a forward portion at each side thereof;

said front and back pieces being each secured at their respective rear and forward portions to the respective forward and rear portions of each of said pair of side pieces; and

said top piece being secured at least to both side pieces at their respective upper portions.

4,404,691

MODULAR PROSTHESIS ASSEMBLY

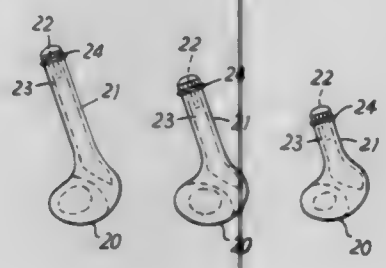
Onno Buning, Clarina, and Peter Lawes, Castletroy, both of Ireland, assignors to Howmedica International Inc., Clare, Ireland

Filed Feb. 25, 1981, Ser. No. 238,013

Claims priority, application United Kingdom, Mar. 11, 1980, 8008140

Int. Cl.³ A61F *1/03*

U.S. Cl. 3—1.911 **25 Claims**



1. A modular prosthesis assembly for replacement of at least part of a joint and part of the length of a bone shaft comprising a mounting component provided with a connection portion and at least two joint components of similar shape but different dimensions and which can be connected alternatively to said mounting component, each of said joint components having an engagement portion and a connection part adapted for connection to said connection portion of said mounting component, the connection part of said two joint components being of different lengths, said different length connection parts each providing a different length for replacing by itself a part of the length of a natural bone shaft which can be connected to a remaining length of a natural bone shaft or artificial joint, and said mounting component and said at least two joint components thereby co-operating to effect selectively two prostheses of different bone shaft lengths.

4,404,692

CENTERING SYSTEM FOR HIP REPLACEMENT

Nas S. Eftekhar, 25 Paddock Rd., Hohokus, N.J. 07423

Filed Sep. 14, 1981, Ser. No. 301,579

Int. Cl.³ A61F *1/04*

U.S. Cl. 3—1.912 **18 Claims**

9. An apparatus for centering proximally and distally a hip replacement in the femur of a patient comprising

(A) a trial hip prosthesis for centering proximally the hip replacement comprising

(i) a stem adapted to be fitted in the femur of a patient,

(ii) a ball member,

(iii) a neck portion connecting said stem and said ball member, and

(iv) a laterally extending adjusting means disposed in said stem below the neck portion and having one end extending laterally out of the prosthesis below the neck protion to contact and not penetrate the medullary canal to selectively adjust the distance between the trial hip prosthesis and the upper medullary canal so as to center said prosthesis with respect to the upper medullary canal of said femur,

(B) a centering pin adapted to be inserted across said femur to mark the centered position of said trial hip prosthesis, and

(C) a device for centering distally said hip replacement comprising

(i) a cylindrical plug for coaxial insertion into and blockage of the medullary canal in said femur, said plug being provided with a plurality of through bores or openings so oriented to be parallel to the longitudinal axis of the plug, and



(ii) means for accommodating and centering distally the distal end of the stem of said hip replacement, said means comprising a plurality of U-shaped wires each having an open end with two arms and a closed end, each arm of said wires passing through one opening in said plug the closed ends of the U-shaped wires being directed toward the hip replacement and bent, along the plane formed by the arms of said U-shaped wire, away from the stem of said hip replacement to define an expansible and retractable guide to accommodate and center same, the open end of each of said U-shaped wire extending out of the openings in said plug being bent to contact and exert pressure on the medullary canal.

4,404,693

SHANK FOR A HIP JOINT PROSTHESIS

Karl Zweymüller, Vienna, Austria, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 30, 1980, Ser. No. 221,255

Claims priority, application Switzerland, Jan. 14, 1980, 257/80

Int. Cl.³ A61F *1/04*

U.S. Cl. 3—1.913 **12 Claims**



1. A shank for a hip joint prosthesis, said shank having a blade, a neck and a collar separating said neck from said blade, said blade having a lower portion widening conically on all

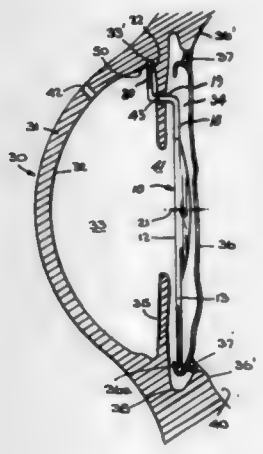
sides from a distal end along a longitudinal median axis to an upper portion at a junction located between ⅛ and ⅜ of the height of said shank, said upper portion being thinner than said lower portion at said junction and in a plane perpendicular to the plane of the lateral width of said blade, said upper portion extending up to said collar with a median narrow side of said upper portion extending on a steadily curved bend to said collar.

4,404,694

INTRAOCULAR LENS

Charles D. Kelman, 269-70 Grand Central Pkwy., Floral Park, N.Y. 11005

Filed Mar. 18, 1982, Ser. No. 359,508
Int. Cl.³ A61F *1/16, 1/24*
U.S. Cl. 3—13 **14 Claims**



1. An intraocular lens suitable for use as an artificial lens implant, the lens comprising:

a medial, light-focusing, lens body intended to be positioned adjacent the pupil on one side of the iris; and

at least a pair of position fixation elements connected with said lens body;

one of said position fixation elements having a first portion contiguous to and extending generally laterally outwardly from a first region of the periphery of said lens body and intended to extend to and seat adjacent the periphery of the iris on said one side thereof;

the other of said position fixation elements having a first portion extending generally laterally outwardly from a second region of the periphery of said lens body spaced from said first region and in a direction generally opposite that of said first portion of said one position fixation element, a second portion extending from said last-mentioned first portion and intended to extend through an opening in the iris from said one side of the iris to the other side of the iris and a third portion connected to said second portion and intended to extend to and seat adjacent the periphery of the iris on said other side thereof.

4,404,695

AUTOMATIC-LOCKING TOILET SEAT LID

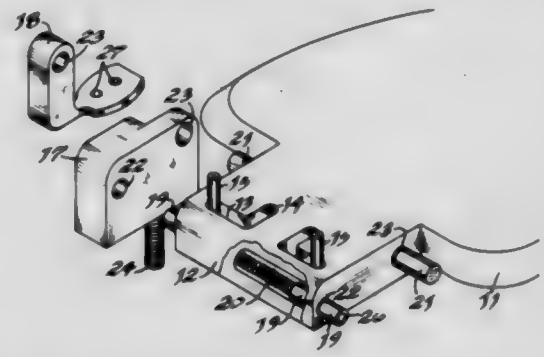
Howard C. Camp, P.O. Box 2072, Huntsville, Ala. 35804

Filed Dec. 14, 1981, Ser. No. 330,682
Int. Cl.³ A47K *13/00, 13/26*
U.S. Cl. 4—253 **5 Claims**

1. An automatic-locking toilet seat assembly comprising:

(a) a toilet seat lid with a centerline and an aft extension unitary with said toilet seat lid, designed to accommodate a first cylindrical hole and a second cylindrical hole said holes running transverse to the lid centerline, and parallel to each other, wherein said first cylindrical hole is forward of said second cylindrical hole and accommodates an axle rod, said second cylindrical hole housing a latch bolt assembly comprised of two sliding latch bolts which are separated by a compression spring and extend outward through opposite ends of said second cylindrical hole said axle being positioned so as to be a pivot about which said latch bolt assembly and said toilet seat lid may rotate;

(b) a pair of anchor bolt lock-block and hinge assemblies; each of said anchor bolt lock-block and hinge assemblies having a pair of indents, said pair of indents being comprised of a forward indent and a rear indent, said forward indents being positioned to receive and hold said axle rod at its ends, said rear indents being simultaneously positioned to receive the extended portions of said sliding



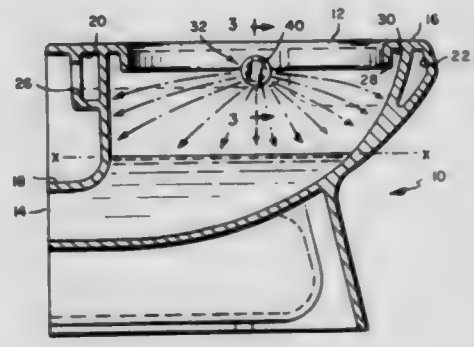
latch bolts when said toilet seat lid is in a down position, said sliding latch bolts being controlled by a pair of studs which extend out through a pair of L-shaped slots in said aft extension of said toilet seat lid, said L-shaped slots allowing said studs to be hooked back into a position where said sliding latch bolts are removed from said rear indents permitting said toilet seat lid to rotate freely, said studs and said sliding latch bolts being operable in an automatic locking mode when said studs are not hooked.

4,404,696

FLUID VELOCITY ASSIST

Walter O. Heinze, Green Valley, Ariz.; Wesley M. Tufts, Holliston, and Jeffrey F. White, Avon, both of Mass., assignors to International Water Saving Systems, Inc., New York, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,224
Int. Cl.³ E03D *9/06, 11/06*
U.S. Cl. 4—420 **2 Claims**



1. In combination; a toilet bowl having a concave interior surface terminating in a bottom opening structured to be connected by a trap to a soil pipe so that water stands at a predetermined level in the bowl above the bottom opening, a rim at the top of the bowl defining a closed passage peripherally thereof, said closed passage being provided with an opening at the rear of the bowl for connection to a source of water under pressure, means defining a skirt inwardly of the rim forming a downwardly-open, continuous slot peripherally of the rim, said passage having at its inner side two or more openings in communication with the interior of the bowl at approximately the level of the lower edge of the skirt, said lower edge of the skirt having an upwardly-concave recess concentric with said openings and a jet member fitted into each opening comprising a cylindrical head corresponding in axial length to substantially the distance from the inside surface of the rim to the inside

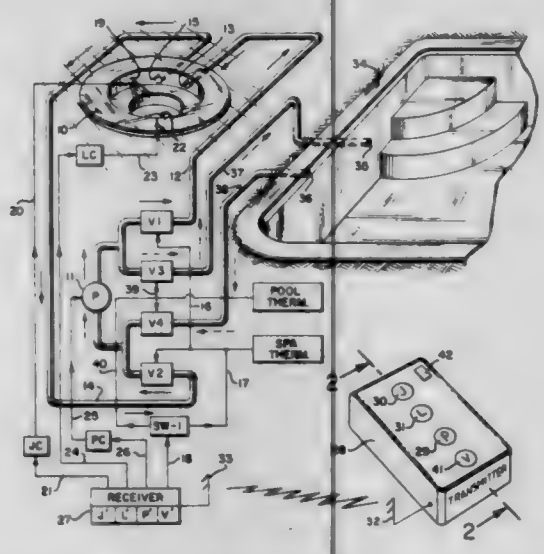
surface of the skirt and of a radius such as to fit snugly into the recess in the skirt and a stem portion of yieldable material dimensioned to be forced to fit snugly into said openings and said stem portion having an axial passage of circular cross section extending from the outer end of said stem into the head and said head having a downwardly-open slot, the top of which is horizontally tangent to said passage at the top of the passage in the head portion, said slot cooperating with said passage and defining a surface opposite the outer end of said passage, the plane of which intersects the curved surface of the bowl above the water line.

4,404,697

REMOTE CONTROL SYSTEM FOR SPAS

Frank L. Hatcher, Ventura, Calif., assignor to Intermatic Incorporated, Spring Grove, Ill.

Filed Aug. 14, 1978, Ser. No. 933,462
Int. Cl.³ E04H *3/18*
U.S. Cl. 4—492 **3 Claims**



1. A remote control system for spas wherein the spa has a water recirculating pump for passing water into a spa water inlet in the spa and receiving water from a spa water outlet and wherein the spa further includes a water jet generating blower and a light, said control system including in combination:

(a) pump control means responsive to a pump signal to turn said pump on and off;

(b) a radio signal receiver responsive to a transmitted signal for providing said pump signal;

(c) a jet control means responsive to a jet signal for turning said water jet generating blower on and off, said radio signal receiver being responsive to a different transmitted signal for providing said jet signal;

(d) a light control means responsive to a light signal to turn said light on and off, said radio signal receiver being responsive to a still different transmitted signal for providing said light signal; and,

(e) a hand-held battery powered radio signal transmitter having manually operable means for transmitting said transmitted signal, manually operable means for transmitting said different transmitted signal and manually operable means for transmitting said still different transmitted signal, said transmitter being encased in a watertight housing and having a specific gravity less than 1.0 so that it will float

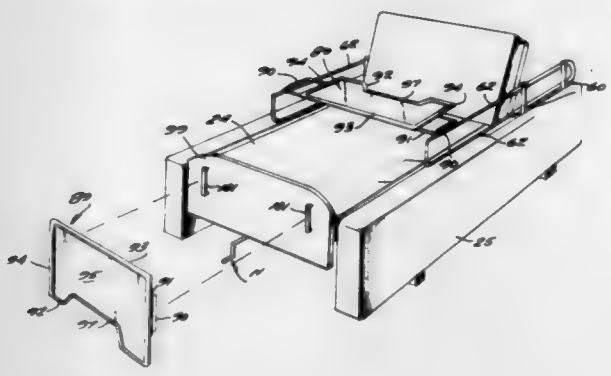
whereby water in the spa can be recirculated, the said water jet generating blower turned on and off and the light turned on and off by a person holding and operating said transmitter from a remote location as well as when sitting in said spa.

4,404,698

OVERBED TRAY ARRANGEMENT

Joseph A. Koncelik, Worthington; David B. Chaney, Powell, both of Ohio; Walter G. Lockard, Quakertown, Pa.; Kevin J. Reeder, Columbus, Ohio, and Thomas D. Hontz, Quakertown, Pa., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Sep. 18, 1980, Ser. No. 188,473
Int. Cl.³ A47B *23/02*
U.S. Cl. 5—507 **20 Claims**



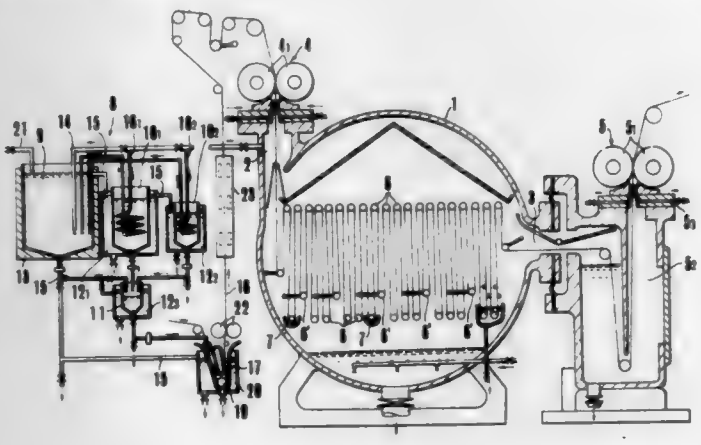
1. A tray assembly comprising: a body including a head portion, a foot portion, a pair of parallel side portions, and a substantially flat support surface that gently slopes downwardly from said head portion to said foot portion; a vertical lip provided upstanding from the support surface at said foot portion and at least portions of said side portions adjacent said foot portion; and means for mounting said body on a pair of generally parallel horizontally spaced supports so that an individual utilizing said tray can eat off of or write on said tray support surface generally horizontal although gently sloping downwardly from said head portion to said foot portion; said tray body being formed from two separate portions, a top portion and a bottom portion having corresponding circumferential definitions so that they fixedly fit together to form the body, and said top and bottom portions comprising injection molded plastic portions fixedly fitted together and defining a space therebetween.

4,404,699

METHOD OF CONTINUOUSLY WET HEAT TREATING A CLOTH AT AN ELEVATED TEMPERATURE

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Aug. 19, 1981, Ser. No. 294,389
Claims priority, application Japan, Sep. 16, 1980, 55-128397
Int. Cl.³ D06B *3/12, 23/00*
U.S. Cl. 8—149.1 **3 Claims**



1. A method of continuously treating a cloth comprising wet heat treating the cloth at an elevated pressure in a high pressure steamer containing a high temperature and pressure steam with the high pressure steamer comprising a steamer body

with a seal mechanism, heating a treating solution in a treating solution application tank provided outside the steamer body by using steam exhausted out of the seal mechanism of the steamer body, soaking the cloth prior to being treated in the steamer up to the core part thereof with thus heated treating solution, and drying the cloth soaked with the treating solution by evaporating water therefrom prior to the cloth being treated in the steamer.

4,404,700

MACHINE FOR LASTING SIDE PORTIONS OF SHOES

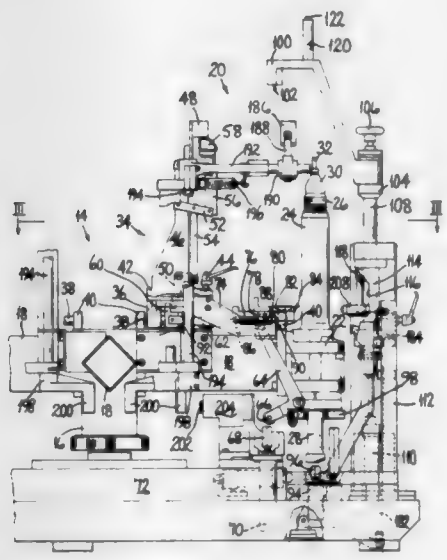
William H. Berrill, and Frank C. Price, both of Leicester, England, assignors to USM Corporation, Farmington, Conn.

Filed Jan. 25, 1982, Ser. No. 342,713

Claims priority, application United Kingdom, Jan. 26, 1981, 8102296

Int. Cl.³ A43D *21/00, 89/00, 3/00*

U.S. Cl. 12—12 **14 Claims**



1. A machine for lasting side portions of shoes comprising a shoe support for supporting, bottom uppermost, a shoe comprising an upper mounted on a last and an insole on the bottom thereof, two side lasting assemblies, arranged one at either side of the last support, and two adhesive-applying nozzles mounted on a carriage for movement relative to the last support whereby adhesive can be applied thereby progressively along opposite side portions of the shoe bottom prior to operation of the side lasting assemblies thereon;

said shoe support comprises a heel support, toe end support means, including a toe end engaging member, movable towards the heel support to bring the toe end engaging member into an operative position, in which it is in engagement with the toe end of a shoe placed on the heel support, and abutment means including an abutment member which is operatively connected with the toe end engaging member and positioned according to the operative position thereof; and

a sensing member mounted on said carriage, for sliding movement relative thereto, and which is resiliently urged into a projecting condition thereon, the arrangement being such that, as the carriage is advanced towards the last support, with the sensing member in its projecting condition, said member engages the abutment member and its movement is arrested thereby, said member thus being held against further movement during the remainder of the advancing movement of the carriage, and further wherein the advancing movement of the carriage is terminated and reversed by valve means actuated by actuator means therefor during such advancing movement, the arrangement being such that said valve means and actuator means are mounted one on the sensing member and the other for movement with the carriage.

4,404,701

SHOE SUPPORT

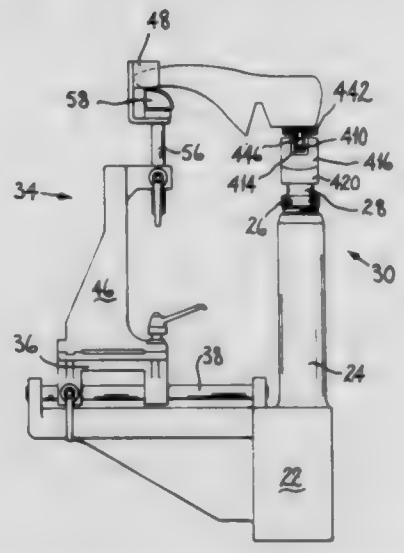
Frank Hartshorn, Wigston; Brian J. M. Murphy, Leicester, and Richard E. Storer, Syston, all of England, assignors to USM Corporation, Farmington, Conn.

Filed Jan. 22, 1982, Ser. No. 341,531

Claims priority, application United Kingdom, Feb. 20, 1981, 8105496

Int. Cl.³ A43D *3/00*

U.S. Cl. 12—127 **7 Claims**



1. A shoe support for supporting a shoe comprising an upper and an insole carried on a last, said support comprising:

a toe support means and a heel support means, the relative positions of said toe support means and heel support means being settable, according to the size and style of shoe, in directions extending both lengthwise and widthwise of the shoe bottom, wherein the heel support means comprises a last pin on which a last with an upper and insole carried thereon can be supported, bottom uppermost, and which is mounted on a support member for limited rocking movement about an axis extending lengthwise of the shoe bottom, the support member being itself mounted for movement about an axis extending heightwise of the shoe bottom whereby the support member can be positioned with the rocking axis of the last pin substantially in the heel-to-toe plane of the shoe supported by the shoe support.

4,404,702

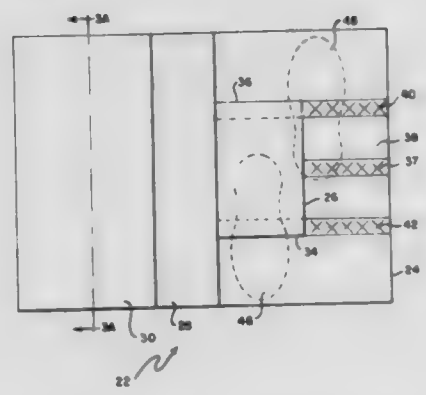
SHANKED INNERSOLE CONSTRUCTION

John M. Clayman, Salem, and Norman Weiner, Lexington, both of Mass., assignors to P. Clayman & Sons, Inc., Salem, Mass.

Filed Mar. 2, 1981, Ser. No. 239,345

Int. Cl.³ A43B *13/41;* A43D *31/00*

U.S. Cl. 12—146 S **1 Claim**



1. A method for fabricating a shanked innersole comprising the steps of:

providing a sheet of street side layer material of sufficient

length and width that a plurality of innersole blanks may be cut therefrom;

lapping said sheet of street side layer material with a sheet of tuck material narrower in at least one dimension than said sheet of street side layer material, said tuck material sheet being skived along at least one edge;

laminating said street side layer material and said tuck material together by application of adhesive therebetween;

lapping the tuck layer side of said laminate with at least one sheet of sponge material;

cutting through said sponge material and said laminate with dies to form a plurality of innersole blanks in a pattern such that a toe portion of each blank contains no tuck material while a heel portion of each blank includes tuck material, with a skived edge of said tuck material being disposed intermediate said toe and heel portions;

separating tuck material layer and said street side material layer at the heel of each blank;

inserting therebetween a metallic shank stiffening strip having a perforation adjacent each of its ends;

fastening a rivet through said street side material and through of each of said perforations;

cementing said tuck material layer and said street side material layer together again; and

molding said innersole blank to conform to the shape of said metallic shank stiffener and the desired shoe contour.

4,404,703

PAINT ROLLER

Leigh C. Woodall, Jr., Roxboro; John T. Hayes, Durham, and Robert G. Currier, Roxboro, all of N.C., assignors to Collins & Aikman Corporation, New York, N.Y.

Filed Apr. 30, 1982, Ser. No. 373,710
Int. Cl.[3] B05C *17/02*; B05D *5/02*
U.S. Cl. 15—230.11 18 Claims



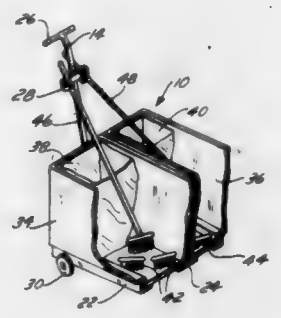
1. A paint roller particularly suited for texture painting and comprising a cylindrical core and a pile fabric covering secured to the cylindrical core, said pile fabric covering comprising a backing fabric and pile yarns interengaged with said backing fabric and extending from one face thereof to form a pile comprised of a multiplicity of upright open pile loops, the density of the pile loops and the size of the pile yarns forming the loops being such as to render substantially the totality of each loop readily visible and to provide substantial void volume within the pile of the fabric for receiving and holding paint therein, said pile yarns having such flexural properties that the pile loops normally extend in a self-supporting, upright orientation from the backing fabric and are resiliently urged to such upright orientation upon the removal of pressure applied to the surface of the pile fabric, and wherein the flexural properties of the pile loops permit readily moving the pile loops from the upright orientation toward the flattened position upon pressure being applied to the pile surface during painting and thereby facilitating release of paint from within the pile.

4,404,704

CLEANING KIT

Philipp Rabban, P.O. Box 401, Hollywood, Fla. 33022

Filed Nov. 30, 1981, Ser. No. 325,694
Int. Cl.[3] A47L *13/51*
U.S. Cl. 15—257 R 3 Claims



1. A cleaning cart comprising:

a base frame having side portions and at least two wheels connected at one side of the bottom of the base frame and a plurality of floor engaging projections situated at the other side of the bottom of the base frame;

a handle connected to the base frame at the wheel side, said handle having a retaining member adapted to receive and retain at least two handles for preliminary and finishing cleaning devices; and

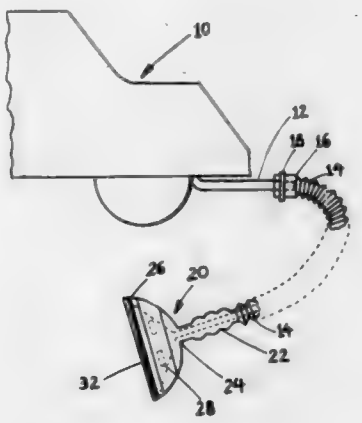
at least two containers situated on the base frame, each said container including three lower margins recessed inwardly from three respective outer walls to form respective step portions and a fourth lower margin flush with the respective fourth outer wall, said walls having flush lower margins of two respective containers facing each other, the walls with the depressed lower margins being located outside the side portions of the frame, the bottoms of the containers being located within the side portions of the frame, one container receiving therein a plurality of preliminary cleaning appliances to be removably attached to said preliminary cleaning device and another container receiving therein a plurality of finishing cleaning appliances to be removably attached to said finishing cleaning device.

4,404,705

CAR WINDOW DEFROSTER

Klaus D. Thoma, Twelve Greenway Plaza, Suite 1200, Houston, Tex. 77046

Filed Apr. 3, 1981, Ser. No. 250,610
Int. Cl.[3] A47L *5/14*
U.S. Cl. 15—313 4 Claims



1. A hand-held scraping device for de-icing frozen car windows utilizing the exhaust fumes emitted through the car's tail pipe for softening or melting the layer of ice, comprising:

hose means for conducting said exhaust fumes from said tail pipe to said window;

connecting means for removably and sealingly clamping one end of said hose means to said tail pipe;

scraping means connected to the other end of said hose means for distributing said exhaust fumes onto said window and for removing the softened-up layer of ice from said window, said scraping means including a handle portion and a broad and flattened head portion; and

exhaust fume outlet means through said flattened head portion for directing said fumes onto the ice covering said window, said exhaust fume outlet means including a continuous narrow, generally rectangular outlet strip between the bottom and front walls of said flattened head portion and one or more openings in the bottom wall of said flattened head portion.

4,404,706

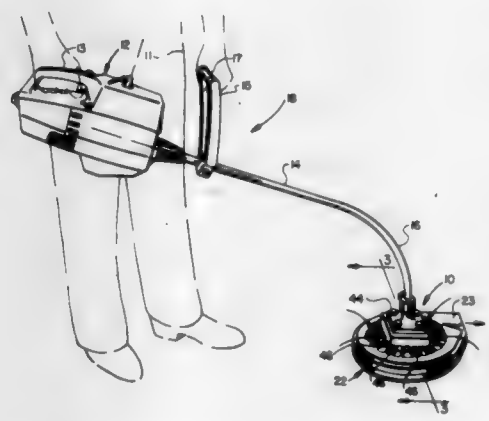
PORTABLE AIR BLOWER SWEEPER APPARATUS

Ronald C. Loyd, Keithville, La., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 7, 1981, Ser. No. 309,433

Int. Cl.³ A47L *5/14*

U.S. Cl. 15—344 **16 Claims**



1. An air blower for attachment to a portable power supply unit including a prime mover, a support, and a drive shaft mounted on said support, said air blower comprising:

a casing including first and second separable parts, a generally upward facing air inlet opening formed in a top wall of said first part of said casing, a bottom wall formed on said second part of said casing spaced from said top wall and defining an air flow passage between said walls, and a generally horizontal air discharge nozzle in said casing in communication with said passage for directing a relatively high velocity air stream away from said casing;

a mounting surface formed on said casing for removably mounting said casing on said support;

an impeller disposed within said casing, said impeller having a hub including means for removably mounting said impeller on said drive shaft in driven engagement with said drive shaft; and

means on said impeller for connecting said impeller to said drive shaft and removing said impeller from said drive shaft without disassembling said casing.

4,404,707

CASTORS

Philip S. Walker, Slough, England, assignor to Flexello Casters & Wheels Limited, Berkshire, England

Filed May 20, 1981, Ser. No. 266,589

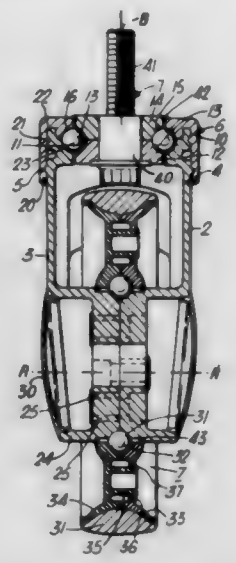
Claims priority, application United Kingdom, May 6, 1980, 8014993

Int. Cl.³ B60B *33/00*

U.S. Cl. 16—31 R **5 Claims**

1. A swivelling wheeled castor, comprising two similar fork halves, each of said fork halves comprising a leg, said fork halves having means for detachable interengagement with one another, and together defining:

(a) part of a circular horizontal track for bearing balls at the upper part of the castor from which the fork legs depend, these bearings supporting a stem for relative swivelling movement about a vertical castoring axis; and



(b) part of a circular vertical track for bearing balls on a circumference around the rolling axis, an outer wheel part being mounted for the rolling movement on these bearings.

4,404,708

HANDLE

Albert J. Winter, Vereeniging, South Africa, assignor to Modern Inventions (Proprietary) Limited, Johannesburg, South Africa

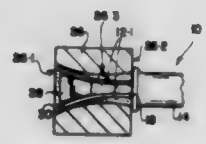
Continuation of Ser. No. 59,232, Jul. 20, 1979. This application May 3, 1982, Ser. No. 374,422

Claims priority, application South Africa, Aug. 7, 1978, 78/4458

Int. Cl.³ A47B *95/02;* A47I *45/00;* B65D *25/28;* E05B *1/00*

U.S. Cl. 16—110 R **18 Claims**





1. A handle of the kind described, which comprises an elongate body of elastomeric material, the body having opposite ends beyond which the elastomeric material does not extend, and a reinforcing core embedded in and extending substantially throughout the length of the body, the core having a pair of end portions protruding beyond one of said ends of the body for inserting into the passage of a striking head, the end portions being capable of being wedged apart so as to facilitate fastening of the handle to the striking head.

4,404,709

FASTENING DEVICE FOR HANDLES, ARMS RESTS ETC. ON THE WALL OF A VEHICLE, OR THE LIKE

Joachim Janz, and Ulrich Svejkovsky, both of Wuppertal, Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

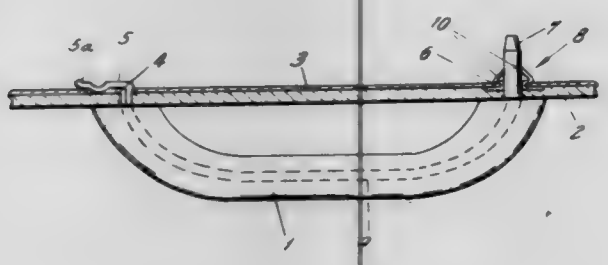
Filed Jun. 8, 1981, Ser. No. 271,246

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1980, 3021552

Int. Cl.³ A47B 95/02

U.S. Cl. 16—111 R

13 Claims



1. A fastening device for attaching a part to a wall, comprising:

a first and a second receptacle for use in a wall for defining first and second connection points, respectively, for the part;

a guide pin attached at one location on the part for being inserted into the first receptacle and the guide pin is oriented on the part so that, upon insertion of the guide pin into the first receptacle, the guide pin is oriented to extend generally along the plane of the wall in which the first receptacle is positioned;

a locking pin attached at a second location on the part for being inserted into the second receptacle and the locking pin is oriented on the part so that, upon insertion of the locking pin into the second receptacle, the locking pin is oriented to extend generally into the wall in which the second receptacle is positioned;

a pull out safety for blocking withdrawal of the locking pin from the second receptacle, wherein the pull out safety comprises two spring legs normally biased to squeeze against the locking pin, and the spring legs are oriented to converge against the locking pin in a direction of insertion of the locking pin, whereby the spring legs block extraction of the locking pin from the second receptacle; and wherein the second receptacle comprises a U-shaped clamp, including the two spring legs of the pull out safety as the legs of the U, and the web of the U having an oblong hole defined therein extending along the length of the space between the spring legs and through which the locking pin is passed for enabling the locking pin, which has passed through the hole, to be moved laterally of the length of the locking pin, and the spring legs being of such length toward the locking pin that at one position along the length of the oblong hole, the spring legs do not squeeze the locking pin.

4,404,710

APPARATUS FOR FEEDING FIBERS TO CARDING MACHINES AND THE LIKE

Dennis E. Wood, Fairport, N.Y., assignor to Rando Machine Corporation, Macedon, N.Y.

Filed May 29, 1981, Ser. No. 268,326

Int. Cl.³ D01G 15/40, 23/08

U.S. Cl. 19—105

14 Claims

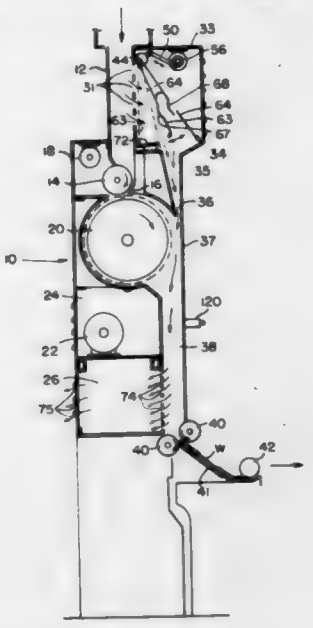
1. In a system for pneumatically feeding airborne fibers to a feed chute having intermediate its ends at least one feed roll for feeding fibers from a supply thereof adjacent one end of the chute to a formation section adjacent the opposite end of the chute, apparatus for controlling the density of the column of fibers formed in the formation section of the chute, comprising

means for sensing the existing air pressure differential between opposite ends of said formation section,

means for generating a first electrical signal the voltage of which varys in proportion to changes in the pressure differential detected by said sensing means,

means for generating a second electric signal having a set voltage which is proportional to the desired pressure differential in said formation section,

first feed roll control means responsive to said first signal to increase the rate of rotation of said feed roll as said pressure differential decreases, and vice versa,



second feed roll control means for interrupting the operation of said feed roll when the voltage of said first signal exceeds one of two predetermined limits above and below, respectively, the voltage of said second signal,

pump means for intermittently supplying pulses of compressed air to one end of said formation section of said chute to compact the column of fibers therein, and

first control means for said pump means responsive to said first signal to increase the rate at which said pulses are supplied to said formation section as said pressure differential decreases, and vice versa.

4,404,711

APPARATUS FOR WITHDRAWING AND GATHERING A FIBER WEB

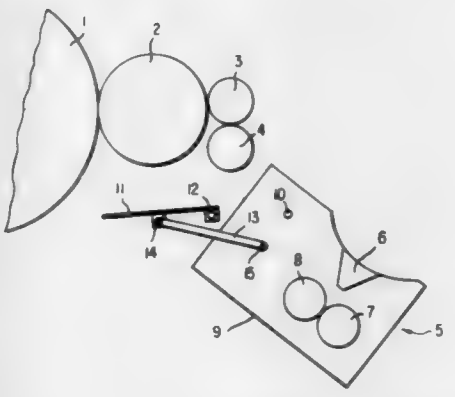
Jürgen Klüttermann, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Aug. 18, 1981, Ser. No. 294,003

Int. Cl.³ D01G 15/46

U.S. Cl. 19—106 R

6 Claims



1. In a carding machine including a doffer, a web delivering assembly cooperating with the doffer, a calender unit arranged for receiving a fiber web discharged by the web delivering

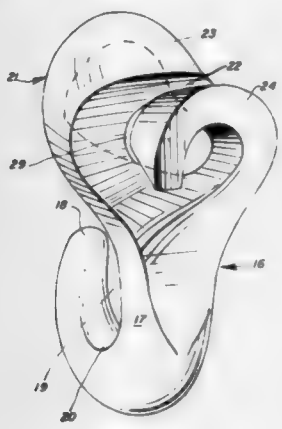
assembly; said calender unit including a sliver trumpet receiving the fiber web from said web delivering assembly and calender rolls receiving a sliver from said sliver trumpet; said calender unit being displaceably supported for assuming an operative position in which said sliver trumpet is situated in the immediate vicinity of said web delivering assembly and an inoperative position in which said sliver trumpet is remote from said web delivering assembly; and a start-up tray supported underneath said doffer and said web delivering assembly; the improvement comprising mounting means for movably supporting said start-up tray for assuming a start-up position in which, during start-up run, said start-up tray guides leading portions of the fiber web from said doffer to said web delivering assembly and a withdrawn position in which said start-up tray leaves the space underneath said doffer and said web delivering assembly substantially unobstructed; and coupling means connecting said start-up tray with said calender unit for moving said start-up tray by said calender unit into said start-up position when said calender unit moves into its inoperative position and for moving said start-up tray by said calender unit into said withdrawn position when said calender unit moves into its operative position.

4,404,712

SLING HOOK

Melvin M. Northe, and Dean W. Larson, both of Portland, Oreg., assignors to Esco Corporation, Portland, Oreg.

Filed Oct. 28, 1981, Ser. No. 315,725
Int. Cl.³ F16G *11/00*
U.S. Cl. 24—129 R **9 Claims**



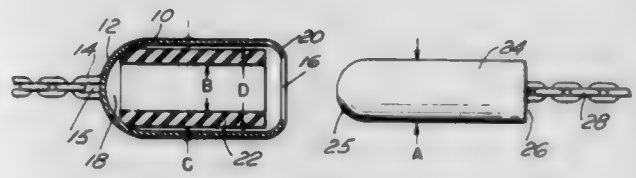
1. A sling hook comprising a unitary body having a shank curving downwardly and forwardly into a bill with the upper end of said bill being in spaced relation to said shank to provide a throat adapted to receive a wire rope therein, said throat being downwardly arcuate to provide a nadir for the bottom of said wire rope, said body at the upper end being equipped with an integral sleeve portion adapted to receive a wire rope sling and providing a downwardly facing elongated bearing surface therefor, said sleeve portion being equipped with a generally curved slot dividing the same into oppositely extending forward and rear lug eyes and interrupting said bearing surface, said slot accommodating receipt of said sling by twisting the same rather than threading the same into a conventional eye, the rear portion of said forward lug eye being generally aligned with said throat nadir, said forward lug eye having a longer bearing surface than said rear lug eye, each lug eye terminating in a free straight end with said free ends extending downwardly and away from said slot to a point below the center line of a wire rope in said sleeve portion.

4,404,713

CLUTCH USING PARTIAL VACUUM TO RESIST SEPARATION

Edmund Dorsey, 455 Meschanticut Valley Pkwy., Cranston, R.I. 02920

Filed Dec. 7, 1981, Ser. No. 327,887
Int. Cl.³ A44B *17/00*
U.S. Cl. 24—217 R **3 Claims**



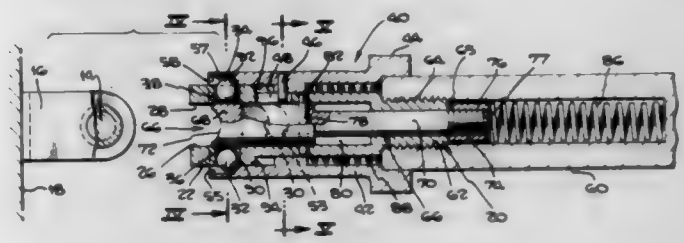
1. A clutch comprising a tubular shell closed at one end to define an open cavity, a resilient, stretchable, tubular clutch member having a through bore and an outer transverse dimension smaller than the inner transverse dimension of the cavity loosely retained in the cavity, a stud of a transverse dimension larger than the inner transverse dimension of the clutch member and adapted to be inserted and withdrawn from the clutch member with the external and internal surfaces, respectively, of said stud and clutch member in sealing relation to each other, whereby the resilient clutch member expands in said shell during insertion of said stud, yet allows release of displaced air from said shell, said shell having peripheral lip means at the open end of the cavity and being imperforate except for said open end whereby, as the stud is withdrawn, the clutch member seals against the lip means and a partial vacuum occurs thereby resisting disengagement.

4,404,714

COUPLING MECHANISM

John A. Duran, Glendora, Calif., assignor to Avibank Mfg., Inc., Burbank, Calif.

Filed Dec. 17, 1979, Ser. No. 104,167
Int. Cl.³ A44B *11/25, 17/00*
U.S. Cl. 24—230 AL **3 Claims**



1. A coupling mechanism adapted for transverse coupling to a keeper pin which comprises:

a housing having a slotted front portion adapted to transversely receive a keeper pin, said slot extending coaxially with the longitudinal axis of said housing;

detent means associated with said housing for releasably coupling a keeper pin and movable between coupled and uncoupled positions;

a slidable keeper pin receiving member mounted in said housing having a forward end engagable by a keeper pin and keeper pin biasing means associated therewith for normally biasing said member in a direction whereby said detent means abuts against said keeper pin receiving member, thereby retaining said detent means in said uncoupled position until said keeper pin receiving member is moved against its bias to thereby release said detent means permitting said detent means to move to its coupled position, said keeper pin receiving member having a plug attached to its end remote from said forward end and said plug being adapted to abut against the end of said housing remote from said slotted front portion when said keeper pin receiving member is mounted in said housing;

sleeve means slidably associated with said housing for releasably locking said detent means in said coupled position and movable between a position locking said detent means in said coupled position and a position allowing movement of said detent means to said uncoupled position, said sleeve means being slotted to transversely receive a keeper pin, said sleeve means slot extending coaxially with the longitudinal axis of said housing, said sleeve means further including a detent body contact surface displaced sufficiently from said housing to permit movement of said detent bodies into said uncoupled position when said sleeve means is in said detent movement allowing position and a locking portion having a locking surface rearward of said front portion, said locking surface retaining said detent bodies in said coupled position when said sleeve means is in said detent locking position; and

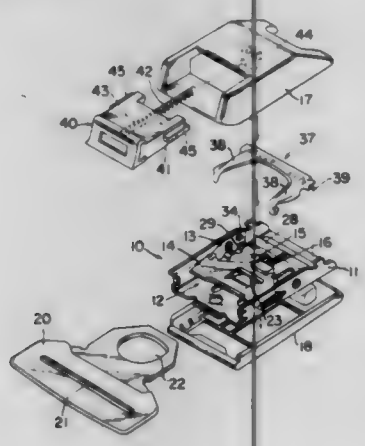
biasing means for biasing said detent bodies to said coupled position and said sleeve means to said detent locking position including an inwardly sloping biasing surface which connects said front portion detent body contact surface with said locking surface whereby forward slidable movement of said biasing surface when said biasing surface is in contact with said detend bodies causes inward movement of said detent bodies toward said coupled position and a spring for urging said biasing surface in said forward direction.

4,404,715

SAFETY-BELT BUCKLE OF SLIDE-UNLOCKING TYPE

Mutsumi Sugimoto, Hamamatsu, Japan, assignor to Katsuyama Kinzoku Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Jun. 24, 1982, Ser. No. 391,743
Int. Cl.³ A44B *11/00, 11/06*
U.S. Cl. 24—230 A **6 Claims**



1. A safety-belt buckle characterized in that it comprises:

a tongue (**20**) adapted (**21**) to be secured at a rear part thereof to a free end of one belt strap and having a locking opening (**22**) at a front part thereof;

a base plate (**11**) adapted (**35**) to be secured at a rear part thereof to a free end of another belt strap;

a latch device (**12**) mounted on the base plate and having a latch plate (**14**) formed to have a locking catch (**23**) capable of positively catching and thereby locking the forward edge of the locking opening of the tongue when the front part of the tongue is slidingly inserted into the latch device between the latch plate and the base plate through an insertion slot (**19**) at the front end of the base plate;

a link plate (**13**) which is rockably supported on trunnions (**31, 31**) journaled in side flanges (**24*a*, 24*b***) of the base plate, and which has engagement slots (**33, 33**) disposed forward of the trunnions and adapted to engage the rear edge of the latch plate, engagement lugs (**34, 34**) disposed rearward of the trunnions, and spring parts (**29, 29**) for pressing the latch plate toward the base plate;

an actuating plate (**37**) elastically and pivotally supported on the side flanges of the base plate and having forwardly projecting arms (**38, 38**), intermediate parts of which are engaged with the engagement lugs of the link plate;

a casing cover (**17**) mounted on the base plate and functioning cooperatively therewith to protectively cover and accommodate the above enumerated parts; and

a slide button (**40**) which is partly accommodated within the casing cover and so supported thereby as to be slidable in the front-rear directions of the base plate and is continually biased forward by spring force (**42**), and which has inclined surfaces (**41, 41**) engageable with the free front ends of the projecting arms of the actuating plate,

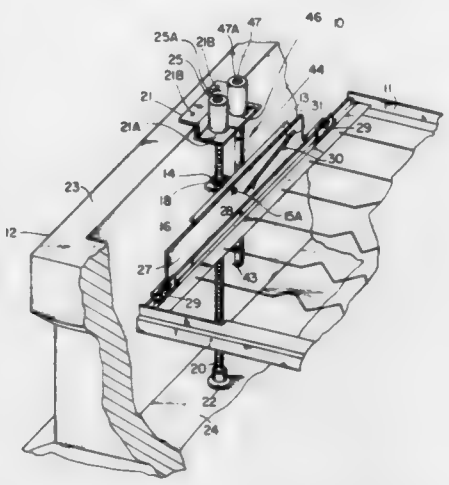
the tongue in locked state being unlocked by pressing the slide button rearward against the spring force, whereby the inclined surfaces thereof press the actuating plate toward the base plate thereby to cause the link plate to move the rear edge of the latch plate away from the base plate, and the locking catch is thereby disengaged from the front edge of the locking opening of the tongue, which is thereby released.

4,404,716

COFFIN BED ADJUSTING APPARATUS

Robert K. Foust, 301 May Kay La., Connersville, Ind. 47331

Filed Aug. 8, 1982, Ser. No. 405,993
Int. Cl.³ A61G *17/00*
U.S. Cl. 27—12 **8 Claims**



1. An apparatus for elevating and tilting a bed in a burial casket, said apparatus comprising:

(a) an elevating support member;

(b) elevation adjustment means for adjusting the vertical height of said elevating support member;

(c) a bed support member pivotally mounted to said elevating support member at a pivoting point, said bed support member including an elongated slot which has a first slot end and a second opposite slot end and said first slot end being closer to said pivoting point than said second opposite slot end;

(d) tilting means mounted to said elevating support member, said tilting means including an arm which is slidably received in said elongated slot so that the sliding of the arm causes contact with the walls of the slot resulting in pivoting of the bed support member about its pivoting point.

4,404,717

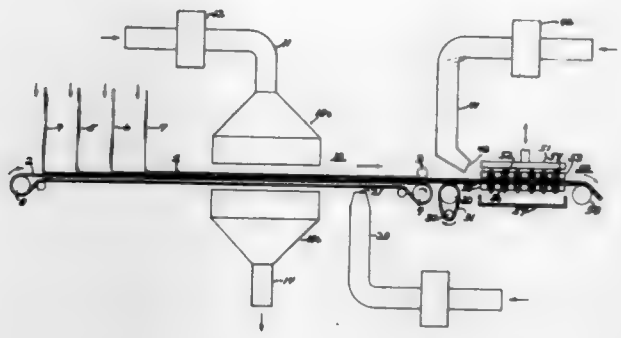
ENVIRONMENTAL CONTROL OF NEEDLED MAT PRODUCTION

Jeffrey A. Neubauer, Boiling Springs, N.C., and Vincent A. Sarni, Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 11, 1980, Ser. No. 214,832
Int. Cl.³ D04H *3/10*
U.S. Cl. 28—107 **6 Claims**

3. In a method of improving the operation of a needling zone by minimizing process interruption for cleaning wherein continuous strand fiber glass mat is being mechanically bonded by

penetrating the mat with barbed needles to entangle the strands and wherein the mat contains moisture at a level of between 0.5 to 1 percent the improvement comprising introducing air into the zone of needing in sufficient quantities to establish in said



zone an atmosphere which is at a temperature of 50° F. to 120° F. and a relative humidity of between 20 percent and 60 percent to thereby prevent fouling of the needling zone with glass fibers and binder.

4,404,718

APPARATUS FOR MANUFACTURING A BULKY TEXTURED YARN

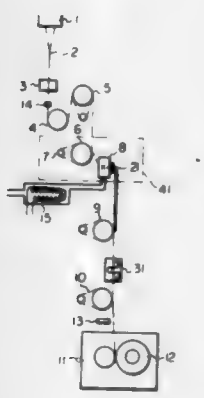
Koji Tajiri, and Toshiharu Arimatu, both of Mihara, Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 15,904, Feb. 28, 1979, abandoned. This application Mar. 18, 1981, Ser. No. 245,121

Claims priority, application Japan, Oct. 17, 1977, 52-123584; Mar. 7, 1978, 53-24933

Int. Cl.³ D02G *1/16*

U.S. Cl. 28—220 **1 Claim**



1. In an apparatus for manufacturing a bulky textured yarn from a thermoplastic synthetic multifilament yarn, said apparatus being provided with means for texturing said multifilament yarn comprising means (**6**) for preheating said multifilament yarn and means (**15, 8**) for treating said preheated yarn with pressurized heated fluid to create bulkiness therein, control means (**20**) for controlling the temperature of said heated pressurized fluid, means (**10**) for drafting said textured yarn with a constant rate of draft in a drafting zone downstream of said texturing means (**15, 8**), the improvement comprising:

a tension detector (**31**) for detecting the yarn tension in said drafting zone;

a tension setting device (**32**) for setting a predetermined value of said yarn tension in said drafting zone;

means (**33**) for detecting deviation between a value of said yarn tension detected by said tension detector (**31**) and a set value of said tension setting device (**32**);

said control means (**20**) controlling temperature conditions which affect thermal shrinkage of said yarn while being processed by said texturing means (**15, 8**); and

an adjustment device (**35**) for issuing a control signal corresponding to an output signal of said deviation detecting means (**33**), an output of said adjusting means (**35**) being connected to said control means (**20**),

whereby when said yarn tension detected by said tension detector (**31**) deviates from said set value thereof, said control means (**20**) is controlled by the control signal issued from said adjustment device (**35**), so that the temperature of said heated pressurized fluid of said texturing means (**15, 8**) is adjusted in accordance with said control signal of said adjusting device (**35**), and said yarn tension can be maintained at a desired condition corresponding to said set (by **32**) value thereof.

4,404,719

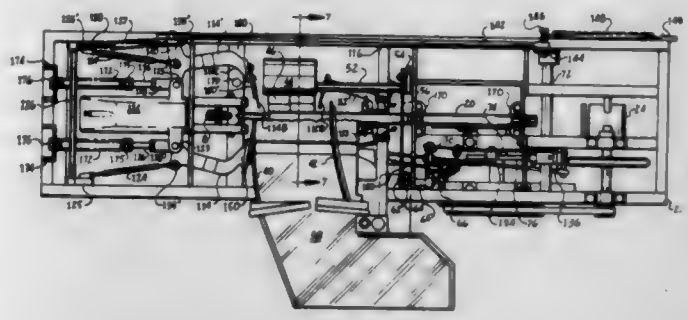
APPARATUS FOR STRIPPING RESIDUAL YARN FROM TEXTILE BOBBINS OR THE LIKE

Kurt W. Niederer, Charlotte, N.C., assignor to The Terrell Machine Company, Charlotte, N.C.

Division of Ser. No. 900,730, Apr. 27, 1978, abandoned. This application Sep. 2, 1980, Ser. No. 183,388

Int. Cl.³ B65H *73/00*

U.S. Cl. 28—297 **5 Claims**



1. In an apparatus for stripping residual yarn from textile bobbins or the like, said apparatus being of the type having means for engaging a textile bobbin having residual yarn thereon at a delivered position of the bobbin and stripping said residual yarn therefrom including means for supporting and positioning the bobbin in disposition for stripping, an improved means for feeding textile bobbins to said engaging and stripping means comprising

(1) a bobbin supply supporting member supporting thereon a plurality of textile bobbins having residual yarn thereon,

(2) a feed drum having a peripheral slot for receiving and carrying a bobbin therein, disposed for oscillation between a bobbin receiving position wherein said peripheral slot of said feed drum is adjacent said bobbin supply supporting member and a bobbin delivering position wherein said peripheral slot is adjacent said engaging and stripping means at said delivered position,

(3) an operating arm linked to said feed drum in a manner such that reciprocation of said operating arm in a bobbin feeding stroke effects oscillation of said feed drum from said bobbin receiving position to said bobbin delivering position, and

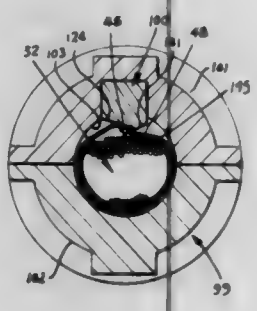
(4) means for reciprocating said operating arm and connected thereto by a pin and slot connection including means for disengaging the operating arm reciprocation of said feed drum when a bobbin is misaligned in said peripheral slot so as to engage said supply supporting member and cause resistance to oscillation thereof by said feed drum, said disengaging means having a drive cam surface in said slot engagable with said pin for driving said operating arm in said bobbin feeding stroke to effect oscillation of said drum, said cam surface being inclined to permit said pin to move in said slot to a position out of engagement with said cam surface when said bobbin is misaligned to resist feed drum oscillation.

4,404,720

APPARATUS FOR FORMING A METALLIC TAPE INTO A TUBE HAVING AN OVERLAPPED SEAM

William D. Bohannon, Jr., Lawrenceville, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 52,165, Jun. 26, 1979, Pat. No. 4,308,662.
This application Nov. 16, 1981, Ser. No. 321,952
Int. Cl.³ H01B *13/24, 13/14*
U.S. Cl. 29—33 E 13 Claims



1. An apparatus for forming a metallic tape into a substantially circular tube having an overlapped seam, said apparatus comprising:

means for advancing a metallic tape;

first forming means including a passageway which converges in a direction along which the tape is advanced for causing successive increments of the tape to have a generally circular configuration with longitudinal edge portions of the successive increments being spaced apart; and

second forming means substantially external to an area enclosed by the metallic tape for causing the longitudinal edge portions of the tape to be overlapped and form a substantially closed seam having overlying and underlying edge portions, said second forming means including guideway means for confining the longitudinal edge portions as the tape is advanced to cause the overlying longitudinal edge portion of the tape to be directed inwardly into substantially continuous engagement with the underlying longitudinal edge portion while supporting outer and inner surfaces of the underlying edge portion to prevent its deflection inwardly toward a longitudinal axis of the tube.

3. An apparatus for wrapping a corrugated metallic tape about a cable core to enclose the core in a shield having a substantially circular configuration and having a preformed, overlapped seam, said apparatus comprising:

a tube;

means for advancing a cable core along a path of travel through said tube;

means for advancing a corrugated metallic tape;

means including a generally conically shaped surface which converges in a direction along which the tape is advanced and which is disposed about said tube for causing successive increments of the tape being advanced to have at least a partially curved configuration;

means concentrically disposed about an end portion of said tube to form a plurality of adjacent, sequentially decreasing openings for causing successive increments of the tape advanced therethrough to have a generally circular configuration with longitudinal edge portions of the tape being spaced apart; and

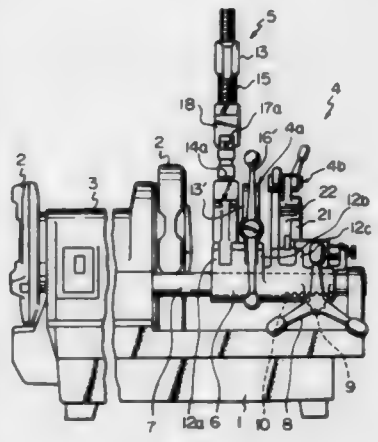
means including guideways which provide individual confinement of longitudinal edge portions of the tape along outer and inner surfaces thereof for at least a portion of the length of the path of travel for forming the longitudinal edge portions of the tape into an overlapped, substantially closed seam having overlying and underlying edge portions with the overlying edge portion being directed inwardly to preclude its protrusion into a plastic jacket which is extruded subsequently over the enclosed core, while supporting the underlying edge portion to prevent its deflection inwardly toward the core as the overlying edge portion is being engaged therewith.

4,404,721

PIPE THREAD CUTTING AND ASSEMBLY MACHINE

Taketomo Ohyama, Mie, Japan, assignor to MCC Corporation, Mie, Japan

Division of Ser. No. 193,105, Oct. 2, 1980. This application Apr. 7, 1982, Ser. No. 366,413
Claims priority, application Japan, Oct. 20, 1979, 54-135705; Oct. 20, 1979, 54-145575[U]; Oct. 20, 1979, 54-145576[U]
Int. Cl.³ B23P *23/04, 19/04;* B23G *1/02;* B21D *39/04*
U.S. Cl. 29—33 T 5 Claims



1. A pipe thread cutting machine comprising:

a machine base having mounted thereon pipe holding chucks and a driving mechanism for rotating a pipe held by said holding chucks;

a reciprocal carriage slidably mounted on said base for selective movement toward and away from said holding chucks;

pipe cutting means mounted on and supported by said carriage for selectively cutting a pipe rotated by said driving mechanism;

thread cutting means mounted on and supported by said carriage for selectively cutting threads into an end of a pipe rotated by said driving mechanism; and

chuck mechanism means mounted on and supported by said carriage for selectively holding a threaded coupling, whereby upon rotation of a pipe by said driving mechanism the coupling is threaded onto a threaded end of the pipe, said chuck mechanism means being pivotally mounted on said carriage for movement between an open withdrawn position and a closed operable position.

4,404,722

APPARATUS FOR FORMING A SPACE SECTION IN A PAIR OF CONTINUOUS SLIDE FASTENER STRINGERS

Hideo Shimai, Namerikawa, Japan, assignor to Yoshida Kogyo, K.K., Tokyo, Japan

Filed Apr. 29, 1981, Ser. No. 258,566
Claims priority, application Japan, May 1, 1980, 55-58154
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—33.2 7 Claims

1. An apparatus for forming a space section devoid of coupling elements in a pair of continuous slide fastener stringers including a pair of tapes carrying along their inner longitudinal edges a pair of rows of interengaged continuous coupling elements attached by stitches to the respective tapes, said apparatus comprising:

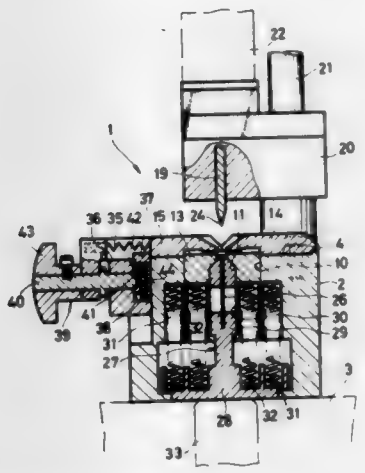
(a) a support table having in its top surface a guide groove for receiving the pair of continuous slide fastener stringers along a longitudinal path;

(b) a stationary die disposed in said support table and having a top surface for supporting the interengaged coupling element rows along a length corresponding to the length of the space section to be formed;

(c) a pair of guide plates disposed one on each side of said guide groove and extending thereover toward each other, said guide plates having an aperture registering with said top surface of said stationary die;

(d) a pressure pad vertically movably disposed around said stationary die in said support table for clamping with said guide plates portions of the tapes around said length of the interengaged coupling element rows supported on said top surface of said stationary die;

(e) a punch vertically movable toward and away from said stationary die and having a sharp cutting edge locatable to project through said aperture of said guide plates into said longitudinal path of the pair of continuous slide fastener stringers for cutting tape-side leg portions of the interengaged coupling elements supported on said top surface of said stationary die;



(f) an ejector extending vertically through said stationary die and aligned vertically with said cutting edge of said punch, said ejector being upwardly movable together with said punch relative to said stationary die for pulling the cut coupling elements out of the stitches while the tapes are clamped between said pressure pad and said guide plates; and

(g) a mechanism for driving said pressure pad and said ejector to be moved in timed relation to each other.

4,404,723

APPARATUS FOR TAKING OFF A BAND WOUND ABOUT A PAPER SHEET BUNDLE

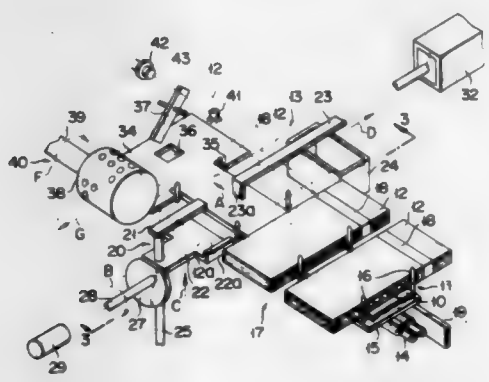
Hiroshi Ohba, Tokyo, and Shigeo Horino, Oizumi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 8, 1981, Ser. No. 261,936

Claims priority, application Japan, May 12, 1980, 55-62414; May 12, 1980, 55-62416

Int. Cl.³ B23D *15/04*

U.S. Cl. 29—33.52 **12 Claims**



3. A band-removing apparatus for taking off a band wound about a paper sheet bundle crosswise of one axis thereof comprising:

transport means for conducting a paper sheet bundle fastened by a band through a transport passage to a band-removing section with the axis of said transported paper sheet bundle set substantially at right angles to a transport direction;

bending means which is provided in the band-removing section to clamp one end portion of the paper sheet bundle and bend said bundle around said one axis, thereby causing part of the wound band to be stretched over the concave portion of the bent paper sheet bundle in the form of a chord;

means for taking off the band from the bent paper sheet bundle by engaging with said part of the wound band to be stretched in the form of a chord; and

discharge means for carrying the paper sheet bundle from which the band has been taken off away from the band-removing section.

4,404,724

HYDROSTATIC SUPPORT ELEMENT, ESPECIALLY FOR A CONTROLLED DEFLECTION ROLL

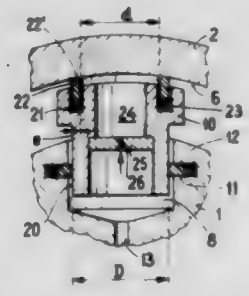
Alfred Christ, and Johann Miesch, both of Zürich, Switzerland, assignors to Escher Wyss Limited, Zürich, Switzerland

Filed Mar. 9, 1981, Ser. No. 242,121

Claims priority, application Switzerland, Mar. 25, 1980, 2320/80

Int. Cl.³ B21B *13/02*; F16C *33/74, 32/06*

U.S. Cl. 29—116 AD **10 Claims**



1. A hydrostatic support element, especially for a controlled deflection roll, for supporting a supported part upon a supporting part, comprising:

a plunger member movable at the supporting part in a predetermined displacement direction;

said plunger member coacting with the supporting part for enclosing a hydrostatic pressure chamber to which there is infed a pressurized fluid medium;

said supported part having a running surface;

the pressurized fluid medium acting directly upon the running surface of the supported part;

said plunger member possessing a closure ledge surrounding the pressure chamber;

said closure ledge having a surface coacting with the running surface of the supported part;

said surface comprising a sealing surface of a sealing ledge and measured in the direction of pressure gradient of the pressurized fluid medium having a width which does not exceed 7 mm;

said plunger member possessing a groove;

said sealing ledge being inserted into said groove;

said plunger member having hydraulically effective surface means of a dimension such as to determine the force by means of which the sealing surface of the sealing ledge is pressed against the running surface of the supported part;

the size of the hydraulically effective surface means of the plunger member being chosen such that there is formed a contact force which is just sufficient in order to permit a predetermined low escape of the pressurized fluid medium between the sealing surface of the sealing ledge and the running surface of the supported part; and

a sealing means between the plunger member and the sealing ledge along an inner surface of the sealing ledge which confronts the pressure chamber.

4,404,725
TOOL FOR INSTALLING AN ELEMENT ON A SHAFT

William C. Sullivan, North East Newark, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 179,412, Aug. 18, 1980, abandoned. This application Aug. 11, 1982, Ser. No. 407,013
Int. Cl.[3] B23P 19/04
U.S. Cl. 29—252 3 Claims



1. A tool for installing an element on a shaft said shaft having a threaded end with a plurality of external threads thereon and an enlarged portion adjacent to said theaded end, said element having an opening therethrough which is dimensioned to pass over said threaded end to be positioned on said enlarged portion of said shaft with an interference fit therebetween when said element is fully installed on said shaft, said tool comprising:

a power cylinder having a piston means movably mounted therein:

a tubular ram supported by said power cylinder and extending therefrom, said tubular ram having an end capable of making contact with a surface of said element around said opening;

a gripping member projecting from said piston means of said power cylinder to extend through an interior of said tubular ram, said piston means being capable of moving an extended end of said gripping member into and outwardly of said interior of said tubular ram;

said extended end of said gripping member being circumferentially divided into sections by axially extending slots therethrough, said sections of said extended end having internally threaded portions having a plurality of internal threads which match said plurality of said external threads of said threaded end of said shaft when said extended end is fully within said interior of said tubular ram, said sections being performed to be separated one from the other to allow said internally threaded portions to freely pass over said threaded end of said shaft when said extended end is outwardly of said interior of said tubular ram;

said tubular ram having an interior wall which makes sliding contact with an exterior surface of said extended end of said gripping member to cam said sections thereof inwardly to entrap said threaded end of said shaft in said internally threaded portions when said plurality of said external threads and said plurality of said internal threads are aligned and intermeshed and said extended end is moved into said interior of said tubular ram;

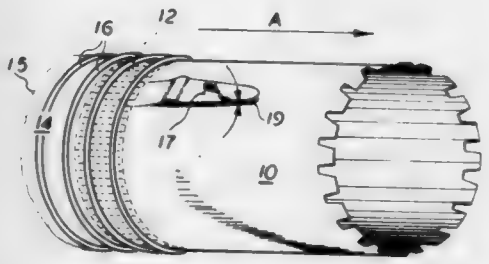
said end of said tubular ram being capable of acting on said surface of said element on said enlarged portion of said shaft as said extended end moves further into said interior of said tubular ram by said piston means; and

said piston means being incapable of producing said camming of said sections inwardly to entrap said threaded end of said shaft in said internally threaded portion when said plurality of said external threads and said plurality of said internal threads are misaligned and unable to intermesh.

4,404,726
METHOD OF CONNECTING FLEXIBLE TUBULAR DUCT AND A CONNECTOR

Karl Fahrion, 1000 Constance St., Pittsburgh, Pa. 15212

Division of Ser. No. 147,467, May 7, 1980, abandoned. This application Jul. 29, 1981, Ser. No. 287,763
Int. Cl.[3] B23P 11/00
U.S. Cl. 29—432.2 2 Claims



1. A method for connecting flexible tubular duct having a scrim supported on a wire helix with a sheet metal tubular connector having piercing members externally and circumferentially connected thereto, said method comprising:

placing one end of the tubular connector in receiving engagement with one end of the flexible tubular duct;

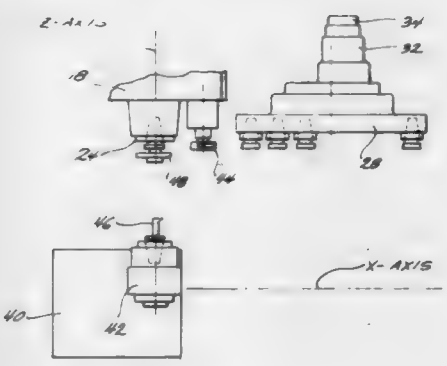
forcing the flexible tubular duct onto said tubular connector by a length such that at least one turn of the helix of the flexible tubular duct passes over the end of the piercing member that is oppositely disposed from the end of the tubular connector; and

drawing the flexible tubular duct in the opposite direction until the opposite end of the piercing members pierces the scrim of the flexible tubular duct and the wire helix is lodged between the piercing members and the tubular connector.

4,404,727
MACHINE TOOL OPERABLE AS BOTH A CHUCKING TYPE LATHE AND AS A MACHINING CENTER

Frank Zankl, Brookfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Feb. 24, 1981, Ser. No. 237,750
Int. Cl.[3] B23Q 3/157
U.S. Cl. 29—568 9 Claims



1. An improved machine tool operative as both a chucking type lathe and a horizontal spindle machining center comprising:

a frame;

a spindlehead; means slidably mounting said spindlehead on said frame for vertical and horizontal movement thereon;

a tool and workpiece carrying spindle rotatably journaled in said spindlehead parallel to the path of horizontal movement of said spindlehead, said spindle having means to receive a workpiece or a cutting tool thereon;

means connected to said spindle for rotatably driving said spindle to rotate the workpiece holder or toolholder in said spindle;

tool and workpiece holding means slidably mounted on said

frame for horizontal movement on said frame perpendicular to the path of horizontal movement of said spindlehead on said frame, said tool and workpiece holding means being rotatable about an axis parallel to the vertical path of spindlehead movement for positioning a workpiece or a tool held therein in a predetermined relationship with said spindle;

storage means mounted to said bed for storing workpiece holders and toolholders, means connected for rotating said storage means about an axis parallel to the axis of spindle rotation for positioning a workpiece holder or toolholder in a ready position adjacent to said spindle; and

a changer arm journaled to said spindlehead for rotational movement about, and longitudinal movement along, an axis parallel to said spindle axis for transferring workpieces and tools between said spindle and said storage means and for transferring workpieces and tools between said spindle and said tool and workpiece holding means.

4,404,728

TOOL POT CLEANING SYSTEM FOR TOOL MAGAZINE

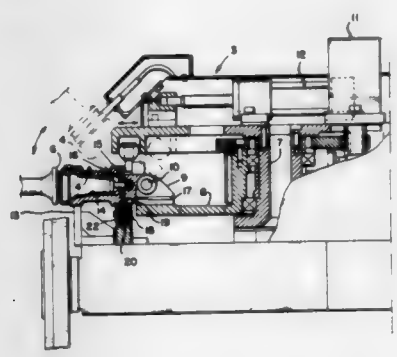
Kazutomi Ishikawa, Okayama, Japan, assignor to Mori Machinery Co., Ltd., Okayama, Japan

Filed Apr. 24, 1981, Ser. No. 257,410

Claims priority, application Japan, Apr. 26, 1980, 55-57902[U]

Int. Cl.³ B23Q *3/157*

U.S. Cl. 29—568 **3 Claims**



1. A tool pot cleaner of a tool magazine which is on a cradle provided with a number of tool pots, attachment means for pivotally mounting a tool pot to said cradle, the tool pots being disposed movably and radially with an elevation angle of the outer circumference of said tool magazine, said tool pot cleaner comprising:

an air passage provided at the base of each tool pot; and

an air supply means having an air connection port provided in the tool cradle for supplying air to said air passage via said air connection port when said tool pot is tilted for tool exchange;

whereby when the tool pot is tilted for tool exchange, the air passage is opened through to said air connection port to thereby let the air jet into the tool pot to clean the inside of the tool pot.

4,404,729

MULTI-SPINDLE MACHINE TOOLS

Niels D. Jensen, Bjerringbro, Denmark, and Arne Johansen, Fahrenkrug, Fed. Rep. of Germany, assignors to Grundfos Pumpenfabrik GmbH, Wahlstedt, Fed. Rep. of Germany

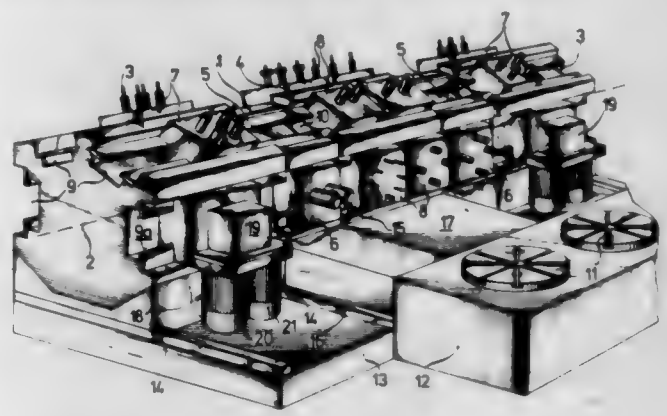
Filed Nov. 10, 1981, Ser. No. 319,918

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1980, 3042564

Int. Cl.³ B23Q *3/157*

U.S. Cl. 29—568 **6 Claims**

1. In a multi-spindle machine tool of the kind comprising a plurality of tool-carrying spindle heads stored in at least one magazine, said spindle heads being exchangeable as desired for the purpose of performing a tool change, a selected spindle head in the magazine being substituted for the one currently secured to the spindle head carrier, this latter spindle head being released from the carrier and conveyed to its predetermined storage space in the magazine, whereas the other spindle head selected in each case is withdrawn from the magazine and secured to the spindle head carrier, the invention which consists that said spindle head carrier is constructed as a turret rotatable around a longitudinal axis and is provided with spindle head holders distributed along its outer periphery, each



said magazine laterally co-ordinated with said turret having storage spaces for the spindle heads which are to be stored, said holders and said storage spaces being located at identical radial distances from said longitudinal axis and, for the purpose of reciprocal transfer of spindle heads being placeable in alignment by rotation of said turret, and wherein each said holder of said turret is turnable to an operating position in which said spindle head present in said holder in question is couplable to a spindle drive system stationarily arranged on said magazine.

4,404,730

METHOD OF PRODUCING LUMINESCENT OR LASER DIODES HAVING AN INTERNALLY LIMITED LUMINESCENT SURFACE

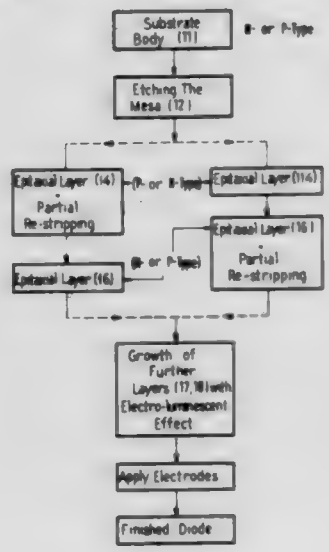
Jochen Heimen, Haar, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 349,376

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1981, 3105786

Int. Cl.³ H01L *21/208*

U.S. Cl. 29—569 L **9 Claims**



1. In a method for producing a pn-luminescent or laser diode having an emission area in the semiconductor body of said diode defined by lateral limitations of a pn-junction wherein a plurality of semiconductor layers are epitaxially deposited onto a substrate body or on one another and electrodes are applied, the improvement comprising:

(1) generating a mesa having side surfaces and a top plane surface dimensioned according to a desired luminescent

surface area on a select semiconductor substrate of a first conductivity type;

(2) epitaxially depositing a first layer of a semiconductor material of a second, opposing conductivity type relative to that of the substrate, onto the surfaces of the substrates and the mesa in such a manner that said first layer is generated with a lesser thickness in the area of the mesa surfaces relative to the thickness thereof on the substrate surfaces located around said mesa;

(3) removing a sufficient portion of said first layer so that at least the entire mesa plane surface is uncovered;

(4) epitaxially depositing a second layer of a semiconductor material of the first conductivity type on said first layer and on the uncovered plane surface of said mesa; and

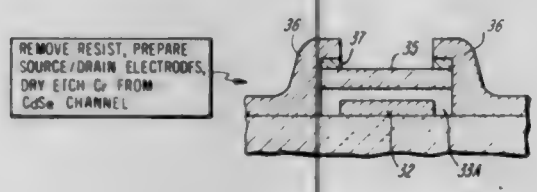
(5) thereafter applying a layer sequence required for luminescent or laser diodes and providing electrodes.

4,404,731

METHOD OF FORMING A THIN FILM TRANSISTOR

Michael Poleshuk, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 1, 1981, Ser. No. 307,463
Int. Cl.³ H01L *21/363*
U.S. Cl. 29—571 **14 Claims**



5. A method of forming an active region of a thin film transistor on a substrate having a gate electrode deposited thereon which extends to the edge of the substrate to provide means for contact therewith, the method comprising depositing thin film layers of an insulator, a semiconductor, and a conductive metal upon a portion of the gate electrode and a surface portion of the substrate adjacent the gate electrode portion in successive sequence under continuous vacuum, said surface portion of the substrate and gate electrode portion being exposed by a predetermined opening in a mask to define and delineate the exact transistor dimensions by said opening.

4,404,732

SELF-ALIGNED EXTENDED EPITAXY MESFET FABRICATION PROCESS

Thomas L. Andrade, Oakton, Va., assignor to IBM Corporation, Armonk, N.Y.

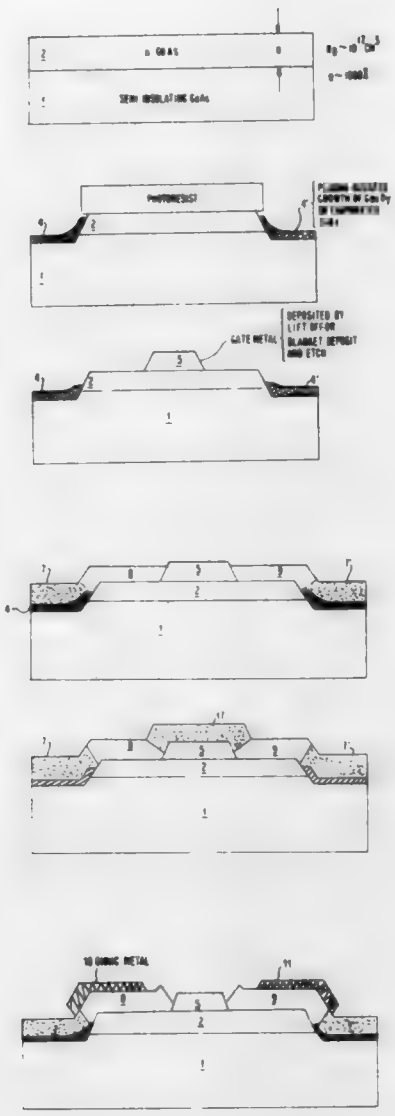
Filed Dec. 7, 1981, Ser. No. 327,832
Int. Cl.³ H01L *21/203, 21/306*
U.S. Cl. 29—571 **12 Claims**

1. An improved fabrication process for forming a gallium arsenide MESFET device, comprising the steps of:

forming an N-type gallium arsenide layer on a low conductivity substrate;

forming a refractory gate electrode on a selected portion of the surface of said gallium arsenide layer;

growing an epitaxial gallium arsenide raised source region on said gallium arsenide layer on a first side of said gate and simultaneously therewith growing a gallium arsenide raised drain region on said gallium arsenide layer on a second side of said gate opposite from said first side thereof, said source and drain regions being of N-type conductivity;



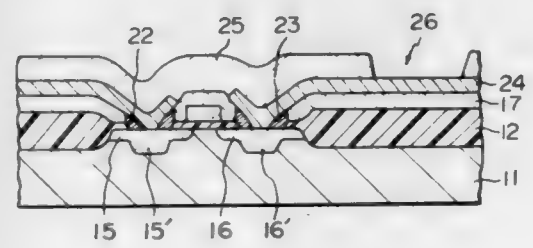
whereby a self-aligned refractory gate MESFET device having a raised source and drain, is formed.

4,404,733

METHOD OF PRODUCING SEMICONDUCTOR DEVICES

Nobuo Sasaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 27, 1982, Ser. No. 343,154
Claims priority, application Japan, Jan. 28, 1981, 56-11447
Int. Cl.³ H01L *21/223*
U.S. Cl. 29—571 **8 Claims**



1. A method of producing a semiconductor device, comprising the steps of: forming an insulating layer of silicon dioxide on a semiconductor substrate; forming a contact hole in said insulating layer; selectively introducing impurities into a portion of said insulating layer around said contact hole; heating the insulating layer to cause plastic flow of said insulating layer so as to round the edge portion thereof defining said contact hole; and forming a conducting layer within said contact hole and on said insulating layer.

4,404,734

METHOD OF MAKING A CDS/CU_xS PHOTOVOLTAIC CELL

Vijay P. Singh, El Paso, Tex., assignor to Photon Power, Inc., El Paso, Tex.

Division of Ser. No. 201,588, Oct. 28, 1980, Pat. No. 4,362,896.
This application Aug. 2, 1982, Ser. No. 404,239
Int. Cl.[3] H01L *31/18*
U.S. Cl. 29—572 20 Claims

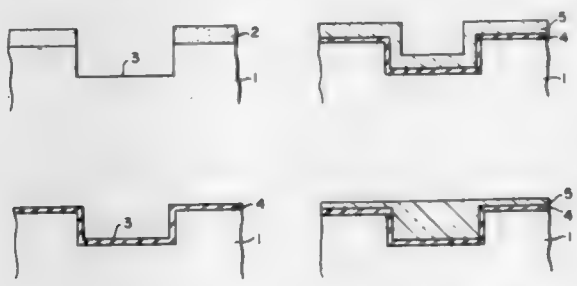
1. A process for forming photovoltaic cells, comprising:
spraying onto a heated electrically conductive film of SnO_x on a transparent vitreous substrate at least one solution effective to form a crystalline film containing cadmium and sulphur,
exposing said crytalline film to a heated vapor effective to recrystallize said crystalline film to form crystals having at least one dimension greater than 0.5 microns,
vacuum evaporating a copper chloride layer onto said recrystallized film, and
heating to convert a portion of said recrystallized film to Cu_xS to a thickness between about 0.5 to 1.0 microns, thereby forming a heterojunction and associated depletion layer with a remaining portion of said recrystallized film, said remaining portion having a thickness effective to separate said depletion layer from said electrically conductive film.

4,404,735

METHOD FOR MANUFACTURING A FIELD ISOLATION STRUCTURE FOR A SEMICONDUCTOR DEVICE

Junji Sakurai, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 13, 1981, Ser. No. 263,280
Claims priority, application Japan, May 14, 1980, 55-63573
Int. Cl.[3] H01L *21/95*
U.S. Cl. 29—576 W 9 Claims



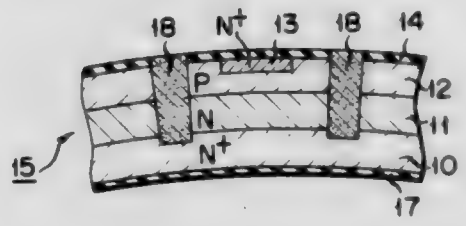
1. A method for manufacturing a semiconductor device having a semiconductor substrate, a plurality of active elements formed in said substrate and an isolation region formed in said substrate for isolating said active elements from one another, the method comprising the steps of;
forming a groove in said substrate defining said isolation region,
covering said groove with an insulating layer,
forming on said insulating layer at least in said groove a layer of a material capable of being fluidified when heated, and
irradiating said layer of said material with an energy beam to selectively heat said layer of said material and permit the same to flow into said groove, thereby to fill up said groove with said material.

4,404,736

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE OF MESA TYPE

Yutaka Koshino, Yokosuka; Takashi Ajima, Tokyo; Jiro Ohshima, and Masahiro Abe, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 9, 1981, Ser. No. 319,411
Claims priority, application Japan, Nov. 13, 1980, 55/159931
Int. Cl.[3] H01L *21/316*
U.S. Cl. 29—576 W 9 Claims



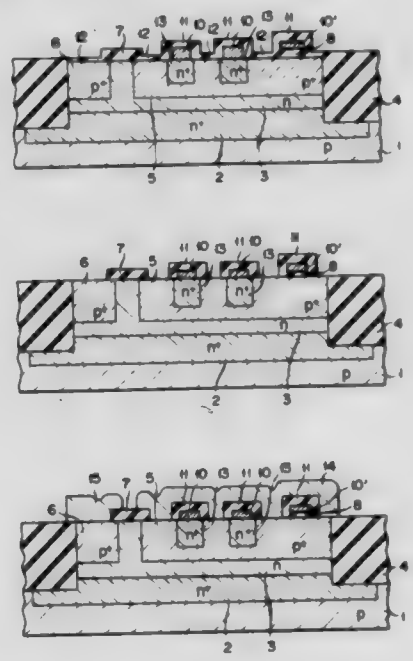
1. A method for manufacturing a semiconductor device of mesa type comprising:
forming mesa recesses of predetermined depth around a semiconductor element in one surface of a semiconductor body;
forming only on the entire opposite surface of said semiconductor body a film for lessening the concentration of stress;
filling glass powder into said mesa recesses; and
sintering glass powder to form glass insulators.

4,404,737

METHOD FOR MANUFACTURING A SEMICONDUCTOR INTEGRATED CIRCUIT UTILIZING POLYCRYSTALLINE SILICON DEPOSITION, OXIDATION AND ETCHING

Koichi Kanzaki, Kawasaki, and Minoru Taguchi, Omiya, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 28, 1980, Ser. No. 210,759
Claims priority, application Japan, Nov. 29, 1979, 54-153601; Nov. 29, 1979, 54-153603; Nov. 29, 1979, 54-154593; Dec. 21, 1979, 54-165494
Int. Cl.[3] H01L *21/225, 21/31*
U.S. Cl. 29—577 C 8 Claims



1. A method for manufacturing a semiconductor integrated circuit comprising the steps of:
selectively forming a polycrystalline silicon layer containing

an impurity of second conductivity type on an exposed surface of a first conductivity type region formed in a semiconductor substrate;

forming simultaneously both a thick oxidation film on said polycrystalline silicon layer and a thin oxidation film on the remaining exposed surface of said substrated by a heat oxidation treatment;

diffusing said impurity of second conductivity type from said polycrystalline silicon layer into said first conductivity type region in said substrate to form second conductivity type regions, said polycrystalline silicon layer constituting a first electrode wiring layer connected with said second conductivity type regions;

removing said thin oxidation film by etching said oxidation films to leave a remaining part of said thick oxidation film on said polycrystalline silicon layers for forming a contact opening to said first conductivity type region; and

forming a second electrode wiring layer insulated from said first electrode wiring layer of the polycrystalline silicon by said oxidation film remaining thereon and connected with said first conductivity type region through said contact opening.

4,404,738

METHOD OF FABRICATING AN I^2L ELEMENT AND A LINEAR TRANSISTOR ON ONE CHIP

Gen Sasaki, Yokohama; Minoru Taguchi, Omiya; Koichi Kanzaki, Kawasaki, and Akihiko Furukawa, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

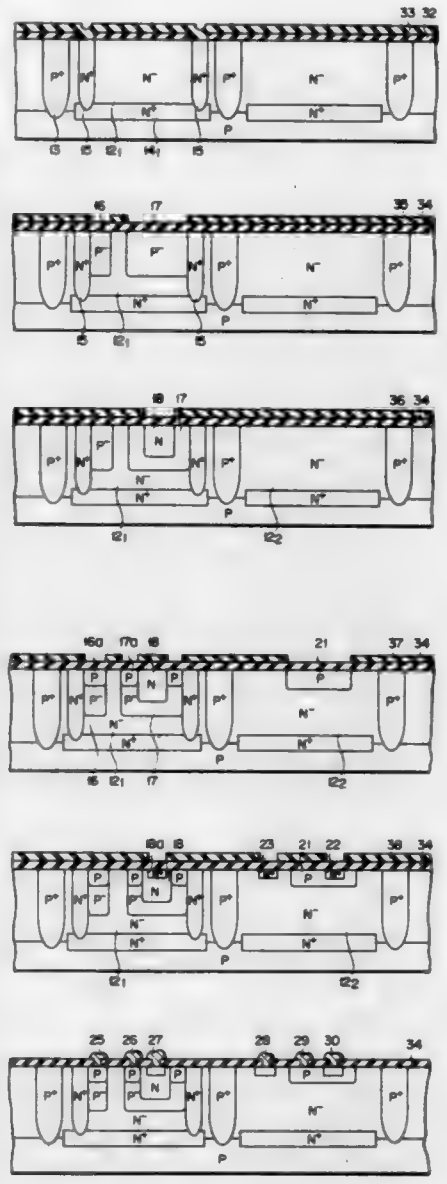
Division of Ser. No. 153,952, May 28, 1980, abandoned. This application Sep. 25, 1981, Ser. No. 305,721

Claims priority, application Japan, May 31, 1979, 54-66759; Jul. 23, 1979, 54-92585

Int. Cl.³ H01L *21/20, 21/74*

U.S. Cl. 29—577 C **4 Claims**

1. A method of manufacturing an integrated circuit comprising at least one I^2L element and at least one linear transistor, comprising: a first step of forming on a semiconductor substrate of a first conductivity type high impurity concentration layers of a second conductivity type; a second step of growing an epitaxial layer of the second conductivity type on said substrate and said high impurity concentration layers; a third step of separating said epitaxial layer into a plurality of island regions by forming an isolating region of the first conductivity type, a fourth step of forming a high impurity concentration region of the second conductivity type in at least one of said island regions inn which the I^2L element is formed, said high impurity concentration region reaching said high impurity concentration layers; a fifth step of doping an impurity in said island region to form a deep injector region of the I^2L element and a deep base region of a vertical transistor, said deep injector and base regions being low impurity concentration layers of the first conductivity type; a sixth step of forming, in the base region, a collector region 18 of the vertical transistor, said region being an impurity layer of the second conductivity type; a seventh step performed after the sixth step of forming a base region of the linear transistor in at least one of the remaining island regions by doping an impurity into said island region shallower than said base region of the vertical transistor, said base region being an impurity layer of the first conductivity type; and an eighth step of forming an emitter region and a collector region of the linear transistor respectively in said base region of the linear transistor and said remaining island region, said collector region of the linear transistor being a high impurity concentration layer of the second conductivity type and said emitter region of the linear transistor being an impurity layer of the second conductivity type which has an impurity



concentration higher than that of the collector region of the vertical transistor which is formed in the base region thereof.

4,404,739

METHOD FOR MOUNTING, ELECTRICALLY ISOLATING AND MAINTAINING CONSTANT PRESSURE ON A SEMICONDUCTOR ELEMENT

Richard F. Kiley, Stoneham, and Ralph I. Larson, Jr., North Reading, both of Mass., assignors to Thermal Associates, Inc., North Reading, Mass.

Continuation-in-part of Ser. No. 142,862, Apr. 21, 1980, abandoned, and Ser. No. 171,827, Jul. 24, 1980, abandoned. This application Feb. 22, 1982, Ser. No. 351,174

Int. Cl.³ H01L *21/52, 21/58*

U.S. Cl. 29—588 **11 Claims**

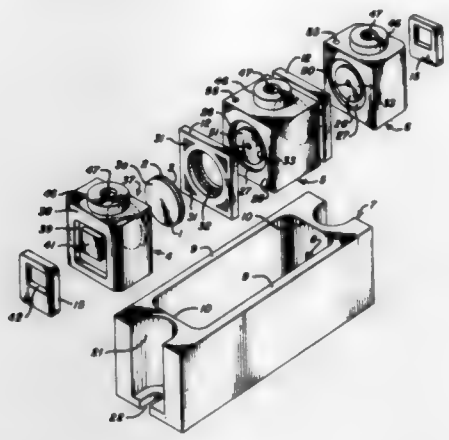
1. A method for mounting a semiconductor element having opposing sides in a retaining frame to facilitate electrical connection and double-side cooling of said element, comprising:

positioning said element between two electrically and thermally conductive members;

applying to said members external force to maintain said members in electrical and thermal contact with the opposing sides of said element;

fixing said members in said retaining frame by means of bonding means, said members being electrically isolated from said retaining frame by thermally conductive insulation means;

removing said external force from said members, so that said members are maintained in electrical and thermal contact



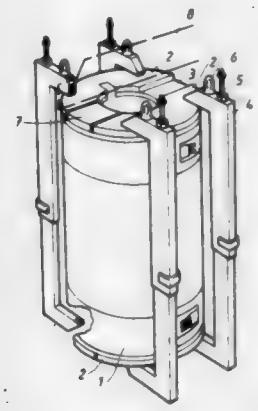
with said semiconductor element by said bonding means to cooperation with said retaining frame.

4,404,740

METHOD FOR MOUNTING A WINDING IN A TRANSFORMER

Rune Hägg, and Lennart Lundström, both of Ludvika, Sweden, assignors to ASEA Aktiebolag, Västeras, Sweden

Filed Aug. 6, 1980, Ser. No. 175,632
Claims priority, application Sweden, Aug. 9, 1979, 7906678
Int. Cl.³ H01F *41/02*
U.S. Cl. 29—606 **4 Claims**



1. Method for mounting a prepressed annular complete winding unit on a transformer core, comprising the steps of:

prepressing said winding unit to a first compressing pressure with a separate winding press within a range of approximately 50% to 65% of a final desired compressing pressure required for a finished transformer;

retaining said winding unit in a compressed condition at said first compressing pressure by adjustable clamping members engaging respective opposite upper and lower end faces of the winding unit such that said clamping members extend outside thereof;

mounting said winding unit still in said first compressed condition together with said clamping members onto a transformer core such that said lower winding unit end face rests on a lower yoke and press beam;

interleaving an upper yoke with said upper transformer core end face;

engaging an upper press beam with said upper yoke;

removing said adjustable clamping members; and then

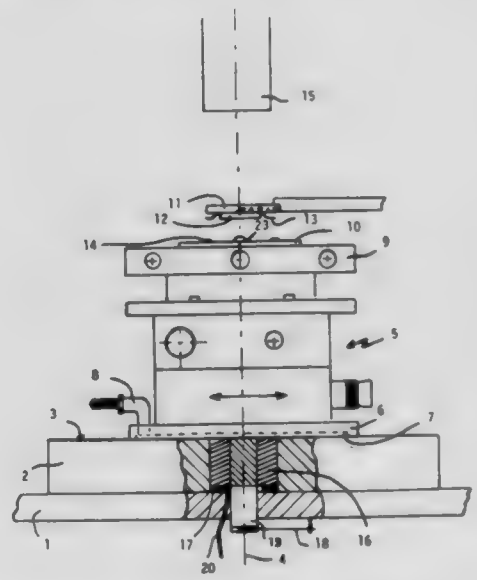
further compressing said winding unit to said final desired compressing pressure.

4,404,741

DEVICE FOR THE ALIGNMENT OF A PART AND A SUBSTRATE FOR CARRYING THE PART

Jean-Philippe Lebet, Les Geneveys; Leonardo Peterle, Buttes, and Fernand Matthey-Doret, Le Locle, all of Switzerland, assignors to Les Fabriques d'Assortiments Reunies, Le Locle, Switzerland

PCT No. PCT/CH81/00056, § 371 Date Oct. 9, 1981, § 102(e) Date Oct. 9, 1981
PCT Filed May 19, 1981, Ser. No. 309,907
Claims priority, application Switzerland, May 19, 1980, 3877/80; European Pat. Off., May 5, 1981, 81.810170.1
Int. Cl.³ H05K *3/30, 13/04*
U.S. Cl. 29—721 **8 Claims**



1. A device for the alignment of a part and of a substrate designed to receive said part, said device comprising:

a plate having a horizontal flat upper surface, said plate being mounted on a fixed base;

an XY moving table connected with a movable base, said movable base mounted for sliding movement relative to said upper surface of the plate, said table supporting said substrate;

a blocking device for momentarily preventing translational movement of the movable base on said upper surface, but allowing said base to rotate about a given vertical axis;

a gripping device to bring the part over the substrate approximately along said given vertical axis and to deposit it vertically onto said substrate; and

an optical device for viewing the part and the substrate with the direction of observation being along said given vertical axis.

4,404,742

METHOD AND APPARATUS FOR MOUNTING RIVETS OR THE LIKE IN A FLEXIBLE CARRIER

Ralph Fuhrmeister, Coopers Plains, Australia, assignor to Furma Manufacturing Co. Pty. Ltd., Coopers Plains, Australia

Filed Jul. 7, 1981, Ser. No. 281,039
Claims priority, application Australia, Jul. 18, 1980, PE4596
Int. Cl.³ B23P *19/00*; B25C *5/02*
U.S. Cl. 29—798 **4 Claims**

1. Apparatus for charging a carrier strip of pliable, resiliently deformable material with a series of similar articles, comprising:

(a) a striker, and means for advancing and retracting the same toward the strip for driving the article at least partially therethrough said strip in response to advancement of said striker, causing said strip to stretch and be formed with a punched hole for receiving said article,

(b) die means including a central die aligned coaxially with said striker, and a series of equally spaced apertures aligned with said central die to receive and closely engage

articles driven by said striker partially through said strip, said central die being formed to permit stretching of said strip by said article,

(c) means for advancing and retracting said die means toward and away from said strip,

(d) feed means for sequentially feeding the articles to the strip in alignment with and between said striker and said die means,

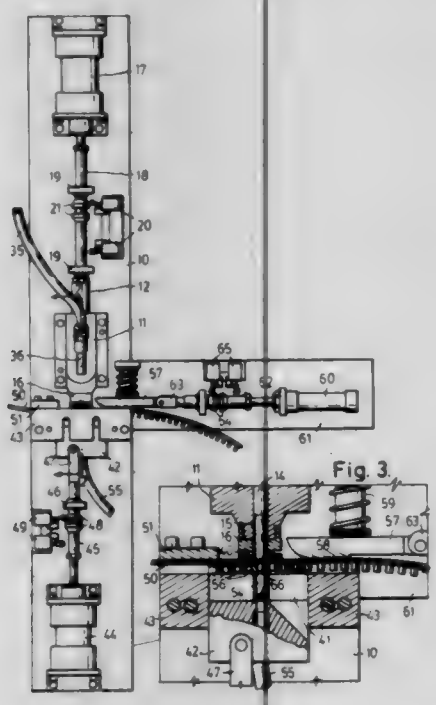


Fig. 3.

(e) means for guiding said strip between said striker and said die means, in alignment with said central die and said apertures formed in said die means, and

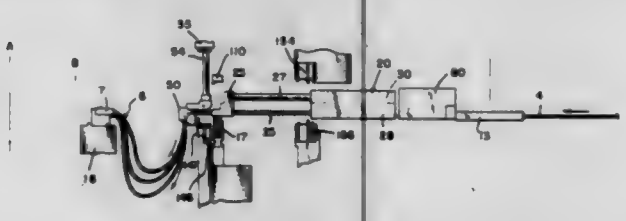
(f) means for advancing the strip, said advancing means engaging and moving articles driven through said strip so as to present a blank strip in the region of said central die.

4,404,743

ELECTRICAL HARNESS FABRICATION USING IMPROVED WIRE MEASURING METHOD

Joseph E. Brandewie, Dunedin, and Granville S. Hart, Clearwater, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 26, 1981, Ser. No. 267,108
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—857 **4 Claims**



1. In the method of manufacture of electrical harnesses of the type comprising an insulating connector block having a plurality of contact terminals therein, said terminals being arranged in side-by-side relationship in a row, wires having their ends connected to said terminals, said method comprising the step of feeding each of said wires from an endless source of wire toward said connector block by means of feed roll means, the wires being fed along a wire feed path in side-by-side coplanar relationship toward said connector, said method being characterized in that:

after said wires are connected to said terminals in said connector block and said connector is positioned at a predetermined location in said feed path which is downstream, relative to the direction of wire feed, from said feed rolls, wire deflector means is positioned on said feed path between said connector and said feed roll means, said deflector means having deflecting surface portions which bear against respective wires,

said feed roll means is thereafter actuated to feed lengths of wire from said wire sources axially against said deflecting surface portions to form loops in said wires transversely of the plane of said feed path between said deflector means and said connector block, said deflector means remaining stationary during wire feed,

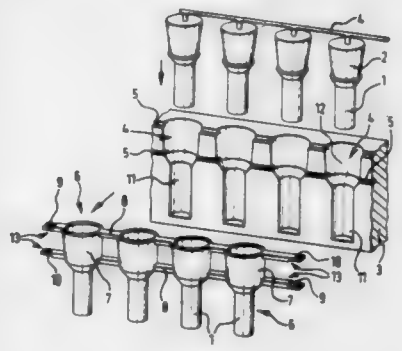
said wires are thereafter cut at a location between said deflector and said feed roll means.

4,404,744

METHOD OF MAKING ELECTRICAL CONTACTS

Paul Stenz, and Manfred Wilmes, both of Detmold, Fed. Rep. of Germany, assignors to C. A. Weidmuller K.G., Detmold, Fed. Rep. of Germany

Filed Oct. 10, 1980, Ser. No. 195,819
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1979, 2941770
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—883 **4 Claims**



1. A method of making a strip of mechanically interconnected insulated electrical contacts each comprising a tubular crimpable metal contact pin and an insulating tubular plastic sleeve extending from one end of said contact pin, comprising the steps of

(a) providing an injection mold having a plurality of elongated mold cavities side by side, each cavity having first and second opposite end regions, and said mold further having ducts transversely interconnecting said first end regions of said mold cavities;

(b) disposing a respective said contact pin in the second end region of each said cavity; and

(c) injecting plastic material into said first end regions and said ducts, thereby forming in said first end regions said insulating tubular plastic sleeeves directly bonded to respective ends of said contact pins in substantially end-to-end relation, said sleeves having a larger diameter than, and extending axially away from, said contact pins, and forming in said ducts members integral with said sleeves and mechanically interconnecting said sleeves to form said strip of interconnected contacts.

4,404,745

PROCESS FOR SEALING VHF COMPONENT IN CASE

Jean C. Resneau; Jean Doyen, and Robert Ribier, all of Paris, France, assignors to Thomson-CSF, Paris, France

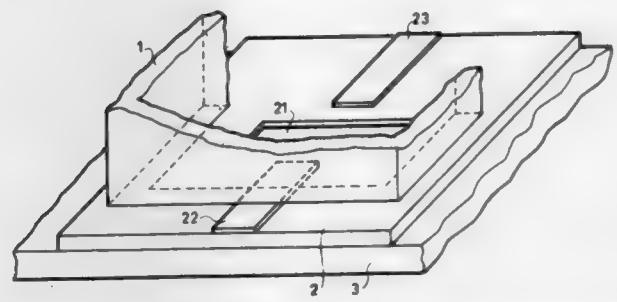
Filed Feb. 26, 1981, Ser. No. 238,600
Claims priority, application France, Feb. 26, 1980, 80 04208
Int. Cl.³ H05K *3/30*
U.S. Cl. 29—841 **3 Claims**

1. A process for the hermetic sealing of a very-high-frequency component in a case, said process comprising the steps of:

manufacturing of a first and a second part from green alumina by grinding, drying and pressing of said parts after addition of organic binders;

heating said first and second manufactured parts at 1000° for a period of time greater than one hour;

depositing by silk-screen printing of refractory metalizations made from an alloy refractory at the sintering temperature of said green alumina on the large face of one of said parts in order to form conducting crossovers on the contacting



surface of said first and second parts and stove-drying said first and second manufactured parts at 100° C.;

positioning and assemblying said first and second parts and compressing said first and second parts together; and

heating said assembled parts at 1500° C. for a period of more than one hour.

4,404,746

WIRE RETAINER AND DIAGONAL CUTTING NIPPER WITH WIRE RETAINER

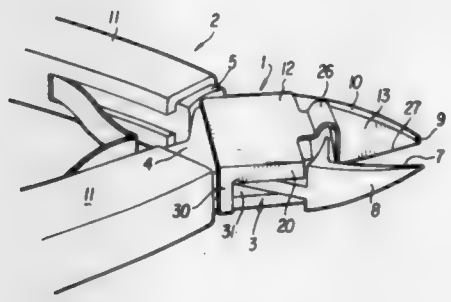
Conny Jansson, Enköping; Lars Erlandsson, and Rolf Appelkvist, both of Eskilstuna, all of Sweden, assignors to AB Bahco Verktyg, Enkoping, Sweden

Filed Dec. 19, 1980, Ser. No. 218,074

The portion of the term of this patent subsequent to Feb. 3, 1998, has been disclaimed.

Int. Cl.³ B26B *17/00*

U.S. Cl. 30—124 **4 Claims**



1. A wire retainer made from sheet metal for attaching to a diagonal cutting nipper or box joint nipper of the kind consisting of two members crossing over each other at a box joint portion including a slot, and which are pivotably kept together by a hinge means at the joint portion to form jaws provided with cutting edges forwards of the joint portion, and nipper arms rearwards of the joint portion, the retainer serving to prevent offcuts from dropping during wire cutting with the nipper, when the retainer is fitted to a first one of the members of the nipper, the retainer comprising an attachment portion and a wire retainer tongue integral therewith, which projects outwardly form the attachment portion and is adapted to come into resilient yielding engagement against the jaw of a second one of the member when the jaws are closed, the attachment portion consisting of a plate with a front edge, a rear edge and two side faces formed by flanges upstanding in the same direction from the plate, a first flange being formed at the front edge of the plate with a first flap bent at substantially 180° to form a hook, while the opposing second flange is bent substantially at right angles to the plate and includes a second flap at the rear of the plate, said second flap being bent at substantially 180° to form a hook, the tongue comprising a flap projecting from the front edge of the plate, with a rear portion joined to the front edge of the plate and bent from said edge outwards in a direction away from said both flanges and bent over inwards in a curve to merge into a forward portion extending forwards from the rear portion in the form of a blade which is oblique in relation to the plate.

4,404,747

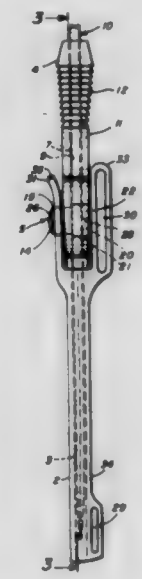
KNIFE AND SHEATH ASSEMBLY

Walter W. Collins, Clover, S.C., assignor to Schur, Inc., Natick, Mass.

Filed Jul. 29, 1981, Ser. No. 287,917

Int. Cl.³ B26B *29/02*

U.S. Cl. 30—151 **6 Claims**



1. In combination a knife having a handle and blade and a sheath having a knife encasing portion and a hanger extending therefrom, means for securing said knife in said sheath comprising:

a detent assembly;

means supporting said detent assembly in said handle, said supporting means removably engaging said handle and a blade extension into said handle whereby removal of said supporting means permits separation of said blade and handle;

means spring loading a detent and forming a portion of said detent assembly to partially project from said handle;

means forming a hole in said hanger into which said detent projects when said knife is in said sheath, whereby said detent engages said hanger to prevent removal of said knife from said sheath unless said detent is pushed against said spring pressure to disengage it from said hanger while said knife is being withdrawn from said sheath.

4,404,748

FOLDING KNIFE

Günter Wiethoff, Solingen, Fed. Rep. of Germany, assignor to Firma Cuno Melcher KG ME-Sportwaffen, Solingen, Fed. Rep. of Germany

Filed Jan. 18, 1982, Ser. No. 340,014

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 3101028; Sep. 12, 1981, 3136325

Int. Cl.³ B26B *1/00, 29/00*

U.S. Cl. 30—161 **11 Claims**

1. A folding knife comprising:

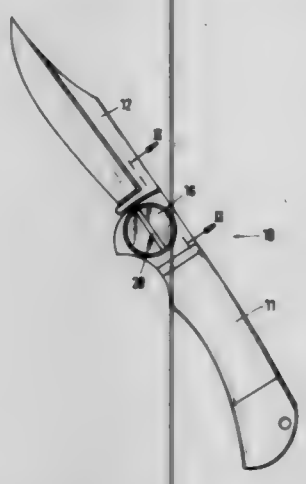
a blade with a longitudinal cutting edge ending in a point and a blunt end opposite said point provided with a circular hole;

a handle having a body integrally formed with substantially coextensive first and second cheeks separated by a pocket accommodating said blade in a retracted position of the latter, said first and second cheeks being provided with aligned first and second cutouts extending in line with said hole from said pocket to the outer cheek surfaces;

a first and second member respectively lodged in said first and second cutouts and rigidly interconnected by a stem

of the same diameter as said hole forming part of one of said members and traversing said hole, said members being separated by a distance sufficient to enable their joint displacement along the axis of said bore between a normal and an off-normal position; and

spring means engaging said first member in said first cutout for biasing said members into said normal position, said



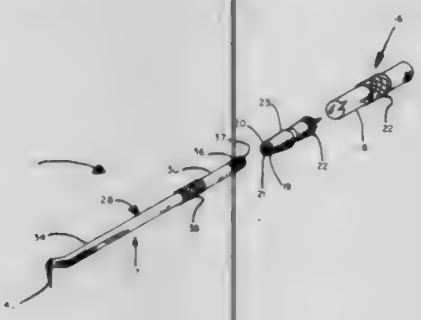
second member being nonrotatable about said axis and being provided with a retaining formation engaging a coacting formation on said blunt end in the retracted position and in an extended position of said blade, axial depression of said first member against the force of said spring means disengaging said formations for enabling a pivoting of said blade about said axis.

4,404,749

COMBINATION TOOL APPARATUS

Clarence A. Emerson, Bozeman, Mont., assignor to King Tool Inc., Bozeman, Mont.

Filed Aug. 6, 1981, Ser. No. 290,685
Int. Cl.³ B26F *1/24*
U.S. Cl. 30—164.9 **5 Claims**



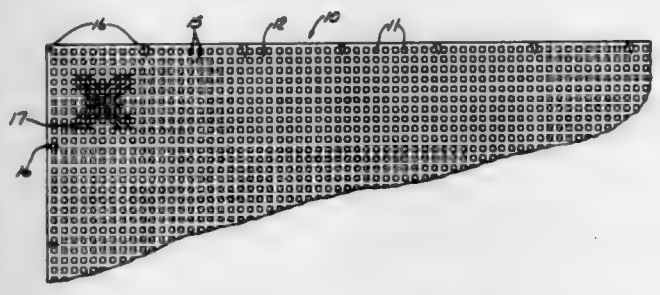
1. Combination tool apparatus including a handle portion and a tool portion; said handle portion including an elongated handle member, said handle member having a generally cylindrical configuration, said handle member including an opening extending into said member from one end thereof, said opening including an internal sidewall section, gripping means disposed along at least a portion of the outer surface of said handle member; said tool portion including a plurality of interchangeable pick members selectively connectable with said handle member, said pick members and said handle member being mateable through threaded sections, each of said pick members including a shank section, an external portion adjacent one end of said shank section mateable with said end opening in said handle member, said shank section including gripping means disposed along the length of the outer surface of said shank section adjacent to said external end portion thereof, said gripping means on said handle member and said pick members including knurled sections, a pick section extending from the end of said shank section opposite to said external end portion, said pick section including a pointed end portion extending from the free end of said pick member, one of said pick members including a pick section with a substantially straight configuration, another of said pick members including a pick section with a right angle configuration, a third of said pick members including a pick section with a hook configuration, a fourth of said pick members including a pick section with an ascending spiral configuration, said spiral configuration extending around an arc of less than 180°, a storage case for said handle member and said pick members, said storage case including a substantially flat body portion with a plurality of adjoining elongated pocket sections; whereby the external end portions of said pick members alternately may be threaded into the internal opening of said handle member to provide a picking tool.

4,404,750

NEEDLEPOINT SHEET

Michael K. Marx, 905 Mt. Hood Dr., Pittsburgh, Pa. 15239, and Louis P. Musante, 45 Maple Dr., Fairview, Pa. 16415

Filed Mar. 11, 1981, Ser. No. 242,637
Int. Cl.³ D03D *29/00*
U.S. Cl. 33—1 B **5 Claims**



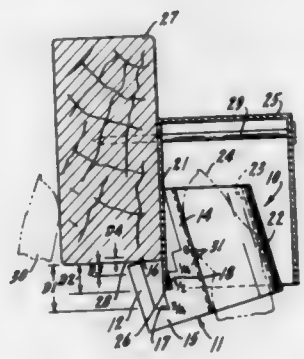
1. A needlepoint sheet of flexible plastic material having a plurality of aligned rows of perforations therein for receiving thread-like material therethrough, at least one face of said sheet being flat, said perforations having side walls in the form of a pyramid frustrum.

4,404,751

HAND TOOL FOR MOUNTING AN ELECTRICAL BOX

Ivan L. Rieckenberg, Rte. 1, Box 148E, Steeleville, Ill. 62288

Filed Mar. 16, 1982, Ser. No. 358,840
Int. Cl.³ B25B *1/00*
U.S. Cl. 33—180 R **8 Claims**



1. A hand tool for use in mounting an electrical box on a structural member, such as a wall stud, with the rim of the box displaced from the outer surface of the structural member by a predetermined distance D, comprising:

a jig of substantially V-shaped cross sectional configuration, including first and second rigid legs joined at a base;

the first leg of the jig having an elongated linear primary gauge surface at its upper edge for engaging the outer surface of the structural member, and having an effective height equal to the distance D;

the base of the jig having an elongated linear secondary gauge surface for engaging the rim of one wall of an

electrical box, the secondary gauge surface extending parallel to the primary gauge surface;

the second leg of the jig having a height substantially greater than the height of the first leg but substantially less than the depth of the box and having a tertiary gauge surface at its upper edge for engaging the inner surface of said one wall of the electrical box;

and a finger grip mounted on and extending transversely on the second leg of the jig to enable a workman to hold the jig in place on the rim of an electrical box and to maintain the box and jig in position on the structural member with one hand while securing the box to the structural member with the other hand;

the entire tool constituting a single, unitary molded member.

4,404,752

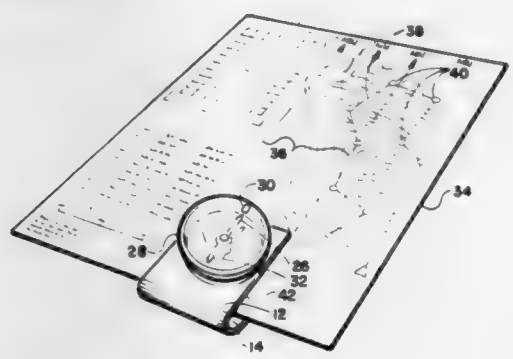
CLIP-ON COMPASS

John W. Hanna, 4076 Crown Point Dr., San Diego, Calif. 92109

Filed Jun. 3, 1981, Ser. No. 270,083

Int. Cl.³ G01C *17/04*

U.S. Cl. 33—347 **1 Claim**



1. A clip-on compass assembly comprising:

(a) a non-ferromagnetic frame;

(b) a "North" indicator on said frame;

(c) a compass needle pivotally mounted to said frame and allignable with said indicator;

(d) a clamp mounted on said frame for clamping a map beneath said compass needle;

(e) said frame including a mounting plate with said needle mounted atop same and said frame also having a reference line-defining structure alignable with a reference line on a map engaged by said clamp;

(f) Said clamp comprising a cam-type over-the-center device with a roller which clamps against the bottom of said plate; and,

(g) said plate having an extended resilient end with a spaced return portion defining a deep bay to receive a map, with said clamp being pivoted to said end.

4,404,753

CARPENTER'S SAW GUIDE AND SQUARE

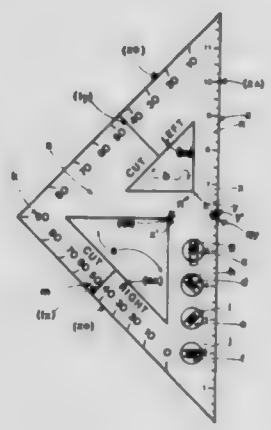
Henri Klok, P.O. Box 13714, Houston, Tex. 77219

Filed Dec. 15, 1981, Ser. No. 330,966

Int. Cl.³ G01C *9/24*

U.S. Cl. 33—451 **1 Claim**

1. A measuring, angle marking, squaring, and saw guiding device comprising an isosceles right triangle with the hypotenuse forming a measuring and guiding edge having a calibrated scale with its zero index at one end and progressing onward to the opposite end of said hypotenuse, which has mounted to the underside face exactly at the midpoint of the hypotenuse a squaring and pivot flange whose edges create two distinct protraction conditions relative to the edges of the isosceles triangle formed by said equal legs, with the outward edge of said flange forming a pivot point aligned with the midpoint of said hypotenuse and the inside pivot flange located a predetermined distance along an imaginary line bisecting said isosceles triangle and said flange being perpendicular to the mentioned hypotenuse with a second smaller reinforcing flange parallel to said hypotenuse welded to the inside edge of the pivot flange but located opposite the pivot flange's intended angling and squaring edge that is transversely aligned exactly on the midpoint of said hypotenuse; the first leg of said isosceles forming a protractor condition with the midpoint of the hypotenuse and said leg graduated from 0 to 90 degrees from the hypotenuse to apex of the isosceles and the second leg forming a protractor condition with mentioned inside pivot point and graduated from 90 to 0 degrees from the apex toward the hypotenuse, but short of the hypotenuse exactly the dimension the pivot flange creates, said inside pivot point being itself an apex for a smaller proportionate right isosceles triangle removed in actual material to reduce the weight of the device in the second of two equal halves formed figuratively by an imaginary line which is coincidental with the 90° apex point and the midpoint of said hypotenuse, with an even smaller right isosceles triangle removed in actual material from the first half section, said first section being heavier in mass than the second to retain the device balanced in place during actual use, said section is furthermore reduced in mass by four equal, rounded apertures bored out and removed in actual material; all four apertures located in line and parallel to said hypotenuse, cradeling in each a small leveling device that corresponds individually in parallel to each of the three legs of said isosceles triangle as well as to the stated pivot flange; said flange projects from the underside surface which is calibrated and graduated in a manner of a mirror reflection identical to the top surface so that the pivot points are identical and said device can be laid flatly upon its top surface and be used according to similar functions of measuring, angle marking, and squaring on a planar surface; or be used conversely with the pivot flange abutting and pivoting mentioned edges against a given material, and the calibrated hypotenuse forming a respective angle that can be utilized.



4,404,754

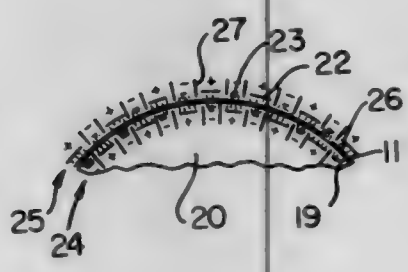
ELECTROSTATIC METHOD FOR TREATING MATERIAL

James T. Candor, 5440 Cynthia La., Dayton, Ohio 45429

Continuation-in-part of Ser. No. 261,784, May 8, 1981, Pat. No. 4,338,729, which is a division of Ser. No. 124,224, Feb. 25, 1980, Pat. No. 4,283,862, which is a division of Ser. No. 50,807, Jun. 2, 1979, Pat. No. 4,208,807, which is a continuation-in-part of Ser. No. 925,378, Jul. 17, 1978, abandoned, which is a division of Ser. No. 863,910, Dec. 23, 1977, Pat. No. 4,111,773, which is a continuation-in-part of Ser. No. 732,846, Oct. 15, 1976, Pat. No. 4,081,342, which is a continuation-in-part of Ser. No. 695,068, Jun. 11, 1976, Pat. No. 4,033,841, which is a continuation-in-part of Ser. No. 569,815, Apr. 21, 1975, Pat. No. 3,966,575, which is a continuation-in-part of Ser. No. 499,178, Aug. 21, 1974, Pat. No. 3,893,898, which is a continuation-in-part of Ser. No. 383,255, Jul. 27, 1973, Pat. No. 3,849,275, which is a division of Ser. No. 263,605, Jun. 16, 1972, Pat. No. 3,795,605, which is a continuation-in-part of Ser. No. 53,402, Jul. 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 25,938, Apr. 6, 1970, Pat. No. 3,687,834, which is a continuation-in-part of Ser. No. 864,851, Oct. 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 811,421, Mar. 28, 1969, abandoned, said Ser. No. 569,815, is a continuation-in-part of Ser. No. 548,666, Feb. 10, 1975, Pat. No. 3,965,581, which is a continuation-in-part of Ser. No. 469,820, May 14, 1974, Pat. No. 3,931,682, Ser. No. 405,023, Oct. 10, 1973, Pat. No. 4,060,449, and Ser. No. 499,178, Aug. 21, 1974, Pat. No. 3,893,898. This application Nov. 9, 1981, Ser. No. 319,114

Int. Cl.[3] F26B *3/34*; B01D *57/02, 13/02*

U.S. Cl. 34—1 20 Claims



1. In a method for drying material comprising the steps of disposing said material in a heating means to have said heating means heat at least part of the liquid particles of said material, disposing charged electrode means so as to be adjacent one side of said material when said material is disposed in said heating means and to define a plurality of electrostatic fields that are serially arranged in substantially a like repeating pattern and that are substantially constant and non-oscillating so that said fields at least partially extend through said material while said material is disposed in said heating means, and moving said material in one direction through said heating means to cause at least a portion of said material to have the particles of liquid thereof serially moved through said electrostatic fields while said portion of said material is being heated in said heating means whereby said electrostatic fields augment the drying effect of said heating means on said material, the improvement comprising the step of disposing means between each pair of adjacent electrostatic fields to change the normal shape of said adjacent electrostatic fields between said electrode means and said material so that when said material is moved in said one direction said particles of liquid of said portion serially move through the thus reshaped electrostatic fields while said portion of said material is being heated by said heating means.

4,404,755

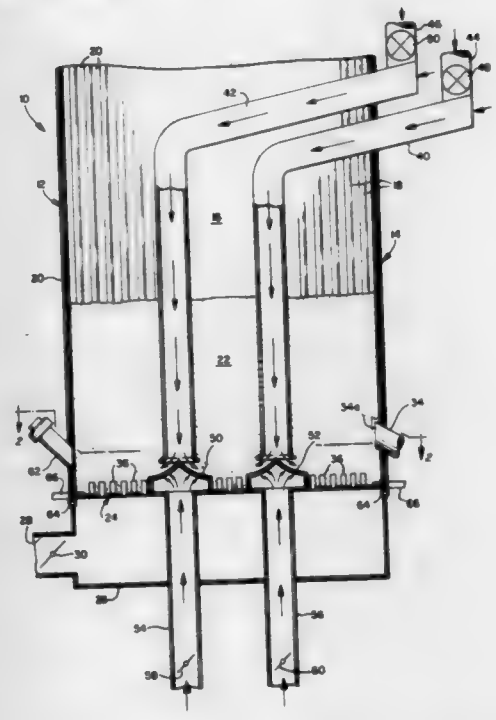
FLUIDIZED BED HEAT EXCHANGER UTILIZING INDUCED DIFFUSION AND CIRCULATION

Robert D. Stewart, Verona, and Robert L. Gamble, Wayne, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Aug. 25, 1981, Ser. No. 296,021

Int. Cl.[3] F26B *17/10*

U.S. Cl. 34—57 A 4 Claims



1. A fluidized bed heat exchanger comprising a perforated plate adapted to support a bed of particulate material, means for introducing air through said perforations to fluidize said particulate material, at least one feeder pipe having a substantially vertical portion which extends from an area above said bed into said bed for introducing a mixture of air and additional particulate material into said bed, means disposed immediately below said feeder pipe and in the path of said mixture as it discharges from said feeder pipe for deflecting said mixture in a substantially horizontal direction laterally across said bed, and means for introducing additional air into said deflecting means, said deflecting means including means for discharging said latter air into said bed in a substantially horizontal direction laterally across said bed, said means for introducing said mixture, said means for introducing said air, and said means for introducing said additional air being adapted to be controlled so that a relative dense column of particulate material is formed at said bed portion to induce circulation of the material downwardly and laterally across said bed.

4,404,756

GRAIN DRYING AND CONDITIONING APPARATUS

Ronald T. Noyes, Frankfort, Ind., assignor to Beard Industries, Inc., Frankfort, Ind.

Filed Jun. 12, 1981, Ser. No. 272,887

Int. Cl.[3] F26B *17/12*

U.S. Cl. 34—65 35 Claims

1. Apparatus for drying and conditioning grain comprising:

wall means including an upper portion, a lower portion and an intermediate portion between the upper and lower portions, for containing and guiding grain downwardly by gravity from the upper portion to the lower portion;

airflow means connected to said wall means for permitting air to pass through the grain as such grain moves downwardly;

air circulation means, including an inlet and an outlet for causing air movement;

a plenum chamber in communication with said air flow means;

means for connecting the outlet of the air circulation means

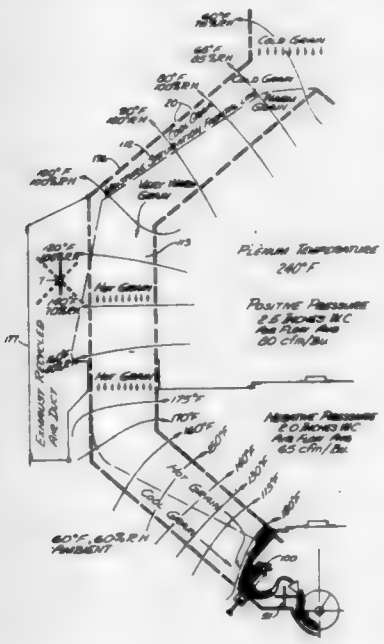
to the plenum chamber whereby said plenum chamber is pressurized and air is thereby forced through a first portion of the airflow means for drying the grain;

means for heating the air being forced into the plenum chamber;

recirculation means for selectively directing at least some of the heated air that has passed through the airflow means and grain back to the inlet of the air circulation means, said recirculation means including means for forming a recirculation chamber for receiving said air forced through said first portion of the air flow means;

adjusting means connected to said recirculation means for selectively controlling the amount of air that is recirculated by said recirculation means; and

valve means connected to said recirculation means and being disposed in said recirculation chamber for controlling the relative amount of air in said recirculation chamber that is directed back for circulation and the amount of air that is directed to exhaust to atmosphere, said valve means includes a plate means pivotally attached to said recirculation means, said plate means being wider than said chamber for dividing said recirculation chamber into two unequal parts, a recirculation part and an exhaust part, and having a first rotary position wherein one edge of said plate means engages one portion of said airflow means on one side of said recirculation chamber and an opposite edge of said plate means engages one portion of said recirculation means on an opposite side of said recirculation chamber, said plate means having a second rotary position wherein said one edge of said plate engages another portion, spaced from the first portion, of said airflow means on said one side of said recirculation chamber and the opposite edge of said plate member engages another portion, spaced from said one portion, of said recirculation means on the opposite side of said recirculation chamber, said first position of said plate means causing more of said air from said airflow means to be recirculated and less air to be exhausted to atmosphere than when said plate means is in the second position thereof.



4,404,757

HEEL FILLER AND ASSEMBLY FOR BOOTS

Henry D. Sweeny, Kitchener, Canada, assignor to Swenco Limited, Waterloo, Canada

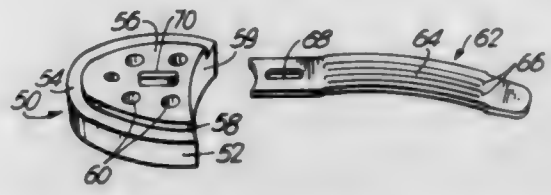
Filed May 13, 1981, Ser. No. 263,256

Claims priority, application Canada, Apr. 8, 1981, 374968

Int. Cl.³ A43B *23/22, 23/00*

U.S. Cl. 36—107 **20 Claims**

9. A heel filler for location in the heel portion of a boot or shoe, said heel filler comprising a block of molded plastics material having a top surface, a bottom surface, side walls, a forward wall and a rearward wall and having a shank or protective mid-sole locating member in the form of an elongated rib projecting upwardly from said top surface.



4,404,758

SKIING BOOT

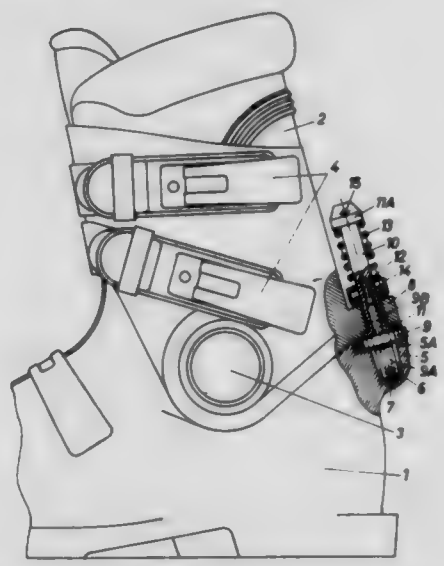
Ernst Kopp, Graz, Austria, assignor to Skischuhfabrik Dynafit Gesellschaft m.b.H., Graz, Austria

Filed Jan. 22, 1982, Ser. No. 341,788

Claims priority, application Austria, Jan. 26, 1981, 312/81

Int. Cl.³ A43D *5/04*

U.S. Cl. 36—121 **6 Claims**



1. A skiing boot comprising a lower shell which substantially surrounds the foot, a gaiter hinged to the lower shell near the ankle, means for adjusting the inclination of the gaiter relative to the lower shell and for exerting a force opposing the forward pivotal movement of the gaiter, said lower shell and said gaiter having a rear portion each, each of the two rear portions of the lower shell and the gaiter having a holder, an adjusting screw being provided between said holders and comprising oppositely handed screw threads and an adjusting wheel fixed between said screw threads, and a guide pin being longitudinally slidably held on said holder of said gaiter, which guide pin interengages with said adjusting screw and carries resilient means.

4,404,759

ATHLETIC SHOE, ESPECIALLY JOGGING SHOE

Armin A. Dassler, Herzogenaurach, Fed. Rep. of Germany, assignor to PUMA-Sportschuhfabriken Rudolf Dassler KG, Herzogenaurach, Fed. Rep. of Germany

Filed Aug. 27, 1981, Ser. No. 296,772

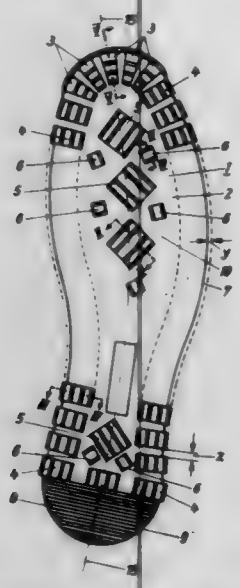
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1980, 8022761[U]

Int. Cl.³ A43B *5/00, 13/04*

U.S. Cl. 36—129 **23 Claims**

1. Athletic shoe, especially a jogging shoe, with a tread sole formed of rubber or a rubber-like synthetic resin, the sole being provided at least partially with cleat-like projections distributed over the tread surface remote from the periphery of the sole and additional cleat-like projections sub-divided in the manner of a link chain distributed along a rim of the sole, characterized in that the cleat-like projections are equipped on

contact surfaces on a bottom side thereof with blade-like projections which are constructed for increasing the shock-



absorbing effect and simultaneously enhancing the gripping effect of the sole, said blade-like projections of each cleat-like projection extending essentially in parallel to one another.

4,404,760

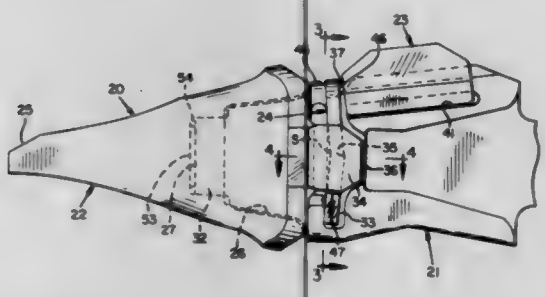
EXCAVATING TOOTH

Frecerick C. Hahn, Aloha; William R. Barber, Jr., Portland, both of Oreg., and David A. Hampel, Vancouver, Wash., assignors to Esco Corporation, Portland, Oreg.

Continuation-in-part of Ser. No. 144,368, Apr. 28, 1980, abandoned, and a continuation-in-part of Ser. No. 235,771, Feb. 25, 1981, Pat. No. 4,335,532. This application Feb. 24, 1982, Ser. No. 351,769

Int. Cl.³ E02F *9/28*

U.S. Cl. 37—142 R **18 Claims**



1. An excavating tooth comprising an adapter element and a point element, said adapter element having means at one end for connection to a bucket or the like and a nose at the other end for coupling to said point element, said point element having an earth engaging edge at one end constituting the tooth forward end and a socket at the other end for coupling to said adapter element, said nose and socket being equipped with straight, longitudinally extending rail and groove means, and lock means externally of said nose releasably connecting said elements to prevent inadvertent disassembly of said elements, said lock means including rearwardly extending tongues on said point element and recesses on said adapter element, and rod means interposed between said tongues and recesses.

4,404,761

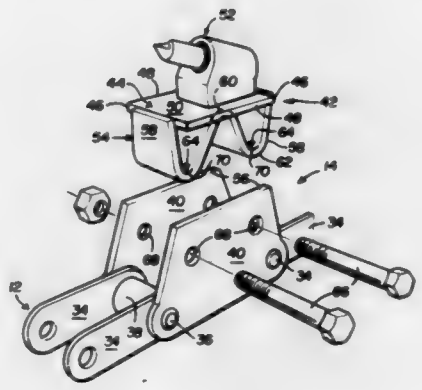
DIGGING TOOTH MOUNTING BRACKET

Stephen V. Paulin; Randy H. Hillard, both of Wichita, and Stephen A. Youngers, Clearwater, all of Kans., assignors to J. I. Case Company, Racine, Wis.

Filed Jul. 6, 1981, Ser. No. 280,747

Int. Cl.³ E02F *3/14*

U.S. Cl. 37—191 A **1 Claim**



1. A support assembly for digging teeth comprising:

a digging tooth mounting bracket which is secured to opposed, spaced apart adaptor links, said adaptor links having upper ends and aligned mounting openings therethrough for attaching said mounting bracket, said mounting bracket including a base having opposed vertical end surfaces, opposed vertical side surfaces, and a top surface for mounting a digging tooth cutter bit;

a one-piece continuous plate-like mounting member attached to said base, said mounting member being generally in the shape of a "W" in longitudinal cross-section and including opposed divergent leg portions that are secured against the opposed end surfaces of said base, each divergent leg portion being of a width less than the length of the end surface to which it is secured, said mounting member having a mid-portion with an upper radiused terminal end that engages the underside of said base, said divergent leg portions joined to said mid-portion through radiused bottom portions for forming a plurality of transversely disposed large, open area mounting slots or grooves that fit between said opposed, spaced apart adaptor links for attachment thereto, said large, open area mounting slots or grooves being formed between said divergent leg portions and said mid-portion; and

fastening means extendable through the mounting openings in one of said adaptor links into the large, open area mounting slots or grooves between said divergent leg portions and said mid-portion, said fastening means engaging said bottom radiused portions and extending through the mounting openings in the other adaptor links to thereby secure said mounting bracket base to said upper ends of said adaptor links.

4,404,762

SKI TRAIL RESURFACING APPARATUS

Gerald A. Munsterer, 390 State Hwy. No. 15 S., Wharton, N.J. 07885

Filed Feb. 8, 1982, Ser. No. 346,506

Int. Cl.³ E01H *8/04*

U.S. Cl. 37—219 **6 Claims**

1. Ski trail resurfacing apparatus, comprising:

first means defining a blower;

said first means having means for admitting a mixture of snow and air thereinto, and means for discharging a mixture of snow and air therefrom;

first duct means in fluid-flow communication with said admitting means; and

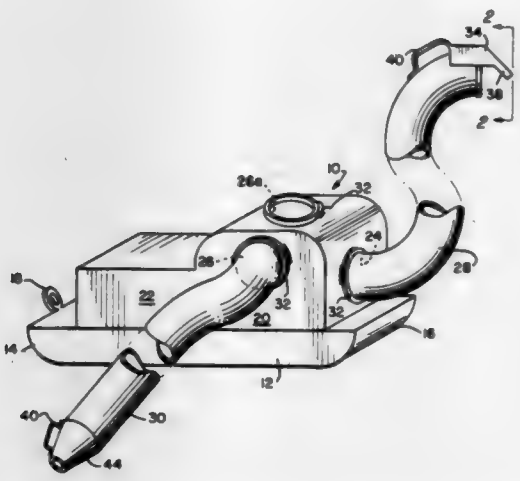
second duct means in fluid-flow communication with said discharging means; wherein

said first duct means comprises a flexible duct having one end thereof opening into said admitting means;

said second duct means comprises a second duct having one end thereof opening into said discharging means;

said first duct has means, on the end thereof which is opposite said one end, for manually gripping said opposite end, said manipulating and orienting said first duct and said opposite end;

said first duct further has, on said opposite end thereof,



means for scarifying accretions of snow, and baffle means, in said opposite end thereof, for inhibiting the ingestion of large objects;

said scarifying means comprises means defining a plurality of depending teeth, immovably fixed to, and which extend in partial traverse of, said opposite end, and at an angle outwardly therefrom; and

said baffle means comprises a plurality of linear elements bridging across said opposite end, in substantial parallelism, and transverse to said teeth.

4,404,763

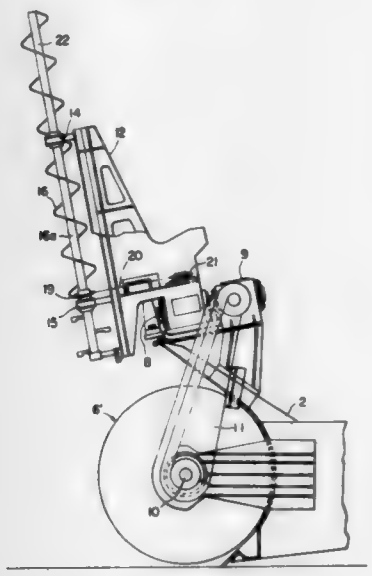
ROTARY SNOW PLOUGH

Takashi Sakano, and Mikio Igarashi, both of Niigata, Japan, assignors to Niigata Engineering Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 140,540, Apr. 15, 1980, abandoned. This application Nov. 25, 1981, Ser. No. 324,937

Int. Cl.³ E01H *5/09*

U.S. Cl. 37—250 **9 Claims**



1. A rotary snow plough vehicle including a frame positioned in front of said vehicle, and a main auger supported to said frame and adapted to level a snow bank and introduce the same into a blower, comprising:

(a) an auxiliary auger swingably mounted above said main auger, a swingable range of said auxiliary auger being from a horizontal position approximately above said main auger to a position laterally outside of said vehicle;

(b) means for swingably moving said auxiliary auger along a vertical plane perpendicular to an advancing direction of said vehicle in order to level an upper section of said snow bank;

(c) transmission means for transmitting rotation of said main auger to said auxiliary auger to rotate said auxiliary auger about its axis, said transmission means comprising a deceleration means disposed on said frame, said deceleration means having a central shaft extending toward the advancing direction of said vehicle, said supporting arm being swingable about said central shaft;

(d) an endless chain trained between said main auger and said deceleration means;

(e) a first bevel gear integrally and coaxially secured to said central shaft;

(f) a second bevel gear in meshing engagement with said first bevel gear;

(g) a first sprocket wheel provided coaxial and integral with said second bevel gear;

(h) a second sprocket wheel provided coaxial and integral with said auxiliary auger; and

(i) an endless chain trained over said first and second sprocket wheels.

4,404,764

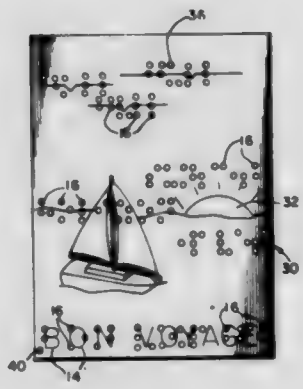
MESSAGE MEDIUM HAVING CORRESPONDING OPTICAL AND TACTILE MESSAGES

David V. Wills, and Angela B. Wills, both of Philadelphia, Pa., assignors to Handy C. Priester, West Covina, Calif., a part interest

Filed Aug. 7, 1981, Ser. No. 291,114

Int. Cl.³ B42D *15/02*; G09F *1/02*

U.S. Cl. 40—124.1 **3 Claims**



1. A medium for conveying information among sighted and sightless persons, comprising:

a greeting card;

an optically discernible message printed on the card, the optically discernible message having scenic and textual elements, the scenic elements corresponding to a visual scene and the textual elements corresponding to words; and,

a tactilely discernible message including braille impressions formed in the card, the tactilely discernible message being a transcription of the optically discernible message, the tactilely discernible message and optically discernible messages having corresponding content and having elements placed in corresponding positions, the tactilely discernible message being braille dots imprinted on both a front surface and a rear surface of the medium, the medium having raised braille dots, depressed braille dots, areas of mixed raised and depressed dots, and open areas, whereby at least four degrees of textured areas are provided, the textured areas corresponding to elements of the optically discernible message, the optically discernible message and the tactilely discernible message conveying both scenic and textual information.

4,404,765

GUN BARREL INSERT

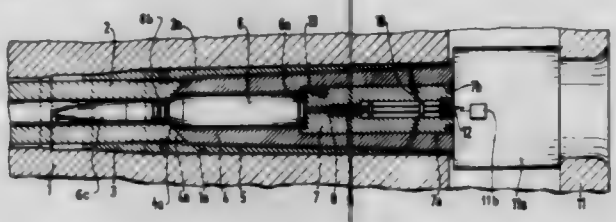
Helmut Reudelsterz, Bochingen, and Gerd Kellner, Schramberg, both of Fed. Rep. of Germany, assignors to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,421

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 8009469

Int. Cl.³ F41F *17/06*; F41C *21/10, 21/12*

U.S. Cl. 42—77 10 Claims



1. A small caliber cartridge assembly for a large caliber gun having a firing mechanism, a large caliber cartridge chamber and barrel, comprising:

a small caliber barrel insert axially and radially fixed in the barrel;

a chamber tube inserted in the large caliber cartridge chamber;

an adapter member adapted to be inserted into said chamber tube;

a small caliber cartridge connected to said adapter member and having a projectile adapted to be inserted into and fired through said small caliber barrel insert;

said adapter member being substantially rotationally symmetrical and having a tapered outer surface tapered toward said small caliber cartridge and toward said barrel insert, said adapter member including a conical forward end extending toward said small caliber cartridge projectile, said barrel insert having a conical rear face against which said front conical end of said adapter member is adapted to bear; and

firing means in said adapter member responsive to the large caliber gun firing mechanism to fire said small caliber cartridge.

4,404,766

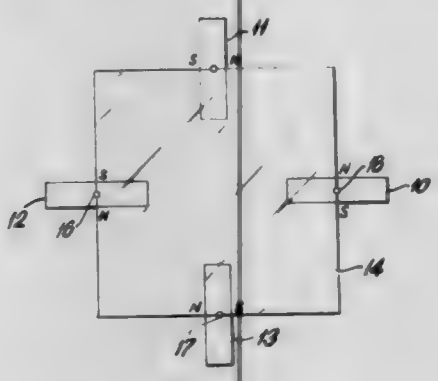
MAGNETIC TOY

Kalman A. Toth, 24 Jean La., Monsey, N.Y. 10952

Filed May 12, 1981, Ser. No. 262,902

Int. Cl.³ A63H *33/26*; G09F *19/00*

U.S. Cl. 46—239 5 Claims



1. A magnetic toy, comprising, a lower support surface, an upper support surface mounted above said lower support surface and supported by a plurality of support posts, a plurality of bar magnets, rotatably attached to selected ones of said support posts and suspended between said upper and lower support surfaces, said bar magnets being free to rotate in a horizontal plane about their respective vertical axis, and a magnetic wand element adapted to be hand held by a user of said magnetic toy, said bar magnets being positioned such that the magnetic field of a pivotable bar magnet interacts with the magnetic field of each of the remaining pivotable bar magnets and with the magnetic field of said magnetic wand, whereby movement of said magnetic wand element in the vicinity of said plurality of bar magnets causes rotational movement of one or more of said plurality of bar magnets.

4,404,767

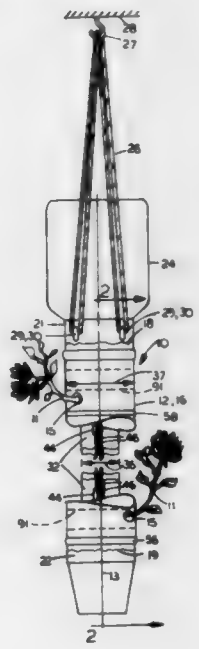
PLANT GROWING APPARATUS

Carlos W. Enrich, 11390 - 96th Ave., Delta, British Columbia, Canada V4C 2W5

Filed Nov. 3, 1981, Ser. No. 317,784

Int. Cl.³ A01G *25/00*

U.S. Cl. 47—67 13 Claims



1. A plant growing apparatus for growing plants therein, the apparatus having a tube containing a rooting medium, the tube having a side wall and open first and second ends, and being adaptable to provide clearance means to permit plants having roots immersed in the rooting medium to pass the side wall for growing outside the tube, the apparatus including:

(a) a first end member cooperating with the first end of the tube, the end member having an opening therein communicating with the rooting medium within the tube, and a reservoir portion adapted to cooperate with a water supply and to contain water at an essentially constant level,

(b) a second end member cooperating with the second end of the tube, the second end member having an opening therein communicating with the rooting medium within the tube,

(c) a rigid support member extending between the two end members to locate the end members in a fixed relationship relative to each other and to the support member,

(d) the side wall of the tube being flexible and an integral flexible flange extending therefrom, the flange extending continuously between the end members along the length of the tube and being adapted to be positioned relative to the tube so as to be secured to the support member so as to restrain the tube against excessive movement relative to the support member and the end members,

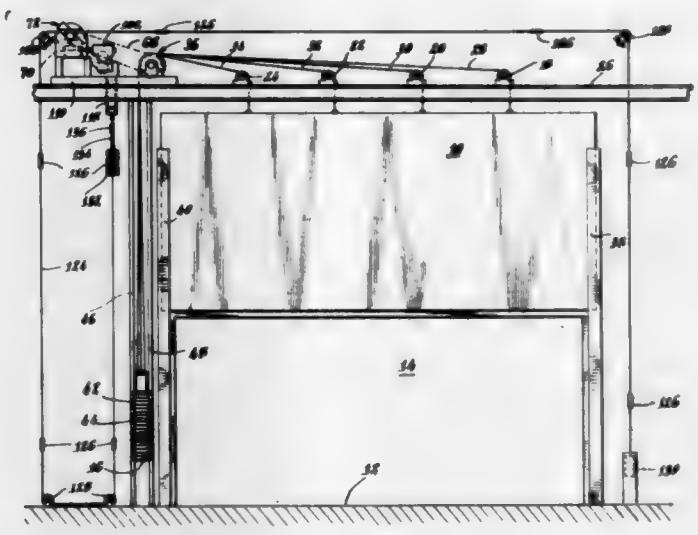
(e) a wick means fitted within, so as to be essentially surrounded by, the rooting medium within the tube, and extending continuously between the end members, the wick means being disposed generally adjacent a side of the tube adjacent the flange, so as to be generally adjacent the support member, the wick means having opposite end portions cooperating with the first and second end members, one of the end portions communicating with the reservoir portion to supply water to the wick means, the wick means being capable of drawing water therealong by capillarity.

4,404,768

ARRANGEMENT FOR RELEASING A FIRE CURTAIN IN A THEATER

Nicholas G. Cristy, 31 Brighton Park, Rochester, N.Y. 14620

Filed May 22, 1981, Ser. No. 266,296
Int. Cl.³ E05F *15/20*
U.S. Cl. 49—5 12 Claims



11. An improved safety curtain release apparatus for coupling a drive to a traction means to raise and to alternatively lower a theatre fire curtain, and, for automatically decoupling the drive upon occurrence of ambient conditions indicative of combustion to enable descent of the curtain, comprising:

a. an electrically energized drive means;

b. means for mechanically coupling said drive means to a fire curtain traction means for imparting rotary motion to the traction means to raise and lower the curtain when said drive means is energized and alternatively for restraining motion of said traction means when said drive means is deenergized;

c. said mechanical coupling means having a drive coupling gear means and a gear support means for alternatively engaging and disengaging said gear means to thereby respectively establish and interrupt mechanical coupling between said drive means and said traction means;

d. said gear support means comprising a rotatably mounted support body having a weight thereof, said gear means including a first gear mechanically coupled to said electric drive means and a second gear mounted to said support body for rotation therewith into and out of engagement with said first gear upon rotation of said support body,

e. a combustion sensitive means for positioning said support body to establish engagement of said gear means and for enabling disengagement of said gear means upon occurence of a relatively high ambient temperature indicative of combustion;

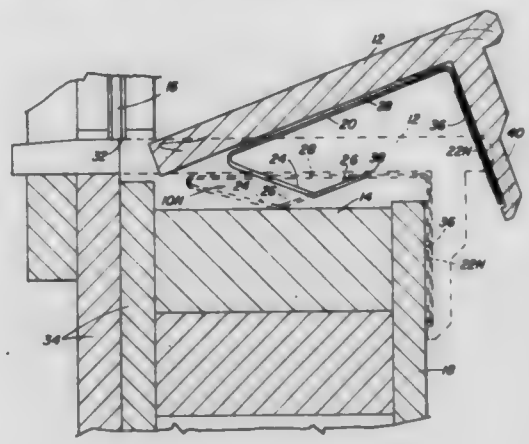
f. said positioning means including a cam follower mounted to said support body, a cam mounted to a stationary body and positioned in engagement with said cam follower for imparting motion to said support body between a first rotational position at which said gears are engaged and a second rotational position at which said gears are disengaged, said cam and cam follower maintained in engagement by the weight of said support body and members mounted thereto, an actuating arm coupled to said cam, combustion detection means coupled to said actuating arm for biasing said cam at said first position, and means for causing movement of said cam to said second position upon detection of combustion.

4,404,769

RODENT BARRIER FOR DOOR OVER RAILROAD TRACK

Jesse I. Casbeer, Jr., 7946 Cedel, Houston, Tex. 77055

Filed Dec. 29, 1980, Ser. No. 220,813
Int. Cl.³ E04H *9/16*
U.S. Cl. 49—58 10 Claims



1. In a storage or shipping facility such as a warehouse having a railroad track extending into the warehouse through a warehouse door opening closable with a vertically movable warehouse door, apparatus for mounting with such warehouse door and with the railroad track mounted in the floor below such warehouse door for preventing the entry of rodents or other vermin, comprising:

channel members adapted to be mounted adjacent to the inside of each rail forming the railroad track directly below such a warehouse door in the closed position;

a floor section adapted to extend transversely of said warehouse opening along the line of closing of such warehouse door in the closed position to provide a surface area substantially flush with the top of such rails;

each of said channel members having a channel formed therein in cooperation with the inside of such adjacent rail, such channel extending linearly along the length of such rail; and

barrier plates mounted with said warehouse door and in vertical alignment with each of said channel members and having depending downwardly therefrom barrier detent portions having a configuration complementary to the configuration of said channels in said channel members such that said barrier detent portions of said barrier plates extend downwardly into a nested position in said channel member channels with such warehouse door in a closed position to prevent the entry of rodents or other vermin into said warehouse between the warehouse door and the rails.

4,404,770

SLIDING DOOR CONSTRUCTION FOR CLOSING AN OPENING IN A WALL

Jan J. G. Markus, Krimpen aan den IJssel, Netherlands, assignor to Markus Heretische Deuren B.V., Netherlands

Filed May 5, 1981, Ser. No. 260,751
Claims priority, application Netherlands, Aug. 21, 1980, 8004733
Int. Cl.³ E05D *15/56*
U.S. Cl. 49—235 10 Claims

1. A sliding door construction for closing an opening in a wall, which door construction comprises:

(a) a door;

(b) a guide rail having a longitudinal V-shaped portion;

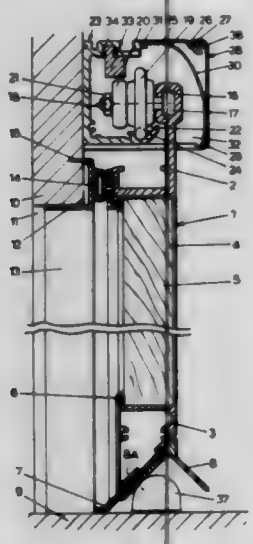
(c) a plurality of rollers carried by the upper edge of the door and disposed in the V-shaped portion for supporting the door on the guide rail for sliding movement along a plane parallel to and spaced from the wall;

(d) the V-shaped portion including recesses for engaging the

rollers to move the door downwardly and towards the wall into a closed position;

(e) the upper edge of the door including a first C-shaped slot;

(f) a plurality of bolts, each bolt including a shaft portion and a head portion, with the head portions being disposed in the first C-shaped slot and the rollers being rotatably mounted on the shaft portions;



(g) at least one ball bearing carried by the upper edge of the door; and

(h) means carried by the guide rail and engageable by the ball bearing for arresting the sliding movement of the door.

4,404,771

ROLLER ASSEMBLY FOR SLIDING CLOSURES

Yasushi Murase; Tosiyuki Kanegae; Hideaki Mitsuzawa, and Tosiyuki Tatsumi, all of Isehara, Japan, assignors to The Nippon Aluminum Mfg. Co., Ltd., Osaka; Nippon Alumi Jutaku-Kenzai Kogyo Co., Ltd., Kanagawa, both of, Japan; The Nippon Aluminum Mfg. Co., Ltd., Osaka and Nippon Alumi Jutaku-Kenzai Kogyo Co., Ltd., both of, Japan

Filed Feb. 9, 1982, Ser. No. 347,357

Claims priority, application Japan, Feb. 17, 1981, 56-22426

Int. Cl.³ E05D *13/02*

U.S. Cl. 49—425 **11 Claims**



1. In a sliding closure which is mounted on a structure defining an opening and which moves toward and transversely to a plane in which said opening lies for moving a portion of said closure in a direction toward said plane, a roller assembly which is to be disposed at least one at the lower portion of said structure for being moved in rotation on a substantially flat surface situated on a lower frame of said structure, being built into a step-like form, said roller assembly comprising:

a roller body;

an inner housing having a first rotation axis for rotatably retaining said roller body;

an outer housing attached to said closure for accommodating said inner housing therein so as to be rotatable about a pivotal second axis which is located at a separate position from, and is parallel to, said first axis;

a biasing means anchored between said inner housing and said outer housing for biasing said inner housing rotatably about said second axis such that at least a part of said roller body can be exposed outside from a lower opening of said outer housing; and

an engagement arm means which is vertically movable according to the rotational movement of said inner housing about said second axis and is thereby capable of preventing said closure from getting out of the structure by means of being engaged, when it is ascended, with a guide groove which is formed on a vertical wall portion of said steplike form along the longitudinal direction thereof.

4,404,772

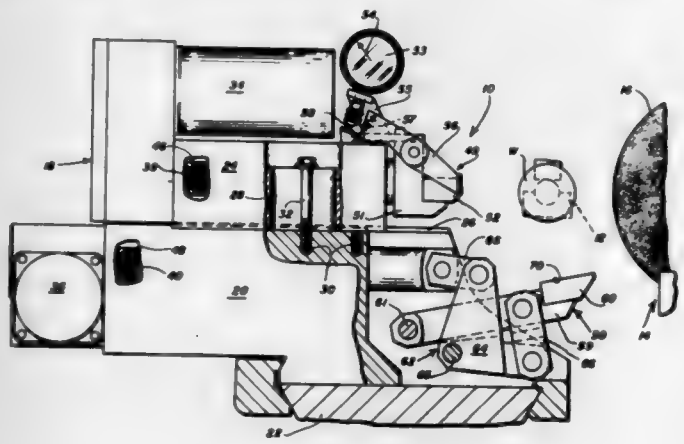
CYLINDRICAL GRINDING MACHINE

Glenn M. Snyder, Waynesboro, Pa., assignor to Litton Industrial Products, Inc., Waynesboro, Pa.

Filed Sep. 14, 1981, Ser. No. 301,725

Int. Cl.³ B24B *5/04*

U.S. Cl. 51—105 R **1 Claim**



1. A cylindrical grinding machine comprising

means for supporting and rotating a workpiece about a selected axis,

wheelhead assembly means selectively displaceable transverse to said axis including a rotatable grinding wheel for effecting stock removal from the surface of the rotating workpiece,

workrest assembly means including

jaw means having a workpiece engaging shoe, and

means for selectively displacing said jaw means for opposing the deflective force exerted by said grinding wheel on the rotating workpiece as it is machined, and

means for monitoring the wear of said jaw means including

indicator means mounted on said workrest jaw including a visually observable needle,

control arm means pivotally secured to said workrest jaw means having a first workpiece engaging end and a second end operatively associated with said indicator means,

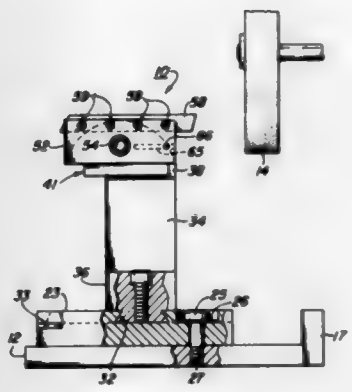
said control arm means having a first position whereat said control arm first end leads said workrest shoe and a second position whereat said control arm first end is flush with said workrest shoe, and

means for biasing said control arm means towards said first position for maintaining said control arm first end in constant tracking engagement with the surface of a rotating workpiece whereby jaw means wear will be indicated by the oscillation of said needle and the degree of wear will be indicated by the magnitude of such oscillation.

4,404,773
TOOL GRINDING FIXTURE

Richard L. Gauger, 1N050 Coolidge Ave., West Chicago, Ill. 60185

Filed May 4, 1981, Ser. No. 259,840
Int. Cl.³ B24B 3/34
U.S. Cl. 51—218 A 9 Claims



1. A grinding fixture for holding a tool bit during a grinding operation in which the tool bit is moved against a rotating grinding wheel, comprising in combination,

a base plate adapted to be mounted to the chuck of a grinding machine,

a pivot plate resting on said base plate and pivotably connected to said base plate for pivotal movement about a vertical axis,

said pivot plate having a rectilinear guideway in its upper face, the longitudinal axis of said guideway being displaced from said vertical axis,

an upstanding tool post mounted on said pivot plate and having a guide surface complimentary to and mating with said guideway for slidable movement on said pivot plate

a tool holder assembly including a first part pivotably mounted to said tool post for adjustable pivotal movement about a first horizontal axis, and

a tool bit holding block mounted to said first part of said tool holder for pivotal movement about a second horizontal axis which is orthogonal to the vertical plane containing said first horizontal axis,

said rectilinear guideway extending at an angle of forty-five degrees relative to said first and second horizontal axes,

whereby pivotal movement of said pivot plate about said vertical axis causes a tool bit mounted to said tool bit holding block to orbit around said vertical axis.

4,404,774
GRINDING MACHINE WITH A METHOD FOR SECURING DIMENSIONAL ACCURACY

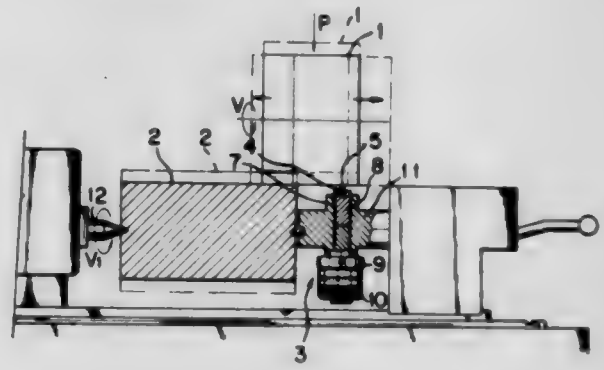
Yamanaka Sadao, Chigasaki, Japan, assignor to Nippon Thompson, Co., Ltd., Tokyo, Japan

Division of Ser. No. 877,762, Feb. 14, 1978, abandoned. This application Sep. 3, 1981, Ser. No. 299,162
Claims priority, application Japan, Feb. 15, 1977, 52-15968
Int. Cl.³ B24B 53/00
U.S. Cl. 51—325 1 Claim

1. In a rotary type surface grinding machine having a cylindrical grinding wheel rotatable in one direction about the axis of the cylinder, a workpiece opposedly disposed against the circumferential grinding surface of said grinding wheel and rotatable at such a rate of rotation so as to produce a relative motion with respect to said grinding wheel and to thus provide an effective grinding function, said grinding wheel and said workpiece being relatively feedable toward and away from each other, said grinding wheel and said workpiece being relatively feedable in a direction with respect to each other parallel to the axis of the cylinder, the method for securing a desired dimensional accuracy in the finish grinding of said workpiece without any possibility of error resulting from the stopping or adjustment of the grinding machine during the grinding operation comprising the steps of:

(a) supporting a diamond cutter means adjacent to but laterally displayed from the workpiece in a selected finish depth-of-grind position relative to the grinding surface of the grinding wheel with the diamond cutter means generally opposing the direction of feed of the grinding wheel toward said workpiece;

(b) moving the grinding wheel laterally over first the diamond cutter means and then the workpiece in a single continuing movement;

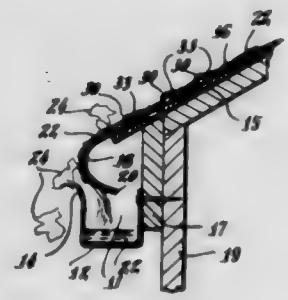


(c) incrementally feeding the grinding wheel towards the workpiece and toward the diamond cutter as the grinding wheel passes over both the workpiece and the diamond cutter means until desired finish grind has been completed, the dressing of the grinding wheel by the diamond cutter means on each lateral movement preventing excessive grinding of the workpiece during the grinding operation of that lateral movement so that the grinding operation can be completed without any stoppage or feed adjustment of the grinding machine.

4,404,775
RAIN GUTTER DEVICES

Robert J. Demartini, 3500 Canter La., Raleigh, N.C. 27604

Continuation-in-part of Ser. No. 198,830, Oct. 20, 1980, abandoned. This application Oct. 14, 1981, Ser. No. 310,838
Int. Cl.³ E04D 13/04
U.S. Cl. 52—12 41 Claims



1. A roof on a structure and a water control device for use in association with a gutter which is positioned at the edge of said roof and forms a trough described by an elongated bottom, a rear wall extending upward from said bottom along the side thereof closest to said structure, and a front wall extending upward from said bottom along the side thereof farthest from said structure, which device comprises a continuous main body that has an upper edge region and has a lower region that is substantially arcuate in cross-section, and is adapted for affixation at the edge region of said roof with the axis described by the arcuate portion of said lower region substantially parallel to the long axis of said gutter, with said arcuate portion extending beyond the front wall of said gutter, and with the lowest portion of said region positioned above the trough formed by the front wall, bottom and rear wall of said gutter,

said device being mounted on the upper surface of said roof

with a portion at least of the under-surface of the part thereof which is first encountered by water traversing said roof in substantially continuous contact with said upper surface of said roof, and said device including flow governing means for causing the kinetic energy of water traversing said device to be less, substantially entirely throughout the region of said arcuate section, than the forces acting counterdirectionally thereto induced by the surface tension of said water,

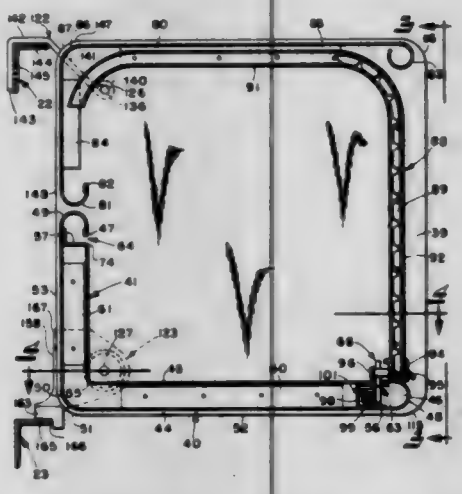
whereby said water will be caused substantially entirely to follow the contour of the upper surface of said arcuate portion of said lower region into said gutter, while debris associated with said water is substantially jettisoned off of said device without passing into said gutter.

4,404,776

HANGING COMPONENTS FOR SPACE DIVIDER SYSTEM

Douglas C. Ball, Ste-Anne-de-Bellevue; William S. Stumpf, and Gary R. Ludwig, both of Kitchner, all of Canada, assignors to Hauserman Ltd., Waterloo, Canada

Filed Jan. 21, 1981, Ser. No. 226,755
Int. Cl.³ B66B 9/00
U.S. Cl. 52—29 **26 Claims**



1. A hanging component for an interior space dividing system comprising horizontally spaced vertical panels, each panel being formed of spaced plates, means within said panels at the upper and lower rear corners for hanging said component on such space dividing system, and supports for said means within said plates, said supports being pivot collars fixed to the interior of one plate and secured by fasteners to the other and also serving to secure said plates together.

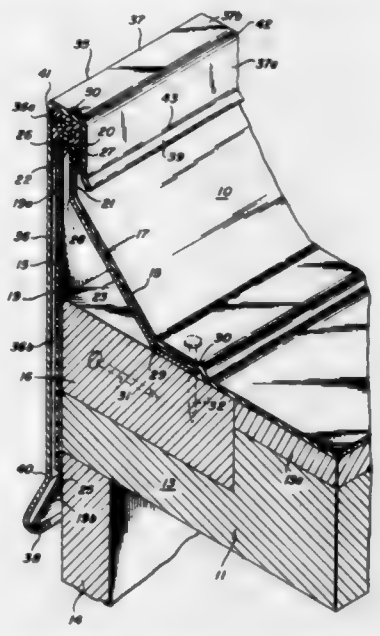
4,404,777

CONJOINT FACIA, HOOD AND WATER DAM

Ted E. Lolley, and Randolph W. Driggers, both of Tucker, Ga., assignors to MM Systems Corporation, Tucker, Ga.

Filed Jul. 31, 1981, Ser. No. 289,086
Int. Cl.³ F04D 13/15
U.S. Cl. 52—60 **17 Claims**

1. In a conjoint facia, hood and water dam, the combination which includes; dam and first engagable means comprising, dam means having longitudinal ridge structure which includes upwardly extending laterally opposite forward and rearward sides, and said dam means adapted to be on a roof deck of a building and installed adjacent to a wall of said building for sustaining said ridge structure in a substantially fixed position above said roof deck and supporting sheet roofing having the latter lead from said roof deck at the rear of said dam means onto said ridge structure, and first engagable means adapted to be in a position adjacent to said building wall and below said ridge structure; facia and hood means comprising at least one facia and hood member, said facia and hood member including hood structure for covering said sheet roofing on said ridge structure and said hood structure comprising downwardly extending forward and rearward laterally opposite walls, and facia means to be disposed frontally of said dam means and said wall of said building and said facia means having second engagable means, said first and second engagable means together including restraining means to be engaged by upward movement of said facia and hood member for maintaining said facia means horizontally laterally restrained and said first engagable means comprising means for detaining said facia and hood member against movement in an upward direction relatively to said dam and first engagable means; and clamp and biasing means including resilient clamp means comprising counter-active presser means and bight means interconnecting said counter-active presser means, for said counter-active presser means, with said bight means disposed across said ridge structure and said clamp means resiliently sprung, to hold said clamp means clamped against said sheet roofing on said ridge structure and against said upwardly extending laterally opposite sides of said ridge structure having said sheet roofing disposed between said clamp means and said ridge structure, and resilient biasing means for being inside said hood structure to abut against said hood structure and be pressed downwardly against said clamp means while said sheet roofing is clamped by said clamp means against said ridge structure having said bight means disposed across said ridge structure and said sheet roofing disposed between said clamp means and said ridge structure; said facia and hood member, to be installed, initially having said hood structure covering said clamp and biasing



means, and said sheet roofing clamped by said clamp means against said ridge structure, with said bight means being disposed across said ridge structure and said sheet roofing being disposed between said clamp means and said ridge structure and said downwardly extending walls of said hood structure being laterally outside said upwardly extending laterally opposite sides of said ridge structure, and said facia and hood member thereafter being downwardly moved relatively to said dam and first engagable means for said restraining means to be aligned for being engaged having said resilient biasing means inside said hood structure and pressed downwardly against said clamp means and urging said clamp means to remain in place with said bight means disposed across said ridge structure and said clamp means clamping said sheet roofing against said ridge structure and said sheet roofing being disposed between said clamp means and said ridge structure and having said biasing means reactively move said facia and hood member upward relative to said dam and first engagable means to engage said restraining means and have said upward movement of said facia and hood member be stopped by said detaining means, with said restraining means thereafter still being engaged and said biasing means still pressing said clamp means downwardly and resiliently urging said facia and hood member in an upward direction, and with said hood structure still covering said sheet roofing on said ridge structure and said

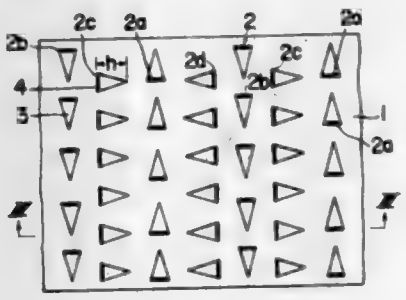
laterally opposite downwardly extending walls of said hood structure still being laterally outside said upwardly extending laterally opposite sides of said ridge structure and said clamp and biasing means.

4,404,778

METAL STRIP FOR PREVENTING INVASION

Chuji Ushimaru, Tokyo, Japan, assignor to Decol Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1981, Ser. No. 254,130
Int. Cl.³ E04B *1/72*
U.S. Cl. 52—101 **5 Claims**



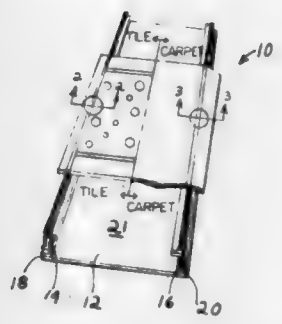
1. A metal strip for preventing invasion comprising a metal strip having a surface formed with a multiplicity of V-shaped projections extending from said surface substantially perpendicular thereto and positioned close to one another, whereby a force acting on said projections is distributed uniformly thereon, said projections **2** comprise four kinds of projections each lying in a row transversely of said strip **1**, and provided alternately to one another longitudinally of said strip **1**, said rows being equally spaced apart from one another, said projections being substantially equally spaced apart from one another in each row, two of said four kinds of projections, **2***a* and **2***b*, being separated from each other by another kind of projections, and having each a base extending in parallel to the longitudinal edges of said strip **1**, the other two kinds of projections **2***c* and **2***d* each having a base which is perpendicular to said longitudinal edges of said strip, each of said projection **2***a* having its base located substantially in a line in which the bases of said projections **2***c* and **2***d* lie, said projections **2***a* and **2***b* being formed by two kinds of oppositely directed cuts in said strip **1**, while the other projections **2***c* and **2***d* are likewise formed by two kinds of oppositely directed cuts in said strip.

4,404,779

TRENCHDUCT CONSTRUCTION HAVING ADJUSTABLE LID-SUPPORTING MEANS

L. Owen Calhoun, Richmond Hill, and Michael A. Murray, Toronto, both of Canada, assignors to CTS Corporation, Elkhart, Ind.

Filed Apr. 16, 1981, Ser. No. 254,880
Claims priority, application Canada, Apr. 10, 1981, 375261
Int. Cl.³ E04B *5/48*; E04F *17/08, 19/08*
U.S. Cl. 52—126.2 **6 Claims**



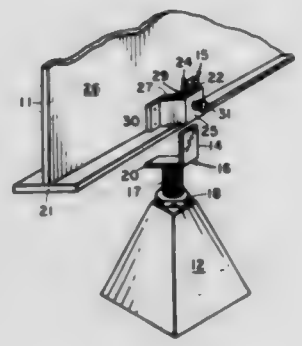
2. A trenchduct for internally receiving electric wires and cables comprising an uncoated galvanized steel base, means forming uncoated galvanized steel side walls along opposite flanges of said base and secured to said flanges to define an open space for receiving electric service therebetween, threaded means operatively secured to said flanges, vertically adjustable uncoated galvanized steel lid-support side wall means slideably engageable with said side walls and operatively defined in a lateral position relatively to said side walls, said lid-support side wall means comprising integral Z-cross section members each having a vertical section with a continuous flat surface substantially flush with a respective side wall for slideable engagement therebetween, a second section of each Z-cross section member projecting laterally above the confines of the open space formed by said side walls and base to receive the wires and cables, a third section of each Z-cross section member comprising a continuous transverse flange disposed outside the confines of said trenchduct and extending away from the respective side wall and including threaded openings therein, and a continuous plate of uncoated galvanized steel welded to said vertical section to form a lid receiving pocket therewith, said threaded means threadedly received through threaded openings in a respective transverse flange to effect vertically adjustable movement of said lid-support side wall means, and a plurality of removable lids disposed over the open end of said trenchduct at floor level and carried by the section of said lid carrying side wall means projecting laterally above said trenchduct open space, each of said Z-cross section members forming a continuous barrier enclosing the separation between the respective side wall and removable lids and thereby preventing concrete pour from entering said open space.

4,404,780

SUPPORT SYSTEM FOR RESTRAINING LATERAL MOVEMENT OF PIER-MOUNTED BUILDING

Martin Josephson, 718-27 Sycamore Ave., Vista, Calif. 92083

Filed Mar. 16, 1981, Ser. No. 244,208
Int. Cl.³ E04D *15/00*; E04G *21/00*
U.S. Cl. 52—126.7 **8 Claims**



1. In a system wherein a building having I-beams secured to the bottom of the building is supported by piers positioned beneath the I-beams, a system for restraining the building from moving laterally from the piers, comprising

a plurality of tongues secured to and extending vertically from the tops of a corresponding plurality of the piers; and

a corresponding plurality of socket members defining horizontally enclosed vertical sockets secured to the I-beams for receiving the vertically extending tongues for restraining lateral movement of the building from the piers.

4,404,781

MUD-SILL ANCHOR

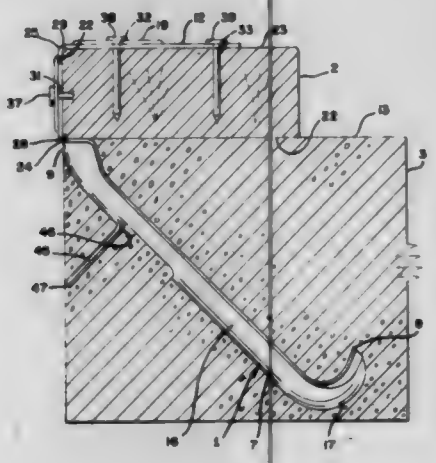
Tyrell T. Gilb, Berkeley, Calif., assignor to Simpson Strong-Tie Company, Inc., San Leandro, Calif.

Filed Dec. 12, 1980, Ser. No. 215,730
Int. Cl.³ E02D *27/00*
U.S. Cl. 52—295 **8 Claims**

1. A singleside sheetmetal mudsill anchor for anchoring a wood mudsill plate to a concrete slab foundation comprising:

a. a concrete slab foundation having a perimeter;

b. a nailable form board member having an inner face temporarily placed in contact with a portion of said perimeter of said concrete slab foundation;
c. said anchor includes an embedded leg having a distal end embedded at an angle to the top of said slab and positioned downwardly within said slab foundation and inwardly from said slab perimeter and having an upper end positioned in contact with said inner face of said form board;
d. said anchor having a first mudsill attachment arm integrally connected to said upper end of said leg and extending above and outwardly from said form board and outside said perimeter of said concrete slab foundation wherein the plane of said arm is generally parallel to the top surface of said foundation;



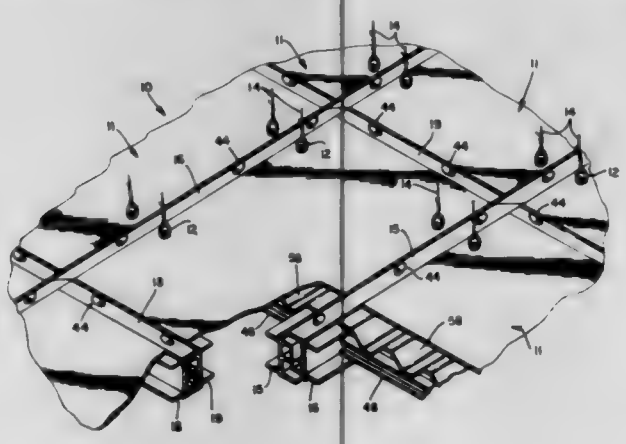
e. said anchor having a second mudsill attachment arm integrally connected to said upper end of said leg and extending above and outwardly from said form board and outside said perimeter of said concrete slab foundation in generally the same plane as said first arm and at an angle of substantially less than 180° thereto;
f. a wood mudsill member positioned on said concrete slab perimeter edge when said concrete hardens;
g. said first and second mudsill attachment arms have a selected length for bending over said mudsill member from the same side of said mudsill and then over a portion of the top of said mudsill member; and
h. fastener means connecting said first and second arms to the top side of said mudsill member.

4,404,782

SUSPENDED MODULAR FLOOR ASSEMBLY

Virgil R. Williams, 2055 Webb Jin House Rd., Snellville, Ga. 30278, and James M. Williams, Jr., 2980 Payton Rd., NE., Atlanta, Ga. 30345

Filed Aug. 21, 1980, Ser. No. 180,137
Int. Cl.³ E04B *5/52, 5/58*
U.S. Cl. 52—475 **6 Claims**



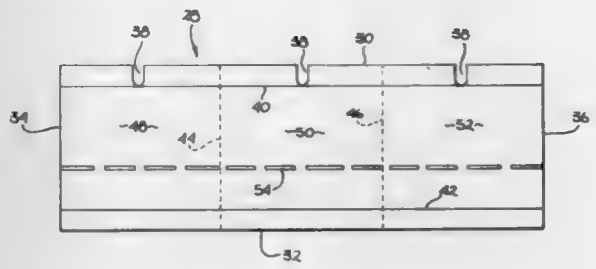
1. A suspended modular floor assembly for suspension from the truss structure of a roof of an industrial building, said floor assembly comprising a plurality of modules of similar size and shape and in abutment with one another at their edges, each said module comprising parallel side beams and parallel end beams each joined at their ends to one another and forming a peripheral rectangular frame, said side and end beams each constructed of similar cross-sectional shape with an upright web extending from top to bottom of and along the length of the beam, spaced upper and lower parallel flange members extending from one side of said web inwardly of the frame, the upper surface of said upper flange and the lower surface of said lower flange each being formed with a ridge with a recessed step surface extending to the side edge of each of said upper and lower flanges, and a tongue and groove formed on the other side of said web and extending outwardly of the frame with the tongue positioned over the groove for one side beam and one end beam and with the groove positioned over the tongue for the other side beam and the other end beam, said tongue comprising a closed box formation with said web and including an upper wall and a lower wall each connected at one edge to said web and an outer wall connected at its edges to said upper and lower walls, a plurality of elongated cross braces extending parallel to one another and connected at their ends to the lower flange members of the side beams, a corrugated support sheet positioned over said cross braces with the folds of its corrugations extending across the lengths of and engaging said cross braces, said corrugated support sheet being joined at its opposite edges to and overlying the recessed step surfaces of the upper flange of said side beams, a flat sheet member positioned over said corrugated support sheet and joined at its edges to and overlying the recessed step surfaces of the upper flange of said side beams, and hanger bolts extending through said upper and lower flange members of the beams of said rectangular frame, said bolts including connection means positioned over the beams for connection to a suspension line or the like.

4,404,783

MULTI PURPOSE ROOF PIECE

Bennie Freiborg, 4536 Indiana Ave., La Canada, Calif. 91011

Filed Nov. 17, 1980, Ser. No. 207,357
Int. Cl.³ E04D *1/20*
U.S. Cl. 52—518 **7 Claims**



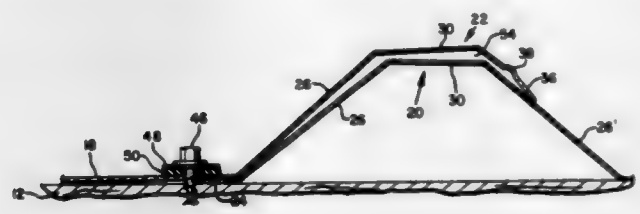
1. An asphalt composition roofing piece of generally rectangular shape comprising a layer of asphalt saturated felt having a layer of rock granules applied to one side thereof and having a first end, a second end, a first edge and a second edge and further comprising:
a first foldable portion integral with said roofing piece and coupled thereto by a first hinge means having a hinge axis parallel to said first edge;
a second foldable portion integral with said roofing piece and coupled thereto by a second hinge means having a hinge axis parallel to said second edge;
at least one line of decreased structural integrity extending from said first edge to said second edge and lying perpendicular thereto and dividing said roofing piece into a plurality of equally sized parts;
each equally sized part being provided with a notch extending from said first edge to approximately the hinge axis of said first hinge means and placed approximately at the midpoint of the first edge of each such equally sized part.

4,404,784

ANTISIPHON LAP JOINT FOR BUILDING SHEETS

Kenneth G. Gorman, Dallas, and Richard A. Marx, Salem, both of Oreg., assignors to Valley Rolling Mills, Inc., Salem, Oreg.

Filed Nov. 12, 1981, Ser. No. 320,186
Int. Cl.[3] E04D *1/34, 3/30*
U.S. Cl. 52—534 12 Claims



1. A lap joint construction for forming a tight weatherproof juncture between partially overlapping adjacent building sheets for roofing and the like, comprising:

(a) a lapped member including a rib extending along the entire extent of the juncture, said rib including a pair of upwardly-converging sloping sidewalls interconnected by a table;

(b) an overlapping member including an inner section having a shape which is congruent with the shape of a portion of said lapped member, a sealing lip arranged to resiliently separate the entire extent of said overlapping member from said lapped member when said overlapping member is urged toward said lapped member, and an intermediate strengthening bead interfacing said sealing lip with the remainder of said overlapping member; and

(c) fastening means for tightly securing said lapped and said overlapping member to an underlying structure and for urging said overlapping member toward said lapped member;

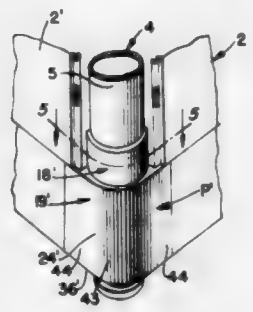
(d) said fastening means being located on the sheet apart from said lapped and overlapping members.

4,404,785

POST COVER PLATE

Richard W. McCracken, Youngstown; Melvin A. Textoris, Struthers, and Philip J. Williams, Poland, all of Ohio, assignors to GF Business Equipment, Inc., Youngstown, Ohio

Filed Jan. 23, 1981, Ser. No. 228,704
Int. Cl.[3] H02G *3/00;* E04F *19/04*
U.S. Cl. 52—290 12 Claims



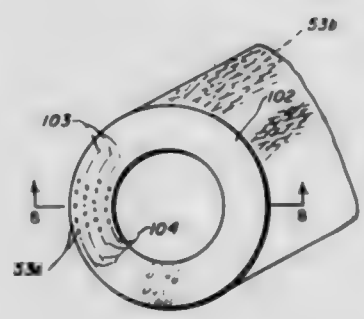
1. A partition assembly having panels provided with side edges attached to support posts having a bottom, said panels having a bottom, support assemblies disposed beneath said post bottoms engageable with an underlying surface to maintain said post bottoms and panel bottoms elevated above said underlying surface to define a bottom space therebetween, one said post attached to one said panel comprising an end-most post in said partition assembly, removable panel cover plates extending beneath said panel bottoms to enclose said bottom space beneath said panels, said panel cover plates having end edges extending laterally to a point short of said post support assemblies, a removable post cover plate adapted to mask that portion of said bottom space from each said post bottom to said underlying surface, said post cover plate including an upper section having a top edge disposed above said post bottom, said post cover plate upper section enveloping a majority of the peripheral extent of said post adjacent its bottom, a lower section extending below said upper section and overlying said support assembly, said lower section provided with opposite lateral edges, joining means on said lateral edges engageable with two said panel cover plate end edges to retain said post cover plate in said masking position, said lower section including a central curved portion defining an arc of substantially 180° and bounded by two straight portions having said joining means thereon, said post including a cylindrical periphery and said post cover plate upper section including an arcuate inner surface having a radius substantially mating the radius of said post, and said upper section arcuate inner surface describing an arc of substantially 270°.

4,404,786

METHOD AND APPARATUS FOR MAKING REINFORCED CONCRETE PRODUCTS

Philip L. Rotondo, 8 Watson Dr., Simsbury, Conn. 06070, and Thomas J. Rotondo, Meadow La., Harwinton, Conn. 06791

Filed Jan. 10, 1980, Ser. No. 111,168
Int. Cl.[3] E04C *5/01, 3/34*
U.S. Cl. 52—659 12 Claims



1. A hollow structure having an annular wall comprised of concrete,

a plurality of discrete cut lengths of straight reinforcing wires embedded within said annular wall along the length of and in alignment with the axis of said structure,

said cut lengths of wire being at least ten inches in length,

said embedded lengths of wire being ordered and arranged in a plurality of radially spaced annular arrays with wires in an annular array circumferentially and axially spaced from one another, and

said annular arrays axially overlapping one another.

4,404,787

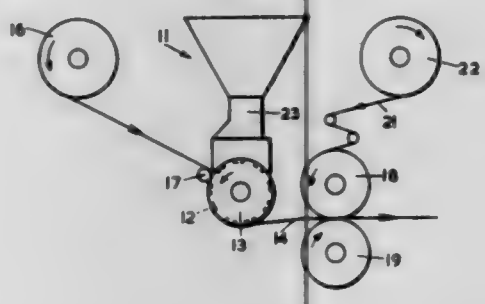
DENSITY CONTROL SYSTEM FOR TEA PACKAGING APPARATUS

Geoffrey Hazelwood, New Farnley, England, assignor to Baker Perkins Holdings Limited, Peterborough, England

Filed Feb. 20, 1981, Ser. No. 236,332
Claims priority, application United Kingdom, Mar. 11, 1980, 8008189
Int. Cl.[3] B65B *57/14*
U.S. Cl. 53—502 3 Claims

1. A machine for packaging tea or other particulate solid material comprising a framework, a rotary dispensing drum mounted for rotation in the framework and having in its periphery a row of circumferentially spaced pockets, a hopper to contain the material to be packaged which is mounted in the framework and has a lower portion which contains a permanently open outlet through which the material flows by gravity into successive pockets in the drum as said drum rotates, the lower portion at least of the hopper being normally stationary but slidable when required in the framework in relation to the drum to vary the effective area of the outlet to the pockets and therefore the extent of filling of the pockets, means for imparting such sliding movement to said lower portion at least of the hopper, means for feeding a lower web of packaging material

into contact with the periphery of the drum so that it covers said pockets in succession after they have received material from said hopper through said outlet and leaves the bottom of the drum in a substantially horizontal run carrying spaced piles of material deposited on the web by gravity from successive



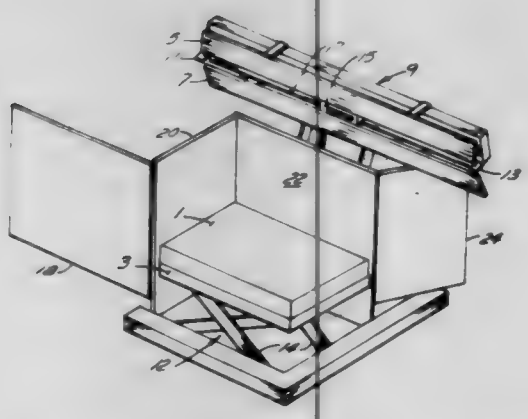
pockets in the drum, and means spaced laterally from said drum for superposing an upper web of packaging material on the lower web to cover the piles of material carried by and traveling with said lower web and sealing the webs together around the perimeter of each pile.

4,404,788

PACKAGING MACHINE

Jan T. Svenäng, Gothenburg, Sweden, assignor to Tex Innovation AB, Frölunda, Sweden

Filed Mar. 6, 1981, Ser. No. 241,347
Int. Cl.³ B65B *31/06*
U.S. Cl. 53—512 **13 Claims**



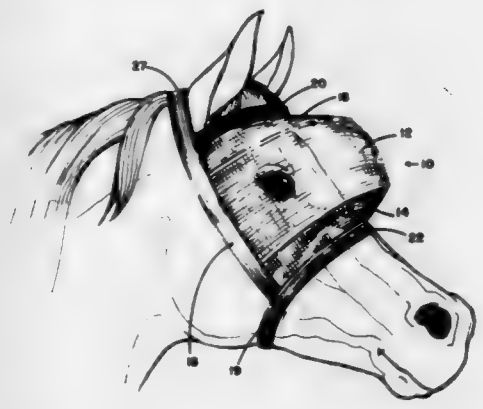
1. An apparatus for over-wrapping or bulk packaging of commodities on a pallet or the like supporting surface comprising a supporting surface on which said commodities are adapted to be over-wrapped or bulk packaged with a sealable flexible wrapping material having a vacuum valve therein, a movable enclosure surrounding the supporting surface and forming an open-topped chamber with said supporting surface, said chamber being adapted to receive said flexible packaging material therein, said movable enclosure being movable relative to said supporting surface to permit access to said supporting surface, means for gripping and engaging opposed portions of said flexible wrapping material, means for evacuating air from the flexible wrapping material after commodities have been inserted therein, and means for sealing the flexible wrapping material in said chamber to form a seal across the wrapping material, said means for sealing the flexible wrapping material being effective to seal the wrapping material prior to said means for evacuating air from the flexible material evacuating said air from said material through said vacuum valve means.

4,404,789

ANIMAL EYE PROTECTION DEVICE

Elizabeth R. Denning, 47715 Rainbow Canyon Rd., Fallbrook, Calif. 92028

Filed Aug. 10, 1981, Ser. No. 291,246
Int. Cl.³ B68C *5/00*; A61F *9/04*
U.S. Cl. 54—80 **11 Claims**



1. A device for protecting the eyes of an animal from inspects comprising:

a cover member having a pair of opposite side edges and comprising first and second panels and a third panel therebetween, said first panel having a top edge adapted for lying against and around a portion of an animal's forehead below the ears and above the eyes and a lower edge secured to said third panel, said second panel having a bottom edge adapted for lying against and around a portion of the animals's head below the eyes and an upper edge secured to said third panel, said third panel forming an arched cover over said animal's eyes and held in a spaced relation therefrom by said first and second panels, said third panel comprising a net-like material having spaces therein to provide visibility therethrough, and

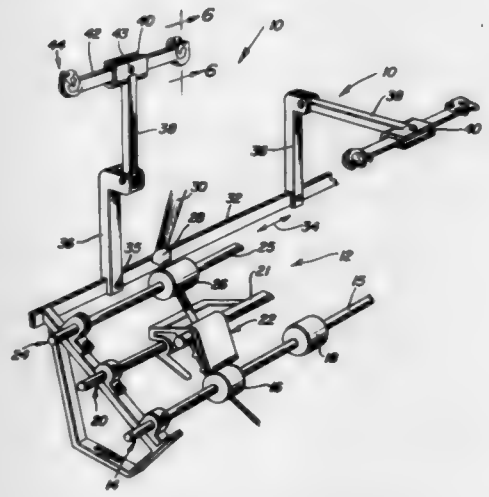
means adapted for securing said cover member on said animal's head.

4,404,790

TRAVERSING CORE YARN GUIDE FOR SPINNING FRAMES

David C. Frederick, Gastonia, N.C., assignor to Hope Plastics Corporation, Gastonia, N.C.

Filed Jun. 11, 1981, Ser. No. 272,477
Int. Cl.³ D01H *13/04*
U.S. Cl. 57—12 **12 Claims**



1. A core yarn guide for use on a spinning frame or the like, said guide comprising:

yarn guide means for guiding said core yarn;

first support means to which said yarn guide means is fixedly secured; and

second support means to which said first support means is

fixedly secured, said second support means being selectively attachable to said spinning frame, said second support means including a first arm and a second arm pivotally attached to said first arm, said first arm being fixedly securable to said spinning frame and said first support means being fixedly securable to said second arm, said first support means including an elongated member substantially orthogonally aligned with respect to said second arm and being connected to said second arm at a point which is substatially centrally positioned along a length of said elongated member.

4,404,791

SPINNING MACHINE

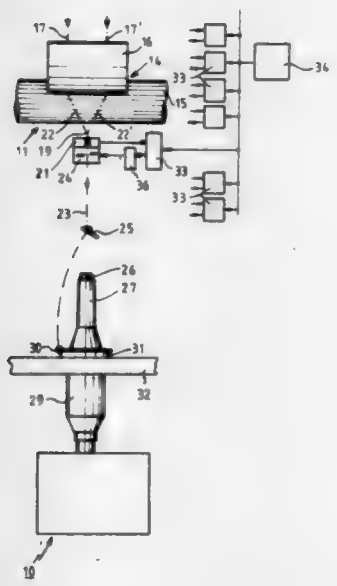
Horst Wolf, Albershausen, and Hermann Guttler, Uhingen, both of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

Filed Jul. 22, 1981, Ser. No. 285,722

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028453

Int. Cl.³ D01H *13/16*

U.S. Cl. 57—80 **9 Claims**



1. A spinning machine for spinning yarns comprised of finite length fibers comprising a plurality of drawing means each of which draws two parallel, untwisted fiber strands, guide means for converging each of said two strands to provide a plurality of yarns, spindle means for imparting a twist to said yarns and winding said yarns, sensing means located between each drawing means and each guide means for continuously sensing a characteristic of the yarn which changes in the manner recognizable to said sensing means when the yarn is only being spun from one of the two fiber strands and interrupter means responsive to said sensing means for interrupting the spinning of the yarn upon breakage of one of said strands.

4,404,792

FRICTION SPINNING APPARATUS

Alan Parker, 7 Darvel Close, Breightmet, Bolton, Lancashire, and Douglas O. Clough, 26 Parkwood Dr., Rawtenstall, Rossendale, Lancashire, both of England

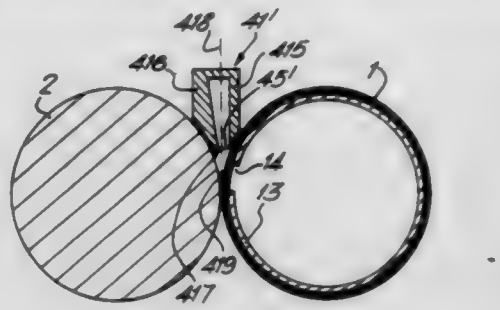
Filed Feb. 17, 1982, Ser. No. 349,541

Claims priority, application United Kingdom, Feb. 21, 1981, 8105573

Int. Cl.³ D01H *1/12, 7/892*

U.S. Cl. 57—401 **8 Claims**

1. In an apparatus for open-end spinning yarn of the type comprising two rotatable bodies each having a surface and arranged such that the surfaces define an elongate gap which narrows toward a line of closest approach of the surfaces, means for rotating one of the bodies in a direction so that the surface moves into the gap and means for moving the other body in a direction so that the surface moves out of the gap to twist fibres in the gap to form a yarn, means for withdrawing the yarn along the gap, and a fibre feed duct having an elongate mouth within the gap and arranged to feed fibres substantially



directly into the gap such that some fibres can fall directly on to the yarn, the improvement wherein the fibre feed duct is biassed to one side so as to tend to direct more of the fibres toward the surface which moves into the gap.

4,404,793

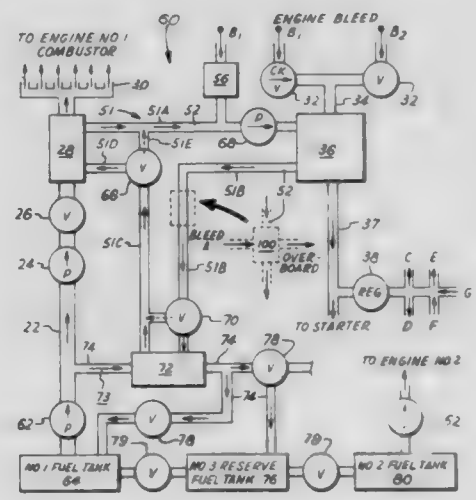
APPARATUS FOR IMPROVING THE FUEL EFFICIENCY OF A GAS TURBINE ENGINE

George A. Coffinberry, West Chester, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 20, 1980, Ser. No. 132,364

Int. Cl.³ F02C *6/08*

U.S. Cl. 60—39.07 **9 Claims**



1. An energy recovery system for a gas turbine of the type including means for supplying a flow of fuel thereto from at least one fuel tank and having at least one support system in which some of the pneumatic energy developed by the engine is made available to the support system, including first means for recovering at least some of the pneumatic thermal energy made available to but not utilized by the support system, second means for utilizing at least some of the energy recovered by the first means to heat the fuel substantially immediately prior to the consumption of the fuel by the engine, third means for utilizing at least some of the energy recovered by the first means to heat the fuel in the fuel tank, and fourth means for selectively utilizing the second and third means, which comprises:

a first liquid-to-liquid heat exchanger disposed to receive the flow of fuel substantially immediately prior to its consumption by the engine;

second air-to-liquid heat exchanger disposed to receive engine bleed air from the engine and to pass the engine bleed air to the support system;

third liquid-to-liquid heat exchanger means coupled to receive fuel from the fuel tank and to pass fuel therethrough and back to the fuel tank;

conduit means for coupling said first, second and third heat

exchangers, said conduit providing a first continuous loop between said first and second heat exchangers, a second continuous loop between said first, second and third heat exchangers, and a third continuous loop between said second and third heat exchangers;

pumping and pressurizing means for circulating a heat transfer medium through said conduit means; and

control valve means for controlling the flow of said heat transfer medium to said third heat exchanger.

4,404,794

TURBO-GENERATOR FOR A ROTARY WING HELICOPTER

Charles Dechaux, 4 Ave. de la Porte de Sevres, 75015 Paris, France

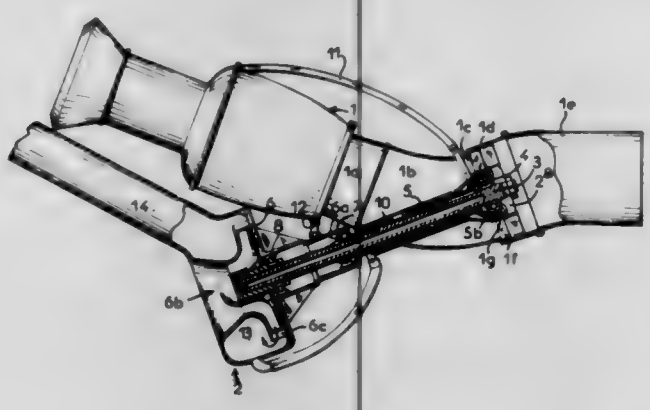
PCT No. PCT/FR80/00083, § 371 Date Jan. 16, 1981, § 102(e) Date Jan. 16, 1981, PCT Pub. No. WO80/02542, PCT Pub. Date Nov. 27, 1980

PCT Filed May 21, 1980, Ser. No. 230,945

Claims priority, application France, May 21, 1979, 79 12879

Int. Cl.³ F02C *3/10*

U.S. Cl. 60—39.161 **5 Claims**



1. A compressed air turbo-generator for supplying the reaction blades of the rotating wing of a helicopter, comprising

a turbo-reactor including a gas exhaust manifold, said turbo-reactor having a longitudinal axis;

a turbo-compressor having a longitudinal axis intersecting the longitudinal axis of said turbo-reactor at an actue angle, said turbo-compressor being located adjacent said turbo-reactor;

a driving turbine located within the gas exhaust manifold of said turbo-reactor, said turbine including a rotary wheel rotatable about the longitudinal axis of said turbo-compressor;

a shaft having one end secured to the rotary wheel of said driving turbine and the other end to said turbo-compressor for the rotation thereof;

a tubular member forming part of said turbo-compressor surrounding said shaft;

bearing means interposed between said tubular member and said shaft for rotation of said shaft within said tubular member, said bearing means including a rear ball bearing at the rotary wheel of said turbine; and

a hinged member pivotably coupled at one end to said turbo-reactor and the other end to said turbo-compressor, said hinged member permitting said turbo-compressor to be pivoted in a plane defined by said longitudinal axis about a point located in the region of the rotary wheel of said driving turbine.

4,404,795

METHOD OF AND APPARATUS FOR REDUCING EMITTED AMOUNT OF PARTICULATES CONTAINED IN EXHAUST GAS OF DIESEL ENGINE

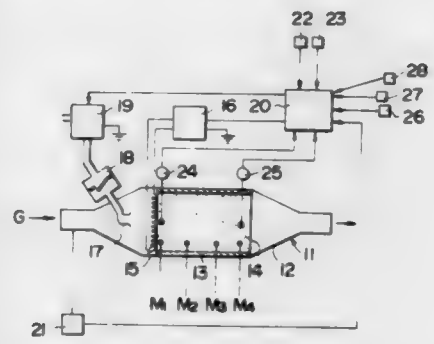
Kiyohiko Oishi, Susono; Yoshihiro Suzuki, Toyota; Kiyoshi Kobashi, Mishima; Shinichi Matsumoto, Toyota; Takashi Yoshida, Nagoya, and Takeshi Kogiso, Aichi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho, both of Aichi, Japan

Filed Jun. 12, 1981, Ser. No. 272,956

Claims priority, application Japan, Jun. 19, 1980, 55-83176

Int. Cl.³ F01N *3/02*

U.S. Cl. 60—274 **13 Claims**



1. A method of reducing an emitted amount of particulates by introducing the exhaust gas from a diesel engine into a trapper and causing the particulates to adhere to a trapping member in said trapper, comprising the following steps in the sequence set forth:

detecting that the amount of the particulates which have adhered to said trapping member exceeds a predetermined value;

detecting that a temperature of said trapping member is within a range of self-burning temperature of the particulates relative to said adhering amount of the particulates;

heating an inlet part of said trapping member in said trapper to a range of igniting temperature of the particulates;

supplying secondary air to said trapper to ignite the particulates which have adhered to the inlet part of said trapping member;

and

stopping said heating of the inlet part of said trapping member;

whereby combustion of the particulates at the inlet part of said trapping member is propagated to the particulates which have adhered to an outlet part of said trapping member, to thereby regenerate said trapper.

4,404,796

REMOVAL OF PARTICULATES FROM DIESEL ENGINE EXHAUST GAS

Wallace R. Wade, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 3, 1982, Ser. No. 384,806

Int. Cl.³ F01N *3/02*

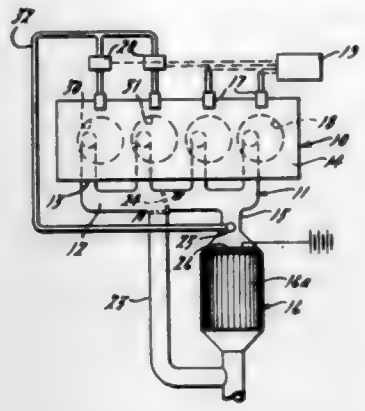
U.S. Cl. 60—274 **17 Claims**

1. A method for periodically oxidizing particulate matter trapped in and on an exhaust gas purifying device used in conjunction with a diesel engine having a plurality of combustion cylinders, each supplied with fuel for combustion, said purifying device having a fuel burning device associated therewith, the method comprising the steps of:

(a) diverting fuel normally delivered to selected combustion cylinders of said diesel engine to said fuel burning device and thereby deactivate the combustion operation of said selected cylinders;

(b) burning only said diverted fuel by said fuel burning

device to increase the temperature of the exhaust gas from the nonselected cylinders flowing through said purfiying



device to a level effective to combust said trapped particulate matter.

4,404,797

GAS TURBINE ENGINE POWERPLANT

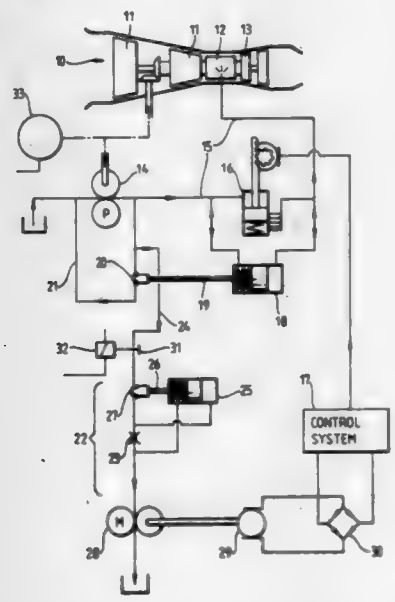
Charles E. G. Payne; Thomas I. Y. Jones, and Peter A. Dootson, all of Bristol, England, assignors to Rolls Royce Limited, London, England

Filed Nov. 20, 1981, Ser. No. 323,366

Claims priority, application United Kingdom, Dec. 10, 1980, 8039520

Int. Cl.³ F02C 7/22, 7/32

U.S. Cl. 60—39.281 3 Claims



1. Gas turbine engine powerplant comprising a gas turbine engine, a fuel pump connected to be driven by the engine and having a delivery duct connected to feed fuel to the engine, an electronic control system for varying the flow rate of fuel in the delivery duct thereby to vary the speed of the engine, a branch duct connected to the delivery duct and subject to pressure changes produced therein by said varying flow rate, changing means provided in the branch duct for changing the variable flow rate produced by said pressure changes into a constant flow rate, a hydraulic motor connected to be driven by said constant flow rate, an electric generator connected to be driven by the motor and connected to provide power for said control system.

4,404,798

EXHAUST GAS CLEANING DEVICE FOR INTERNAL COMBUSTION ENGINE

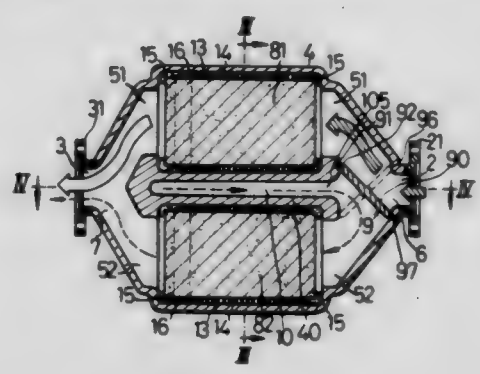
Shigeru Takagi, Anjo; Yukihisa Takeuchi, Aichi; Shigeru Kamiya, Chiryu; Masahiro Tomita, Anjo; Kiyohiko Oishi, Susono, and Kiyoshi Kobashi, Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Oct. 7, 1981, Ser. No. 309,408

Claims priority, application Japan, Oct. 9, 1980, 55-141793

Int. Cl.³ F01N 3/02

U.S. Cl. 60—296 13 Claims



1. An exhaust gas cleaning device for collecting and burning particulates contained within exhaust gases discharged from an internal combustion engine, comprising:

a housing provided with an exhaust gas inlet chamber which is communicated with an exhaust gas inlet port, an exhaust gas outlet chamber which is communicated with an exhaust gas outlet port, and two independent exhaust gas flowing passages which are formed between said exhaust gas inlet chamber and said exhaust gas outlet chamber so as to be communicated therewith;

a pair of particulates collecting members for collecting said particulates, which are made of heat resistant material having air permeability;

each of said collecting members being disposed within each of said exhaust gas flowing passages;

an exhaust gas diverter valve which is disposed within said inlet chamber so as to be opposed to said exhaust gas inlet port for alternately directing the exhaust gas flowing from said exhaust gas inlet port to either one of said exhaust gas flowing passage while blocking the exhaust gases to the other flowing passage;

a heated air supplying means for burning off said particulates collected in said collecting member disposed in said other flowing passage;

said exhaust gas diverter valve being composed of a butterfly valve which is supported by a valve shaft in the central portion of said inlet chamber so as to turn by a predetermined degree clockwise and counterclockwise; and

said heated air supplying means comprising a heated air outlet port which opens into said exhaust gas inlet chamber so as to be opposed to said exhaust gas inlet port with said butterfly valve between.

4,404,799

PNEUMATIC TOOL WITH MUFFLER

Edmund C. Dudek, St. Charles, Ill., assignor to Thor Power Tool Company, Aurora, Ill.

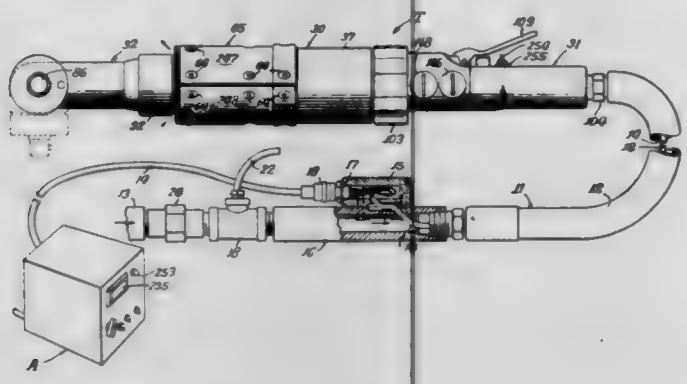
Division of Ser. No. 359,640, May 14, 1973, Pat. No. 3,920,082. This application Oct. 6, 1975, Ser. No. 620,035

Int. Cl.³ B23B 45/04; F01N 1/08

U.S. Cl. 60—370 10 Claims

1. In a pneumatic power tool including a tool body having a pneumatic motor mounted therein, said motor having at least one air inlet and one air outlet port therein, drive means in the body driven by the motor, the improvement of a sound attenuating exhaust air flow arrangement for said motor comprising at least one exhaust air discharge port in said body, said body

including a single annular wall, and means defining a tortuous path totally within the single annular wall through said tool body between said air outlet port of said motor and said exhaust air discharge port, said tortuous path being defined only by the



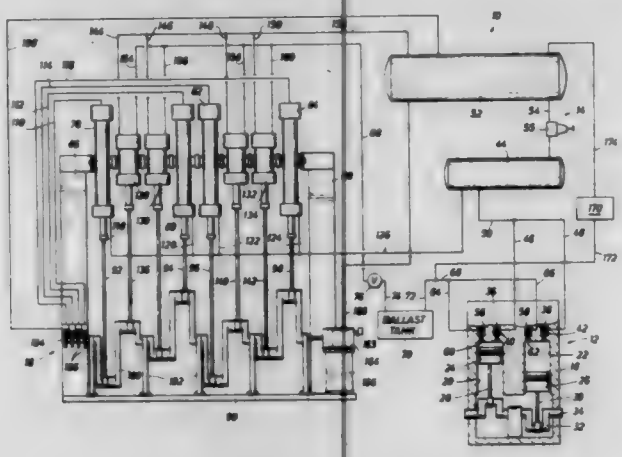
tool body and the drive means, said tortuous path being effective to reduce the sound level of the exhaust air flowing therethrough to a level such that no supplemental muffling is required.

4,404,800

GAS ENERGIZED ENGINE SYSTEM

Edison P. Penney, 3750 Underwood Blvd., Houston, Tex. 77025

Filed Sep. 16, 1980, Ser. No. 187,800
Int. Cl.³ F15B *11/06*
U.S. Cl. 60—370 **25 Claims**



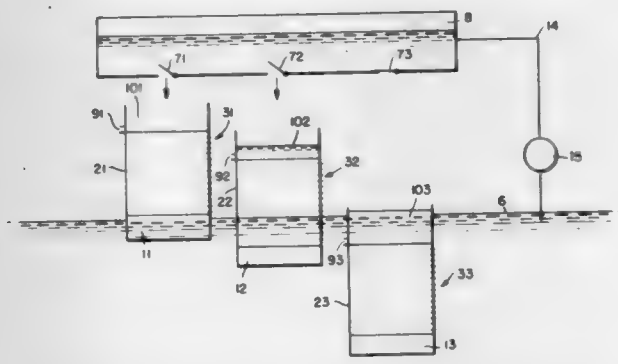
17. A gas energized engine system comprising:
(a) a piston type engine having compressed gas intake means and gas exhaust means;
(b) an operational pressure vessel containing gas for engine energization and being in communication with said intake means of said engine;
(c) pressure regulator means maintaining an operating pressure range within said operational pressure vessel;
(d) a high pressure vessel being in gas supplying connection with said pressure regulator means;
(e) pneumatic cylinder compressor means having a valve controlled intake in communication with said gas exhaust means of said engine and having a compressed gas discharge in communication with said high pressure vessel;
(f) pneumatic cylinder drive motor means having an inlet in communication with said high pressure vessel and an outlet in communication with said operational pressure vessel;
(g) timing valve means interposed between said high pressure vessel and said drive motor means, said timing valve means inducing sequential operation of said drive motor means;
(h) crank shaft means being rotatably mounted and having driving interconnection with said compressor means and driven interconnection with said drive motor means, said crank shaft means having controlling interconnection with said timing valve means; and
(i) auxiliary gas compressor means having an inlet in communication with said exhaust means of said engine and a discharge in communication with said high pressure vessel.

4,404,801

METHOD OF GENERATING ENERGY FROM DIFFERENT WATER LEVELS

Dieter Palm, Kopernikusstrasse 60, 6800 Manheim 1, Fed. Rep. of Germany

Filed Nov. 21, 1979, Ser. No. 96,511
Int. Cl.³ F03C *5/00*
U.S. Cl. 60—496 **8 Claims**



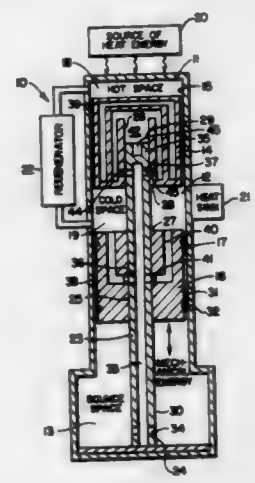
1. A method of generating energy, more particularly electrical energy, from differing water levels, comprising the steps of: filling a container resting upon a float while descending from an upper water level of the differing water levels through inwardly opening side flaps, wherein the outlet openings are closed during the filling; draining the container while rising through outlet openings opened upon reaching a desired filling level; and generating energy through movement of the container during the filling and draining of the container.

4,404,802

CENTER-PORTING AND BEARING SYSTEM FOR FREE-PISTON STIRLING ENGINES

William T. Beale, Athens, Ohio, assignor to Sunpower, Inc., Athens, Ohio

Filed Sep. 14, 1981, Ser. No. 302,102
Int. Cl.³ F02G *1/04*
U.S. Cl. 60—520 **9 Claims**



1. In an improved free-piston Stirling engine provided with a housing which defines a work space and a reference space, a gas contained in said work space and said reference space, a displacer reciprocating in said work space and a reciprocating power piston in fluid communication with said work space, that improvement which comprises:
(a) an inner cylindrical piston wall extending axially through said power piston and defining a central bore in said piston;
(b) an inner cylindrical displacer wall extending from one

end of said displacer into a central portion thereof and defining a central opening in said displacer; and

(c) an elongated center rod fixed within said housing and providing an outer bearing surface upon which said inner cylindrical piston wall and said inner cylindrical displacer wall are slidingly engaged.

4,404,803

BRAKE UNIT WITH A HYDRAULIC BOOSTING DEVICE

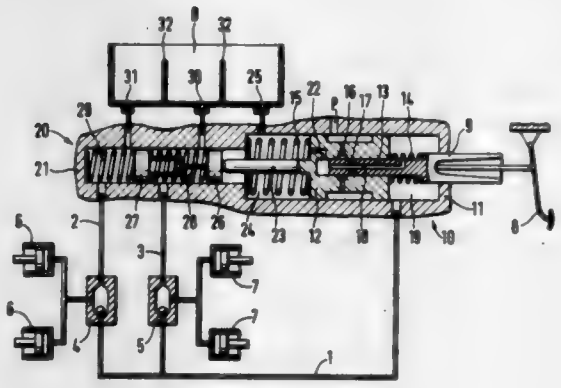
Helmut Steffes, Eschborn, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 18, 1981, Ser. No. 244,950

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016683

Int. Cl.³ B60T *13/00*

U.S. Cl. 60—547.1 **14 Claims**



1. A brake unit to generate a braking pressure in a vehicular brake system comprising:

a hydraulic booster unit connected to an auxiliary hydraulic boosting fluid source, said booster unit being controllable by a brake pedal via a control piston for driving a master brake cylinder unit to supply said braking pressure to wheel brake cylinders through at least one hydraulic line connected to an outlet of said master cylinder unit;

a bypass line connected to a boosting chamber of said booster unit subjected to auxiliary boosting fluid from said source upon actuation of said brake pedal to provide a preliminary feed of said boosting fluid to said wheel brake cylinders to overcome brake clearance; and

a changeover valve directly connected to said wheel brake cylinders, said hydraulic line and said bypass line responsive to said braking pressure and the pressure of said boosting fluid to connect said bypass line to and disconnect said hydraulic line from said wheel brake cylinders during said preliminary feed and to connect said hydraulic line to and disconnect said bypass line from said wheel brake cylinders after said brake clearance is overcome.

4,404,804

INTERNAL COMBUSTION ENGINE HAVING A TURBO-SUPERCHARGER AND A CATALYTIC EXHAUST GAS PURIFYING DEVICE

Tomoo Tadokoro; Masato Iwaki, and Haruo Okimoto, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

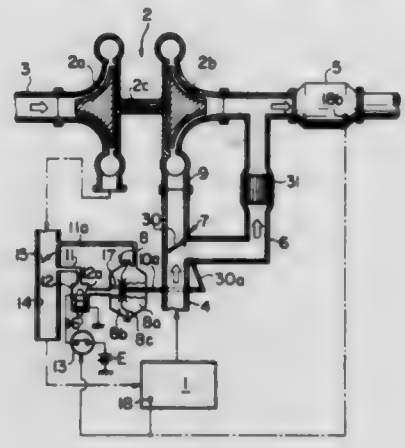
Filed Jan. 7, 1981, Ser. No. 223,165

Claims priority, application Japan, Jan. 10, 1980, 55-1822[U]; Feb. 15, 1980, 55-18891[U]; Feb. 20, 1980, 55-21575[U]

Int. Cl.³ F01N *5/04, 3/08;* F02B *37/00*

U.S. Cl. 60—602 **12 Claims**

1. An internal combustion engine including intake passage means and exhaust passage means, a turbo-supercharger comprised of exhaust gas turbine means provided in said exhaust gas passage means and compressor means provided in said intake passage means, first catalytic exhaust gas purifying means provided in said exhaust gas passage means downstream of the exhaust gas turbine means, bypass passage means having one end connected with said exhaust gas passage means upstream of the exhaust gas turbine means and the other end with the exhaust gas passage means between the exhaust gas turbine means and the first catalytic exhaust gas purifying means, valve means for controlling said bypass passage means, temperature responsive control means for actuating said valve means to open the bypass passage means when engine operating temperature is below a predetermined value so that at least a part of engine exhaust gas is passed through the bypass passage means to the first catalytic exhaust gas purifying means, and second catalytic exhaust gas purifying means provided in said bypass passage means and having a smaller capacity than said first catalytic exhaust gas purifying means.



4,404,805

METHOD OF AND SYSTEM FOR POWER GENERATION BY SUPERCHARGED INTERNAL COMBUSTION ENGINE

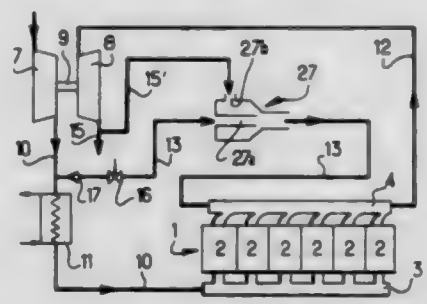
Remi Curtil, Montsoult, France, assignor to Societe d'Etudes de Machines Thermiques S.E.M.T., Saint Denis, France

Filed Mar. 17, 1981, Ser. No. 244,624

Claims priority, application France, Mar. 21, 1980, 80 06439

Int. Cl.³ F02B *37/00*

U.S. Cl. 60—606 **16 Claims**



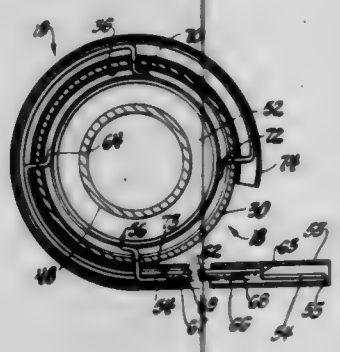
9. A power generating system comprising: a piston-type internal combustion volumetric engine system, a supercharging air compressor system and an exhaust gas-driven turbo-motor system with mechanical and/or pneumatic couplings therebetween; a by-pass duct connecting the compressed air delivery pipe-line from said compressor system to the exhaust gas flow passage-way of said volumetric motor system after the outlet thereof from the working cylinders of said engine system and a device for recovering energy from the gases burnt within said volumetric engine system and for transferring the recovered energy to one part of the compressed air flow, a compressed air flow passage-way extending through said device which is inserted with its compressed air flow passage-way exclusively in said sole by-pass duct, characterized in that said energy recovery and transfer device consists of at least one ejector the impelled fluid suction pipe of which is branched in by-passing relationship off a gas outlet pipe-line of said turbo-motor system.

4,404,806

GAS TURBINE PRECHAMBER AND FUEL MANIFOLD STRUCTURE

Albert H. Bell, III, Birmingham, and James C. Hyde, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 4, 1981, Ser. No. 299,630
Int. Cl.³ F02C 7/22
U.S. Cl. 60—737 3 Claims



1. In a gas turbine engine having a pressurized air plenum, a combustor in said plenum, a source of fuel, a fuel control means remote from said combustor and connected to said fuel source, said fuel control means having a metering mode for metering fuel flow for combustion and a dump mode for purging fuel upon engine shut down to minimize fuel coking, and a generally cylindrical prechamber housing in said plenum defining a prechamber having an inlet exposed to said plenum and an outlet exposed to said combustor and a cylindrical surface therebetween, the improvement comprising, a plurality of delivery heads disposed on said prechamber housing with symmetrical spacing around said cylindrical surface and projecting therethrough into said prechamber, a plurality of identical fuel conduits in said plenum each having a first end and a second end and corresponding in number to the number of said delivery heads, means connecting said fuel conduit first ends to corresponding ones of said delivery heads, each of said fuel conduits wrapping around said prechamber housing and uniting with the others to form a bundle wherein said fuel conduit second ends terminate at successively greater distances from the end of said bundle, a fuel supply pipe having one end connected to said fuel control means and another end enveloping said fuel conduit bundle such that each of said fuel conduit second ends is disposed within said supply pipe, and means in said supply pipe defining a wall around said fuel conduit bundle downstream of the most distant of said fuel conduit second ends relative to the end of said fuel conduit bundle operative to prevent passage of fuel thereacross so that in said fuel control means metering mode equal fuel flow is induced in each of said fuel conduits and so that in said fuel control means dump mode fuel purge in each of said fuel conduits is rapid and complete.

4,404,807

GASIFIED ICE PROCESS AND PRODUCT

Valery B. Zemelman, Wilton, Conn., and Fredric Kleiner, Valley Cottage, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

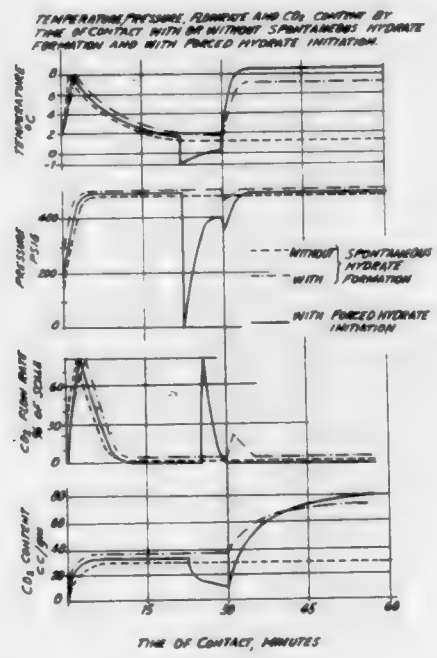
Filed Dec. 28, 1981, Ser. No. 334,846
Int. Cl.³ F25C 1/00
U.S. Cl. 62—1 8 Claims

1. An improved process for preparing a gasified ice characterized by a high gas content, prolonged storage stability suitable for commercial distribution in its frozen state, and a vigorous, uniform effervescence when placed in water, by contacting an aqueous liquid with a conditionally-stable-hydrate-forming gas under conditions of temperature, applied gas pressure and time effective to form a gas hydrate, followed by reducing the temperature of the aqueous liquid below its freezing point to entrap the gas hydrate in a matrix of frozen aqueous liquid, wherein the improvement is characterized in that:

(a) the aqueous liquid is initially contacted with said gas under conditions of temperature and applied gas pressure capable of forming the gas hydrate;

(b) the initial contact is maintained under applied pressure of said gas for a time effective to substantially equilibrate the total pressure in the system;

(c) the applied pressure of said gas is rapidly reduced to a degree effective to reduce the temperature of the aqueous liquid sufficiently to initiate formation of nuclei of water ice throughout said aqueous liquid;



(d) the applied pressure of said gas is increased to a level effective to initiate the formation of gas hydrate;

(e) the applied pressure of said gas and the temperature of said aqueous liquid are then maintained at levels and for a time effective to form gas hydrate about said nuclei of water ice; and

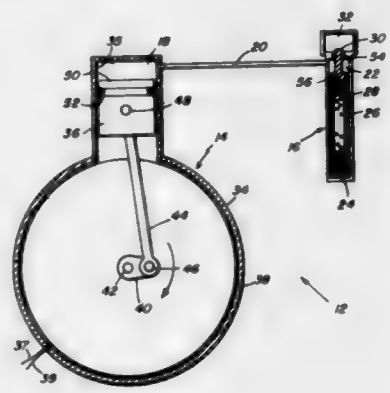
(f) the temperature of said aqueous liquid is reduced below its freezing point to entrap the gas hydrate in a matrix of frozen aqueous liquid.

4,404,808

CRYOGENIC REFRIGERATOR WITH NON-METALLIC REGENERATIVE HEAT EXCHANGER

Bruce R. Andeen, Acton, Mass., assignor to Helix Technology Corporation, Waltham, Mass.

Filed Aug. 10, 1981, Ser. No. 291,517
Int. Cl.³ F25B 9/00
U.S. Cl. 62—6 12 Claims



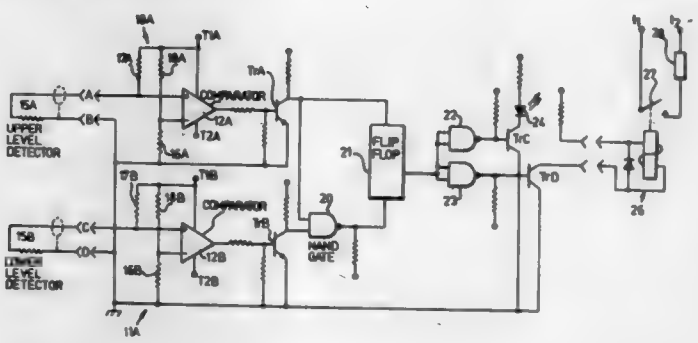
12. A refrigerator for operating at cryogenic temperatures comprising a compressor, a reciprocating displacer within a cold finger, the displacer being driven in reciprocating motion by the compressor through the medium of a compressable gas and a regenerative heat exchanger in the displacer in communication with the compressed gas comprising a pervious matrix of plastic material.

4,404,809

LIQUID NITROGEN LEVEL CONTROLLER

Arthur W. Johnson, Ottawa, and Howard R. Braun, Almonte, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Jul. 23, 1982, Ser. No. 401,374
Claims priority, application Canada, Aug. 20, 1981, 384251
Int. Cl.[3] F17C *13/02*
U.S. Cl. 62—49 7 Claims



1. Temperature sensitive liquid level controlling apparatus, comprising:

a container for holding a supply of a low temperature liquid;

first and second carbon resistors each having a resistance which changes in response to immersion in said liquid;

said first and second carbon resistors being positioned to determine upper and lower levels, respectively, of said liquid in said container;

first and second means for detecting the changes of resistance of said first and second carbon resistors;

said first and second change detecting means comprising first and second reference resistors and first and second means for comparing the resistances of said first and second carbon resistors with the resistances of said first and second reference resistors, respectively; and

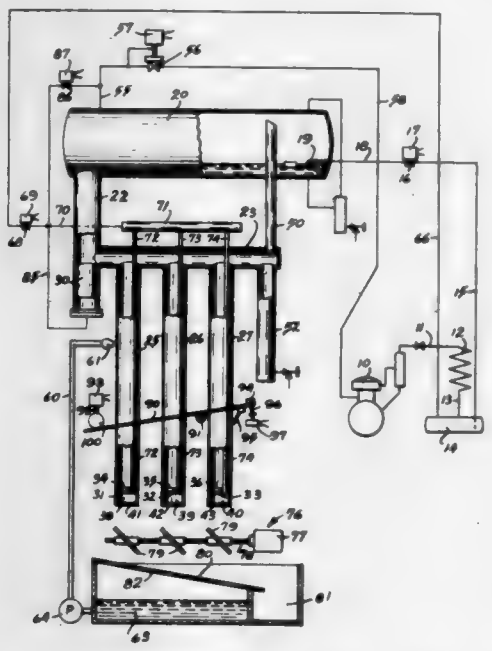
means response to the outputs of said first and second comparing means for controlling a flow of said liquid into said container.

4,404,810

METHOD OF MAKING ICE USING HOT GAS DEFROST

Milton W. Garland, Waynesboro, Pa., assignor to Frick Company, Waynesboro, Pa.

Division of Ser. No. 242,219, Mar. 10, 1981, Pat. No. 4,324,109.
This application Dec. 28, 1981, Ser. No. 335,049
Int. Cl.[3] F25C *5/10*
U.S. Cl. 62—73 2 Claims



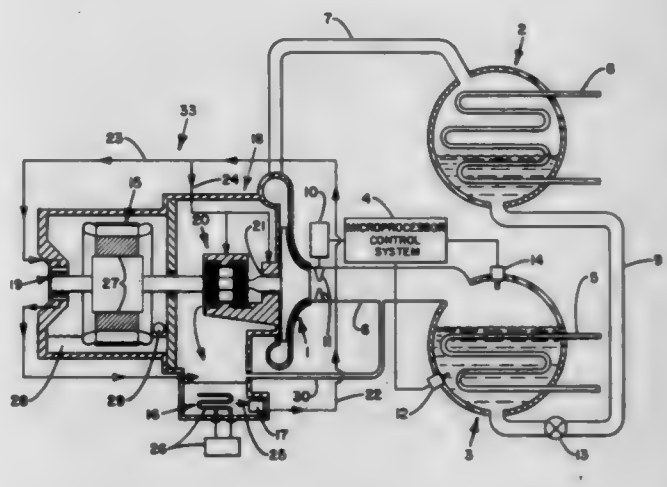
1. The method of producing ice in which vertical tube means is provided on which the ice is formed in heat exchange relation with refrigerant supplied to said vertical tube means through a supply line from a separator means connected to a suction means, said vertical tube means having a vapor return line to said separator means communicating with said suction means, comprising the steps of: flowing water over the vertical tube means and flooding the vertical tube means continuously with refrigerant in heat exchange relation with the water during the ice making phase, harvesting ice by stopping the flow of water, keeping the liquid refrigerant in the vertical tube means by preventing refrigerant flow through the supply line while continuing to maintain an open vapor return line between the vertical tube means and the separator means and maintaining such vertical tube means at a predetermined thawing temperature during the harvest time by regulating the pressure in the suction means and by introducing gaseous refrigerant at a temperature and pressure level exceeding the temperature and pressure level needed for thawing purposes into an area at the bottom of the tube means and flowing it upwardly through the tube means.

4,404,811

METHOD OF PREVENTING REFRIGERATION COMPRESSOR LUBRICATION PUMP CAVITATION

Gordon L. Mount, West Monroe, and Benjamin F. Hesler, Canastota, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 27, 1981, Ser. No. 325,615
Int. Cl.[3] F25B *43/02*; G05D *23/32*
U.S. Cl. 62—84 2 Claims



1. A method of regulating start-up operation, to prevent oil pump cavitation, of a hermetically sealed refrigeration system of the type wherein a lubricating oil reservoir is located in a housing filled with vaporous refrigerant at a pressure proportional to the refrigerant pressure in the refrigeration system evaporator, comprising:

measuring the pressure in the evaporator;

comparing the measured pressure in the evaporator to a pressure which corresponds to a desired predetermined rate of pressure drop for the evaporator;

generating an electrical signal when the pressure drop in the evaporator exceeds the predetermined rate; and

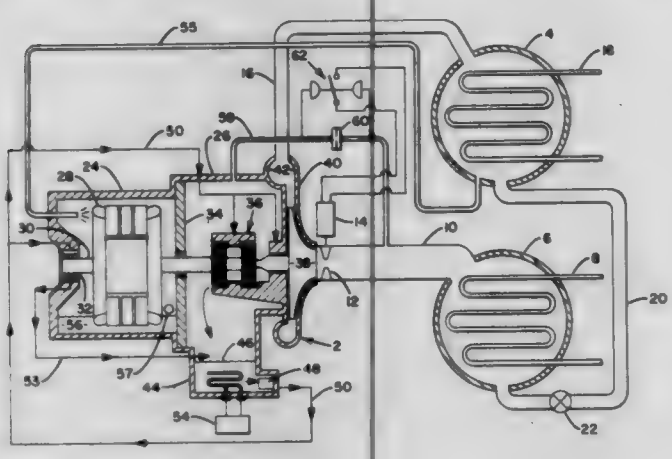
controlling the rate of pressure drop in the evaporator, in response to the generated electrical signals, so that the pressure drop in the evaporator approximately equals the predetermined rate.

4,404,812

METHOD AND APPARATUS FOR CONTROLLING THE OPERATION OF A CENTRIFUGAL COMPRESSOR IN A REFRIGERATION SYSTEM

Thomas M. Zinsmeyer, Pennellville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 27, 1981, Ser. No. 325,617
Int. Cl.³ F25B *43/02, 31/00*
U.S. Cl. 62—84 7 Claims



1. A compressor control for use in vapor compression refrigeration system for controlling the operation of a hermetic centrifugal compressor having a transmission enclosed in a housing said housing having an oil reservoir for lubricating the transmission and an atmosphere of refrigerant, said control comprising:

means to equalize the pressure between the compressor suction and the atmosphere of refrigerant in the housing,

means to detect a pressure differential between the compressor suction and the housing before equalization of the pressure in the housing occurs, and

means to throttle the suction to the compressor upon the detection of a predetermined pressure differential between the compressor suction and the housing.

4,404,813

DOOR MOUNTED ELECTRONIC HOUSING ASSEMBLY FOR A REFRIGERATOR

Stephen W. Paddock, Knight Township, Vanderburgh County, and Ralph Tate, Jr., Center Township, Vanderburgh County, both of Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Apr. 20, 1981, Ser. No. 255,672
Int. Cl.³ F25B *49/00*
U.S. Cl. 62—127 23 Claims

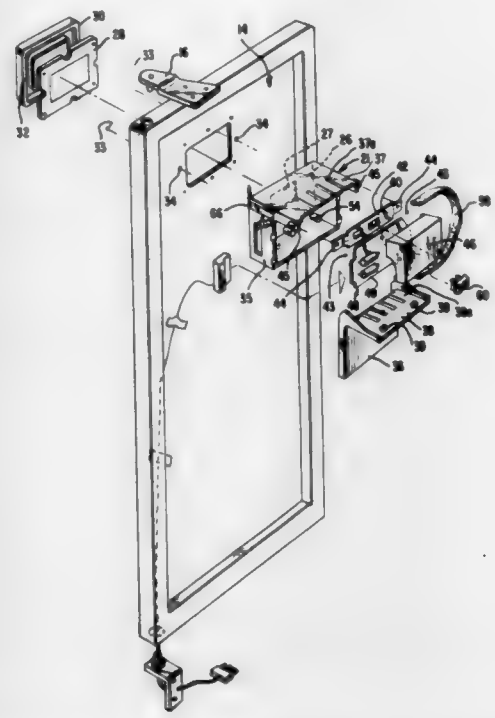
1. In a refrigeration apparatus having a cabinet defining a refrigerated space and including an insulated door for selectively closing said space, an electronic housing assembly comprising:

housing means including a first portion defining a circuit receiving space, said housing defining a front wall substantially closing the front of said circuit receiving space;

electronic circuit means including heat generating means disposed within said circuit receiving space;

heat transfer prevention means disposed within said housing for substantially retaining heat generated by said heat generating means within said housing; and

mounting means for mounting said housing means within insulation of said door, whereby sufficient heat is retained in said circuit receiving space by the substantial enclosure thereof by the heat transfer prevention means, the door



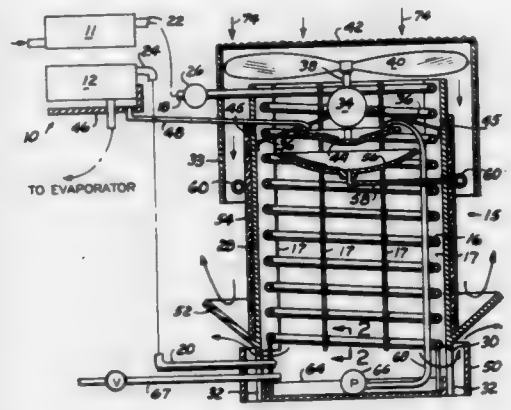
insulation, and the housing front wall to effectively prevent moisture condensation on said circuit means.

4,404,814

AUXILIARY CONDENSER COOLING TOOL FOR REFRIGERATED AIR CONDITIONERS

Albert W. Beasley, 2127 W. Sheridan, and Albert C. Beasley, 2624 NW. 1st, both of Oklahoma City, Okla. 73107

Filed Oct. 30, 1981, Ser. No. 316,695
Int. Cl.³ F28D *3/00*
U.S. Cl. 62—171 3 Claims



1. In an air conditioner unit of the self contained type having a primary condenser coil and a housing collecting condensed moisture, the improvement comprising:

an upright open end jacket;

a liquid containing sump within the depending end portion of said jacket;

a layer of moisture absorbent material surrounding said jacket intermediate its ends;

an endless tube surrounding said absorbent material adjacent its upper end,

said endless tube having a plurality of downwardly open apertures;

an auxiliary condenser coil carrying fluid to be condensed by cooling disposed adjacent the inner periphery of said jacket and communicating with said primary coil;

auxiliary fan and motor means including a motor drive shaft coaxially supported by the upper end portion of said jacket for generating a flow of ambient air across said auxiliary coil and through said jacket;

a dish coaxially supported by and angularly rotated with said drive shaft;

a tray coaxially supported below said dish;

pump and pipe means moving liquid contained by said sump to said dish;

first drain tube means connecting said housing with said dish;

second drain tube means connecting said tray with said endless tube; and,

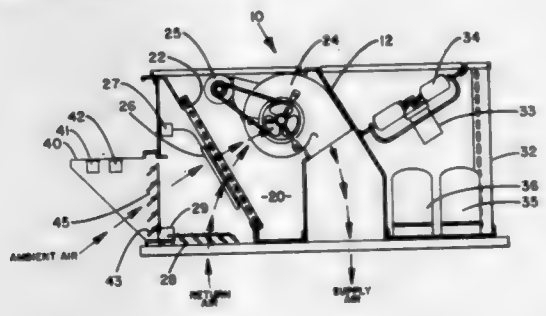
fluid pressure sensing means connected with a source of electrical energy and interposed in the inlet end portion of said auxiliary coil for energizing said auxiliary fan and motor means in response to predetermined fluid pressure.

4,404,815

AIR CONDITIONING ECONOMIZER CONTROL METHOD AND APPARATUS

John D. Gilson, Bridgeport, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 23, 1981, Ser. No. 323,799
Int. Cl.³ F25D *17/00*; G05D *23/00*
U.S. Cl. 62—180 **9 Claims**



1. A control circuit for integrating economizer operation with operation of a compressor of an air conditioning system to effect cooling of an enclosure, said air conditioning system including a two stage thermostat for sensing a first stage cooling load and a second stage cooling load which comprises:

a second ambient thermostat set to close at a second threshhold temperature;

a first ambient thermostat set to close at a first threshhold temperature lower than the second threshhold temperature;

first circuit means for energizing the economizer to allow ambient air to enter the enclosure when the ambient air temperature is below the first threshhold temperature upon a first stage cooling load being detected;

second circuit means for energizing the economizer upon the ambient air temperature being above the first threshhold temperature and below the second threshhold temperature upon a first stage cooling load being detected and for energizing the compressor simultaneously with the economizer upon a second stage cooling load being detected; and

third circuit means for energizing the compressor upon a first stage cooling load being detected and the ambient temperature exceeding the second threshhold temperature.

4,404,816

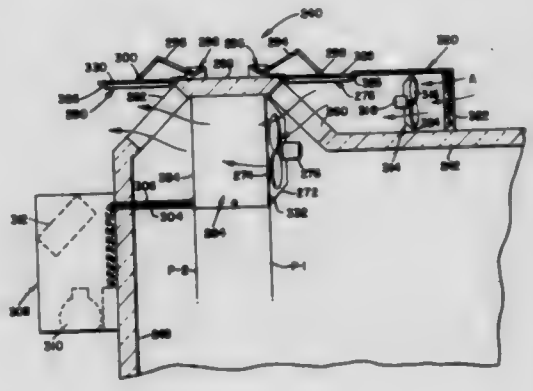
MODULAR REFRIGERATION ASSEMBLY HAVING AIR DEFROST SYSTEM

Fayez F. Ibrahim, Niles, and Terry Wessel, Three Oaks, both of Mich., assignors to Tyler Refrigeration Corporation, Niles, Mich.

Filed Apr. 14, 1981, Ser. No. 254,134
Int. Cl.³ F25D *21/12*
U.S. Cl. 62—282 **14 Claims**

1. In a refrigeration assembly in combination with a structure having side and top walls which encloses a mass of cooled air, and said assembly having at least one low temperature element arranged for contact by the refrigerated air, and an air moving means for circulating air into contact with said low temperature element; the improvement comprising:

an assembly housing for containing said air moving means and said low temperature element integrally formed at an elevated position in the top wall of said refrigeration assembly, ambient air inlet and outlet openings formed in said assembly housing, first and second substantially planar cover gates for blocking ambient air flow through said ambient air inlet and outlet openings during refrigeration cycles of operation, cover gates operating means operatively connected to said gates, a defrost control means operable in response to frost conditions to actuate said operating means for opening said cover gates upon th initiation of defrost cycles and to close said cover gates at the termination of the defrost cycles, said low temperature element affixed to the inner surface of said top wall and extending into the interior of said structure and surrounded by said mass of cooled air during a refrigeration



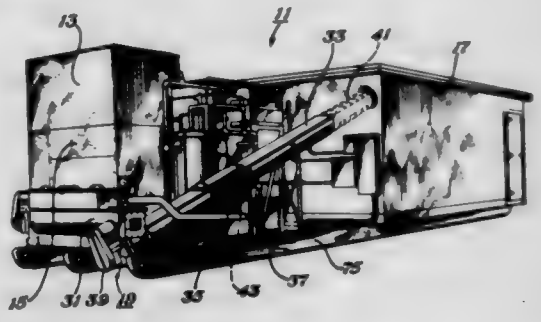
cycle, and said low temperature element having air outlet and inlet areas defining opposing sides thereof, said air outlet and inlet areas positioned in a straight line path passing substantially perpendicularly between said ambient air inlet opening and said ambient air outlet opening to enable the formation of a low resistance straight line ambient air flow path through said low temperature element and through said assembly during defrost cycles of operation, and said air outlet and inlet areas of said low temperature element positioned to intersect a straight line flow path of the refrigerated air band moving within said structure during a refrigeration cycle, said air moving means operative to circulate both refrigerated and ambient air through said air inlet and outlet areas of said low temperature element in both the refrigeration and the defrost cycles of operation, respectively.

4,404,817

SATELLITE ICE PLANT

Herman G. Cox, III, P.O. Box 2140, Fort Worth, Tex. 76113

Filed Feb. 25, 1982, Ser. No. 352,184
Int. Cl.³ F25C *5/18*
U.S. Cl. 62—320 **8 Claims**



7. A satellite ice plant operable by a single operator bagging ice, comprising:

a. ice making means for freezing ice;

b. comminution means for reducing the ice to crushed ice size for bagging; said comminution means disposed so as to take the ice from the ice making means;

c. refrigerated storage housing which is cooled below the

freezing point of said ice, said refrigerated storage housing having a bin for storing said ice;

d. conveyor means for conveying said ice to said refrigerated storage housing; said conveyor means including at least one screw conveyor having a snow remover means disposed at a location therealong for removing snow;

e. freeze-up prevention means for preventing freeze-up at the entrance of said conveyor means into said refrigerated storage housing; said freeze-up prevention means being disposed in communication with said conveyor means and adapted to prevent freeze-up of said conveyor means at its entrance into said refrigerated storage housing;

f. ice break up means for breaking up stored said ice for bagging;

g. second conveyor means interiorly of said refrigerated storage housing for conveying the ice that has been broken up to a bagging means;

h. control means operable automatically to supply said ice, breaking up of stored said ice, and convey the broken up ice to a bagging means responsive to need for ice thereat;

i. ice bagging means in said refrigerated storage housing and adapted to bag ice responsive to an operator;

such that one operator can operate said ice bagging means and the remainder of said satellite ice plant would automatically supply ice therefor; said control means including:

j. a bin level control so as to be responsive to the level of ice in said bin and energize when said ice is below a pre-determined level indicating inadequate ice and de-energized when said ice is above said pre-determined level indicating adequate ice;

k. ice movement control disposed so as to be responsive to the level of ice in a horizontal portion of said second conveyor means and to de-energize said ice moving means when there is adequate ice and to energize said ice moving means when there is inadequate ice; and

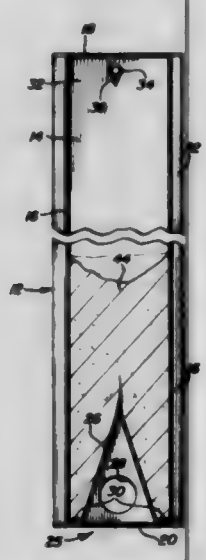
l. an ice bagging means control disposed so as to be responsive to the level of ice in said ice bagging means and to de-energize said second conveyor when said ice bagging means has adequate ice and to energize said second conveyor means when said ice bagging means has inadequate ice.

4,404,818

CO_2 SNOW COOLER WITH SNOW SPLITTING BOTTOM

Paul R. Franklin, Jr., P.O. Box 37978, Jacksonville, Fla. 32205

Filed Sep. 14, 1982, Ser. No. 417,993
Int. Cl.³ F25D *3/02*
U.S. Cl. 62—384 **9 Claims**



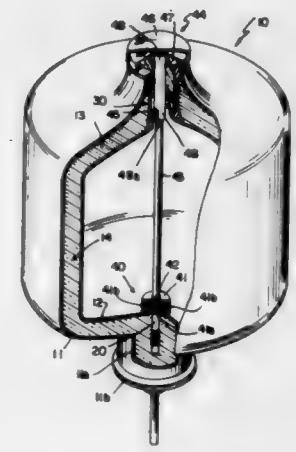
1. A CO_2 snow cooler including a vertically elongated hollow housing having a least generally vertical peripherally extending side walls, a bottom wall structure closing the lower portion of said housing, said bottom wall structure including means defining a sharply upwardly tapering central wedge body operative, upon downward gravity forces acting upon a quantity of CO_2 snow disposed within said housing above said wedge body to split the lower portion of said quantity of snow for wedging the snow laterally into surface to surface heat transfer relation with the inner surfaces of the lower portions of said side walls horizontally aligned with and opposing said wedge body.

4,404,819

VALVED CRYOGENIC DEWAR

Rex D. Leonard, Indianapolis, Ind., assignor to International Cryogenics, Inc., Indianapolis, Ind.

Filed Jul. 16, 1982, Ser. No. 398,745
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—514 R **6 Claims**



1. A cryogenic dewar, comprising

an inner container for cryogenic fluids, and an outer casing surrounding the inner container and being sealed to said inner container to define a vacuum space therebetween, said vacuum space carrying thermal insulation to impede the transfer of heat from the surrounding atmosphere to the inner container,

first means forming an opening between the inner container and the outer casing at the bottom of the dewar and second means forming an opening between the inner container and the outer casing at the top of the dewar,

a valve at the bottom of the inner container to control the flow of cryogenic fluid through said first means,

said valve including a valve body forming at least one passageway from the inner container to said first means and a valve seat therebetween, and including a valve closure adapted to engage and seal the valve seat,

a rod having the valve closure at its lower end and being supported by the body within the inner container,

a valve actuator for said rod carried in said second means, said valve actuator being adapted to engage the rod at its upper end and to operate said valve closure and to be movable from said second means.

4,404,820

COLD COMPRESS

John W. Romaine, 58897 County Rd. 115, Goshen, Ind. 46526

Filed Jan. 29, 1982, Ser. No. 343,790
Int. Cl.³ F25D *3/08*
U.S. Cl. 62—530 **9 Claims**

1. A cold compress, comprising:

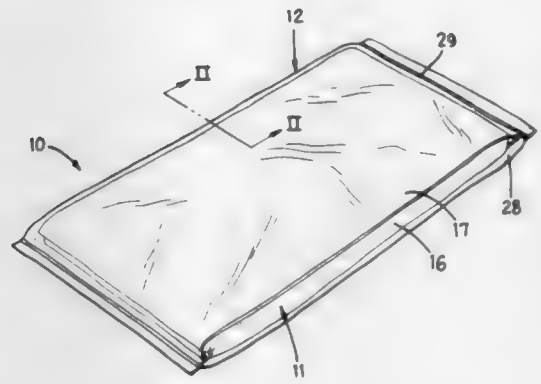
a thin, soft, flexible pad means which is deformable to conform to a portion of a human or animal body, said pad means maintaining its soft and flexible properties over a temperature range from about 0° F. to about 100° F.;

a tough, flexible envelope sealingly enclosing said pad means;

said pad means being of a laminated structure and including a gel pad and a thermal insulator pad fixed to and overlying one of the enlarged side surfaces of the gel pad;

said gel pad being substantially solid, self-supporting, and nonflowable throughout the aforesaid temperature range;

said gel pad comprising a padlike piece of flexible, open-cell, synthetic resin foam, the inner communicating open cells of said foam being substantially filled with a coagulated gel of polyvinyl alcohol and containing included water and a freeze-point depressant; and



said insulator pad comprising a thin sheetlike piece of flexible, porous insulator material, said gel and some of the moisture from said gel pad penetrating said porous insulator material whereby said insulator pad becomes attached to said gel pad.

4,404,821

YARN FEEDER AND CHANGER UNIT

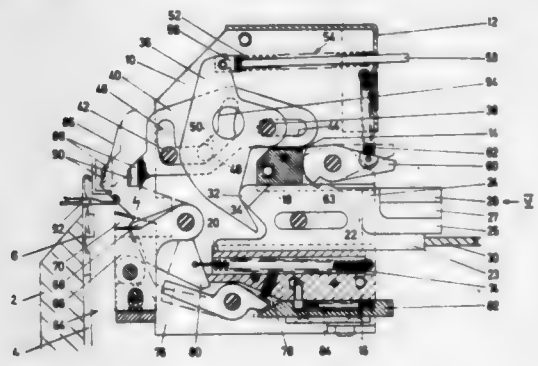
Bertram Johnson, Braunstone, and Arthur R. Smith, Leicester, both of England, assignors to Wildt Mellor Bromley Limited, Leicester, England

Filed Sep. 5, 1980, Ser. No. 184,295

Claims priority, application United Kingdom, Sep. 28, 1979, 7933686

Int. Cl.³ D04B *15/60*

U.S. Cl. 66—139 12 Claims



1. In a knitting machine having a circular array of needles axially reciprocable in tricks in at least one needle cylinder, a yarn feeder and changer unit comprising:

a fixed support frame alongside the needle cylinder or cylinders;

first and second parallel mounting pins rigidly mounted on said support frame;

a number of yarn feeders mounted on the said mounting pins in side-by-side relationship, each having a yarn guide eye and each being movable on the said mounting pins between a first position in which the said yarn guide eye is in a yarn trapping position and a second position in which the said yarn guide eye is in a yarn feeding position, said first mounting pin passing through a first elongate slot in each yarn feeder and said second mounting pin passing through a second elongate slot in each yarn feeder; and

actuating means including a linearly reciprocable slide member for each yarn feeder, whereby linear movement of each slide member in an actuating direction causes the associated yarn feeder to move from its first position to its second position in two separate and defined successive movements of which the first is a pivotal movement of the yarn feeder about the said first mounting pin and the second is a sliding movement of the yarn feeder over the said first and second mounting pins, said actuating means for each yarn feeder comprises said slide member and a lever plate, the lever plate being pivotally mounted on said first mounting pin and having cam means engaging the associated yarn feeder, and the slide member bearing on the lever plate so that linear movement of each slide member in the said actuating direction causes a pivotal movement of the associated lever plate and yarn feeder together about said first mounting pin to complete the said first feeder movement, followed by a continued pivotal movement of said lever plate about said first mounting pin to cam the yarn feeder in a sliding movement over said first and second mounting pins to complete the said second feeder movement.

4,404,822

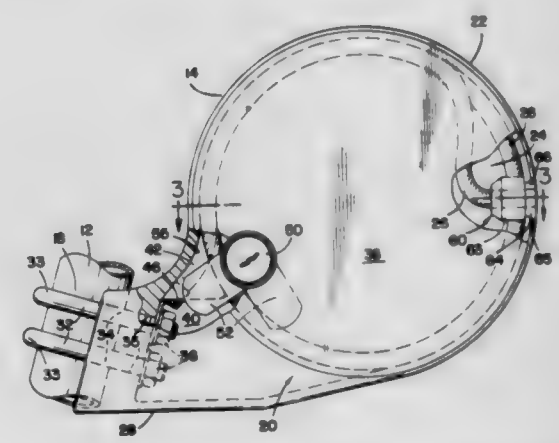
PRE-COILED CABLE-LOCK DEVICE

Leonard O. Green, 922 S. Birch St., Santa Ana, Calif. 92701

Filed May 18, 1981, Ser. No. 265,041

Int. Cl.³ B62H *5/00*; E05B *71/00, 73/00*

U.S. Cl. 70—233 7 Claims



1. A lock device for two-wheel vehicles, comprising:

a housing having an annular wall including receiving means, and a rear wall defining a drum-like compartment;

a projecting neck member integrally formed as part of said housing and adapted to be fixedly secured to the frame structure of the two-wheeled vehicle;

means attached to said neck member for securing said housing to said frame structure adjacent at least one of the wheels thereof;

a pre-coiled cable for storage in said drum-like compartment and having sufficient length to form an enlarged loop when extended from said compartment, one end of said pre-coiled cable being fixedly secured within said compartment and the opposite free end thereof being removably mounted within said receiving means of said annular wall;

keeper means attached to said free end of said cable and adapted to be removably mounted within said annular wall;

a removable cover adapted to be lockably secured to said housing, in order to cover said compartment; and

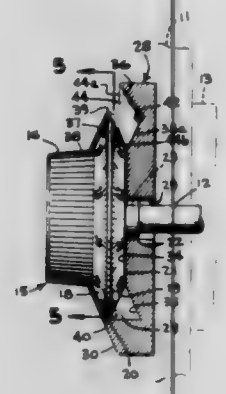
locking means mounted to said cover for locking said cover to said housing.

4,404,823

VIEW LIMITING DIAL AND RING STRUCTURE FOR COMBINATION LOCKS AND THE LIKE

Harry C. Miller, Nicholasville, and Walter R. Evans, Lancaster, both of Ky., assignors to Sargent & Greenleaf, Inc., Nicholasville, Ky.

Filed Dec. 5, 1980, Ser. No. 213,734
Int. Cl.[3] E05B 63/00, 1/00
U.S. Cl. 70—333 A 17 Claims



1. A combination lock dial and ring assembly for combination locks and the like for limited range top reading of the dial indicia by reflected light rays only, comprising a rotatable dial member having a circular dial portion and a knob formation projecting forwardly therefrom, the dial portion including a rearwardly facing annular indicia bearing surface adjacent said periphery having rearwardly facing dial graduations and mirror image reversed dial numerals thereon, said annular indicia bearing surface defining a frustro-conical annulus outwardly bounded by the circular periphery of the dial portion and lying in a rearwardly convergent cone of revolution concentric with the center axis of the dial inclined at substantially the same angle to said center axis as the cone of revolution of said mirror surface and in the opposite direction, and a dial ring having a forwardly facing dial receiving cylindrical well encircled by an integral shielding surround ring formation over a sufficient extent to exclude observation of the dial graduations and numerals laterally and below the dial portion and having an interruption of limited circumferential extend providing a sight opening for observation of the dial graduations and numerals in a restricted observation zone generally above and vertically aligned with the axis of the dial member, the rear surface of the dial receiving well having an arcuate light-reflecting mirror surface carried on and conforming to the shape of said rear surface at least spanning the arcuate extent of said sight opening positioned to reflect light rays from said dial graduations and numerals along reflection ray paths extending along upwardly and forwardly inclined paths to said restricted observation zone for visual observation of the rearwardly facing numerals and dial graduations confronting the mirror surface.

4,404,824

SIDE-BAR LOCK

Thomas F. Hennessy, Bristol, Conn., assignor to Lori Corporation, Southington, Conn.

Filed Feb. 5, 1981, Ser. No. 231,777
Int. Cl.[3] E05B 27/06
U.S. Cl. 70—364 A 19 Claims

1. A cylinder lock operated by a key having detents of differing depths provided within its opposing surfaces comprising:

cylinder housing means;

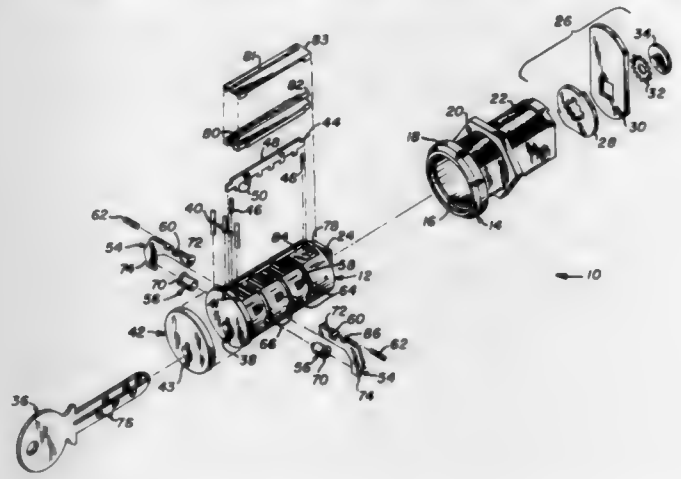
key plug means rotatably mounted within said cylinder housing means, said key plug means being provided with a keyway;

at least one tumbler means, said tumbler means being reciprocally mounted in said key plug means, said tumbler means being normally biased into said keyway, said tumbler means being directed out of said keyway upon engagement with a detented key, said tumbler means position being determined by the depth of the key detent with which it is engaged;

at least one bar means, said bar means being slidably mounted in said key plug, said bar means being biased in a first direction, said bar means being in contact with said tumbler means, said bar means being moved in a second direction opposite to said first direction by said tumbler means when said tumbler means engages the detented key;

first biasing means for biasing said tumbler means in said first direction;

fence means, said fence means being reciprocally mounted in said key plug means, said fence means being biased in a third direction generally transverse to said first direction to engage said cylinder housing means and prevent the



rotation of said key plug means, said fence means contacting a portion of said bar means which prevents said fence means from moving in a fourth direction opposite to said third direction when the lock is in the locked condition;

true gate means, said true gate means being provided in said bar means portion, said true gate means being placed in alignment with said fence means when said bar means is moved to the unlocked position by reception of said plug means in a key detent of proper depth, said true gate means receiving said fence means and allowing said fence means to move in said fourth direction and disengage from said cylinder housing means; and

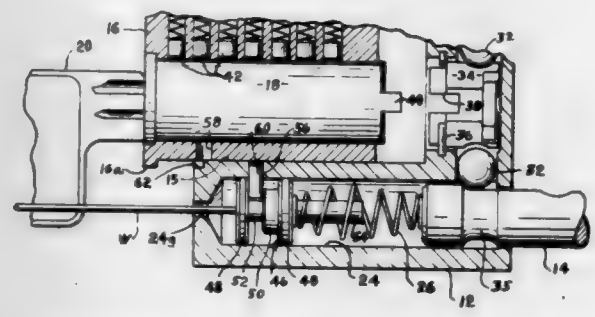
second biasing means for biasing said fence means in said third direction.

4,404,825

PADLOCK HAVING A REPLACEABLE CYLINDER

David Dixon, Monroe, and William A. Krupicka, Charlotte, both of N.C., assignors to Scovill Inc., Waterbury, Conn.

Filed May 12, 1981, Ser. No. 263,036
Int. Cl.[3] E05B 9/06
U.S. Cl. 70—368 12 Claims



1. A changeable-cylinder padlock comprising a body having a large central opening formed in one end thereof, a cylinder disposed in the opening, the other end of the body being formed with a pair of spaced bores, a shackle, one of said bores receiving the heel and the other the toe of the shackle, the heel-receiving bore being parallel to and spaced from the

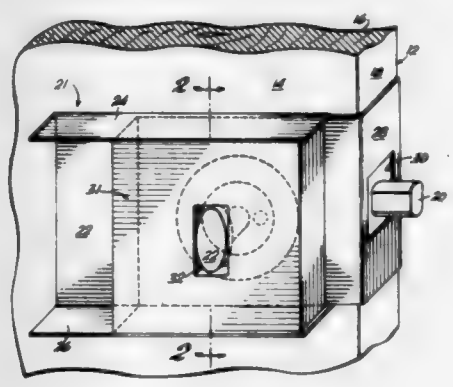
cylinder opening, bolt means inside the housing associated with the cylinder selectively to hold the shackle in locked position, the heel bore extending well beyond the heel end of the shackle and being reduced at a shoulder to an access hole extending to the said one end of the body, the body being formed with a passage between the heel bore and the cylinder opening, pin means being reciprocably disposed in said passage and normally extending into an aperture in the cylinder thereby holding the cylinder in the body, spool-like stop means disposed in the heel bore and normally blocking the pin means for moving away from the cylinder, the height of the stop means in the heel bore when the lock is locked and the shackle down keeping the stop means in blocking position, but the stop being movable when the lock is open to permit the pin means to vacate said aperture in the cylinder and permit withdrawal of the cylinder.

4,404,826

KEEPER DEVICE FOR DOOR LOCK

Garrett W. Brill, 745 NE. 88 St., Miami, Fla. 33138

Filed Jun. 3, 1981, Ser. No. 269,839
Int. Cl.³ E05B *13/00*
U.S. Cl. 70—416 **2 Claims**



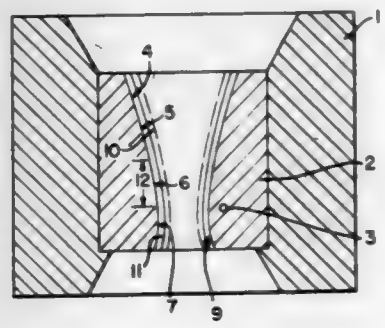
1. For a door having an outside and an inside main face and gripped with a bolt movable from the door side between the faces into and out of a locked position upon operation of an outside key or an inside operator knob, a keeper comprising a channel form member having an upper flange, a lower flange, and a longitudinally extending web, said longitudinally extending web being bent from the main plane of the web away from the channel members and including a cutout portion sized to accommodate the bolt of the door and a block sized to nest between the flanges and including a cutout to receive the operator and restrain movement of the bolt.

4,404,827

METHOD AND APPARATUS FOR DRAWING WIRE

Jaak S. Van den Sype, Scarsdale, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 10, 1981, Ser. No. 282,255
Int. Cl.³ B21C *9/00*
U.S. Cl. 72—41 **9 Claims**



1. In a die adapted for drawing wire and comprising a casing with a nib disposed centrally therein, said casing being comprised of a material having a high thermal conductivity,

(a) said casing including

(i) inlet and outlet means; and

(ii) at least one internal passage surrounding the nib and connected to the inlet and outlet means, the inlet and outlet means and the internal passage being constructed in such a manner that a fluid can pass into the inlet means, through the internal passage, and out of the outlet means; and

(b) said nib including a walled passage through which wire can be drawn, a portion of said walled passage being constructed in such a manner as to provide a working surface for the die,

the improvement comprising providing the internal passage with

(a) a total surface area for heat transfer of about 0.4 square inch to about 4 square inches; and

(b) a cross-sectional area of about 0.0001 square inch to about 0.01 square inch.

4,404,828

METHOD OF DRAWING A METAL WIRE AND LUBRICANT COMPOSITION THEREFOR

John Blachford, Westmount, Canada, assignor to H. L. Blachford Ltd/Ltee, Montreal, Canada

Filed Aug. 1, 1980, Ser. No. 174,652
Int. Cl.³ B21B *45/02*; C10M *7/10, 7/28, 7/44*
U.S. Cl. 72—42 **22 Claims**

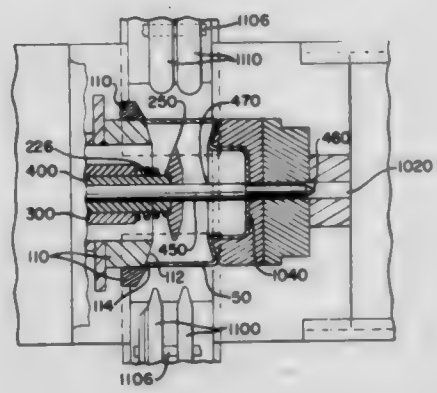
10. A method of drawing a metal wire comprising feeding a metal wire through a lubricant composition comprising a particulate lubricant and discrete pressure rupturable microcapsules having a liquid core, to form a coating of the composition on the wire, drawing the coated wire through a die effective to reduce the diameter of the wire, and allowing the microcapsules to rupture to release said liquid at the die, said liquid being a load carrying additive effective to enhance the wire drawing operation.

4,404,829

METHOD AND APPARATUS FOR THE MANUFACTURE OF PULLEYS

Vanco Dorakovski, 111 25th St., Massillon, Ohio 44646

Continuation of Ser. No. 110,943, Jan. 10, 1980, abandoned. This application Oct. 28, 1981, Ser. No. 315,713
Int. Cl.³ B21D *22/14*
U.S. Cl. 72—84 **26 Claims**



1. A method for the manufacture of multiple groove pulleys comprising:

(a) inserting a pulley blank into a blank orientation device;

(b) removing the pulley blank from said blank orientation device using a blank loading device;

(c) positioning the pulley blank, on said blank loading device, in orientation between a tail stock assembly and a head stock assembly of an internal spin pulley manufacturing device;

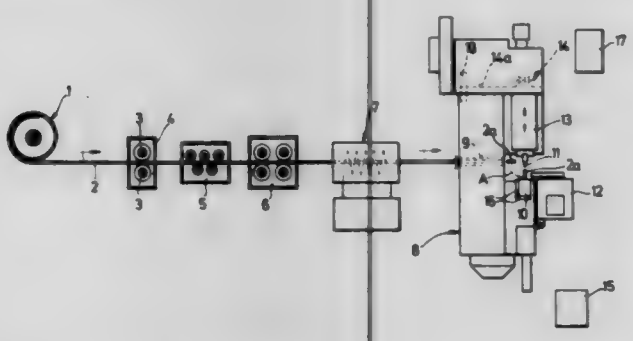
(d) extending a feeder plunger in a spin roller shaft from said head assembly;
(e) securing the pulley blank between said head stock assembly and said tail stock assembly;
(f) retracting said feeder plunger to within said spin roller shaft;
(g) removing said blank loading device;
(h) spinning said head stock assembly about a rotatable hollow drive shaft, said spinning revolving the pulley blank and said tail stock assembly;
(i) engaging at least one internal spin roller with the internal circumference of the pulley blank;
(k) sliding at least two external spin rollers and engaging said external spin rollers with the exterior circumference of the pulley blank;
(l) maintaining said internal spin roller engagement and maintaining said external spin roller engagement during said spinning of said head stock assembly and said securement of the pulley blank between said head stock assembly and said tail stock assembly until a pulley is produced by deformation from the pulley blank;
(m) aligning the axis of said spin roller shaft with the axis of said hollow drive shaft, thereby disengaging said internal spin rollers from the internal circumference of the pulley;
(n) sliding said external spin rollers from engagement with the exterior circumference of the pulley;
(o) extending said feeder plunger from said spin roller shaft to engage the pulley at its axis;
(p) inserting an electromagnetic removal disc on a pulley unloading device between said tail stock assembly and said head stock assembly;
(q) retracting said feeder plunger to within said spin roller shaft from the internal axis of the pulley; and
(r) removing said pulley by said electromagnetic removal disc.

4,404,830

METHOD AND APPARATUS FOR PRESSING PARTS FROM ROUND STOCK

Friedrich-Karl Koch, deceased, late of Krefeld, Fed. Rep. of Germany (by Annekathrin Koch, Klaus-Michael Koch, executors), assignor to L. Schuler GmbH, Goppingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 649,417, Jan. 15, 1976, abandoned. This application Mar. 26, 1982, Ser. No. 362,503
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1975, 2501506
Int. Cl.³ B21B *37/04*
U.S. Cl. 72—128 **4 Claims**



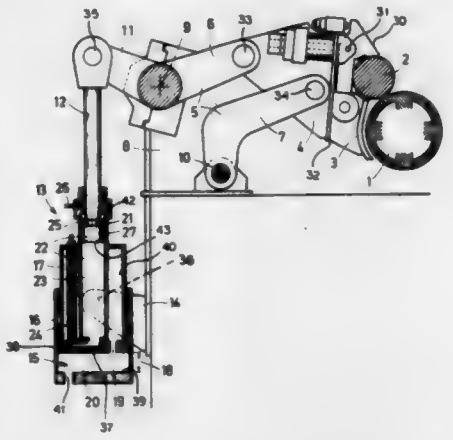
1. An apparatus for producing pressed parts to close tolerance from eutectic steel wire stock wound on a supply reel comprising:
means for drawing said wire stock from said supply reel followed by means for straightening said wire stock,
a press having a holding furnace, a shear station and pressing dies,
a wire stock heating furnace for heating said wire stock to a temperature above the cold forging temperature range and below the hot forging temperature range and with the semi-warm range of 600°–850° C.,
a wire stock feed mechanism consisting of two pairs of longitudinally spaced feed rollers disposed upline from said heating furnace for firmly gripping and intermittently pushing said wire stock while unheated through said heating furnace and into said holding furnace for maintaining the temperature of said wire stock within said semi-warm without handling of the heated wire stock,
means for maintaining the temperature of said pressing dies at at least about 150° C. for minimizing die wear and thermal differential with said wire stock, and
transfer means for transferring cut pieces of wire from said shear station to said pressing dies.

4,404,831

STRIP-GUIDE ASSEMBLY FOR A METAL STRIP COILER

Berthold Hild, Burbach-Wahlbach; Martin Braun, Kreuztal-Ferndorf, and Max Münker, Hilchenbach, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 13, 1981, Ser. No. 283,004
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1980, 3026524
Int. Cl.³ B21C *47/06*
U.S. Cl. 72—148 **4 Claims**



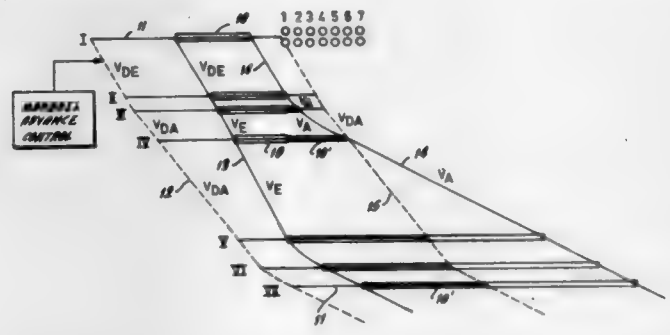
1. A positioning device for a strip-guide member, in combination with a strip-coiling mandrel, of a strip coiler, said device comprising:
a four-pivot linkage carrying said member and displaceable to shift said member toward and away from said mandrel; and
a pneumatic-hydraulic unit connected to said linkage, said unit comprising
pneumatic cylinder means including a pneumatic cylinder having a workpiece chamber and a stroke-limiting pneumatic piston, said pneumatic piston being hollow,
means forming a hydraulic cylinder within the interior of said hollow pneumatic piston and having a hydraulic piston connected to said linkage for displacing same,
means for independently hydraulically pressurizing said hydraulic cylinder and pneumatically pressurizing said pneumatic cylinder,
means defining a further chamber in said hollow pneumatic piston surrounding said hydraulic cylinder, and
means continuously communicating between said chambers whereby the combined volumes of said chambers form a pneumatic cushion.

4,404,832

OPERATING A ROLLING MILL WORKING ON SEAMLESS TUBING

Gerd Pfeiffer; Horst Biller, both of Mülheim; Manfred Bellmann, Breitscheid; Karl Oberem, Mülheim; Alfred Lampe, Willich, and Hermann-Josef Frentzen, Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Feb. 11, 1982, Ser. No. 348,034
Claims priority, application Japan, Feb. 20, 1981, 54-24164
Int. Cl.³ B21B *17/02*
U.S. Cl. 72—209 3 Claims



1. In a method of hot-rolling seamless hollows by means of a plurality of driven roll stands under utilization of an elongated cylindrical mandrel, comprising the steps of

determining stretch values of at least a first one and a second one of said stands, λ_1 and λ_2; and

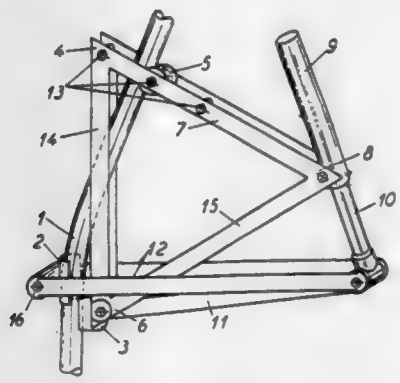
controlling the mandrel speed during rolling to be larger than $\lambda_1 \cdot V_E$ but smaller than $V_E[1+\lambda_1(2+\lambda_2)]/4$, wherein V_E is the actual entrance speed of the hollow at the first stand and upstream thereof.

4,404,833

DEVICE FOR STRAIGHTENING OF PIPES

Torkil K. Andersen, Jovavej 25, Kolding, Denmark

PCT No. PCT/DK81/00005, § 371 Date Sep. 21, 1981, § 102(e) Date Sep. 21, 1981, PCT Pub. No. WO81/02120, PCT Pub. Date Aug. 6, 1981
PCT Filed Jan. 15, 1981, Ser. No. 305,632
Claims priority, application Denmark, Jan. 21, 1980, 232/80
Int. Cl.³ B21D *3/00*
U.S. Cl. 72—216 7 Claims



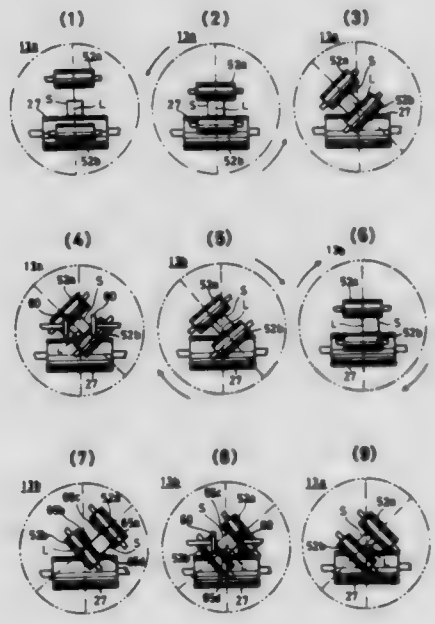
1. Device for straightening of bent, tubular road sign posts, characterized in that the device comprises a base (2, 3) in two parts to span a bent pipe (1) on one side of its bent portion, which base (2, 3) is connected to one end of at least one bar (11), the other end of which is pivotally fastened to a piston rod (10) in a working cylinder (9), which is pivotally fastened to a corner (8) of a triangular straightener (7, 14, 15), another corner (6) being pivotally fastened to one part of the base (3), and the side (7) opposite this corner (6) bearing a thrust roller (5) arranged to press against the other side of the bent portion of the pipe (1).

4,404,834

ROD SHAPED METAL ROLLING APPARATUS AND METHOD

Teruaki Tanaka, Aichi, Japan, assignor to Daido Tokushuko Kabushiki Kaisha, Japan

Filed Aug. 21, 1981, Ser. No. 294,874
Claims priority, application Japan, Aug. 27, 1980, 55-118707; Aug. 27, 1980, 55-118708; Nov. 7, 1980, 55-157416
Int. Cl.³ B21B *39/16, 39/20*
U.S. Cl. 72—221 6 Claims



1. In a rolling apparatus comprising rolling means and a plurality of rollers arranged along a horizontal conveyor line to allow a material to be rolled to move thereon while supporting the material and having means disposed in the middle of said conveyor line for rolling the material having been conveyed along said conveyor line, and having means disposed on one side of the means for rolling for rotating the material during the process of a reciprocated conveyance thereof along said conveyor line, said means for rotating including:

(a) a framework construction so disposed that said conveyor line extends therethrough;

(b) a rotating frame connected to said framework construction rotatable about said conveyor line as central point of rotation thereof;

(c) a pair of support frames disposed in said rotating frame, having said central point of rotation of said rotating frame therebetween and movable relative to each other to vary the distance therebetween;

(d) a pair of work holders connected to said support frames, respectively, for taking hold of the material having been conveyed along said conveyor line;

(e) holding means disposed in close proximity to said work holders for moving said work holders to each other so that the distance between said work holders may be varied;

(f) each of said framework, said rotating frame, said support frames, said work holders and said holding means being axially aligned with said conveyor line; and

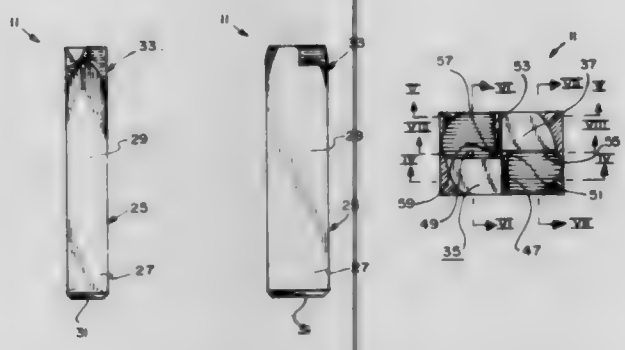
(g) further including work-path correcting means disposed between said rolling means and said means for rotating, said work-path correcting means comprising a pair of locating plates disposed with said conveyor line therebetween and means for moving each of said locating plates independently relative to said conveyor line so that the distance between said locating plates may be varied.

4,404,835

TOOL

Marvin E. Frith, Rte. 2, Box 40, Coffeeville, Miss. 38922

Filed Sep. 21, 1981, Ser. No. 304,327
Int. Cl.[3] B21D *28/00, 39/02*
U.S. Cl. 72—325 3 Claims



1. A tool for forming a pair of locking tabs in a piece of metal as it is hammered thereinto, said tool comprising:

(a) a body member having a first end and a second end, said first end of said body member including an anvil portion for being selectively struck with a hammer or the like;

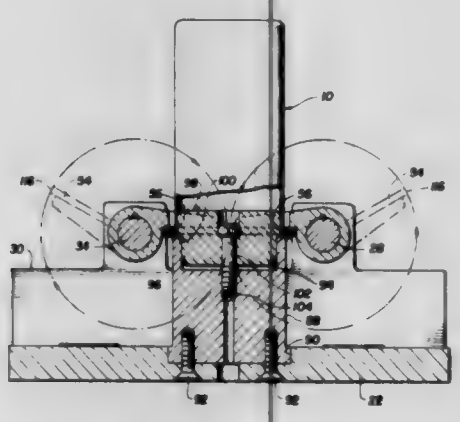
(b) a head means for engaging said piece of metal, said head means including a first finger member having a first end attached to said second end of said body member and having a second end, said head means including a second finger member having a first end attached to said second end of said body member and having a second end, said first finger member having a first side wall and a second side wall, said first and second side walls of said first finger member joining one another to form a corner, said second finger member having a first side wall and a second side wall, said first and second side walls of said second finger member joining one another to form a corner, said corners of said first and second finger members being located diagonally from one another with at least a portion thereof abutting one another, said first side walls of said first and second members being substantially flat and lying substantially in the same plane extending in the direction of the longitudinal axis of said body member, and said second side walls of said first and second finger members curving upwardly from said second end of said body member.

4,404,836

METAL CONTAINER EDGE TRIMMING METHOD AND APPARATUS

William T. Saunders, Weirton, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Dec. 7, 1981, Ser. No. 327,802
Int. Cl.[3] B21D *24/16*
U.S. Cl. 72—332 27 Claims



1. In a method of forming a one-piece metal can body having an outwardly directed closure attachment flange at its open end by initially deep-drawing a flat metal blank into a one-piece can body having an outwardly directed flange at its open end and subsequently trimming the excess metal from said outwardly directed flange leaving the closure attachment flange on the open end of the can body, the improvement comprising the steps of

supporting the open end of the drawn can body in position to be trimmed with the inner peripheral portion of the outwardly directed flange in abutting relation with an annular shoulder having a diameter, corresponding to the diameter of the closure attachment flange

supporting a plurality of first rotary cutters for rotations about spaced axes disposed in a plane perpendicular to the longitudinal axis of the can body, the first rotary cutters each having a concave arcuate cutting edge having a radius corresponding to the desired radius of the closure attachment flange, the arcuate cutting edges having a combined length substantially equal to the periphery of the closure attachment flange, and

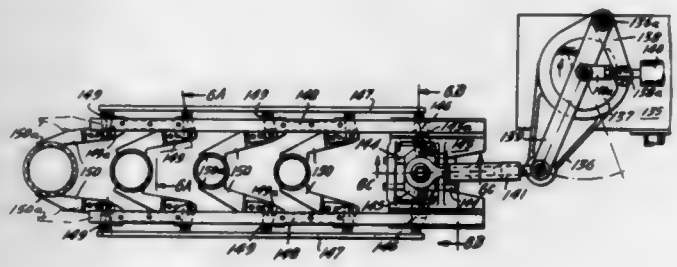
driving said first rotary cutters for rotation around their respective axes to substantially simultaneously engage and trim the outwardly directed flange along a trim line defining the peripheral edge of the closure attachment flange.

4,404,837

PRESS TRANSFER BAR

Robert J. Allen, Daly City; Edward W. Blake, Orinda, both of Calif.; Manjeshwar S. Rao, Hoffman Estates, Ill., and Kurt L. Hahn, San Rafael, Calif., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 56,704, Jul. 11, 1979, Pat. No. 4,373,370.
This application Nov. 1, 1982, Ser. No. 438,121
Int. Cl.[3] B21D *72/00*
U.S. Cl. 72—349 1 Claim



1. A method for transferring can bodies within a progressive forming press which receives sheet stock in a horizontal plane and blanks and cups same in a first station, draws the cup in a second station, redraws and bottom profiles in a third station, trims the flange in a fourth station and separates scrap ring and can body in a fifth station including the following steps:

(a) carrying slightly beneath the horizontal plane four sets of opposed fingers each pivotally mounted, each upon an axis and each designed to cooperate with its partner and each shaped to conform to the semifinished can body and said axes being fixedly disposed on a chassis means and each axis carried normal to the horizontal plane and said chassis means mounted to reciprocate substantially within the horizontal plane;

(b) timing the reciprocations of said chassis means to be substantially simultaneous with the periodicity of the press stroke and in particular with the opening of the slide therein;

(c) supporting a pair of connecting rods for the finger sets on said chassis means to reciprocate approximately in the plane with said chassis means and in the same direction but relative thereto for simultaneously driving said opposing fingers about their respective axes from a first position where the can body grasping ends of each finger set are apart to a second position where said can body grasping ends of each finger set are together about a semifinished can body; and

(d) timing the maintenance of said first and second positions and the motion therebetween to the periodicity of the press stroke so when the slide therein is in its opening

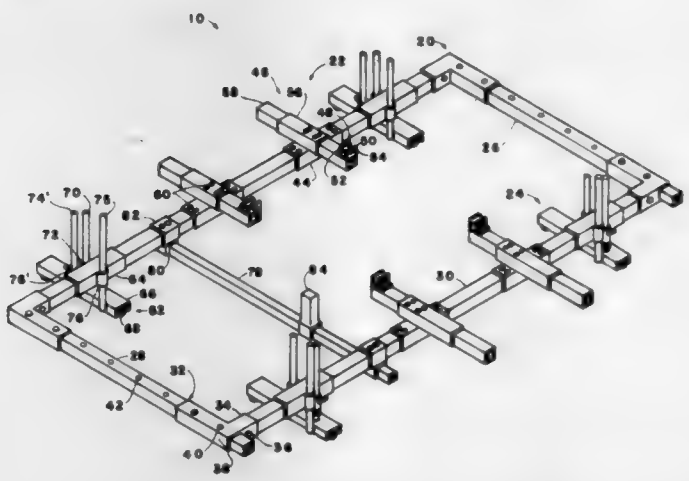
mode moving said grasping ends toward each other to grasp semifinished can bodies then holding same as said chassis means reciprocate to positions said bodies at the next adjacent station.

4,404,838

SYSTEM FOR STRAIGHTENING BENT AUTOMOBILE BODIES

Charles E. Hare, 23 Franklin Valley Cir., Baltimore, Md. 21136

Filed Jul. 23, 1981, Ser. No. 286,086
Int. Cl.[3] B21D *1/12*
U.S. Cl. 72—457 3 Claims



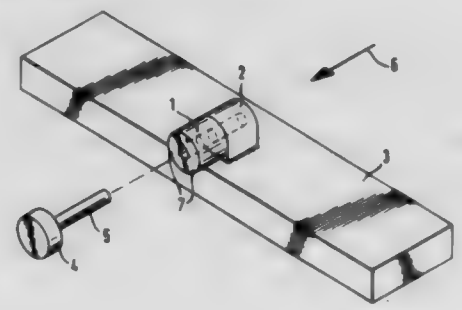
1. In a system for straightening bent automobile bodies and the like and having a frame (20) of generally rectangular proportions including means (62) for raising and lowering the frame and means (48) for clamping it to an automobile body, the improvement comprising: the frame (20) having as components: first and second side-assemblies (22, 24), each having first and second ends; means permitting the first and second side-assemblies to be independently moved to corresponding sides of an automobile body and clamped to the automobile body by said clamping means, including respective means (66) transverse to each of said first and second side-assemblies (22, 24) for holding the first and second side assemblies upright while being independently moved to a corresponding side of an automobile body and clamped to the automobile body by said clamping means (48), first and second end rails (26, 28), quick-attach means (32) for adjustably joining respective first and second ends of said side assemblies after said clamping to an automobile body; means (58) for extending the clamping means (48) inward of said frame, means (46) for adjusting the position of said means for extending; means permitting application of straightening forces to a car body inward through said clamping means (48) including the frame (20) being larger across than automobiles to be straightened using the frame; said means (66) for holding upright being a part of the means (62) for raising and lowering; each means (62) for raising and lowering including a said means for holding upright in the form of a base (66), roller means (68) on the base, a jack (74', 76') on the base and having a jacking connection (76') for raising and lowering the frame; each of said first and second side-assemblies including a respective side rail (30), and means (64) mounting said means for raising and lowering slidably along the side rails.

4,404,839

TESTING DEVICE FOR FORCE MEASURING APPARATUS

Erich Geisler, Polling, Fed. Rep. of Germany, assignor to Marker-Patentverwertungsgesellschaft mbH., Baar, Switzerland

Filed Feb. 6, 1981, Ser. No. 232,366
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004729
Int. Cl.[3] G01L *25/00*
U.S. Cl. 73—1 B 5 Claims



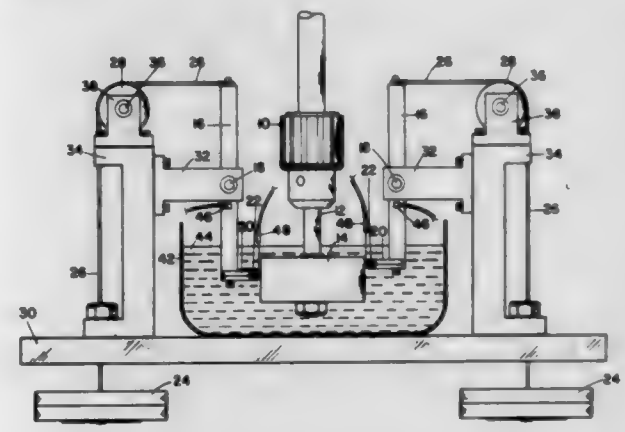
1. A testing device for force measuring apparatus, said testing device comprising:
base means;
a magnet fixed to said base means;
plate means of ferro magnetic material magnetically attracted to said magnet;
force engaging means attached to said plate means for receiving applied forces; and
spacing means for maintaining a uniform gap between said plate means and said magnet; wherein;
said force engaging means urges said plate means from said magnet on the application of force to said force engaging means.

4,404,840

DEVICE FOR EVALUATING ABRASIVE WEAR OF ELASTOMERIC O-RING MATERIALS

Bruce H. Burr, 10203 Sagedown La., Houston, Tex. 77089, and Kurt M. Marshek, 9701 Courtleigh Cir., Austin, Tex. 78759

Filed May 18, 1981, Ser. No. 264,687
Int. Cl.[3] G01N *3/56*
U.S. Cl. 73—7 8 Claims



1. An apparatus for measuring and testing O-ring wear and dynamic coefficient of friction characteristics of an O-ring surface and the like, the apparatus comprising; coupling means to hold and selectively rotate a wear cylinder during the wear test; at least one vertical loading arm mounted to pivot on support means in said apparatus; a specimen holding assembly at the bottom of the loading arm which holds at least one segment of the O-ring; a dead weight connected to the top of the loading arm by means of a steel cable on pully means for maintaining the wear specimen against the wear cylinder; a container of abrasive test fluid for immerson of the test specimens and wear cylinder; strain gauges mounted on the vertical

loading arm which serve as a means for determining the friction force on the O-ring specimens; at least one thermocouple in the O-ring specimens for monitoring the temperature there of during the tests; a rough surface on the wear cylinder which tends to draw said abrasive test fluid into the interface between the wear cylinder and the O-ring segment causing wear involving the cylinder, the O-ring segment and the test fluid.

4,404,841

OPTICAL COMBUSTION SENSOR SYSTEM

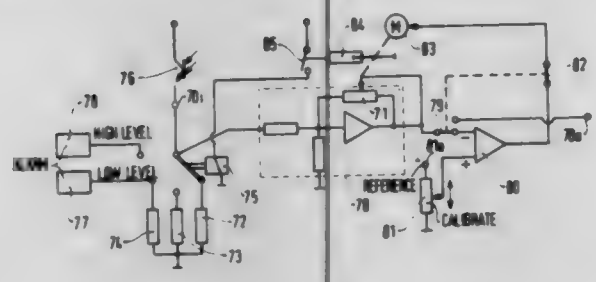
Horst Franke, Löchgau; Ernst Linder, Mühlacker; Winfried Moser, Markgröningen; Klaus Müller, Tamm, and Franz Rieger, Aalen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 1, 1982, Ser. No. 344,518

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112327

Int. Cl.³ G01L *23/22*

U.S. Cl. 73—35 **18 Claims**



1. Optical sensor system to obtain an optical signal representative of characteristics of combustion events in a combustion chamber, particularly a combustion chamber (10) of an internal combustion engine having

a tubular housing formed with means for securing the housing in a wall (12) defining at one side thereof said combustion chamber;

light pick-up means (13, 20, 30) retained in the housing and having a sensing end portion in optical communication with the combustion chamber at one end thereof;

light-responsive means (76) being coupled to the pick-up means;

and comprising, in accordance with the invention,

means (15, 16; 23, 24, 28, 29, 35; 53, 56, 57) for applying reference light to the pick-up means;

and signal evaluation means (70, 80, 91) coupled to the light-responsive means and receiving both said reference light and the light generated as a consequence of a combustion process in the combustion chamber, and normalizing the sensed light derived from the combustion process with respect to the reference light to obtain an output representative of absolute light regardless of contamination of the light pick-up means upon continued exposure thereof to combustion processes or events.

4,404,842

LEAK DETECTOR FOR INTERMITTENT PRESSURE PIPE LINES

Joseph R. Mooney, 7780 Townsend Pl., New Orleans, La. 70126

Filed Apr. 15, 1982, Ser. No. 368,538

Int. Cl.³ G01M *3/08*; G08B *21/00*

U.S. Cl. 73—40.5 R **5 Claims**

1. A leak detector for intermittent pressure pipe lines comprising:

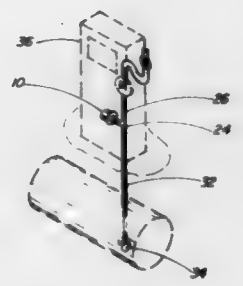
(a) battery means for energizing a low voltage power circuit;

(b) manually operable off-on switch means for energizing a low voltage power circuit;

(c) a pair of pressure sensitive switch means mounted in said intermittent pressure pipe line and connected in said power circuit to close at the upper and lower limits of a predetermined pressure drop in the lower third of said intermittent pressure pipe line's pressure range;

(d) timing circuit means connected across said power circuit and adapted to be energized by the closing of one of said pair of pressure sensitive switch means at said upper limit of said pressure drop for a predetermined time period;

(e) latching circuit means connected to said timing circuit means and across said power circuit for being energized during said predetermined time period to conduct; and



(f) alarm circuit means connected in parallel with said timing circuit means and to said power circuit and latching circuit means for being energized, through said latching circuit means when conducting, by the closing of the other of said pressure sensitive switch means at the lower limit of said predetermined pressure drop for indicating a leak when both pressure sensitive switch means are actuated to close during said predetermined time period of said timing circuit means.

4,404,843

CRYOGENIC STORAGE TANK LEAK DETECTION SYSTEM

Irvin D. Johnson, Englewood, Colo.; Gary M. Timlin, Kenai, Ak., and Robert D. Yuill, Yokohama, Japan, assignors to Marathon Oil Company, Findlay, Ohio

Filed Jul. 20, 1981, Ser. No. 284,756

Int. Cl.³ G01M *3/32*

U.S. Cl. 73—49.2 **15 Claims**



1. A system for detecting leaks in the barrier (130) separating the primary (140) and the secondary (120) insulation spaces disposed around a cryogenic storage tank (10), said system comprising:

means (200) for storing an inert gas,

first means (120) connected to said storing means (200) and to said primary insulation space (140) for supplying and maintaining said inert gas at a first predetermined pressure (P_{NP}) in said primary insulation space (140),

means (230) connected to said primary insulation space (140) for exhausting said inert gas from said primary insulation space (140) to maintain said first predetermined pressure (P_{NP}),

second means (220) connected to said storing means (200) and to said secondary insulation space (120) for supplying and maintaining said inert gas at a second predetermined pressure (P_{NS}) in said secondary insulation space (120),

means (240) connected to said secondary insulation space (120) for exhausting said inert gas from said secondary insulation space (120) to maintain said secondary predetermined pressure (P_{NS}), and

means (250) connected to said first supplying means (210) and to said primary insulation space exhausting means (230) for determining any primary flow difference between the total mass flow of said inert gas into and out

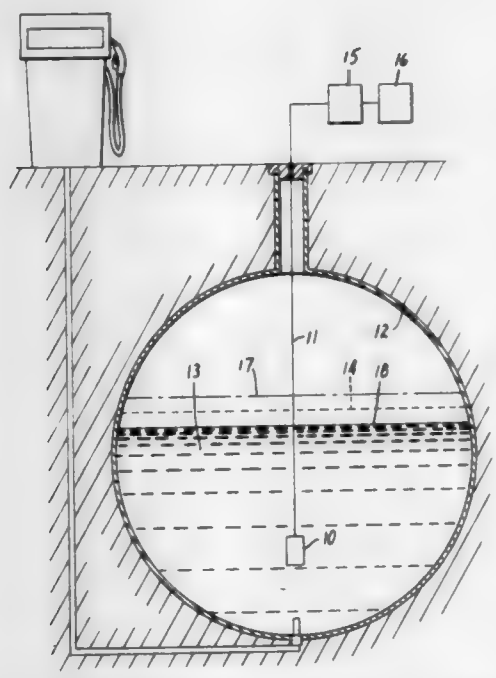
from said primary insulation space (140) during a period of time, said determining means (250) being further connected to said second supply means (220) and to said secondary insulation space exhausting means (240) for calculating any secondary flow difference between the total mass flow of said inert gas into and out from said secondary insulation space (120) during said period of time, said primary and secondary flow differences being indicative of a leak present in said secondary barrier (130).

4,404,844

LEAK DETECTING METHOD

Roy E. Hegler, Forest Lake, Minn., assignor to Duane L. Knopik, Stacy, Minn.

Filed Jan. 22, 1982, Ser. No. 341,854
Int. Cl.³ G01M *3/32*
U.S. Cl. 73—49.2 **1 Claim**



1. Method of detecting leakage in a vessel containing liquid, comprising the steps of:

(a) placing into said vessel beneath the surface of said liquid a submersible diaphragm-type pressure transducer having an integral operational amplifier;

(b) energizing said operational amplifier to obtain an initial electrical output;

(c) recording said initial electrical output;

(d) adjusting the liquid volume of said vessel by a predetermined amount;

(e) recording the electrical output after the adjustment in volume;

(f) calculating a calibration factor by dividing the adjusted volume by the change in electrical output;

(g) recording the electrical output at the beginning of a predetermined period of time;

(h) recording the electrical output at the end of said predetermined period of time; and

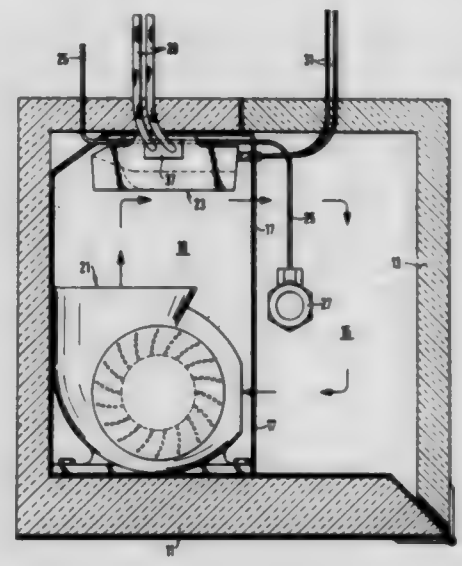
(i) calculating the volume of liquid lost by subtracting the electrical output at the end of said predetermined period of time from the electrical output at the beginning of said predetermined period of time and multiplying the result by said calibration factor.

4,404,845

THERMAL REGULATOR FOR LIQUID CHROMATOGRAPHS

Helge Schrenker, Karlsruhe, Fed. Rep. of Germany, assignor to Hewlett-Packard GmbH, Boeblingen, Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 276,394
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1980, 3026267
Int. Cl.³ G01N *31/00*; B01D *15/08*; F25B *29/00*
U.S. Cl. 73—61.1 C **2 Claims**



1. A thermal regulator for the mobile phase and the separation column in a liquid chromatograph having a sample injection device, said thermal regulator comprising:

a heat exchanger including a capillary tube through which the mobile phase passes, said heat exchanger being disposed between the sample injection device and the entrance of the separation column and containing a heating element and a cooling element for respectively heating and cooling ambient air surrounding the separation column;

said capillary tube, said heating element and said cooling element being sealed within a molded radiator body of heat conducting material disposed in contact with ambient air surrounding said separation column;

said capillary tube having an inner diameter of less than 0.15 mm and a volume of less than 2 μl within the heat exchanger;

whereby a variation of the flow rate of the mobile phase within a range of 0 to 5 ml/min causes a temperature deviation of less than ±2 degrees C.

4,404,846

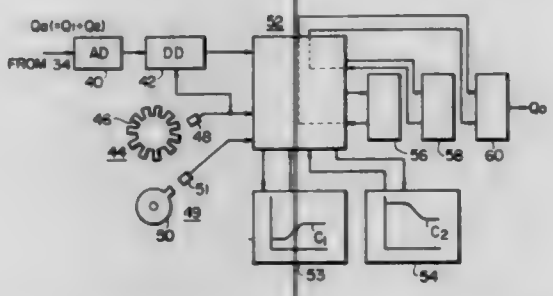
AIR FLOW RATE MEASURING DEVICE INCORPORATING HOT WIRE TYPE AIR FLOW METER

Teruo Yamauchi, Katsuta; Yoshishige Ohyama, Katsuta; Hiroshi Kuroiwa, Hitachi; Mamoru Fujieda, Nishiibaraki, and Tadashi Kirisawa, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP81/00018, § 371 Date Sep. 9, 1981, § 102(e) Date Sep. 9, 1981, PCT Pub. No. WO81/02202, PCT Pub. Date Aug. 6, 1981
PCT Filed Jan. 28, 1981, Ser. No. 302,435
Claims priority, application Japan, Jan. 31, 1980, 55-11346
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—118 **4 Claims**

1. An air flow rate measuring device making use of a hot wire type air flow meter comprising: a hot wire type air flow meter including a hot wire type flow rate measuring sensor disposed in the intake air passage of an internal combustion engine and a control drive circuit connected to said sensor, said hot wire type air flow meter being adapted to produce a first signal corresponding to the flow rate of air in said intake air passage; a reversing flow signal generating means adapted to

generate a second signal representing the period of occurence of reversing or backward flow of air in said intake air passage; a first operation unit connected to said control drive circuit and said reversing flow signal generating means and adapted to generate, upon accumulation of the first signal representing



said flow rate of air, a third signal representing the amount of air in said period of occurence of reversing flow and a fourth signal representing the amount of air in the period other than said period of occurence of reversing flow; and a second operation unit adapted for subtracting said third signal from said fourth signal derived from said first operation unit.

4,404,847

FUEL SUPPLY CONDITIONING AND FLOW MEASUREMENT CIRCUIT

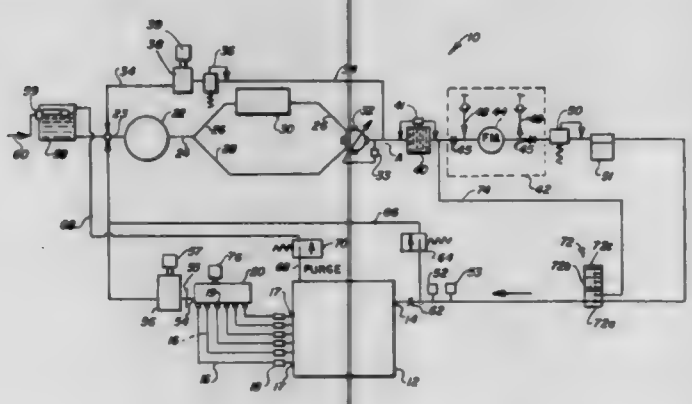
Larry A. Larson, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/01057, § 371 Date Aug. 7, 1981, § 102(e) Date Aug. 7, 1981, PCT Pub. No. WO83/00555, PCT Pub. Date Feb. 17, 1983

PCT Filed Aug. 7, 1981, Ser. No. 294,760

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—119 A **18 Claims**



1. In a fuel supply flow measuring circuit (10) to test a fuel injection apparatus (12), said circuit (10) having a fuel reservoir (58), a pump (22) having a suction side (23) communicating with said reservoir (58) and a discharge side (24) supplying fuel to the injection apparatus (12), means (44) for measuring the flow of fuel supplied to the injection apparatus (12) and means (50) for controlling the pressure of the supply fuel to the injection apparatus (12), the improvement comprising:

a recirculation line (34) bypassing said flow measuring means (44) and said injection apparatus (12) and connecting the pump discharge side (24) and the pump suction side (23), said recirculation line (34) adapted for recirculating a predetermined proportion of fuel flow from the pump discharge side (24) to the pump suction side (23); and

a deaeration means (38) for removing entrained air from the fuel, said deaeration means (38) positioned in said recirculation line (34).

4,404,848

METHOD FOR CORRECTING MEASUREMENT ERRORS IN TIRE UNIFORMITY INSPECTING MACHINES

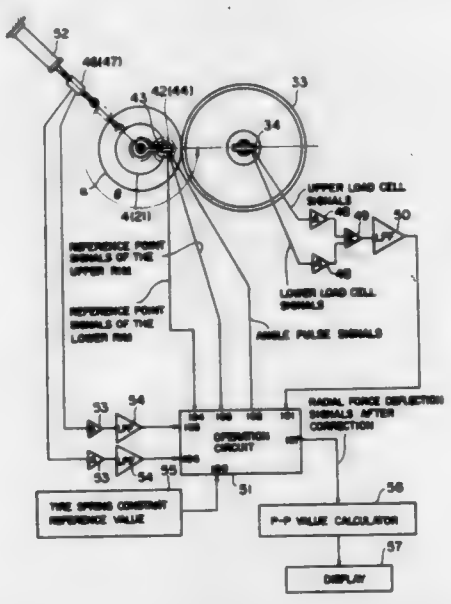
Atsuaki Iwama; Yoshimata Maikuma, both of Kobe; Masayoshi Okamoto, Kakogawa; Toshikazu Tanaka, Ashiya, and Yuji Oikawa, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Feb. 23, 1982, Ser. No. 351,513

Claims priority, application Japan, Feb. 26, 1981, 56-29015; Mar. 3, 1981, 5630605

Int. Cl.³ G01M *17/02*

U.S. Cl. 73—146 **7 Claims**



1. A method for correcting errors of measurement in a tire uniformity inspecting machine having a pair of upper and lower rims engageable with bead portions of a tire for gripping said tire securely for rotation at a predetermined position and a load wheel engageable with the circumference of said tire at one side thereof to check for variations in the radial force of said tire, said method comprising:

measuring radial runout of said rims and load wheel to obtain an erroneous deflection signal indicating the amount of radial runout of said rims and load wheel;

obtaining and storing a primary harmonic component of said erroneous deflection signal;

measuring variations in radial force of a tire rotated on said rims to obtain a radial variation signal for a period of one revolution of said tire;

multiplying said erroneous deflection signal by a spring constant of said tire to obtain an erroneous variation signal; and

subtracting said erroneous variation signal from said radial variation signal to eliminate influence of radial runout of said rims and load wheel from the measured value of said radial force of said tire.

4,404,849

METHOD AND SYSTEM FOR CORRECTING ERRORS OF MEASUREMENT IN TIRE UNIFORMITY INSPECTING MACHINES

Atsuaki Iwama; Yoshimata Maikuma, both of Kobe; Masayoshi Okamoto, Kakogawa; Toshikazu Tanaka, Ashiya, and Yuji Oikawa, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Feb. 23, 1982, Ser. No. 351,514

Claims priority, application Japan, Feb. 26, 1981, 56-29017

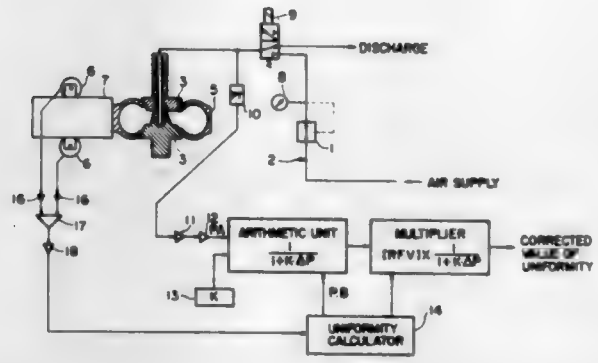
Int. Cl.³ G01M *17/02*

U.S. Cl. 73—146 **4 Claims**

1. A method for correcting errors of measurement due to variations in tire pressure in a tire uniformity inspecting operation, wherein a tire is inflated and rotated between a pair of

rims, a load wheel is pressed against the tire, and a radial force variation of the tire is measured, said method comprising:

detecting a deviation of actual air pressure of said tire from a predetermined measuring pressure level to determine a correction coefficient;



calculating a value of tire uniformity from the actually measured value of radial force variation of said tire according to the predetermined measuring pressure level; and

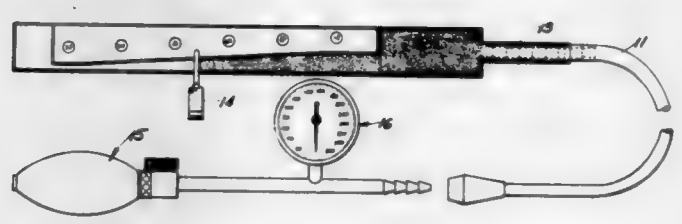
multiplying the calculated value of uniformity of said tire by said correction coefficient to compensate for any erroneous component due to a variation in the tire pressure.

4,404,850

ANEURYSM CLIP TESTING INSTRUMENT

Horst R. Hickmann, 1455 Montegor, Cincinnati, Ohio 45230

Filed Jan. 11, 1982, Ser. No. 338,367
Int. Cl.³ G01L *5/00*
U.S. Cl. 73—161 **7 Claims**



1. An instrument for testing vascular and aneurysm clips by simulating the pressure of the vascular system and the diameter of the vessel at the implant site, said instrument comprising:

an elongated, thin test strip having a first compartment, a second compartment and a tapered channel connecting said first and second compartments;

means for filling said test strip with a fluid; and

gauge means for indicating the pressure within said test strip;

whereby when one of said clips is applied across said tapered channel at a location corresponding in size to a vessel or aneurysm neck, and said test strip is filled with said fluid until the fluid reaches the location of said clip, with the pressure of said fluid being continually increased until said clip fails, the amount of pressure is indicated on said gauge means.

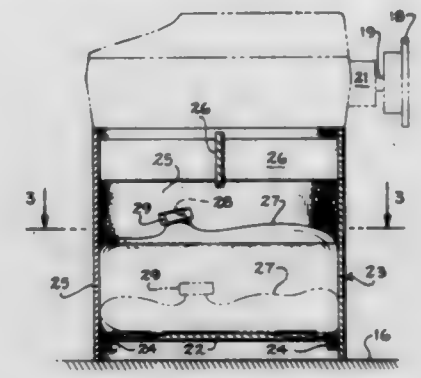
4,404,851

BASE ASSEMBLY FOR WHEEL BALANCING MACHINE

Donald B. Curchod, 23555 Mt. Eden Rd., Saratoga, Calif. 95070

Filed May 26, 1981, Ser. No. 266,792
Int. Cl.³ G01M *1/02, 1/16*
U.S. Cl. 73—460 **5 Claims**

1. In a balancing machine of a type having means for supporting a body for rotation and having means for detecting and measuring imbalance forces acting upon the body, a support base comprising upstanding rigid walls of relatively light weight material forming the sides thereof for supporting the first and second named means at an appropriate working height above a support surface, an opening extending through an end of the base, a bottom closure panel disposed within and adjacent the bottom end of said base, and readily removable means resting freely thereon and independently thereof for containing ballast material in fluid form for stabilizing said



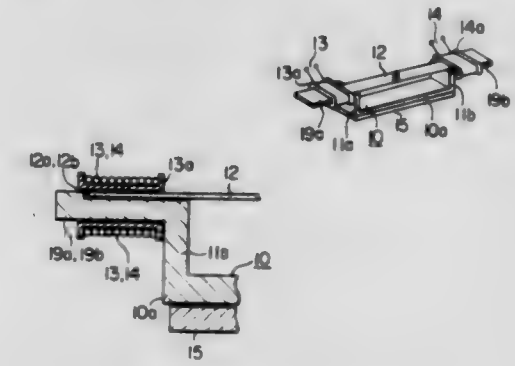
support base and for damping movement imparted thereto by rotation of said body.

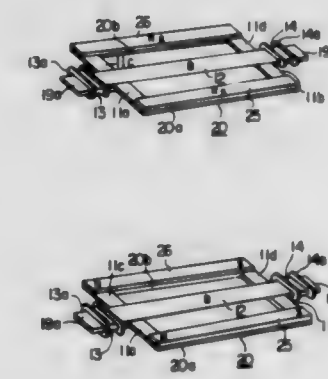
4,404,852

FROST SENSOR

Norio Goto, Tokyo, Japan, assignor to Hitachi, Ltd.; Hitachi Metals, Ltd. and Research Development Cooperation of Japan, all of Tokyo, Japan

Filed Jun. 24, 1981, Ser. No. 276,816
Claims priority, application Japan, Jun. 25, 1980, 55-85095
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—599 **11 Claims**





1. A frost sensor for detecting the presence of frost comprising;

(a) an acoustic transmitting medium for detecting the frost made of a magnetic metal material having a magnetostrictive property and having a ribbon shape, said acoustic transmitting medium being adapted to be disposed in an environment which allows the frost to be detected to be deposited thereon,

(b) a support member made of a non-magnetic material, the opposite ends of said acoustic transmitting medium being fixedly mounted on said support member with a center portion between said opposite ends of said acoustic transmitting medium extending on said support member, said support member having a permanent magnet arranged in

parallel to said center portion and in spaced relation thereto by a predetermined distance,

(c) a first transducer having a coil wound and mounted on one of said opposite ends of said acoustic wave transmitting medium fixedly mounted on said support member, said first transducer generating an acoustic wave in said acoustic transmitting medium in response to the application of a current to said coil,

(d) a second transducer having a coil wound and mounted on the other end of said acoustic transmitting medium fixedly mounted on said support member, said second transducer transducing said acoustic wave to an electrical signal, and

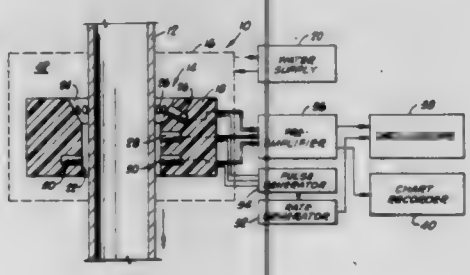
(e) said permanent magnet being fixedly mounted to extend in parallel to said center portion of said acoustic transmitting medium and in spaced relation thereto by the predetermined distance, said permanent magnet applying a biasing magnetic field to said acoustic transmitting medium.

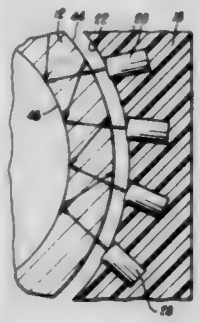
4,404,853

METHOD AND APPARATUS FOR ULTRASONIC TESTING OF TUBULAR GOODS

Waylon A. Livingston, 2534 Hollywood, Norman, Okla. 73069

Filed Mar. 12, 1981, Ser. No. 242,833
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—622 **30 Claims**





1. Apparatus for ultrasonic testing of tubular goods, comprising:

array block means defining a cylindrical central bore area;

plural ultrasonic energy transducers secured in said block means for transmitting and receiving ultrasonic energy toward said central bore area, said plural transducers including a first equi-spaced circumferential array of transducers for detecting transverse discontinuities and a second equi-spaced circumferential array of transducers for detecting longitudinal discontinuities;

means for disposing tubular goods in said central bore area for movement relative to said plural ultrasonic energy transducers;

fluid enclosure means including a central bore area defined by a slidable seal for maintaining a fluid environment between each of said plural ultrasonic energy transducers and said tubular goods; and

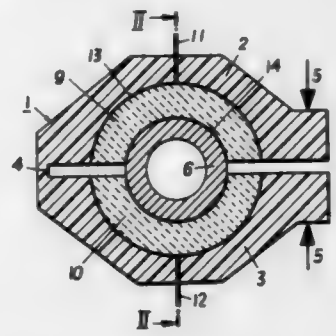
means for energizing said plural ultrasonic transducers and indicating received energy variations due to discontinuities in said tubular goods.

4,404,854

TRANSDUCER DEVICE FOR MEASURING MECHANICAL VALUES ON HOLLOW BODIES

Peter Krempl, Vienna; Rudolf Zeiringer, and Peter Claassen, both of Graz, all of Austria, assignors to Hans List, Graz, Austria

Filed Jun. 15, 1981, Ser. No. 273,685
Claims priority, application Austria, Jun. 16, 1980, 3178/80
Int. Cl.³ G01L *9/06*
U.S. Cl. 73—730 **9 Claims**



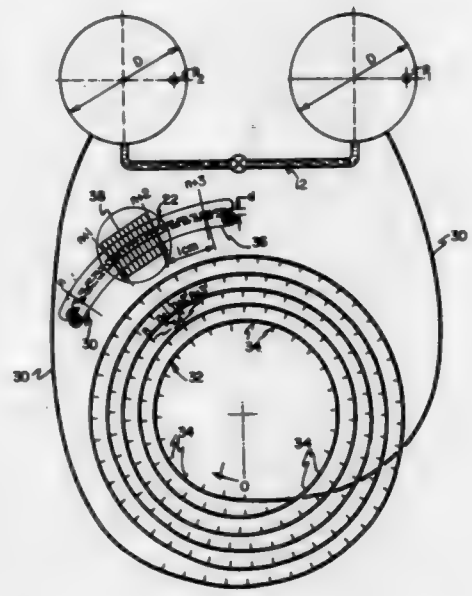
1. A transducer device for measuring mechanical values on hollow bodies, such as the internal pressure in pipes, by detecting deformations at the outer surface thereof, comprising a removable housing for removably enclosing the hollow body whose outer surface deformation is to be measured, said housing comprising an elastic endorsing element, and at least one elastic sensor member being elastically pressed against the outer surface of said hollow body by said elastic endorsing element said member being capable of stretching due to the deformation of said hollow body due to the frictional contact therewith, and wherein said endorsing element and said sensor element are of one-piece construction.

4,404,855

HIGH SENSITIVE MICROMANOMETER

Wolfgang Leidenfrost, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Oct. 15, 1981, Ser. No. 311,509
Int. Cl.³ G01L *7/18*
U.S. Cl. 73—747 **2 Claims**



1. A high sensitivity micromanometer comprising:

first and second vertically disposed monometer legs of large and equal diameter, each with pressure access ports and having a liquid contained therein;

a coiled capillary tube interconnected between said first and second momometer legs;

a tube having a large diameter interconnected between said first and second manometer legs;

valve means for equalizing the level of a liquid contained in

said manometer legs in the same horizontal plane by regulation of the flow of said liquid through said large diameter tube connected between said legs;

septum means connected to said coiled capillary tube for introduction of a gas bubble therein;

scale means for measuring the displacement of said gas bubble; and

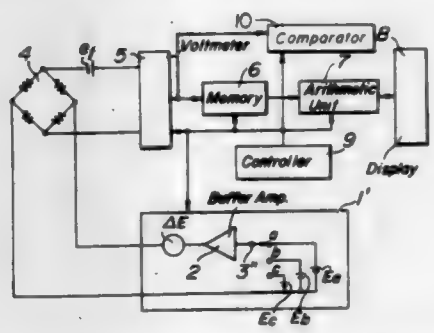
whereby pressure differentials between said pressure access ports are magnified on the order of at least 10^4.

4,404,856

STRAIN MEASURING DEVICE

Harukichi Honda, Tachikawa; Toshiya Kawada, Komae, and Yoshiyuki Tsujitsugu, Tama, all of Tokyo, Japan, assignors to Kyowa Electronic Instruments Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 28,686, Apr. 10, 1979, abandoned. This application Mar. 19, 1981, Ser. No. 245,373
Claims priority, application Japan, Apr. 18, 1978, 53-46180
Int. Cl.³ G01B *7/18*
U.S. Cl. 73—765 **2 Claims**



1. A strain measuring device using a Wheatstone bridge circuit comprising:

a bridge current supply source including therein a plurality of bridge excitation voltages of different magnitudes with a predetermined difference between each pair of these magnitudes, an excitation voltage changing switch for switching from one said excitation voltage to another, and a driver circuit for exciting said Wheatstone bridge by the bridge excitation voltage determined by said changing switch plus a spurious drift voltage inherent in the circuit,

a voltmeter for measuring output voltage derived from said Wheatstone bridge, said output voltage including an undesirable thermal electromotive force produced inside or outside of said Wheatstone bridge,

a memory for memorizing each said measured value,

an arithmetic unit for arithmetically processing each said memorized value, and

controlling circuit means for controlling said excitation voltage changing switch of the bridge current supply source, and for controlling sequence operation of said voltmeter, said memory, and said arithmetic unit in response to the switching operation of the excitation voltage changing switch, said circuit means for controlling said excitation voltage changing switch of the bridge current supply source including means to excite the Wheatstone bridge circuit by a pair of different excitation voltages in time division relationship,

said memory memorizing each measured value measured by said voltmeter,

said circuit means for controlling sequence operation then causing said arithmetic unit to subtract one of each pair of the respective measured values memorized in the memory from the other,

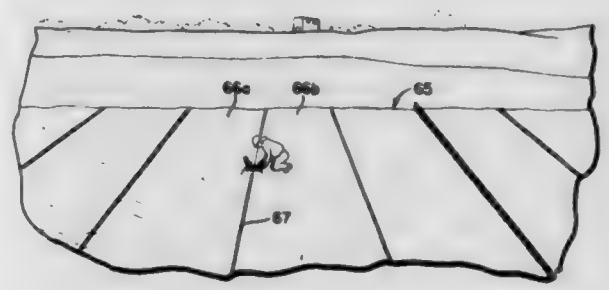
whereby the spurious components affecting the measurement of strain are removed, including potential error due to said thermal electromotive force produced inside or outside said Wheatstone bridge and sensitivity error due to said drift voltage occurring in the driver circuit of the bridge current source.

4,404,857

SEAM TESTER

Leslie C. Hardison, Barrington, and Kenneth A. Sandstrom, Prospect Heights, both of Ill., assignors to National Seal Company, Palatine, Ill.

Filed Sep. 18, 1981, Ser. No. 303,215
Int. Cl.³ G01N *3/08*
U.S. Cl. 73—827 **10 Claims**



1. A portable seam tester for use on a large section of flexible sheet material formed from smaller panels of said material secured together along elongated seams, said tester comprising:

an elongated piston and cylinder mechanism having a retracted position and an extended position;

a pair of clamping means carried on said piston and cylinder mechanism;

said tester being adapted to be positioned transversely across a seam of said large section of flexible sheet material inwardly from the periphery of said section with said clamping means disposed at opposite sides of the seam, and said clamping means being adapted to receive and retain folded double-thickness portions of said material at opposite sides of the seam when said piston and cylinder mechanism is in said retracted position;

each of said clamping means comprising a support having a curved outer surface portion adapted to have said material wrapped therearound, and a manually operable clamping member mounted on said support and being movable from a released position to a clamping position in which said clamping member presses said folded double-thickness portion of said material against the outer surface of said support for frictionally retaining said material; and

means for controllably supplying pressurized fluid to said piston and cylinder mechanism to effect movement thereof toward said extended position, whereby to place said material in tension and impose a predetermined stress on the seam.

4,404,858

VELOCITY AND MASS AIR FLOW SENSOR

Chester J. Blechinger, Bloomfield Hill, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 26, 1981, Ser. No. 315,096
Int. Cl.³ G01F *1/34, 1/32, 1/76*
U.S. Cl. 73—861.02 **6 Claims**

3. A device for measuring mass fluid flow comprising:

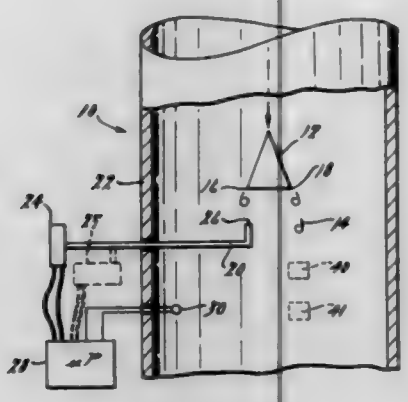
vortex generating means positioned in a fluid stream so that vortices are formed in the wake of said generating means;

pressure sensor means positioned in the wake of said generating means for sensing a pressure variation caused by the passage of the vortices and for sensing average background pressure;

a temperature sensor means positioned in the fluid stream for providing a signal indicative of the temperature of the fluid stream; and

a processing means coupled to said pressure sensor means

and said temperature sensor means for determining the mass fluid flow as a function of pressure changes and



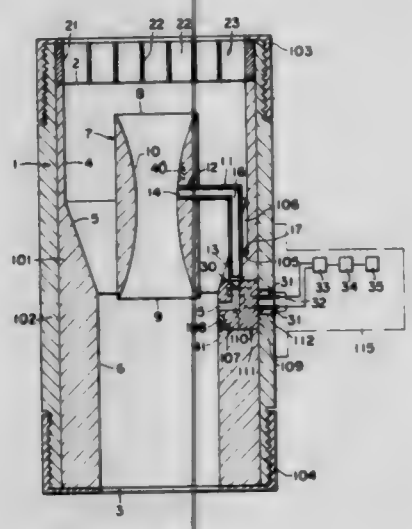
average pressure sensed by said pressure sensor means and temperature sensed by said temperature sensor means.

4,404,859

FLOWMETER

Katsuyuki Ohsawa, Nagoya; Katsuhiko Sugiyama, Aichi, and Yoshinori Idota, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Jan. 20, 1982, Ser. No. 341,112
Claims priority, application Japan, Jan. 26, 1981, 56-9888
Int. Cl.[3] G01F *1/20*
U.S. Cl. 73—861.18 9 Claims



1. A flowmeter comprising:

a first tube having an inlet and an outlet at axial ends thereof and a first flow passage having a cross-sectional area extending perpendicularly to a central axis of said first tube and smaller at said outlet than at said inlet, said first tube having a first port defined in a sidewall thereof and opening into said first flow passage;

a second venturi-shaped tube disposed substantially concentrically within said first flow passage of said first tube and having an inlet and an outlet at axial ends thereof and a second flow passage having a cross-sectional area which is minimum substantially midway of said second tube in an axial direction thereof, said second tube having a second port defined in a sidewall thereof and opening into said second flow passage at the minimum cross-sectional area thereof;

a third flow passage providing fluid communication between said first and second ports; and

a sensor disposed in one of said third flow passage, said sidewall of the first tube and said sidewall of the second tube for detecting periodic variations in the condition of a fluid flowing through said first, second, or third flow passage, thereby detecting effectively the rate of flow of the fluid through said first and second tubes.

4,404,860

FLOW RATE SENSOR

Hugh C. Wood, and Simon W. J. H. Okkerse, both of Saskatoon, Canada, assignors to SED Systems Inc., Saskatoon, Canada

Filed Jan. 26, 1981, Ser. No. 228,525
Claims priority, application Canada, Feb. 1, 1980, 344891
Int. Cl.[3] G01F *1/75*
U.S. Cl. 73—861.78 12 Claims



1. Apparatus for detecting rates of motion comprising:

(a) an inductor and a capacitor connected in a series circuit,

(b) an oscillator connected in series with said circuit adapted to apply a signal to said circuit at a frequency at which the inductor and capacitor are in series resonance,

(c) means for detecting the repetitive passage of a metallic element through the field of said inductor including:

(i) means connected in parallel with said inductor for detecting the envelope of said signal, and

(ii) means for converting pulsations in said envelope to an output signal designative of said passage repetition rate of said metallic element,

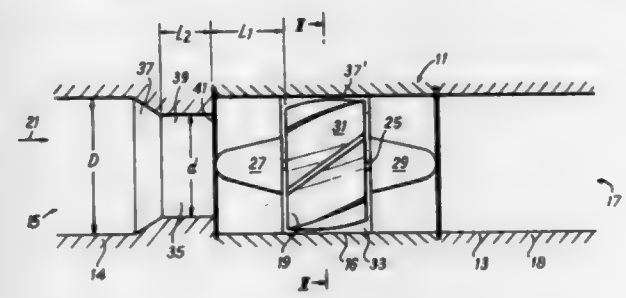
in which the frequency of said signal is a multiple of the highest expected repetition rate of passage of said element through said field.

4,404,861

LIQUID FLOWMETER

Colin Wass, Castleford, England, assignor to Brown Boveri Kent Limited, Bedfordshire, England

Filed Jul. 22, 1981, Ser. No. 285,640
Claims priority, application United Kingdom, Aug. 4, 1980, 8025316
Int. Cl.[3] G01F *1/12*
U.S. Cl. 73—861.83 6 Claims



1. A liquid flowmeter comprising a flow passageway having coaxially disposed inlet and outlet ends, a freely rotatable vaned flow measuring rotor within the passageway and disposed with its axis of rotation extending along the direction of flow and a constriction in the passageway upstream of the rotor, the remainder of the passageway being of uniform cross-section and the constriction comprising a main portion of uniform cross-section less than that of the passageway which at the downstream end thereof opens directly into the passageway in the vicinity of the rotor and a portion at the upstream end which is of tapering form and connects the main portion of the constriction with the passageway, whereby the velocity profile across the passageway at the rotor arising at laminar flow rates is substantially unaffected by the presence of the constriction and the velocity profile across the passageway at the rotor arising at turbulent flow rates is altered by the presence of the constriction.

4,404,862

MICRODISPENSING SPRINGS WITH A NEEDLE IN A TUBULAR EXTENSION

Rano J. Harris, Sr., Baton Rouge, La., assignor to Dynatech Precision Sampling Corporation, Baton Rouge, La.

Filed Nov. 2, 1981, Ser. No. 317,070
Int. Cl.³ G01F *11/06*
U.S. Cl. 73—864.16 5 Claims



1. In apparatus useful for dispensing small, or infinitesmal accurately measured quantities of a fluid, which embodies a tubular barrel having a bore therethrough, a plunger reciprocably mounted within the bore from a rearward end of said barrel, a tubular extension member mounted and sealed within a forward end of said barrel, and a tubular needle mounted in said tubular extension member such that a fluid can be drawn into the tubular needle from a dispensing end thereof by withdrawal of the plunger within the barrel, and dispensed from the dispensing end of the needle by forward movement of said plunger within the barrel, the improvement which, in combination, comprises

a conical entry located within the forward end of the barrel coaxially aligned and contiguous with the bore of said barrel,

said tubular extension member provided with a bore therethrough having an internal diameter substantially equal to an external diameter of the tubular needle, a rearward end of said tubular needle mounted in said tubular extension member to provide coaxially aligned bores through which fluid can flow from the dispensing end of said needle through the bore of said tubular extension member,

a tubular seal mounted on a rearward end of said tubular extension member, the rearward end of said tubular extension member being extendable into the barrel,

a stop externally located on said tubular extension member intermediate a forward terminal end of the tubular extension member and the tubular seal,

a hub mounted on the forward end of said barrel and having an opening therein through which the sealed rearward end of said tubular extension member can pass for sealing engagement with the conical entry at the forward end of said barrel,

a coil spring concentrically mounted about the tubular extension member, a rearward end of the spring seated against the stop of said tubular extension member,

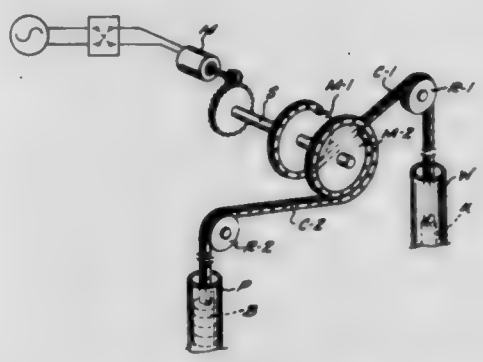
a cap having an opening through which the needle and forward end of said tubular extension member extends, an inside forward wall of said cap providing a seating surface against which a forward end of said coil spring rests and is retained, said cap being adjustably engagable with said hub so that a preselected compressive force can be exerted upon said spring for retention of said needle and tubular extension member in place on the forward end of the barrel of the syringe without the application of excessive force.

4,404,863

COUNTERBALANCED PUMPS AND METHOD OF USING SAME

Robert G. James, Whittier, Calif., assignor to Armco Inc., Middletown, Ohio

Filed Dec. 29, 1980, Ser. No. 220,435
Int. Cl.³ F16H *29/02*
U.S. Cl. 74—89.2 10 Claims



1. In a counterbalanced pumping system having a set of sheave chains wound in opposing directions over mandrels, said sheave chains supporting a pump rod string and a counterbalance, and a motor operatively engaged to maintain said mandrels in oscillation, the improvement comprising:

said sheave chains having ends pivotally secured to said mandrels and having lengths selected for full unwinding of one upon the reversal of the other; and

turning means mounted proximate said mandrels for supporting said sheave chains and for aligning the ends thereof to a vertical alignment, said turning means being aligned relative said mandrels to produce a torque reversal thereabout upon the full unwinding of each sheave chain.

9. A method for reducing the reversal periods of a counterbalanced pump having a set of sheave chains wound in opposing directions over mandrels, said sheave chains supporting a pump rod string and a counterbalance, and a motor operatively engaged to maintain said mandrels in oscillation, comprising the steps of:

driving said motor to unwind one of said sheave chains; and

coasting said mandrels to wind said one sheave chain in the same direction as the other.

4,404,864

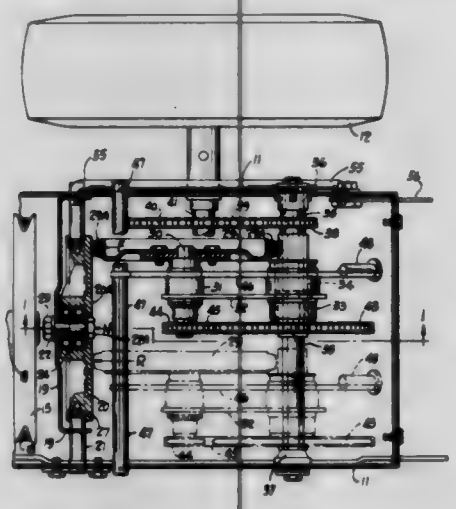
VARIABLE SPEED DRIVING MECHANISM

Bhupendra A. Parikh, Parma, Ohio, assignor to MTD Products Inc., Cleveland, Ohio

Filed Oct. 23, 1980, Ser. No. 199,817
Int. Cl.³ F16H *15/08*
U.S. Cl. 74—197 3 Claims

1. In a variable speed power transmission mechanism for delivering power from an engine to a working part, the mechanism having a driving wheel rotatable by the engine, a friction wheel engageable with the driving wheel to be driven in accordance with the then current location of the engagement of the friction wheel with the driving wheel, the friction wheel being carried on a shaft rotatable with the friction wheel, the working part being operatively connected to a driven shaft, to be rotated by the same, said driven shaft having a non-cylindrical outer surface, the improvement of a first bearing assembly rotatably carrying said friction wheel carrying shaft, a second bearing assembly having an inner part non-rotatively engaging said driven shaft and longitudinally slidable along said driven shaft and having an outer part concentrically mounted about said inner part to permit the inner part and said driven shaft to rotate within the said outer part, supporting means connected to both said first bearing assembly and the outer part of said

second bearing assembly to support the same and to maintain their respective axes parallel to each other, driving connection means inter-connecting said friction wheel carrying shaft and said driven shaft to provide for rotation of the driven shaft by the friction wheel, shifting means connected to said supporting means for shifting said supporting means along a path parallel



to the axis of said first bearing assembly and said second bearing assembly, the shifting of said supporting means changing the location of the friction wheel relative to the axis of said driving wheel while maintaining the driving connection between said friction wheel carrying shaft and said driven shaft at varying shiftable positions of the first bearing assembly and second bearing assembly.

4,404,845

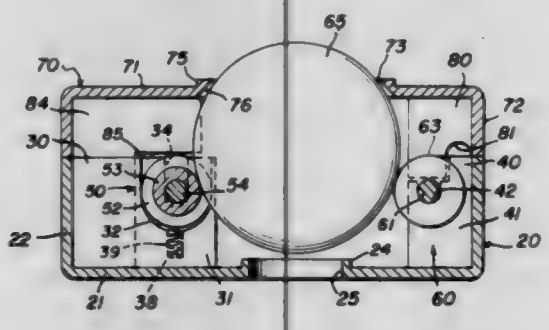
TRACKBALL DEVICE

Sayg N. Kim, Hoffman Estates, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Feb. 10, 1982, Ser. No. 347,469

Int. Cl.³ F16H *13/00*; G05G *9/00, 13/00*

U.S. Cl. 74—471 XY **12 Claims**



1. In a trackball position control device including a housing having a circular opening therein, a plurality of rotatable supports in the housing, at least first and second ones of which are respectively rotatable about orthogonally related axes, and a ball seated on and supported by the supports with a portion of the ball projecting through the opening for manual rotation by a user, wherein each of the first and second supports rotates in response to a corresponding component of rotational movement of the ball for generating control signals, the improvement comprising: mounting means accommodating movement of the first and second supports in directions toward and away from the plane of the opening and preventing movement of the first and second supports in directions parallel to the plane of the opening, and bias means carried by the housing and resiliently urging the first and second supports toward the plane of the opening.

4,404,866

REGULATOR HANDLE ASSEMBLY FOR THE OPERATION OF CAR WINDOW GLASS

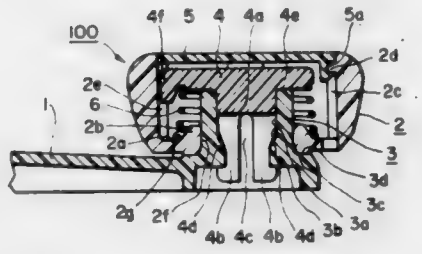
Shyouichi Koike, Tokyo; Toshiharu Iidaka, Funabashi, and Akio Ohyama, Kawasaki, all of Japan, assignors to Nissan Motor Co. Ltd., Yokohama and Kokusan Kinzoku Kogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed Jan. 23, 1981, Ser. No. 227,775

Claims priority, application Japan, Feb. 26, 1980, 55-22186

Int. Cl.³ B25G *3/00*; G05G *1/00*

U.S. Cl. 74—546 **6 Claims**



1. Regulator handle assembly for operating a window glass of a vehicle, comprising:

a handle lever associated with said window glass,

a cylindrical sleeve formed at the free end of said handle lever, said sleeve being substantially perpendicular to said handle lever and having at its lower portion a projection extending inwardly from an inner surface thereof,

a plug member rotatably received in said cylinder, said plug member having an extended leg which hooks on said projection and having a projection extending outwardly over said sleeve,

a hollow knob being rotatable relative to said sleeve, said hollow knob having at its lower portion a projection extending inwardly and at its inner surface an axially extending recess which axially slidably receives said projection of said plug member, and

a spring disposed between said projections of said plug member and said hollow knob, said plug member, said hollow knob, and said spring being rotatable as a unit with respect to said sleeve,

whereby said hollow knob is normally in a retracted position and can be pulled out to be manipulated.

4,404,867

GEAR UNIT

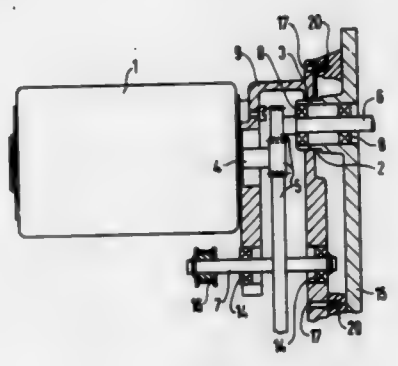
Gerhard Müeller, Taufkirchen, and Ernst Puritscher, Unterhaching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 19, 1982, Ser. No. 369,885

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1981, 3116793

Int. Cl.³ F16H *37/06, 35/06*

U.S. Cl. 74—665 GA **6 Claims**



1. A gear transmission device for connecting to a rotary motor having a drive shaft comprising a housing for receiving therein said drive shaft and first and second driven shafts, said

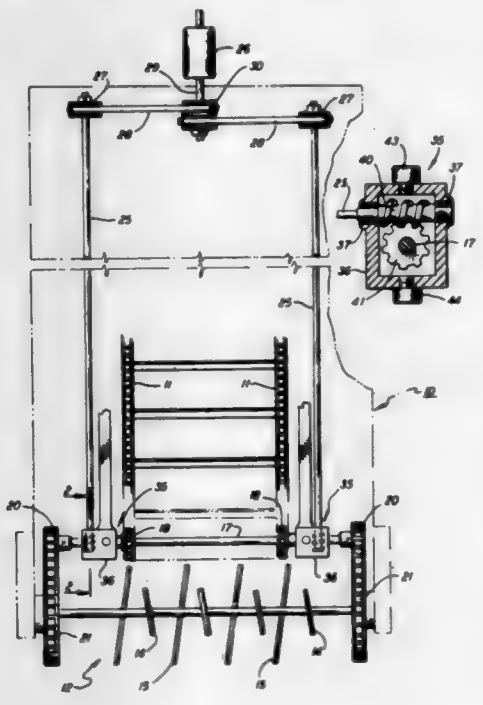
first driven shaft being mounted for rotation on bearing means carried by a stationary support plate, said second driven shaft being mounted for rotation on bearing means carried by said housing, a centering means for maintaining said first driven shaft aligned with said housing, a releasable fastening means connecting said housing for rotation relative to said support plate, and gear wheels drivingly interconnecting said drive shaft with said first and second driven shafts respectively.

4,404,868

WAGON TRANSMISSION

William H. Kleine, R.D. #1, McGraw, N.Y. 13101

Filed Jun. 4, 1982, Ser. No. 385,074
Int. Cl.[3] F16H *37/06*; A01C *19/00, 17/00*
U.S. Cl. 74—665 GE 3 Claims



1. In an agricultural wagon of the type having beaters, a spreader apron and a power train for driving the beaters and the spreader apron, said wagon further including

a prime mover having a gear box,

a pair of power take-off shafts coupled to the gear box so that both shafts rotate at the same speed,

a common main shaft connected to the pair of take-off shafts by a pair of transmissions that are spaced apart along the main shaft whereby the main shaft passes through both transmissions,

each of said transmissions including a housing for enclosing a gearset within an oil bath,

a pair of beater sprockets affixed to the main shaft with a beater sprocket being located on either side of the transmission pair, and

a pair of apron sprockets also affixed to the main shaft between the transmission pair.

4,404,869

POWER TRANSMISSION UNIT FOR MOTOR VEHICLES

Akio Numazawa, Nagoya, and Hajime Arai, Aichi, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 954,121, Oct. 24, 1978, abandoned.
This application Jan. 19, 1981, Ser. No. 226,532
Claims priority, application Japan, Apr. 20, 1978, 53/47336
Int. Cl.[3] F16H *37/00*
U.S. Cl. 74—740 3 Claims

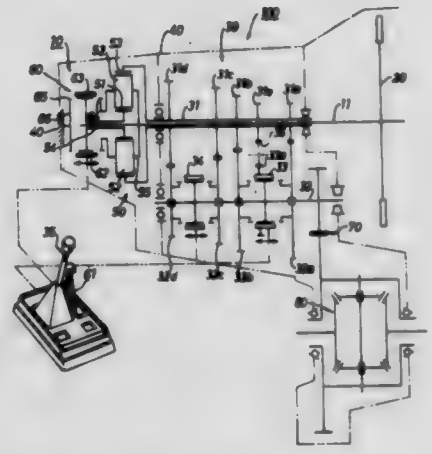
1. A power transmission unit for a motor vehicle comprising:

an elongated input shaft drivingly connected to an output shaft of an engine through a disengageable coupling;

a primary transmission having an elongated main sleeve shaft in surrounding relationship to said input shaft, a countershaft arranged in parallel with said main sleeve shaft, change-speed gearing means mounted in association with said main sleeve shaft and said countershaft and selectively operable to provide a plurality of forward speed ratios and at least one reverse speed ratio between said main sleeve shaft and said countershaft, and shift means;

a final drive gearing drivingly connected to said countershaft to drive a differential gear unit;

an auxiliary transmission having a sun gear rotatably mounted on said input shaft, a ring gear integral with said



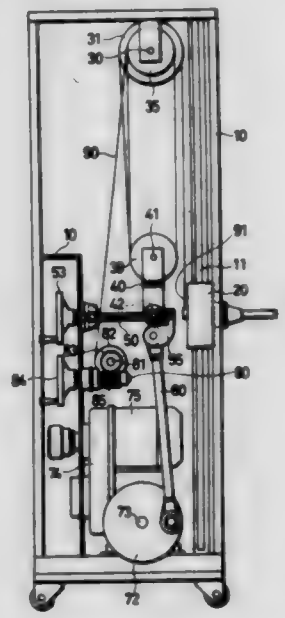
main sleeve shaft, a planet carrier integral with said input shaft, a plurality of planet gears rotatably mounted on said planet carrier, said planet gears being in mesh with said sun gear and said ring gears, a selector gear unit comprising a first spline drivingly connected to said sun gear, a reaction member stationary with respect to said auxiliary transmission, a slide solidly engaged with said spline and said planet carrier and also with said spline and said reaction member, said primary transmission being arranged between said disengageable coupling and said auxiliary transmission.

4,404,870

RECIPROCATOR FOR PAINT GUN

Ayakazu Atumaru, 3-21 kajihara 2-Chome, Takatsuki-Shi, Osaka-Fu, Japan

Filed Jun. 18, 1981, Ser. No. 274,786
Int. Cl.[3] F16H *35/08, 19/06*
U.S. Cl. 74—829 3 Claims



1. A reciprocator for paint gun comprising a slider for mounting a paint gun, said slider slidably engaged with an upright rail fixed on a frame so that the slider may be capable of ascending and descending along the rail, fixed pulleys rotatably supported at an upper portion of the frame, movable

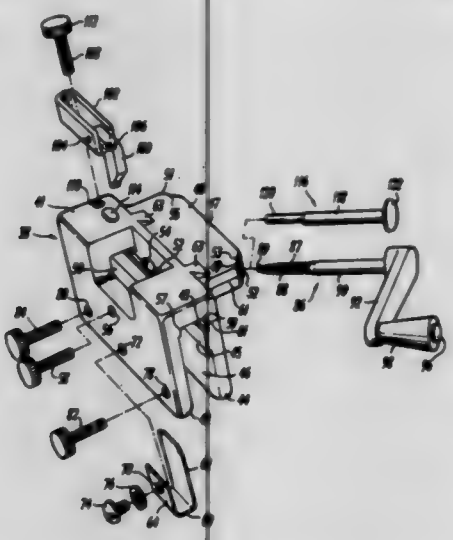
pulleys rotatably supported on a common shaft below said fixed pulleys, the number of said movable pulleys being one less than the number of said fixed pulleys, a bracket for mounting said common shaft and supporting a movable rod, said movable rod having a threaded hole, a threaded rod threadably engaged with said threaded hole, one end of said threaded rod connected via a universal joint to a handle rotatably supported on the frame, and the other end of said threaded rod connected to one end of a connecting piece, a connecting rod having one end pivotably connected to the other end of said connecting piece and the other end pivotably connected to a crank pin, a winch device having a drum rotatably supported at a middle portion of the frame, said drum adapted to be rotated by means of a handle, and a wire led from said slider to said drum through said fixed and movable pulleys, said wire having its ends fixed on said slider and said drum.

4,404,871

PORTABLE CHAIN SAW SHARPENING KIT WITH CUTTING LINK ALIGNMENT MEANS AND METHOD FOR USING SAME

Thomas A. Fritz, 8104 Larch La., Evansville, Ind. 47710, and James W. Shrode, 10435 Upper Mt. Vernon Rd., Evansville, Ind. 47712

Filed Oct. 2, 1981, Ser. No. 308,104
Int. Cl.³ B23D *63/16*
U.S. Cl. 76—25 A 16 Claims



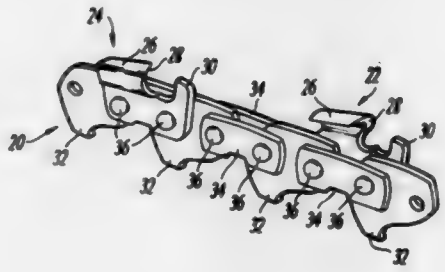
1. A portable chain saw sharpening kit comprising:
(a) a unitary sharpener body in the form of a channel member adapted to be placed over the bar of a chain saw, said channel member comprising:
(1) an inverted U-shaped portion including an upper web and first and second side walls extending downwardly from said upper web, said side walls being parallel and spaced apart from each other to define a channel therebetween for receiving the bar of a chain saw with the saw chain thereon facing the underside of said upper web, adjoining portions of said upper web and said first side wall being cut away to define an open area near the center of said channel for receiving a cutting link of the saw chain;
(2) a horizontal extension projecting outwardly from said second side wall on the side opposite the channel, said extension being provided with first and second horizontal guide bores converging toward each other in the direction of the channel at equal angles with respect to a line perpendicular to the channel axis, said guide bores extending from opposite corners of said extension and opening through said second side wall into the open cutting link receiving area of the channel;
(b) first clamping means supported by said first side wall below the open cutting link receiving area for clamping a cutting link against said second side wall in a position adjacent to the open ends of said first and second guide bores;
(c) second and third clamping means supported by said first side wall for clamping the sharpener body to the bar of a chain saw, said second and third clamping means being provided at points near the lower corners of said first side wall;
(d) a rotary burr receivable in a selected one of said first and second guide bores, said rotary burr having an abradant end portion for sharpening a cutting link positioned in the open cutting link receiving area of the sharpener body; and
(e) an alignment pin receivable in a selected one of said first and second guide bores for longitudinally aligning a cutting link in the channel prior to sharpening, said alignment pin comprising a shank portion and a reduced end portion for abutting against the edge of the cutting link to be sharpened, said reduced end portion being dimensioned to allow for the removal of a predetermined amount of material from the edge of the cutting link when the rotary burr is subsequently inserted into the selected guide bore for sharpening.

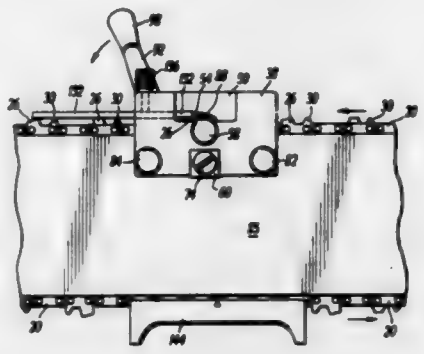
4,404,872

PORTABLE CHAIN SAW SHARPENING KIT WITH DEPTH GAUGE FILING ATTACHMENT AND METHOD OF USING SAME

Thomas A. Fritz, 8104 Larch La., Vanderburg County, Evansville, Ind. 47710

Filed Oct. 2, 1981, Ser. No. 308,105
Int. Cl.³ B23D *63/16*
U.S. Cl. 76—25 A 14 Claims





1. A portable chain saw sharpening kit comprising:
(a) a unitary sharpener body in the form of a channel member adapted to be placed over the bar of a chain saw, said channel member comprising:
(1) an inverted U-shaped portion including an upper web and first and second side walls extending downwardly from said upper web, said side walls being parallel and spaced apart from each other to define a channel therebetween for receiving the bar of a chain saw with the saw chain thereon facing the underside of said upper web, adjoining portions of said upper web and said first side wall being cut away to define an open area near the center of said channel for receiving a cutting link of the saw chain;
(2) a horizontal extension projecting outwardly from said

second side wall on the side opposite the channel, said extension being provided with first and second horizontal guide bores converging toward each other in the direction of the channel at equal angles with respect to a line perpendicular to the channel axis, said guide bores extending from opposite corners of said extension and opening through said second side wall into the open cutting link receiving area of the channel;

(b) first clamping means supported by said first side wall below the open cutting link receiving area for clamping a cutting link against said second side wall in a position adjacent to the open ends of said first and second guide bores;

(c) second and third clamping means supported by said first side wall for clamping the sharpener body to the bar of a chain saw, said second and third clamping means being provided at points near the lower corners of said first side wall below said first-mentioned clamping means;

(d) a rotary burr receivable in a selected one of said first and second guide bores, said rotary burr having an abradant end portion for sharpening a cutting link positioned in the open cutting link receiving area of the sharpener body; and

(e) a depth gauge attachment for allowing said rotary burr to be used for filing the depth gauge of a cutting link, said depth gauge attachment comprising:

(1) an elongated gauge bar shaped and dimensioned to be received in the channel of said sharpener body along the underside of the upper web of said inverted U-shaped portion, said gauge bar having a flat surface on the underside thereof to provide a guide surface for the upper portions of the cutting links on the saw chain, the thickness of said gauge bar being selected to cause the saw chain to assume a sufficiently lower position within the channel of the sharpener body to bring the top of the depth gauge portion of a cutting link into contact with the abradant end portion of the rotary burr when the rotary burr is inserted into one of said first and second guide bores; and

(2) means for removably affixing said gauge bar within the channel of the sharpener body such that the gauge bar occupies only a portion of the length of said channel, said portion not including the area immediately adjacent to the opening formed by said one of said first and second guide bores in the second side wall of the inverted U-shaped portion of the sharpener body, whereby said rotary burr can be inserted into said one of said first and second guide bores to file the depth gauge portion of a cutting link as said cutting link passes through the open cutting link receiving area of the sharpener body.

4,404,873

BLADE SHARPENER

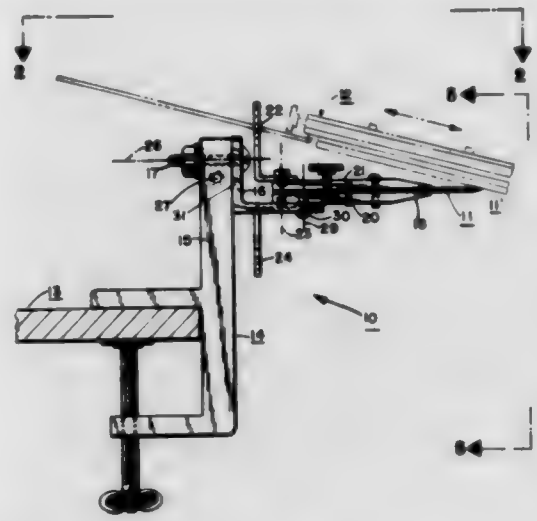
Madeline L. Radish, Westerville, Ohio, assignor to Howard Ray Longbrake, Grafton, Ohio

Filed Oct. 13, 1981, Ser. No. 310,507

Int. Cl.³ B24B *3/54*; B25B *1/22*

U.S. Cl. 76—82 **8 Claims**

1. In the combination of a support clamp, a vise adapted to pinch a blade having a cutting edge to be sharpened, an elongated sharpener engageable with said cutting edge for longitudinal reciprocal movement thereacross, and a guide pivoted on the vise on a guide axis and holding the sharpener in its path of reciprocal movement, the provision of, a post extending outwardly from said clamp in a direction parallel to a guide plane containing the guide axis, bracket means pivotally supporting said vise on said post on a support pivot axis generally transverse to the direction of the post, and positioning said vise and said guide and said sharpener with the sharpener extending



generally across the post and next adjacent to and spaced from said post.

4,404,874

SCREWDRIVER WITH REPLACEABLE BLADE

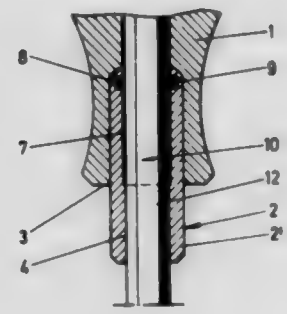
Karl Lieser, Wuppertal, Fed. Rep. of Germany, assignor to Firma Hermann Werner GmbH & Co., Wuppertal, Fed. Rep. of Germany

Filed Feb. 9, 1981, Ser. No. 232,781

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016932

Int. Cl.³ B25B *15/02*

U.S. Cl. 81—438 **13 Claims**



1. In a screwdriver with a replaceable polygonal blade and a handle, the blade being insertable in non-rotatable complementary manner from a front end of the handle into a cross-sectionally non-round opening of a socket, the socket with an interior portion of its length being seated non-rotatably in the handle, the opening defined by an inside wall of the socket being cylindrical at a portion thereof and the socket over the remainder of the length inside on the inside wall and outside is polygonal defining corners, the socket with said polygonal remainder of its length projecting beyond the front surface of the handle, and a spring element frictionally locking the blade being coordinated to the socket, the improvement wherein

said socket is polygonal on said outside along its entire length,

said cylindrical portion of the opening on the inside wall of the socket is formed so as to include an annular groove formed therein and spaced substantially apart from a transition of said opening defined by said inside wall from cylindrical to polygonal,

the spring element is formed as a closed annular ring and is partially encased in said annular groove on the inside wall of the cylindrical portion, extends radially inwardly beyond the radius of said cylindrical portion into said opening before said blade is inserted into said opening and forms an integral unit with said socket insertable into the handle, and

the cylindrical diameter of said cylindrical portion of the

inside wall approximately equals the width across two opposite of said corners of the opening on the inside wall of said polygonal remainder of the length of said socket, said width across said two opposite corners of said inside wall at said polygonal remainder of the length of said socket is defined by said two corners which are 180° opposite each other.

4,404,875

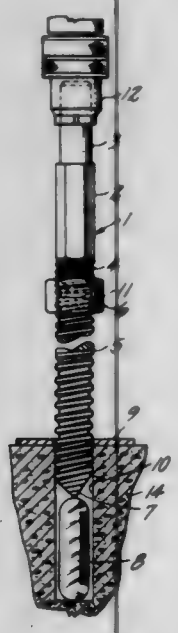
INSTALLER DRIVE UNIT FOR CHEMICAL ANCHOR

Kunissey P. Sadanandan, Reading, Pa., and Raymond S. Guntulis, Manchester, Conn., assignors to USM Corporation, Farmington, Conn.

Continuation of Ser. No. 170,285, Jul. 18, 1980. This application Jul. 19, 1982, Ser. No. 399,402

Int. Cl.³ B25B *13/50*

U.S. Cl. 81—53.2 **3 Claims**



1. A drive unit for a threaded stud of predetermined diameter and thread pitch that is to be rotatably driven through the action of a rotary drill into a frangible ampule placed within masonry, concrete, rock or the like, said drive unit comprising:

a nut having a uniform thread diameter and a uniform thread pitch for threadably engaging the threads of said stud, said nut adapted to receive a first wrench;

a shank of unitary construction having a central portion with a generally polygonal cross-section and adapted to receive a second wrench;

said shank further having a first unitary cylindrical extension, disposed at one end of said central portion, for insertion into the chuck of a rotary drill; and

said shank still further having a second unitary extension with a threaded portion disposed at the other end of said central portion, the diameter and thread pitch of said threaded portion being substantially the same as said predetermined diameter and thread pitch of said stud whereby said nut having the same predetermined thread pitch and diameter is threaded onto both said stud and said threaded portion on the secondary extension of said shank so as to lock the two together prior to the stud being driven into a medium by rotation of the rotary drill and whereby said stud is ultimately detached from said shank by engaging the central portion with the second wrench and the nut with the first wrench and twisting the wrenches in opposite directions so as to disconnect the nut from the threaded portion of said second unitary extension without disturbing the inserted condition of said stud within the frangible ampule.

4,404,876

POWER TONGS

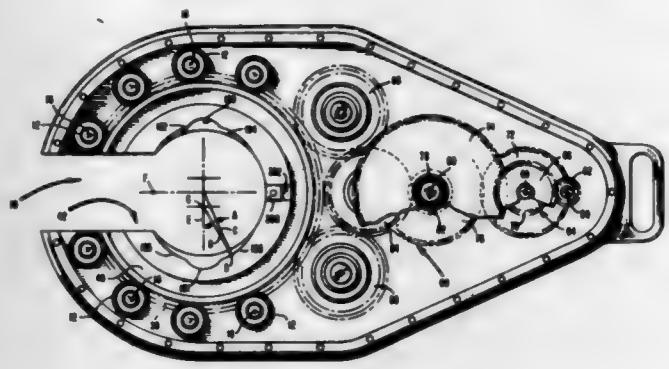
Emery L. Eckel, Odessa, Tex., assignor to Eckel Manufacturing Co., Inc., Odessa, Tex.

Continuation of Ser. No. 906,200, May 15, 1978, abandoned, which is a continuation of Ser. No. 698,324, Jun. 22, 1976, Pat. No. 4,089,240, which is a continuation-in-part of Ser. No. 671,959, Mar. 30, 1976, Pat. No. 4,084,453. This application Mar. 28, 1980, Ser. No. 135,176

The portion of the term of this patent subsequent to Apr. 11, 1995, has been disclaimed.

Int. Cl.³ B25B *17/00*

U.S. Cl. 81—57.18 **6 Claims**



1. A power tong assembly for engaging and rotating a pipe member and the like about its longitudinal axis, comprising

a partial ring member rotatable about a center line and having an open throat portion for receiving said pipe member, said partial ring member further having a plurality of arcuate cam surfaces spaced interiorly about and oppositely with respect to said center line of said ring member and each having a radius of curvature extending to a cam radius point spaced from said center line of said ring member,

a plurality of gripping members corresponding to the outside diameter of said pipe member and arranged within said ring member for movement relative to said center line of said ring member,

a plurality of cam followers each arranged between said ring member and one of said gripping members for engaging said cam surfaces and urging corresponding ones of said gripping members substantially diametrically and oppositely toward said pipe member to align said center line of said ring member with said longitudinal axis of said pipe member in response to rotation of said ring member,

said cam followers each further abutting one of said cam surfaces at a contact point defining the apex of a cam angle of not more that 5½ degrees when said gripping members engage said pipe member, said cam angle formed by a straight line commencing at said contact point and passing through said cam radius point and a second line commencing at said contact point and passing through said center line of said ring member, and

driving means for rotating said partial ring about said center line of said ring member and for driving said gripping members substantially equally and oppositely against said pipe member as a function of the magnitude of said cam angles.

4,404,877

POWER-DRIVEN SCREWDRIVER

Megumi Mizuno; Shigeru Ishikawa, and Eiki Kubo, all of Tokyo, Japan, assignors to Sanyo Industries, Ltd. and Muro Kinzoku Kogyo Co., Ltd., both of Tokyo, Japan

Filed Oct. 9, 1981, Ser. No. 309,975

Int. Cl.³ B25B *23/04*

U.S. Cl. 81—57.37 **7 Claims**

1. A power-driven screwdriver for attachment to a motor-driven tool for being driven thereby, comprising:

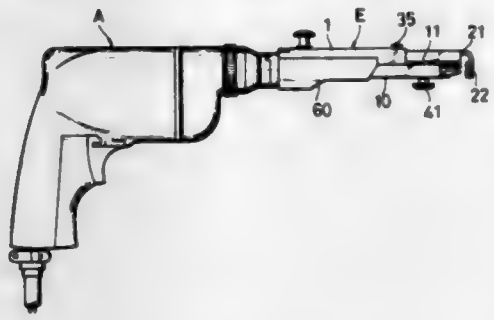
(a) an outer guide frame adaped to be mounted on the motor-driven tool;

(b) a slide block slidable into and out of said outer guide frame and having a bore;

(c) a screwdriver bit extending through said bore and adapted for attachment to the motor-driven tool, said outer guide plate having a first cam slot substantially parallel to said screwdriver bit and including an oblique portion;

(d) a slide plate slidably mounted on said slide block and having a protective plate, said slide plate having a second cam slot substantially normal to said screwdriver bit;

(e) a spring disposed around said screwdriver bit and acting between said outer guide frame and said slide block to normally urge the latter in a direction to slide out of said outer guide frame to a position in which a distal end of



said screwdrier is disposed in said slide block, said slide block and slide plate being movable into said outer guide frame against the bias of said spring when the motor-driven tool is pushed toward a workpiece with said protective plate held against the workpiece, before said screwdriver bit drives a screw home into the workpiece; and

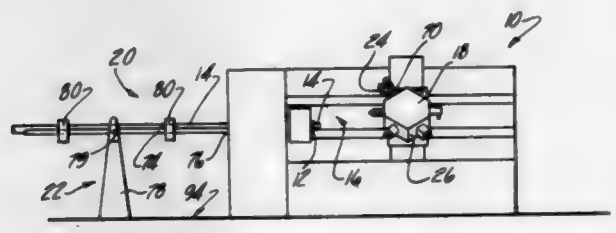
(f) a screw indexing lever swingably mounted on said slide block and having a pin received in said first and second cam slots, said screw indexing lever being angularly movable to supply a next screw to a position in front of said screwdriver bit in response to movement of said pin in and along said oblique portion of aid first cam slot and said second cam slot.

4,404,878

BAR STOCK FEED APPARATUS

Vernon F. Blanchard, 35406 Brookview, and Bradley V. Blanchard, 14417 Park, both of Livonia, Mich. 48152

Filed Mar. 26, 1981, Ser. No. 247,576
Int. Cl.³ B23B *15/00*
U.S. Cl. 82—2.5 **19 Claims**



1. In a machine for operating on elongate cylindrical bar stock, the improvement comprising:

a gripping device having a pair of adjustable, opposing cutting elements spaced apart a distance less than the outer diameter of the bar stock;

means for moving the gripping device transversely to the longitudinal axis of the bar stock to engage the bar stock from its side, with the cutting elements forming notches therein; and

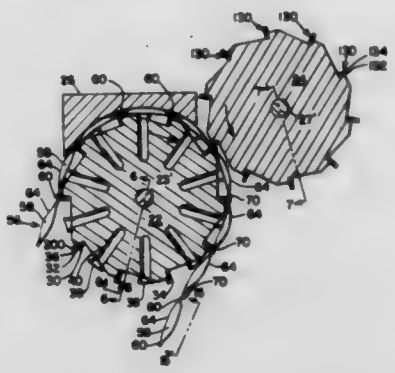
means for moving the gripping device parallel to the longitudinal axis of the bar stock to pull the bar stock into a given area for performing work on the bar stock.

4,404,879

ACCURATELY PLACED STRESS CONCENTRATING APERTURE IN FLEXIBLE PACKAGES

Arthur E. Frohwerk, Harrison, Ohio, and David E. Enting, Americas, Ga., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 147,018, May 6, 1980, Pat. No. 4,332,327.
This application Mar. 11, 1982, Ser. No. 357,021
Int. Cl.³ B26D *1/62, 9/00*
U.S. Cl. 83—22 **19 Claims**



1. A process for forming an easy open stress concentrating aperture in the seal area of a filled and sealed flexible pouch as said pouch is transversely severed from a continuous web of said pouches interconnected to one another along their sealed lateral edges, said stress concentrating aperture being located a predetermined distance from the severed edge of said pouch, said process comprising the steps of:

(a) advancing said web of interconnected pouches to a transverse web cutting means having web aperturing means secured a predetermined distance therefrom;

(b) fixing the position of said sealed lateral edge relative to said cutting and said aperturing means;

(c) subjecting said sealed lateral edge of said pouch to tension as said pouch is being transversely severed from said web along said lateral edge by said cutting means;

(d) contacting said sealed lateral edge and said aperturing means with one another while said sealed lateral edge is in tension and in an unsupported condition to concentrate the stress applied by said tension at said point of contact and thereby rupture said sealed lateral edge a predetermined distance from the severed edge of said pouch; and

(e) removing said pouch from said cutting and said aperturing means after said sealed lateral edge of said pouch has been transversely severed and apertured.

4,404,880

METHOD FOR WEB CUTTING IN ROLLED SHEET MATERIAL DISPENSERS

Raymond F. DeLuca, Stamford, Conn., assignor to Georgia-Pacific Corporation, Atlanta, Ga.

Continuation of Ser. No. 46,182, Jun. 6, 1979, abandoned, Division of Ser. No. 842,533, Oct. 14, 1977, Pat. No. 4,188,844.
This application May 26, 1981, Ser. No. 266,652
Int. Cl.³ B26D *1/56*
U.S. Cl. 83—42 **3 Claims**

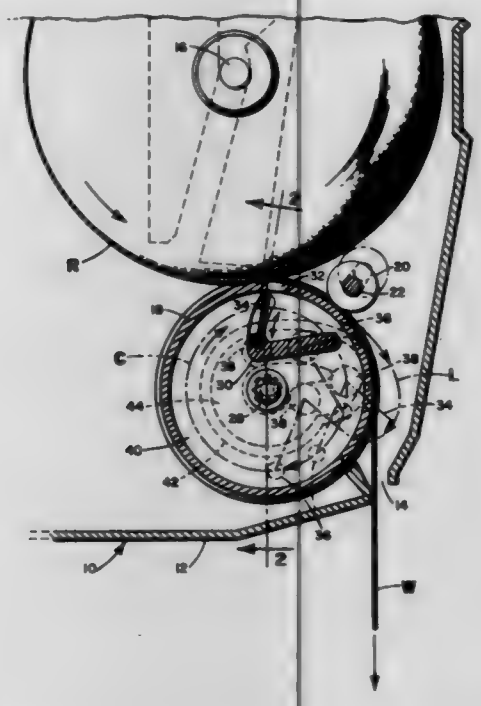
1. In a dispenser for rolls of flexible sheet material having mechanism for cutting a web of the material, a method for cutting the web comprising the steps of:

passing the web of material in an arc over an arcuate segment of a feed roller;

applying a pulling force to said web to rotate the feed roller through said arcuate segment incident dispensing flexible sheet material from the dispenser;

projecting the edge of a cutting knife in a first direction by positively driving the cutting knife from within the feed roller beyond the periphery of the feed roller while the feed roller rotates through the arcuate segment to cut the web arc passing over the feed roller; and

positively driving the cutting knife in a second direction opposite to said first direction to positively retract the



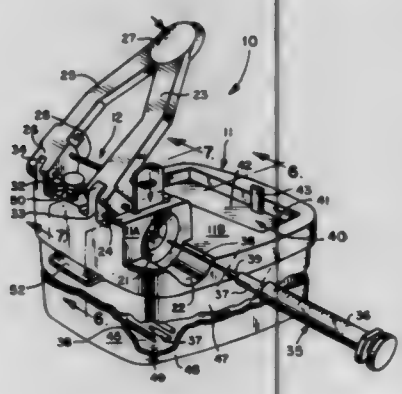
knife edge back into the feed roller incident rotation of the feed roller beyond said arcuate segment.

4,404,881

NEEDLE AND SYRINGE DESTRUCTOR

Paul H. Hanifl, Barrington, Ill., assignor to Sage Products, Inc., Cary, Ill.

Filed Aug. 19, 1981, Ser. No. 294,326
Int. Cl.³ B23D *15/00*; B26D *5/10*
U.S. Cl. 83—167 **16 Claims**



1. A needle and syringe destructor comprising:

a base having a first portion including shearing means and a second portion including disposal means:

said shearing means comprising

a pair of guillotine shears each having a movable shear blade and a static shear blade, said movable shear blades having a shearing edge and a linkage slot, said static shear blades having opposing guide grooves accommodating said movable shear blades and each having an access aperture both being coaxial and each having a static shearing edge capable of shearing association with a movable shear blade,

a connector means movably engaging the linkage slots of said movable shear blades,

a lever arm means in pivotal relationship with said first base portion at hinge means and having attachment means engaged with said connector means linking said lever arm means with said guillotine shears,

entry portal means coaxial with said access apertures opening adjacent to a guillotine shear and opening outwardly of said first base portion,

said disposal means comprising

an opening in said second base portion,

a movable closure lid associating with said opening,

a receptacle having a peripheral edge associating with said base in removable relationship, an open side defined by said peripheral edge opening to said first and second base portions, and sidewall and lower wall portions defining a containment chamber therebetween,

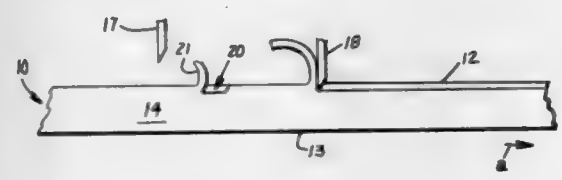
wherein a needle and syringe is insertable through said entry portal means for positioning of a needle at one of the guillotine shears and a portion of a syringe barrel at the other, whereupon said lever arm is hand manipulable to actuate said movable shear blades to traverse across access apertures of said static shear blades whereby the needle and syringe barrel are severable in one traversal, whereupon severed portions enter said containment chamber and remaining syringe barrel portions extending outwardly of said entry portal means may be deposited at said disposal means through said opening by opening said movable closure lid and depositing such portions into said containment chamber of said receptacle.

4,404,882

METHOD AND APPARATUS FOR TRIMMING ELONGATED ARTICLES

George E. Mock, Duluth, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Aug. 6, 1981, Ser. No. 290,279
Int. Cl.³ B23D *1/26*
U.S. Cl. 83—869 **5 Claims**



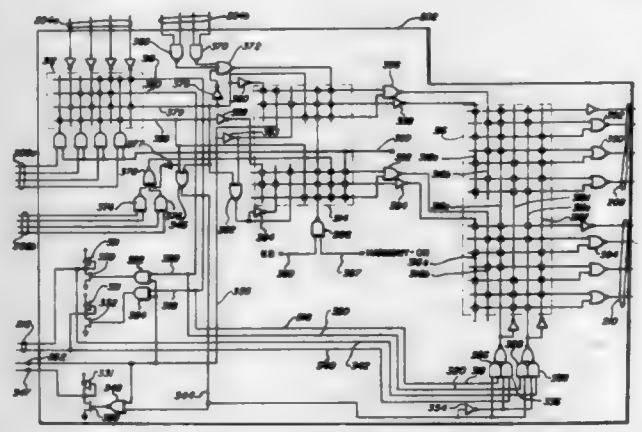
1. A method of trimming a cast metal bar of a shape having at least one elongated corner as it is being advanced along a path which method comprises the steps of periodically moving a first blade into and out of the corner of the bar thereby forming spaced notches in the corner from which curls protrude, and directing the notched metal bar corner into contact with a second blade to trim discrete corner strips spanning adjacent notches sequentially from the bar.

4,404,883

INTEGRATED HARMONY GENERATING CIRCUIT FOR ELECTRONIC ORGAN

Angelo A. Bione, Elmhurst, Ill., assignor to The Marmon Group, Inc., Chicago, Ill.

Filed Jan. 19, 1981, Ser. No. 226,117
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.03 **5 Claims**



1. A harmony generating system for use in an electronic organ having an upper manual for generating upper manual

keying signals, a lower manual for generating lower manual keying signals and keyer circuits responsive to said upper and lower manual keying signals, said harmony generating system receiving upper manual keying signals and lower manual keying signals and having a plurality of integrated circuits with each circuit receiving said upper manual keying signals and said lower manual keying signals for at least one letter note and comprising:

octave identify means responsive to said upper manual keying signals for at least one letter note for generating an upper manual octave identify signal;

first circuit means responsive to said upper manual keying signals for at least one letter note for generating an upper manual active signal;

octave select means responsive to the absence or presence of said upper manual active signal from another one of said plurality of integrated circuits and said lower manual keying signals for at least one letter note for generating octave select signals; and

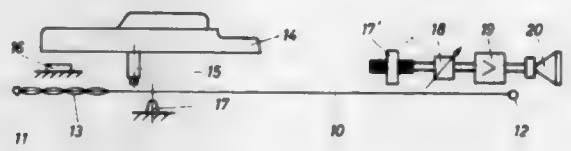
second circuit means responsive to said upper manual octave identify signal, said upper manual active signal from said first circuit means of the same integrated circuit and to said octave select signals for generating harmony signals, said harmony signals corresponding to said lower manual keying signals for at least one letter note and said upper manual keying signals for at least one letter note and being within a twelve note range above the upper manual keying signals.

4,404,884

STRINGED INSTRUMENT WITH KEYBOARD, OF THE CLAVICHORD TYPE

Ernst Zacharias, Trossingen, Fed. Rep. of Germany, assignor to Matth. Hohner AG, Trossingen, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,798
Int. Cl.³ G10C *3/18*
U.S. Cl. 84—258 **4 Claims**



1. In a stringed instrument of the clavichord type employing a plurality of stretched strings, wherein each key carries a tangent which may be caused to impact against a single associated string by actuation of the key, the impact of the tangent causing the string to vibrate, each string also corresponding with a fixed stop disposed at the side of the string opposite to the tangents, the strings each also having associated therewith muting devices positioned adjacent first ends of the strings, the improvement comprising:

means positioning the key tangents at points along the individual associated strings which are off-set with respect to the point of contact between the string and stop toward the muting devices whereby a free string portion is established between each tangent and the said point of contact of its associated string with a stop.

4,404,885

MICROPHONE MOUNT FOR BASS FIDDLE

Scott W. Salak, 26151 Lakeshore Blvd., Euclid, Ohio 44132

Filed Apr. 3, 1981, Ser. No. 250,580
Int. Cl.³ G10D *3/00*; G12B *9/00*
U.S. Cl. 84—329 **7 Claims**

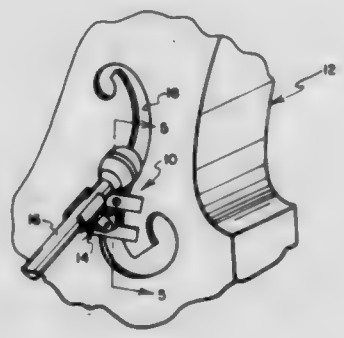
1. A microphone mount for positioning a microphone in steadied and non-shifting relationship adjacent an opening formed through a substantially planar wall of a housing of a musical instrument subjected to musical vibration and without imparting vibration-induced mechanical noise from said mount to a microphone, comprising:

(a) clamping means for sandwiching and clampingly engaging exterior and interior portions of a substantially planar wall of a musical instrument, said instrument wall portions being located on opposite sides of an opening formed through the instrument planar wall, the clamping means including:

(i) at least a pair of overlying clamping members with each member of sufficient length to extend transversely across the opening formed through the instrument planar wall to overlie said planar wall portions on either side of said opening, with at least one of said clamping members having dimensions to permit ready insertion thereof through the opening in the instrument;

(ii) resilient cushion means carried by said clamping members on the respective faces thereof confronting said instrument wall portions;

(iii) compression means accessible from one side of said clamping members and adjacent an exterior wall of the instrument for effecting relative movement of the



clamping members in directions substantially perpendicular to said instrument wall portions to bring the clamping members into clamping engagement with said instrument wall portions; and,

(b) microphone connector means carried by at least one of the clamping members for supporting a microphone rigidly adjacent said instrument when the mount is clamped thereon,

said connector means extending outwardly from said one side of said clamping members exteriorly of said instrument wall thereby to position a microphone in proximity to said instrument wall,

whereby a microphone may be readily mounted in secure relation in immediate proximity to an exterior face said musical instrument when said mount is clamped thereon and wherein said resilient cushion means in cooperation with said compression means preclude unwanted shifting movement of said mount in response to musical instrument vibration while simultaneously precluding transmission of noise-inducing vibration to said clamping members, said microphone connector means, and a microphone thereon.

4,404,886

NOTE READING OCTAVE ISOLATOR

Verna M. Leonard, 9360 N. Blackstone, Fresno, Calif. 93710

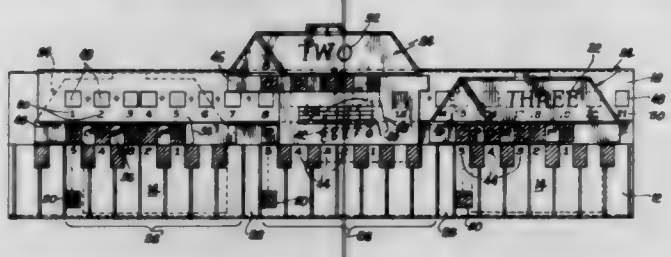
Filed Aug. 17, 1981, Ser. No. 293,555
The portion of the term of this patent subsequent to Oct. 20, 1998, has been disclaimed.
Int. Cl.³ G09B *15/02*
U.S. Cl. 84—471 R **8 Claims**

1. A note reading octave isolator comprising:

(a) a front panel having a display of a portion of a keyboard thereon with keys in a certain octave;

(b) at least one insert card insertable behind said front panel and having first and second positions assumable relative to said front panel and including means to hold said insert card in at least one of said positions;

(c) said insert card having an octave indentifier identifying said certain octave and including first and second tiers of indicia, said first tier comprising scale tone name naming by juxtaposition the scale tones of said keys and aligning with same in said first position, and said second tier displaying a group of notes on a staff generally falling within



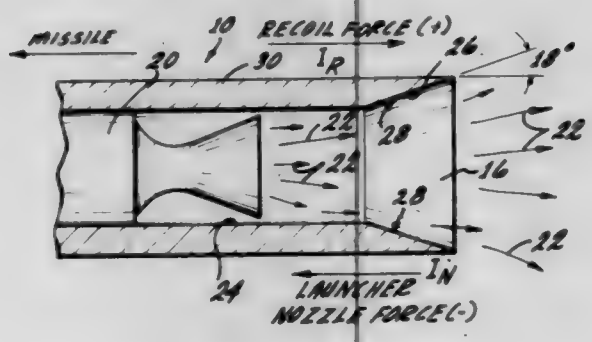
said certain octaves and being hidden behind said front panel in said first position and juxtaposed with said keys on said front panel in said second position, whereby a user can alternate between said first and second position to alternately identify notes with a range on said keyboard, or identify the keys of said keyboard.

4,404,887

RECOIL REDUCER

Edward T. Piesik, Pomona, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Continuation of Ser. No. 162,291, Jun. 23, 1980, abandoned.
This application Jun. 7, 1982, Ser. No. 385,520
Int. Cl.³ F41F 3/04
U.S. Cl. 89—1.816 **2 Claims**



1. In a missile launcher for filing self propelled missiles which generate an internal exhaust gas over pressure within said launcher upon firing, a recoil reducer comprising:

a single wall tubular housing having a forward end from which the missile exits upon firing and an after end from which missile exhaust gases are emitted,

the wall of the housing having any inner cylindrical surface and an outer cylindrical surface,

a truncated conical surface formed in the wall of the housing at its after end, and

wherein the conical surface extends from the after end of the outer wall surface to the inner wall surface at an angle between 10 and 20 degrees with respect to the outer wall surface, thus forming an outwardly flared surface against which the missile exhaust gases impinge when exiting the housing.

4,404,888

OBTURATOR SYSTEM

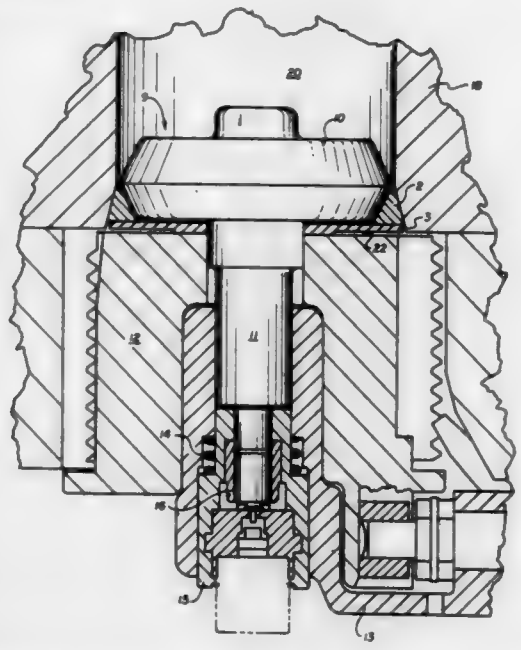
Joseph A. Gentiluomo, Schenectady, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 13, 1981, Ser. No. 310,944
Int. Cl.³ F41F 11/00
U.S. Cl. 89—26 **6 Claims**

1. An obturator system functionally mounted between the tube and breechblock of a cannon, comprising:

(a) an annular disc spring mounted against the front face of said breechblock.

(b) an annular seal ring having a base surface slidably engaged with said disc spring, an outer sealing surface oriented to align itself with said tube's gas check seat when said breechblock is in the closed position, and an inner sealing surface;



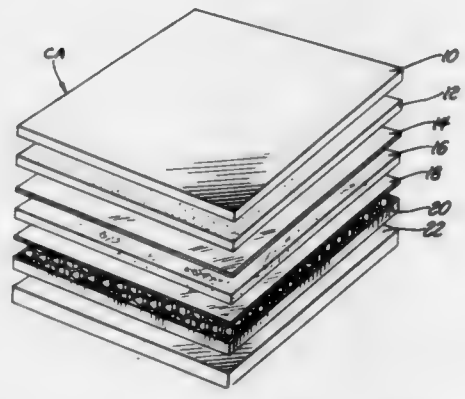
(c) and a spindle having integral mushroom head and shaft, with said shaft slidably mounted within said breechblock, and said mushroom head having a wedging surface oriented for making slidable contact with said inner sealing surface of said seal ring.

4,404,889

COMPOSITE FLOOR ARMOR FOR MILITARY TANKS AND THE LIKE

Anthony S. Miguel, Leucadia, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 28, 1981, Ser. No. 297,295
Int. Cl.³ F41H 5/04
U.S. Cl. 89—36 A **17 Claims**



15. A novel composite armor assembly adaptable for use in belly hulls and walls of various vehicles to protect its personnel and other vital compartments, said composite armor assembly comprising plural intermediate layers of various kinetic-energy-absorbing media of differing densities contained between innermost and outermost layers of armor steel plate; said intermediate layers including media layers of balsa wood, steel honeycomb, and an at least semiflexible reinforced ballistic-resistant fabric, and wherein said layer of balsa wood is planar in form and approximately the same thickness as said innermost steel plate, with said balsa wood layer being cut and disposed so that its grain is essentially perpendicular to major planes of

the assembled composite layers and is essentially parallel to the major force direction of a potential explosive shock wave load.

4,404,890

FIRE CONTROL SYSTEM

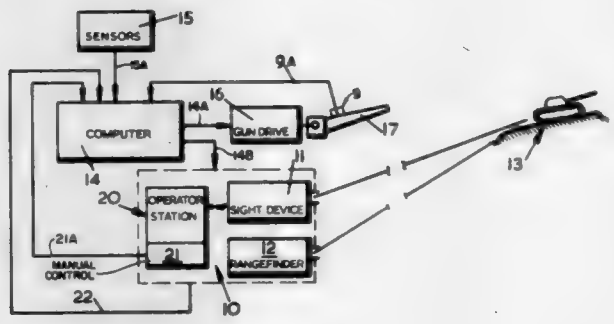
Frederick W. McAlpine, Bearsden, Scotland, assignor to Barr & Stroud Limited, Glasgow, Scotland

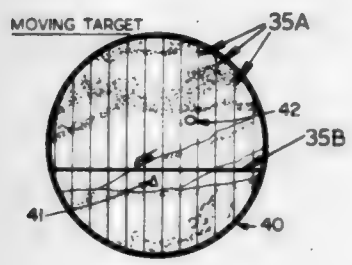
Continuation of Ser. No. 88,453, Oct. 22, 1978, abandoned. This application Feb. 26, 1982, Ser. No. 352,932

Claims priority, application United Kingdom, Nov. 2, 1978, 43015/78

Int. Cl.³ F41G *3/06*

U.S. Cl. 89—41 E **1 Claim**





1. A fire control system for a gun, comprising

a gun drive mechanism;

a sighting device having a ballistic aiming mark;

a ballistic computer arranged to compute fire control signals from parameter-dependent input signals;

sensor means for establishing individual electrical input signals from respective environmental and ballistic parameters;

operator-actuated means associated with said sighting device for establishing individual electrical input signals from respective target-dependent parameters; and

means for applying the input signals established by said sensor means and said operator-actuated means to said computer;

wherein said sighting device comprises a visual display on which a sighting mark and first and second images are presented in superimposition, said first image being from a field of view and said second image being from a dual-mode electronic pattern generator which when operable in one of said modes establishes said ballistic aiming mark; said electronic pattern generator when operable in the other of said modes establishing a predetermined pattern in the form of a set of parallel lines arranged to move as a body substantially continuously over said visual display in the direction of an orthogonal line;

and said operator-actuated means comprises manually-actuable means for altering the field of view of said sighting device; rate means operable by a single operator-actuated rate controller for setting the rate of movement of said set of lines on said visual display; orientation means operable by a single operator-actuated orientation controller for setting the orientation of the orthogonal line on said visual display; and a laser rangefinder device for determining the range of a target in said field of view with said sighting mark aligned thereon;

the arrangement being such that, in operation, a moving target has its direction of movement parameter determined by the orientation controller when said orthogonal line is aligned on the visual display with the target movement direction and its rate of movement parameter determined by the rate controller when said set of lines move over the visual display in synchronism with the target movement, the field of view being held stationary during determination of said movement parameters, the range parameter being subsequently determined by the rangefinder device after alteration of the field of view so that the sighting mark is aligned with the target, said range, rate and direction parameters being determined independently of each other during operation of the pattern generator in said other mode and establishing individual electrical input signals for said ballistic computer, said computer having means to cause said pattern generator to establish said ballistic aiming mark on the visual display for positioning by the fire control signals on receipt of the range parameter input signal, the gun drive mechanism being thereafter actuated to align the aiming mark on the target prior to firing of the gun.

4,404,891

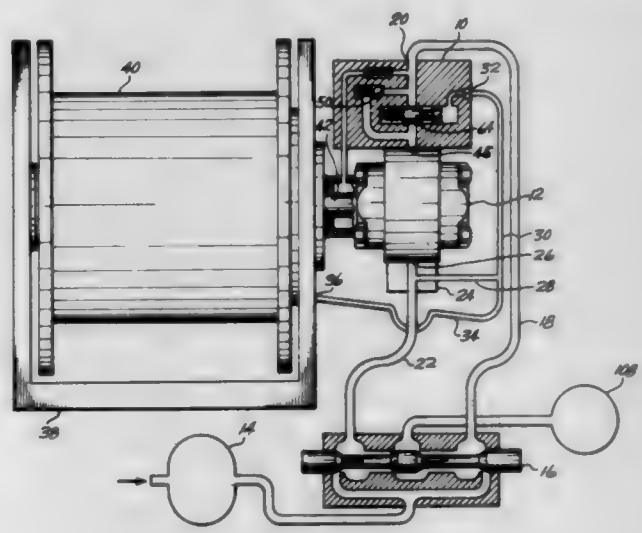
BRAKE VALVE FOR A HYDRAULICALLY POWERED WINCH

Edwin W. Turnquist, and Rick J. Bentley, both of Tulsa, Okla., assignors to Paccar Inc., Bellevue, Wash.

Filed Aug. 18, 1980, Ser. No. 179,186

Int. Cl.³ F15B *15/26*

U.S. Cl. 91—45 **9 Claims**



1. An improved brake valve for a winch or the like having a drum powered by a rotary hydraulic motor and having a drum brake, comprising:

said motor having a drum lowering inlet for receiving pressurized fluid for lowering a load when the drum brake is released, said drum brake having a brake release port for receiving pressurized fluid to release the drum brake;

a housing having a plurality of cavities and passageways therein;

a check valve permitting the flow of hydraulic fluid through the valve in one direction when the winch is being used to raise a load and means for biasing the check valve toward a closed position;

a fixed area orifice for metering the flow of fluid into a spool bore in the housing when the winch is being used to lower a load;

a spool disposed for reciprocating motion between open and closed positions within said bore and means for biasing said spool toward the closed position, said spool cooperating with said spool bore to provide an annular restrictive passageway therebetween and said spool further cooperating with an orifice cavity in said housing to provide a variable area orifice, said fixed area orifice creating a pressure drop upstream of said variable area orifice;

means coupling the drum lowering inlet, the brake release port and the spool of said brake valve for simultaneously receiving pressurized fluid for lowering the load, releasing the drum drake and for urging said spool into an open position;

a damper piston disposed for reciprocating motion within a damper piston bore in said spool and tending to retard the movement of said spool toward an open position, a flow-restricting, damping orifice communicating with said damper piston bore, said damper piston blocking passage of fluid movement out of said damper piston bore but allowing fluid to pass out of said damping orifice to damp movement of said spool;

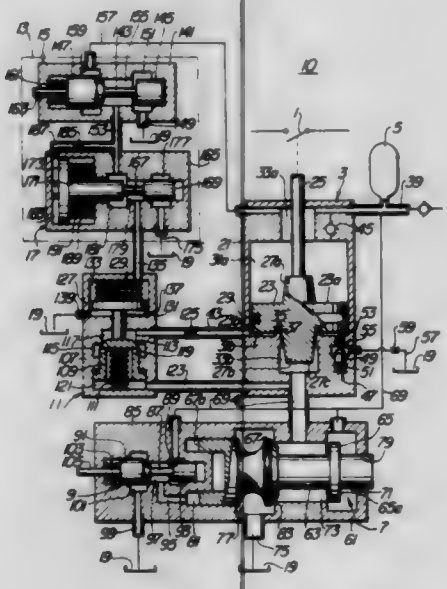
and radially expandible friction producing means disposed between said spool and said spool bore and engageable therewith for retarding the movement of said spool, said friction producing means tending to reduce the sensitivity of said valve to transient pressure changes.

4,404,892

HYDRAULIC OPERATING APPARATUS

Ichiro Nakamura; Mitsuaki Takenoshita, both of Katsuta; Ken Ichiryu, Mito; Yoshimichi Akasaka, and Haruo Watanabe, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 18, 1980, Ser. No. 217,844
Claims priority, application Japan, Dec. 27, 1979, 54-169253
Int. Cl.[3] F15B *15/22*
U.S. Cl. 91—396 9 Claims



1. A hydraulic operating apparatus comprising:

an actuating cylinder;

a piston movable in said actuating cylinder and provided on one side with a piston rod; and

a control valve for applying a fluid under high pressure to a pressure receiving surface of said piston on the side of said piston opposite to the side provided with said piston rod to move said poston in a direction in which the piston rod extends from the piston and for discharging the fluid existent on the side of the piston opposite said piston rod to move said piston in a direction opposite the direction in which the piston rod extends from the piston;

wherein the improvement comprises:

sealing means for dividing the pressure receiving surface of the piston on the opposite side of said piston rod into a first pressure receiving surface section and a second pressure receiving surface section when the piston is disposed at its terminal position on the side of said piston opposite said piston rod, said first pressure receiving surface section having an effective pressure receiving area smaller than that of a pressure receiving surface of the piston on the side of said piston rod, whereby the fluid under high pressure is only applied to said first pressure receiving surface section when said piston is held at its terminal position at the side of the piston opposite the piston rod, and the fluid under pressure is applied to said first and second pressure receiving surface sections when said piston is moved away from its terminal position opposite the piston rod; and

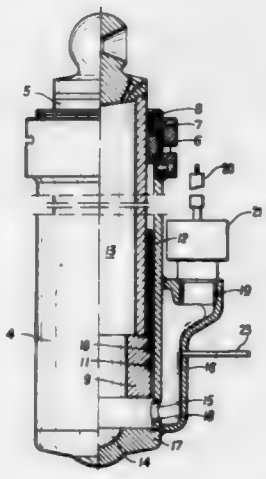
a pilot-operated check valve provided in a fluid passage communicating a first fluid chamber with a second fluid chamber when said piston is disposed in its terminal position opposite the piston rod, said first fluid chamber facing said first pressure receiving surface section and said second fluid chamber facing said second pressure receiving surface section, said pilot-operated check valve being oriented for executing an opening movement in a direction opposite to a direction of flow of the fluid under high pressure from said first fluid chamber to said second fluid chamber and being adapted to be forcedly opened temporarily by the action of a pilot fluid pressure for moving the piston away from its terminal position opposite the piston rod to thereby cause the fluid under high pressure acting on said first pressure receiving surface section to act also on said second pressure receiving surface section.

4,404,893

HYDRAULIC MINE PROP

Siegfried Sigott; Heinrich Suessenbeck; Alfred Zitz, all of Zeltweg, and Gottfried Siebenhofer, Vienna, all of Austria, assignors to Vereinigte Österreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft, Vienna, Austria

Continuation of Ser. No. 719,652, Sep. 1, 1976. This application Mar. 17, 1978, Ser. No. 887,774
Claims priority, application Austria, Sep. 9, 1975, 6947/75
Int. Cl.[3] F15B *15/22*
U.S. Cl. 91—405 1 Claim



1. A hydraulic mine prop comprising an inner tubular prop for supporting a mine roof guided within an outer tubular prop, said inner prop having an open end disposed within the outer prop and facing toward a closed end of the outer prop, said inner prop operating as a piston working in the outer prop as in a cylinder, the interior space of said inner prop communicating freely with a fluid pressure working chamber in said outer prop, said outer prop having an orifice at the circumference thereof at said closed end, said orifice being open on one side to the working chamber and being open on its other side to a pocket which is rigidly secured onto the outer surface of said outer prop, a threaded bore in the outer surface of the upper end of said pocket, an externally-mounted pressure-responsive roof fall valve secured in said threaded bore in the upper end of said pocket in a position generally parallel to said outer prop, said roof fall valve having an outlet passage which discharges pressure medium from said working chamber when the valve is in its opened position thereby enabling the inner prop to move into the outer prop under an increasing roof pressure, the cross-sectional area of said orifice equalling at least the passage area of said roof fall valve in its open position, and the end of the inner prop directed towards the working chamber being slidable when fully lowered over the orifice to

thereby throttle the latter, said end having at least one sealing ring provided thereon at such an axial location as not to obstruct said orifice when said inner prop is moved into said outer prop the maximum distance, and means for connecting said mine prop to a source of fluid pressure.

4,404,894

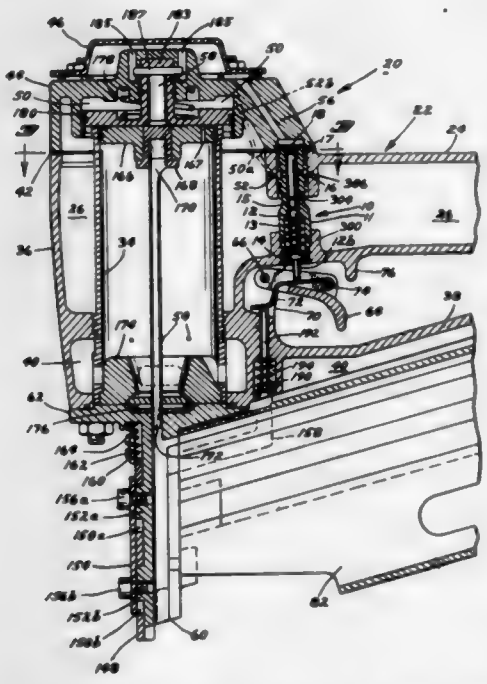
VALVE TRIGGER ASSEMBLY FOR PNEUMATIC NAILER

Helmut Oesterle, Tosters, Austria, assignor to Hilti Aktiengesellschaft, Liechtenstein

Filed Aug. 27, 1980, Ser. No. 181,951

Int. Cl.³ F15B *13/042*

U.S. Cl. 91—461 **8 Claims**



1. Valve trigger assembly for a pneumatic nailer including a pneumatic system having a cylinder assembly, a piston assembly mounted within said cylinder assembly and having a driver blade attached to said piston assembly in said cylinder assembly, a poppet assembly covering said cylinder assembly, and said valve trigger assembly connected between a supply line of air pressure and said pneumatic system in a housing of said nailer, said valve trigger assembly comprising:

a. valve bushing including a geometrically configured bushing, threads positioned on a lower end of said bushing for engagement in said nailer, a geometrically configured outer diameter including a plurality of small holes in a mid-portion of said bushing and a plurality of large holes in an upper portion of said bushing, a geometrically configured inner diameter including an enlarged inner diameter in said lower portion of said bushing and a groove in a substantially lower portion of said enlarged inner diameter;

b. valve piston including a longitudinal member, an upper mid-position of a slightly reduced diameter, a lower portion including an enlarged diameter having finite width which engages with said enlarged inner diameter of said bushing, and a valve stem extending downward of substantially reduced diameter from said enlarged diameter; hexagonal sided top on said valve bushing, a slot running between opposing intersections of said sides of said hexagonal top and a key of rectangular configuration engages in said housing and locks one of said hexagonal sides to said housing;

c. biasing and retaining means including a spring positioned over a lower portion of said valve piston above said enlarged diameter of said valve piston and within said enlarged inner diameter, and a snap ring retainer engaged into said groove, said spring biasing said enlarged diameter of said valve piston downwardly against said enlarged inner diameter of said valve bushing, and said retainer ring engaged into said groove of said valve bushing retaining said spring and valve piston therein; and,

d. ring means including a plurality of o-ring grooves and o-rings selectively positioned about said bushing on said upper and lower portions, and o-ring grooves and o-rings selectively positioned about said valve piston at least one o-ring groove and o-ring on a mid-portion of said valve piston and including an o-ring groove and an o-ring in an upper portion of said reduced diameter of said valve piston, said valve bushing o-ring grooves and o-rings include two o-ring grooves and o-rings on each side of said holes of said upper portion of said valve bushing, and an o-ring groove and o-ring on said lower portion adjacent said threads on said lower portion, said o-ring on said valve piston is positioned slightly below said plurality of holes, said o-ring moves a slight distance for blocking and isolating said small holes, said o-ring adjacent the top of said valve piston is positioned a lesser distance from the top of said valve bushing than said o-ring on said valve piston is positioned below said plurality of holes, said lower o-ring blocks and isolates said holes after said large holes communicate with atmosphere, whereby said valve trigger assembly provides for air passage of air supply line pressure from said plurality of small holes to said plurality of large holes between said two o-rings of said valve piston through a channel for charging a poppet assembly of said nailer when said valve piston is in a downwardly biased position in said valve bushing, and provides for passage of air pressure through channels above said poppet assembly to the atmosphere on actuation of said valve stem of said valve piston in reverse biasing said valve piston upward in said valve bushing where said lower o-ring about said valve piston isolates and blocks said plurality of small holes and said pressure above said poppet assembly flows through channels in said pneumatic tool, through said plurality of large holes, and up along said reduced diameter of said valve piston to the atmosphere thereby providing for firing of said nailer and subsequent dispensing of a nail.

4,404,895

FLUID PRESSURE UNIT WITH HYDROSTATIC TORQUE TRANSMISSION BY ROLLER PISTONS

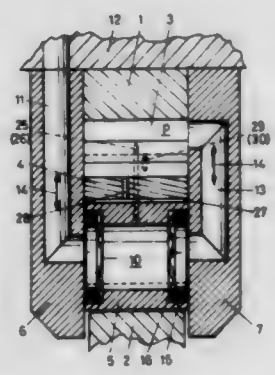
Ivan J. Cyphelly, Neuhaus, CH-8128 Hinteregg, Switzerland

Filed May 12, 1980, Ser. No. 150,222

Claims priority, application Switzerland, May 18, 1979, 4687/79

Int. Cl.³ F01B *1/06*

U.S. Cl. 91—488 **2 Claims**



1. In a pressure fluid pressure unit having a cylinder block which has radial bores of rectangular cross section in which pistons are disposed, each of which has a piston cap periodically exposed to pressure of a medium and a cylindrical roller supported on the piston cap, and having a cam surrounding the cylinder block producing at least one stroke and upon which the rollers are supported, each roller forming a variable gap with a first of two side walls, perpendicular to the direction of rotation, of a respective said radial bore, wherein each said piston cap forms a sealing point with the second of the two side

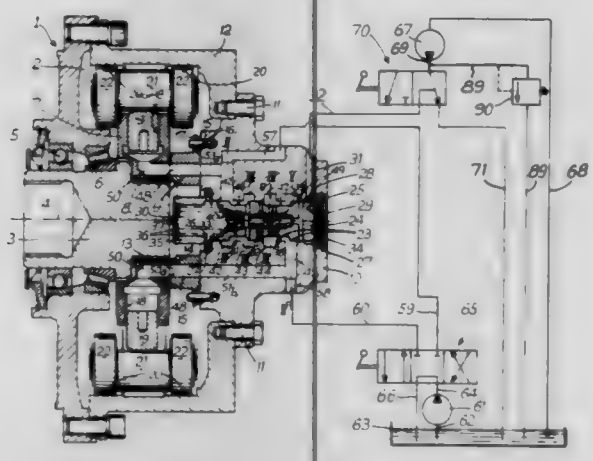
walls, wherein a respective intermediate pressure chamber exposed to the pressure of the medium is located between the variable gap and the piston cap along the first side wall, and wherein the rollers are hollow and their hollow spaces are exposed to the pressure of the medium via channels which terminate in the side walls, parallel to the direction of rotation, of the radial bores, the improvement wherein for each said roller (5) a first channel (11) terminating in the one side wall (6), parallel to the direction of rotation, of a respective said radial bore (3) is intended for communication with a pressure source of the medium and a second channel (13) terminating in the other side wall (7) parallel to the direction of rotation communicates with a pressure chamber (at p) of said respective radial bore (3) located on the side of the piston cap (4) remote from a respective said roller (5) in such a manner that a respective said hollow space (10) of said respective roller (5) is exposed to flow through it of the medium acting upon a corresponding said piston cap (4) and further comprising axially yielding sealing rings (15, 16) disposed between end faces of each said roller (5) and said two side walls (6, 7) of said respective radial bore (3) which are parallel to the direction of rotation.

4,404,896

PRESSURIZED FLUID ENGINE EQUIPPED WITH MEANS FOR SELECTING ITS SPEED OF ROTATION

Bernard R. Allart; Jean-Claude Lallier, both of Crepy-en-Valois, and Alain W. Noël, Verberie, all of France, assignors to Poclain Hydraulics, France

Filed Apr. 8, 1981, Ser. No. 252,152
Claims priority, application France, Apr. 30, 1980, 80 09854
Int. Cl.³ F01B *13/06*
U.S. Cl. 91—491 **7 Claims**



1. A pressurized fluid engine system comprising:
a rotary cylinder block mounted for rotation about an axis of rotation;
first and second groups of radial cylinders provided in said rotary cylinder block;
a piston mounted for movement in each of said cylinders to define a work chamber of variable volume;
a plurality of fluid passageways in said rotary cylinder block with each of said fluid passageways communicating on one end with the work chamber of one of said cylinders and having an open outer end in a transverse plane face of said cylinder block oriented perpendicularly to the axis of rotation of said cylinder block and with each open outer end being equidistantly spaced from each other and said axis of rotation;
a source of pressurized work fluid;
a sump;
a first fluid control valve;
a three-position fluid control valve;
first and second main supply conduits extending between said first fluid control valve and said second fluid control valve;
said three-position fluid control valve including selectively movable means movable to a first position for connecting said first main supply conduit to said source of pressurized work fluid and said second main supply conduit to said sump and to a second position for blocking the first and second main supply conduits and to a third position for connecting said first main supply conduit to said sump and said second main supply conduit to said source of pressurized work fluid; and wherein
said first fluid control valve includes a valve housing, a piston valve mounted for axial positioning in a housing bore in said valve housing in a first position for directing pressurized work fluid to the fluid passageways in said rotary cylinder block to both groups of said cylinders to achieve low speed operation of said engine in a first direction when said three-position fluid control valve is in its first position or in a reverse direction when said three-position fluid control valve is in its third position and a second position for directing pressurized work fluid to only a selected one of said groups of cylinders to achieve high speed operation of said engine when said three-position fluid control valve is in its first position or in a reverse direction when said three-position fluid control valve is in its third position while simultaneously providing substantially unpressurized work fluid to the cylinders of the non-selected group of cylinders.

4,404,897

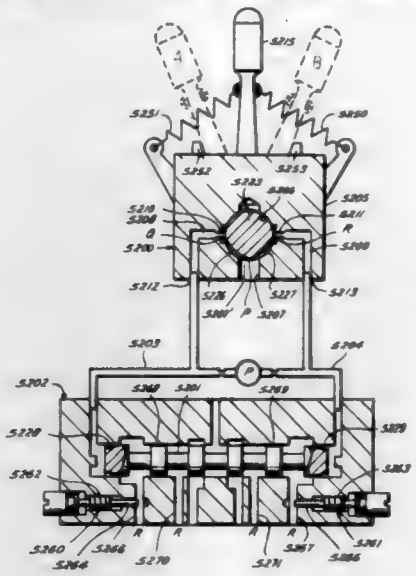
FLUIDIC REPEATER

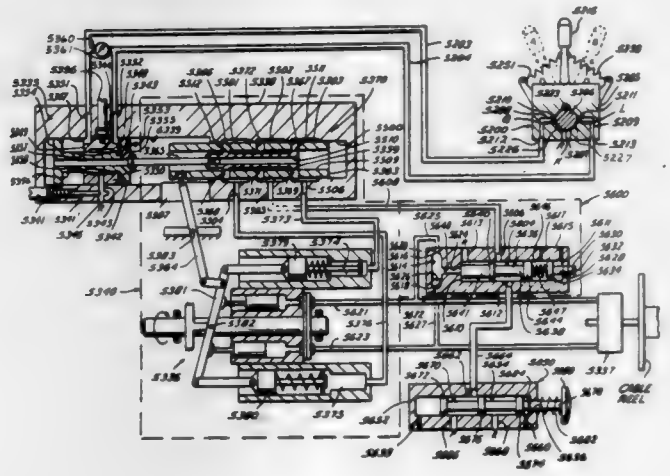
Willie B. Leonard, 5902 Royalton, Houston, Tex. 77036

Continuation of Ser. No. 772,560, Feb. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 622,760, Oct. 15, 1975, Pat. No. 4,094,229, which is a continuation-in-part of Ser. No. 521,036, Nov. 11, 1974, Pat. No. 4,046,059, which is a continuation-in-part of Ser. No. 489,829, Jul. 18, 1974, Pat. No. 3,988,966. This application Apr. 6, 1979, Ser. No. 27,668
Int. Cl.³ F01B *3/00;* F15B *9/10*
U.S. Cl. 91—506 **51 Claims**

1. A fluidic repeater system comprising:
a source of fluid under pressure;
a first and a second fluid restrictor;
a first fluid passage connected to said source through said first fluid restrictor;
a second fluid passage connected to said source through said second fluid restrictor;
a reservoir of fluid having a pressure less than that of the fluid of said source;
transmitter means for variably venting both said first and said second passages to said reservoir in such a manner that one of said fluid passages can be variably vented by said transmitter means while the other of said fluid passages is not vented by said transmitter means;
said transmitter means being positionable, while the second passage is not vented, in a first stationary position of low venting of the first passage and a second stationary position of increased venting of the first passage and a plurality of stationary positions between said first and second stationary positions in which said first passage is vented differing amounts;
said transmitter means being positionable, while the first passage is not vented, in a third stationary position of low venting of the second passage and a fourth stationary position of incresed venting of the second passage and a plurality of stationary positions between said third and fourth stationary positions in which said second passage is vented differing amounts; and
first responder means including a first piston in a cylinder for providing mechanical displacement of said first piston with respect to said cylinder in response to change in the differential of the pressure of the fluid in said first passage and the pressure of the fluid in said second fluid passage,

said transmitter means in each of said stationary positions venting the respective passage an amount which is invari-





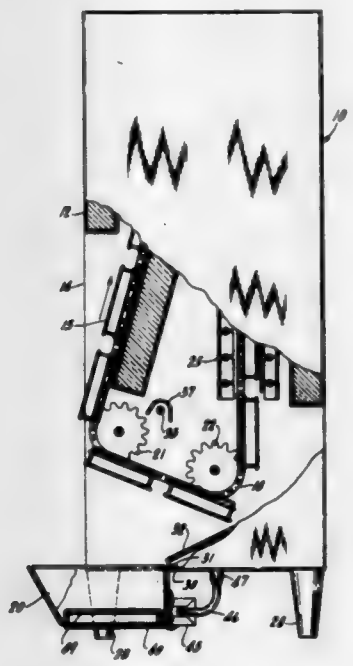
ant with respect to changes in the relative positions of the responder piston and cylinder.

4,404,898

TOASTER WITH PRODUCT WARMER

Roderick J. Chaudoir, Fox Point, Wis., assignor to Hatco Corporation, Milwaukee, Wis.

Filed Aug. 7, 1981, Ser. No. 291,014
Int. Cl.³ A47J *27/62*
U.S. Cl. 99—331 **10 Claims**



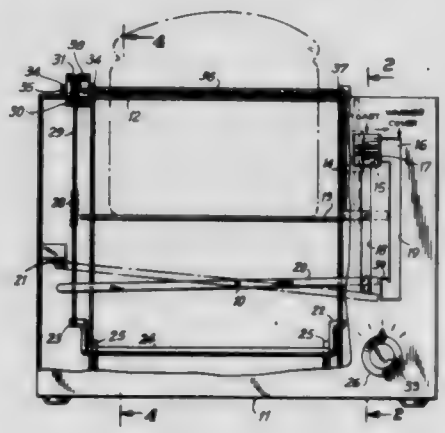
1. A food cooking and warming system comprising means for cooking a food product and a food product receiving tray associated therewith and adapted to receive food from said cooking means, means for warming the food received in said tray consisting of an electrical heating element means located above said tray and arranged for directing radiant heat onto said tray and a heating blanket means affixed to the exterior of said tray and adapted for warming said tray.

4,404,899

TOASTERS

Joseph Weiss, 134 W. 93rd St., New York, N.Y. 10025

Filed Apr. 11, 1980, Ser. No. 139,192
Int. Cl.³ A47J *37/08*
U.S. Cl. 99—332 **16 Claims**



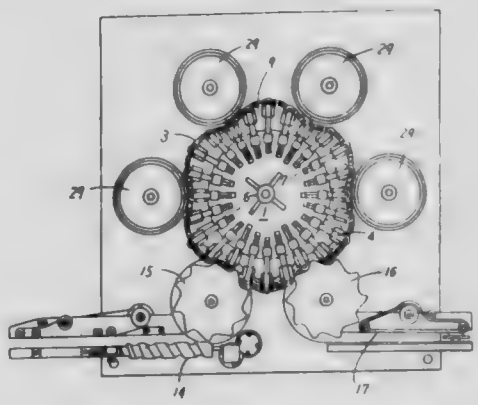
1. In a device, such as a toaster, having an open slotted receptacle, a control lever, a movable rack affected by said control lever, a movable member and a rotatable member, said members being coupled to each other and whereby said coupling permits some movement of either of said members without affecting the other of said members, and whereby when said movement of either of said members is greater than said coupling permits, the other member is affected, and when said control lever is activated in one direction, said control lever affects said movable rack, said movable member and said rotatable member to effect the covering of said receptacle and when said control lever is activated in the opposite direction, said receptacle is uncovered.

4,404,900

APPARATUS FOR MULTIPLE COLOR PRINTING OF ARTICLES WITH TAPERED SURFACES

Kazumi Ozawa, Koga, and Shinichiro No, Hooya, both of Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

Filed Feb. 27, 1981, Ser. No. 239,122
Claims priority, application Japan, Feb. 28, 1980, 55-24365
Int. Cl.³ B41F *17/20*
U.S. Cl. 101—40 **4 Claims**



1. A continuous multicolour printing apparatus for printing stepwise in multicolor the tapered surfaces of conical or truncated-conical articles which are successively fed and conveyed at a constant speed, the apparatus comprising:

(A) a conveyor unit adapted to convey articles to be printed at a constant speed which includes a rotary disc having a plurality of bearings mounted on the outer periphery thereof, a first rotating shaft for rotating the disc, a conveyor chain arranged to be moved along a predeterminned conveying locus or path, a second rotating shaft located within a first sprocket means driven by a prime mover and adapted to drive said conveying chain, a plurality of tilting support means each adapted to support an article to be printed, a plurality of third freely rotating support shafts each mounted in one of said bearings, said tilting support means each having an arm adapted to be slidably fitted into one of said third rotatable shafts, said tilting support means each being inclined by an angle corresponding to the degree of taper of the articles to be printed, a cradle for receiving said articles to be printed and having a fourth rotatable shaft, a power transmission shaft flexibly connected to said fourth rotatable shaft, said first rotating shaft of the rotary disc being arranged to rotate in synchronism with the rotation of said second rotating shaft and said first sprocket means;

(B) cradle rotating units each including a fixed plate having a similar configuration to said predetermined conveying locus, a fixed chain stretching around a major part of the outer periphery of said fixed plate, a second sprocket means arranged to rotate said cradle and meshing with said fixed chain so as to be rotated therealong thereby rotating said power transmission shaft of said second sprocket means rotating said power transmission shaft of said second sprocket means and said fourth rotatable shaft of said cradle connected to said power transmission shaft;

(C) a plurality of rotary printing means disposed along the conveying locus or path of the articles to be printed;

(D) a feeding unit for supplying articles to be printed to said conveyor unit; and

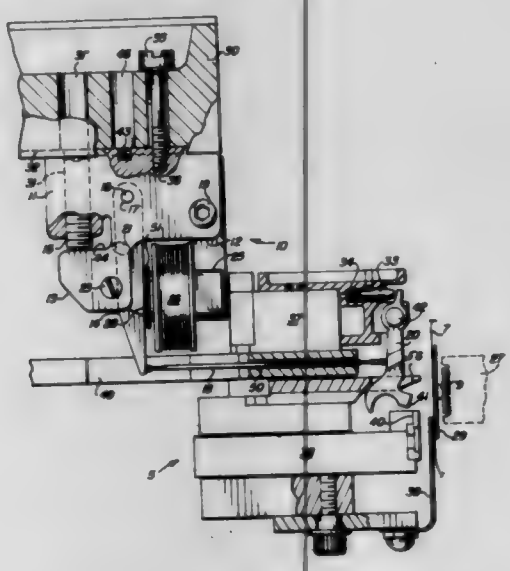
(E) a delivery unit for delivering printed articles from the appartus, and that all the rotating means of said units set forth in (A) to (E) above are arranged to rotate in synchronism with one another.

4,404,901

STRIKER ASSEMBLY FOR LINE PRINTERS

Richard L. Funkhouser, Melbourne, Fla., assignor to Documation Incorporated, Palm Bay, Fla.

Filed Feb. 26, 1979, Ser. No. 15,213
Int. Cl.³ B41J *9/42*
U.S. Cl. 101—93.02 **11 Claims**



1. In a high speed printer having a plurality of hammers utilized in a printing operation and a plurality of associated striker assemblies supporting striker armatures for driving said hammers against a moving character band during such printing operating, a striker assembly comprising in combination:

a striker base having a body portion and a head portion attached to said body portion by a narrow neck section;

a striker armature attached at a pivot point to said striker base;

a self-aligning cylindrical backstop disposed in said head portion and aligned with said striker armature for maintaining said armature in a desired non-operated position; and

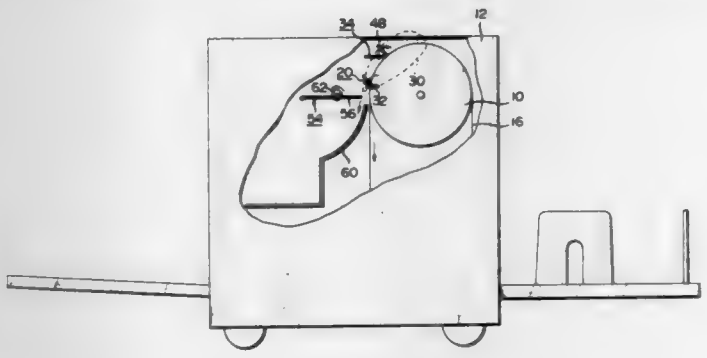
external adjustment means for adjusting said backstop to maintain said armature in such desired non-operated position during normal operation of said printer.

4,404,902

ROTARY DUPLICATING MACHINE WITH AUTOMATIC STENCIL PAPER DISCHARGE

Juichi Horii; Shuichi Nakajima, both of Tokyo, and Eiji Takahashi, Yokohama, all of Japan, assignors to Horii Toshado Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1982, Ser. No. 396,480
Claims priority, application Japan, Sep. 2, 1981, 56/136978
Int. Cl.³ B41L *13/08*; B41F *15/08*
U.S. Cl. 101—122 **5 Claims**



1. A rotary duplicating machine comprising a rotary screen formed into an endless belt, a bit of cut stencil paper including a head somewhat thicker than a main body thereof and clamped to the rotary screen, and an automatic stencil discharging device operative after the completion of the printing operation to release the clamped head of the bit of cut stencil paper, and raise the released head from the rotary screen, the automatic stencil discharge device including a pair of opposite stencil takeup pawls disposed outside of both edges of the rotary screen to be spaced from the rotary screen in a direction perpendicular to a portion thereof near to the pawls and having an operating positions where the pawls carry the raised head of the bit of cut stencil paper therebetween, then are rotated to wrap the bit of stencil paper about the head thereof carried between the takeup pawls, the pair of stencil pawls being retracted to an inoperative position after the wrapping of the bit of stencil paper to discharge the wrapped bit of stencil paper therefrom.

4,404,903

AUTOMATED SCREENER

John V. Cronin, 2215 Port Lerwick, Newport Beach, Calif. 92660

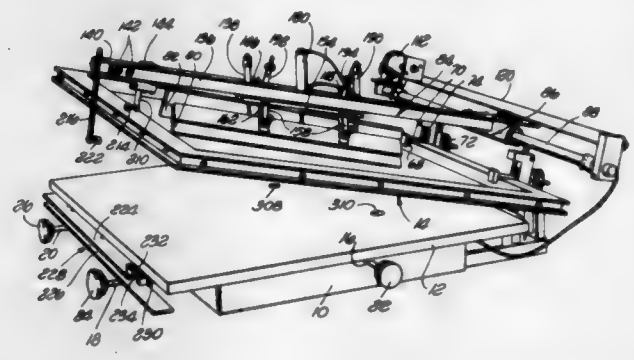
Continuation of Ser. No. 103,755, Dec. 14, 1979, abandoned. This application Feb. 5, 1982, Ser. No. 346,661
Int. Cl.³ B41L *13/18*
U.S. Cl. 101—123 **30 Claims**

1. In a screener in which a chase for framing a stencil screen and having front, rear and side edges, is pivotally secured at its rear edge so as to be pivotally movable relative to a table surface, from an open position permitting a workpiece to be placed on, or withdrawn from, the table surface, to a closed position in which the screen will be in contact with the workpiece during a print stroke whereby, in the closed position, printing fluid on a first end of the screen can be spread by a squeegee and applied to the workpiece through the screen

during a print stroke, whereby thereafter the chase can be moved from the closed position and the printing fluid can be swept back by a squeegee to the first end during a stroke, the improvement according to which operation of the screener is automated comprising:

means for moving the chase to and from the open and closed positions;

means for supporting a print squeegee and a flood squeegee over the screen whereby the bottom edge of the flood squeegee is a predetermined distance below the support-



ing means and whereby the print squeegee is movable below and above the bottom edge of the flood squeegee,

means for driving the print and flood squeegees toward alternate side edges sequentially in print and flood strokes, respectively;

means for raising the print squeegee above the bottom edge of the flood squeegee after the print stroke;

means for raising the chase to bring the screen and the bottom edge of the flood squeegee into contact; and

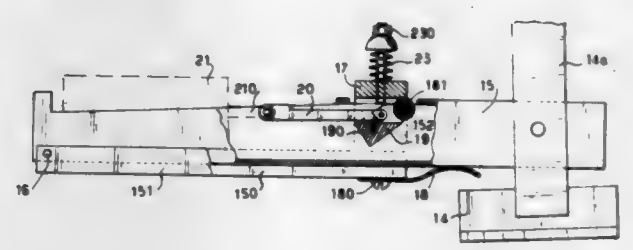
means for raising the support means with the chase after the flood stroke to enable removal of said work piece.

4,404,904

AUTOMATIC SILK-SCREEN PRINTING MACHINE INCLUDING AN ELECTROMAGNET DEVICE FOR MOVING THE DOCTOR BLADE DOWNWARDS

Jacques Monvoisin, Paris, France, assignor to Societe Tecal, France

Filed Dec. 21, 1981, Ser. No. 332,638
Int. Cl.³ B05C *17/06*; B41F *15/08*
U.S. Cl. 101—126 **2 Claims**



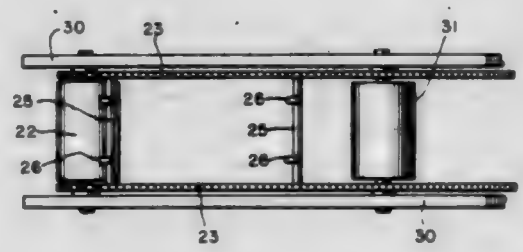
1. An automatic silk-screen printing machine including means for synchronized control of movements comprising a relative linear movement between the screen and the doctor blade, a downward movement of the doctor blade and a simultaneous upward movement of the member which holds the object to be printed, in which the mechanism for moving the doctor blade holder (14) downwards and upwards includes an electromagnet which controls the downward movement of the doctor blade, characterized in that said mechanism comprises a pivoting arm (15) the pivot point (16) of which is fixed relative to the means for linearly moving the doctor blade, means (18) for yieldingly returning said arm to a position corresponding to the up position of the doctor blade, a member (17) having an abutment surface above said arm, means (23) for applying a downward vertical pressure onto said abutment surface; a link (19) having a pivot pin (190) integral with said arm and at one end of which is mounted the axle of a wheel (191) bearing against said abutment surface, a rod (20) connected at one end thereof to said link so as to cause it to oscillate about its pivot pin, and said electromagnet (21) which has a movable member integral with the opposite end of said rod and means for causing energization of the electromagnet throughout the printing period.

4,404,905

VERSO PRINTING UNIT IN THE DELIVERY OF A SHEET-FED ROTARY PRINTING PRESS

Claus Simeth, Offenbach am Main; Oskar Liebert, Westheim, and Klaus Theilacker, Friedberg, all of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 374,149, May 3, 1982, abandoned. This application Jul. 2, 1982, Ser. No. 395,141
Claims priority, application Fed. Rep. of Germany, May 6, 1981, 3117856
Int. Cl.³ B41F *5/16*
U.S. Cl. 101—183 **7 Claims**



1. An apparatus for printing the back side of a sheet being fed from a sheet-fed printing press unit into a delivery unit comprising, in combination, a frame, guide rails in the frame, a pair of conveyor chains laterally spaced from one another on the guide rails to form an endless loop conveyor extending from the press unit to a delivery pile, the chains having cross members at regular intervals, grippers at the cross members for gripping the leading edge of a sheet, the guide rails being arranged to form a delivery run and return run spaced apart and generally parallel to one another, an impression cylinder journalled in the frame between the runs in a position in which it is overlapped by each of the runs but having an axial length which is shorter than the lateral spacing between the chains, a blanket cylinder journalled in the frame outside of the delivery run and in rolling engagement with the impression cylinder, a plate cylinder having inking and dampening systems and in running engagement with the blanket cylinder, the circumference of the cylinders being equal to the spacing between the successive cross members and grippers, the impression cylinder having a longitudinal groove sufficiently large to provide free passage for the cross members and associated grippers in both the delivery and return runs, and means for driving the cylinders in synchronism with the conveyor chains so that a sheet passing on the grippers is engaged between the impression and blanket cylinders for application of a printed impression to the sheet.

4,404,906

SYSTEM FOR CONTROLLING FAN-OUT IN A WEB OFFSET PRESS

Thomas F. Curran, 460 N. Main St., Wauconda, Ill. 60084

Filed May 18, 1981, Ser. No. 264,634
Int. Cl.³ B41M *1/14*
U.S. Cl. 101—211 **2 Claims**

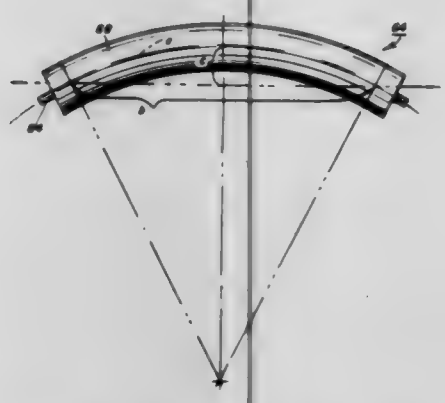
1. A method for controlling fan-out in a web offset press, which comprises the steps of:

providing first, second and third printing units, each of which printing units includes a plate cylinder and a blanket cylinder;

applying ink to the plate cylinders;

delivering a web to the blanket cylinders;

interposing, at a wrap angle of between 60° and 180°, a bowed roller, having a bow that is between 0.02 percent and 0.08 percent, transverse the web immediately upstream of the blanket cylinder of the first printing unit



only without any tensioning device intermediate the bowed roller and the blanket cylinder, prior to delivery of the web to the blanket cylinder of the first printing unit, for applying outward lateral forces to the web to expand the web laterally prior to printing thereon by the blanket cylinder of the first printing unit.

4,404,907

WEB THREADING APPARATUS FOR ROTARY PRINTING MACHINES

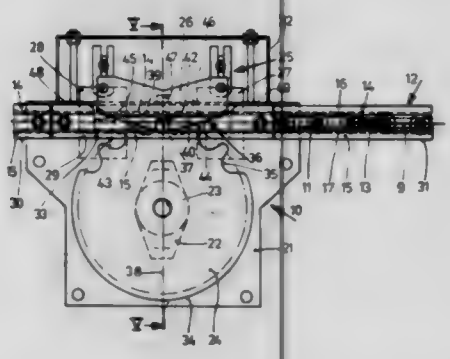
Ingo Köbler, Gessertshausen, and Johann Winterholler, Friedberg, both of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed May 5, 1981, Ser. No. 260,687

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018740

Int. Cl.³ B41F *13/02*

U.S. Cl. 101—228 **11 Claims**



1. In combination with a rotary printing machine a web threading apparatus for use in the rotary printing machine comprising

a track (12) having guide rails, including an inner guide rail (15), and an outer guide rail (14) parallel to the inner guide rail and spaced therefrom;

a roller chain (11) having a leading end, positioned in said track, sliding on at least one of said guide rails, guided by the guide rails, and having attachment means (13) for attachment thereto of a web (9) of material to be threaded into the printing machine,

and a sprocket wheel (24) adapted to receive the leading end portion of the chain and to then engage in the links between the rollers of the roller chain, said sprocket wheel extending through one of the guide rails into the space between both of the guide rails (14, 15) of said track in a section thereof,

and means to permit reliable interengagement of the sprocket wheel projecting in the space between the guide rails with the leading end portion of the chain, said means including a movable rail element (36) located in said section, and

spring means (46) retaining said movable rail element in a normal position forming a continuation of the outer guide rail of the track and capable of resilient deflection in a direction transverse to the direction of movement of the chain when the chain is being fed in the track toward the sprocket wheel for engagement with the leading end portion of the chain, and being returned from deflected position to permit reliable interengagement of the sprocket wheel with the roller chain regardless of relative position of the chain and sprocket wheel upon initial contact therebetween.

4,404,908

ARRANGEMENT FOR SUPPLYING INK TO THE PRINTING PLATE OF A PRINTING PRESS

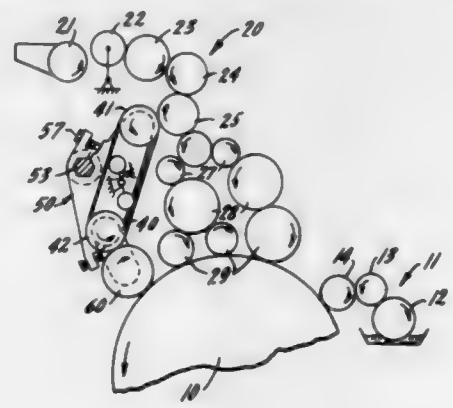
Claus Simeth, Offenbach am Main, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Jun. 21, 1982, Ser. No. 390,276

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1981, 3125434

Int. Cl.³ B41F *7/24, 31/00*

U.S. Cl. 101—349 **6 Claims**



1. In an inking system for a lithographic printing press, the combination comprising a main frame, a plate cylinder journalled in the main frame and having a plate mounted thereon, the plate having a non-ink accepting column position, a source of dampening fluid having means for applying dampening fluid the width of the plate, a source of ink, an ink form roller in rolling engagement with the plate, means including a series of rollers for conveying a film of ink from the source to the form roller for applying ink the width of the plate accompanied by a tendency toward emulsification of the ink on the form roller in the non-ink accepting column position, the conveying means also including an ink drum interposed early in the series of rollers, a relatively narrow endless ink belt presenting a flat ink-accepting surface in the non-ink accepting column position, a pair of correspondingly narrow guide rollers widely spaced from one another for supporting the belt in an elongated loop, a subframe for journalling the guide rollers, means for mounting the subframe on the main frame including provision for lateral adjustment of position, one end of the loop being in ink-transferring relationship with the printing plate at a position adjacent the downstream side of the form roller to remove from the plate ink, particularly any emulsified ink, which may be applied by the form roller to the non-ink accepting areas in the column position, the other end of the loop being in ink-transferring relationship to the ink drum for constantly transferring the removed ink to the drum thereby to prevent contamination of non-inked areas of the plate in the non-ink accepting column position.

4,404,909

INK SUPPLY ARRANGEMENT FOR AN OFFSET PRINTING MACHINE

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

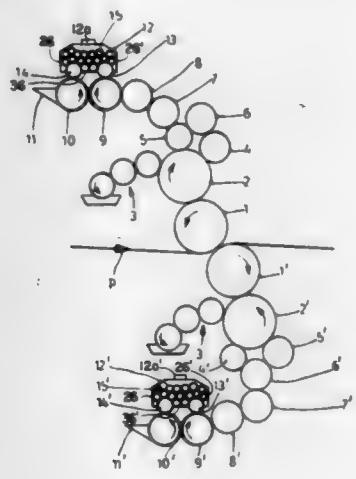
Continuation of Ser. No. 186,533, Sep. 12, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 362,623

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1979, 2942734

The portion of the term of this patent subsequent to Mar. 16, 1999, has been disclaimed.

Int. Cl.³ B41F *31/14, 31/26*

U.S. Cl. 101—350 18 Claims



1. In an offset printing machine having an inking system including

an ink trough (11);

an ink duct roller (10) receiving ink from the ink trough (11);

a transfer roller (9) receiving ink from the ink duct roller (10) and positioned in ink film transferring relation to the ink duct roller;

and a plurality of ink distribution rollers (4-8) receiving ink from the transfer roller (9), said ink transfer roller (9) and the ink distribution rollers (4-8) forming an ink roller train,

in which the ink duct roller (10) is operating at a circumferential speed which is low with respect to the circumferential speed of the ink transfer roller (9) and the ink distribution rollers (4-8);

apparatus preventing accumulation of ink or ink pools, and to remove water-ink emulsion from the ink train,

comprising

a cage-like holder (12) having confining end walls (26), side walls (16) and a closed bottom wall (36);

first and second ink transferring rollers (13, 14) having an ink accepting surface projecting from the cage-like holder;

and a plurality of loose roller elements (15) freely, centerless floatingly located in the cage-like holder for centerless self-positioned rolling movement between the confining walls and the bottom wall of the cage, some of the roller elements being in surface engagement with said ink transferring rollers (13, 14) and some of the roller elements being in surface engagement with each other to increase the surface area of ink being transported in the ink train,

the plurality of roller elements being of such number that the distance between the ink transferring rollers (13, 14) within the cage-like holder (12) is spanned by at least some of the roller elements, and which will assume positions between the ink transferring rollers, the plurality of roller elements (15) being rotated by surface frictional engagement with the ink transferring rollers (13, 14);

and wherein said cage-like holder (12) is positioned in said printing machine for engagement of one (14) of the ink transferring rollers with the ink duct roller (10) and for engagement of the other of the ink transferring rollers (13) with one (9) of the rollers of the roller train (4-8; 9) to place said ink transferring rollers (13, 14) and the roller elements (15) therein in an ink and water-ink transferring path between the ink duct roller (10) and the ink transfer roller (9) which is in parallel to the path of ink from the ink duct roller (10) to the said one roller (9) of the roller train (4-8; 9).

4,404,910

MULTICHANNEL CONNECTION AND METHOD FOR TRANSMITTING PYROTECHNIC ORDERS

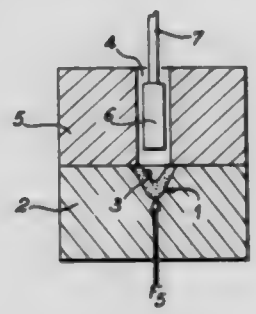
Jules H. P. Devienne, Sartrouville, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Nov. 26, 1980, Ser. No. 210,816

Claims priority, application France, Dec. 3, 1979, 79 29658

Int. Cl.³ C06C *5/06*

U.S. Cl. 102—200 6 Claims



1. A multichannel connection making it possible to transmit pyrotechnic orders to a plurality of pyrotechnic chains having multiple functions forming part of a pyrotechnic logic used on board aircraft, missiles and launchers, wherein it is constituted by a detonating cutting cord in the form of a dihedron incorporated into a support provided with the same number of openings as there are transmitting channels which, on the basis of one pyrotechnic signal performs a plurality of different terminal functions.

4,404,911

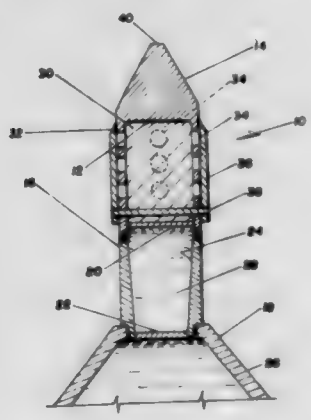
SELF-SPARGING INERTIA ARMED NOSE FUZE

Frank H. Bell, Logan, and John A. Peterson, Brigham City, both of Utah, assignors to Thiokol Corporation, Newtown, Pa.

Filed Nov. 5, 1981, Ser. No. 318,664

Int. Cl.³ F42C *15/38*

U.S. Cl. 102—221 7 Claims



1. An explosive device comprising a housing having a cavity formed therein and including a plurality of ventillation ports for the cavity,

a movable sleeve normally covering a sealing said ventillation ports, and

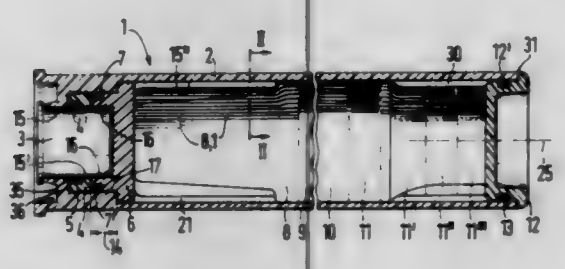
a desensitized liquid explosive contained within said cavity, the desensitizing constituent of said liquid explosive being a volatile solvent absorbed therein,

whereby upon movement of said sleeve and uncovering of said ventillation ports said volatile solvent is allowed to evaporate and thus render said solvent desensitized liquid explosive sensitive, thereby arming said explosive device.

4,404,912
CHAFF CARTRIDGE FOR AIRCRAFT DEFENSE

Paul Sindermann, Nuremberg, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 249,123
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1980, 3015719
Int. Cl.³ F42B 9/02
U.S. Cl. 102—505 10 Claims



1. A cartridge for ejecting chaff dipoles for use in an aircraft defense system to disrupt enemy radar, said cartridge comprising:

(a) a shell for receiving a plurality of chaff dipoles, said shell having a base portion and an open mouth portion;

(b) a plurality of chaff dipoles, said dipoles having at least first and second portions;

(c) a pressurized gas cartridge mounted in the base of the cartridge for expelling said dipoles through said open mouth portion;

(d) a first piston means mounted between said gas cartridge and said chaff dipoles, said first piston means having axially and forwardly extending spaced apart leg means that contact the inner walls of said cartridge and a portion of said dipoles, said piston and leg means retaining said first portion of chaff dipoles in their initial loaded position for a predetermined portion of their flight path after ejection;

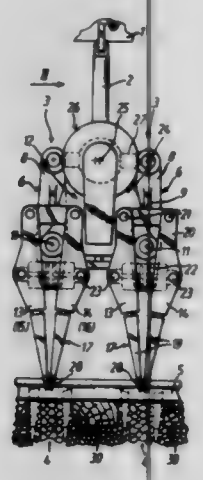
(e) a second piston means closing the mouth of said cartridge, said second piston having rearwardly and axially extending leg means for retaining said second portion of the dipoles after ejection:

whereby the pressurized gas ejects the first piston, the chaff dipoles and said second piston to form an elongated pattern of dispersion a predetermined distance from said aircraft.

4,404,913
TAMPING TOOL ASSEMBLY

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbauma-Schinen-Industriegesellschaft mbH, Vienna, Austria

Filed Oct. 7, 1981, Ser. No. 309,244
Claims priority, application Austria, Jan. 22, 1981, 260/81
Int. Cl.³ E01B 27/16
U.S. Cl. 104—12 8 Claims



1. A tamping tool assembly arranged on a mobile track tamping machine for simultaneously tamping ballast underneath three successive track ties resting on the ballast, the track having two rails fastened to ties having elongated edges extending transversely of the track and adjacent ones of the elongated tie edges defining cribs therebetween, the machine including a frame and the tamping tool assembly including

(a) a tamping tool carrier associated with each one of the track rails in vertical alignment therewith and mounted for vertical movement on the machine frame, each track rail defining a vertical plane extending in the direction of the track,

(b) two vibratory tamping tool supports mounted on the carrier for pivoting about an axis extending perpendicularly to the vertical plane, each support having an upper end and a lower end, and each support extending perpendicularly to, and on both sides of, the vertical plane to the left and to the right of the associated track rail,

(c) a common drive for vibrating the tamping tool supports, the upper support ends being linked to the common vibrating drive,

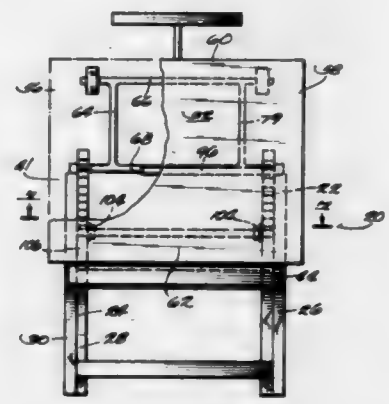
(d) two pairs of tamping tools mounted on the lower ends of each one of the supports and arranged mirror-symmetrically with respect to the vertical plane, the pairs of tamping tools mounted on one of the supports being spaced from the pairs of tamping tools mounted on the other support in the direction of the track and the spacing being such that the pairs of the tamping tools mounted on each support are in vertical alignment with a respective one of two successive ones of the cribs between the three successive track ties, the tamping tools of each pair being immersible in the respective crib upon vertical downward movement of the carrier, and

(e) drive means mounted on each one of the supports for reciprocating the tamping tools of each pair towards and away from the elongated tie edges defining the respective cribs.

4,404,914
DRAWING TABLE AND EASEL CONVERSION

Max F. Taylor, Rte. 1, Bradley Rd., Whitewater, Wis. 53190

Filed Aug. 20, 1981, Ser. No. 294,669
Int. Cl.³ A47F 5/12
U.S. Cl. 108—9 15 Claims



1. A folding table comprising:

A. at least two pairs of first and second pivotally attached crossed legs, joined by transverse brace members to form a folding base;

B. stop means defining the limit of unfolding of said base;

C. a removable tabletop having a top surface, a bottom surface, first and second opposed edges, and a central portion between said edges;

D. first rack means extending along the upper ends of said first legs;

E. a strut having one end pivotally attached to said tabletop bottom surface near said first edge and the other end received by said first rack means to support said first edge;

F. second rack means extending along the bottom surface of

said tabletop substantially from said second edge to said central portion; and

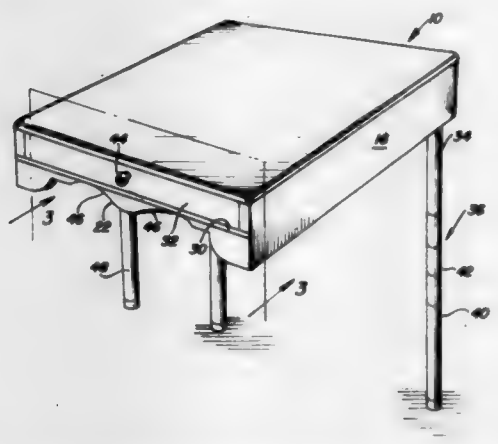
G. a transversely extending bar supported by the upper ends of said second legs and received by said second rack means to support said econd edge.

4,404,915

PORTABLE DESK-WORK BENCH

Lewis H. Simpson, 101 Hilborn Ave., #18, Vallejo, Calif. 94590

Filed Dec. 18, 1980, Ser. No. 217,792
Int. Cl.[3] A47B *37/00*
U.S. Cl. 108—43 2 Claims



1. A work surface defining horizontal assembly for use by seated persons, said assembly including a horizontal upper surface defining a work surface, said assembly including remote transverse front and rear marginal portions, depending front legs supported from said assembly adjacent the opposite end portions of said front transverse marginal portion, the rear marginal portion of said assembly including transversely spaced downwardly facing abutment surface portions for engagement with and support from the upwardly facing upper surfaces of the horizontal upper leg portions of a seated person, said assembly defining a downwardly opening cavity, said legs and assembly including coacting means for upward folding of said legs into retracted positions within said cavity, said assembly including a rear leg dependingly supported from the central portion of the rear marginal portion of said assembly, said rear leg being considerably shorter than said front legs and disposed in a front to rear extending vertical plane disposed between said abutment surface portions, the lower end of said rear leg being shaped to abut and be supported from the central forward marginal portion of a seat upon which the user of said assembly is seated with said rear leg being downwardly received between the upper leg portions of the user, said rear leg and assembly including coacting means for upward folding of said rear leg into retracted position within said cavity, said rear leg and said front legs being foldable upwardly into front to rear extending positions within said cavity, said abutment surfaces being arcuate, extending longitudinally of said rear marginal portion and opening downwardly, said front legs, when folded, being disposed outwardly of remote sides of vertical front to rear extending planes containing the remote end portions of said arcuate abutment surface portions and said rear leg being disposed in a front to rear extending vertical plane spaced between the adjacent ends of said arcuate abutment surfaces.

4,404,916

MULTIPLE ENTRY CLOSURE FOR A SAFE OR VAULT

Bert M. Ingram, Santa Paula, Calif., assignor to Ingram Security Inc., Santa Paula, Calif.

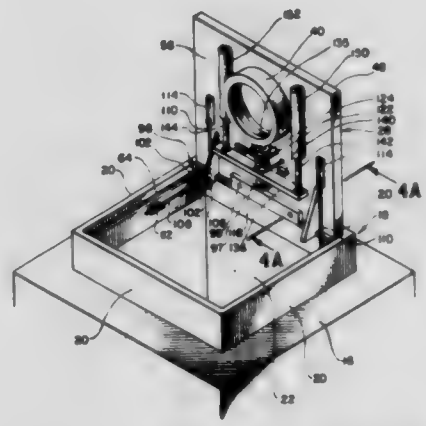
Filed Dec. 22, 1980, Ser. No. 218,538
Int. Cl.[3] E06B *7/00*; E05B *13/00*
U.S. Cl. 109—67 13 Claims

1. A multiple entry closure for a safe wherein at least one surface of said safe is accessible and exposable comprising:

a collar secured to said one exposable surface extending outwardly therefrom and said collar defining an opening therethrough communicating with the interior of said safe and having an outer edge surface;

a door having inner and outer generally co-planar surfaces and the periphery of said door corresponding with said opening within said collar and said door hingedly mounted therein, so that when said door is opened full access may be had to the interior of said safe;

said door including a reduced size opening extending therethrough of lesser peripheral area than said door;



a locking means cooperating with said door and said collar whereby said door may be locked to said collar and in turn close a majority access area of said safe;

said locking means being accessible only through said reduced size opening when said door is in a closed position;

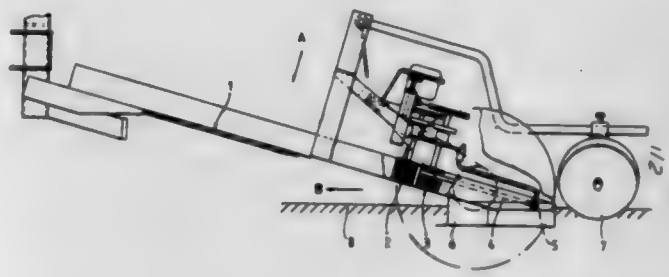
a lift-out removably mountable door within said reduced size opening including a locking means including bolt members adapted to engage a portion of said door and retain said lift-out door in said reduced size opening and in turn fully close said safe and when said door is removed allowing limited access to the interior of said safe.

4,404,917

METHOD AND DEVICE FOR PLANTING PLANTS

Reijo S. Häkli, Iso-Vimma, Finland, assignor to Lännen Tehtaat Oy, Iso-Vimma, Finland

PCT No. PCT/FI80/00003, § 371 Date Jun. 15, 1981, § 102(e) Date Jun. 15, 1981, PCT Pub. No. WO81/01351, PCT Pub. Date May 28, 1981
PCT Filed Oct. 28, 1980, Ser. No. 276,377
Claims priority, application Finland, Nov. 13, 1979, 793547
Int. Cl.[3] A01C *11/02*
U.S. Cl. 111—3 11 Claims



1. A method for planting pot plants with a planting machine travelling on the ground, comprising the steps of driving the machine along the ground, forming a planting furrow, feeding one of the plant pots into a rotary planting means of the planting machine, grasping the plant pot in a generally vertical position with a pair of opposed belts of the planting means having vertical faces, moving the plant pot down towards the planting furrow with the belts, throwing the plant pot from the planting means into the planting furrow with the plant stem above the ground level, depositing the plant pot directly into the furrow from the planting means, closing the furrow when the plant pot has attained a substantially vertical position in the

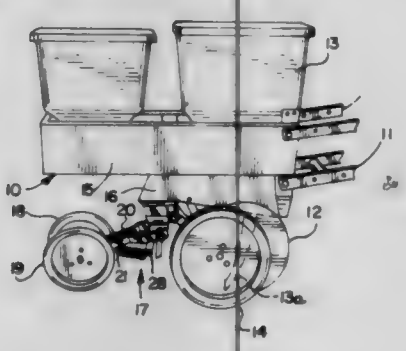
planting furrow as the plant pot abuts soil being pressed into the furrow during closing of the furrow, disengaging the plant pot from the planting means when the component of the speed of the planting means and the plant in relation to the planting machine, which component is opposite to the travelling direction of the planting machine, is at least 1.5 times greater than the speed of the planting machine in relation to the ground surface.

4,404,918

CLOSING WHEEL MOUNTING FOR A PLANTER

Bernard F. Whalen, Colchester, and Clifford J. Roberts, Roseville, both of Ill., assignors to Yetter Manufacturing Co., Colchester, Ill.

Filed Sep. 14, 1981, Ser. No. 301,730
Int. Cl.³ A01C *5/06*
U.S. Cl. 111—85 **1 Claim**



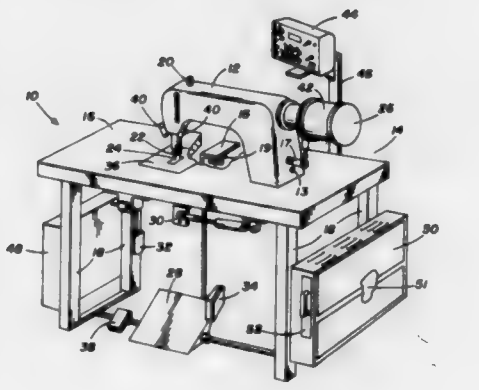
1. An agricultural seed planter including
(a) a main frame attachable to a mobile power source;
(b) furrow forming means depending from said main frame;
(c) seed dispensing means including a seed delivery tube associated with said planter adapted to deposit seeds within the furrow;
(d) furrow closing means disposed rearwardly of said seed delivery tube including a pair of suspension arms, each arm pivotally connected to said main frame at one end, a pair of closing wheels, each wheel carried by and journalled on the other end of the respective suspension arms, biasing means exerting pressure on said arms to cause downward movement thereof, each wheel disposable on an opposite side of said furrow whereby each arm and associated closing wheel is movable up and down upon the pivotal movement of the respective suspension arms;
(e) each of said closing wheels disposed at a laterally inclined angle to the ground;
(f) means associated with at least one of said closing wheels and suspension arms to selectively vary the angle between sid closing wheel and ground;
(g) said means including a bushing in said other end of the suspension arm, said bushing having an obliquely disposed shaft therein mounting said wheel, and clamping means for fixing said bushing in the suspension arm, said means to vary the angle between said closing wheels and ground simultaneously resulting in an adjustment of the distance between said closing wheels at the point where said closing wheels engage the ground upon rotating said bushing;
(h) an equalizer connection between said suspension arms, said biasing means being anchored at one end to said equalizer connection, said equalizer having portions associated with each of said suspension arms, one said portion of the equalizer extending through each suspension arm and another portion of the equalizer overlying each suspension arm, said equalizer and biasing means being adapted to urge each said arm and associated wheel to a ground engaging position, and said biasing means and equalizer causing said closing wheels to apply substantially equal pressure at each side of the furrow irrespective of the relative levels of such sides.

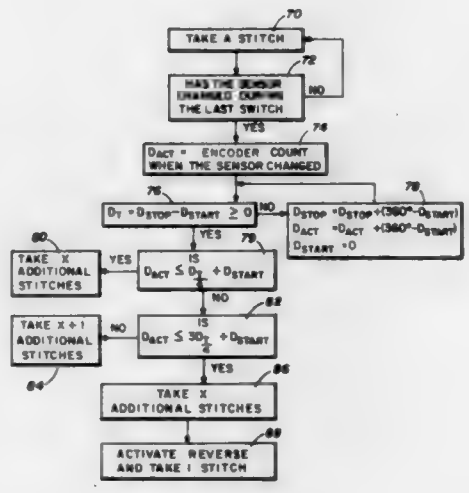
4,404,919

CONTROL SYSTEM FOR PROVIDING STITCH LENGTH CONTROL OF A SEWING MACHINE

Charles R. Martell; Elmer N. Leslie; Don D. Isett, all of Dallas, and Stephen S. Treadwell, Richardson, all of Tex., assignors to Microdynamics, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 210,197, Nov. 26, 1980, which is a continuation-in-part of Ser. No. 168,525, Jul. 14, 1980, Pat. No. 4,359,953. This application Jun. 29, 1981, Ser. No. 278,674
Int. Cl.³ D05B *19/00*
U.S. Cl. 112—121.11 **29 Claims**





7. A seam length control apparatus for use on a machine having a reciprocable stitching member comprising:
means for detecting the edge of the material in advance of the seam being stitched,
means for detecting the amount of completion of the stitch being formed at the time of detection of the edge of the material, and
means responsive to said detecting means for varying the length of only the last stitch formed in the seam by a variable amount.

4,404,920

SEWING AID DEVICE

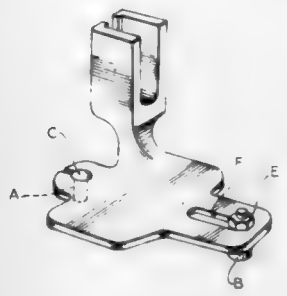
Jakob Pfuhl, Punchbowl, Australia, assignor to Katarina Pfuhl; Ingrid Pfuhl and Kate Models Pty., Limited, all of Punchbowl, Australia

Division of Ser. No. 498,948, Aug. 20, 1974, Pat. No. 4,240,367. This application Oct. 17, 1979, Ser. No. 85,484
Claims priority, application Australia, Aug. 27, 1973, PB.4645
Int. Cl.³ D05B *21/00*
U.S. Cl. 112—121.15 **7 Claims**

1. A sewing aid device for the manufacture of closed or substantially closed clothing items, such as pockets or collars, comprising:
frame means adapted to hold together in fixed relative position items to be stitched together;
guide means adapted to engage with cooperating guide means on a sewing machine in such manner as to permit

automatic guiding of the sewing mechanism of the sewing machine along said guide means;

an enclosed base member surrounding a central aperture and provided with means for retaining portions of material to be stitched together in fixed relative position; and



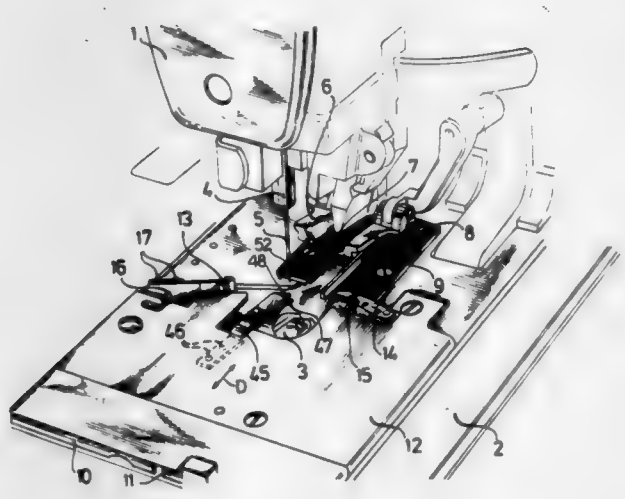
a guide member adapted to be fitted closely over said base member and to guide the sewing mechanism of a sewing machine whereby the portions of material may be stitched together.

4,404,921

BUTTONHOLE MACHINE WITH AUTOMATIC THREAD CLIPPING

Eberhard Kastrup, and Heinz-Rolf Oberschelp, both of Bielefeld, Fed. Rep. of Germany, assignors to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Jun. 29, 1982, Ser. No. 393,472
Int. Cl.³ D05B *65/02*
U.S. Cl. 112—291 **10 Claims**



1. In a buttonhole machine having:

a vertically reciprocal needle;

a horizontally displaceable material support plate;

a rotary stitch plate below said needle;

means for feeding a lower thread up through said stitch plate;

clamps for holding material on said material plate at said stitch plate; and

means for rotating said stitch plate in one rotational sense, simultaneously displacing said material plate, and reciprocating said needle to form a buttonhole in said fabric and for rotating it in an opposite return rotational sense after formation of the buttonhole; the improvement comprising:

means including a feed arm carried by and jointly rotatable with said stitch plate, engaging said lower thread, and pivotal for freeing a length of said lower thread and feeding same to said stitch plate;

a pivotal blade carried by said material plate;

a fixed blade on said material plate and engageable with said pivotal blade; and

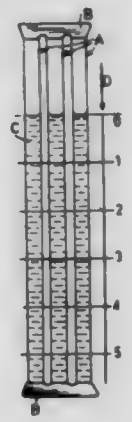
control cam means at least partially on said stitch plate for pivoting said blade during return rotation of said stitch plate to sever said lower thread and for synchronously pivoting said feed arm to make slack in said lower thread.

4,404,922

AGEING INDICATOR

Bruno P. Morane, Neuilly, and Gilbert L. Legras, Chatillon, both of France, assignors to L'Oreal, Paris, France

Filed Jul. 28, 1980, Ser. No. 173,237
Claims priority, application France, Aug. 3, 1979, 79 19954
Int. Cl.³ G01D *21/00*; G04F *1/04*
U.S. Cl. 116—206 **17 Claims**



1. An ageing indicator intended to be physically associated by affixation or placement or placement with merchandise whose ageing-phenomenon-characteristic and age is and are disired to be evaluated, wherein:

the indicator consists of at least one closed envelope which defies a single compartment; in which

said at least one closed envelope in said indicator is constituted of a plastic material of construction that is selected from the Group consisting of: polyethylene; polypropylene; polyvinyl chloride; polymers of acrylonitrile; polymers of ethylene terephthalate; polystyrene; acetate polymers; and elastomers; with

said at least one closed envelope being in the form of at least one tube means or sachet of a plastic material of construction as defined in the foregoing; and also wherein

it is intended to give only one indication of the ageing of the merchandise to be monitored, this indication consisting of information printed on the indicator; and further with

said tube means or sachet being of a closed construction which has two large faces thereon, one of which large faces carries information whilst the other large face through which said information is read is transparent; and

at least one opaque fluid product being contained in said at least one envelope, said opaque fluid product being selected from the Group consisting of: water; colored solvents; and opaque emulsions which become transparent on the elimination of a volatile constituent;

said opaque fluid product being further capable of migrating to the outside of said at least one envelope in which it is contained and therethrough so as to traverse at least part of the said at least one envelope;

said opaque fluid product being still further capable of generating the said migrating fluid; and

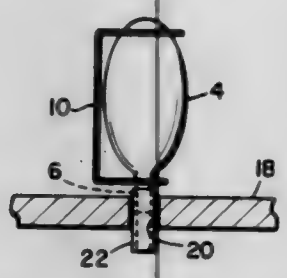
the migration of fluid occurring as a function of time involved during the migration and the ambient temperature or temperatures affecting said merchandise; whereby

the ageing of the associated merchandise can be evaluated by mere sighting of the relevant said information printed and thereupon capable of appearing on the said indicator faces.

4,404,923
HEAT ALARM INDICATOR

William V. Smith, Memphis, Tenn., assignor to Lectrolarm Custom Systems, Inc., Memphis, Tenn.

Filed Jul. 14, 1981, Ser. No. 283,278
Int. Cl.[3] G08B *5/40, 17/00;* A62C *37/14*
U.S. Cl. 116—214 9 Claims

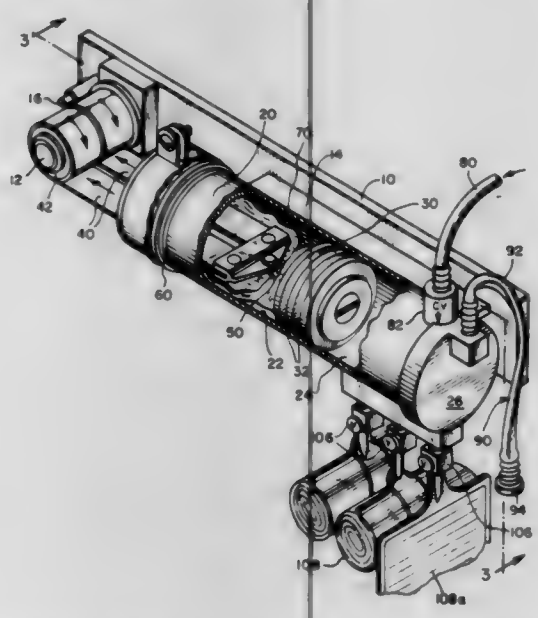


1. A heat alarm indicator comprising: a container having at one end thereof an elongated breakable neck portion; an odoriferous fluid within the container that can escape from the container upon breakage of said neck portion of said container, said fluid when in contact with the atmosphere creating a strong odor; and a heat reactive member that bends upon being subjected to heat above a preselected level, said heat reactive member having first and second portions, with said first portion forming a loop around said neck portion of said container so that when subjected to heat above said preselected level, said heat reactive member bends and breaks said neck portion for enabling said fluid to escape, said second portion of said heat reactive member being formed around another portion of said container.

4,404,924
BODY FLUID SUCTION DEVICE INDICATORS

Edward M. Goldberg, Glencoe, and Seymour Bazell, Skokie, both of Ill., assignors to UreSil Company, Morton Grove, Ill.

Filed Sep. 5, 1980, Ser. No. 184,235
Int. Cl.[3] A61M *1/00;* G01L *19/12*
U.S. Cl. 116—270 7 Claims

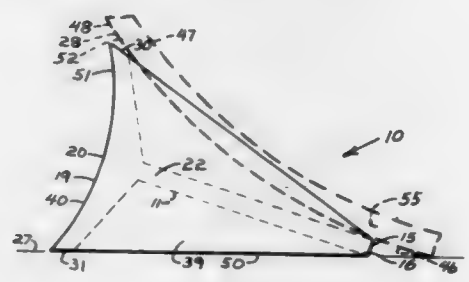


1. A suction device for receiving body fluids comprising:
container means including a constant force moveable wall means for defining a suction chamber adapted to maintain a subatmospheric pressure and to receive body fluids:
a vacuum indicator comprising a flexible tube which is closed at one end by a preselected mass, said tube movable between a rest state, in which the interior volume of the tube has a first value, and a collapsed state, in which the interior volume of the tube is substantially less than the first value;
means for mounting the tube to the container means such that the interior volume of the tube is in fluid communication with the suction chamber;
the flexibility of said tube being chosen such that the tube collapses to the collapsed state when a subatmospheric pressure less than a first predetermined value is induced in the suction chamber, and the tube returns to the rest state when the pressure in the container means rises to a value greater than a second predetermined value, greater than the first predetermined value, such that the tube provides a visual indication of the pressure in the suction chamber.

4,404,925
AIR HOSE GUIDE

Kevin R. Louwsma, 1019 Sarita St., Sanford, Fla. 32771

Filed Oct. 27, 1980, Ser. No. 200,903
Int. Cl.[3] B05C *11/00*
U.S. Cl. 118—506 6 Claims



1. A paint sprayer air hose guide for use between the tire tread of a wheel of a vehicle being spray painted and the supporting surface therefor, said air hose guide comprising a flat planar web portion having a transversely extending rear side edge that is adapted and arranged to be wedged between said supporting surface and said tire tread, a transversely extending front side edge that is generally forwardly offset from said rear side edge, and a pair of oppositely facing surfaces that are generally located between the rear and front side edges of the web portion, a first flange portion which extends along said front side edge and projects laterally of one of said oppositely facing surfaces, said first flange portion being adapted and arranged to rest upon said supporting surface and support the web portion in a forwardly inclining position when said one of said oppositely facing surfaces confronts said supporting surface, a second flange portion which extends along said front side edge and projects laterally of the other of said oppositely facing surfaces, said second flange portion being adapted and arranged to rest upon said supporting surface and support the web portion in a forwardly inclining position when said other of said oppositely facing surfaces confronts said supporting surface, said first and second flange portions being adapted and arranged to provide a transversely extending air hose contact surface along said front side edge for guiding movements of an air hose thereat, said first flange portin having an edge that is adapted and arranged to contact said supporting surface when said first flange portion is resting thereon, said second flange portion having an edge that is adapted and arranged to contact said supporting surface when said second flange portion is resting thereon, and the edges of the first and second flange portions being located in respective planes which intersect the plane of the web portion along a line that is located in back of the rear side edge thereof.

4,404,926

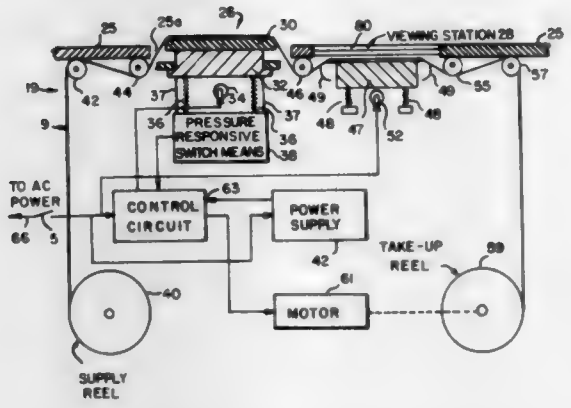
APPARATUS FOR RECORDING SURFACE TOPOLOGY

Mark H. McCormick-Goodhart, Grosse Pointe Woods; Vincent D. Cannella, Detroit, and Robert Minko, East Detroit, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Division of Ser. No. 937,432, Aug. 21, 1978, which is a continuation-in-part of Ser. No. 890,601, Apr. 14, 1977. This application Oct. 8, 1981, Ser. No. 309,577

Int. Cl.[3] B05B *5/00*; B41K *1/00*

U.S. Cl. 118—641 15 Claims



1. A recording system for recording the surface topology of a given surface, said recording system comprising a platform transparent to electromagnetic energy; a recording film extending over one side of said platform which recording film comprises an electromagnetic imaging energy transparent substrate upon only one side of which is deposited a thin, solid, high optical density film of dispersion imaging material which, upon application of electromagnetic energy to a given point thereof for a given momentary period and in an amount which produces undissipated heat in the imaging material of a certain critical value changes at such point to a fluid state in which the surface tension of the imaging material acts to cause the substantially opaque film to disperse and change to a discontinuous film comprising light-passing openings and deformed material which are frozen in place after termination of electromagnetic energy, the substrate side of the recording film facing said platform; a source of said electromagnetic energy on the other side of said platform for directing said energy through said transparent platform and substrate of said recording film upon said body of imaging material; and means for selectively causing said source of energy of said amount to be directed said given momentary period through said platform into said recording film, the application of a surface to be recorded upon the outer imaging material containing side of said recording film during the entire period said energy is applied thereto having a heat-sinking effect on said recording film, where the projecting portions of said surface will dissipate the heat generated at the points involved in said body of imaging material by said amount of electromagnetic energy, to reduce the undissipated heat energy therein below said critical value which will cause the imaging material to disperse.

4,404,927

LEASH WITH REMOTE LATCH RELEASE

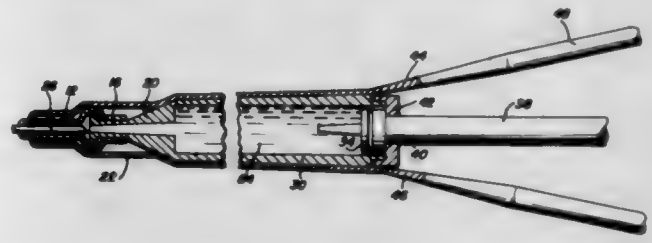
Wilson A. Woutat, 1025 Perry Dr., NW., Canton, Ohio 44708

Filed Nov. 18, 1981, Ser. No. 322,653

Int. Cl.[3] A01K *27/00*

U.S. Cl. 119—114 6 Claims

1. An elongated tether member including a main elongated flexible tubular body, an anchor sleeve carried by each end of said body, one of said anchor sleeves supporting anchor structure therefrom including at least one movable component thereof shiftable between operative anchoring and inoperative release positions, an operator shiftably supported from the other sleeve for movement between active and inactive positions, and motion transmitting means disposed within said tubular body establishing at least a one-way motion transmitting connection between said operator and movable component functional to shift the latter from the operative position to the inoperative position thereof responsive to movement of said operator from said inactive position to the active position thereof, said tether member including an outer flexible tubular housing disposed about said tubular member and including opposite ends anchored relative to said sleeves, said tubular body being longitudinally stretchable, said outer flexible tubular housing comprising a diamond braided fabric tubular member, said fabric tubular member being longitudinally stretchable a limited amount and being constructed in a manner



whereby it is reduced in both inside and outside diameter as it is longitudinally stretched, said tubular body establishing a limit of reduction of the inside diameter of said tubular member and thus a limit of longitudinal stretching of said tubular housing, said tubular body being constructed of yieldable and deformable material whereby said tubular body defines a yieldable limit of longitudinal stretching of said tubing housing, said motion transmitting means including piston means in each of said sleeves and fluid column means disposed in said tubular body acting upon said piston means.

4,404,928

METHOD OF EVAPORATING A PURE LIQUID

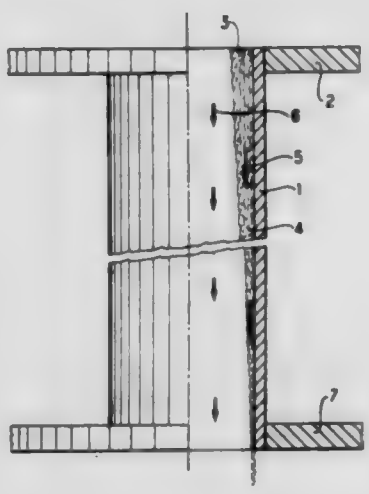
Francois Perot, Paris; Jacqueline Pouderoux, Meudon la Foret, and Jacques Diez, Massy, all of France, assignors to Stein Industrie, Velizy-Villacoublay, France

Filed Mar. 9, 1982, Ser. No. 356,548

Claims priority, application France, Mar. 9, 1981, 81 04602

Int. Cl.[3] F22B *1/02*

U.S. Cl. 122—32 3 Claims



1. A method of evaporating a pure liquid by indirect heat exchange between it and a hotter fluid, said method comprising the step of flowing said liquid under the effect of gravity along a heat exchange surface from the top to the bottom with the vapour formed flowing in the same direction as the liquid, the improvement comprising adjusting the liquid flow speed as a function of the heat exchanged via the heat exchange surface so that at least half of the liquid has evaporated by the time the remaining liquid reaches the bottom of the heat exchange surface.

4,404,929
LIQUID DISTRIBUTOR HEAD ACTUATED BY FLUID PRESSURE

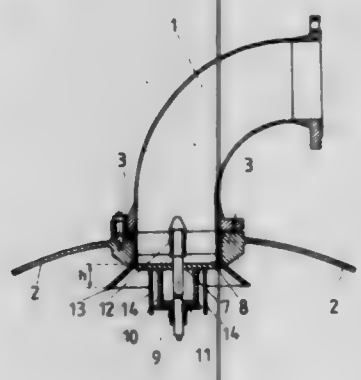
Andreas Brand, Wettingen, and Rudolf Datz, Klingnau, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Continuation of Ser. No. 197,119, Oct. 15, 1980, abandoned. This application Jun. 1, 1982, Ser. No. 383,818

Claims priority, application Switzerland, Nov. 8, 1979, 9999/79

Int. Cl.³ F22D *1/00*

U.S. Cl. 122—412 **3 Claims**



1. A liquid distributor head, especially for a mixing preheater and degasifier of a steam power plant, comprising:

means defining a pre-heater having a preheater housing with an upper housing portion;

a liquid infeed bend provided for said upper housing portion; said bend having a mouth portion;

a spray device, arranged at the mouth portion of said bend, for spraying a liquid flow stream into the pre-heater;

a substantially truncated cone-shaped deflection screen provided for said spray device;

said spray device embodying a valve comprising a valve plate, valve spring and spring plate, said valve spring and said spring plate being arranged beneath said valve plate, said valve being arranged internally of the mixing preheater and substantially centrally of said deflection screen but externally of the liquid flow stream; and

a substantially ring-shaped protective housing means, surrounding said valve spring and bearing against said valve plate, for preventing broken spring pieces from dropping into the mixing preheater and additionally protecting said valve spring from immersion in the liquid flow stream.

4,404,930
METHODS AND APPARATUS FOR TRANSFERRING LIQUID AGAINST HIGH PRESSURE RESISTANCE

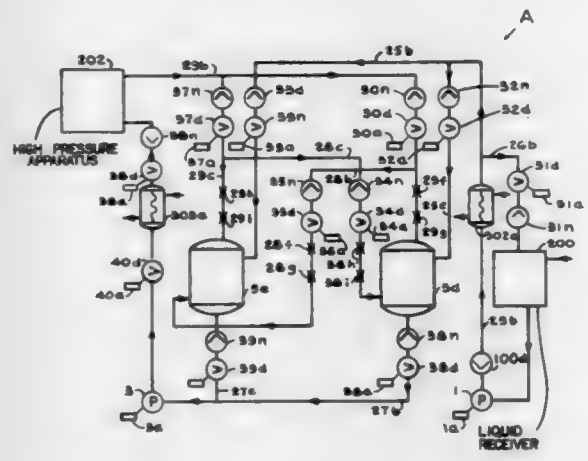
Thomas Y. C. Chen, 40 Beacon Ave., Jersey City, N.J. 07306

Continuation-in-part of Ser. No. 23,334, Mar. 23, 1979, Pat. No. 4,211,188, and a continuation-in-part of Ser. No. 841,490, Oct. 12, 1977, Pat. No. 4,165,718. This application Jul. 7, 1980, Ser. No. 165,450

Int. Cl.³ F22D *5/26*

U.S. Cl. 122—451 R **4 Claims**

1. A high efficiency energy saving condensate feeding system for feeding condensate into a high pressure vapor generator of more than 80 PSIG vapor pressure, comprising a first high pressure vessel with an expansion adjustable internal shell and an external shell and a second high pressure vessel filled with the same find of vapor as is generated by said generator and said vapor in said first vessel being high pressure vapor, a high pressure vapor source, means for changing condensate into said second vessel to fill said second vessel up to a substantial liquid level in said second vessel, means for selectively isolating said second vessel, a vapor distributor with multiple openings under the liquid level in said second vessel, means for releasing high pressure vapor in said first vessel into said second vessel and to inject said vapor into the condensate in said second vessel through said vapor distributor for reducing the vapor pressure by condensing a portion of said vapor, means for charging said condensate from said second vessel into said first vessel, means for isolating said first vessel from said second vessel, means for bleeding high pressure vapor from said high pressure vapor source into said first vessel to build up a pressure head in said first vessel for assisting condensate feeding into said generator, means for charging said condensate from said first vessel into said generator until said first vessel is selectively drained while said vapor bleeding means is selectively in operation; and means for selectively isolating said first vessel from said high pressure vapor source.



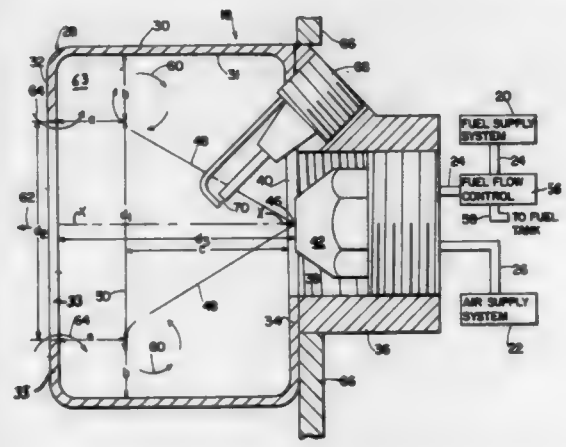
4,404,931
STABLE FUEL BURNER FOR PREHEATING INTAKE AIR OF INTERNAL COMBUSTION ENGINE

Joel D. Smith, Columbus, and Joseph M. Johnson, Nashville, both of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Continuation of Ser. No. 959,650, Nov. 13, 1978, abandoned. This application Nov. 10, 1980, Ser. No. 205,099

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—179 H **19 Claims**



1. A fuel burner for forming a flame resistant to blow out due to cross or counter flow of ambient air, said fuel burner comprising:

(a) a combustion chamber including a first portion having a first interior surface shaped as a surface of revolution and a second portion positioned at one end of said first portion to extend perpendicularly to said first portion in a radial direction toward the axis of revolution of said first interior surface to form an end wall, said end wall having positioned therein a single central outlet aperture, said single central outlet aperture being positioned symmetrically with respect to said axis of revolution so that the center of said aperture coincides with said axis of revolution, said central aperture forming the sole path for fluid passage through said end wall; and

(b) injector means for injecting fuel into said combustion chamber, said injector means including a nozzle means

positioned along said axis of revolution at a point within the combustion chamber opposite said second portion for forming an atomized conical spray pattern symmetric with said axis of revolution, said atomized conical spray pattern having an apex positioned at said nozzle means and a base positioned inwardly from said aperture at both a first predetermined distance in an axial direction from said outlet aperture and a second predetermined distance in a radial direction from said first interior surface, the location of the base of said conical spray pattern creating a toroidal zone within said combustion chamber positioned concentrically around said axis of revolution between said conical spray pattern and said interior surface and a low pressure zone within said combustion chamber between said central aperture and said base, causing combustion products simultaneously to recirculate in a toroidal flow pattern within said toroidal zone and to flow through said outlet aperture along an exit flow path, further causing a counterflow of ambient air to be drawn into said low pressure zone through said single outlet aperture.

4,404,932

PREHEATING SYSTEM FOR DIESEL ENGINES

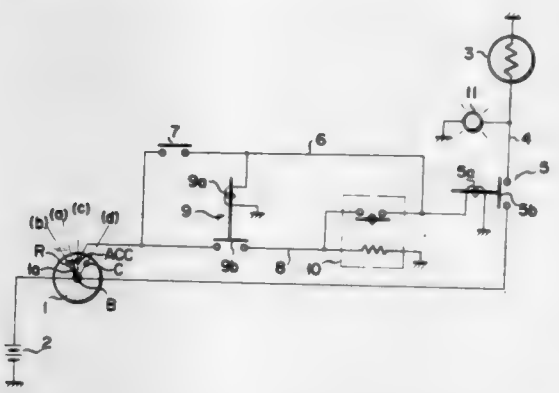
Tadao Nakamura, Oyama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 28, 1982, Ser. No. 392,697

Claims priority, application Japan, Jun. 29, 1981, 56-95112; Mar. 26, 1982, 57-41920; Mar. 31, 1982, 57-44979

Int. Cl.³ F02N *17/00*

U.S. Cl. 123—179 H **7 Claims**



1. A preheating system for a diesel engine of the direct fuel injection type, comprising:

connection means for an electric power source;

key switch means connected with said connection means for said electric power source, said key switch means having at least first and second output terminals wherein, when said key switch means is switched over to the first output terminal, the first output terminal connects with said connection means for said electric power source and when said key switch means is switched over to the second output terminal, the diesel engine is caused to be started;

electric suction heater means for heating suction air into the diesel engine, said electric suction heater means being selectively connected with and disconnected from said connection means for said electric power source;

a lamp connected with said heater means;

first relay means disposed in a circuit between said electric suction heater means and said connection means for said electric power source, said first relay means being normally-open and adapted to be closed when excited;

a push-button switch disposed in a circuit between the first output terminal of said key switch means and said first relay means;

timer means connected with said push-button switch for selectively connecting and disconnecting said first relay means with and from said first output terminal of said key switch means; and

means for selectively connecting and disconnecting said timer means with and from the first output terminal of said key switch means, said means being connected with said push-button switch and disposed in a circuit between said timer means and the first output terminal of said key switch means.

4,404,933

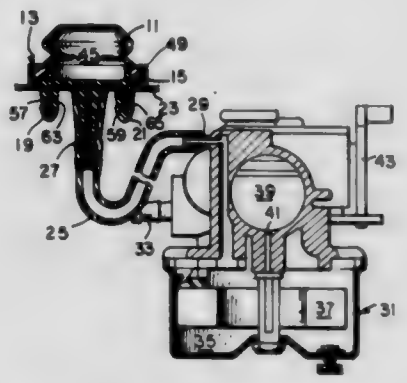
SELF-MOUNTING PNEUMATIC FUEL PRIMER

Steven R. Kuczenski, New Holstein, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Aug. 31, 1981, Ser. No. 297,994

Int. Cl.³ F02M *1/16*

U.S. Cl. 123—187.5 R **14 Claims**



1. A two piece self-mounting manually actuable primer for introducing a priming charge of fuel into an internal combustion engine intake system preparatory to starting the engine comprising:

a primer bulb or relatively flexible resilient material with an annular mounting ring at an extremity thereof; and

a base of relatively stiff resilient material having a slotted rim for sealingly receiving the annular mounting ring, a pair of self-fastening protuberances for passing into an apertured support to secure the base to the support and an apertured air passing protuberance with the protuberances all extending from a common base surface generally parallel to one another.

4,404,934

ROTARY VALVE IN AN INTERNAL COMBUSTION ENGINE

Urataro Asaka; Noboru Kurata, both of Kami-fukoka, and Masanori Masumura, Sayama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 49,068, Jun. 18, 1979, abandoned. This application Jul. 20, 1981, Ser. No. 284,652

Claims priority, application Japan, Jun. 16, 1978, 53-82722; Jun. 26, 1978, 53-87815

Int. Cl.³ F01L *7/10*

U.S. Cl. 123—190 BD **4 Claims**

1. A rotary valve in an internal combustion engine, comprising:

a rotary valve proper arranged in a housing and having a substantially hollow cylindrical shape, said valve proper including a small diameter portion and an enlarged diameter portion;

said housing being provided in a cylinder head including a combustion chamber;

an inner space of said rotary valve proper being arranged to form a portion of an intake passage and a portion of an exhaust passage;

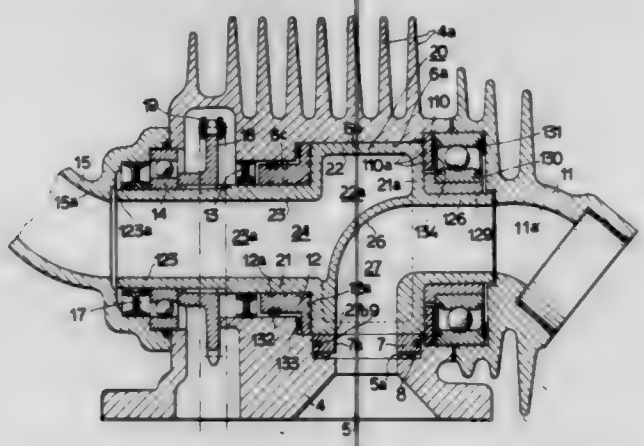
said portion of said intake passage in said valve proper including an expanded space arranged in said enlarged diameter portion of said valve proper and having a larger diameter than the diameter of the residual space in said portion of said intake passage;

said expanded space being disposed adjacent to said combustion chamber;

said portion of said intake passage and said portion of said exhaust passage being separated from each other and including end openings which selectively communicate with said combustion chamber as said valve proper rotates, said end openings being angularly shifted from each other on the same plane in the radial direction of said valve proper;

said portion of said intake passage and said portion of said exhaust passage including other end openings opened respectively at axial ends of said valve proper;

a substantially tubular wall having said portion of said exhaust passage confined therein, said tubular wall having a major proportion of the outer surface thereof exposed to and extending arcuately into the interior of said expanded space of said portion of said intake passage such that said portion of said exhaust passage is disposed substantially



within said expanded space of said portion of said intake passage;

a bush means provided with radial and axial extensions, said bush means being arranged on said valve proper at a stepped portion between said small diameter portion and said enlarged diameter portion;

said radial and axial extensions of said bush means being in slidable contact with an end surface of said enlarged diameter portion and an outer peripheral surface of said small diameter portion, respectively;

an O-ring provided at an outer peripheral portion of said axial extension of said bush means;

means for driving said rotary valve, said driving means being provided on said small diameter portion; and

an oil seal means disposed between said driving means and said bush means.

4,404,935

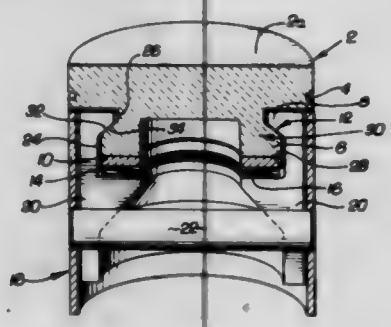
CERAMIC CAPPED PISTON

Edwin H. Kraft, San Diego, Calif., assignor to Kyocera International, Inc., San Diego, Calif.

Filed Apr. 27, 1981, Ser. No. 257,666

Int. Cl.³ F01B *31/08*

U.S. Cl. 123—193 P **3 Claims**



1. A piston assembly comprising:

(a) a ceramic piston cap including:

a cylindrical cap section having upper and lower surfaces,

a downward facing extension attached to the lower surface of the cap section, and

an outwardly extending first radial flange attached to the extension and spaced from the lower surface of the cap section, said flange including a first contact surface which faces toward the cap section;

(b) a metallic body including:

a cylindrical body section having an upper surface with a central opening therein defined by a wall portion and a lower platform,

a second radial flange extending inwardly into said central opening from the wall portion, said second flange extending into the space between the first flange and the lower surface of the cap section and including a second contact surface which faces away from the cap section; and

(c) bias means for forcing the first contact surface against the second contact surface;

wherein the first and second flanges are configured so that contact between said flanges is limited to said first and second contact surfaces, whereby the assembly can accommodate differential thermal expansion of the piston cap and body while maintaining continuous contact therebetween;

wherein said bias means is a spring located between said lower platform and said downward facing cap extension, wherein said spring forces said cap away from said body.

4,404,936

BREATHER DEVICE FOR OVERHEAD VALVE ENGINES

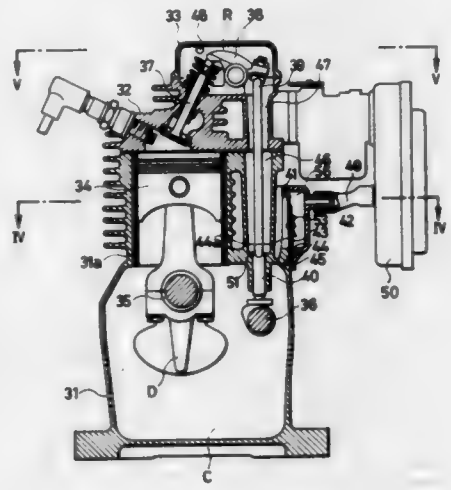
Yoshikazu Tatebe; Masafumi Egami, and Toshimitsu Miyawaki, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed Jan. 16, 1981, Ser. No. 225,658

Claims priority, application Japan, Apr. 30, 1980, 55-58269[U]; May 6, 1980, 55-60697[U]

Int. Cl.³ F01M *1/00*

U.S. Cl. 123—196 R **2 Claims**



1. A breather device for overhead valve engines, comprising a breather chamber, a crank chamber and a cylinder having a piston movable in said cylinder and a crank member connected to said piston disposed below said cylinder, a push rod chamber formed on one side of and integrally with said cylinder and said crank chamber, said cylinder having a cylinder head and defining a rocker chamber to one side of said cylinder, a push rod housed within said rocker chamber and said crank chamber, a blow by gas discharging passage formed around the periphery of said push rod and connecting said rocker chamber and said breather chamber, an air cleaner adjacent said breather chamber, a second breather chamber connected to said air cleaner, a one way breather valve allowing only the flow of gas from said breather chamber to said second breather chamber located between said breather chamber and said

second breather chamber, said blow by gas discharging passage being opened at one end in the upper part of said rocker chamber and at its other end in said breathing chamber.

4,404,937

VALVE CONTROLLED STROKE PISTON COMBUSTION ENGINE WITH A CAM SHAFT

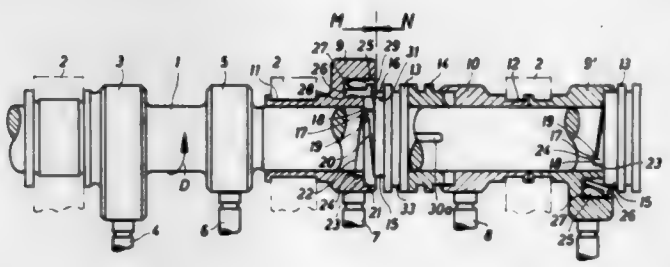
Wulf Leitermann, Bad Wimpfen, Fed. Rep. of Germany, assignor to Audi Nsu Union Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 8, 1981, Ser. No. 328,676

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1980, 3046402

Int. Cl.³ F02D *13/06*

U.S. Cl. 123—198 F **11 Claims**



1. A valve controlled stroke piston combustion engine provided with a cam shaft which supports a number of cams equal in number to the inlet and outlet valves, the individual cylinders being switched off by stopping the associated inlet and outlet valves, the cams being associated with the valves, the cams being rotatably mounted and being axially non-displaceable on the cam shaft, dogs being mounted fixedly on said cam shaft cooperating with said cams, and each of said cams being provided with a front face with a concentric annular section groove with a continuously increasing depth with respect to the rotating axis of the cam shaft, said annular section groove ends having a radial abutment face, each dog being provided with an axial protrusion on a front face facing the corresponding cam, said protrusion engaging on the abutment face during a switched on valve and the pretensionable springs being provided for the engagement and disengagement of dogs.

4,404,938

FOUR-STROKE-CYCLE INTERNAL COMBUSTION ENGINE WITH FUEL INJECTION

Zivomir Nikolic, U1.V1. Nazora 24, 51262 Kraljevica, Yugoslavia

Filed Nov. 17, 1981, Ser. No. 322,234

Int. Cl.³ F02B *3/00, 23/00*

U.S. Cl. 123—256 **2 Claims**

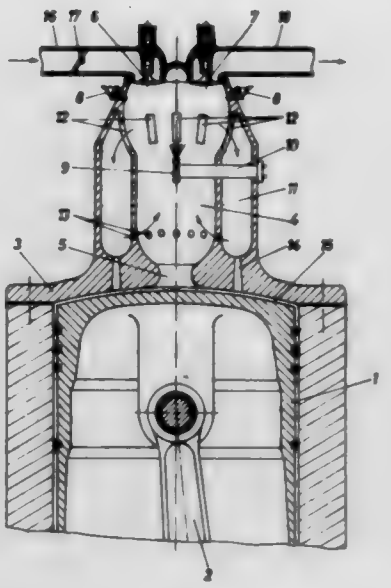
1. A four-stroke-cycle internal combustion engine comprising a piston housing, a cylinder head, a crankshaft, a piston which is connected to the crankshaft by a connecting rod and has a top face which almost contacts the cylinder head when the piston is at its top dead center, a combustion chamber disposed on top of said cylinder head, a passage extending from adjacent to the piston through the cylinder head and opening into said combustion chamber, inlet and outlet valves opening into the top portion of said combustion chamber,

fuel-injecting means, which are upwardly directed and protrude into said combustion chamber,

at least one spark plug means protruding into said combustion chamber,

a plurality of slots opening into the upper portion of said combustion chamber and permitting explosive gases to flow into a chamber which surrounds the combustion chamber,

a plurality of first openings which open into said surrounding chamber at its lower portion and are smaller in cross-section than the plurality of said slots and permit said explosive gases to flow back into said combustion chamber, and



a plurality of downwardly flaring, conical second openings which open into said surrounding chamber in its lower portion and extend through said cylinder head toward said piston.

4,404,939

ELECTRICAL CIRCUIT FOR ACTUATION OF THE RELAYS OF A FUEL PUMP

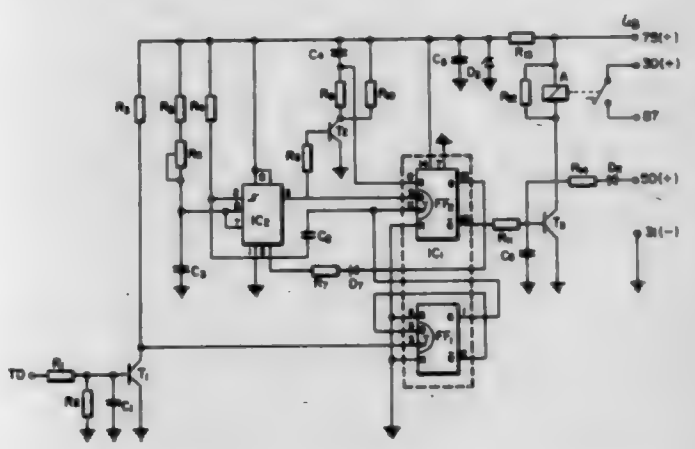
Marwin Kinzl, Kierspe, and Eduard Bergmann, Luedenscheid, both of Fed. Rep. of Germany, assignors to Kostal of America, Ludenscheid, Fed. Rep. of Germany

Filed Aug. 10, 1981, Ser. No. 291,166

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1980, 3030240

Int. Cl.³ F02D *33/00*

U.S. Cl. 123—333 **7 Claims**



1. An electrical circuit for controlling the operation of the relay of a fuel pump depending upon the number of revolutions of the motor supplied by the fuel pump, ignition pulses corresponding to the number of revolutions of the motor being coupled to said electrical circuit, said electrical circuit comprising: relay control means for energizing said relay, said relay being connected with an operating voltage and said relay control means comprising a transistor having its collector-emitter path connected in series with said relay, whereby said transistor upon being rendered conductive energizes said relay; timing means operated responsive to each of said ignition pulses for generating a timing signal having an interval corresponding to the minimally permissible time between two ignition pulses; and control means operated responsive to said ignition pulses and said timing signals for generating output signals to control said relay control means, said control means comprising a flip-flop having inputs to which said timing sig-

nals and said ignition pulses are coupled respectively and an output coupled to the base of said transistor, said control means being responsive when only a timing signal is coupled thereto to operate said relay control means to energize said relay to thereby operate said fuel pump, and being responsive to a timing signal and an ignition pulse being simultaneously coupled thereto to operate said relay control means to de-energize said relay to thereby cut off the operation of said fuel pump.

4,404,940

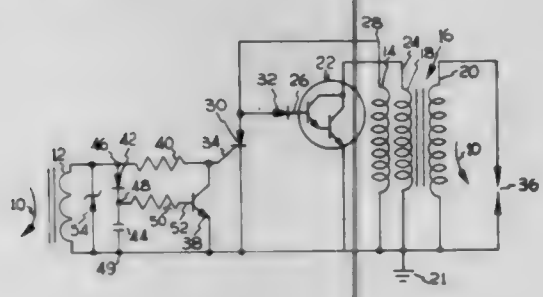
ENGINE SPEED LIMITING CIRCUIT

Norman F. Sieja, Toledo, Ohio, assignor to Allied Corporation, Morristown, N.J.

Continuation-in-part of Ser. No. 145,116, Apr. 30, 1980. This application Feb. 16, 1982, Ser. No. 349,394

Int. Cl.³ F02P *1/00*; F02A *1/00*

U.S. Cl. 123—335 **1 Claim**



1. A speed limiting circuit for an ignition system including an ignition coil including a primary coil winding and having a current control means for controlling the flow of a current through the primary coil winding to cause an ignition impulse in a secondary coil winding of said ignition coil, and trigger means operatively connected to the current control means for providing a trigger signal for controlling the current control means, comprising:

circuit means operatively interposed between said trigger means and said current control means;

said circuit means including threshold shorting means for at least intermittently shorting said trigger signal to prevent said trigger signal from being effective to actuate said current control device;

a resistor being operatively interposed between said trigger means and a first control terminal of said current control means;

said threshold shorting device having first and second controlled terminals operatively connected to said first control terminal of said current control means and to an electrical ground respectively for preventing said trigger signal from affecting said first control terminal;

said threshold shorting device having a second control terminal resistively connected to a first terminal of a diode means and a first terminal of a capacitor means, a second terminal of said diode means being electrically connected to said trigger means and a second terminal of said capacitor means being electrically connected to said electrical ground;

said trigger signal charging said capacitor means through said diode means, said capacitor means discharging through said second control terminal to render said threshold shorting device conductive for a first predetermined time period while a voltage of said capacitor means exceeds a threshold voltage of said threshold shorting device;

a trigger signal caused by said trigger means at a second predetermined time before a termination of said first predetermined time period being ineffective to actuate said current control means.

4,404,941

ELECTRONIC CONTROLLED CARBURETOR

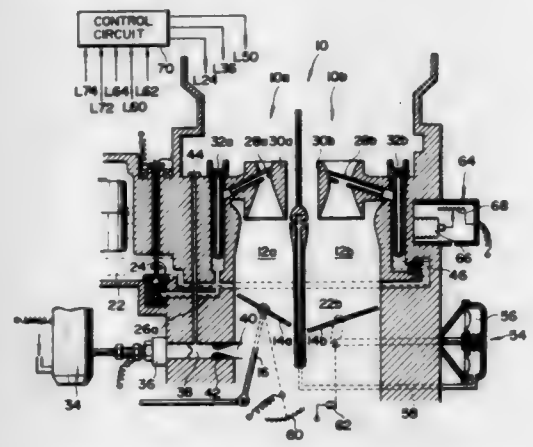
Kenji Masaki, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed Mar. 9, 1981, Ser. No. 241,721

Claims priority, application Japan, Mar. 11, 1980, 55-30491

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—339 **9 Claims**



1. A carburetor for use in an internal combustion engine, comprising:

(a) an induction passage provided therein with venturi means and controlled by throttle valve means located downstream of said venturi means;

(b) a main fuel supply unit including a fuel bowl, a main nozzle opening to said venturi means, and a main fuel passage connecting said fuel bowl to said main nozzle;

(c) an auxiliary fuel supply means including a fuel pump, an auxiliary fuel passage terminating in a sonic nozzle opening into said induction passage downstream of said throttle valve means, a solenoid valve provided in said auxiliary fuel passage for controlling the rate of fuel flow through said auxiliary fuel passage, an air bleed opening into said auxiliary fuel passage downstream of said solenoid valve;

(d) a fast-idle mechanism for forcing said throttle valve means to open to a predetermined angle from its closed position when actuated; and

(e) a control circuit responsive to low engine temperatures for actuating said fast-idle mechanism and opening said solenoid valve to an opening degree coreresponding to said predetermined angle of opening of said throttle valve means, said control circuit being responsive to low load conditions for controlling the degree of opening of said solenoid valve in accordance with the rate of air flow through said induction passage, said control circuit being responsive to normal load conditions for closing said solenoid valve, said control circuit being responsive to high load conditions or a demand for acceleration for opening said solenoid valve to supply additional fuel so as to produce an overrich air-fuel mixture.

4,404,942

METHOD OF CONTROLLING THE ROTATIONAL SPEED OF A ROTARY SHAFT

Ken Asami, Nagoya, Japan, assignor to Toyota Jidosha K.K., Toyota, Japan

Filed Jul. 21, 1981, Ser. No. 285,591

Claims priority, application Japan, Jul. 26, 1980, 55/101866

Int. Cl.³ B60K *31/00*; F02D *11/10*

U.S. Cl. 123—352 **17 Claims**

1. A method of controlling the rotational speed of a rotary shaft, said method comprising the steps of:

generating speed pulses having a frequency proportional to an actual rotational speed V of said rotary shaft;

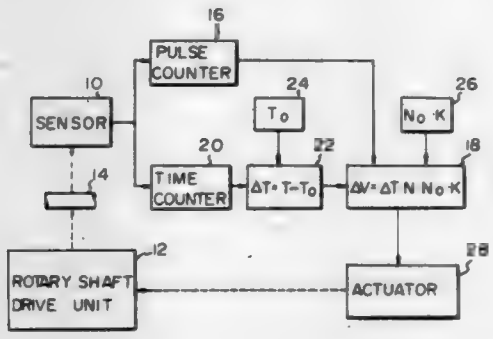
measuring a time T until a predetermined number of said speed pulses are generated;

calculating the difference ΔT between said measured time T

and a predetermined time T_o which is equal to the measured time T when said rotary shaft rotates at a desired rotational speed V_o;

measuring a number N of said speed pulses generated within a predetermined period of time;

multiplying said calculated difference ΔT, said measured number N and a predetermined number N_o which is equal to the measured number N when said rotary shaft rotates



at the desired rotational speed V_o, said multiplying being performed to obtain a value ΔV which is equivalent to the difference between the actual rotational speed V and said desired rotational speed V_o; and

controlling, in response to said value ΔV the rotational speed of said rotary shaft to reduce the difference between the actual rotational speed V and said desired rotational speed V_o to zero.

4,404,943

FUEL SYSTEM FOR INTERNAL COMBUSTION ENGINES

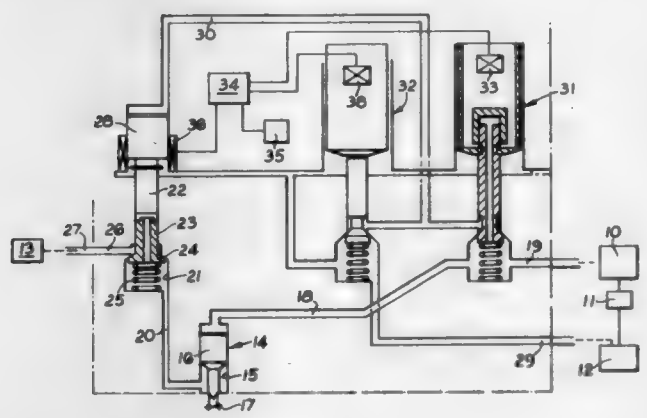
Alec H. Seilly, North Wembley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Nov. 30, 1981, Ser. No. 325,775

Claims priority, application United Kingdom, Jan. 27, 1981, 8102388

Int. Cl.³ F02D *5/02*

U.S. Cl. 123—447 **5 Claims**



1. A fuel for supplying fuel to an internal combustion engine, comprising an accumulator in which fuel is stored at a high pressure, an injection nozzle which receives fuel from the accumulator, electrically operated means for opening a valve in the injector nozzle, thereby to allow delivery of fuel to the engine, a pump for supplying fuel to the accumulator, characterized in that the accumulator has a small volume, and by a transducer for providing an electrical signal indicative of the pressure within the accumulator, electrically operated valve means for controlling the output of said pump, a control circuit for said valve means, said electrical signal forming a first input signal to said control circuit, circuit means for providing a second input signal to said control circuit, said second input signal varying in accordance with an operating parameter of the associated engine, said control circuit acting to control said valve means so that the pressure in said accumulator varies in accordance with said second input signal, and said pump comprising a high pressure pump and a low pressure pump, said valve means acting to control the flow of fuel from said low pressure pump to said high pressure pump.

4,404,944

FUEL SUPPLY SYSTEM FOR AN INJECTION-TYPE INTERNAL COMBUSTION ENGINE

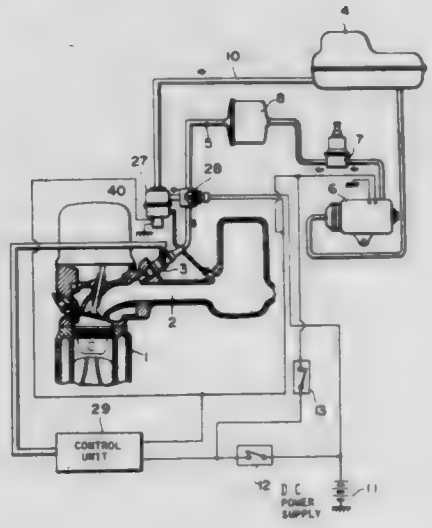
Masafumi Yamazaki, Yokohama, and Mikio Suzuki, Zushi, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Aug. 4, 1981, Ser. No. 290,078

Claims priority, application Japan, Aug. 7, 1980, 55-111163[U]; Aug. 15, 1980, 55-115662[U]; Sep. 10, 1980, 55-124700

Int. Cl.³ F02D *5/02*; F02M *51/00*

U.S. Cl. 123—458 **13 Claims**



1. A fuel supply system for an internal combustion engine using a gasoline or alcohol blended gasoline as a fuel, comprising:

(a) a fuel tank;

(b) a fuel injector which injects the fuel to the engine;

(c) a fuel supply line which connects said fuel injector with said fuel tank;

(d) a fuel pump disposed in said fuel supply line;

(e) a fuel return line connected with said fuel supply line beteen said fuel pump and fuel injector, for returning an amount of fuel to upstream of said fuel pump;

(f) a fuel pressure regulator disposed between said fuel supply line and fuel return line for regulating the amount of returned fuel and a fuel pressure in said fuel supply line between said fuel pump and fuel injector;

(g) temperature sensor means for generating a signal when the temperature of the fuel in said fuel supply line is above a predetermined value; and

(h) means for restricting the amount of returned fuel and for raising the fuel pressure in response to the signal outputted from said temperature sensor means.

4,404,945

FUEL-SUPPLY CONTROL SYSTEM FOR GAS-TURBINE ENGINE

Yasuo Fujikawa, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 4, 1981, Ser. No. 290,076

Claims priority, application Japan, Oct. 21, 1980, 55-146238

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—478 **10 Claims**

1. A fuel-supply control system for a gas-turbine engine, comprising:

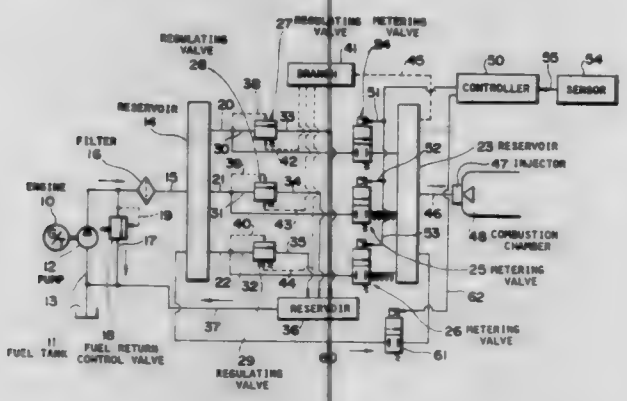
(a) a fuel injector opening to an engine combustion chamber;

(b) a reservoir connected to the fuel injector;

(c) at least two different lines each connected at one end to the reservoir, the lines being permitted to pass fuel there-

through to supply the fuel to the combustion chamber through the reservoir and the fuel injector;

(d) metering valves whose number is equal to the number of the lines and which are arranged in the lines respectively in such a manner that the lengths of the lines from the corresponding metering valve to the reservoir are different from each other, the metering valves being changed from one of open and closed states to the other when energized;



(e) a sensor detecting an engine operating condition; and

(f) a controller electrically connected to the sensor for receiving the output signal from the sensor indicative of the engine operating condition, the controller producing a pulse train whose duty cycle responds to the engine operating condition and feeding the pulse train to the metering valves to open them periodically.

4,404,946

METHOD FOR IMPROVING FUEL CONTROL IN AN INTERNAL COMBUSTION ENGINE

John W. Hoard, Livonia, and Richard R. Tuttle, Utica, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 79,293, Sep. 27, 1979, abandoned. This application Nov. 2, 1981, Ser. No. 317,671
Int. Cl.³ F02D *5/00*
U.S. Cl. 123—486 5 Claims

1. A method for improving the fuel control of an internal combustion engine having an intake conduit and an exhaust conduit, the method comprising the steps of:

(a) measuring the intake conduit pressure value;

(b) establishing an exhaust conduit pressure value;

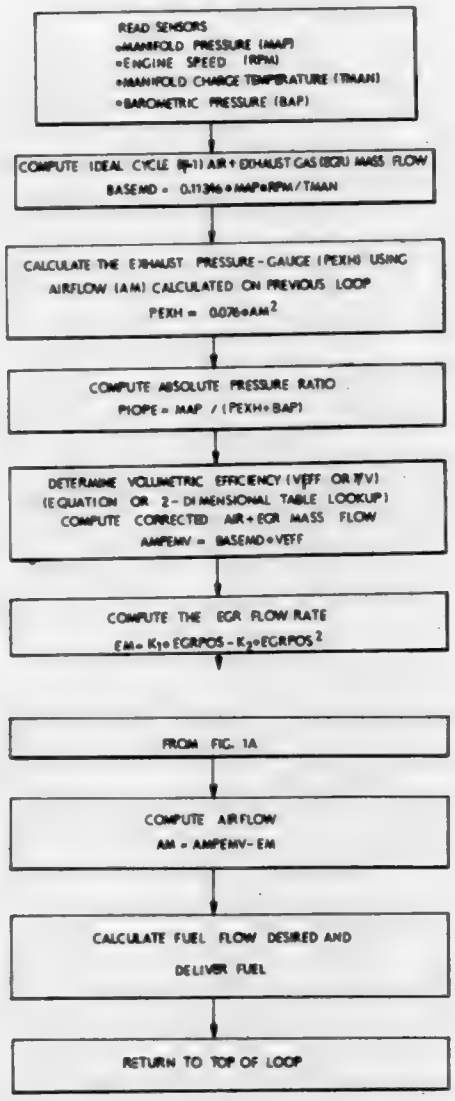
(c) determining the ratio between the engine's intake conduit pressure value and its exhaust conduit pressure value;

(d) using the determined ratio to determine the volumetric efficiency value of the engine, the volumetric efficiency value being determined with respect to the flow of gases into at least one combustion chamber of the engine;

(e) calculating the air mass flow into the engine based upon such determined volumetric efficiency value;

(f) metering fuel to the engine in a quantity based upon such calculated air mass flow; and

when a value for air mass flow is available said steps of establishing an exhaust conduit pressure value including



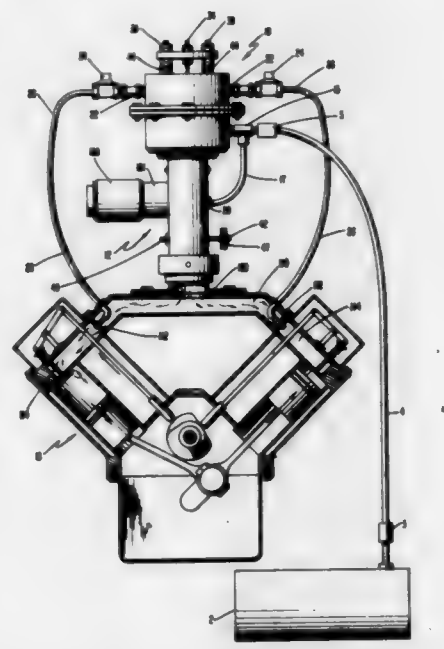
calculating the exhaust conduit pressure using the latest available air mass flow.

4,404,947

VAPOR/AIR CONTROL SYSTEM

Wayne A. Swanson, Knights Hill Rd., New London, N.H. 03257

Filed Mar. 10, 1981, Ser. No. 241,838
Int. Cl.³ F02M *21/04;* F02B *43/00*
U.S. Cl. 123—527 16 Claims



1. A device for controlling the flow of a gaseous fuel to an

internal combustion engine, said engine having a plurality of cylinders, and operable in conjunction with apparatus to control the flow of air to said cylinders comprising:

(a) a reservoir having an inlet for receiving gaseous fuel under pressure;

(b) a plurality of chambers equal in number to the number of said cylinders, each of said chambers being in individual fluid communication with said reservoir;

(c) means for separately connecting each of said chambers to a respective one of said cylinders;

(d) individual valve means biased to a closed position for controlling the fluid communication between said chambers and said reservoir;

(e) means connected with the throttle of said engine for simultaneously opening said valve means against said bias in response to actuation of said throttle; and

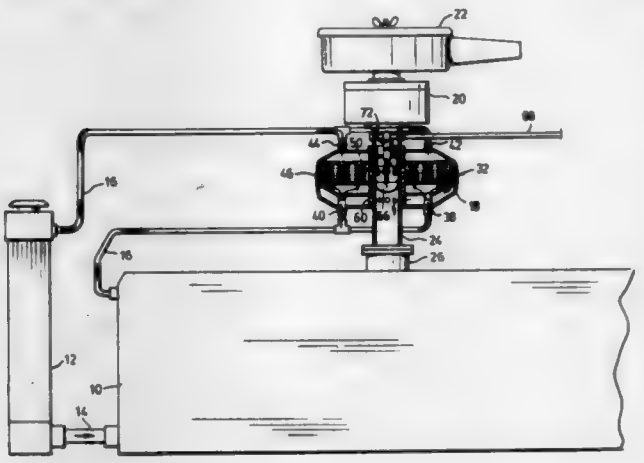
(f) means connectable with said air control apparatus for regulating the flow of air to said engine.

4,404,948

FUEL SYSTEMS FOR INTERNAL COMBUSTION ENGINES

Galiano Feltrin, R. R. #1, Stoney Point, Ontario, Canada

Filed Oct. 6, 1980, Ser. No. 194,109
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—546 **6 Claims**



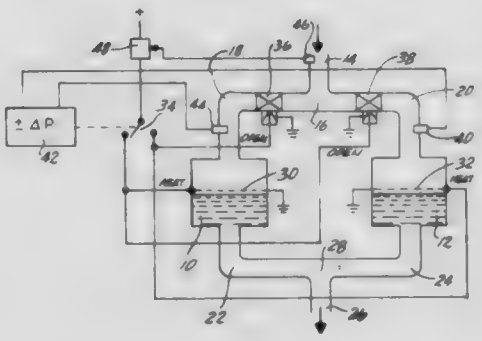
1. A fuel system for an internal combustion engine comprising mixing means for forming a mixture of fuel and air, conduit means for directly delivering mixed fuel and air from a mixing means to a combustion site of said engine, a heat exchanger disposed about said conduit means, means for delivering a heating medium to said heat exchanger, said medium being heated by engine operation and means operatively associated with said conduit means causing the said mixed fuel and air to be diverted from said conduit means and to pass through said heat exchanger, said means operatively associated with said conduit means comprising inlet port means opening from said conduit to said heat exchanger, return port means disposed down stream of said inlet port means and opening from said heat exchanger to said conduit means and valve means disposed in said conduit means between said inlet and return port means, said valve means being movable between closed position in which fuel air mixture is caused to pass through said heat exchanger and an open position in which fuel air mixture is passed directly to said combustion site, said heat exchanger comprising an inlet header for heating medium, a return header for that medium, and a plurality of heat exchanging tubes extending between said headers and within a heat exchange chamber, said headers and said chamber being of annular form and wherein said conduit means for delivering mixed fuel and air from a mixing means to the combustion site includes a conduit section extending axially through said headers and said chamber.

4,404,949

HEATED DIESEL FUEL FILTER

Lon E. Bell, Altadena, Calif., assignor to Technar Incorporated, Arcadia, Calif.

Filed Dec. 11, 1980, Ser. No. 215,537
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **3 Claims**



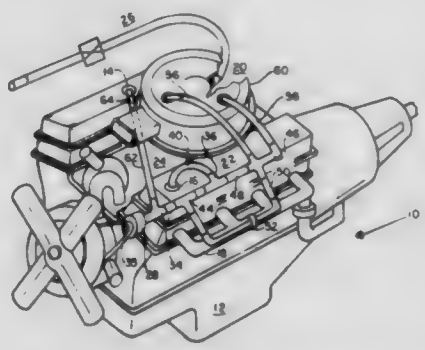
1. A heated filter for diesel fuel or a similar type fuel comprising: a source of fuel, a housing forming a fully enclosed chamber, a non-metallic filter element in the chamber dividing the chamber into an inlet region and an outlet region on opposite sides of the filter element, a fuel inlet to the inlet region of the chamber, a fuel outlet to the outlet region of the chamber, and heater means in the inlet region adjacent the filter element, the heater means including an electrical resistance heating element, the resistance heating element comprising a metal grid having openings through which the fuel passes before passing through the filter element, the metal grid being positioned in the path of fuel passing from the inlet to the filter element for heating all fuel passing through the filter, the metal grid being positioned immediately adjacent the filter element so that the fuel flow through the grid at any position is limited by the flow of fuel through the filter at the same position.

4,404,950

AUTOMOTIVE FUEL SAVING SYSTEM

Alfred C. Dallman, 2437 Bending Willow Dr., Kettering, Ohio 45440

Filed Feb. 9, 1982, Ser. No. 347,382
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—572 **3 Claims**



1. In a crankcase ventilating and vapor utilizing sytem for an internal combustion engine having a sealed crankcase and an air-fuel intake system, said system having a first air flow circuit for withdrawing crankcase vapors from said engine crankcase and directing the same into said engine intake system, a second air flow circuit for providing a flow of air into said engine crankcase, and a third air flow circuit for metering air into said engine intake system to provide compensation for the addition of said crankcase vapors into said intake system, the improvement in said crankcase ventilating and vapor utilizing system comprising:

air pumping means connected to both said first and second circuits for feeding air to said first and second circuits

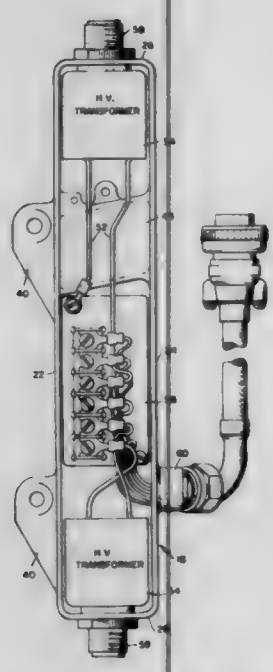
such that air and crankcase vapors will be withdrawn from said crankcase to said first circuit and directed to said engine intake system, as air is added to said crankcase from said second circuit, whereby a continuous circulation of air through said crankcase and ventilation of vapors therefrom is achieved, accompanied by combustion of said vapors in said engine after introduction through its intake system.

4,404,951

IGNITION CONTROL BOX ASSEMBLY FOR INTERNAL COMBUSTION ENGINE

Richard Zechlin, Beloit, and Robert M. Henderson, Williams Bay, both of Wis., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed Sep. 24, 1982, Ser. No. 422,845
Int. Cl.³ F02P 1/00
U.S. Cl. 123—595 **7 Claims**



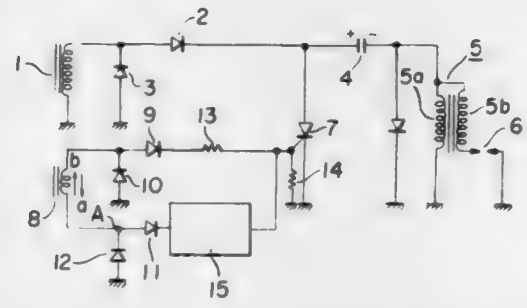
1. An ignition control box assembly adapted to be retrofit onto an internal combustion engine and to maintain a hose for such engine against movement in all directions and within the confines of the engine profile comprising a unitary metal housing including spaced top and bottom walls, spaced endwalls extending between and integral with said top and bottom walls, a backwall integral with and extending between said top, bottom and endwalls on a back side of said housing to form an enclosure, the front side of said housing opposite said back side being open, and chamber means for retaining said hose against movement in all directions and isolating the hose from contact with said engine while providing magnetic isolation for electronic components within said enclosure, said chamber means including chamber wall means formed integrally with said top, bottom and backwalls and extending inwardly of said enclosure from said backwall toward the front side of said housing to define an open ended chamber extending between said top and bottom walls and having no opening into said enclosure, said top and bottom walls each including an opening within the confines of said chamber wall means to provide the open ends of said chamber, said chamber wall means being spaced from each of said endwalls to divide said enclosure into first and second compartments separated by said chamber, and a closure assembly means for closing the front side of said housing.

4,404,952

MAGNET IGNITION DEVICE

Takanori Fujimoto, and Yasuo Tada, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 95,521, Nov. 19, 1979. This application Dec. 18, 1981, Ser. No. 332,206
Claims priority, application Japan, Dec. 19, 1978, 53-157268
Int. Cl.³ F02P 5/08
U.S. Cl. 123—602 **2 Claims**



1. A magnet ignition device comprising: power source means for producing a positive and negative output in synchronism with the rotation of an engine and capable of making the output rectified pass through an ignition coil; a switching element for controlling the passage of current to the ignition coil; an angular position detecting means for producing a first angular signal with one polarity corresponding to an angular position of a given crankshaft of the engine and a second angular signal with the other polarity corresponding to an angular position of the crankshaft retarded by a given angle relative to the angular position where the first angular signal is produced, in synchronism with the rotation of the engine; and an ignition timing operation circuit which produces an operational signal in response to the first angular signal and comprises an integration circuit which defers the timing of production of an operational signal fed to the switching element in accordance with the speed of the engine, wherein the second angular signal and the operational signal are each applied to the switching element such that for each engine revolution the firstly produced of said second angular signal and said operational signal produces switching of said switching element to produce passage of current to the ignition coil, such that when the rotational frequency is higher than a given rotational frequency of the engine, the operational signal is used to initiate ignition as a function of engine speed while, when it is lower than the given rotational frequency, the second angular signal is used to initiate at a predetermined angle of engine rotation.

4,404,953

STOVE FOR BURNING COMBUSTIBLE SOLID FUELS

Robert D. Thulman, 10309 Wilde Lake Ter., Columbia, Md. 21044, and Alve J. Erickson, 17 Pleasant St., Milford, N.H. 03055

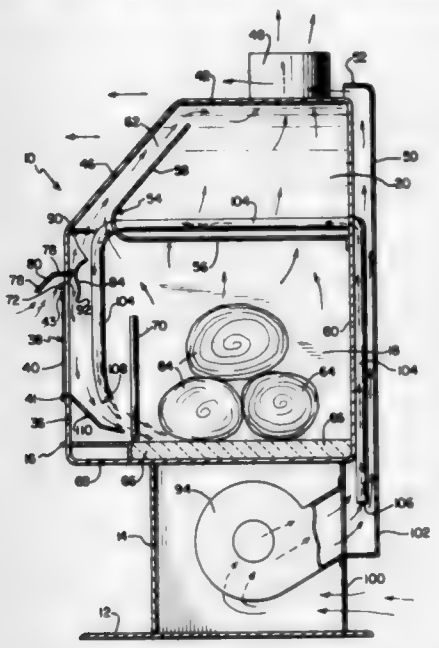
Filed May 4, 1981, Ser. No. 260,092
Int. Cl.³ F24C 1/14
U.S. Cl. 126—77 **40 Claims**

1. A stove for burning combustible solid fuels comprising:
an enclosed firebox;
baffle means for dividing said firebox into a lower combustion chamber and an upper chamber and for permitting gases from said combustion chamber to flow into said upper chamber;
means for facilitating introduction of combustible solid fuel into said combustion chamber;
outlet means communicating with said upper chamber for withdrawing combustion gases from said firebox;
air inlet means through a wall of said firebox for admitting a flow of air into the firebox;
means for splitting a flow of air admitted into said firebox through said air inlet means into first and second portions

and for directing said first portion of air toward the bottom of said combustion chamber and said second portion of air toward said upper chamber;

said baffle comprising a generally horizontal portion extending from the back wall of the firebox to a point spaced from the front wall of the firebox and an upwardly projecting portion extending from said horizontal portion generally parallel to said front wall to a point spaced from the top of said firebox; and

said upwardly projecting portion and said front wall defining a passageway through which gases may pass from said combustion chamber to said upper chamber.

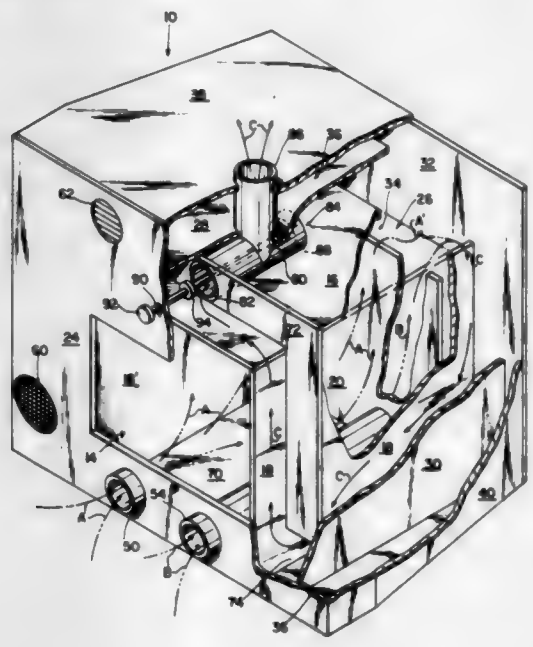


4,404,954

FIREPLACE FURNACE

James S. Steel, 841 Bowie Rd., Rockville, Md. 20852

Filed Jan. 27, 1981, Ser. No. 228,717
Int. Cl.³ F24J 3/02
U.S. Cl. 126—121 26 Claims



1. A furnace for the hot air heating of a room comprising:

an enclosed primary combustion chamber for burning a fuel, the burned fuel producing a flue gas containing volatiles;

an enclosed room air heating chamber for heating the room air; and

an enclosed secondary combustion chamber for burning the volatiles remaining in the flue gas from said primary combustion chamber, said secondary combustion chamber substantially surrounds the primary combustion chamber;

means for supplying combustion air to said secondary combustion chamber, said secondary combustion chamber being disposed between said primary combustion chamber and said room air heating chamber such that the heat transferred to said room air heating chamber is not transferred directly from said primary combustion chamber.

18. A method for the hot air heating of a room comprising the steps of:

burning a fuel in an enclosed primary combustion chamber;

directing the flue gas containing volatiles from the burning of the fuel in the primary combustion chamber to an enclosed secondary combustion chamber that substantially surrounds the primary combustion chamber;

burning the volatiles in the flue gas in the secondary combustion chamber;

directing the flue gas from the burning of the volatiles in the secondary combustion chamber in a path around a portion of the primary combustion chamber; and

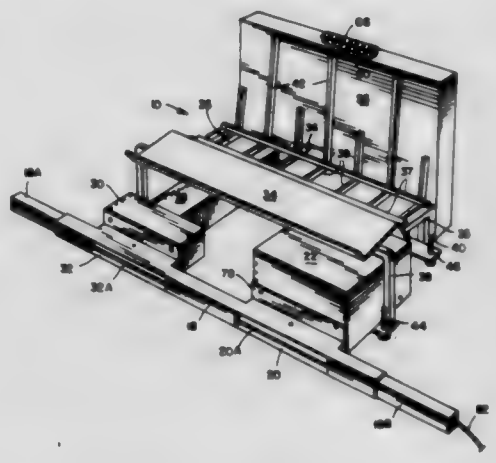
heating room air in a room air heating chamber disposed around the path of the flue gas in the secondary combustion chamber by conductive heat transfer from the secondary combustion chamber so that heat transfer occurs only after secondary combustion and so that no direct conductive heat transfer occurs from the primary combustion chamber.

4,404,955

FIREPLACE HEAT EXTRACTOR

William P. Sherman, Portland; Floyd R. Clark, Scappoose, both of Oreg., and Lothar K. Will, Sparta, Tenn., assignors to Thomas Industries Inc., Louisville, Ky.

Filed Aug. 20, 1981, Ser. No. 294,614
Int. Cl.³ F24B 7/00
U.S. Cl. 126—121 20 Claims



14. A forced-air heat extraction system for use in a conventional fireplace, said system comprising:

a bottom bar positioned at the lower forward portion of said fireplace, said bottom bar having an air inlet and an air outlet in air flow communication with a room to be heated;

a plenum located in the rear of said fireplace beneath a stack;

inlet duct means communicating said air inlet with said plenum;

outlet duct means communicating said air outlet with said plenum;

housing means in one of said ducts;

electrically energized air circulating means located in said housing means, said housing means coupling said air inlet to said inlet duct for forcing room air through said inlet, said air inlet duct means, said plenum, said outlet duct means and back into said room through said air outlet; and

temperature responsive means positioned adjacent the upper portion of said plenum for venting hot air in said plenum into said stack when the temperature of the air therein exceeds a predetermined value.

4,404,956

FURNACE WITH DRAFT-LIMITER AND VENTILATION

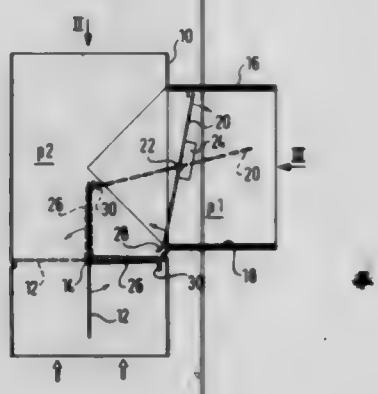
Luitpold Kutzner, Boecttistrasse 8, D-8000 Munich 60, Fed. Rep. of Germany, and Erwin Posteurieder, Mehring, Fed. Rep. of Germany, assignors to Luitpold Kutzner, Munich, Fed. Rep. of Germany

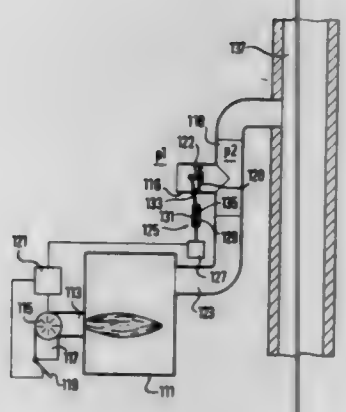
Filed Apr. 14, 1981, Ser. No. 254,087

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1980, 3015472

Int. Cl.³ F23L 3/00

U.S. Cl. 126—293 27 Claims





1. Furnace wherein there is connected to the exhaust gas duct after said furnace in the flow direction a ventilation opening with a ventilation flap openable in chronological conjunction with the cut-off of said furnace and closable in chronological conjunction with the switching-on of said furnace, and wherein there is further connected to said exhaust gas duct after said furnace in the flow direction a draft-limiter opening with a draft-limiter flap, whereat said draft-limiter flap is prestressed in the direction of a closing position and is to be opened by the pressure difference incident upon it, p1-p2 (flue draft) between the pressure p2 in said exhaust gas duct and the possibly higher pressure p1 on its outer side, in such a way that when the pressure difference exceeds a predetermined value said draft-limiter flap increasingly opens for the purpose of maintaining a predetermined pressure difference, characterized in that said ventilation opening is formed by said draft-limiter opening (16) and said ventilation flap is formed by said draft-limiter flap (20), whereat said draft-limiter flap (20), during an operating pause of said furnace, is held in an open position independently of said pressure difference (p1-p2) prevailing at said draft-limiter flap (20).

4,404,957

EQUIPMENT AND PROCESS FOR HEATING WATER BY SOLAR ENERGY

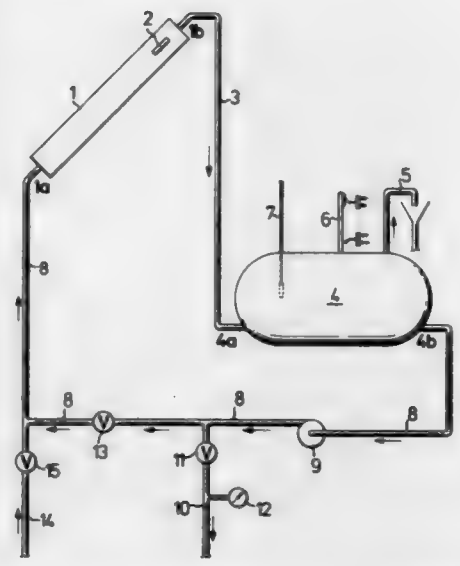
Armin Bayerle; Karl-Heinz Holz; Johannes Lüke, all of Frankfurt am Main, and Wolfgang Riederer, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 26, 1980, Ser. No. 210,594

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948207

Int. Cl.³ F24J 3/02

U.S. Cl. 126—419 5 Claims



1. Solar heating apparatus comprising a solar collector having an inlet and an outlet for a liquid; a reservoir having an inlet and an outlet for said liquid; conduit means for circulating the liquid from the collector outlet to the reservoir inlet and from the reservoir outlet to the collector inlet; withdrawal means between the reservoir outlet and collector inlet for withdrawing liquid from the apparatus on demand; injection means independent of said withdrawal means for injecting fresh liquid into the collector; means for sensing a temperature differential between the liquid in the collector and the liquid in the reservoir; and means responsive to the temperature differential sensing means for circulating liquid from the collector to the reservoir and recycling liquid from the reservoir to the collector or injecting fresh liquid into the collector.

4,404,958

SOLAR ENERGY COLLECTOR, AND WATER HEATER AND HEATING DEVICE WITH A HEAT PUMP CONTAINING THE SAID COLLECTOR

Alfred Boettcher, Hangstrasse 11, 51 Aachen, Allemagne, Fed. Rep. of Germany, assignor to Alfred Boettcher, Aachen, Fed. Rep. of Germany

Filed Jul. 14, 1980, Ser. No. 168,672

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1979, 2929162; Nov. 28, 1979, 2947877; Feb. 13, 1980, 3005253

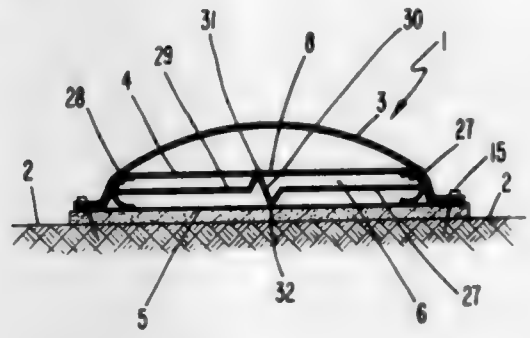
Int. Cl.³ F24J 3/02

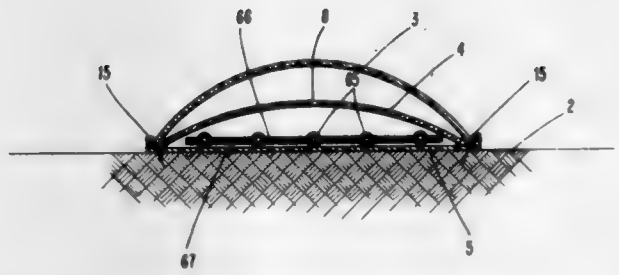
U.S. Cl. 126—426 15 Claims

1. A water heater, comprising a heat exchanger having a first compartment through which water to be heated is passed, and a second compartment through which a hot gaseous fluid is passed; means defining a circuit for the circulation of the fluid through said second compartment; and, in said circuit upstream of the said heat exchanger, a solar energy collector comprising at least three plastic sheets joined together so as to delimit a tube having inlet and outlet means for the circulation of the gaseous heat transfer fluid, and an insulation chamber on said tube, and wherein at least that sheet which constitutes an external wall of said chamber is permeable to solar radiation and further comprising means for absorbing solar energy arranged to contact the gaseous fluid circulated through said tube, means limiting the mean height of said tube, means com-

municating said insulation chamber with said tube for the circulation of gaseous fluid therebetween and means for fixing said collector to a support surface.

3. In a solar energy collector for heating a gaseous fluid, said collector comprising at least three plastic sheets joined together so as to delimit a tube and an insulation chamber adjacent said tube, said insulation chamber defined by a sheet which constitutes an external wall thereof and one of said sheets of said tube, wherein at least said sheet which constitutes an external wall of said chamber is permeable to solar radiation and wherein said tube includes inlet and outlet means for the circulation of a gaseous heat transfer fluid, the improvement comprising:





means for absorbing solar energy arranged to contact the gaseous fluid circulated through said tube which also serves as means limiting the mean height of said tube, said means comprising a thin plate which includes means defining a longitudinal bend, the profile of which is approximately N-shaped;

means communicating said insulation chamber with said tube for the circulation of gaseous fluid therebetween, said means comprising at least one opening in said one of said sheets of said tube; and

means for fixing the said collector to a support surface.

4,404,959

SOLAR HEATING SYSTEM

Ralph Mondragon, P.O. Box 199, Ranches of Taos, N. Mex. 87557

Filed Feb. 2, 1982, Ser. No. 345,167
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **10 Claims**

1. A solar heating system comprising:

a. a heat collecting and storage chamber located at the upper level of a building;

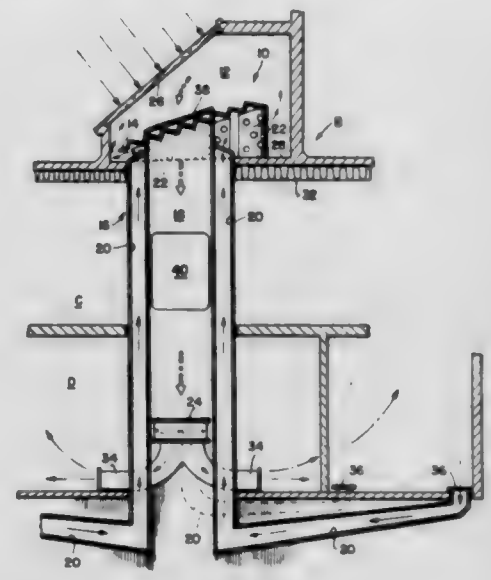
b. solar heat collecting means disposed and extending laterally within said chamber;

c. a hot air supply and return plenum including a generally vertically extending central air supply duct and a plurality of generally vertically extending return air passages surrounding said supply ducts;

d. heat storage and yielding means disposed in said chamber and adjacent said hot air supply and return plenum; and

e. means effecting circulation of air through said system by drawing hot air from said chamber through said supply duct and by returning relatively cooler air to said chamber through said return air passages;

wherein said heat collecting and storage chamber includes windows and a floor enclosing said chamber; said windows are disposed above said heat collecting means to enable impingement of the sun's rays upon said heat collecting means; said floor supports said heat storage and yielding means within said chamber; and said hot air



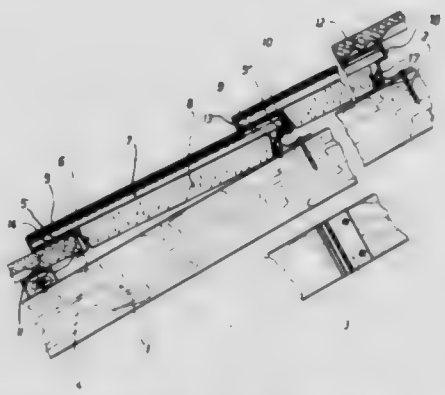
supply plenum, including said supply duct and said return air passages, extends down through said floor of said chamber to lower levels of a building in which said solar heating system may be installed.

4,404,960

ROOF SKIN FORMING A HEAT SINK

Karsten Laing, Herrenstrasse 57, 7500 Karlsruhe, Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 140,995
Claims priority, application Austria, Apr. 17, 1979, 2864/79
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—432 **11 Claims**



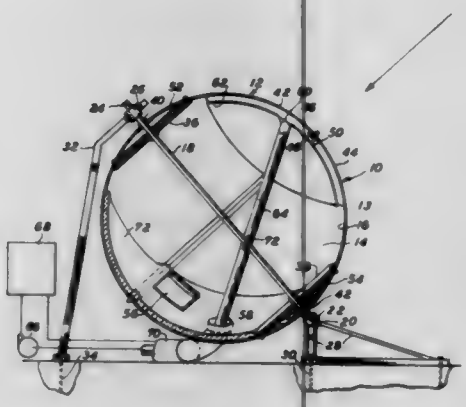
1. An absorber element for the absorption of solar energy and for exchanging heat with ambient air, characterized in that said element has a radiation absorption metal plate with an outer facing surface adapted to act as a roof skin and to be exposed to ambient air where the outer facing surface is substantially identical in appearance with that of a conventional roof covered with a plurality of conventional shingles, in that said element has a plastic extrusion panel with a plurality of fluid channels therein adapted to contain a heat carrier fluid and where the extrusion panel is engaged with said metal plate to provide direct thermal communication with an inner facing surface of the metal plate opposite said outer facing surface, in that the length of one margin of said element corresponds to the width of a plurality of conventional shingles, and in that said element has an overlapping region along two margins thereof adapted to join with conventional shingles.

4,404,961

APPARATUS FOR COLLECTING SOLAR ENERGY

Frank A. Stahlman, Rte. 5, Weller Dr., Plainfield, Ill. 60544

Filed Nov. 17, 1980, Ser. No. 207,558
Int. Cl.³ F24J 3/02
U.S. Cl. 126—432 8 Claims



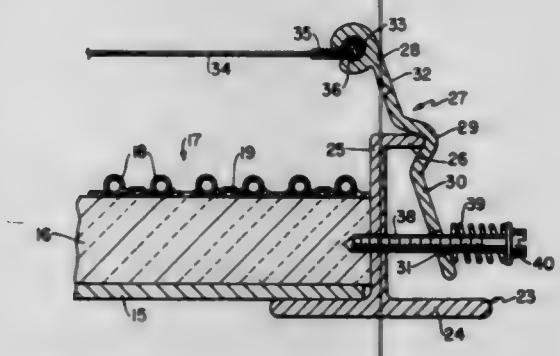
1. An apparatus for collecting solar energy comprising:
a first rigid hemispherical member;
a second rigid hemispherical member; said two members each having an opening at the apex and a circumferential flange at the periphery with an exterior surface having a solar heat absorbing coating thereon and being sized identically such that the two members may be joined as a sphere and restraining means associated with said flanges holding said members in fixed assembled relationship;
an axle member insertable through said apex openings to extend beyond said assembled sphere on at least one end;
said axle member connected to said sphere assembly by internal support members such that said sphere assembly is mounted on and carried by said axle member;
at least one support frame to engage said extending end of said axle to support said axle and said carried sphere assembly; and
means for directing a heat transferring gas into the interior of said sphere assembly to pick up heat energy from said sphere and means for extracting said gas after it has been heated.

4,404,962

LARGE FORMAT FILM GLAZED SOLAR COLLECTOR

Michael Zinn, Ellenville; Tamil D. Bauch, Kingston, and Morton Schiff, Kerhonkson, all of N.Y., assignors to Raybend Associates, New York, N.Y.

Filed Feb. 11, 1982, Ser. No. 347,709
Int. Cl.³ F24J 3/02; E04H 14/00; A45C 13/00; B65D 45/16
U.S. Cl. 126—450 21 Claims



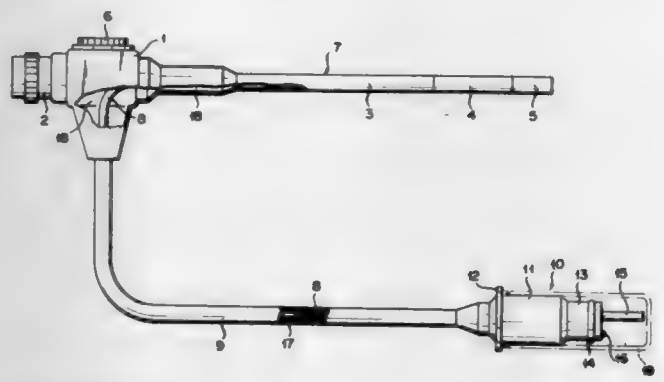
9. A solar collector assembly comprising
(a) a rectangular planar base,
(b) a frame around the periphery of said base,
(c) a flexible glazing film spanning said frame and covering said base,
(d) said frame including two pivotable elongated members along opposed longer sides of the rectangular base and having opposed upper edge portions movable away from one another,
(e) adjustable securing means connecting the pivotable frame members to the base, and
(f) said glazing film being secured along opposite edges to the movable edge portions of the pivotable frame members,
(g) whereby said pivotable frame member is pivoted by said securing means so that its edge portion moves away from the opposite portion of the frame to tension the glazing film.

4,404,963

ENDOSCOPE

Kitijiro Kohri, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1980, Ser. No. 199,866
Claims priority, application Japan, Oct. 31, 1979, 54-140647
Int. Cl.³ A61B 1/00
U.S. Cl. 128—4 15 Claims



1. In combination:
an endoscope having at least one end;
means defining a closed internal air filled space extending through substantially the entire length of the endoscope;
a cylindrical end portion connected to said one end and having an outer peripheral wall and an air port communicating said internal space to ambient air;
a hollow cylindrical fluid tight cap member of substantially the same length as said end portion and sized to slide telescopically over said end portion from the outer to the inner end thereof while covering said port;
means forming a sliding gas tight seal between the inner surface of said cap adjacent the open end thereof and said outer peripheral wall so that movement of said cap from the outer to the inner end of said portion is effective to force air in said cap inwardly through said port to pressurize said closed internal air filled space; and
latching means for retaining said cap in fully telescoped position on said end member to maintain pressurization of said endoscope.

4,404,964

ENDOSCOPE OCULAR DEVICE

Koji Kambara, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

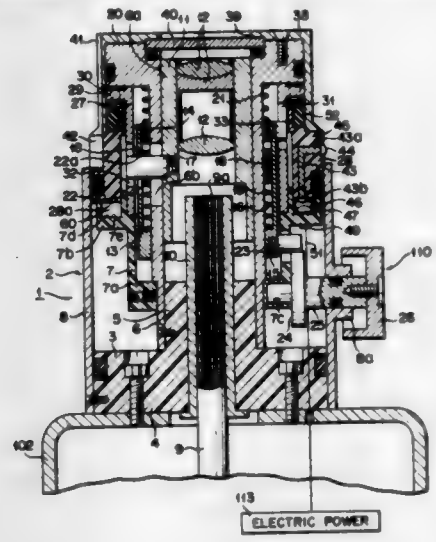
Filed Nov. 7, 1980, Ser. No. 204,897
Claims priority, application Japan, Nov. 15, 1979, 54-148209
Int. Cl.³ A61B 1/00
U.S. Cl. 128—4 5 Claims

1. An endoscope ocular device which comprises:
a hollow cylindrical housing having two ends and which is concentrically penetrated by an image guide from one of said ends to an intermediate part of the housing;
an ocular mounted in the housing in a state facing said image guide and being movable axially of the housing;
rotatable diopter-adjusting means concentrically provided in the housing in a state movable axially of the housing and being operatively connected to the ocular;

a return ring operatively connected to the diopter-adjusting means, and which has an outer peripheral wall, the return ring being provided in the housing in a rotatable but axially immovable state such that the return ring, when taking a first angular position relative to the housing, causes the diopter-adjusting means to set the ocular in a prescribed dioptric positon, and, when taking a second angular position, causes the diopter-adjusting means to return to a position enabling axial movement;

a contact chamber disposed between the return ring and housing and extending circumferentially of the housing;

a source of electric power coupled to the housing;



a first electrical contact provided in the return ring and having two ends, one end of said first electrical contact being exposed to the outer periphery of the return ring, and the other end of said first contact projecting into the contact chamber; and

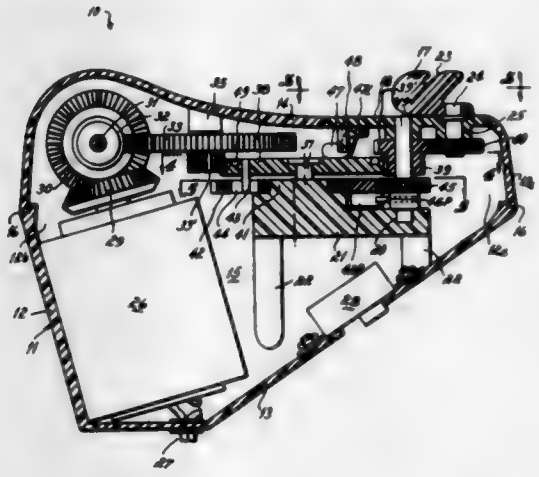
a second electrical contact coupled to the electric power source and which is mounted in the contact chamber such that when the return ring is in the first angular position, the second electrical contact contacts the other end of the first electrical contact, and, when the return ring is in the second angular position, the second electrical contact is removed from the first electrical contact.

4,404,965

SKIN MASSAGE DEVICE

Kym H. Waits, and Roland S. Sedziol, both of Cincinnati, Ohio, assignors to Kym H. Waits, Cincinnati, Ohio

Filed Jan. 27, 1982, Ser. No. 343,270
Int. Cl.³ A61H 7/00
U.S. Cl. 128—46 **13 Claims**



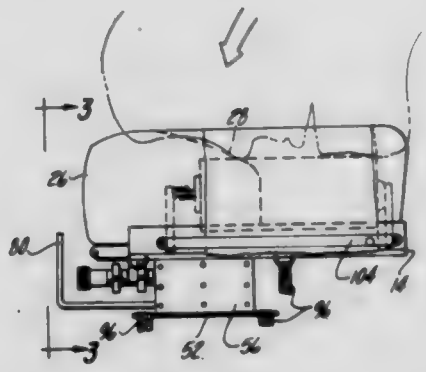
1. A massage device comprising: a housing, an electric motor mounted by and within said housing; a massage element mounted for movement relative to said housing; and drive means connecting said motor to said massage element for generating a cyclical path of motion of said massage element comprising a circular motion followed by an increasing, then decreasing spiral path.

4,404,966

HEADREST FOR A CHIROPRACTIC DEVICE

Lawrence Hartman, 2015 Rowland, Royal Oak, Mich. 48067

Filed Jul. 24, 1981, Ser. No. 286,574
Int. Cl.³ A61F 5/00
U.S. Cl. 128—69 **5 Claims**



1. A portable headrest for use with a chiropractic table of the type having a pair of stationary headrests spaced apart from each other and forming a space therebetween, said portable headrest comprising:

a base plate having an upper end and a lower surface,

means for securing said base plate to said stationary headrests,

a support plate,

means pivotally securing one edge of said support plate to one edge of said base plate so that said support plate is pivotal between a first position in which said support plate is spaced outwardly from said upper surface of said base plate, and a second position in which said support plate is positioned closely adjacent said base plate,

a channel member secured to a midpoint of said base plate, said channel member extending outwardly from said lower surface of said base plate and said channel member being dimensioned to fit in said space between said stationary headrests,

latch means for retaining said support plate in said first position, said latch means being at least partly contained within said channel member and releasable upon application of a predetermined pressure on said support plate in a direction towards said base plate,

means for moving said support plate from said second position and to said first position, said moving means comprising an elongated handle extending outwardly from one end of said channel member so that said handle extends through said space between said stationary headrests, said handle having a free end extending outwardly from said one edge of said base plate, and

means for variably adjusting the release pressure of said latch means, said adjusting means comprising an adjustment member extending outwardly from said one end of said channel member extends through said space between said stationary headrests, said adjustment member having a free end positioned adjacent said one edge of said base plate.

4,404,967

SURGICAL STRUT FOR TREATMENT OF THE BACK-BONE

Kazimierz Bacal, Akademicka; Lech Wierusz, Browarniany, and Stanislaw Kossek, Maja, all of Poland, assignors to Wyzsza Szkola Inzynierska Im. Jurija Gagarina, Zielona

Filed Jan. 10, 1983, Ser. No. 456,734
Claims priority, application Poland, Jan. 18, 1982, 234744
Int. Cl.³ A61F 5/01
U.S. Cl. 128—69
1 Claim



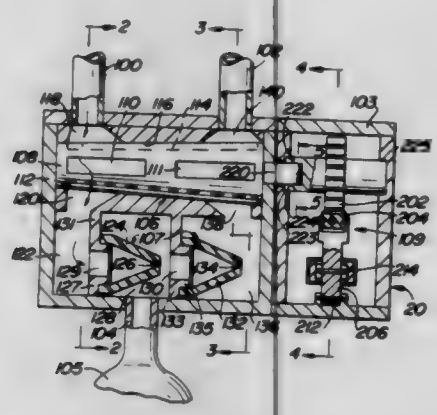
1. A surgical strut for the treatment of the back-bone consisting of a rod having a circular cross-section and a pectoral- and lumbar hook mounted thereon, characterized in that it has a rod (1) provided with a thrust pin (2) protruding at one side and mounted on one end of the rod longitudinally cut sleeve (3) with skew recesses (4) made along the cut, whereby the end of the sleeve (3) external in relation to the rod (1) has the outer surface in a form of a cone on which a pectoral hook (5) is mounted with the conical inner surface of the hole.

4,404,968

PUMP AND VALVE ASSEMBLY FOR PENILE IMPLANT

Alvin S. Evans, Sr., 234 Shubert Ave., Runnemede, N.J. 08078

Filed Apr. 7, 1982, Ser. No. 366,447
Int. Cl.³ A61F 5/00
U.S. Cl. 128—79
20 Claims



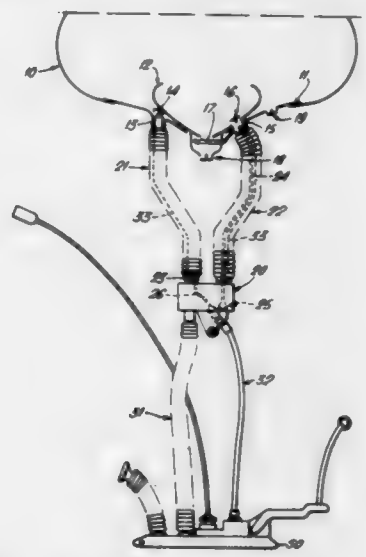
1. For simulating a natural erection, a pump and valve assembly to be used in combination with a prosthetic penile implant which includes bladder means which are implanted within the penis and a fluid containing reservoir which is implanted at a remote location thereto, wherein said assembly comprises a housing, a first portion of which is in fluid communication with said reservoir and a second portion of which is in fluid communication with said bladder means, valve means coupled between said reservoir and said bladder means for controlling the flow of fluid therebetween, moveable means which when in a first position allows said fluid to flow from said reservoir, through said valve means into said bladder means and when in a second position allows said fluid to flow from said bladder means, through said valve means and into said reservoir, means for moving said moveable means between said first and second positions, pump means coupled to said valve means for pumping said fluid from said reservoir to said bladder means to produce a simulated erection when said moveable means is in said first position and from said bladder means to said reservoir to produce a flaccid penis when said moveable means is in said second position.

4,404,969

RESPIRATORS

Arnold W. Cresswell, 132, Prospect Rd., Farnborough, Hampshire; John Ernsting, 21, Wellington Ave., Fleet, Hampshire; James A. Turnbull, "Coppice", Ash Green Rd., Ash, Aldershot, Hampshire, and Waldemar E. Voss, "Blandings", Potter Street Hill, Pinner, Middlesex, all of England

Filed Nov. 9, 1978, Ser. No. 959,100
Claims priority, application United Kingdom, Nov. 11, 1977, 47129/77
Int. Cl.³ A61M 15/00; A62B 18/00
U.S. Cl. 128—201.23
23 Claims



1. Apparatus for supplying respirable gas to a respirator of the type having a hook with a cowl and a visor adapted to envelop at least the face of a user and a mask for delivering respirable gas to the user, means for maintaining a gas pressure within the hood but outside the mask greater than that outside the hood and for preventing misting of at least a portion of the visor, said apparatus comprising:

a control unit including an air supply manifold and mountable on the person and mounted remote from the respirator,

a respirable air supply duct connected into said air supply manifold,

a flexible mask supply duct connected to said air supply manifold and adapted for connection to the respirator mask,

a flexible hood supply duct connected to said air supply manifold and adapted for connection to the respirator hood cavity external to the mask,

a non-return valve in said hood supply duct and permitting therein in use only flow of gas from said air supply manifold to the hood,

a flexible mask oxygen supply duct having an exit within said mask supply duct and adapted for connection to a constant flow source of oxygen, and

a restriction in said mask oxygen supply duct for controlling the flow of oxygen therethrough,

the total capacity of said mask supply duct and said air supply manifold being such that sufficient oxygen can be stored therein between inspirations to ensure on inspiration a predetermined minimum thereof within a range of partial pressures of oxygen in the respirable gas and surplus oxygen can enter said hood supply duct during prolonged non-inspiration.

23. Apparatus for supplying respirable gas to an aircrew respirator of the type having a hood with a cowl and visor adapted to envelop at least the face of a user and a mask for delivering respirable gas to the user, means for maintaining a

gas pressure within the hood but outside the mask greater than that outside the hood and for preventing misting of at least a portion of the visor, said apparatus comprising:

a control unit including an air supply manifold and an oxygen supply manifold and mountable in the region of the aircrewman's chest,

a flexible respirable air supply duct connected into said air supply manifold and adapted for connection to a filter/-blower unit,

a flexible mask supply duct connected to the said supply manifold and adapted for connection to the respirator mask,

a flexible hood supply duct connected to said air supply manifold and adapted for connection to the respirator hood cavity external to the mask,

a non-return valve lightly biassed closed in said hood supply duct approximate said control unit and permitting therein in use only flow of gas from said air supply manifold to the hood,

a flexible oxygen supply duct connected to said oxygen supply manifold,

a flexible mask oxygen supply duct contained within said mask supply duct, connected to said oxygen supply manifold, and terminating with an exit just upstream of the connection for said mask supply duct to the mask,

a restriction in said mask oxygen supply duct for controlling the flow of oxygen therethrough,

a flexible emergency hood gas supply duct contained within said hood supply duct connected to said oxygen supply manifold and having a restrictor therewithin and an exit in said hood supply duct downstream of said non-return valve,

a cock on said control unit for determining whether oxygen shall flow in said emergency hood gas supply duct, and

an anti-drowning facility whereby said mask supply duct can be manually disconnected from the respirator mask at the connection thereto,

the total capacity of said mask supply duct and said air supply manifold being such that sufficient oxygen can be stored therein between inspirations to ensure on inspiration a predetermined minimum within a range of partial pressures of oxygen in the respirable gas and surplus oxygen can enter said hood supply duct during prolonged non-inspiration.

4,404,970

HEMOSTATIC ARTICLE AND METHODS FOR PREPARING AND EMPLOYING THE SAME

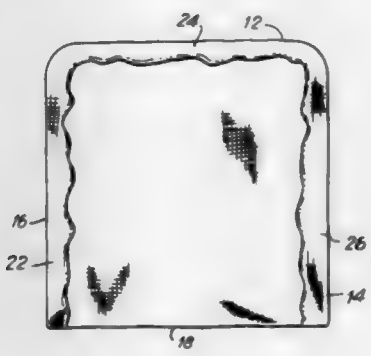
Philip N. Sawyer, 7600 Ridge Blvd., Brooklyn, N.Y. 11209

Continuation-in-part of Ser. No. 907,899, May 19, 1978, Pat. No. 4,238,480. This application Jul. 22, 1980, Ser. No. 171,191

The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.

Int. Cl.³ A61B *17/12*

U.S. Cl. 128—325 **12 Claims**



1. A hemostatic article prepared by a method comprising modifying one of the group consisting of a collagen substance or collagen-like substance by dissolving the substance in water and modifying the thereby dissolved substance to render the surface charge thereof effectively more positive than prior to modification whereby to provide augmented hemostatic properties thereto and freezing and drying the thereby modified substance in a porous body, said porous body having a normal structural strength and composition which is modified by said modified substance, the modified substance being blood-soluble such that upon subjecting the thereby modified substance in the porous body to blood, the modified substance goes into solution therein; the supporting body being so constructed and arranged that it resumes its normal strength and composition after the modified substance has gone into solution.

4,404,971

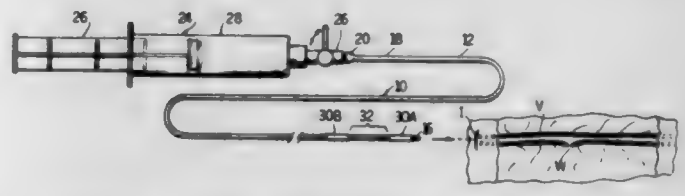
DUAL BALLOON CATHETER

Harry H. LeVeen, 321 Confederate Cir., Charleston, S.C. 29407; Eric G. LeVeen, 3-3 Woodlike Rd., Albany, N.Y. 12203, and Robert F. LeVeen, 312 Lombard St., Philadelphia, Pa. 19147

Filed Apr. 3, 1981, Ser. No. 250,603

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—348.1 **1 Claim**



1. A method of closing an opening in a first blood vessel which comprises introducing the closed end of a catheter into a second blood vessel remote from and communicating with said first blood vessel; the said catheter being formed of an elongated tube having a central bore extending the length thereof, said bore being closed at one end of said catheter and having means for introducing a pressurized fluid into said bore at the other end of said catheter, said catheter further including first balloon forming structure disposed about said tube adjacent the closed end of said catheter, second balloon forming structure disposed about said tube spaced along the length thereof apart from said first balloon forming structure, each said balloon forming structure having an expandable cylindrical wall enclosing said tube and sealed at the ends thereof to said tube thereby trapping an annular closed space between said wall and said tube, and first and second ports in said tube communicating the interior bore thereof with said closed spaces trapped by said walls of said first and said second balloon forming structures, respectively; advancing said catheter in said blood vessels to a position in said first blood vessel with said first and second balloon forming structures disposed on opposite sides of said opening; introducing fluid under pressure into said catheter through said means at the other end of said catheter thereby causing said fluid to flow into said closed spaces and expanding said walls to an oblate shape blocking flow of blood in said first blood vessel; surgically closing said opening while retaining pressure on said fluid; removing pressure from said fluid after closing said opening thereby to deflate said balloon forming structures; and removing said catheter from said blood vessels.

4,404,972

IMPLANTABLE DEVICE WITH MICROPROCESSOR CONTROL

Pat L. Gordon, West Columbia; Richard V. Calfee, Houston, both of Tex., and Jay Miner, Sunnyvale, Calif., assignors to Intermedics, Inc., Freeport, Tex.

Filed May 18, 1981, Ser. No. 264,670

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 PG **24 Claims**

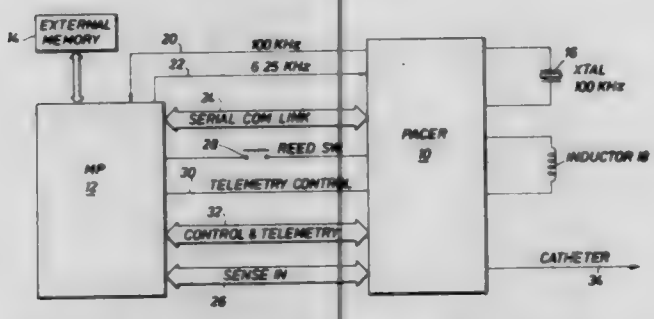
1. A method of reducing the power consumption of a microprocessor controlled system comprising the steps of:

(a) storing a wakeup parameter;

(b) operating the microprocessor in a sleep state wherein no

processing activity or a predetermined sleep processing activity occurs;

(c) generating event signals upon the occurrence of corresponding predetermined events; and



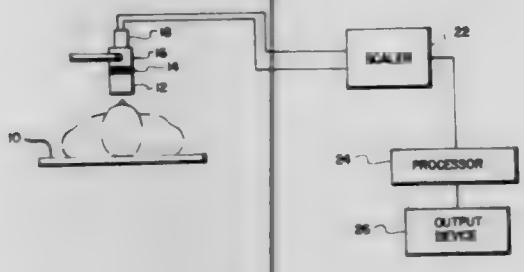
(d) operating the microprocessor with a processing activity increased with respect to the activity occurring during said sleep state, in response to a generated event signal which corresponds to the stored wakeup parameter.

4,404,973

HEART MUSCLE EVALUATION METHOD AND APPARATUS

Jack Lancaster, 1410 Park East, Garland, Tex. 75043; John Floyd, 9620 Greensprint, Dallas, Tex. 75238, and William Harvey, 7016 Leameadow, Dallas, Tex. 75248

Filed Apr. 20, 1981, Ser. No. 255,895
Int. Cl.³ A61G 5/02
U.S. Cl. 128—654 16 Claims



1. An apparatus for evaluating the condition of the heart muscle for use in conjunction with means for injecting radioactive material into the bloodstream, said apparatus comprising:

a single roughly collimated radiation detector adapted to be positioned near the heart muscle for simultaneously detecting radiation both within the heart muscle and in the vicinity of the heart muscle;

means coupled to said detector for generating a plurality of signals indicative of the total amount of radiation detected; and

processor means for processing said plurality of signals and for distinguishing in response to said processing radiation detected within the heart muscle from radiation detected in the vicinity of said heart muscle.

4,404,974

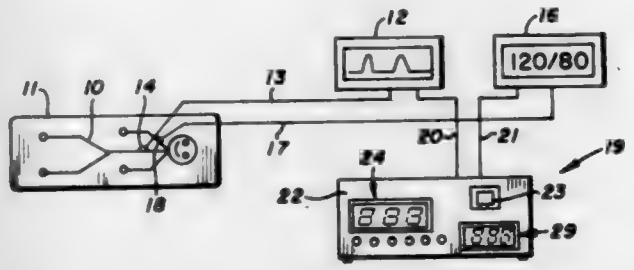
METHOD AND APPARATUS FOR MONITORING AND DISPLAYING HEART RATE AND BLOOD PRESSURE PRODUCT INFORMATION

John S. Titus, Prior Lake, Minn., assignor to Possis Medical, Inc., Minneapolis, Minn.

Filed Aug. 7, 1981, Ser. No. 291,023
Int. Cl.³ A61B 5/02
U.S. Cl. 128—670 62 Claims

1. A method of providing heart rate and blood pressure product information of a primate comprising:

sensing the heart rate of a primate, providing a first signal related to the sensed heart rate, sensing the systolic blood pressure of the primate simultaneously with the sensing of the heart rate of the primate, providing a second signal related to the systolic blood pressure simultaneously with the first signal, combining the first and second signals to produce current heart rate and systolic blood pressure product information and time delayed heart rate and systolic blood pressure product information, visually displaying current heart rate and systolic product information



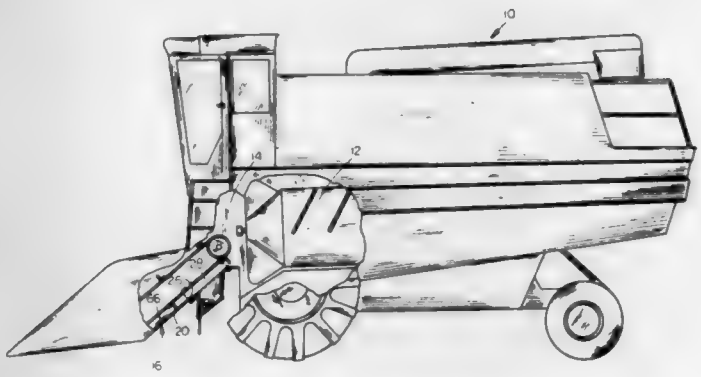
and time average heart rate and systolic product information derived from the combined first and second signals, and actuating a recognizable alarm when the time average heart rate and systolic blood pressure information exceed a selected level.

4,404,975

ROCK TRAP FOR A COMBINE

Roger L. Westby, Rte. 2, New Rockford, N. Dak. 58356

Filed Nov. 25, 1981, Ser. No. 324,762
Int. Cl.³ A01F 12/16
U.S. Cl. 130—27 JT 1 Claim



1. In combination,

a crop harvester including a crop threshing means having rearward and forward ends, a feeder housing means, having rearward and forward ends, pivotally mounted on said crop harvester so that its rearward end is in communication with said crop threshing means, and a crop gathering means at the forward end of said feeder housing, said feeder housing comprising a top wall, a bottom wall, and opposite side walls, said bottom wall having its rearward end terminating forwardly of said crop threshing means to define an opening between the rearward end of said feeder housing and said crop threshing means,

a stone retarder panel having rearward and forward ends, said panel being pivotally secured, at its rearward end, to said crop harvester,

said panel embracing the underside of the upper end of said feeder housing to close said opening,

means securing the forward end of said panel to said feeder housing whereby said panel will pivotally move with said feeder housing,

said panel comprising a rectangular bottom portion having rearward and forward ends and opposite side wall portions which extend upwardly therefrom adapted to embrace said feeder housing, said bottom portion of said panel having a rectangular opening formed therein,

and a rock trap box means secured to said panel positioned below said rectangular opening for receiving rocks therein which are moving upwardly in said feeder housing means towards said crop threshing means,

said rock trap box means having an interior rock compartment which is in communication with the interior of said feeder housing,

said rock trap box means having a lower end which is selectively closed by a spring loaded door means,

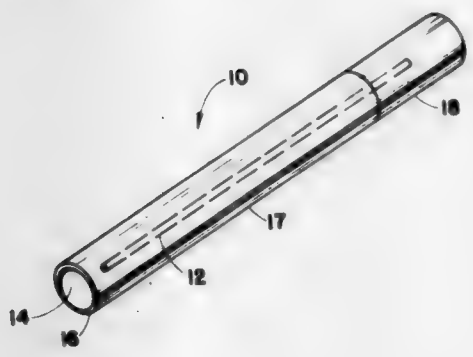
said lower end of said rock trap box being selectively opened to permit rocks accumulated therein to be dumped on the ground.

4,404,976

LOW DELIVERY CIGARETTE

Lawrence L. Stewart, Jr., Richmond, Va., assignor to Philip Morris Inc., New York, N.Y.

Filed Sep. 14, 1981, Ser. No. 301,486
Int. Cl.³ A24D *1/00*
U.S. Cl. 131—339 **6 Claims**



1. A smoking article comprising:

a cylinder of smoking material;

a filter attached to said cylinder of smoking material; and

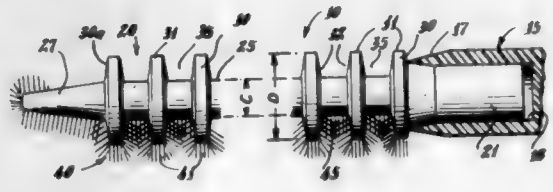
a tube of heat fusible material extending from near one end of said smoking material, to the junction of said smoking material and said filter, said tube being open at both ends for conveying virtually unfiltered, undiluted smoke the length of said tube.

4,404,977

COSMETICS BRUSH

Martin M. Vasas, Fairfield, Conn., assignor to The Bridgeport Metal Goods Manufacturing Company, Bridgeport, Conn.

Filed Sep. 14, 1981, Ser. No. 301,636
Int. Cl.³ A45D *40/26*
U.S. Cl. 132—88.7 **20 Claims**



1. A cosmetics applicator brush comprising:

(A) a rod;

(B) a flexer positioned at the end of said rod, the flexer having outwardly extending rib portions defining grooved portions therebetween; and

(C) bristles secured to the exterior of said ribbed flexer and extending outwardly therefrom, said bristles deployed on both of said rib and grooved portions.

4,404,978

BI-STRING DENTAL FLOSS HOLDER

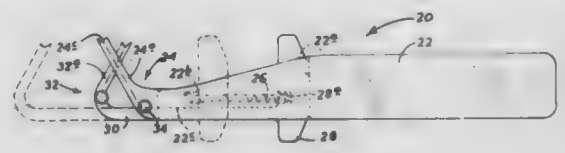
David L. Withers, 3424 Archer Ct. N.W., Salem, Oreg. 97304

Filed Mar. 10, 1982, Ser. No. 356,773
Int. Cl.³ A61C *16/00*
U.S. Cl. 132—91 **17 Claims**

4. A tool of the type using dental floss or the like for use in flossing teeth comprising

an elongate handle,

a pair of double-pronged fork members joined to said handle, each member having a pair of spaced-apart prongs constructed to receive a length of a run of floss extended between extremeties of the prongs in the pair, with lengths of floss so received by said two members residing in spaced-apart, generally parallel, confronting relationship,



said fork members being structured for simultaneously and unobstructedly disposing such supported lengths of floss adjacent common-jaw tooth surfaces, and

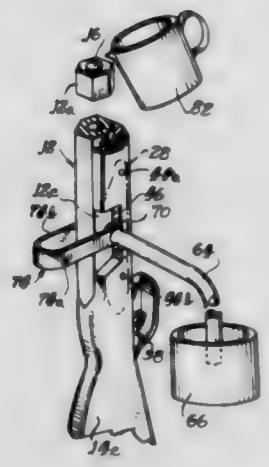
for each fork member, means for anchoring opposite ends of a floss run associated with a length of floss extended between the extremeties of the associated prongs, thus to facilitate tensioning of such a length.

4,404,979

APPARATUS FOR CLEANING THE BORE OF A FLINTLOCK MUZZLELOADING RIFLE

Larry R. Hobbs, 611 S. Amy La., Idaho Falls, Id. 83401

Filed Sep. 9, 1981, Ser. No. 300,647
Int. Cl.³ B08B *9/00*
U.S. Cl. 134—166 C **6 Claims**



1. Apparatus for use in cleaning the longitudinal bore in a barrel of a flintlock muzzleloading type rifle wherein the barrel is mounted on a stock and has an exposed touchhole opening communicating with the longitudinal bore, said apparatus comprising;

a drain member having a flow passage therethrough intersecting at least one end and defining a fluid entry opening at said one end,

seal means mounted on said drain member adjacent said one end and having an annular sealing surface adapted for sealing engagement with said barrel peripherally of said exposed touchhole opening, said seal means having a flow passage communicating with said touchhole and with said flow passage in said drain member,

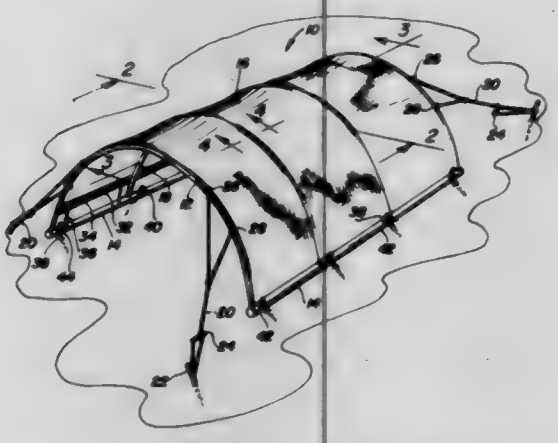
and mounting means attached to said drain member and enabling releasable mounting of said drain member and sealing means on said barrel and stock with said annular sealing surface engaging said barrel peripherally of said touchhole opening so that cleaning fluid introduced into the muzzle end of the longitudinal bore is discharged through said touchhole and through said drain member.

4,404,980

ARCHED SUPPORT STRUCTURE WITH COVER

Mark W. Wade, Boynton Beach, Fla., assignor to James Nemec, West Palm Beach, Fla.

Filed Sep. 30, 1980, Ser. No. 192,189
Int. Cl.³ A45F 1/16
U.S. Cl. 135—102 6 Claims



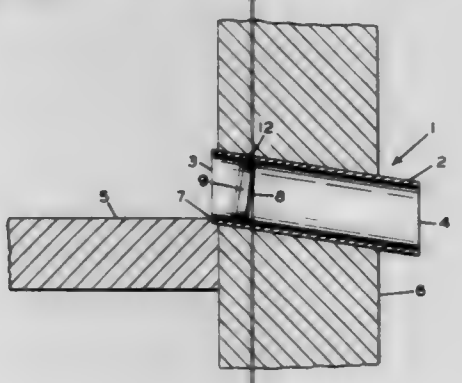
1. A portable shelter including a plurality of laterally spaced apart and downwardly opening arched plastic pipe members of generally 180° in angular extent, a flexible covering disposed over and supported from said pipe members in arched configuration, the concave inner side of said cover including means defining flexible sleeve portions carried thereby and through which said pipe members extend, the upper portions of said pipe members having longitudinally extending stiffening rods disposed therein to prevent flattening or peaking of the upper portions of said pipe members, means carried by said pipe members preventing longitudinal displacement of said rods in said pipe members, a pair of elongated tubular bars extending between corresponding ends of said pipe members and having upwardly opening apertures formed therein downwardly into which the ends of said pipe members extend with the terminal ends thereof abutted against the inner surface portions of said tubular bars opposite said apertures, ground anchor means supported from said tubular bars for anchoring the latter to the ground, elongated horizontal anchor means carried by said cover, extending transversely of said sleeve portions and spaced above each of said tubular bars, and elongated elastic tension members anchored at one set of corresponding ends to said anchor means adjacent a corresponding sleeve portion and anchored at their other set of corresponding ends to the corresponding tubular bar adjacent the corresponding sleeve portion.

4,404,981

SCUPPER DEVICE

James P. Valenti, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Feb. 16, 1982, Ser. No. 348,849
Int. Cl.³ F16K 13/04
U.S. Cl. 137—67 5 Claims



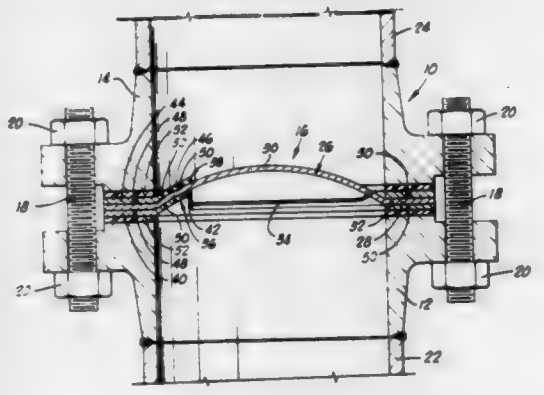
1. In combination, a scupper device comprising a pipe having a water inlet opening at one end and a water discharge opening at the other end, said pipe being adapted to be installed through a building wall at the edge of a floor therein, with the inlet opening in a position to receive water from the floor, said discharge opening being positioned in a plane below that of the inlet opening, a retaining ring frictionally held in position in said pipe adjacent the water inlet opening therein, a single, water-soluble sealing film having a main body portion covering at least one side of said retaining ring to exclude air movement through the pipe when no water is present and, by dissolving when water is present, allow passage of water from the inlet opening through the pipe to the discharge opening thereof.

4,404,982

RUPTURABLE PRESSURE RELIEF APPARATUS

Sam A. Ou, Bixby, Okla., assignor to BS&B Safety Systems, Ltd., Limerick, Ireland

Filed Feb. 10, 1982, Ser. No. 347,472
Int. Cl.³ F16K 13/04
U.S. Cl. 137—68 R 14 Claims



1. A rupturable pressure relief apparatus adapted to be clamped between inlet and outlet annular support members comprising:

a rupture disk having an annular flange portion connected to a concave-convex portion by a circular transition connection, the concave-convex portion including a groove in a side thereof creating a line of weakness therein;

at least one concave-convex hinge reinforcing member attached to a side of said concave-convex portion of said rupture disk having a shape and positioned adjacent a portion of said concave-convex portion of said rupture disk whereby upon rupture, said concave-convex portion of said rupture disk tears along said line of weakness created by said groove and bends about an integral untorn portion corresponding with said hinge reinforcing member.

4,404,983

MOTOR VEHICLE FUEL TANK WITH HEAT RESPONSIVE CLOSURE MEANS

Dieter Scheurenbrand, Ostfildern, and Einhard Kleinschmit, Esslingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

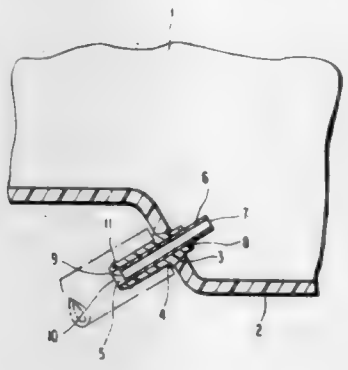
Filed Oct. 24, 1980, Ser. No. 200,578
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2942922
Int. Cl.³ F16K 17/38
U.S. Cl. 137—74 9 Claims

1. A fuel tank for motor vehicles, the tank being potentially subject to excessive heat, the fuel tank including at least one connecting socket means having a fluid outlet for enabling a connecting of a fuel line to the fuel tank, the connecting socket means being arranged in a lower zone of the fuel tank and including an axially extending bore, and comprising

a metal sleeve means arranged in the bore of the connecting socket means so that an inner end of the metal sleeve

means freely projects into an interior of the fuel tank beyond an inner end of the connecting socket means for transmitting heat to said interior at a greater rate than the heat transmitting rate of the socket means,

an outer end of the metal sleeve means is located within and axially spaced from an outer end of the connecting socket means,



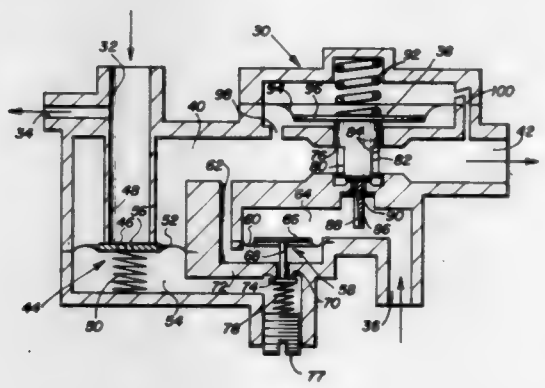
the connecting socket means having a greater capacity than the metal sleeve means to deform for sealing the fluid outlet upon application of excessive heat and upon application of excessive heat the connecting socket means deforms to seal the fluid outlet.

4,404,964

GAS-LIQUID MIXING METERING SYSTEM

James S. Jones, 45 Crown Pl., Richardson, Tex. 75080

Continuation of Ser. No. 155,931, Jun. 3, 1980, abandoned. This application Feb. 17, 1982, Ser. No. 349,533
Int. Cl.³ G05D *11/03*
U.S. Cl. 137—88 13 Claims



1. A blender of gas and liquid fuels from a gas source and from a liquid fuel supply reservoir and having a gas inlet, and an outlet which comprises:

a servo valve to open and close said gas inlet;

a throttle valve;

means to apply fuel gas under pressure to one side of said throttle valve;

means for connecting said inlet to said liquid fuel supply reservoir to supply liquid fuel under the pressure of said gas source to the other side of said throttle valve;

means including a variable proportioning device between said inlet and outlet responsive to reduction of gas pressure at said outlet to reduce the gas pressure on said throttle valve to open said servo valve and supply fuel gas from said inlet to said proportioning device; and

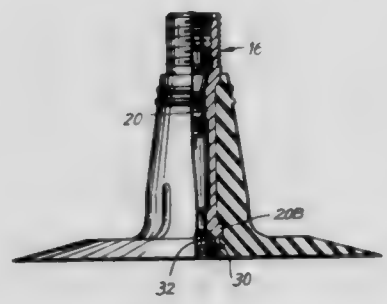
variable passage means between said outlet and said other side of said throttle valve to entrain proportional liquid flow with gas flow in said outlet dependent upon the pressure difference between said outlet and said other side of said throttle valve.

4,404,985

AIR-LIQUID VALVES FOR OFF-THE-ROAD VEHICLE TIRES

Carl Stasiunas, Altavista, Va., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 144,517, Apr. 12, 1980, abandoned. This application Oct. 8, 1981, Ser. No. 309,741
Int. Cl.³ F16K *15/20*
U.S. Cl. 137—234.5 1 Claim



1. In a valve device having a longitudinal axis, comprising a rubber body having a tubular stem portion and, integral therewith, a base member; a tubular metal insert having a bore; a valve core disposed within the bore of said insert, the insert extending to the lower end of said rubber body and being substantially encased therein; first and second thickened wall portions for said tubular metal insert spaced between a third, thin wall portion of substantially constant inner diameter, the first thickened wall portion being adjacent to and located upwardly of the lower end of said valve core, the second thickened wall portion being adjacent the lower end of said insert and having interior and exterior lower surfaces, whereby said bore for the passage of fluid comprises a first part defined by said thin wall portion of constant inner diameter, and a second part defined by the second thickened wall portion at which the bore diameter is lessened; the improvement comprising:

a hook-like annular projection at the lower end of said insert, said hook-like annular projection being completely surrounded by the rubber of said body so that the interior portion of rubber defines a continuing third part of said bore, the diameter of the third bore part defined by said interior portion of rubber being at least as great as the substantially constant inner diameter of the thin wall portion of said insert between said first and second thickened wall portions, the interior lower surface of said second thickened wall portion being tapered downwardly outwardly; further, in which said hook-like annular projection is thinner than said second thickened wall portion, and extends downwardly for a short distance from approximately a central location between the interior and exterior lower surfaces of said second thickened wall portion and then is curved outwardly of said valve axis, and in which said interior portion of rubber extends upwardly so as to contact said tapered interior lower surface of said second thickened wall portion above said hook-like annular projection;

further, in which the diameter of said interior portion of rubber decreases with distance toward the lower end of said rubber body.

4,404,986

TAKE UP SYSTEM FOR LONG LENGTHS OF HIGH PRESSURE HOSE

James B. McKnight, Louisville, Ga., assignor to Fulghum Industries, Inc., Wadley, Ga.

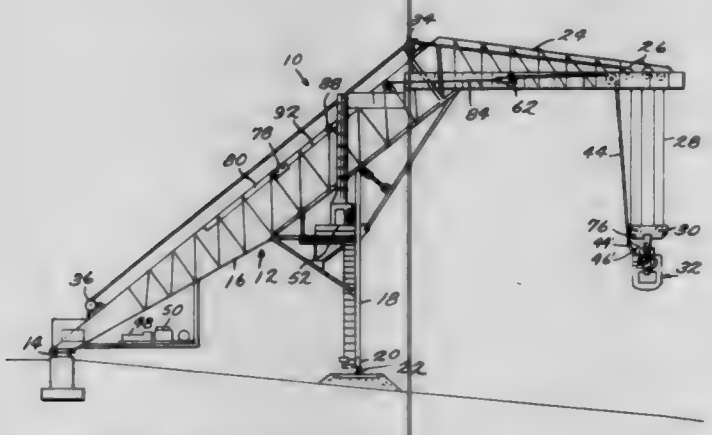
Filed Jan. 13, 1981, Ser. No. 224,822
Int. Cl.³ B65H *75/34, 51/20*
U.S. Cl. 137—355.17 4 Claims

1. In a high pressure system having two flexible resilient hoses for alternately supplying fluid under high pressure from a fixed source thereof to, and alternately exhausting the fluid

from, a double acting fluid motor movable relative to the source, the combination of a take-up system for maintaining said hoses slack-free comprising:

fixed means connecting one end of each of said hoses to the source with the hoses extending from said means to the motor with a length equal to at least the maximum distance between said fixed means and the motor;

flexible line means extending between and connecting said hoses intermediate their ends;



a movable counterweight; and

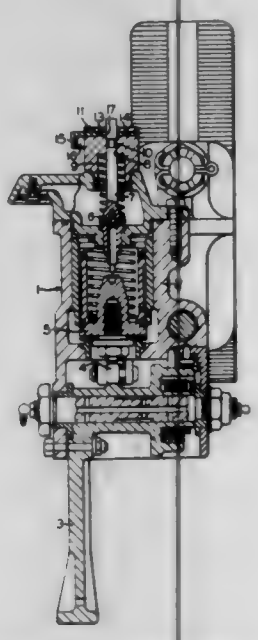
means connecting said counterweight with said line means, said connecting means being movable along an intermediate length of said line means, whereby alternate stretching and alternate contracting of said hoses, occasioned by the alternative supply of high pressure fluid thereto and alternative exhaust of the fluid therefrom may take place without substantial movement of said counterweight.

4,404,987

CAP NUT FOR A TRIP COCK DEVICE INCLUDING A DETENT ARRANGEMENT FOR OVERRIDING AUTOMATIC RESET

Robert J. Bridigum, Plum Township, Allegheny County, and William S. Johnston, Forest Hills Borough, both of Pa., assignors to American Standard Inc., Wilmerding, Pa.

Filed Sep. 24, 1981, Ser. No. 305,236
Int. Cl.³ F16K *37/00, 31/00, 31/524*
U.S. Cl. 137—556 **3 Claims**



1. A cap nut assembly for installation in a railway trip cock device, such trip cock device of the type having a trip lever engageable with a trip arm supported adjacent a railroad track section, such trip lever having a cam portion which causes upward movement of a piston as such trip lever is rotated, a pilot valve seat member disposed in such trip cock device above such piston and axially movable upward upon upward contact with such piston, said cap nut assembly comprising:

a cap nut member having a threaded portion adapted to insert into a threaded bore in such trip cock device axially above such pilot valve seat member; said cap nut member having a coaxial through bore;

a pilot valve stem member axially reciprocably movable in said through bore and having formed thereon an annular groove;

at least one detent member operably disposed in said cap nut member;

biasing means disposed in said cap nut member for biasing said detent member in a direction transversely to said through bore and engaging said groove; said stem having pilot valve means on the end opposite said groove and at a predetermined axial distance from said groove for engaging such pilot valve seat member in such trip cock device; and

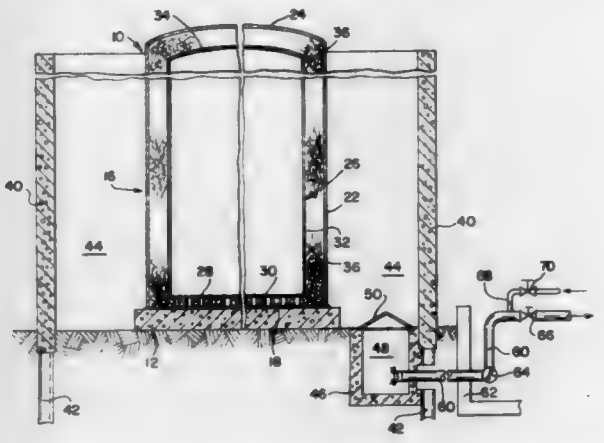
said predetermined axial distance being such that upward movement of said pilot valve means by said pilot valve seat member to an unseated position situates said detent member adjacent to said groove axially arresting said stem such that at least a portion of said stem extends axially outward of said through bore in said cap nut member to indicate a tripped condition of such trip cock device.

4,404,988

PRESSURE SEATED CLOSURE FOR CONTAINMENT DRAIN

Joel H. Trammell, Hinsdale, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Dec. 16, 1981, Ser. No. 331,213
Int. Cl.³ E03B *5/00*
U.S. Cl. 137—565 **6 Claims**



1. Apparatus for draining a liquid which has been inadvertently freed from a primary storage container and captured in a containment space comprising:

a drain conduit extending from the containment space to a remote location, with said drain conduit having an opening in a lower part of the containment space into which captured liquid can flow by gravity when not closed;

a valve, in the drain conduit, outside of the containment space;

a pressurization line, containing a valve, communicating with the drain conduit between the drain conduit valve and the conduit opening;

a closure in the drain conduit opening adapted to bar flow of captured liquid into the drain conduit; and

closure retainer means releasably securing the closure in the drain conduit opening;

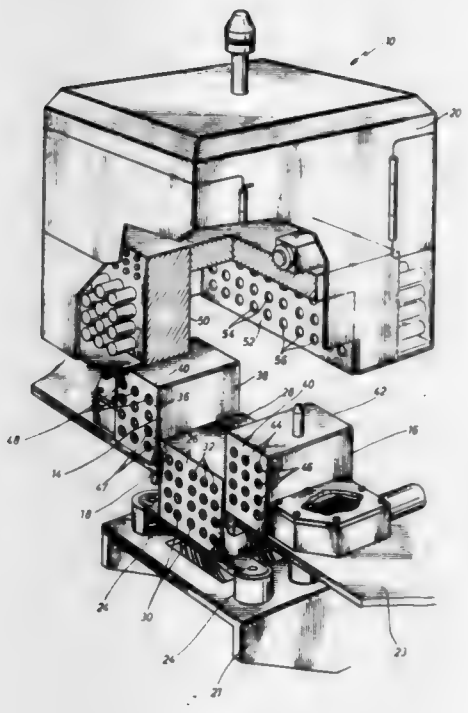
whereby when it is desired to remove captured liquid from the containment space the pressurization line valve can be opened and fluid under pressure can be fed to the pressurization line which delivers it to the drain conduit with the drain conduit valve closed so that the resulting pressure against the inside surface of the closure can force it out of the opening following which the pressurization line valve can be closed and the drain conduit valve opened to remove captured liquid from the containment space.

4,404,989

UNDERWATER CONNECTOR FOR FLUID LINES

Joseph L. LeMoine, Houston, Tex., assignor to Koomey, Inc., Brookshire, Tex.

Filed Aug. 3, 1981, Ser. No. 289,566
Int. Cl.³ F16L *29/00*
U.S. Cl. 137—596.18 5 Claims



1. An underwater connector for interconnecting a plurality of fluid lines comprising,

a first member adapted to be positioned underwater, said member including at least one upright positioned flat side having a plurality of fluid passageways terminating at said side,

a second member adapted to engage and disengage from said first member, said second member including at least one upright positioned flat face for alignment with but spaced from the first member flat side when engaged for providing a venting space therebetween and having a plurality of passageways terminating at said second member flat face for axial alignment with the first member passageways,

a valve seat releasably connected to the first member flat side about each of the first member passageways,

a valve positioned in each of the second member passageways having a movable valve element, and having a hydraulic fluid supply port, and pilot actuated means connected to and actuating the valve element, and

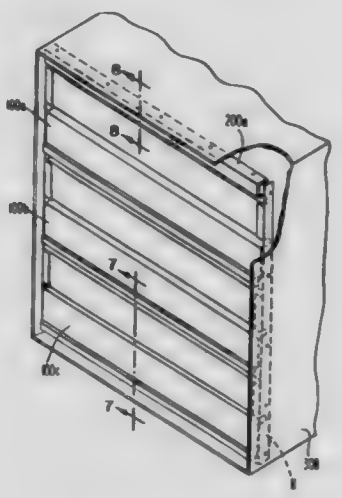
said valve element when moved to one position seats on the valve seat on the first member and opens the fluid supply port for providing actuating fluid to the second member, and when moved to a second position closes the fluid supply port and is removed from the valve seat for allowing fluid in the first member to vent into said space.

4,404,990

ECONOMY, ANGLE-BLADE DAMPER KIT

Francis J. McCabe, Doylestown, Pa., assignor to Prefco Products, Inc., Buckingham, Pa.

Division of Ser. No. 74,290, Sep. 11, 1979, Pat. No. 4,277,870, which is a division of Ser. No. 891,330, Mar. 20, 1978, Pat. No. 4,185,657, which is a continuation-in-part of Ser. No. 874,001, Jan. 31, 1978, Pat. No. 4,165,629, Ser. No. 764,774, Feb. 2, 1977, Pat. No. 4,114,646, Ser. No. 770,631, Feb. 22, 1977, Pat. No. 4,113,230, and Ser. No. 729,831, Oct. 4, 1976, Pat. No. 4,113,232, said Ser. No. 874,001, is a continuation-in-part of Ser. No. 736,823, Oct. 18, 1977, Pat. No. 4,080,060, which is a continuation-in-part of Ser. No. 650,926, Jan. 21, 1976, Pat. No. 4,004,480, said Ser. No. 764,774, is a continuation of Ser. No. 689,994, May 26, 1976, Pat. No. 4,081,173, said Ser. No. 770,631, and Ser. No. 729,831, each is a continuation-in-part of Ser. No. 689,994,. This application Dec. 18, 1980, Ser. No. 217,765
The portion of the term of this patent subsequent to Feb. 29, 1997, has been disclaimed.
Int. Cl.³ F24F *13/14*
U.S. Cl. 137—601 1 Claim



1. A kit for constructing a damper inside an opening, said kit comprising:

a. blade stock having a hook-shaped hinge portion formed therein, said hook-shaped hinge portion extending uniformly across substantially the entire longitudinal length of said blade stock; and

b. notched angle stock for two opposing sides of said opening, said notched angle stock comprising at least one transverse portion and one face strip portion, said face strip portion having opposing, periodically spaced hook-shaped hinge elements formed therealong for receiving and, upon pivoting of the blade when received thereby, for slidingly engaging portions of said hook-shaped hinge portion of said blade stock, said opposing, periodically spaced hook-shaped hinge elements being adapted to alternatively receive the right and left hand ends of said blade stock, and said transverse portion having means for use in attaching said stock to an interior surface of said opening, said notched angle stock being easily cut and fastened within said opening.

4,404,991

VALVE CONTROL ASSEMBLY

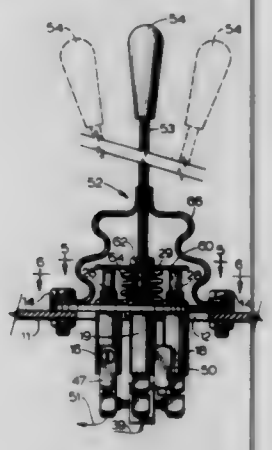
Mark Cullen, Rossford, Ohio, assignor to Donahue Enterprises, Inc., Minneapolis, Minn.

Filed Sep. 29, 1982, Ser. No. 427,929
Int. Cl.³ F16K *11/18*
U.S. Cl. 137—636.1 17 Claims

1. A fluid control apparatus comprising:

support means having circular edge means surrounding a hole, a plurality of valve means mounted on the support means, each of said valve means having a movable actua-

tor spaced from said hole, said actuator being movable between an open first position allowing fluid to flow through the valve means and a closed second position blocking flow of fluid through the valve means, control means cooperating with the support means and each actuator operable for selectively moving one or more of said actuators from the first position to the second position, said control means having a first member located in said



hole and engageable with said edge means, rod means secured to the first member, a second member mounted on the rod means engageable with said actuators, and biasing means located around the rod means engageable with the support means and second member to bias the first member into bearing engagement with the circular edge means and the rod means to a neutral position wherein the actuators are in the second position.

4,404,992

COMPOSITE DUAL TUBING

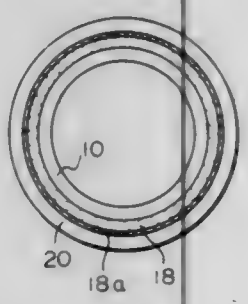
Takesada Sasaki, Machida; Hiroshi Endo, Zama; Yoshimasa Zama, Sagamihara; Masahiko Shiraishi, Nakatsu; Yosinari Miura, Nakatsu, and Masayuki Yamaguchi, Nakatsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sep. 8, 1981, Ser. No. 300,050

Claims priority, application Japan, Sep. 9, 1980, 55-125011; Sep. 10, 1980, 55-125845

Int. Cl.³ F16L *9/14*

U.S. Cl. 138—140 **8 Claims**



1. An exhaust pipe for discharging hot gases from an internal combustion engine comprising:

a metallic dual tubing having an inner tube spaced from an outer tube;

an intermediate layer filling the space between the inner tube and the outer tube;

said intermediate layer comprising a combustible material which combusts at the temperature of the hot gases to be discharged from said engine;

whereby upon exposing said exhaust pipe to said temperature of the hot gases to be discharged said combustible material combusts thereby providing a gap between said inner and outer tube.

4,404,993

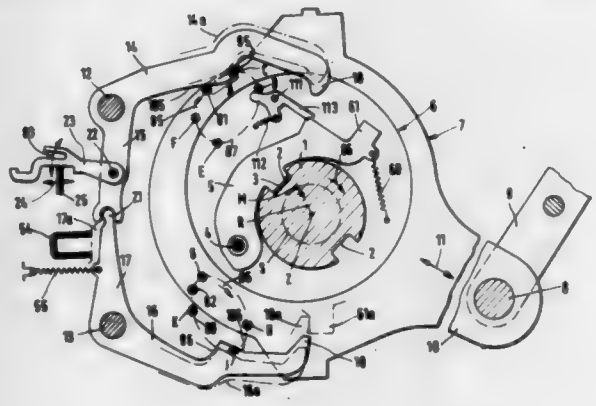
CLUTCH ARRANGEMENT FOR CONTROLLING A HEDDLE OF A WEAVING MACHINE

Werner Julich, Wallisellen, and Gunter Müller, Wiesendangen, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Oct. 16, 1981, Ser. No. 312,151

Int. Cl.³ D03C *1/00*

U.S. Cl. 139—66 R **5 Claims**



1. A clutch arrangement for controlling a heddle of a weaving machine, said arrangement comprising

an intermittently rotatable drive shaft having at least one slot therein;

an eccentric rotatably mounted on said shaft;

a pawl mounted on said eccentric for engagement in said slot of said shaft;

a link disposed about said eccentric for movement in an orbital manner about said shaft to impart a reciprocating movement to a connecting rod for driving a heddle with said pawl engaged in said slot;

at least one control lever movable between a blocking position in the path of said pawl and a release position spaced from said pawl;

a bar connected to said control lever;

a stroke meter drive for moving said bar to cause said lever to move between said positions; and

at least one stop element mounted on said link for engaging said control lever during rotation of said eccentric to maintain said control lever in said release position during at least part of said orbital movement of said link.

4,404,994

SQUEEZE ROD HOOK

Stephen J. Root, Mauldin, and Charles F. Kramer, Greenville, both of S.C., assignors to Steel Heddle Manufacturing Co., Greenville, S.C.

Filed Jan. 27, 1982, Ser. No. 343,052

Int. Cl.³ D03C *9/06*

U.S. Cl. 139—91 **10 Claims**

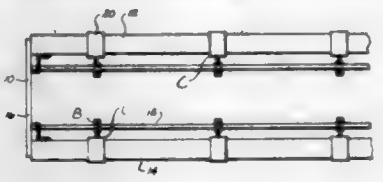
1. A heddle rod support device for supporting a heddle rod on an associated heddle frame of a weaving loom comprising:

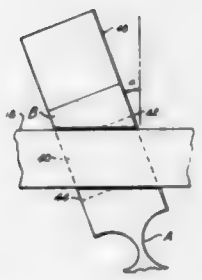
a main body portion adapted for attachment to said heddle frame;

flexible neck means carried by said main body portion;

resilient slot means carried by said neck means squeezing and holding said heddle rod firmly in a support position when said neck means is generally upright; and

said slot means having a receiving position when said neck means is flexed wherein said slot means is open for receiving said heddle rod and thereafter returnable to said support position.

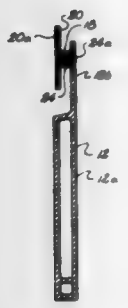




4,404,995
HEDDLE FRAME ASSEMBLY CONSTRUCTION AND METHOD

James B. Bowen, and Charles F. Kramer, both of Greenville, S.C., assignors to Steel Heddle Manufacturing Co., Greenville, S.C.

Filed Apr. 10, 1981, Ser. No. 252,859
Int. Cl.[3] D03C *9/06*; B23P *11/00*
U.S. Cl. 139—92 5 Claims



1. A method of constructing a heddle frame assembly to eliminate dimensional variations in the assembly and increase the integrity thereof wherein the heddle frame assembly is of the type having top and bottom frame slats on which heddle rods are affixed on which end eyes of the heddles are slidably carried, wherein the improvement comprises:

welding a plurality of studs having a uniform effective rivet length to said heddle rods at spaced intervals along the length thereof providing an integral unitary construction therebetween and eliminating dimensional variations in said assembly due to variations in the thickness of the heddle rods and in the depth of countersinks in the face thereof;

providing corresponding spaced uniformly dimensioned countersink openings in a portion of said frame slats for receiving said studs;

placing said studs into said openings;

peening the ends of said studs in said openings to form a rivet head and secure rivet connection between each said heddle rod and corresponding heddle frame slat;

whereby a more rigid and accurate construction and assembly is provided which eliminates weak connection points and affords a smooth face for free wear-resistant heddle travel along the length of said heddle rod.

5. A heddle frame assembly of the type which includes top and bottom frame slats on which are affixed heddle rods which slidably support the end eyes of the heddles wherein the improvement comprises:

a plurality of studs having a standard effective length for forming a rivet;

a pointed projection carried at one end of each said stud;

said studs being welded to said rods at spaced intervals over the length thereof in a manner in which the effective length of said studs is unchanged providing uniform spacing between said heddle rod and frame slat affixed thereto;

a plurality of correspondingly spaced uniformly dimensioned countersink openings formed in said heddle frame slat;

said heddle rod and slat being integrally formed by heading said studs in said countersink openings to provide an accurately dimensioned rivet connection and reliable assembly; and

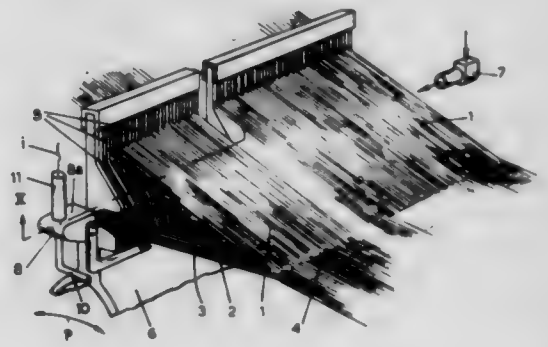
the face of said heddle rod being smooth and completely unbroken facilitating free travel of the end eyes of said heddles thereover;

whereby dimensional variations in the thickness of the heddle rod and countersinks formed in the face thereof are eliminated in the construction of said assembly increasing the structural integrity thereof.

4,404,996
METHOD FOR INSERTING AND STRETCHING A MEASURED WEFT YARN LENGTH INTO THE WEAVING SHED OF A SHUTTLELESS WEAVING MACHINE

Petrus G. J. Manders, Eindhoven, Netherlands, assignor to Ruti-Te Strake B.V., Netherlands

Filed Jul. 27, 1981, Ser. No. 287,155
Claims priority, application Netherlands, Aug. 11, 1980, 8004551
Int. Cl.[3] D03D *47/34, 47/28*
U.S. Cl. 139—194 2 Claims



1. A method of inserting and stretching a measured weft thread length in the weaving shed of a shuttleless weaving machine, comprising the step of transporting the thread length through the shed by means of a transport air jet injected into one end of the shed, wherein the improvement comprises the steps of passing the transport air jet, at the other end of the shed, into an inlet formed in a receptacle which has an outlet in the form of a mixing tube extending at an angle to the axis of the transport air jet, the end of the receptacle opposite to said inlet being closed and the wall of the receptacle opposite to said outlet being inclined to the axis of the transport air jet at such an angle as to deflect said transport air jet into said outlet, and injecting a concentrated auxiliary air jet into said outlet along the axis of said mixing tube.

2. A shuttleless weaving machine comprising two sheets of warp threads which are momentarily held in diverging planes to form a weaving shed, and a blowing nozzle arranged at one end of the shed for injecting a transport air jet to transport a measured weft thread length through the shed, wherein the

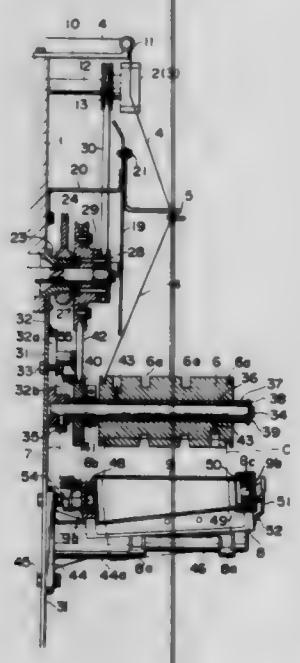
improvement comprises a receptacle at the other end of the shed, having an inlet aligned with the transport air jet to receive said jet, and having an outlet in the form of a mixing tube extending at an angle to the axis of the transport air jet, the end of the receptacle opposite to said inlet being closed and the wall of the receptacle opposite to said outlet being inclined to the axis of the transport air jet at such an angle as to deflect said transport air jet into said outlet, and an auxiliary blowing nozzle arranged to inject an air jet into said outlet along the axis of said mixing tube to stretch the thread length in the shed.

4,404,997

WASTE BINDING YARN TAKE-UP DEVICE FOR SHUTTLELESS LOOM

Masayuki Ushiro, Tokyo, and Takeki Tsubokura, Koganei, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 13, 1981, Ser. No. 253,569
Claims priority, application Japan, Apr. 12, 1980, 55-47479
Int. Cl.³ D03D *49/00*
U.S. Cl. 139—291 R **9 Claims**



1. A waste binding yarn take-up device for a shuttleness loom, comprising:

traction means for pulling waste binding yarns at a constant traction speed;

a rotary traverse roller formed at the outer surface thereof with a guide groove along which said waste binding yarns from said traction means are guided, the said guide groove being arranged to impart a traversing motion to said yarns;

means for rotating said traverse roller at a peripheral velocity slightly higher than the traction speed of said traction means;

a rotatable core member on which the waste binding yarns from said traverse roller is capable of being wound; and

means for biasing said rotatable core member and the waste binding yarns wound thereon into contact with said traverse roller.

8. A method of taking up a waste binding yarn in a shuttleness loom, comprising the following steps of:

pulling waste binding yarns at a constant traction speed by using a traction device;

imparting traverse motion to said waste binding yarns from said traction device by using a rotary traverse roller;

rotating said traverse roller at a peripheral velocity slightly higher than said traction speed of said traction device; and

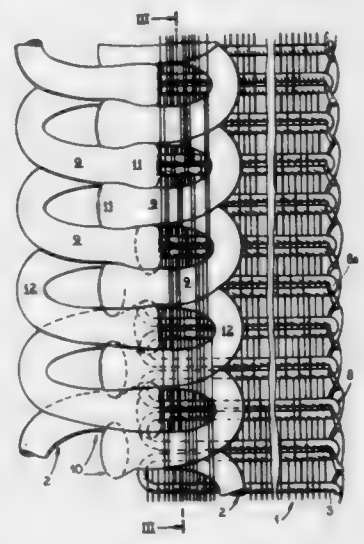
winding up said waste binding yarns from said traverse roller to form a cheese on a rotatable core member which is biased to be contactable with said traverse roller.

4,404,998

WOVEN SLIDE FASTENER STRINGER

Alfons Fröhlich, and Karl Griessbaum, both of Essen, Fed. Rep. of Germany, assignors to Opti Patent-, Forschungs- und Fabrikations AG, Riedern-Allmeind, Switzerland

Continuation-in-part of Ser. No. 33,224, Apr. 25, 1979, Pat. No. 4,334,556. This application Oct. 23, 1980, Ser. No. 199,831
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818383; Apr. 27, 1978, 2818508; Apr. 27, 1978, 2818509
Int. Cl.³ D03D *1/00*; A44B *19/34*
U.S. Cl. 139—384 B **5 Claims**



1. A slide fastener stringer half comprising a woven tape and a continuous monofilament coupling element interwoven with said tape, said tape being formed with a ground weft comprised of a plurality of double-pick weft insertions extending transversely of said tape and interlaced with warp yarns, said coupling element being formed of double-pick weft insertions and being provided with a multiplicity of coupling members each having a head overhanging an edge of said tape and a pair of shanks extending inwardly from said edge, said head and the respective shanks being integrated in the double-pick weft insertion of the coupling element, said warp yarns including connective warp threads interlaced with the double-pick weft insertions of said ground weft and with the double-pick weft insertions of said coupling element inwardly of said edge of said tape such that the warp threads pass over and under said double-pick weft insertions in a staggered pattern and each of said warp threads passes in succession over only a single double-pick weft insertion of said coupling element, under two successive double-pick weft insertions of the ground weft, and between the next two double-pick weft insertions of the ground weft and a double-pick weft insertion of said coupling element before entering a pattern repeat, a respective double-pick weft insertion underlying each double-pick weft insertion of said coupling element, and a further double-pick weft insertion of said ground weft being disposed between successive double-pick weft insertions of said coupling element.

4,404,999

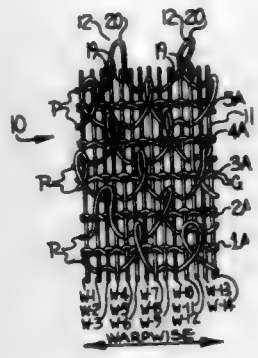
LOOP PILE FABRIC

Leigh C. Woodall, Jr., Roxboro; John T. Hayes, Durham, and Robert G. Currier, Roxboro, all of N.C., assignors to Collins & Aikman Corporation, New York, N.Y.

Filed Apr. 30, 1982, Ser. No. 373,709
Int. Cl.³ D03D *27/00*
U.S. Cl. 139—391 **19 Claims**

1. A pile fabric comprising a woven backing fabric and pile yarns interwoven with said backing fabric at spaced intervals and extending from one face thereof to form a pile comprised of a multiplicity of pile loops, the pile loops being arranged in rows lengthwise of the fabric with the pile loops in any given row being staggered relative to the pile loops in the adjacent rows on each side thereof and with the loops in said adjacent rows also being staggered relative to one another to provide a

nonaligned appearance to the respective pile loops, the pile loops extending substantially upright from the backing fabric and being randomly oriented relative to one another to provide a random appearance and a substantially nondirectional grain to the pile, and the density of the pile loops and the size of the



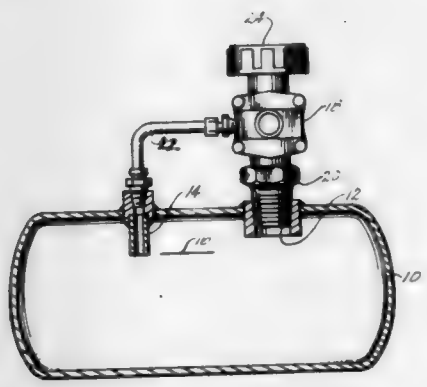
pile yarns forming the pile loops being such that each pile loop has the major portion thereof out of contact with the adjacent surrounding pile loops and substantially the totality of each pile loop is readily visible to provide substantial void volume within the pile of the fabric.

4,405,000

AUTOMATIC SHUTOFF VALVE

William J. Fuller, Fullerton, Calif., assignor to Auto Stop Corporation, Lynwood, Calif.

Filed Aug. 24, 1981, Ser. No. 295,767
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—198 **17 Claims**



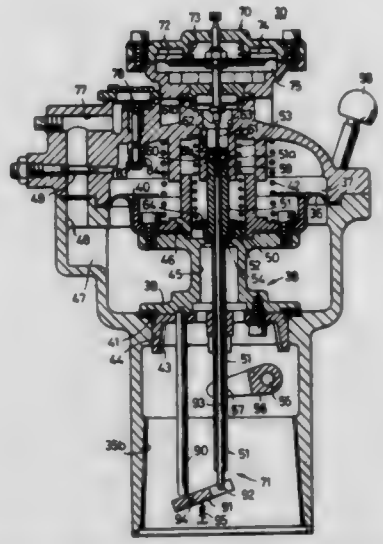
7. A storage system for a volatile liquid comprising:
a storage tank having an inlet;
a dip tube extending into the tank to a maximum fill level;
a valve body;
a main inlet, a main outlet, and a main passage from the main inlet to the main outlet formed in the valve body;
means for connecting the main outlet to the tank inlet;
a piston chamber formed in the valve body, the piston chamber having a valve seat in the main passage, a piston movable through the piston chamber between a first position in engagement with the valve seat to close the main passage and a second position out of engagement with the valve seat to open the main passage;
a first seal between the piston and piston chamber creating on the piston a first area against which fluid pressure in the main passage acts to urge the piston toward its second position;
a control chamber in fluid communication with one end of the piston chamber;
an actuator movable through the control chamber between a first position and a second position to drive the piston toward its first position when the actuator moves towards its first position and to be driven by the piston towards its second position when the piston moves towards its second position;
a second seal between the actuator and the control chamber creating on the actuator a second area larger than the first area against which fluid pressure in the control chamber acts to urge the actuator towards its first position; and
means for generating a sufficient pressure in the control chamber responsive to liquid in the dip tube to overcome the force of the liquid pressure exerted on the first area, thereby driving the actuator toward its first position, without generating sufficient pressure in the control chamber to do so responsive to gas in the dip tube.

4,405,001

OVERFLOW PREVENTING VALVE APPARATUS

Shigeo Sugiyama, Fujisawa; Masahiro Soya, Kawasaki, and Tugio Nagashima, Yokosuka, all of Japan, assignors to Tokico Ltd., Japan

Filed Sep. 16, 1981, Ser. No. 302,833
Claims priority, application Japan, Sep. 16, 1980, 55-131373
Int. Cl.³ B65B *57/14*
U.S. Cl. 141—220 **8 Claims**



1. An overflow preventing valve apparatus comprising:
a valve main body provided at a terminal end of a fluid supplying passage, said valve main body comprising drop pipe means and fluid level detection pipe means;
a main valve fixed to a separating membrane stretched within said valve main body to separate an upper chamber and a lower chamber, said upper chamber being coupled to said fluid supplying passage through throttle valve means, said lower chamber being coupled to said fluid supplying passage and said drop pipe means, said main valve being movable according to a pressure difference between said upper and lower chambers and allowing fluid to flow to said drop pipe means from said fluid supplying passage in an open state;
a pilot valve provided in said main valve, said pilot valve being opened upon starting of a fluid supplying operation and opening said main valve by allowing fluid within said upper chamber to flow to said drop pipe means;
a lock mechanism for locking said pilot valve in the open state, said lock mechanism comprising stopping balls fitted into holes which are provided in radial directions of said pilot valve, a needle urging said stopping balls to move radially outward, and a stopping part provided at a part of said valve main body, for stopping said stopping balls which are urged to move radially outward, said pilot valve locked by said locking mechanism being released and closed when said needle is displaced so that said stopping balls become movable radially inward;
a first lock releasing mechanism responsive to said fluid level detection pipe means, for displacing said needle according to a predetermined fluid level detected by said fluid level detection means and releasing said pilot valve locked by said lock mechanism to close said pilot valve; and
a second lock releasing mechanism responsive to stoppage of fluid supply, for displacing said needle according to clos-

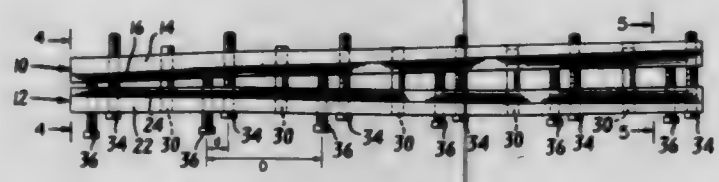
ing of said main valve due to pressure reduction in said lower chamber caused by the stoppage of the fluid supply and releasing said pilot valve locked by said lock mechanism to close said pilot valve.

4,405,002

PLANING FORM

Giordano Catalano, 46 Lindsley Ave., Irvington, N.J. 07111

Filed Oct. 8, 1981, Ser. No. 309,825
Int. Cl.³ B23Q *3/00*
U.S. Cl. 144—2 R **11 Claims**



1. A form for taper planing elongated wooden strips comprising:

(a) a pair of elongated members, each such member having a longitudinally extensive beveled surface;

(b) means for retaining said members in opposed relation with one another so that said beveled surfaces cooperatively define an elongated groove of generally V-shaped cross section and said members being moveable towards and away from one another to vary the width of said groove;

(c) a plurality of adjusting screws each having a head and a threaded shank, the head of each such adjusting screw engaging one of said members, the shank of each such adjusting screw extending laterally of said members and threadedly engaging only the other one of said members; and

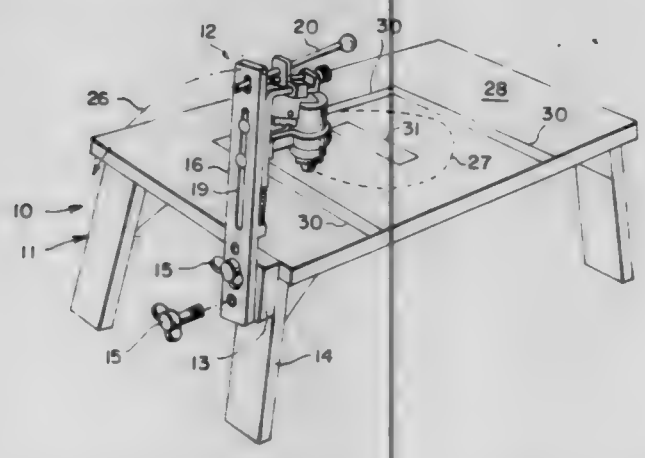
(d) a plurality of lock screws, each such lock screw extending laterally of said members, threadedly engaging only one of said members and bearing upon the other one of said members, there being one such lock screw adjacent to each one of said adjusting screws, whereby each of said adjusting screws together with the associated one of said lock screws may be operated to adjust and control the distance between said members in the vicinity of such adjusting screw.

4,405,003

UNIVERSAL TABLE

Woodroe Watson, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jan. 29, 1981, Ser. No. 229,761
Int. Cl.³ B27C *9/04*
U.S. Cl. 144—35 R **1 Claim**



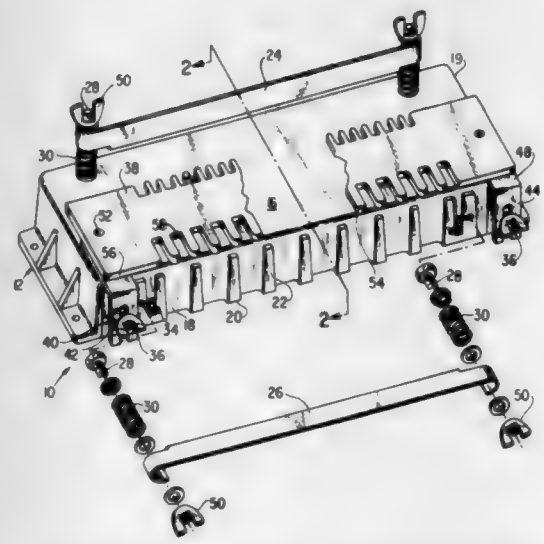
1. A universal table, comprising in combination, table member and a fixture pivotally mounted on said table, said table including a table top supported upon legs, a turntable at a center of said table top carrying a hand skill saw secured to an underside thereof, and a portable electric drill mounted on said fixture, wherein said fixture comprises a post, a bracket mounted slidably along a slot in said post carrying said portable electric drill, and a pivotable lever mounted on said post vertically above said bracket engaging said bracket to apply downward pressure on said bracket against a spring mounted on said post under said bracket, said bracket including a vertical portion with spaced rivets projecting therefrom through said slot, said bracket also including an integral horizontal portion upon which is mounted a sliding support for said lever, in combination with means for adjusting said support mounted on said horizontal portion, wherein said post is vertically pivotable about said table.

4,405,004

DOVETAIL FIXTURE

William C. Dicke, Easley, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Aug. 17, 1981, Ser. No. 293,430
Int. Cl.³ B27F *1/14*
U.S. Cl. 144—87 **2 Claims**



1. Dovetail fixture for guiding a cutting tool in cutting mortises and tenons, comprising a molded base of one-piece unitary construction equipped with a horizontal table defining a first work receiving surface and a generally vertical apron sloped to provide draft for easy removal from a mold and carrying a series of narrow, vertically oriented bosses having flat faces orthogonal to said first work receiving surface defining a second work receiving surface adapted to support a pair of work pieces in orthogonal abutting relation, a first clamping means adapted to clamp one work piece against said first work receiving surface, a second clamping means adapted to clamp the other work piece against said second work receiving surface, a cutter guiding template having at least one of its edges formed with a series of alternating guide fingers and slots, the template being adapted to overlie one of the work pieces and to be clamped thereupon in a position such that the outer edges of said set of slots and fingers is in alignment with the outer surface of the work piece.

4,405,005

FIREWOOD SPLITTER

Dieter S. Zanker, 602 Esquimalt Rd., Victoria, British Columbia, Canada (V9A 3L4)

Filed May 5, 1981, Ser. No. 260,736
Int. Cl.³ B27L *7/00*
U.S. Cl. 144—193 C **10 Claims**

1. An apparatus for splitting material such as firewood, comprising:

an elongate metal bar with a top end and a bottom end;

a wedge-shape splitting tip connected to the bottom end of the bar;

a metal slide hammer having an elongate sleeve slidably received over the bar between the top end and the splitting tip, the sleeve having a top end, and a separate solid core having a bottom end for impacting the top end of the



elongate bar, the core being fixedly connected to the sleeve by connecting means spaced apart from the bottom end, the core being of a softer metal than the top end of the bar.

4,405,006

ANTI-SKIDDING DEVICE FOR TIRED, PARTICULARLY PNEUMATIC-TIRED VEHICLE WHEELS ON ICE AND SNOW

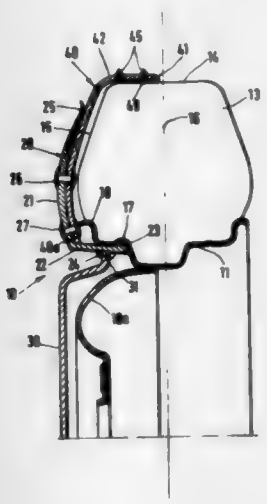
Werner Preusker, Atzelgift, Fed. Rep. of Germany, assignor to Firma Niveau AG, Basel, Switzerland

Filed Dec. 28, 1981, Ser. No. 334,657

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1981, 3100325; Nov. 14, 1981, 3145250; Dec. 4, 1981, 3148112

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—170 **32 Claims**



1. Anti-skidding device for tires, particularly for pneumatic tire vehicle wheels when used in ice and snow, arranged to be mounted on a motor vehicle wheel, including a base disk arranged to be positioned opposite the motor vehicle wheel, anti-skidding arms arranged to extend radially outwardly of said base disk, in the operating position said anti-skidding arms having radially inner first ends and radially outer second ends and said second ends arranged to be positioned between the tire tread and the surface over which the tire travels, and means for securing said base disk on the motor vehicle wheel, wherein the improvement comprises an annular cover disk arranged to be positioned opposite the side wall of a tire mounted on the motor vehicle wheel, said base disk spaced radially inwardly of said cover disk and arranged to attach said cover disk to the rim of the motor vehicle wheel, said first ends of said anti-skidding arms attached to said cover disk and said second ends of said anti-skidding arms spaced radially outwardly from said cover disk, said anti-skidding arms bent angularly at the second ends thereof relative to said cover disk and arranged in the operating position to remain in position between the tire tread and the surface on which the tire travels.

4,405,007

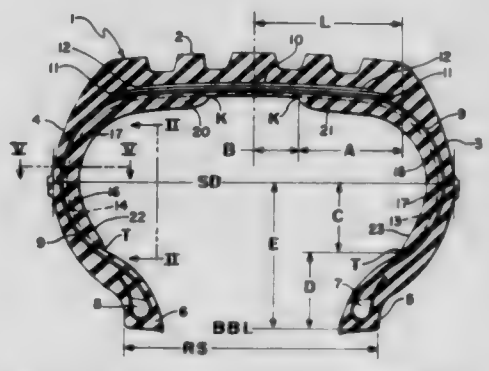
PNEUMATIC SAFETY TIRE

Thomas N. H. Welter, Keispelt, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 27, 1977, Ser. No. 810,658

Int. Cl.³ B60C *17/00*

U.S. Cl. 152—353 R **55 Claims**



1. A safety pneumatic tire for a passenger vehicle: comprising a circumferentially extending ground-engaging tread portion, a pair of sidewall portions, a pair of shoulder portions, a pair of bead portions, a carcass ply structure which extends from said bead portion to said bead portion, said carcass ply structure having at least one layer of parallel reinforcing cords, said tire characterized in that the internal sidewall surfaces are provided with a reinforcing means which extends circumferentially about said tire and uninterrupted along the internal surface of the tire from a point radially below the maximum section width of said tire to a point beneath said tread portion, said reinforcing means terminating prior to reaching the mid-circumferential plane of the tire, the surface of said reinforcing means facing the tire cavity having generally a corrugated cross-sectional configuration, as viewed in a plane perpendicular to the tire surface and radial plane of said tire, said corrugations lying in a plane substantially perpendicular to the mid-circumferential plane of the tire, the thickness of said corrugations being greater than the thickness of said sidewall of said tire measured at the maximum section width of said tire exclusive of adornment of other indicia, the distance between center lines of adjacent corrugations divided by the thickness of said corrugations being at least equal to two but less than or equal to five, said reinforcing means being made from a rubber compound having a Shore A hardness ranging from 70 to 85 and having a modulus greater than 45 Kp/cm^2.

4,405,008

ADJUSTABLE HEAT SHIELD

Robert L. Hazlett, Tucson, Ariz., assignor to Effie Hoopman Hazlett, Tucson, Ariz.

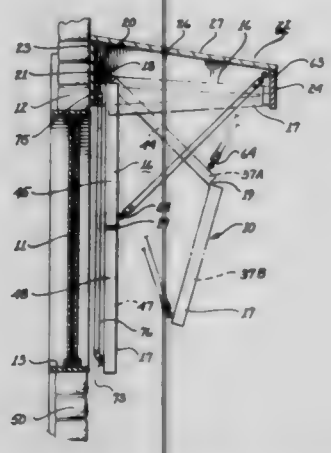
Filed May 22, 1978, Ser. No. 907,644

Int. Cl.³ E05D *15/00*

U.S. Cl. 160—213 **6 Claims**

1. A heat shield mounted to a structure for controlling the flow of heat to and from a desired structural area associated therewith, said shield comprising: an elongated substantially rigid rectangular body portion formed of a light weight heat-insulative material; a snubber bar mounted horizontally on the

associated structure in fixed operative relationship adjacent to and superposed with the desired structural area in substantially parallel relationship to the uppermost edge of said body portion; a unitary flexible skin member integrally formed upon said body portion in total enveloping relationship therewith and having a flap portion extending upwardly therefrom at the uppermost edge of said body portion, said extending flap portion being wrapped about said snubber bar and cooperating therewith to provide said body portion a fixed horizontal axis for selective movement thereabout; and actuating means operatively connected to said body portion and selectively actuatable to move or hold said body portion relative to said snubber bar axis and control the flow of heat to and from said desired structural area

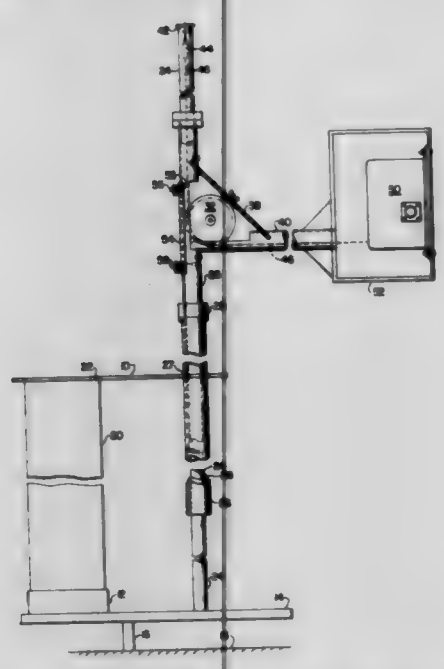


4,405,009

METHOD AND APPARATUS FOR MEASURING INGOT PRODUCTION

Warren J. Nelson, Hanover County, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Jun. 19, 1981, Ser. No. 275,320
Int. Cl.³ B22D *11/16, 11/124*
U.S. Cl. 164—413 **4 Claims**



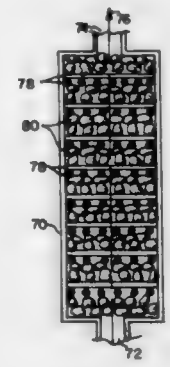
1. In an apparatus for forming a metallic ingot comprising a top mold, a hydraulically driven table and at least one stool carried by said table upon which said ingot is formed, the improvement comprising means for measuring the velocity and displacement of said table, said measuring means comprising a first tube fixedly mounted to and passing through said top mold, a second tube passing through said first tube and constructed and arranged to move with said table, a transducer, said transducer including an extendable and retractable cable as a portion thereof, said cable being connected to said second tube above said top mold, and means for fixedly mounting said transducer with respect to said second tube.

4,405,010

SENSIBLE HEAT STORAGE UNIT

Jacob Schwartz, Arlington, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Continuation of Ser. No. 918,889, Jun. 28, 1978, abandoned.
This application Jun. 9, 1980, Ser. No. 157,930
Int. Cl.³ F28D *17/00*
U.S. Cl. 165—4 **5 Claims**



1. A step function thermal gradient sensible heat storage unit comprising:

a housing having an inlet and an outlet and a flow path therethrough from said inlet to said outlet;

a first plurality of structures permitting fluid flow therethrough disposed within said housing, said structures being spaced apart along substantially the entire length of said flow path;

a second plurality of structures permitting fluid flow therethrough disposed within said housing in between said first plurality of structures, said second plurality of structures providing the principal heat storage medium for the unit;

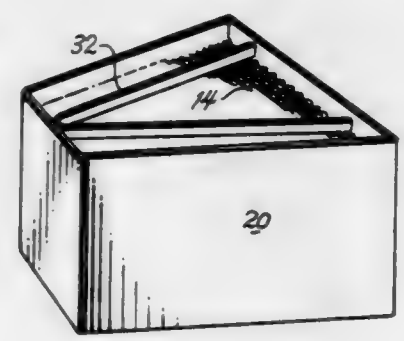
said first plurality of structures providing a substantially straight-line shunt between the sides of said housing and thereby yielding a substantially higher net thermal conduction transverse to said flow path throughout substantially the entire housing than the thermal conductivity of said second plurality of structures such that a step function thermal gradient is provided which permits discharge of the storage unit at a substantially constant output temperature.

4,405,011

ELEMENT BASKET

Richard F. Stockman, Friendship, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,554
Int. Cl.³ F28D *19/00*
U.S. Cl. 165—10 **4 Claims**



1. An element pack for a regenerative heat exchanger including a plurality of element sheets lying in lateral juxtaposition and spaced apart to permit the flow of fluid therethrough, an open ended basket enclosing the element sheets, said open ended basket including a pair of parallel walls lying parallel to

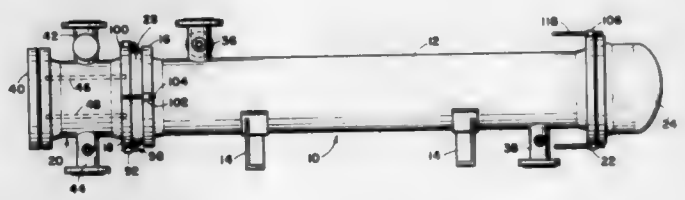
the element sheets and spaced apart to bracket the element sheets therebetween, and an element support means lying at opposite ends of the element basket adapted to hold the element sheets firmly in the basket, said support means comprising a flexible bar having a curved portion forming a variable bight at an end of plural straight portions and disposed such that the curved portion abuts one wall of said pair of parallel walls and the straight portions extend obliquely across an end of the element basket to abut the opposite wall of said pair of parallel walls thereby supporting the element sheets within the basket.

4,405,012

DEVICE TO POSITION COMPONENTS OF SHELL AND TUBE HEAT EXCHANGER

Joe A. Mach, Rte. 1, Box 133, Talala, Okla. 74080

Filed May 26, 1981, Ser. No. 267,003
Int. Cl.[3] F28F *7/00*
U.S. Cl. 165—78 4 Claims



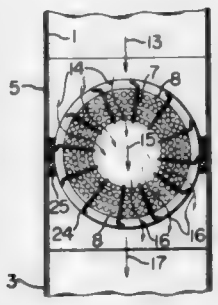
1. Means for facilitating the relative operable radial orientation of the components of a shell and tube type heat exchanger during the assembly thereof and comprising guide pin means provided on selected components of the heat exchanger in preselected positions thereon, and complementary sleeve means provided on mating components of the heat exchanger for slidably receiving the guide pin means therein for assuring proper rotational and axial alignment orientation between the mating components.

4,405,013

ROTARY TYPE HEAT PIPE HEAT EXCHANGER

Eiji Okamoto, Kobe, Japan, assignor to Gadelius K.K., Tokyo, Japan

PCT No. PCT/JP80/00005, § 371 Date Sep. 10, 1980, § 102(e) Date Sep. 9, 1980, PCT Pub. No. WO80/01510, PCT Pub. Date Jul. 24, 1980
PCT Filed Jan. 10, 1980, Ser. No. 209,102
Claims priority, application Japan, Jan. 10, 1979, 54-745
Int. Cl.[3] F28D *15/00*
U.S. Cl. 165—86 4 Claims



1. A heat pipe heat exchanger including first flow path means along which a first fluid of relatively high temperature flows, second flow path means along which a second fluid of relatively low temperature flows, and a plurality of heat pipes disposed across and through said two flow paths so that heat is transferred from said first fluid to said second fluid, characterized in that said heat exchanger includes

a rotor formed by said plurality of heat pipes disposed with such intervals that said first and second fluids can pass therebetween,

said rotor includes separating means fixed to said rotor and separating said first flow path means from said second flow path means, and

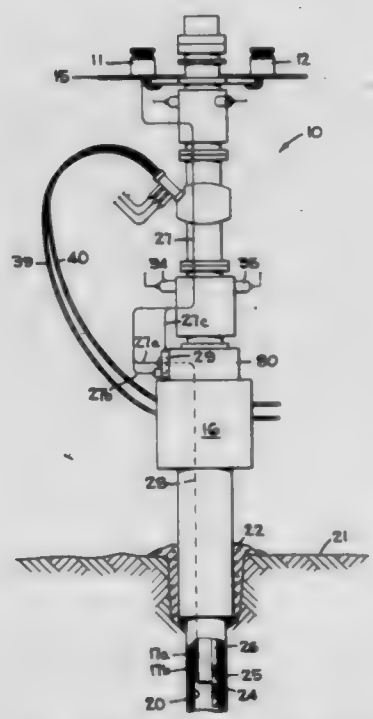
said rotor has means for rotating said rotor so that said heat pipes are rotated temporally by 180° from a low temperature region to a high temperature region for drying materials accumulated on the rotor in order that the dried materials may then, successively be blown off of said rotor by blowing means.

4,405,014

SAFETY VALVE MANIFOLD SYSTEM

Larry J. Talafuse, Spring, Tex., assignor to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 139,502, Apr. 11, 1980, abandoned.
This application Feb. 26, 1982, Ser. No. 353,111
Int. Cl.[3] E21B *7/12*
U.S. Cl. 166—72 14 Claims



1. A hydraulic valve operating system for opening and closing a surface-controlled, sub-surface safety valve, said system connected for use with a source of pressurized hydraulic fluid and a surface-controlled, sub-surface safety valve mounted in a petroleum well having a wall, said safety valve including a valve actuator having an inlet port, said well including a block valve mounted to a Christmas tree atop said well to connect the safety valve actuator to an outside hydraulic pressure source and to a pressure sink while isolating the safety valve from the outside environment by preventing fluids from being discharged to the outside environment, said system comprising:

a normally closed block valve housing an inlet port and an outlet port;

a fluid accumulator having a variable volume fluid chamber and an inlet port connected to said fluid chamber;

means for decreasing the volume of said accumulator fluid chamber in response to an increase in hydraulic fluid pressure;

means for connecting said block valve outlet port and said accumulator inlet port to said safety valve actuator inlet port while preventing fluid flow to the outside environment;

means for selectively connecting said block valve inlet port and said accumulator volume varying means to said hydraulic pressure source;

means for opening said block valve when said block valve inlet port is connected to said hydraulic pressure source; and

means for selectively connecting said block valve inlet port and said accumulator volume varying means to said pressure sink.

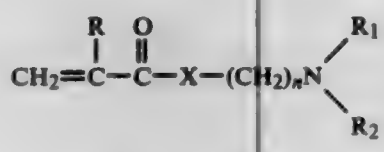
4,405,015

DEMULSIFICATION OF BITUMEN EMULSIONS

David R. McCoy; Edward E. McEntire, and Robert M. Gipson, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 2, 1981, Ser. No. 326,461
Int. Cl.³ E21B *43/24, 43/40*
U.S. Cl. 166—267 **10 Claims**

1. A process for recovering petroleum from oil-in-water bitumen emulsions by demulsifying said emulsions by adding thereto demulsifiers comprising hompolymers or co-polymers of greater than about 2,000 molecular weight of monomers having the general structure



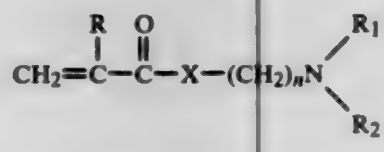
where R=H or lower alkyl, X=NH or 0, n>1, R_1 and R_2 are hydrogen or alkyl wherein the homopolymer and/or co-polymer is in the salt form and monomers of the above structure comprise greater than 50% of the total co-polymer where a co-polymer is used.

10. A process for recovering bitumen from a tar sand formation comprising

injecting into the tar sand a fluid containing hot water and/or steam in order to emulsify the bitumen in the tar sand,

recovering the emulsified bitumen,

demulsifying said emulsions by adding thereto demulsifiers comprising homopolymers or co-polymers of greater than about 2,000 molecular weight of monomers having the general structure



where R=H or lower alkyl, X=NH or 0, n>1, R_1 and R_2 are hydrogen or alkyl wherein the homopolymer and/or co-polymer is in the salt form and monomers of the above structure comprise greater than 50% of the total co-polymer where a co-polymer is used,

converting the salts of the polymers or co-polymers into inactive polymers or co-polymers by pH adjustment of the aqueous phase of the broken emulsion, and

reinjecting the aqueous phase into a bitumen containing formation to recover additional bitumen.

4,405,016

UNDERWATER CHRISTMAS TREE CAP AND LOCKDOWN APPARATUS

Michael J. A. Best, Dursley, England, assignor to Smith International, Inc., Newport Beach, Calif.

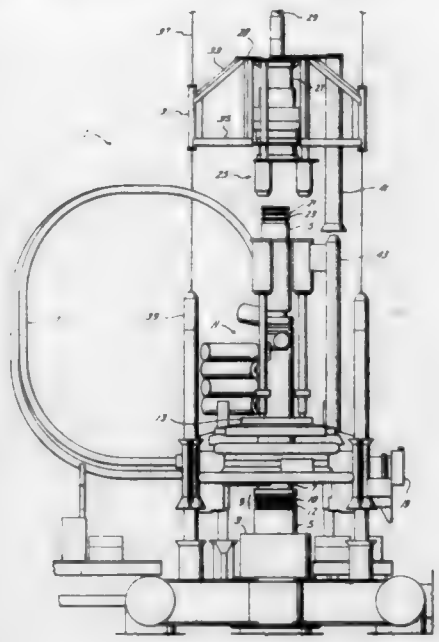
Filed Jun. 29, 1981, Ser. No. 278,359
Claims priority, application United Kingdom, Dec. 18, 1980, 8040496
Int. Cl.³ E21B *41/04, 43/013, 43/017*
U.S. Cl. 166—337 **28 Claims**

1. An apparatus for an actuator which actuates a connector for connecting one end of a tubular member to an underwater wellhead, comprising:

mechanical means for mechanically maintaining the actuator in the actuated position to insure the connection of the tubular member to the wellhead,

said mechanical means including extension means for extending into engagement with said actuator to prevent said actuator from moving to a nonactuated position,

said extension means including a piston slidably disposed within a cylinder and activation means for extending said piston from said cylinder whereby said piston engages the



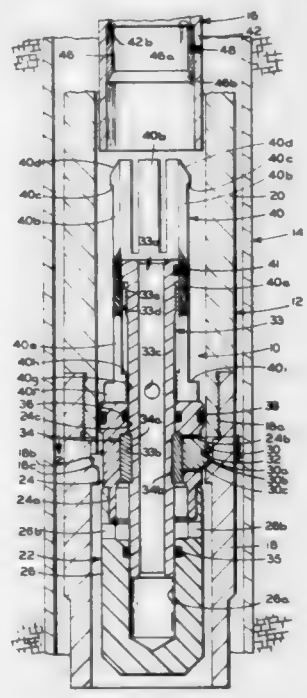
actuator preventing the actuator from moving to a nonactuated position.

4,405,017

POSITIVE LOCATING EXPENDABLE PLUG

Richard G. Allen, Houston, and Mark C. Glaser, Bellaire, both of Tex., assignors to Baker International Corporation, Orange, Calif.

Filed Oct. 2, 1981, Ser. No. 308,688
Int. Cl.³ E21B *23/03*
U.S. Cl. 166—382 **26 Claims**



9. An expendable tool assembly adapted to be secured within the central bore of a tubular member in a subterranean well and then expended downwardly into the lower portions of the well comprising: a hollow tool body freely insertable in the central bore of the tubular member and defining a vertical bore; radially shiftable locking means mounted on said hollow tool body and engagable with the tubular member preventing vertical movement of said tool body within the tubular member; a mandrel vertically slidable within said vertical bore; said mandrel being shiftable downwardly from a first position in engagement with said locking means to maintain said locking means in engagement with the tubular member, to a second position wherein said radially shiftable locking means may move out of engagement with the tubular member to expend said tool body; sleeve means including a shearable element for

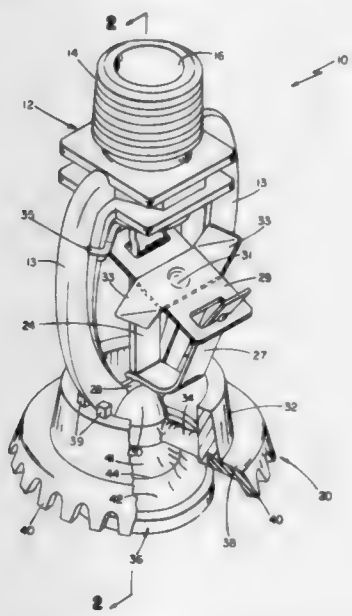
securing said mandrel to said sleeve means, and means on said sleeve means for connection to the bottom end of a control element whereby upward movement of the control element effects shearing of said shearable element with subsequent downward movement of said control element shifting said mandrel to said second position releasing said tool body.

4,405,018

DEFLECTOR WITH SURFACE FOR CIRCUMFERENTIALLY REDISTRIBUTING FLUID FOR IMPROVED SPRAY UNIFORMITY

Michael A. Fischer, North Kingstown, R.I., assignor to Grinnell Fire Protection Systems Company, Inc., Providence, R.I.

Filed Jun. 24, 1981, Ser. No. 278,439
Int. Cl.³ A62C *37/08*
U.S. Cl. 169—37 4 Claims



1. In a fire-protection sprinkler head of the pendent type, said head including a body with means for connecting said head to a supply of fire-retardant fluid, a passage through said body for said fluid, a closure for said passage, means for opening said closure in response to a fire, and a spray-forming deflector means supported below said passage by a dependent structure that extends from said body, said deflector means positioned in the path of fluid emerging from said passage, the improvement wherein said deflector means includes:

a first deflecting surface directly in the path of said emerging fluid and facing generally upward,

said first deflecting surface including a portion shaped to circumferentially redistribute fluid to improve uniformity of distribution and deflect at least some of said fluid generally outward; and

a second deflecting surface positioned outward and away from said first deflecting surface to receive and control the distribution of a portion of the fluid moving outwardly from said first deflecting surface,

said second deflecting surface having an interior opening and being so positioned that the path of the fluid from said passage to said first deflecting surface passes through said opening, and

the flow paths between said first deflecting surface and said second deflecting surface being circumferentially unobstructed so that the circumferential distribution of said fluid leaving said first deflecting surface is not divided as it moves between said first deflecting surface and said second deflecting surface,

wherein said first deflecting surface has an outer circular portion having a vertical cross-section of upwardly concave form defining a first concave surface, and

wherein said first deflecting surface includes a second concave circular surface radially inside of and above said first concave circular surface,

said first and second concave surfaces are joined at a circular ridge, and

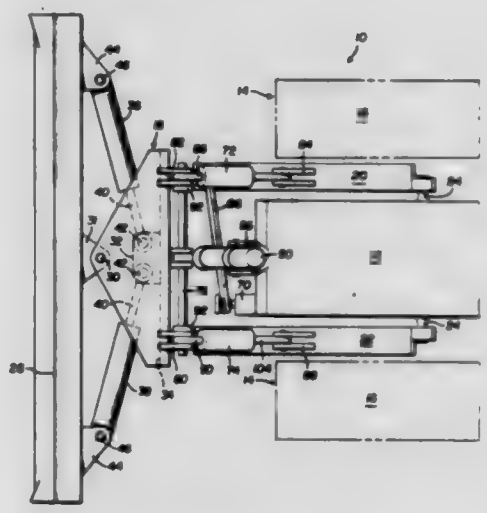
the location of said ridge and the shape of said second concave surface are selected to influence the radial distribution of fluid in the spray pattern generated by said sprinkler head.

4,405,019

ADJUSTMENT AND STABILIZER MECHANISM FOR DOZER BLADE

Claude M. Frisbee, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Sep. 4, 1981, Ser. No. 299,358
Int. Cl.³ E02F *3/76*
U.S. Cl. 172—816 5 Claims



1. In an earth-working machine having a frame, a pair of push arms pivotally secured at one of their ends to said frame, and a blade pivotally secured to the push arms at their other ends, a pair of lift cylinders pivotally interconnected between said frame and said blade, the improvement comprising:

a pitch-tilt control assembly for said blade including a pitch piston cylinder, a pitch-tilt piston cylinder, a torsion bar, and a pair of drag link connections, means for mounting said torsion bar to the backside of said blade, said torsion bar extending generally parallel to the backside of said blade and being rotatable about its longitudinal axis, said pitch piston cylinder being pivotally attached at one end to said torsion bar and pivotally attached at its opposite end to one of said push arms, said pitch-tilt piston cylinder being pivotally attached at one end to said torsion bar and pivotally attached at its other end to the other of said push arms, said pitch piston cylinder and said pitch-tilt piston cylinder being additionally pivotally attached to said torsion bar by said drag link connections whereby a load on one side of said blade being transmitted to the opposite side of said blade by said torsion bar and drag link connections for counteracting uneven loads on said blade and preventing said blade from following a path of least resistance when uneven loads are applied to said blade.

4,405,020

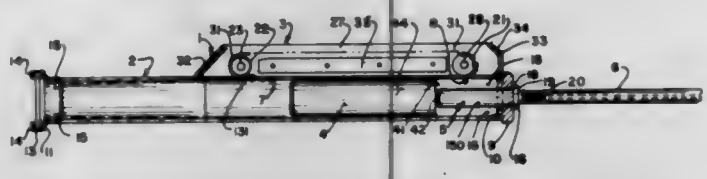
AUTOMATIC DRIVE HAMMER SYSTEM

Charles L. Rassieur, Creve Coeur, Mo., assignor to Central Mine Equipment Company, St. Louis, Mo.

Filed Jul. 15, 1981, Ser. No. 283,490
Int. Cl.³ B25D *9/00*
U.S. Cl. 173—89 12 Claims

1. In an automatic drive hammer system wherein a hammer is mounted in a tubular housing and mechanism, mounted with said housing, is provided for lifting said hammer a predetermined distance and allowing it to fall free in said housing, the improvement comprising carriage means for carrying said housing and lifting mechanism and means for mounting said carriage on a drill rod feed mechanism support structure of a drill rig drive having a drill rod fed along a vertical axis, said

support structure including a vertical member offset laterally from and parallel to the axis of said drill rod feed, and said means for mounting said carriage on said drill rig drive including means for mounting said carriage on said vertical member rotatably and slidably for swinging movement between an on-hole, operating, position and an off-hole, stored, position.



4,405,021

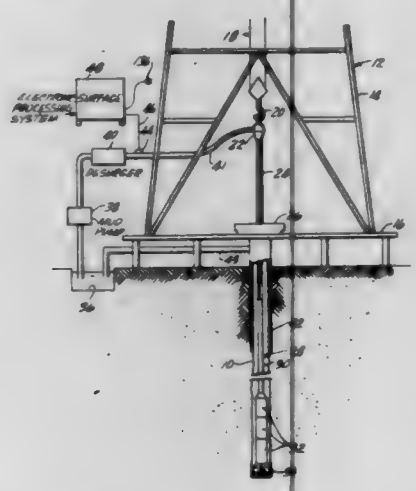
APPARATUS FOR WELL LOGGING WHILE DRILLING

Edward S. Mumby, Carmichael, Calif., assignor to Exploration Logging, Inc., Sacramento, Calif.

Continuation-in-part of Ser. No. 211,501, Nov. 28, 1980, abandoned, which is a continuation of Ser. No. 21,348, Mar. 19, 1979, abandoned. This application Sep. 15, 1981, Ser. No. 302,446

Int. Cl.³ E21B *47/00*

U.S. Cl. 175—48 **29 Claims**



1. In apparatus for sending information to a surface fluid-pulse detector through a drilling fluid in a borehole drilled in the earth with a drill bit on the lower end of a drill string in the borehole and through which the drilling fluid is circulated with a pump to flow through the interior of the drill string, past the drill bit, and into an annulus between the drill string and the borehole wall, the improvement comprising:

(a) means defining a passage for drilling fluid between the drill string interior and the annulus to bypass the drill bit;

(b) a valve disposed in the passage to be held in a normally closed position by the difference in drilling fluid pressure cross the valve,

(c) the valve including:

(i) a valve housing with an inlet and an outlet;

(ii) a valve seat in the housing between the inlet and the outlet;

(iii) a valve disk disposed in the housing on the inlet side of the seat so the disk is urged against the seat by fluid pressure difference between the valve inlet and outlet, the disk being shaped to rest on the seat and close the valve by sealing the valve inlet from the outlet;

(iv) a valve guide chamber in the housing on the inlet side of the seat;

(v) a piston secured to move with the disk and disposed to slide in the chamber;

(vi) means connecting the chamber interior with the fluid on the outlet side of the seat when the valve is closed; and

(vii) means on the valve disk for urging the valve toward a closed position when fluid passes through it so the fluid exerts a net force on the valve disk in the direction of the seat;

(d) means for applying an opening force to open the valve so drilling fluid flows through it; and

(e) means for removing the force on the valve so it moves to the closed position, the opening and the closing of the valve generating a pressure pulse in the drilling fluid.

4,405,022

TUBULAR HANDLING SYSTEM FOR OIL DRILLING RIGS

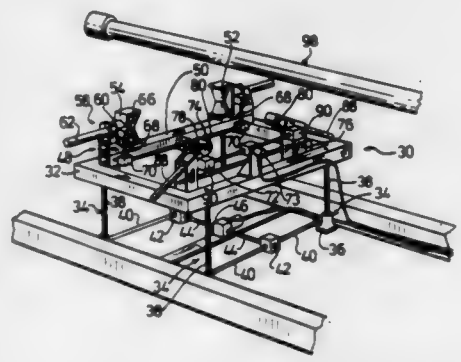
Brian C. Will, Calgary, Canada, assignor to Slant Drilling Systems Ltd., Calgary, Canada

Filed Oct. 13, 1981, Ser. No. 310,548

Claims priority, application Canada, Jun. 3, 1981, 378932

Int. Cl.³ E21B *19/20*

U.S. Cl. 175—85 **16 Claims**



1. Drilling apparatus comprising an inclined mast, drive means slidably mounted on the mast for rotating a tubular drilling member, and at least two positioning units secured to the mast at spaced positions therealong for positioning tubular drilling members, each positioning unit comprising a frame, means for raising the frame a preset distance above the mast and lowering the frame from the preset distance, gripper means adjacent opposite sides of the frame, means for raising the gripper means a preset distance above the frame and lowering the gripper means from the preset distance, means for moving the gripper means towards one another to grip a tubular drilling member therebetween and for moving the gripper means away from one another to release the tubular drilling member, locating means adjacent opposite sides of the frame, and means for raising the locating means to cause said locating means to engage and position lower parts of the tubular member, with the tubular member being movable away from the mast out of contact with the locating means without moving the locating means, said drive means being movable along the mast past at least one positioning unit.

4,405,023

APPARATUS FOR HANDLING AND WEIGHING FRUITS AND THE LIKE

Agustin D. Guardiola, Camelia 36, Barcelona, Spain

Filed Feb. 22, 1982, Ser. No. 350,834

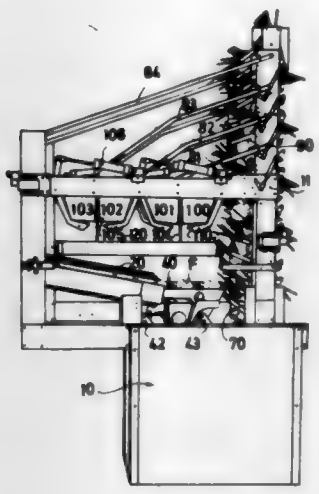
Claims priority, application Spain, Mar. 6, 1981, 500.951

Int. Cl.³ G01G *19/22*

U.S. Cl. 177—59 **11 Claims**

1. Improvements in automatic weighing machines for fruits and the like, comprising a feed entry having various channels terminating in means for retaining the product to be weighed and allowing it to rest there, followed by horizontal transport means arranged in sets in which each set corresponds to one of said channels, the said sets being out of phase with each other as regards their motion and carrying the corresponding product from the respective retention means to a weighing means assigned to each set and, following this, from said weighing means to vertical transport means which are also constituted by the same number of sets and channels and which carry the product which has already been weighed, to a number of ramps which are super-posed at differing heights, which discharge into respective storage areas provided with means for

discharging their content, a further ramp located above those referred to previously, being provided for leading the rejected product (as a result of it having an inadequate weight) towards the entry into the machine, the vertical transport means having



selector means which allow the product to be discharged on to the corresponding ramp, horizontal and transverse transport means being provided below said storage areas for carrying away the product in batches of predetermined and adjustable weight.

4,405,024

WEIGHING DEVICES

Robert H. Fraval, Langley, and Howerd P. Oakford, Byfleet, both of England, assignors to National Research Development Corporation, London, England

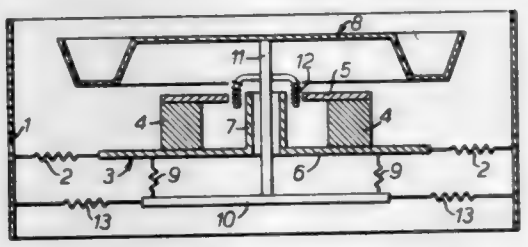
PCT No. PCT/GB80/00212, § 371 Date Aug. 7, 1981, § 102(e) Date Aug. 7, 1981, PCT Pub. No. WO81/01742, PCT Pub. Date Jun. 25, 1981

PCT Filed Dec. 8, 1980, Ser. No. 293,631

Claims priority, application United Kingdom, Dec. 8, 1979, 7942430

Int. Cl.³ G01G *19/00, 3/14*

U.S. Cl. 177—200 **10 Claims**



1. A device for weighing a load of unknown mass comprising a first body (3; 23; 68) of known mass, a second body (8; 28; 66) of known mass adapted to carry a load of unknown mass, a base (1; 21; 60, 62), a suspension system in the form of matching spring means (2, 13; 22, 33; 65, 67) for each body supporting the bodies on the base for substantially unimpeded motion in one mode over at least a limited distance, and further spring means (9; 29; 83) connecting said bodies so that their natural oscillations are in said one mode and mutually opposed, whereby opposite forces are transmitted via the spring suspension means to the base and the bodies are substantially isolated from the environment, and means (12; 32; 76) for determining the resonant frequency of such oscillations and hence the mass of the load.

4,405,025

ELECTRONIC WEIGHING APPARATUS OF INDUCTION TYPE

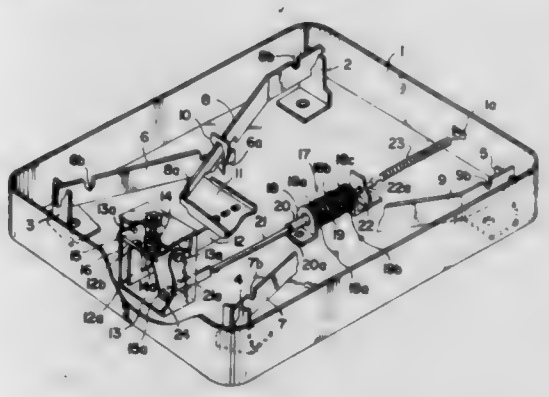
Shuichi Yanagita; Tsutomu Miyoshi, and Masashi Miyane, all of Tokyo, Japan, assignors to Tanita Corporation, Tokyo, Japan

Filed Sep. 15, 1981, Ser. No. 302,623

Claims priority, application Japan, Jun. 15, 1981, 56/90833

Int. Cl.³ G01G *3/14, 21/08*

U.S. Cl. 177—210 FP **14 Claims**



1. An electronic weighing apparatus of the induction type comprises a weighing member adapted to be moved according to the weight of a load to be measured, a variable inductance element consisting of a coil and a magnetic core which is movable relative to said coil and through said coil, means for connecting said weighing member with one of said coil and said magnetic core of said inductance element so that said one can be moved with respect to the other according to the movement of said weighing member and thus the inductance of said inductance element can be changed proportionally to the movement of said weighing member, a sensor oscillator for generating at an output a series of pulses having a period representative of the inductance of said variable inductance element, means connected to receive said pulses and arranged for converting said period of said output pulses from said sensor oscillator into a weight signal indicative of the weight of said load, a display for receiving said weight signal from said converting means and providing an indication of the weight of said load, said sensor oscillator comprising a comparator having an inverting input terminal, a non-inverting input terminal and an output terminal and an integrator having an inverting input terminal, a non-inverting input terminal and an output terminal, said coil of said variable inductance element being connected between said output terminal of said comparator and said non-inverting input terminal of said intergrator, and said output terminal of said comparator being connected to the output of said sensor oscillator.

4,405,026

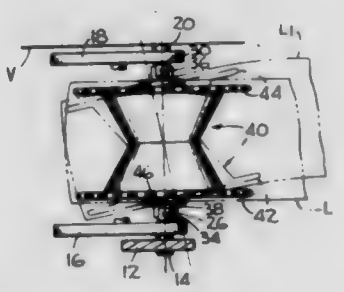
MOUNTING MECHANISM FOR ENDLESS TRACTION BAND SYSTEM

Donald V. Merrifield, Huntsville, Ala., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Oct. 30, 1980, Ser. No. 202,065

Int. Cl.³ B62D *55/08, 55/14*

U.S. Cl. 180—9.62 **10 Claims**



1. In vehicle traction apparatus of the type including an endless traction band having an outer convex surface and an

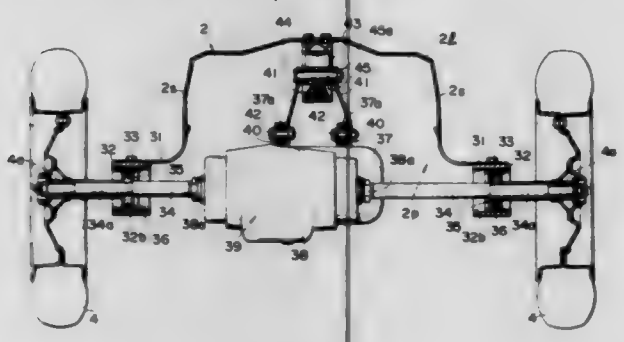
inner concave surface, a first roller chain mounted on one side edge of the band and a second roller chain mounted on the other side edge of the band, said roller chains being of the type that can experience a deviation of up to about +6° from a linear path, an improved mounting mechanism for the endless band comprising first and second spaced apart arms each having an upper end and a lower end, means for mounting the upper ends of said arms to said vehicle so that said arms depend from said vehicle in parallel spaced apart relation, said mounting means affording independent pivotal movement of said arms about a generally horizontal common axis that extends substantially transversely of the vehicle, first and second shaft supports carried at the lower ends of respective said arms, there being imaginary lines extending between respective said mounting means and said shaft supports, said shaft supports each including a body portion and means for securing said body portion to said lower end for pivotal movement about a gimbal axis that is substantially parallel to said imaginary line, and an endless band support member including a shaft mounted to said body portions for rotation relative thereto and extending between said arms, first and second sprockets fixed to said shaft for engaging respective said roller chains, said support member skewing by an amount corresponding to said deviation between a position parallel to said common axis and a position oblique of said common axis in response to side loads imposed on said endless band so as to maintain substantial parallelism between said sprockets and said roller chains.

4,405,027

MOTOR VEHICLE

Akito Enokimoto, Asaka; Toshio Tsuchiya, Kawagoe; Tatsuo Masuda, Niiza, and Suwaji Takano, Urawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 84,175, Oct. 12, 1979, abandoned. This application Oct. 14, 1981, Ser. No. 311,467
Claims priority, application Japan, Oct. 12, 1979, 54-125619
Int. Cl.³ B60K *5/12*
U.S. Cl. 180—56 **7 Claims**



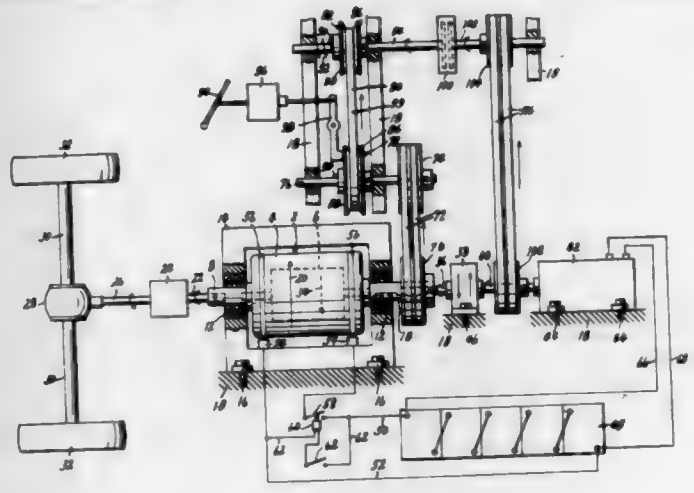
1. A motor vehicle, comprising:
a vehicle frame;
a seat for a driver of said vehicle;
rear wheels, and axles therefor;
two leaf springs extending rearwardly from both sides of said vehicle frame, below said seat, such that said leaf springs support said axles of said rear wheels at the rear ends of said leaf springs;
each of said leaf springs being formed at the rear end thereof with a bearing portion for mounting said axles;
an elastic member being sandwiched between said bearing portion and the bearing of each rear axle such that said axles are mounted elastically on said rear ends of said leaf springs;
a power unit including an engine and a transmission case disposed between said leaf springs, in a space defined under said frame below said seat;
an engine mounting member depending downwardly from a portion of said frame disposed above said engine;
a pair of transversely spaced suspension members connected to said engine so as to extend upwardly therefrom, said suspension members being in turn connected to said engine mounting member;
said suspension members being elastically connected to said engine at transversely spaced portions thereof to define two elastic support portions for said engine, and being elastically connected to said engine mounting member to define a third elastic support portion for said engine; and
said axles of said rear wheels having the inner ends thereof rigidly supported by, and extending from opposite sides of, said transmission case such that the axes of said axles are incapable of displacement relative to each other.

4,405,028

DRIVE SYSTEM FOR ELECTRIC VEHICLES

Cosby G. Price, 6403 N. Walrond, Gladstone, Mo. 64119

Filed Jun. 18, 1981, Ser. No. 275,113
Int. Cl.³ B60K *1/00*
U.S. Cl. 180—65 E **3 Claims**



1. A drive system for an electric vehicle having a frame and ground-engaging drive wheels, said drive system comprising:
a. an electric motor the main elements of which consist of a case carrying the field windings of the motor and being rotatably mounted on the frame of said vehicle, and an armature carrying the armature windings of the motor and being rotatable in said case coaxially therewith, whereby when electric power is supplied to said motor said case and armature will rotate in opposite directions, each being driven by the reactive force of the other,
b. rechargeable electric storage batteries operable to supply electric power to said motor,
c. a first drive train operably connecting one of said main motor elements to said vehicle drive wheels, whereby the latter are driven by the former to propel said vehicle, the torque delivered to said power train by said motor being variable directly with the differential between the rotational speeds of said motor elements,
d. an electric generator,
e. a drive connection between the other of said main motor elements and said electric generator, whereby the latter is driven by the former, the electric output of said generator being connected in recharging relation to said storage batteries,
f. a second drive train interconnecting the main motor element which is connected to said vehicle drive wheels by said first-named drive train to the input of said generator, whereby the latter may be driven by the former, in the same direction it is driven by the other of said motor elements, and
g. a uni-directional clutch interposed in said second drive train and operable to prevent said generator from driving the motor element to which it is connected by said second drive train by reverse operation of said drive train, whereby as the vehicle speed reaches or exceeds a predetermined equilibrium level at which the speed of said wheel-drive motor element equals or exceeds the speed at

which the generator is driven by the other motor element, said clutch will engage to drive said generator, thereby locking said motor elements at a fixed differential speed of rotation, which deprives the motor of the ability to generate the additional motive power which would be required to drive the vehicle at any speed higher than said equilibrium level.

4,405,029

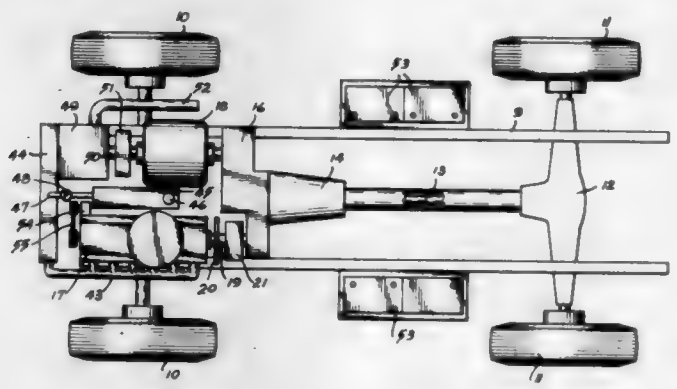
HYBRID VEHICLES

Hugh S. Hunt, 12219 River Rd., Potomac, Md. 20854

Continuation-in-part of Ser. No. 108,987, Jan. 2, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 322,050

Int. Cl.³ B60K *25/00*

U.S. Cl. 180—65 A **5 Claims**



1. A hybrid vehicle comprising a frame supported by ground engaging wheels, propelling means including a transmission and drive shaft for driving certain of said wheels, an electric motor mounted on said frame, means for selectively connecting said electric motor to said propelling means, said means for connecting said electric motor to said propelling means for the vehicle including a transfer case having a power shaft connected to said transmission, an internal combustion engine mounted on said frame, means for selectively connecting said internal combustion engine to said power shaft to selectively drive said propelling means, said transfer case further including bypass means operably connecting said internal combustion engine to drive said electric motor to generate electricity while simultaneously disconnecting said internal combustion engine and said electric motor from said propelling means, said internal combustion engine having an exhaust manifold for removing heated exhaust gases therefrom, chamber means communicating with said exhaust manifold for receiving said exhaust gases therefrom, energy conversion means for utilizing the energy of said heated exhaust gases within said chamber means to generate an output which is connected to selectively drive said electric motor, means for electrically connecting said electric motor to at least one storage battery for receiving and storing electrical energy being generated by said electric motor, said storage battery being electrically connected to said electric motor to selectively drive said electric motor when said electric motor is connected to said propelling means, whereby either said internal combustion engine or said electric motor may be selectively operated to propel the vehicle and wherein the storage battery may be charged during operation of the internal combustion engine through the use of the exhaust gases.

4,405,030

STEERING SYSTEM AND COMPENSATING VALVE

Richard A. Wittren, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Mar. 16, 1981, Ser. No. 244,396

Int. Cl.³ B62D *5/08*

U.S. Cl. 180—153 **9 Claims**

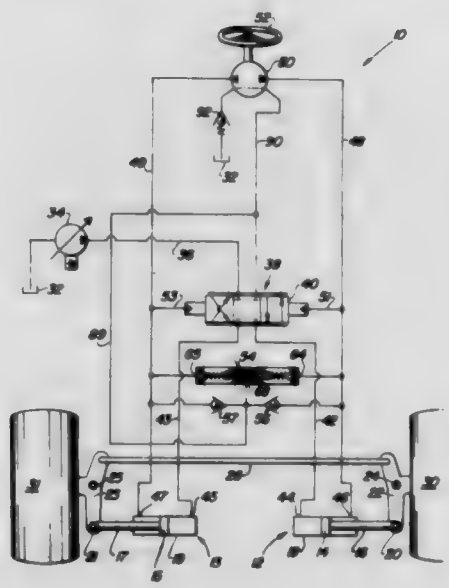
1. A steering system for a vehicle having a pair of steerable wheels attached to pivotable support arms and joined together by a mechanical link, said system comprising:

(a) first and second steering cylinders each having a piston with an attached piston rod extending through one end thereof and each cylinder having a head chamber and a feedback chamber;

(b) a fluid reservoir;

(c) a supply pump connected to said reservoir for supplying pressurized fluid to said head chambers of said cylinders;

(d) first and second fluid passages connected to said feedback chambers of said first and second cylinders, respectively;



(e) control valve means for selectively controlling the flow of pressurized fluid from said supply pump to said head chambers of said cylinders, said valve means connected across said first and second fluid passages and actuatable by pressure differences therebetween;

(f) a metering pump connected to said first and second passages for facilitating movement of fluid therebetween;

(g) a manually operable steering element connected to said metering pump for controlling the steering of said wheels; and

(h) compensating valve means for regulating fluid pressure across said first and second fluid passages so that a predetermined pressure range is possible between said first and second fluid passage.

4,405,031

METHOD AND DEVICE FOR OPERATING A MOTOR VEHICLE WITH AN INTERNAL-COMBUSTION ENGINE

Gerhard Rotter, Obersasbach, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Continuation of Ser. No. 143,713, Apr. 25, 1980, abandoned. This application Aug. 10, 1982, Ser. No. 406,898

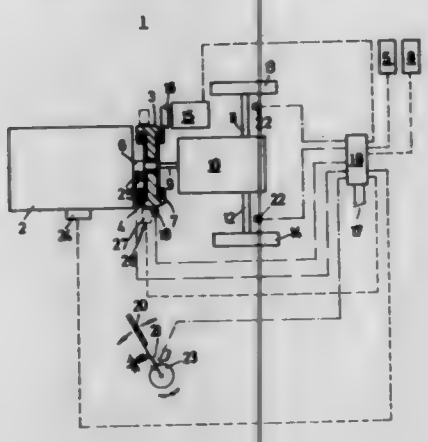
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1979, 2917139; Apr. 27, 1979, 2917296

Int. Cl.³ B60K *9/04*

U.S. Cl. 180—165 **20 Claims**

1. A method of operating a wheel-mounted motor vehicle wherein a rotary flywheel for minimizing non-uniformity of rotational motion is engageable with and disengageable from the internal combustion engine by a first clutch and such flywheel is engageable with and disengageable from the wheels of the vehicle by a second clutch, comprising the steps of automatically (a) disengaging the second clutch by a shifting and control device when the vehicle is in motion but the engine does not drive the wheels, such as during deceleration, braking or coasting, and maintaining the first clutch in engaged condition while operating the engine at a minimal speed; (b) disengaging the first and second clutches by a shifting and control device when the vehicle is briefly arrested, such as at a traffic

light, so that the flywheel continues to rotate due to inertia, and arresting the engine; and (c) restarting the engine, including engaging the first clutch but maintaining the second clutch in disengaged condition by a shifting and control device.



4,405,032

WHEEL HUB ASSEMBLY

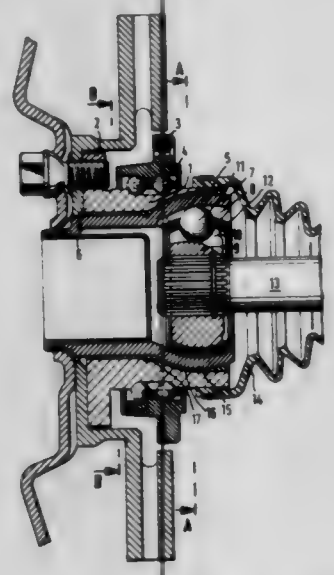
Hans-Heinrich Welschof, Rodenbach, and Rudolf Beier, Offenbach, both of Fed. Rep. of Germany, assignors to Lohr & Bromkamp GmbH, Offenbach am Main, Fed. Rep. of Germany

Filed May 7, 1981, Ser. No. 261,500

Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3017757

Int. Cl.[3] B60K *17/30*

U.S. Cl. 180—259 13 Claims



1. A wheel hub assembly comprising a tubular shaped hub member having an axis of rotation, bearing means for rotatably supporting said hub member, a universal joint member engageable with said hub member for driving said hub member about the axis of rotation thereof, said universal joint member is positioned within said hub member, said hub member and said universal joint member having confronting surfaces extending in the direction of the axis of rotation of said hub member, said confronting surfaces are spaced radially apart and after said universal joint member is assembled within said hub member a filler material is filled into the space between the confronting surfaces so that it completely fills the space and forms a torque transmitting connection between said universal joint and said hub member.

4,405,033

FAIL-SAFE METHODS FOR GENERATING A PULSE INDICATING THE PRECISE MOMENT OF FIRING OF A GAS EXHAUSTING GUN

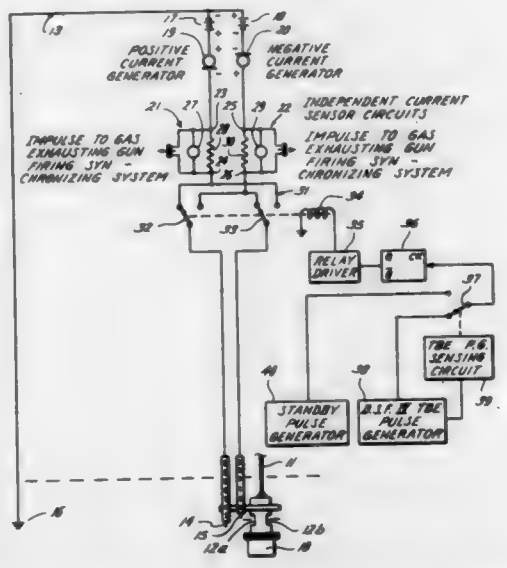
Lloyd E. Elliott, Jr., and John L. Hudson, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 90,158, Oct. 31, 1979, abandoned, which is a continuation-in-part of Ser. No. 913,772, Jun. 8, 1978, abandoned. This application Jan. 26, 1981, Ser. No. 228,432

The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.

Int. Cl.[3] G01V *1/38, 1/14*

U.S. Cl. 181—120 14 Claims



1. A fail-safe method for detecting firing of a gas exhausting gun having two closely spaced apart electrodes submerged underwater very close to the gas exhausting gun exhaust port comprising,

(a) passing a current to a sea ground as a backup electrode when any one of the two electrodes becomes defective for providing a fail-safe indicator.

4,405,034

ROPE LADDER

James Dunne, 12518 S. Pawnee Rd., Palos Park, Ill. 60464

Filed Dec. 24, 1981, Ser. No. 334,130

Int. Cl.[3] E06C *1/56*

U.S. Cl. 182—190 4 Claims



1. A rope ladder comprising,

a main rope piece formed of a twisted, stranded fibrous

material, said main rope piece including a top end and a bottom end,

a plurality of short rope pieces formed from a twisted and stranded fibrous material, each of said short rope pieces including opposed ends,

each of said short rope pieces including one end securely connected to said main rope piece by interweaving the braided and stranded fibrous material forming said short rope piece with the twisted and stranded fibrous material forming said main rope piece, said splicing facing the direction of the top end of said main rope piece, and the opposed end of said short rope piece similarly being securely connected to the main rope piece by splicing the opposed end of the twisted and stranded fibrous material forming said short rope piece with the twisted and stranded material forming said main rope piece, said splicing similarly extending in an upward direction toward the top end of said main rope piece,

each of the plurality of short rope pieces thereby creating a plurality of loops along the length of said main rope piece,

and each of said plurality of loops being sequentially positioned on opposed sides of said main rope piece in alternating fashion along the length thereof, each succeeding loop secured to said main rope piece being 180° out of the plane of the immediately previous vertically positioned loop whereby said loops are positioned in alternating side to side relationship along the entire length of said main rope piece.

4,405,035

METHOD AND APPARATUS FOR INJECTING VISCOUS MATERIALS

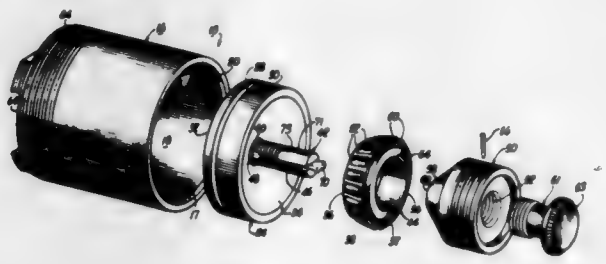
William E. Shultz, 239 N. Main St., Lombard, Ill. 60148

Division of Ser. No. 115,062, Jan. 24, 1980. This application Oct. 13, 1981, Ser. No. 310,382

The portion of the term of this patent subsequent to Sep. 25, 1996, has been disclaimed.

Int. Cl.³ F01M *11/00*

U.S. Cl. 184—1 D **2 Claims**



1. A method of applying a lubricant to a bearing comprising inserting said bearing into a lubricant chamber to seal an outer peripheral surface of said bearing against a tapered surface of a piston member disposed within said lubricant chamber;

sealing an inner peripheral surface of said bearing with tapered spool member by inserting said tapered spool member within a central aperture in said bearing;

mounting said lubricant chamber between vice jaws of a common vice; and

compressing said vice jaws to force grease through a central opening in said piston member and outwardly into said bearing.

4,405,036

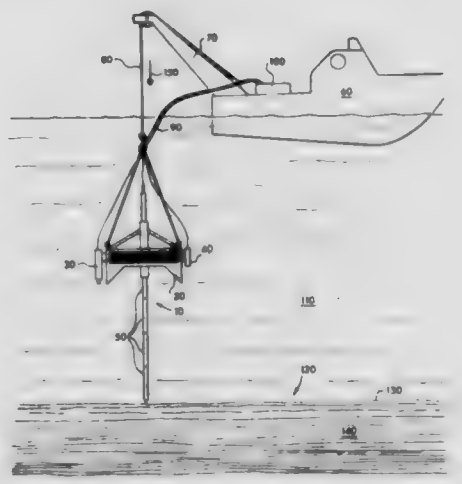
SEAFLOOR VELOCITY AND AMPLITUDE MEASUREMENT APPARATUS METHOD

Kenneth R. Weser, Littleton, Colo.; James F. Huff, Sugar Land, Tex., and Anthony R. Tinkle, Little, Ohio, assignors to Marathon Oil Company, Findlay, Ohio

Filed Dec. 11, 1980, Ser. No. 215,591

Int. Cl.³ G01V *1/16, 1/38*

U.S. Cl. 181—110 **5 Claims**



1. An apparatus (10) operative with a crane (70) on a vessel (60) on the sea (110) for penetrating the mudline (130) of the sea-floor (120) and for measuring the substantial vertical velocity of the pressure wave (310) from an acoustic pulse (300) through the different layers of sediments (140) located directly below the mudline (130), said apparatus comprising:

a ballast (20) operatively connected to said crane (70),

means (30) located on said ballast (20) for providing said acoustic pulse (300),

a plurality of rigidly interconnected vertical sensors (50) connected to said ballast (20) and extending downwardly therefrom predetermined substantially vertical distances from said providing means (30) for sensing the substantial vertical velocity of said pressure wave (310) at different vertical locations in said sediments,

said ballast (20) having sufficient weight to embed said sensors (50) downwardly into said sediments when lowered by said crane (70) and to place said providing means (30) into a region near said mudline (130) and above said sediments (140) to be measured, each of said sensors (50) being capable of generating an electrical signal (550) in response to said sensed substantial vertical velocity of said pressure wave (310), and

means (100) located on said vessel (60) receptive of said electrical signals (550) from said sensors (50) and based upon the values of the aforesaid predetermined substantially vertical distances for measuring the substantial vertical velocity of said pressure wave (310) through said layers of sediment (140) between said providing means (30) and said sensors (50).

4,405,037

RAIL VEHICLE SLACK ADJUSTER

Lars M. Severinsson, Hishult; Peter Beijbom, Lund, and Anders K. Martensson, Bjärred, all of Sweden, assignors to SAB Industri AB, Landskrona, Sweden

Filed Jun. 10, 1981, Ser. No. 272,183

Claims priority, application Sweden, Jun. 24, 1980, 8004667

Int. Cl.³ F16D *65/56*

U.S. Cl. 188—196 D **8 Claims**

1. A rail vehicle slack adjuster of the double-acting, clearance-sensing, axial type, comprising

an elongated barrel,

a non-rotatable pull rod extending out of the barrel from one of its ends and intended for brake force introduction into the adjuster,

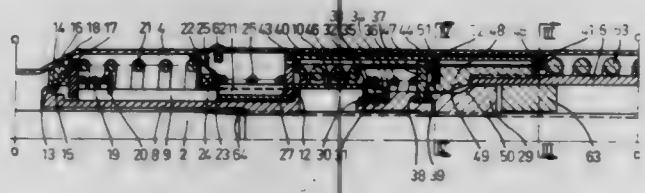
a non-rotatable threaded spindle extending out of the barrel from its opposite end and intended for brake force transmission from the adjuster,

a leader unit and an adjuster unit cooperating with the spindle in the barrel, and

a barrel spring arranged around the pull rod acting between the adjuster unit and the barrel end,

the leader unit including a leader nut in non-self-locking engagement with the spindle and capable of being clutched to the barrel under the action of a pay-out spring for preventing relative rotation between the leader nut and the barrel under certain conditions, and

the adjuster unit including an adjuster nut in non-self-locking



engagement with the spindle and capable of being clutched to a pull sleeve connected to the pull rod for transmitting the pulling brake force to the spindle, characterized in that the adjuster unit includes a sleeve non-rotatingly engaging the barrel acted on by the pulling brake force from the pull rod and the opposite force from the barrel spring and in that the leader nut is provided with telescoping means for sensing elasticity which are only axially movable relative to the leader nut, first clutch means conditionally clutchable to engage the leader nut to the barrel and to thereby said non-rotatable sleeve, and further clutching means enabling the leader nut to rotate with clutch engagement of said first clutch means with the barrel.

4,405,038

DEVICE FOR TROQUE TRANSMISSION BETWEEN A DRIVE SHAFT, E.G. AN ENGINE CRANKSHAFT, AND AN ATTACHMENT UNIT SUCH AS A HYDRODYNAMIC RETARDER

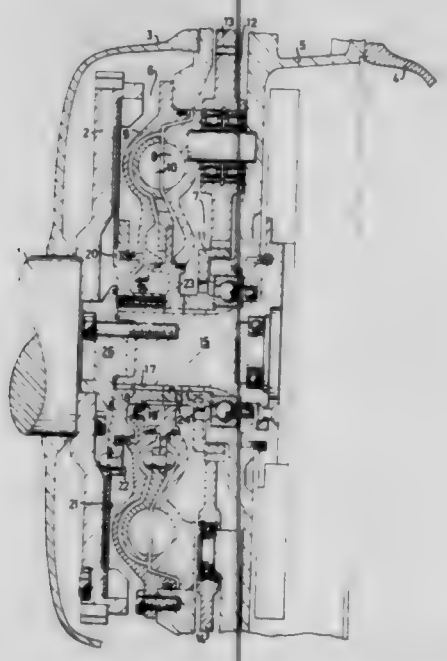
Runo R. O. Ternehäll, Skärhamn, Sweden, assignor to Ab Volvo, Gothenburg, Sweden

Filed Nov. 18, 1980, Ser. No. 208,009

Claims priority, application Sweden, Nov. 19, 1979, 7909554

Int. Cl.³ B60K *41/26*

U.S. Cl. 192—4 B **5 Claims**



1. A device in motor vehicles for torque transmission between an engine crankshaft and at least one driven unit, said device comprising an extension shaft journalled in bearing means for rotation about an axis of rotation coinciding with the axis of rotation of the crankshaft and having external splines and a tubular connection member having internal splines engaging the external splines of the extension shaft and connected to a fly wheel on the crankshaft by means of an axially flexible member rigidly attached to the fly wheel and to the tubular connection member, the extension shaft end facing the crankshaft and the crankshaft having interengaging means preventing radial but permitting axial movement of the extension shaft in relation to the crankshaft, said driven unit having means which are arranged concentrically with at least one of said extension shaft and said tubular member and have internal splines engaging external splines on one of said extension shafts and said tubular member.

4,405,039

FLUID FRICTION CLUTCH

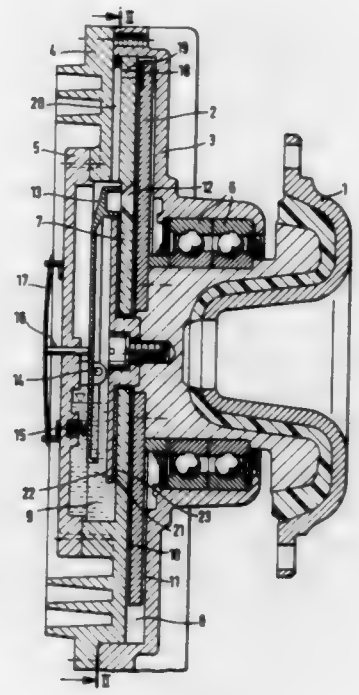
Kurt Hauser, Stuttgart, Fed. Rep. of Germany, assignor to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co., KG, Stuttgart, Fed. Rep. of Germany

Filed Aug. 4, 1981, Ser. No. 290,058

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1980, 3029992

Int. Cl.³ F16D *35/00, 43/25*

U.S. Cl. 192—58 B **11 Claims**



1. A fluid friction clutch, comprising:

a driven disk member;

a drivable housing member surrounding said driven disk member in such a manner as to provide a working chamber therebetween for receiving a fluid capable of transmitting rotational force between said driven disk member and said housing member;

a reservoir separate from said working chamber for containing the fluid;

a selectively openable and closable inlet orifice providing fluid communication between said reservoir and said working chamber;

a return conduit providing fluid communication between said working chamber and said reservoir; and

a supplemental disk member rotatable with said driven disk member and positioned within said reservoir so as to be wetted by the fluid at least when the fluid friction clutch is at rest.

4,405,040

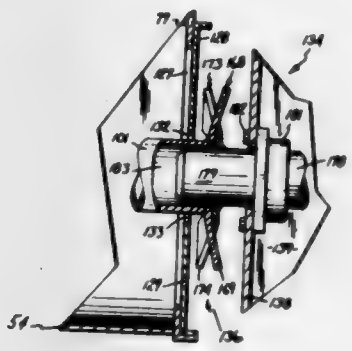
RELEASABLE DRIVE APPARATUS

Floyd E. Buschbom, Long Lake, and Donald L. Henke, Maple Plain, both of Minn., assignors to Veda, Inc., Long Lake, Minn.

Division of Ser. No. 115,184, Jan. 25, 1980. This application Jun. 2, 1981, Ser. No. 269,634

Int. Cl.³ F16D *11/00, 21/00*

U.S. Cl. 192—67 R 11 Claims



1. An apparatus for driving a movable means, said movable means including driven shaft means comprising: power means having drive shaft means for driving the drive shaft means, releasable means drivably connecting the drive shaft of the power means with the driven shaft means whereby the power means rotates the driven shaft means, said releasable means includes first means having at least one first arm secured to the shaft means, and second means having at least one second arm secured to and moved by the drive shaft means to the power means, one of said shaft means having an axial passage having an open end, and the other of said shaft means having projection means adapted to fit into the axial passage through the open end thereof to support said one of said shaft means on the other of said shaft means, said first and second arms being engageable with each other to transmit power from the power means to the driven shaft means when the projection means is located in said axial passage.

4,405,041

CLUTCH RELEASE MECHANISM FOR A PULL TYPE CLUTCH

George T. Broadbent, Chesterfield, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Jul. 16, 1981, Ser. No. 283,873

Claims priority, application United Kingdom, Jul. 22, 1980, 8023908

Int. Cl.³ F16D *23/14*

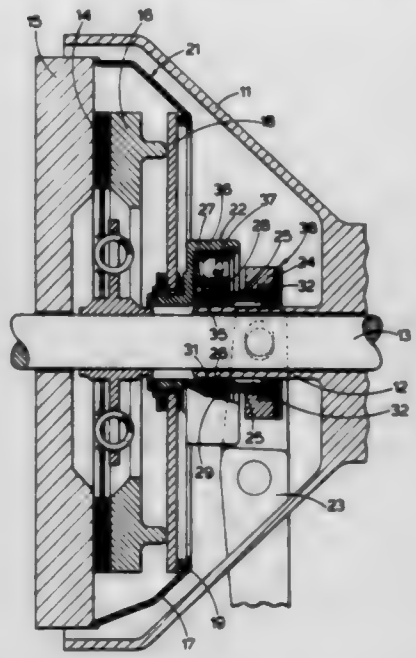
U.S. Cl. 192—98 5 Claims

1. A clutch release mechanism for a pull type friction clutch of a motor vehicle transmission system having a gearbox with a sleeve surrounding the gearbox input shaft and a clutch cover assembly, said mechanism comprising;

a clutch release bearing assembly secured to the clutch cover assembly and having a shoulder thereon;

a clutch release fork pivoted relative to the gearbox housing;

and a coupling means which connects the release fork to the bearing assembly, said coupling means being automatically connectable and disconnectable with the bearing assembly by engagement and disengagement, respectively, with the shoulder on the assembly depending upon the axial position of the sleeve relative to the coupling means, so that said coupling means automatically latches with said shoulder when the gearbox is in its operable



position, and is automatically unlatched from said shoulder when the gearbox is withdrawn.

4,405,042

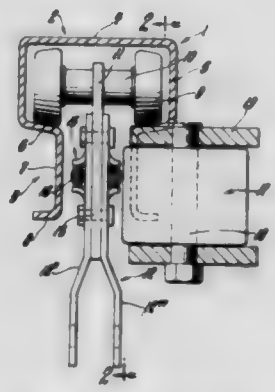
COMBINATION ENCLOSURE/SUPPORT FOR CONVEYOR APPARATUS, AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Clarence A. Dehne, Farmington, Mich., assignor to Jervis B. Webb Company, Farmington Hills, Mich.

Continuation of Ser. No. 83,405, Oct. 10, 1979, abandoned. This application Apr. 21, 1981, Ser. No. 256,117

Int. Cl.³ B65G *17/38*

U.S. Cl. 198—687 2 Claims



1. An overhead power driven conveyor apparatus, comprising:

a plurality of elongated track members longitudinally joined to form a continuous single overhead track supported by a plurality of hanger members at spaced intervals;

a power driven continuous chain member;

a plurality of trolley members, each of said trolley members being operatively connected to said continuous chain member;

each said trolley member including:

a pair of wheels mounted for rotation to opposite ends of an axle member;

load supporting means on said trolley comprising a downwardly depending bracket member supported by said axle member;

a pair of load attachment members extending along one side of said bracket member;

means securing said attachment members to said bracket in depending relationship;

a pair of chain link support portions disposed adjacent the upper portion of each said load attachment member and respectively extending on opposite sides of said load supporting means, each said support portions defining at least a portion of a recess in which a portion of a rigid chain link is received;

said bracket member including:

an upper portion substantially coextensive longitudinally with the portion of said axle between said wheels and receiving and being supported by the latter axle portion;

a depending main body portion;

lower oppositely recessed portions and a lowermost inwardly tapered connection portion;

said attachment members receiving and being connected to said connection portion in load supporting relationship; and

each said attachment member having an outwardly flanged portion forming with said lower recessed portion one of the recesses for receiving a portion of said rigid link: and

each of said elongated track members including:

an upper enclosure defined by a top wall portion, first spaced apart downwardly-depending side wall portions, and a pair of spaced apart lower wall portions extending integrally from and substantially perpendicular to said side wall portions;

said lower wall portions each including an upper surface thereof for supporting and guiding one of said wheels of said trolley member;

a lower chain enclosure extending downwardly from said upper enclosure; and

said lower chain enclosure including a pair of substantially parallel spaced apart second side wall portions which are constructed and arranged not to contact any movable member, each of said second side wall portions extending integrally downwardly from one of said lower wall portions of said upper enclosure a sufficient distance to dispose therebetween and to be spaced apart from said chain link support portions of said trolley member;

said top wall portion of said upper enclosure being substantially horizontal, said first spaced apart side wall portions extending integrally and substantially vertically downwardly from each side of said top wall portions, and said lower wall portions of said upper enclosure extending integrally and substantially horizontally inwardly from said first side wall portions such that the inner ends thereof are spaced apart;

said pair of spaced apart second side wall portions of said lower chain enclosure extending substantially vertically downwardly from the inner ends of said lower wall portions of said upper enclosure; and

said chain link support portions of said trolley member being disposed adjacent to but spaced apart from a central portion of said lower chain enclosure of said track member.

4,405,043

DYNAMICALLY BALANCED VIBRATORY SYSTEM

George L. Burghart, 2993 Curtiss Lot 45B, Des Plaines, Ill. 60018

Filed Jun. 12, 1981, Ser. No. 272,902
Int. Cl.³ B65G *27/24*
U.S. Cl. 198—769 **18 Claims**

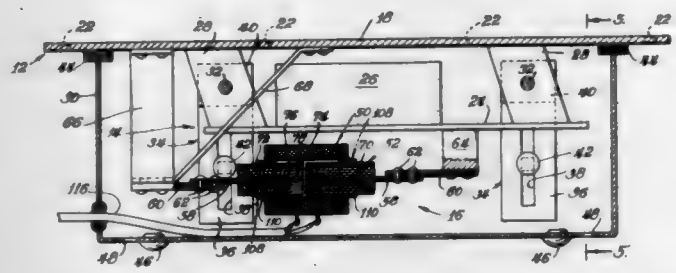
1. A dynamically balanced vibratory feeder system comprising:

a. a material handling component including an elongated platform oriented substantially horizontally and formed to support a material conveying trough,

b. a counterweighting component having a rigid plate oriented substantially horizontally and positioned adjacent to said elongated platform, said counterweighting component including a counterweight secured to said plate and located between said plate and said elongated platform.

c. a plurality of inclined struts resiliently interconnecting said material handling and counterweighting components,

d. driving means comprising an electromagnet driver connected between said material handling and counterweighting components to reciprocally drive said components in opposed relative directions, said driving means including a driving portion and a driven portion, said driving portion being essentially isolated from the reciprocal movement of said material handling and counter-



weighting components and including means resiliently mounting said driving portion on said driven portion, and said driven portion comprising a portion connected to said material handling component and a portion connected to said counterweighting component, and

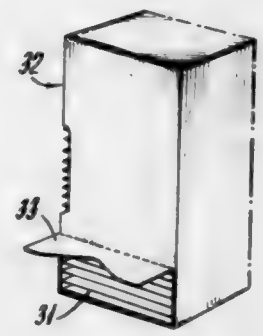
e. means supporting said system upon said struts at a substantially vibrationally neutral location.

4,405,044

DISPENSER BOX FOR PACKAGES OF STERILE SUTURES

David I. Flower, Bridgewater, and Michael Schuler, Edison, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Sep. 17, 1981, Ser. No. 303,283
Int. Cl.³ B65D *83/08, 5/72*
U.S. Cl. 206—44.12 **8 Claims**



1. A dispenser for a plurality of packages of sterile suture materials comprising a front panel and a rear panel, a top panel and a bottom panel, and a pair of side panels, an opening disposed at the bottom of the front panel and abutting the bottom panel for removing a single suture package from said dispenser, an area of said front panel adjacent said opening panel being easily deflectable to allow for removal of a plurality of suture packages at one time and viewing means disposed vertically in the front panel to allow for ready determination of the amount of packages of sutures remaining in said dispenser.

4,405,045

AUTOMATIC TWO-COMPONENT MEDICATION TIME-INTERVAL REMINDER CAP AND CONTAINER

Antony-Euclid C. Villa-Real, 2512 Capistrano Ave., Las Vegas, Nev. 89121

Filed May 1, 1981, Ser. No. 259,664
Int. Cl.³ B65D *83/04*
U.S. Cl. 206—534 **9 Claims**

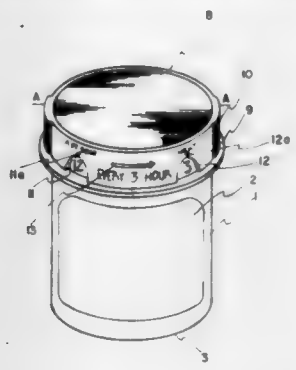
1. A two-component medicament container comprising:

a cylindrical hollow body closed at one end and open at the opposite end;

a pair of parallel circumferentially extending ridges on the outside circumference of the hollow body, a distance below the open end;

a plurality of hour indicia extending about the circumference of the hollow body below said ridges;

a cap for closing the open end of the hollow body having a top flat portion and a depending circular flange, the diameter of said cap being slightly larger than the diameter of said flange and ridges, a lateral flange on an end of the depending flange, a pair of parallel circumferentially extending grooves on an inside surface of the depending flange coincident with said ridges such that when said cap is telescoped over the open end of the hollow body the ridges snap into the grooves whereby the cap is tightly held onto the hollow body and rotatable thereabout, and a



pair of oppositely positioned protuberances on the depending flange extending from the top flat portion to the lateral flange and having rib-like serrations thereon for facilitating gripping of the cap for ease in rotating the cap about the open end of the hollow body; and

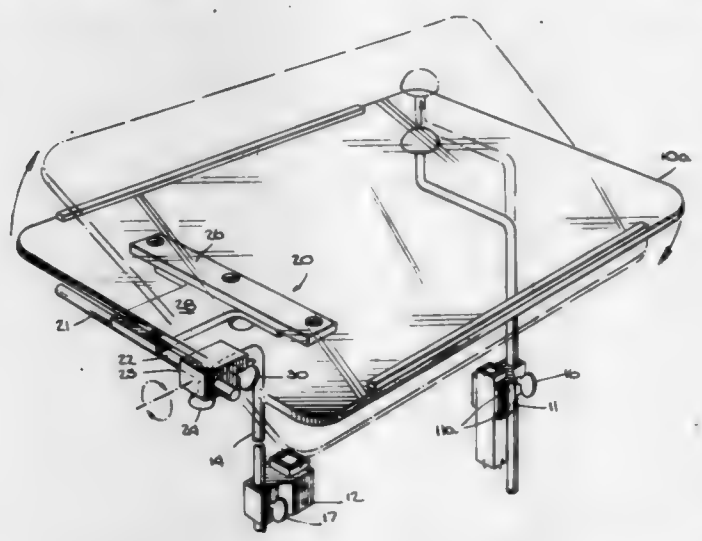
said depending flange having a plurality of semi-circular windows therein for exposing the hour indicia on the hollow body, the distance between the first window, and the second window being a quarter of a circumference from left to right to provide the cap with a pre-set-3-hour time-interval automatic time setter and reminder for use in the administration of prescribed medication having a 3-hour frequency of drug-dose intake.

4,405,046

TRAY ATTACHMENT FOR A CHAIR

Roland P. Schultz, Costa Mesa, and Steven P. Schultz, Huntington Beach, both of Calif., assignors to LPS Industries, Inc., Newark, N.J.

Filed Nov. 1, 1982, Ser. No. 438,318
Int. Cl.³ F16M *13/00*; B65D *1/34*
U.S. Cl. 206—557 **2 Claims**



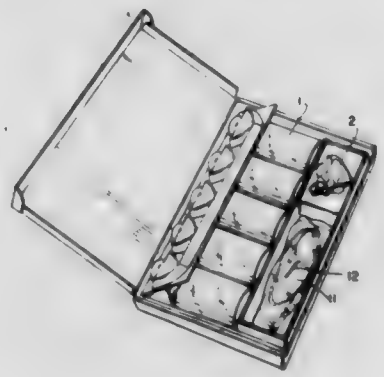
1. An improved tray assembly for a chair, wherein such tray is mounted to the chair for pivotal movement from a usable horizontal disposition to a vertically disposed storage position adjacent the chair, the improvement comprising: a planar tray member; bracket means for use in attaching the tray member to the chair, said bracket means being disposed at a side position of the tray member and having a mounting pin extending in a forward-rearward direction with respect to the tray member; a mounting block having an opening for receiving a free end of the mounting pin, and having means for locking the pin within said opening to prevent slidable or rotative movement thereof, wherein said locking means is releasable to permit the pin and tray member to be rotated, with respect to the axis of the pin, for selective movement between its said horizontal usable position and said vertical storage position; an assembly comprising a transverse rod and vertical rod, and means for connecting said rod assembly to one side of the chair and for vertically positioning said rod assembly at a desired height with respect to the chair, wherein said transverse rod is receivable in an opening of said mounting block, disposed at right angles to said pin opening, to permit the tray to be tilted about the axis of the transverse rod; and an opposed vertical rod disposed at the side of said chair opposed to said rod assembly, and a mounting device for selectively adjusting the vertical height of said opposed rod, wherein the upper end of said opposed rod contacts the underside of said tray member to support same, and wherein the position of said contact is displaced from the axis line of said transverse rod.

4,405,047

UNIT PACKAGE FOR POULTRY VACCINATION

Robert L. Barba, Georgetown, Del., assignor to Sterling Drug, Inc., New York, N.Y.

Filed Jul. 22, 1981, Ser. No. 285,318
Int. Cl.³ B65D *83/00*; A61B *17/20*
U.S. Cl. 206—570 **1 Claim**



1. A unit package for use in connection with a system for supplying liquid vaccine composition to an apparatus for substantially simultaneously debeaking and vaccinating poultry chicks said package comprising a compartmentalized container the compartments of which contain

(a) a plurality of liquid diluent supply bottles containing sterile diluent for rehydrating dehydrated vaccine,

(b) a transfer spike assembly comprising a cover unit sealed with a tear-away cover and containing a transfer spike suitable for providing sterile flow means from a liquid diluent supply bottle to a bottle containing dehydrated vaccine, and

(c) a drip chamber-tubing-clamp assembly suitable for sterile transfer of liquid vaccine from a liquid supply bottle to the liquid injecting means of an apparatus for substantially simultaneously debeaking and vaccinating poultry chicks.

4,405,048

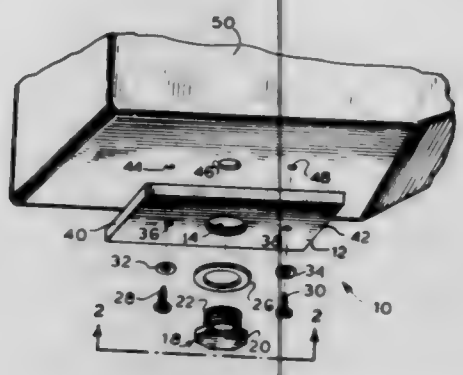
FUEL TANK DRAIN KIT AND PROCESS

Gilbert R. Peake, 16615 Bud Rd., Poolesville, Md. 20879

Filed Feb. 25, 1982, Ser. No. 352,242
Int. Cl.³ B65D *69/00, 71/00*
U.S. Cl. 206—582 **2 Claims**

1. A fuel tank adaptor kit for converting an existing fuel tank of a motor vehicle to permit it to be periodically partially or totally drained to rid the fuel tank of contaminants comprising a flat metallic plate attaching member having a threaded hole located through its central portion and a plurality of un-

threaded holes located away from the central portion of said flat metallic plate attaching member that extend completely through said attaching member, a threaded member for closing the threaded hole in said flat metallic plate attaching member, an oil resistant washer sized and shaped to fit around said threaded member, screw members adapted to fit into the un-



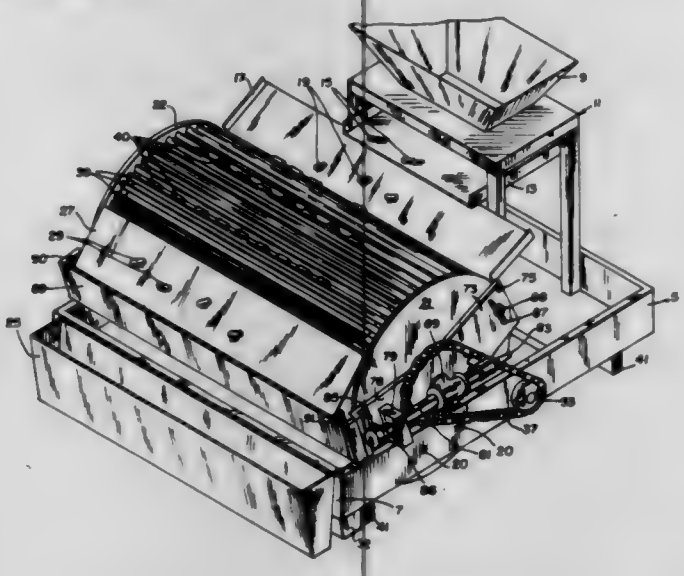
threaded holes to be seated into holes in said fuel tank to secure said flat metallic plate attaching member to said fuel tank, oil resistant washers sized and shaped to fit on said screw members to prevent leakage of fuel from said fuel tank when said screw members and associated oil resistant washers are in place and means for attaching said flat metallic plate attaching member to said fuel tank comprising a cement.

4,405,049

CAPSULE INSPECTION DEVICE

Stephen J. Deitz, 1707 Certainty Dr., Point Pleasant, N.J. 08742

Filed Oct. 13, 1981, Ser. No. 310,799
Int. Cl.[3] B07C 5/36, 7/00
U.S. Cl. 209—630 6 Claims



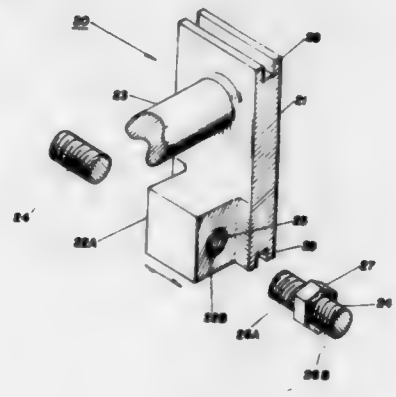
1. A capsule inspection device comprising a pair of stationary flanged discs mounted in spaced parallel vertical planes with their centers aligned to define the ends of a large cylinder, the smaller diameters of said flanged discs facing each other, each said flanged disc having a rotating disc mounted adjacent thereto and parallel and concentric therewith, said rotating discs being between said flanged discs and having smaller diameters than said flanged discs, said rotating discs having radial projections therein, skirts attached to the lower portions of the larger diameters of said flanged discs and extending inwardly toward said rotating discs, an array of rollers forming the curved surface of said large cylinder, said rollers being slightly shorter than the spacing between the flanges of said flanged discs so that they rest on the smaller diameter of said flanged discs between adjacent radial projections of said rotating discs, the diameter of said rollers and the spacing between them being chosen so that medicinal capsules to be inspected can array themselves in linear arrays between adjacent rollers and be rotated thereby, means to sychronously drive said rotating discs from a common source, capsule supply means at the rear of said array of rollers and a capsule discharge means at the front of said array rollers.

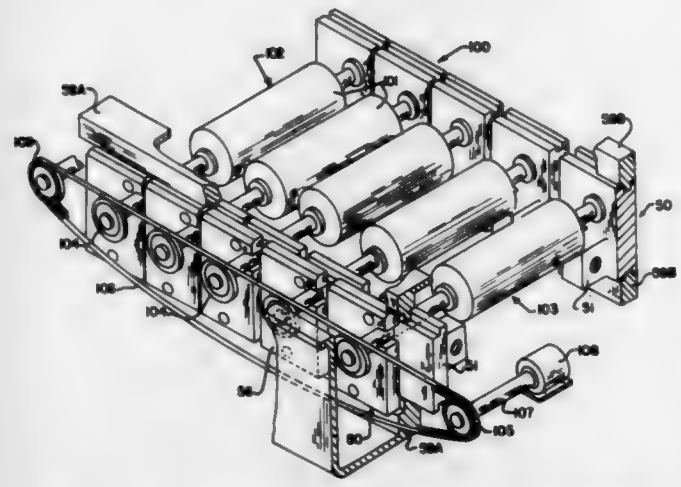
4,405,050

QUICK ROLL ADJUSTMENT FOR A ROLLER SCREEN CONVEYOR

Edward A. Fenton, Jr., Pittsburgh, and John F. Simpson, Jr., Eighty Four, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Dec. 14, 1981, Ser. No. 330,460
Int. Cl.[3] B07B 1/14
U.S. Cl. 209—668 21 Claims





1. In a roller screen conveyor hving a frame with a plurality of spaced parallel rollers mounted thereon, each with its longitudinal axis normal to the longitudinal axis of the conveyor, an apparatus for adjusting and rigidly fixing the spacing between adjacent rollers comprising:

a plurality of roller support blocks slidably mounted on the frame of the conveyor and movable in a direction parallel to the longitudinal axis thereof, each roller support block rotatably supporting an end of a roller and having two adjustment engaging means oppositely extending normal to the axis of rotation of the roller and parallel to the longitudinal axis of the roller screen conveyor; and

a plurality of independent adjusting means for independently and rigidly fixing the spacing between adjacent support blocks, each adjusting means positioned intermediate confronting adjustment engaging means of adjacent support blocks and engaging the adjustment engagement means to form a structure of alternating support blocks and adjustment means, such that extension of the adjustment means in a line sustantially parallel to the longitudinal axis of the conveyor moves the adjacent support blocks farther apart while retraction of the adjustment means along a line substantially parallel to the longitudinal axis of the conveyor moves the adjacent blocks closer together without affecting the spacing between the other slidably mounted support block similarly connected to the other adjustment engaging means of the support blocks being adjusted.

4,405,051

MERCHANDISE HOOK

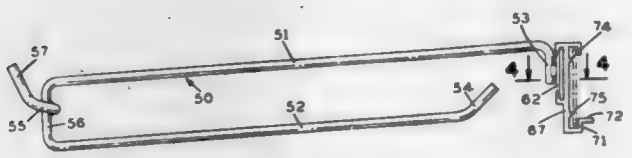
David R. Thalenfeld, Beechurst, N.Y., assignor to Trion Industries, Inc., Wilkes-Barre, Pa.

Division of Ser. No. 151,357, May 19, 1980, Pat. No. 4,351,440, which is a continuation-in-part of Ser. No. 918,483, Jun. 23, 1978, abandoned. This application Jan. 18, 1982, Ser. No. 339,885

The portion of the term of this patent subsequent to Feb. 16, 1999, has been disclaimed.

Int. Cl.³ A47F 5/00

U.S. Cl. 211—57.1 15 Claims



1. A display member for a display structure to display labels or other information, said member having means for being mounted upon said display board, wherein

(a) said member comprises a wire-like element,

(b) said wire-like element including an outwardly projecting display arm,

(c) a mounting plate being rigidly and transversely secured to an outer end extremity of said display arm,

(d) a plate-like label holder comprising an extruded section having upper and lower rearwardly projecting mounting flanges adapted for tight slideable engagement with said mounting plate,

(e) said label holder being of any predetermined length, whereby the label holder may have a length independent of the length of the mounting plate.

4,405,052

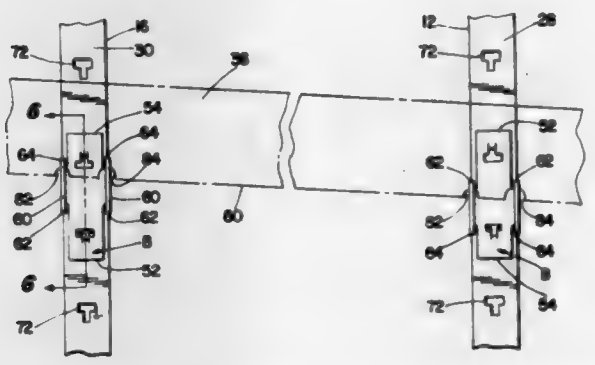
SHELF SUPPORT BRACKET

Dennis J. Spiros, Punta Gorda, Fla., assignor to Nestier Corporation, Cincinnati, Ohio

Filed Sep. 22, 1980, Ser. No. 189,196

Int. Cl.³ A47F 5/00

U.S. Cl. 211—49 D 19 Claims



1. A bracket for supporting shelves on vertical columns, said columns having at least one vertical row of mounting holes; a substantially flat and generally rectangular plate having opposite end edges and opposite side edges, first and second vertically spaced mounting means on said plate for mounting said plate to respective first and second ones of said mounting holes, at least one integral flange for engaging said shelves bent from one of said side edges and extending generally perpendicular to said plate, said flange having opposite flange end portions provided with opposite first and second hooks opening outwardly toward said opposite end edges respectively, said first hook being spaced a first certain distance from said first mounting means, said second hook being spaced a second certain distance from said second mounting means, said first and second distances being of different length so that said plate may be mounted with said first and second mounting means respectively engaging said first and second holes for supporting a shelf on said one hook and may be mounted inverted with said first and second mounting means respectively engaging said second and first holes for supporting the shelf on said second hook to thereby change the elevation of said shelf.

4,405,053

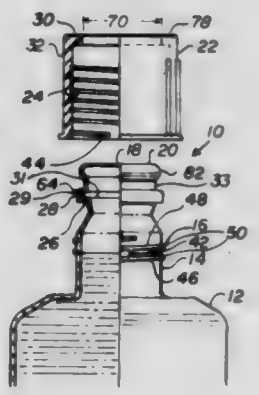
TAMPERPROOF CLOSURE SYSTEM FOR PLASTIC CONTAINERS

Harrison Cherot, McHenry, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 27, 1981, Ser. No. 258,191

Int. Cl.³ B65D 1/02

U.S. Cl. 215—32 23 Claims



1. An improved tamperproof closure system for molded plastic containers having a threaded container neck sealed at its distal end, said closure system comprising:

a screw-type cap having internal threading constructed and arranged for threaded engagement with said container neck;

flange means integrally formed in and extending substantially radially from said container neck with a frangible annular groove circumferentially disposed about said flange means constructed and arranged to rupture when force is applied to said distal end of said container neck;

shoulder means disposed about said screw-type cap, constructed and arranged for abutment with said flange means whereby downward rotation of said screw cap is effective to rupture said frangible annular groove, and sever said distal portion of said container neck from the remainder thereof; and

stop means positioned proximate said threads about said container neck, said stop means being constructed and arranged for selective limitation of the downward rotation of said screw cap onto said container neck to a point short of that required to rupture said frangible annular groove so as to prevent inadvertent opening of said container and to indicate when said container has been opened.

4,405,054

CONTAINER INCLUDING PRESSURE MOUNTED INNER COVER

Morris Braun, Chicago, and Karen A. Wavering, Villa Park, both of Ill., assignors to W. Braun Co., Chicago, Ill.

Continuation of Ser. No. 152,334, May 22, 1980, abandoned. This application Mar. 15, 1982, Ser. No. 358,094

Int. Cl.³ B65D 51/18

U.S. Cl. 215—277 1 Claim

1. An improved double seal container comprising:

a bottle or jar portion including a circumferentially curved first side wall and an integral bottom enclosing wall; said first side wall including a first annular lip at the top thereof and means on an outer portion of said first side wall subjacent said lip for securing a closure cap thereto;

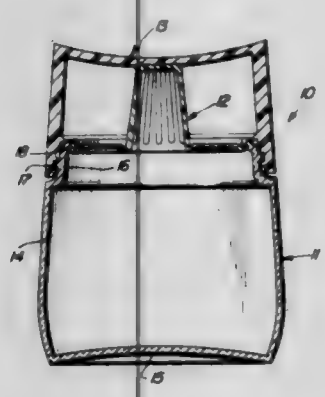
said first lip including a top surface being substantially horizontal, an inner vertical surface, an outer generally verti-

cal annular surface extending generally downwardly from an outer edge to said top surface toward said closure cap securing means;

a closure cap having a curved second side wall including a second annular lip at the bottom thereof and an integral top enclosing wall, means on an inner portion of said second side wall substantially immediately above said lip for matingly securing said cap to said jar portion securing means, and an annular wiping seal positioned inwardly adjacent and above said securing means for providing a first sealing engagement between said closure cap and said outer annular surface of said first lip thereof when said cap is closed thereon;

a one-piece sealing cover including an annular outer rim portion, a web portion, and a hub portion, all of substantially constant cross-sectional thickness, said outer rim portion including a radially extending wall for resting on top of said lip top surface of said jar and an axially oriented cylindrical wall extending downwardly from an inner edge of said radial wall for engaging said inner surface;

said web portion defining a generally frusto-conical wall with an inner boundary thereof joining said hub portion at a bottom thereof and an outer boundary thereof defining a resilient annular trough joining said axially oriented cylindrical wall at a bottom thereof;



said hub portion including a top wall and a generally cylindrical wall extending axially between said top wall and said web portion, said generally cylindrical wall including a surface thereon suitable for grasping retention by a user of said container when removing said cover from said jar portion annular lip and when positioning said cover on said jar portion annular lip,

said closure cap top wall including an inner surface having a central portion thereof which is adapted, when mounted on said jar portion, to press on said hub portion, deform said web portion, and move said outer rim portion thereof into a second sealing engagement with said jar lip defining a continuous two surface annular engagement between said outer rim portion and said jar lip, said engagement surfaces being L-shape in vertical cross section and positioned for engagement independently of said first sealing engagement, and a first perpendicular distance between said inner surface central portion and said annular wiping seal being less than a second perpendicular distance between said top wall of said hub and said radially extending wall of said outer rim portion when said sealing cover web portion is undeformed and greater than said second perpendicular distance when said sealing cover web portion is deformed.

4,405,055

VAULTED COVER WITH FLANGE AND PLURALITY OF PIPE FITTINGS

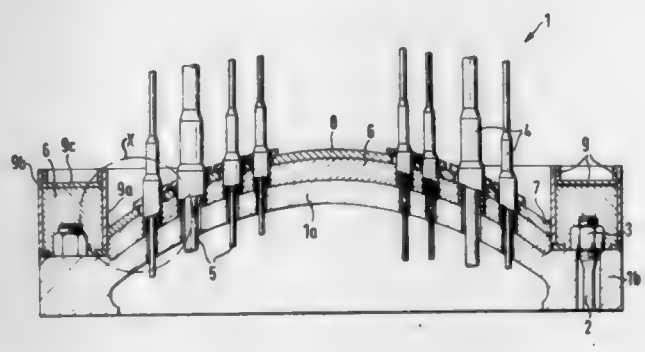
Reinhold Koerdt, Hemsbach; Josef Schoening, Hambruecken, and Hans-Georg Schwiers, Ketsch, all of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Cologne, Fed. Rep. of Germany

Filed Dec. 18, 1980, Ser. No. 217,815

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1980, 3005905

Int. Cl.³ B65D *6/10*

U.S. Cl. 220—215 **13 Claims**



1. A vaulted cover for an opening in a pressure vessel comprising:

a first metal covering having a vaulted center piece and an annular rim member;

a plurality of pipe fittings welded onto said first covering;

a second metal covering adjacent said first metal covering, forming a space therebetween and having an annular flange;

thermal insulation material in said space between said first and second metal coverings;

said rim member comprising an inner annular cylindrical section and an outer cylindrical section coaxially arranged to form an annular space therebetween and a disk-shaped member covering said annular space

wherein said vaulted center piece is welded to the inner cylindrical section and both of said cylindrical sections are fastened to said flange on said second metal covering by a sliding seat.

4,405,056

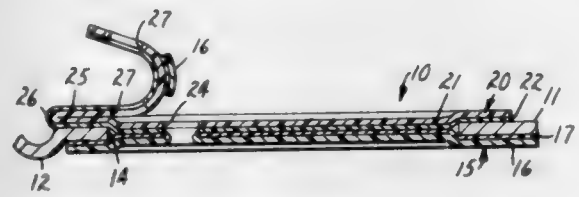
CONTAINER CLOSURE SYSTEM WITH VENT OPENING THROUGH THE CLOSURE TAPE

Richard A. Patterson, Woodbury, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed May 17, 1982, Ser. No. 378,985

Int. Cl.³ B65D *41/02*

U.S. Cl. 220—271 **10 Claims**



1. A container end assembly comprising:

a container end with an interior surface, exterior surface and a pour opening therein, and an easy-opening closure system covering said pour opening comprising:

an interior tape having an adhesive on one surface adhered to the interior surface of the container end and covering said pour opening,

an exterior tape covering the pour opening and adhered therein to said interior tape, said exterior tape having a vent opening formed therein in the area of the pour opening and exposing the adhesive surface of the inte-

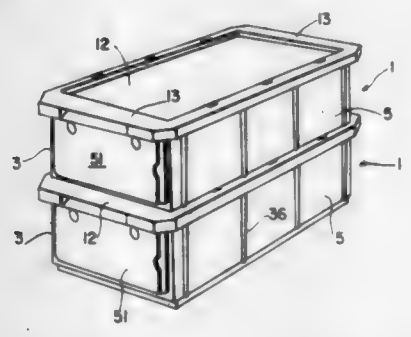
rior tape, said exterior tape being formed at one end beyond said opening with a pull tab covering a portion of said exterior tape and said vent opening, and said pull tab being secured firmly to the exposed adhesive of the interior tape at said vent opening in the exterior tape.

4,405,057

SECURITY BOX HAVING SLIDING CLOSURE

Eric D. Stein, Cincinnati, Ohio, assignor to Nestier Corporation, Cincinnati, Ohio

Filed Nov. 3, 1981, Ser. No. 317,757
Int. Cl.³ B65D *43/20*
U.S. Cl. 220—346 **21 Claims**



1. A security storage box for papers of a similar size, such as checks, comprising:

a one-piece molded synthetic resin open-topped container having opposed generally parallel side walls, opposed generally parallel end walls, and a rectangular bottom wall integrally connected around its entire periphery with respective lowermost edges of said side and end walls, with said side and end walls being serially connected together in a closed alternate array along adjacent vertically extending edges;

the upper edge portions of said side and end walls opposed to said bottom wall including integrally formed outwardly extending horizontal flanges connected together around substantially the entire upper periphery of said container to constitute side and end flanges, said side flanges having a plurality of through apertures;

a lid separate from said container and integrally molded from synthetic resin in one piece, said lid being of a size and a rectangular shape to close the open top of said container with the peripheral edge portion of said lid being rectangular and having a flange overlying the flanges of said container, said lid integrally being formed with a plurality of hooks depending in one piece from its peripheral edge portion in alignment with and to extend through said through apertures of said container; and

said hooks and through apertures being of a size and shape so that in one relative position of said lid and container said lid may be translated generally vertically from a disengaged position above said container to a closed position on said container with said hooks extending completely through said apertures and thereafter translated horizontally parallel to said side walls to engage said hooks beneath said container flanges to a locked position.

4,405,058

CONTAINER

Thomas L. Phalin, Cary, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Feb. 13, 1981, Ser. No. 234,452
Int. Cl.³ B65D *8/04, 25/14*
U.S. Cl. 220—458 **5 Claims**

1. In a food container fashioned from a blank of metal having a predetermined thinness and including a cylindrical sidewall with a flange at one end and a bottom wall across the other for receiving foodstuffs and capable of withstanding internal and external pressure in connection with hermetic sealing, retorting and storing operations, the improvement therein wherein:

(a) said blank from which said sidewall and said bottom wall are fashioned is of high temper and double reduced metal,

(b) said blank has precoated bonded protective layers on its two major surfaces,

(c) said precoated metal is drawn throughout its sidewall length,

(d) said precoated metal is ironed throughout its sidewall length between the areas of said flange and said bottom wall to provide uniform thickness therealong,

(e) said sidewall is elongated as a result of drawing and ironing to a length substantially greater than the diameter of said bottom wall,



(f) said bottom wall after said sidewall is elongated to its final height is generally of said blank predetermined thinness prior to any configurative deformation thereof, and

(g) said sidewall having a thickness resulting from ironing throughout its length being only slightly thinner on the order of 0.001" thinner than said predetermined thinness,

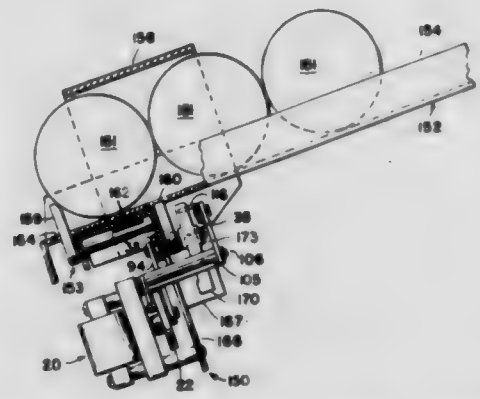
thereby to provide a container having a fully coated sidewall with said bonded protective layers of generally uniform thickness throughout its length as a result of said ironing and wherein said ironing has further worked said high temper double reduced metal thereof thereby further enhancing overall strength of the container while maintaining a sidewall and fully coated bottom wall of closely similar thicknesses.

4,405,059

SELECTABLE COUPLING MECHANISM INCLUDING ARTICLE DISPENSERS

Leo Kull, 58 Westover Ave., W. Caldwell, N.J. 07006

Filed Jul. 9, 1981, Ser. No. 281,671
Int. Cl.³ B65G *59/08*
U.S. Cl. 221—129 **36 Claims**



1. An electrically selectable multistation coupling mechanism comprising a control cam, an electric motor for rotating said control cam, more than one coupling station each having an electrical actuator, a pivoting member and a coupler pivotally secured to said pivoting member; said control cam controlling electrical switching means for energizing and deenergizing said electric motor, said control cam having means to reciprocate a driving member reaching all of said coupling stations and being in contact with said pivoting members, said

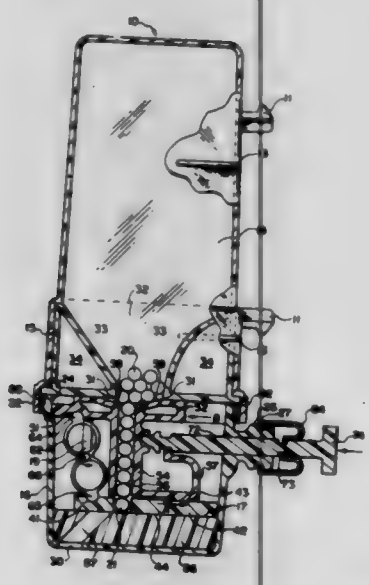
couplers having a non-active and active position responsive to the excitation of said electrical actuator, all of said couplers being in contact with a starting member, an excitation of said electrical actuator causing a motion to said coupler, said motion providing an engagement between said coupler and said driving means, said motion causing a switchover to said electrical switching means for starting said electric motor; said driving means reciprocating said pivoting member together with said engaged coupler, said coupler being resettable to said inactive position during the return half of said reciprocating motion when said driving means is driving said pivoting member back to its initial position.

4,405,060

TABLET DISPENSING DEVICE

Paul K. Hsei, Huntington Beach, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jul. 20, 1981, Ser. No. 285,022
Int. Cl.³ B65D *83/04*; B65G *59/06*
U.S. Cl. 221—135 **33 Claims**



1. A tablet dispenser for dispensing a solid tablet or a predetermined number of tablets of a substantially uniform size from a storage area containing a relatively large number of tablets into a dispensing orifice upon operation of an external actuating mechanism, said tablet dispenser comprising:

a hollow body having an upper portion for storing the relatively large number of tablets and a lower base portion having the dispensing orifice formed in its bottom;

a gate member mounted for reciprocal movement above said tablet dispensing orifice, said gate member having a tablet receiving area formed therein;

a field organizing member mounted for reciprocal movement below said tablet storage portion and above said gate member, said organizing member having a tablet receiving area which communicates with said tablet storage portion and is unitary with said organizing member;

said tablet receiving area of the organizing member further having an agitator means for engaging said tablets and changing their array as said organizing member is reciprocated, and for guiding said tablets into the tablet receiving area of said organizing member;

interconnecting means for reciprocating said gate member and said organizing member in directions opposite each other, whereby said gate member may be reciprocated from a tablet dispense position wherein its tablet receiving area is in communication with said tablet dispensing orifice to a tablet receiving position wherein its tablet receiving area is in communication with said tablet receiving area of said organizing member; and

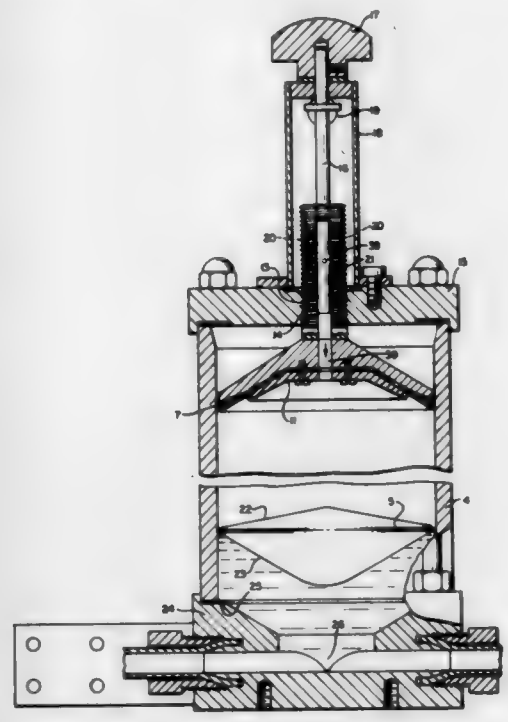
actuating means for causing reciprocal movement of said gate member and said organizing member in response to the operation of the external actuating mechanism.

4,405,061

FILLING MACHINE

Wieslaw Bergandy, Arnold, Md., assignor to National Instrument Co., Inc., Baltimore, Md.

Continuation-in-part of Ser. No. 293,659, Aug. 18, 1981, abandoned. This application Dec. 28, 1981, Ser. No. 335,244
Int. Cl.³ B67D *5/30*
U.S. Cl. 222—21 **21 Claims**



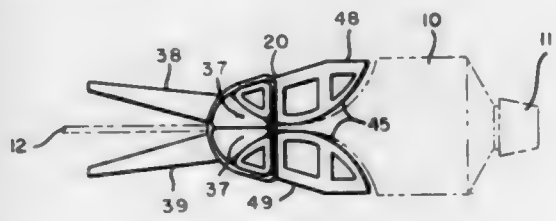
1. A filling machine for supplying predetermined quantities of liquid comprising measuring chamber means, float means positioned with clearance in said chamber means and adapted to move up and down in at least a portion of said chamber means with the level of liquid in said chamber means, abutment means positioned in said chamber means above said float means for limiting the upward movement of said float means in said chamber means, and seal means adjacent said abutment means for sealing against said chamber means, said seal means being arranged such that it can be moved into and out of sealing engagement with the chamber means without disassembly of the filling machine thereby facilitating cleaning of said machine.

4,405,062

TUBE DISPENSING DEVICE

Eraine J. Tschida, Sr., 3915 Buckley Pl., Missoula, Mont. 59801

Filed Oct. 19, 1981, Ser. No. 312,655
Int. Cl.³ B65D *35/28*
U.S. Cl. 222—102 **6 Claims**



1. A tube dispensing device for use in manually emptying deformable tubes of the type containing soft paste comprising:

an upper fractional roller wider than the tube to be evacuated, with rounded side down,

a lower fractional roller of similar width with rounded side up and located so that the upper rounded side contacts the rounded side of the upper fractional roller,

an upper generally horizontal lever of width similar to that of fractional rollers having a raised ridge at the front end of the lower surface and having a generally wedge-shaped front end with the top surface tapering down to the lower

front end and upper lever also having raised pivot points on the lower surface near the front end toward the sides,

a lower generally horizontal lever of width similar to upper lever being located beneath the upper lever having a raised ridge at the front end of the upper surface so as to meet the ridge of the upper lever and having a generally wedge-shaped front and with the bottom surface tapering up to the upper front end and lower lever also having raised pivot points on the upper surface near the front end toward the sides so as to meet the pivot points of the upper lever,

resilient securing means to hold the rearward ends of the fractional rollers and the forward ends of the levers in proximity, with the wedge portions of the levers fitting in the gap at the rearward end of the rollers,

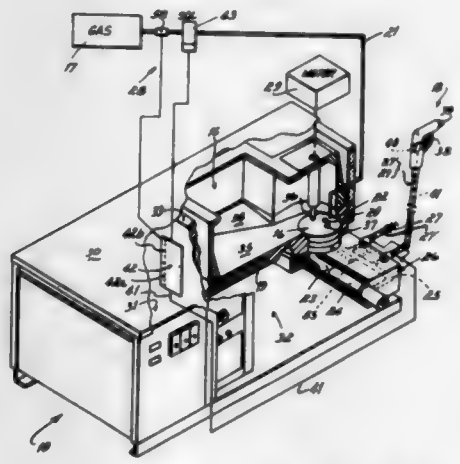
the upper and lower fractional rollers having adaptations at the rearward ends to receive the securing means and the upper and lower levers having adaptations at the forward ends to receive the securing means.

4,405,063

METHOD AND APPARATUS FOR CONTROLLING THE DENSITY OF DISPENSED HOT MELT THERMOPLASTIC ADHESIVE FOAM

Jan J. Wydro, Lilburn; Charles H. Scholl, Duluth, and William R. Coker, Lilburn, all of Ga., assignors to Nordson Corporation, Amherst, Ohio

Filed Feb. 27, 1981, Ser. No. 239,173
Int. Cl.³ B67D *5/34*
U.S. Cl. 222—146 HE **19 Claims**



1. Apparatus for controlling the uniformity of dispensed hot melt thermoplastic foamed adhesive comprising:

means for heating solid thermoplastic adhesive material for converting said solid adhesive material to a molten state;

means for supplying gas;

means for agitating and pressurizing said molten adhesive in the presence of said gas so as to force said gas into solution with said molten adhesive;

means for dispensing said molten adhesive and gas solution at a pressure below the solution maintenance pressure of said solution whereby said gas is released from solution and forms an adhesive foam; and

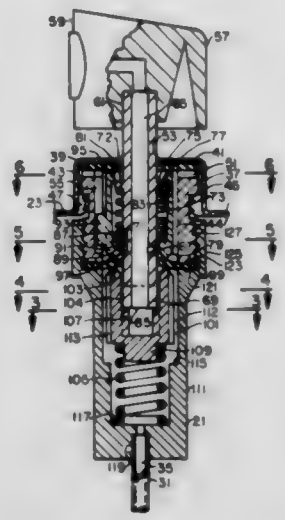
means for selectively controlling said gas supplying means so that additional gas is supplied to said agitating and pressurizing means in response to actuation of said dispensing means.

4,405,064

SELF-CLEANING, ISOLATED PRODUCT, AEROSOL SPRAY ATOMIZING VALVE

William R. Stoody, 8659 Summerdale Rd., San Diego, Calif. 92126

Filed May 26, 1981, Ser. No. 266,747
Int. Cl.³ B65D *83/00, 83/14*
U.S. Cl. 222—148 **6 Claims**



1. A self-cleaning dispensatory valve for co-fluid dispensing, adapted to maintain separation of a pressurizing first fluid from a second fluid prior to effluence, which comprises;

a first fluid transit chamber having a first fluid discharge control element resiliently located therein;

a second fluid transit chamber having a second fluid discharge control element resiliently located therein;

an assemblage retainment member mounted on said first fluid transit chamber;

a first sealing means securingly disposed interjacent said assemblage retainment member and said first fluid transit chamber;

a second sealing means separating said first fluid transit chamber from said second fluid transit chamber;

a dispensatory means which includes a dispensing head and discharge communication passageways extending from said first and second fluid transit chambers to said dispensing head;

said dispensatory means being adapted to co-operatively interosculate said first and second fluid discharge control elements to selectively effect discharge of said fluids;

said second fluid discharge control element having outlet surfaces which remain in communication with said dispensing head;

said dispensatory means further including a fluid by-pass means which is adapted to purgingly direct fluid from said first fluid transit chamber to said outlet surfaces of said second fluid discharge control element and therefrom effect cleaning of said dispensatory means while maintaining the integrity of first and second fluids awaiting discharge.

4,405,065

TILT VALVE STRUCTURE WITH BRIDGED STOP FOR VISCOUS FLOW LIQUIDS

Walter C. Beard, South St., Middlebury, Conn. 06762

Filed Aug. 5, 1982, Ser. No. 405,685
Int. Cl.³ B67D *5/32*
U.S. Cl. 222—153 **10 Claims**

1. A fluid dispensing valve structure for dispensing the contents of a pressurized container comprising:

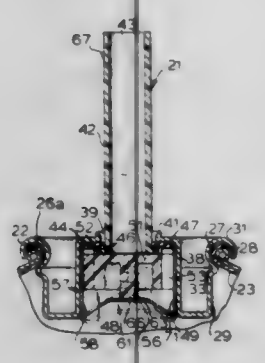
a mounting cup member securable to said pressurized container and having communications with the pressurized contents of said container,

a resilient seal member carried in said mounting cup member,

an elongated tubular nozzle means having a dispensing orifice in one end thereof and having a second end supported in said mounting cup member by said resilient seal member in a generally upright extending position,

a moveable valve cup member reciprocably slidably carried within said mounting cup member and normally being biased against said resilient seal member to form a seal means for normally sealing the contents of said container, and

distortable bridge stop means associated with said mounting cup member in adjacent relationship to said moveable valve cup member, said bridge member being capable of assuming two configurations, one configuration being an initially assembled arrangement wherein said bridge stop means maintains said moveable valve cup means in an



initially sealed condition against said resilient seal member, the second configuration being a dispensing arrangement wherein a portion of said bridge stop means is displaced away from said initially assembled arrangement,

means for distorting said bridge stop means from said initially assembled arrangement to said dispensing arrangement and also for opening said valve structure from said initially sealed condition, said means including foot means extending from said moveable valve cup member to an initial contact with said portion,

said second end being engageable with said moveable valve cup member,

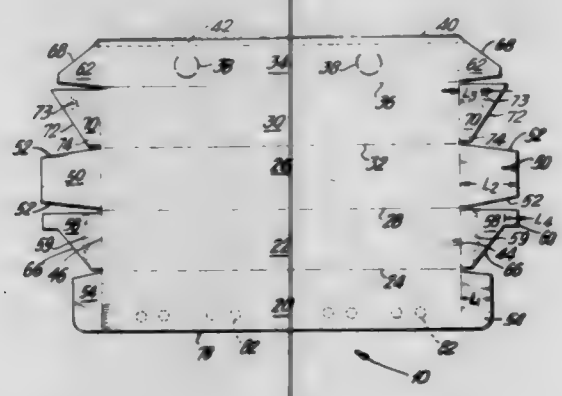
whereby when an external operating deflecting force is applied when said one end, said second end causes said distorting means to move said bridge means from said one configuration to said second configuration.

4,405,066

DISPENSER CARTON WITH IMPROVED END CLOSURE

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Sep. 25, 1981, Ser. No. 305,618
Int. Cl.³ B65D *85/671*
U.S. Cl. 225—43 **25 Claims**



25. A paperboard blank for forming a dispenser carton having end closures sealable on automatic equipment comprising:

generally rectangular front, bottom, rear, top and outer panels hingedly connected in series; and

two sets of end closure flaps for sealing the ends of the erected carton, each set of end closure flaps respectively hingedly connected to the opposed side edge of said blank, with each set including,

a first flap hingedly connected to said rear panel and having a generally rectangular configuration,

a second flap hingedly connected to said front panel, said second flap being generally rectangular in configuration and extending away from said front panel a distance less than the width of said top and bottom panels,

a third generally triangular flap hingedly connected to said bottom panel, said third flap extending away from said bottom panel a distance less than the width of said rear panel, and one leg of said triangular third flap being substantially colinear with the hinged connection between said bottom and rear panels,

a fourth generally triangular flap hingedly connected to said outer panel and having a configuration complimentary to said third flap, said fourth triangular flap having one leg which is substantially colinear with the hinged connection between said top and outer panels; and

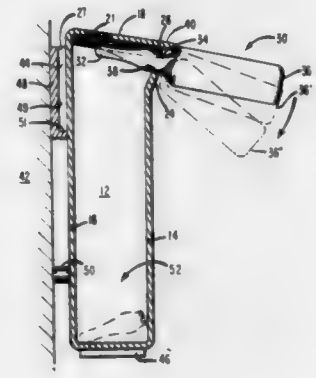
a fifth generally triangular flap hingedly connected to said top panel, said fifth flap extending away from said top panel a distance less than the width of said rear panel, said triangular fifth flap having a configuration complimentary to said third flap, and said fifth triangular flap having one leg which is substantially colinear with the hinged connection between said top and outer panels.

4,405,067

AMPOULE OPENER

Peter L. Caron, 342 Washington St., Arlington, Mass. 02174

Filed Jun. 25, 1981, Ser. No. 277,145
Int. Cl.³ B26F *3/00*
U.S. Cl. 225—93 **6 Claims**



1. An ampoule opener for severing the ampoule tip from an ampoule body at a narrowed neck disposed therebetween to open the ampoule, said ampoule opener comprising:

a housing;

a front face disposed on said housing and having a primary opening therein, said opening being of sufficient size to permit ampoule tips of several different diameters to pass therethrough;

a projection extending outwardly from said front wall adjacent said primary opening on one side thereof and forming a support adapted to receive the neck portion of the ampoule, the ampoule being adapted to be pivoted thereabout;

an upper bearing surface formed on interior portions of said housing adjacent said projection, said bearing surface being adapted to resist motion of said ampoule tip pressed thereagainst as force is applied to a lower portion of said ampoule body to pivot said ampoule neck about said projection to sever said ampoule tip from said ampoule body at its neck, said bearing surface being inclined downwardly toward said opening; and

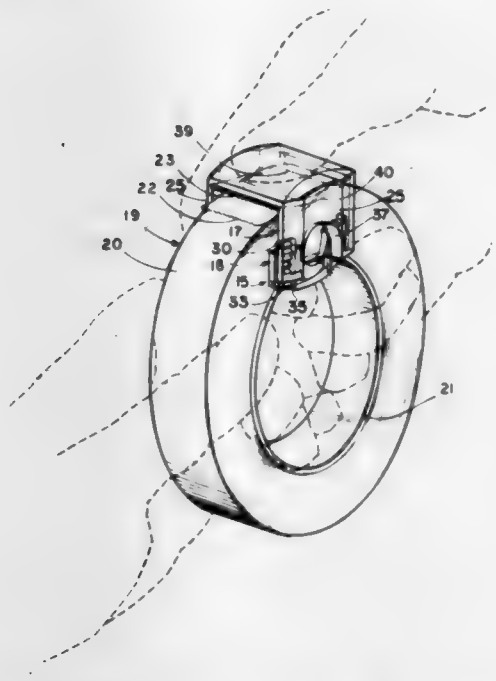
means disposed within the housing for collecting severed container tips.

4,405,068

PORTABLE ROLL-RIDING TAPE CUTTER

Bruce A. Blair, 720 W. California Ter., Chicago, Ill. 60657

Filed Jun. 25, 1981, Ser. No. 277,229
Int. Cl.³ B65D *85/671*; B26D *1/02*
U.S. Cl. 225—65 **17 Claims**



1. In a tape cutter assembly having a pair of complementary collapsibly interengageable members adapted to receive therebetween and ride circumferentially about an annular roll of tape wound on a ring-shaped core, one of said members adapted to engage the outer diameter of the roll and the second of said members adapted to engage the inner diameter of the roll, an edge on said one member arranged to extend across the roll outer diameter for severance of selective terminal lengths of tape stripped from the roll and manipulated into severing relation against said edge, telescopically engageable legs on said members for straddling the sides of the roll and equipped with complementary separable interdigitating retaining ribs for holding the members in assembly against unintentional separation from one another radially relative to the roll, and means cooperating with said retaining ribs for maintaining said members against displacement relative to one another circumferentially of the roll, the improvement comprising:

said second member being reversible relative to said one member;

and oppositely convexly curved bearing surfaces on said second member substantially matching inside diameter roll surface curvature to facilitate maximum severed tape strip utilization from the roll by reversing said second member relative to said one member as the tape in the roll diminishes during use of the assembly.

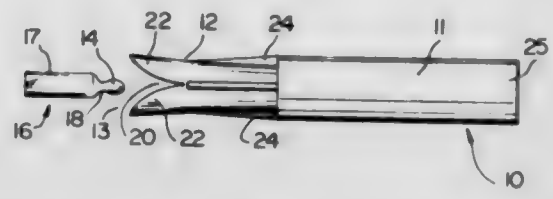
4,405,069

AMPOULE BREAKER

Ghislain Vivier, P.O. Box 247, Val Therese, Ontario, Canada P0M 3B0, and Aurele Gauthier, 119 Vaillancourt Cr., P.O. Box 698, Chelmsford, Ontario, Canada P0M 1L0

Filed Apr. 14, 1981, Ser. No. 254,180
Claims priority, application Canada, Oct. 30, 1980, 363640
Int. Cl.³ B26F *3/00*
U.S. Cl. 225—93 **9 Claims**

1. An ampoule breaker comprising a body member capable of being held in a person's hand, said member including a hollow end portion constructed of flexible, resilient material and having an open end adapted to receive an ampoule head, wherein said end portion is formed with slots extending axially from said open end, said slots comprising two generally V-shaped slots located on diametrically opposite sides of said end portion, the narrow end of each slot being disposed away from said open end to permit said end portion to be compressed



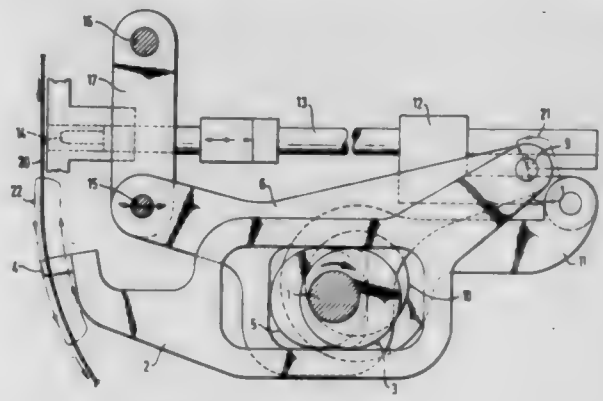
between the person's fingers so that an ampoule located in said end portion can be firmly held therein and broken off by finger manipulation of said breaker.

4,405,070

FILM TRANSPORT MECHANISM

Otto Blaschek, Aschheim, Fed. Rep. of Germany, assignor to Arnold & Richter Cinetechnik GmbH, & Co. Betriebs KG, Munich, Fed. Rep. of Germany

Filed Feb. 24, 1981, Ser. No. 237,658
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 8005124[U]; Jan. 21, 1981, 3101813
Int. Cl.³ G03B *1/28, 1/22*
U.S. Cl. 226—55 **8 Claims**



1. A film transport mechanism comprising:

a drive shaft;

cam control means mounted for rotation with said drive shaft; and

a shuttle frame pivotally and longitudinally movable by said cam control means, said shuttle frame having a transport pin engageable with a film perforation for advancing the film when said shuttle frame is moved by said cam control means;

said cam control means comprising:

a first constant-diameter cam wheel mounted on said drive shaft and directly engaged with said shuttle frame;

a second constant-diameter cam wheel mounted on said drive shaft;

a rocker engaged and moved by said second cam wheel, said rocker having a first end portion pivotally engaged with said shuttle frame and a second end portion; and

means for guiding movement of said second end portion of said rocker.

4,405,071

FASTENER DRIVING TOOL

Ronald Austin, Hazelcrest, Ill., assignor to Duo-Fast Corporation, Franklin Park, Ill.

Filed Sep. 14, 1981, Ser. No. 301,958
Int. Cl.³ B27F *7/02*
U.S. Cl. 227—7 **12 Claims**

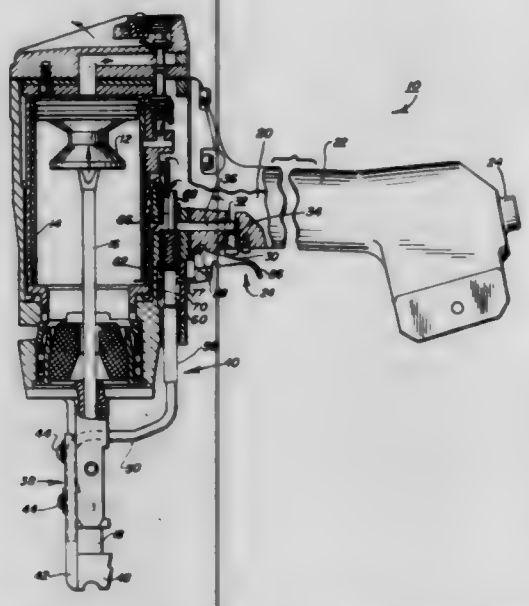
1. In a fastener driving tool for driving fasteners into a workpiece, the improvement comprising:

a trigger assembly movable from an inoperative position to an operative position to control operation of the tool,

a workpiece responsive assembly movable from an inopera-

tive position to an operative position as the tool is moved adjacent a workpiece, and

a safety control assembly coupling said trigger assembly and said workpiece responsive assembly to control operation of the tool, said safety control assembly including means coupled to said workpiece responsive assembly for actuating said tool and a blocking member for blocking movement of said actuating means to an operative position and



(1) positioned in a non-blocking position in response to movement of both said trigger and workpiece responsive assemblies to their operative positions for effecting operation of said tool to drive a fastener, and (2) positioned in a blocking position in response to movement of the trigger assembly to its operative position prior to movement of the workpiece responsive assembly to its operative position.

4,405,072

SETTING DEVICE POWERED BY AN EXPLOSIVE GAS MIXTURE

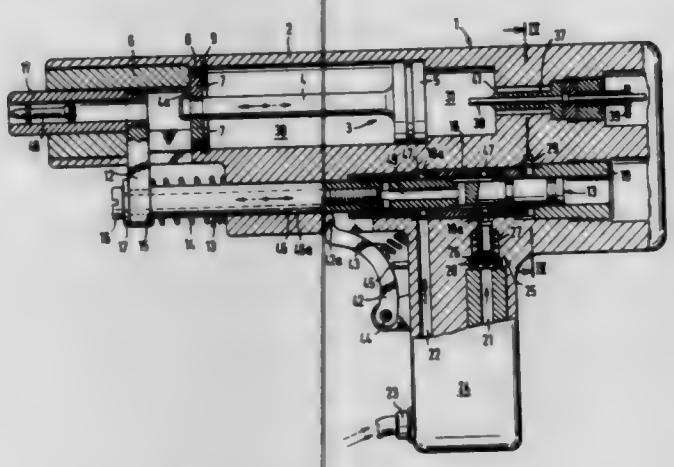
Edwin Kindle, Triesen, Liechtenstein, and Peter Jochum, Meiningen, Austria, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed May 27, 1981, Ser. No. 267,593

Claims priority, application Fed. Rep. of Germany, May 28, 1980, 3020268

Int. Cl.³ B25C *1/08*

U.S. Cl. 227—10 **9 Claims**



1. A fastening element setting device powered by an explosive gas mixture comprising a housing forming an axially elongated guide cylinder having a front end and a rear end, a propulsion piston slidably mounted in said guide cylinder, a combustion chamber located within said housing and opening into the rear end of said guide cylinder, an ignition device mounted within said housing and having a part thereof located within said combustion chamber for igniting an explosive gas mixture within said combustion chamber and generating pressurized gases for driving said propulsion piston in said guide cylinder, a first supply line in said housing for a first component of the gas mixture, a second supply line in said housing for a second component of the gas mixture with the second component being at a higher pressure than the first component, a control slide-valve displaceably mounted in said housing and located between said first and second supply lines and said combustion chamber for controlling the flow of the components of the explosive gas mixture one after the other into said combustion chamber, an inflow duct extending between said control slide-valve and said combustion chamber, a back-pressure valve located in said inflow duct between said control slide valve and said combustion chamber, and a closure valve in said first supply line disposed in the closed position when the higher pressure component of the gas mixture flows from said second supply line to said combustion chamber.

4,405,073

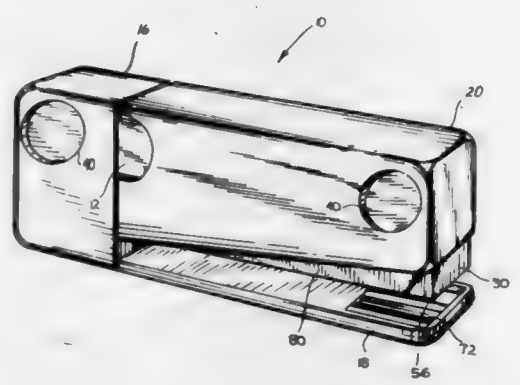
STAPLER WITH STAPLER STORAGE SPACE

Juan D. Salleras Escalante, c/o Ave. Principal de Campo Alegre, Quinte "San Luis", Caracas, Venezuela, assignor to Juan D. Salleras Escalante, Caracas, Venezuela

Filed Sep. 18, 1980, Ser. No. 188,326

Int. Cl.³ B27C *5/02*

U.S. Cl. 227—120 **6 Claims**



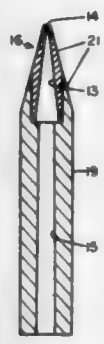
1. A stapler comprising a head, a back, and base; said head containing a staple driver means on an opposite end from the back and an interchangeable removeable staple magazine assembly horizontally slideably removable away from said head and said back through said opposite end, said magazine assembly comprising a magazine, a load pusher slideably mounted to said magazine, and a tensioned coiled spring completely enclosed within said magazine, and tensioned coil spring having a fixed end coupled to said magazine and a moveable end coupled to said load pusher, said load pusher being adapted to urge a load of staples through said magazine assembly to said staple driver means, said coil spring varying less than 50 percent in length as said load of staples is dispensed; said base being spaced apart from and below said head, said base having a staple anvil means directly below said staple driver means within said head; and said back having a spring rail means partially embedded within said back, said spring rail means connecting said back to said head and said spring rail means also connecting said back to said base, and wherein said magazine assembly further comprises a pivot pin fixed vertically within said magazine adjacent said staple driver means, said tensioned coil spring having said fixed end secured to an end of said magazine adjacent said back, said tensioned coil spring traversing the length of said magazine from said back to said pivot pin, said tensioned coil spring passing around said pivot pin and returning along the length of said magazine to said load pusher.

4,405,074

COMPOSITE BONDING TOOL AND METHOD OF MAKING SAME

Chaim Levintov, Hofit, and Michael Shienfeld, Herzeliah, both of Israel, assignors to Kulicke and Soffa Industries Inc., Horsham, Pa.

Filed Aug. 31, 1981, Ser. No. 297,867
Int. Cl.³ B23K 1/00, 5/00, 20/14; B23P 9/00
U.S. Cl. 228—41 15 Claims



1. The method of making a composite two piece bonding tool of the type comprising a bonding nib carried by a nib holder, the steps comprising:

providing a cylindrical shaped mono crystal synthetic jewel workpiece,

laser cutting a funnel shape into said synthetic jewel workpiece to provide an unfinished bonding nib,

providing a cylindrical nib holder, said nib holder having a cylindrical recesses in one end and a connecting larger cylindrical recess in the other end adapted to receive said unfinished bonding nib,

placing said unfinished bonding nib in said larger cylindrical recess of said nib holder to provide an unfinished composite bonding tool,

shrinking said nib holder to provide a shrink fit between said bonding nib and said nib holder,

grinding the outside diameter of said nib holder,

grinding an external cone shape onto the working end of said unfinished composite bonding tool, and

finishing the working face of said bonding nib by grinding and polishing.

15. A composite two piece bonding tool comprising:

a sintered high density alumina nib holder,

said nib holder having a tapered fit hole in one end and a large connecting recess in the other end,

a synthetic jewel mono crystal bonding nib mounted in said large connecting recess in said nib holder,

said bonding nib being held in said recess by a shrink fit between said bonding nib and said nib holder,

said bonding nib having a funnel shape extending through the bonding nib and terminating in a substantially constant diameter bore at the working face of said bonding tool, and

said funnel shape being characterized by a smooth finish surface made by cutting said funnel shape with a laser beam.

4,405,075

STRUCTURE FOR ALIGNING AND BUTT-WELDING TUBE ENDS

Robert L. Roddy, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 11, 1981, Ser. No. 262,170
Int. Cl.³ B23K 37/06
U.S. Cl. 228—49 B 1 Claim

1. A fixture with which to abutt two pipe sections while they are welded together, including;

an expandable section comprising,

a plurality of longitudinal segments arranged to nest together and form a central bore,

a spring member encircling the nest of segments to retain the segments yieldingly in their nesting relation to each other,

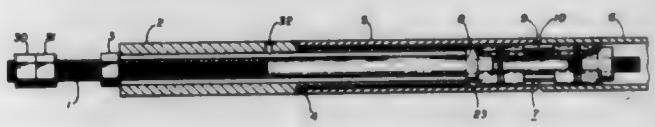
a first body having an internal bore aligned with that of the nested segments and providing a conical wedge surface inclined in the direction of the nest,

and a second body having an internally threaded bore aligned with the bore of the nested segments and providing a conical wedge surface inclined in the direction of the nest,

whereby the movement of the first and second bodies toward the nest engages the nest with their conical wedge surfaces to overcome the spring force to radially move the segments from their bore;

a threaded rod extended through the axially aligned bores of the first body and the bore of the nest to bring a shoulder on the threaded rod against the first body and into threaded engagement with the second body;

means for preventing rotation of the second body;



means for rotating the threaded rod in its engagement with the second body threads whereby rotation of the threaded rod in its engagement with the threads of the second body moves the first and second bodies toward and away from each other to alternately expand and contract the expandable section;

a sleeve member with a bore sized to journal the sleeve freely over the threaded rod comprising,

means for axially spacing the sleeve member from the expandable section,

and a shoulder formed on the sleeve member sized to engage the non-abutting end of one of the pipes;

means for fixing the axial position of the sleeve member along the threaded rod to engage the pipe and sleeve shoulder to bring the other end of the pipe to its junction with the end of the second pipe;

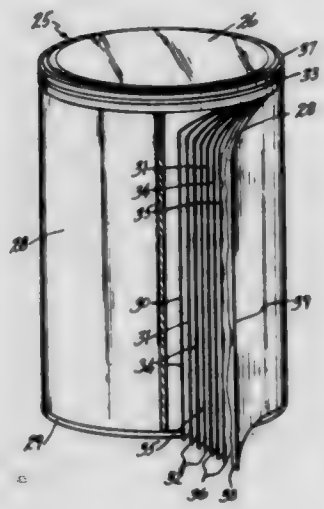
and passageways formed through the sleeve member to establish a flow of inert gas through the pipes.

4,405,076

FIRE AND HEAT RESISTANT STRUCTURE

Ellwood L. Lines, Jr., New Haven, and Douglas A. Farmer, Jr., Madison, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 301,243, Sep. 11, 1981. This application Aug. 30, 1982, Ser. No. 412,471
Int. Cl.³ B32B 7/02, 15/08, 9/06; B65D 1/00
U.S. Cl. 229—3.5 MF 52 Claims



1. A fire and heat resistant container having a top and a

bottom interconnected by sidewall means, at least the sidewall means being partially formed from fibrous material and having an inner surface and an opposing outer surface with a plurality of laminae therebetween to protect an object adjacent the inner surface from a fire or heat generating source adjacent the outer surface, the combination comprising:

(a) a first lamina of predetermined thickness generally defining the inner surface and formed at least partially of aluminum;

(b) at least one ply adjacent the first lamina and comprising:

i. a second lamina of fibrous material of predetermined thickness and strength adjacent the first lamina;

ii. a third lamina of predetermined thickness having generally planar opposing sides;

iii. a fourth lamina of fibrous material of predetermined thickness and strength adjacent the third lamina;

iv. a first bonding agent bonding each lamina of fibrous material to each of the opposing sides of the third lamina; and

(c) a second bonding agent of predetermined thickness bonding the at least one ply to the first lamina.

4,405,077

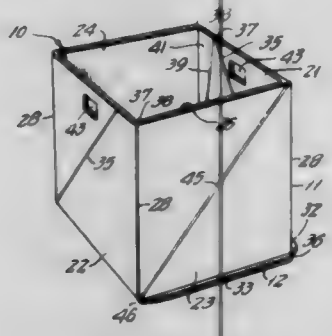
COLLAPSIBLE TALL CONTAINER

Julius B. Kupersmit, 229 W. 12th St., New York, N.Y. 10014

Filed Nov. 12, 1981, Ser. No. 320,328

Int. Cl.³ B65D *5/36*

U.S. Cl. 229—41 R **2 Claims**



1. An improved collapsible shipping container comprising: an open topped box-like element having a bottom wall, first and second oppositely disposed side walls, and first and second oppositely disposed end walls, each having a lower edge interconnected to a corresponding edge of said bottom wall; said side and end walls having an effective height substantially greater than half the horizontal length of said side walls, said side walls and end walls being interconnected to each other at vertical side edges thereof; each of said end walls having an angularly disposed fold line commencing at a lower corner thereof and extending to an upper diagonally disposed corner thereof; each of said side walls having a second angularly disposed fold line commencing at a lower corner and extending to an upper edge thereof and terminating a distance from the diagonally opposite corner thereof; one of said side walls having a third fold line commencing from the point of meeting of said second fold line with said upper edge of said wall, and extending downwardly to the corner of said side wall horizontally opposite the corresponding lower corner of said wall; whereby said side walls may be folded upon an upwardly facing surface of said bottom wall by first pushing inwardly at an upper corner of said one of said walls adjacent said second fold line to temporarily effectively shorten the width of said one of said side walls to enable it to clear the adjacent end wall, and permit, without interference, the progressive folding of the oppositely disposed end and side walls, and the adjacent end wall.

4,405,078

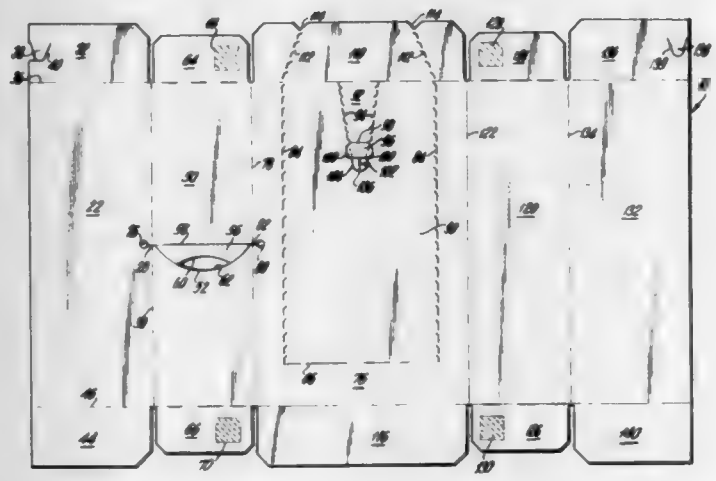
ARTICLE CARRIER AND A BLANK FOR FORMING THE SAME

Daniel P. Dutcher, Woodbury, Minn., and Harry I. Roccaforte, Western Springs, Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Jan. 30, 1980, Ser. No. 116,909

Int. Cl.³ B65D *5/46*

U.S. Cl. 229—52 B **7 Claims**



1. A blank for forming an article carrier with an integral handle comprising:

a first side panel;

a top panel hingedly connected along one side edge of said first side panel;

a bottom panel hingedly connected along the opposed side edge of said first side panel;

an outer side panel, said outer side panel being hingedly connected to the opposed side edge of said top panel;

an inner side panel, said inner side panel being hingedly connected to the opposed side edge of said bottom panel; and

handle means, said handle means including a cut line, said cut line having an arcuate portion disposed in said top panel and extending between the opposed side edges of said top panel and defining a handle tab, said cut line further including a pair of opposed straight portions disposed in said opposed outer and first side panels, said straight portions of said cut line being colinear with the hinged connection to said handle tab, said handle means further including a pair of stress relieving apertures being respectively disposed in said outer and first side panels, said stress relieving apertures being contiguous with the distal ends of said straight portions of said cut line.

4,405,079

CENTRIFUGAL DISPLACER PUMP

Donald W. Schoendorfer, Lexington, Mass., assignor to Haemonetics Corporation, Braintree, Mass.

Filed Nov. 10, 1980, Ser. No. 205,144

Int. Cl.³ B04B *9/12, 11/02*

U.S. Cl. 494—1 **3 Claims**

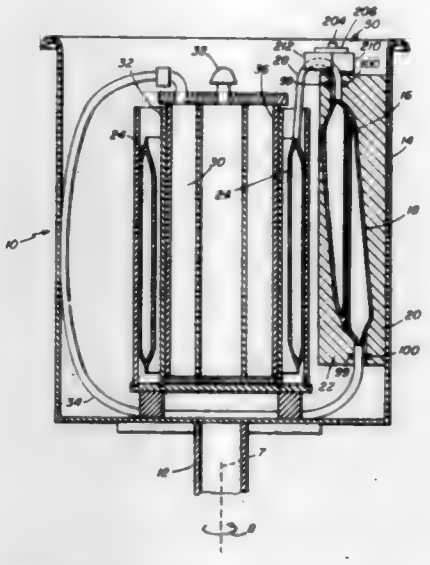
1. Apparatus for processing fluids, comprising, in combination:

a. a centrifuge having a rotor capable of rotating about an axis of rotation at speeds sufficient to produce a desired separation;

b. a processing chamber mounted on said rotor and supporting a flexible processing container and a flexible displacer fluid container;

c. a reservoir of displacer fluid mounted on said rotor nearer the axis of rotation of the rotor than said processing chamber and in fluid communication with said displacer fluid container; whereby, when said rotor is rotated at a speed sufficiently long to produce the desired separation, displacer fluid flows due to centrifugal force from said reser-

voir to said displacer container thereby expanding said displacer container to expel a separate fluid component from said processing chamber; and



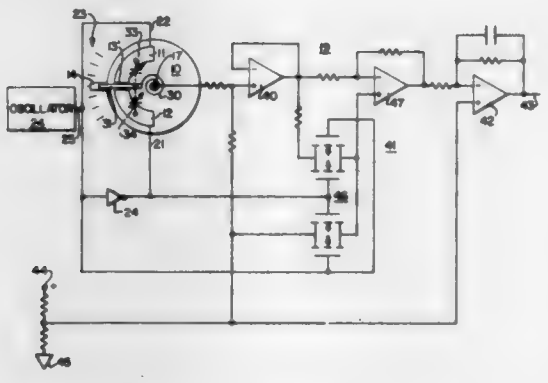
d. a rotatable member provided to control the amount of displacer fluid communicated from said reservoir to said displacer fluid container thereby controlling the amount of fluid component expressed from said processing chamber.

4,405,080

ELECTRONIC TEMPERATURE CONTROL FROM A MECHANICAL TEMPERATURE RESPONSIVE MEANS

Arlon D. Kompelien, Richfield, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Nov. 12, 1982, Ser. No. 440,689
Int. Cl.³ G05D *15/00*; H01G *7/00*
U.S. Cl. 236—78 D **12 Claims**



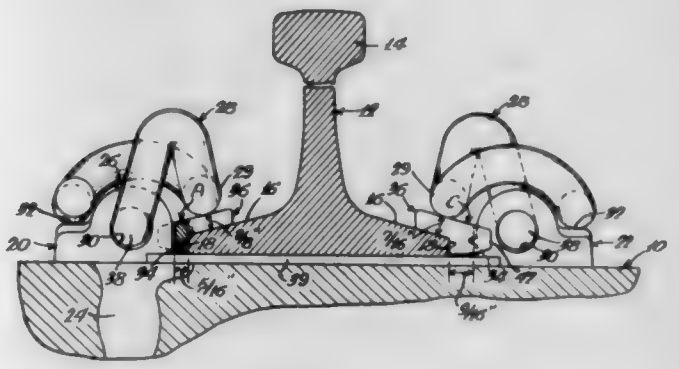
1. A mechanically controlled electronic thermostat, including: a rotatable insulating member having two electrically conductive areas on said rotatable member with said two areas electrically separated from each other by a nonconductive area; electric power supply means including an alternating current source having opposite polarity output voltages; a first of said areas electrically connected to a first of said voltages and a second of said areas electrically connected to a second of said voltages; temperature indicia means adjacent said rotatable insulating member with said member further having temperature indicating means to provide for the selection of a control temperature for said thermostat by said rotatable member being rotated and said temperature indicating means cooperating with said temperature indicia means; temperature responsive means mounted adjacent said rotatable member and having a rotatable conductive portion that rotates adjacent to said two conductive areas; said conductive areas and said conductive portion of said temperature responsive means creating two differentially variable capacitors; electronic circuit means including connection means connected to said two variable capacitors with said circuit means measuring the unbalance of said capacitors by measuring a capacitive coupled voltage from said alternating current source; and said electronic circuit means having output means indicative of the unbalance of said capacitors.

4,405,081

RAIL FASTENER WITH GAUGE ADJUSTMENT

Carl E. Tack, Elmhurst, Ill., assignor to TransDyne, Inc., Chicago, Ill.

Filed Jan. 21, 1982, Ser. No. 341,305
Int. Cl.³ E01B *9/38, 9/48, 9/66*
U.S. Cl. 238—282 **3 Claims**



1. In a rail securing system wherein the rail has a flanged base resting on a tie between space supports, and a spacer is provided between each support and the rail, and wherein a resilient retainer extends from each support for holding down the fanged base of the rail, the improvement for providing successive changes in the lateral position of the rail relative to the supports, said improvement comprising a set of individual spacers including a plurality of members, said spacers being substitutable for one another between the rail and said supports, with each of said spacers comprising a base located between the support and the base of the rail, and a portion extending from said spacer base overlapping the flanged base of the rail, the thickness of the base of each member being different, and the sum of the thicknesses of any selected pair of spacer bases being constant, said resilient retainer engaging the overlapping portion of said spacer, said overlapping portion having different thicknesses within each set, whereby to provide constant deflection of the resilient retainers regardless of the adjusted position of the flanged rail base.

4,405,082

LOW LEAKAGE FUEL INJECTOR

Richard P. Walter, Southfield, and Robert D. Muller, Royal Oak, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jul. 31, 1981, Ser. No. 288,845
Int. Cl.³ F02M *47/02*
U.S. Cl. 239—91 **11 Claims**

6. A fuel injector comprising:

a housing having a first port that is adapted to receive pressurized fuel from a first source, a second port adapted to be connected to a source of fuel pressurized at a pressure level less than the level of said first source, said housing including a stepped bore having a first bore linked to a narrower second bore and to a wider third bore, said housing further including a first dump orifice situated on said first bore, a second dump orifice situated on said second bore;

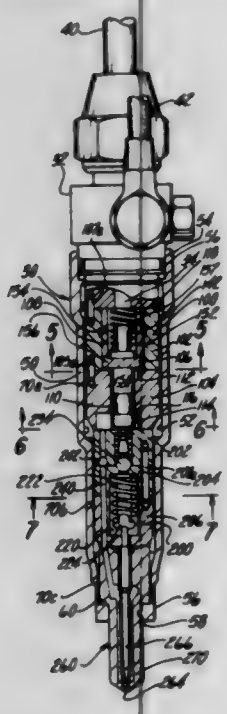
intensifier piston means cooperating with said stepped bore to provide a variable volume upper or primary chamber a middle or inner chamber and a lower or metering chamber;

leakage path means which includes said second dump orifice interposing said middle and said lower chambers and continually maintained at a determinable pressure level less than the pressure developed within said metering

chamber during the injection mode for providing a preferred leakage path for fuel;

said intensifier piston means being responsive to the pressure differential thereacross for reciprocatively moving within said stepped bore, and for selectively uncovering said first dump orifice and said second dump orifice;

nozzle means extending from said housing, and operatively connected, in fluid communication, to said lower chamber, for injecting fuel therefrom in correspondence with the motion of said intensifier piston means;



first fuel passage means for connecting said second port with said lower chamber including first check valve means for inhibiting flow of fuel from the lower chamber to said second port;

second fuel passage means for connecting said middle chamber to said second dump port;

third fuel passage means for connecting said first dump orifice to said second port including second check valve means for inhibiting the flow between said second port and said first dump orifice; and

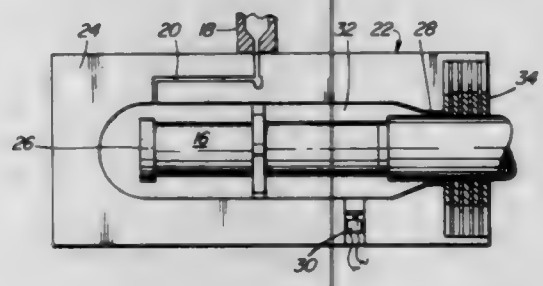
fourth fuel passage means for connecting said first port to said middle chamber.

4,405,083

MOULDING APPARATUS FOR ENCAPSULATING CABLE SPLICES

Leonard J. Charlebois, Kanata, and Fred A. Huszarik, Ottawa, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 19, 1982, Ser. No. 359,899
Int. Cl.³ B29C 6/04
U.S. Cl. 249—97 **3 Claims**



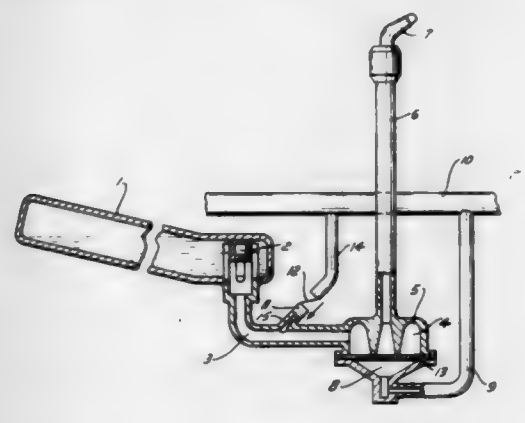
1. A moulding apparatus for moulding encapsulations upon cables comprising at least two mould parts which define a mould cavity and an opening to the cavity for location therein of a cable to extend through the mould and into the cavity, and a resiliently compressible element gripping and sealing device disposed within the opening to seal around said cable and grip it and retain it in fixed position during a moulding operation, said device formed as a diametrically split annulus composed of two structures each of which comprises two groups of planar resilient plates, the plates in one group alternating with those of the other and wherein the plates of one group have semi-circular extensions directed radially inwards of the opening and lying in the plane of its plate, each extension forming a radial rib between plates of the other group, and the ribs of each structure radially in alignment with and sealingly abutting against those of the other structure at the diametral split line to provide annular ribs within the annulus, said ribs being spaced axially along the opening by the plates of the other group of each structure to compressively seal and grip against the cable.

4,405,084

HYDRO-PNEUMATIC ACCUMULATOR FOR IMPULSE SPRINKLING

Vesselin Y. Georgiev, and Vladimir S. Mednikarov, both of Sofia, Bulgaria, assignors to Institute Po Mechanika I Biomechanika, Sofia, Bulgaria

Filed Aug. 21, 1980, Ser. No. 180,381
Claims priority, application Bulgaria, Aug. 21, 1979, 44 712
Int. Cl.³ B05B 1/08
U.S. Cl. 239—99 **4 Claims**



1. Apparatus for impulse spraying, comprising a hydropneumatic accumulator, a connecting pipe having a first end connected to the lowest point of the accumulator, a float valve in the accumulator interposed between the space within the accumulator and the first end of the connecting pipe to prevent the flow of water from the accumulator into the connecting pipe when the water level in the accumulator drops to the predetermined level, a water supplying conduit, conduit means including a pack flow-preventing check valve for feeding water from the water supplying conduit into the accumulator, an outlet pipe having a sprinkler on its outer end, a selectively operated shut-off valve interposed between the second end of the connecting pipe and the inlet end of the outlet pipe, and means responsive to changes of water pressure in the water supplying conduit for controlling the shut-off valve to open the shut-off valve when such water pressure falls below a predetermined desired value, and to close the shut-off valve when such water pressure exceeds a predetermined desired value, the connecting pipe being isolated from the liquid/gas compression accumulator, the upper end of the connecting pipe terminating in a chamber inside which there is affixed the conduit means, the conduit means comprising a cylinder, the cylinder being connected from below, through an inlet, to the water supplying conduit, the water supplying conduit passing through the walls of the chamber, and the conduit means ending at its upper end in a guide cone having a valve seat around an axial opening therethrough, a vertically reciprocable valve element having a stem at its lower end passing through the valve seat, a recess with two opposed apertures in the stem by means of which the valve element is connected to a cross pin through the piston rod of a piston which reciprocates in the cylinder, the diameter of the piston being greater than the diameter of the inlet to the cylinder, at a predeter-

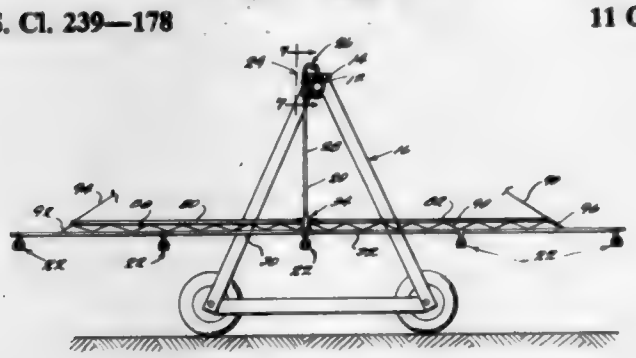
mined distance above the inlet to the cylinder in the walls of the cylinder there being apertures connecting the water supplying conduit with the space in the cylinder beneath the piston.

4,405,085

WATER DISTRIBUTING ASSEMBLY

Larry P. Meyer, Walla Walla, Wash., assignor to Nelson Irrigation Corporation, Walla Walla, Wash.

Filed Apr. 27, 1981, Ser. No. 257,621
Int. Cl.³ B05B 3/18
U.S. Cl. 239—178 11 Claims



1. A water distributing assembly for use with a section of upwardly bowed rigid conduit having a first axis which extends longitudinally therein; said conduit being supported at the opposite lower ends thereof by wheeled towers to that its longitudinal axis is disposed within a vertical plane for movement over a field in a direction transverse to said vertical plane, said water distributing assembly including

an inverted T-shaped pipe assembly for containing water under pressure, said inverted T-shaped pipe assembly including an elongated head carrying section having a second axis, said head carrying section being arranged to be disposed with said second axis extending horizontally in operation and a mounting section having a third axis, said mounting section being fixed at one end with the central portion of said head carrying section arranged so that said third axis extends vertically upwardly with respect to said second axis,

a plurality of sprinkler heads fixedly mounted in longitudinally spaced relation on said head carrying section in water pressure communicating relation with respect thereto so that water contained within said T-shaped pipe assembly is communicated with said sprinkler heads and discharged therefrom in a plurality of spray patterns within the field therebelow,

clamping means for operatively fixedly connecting the upper end portion of the mounting section with said conduit for the following five adjustable movements; (1) longitudinal movement of said T-shaped pipe assembly along said first axis so as to determine the longitudinal position of operation of the inverted T-shaped pipe assembly with respect to the conduit, (2) pivotal movement of the T-shaped pipe assembly about said first axis so as to position said third axis parallel with said vertical plane, (3) pivotal movement of the T-shaped pipe assembly with respect to the conduit about a fourth axis perpendicular to the aforesaid vertical plane so as to position said third axis within a second vertical plane perpendicular to the first-mentioned vertical plane, (4) vertical translational movement of the T-shaped pipe assembly with respect to the conduit so as to determine the height of operation of the sprinkler heads mounted on the head carrying section thereof above the field surface, and (5) pivotal movement of the T-shaped pipe assembly about said third axis so as to determine the angular extent of said second axis with respect to the first-mentioned vertical plane, and

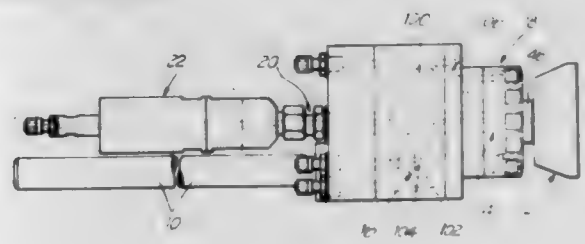
flexible hose means having one end connected with the upper end of the mounting section in fluid pressure communicating relation therewith and an opposite end adapted to be connected with the conduit for communicating water under pressure within said conduit to said T-shaped pipe assembly while accommodating any and all of the aforesaid five adjustable movements.

4,405,086

DEVICE FOR ATOMIZING LIQUID COLOR

Kurt Vetter, Remseck, Fed. Rep. of Germany, assignor to Hans Behr, Stuttgart, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 220,586
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1980, 3001209
Int. Cl.³ B05B 3/10
U.S. Cl. 239—224 9 Claims



1. A device for the atomizing of liquid color, particularly a lacquer sprayer, having an atomizer bell which is rotatable around a central axial opening and is provided above its rear base with a deflection part of rotational symmetry, the rear side of the center of which is opposite the opening while its radially outer edge is adjacent an overflow surface, the intermediate space between the deflection part and the base being connected in liquid-conducting manner with a free bell space above the overflow surface; and having a nozzle seated on the free end of a coaxial color feed tube, the nozzle extending into the intermediate space and discharging opposite the center of the deflection part, wherein

the deflection part has in its center a cannulae labyrinth comprising a coaxial inlet lying opposite an opening of the nozzle and a coaxial outlet onto the front side of the deflection part; and

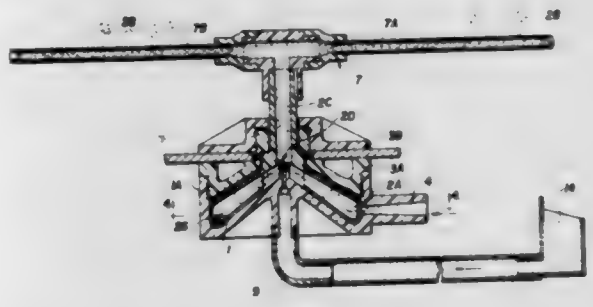
the front side of the deflection part forms an annular coaxial overflow surface for overflow by a partial stream of the color which at an edge of this surface discharges into a main stream of color flowing on an end-side overflow surface of the bell.

4,405,087

FLUID MIXING TECHNIQUE

Antonio Mata-Garza, Jamaica 401, Col. Vista Hermosa, Monterrey, N.L., Mexico

Continuation-in-part of Ser. No. 102,861, Dec. 12, 1979, Pat. No. 4,298,015. This application Jul. 20, 1981, Ser. No. 283,896
Int. Cl.³ B05B 3/04, 7/30
U.S. Cl. 239—226 11 Claims



1. Mixing apparatus comprising in combination, conveying means providing a conduit path for incoming fluid of a first characteristic under pressure converging in a cyclone shaped flow pattern from an input port to an output port comprising a rotary turbine member rotatable by the fluid under pressure in said conduit path, and mixing means providing a second fluid conduit path for conveying a fluid of a second characteristic

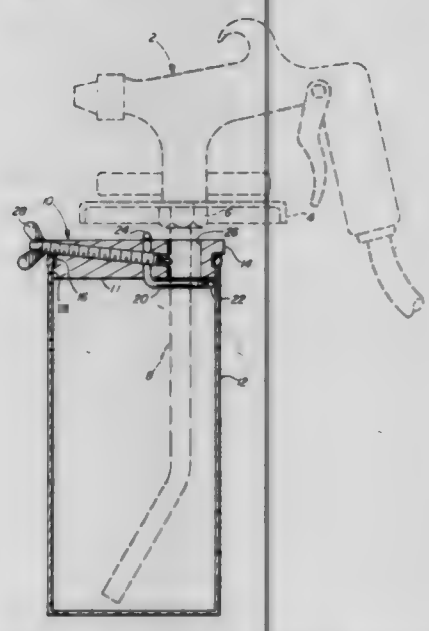
under motive power of the suction provided by the cyclone pattern of the first fluid path at a converging vortex position having an input port for access to a fluid supply external to said cyclone conduit path and an output port located in the converging vortex position of said cyclone path thereby to provide suction for supplying said second fluid into the conveyance path of said first fluid for mixing therewith.

4,405,068

ADAPTOR FOR DISPOSABLE CANS FOR SIPHON-TYPE SPRAY PAINT GUNS

James W. Gray, 4600 N. Bear Canyon Rd., Tucson, Ariz. 85715

Filed Mar. 20, 1981, Ser. No. 245,742
Int. Cl.³ B05B 7/30
U.S. Cl. 239—302 **3 Claims**



1. An attachment for siphon-type spray paint guns having a siphon tube to utilize disposable open containers holding paint comprising an adaptor adapted to attach to the siphon-type spray paint gun siphon tube and adapted to receive in a securing configuration an associated disposable open container, said adaptor defining a circular shaped disk with a circumferential stepped shoulder, said adaptor adapted to reside in the opening of the associated disposable container with the container opening abutting said stepped shoulder, said adaptor including an opening to receive the siphon tube and means forcibly engaging and holding in place the siphon tube, and means to forcibly engage the side wall of the associated disposable container, said means to engage the side wall of the associated disposable container defines a wire penetrating said adaptor and emerging from both sides thereof, said wire being a handle on one side of the adaptorand an arcuate shaped bow on the other side of the adaptor, said wire pivotal through said adaptor whereby in rotating the handle, the arcuate shaped bow rotates into the wall of the associated disposable container and engages the container and thereby holds the container in place.

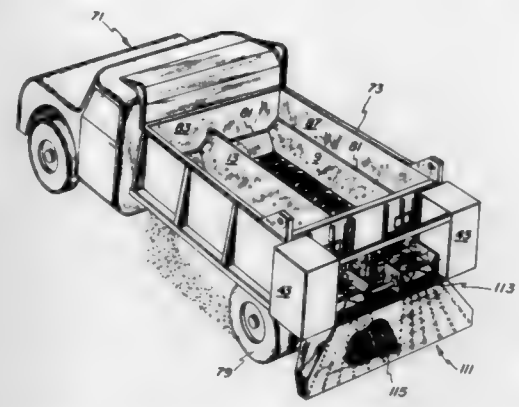
4,405,089

MULTIPLE CONVEYOR

Bruce W. Taylor, Ballston Lake, N.Y., assignor to Tarrant Manufacturing Company, Saratoga Springs, N.Y.

Filed Sep. 28, 1982, Ser. No. 425,431
Int. Cl.³ A01C 7/06
U.S. Cl. 239—656 **9 Claims**

1. A self-contained unit insertable in and in combination with a vehicle whose body has front and side walls, said unit being used with said vehicle body's front and side walls, said unit having multiple conveyors for spreading, unloading or dumping therefrom bulk granular material such as salt, sand, grain, fertilizer; said unit having a converging front wall, a vertical rear wall, two converging outside walls, and inverted, V-shaped longitudinal divider means, said vehicle body's front wall forming a continuation of said unit's front wall, and said vehicle body's side walls forming continuations of said units outside walls; said converging-front, vertical-rear and converging-outside walls, and said divider means, together with



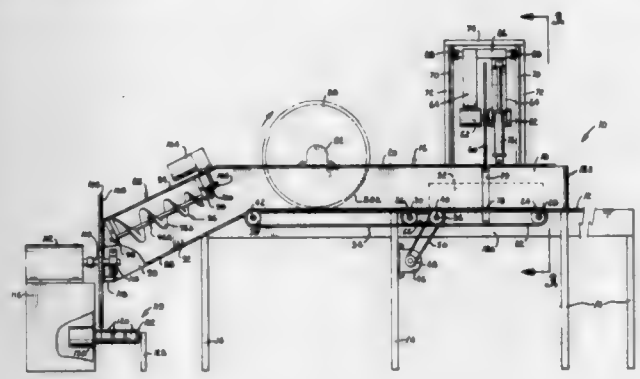
said vehicle body's front and side walls, defining multiple hopper compartments, and each of said hopper compartments having one of said conveyors operatively associated therewith for removing such material.

4,405,090

METHOD AND APPARATUS FOR REDUCING TIRES

Dale Wakeem, Rte. 2, Box 539, Lamar, Mo. 64759

Filed Oct. 6, 1980, Ser. No. 193,904
Int. Cl.³ B02C 19/12
U.S. Cl. 241—3 **4 Claims**



1. A method of reducing a tire having rubber and metal content, said method comprising the steps of:

conveying the tire along a conveyor path to a first cutting station;

effecting a first pair of cuts through opposite sides of the tire at said first cutting station to cut the tire into a pair of arcuate pieces approximately equal in size without human assistance;

conveying the arcuate pieces from said first cutting station to a second cutting station;

effecting a cut through each of said arcuate pieces at said second cutting station, each cut at said second cutting station being made without human assistance in a direction generally perpendicular to the first pair of cuts and at a location approximately halfway along the arc defined by each arcuate piece, thereby cutting the tire into four pieces approximately equal in size;

conveying the tire pieces from said second cutting station to a grinding station;

grinding each tire piece into small particles of rubber and small particles of metal at said grinding station; and

separating the particles of rubber from the particles of metal.

4,405,091

APPARATUS FOR THE PRODUCTION OF MECHANICAL WOOD PULP

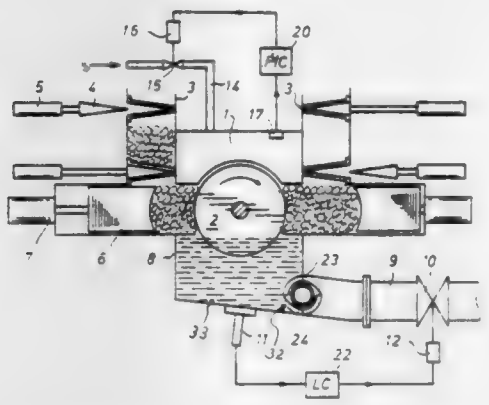
Theodor Bähr; Hans-Otto Heinrich, and Helmut Thumm, all of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Apr. 20, 1981, Ser. No. 255,849

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1981, 3015722

Int. Cl.³ B02C *23/38*

U.S. Cl. 241—33 **12 Claims**



1. In an apparatus for the mechanical production of wood pulp with a grinder located in a housing into which wood stock is fed to be ground up by the grinder for the formation of a slurry of ground wood in a trough below the grinder, the improvement comprising:

a discharge conduit coupled to the trough at a discharge port thereof, said discharge port being located below the upper level of the slurry of ground wood, said conduit further being in unrestricted ground wood flow communication with the slurry of ground wood below the grinder;

a wood chip cutter operatively interposed with the conduit at the trough discharge port; and

means for maintaining the upper level of said slurry of wood pulp above the discharge port.

4,405,092

CUTTING DEVICE

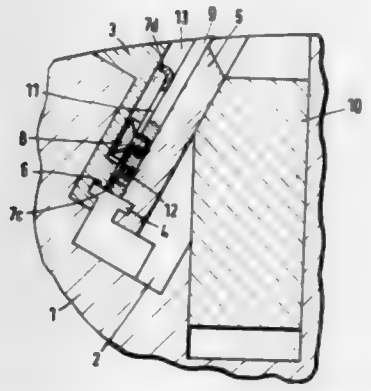
Hans Sybertz; Ferdinand Sybertz, both of Hargesheim, and Arnold Schmidt, Gutenberg, all of Fed. Rep. of Germany, assignors to Hombak Maschinenfabrik GmbH U. Co. KG, Bad Kreuznach, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,408

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 8002428[U]

Int. Cl.³ B02C *18/18*

U.S. Cl. 241—294 **14 Claims**



1. A cutting device, comprising a rotatable body part having an axis of rotation and a periphery which is provided with a plurality of recesses spaced from one another and has an abutment face in each of said recesses; and a plurality of cutting units each arranged in a respective one of said recesses of said body part, each of said cutting units including a resharpenable cutting member having a front surface, a supporting member which supports said cutting member and is connected with said body part, a member displaceable under the action of centrifugal forces and acting upon said supporting member to clamp the above-mentioned members in the same recess of said body part, a holding member loosely abutting against the abutment face of the same recess of said body part and arranged so that said cutting member is substantially radially displaceably and fixedly held on said holding member and loosely abuts with its front surface against said supporting member, and means for connecting said cutting member with said holding member.

4,405,093

ENDLESS TAPE TRAVELLING DEVICE

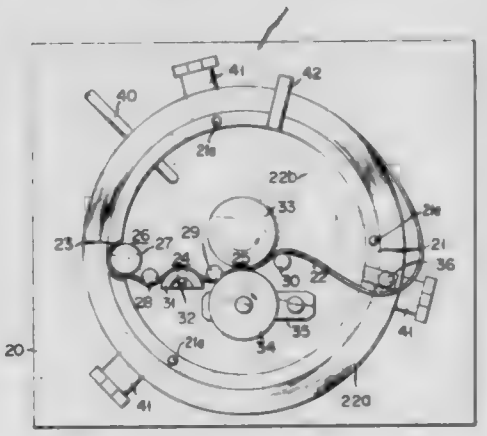
Fumio Izawa, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 28,649, Apr. 10, 1979, abandoned, which is a continuation of Ser. No. 865,414, Dec. 29, 1977, abandoned. This application Jul. 28, 1981, Ser. No. 287,820

Claims priority, application Japan, Jul. 27, 1976, 51-89450

Int. Cl.³ B65H *17/48*; G11B *23/10*

U.S. Cl. 242—55.19 R **11 Claims**



2. A recording and/or reproducing apparatus which comprises:

a base plate;

a stationary reel mounted on the base plate having an annular body around which an endless tape is wound, and first guide means formed in the annular body to communicate the outer peripheral surface of the annular body to the inner peripheral surface thereof;

a driving mechanism including a capstan and pinch roller which are disposed inside the inner peripheral face of said stationary reel for pulling out said tape wound on said reel through said first guide means such that the tape drawn out from the driving mechanism forms a lossened portion inside the inner peripheral face of said stationary reel;

a recording and/or reproducing head disposed inside the inner peripheral face of said stationary reel and between said first guide means and said driving mechanism for scanning the tape;

second guide means for guiding the tape travelling from said first guide means to said driving mechanism through said recording and/or reproducing head while keeping said tape in a substantially non-twisted relationship with a portion of the tape wound on said stationary reel;

third guide means for guiding the tape passed through said lossened portion to cross over the reel and to the outermost periphery of the tape wound on said reel such that the tape drawn out from said driving mechanism is thereby guided to form a winding path to said outermost periphery of the tape wound on the reel; and

fourth guide means for guiding the tape passed through said driving mechanism and for forming said loosened portion inside the inner peripheral face of said stationary reel wherein the tension of the tape passed through said driving mechanism is less than the tension of the tape between the first guide means and said driving mechanism.

4,405,094

THREAD BRAKE

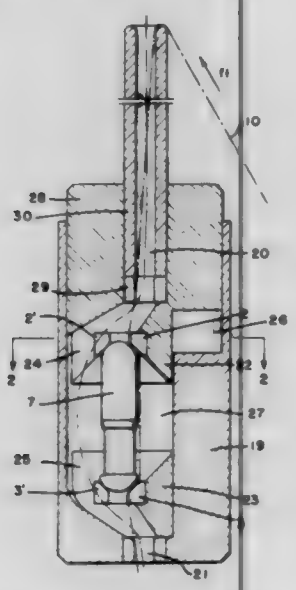
Heinz Scheufeld, Korschenbroich, and Ulrich Loose, Krefeld, both of Fed. Rep. of Germany, assignors to Palitex Project-Company GmbH, Krefeld, Fed. Rep. of Germany

Filed Apr. 2, 1981, Ser. No. 250,318

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1980, 3015182; Nov. 5, 1980, 8029436[U]

Int. Cl.³ B65H *59/22*

U.S. Cl. 242—149 5 Claims



1. A thread brake interposed between axially aligned thread entry and thread exit passages comprising; a substantially tubular housing, said tubular housing having a capsule-shaped braking cartridge, spaced-apart axially aligned braking surface rings supported in said tubular housing between said thread entry passage and said thread exit passage for retaining said braking cartridge therein, each of said braking surface rings having a threading slot therein through said braking surface ring, said two braking surface rings having a common axis offset radially from said thread entry passage and said thread exit passage whereby a thread guidance passage is formed bypassing the braking region formed by said two braking surface rings and said braking cartridge.

4,405,095

MAGNETIC TAPE SHIFTING DEVICE

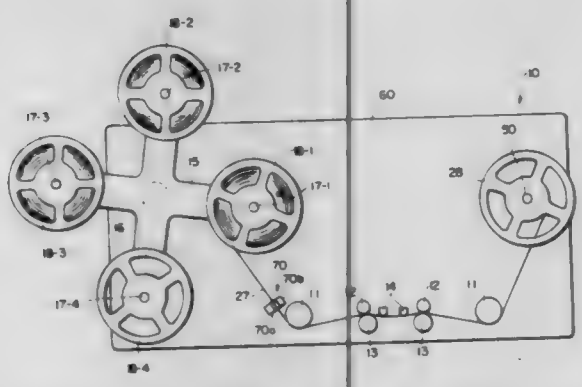
Tsutomu Kohno, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jul. 2, 1981, Ser. No. 280,083

Claims priority, application Japan, Jul. 4, 1980, 55-93653[U]

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—179 11 Claims



11. A magnetic tape shifting device for reeling a plurality of magnetic tapes separately wound around a plurality of payoff reels by a plurality of takeup reels, comprising:

(a) first and second slidable members each having a plurality of arms arranged in parallel to each other, each of said arms of said first slidable member being equipped with a reel mount for carrying a payoff reel and with a reel-driving motor for driving said payoff reel, each of said arms of said second slidable member being equipped with a reel mount for carrying a takeup reel and with a reel-driving motor for driving said takeup reel;

(b) first means for linearly moving said first and second slidable members in a direction perpendicular to the plane of said plurality of payoff reels and takeup reels respectively carried by said arms so that a given position of each of said first and second slidable members is moved to a predetermined position with respect to a stationary member of said device, said means having at least one motor operatively connected to said first and second slidable members;

(c) a magnetic tape guiding mechanism for guiding a magnetic tape from one of said plurality of payoff reels to one of said plurality of takeup reels;

(d) second means for detecting the end of said magnetic tape supplied from said payoff reel;

(e) third means for detecting the position of each arm of at least one of said first and second slidable members; and

(f) a control circuit responsive to signals from said second and third means for energizing said motor connected to said first and second slidable members when the end of said magnetic tape is detected and for deenergizing said motor for stopping each of said first and second slidable members at a desired position.

4,405,096

MAGNETIC TAPE CASSETTE

Hans Pössl, Ottenbach, Switzerland, assignor to Wyder AG., Wettingen, Switzerland

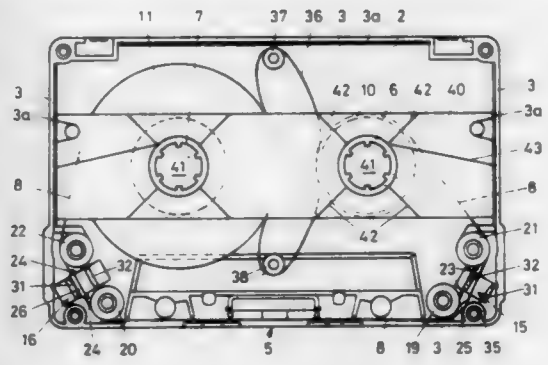
PCT No. PCT/CH80/00095, § 371 Date Apr. 10, 1981, § 102(e) Date Apr. 6, 1981, PCT Pub. No. WO81/00480, PCT Pub. Date Feb. 19, 1981

PCT Filed Aug. 7, 1980, Ser. No. 253,507

Claims priority, application Switzerland, Aug. 10, 1979, 7374/79

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—199 10 Claims



1. Magnetic tape cassette, having a housing comprising two shells which encompass a recording and playback zone and in which two reel hubs for winding and unwinding the magnetic tape together with guide pulleys are located on each of the two sides of the recording and playback zone, characterized in that, between the recording or playback zone (5) and the reel hubs (6, 7), a tape clamp (25, 26) of U-shaped cross-section is placed to embrace the magnetic tape (8), that limit elements (19, 20, 3, 35; 19, 57; 73, 74) opposed to one another for the magnetic tape (8) are provided on both sides of the recording and playback zone (5), which limit elements, on the one hand, form a passage for the magnetic tape (8), and, on the other hand, clamp in and compress the legs of the tape clamps (25, 26) in either direction of movement of the magnetic tape thereby to clamp and bind the tape, there being a pair of stops (23, 24; 61, 62; 81, 82) for the tape clamps (25, 26) positioned between the guide and the associated reel hub to stop movement of the clamp, and that, in the zone between the limit elements (19, 20, 3, 35; 19, 57; 73, 74) and the associated reel hub (6, 7), a control element (15, 16; 57; 74) is provided which can be actuated from outside the housing

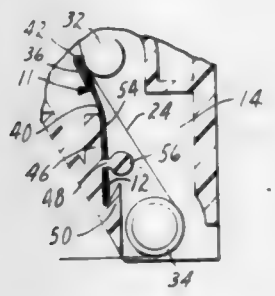
to assume either of two operating positions and which, in its first operating position, moves the magnetic tape (8) into the zone of a pair of said stops (23, 24; 61, 62; 81, 82) for the tape clamps (25, 26) and which, in its second position, keeps the magnetic tape (8) away from the stops.

4,405,097

CASSETTE WITH A SLACK LIMITER TAB

Charles D. Gebeke, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 17, 1981, Ser. No. 284,222
Int. Cl.³ G03B *1/04*; G11B *15/32*; B65H *23/08*
U.S. Cl. 242—199 **4 Claims**



1. In a cassette comprising a housing having an access opening; two reels rotatably mounted within the housing; a length of tape having opposite end portions wound around said reels and a portion extending therebetween, means for guiding the tape portion extending between said reels across said access opening and along a relatively tortuous path between one of said reels and said access opening, a flexible resilient slack limiting tab having a contact end portion adapted to engage said tape and an opposite end portion, and mounting means for mounting said opposite end portion on said housing with said contact end portion transversely biased against said tape to press said tape against a support surface along said tortuous path, the improvement wherein:

said opposite end portion comprises a tapered projection having dimensions narrowing from a proximal end to a distal end and said housing comprises rigid walls defining a receptacle having a width intermediate said dimensions of said proximal and distal ends to frictionally receive and compressively hold said projection with said contact end portion in engagement with said tape, said receptacle and projection being included in said mounting means.

4,405,098

EXTENDED PLAY CASSETTE

Barry K. Spicer, Riverside, Calif., assignor to Technicolor, Inc., Los Angeles, Calif.

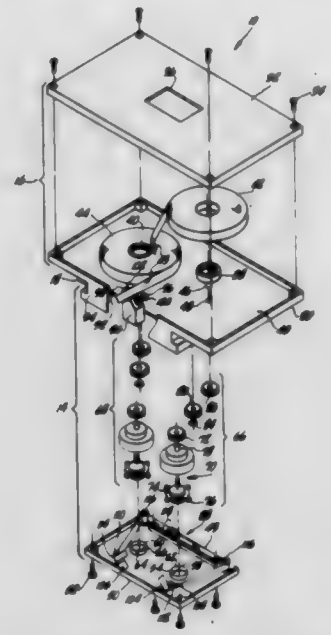
Filed May 27, 1981, Ser. No. 267,560
Int. Cl.³ G03B *1/04*; G11B *15/32, 23/04*
U.S. Cl. 242—200 **8 Claims**

5. An extended play cassette for providing increased web storage capacity for use with an apparatus wherein the apparatus includes a cassette receptacle for receiving a conventional cassette, wherein the conventional cassette includes a housing having hubs therein, the hubs carrying the web, the cassette receptacle being adapted to receive the conventional cassette along an axis substantially perpendicular to a plane defined by the conventional cassette housing, the cassette receptacle including spindles adapted to engage the hubs of the conventional cassette and web handling means for engaging the web, the extended play cassette comprising,

a housing having an adaptor portion substantially similar in form to the housing of a conventional cassette, a magazine portion in stacked relationship with the adapter portion and integral therewith, and an opening between the adapter portion and the magazine portion,

the adapter portion including access means for providing access to the web by the web handling means, engagement means for engaging the spindles, and guide means for guiding the web from the access means through the opening,

the magazine portion including a first and a second hub rotatably carried within the magazine portion, the hubs



adapted to carry the web in rolls thereupon, and guide means for guiding the web from the rolls through the opening to the adapter portion guide means, and

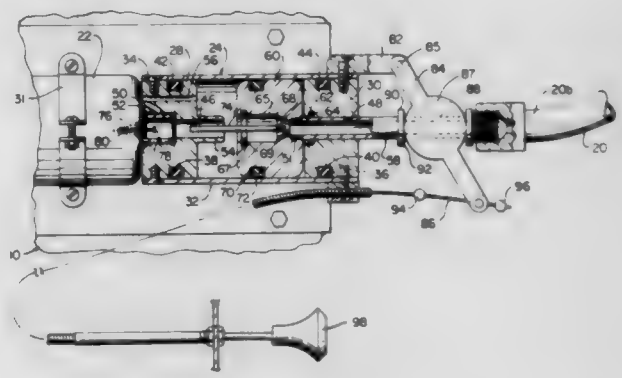
drive means for transmitting rotational motion from the engagement means to the first and second hubs.

4,405,099

APPARATUS FOR ACTIVATING SYSTEM IN RESPONSE TO IMPACT

Ralph A. Bolen, London, Ohio, assignor to John Sawyer, Cincinnati, Ohio

Filed May 6, 1981, Ser. No. 261,261
Int. Cl.³ B64D *25/00*
U.S. Cl. 244—1 R **23 Claims**



1. An impact apparatus, comprising:

(a) a longitudinal housing having first and second end components, said first end component having a first fluid passage extending therethrough and being adapted to selectively communicate with a source of pressurized fluid;

(b) an inertial member disposed within said housing, said inertial member being reciprocally movable within a predetermined range from one of said first and second end components to the other in response to a time rate of change of velocity of the housing, said inertial member having a second fluid passage extending therethrough in selective fluid communication with said first fluid passage;

(c) an actuator secured to the inertial member, said actuator being extendable into said first fluid passage as the inertial member is moved toward the first end component;

(d) a valve disposed in the first fluid passage for controlling

fluid flow from said source of pressurized fluid, said valve being movable to an open position by the actuator as the inertial member is moved toward the first end component;

(e) a vent passage extending through said housing for exhausting fluid from space between the inertial member and the first end component as the inertial member is moved toward the first end component;

(f) a nipple extending from one of the inertial member and the first end component, said nipple partially defining one of the first and second fluid passages and being sealingly received by the other of the first and second fluid passages; and

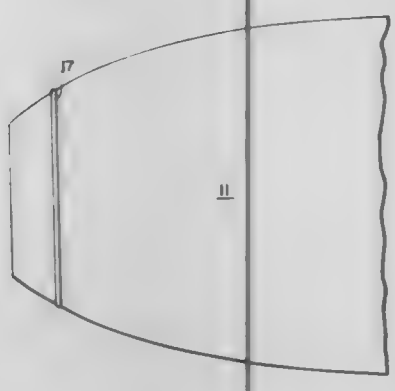
(g) a rigid conduit secured to the inertial member in fluid communication with the second passage, said rigid conduit being reciprocally movable through the second end component as the inertial member moves through the predetermined range.

4,405,100

TURBULENCE GENERATOR FOR MAXIMIZING CONFIGURATION TOLERANCES OF FREE FLIGHT ORDNANCE

Peter Daniels, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 20, 1981, Ser. No. 236,480
Int. Cl.³ F42B *25/20, 13/00*
U.S. Cl. 244—3.1 **1 Claim**



1. A method of reducing the variations in drag disparity between similar free flight ordnance devices caused by variations in surface roughness and configuration so that each of said devices has substantially the same free flight range and accuracy comprising:

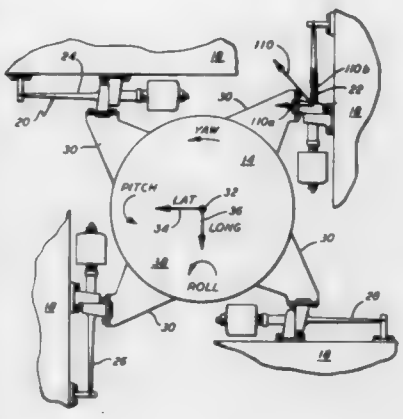
providing each device with a raised annular ring means at the same position on the front end of each device, in the laminar flow of air, where the position is on an essentially curved section of the front end wherein the ring means creates turbulent air flow and the ring means is machined to the same close tolerance dimensions on each device, for causing air flow past the device to change from laminar to turbulent at the same position on each device to reduce surface friction on each of said devices, the surface friction on each device being nearly equal due to the introduction of turbulent flow at the same position on each of said devices, thereby reducing the drag disparity therebetween and providing substantially the same free flight range for all devices.

4,405,101

VIBRATION ISOLATION SYSTEM

Raymond G. Carlson, Orange, and Robert A. Stone, Sandy Hook, both of Conn., assignors to United Technologies Corp., Hartford, Conn.

Filed Oct. 29, 1980, Ser. No. 201,876
Int. Cl.³ B64C *27/04;* F16F *7/10*
U.S. Cl. 244—17.27 **15 Claims**



7. A helicopter having mutually perpendicular vertical longitudinal and lateral intersecting axes and including:

a fuselage,

a rotor drive transmission,

a helicopter rotor extending from said transmission and driven thereby,

suspension means supporting said fuselage from said transmission comprising three or more symmetric vibration isolators connecting the transmission and the fuselage so as to permit relative motion therebetween both linearly along and rotationally about each of said axes, to transmit steady state loads therebetween, and to provide vibration force and motion isolation of the fuselage from the transmission linearly along and rotationally about each of said axes when the rotor is generating and transmitting to the transmission vibrations at a predominant frequency,

said symmetric vibration isolators being substantially equally spaced circumferentially about and having axes oriented perpendicular to the vertical axis and lying in the plane of the longitudinal and lateral axes, and

each isolator comprising a shaft member connected to the transmission in slip-fit fashion to provide axial motion of said shaft and said shaft is also connected to the fuselage, and constructed to have a first end which is equally flexible in the direction of the vertical axis and in the common plane of the longitudinal and lateral axes in response to vibration loading of said isolations in transmitting transmission vibrations to the fuselage, and to have a second inertially weighted end deflectable simultaneously with flexing of the first shaft member end under vibratory loading to develop a vibratory node at the point of connection between the transmission and the fuselage when the transmission is vibrating at the predominant frequency and to permit axial motion between the transmission and the fuselage at this point of connection to thereby provide vibration force and motion isolation of the fuselage from the transmission linearly along and rotationally about each of said axes to thereby provide vibration isolation of the fuselage from the transmission in six degrees of freedom.

4,405,102

VARIABLE WING POSITION SUPERSONIC BIPLANE

Robert M. Taylor, Vienna, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

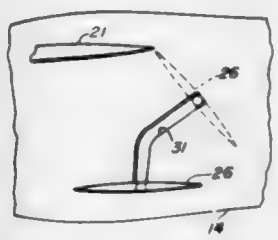
Filed Nov. 20, 1981, Ser. No. 323,525
Int. Cl.³ B64C *3/38, 39/08*
U.S. Cl. 244—45 R **4 Claims**

1. An airplane wing structure attached to an airplane fuse-

lage having a forward end portion and a trailing end portion comprising:

upper and lower elongated wing sections, wherein the leading edge of the upper wing section is positioned on the fuselage forward of the leading edge of the lower wing section, and the upper wing section is supported from the fuselage in a fixed position; and

means supporting the lower wing section from the fuselage to produce rotational and translational displacement of the



lower wing section relative to the upper wing section wherein the lower wing section is capable of assuming configurations where the lower wing section may be aligned with its trailing edge lower than the upper wing section and its leading edge adjacent the trailing edge of the upper wing section for high lift low speed flight conditions, and wherein the lower wing section can be aligned substantially parallel with the upper wing section for higher speed flight conditions.

4,405,103

HYDRAULICALLY OPERATED AIR BORNE ROTOR CRAFT

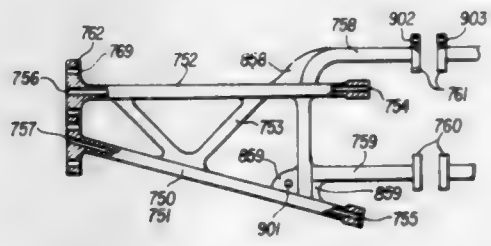
Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Division of Ser. No. 954,555, Oct. 25, 1978, Pat. No. 4,358,073, and a continuation-in-part of Ser. No. 800,755, May 26, 1977, abandoned, and Ser. No. 800,489, May 25, 1977, abandoned, said Ser. No. 954,555, is a continuation of Ser. No. 800,756, May 26, 1977, abandoned, which is a continuation of Ser. No. 465,413, Apr. 30, 1974, abandoned, said Ser. No. 800,755, and Ser. No. 800,489, each is a continuation of Ser. No. 465,413,. This application Feb. 13, 1980, Ser. No. 121,186

Claims priority, application Austria, May 4, 1973, 3968/73

Int. Cl.³ B64D *35/00*

U.S. Cl. 244—60 **4 Claims**



1. A fluid pipe structure, consisting of at least three pipes with a capability to pass fluid through said pipes, fastening means on the ends of said pipes and ribs between said pipes,

wherein at least one of said pipes is a pressure fluid delivery pipe and at least one other of said pipes is a fluid-flow return pipe,

wherein said pipes are laterally and vertically distanced from at least one other pipe,

wherein said ribs are provided between some of said pipes to form a rigid structure free of substantial deformations,

wherein first fastening means are provided on one end of said structure means to fasten and carry thereon a hydraulic fluid motor, and,

wherein second fastening means of said fastening means are providing means on the other end of said structure to fasten said structure rigidly to a portion of a vehicle with ability to travel in air,

wherein the interior spaces of said pipes extend through said first and second fasteners,

wherein said pipes are substantially straight pipes which exclude sharp bendings of said pipes to permit the easy passing of a cleaner through said interior spaces of said pipes,

wherein said pipes are provided with arms, which are individually rigidly fastened to a respective pipe of said pipes,

wherein said arms are extending partially slightly laterally away from said pipes to bend thereafter into straight portions which are directed substantially parallel to said pipes, and,

wherein third fastening means are provided on the ends of said arms to fasten said structure to a respective means, whereon said structure shall be held,

whereby said third fastening means are separate of said second fastening means,

whereby said pipes are capable to permit the cleaning of the interiors of said pipes through said first and second fastening means and said pipes permit the fastening of fluid line extensions to said second fastening means without disconnection of said third fastening means.

4,405,104

PANEL BREAKING APPARATUS

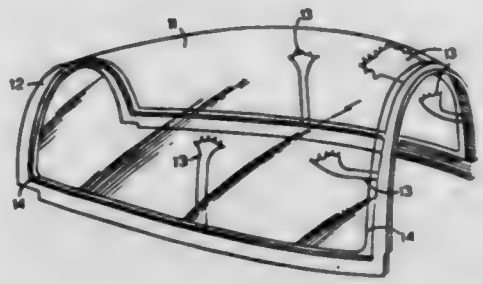
David H. Charman, Horsham; Clara Turner, and Henry W. Turner, both of Ashtead, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation of Ser. No. 213,082, Dec. 4, 1980, abandoned, which is a continuation of Ser. No. 968,925, Dec. 13, 1978, abandoned. This application Aug. 9, 1982, Ser. No. 406,372

Claims priority, application United Kingdom, Dec. 14, 1977, 52077/77

Int. Cl.³ B64C *1/32*

U.S. Cl. 244—122 AF **6 Claims**



1. In an aircraft, a cockpit canopy made of electrically insulative plastics, and means for fracturing said canopy, said fracturing means being in the form of an electrical circuit associated with a DC power source in said aircarft, said circuit consisting essentially of:

at least one fusible electrical conductor in tape form and consisting of 25%–66% aluminium by weight sheathed in 75%–33% palladium by weight and embedded in and in intimate contact with said canopy with the plane of said at least one conductor substantially normal to the local surface of said canopy;

a power booster consisting essentially of an inductance electrically connected to said at least one conductor and operative to provide power both to explode said at least one conductor and to initiate a violent exothermic alloying between said palladium and said aluminium and thus to fracture said canopy by generating a crack therein along said conductor; and

switch means electrically connected to said at least one conductor and operative to permit a surge of electrical energy from said DC power source to said inductance.

4,405,105
AIRFOIL FLAP ACTUATION

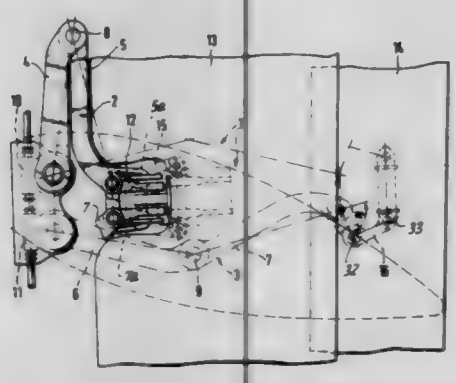
Hommayoun Dilmaghani, Gessel; Hugo Sgarz, Bremen-Lesum, and Hartmut Schulz, Bremen, all of Fed. Rep. of Germany, assignors to Vereinigte Flugtechnische Werke GmbH, Bremen, Fed. Rep. of Germany

Filed Apr. 6, 1981, Ser. No. 250,931

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1980, 3013774

Int. Cl.³ B64C *3/38, 9/20*

U.S. Cl. 244—213 13 Claims



1. In an airfoil, a flap, an actuating mechanism for moving the flap, comprising:

two pantograph guide systems each being pivotally secured to the airfoil at points spaced along the span of the airfoil, each guide system having two branches pivotally linked to a head, there being two heads accordingly;

means for each of the guide systems, for pivotally linking respectively the heads to the flap for pivoting on approximately horizontal axes, the axes extending transversely to a direction of the flap movement, said means for respectively pivotally linking the heads to the flap including essentially vertical pins accordingly, one of the pins positively permitting lateral play to a larger extent than the other pin;

two control rods for each of the guide systems respectively extending from the two branches of the respective guide system and being pivotally linked thereto as well as pivotally linked to the flap at points in each instance being spaced from the respective one of said axes so that, upon expansion of the guide link for extension of the flap, the flap is pivotally actuated for pivoting on said horizontal axes; and

drive means connected for extending and retracting the guide systems.

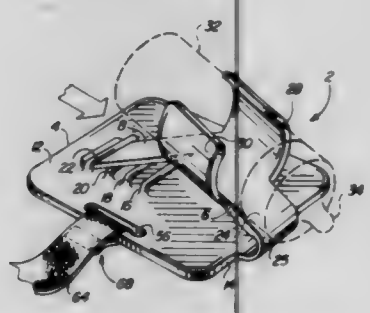
4,405,106
BABY BOTTLE HOLDER

Teri A. Adler, 6027 E. Calle del Norte, Scottsdale, Ariz. 85251

Filed Jun. 4, 1982, Ser. No. 385,022

Int. Cl.³ A61J *9/06*

U.S. Cl. 248—102 7 Claims



1. A baby bottle holder for assisting an infant during feedings and for limiting the amount of liquid that the infant can consume from a baby bottle during a feeding interval, said baby bottle holder comprising in combination:

a. a base portion including a lower surface for resting upon the chest of an infant, said base portion including a forwardmost edge normally disposed toward the infant's head, said base portion further including an upper surface opposite said lower surface, said upper surface presenting a plurality of engagement means spaced at varying distances from the forwardmost edge of said base portion;

b. a bottle holding member having front and rear ends and having a clamp disposed therebetween for releasably engaging a baby bottle, the front end of said bottle holding member being hingedly coupled to the forwardmost edge of said base portion for allowing said bottle holding member to be pivoted with respect to said base portion for varying the angular position of the baby bottle engaged by said clamp; and

c. a prop member having upper and lower ends, the upper end of said prop member being hingedly coupled to said bottle holding member proximate the rear end thereof, and the lower end of said prop member being adapted to releasably engage one of said plurality of engagement means to selectively position the lower end of said prop member relative to the forwardmost edge of said base portion and to thereby adjust the angular position of the baby bottle engaged by said clamp.

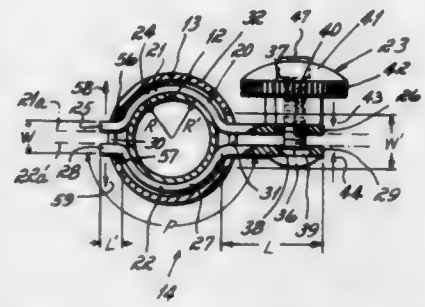
4,405,107
CLAMP SYSTEM FOR TELESCOPING TUBES

C. Wayne Clyburn, Cincinnati, Ohio, assignor to Hamilton Stands, Incorporated, Monroe, Ohio

Filed Jun. 23, 1982, Ser. No. 391,176

Int. Cl.³ F16L *3/00*

U.S. Cl. 248—122 18 Claims



1. A clamp system to clamp inner and outer telescoping tubes in a desired position relative one to the other, said clamp system comprising

structure defining at least one port in said outer tube, said port being positioned between the ends of said outer tube,

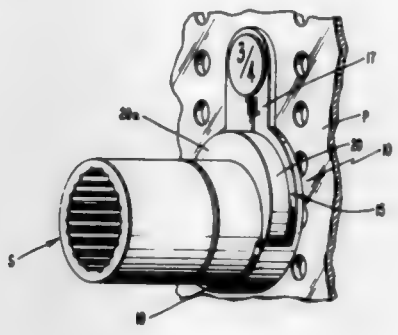
at least one clamp part disposed interiorly of said outer tube and exteriorly of said inner tube, said clamp part being movable into and out of clamping position relative to said inner tube, said clamp part extending outwardly through said port in said outer tube, and,

a fastener connected exteriorly of said outer tube with said clamp part, said fastener cooperating with said clamp part for selectively tightening and releasing said clamp part against said inner tube, longitudinal movement of said inner tube relative to said outer tube being limited when said clamp part is tightened against said inner tube due to interference of said clamp part with said outer tube's port structure, and longitudinal movement of said inner tube relative to said outer tube and said clamp part being permitted when said clamp part is released from tightened position against said inner tube.

4,405,108
MAGNETIC TOOL RETAINING DEVICE

Walter B. Muirhead, Rte. 3, Box 260, Jasper, Tenn. 37437

Filed Apr. 27, 1981, Ser. No. 257,905
Int. Cl.³ F16B 47/00
U.S. Cl. 248—206 A 6 Claims



1. A device for retaining a ferrous metal tool, such as a wrench, socket or the like for easy access on an upright surface, comprising:

a holder having a front mounting surface and rear attachment surface;

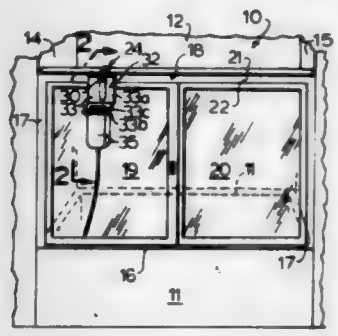
a mounting post projecting outwardly from said front mounting surface and including resilient and thread like ridges extending substantially around an outer surface of said mounting post and further including a central opening extending through said holder thereby enabling mounting of said device to a solid surface with a flat head screw or the like received through the central opening; and

a magnet including a hole having an interference fit diameter receiving said mounting post, thereby enabling said magnet to be positioned upon said mounting post; said magnet having a mounting face projecting outwardly from the holder and having sufficient exposed magnetic area to attract and retain said tool; said mounting face also having a sufficiently free edge whereby said tool may be securely held on said face while allowing removal by lateral sliding movement across the edge and from said face.

4,405,109
PORTABLE BATHROOM HANGERS FOR HYGIENIC IRRIGATION EQUIPMENT

Merle A. Murdoch, Rte. #1, Box 194-K, Shelby, N.C. 28150

Filed Sep. 8, 1981, Ser. No. 300,045
Int. Cl.³ E04G 3/00
U.S. Cl. 248—215 1 Claim



1. In a bath compartment having a door opening (16) spanned by an elevated horizontally disposed rail (18), a portable hygienic irrigation device (32) including a reservoir (35), and means carried by said rail for suspending said device comprising

an inverted U-shaped hanger (24) detachably fixed to said rail;

one leg of said hanger consisting of a flat bar (28, 28*a*) depending adjacently parallel to the plane of said opening (16),

said irrigation device (32) consisting of an L-shaped unitary frame having a flat vertically disposed flange (33*a*) and a horizontally disposed flange (33*b*);

pivot means (34*a*, 34*b*) for oscillatably suspending the vertical flange (33*a*) of said frame upon said pivot means (30) and face-to-face with said depending bar (28, 28*a*) to thereby suspend the device for oscillation parallel to the plane of said opening and

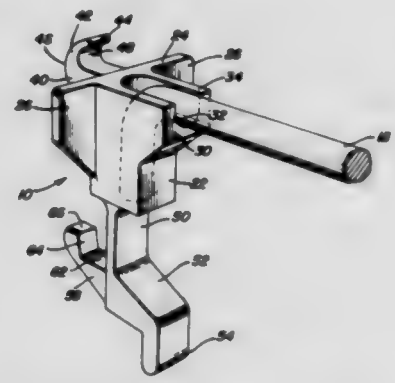
means including said horizontal flange (33*b*) for cantilevering said reservoir (35) axially outwardly from said pivot means (30) and from the plane of said opening,

said last-named means being responsive to a lateral stress component of the weight of said reservoir for biasing said vertical flange (33*b*) in face-to-face frictional engagement with said depending bar (28, 28*a*) whereby the amplitude of oscillation of said device is lessened.

4,405,110
FIXTURE FOR PERFORATED BOARD

Alfred M. Gibbons, Dallas, Tex., assignor to Kanmark, Inc., Chanute, Kans.

Filed Feb. 24, 1982, Ser. No. 352,031
Int. Cl.³ B61L 5/00
U.S. Cl. 248—221.2 9 Claims



1. A bracket for supporting an article hanger from a perforated panel having vertically spaced and aligned apertures, said bracket comprising a body of unitary construction of plastic material have resilient characteristics, said body having a rear surface engageable with the panel, a top lug projecting from the rear face of the body and extendible through an aperture in the panel, a bottom lug aligned with the top lug and projecting from the body and extendible through a lower aperture in the panel, at least one of said lugs including means engaging the rear surface of the panel and exerting a forward gripping force thereon to securely mount the bracket on the panel, said body including a flexible resilient web portion supporting the bottom lug to enable arcuate swinging movement thereof to facilitate insertion of and removal of the bottom lug in relation to the lower aperture.

4,405,111
INTERJOIST SUPPORT

Thomas C. Lennon, 1473 Pecan Tree Dr., Germantown, Tenn. 38138

Filed Apr. 22, 1981, Ser. No. 256,545
Int. Cl.³ F16M 13/00
U.S. Cl. 248—544 5 Claims



1. An extensible support for spaning between spaced joists,

studs and the like elements having opposed surfaces, which comprises:

outer and inner telescopically extensible rod-like members having internal and external threads, respectively, threadedly engaging one another and each having a free outer end portion with threaded lag screw means affixed thereon for screwing into one of said elements,

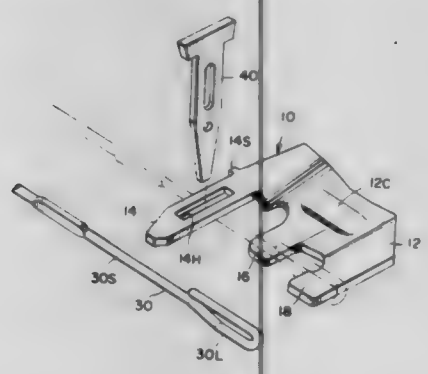
the pitch angles of the threads on said members and said lag screw means being such that rotation of either of said members relative to the other in a direction such as to extend said support rotates the lag screw means thereon in that direction which screws the lag screw means thereon into an element.

4,405,112

GANG FORM BOLT

Max Doubleday, Caldwell, and Anthony J. Gallis, Lake Hiawatha, both of N.J., assignors to Harsco Corporation, Camp Hill, Pa.

Filed Apr. 9, 1982, Ser. No. 367,108
Int. Cl.³ E04G *17/00*
U.S. Cl. 249—207 **15 Claims**



1. A device having at least a tie rod holding bolt for holding a tie rod passing through abutting frames of prefabricated panel units and keeping gang form sections in place, the frames having mating slots, the tie holding bolt comprising:

a body portion;

a slot leg extending from a first end of said body portion for entry through the mating slots;

a tie rod engaging leg extending from a second end, opposite said first end, of said body portion, said tie rod engaging leg extending parallel to said slot leg and in the same direction as said slot leg;

a middle leg extending from said body portion, spaced from and between said slot leg and said tie rod engaging leg and extending in the same direction as said slot leg and sid tie rod engaging leg; and wherein said tie rod engaging leg lies in a substantially horizontal plane, and said slot leg and said middle leg are both outside of said substantially horizontal plane of said tie rod engaging leg, and said middle leg and said slot leg are adapted to straddle a tie rod engaged to said tie rod engaging leg with said middle leg abutting the frames, wherein

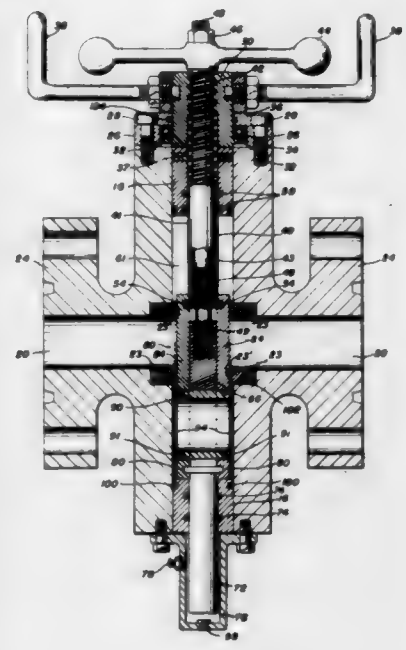
said slot leg and said middle leg are disposed on opposite sides of said substantially horizontal plane of said tie rod engaging leg, and wherein said tie holding bolt is adapted to resist tipping by the resistance of a tie rod from bending a straight portion of the tie rod.

4,405,113

RECIPROCATING EXPANDABLE GATE VALVE

Robert L. Erwin, deceased, late of Farmington, N. Mex., and by Josiephine Reed Erwin, executrix, 1702 N. Mesa Verde, Farmington, N. Mex. 87401, assignors to Josiephine Reed Erwin, Farmington, N. Mex.

Filed May 11, 1981, Ser. No. 262,791
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—168 **22 Claims**



1. A gate type valve unit comprising:

a valve body including first and second aligned flow passageways having facing spaced end portions separated by a transverse gate chamber;

a gate mounted for reciprocation along a gate path of movement in said gate chamber between a closed position blocking said spaced end portions from communication with each other and an open position permitting communication of said end portions, said gate including:

first and second seal blocks mounted for movement transversely with respect to said gate path of movement toward and away from said facing spaced end portions of said flow passageways when said gate is in its closed position;

a central gate block positioned between said first and second seal blocks;

a gate conduit extending through said gate and aligned with said facing end portions of said flow passageways when said gate is in its open position for permitting flow from one of said flow passageways through said gate conduit to the other of said flow passageways, said gate conduit being slidably and sealingly mounted in each said seal block thereby permitting said transverse movement of each said seal block when said gate is in its closed position; and camming means internally of said gate for moving said first and second seal blocks toward said facing end surfaces of said flow passageways to effect sealing contact therewith;

main stem means connected on one end to said gate and mounted for reciprocation in said valve body for effecting movement of said gate between its closed position and its open position; and

cam drive means mounted for axial movement relative to said main stem means for actuating said camming means, said cam drive means comprising a cam drive shaft having a first thread section threadably mounted in said main stem means for effecting axial movement of said cam drive shaft relative to said main stem in response to rotation of said cam drive shaft, and said gate additionally including connector means between said main stem and said seal blocks precluding relative movement of the seal blocks in the direction of the axis of the main stem while permitting relative movement perpendicular to the axis of the main

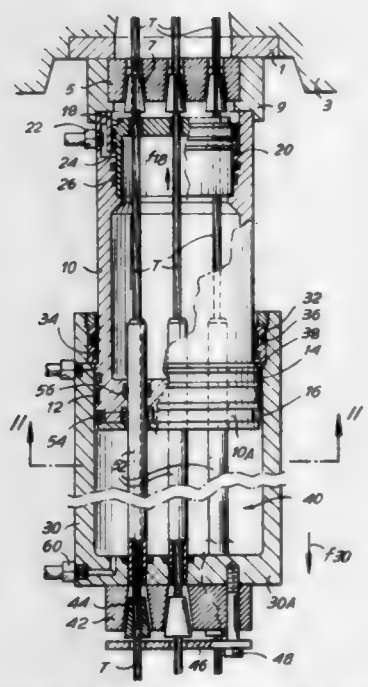
stem and wherein said camming means comprises first and second cam means extending along vertical side edges of first and second faces of said central gate block facing said seal blocks and having a threaded aperture in which one end of said cam drive shaft is threadably received so that rotation of said cam drive shaft effects movement of said central gate block relative to said seal blocks in a direction parallel to the axis of the main stem and wherein said seal blocks each include first and second cam means extending along vertical side edges thereof drivingly engaged with the cam means of the central gate block.

4,405,114

JACK FOR TENSIONING CABLES IN PRESTRESSED CONCRETE STRUCTURES

Romualdo Macchi, Via S. Paolo 31, Pisa, Italy

Filed May 29, 1981, Ser. No. 268,157
Claims priority, application Italy, Jun. 12, 1980, 9464 A/80
Int. Cl.³ E21B *19/00*
U.S. Cl. 254—29 A **7 Claims**



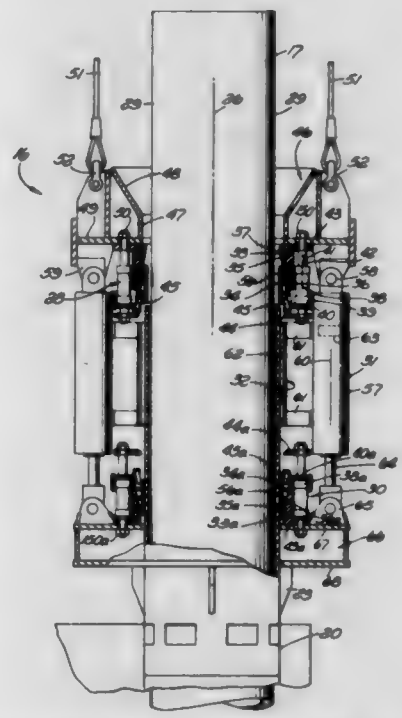
1. Jack for tensioning a plurality of individual linear tensioning means in the form of individual cables made up of sheathed strands, wires, rods or the like, for prestressing concrete structures containing such linear tensioning means and which linear tensioning means individually extend outwardly from the corresponding concrete structure through a distribution plate for anchoring to anchoring head means thereat, comprising a cylinder-piston system including a cylinder member and a piston member, such two members forming a variable volume chamber therebetween and being arranged for relative slidable movement toward and away from each other to extend and retract the jack, one of the members being arranged as an adjacent member for acting operatively against such distribution plate and the other of the members being arranged as a remote member for engaging operatively such plurality of linear tensioning means which extend outwardly through the distribution plate to tension the linear tensioning means upon relative movement of the members away from each other to extend the jack, the cylinder member having a closed end provided with a centrally unobstructed cylinder end wall extending continuously thereacross and an open end for slidably operatively receiving the piston member, and the piston member having a centrally unobstructed end face extending continuously thereacross and forming a corresponding centrally unobstructed continuous piston working surface disposed in opposed facing relation to the cylinder end wall and being relatively movable toward and away from the cylinder end wall to vary the volume of the chamber between the members as the members move relatively toward and away from each other to retract and extend the jack and constituting the piston working surface used for extending the jack to tension the linear tensioning means, and a plurality of individual guide pipes arranged in spaced apart relation and individually operatively extending correspondingly through the cylinder end wall, the chamber and the piston end face in any position of relative movement of the members and being operatively mounted on one of the members and slidably arranged relative to the other member, for operatively individually receiving a corresponding linear tensioning means therethrough from the distribution plate for operative engagement with the remote member.

4,405,115

GRIPPING JACK SYSTEM

George I. Boyadjieff, Anaheim, Calif., assignor to Varco International, Inc., Orange, Calif.

Filed Feb. 20, 1981, Ser. No. 236,298
Int. Cl.³ B66F *1/08*
U.S. Cl. 254—106 **15 Claims**



1. The combination comprising first and second members, and jacking mechanism for moving said members along an axis relative to one another, said jacking mechanism comprising:

two structures which are relatively axially movable and transmit force in opposite directions to said two members respectively; and

power operated means for moving said two structures axially relative to one another and thereby jacking said two members axially relative to one another;

one of said structures including a slip bowl adapted to be urged axially by said power actuated means, and at least one slip engaging said bowl in a relation to be cammed thereby against said first member in gripping relation;

said second member having a portion extending to a location at which it can apply axial force to said slip in a grip tightening direction upon relative axial actuation of said members by said power operated means.

4,405,116

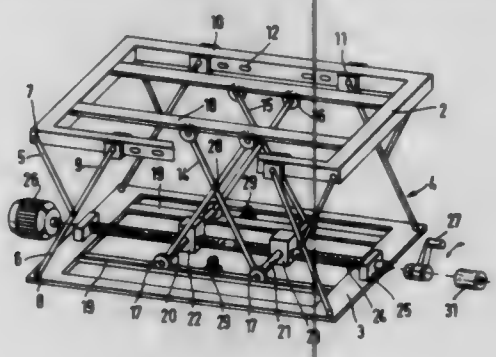
ADJUSTABLE PEDESTAL TRESTLE FOR THEATER STAGES OR THE LIKE

Hans-Jochen Eisenberg, Triebelsheide 59, 5600 Wuppertal 1, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,806
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003392
Int. Cl.³ B66F *3/22*
U.S. Cl. 254—122 **18 Claims**

1. An adjustable pedestal trestle comprising a top frame

means, a platform carried by said top frame means, and four supporting scissors means each having at least three legs, one leg of each of said four supporting scissors means is connected to a corner area of the top frame means for supporting the platform equally in a raised in-use position, characterized in that means are provided for vertically lifting the platform including at least one lifting scissors means arranged centrally below the platform within an area defined between the four



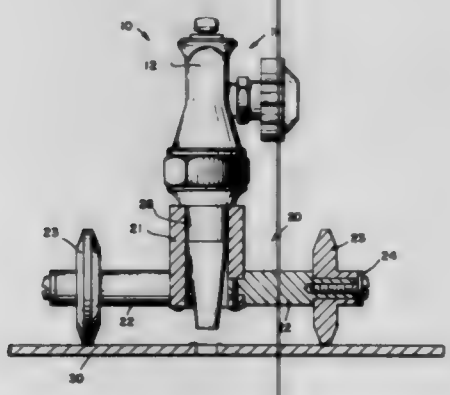
supporting scissors means, said lifting scissors means being extensible in a direction toward and away from an underside of the platform, in that means are provided for locking the supporting scissors means in an adjusted raised in-use position so as to enable the lifting scissors means to be moved in a direction away from the underside of the platform in the raised in-use position, and in that means are provided for driving the lifting scissors means.

4,405,117

GUIDING ATTACHMENT FOR A CUTTING TORCH

Raymond O. Ohlaug, 23033 Oxnard St., Woodland Hills, Calif. 91367

Filed Sep. 28, 1981, Ser. No. 305,973
Int. Cl.³ B23K *7/10*
U.S. Cl. 266—66 **2 Claims**



1. A guiding attachment for use in combination with a cutting torch including:

a. a nozzle having a truncated conical tip portion and a cylindrical portion;

b. an elongated member mechanically coupled to the nozzle;

c. gas supplying means for supplying gas to the nozzle mechanically coupled to the elongated member; and

d. a handle mechanically coupled to the elongated member, said guiding attachment comprising:

a. a cylindrical member having a bore into which the nozzle is placed;

b. a pair of metal axial rods mechanically coupled to said cylindrical body;

b. a pair of metal wheels, each of which is rotatably coupled to one of said metal axial rods; and

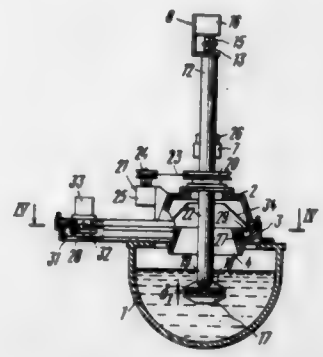
c. coupling means for coupling the cylinidrical portion of the nozzle of the cutting torch to said cylindrical member.

4,405,118

APPARATUS FOR REFINING MOLTEN METALS FROM INSOLUBLE IMPURITIES

Valentin I. Belsky, ulitsa Petukhova, 68, kv. 61; Serafim N. Suturin, ulitsa Kozhevnikova, 2, kv. 22; Gennady I. Orlov, ulitsa Vatutina, 27, kv. 20; Anatoly V. Dolgov, Morskoi prospekt, 36, kv. 30; Boris K. Goncharov, ulitsa Zorge, 105, kv. 38; Vladimir I. Antonov, ulitsa Petukhova, 26, kv. 47, and Jury A. Naryshkin, ulitsa Bijukhera, 7, kv. 55, all of Novosibirsk, U.S.S.R.

Filed Jan. 21, 1982, Ser. No. 341,506
Int. Cl.³ C22B *9/02*
U.S. Cl. 266—227 **5 Claims**



1. Apparatus for refining molten metals from insoluble impurities, comprising:

a housing associated with a removable base in which an opening is formed;

an elongate filtering device mounted on said housing and passing through said opening formed in said base;

a filtering member mounted on an end region of said filtering device;

means mounted on said housing for rotating said filtering member about an axis of rotation;

means mounted on said housing for longitudinally reciprocating said filtering member over a path of travel which passes through said opening formed in said base;

a trough formed in said removable base of said housing, said trough forming a closed loop and extending around said opening formed in said base through which said filtering member passes; and

means situated within said closed-loop trough for engaging and removing impurities from said apparatus which are discharged from said filtering member into the closed-loop trough.

4,405,119

OLEOPNEUMATIC SUSPENSION WITH VARIABLE THROTTLE ORIFICES, ESPECIALLY FOR AIRCRAFT LANDING GEAR

Jean Masclet, Paris, and Andre Turiot, Morsang S/Orge, both of France, assignors to Messier-Hispano-Bugatti, Montrouge, France

Continuation of Ser. No. 968,471, Dec. 11, 1978, abandoned. This application Jul. 22, 1981, Ser. No. 285,790
Claims priority, application France, Dec. 12, 1977, 77 37408
Int. Cl.³ F16F *9/342*
U.S. Cl. 267—64.22 **12 Claims**

1. An oleopneumatic suspension, comprising:

two hollow movable members which are movable relatively to each other, one of said movable members being movable within said other of said movable members;

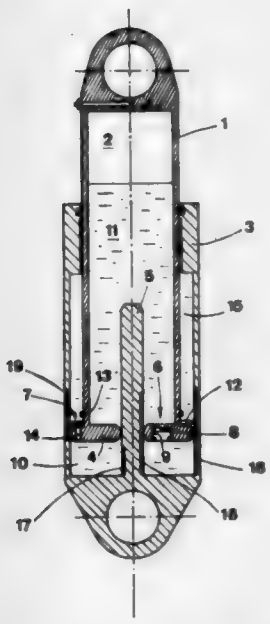
piston means operatively intercoupled between said two movable members, said piston means having an equilibrium position, said piston means together with said one movable member separating the other of the two hollow members into at least first, second and third variable volume chambers, the volume of said second and said third chambers being variable and in opposition to each other,

said three chambers each containing hydraulic liquid, said piston means having its face in contact with said liquid;

said one movable member including a hollow rod having one end enclosing a pneumatic spring and the other end fixed to said piston means, and said other movable member being a cylinder;

a guide rod fixed with a base of said other of said movable members;

said piston means comprising a first valve having an opening and including first throttle means between said first chamber and said second chamber, said first throttle means being oriented for providing for free flow in a first direction of the hydraulic liquid from said first chamber to said second chamber through said first valve and throttling the hydraulic liquid passing during its flow from said second chamber to said first chamber through said piston means, and a second valve having an opening and including second throttle means between said second chamber and said third chamber, said second throttling means being oriented for providing for free flow in a second direction of the hydraulic liquid opposite to said first direction from said second chamber to said third chamber and throttling the flow of the hydraulic liquid passing during its flow from said third chamber to said second chamber through said piston means;



said first throttling means cooperating with the opening of said first valve to provide throttling in a compression phase of said two hollow movable members and said second throttling means cooperating with the opening of said second valve to provide throttling in an extension phase of said two hollow movable members;

said first throttling means including a first throttling orifice cooperating with said first valve opening, and said second throttling means including a second throttling orifice cooperating with said second valve opening, said first throttling orifice having a cross-sectional opening greater than the cross-sectional opening of said second throttling orifice;

by-pass groove means, including one by-pass means in said second chamber and another by-pass means in said third chamber and each of said by-pass means having a portion beginning substantially proximate to said piston means when in its said equilibrium position;

said by-pass groove means including a pair of grooves in the outer face of said guide rod, one of said pair of grooves being longer than the other, said longer groove extending past said piston means and connecting said first and said second chambers when said piston means is in said neutral postion, and said one of said two by-pass grooves being shorter and being only in said second chamber in said equilibrium position; and

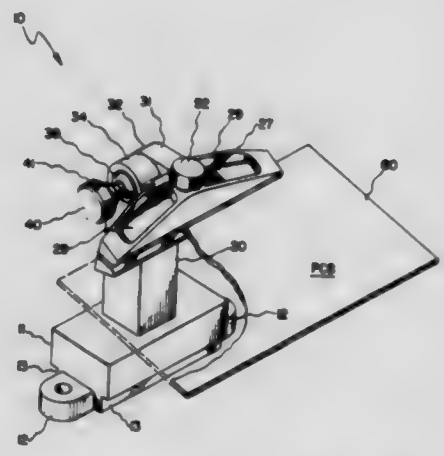
each of said grooves having an effective section which varies in dependence on the position and the direction of displacement of said piston means in the outer of said two hollow movable members so that over at least one predetermined distance on both sides of said equilibrium position of said piston means, under load or in the absence of an external load being applied, said first and said second grooves which provide throttling in the compression and extension phases have cross-sections which are respectively greater than those of said first throttling orifice ensuring throttling in the compression phase and said second throttling orifice ensuring throttling in the extension phase for the remainder of the distance which said piston means moves.

4,405,120

PRINTED CIRCUIT BOARD HOLDER

Marvin Kober, Spring Valley, N.Y., assignor to O.K. Machine and Tool Corporation, New York, N.Y.

Filed Jun. 5, 1981, Ser. No. 270,971
Int. Cl.³ B25B 1/04
U.S. Cl. 269—71 8 Claims

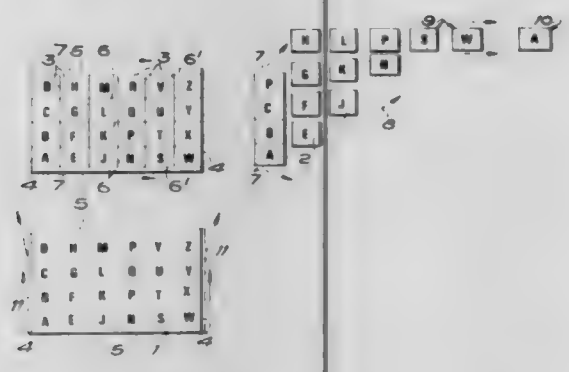


1. A printed circuit board holder comprising a base member having mounting means comprising means including a bottom surface for supporting the base member on a work surface and means adapted for clamping the base member in a vise, an upwardly-extending support member rotatably mounted on the base member and rotatable over a full 360° in a horizontal plane, said rotatable mounting comprising a fixed post on one of the support member and the base member, and a bored member for receiving and frictionally engaging the fixed post on the other of the support member and base member, said post being resilient and having a slightly outwardly tapered slotted end and a substantially annular protuberance thereon, and the bored member having an annular recessed section for receiving the annular protuberance on the tapered end of the post when the latter engages the bore on the bored member in a frictionally-engaging relationship, thereby allowing the full 360° rotation of the support member about the base member while permitting the support member to firmly hold any set position without the need for external clamping, a board holding member pivotably mounted on the end of the rotatable support member and having spring-biased opposed jaws for receiving and clamping an extended edge portion of a printed circuit board, means for adjusting the spring biasing of the opposed board receiving jaws, and means for holding the pivotable mounting of the board holding member in a selected pivotable position, said pivotable mounting being configured to allow pivoting of the clamped board in a vertical plane over an angle exceeding 180°.

4,405,121
CUTTING AND COLLATING SHEETS OF PAPER, CARD, ETC.

James Hill, 116 Silverdale Rd., Sheffield S11 9JL, England

Filed Sep. 8, 1981, Ser. No. 299,847
Claims priority, application United Kingdom, Sep. 5, 1980, 8028794
Int. Cl.[3] B65H 39/06
U.S. Cl. 270—58 12 Claims

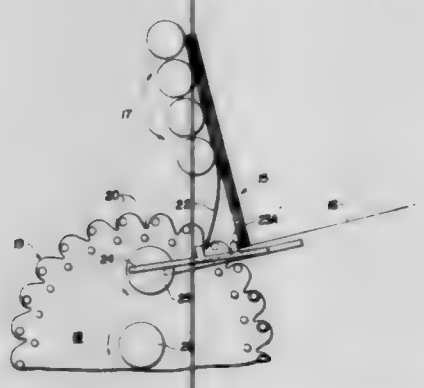


1. A method of cutting a discrete rectangular sheet into a plurality of pieces in a plurality of rows and collating all the cut pieces comprising first forming a plurality of slits extending in spaced relationship parallel to a first pair of opposite edges of the sheet, with all the slits ending short of at least one of the other pair of opposite edges of the sheet, to form at least one continuous extending, uncut edge portion, said slits dividing the sheet into separate, elongated strips attached together by the uncut edge portion, next cutting along a plurality of lines parallel to that other pair of opposite edges and with at least one of the lines of cut intersecting the ends of the slits adjacent the at least one uncut edge portion to separate said at least one uncut edge portion from said strips, then feeding the pieces in the lengthwise direction of the uncut edge portion left beyond the respective ends of the cut ends of the slits and allowing said uncut edge portion to fall away, thereafter allowing the pieces at one end of the rows perpendicular to the direction of feed to drop to a level below the remaining pieces, transversely feeding the remaining pieces towards the dropped pieces, and superimposing the remaining pieces in the respective rows in order on to the respective previously dropped pieces, and finally allowing the batches of pieces to fall successively on to a substantially stationary support, whereby a stack of the pieces is formed in definite order.

4,405,122
HIGH SPEED FEEDING AND TRANSPORT OF PAPER SHEET PRODUCTS

Hans G. Faltin, 4135 Wilshire Dr., York, Pa. 17402

Filed Jun. 5, 1981, Ser. No. 270,827
Int. Cl.[3] B65H 5/10
U.S. Cl. 271—8 A 15 Claims

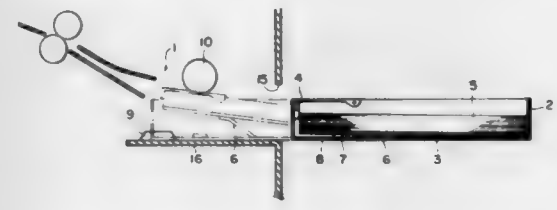


1. The method of feeding and transporting paper sheet products comprising the steps of, stacking the paper sheet products against a stop to form a stack, bending away from the stack individually one at a time one edge of a sequence of single paper sheet products held in place by the stop, seating firmly a plurality of the products in the stack against said stop against a metered gage separating a plurality of sequential products a predetermined distance, grasping the edge of the single paper sheet product when bent away from the stack and seated in the gage, and pulling a plurality of the grasped paper sheet products from the stack in a substantially shingled array for transport away from the stack.

4,405,123
AUTOMATIC PAPER SHEET FEEDING DEVICE FOR COPYING MACHINE

Kokichi Takeyama; Kiyoshi Sugawara, and Yasuyuki Fukagawa, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1981, Ser. No. 313,704
Claims priority, application Japan, Oct. 21, 1980, 55-146248
Int. Cl.[3] B65H 3/30
U.S. Cl. 271—22 4 Claims



1. An automatic paper sheet feeding device for a copying machine having a stack of paper sheets mounted on a base plate in a cassette, the plate being biased rotatively upwardly by a spring so that an uppermost paper sheet of the stack is in contact with a feeding roll to feed the paper sheets to the copying machine one by one with a rotation of the feeding roll, comprising:

a magnet fixedly secured on a bottom surface of the cassette, the magnet holding the base plate in parallel with the bottom surface of the cassette against the spring force when the base plate is close to the magnet;

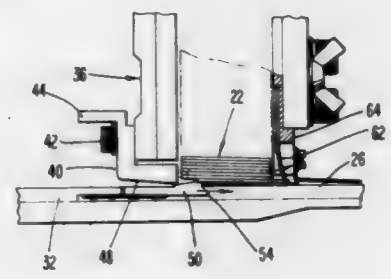
a slot formed in a front portion of the cassette; and

a cam member, the cam member being able to enter into the slot when the cassette is inserted into the automatic paper sheet feeding device and being engageable with a front edge of the base plate to release the base plate from the magnetic holding force of the magnet to allow the base plate to rotatingly move upwardly by the force of the spring.

4,405,124
TAG FEED MECHANISM

Michitoshi Watanabe, Nagoya, Japan, assignor to Tomoe Special Machine Co., Ltd., Nagoya, Japan

Filed Dec. 17, 1981, Ser. No. 331,784
Int. Cl.[3] B65H 3/24
U.S. Cl. 271—135 15 Claims



1. A tag feed mechanism for feeding tags one at a time from a stacked tag supply to a tag attaching station, comprising:

a base;

a tag push member slidably disposed on said base for engag-

ing and moving a tag from the tag supply to the tag attaching station;

a pusher element resiliently coupled to the distal end of said tag push member; and

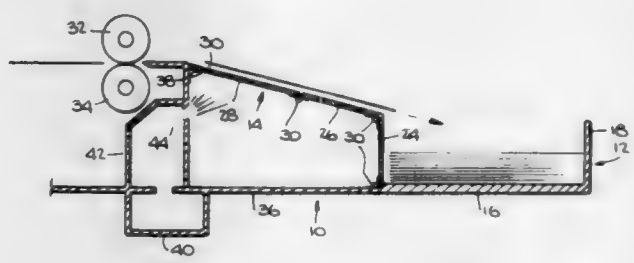
a shutter element disposed upstream of the stacked tag supply and having a bottom surface disposed at a distance above said base equal to the thickness of an individual tag in said stacked tag supply, the bottom surface of said shutter element cooperating with said pusher element for displacing said pusher element from a rest position to a tag pickup position as said tag push member moves from the tag supply to the tag attaching station, whereby only a single tag is moved out of the stacked tag supply.

4,405,125

PAPER STACKING DEVICE

Walter J. Kulpa, Norwalk, and John R. Paulik, Newtown, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 14, 1981, Ser. No. 301,719
Int. Cl.³ B65H *29/24*
U.S. Cl. 271—195 **2 Claims**



1. A levitating paper stacking device for stacking different length papers, comprising:

a box-like receptacle having a bottom wall, a front wall, and a pair of sidewalls;

a fold-down, four bar linkage, perforated ramp, said ramp being movable between a raised position for stacking a shorter length paper and a stored position for stacking a longer length paper, said ramp having three hinged segments wherein the forwardmost segment constitutes the rear wall of the receptacle when said ramp is in its raised position and wherein the forwardmost and middle segments constitute an addition to the bottom wall of the receptacle when the ramp is in its stored position; and

means for directing a levitating air flow toward the rearwardmost segment of said ramp, wherein said airflow impinges on said rearwardmost segment when said rearwardmost segment is in its raised and stored positions, whereby the different lengths papers are conveyed to the front wall of the box-like receptacle with a minimum of bounceback.

4,405,126

AIR REJECT GATE

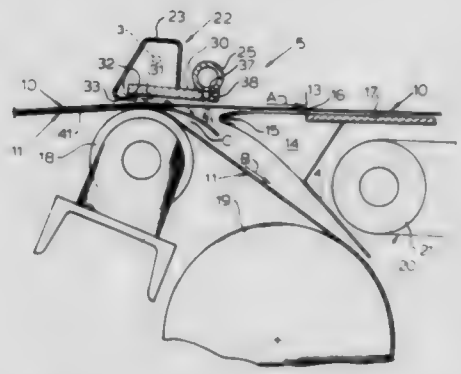
Kenneth G. Frye, South Egremont; Donald R. Grody, Pittsfield, and Gerald A. Guild, Dalton, all of Mass., assignors to Beloit Corporation, Beloit, Wis.

Filed Jan. 26, 1981, Ser. No. 228,260
Int. Cl.³ B65H *29/62*
U.S. Cl. 271—279 **5 Claims**

1. A gate apparatus for use in a sheet transfer mechanism in which a seriatim flow of sheets is conducted there-through along a generally lateral main path by virtue of at least upper surface engagement with a laterally running transport tape means, said apparatus comprising:

at least one branch path leading downwardly and away from said main path and defined by a downwardly running transport tape means adapted for undersurface engagement with said sheets, and

a control mechanism overlying said main and branch paths for directing each sheet along either said main or said branch paths comprising a first low pressure means for discharging from a first manifold a continuous first fluid flow laterally and parallel across the upper surface of said sheet for causing atmospheric air pressure beneath said sheet to force said sheet upper surface into driving engagement with said laterally running transport tape means and maintain said sheet in said main path and a second high pressure means for intermittently discharging from a second manifold a second fluid flow downwardly against



the upper surface of said sheet to deflect said sheet out of driving engagement with said laterally running transport tape means and into said branch path for driving engagement with said downwardly running transport tape means, said first and second manifolds being consecutively disposed on a mounting base with said first manifold upstream of said second manifold, said mounting base being pivotable about a bar extending through said first manifold.

4,405,127

DOORWAY MOUNTED HORIZONTAL BAR

Jack V. Miller, Sierra Madre, Calif., assignor to Gravity Guidance, Inc., Pasadena, Calif.

Filed May 10, 1982, Ser. No. 376,513
Int. Cl.³ A63B *1/00*
U.S. Cl. 272—62 **8 Claims**



1. A doorway mounted horizontal bar comprising,

a pair of telescoping tube members,

end plates rigidly attached at opposite ends of said tube members, said end plates vertically arranged and having opposite side edges tapering downwardly and laterally inwardly,

mounting brackets adapted to be secured to opposite sides of the doorway supporting said end plates, said mounting brackets each having inner and outer parallel walls interconnected by laterally disposed end walls and forming a passageway open at the top and corresponding in shape to said end plates to thereby firmly hold and support said telescoping members and limit them from longitudinal movement or downward vertical movement, and

each of said outer walls comprising a pair of nonconnecting lips projecting towards one another from each of said end walls, each of said lips having opening means for mounting said bracket to the side frame of said doorway and limiting relative movement between said lips, said inner wall of each of said mounting brackets comprising a pair of lips projecting towards one another from each of said

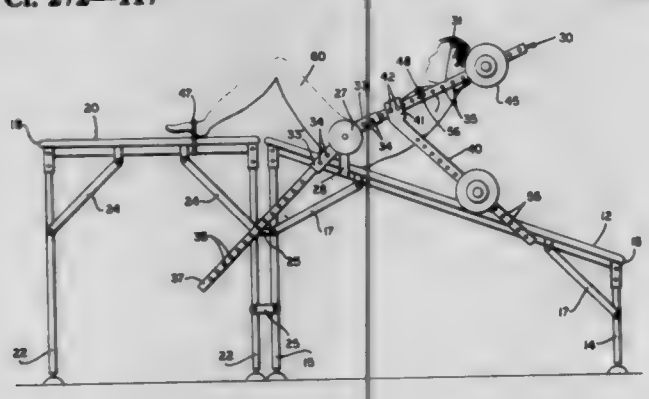
end walls and having upper and lower portions, said lips being intergrally connected only at said lower portion to form a notch in said upper portion adapted to receive the adjacent portion of said telescoping tube member, and said connection at said lower portion of said inner walls preventing outward deflection of said lips when downward force is exerted on said telescoping members mounted in said brackets.

4,405,128

MUSCULAR EXERCISE APPARATUS AND METHOD

Thomas M. Mclaughlin, Dadeville, Ala.; William D. McLeod, Columbus, Ga.; Nels H. Madsen, Auburn, Ala., and Ronald G. Peyton, Marietta, Ga., assignors to Totem, Inc., Atlanta, Ga.

Filed Dec. 11, 1980, Ser. No. 215,227
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—117 **4 Claims**



1. A sit-up exercise apparatus comprising:
a table;
a first elongated weight arm pivotally mounted at one end thereof about a pivot axis adjacent to the upper surface of said table said arm supporting a weight being spaced there-along from said pivot axis;
chest-engaging means attached to said first weight arm spaced apart from said pivot axis for engaging the chest of a person so as to raise and lower the first arm while performing a sit-up exercise while being positioned on the table;
a second elongated weight arm having a weight attached thereto and extending at an angle from said first weight arm so as to extend behind the axis extending from the shoulder to the hip of a user, said table being elevated to permit free movement of said second weight arm with said first weight arm; and
means for adjustably retaining said second weight arm at any one of a plurality of positions along said first weight arm.

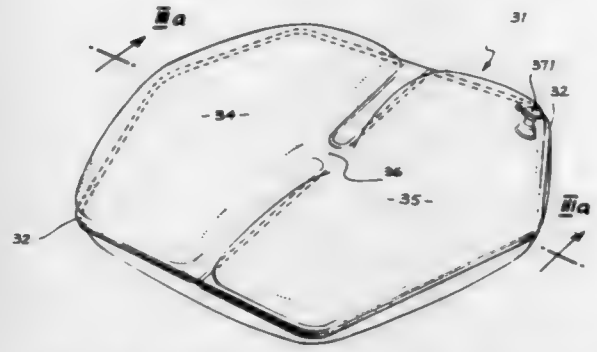
4,405,129

THERAPEUTIC EXERCISE DEVICE

Joan Stuckey, 166 Burns Rd., Turramurra, Sydney, New South Wales, Australia 2074

Filed Apr. 13, 1981, Ser. No. 253,394
Claims priority, application Australia, Apr. 17, 1980, PE 3165; Nov. 18, 1980, PE 6527; Feb. 4, 1981, PE 7472
Int. Cl.³ A63B *23/04*
U.S. Cl. 272—130 **9 Claims**

1. A theraputic exercise device comprising two closed containers formed from flexible, substantially inextensible sheet material and having substantially the same shape, said containers being located one above the other with no fluid communication between said two containers; the upper one of said two containers being shaped to permit compression of same by at least two portions of a human body, being filled with fluid to partially pressurise the interior of said upper container with the pressure therein being less than that required to make said upper container rigid; said upper container being formed into at least two compartments by partions; and each of said compartments being in direct fluid communication with at least one other of said compartments via at least one passage to restrict the flow of fluid between said compartments in response to an external force applied to at least one of said compartments by movement of one of said human body portions to reduce the



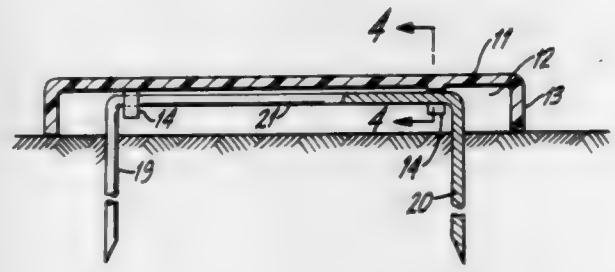
volume of said one compartment, whereby the remainder of said compartments expand in volume thereby exerting a movement inducing force on the other ones of said human body portions.

4,405,130

LOCATION INDICATOR FOR USE IN BASEBALL AND SIMILAR GAMES

David A. Mullany, 275 Bridgeport Ave., Shelton, Conn. 06484

Filed Apr. 23, 1981, Ser. No. 256,706
Int. Cl.³ A63B *71/02*
U.S. Cl. 273—25 **9 Claims**



1. A ground anchored base for baseball or the like comprising:
a plate extending in a plane and having a top surface and an underside,
a ground anchor having prongs arranged for anchoring insertion into the ground and which are integrally interconnected by an intermediate rod providing an engagement between said ground anchor and said plate, and
means fixedly connected to the plate for snap lockingly resiliently connecting the intermediate rod of the ground anchor to the plate in spaced relation to the underside of the plate for fixing the plate against relative movement within its said plane when the prongs are inserted into the ground.

4,405,131

PUZZLE CUBE

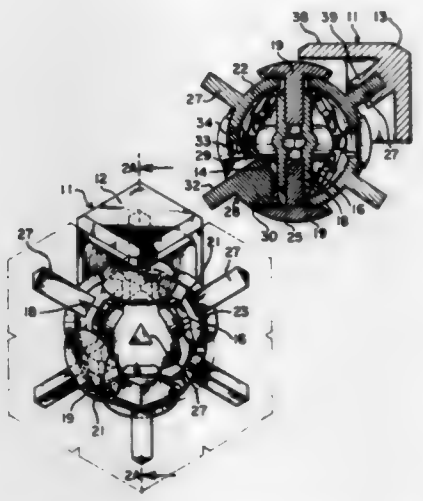
Tibor Horvath, 1877 E. 27th St., Brooklyn, N.Y. 11229

Filed Sep. 25, 1981, Ser. No. 305,479
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—153 S **12 Claims**

1. A puzzle device comprising;
an inner core member;
a plurality of mutually spaced retainer members connected to and spaced from and surrounding said core member and having inside faces lying in a spherical plane concentric with said core member;
a plurality of peripherally spaced slide members underlying said retainer member inside faces and each being movable

in circular paths about orthgonally related axes intersecting at the center of said spherical plane;

a face member connected to each of said slide members and disposed outwardly of said slide and retainer members; including one interlocking member having a plurality of



rib elements in locking engagement with three of said retainer members and a plurality of tongue elements in releasable locking engagement with three of said slide members; and

a face member connected to said interlocking member.

4,405,132

TARGET MEMBER SIMULATING AN OBJECT TO BE FIRED ON

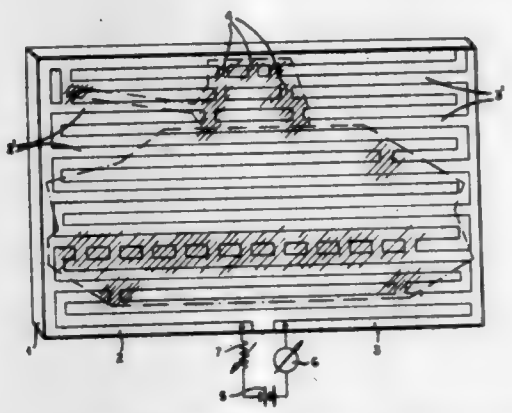
Claude Thalmann, Muri, Switzerland, assignor to Polytronic AG, Muri, Switzerland

Filed Sep. 3, 1981, Ser. No. 299,186

Claims priority, application Switzerland, Sep. 4, 1980, 6638/80

Int. Cl.³ F41J *1/00*

U.S. Cl. 273—348.1 3 Claims



1. A device usable in firearm practice, comprising an upright target member having a front surface provided with a multiplicity of radiation-emitting areas simulating the thermal signature of an object to be shot at,

said front surface being covered by two interleaved arrays of parallel conductor strips, said radiation-emitting areas being constituted by short patches of resistance material bridging adjacent conductor strips of said arrays,

the conductor strips of said arrays being connected across a power supply for energizing said patches in parallel to make them act as localized heat sources.

4,405,133

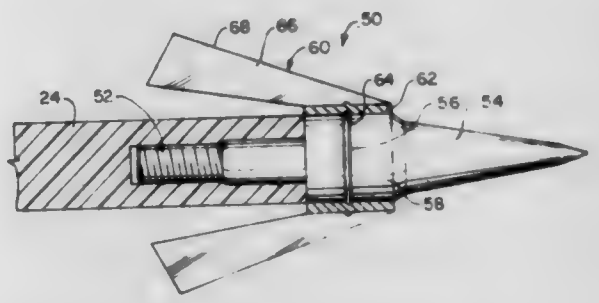
PRACTICE ARROW ADAPTER SIMULATING HUNTING ARROW CHARACTERISTICS

Clifford S. Cartwright, Jr., 1612 Scott Rd., Pylesville, Md. 21132

Filed Sep. 29, 1982, Ser. No. 428,136

Int. Cl.³ F41B *5/02*

U.S. Cl. 273—419 8 Claims



1. A system for use with an arrow having a shaft with a forward portion, comprising a practice tip for shooting into a practice target, means for securing the practice tip to a said forward portion, means adapting said practice tip for simulating a hunting head, and means preventing said means adapting from embedding in said practice target with the practice tip.

4,405,134

NON-CONTACTING GAS SEAL FOR RELATIVELY ROTATING PARTS

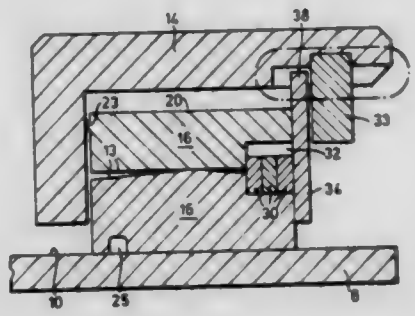
Raymond F. Sargent, and Paul Newman, both of Bristol, England, assignors to Rolls-Royce Limited, London, England

Filed Jan. 20, 1982, Ser. No. 341,086

Claims priority, application United Kingdom, Jan. 31, 1981, 8103023

Int. Cl.³ F16J *15/16*

U.S. Cl. 277—3 3 Claims



1. A non-contacting seal for reducing fluid flow between relatively rotatable components of a machine comprises a seal ring having a sealing face, the seal ring being adapted to be disposed, in operation, on one of the components with its sealing face confronting a co-operating sealing face on the other component to form a seal therebetween, means for locating the seal ring in a housing with freedom of movement in a direction normal to said sealing faces, the seal ring being formed in a plurality of segments, each having a face which includes a sealing area and a lifting area said sealing area forming part of the sealing face of the ring, and further means for providing a seal between the ring and the housing, characterised in that:

the lifting area of each segment extends from the leading end to the trailing end thereof,

the leading end of each segment has a surface arranged to overlap a surface at the trailing end of an adjacent segment in such a manner as to provide a step between the ends of the adjacent segments whereby, in use, a tapering gap is produced between at least the lifting area of each segment face and the confronting sealing face of said other member, which converges towards the trailing end of each segment,

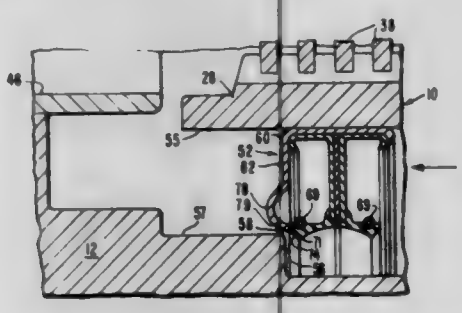
the means for forming a fluid seal between the seal ring and the housing comprises a narrow land on that side-face of each of the segments which lies on the lower pressure side of the seal ring, said land contacting a confronting sealing face on the housing and providing a fulcrum to allow tilting of each pad relative to the housing, and at least one of the overlapping surfaces of the segments is contoured to provide a second fulcrum to allow said tilting to take place.

4,405,135

WHEEL HUB AND SPINDLE SEAL

Donald L. Ries, Dearborn Heights, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jan. 11, 1982, Ser. No. 338,688
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—11 **6 Claims**



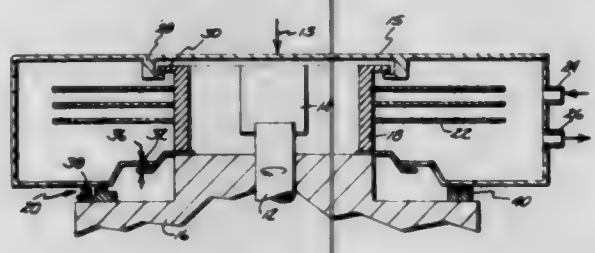
1. A fluid seal comprising:
an outer annular metal case formed to provide an axially extending web having a flange extending radially inward at one end thereof,
an inner annular metal member having a wall and a flange terminating in an edge of a given diameter,
means securing said outer case and said inner member together with said flange of said inner annular member extending radially inwardly relative to said metal case web, and
a resilient annular sealing element secured to said flange of said inner annular member and providing a sealing lip normally located at a first position radially inwardly of said edge of said inner member, said lip being displaceable radially outwardly to a second position located radially inwardly of said edge of said inner member, said radially inwardly extending flange of said outer case terminating in an edge located radially between said second position of said lip seal and said edge of said inner annular metal member and a portion of said radially inward extending flange of said outer metal case adjacent said edge is formed as an oblique surface sloping toward said sealing lip.

4,405,136

PNEUMATIC CARTRIDGE SEAL FOR COMPUTER DISC DRIVE CARTRIDGE

John W. Elsing, Minneapolis, and Steven D. Knopp, Bloomington, both of Minn., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Dec. 27, 1982, Ser. No. 453,401
Int. Cl.³ G11B *17/02*; F16J *15/46*
U.S. Cl. 277—12 **4 Claims**



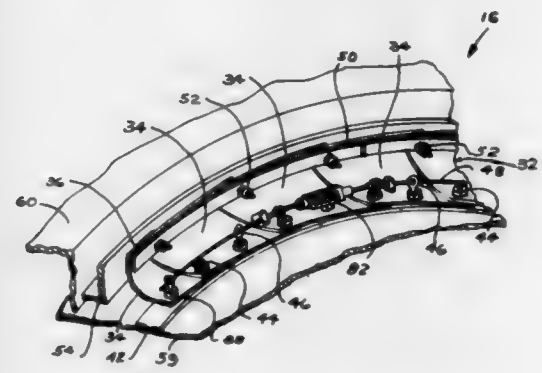
1. A cartridge disk drive seal for preventing contaminated air from entering into the interior of a cartridge through the running clearance between the cartridge housing and hub when the cartridge is mounted on the disk drive's spindle, comprising:
an annular stop mounted on said disk drive's spindle housing and positioned for abutment against the bottom of said cartridge housing; said annular stop having mounted therein across its top three concentric channels opening toward said cartridge housing;
an annular flexible tube seal mounted in an inner one of said channels;
an intermediate one of said channels connected to connection means for connection to a source of pressurized air;
an annular flap seal means mounted in an outer one of said channels; the portion of said annular, stop separating said intermediate channel and said outer channel adapted to allow pressurized air from said intermediate channel enter said outer channel and force said flap seal into abutment with the bottom of said cartridge housing.

4,405,137

METAL LEAF ROTARY SEAL FOR ROTARY DRUM

Samuel B. Webb, 450 Highland Ave., Naperville, Ill. 60540

Filed Oct. 29, 1982, Ser. No. 437,563
Int. Cl.³ F16J *15/32*; F27B *7/24*
U.S. Cl. 277—153 **6 Claims**



1. A rotary seal for sealing a large, high temperature rotary drum to a stationary hood where said drum is mounted for rotation with respect to said hood about an axis of rotation defining axial planes, said drum having a substantially circularly cylindrical surface near one open end thereof substantially coaxial with said axis of rotation, and said hood being open to the interior of said drum through said open end, said seal comprising:
a series of overlapping leaves of resilient metal disposed successively to encircle said cylindrical surface, each said leaf having an inner surface and an outer surface and a mounting end and a sealing end, with said mounting end affixed to said stationary hood, and said sealing end disposed at said cylindrical surface with said outer surface concave in a said axial plane, each said leaf extending from said mounting end to said sealing end obliquely relative to a said axial plane therethrough so that said sealing end is displaced circumferentially a substantial distance relative to said mounting end, and each said leaf further having a sealing edge on said outer surface between said mounting and sealing ends extending obliquely of a said axial plane, said sealing edge being disposed beneath the inner surface of an adjacent leaf,
a wear liner disposed on the inner surfaces of said leaves at their sealing ends for spacing said sealing ends from said cylindrical surface and having an inner surface on a side opposite said sealing ends for mating with said cylindrical surface, and
means for securing said sealing ends to said wear liner and forcing said inner surface of a respective leaf against said sealing edge of the respective adjacent leaf while leaving

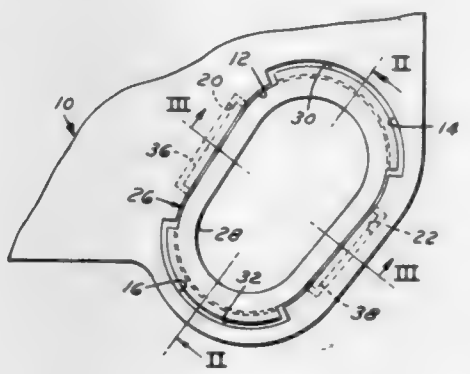
said respective sealing edge free to move relative to said respective inner surface upon flexure of said seal when said drum moves radially relative to said hood.

4,405,138

ENGINE GASKET ASSEMBLY

Robert R. Skrycki, Grosse Ile, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Sep. 27, 1982, Ser. No. 423,588
Int. Cl.³ F16J *15/12*
U.S. Cl. 277—235 B **5 Claims**



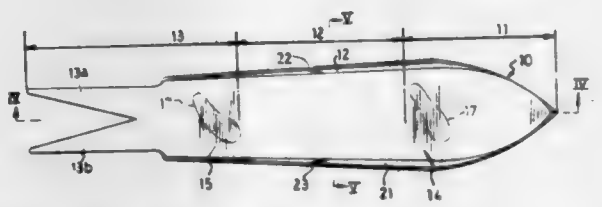
1. An engine gasket assembly adapted to being positioned between engine components, said gasket assembly comprising a gasket body having first and second planar surfaces and at least one opening for a fluid passage formed therethrough, a first pair of oppositely disposed recesses formed adjacent the opening in the first planar surface, a second pair of oppositely disposed recesses formed adjacent the opening in the second planar surface with the centerline therebetween at right angles to the centerline between said first pair of recesses, a molded rubber grommet having a tubular body portion mounted inside the opening, a first pair of oppositely disposed locking tabs formed on the outer surface of said grommet adjacent one face thereof and seated in said first pair of oppositely disposed recesses, and a second pair of locking tabs formed on the outer surface of said grommet adjacent the other face thereof and seated in said second pair of oppositely disposed recesses.

4,405,139

BOARDS FOR SLIDING ON SNOW

Kuniaki Kawahard, 5-8, Sakuragaokar, 4-Chome, Setagaya-ku, Tokyo, Japan

PCT No. PCT/JP79/00002, § 371 Date Sep. 5, 1980, § 102(e) Date Aug. 26, 1980, PCT Pub. No. WO80/01371, PCT Pub. Date Jul. 10, 1980
PCT Filed Jan. 5, 1979, Ser. No. 253,769
Int. Cl.³ B62B *17/00*
U.S. Cl. 280—12 H **6 Claims**



1. Board for sliding on snow, comprising a board body which includes nose, intermediate and tail portions, each of said nose and tail portions having such a thickness that it will not be deformed by the weight of a user placed thereon, said intermediate portion having such a thickness that it will be elastically bent by the user's weight, said board body being shaped into an inverted arch bend; a side plate mounted on each of the side edges of said board body to extend longitudinally thereof; and step-decks for the user's stance which are located on the respective connections between said nose and intermediate portions and between said intermediate and tail portions, said step-decks being inclined downwardly toward said intermediate portion; said tail portion having at least one pin tail configuration: characterized in that said pin tail includes a fin-box embedded therein at the bottom of said pin tail, said fin-box including a fin which is detachably mounted therewithin such that the fin will be released when a force is applied thereto that is stronger than a predetermined level.

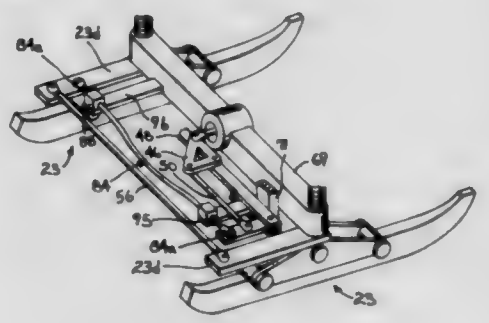
6. Board for sliding on snow, comprising a board body which includes nose, intermediate and tail portions, each of said nose and tail portions having such a thickness that it will not be deformed by the weight of a user placed thereon, said intermediate portion having such a thickness that it will be elastically bent by the user's weight, said board body being shaped into an inverted arch bend; a side plate mounted on each of the side edges of said board body to extend longitudinally along said nose portion, said intermediate portion and a part of said tail portion, each of said side plates being inclined upwardly from the corresponding side edge of the top surface of said board body; step-decks for the user's stance which are located on the respective connections between said nose and intermediate portions and between said intermediate and tail portions, said step-decks being inclined downwardly toward said intermediate portion; and said tail portion being shaped into a double-pin tail configuration which includes pin-tails of a tapered trigonal pyramid configuration.

4,405,140

BOBSLED

David B. Stevens, Oconomowoc Lake Village, Wis., assignor to Excalibur Automobile Corporation, West Allis, Wis.

Continuation-in-part of Ser. No. 179,012, Aug. 18, 1980, Pat. No. 4,348,033. This application Mar. 17, 1982, Ser. No. 359,123
Claims priority, application United Kingdom, Aug. 29, 1979, 7929979
Int. Cl.³ B62B *13/08*
U.S. Cl. 280—16 **4 Claims**



1. A bobsled which comprises:

a frame;

front and rear axles coupled to the frame through a suspension;

two front runner assemblies linked together and each pivotably connected to a respective end of the front axle;

two rear runner assemblies linked together and each pivotably connected to a respective end of the rear axle;

a front steering motion translator and a rear steering motion translator coupled together by a steering linkage and carried by the frame; and

front and rear steering control linkages each having a flexible middle portion carried in a flexible sheath and having rigid end portions extending out the opposite ends of the sheath, a first rigid end portion being connected to one of the runner assemblies at its corresponding end of the bobsled and the end of the sheath around the first rigid portion being coupled to the axle at the same end of the bobsled, the other rigid end portion of the sheathed member being coupled to the steering motion translator at the same end of the bobsled and the other end of the sheath being pivotably coupled to the frame, to allow the operation of each sheathed member in actuating the movement of its corresponding pair of runner assemblies to be inde-

pendent of the displacement of the axle relative to the frame.

4,405,141

SERVICING STEPS TO BE MOUNTED ON THE BUMPER OF A TRUCK

Leonard B. Jurek, 4206 - 2nd St., NE., Columbia Heights, Minn. 55421

Filed May 26, 1981, Ser. No. 266,840
Int. Cl.³ B60R *3/00*
U.S. Cl. 280—163 9 Claims



8. A quick mounting servicing step to be supported on the bumper of a truck that requires servicing comprising a step body including a fulcrum plate section adapted to rest during use against the upper surface of the bumper and having a bumper engaging hook on its free edge, a platform section rigidly associated with the fulcrum section, said platform section comprising a support surface positioned horizontally and when mounted on the bumper extending outwardly from the bumper away from the truck whereby the weight of a user applied to the platform section causes the step body to act as a lever arm having a fulcrum point such that the hook is forced upwardly and is thereby jammed into binding engagement with the bumper whereby the step will stay securely in place during use but can be quickly mounted and later demounted by raising the platform section and sliding the step toward the truck to disengage the hook from the bumper, said platform section and fulcrum plate section lie in intersecting planes whereby the step has a predetermined contour, a member is connected to the lower surface of the step to provide a sheath between the step and the member to receive a brace number, said brace member has a bumper engaging foot at one end adapted to contact the bumper and help support the step after the user mounts the step; said brace being bent upwardly at one end to define said foot and the foot end of the brace conforms to said contour of the step when the brace is in a storage position within the sheath and said brace is removeable so that it can be inverted and reinserted into the sheath to assume an operating position.

4,405,142

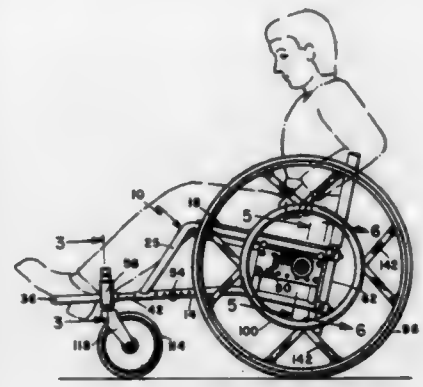
KNOCK DOWN WHEEL CHAIR

Donald L. Whetstine, San Diego, Calif., assignor to Stainless Medical Products, Inc., San Diego, Calif.

Filed Mar. 9, 1981, Ser. No. 241,750
Int. Cl.³ A61G *5/02*
U.S. Cl. 280—242 WC 24 Claims

1. A quick breakdown wheel chair assembly comprising a pair of side frames,

a front frame telescopically engaging said side frames for adjusting the length of the chair assembly including quick release pins for detachably connecting said side frames together at the front thereof and a back frame including quick release pin means for detachably connecting said side frames together at the back end thereof, wherein said front frame has a generally A configuration with a for-



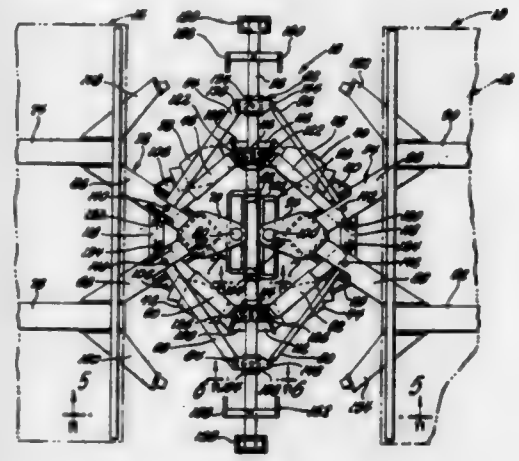
ward foot bar and an intermediate leg support bar, and a pair of castors mounted at the ends of said leg support bar.

4,405,143

HINGE CONNECTION FOR ARTICULATED VEHICLES

Johannes W. Rosenkrands, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 18, 1981, Ser. No. 303,393
Int. Cl.³ B62D *53/00*; B60D *1/00*
U.S. Cl. 280—403 7 Claims



1. A hinge connection for interconnecting the front section with the rear section of an articulated vehicle, said hinge connection comprising a shaft member having a longitudinal center axis adapted to be located in a horizontal plane between said front section and said rear section and to extend transversely relative to said articulated vehicle; a first hinge member adapted to be secured to said front section; a second hinge member adapted to be secured to said rear section; means connecting said first hinge member and said second hinge member to said shaft member so as to allow said front section to be angularly displaced relative to said rear section about a pair of longitudinally spaced vertical axes and about said longitudinal center axis of said shaft member so as to permit said articulated vehicle to negotiate turns and to travel over crests and valleys in a road surface; and means operatively connected between each of said first and second hinge members and said shaft member for maintaining said pair of spaced vertical axes aligned and located along the longitudinal center axis of said articulated vehicle during straight-ahead travel thereof and for positioning said shaft member so that said longitudinal center axis of said shaft member bisects the turn angle between said front section and said rear section when said articulated vehicle is in a turn.

4,405,144
SELF ALIGNING TRUCK TRAILER

Arthur D. Chambers, P.O. Box 702, Lumby, British Columbia, Canada (V0E 2G0)

Continuation of Ser. No. 182,839, Aug. 29, 1980, Pat. No. 4,358,128. This application Apr. 19, 1982, Ser. No. 369,917
Int. Cl.³ B60P 3/40
U.S. Cl. 280—404 8 Claims



1. Apparatus for use in a tractor and trailer combination for carrying an elongated, self-supporting load in which the tractor has a swivable front bunk mounted for pivoting about a pivot axis and is adapted to retain a front portion of the load thereon, and the trailer has a rear bogey having at least one pair of road bearing wheels and a non-swivelling rear bunk mounted on the bogey and adapted to retain a rear portion of the load thereon the apparatus comprising:

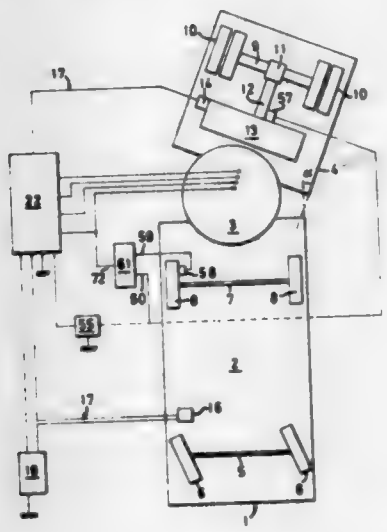
means for aligning the trailer with the front bunk, said aligning means including flexible link means having right and left hand forward link portions extending rearwardly from the front bunk, and right and left hand rear link portions extending forwardly from the trailer,

the forward and rear link portions defining two isosceles triangles having vertices connected to one another along the central longitudinal axis of the combination.

4,405,145
ARRANGEMENT FOR LIMITING UNCONTROLLED ARTICULATION MOVEMENTS AT THE PICOT BETWEEN VEHICLE UNITS IN ARTICULATED VEHICLES, PREFERABLY ARTICULATED BUSES

Hans I. Bergman, and Björn D. Nyman, both of Katrineholm, Sweden, assignors to Saab-Scania Aktiebolag, Sodertalje, Sweden

Filed Jun. 30, 1981, Ser. No. 279,013
Claims priority, application Sweden, Jul. 3, 1980, 8004928
Int. Cl.³ B62D 53/00; B60K 26/00
U.S. Cl. 280—432 9 Claims



1. An arrangement in articulated vehicles, preferably articulated buses, for limiting uncontrolled articulation movements between a leading vehicle unit and a trailing vehicle unit articulatedly connected thereto and equipped with driving wheels which are driven by means of a driving unit under the control of at least one activated power control means, characterized in

that movement-sensing sensors sense parameters representing operating conditions for the leading and trailing vehicle units,

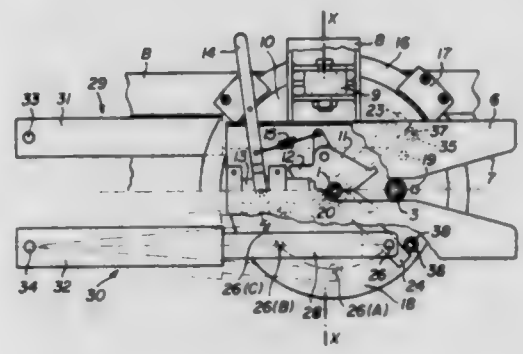
that at least one of the sensors gives an output signal to a comparison means, in which the output signal is compared with a reference signal, and

that the comparison means gives an output signal in response to a comparison between the output signal from the sensor and the reference signal to the power control means which limits the power transmittable to the driving wheels.

4,405,146
COUPLING FOR AN ARTICULATED VEHICLE OR THE LIKE

David C. Mitchell, 20 chemin des Ramses, 1255 Veyrier, Geneva, Switzerland

Filed Jul. 30, 1981, Ser. No. 288,415
Claims priority, application United Kingdom, Oct. 29, 1980, 8034746
Int. Cl.³ B62D 53/06
U.S. Cl. 280—432 10 Claims



1. An apparatus for controlling rotational movements about a substantially vertical axis of a coupling between a tractor part and a trailer part of an articulated vehicle, comprising:

a pair of fluid operated rams positionally fixable relative to one of said tractor and trailer parts;

a first pair of abutments positionally fixable relative to the other of said tractor and trailer parts on opposite sides of said axis; and

a pivotal arm at one end of each of the rams, extending generally radially of and towards a shaft coaxial with said axis and pivotably mounted thereon, said arms forming a second pair of abutments on opposite sides of said axis which cooperate in freely disengagable manner with said first pair of abutments, whereby only one ram at a time is operable to resist rotation between the tractor and trailer parts away from a neutral position corresponding to an aligned position of the tractor and trailer parts and operable to return the tractor and trailer parts back to said neutral position, the other ram remaining during that time in a fully extended position.

4,405,147
TRAILER STEERING DEVICE FOR SPACED AXLE TRAILER

John Horsman, Scottsdale, and James W. Ryden, Phoenix, both of Ariz., assignors to U-Haul Technical Center, Phoenix, Ariz.

Filed Jun. 19, 1981, Ser. No. 275,504
Int. Cl.³ B60D 1/00
U.S. Cl. 280—443 14 Claims

1. A trailer comprising in combination:

(a) a frame having a front portion and a rear portion;

(b) tongue means pivotally connected to said front portion for effecting connecting of said trailer to a trailer hitching means attached to a tow vehicle;

(c) first and second rear wheels and rear axle means for supporting said rear portion of said frame, said first and

second rear wheels being rotatably connected to said rear axle means;

(d) first and second front wheels and front axle means for supporting said front portion of said frame, said first and second front wheels being rotatably connected to said first axle means;

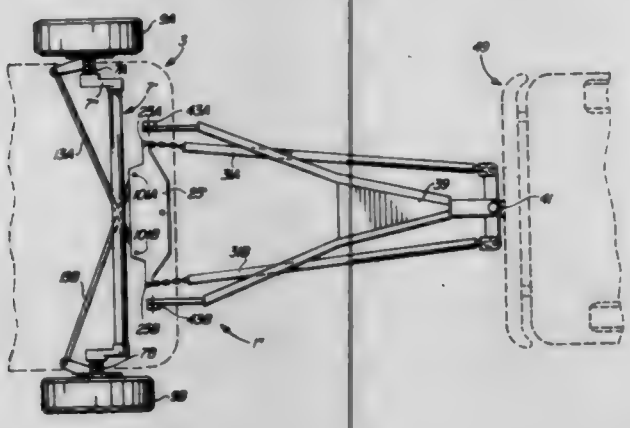
(e) pivot connecting means for pivotably connecting said tongue means to said front portion and confining pivotal movement of said tongue means to a substantially vertical direction relative to a support surface supporting said trailer, said tow vehicle including a trailer guiding means rigidly connected to said tow vehicle and having first and second trailer connecting points spaced from and located on opposite sides of said trailer hitching means;

(f) first and second spindle means for pivotally connecting said first and second wheels, respectively, to said front axle means to effect steering of said trailer;

(g) first and second lever arms connected to said first and second spindle means, respectively, to effect controlled pivoting of said first and second spindle means;

(h) primary steering arm means having first, second and third spaced points thereon pivotally connected at said first point to said frame for effecting pivoting of said spindle means in response to changing of direction of said tow vehicle relative to said trailer;

(i) first coupling means for coupling said first and second lever arms to said primary steering arm means to effect pivoting of said first and second spindle means in response to pivoting of said primary steering arm means;



(j) first tensile connecting means for connecting said second point of said primary steering arm means to said first trailer connecting point to pull said second point of said primary steering arm members toward said tow vehicle to cause pivoting of said primary steering arm means in response to turning of said tow vehicle in a first direction relative to said trailer;

(k) second tensile connecting means for connecting said third point of said primary steering arm means to said second trailer connecting point to pull said third point toward said tow vehicle in response to turning of said tow vehicle in a second direction relative to said trailer, said first and second tensile connecting means exerting only substantial pulling forces on said primary steering arm means to cause pivoting of said primary steering arm means;

(l) a plurality of wheel brake mechanisms for controllably applying braking forces to at least one of said front and rear wheels, said tongue means including mechanical surge braking means for connection to said trailer hitching means to actuate said wheel brake mechanisms in response to a rearward force exerted by said trailer hitching means on said tongue means, said first and second tensile connecting means allowing shortening of the effective length of said tongue means due to actuation of said mechanical surge braking means without exerting rearward forces on said second and third points of said primary steering arm means;

wherein said first tensile connecting means includes a first rigid member having first and second ends and first flexible means connected to the first end of said first rigid member and to said primary steering arm means for preventing said first tensile connecting means from producing a substantial pushing force on said primary steering arm means, and wherein said second tensile connecting means includes a second rigid member and second flexible means connected to a first end of said second rigid member for preventing said second tensile connecting means from producing a substantial pushing force on said primary steering arm means.

4,405,148

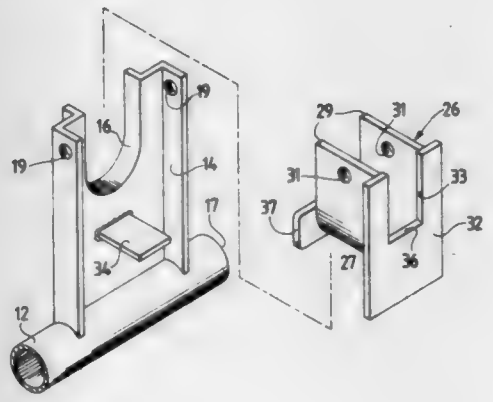
INSERT FOR VEHICLE TOW BAR

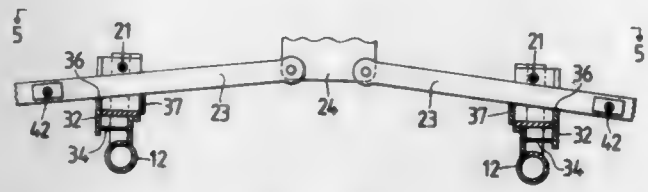
Eugene D. Dickerson, Rte. 1, Box 237, Sterrett, Ala. 35147

Filed Jul. 20, 1981, Ser. No. 284,547

Int. Cl.[3] B60D *1/16*

U.S. Cl. 280—491 E 7 Claims





1. In a tow bar insert for use with a tow bar having connector means at the forward end thereof adapted for connection to a towing vehicle and a bifurcated member having rearwardly extending arms carrying upstanding brackets at the rear ends thereof, with an upwardly opening recess in each said bracket in position to receive an adjacent portion of a laterally and outwardly extending control arm pivotally connected at its inner end to the frame of a towed vehicle and pivotally connected at its outer end to the spindle assembly of an adjacent front wheel of said towed vehicle,

(a) a generally U-shaped member adapted to fit within and engage each said upwardly opening recess in said upstanding brackets with each said U-shaped member having a base portion connected to spaced apart legs,

(b) a transverse load bearing member carried by each said U-shaped member in position to engage and support an adjacent control arm of said towed vehicle while it extends through said U-shaped member,

(c) detachable means connecting each said U-shaped member to is upstanding bracket and adapted to limit movement of said U-shaped member relative to its control arm,

(d) a connector arm pivotally connected at one end to said U-shaped member with the other end thereof extending toward an adjacent portion of a sway bar connecting said control arms, with said connector arm being movable selectively to a connected position in engagement with said sway bar and to a disconnected position out of engagement with said sway bar,

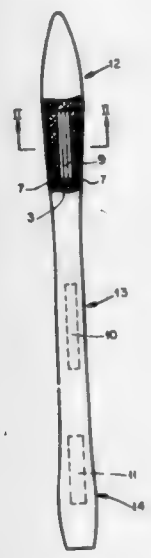
(e) resilient means between said connector arm and said U-shaped member urging said connector arm toward said connected position, and

(f) at least one stop member carried by said U-shaped member limiting vertical movement of said connector arm.

4,405,149
SKI WITH VIBRATION-DAMPING MEANS

Yves Piegay, Voiron, France, assignor to Skis Rossignol S.A., Voiron, France

Filed Apr. 24, 1981, Ser. No. 257,114
Claims priority, application France, Feb. 21, 1980, 80 04128; Apr. 9, 1981, 81 07520; European Pat. Off., Apr. 13, 1981, 81420053.1; Canada, Apr. 23, 1981, 376036; Japan, Apr. 23, 1981, 56-60720
Int. Cl.³ A63C 5/04
U.S. Cl. 280—602
8 Claims

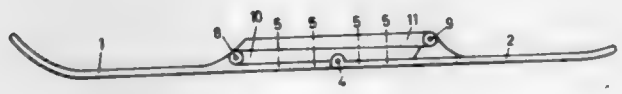


1. A ski comprising an elongated ski body having a spoon at the forward end thereof, a binding region centrally thereof and a heel at the rear end of the body, said body being formed with a core, and at least two generally flat bands of visco-elastic material constrained within said core and spaced apart longitudinally along said body, said bands extending longitudinally within said body and each having a length between 10 and 20% of the total length of the ski.

4,405,150
COLLAPSIBLE SKIS

Herbert Esper, Burgermeister-Heinrich-Strasse 23, 8403 Bad Abbach, Fed. Rep. of Germany

Claims priority, application European Pat. Off., Jun. 19, 1980, 80103411.7; Jun. 23, 1980, 80103037.0
Int. Cl.³ A63C 5/02
U.S. Cl. 280—603
10 Claims

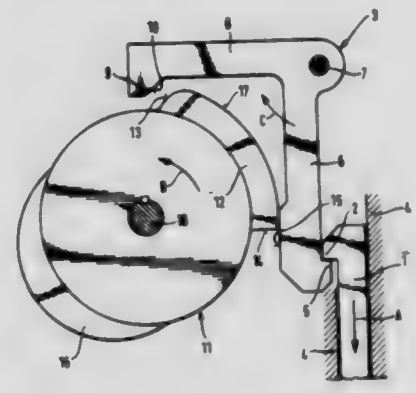


1. A collapsible ski having a front ski part having a ski toe and a back ski part, a join for joining said front ski part and said back ski part together for forming a ski base-part, a ski top part, said ski top part being formed by two elements one of which is pivotally joined to the ski front part and the other of which is pivotally joined to the ski back part, said ski top part being placeable at least in part in a recess in the ski base-part and lockable in position on said ski base-part by fixing means.

4,405,151
LOCKING DEVICE FOR AN ELECTRONIC SAFETY SKI BINDING

Walter Knabel, Farchant; Gerd Klubitschko, Oberau; Lorenz Stempfhuber, Garmisch-Partenkirchen, all of Fed. Rep. of Germany, and Nicholas F. D'Antonio, Liverpool, N.Y., assignors to Marker Patentverwertungsgesellschaft mbH, Baar, Switzerland

PCT No. PCT/EP80/00058, § 371 Date Mar. 2, 1981, § 102(e) Date Mar. 2, 1981, PCT Pub. No. WO81/00216, PCT Pub. Date Feb. 5, 1981
PCT Filed Jul. 16, 1980, Ser. No. 243,920
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1979, 2928681
Int. Cl.³ A63C 9/08
U.S. Cl. 280—612
6 Claims



6. In an electronic safety ski binding having a movable sole retainer, wherein an electrical signal is generated to effect movement of the sole retainer, a locking device comprising:

a locked member connected to the sole retainer, said locked member being movable between a releasing position for enabling movement of the sole retainer and a retaining position for preventing movement of the sole retainer;

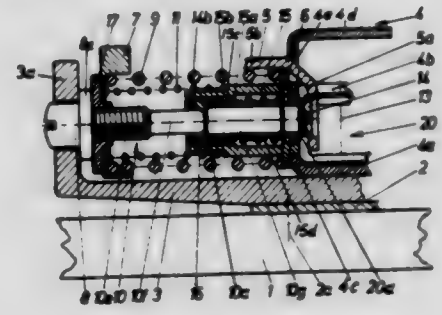
a locking member movable between a first position for holding said locked member in the retaining position and a second position for enabling movement of said locked member to the releasing position; and

a rotatable member having abutment means for abutting said locking member to move said locking member from said first position to said second position in response to the generation of said electrical signal.

4,405,152
SKI BINDING JAW

Theodor Nitschko, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Jul. 22, 1981, Ser. No. 285,702
Claims priority, application Austria, Aug. 26, 1980, 4300/80
Int. Cl.³ A63C 9/22
U.S. Cl. 280—625
12 Claims



1. In a front jaw for a safety ski binding, having a pair of two-arm sole holders which are arranged symmetrically with respect to the longitudinal center plane of said jaw and are pivotally arranged on a pivot means arranged vertically with respect to the upper side of a ski, each said sole holder having

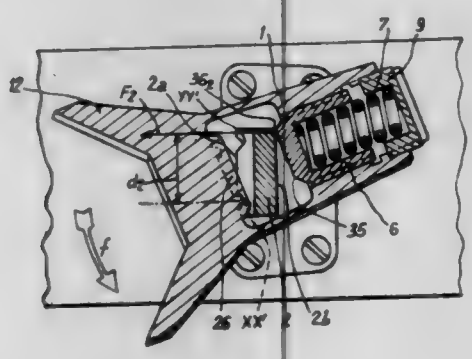
a first arm adapted to engage a ski shoe sole and a second arm engaging a slide member which is movable against the force of a release spring, said release spring having one end thereof supported on a fixed abutment means and its other end supported on an adjustably movable abutment means, said adjustably movable abutment means including an adjusting screw which extends in the longitudinal direction of said ski, said release spring becoming relaxed after a swinging out of one of said two sole holders which exceeds a predetermined limit, and wherein for returning said slide member at least one return spring is provided, the improvement comprising wherein said adjusting screw comprises three sections which are axially offset from one another, the center section having a smaller diameter than the two outer sections and the outer section adjacent said fixed abutment means having a locking edge thereon which radially offsets it from said center section, said adjusting screw being rotatably and axially movably supported in a sleeve which is secured to said slide member, an outer cylinder at least in an axial direction, partially surrounding said sleeve, said sleeve having plural balls thereon which rest both on an interior wall of said outer cylinder and said adjusting screw, means defining a release edge on said interior wall of said outer cylinder initially located between said fixed abutment means and said locking edge when said jaw is in a ski boot holding position, and wherein said balls in said ski boot holding position of said jaw engage said locking edge of said adjusting screw.

4,405,153

SAFETY BINDING FOR SKI

Georges P. J. Salomon, Annecy, France, assignor to Etablissements Francois Salomon & Fils, Annecy, France

Filed Mar. 19, 1981, Ser. No. 245,460
Claims priority, application France, Mar. 21, 1980, 80 06365
Int. Cl.³ A63C 9/085
U.S. Cl. 280—629 **38 Claims**



1. A safety binding for a ski, comprising:

(a) a support means adapted to be fixed to said ski, having a rear transverse face with at least two recesses therein and a front transverse face;

(b) a body comprising:

(i) a holding means adapted to hold a ski boot;

(ii) a transverse face on said body, having at least two projections thereon, each projection adapted to engage one of said recesses, wherein said recesses and projections define two lines of support converging at a point above said ski and disposed respectively, on either side of the longitudinal plane of symmetry of said ski, so that said body may pivot around either one of said lines of support; and

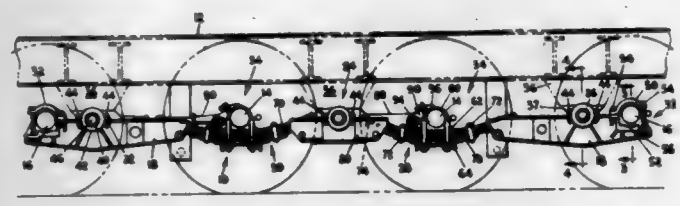
(iii) an abutting means for causing said transverse face of said body to abut said rear face of said support, wherein said abutting means includes a rear face which abuts said front transverse face of said support and which includes two lines of reaction converging toward said ski.

4,405,154

MULTI-AXLE EQUILIZED SUSPENSION SYSTEM

Lloyd D. Masser, Twin Lakes, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed May 15, 1981, Ser. No. 263,981
Int. Cl.³ B60G 5/00
U.S. Cl. 280—686 **6 Claims**



1. A suspension for a multi-wheeled vehicle comprising:

a pair of outer equalizing beams each of which is mounted to a trunnion tube and rockable thereabout;

means for securing said trunnion tubes to a load supporting member of said vehicle so as to mount said pair of outer equalizing beams to said vehicle;

a pair of axles mounted to said pair of outer equalizing beams at the outer ends thereof, said axles supporting ground engaging wheels;

at least one inner equalizing beam rockably mounted to a trunnion tube;

means for securing said trunnion tube to said vehicle frame between said pair of outer equalizing beams;

at least two leaf spring assemblies suspended between said pair of outer equalizing beams, each of said at least two leaf spring assemblies being secured between one of said pair of outer equalizing beams and an inner equalizing beam;

each of said leaf spring assemblies mounting an axle supporting ground engaging wheels; and

means for limiting relative axial displacement of at least one of said axles supported on said leaf spring assemblies relative to said outer axles;

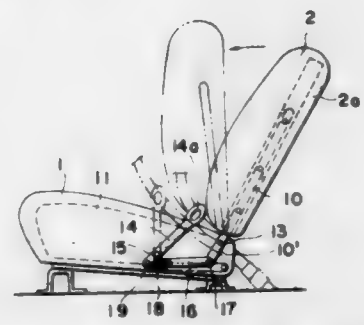
wherein said pair of outer equalizing beams and said at least one inner equalizing beam distribute the load of said vehicle equally over the axles.

4,405,155

SEAT BELT DEVICE FOR AN AUTOMOTIVE VEHICLE

Hideoki Matsuoka, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Jun. 12, 1981, Ser. No. 273,049
Claims priority, application Japan, Jul. 25, 1980, 55-105972[U]
Int. Cl.³ A62B 35/00
U.S. Cl. 280—802 **1 Claim**



1. A seat belt device for an automotive vehicle disposed at the side surface of a seat including a seat cushion and a seat back, which comprises:

(a) a seat belt for protecting a driver or a passenger from injury caused by a shock, one end of said seat belt fixed to the upper rear side of a front door of the vehicle;

(b) a retractor disposed at a rearmost portion of the middle-side surface of the seat cushion for biasing said seat belt thereinto;

(c) a movable rod pivotably supported on a rearward portion of the middle-side surface of said seat cushion, said rod connected to said seat back for rotatable movement therewith;

(d) a belt guide member pivotably supported on said middle-side surface of said seat cushion at a point located forward of the point at which said movable rod is pivotably supported, one end of said belt guide member provided with a belt guideway having an aperture through which said seat belt is passed;

(e) a pin fixed on the other end of said belt guide member;

(f) a link lever, one end of which is pivotably connected to the other end of said movable rod and the other end of which is formed with a slot to which said pin is loosely fitted; and

(g) a belt guide stopper disposed in position on the middle-side surface of the seat cushion for restricting the backward movement of said belt guide member,

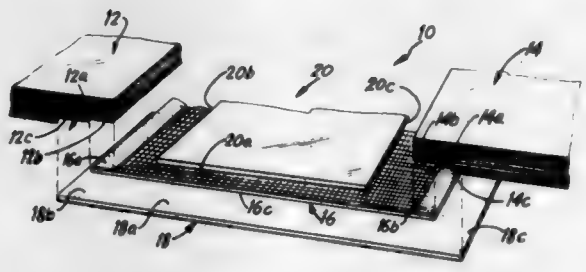
whereby said seat belt is moved back and forth when the seat back is tilted backward and forward and additionally the seat cushion can be moved further backward with said seat belt located at the rearmost position.

4,405,156

REINFORCED HINGE FOR BOOK COVER

Leewood C. Carter, Warren, and Robin P. Neary, Basking Ridge, both of N.J., assignors to Book Covers, Inc., Newark, N.J.

Filed Mar. 30, 1981, Ser. No. 249,089
Int. Cl.³ B42C 7/00
U.S. Cl. 281—29 **13 Claims**



4. A book cover having a reinforced hinge, comprising:

first and second leafboards having respective first and second edge portions in opposed, spaced and parallel relationship;

a reinforcing member including first and second edges overlapping and being secured to said first and second edge portions, respectively;

a hinge member overlapping and adhered to the outer surface of said reinforcing member and extending beyond said first and second edges of said reinforcing member to overlap and directly adhere to said first and second edge portions of said leafboards, respectively;

a lining material overlapping and adhered to the inner surface of said reinforcing member, the longitudinal edges of said lining material being spaced from said first and second edge portions of said leafboards, respectively; and

said reinforcing member, said hinge member, and said lining material, all being adhered together and cooperating to form a reinforced hinge for said book cover.

4,405,157

SURVEY DATA COLLECTING SYSTEM

Robert C. Bennett, 727 Decatur Dr., Mount Laurel, N.J. 08054

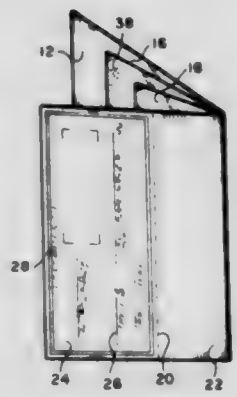
Filed Mar. 3, 1982, Ser. No. 354,452
Int. Cl.³ B42D 15/00
U.S. Cl. 283—58 **4 Claims**

1. A survey data collecting system comprising:

a booklet having a front leaf, a back leaf and at least one intermediate leaf, the height and width of said front and back leaves being substantially identical, the height of said intermediate leaf being substantially the same as said front and back leaves but the width thereof being somewhat less;

said back leaf being perforated throughout the height thereof intermediate its width so as to form a first portion adjacent the front leaf and a second portion remote therefrom;

the rear side of said second portion having indicia printed thereon to form a check, at least part of said indicia being



along an edge thereof and being comprised of magnetic ink;

the front side of said second portion having at least first and second columns of spaces thereon for indicating answers to questions printed on the front side of said first portion and on the front surface of said intermediate leaf;

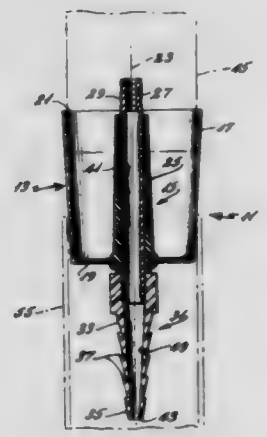
the width of said intermediate leaf being sufficient to cover said first column of spaces but not said second column.

4,405,158

AIR FILLER ADAPTER

Richard Huberman, 7740 Bridlepath La., McLean, Va. 22101

Filed May 26, 1981, Ser. No. 266,643
Int. Cl.³ A47L 9/24
U.S. Cl. 285—7 **1 Claim**



1. A nozzle adapter for providing medium and low inflation pressure from a variety of air sources to air fittings of diverse sizes comprising:

(a) an outer frustro-conical shell having a central axis, inner and outer surfaces and an outer circular lip, the outer circular lip being at the location of the largest diameter of the outer shell, the outer shell having an inside diameter which tapers gradually inwardly so that the inner and outer surfaces of the shell gradually decrease in diameter toward a bottom surface;

(b) said bottom surface having an opening in the center thereof;

(c) an annular stem means including a first stem and a second stem within said first stem, said first stem being sealingly mounted in said bottom surface opening and including an end remote from said bottom surface located within said shell, said second stem including a first end extending through said bottom surface opening and outside said

shell, said second end including exterior threads and further including interior threads forming an inlet to said second stem, said second stem first end including on an exterior surface thereof coupling means;

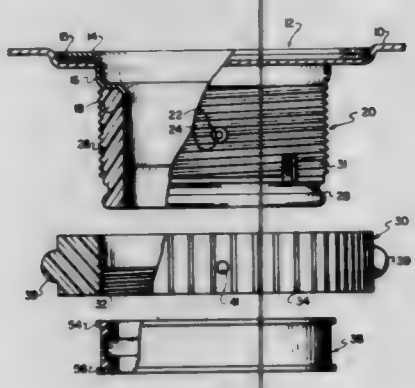
(d) a coupling member sealingly coupled to said coupling means of said second stem and abutting said first stem, said coupling member including a tapered passageway extending from a large diameter portion adjacent said coupling means to a small diameter portion adjacent an outlet of said coupling member, said coupling member further including a plurality of ridges extending from said location adjacent said large diameter portion to a location adjacent said coupling member outlet, said ridges enabling coupling of said coupling member to an inflatable object, said coupling member generally tapering from a large diameter adjacent to said coupling means to a small diameter adjacent to said outlet thereof.

4,405,159

WASTE DISPOSER COUPLING

Leonard G. Spelber, San Diego, Calif., assignor to Wastemate Corporation, San Diego, Calif.

Filed Jun. 16, 1981, Ser. No. 274,069
Int. Cl.³ F16L *41/00*
U.S. Cl. 285—38 **3 Claims**



1. A coupling device for attaching a waste disposer unit having a circumferential groove near the top thereof to a sink having a drain opening therein, comprising:

substantially cylindrical drain conduit means for inserting through the drain opening in the sink, said drain conduit means including a body, and a flange extending from said body for positioning adjacent the upper surface of said sink bottom around said opening;

a reduced portion on said conduit body forming a coolar seat;

substantially cylindrical collar means for positioning on said collar seat, and having external threads thereon, said threads being substantially co-extensive with the circumference of the conduit body in the assembled position;

a circumferential groove near the bottom of said collar means;

fastening means for fastening said collar means to said collar seat;

connector ring means having internal threads extending from one end part way in the axial direction for engaging the threads on said collar means to lock said drain conduit means to the sink bottom by pulling said flange toward said sink bottom, said connector ring means being capable of connection to said collar means with either end facing the sink bottom to accommodate sink bottoms of different thicknesses;

resilient sealing means having an upper boss extending inwardly therefrom for seating in the groove in said collar means and a lower boss extending inwardly therefrom for seating in the groove in the disposer; and

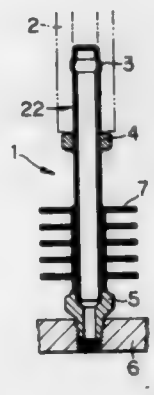
securing means surrounding said sealing ring means for securing said sealing ring means in position and pressing said bosses into sealing engagement with the side walls of said grooves.

4,405,160

HOSE JOINT WITH COOLING FINS

Tutomu Tyuuman, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 13, 1980, Ser. No. 206,662
Claims priority, application Japan, Jul. 24, 1980, 55-101578
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—39 **12 Claims**



1. A one-piece hose joint for connecting a flexible hose to a high-temperature object, comprising:

a tubular member having first and second ends, and a cooling portion intermediate said ends, a protuberance at the first end, said first end being connected to said flexible hose with said protuberance positioned within said hose;

a threaded member, and means securing said threaded member to said second end against movement relative thereto, said threaded member including a wrench-engageable head and further including a threaded end connected to said high-temperature object; and

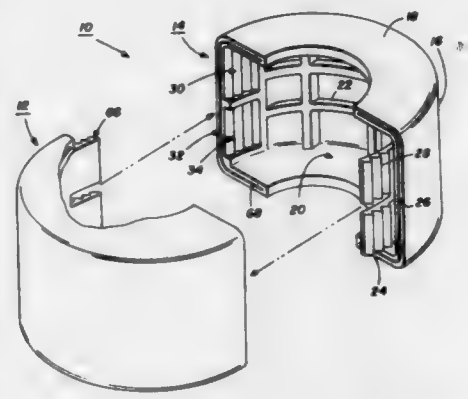
a plurality of fins fixedly engaging said cooling portion of said tubular member adjacent to said second end in axially spaced relationship with one another, the length of said cooling portion engaged by said fins being greater than that of said threaded member, and the radial width of said fins being greater than the width of said wrench-engageable head, said plurality of fins radiating heat conducted to said tubular member from said high-temperature object via said threaded member and intercepting radiant heat from said high-temperature object, whereby a temperature rise of said tubular member is restrained.

4,405,161

WELLHEAD SECURITY APPARATUS

A. Steven Young, and Gorby C. Mason, both of Garland, Tex., assignors to A. Steven Young, Garland, Tex., a part interest

Filed Jun. 9, 1981, Ser. No. 271,832
Int. Cl.³ F16L *55/00, 21/00, 25/00*
U.S. Cl. 285—80 **9 Claims**



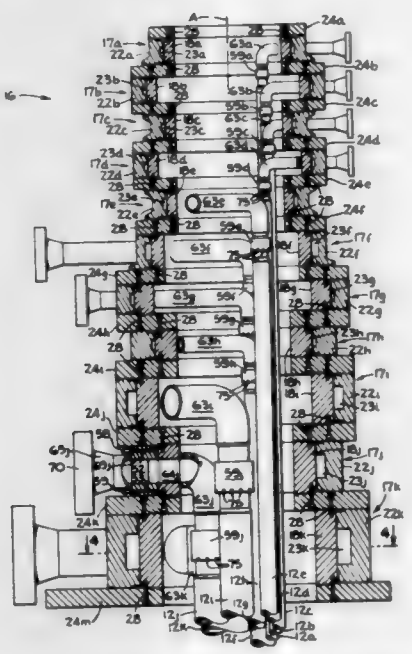
1. A well head security apparatus comprising a housing having a first half and a second half, said first half and said second half being similar, each said half fabricated of an impact resistance plastic material, said housing having locking means

for securing said halves together and a metallic core for providing additional protection against the unauthorized removal of the security apparatus wherein disassembly of said housing requires the destruction of said locking means.

4,405,162
LARGE-DIAMETER MULTI-PASSAGE SWIVEL JOINT FOR HIGH PRESSURE SERVICE

Michael R. Williams, Houston, Tex., assignor to FMC Corporation, Chicago, Ill.

Filed Mar. 5, 1981, Ser. No. 240,725
Int. Cl.³ F16L *39/04*
U.S. Cl. 285—95 15 Claims



1. A multi-passage swivel joint for simultaneous transfer of a plurality of separated fluids between a plurality of inlet conduits and a plurality of corresponding outlet conduits, said joint comprising:

a plurality of annular inner members each having a radially extending inlet port therethrough;

a plurality of annular outer members each having a radially extending outlet port therethrough, each of said outer members rotatably surrounding a corresponding one of said inner members;

a plurality of annular flat seal plates;

means for removably mounting each of said outer members between a pair of seal plates;

means for removably connecting each of said inner members between a pair of seal plates;

a plurality of annular fluid flow passages each defined by the outer surface of one of said inner members and the inner surface of a corresponding one of said outer members;

means for sealing each of the fluid flow passages at the junction of said outer members and said seal plates;

means for connecting each of said outlet conduits to a corresponding one of said outlet ports to rotatably connect each of said outlet conduits to a fluid flow passage;

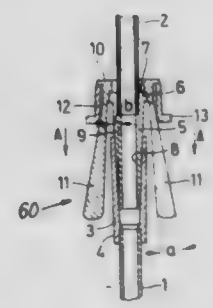
means for connecting each of said inlet conduits to a corresponding one of said inlet ports to connect each of said inlet conduits to a fluid flow passage; and

means for sealing each of the fluid flow passages at the junction of each of said inner members and said seal plates.

4,405,163
COUPLING FOR MEDICAL APPARATUS TUBES

Karl-Friedrich Voges; Claus Haacke, both of Melsungen, and Peter Heise, Fuldabrück, all of Fed. Rep. of Germany, assignors to Intermedicat GmbH, Emmenbrucke, Switzerland

Filed Nov. 24, 1980, Ser. No. 209,744
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949865
Int. Cl.³ F16L *37/08*
U.S. Cl. 285—305 10 Claims



1. A medical apparatus coupling, for connecting the ends of two tubes, comprising:

a first end piece for receiving a first tube end, with said first end piece having a conical outer surface and with the end piece being narrower at the end to which the first tube end is joined;

a second end piece having a first end, and a second end for receiving a second tube end;

a male conical member on the second end piece and a female conical bore on the first end piece;

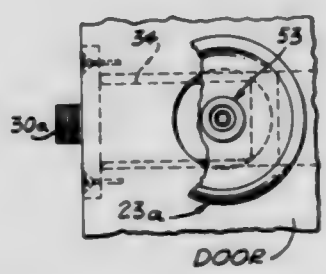
a plurality of fingers, means connecting the fingers to a ring constituting a mounting on and around the second end piece, means securing the ring against axial movement toward the first end of the second end piece with said fingers extending axially along the outside of the first end piece; and

an axially slidable ring circumscribing the ring containing the fingers, so that sliding of the slidable ring over and along the fingers presses the fingers radially inwardly towards the first end piece when the two end pieces are in coupled arrangement thereby locking the fingers to the first end piece conical outer surface and against radial outer displacement to secure the two end pieces against separation when tension is applied to the end pieces when joined into operative coupled arrangement.

4,405,164
RATTLE-FREE DOOR LATCH

Christian L. Lint, 7800 Perimeter Rd. South, Seattle, Wash. 98108, and Robert S. Lint, 1509 Logan Ave., Seattle, Wash. 98199

Filed Sep. 12, 1980, Ser. No. 186,452
Int. Cl.³ E05C *1/12*; E05B *3/00, 15/02*
U.S. Cl. 292—169.21 19 Claims



1. A door latch comprising:

a casing for a bolt and bolt-retracting mechanism;

a spindle passing through said casing for operating said mechanism responsive to turning of the spindle;

two escutcheon assemblies at opposite sides of said casing

and having said spindle passing centrally therethrough, said escutcheon assemblies each comprising an escutcheon, a thrust washer, an outwardly facing thrust face, and an alignment member extending through the escutcheon to said casing;

two thrust roller bearings surrounding the spindle and engaging said outwardly facing thrust faces;

a first handle assembly on one end of the spindle;

a second handle assembly adjustably mounted on the other end of the spindle;

said handle assemblies presenting two respective, inwardly facing, annular thrust faces engaging respective of said bearings; and

tightening means for adjusting the position of said second handle assembly along the spindle for forcing said inwardly facing thrust faces tightly against said bearings and the latter, in turn, tightly against said outwardly facing thrust faces.

4,405,165

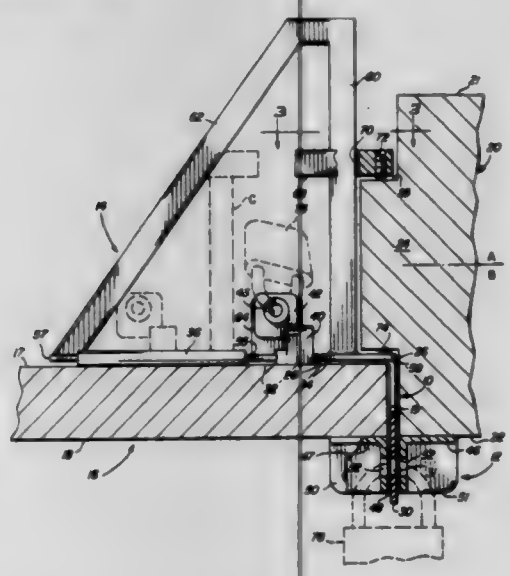
TEMPORARY DOOR LOCKING DEVICE

Blair E. Johns, 1002 N. 91st Ave., Tolleson, Ariz. 85353

Filed Mar. 23, 1981, Ser. No. 246,241

Int. Cl.³ E05C *19/18*

U.S. Cl. 292—258 **16 Claims**



1. A device for demountable attachment to a door for temporary locking thereof with the door being of the type which is hingedly mounted in a door jamb having a protruding door stop shoulder, the door having opposed planar surfaces and a vertical edge which is spaced from the door jamb and defines a crack therebetween when the door is closed, said device comprising:

(a) a door engaging member including means for engaging one of the planar surfaces of the door and tongue means for protruding from the crack between the door and the door jamb when the door is closed;

(b) a collar plate for demountable mounting on the tongue means of said door engaging member for overlaying at least a portion of the opposite planar surface of the door;

(c) first locking means;

(d) means on said collar plate and on the tongue means of said door engaging member for demountably receiving said first locking means by which removal of said collar plate from the tongue means of said door engaging member is prevented;

(e) a door jamb engaging member mounted on said door engaging member for sliding movement toward and away from the door jamb when the door is closed;

(f) gripping means mounted on said door jamb engaging member for demountably attaching said door jamb engaging member to the door jamb when the door is closed and said door jamb engaging member is slidably moved toward the door jamb;

(g) second locking means; and

(h) means formed on said door engaging member and on said door jamb engaging member for demountably receiving said second locking means when said door jamb engaging member is slidably moved toward the door jamb to prevent its movement away from the door jamb.

4,405,166

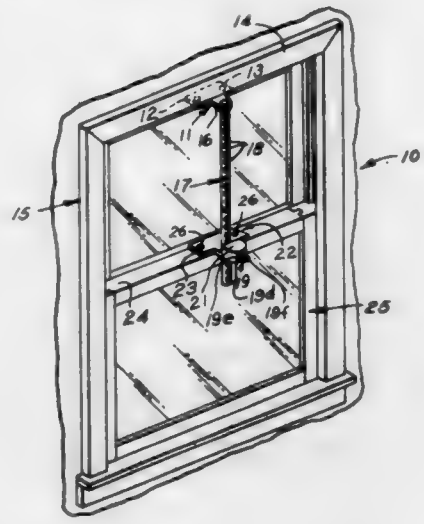
ENERGY SAVING WINDOW LOCK

Luis H. Lovis, 2002 Briscoe Ave., Artesia, N. Mex. 88210

Filed Apr. 17, 1981, Ser. No. 255,108

Int. Cl.³ E05C *17/20*

U.S. Cl. 292—305 **6 Claims**



1. An energy saving lock, comprising, in combination, a lower mounting plate, secured to the upper horizontal member of the lower window of a pair, a sleeve secured pivotally to said lower mounting plate, a toothed rod telescopingly received in said sleeve, a hand lever pivotally received on said sleeve, for engaging said toothed rod, and an upper mounting plate secured to the upper horizontal member of the window frame, for removably receiving the free end of said toothed rod.

4,405,167

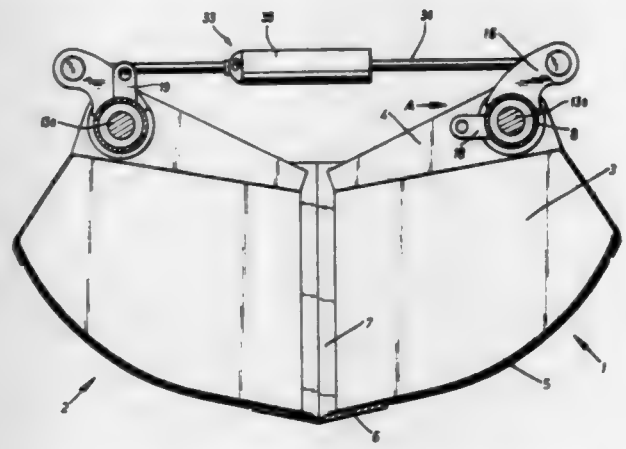
CLAMSHELL

Alfred Kinshofer, Wendelsteinstrasse 8, 8160 Miesbach/BRD, Fed. Rep. of Germany

Filed Mar. 2, 1981, Ser. No. 238,060

Int. Cl.³ B66C *3/02*

U.S. Cl. 294—70 **7 Claims**



1. A clamshell comprising a U-shaped halfscoop carrier including a central crosspiece and depending side legs terminating in parallel crossarms having bearing bores formed proximate their ends, a pair halfscoops having side walls and swingable about parallel axes extending between corresponding end sections of said crossarms, an actuating lever secured to said halfscoops, a hydraulic actuator including a piston rod con-

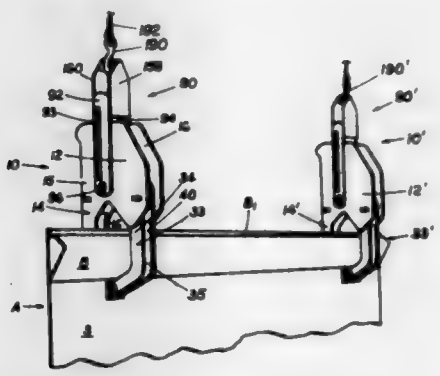
nected to one of said levers and a cylinder connected to the other of said levers, a tube having a bore and extending the upper border of each of said halfscoop sidewalls and having formed proximate its ends a slot extending for part of the periphery of the tube, the ends of each of said crossarms extending through respective slots with said bearing bores being in alignment with said bores in said tubes, said side walls having bores registering with the bores in said tubes and said crossarms, and pivot pins engaging said aligned crossarm bores and tube bores.

4,405,168

CLAMPING ASSEMBLY FOR LIFTING HEAVY OBJECTS HAVING A BULBOUS ENGAGEMENT PORTION

Eldred N. Fritzsche, Kirkwood; Edgar F. Josephson, St. Charles, both of Mo., and Frank C. Pulcrano, Huntington, W. Va., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 13, 1980, Ser. No. 206,418
Int. Cl.³ B66C *1/42*
U.S. Cl. 294—103 R **33 Claims**



1. A clamping assembly for lifting heavy objects having a bulbous engagement portion comprising: a pair of clamping arms extending outwardly from a clamp base portion; each arm including a cutaway portion to receive the bulbous engagement portion of the article to be lifted, and a front gripping portion to engage and grip a non-bulbous portion of the article; at least one of said arms being movable and being pivotably mounted about the base portion for movement between a clamping position in which the gripping portion of the arms engage and grip the non-bulbous portion of the article to be lifted, and an open position wherein the gripping portion of the movable arm is located away from the gripping portion of the other arm to allow entry or removal of the article; drive means mounted on said base portion to move said movable arm between open and closed positions; said base portion being pivotably mounted about a crane support whereby the clamp assembly may be used in any direction; said crane support including means to support the clamp assembly by means of cable extending from an overhead crane; and safety means provided whereby said drive means cannot be activated unless the bulbous portion of the article to be lifted is located within the cutout portions of the fixed and movable arms and engages a contract member.

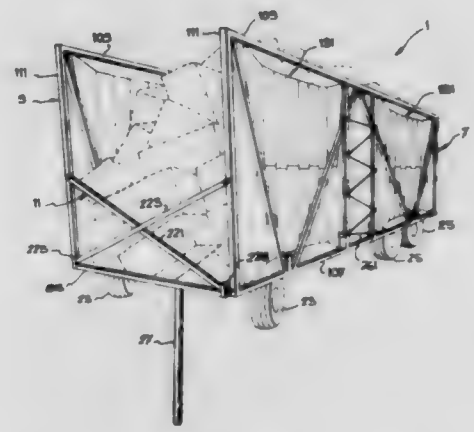
4,405,169

FARM WAGON

Rene Allard, Victoriaville; Fernand Couture, Sherbrooke, and Raynald Couture, Granby, all of Canada, assignors to La Compagnie Normand Ltee, St-Pascal, Canada

Filed Mar. 23, 1981, Ser. No. 246,207
Int. Cl.³ B60P *3/00*
U.S. Cl. 296—3 **14 Claims**

1. A platform for a farm wagon, said platform comprising:
a deck, the deck including a set of bottom frame members defining a first plane, and a set of top members defining a second plane, said top frame members being movably supported by the bottom frame members such that said first and second planes are substantially parallel;
a first pair of opposed side walls connected to the bottom frame members and a second pair of opposed side walls connected to the top frame members;
means for fastening said first pair of side walls to said second pair of side walls to indirectly fasten said top frame members to said bottom frame members whereby said top and



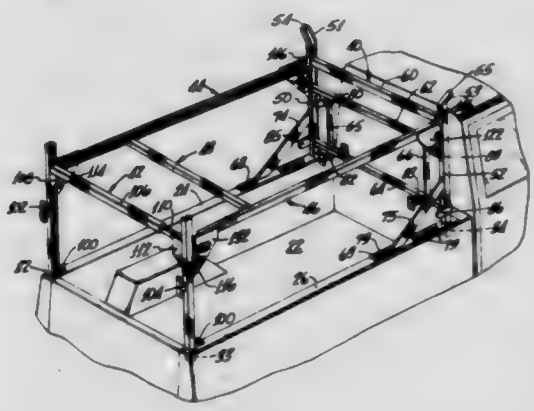
bottom frame members are held in position by said first and second pairs of side walls, yet are movable relative to one another when flexed;
a set of deck panels supported on the top frame members; and
means for maintaining the deck panels on the top frame members such that said deck panels can move relative to said top frame members when said deck is flexed.

4,405,170

DEMOUNTABLE CARRIER RACK ASSEMBLY FOR PICKUP TRUCK

Ruben N. Raya, 964 West Brook, Santa Ana, Calif. 92703

Filed Aug. 3, 1981, Ser. No. 289,305
Int. Cl.³ B60P *3/42*
U.S. Cl. 296—10 **16 Claims**



1. In a carrier rack assembly for use in combination with the sidewalls of a pickup truck bed, the sidewalls having stake holes adjacent to corners thereof, the combination comprising:
a primary framework configured for securing to the sidewalls adjacent the front end of the pickup truck bed, the primary framework having first and second generally upright chassis post members configured for being received within the stake beds adjacent the front corners of the bed;
a secondary structural framework removably mountable to the sidewalls of the truck bed adjacent to the rear thereof, said secondary framework having first and second generally upright chassis post members configured for being received within the stake holes adjacent to the rear corners of the bed when assembled thereon, said chassis post members of said secondary framework being in general alignment with the chassis post members of said primary

framework, said secondary framework is of an inverted generally U-shaped configuration having cross member means adjacent the upper ends of said secondary framework chassis post members, and said primary framework includes means for releasably receiving said secondary framework thereon when removed from the rear stake holes;

first and second generally elongate members, each having means at opposite ends thereof for removably affixing to the upper ends of aligned ones of said chassis post members of each sidewall, each of said generally elongate members being a mirror image of the other, and the means at opposite ends of an elongate member include means configured for coaction with the interior of a sidewall for storage of the elongate member within the truck bed; and

adjustable load bar means transversely extending between said elongate members.

4,405,171

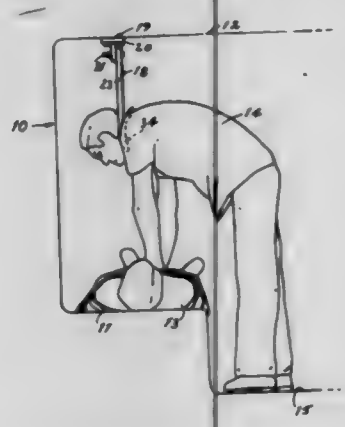
OVERHEAD AMBULANCE ATTENDANT STABILIZING DEVICE

Arnold F. Payne, W. 1724 York, Spokane, Wash. 99205; Gene A. Mauro, E. 14016 Mallon, Spokane, Wash. 99216; Wayne L. Cumpton, 4923 Powell Rd., Newman Lake, Wash. 99025, and George J. Orr, 13422 E. 6th, Spokane, Wash. 99216

Filed Dec. 28, 1981, Ser. No. 334,525

Int. Cl.³ B60P *3/26*; A61B *19/00*

U.S. Cl. 296—19 **12 Claims**



1. An overhead ambulance attendant stabilizing device for restraining a medical attendant within an ambulance having an overhead roof structure while the attendant is administering cardiopulmonary resuscitation to a patient lying on an ambulance bed while the ambulance is in transit, comprising:

bracket means for mounting the device to the overhead roof of the ambulance overlying the ambulance bed;

two elongated shoulder arms pivotally connected to the bracket means for movement between elevated outstretched horizontal storage positions adjacent the ambulance roof and depending operating positions projecting downward from the bracket toward the ambulance bed;

means for securing the two shoulder arms in the storage positions and in the depending operating positions;

shoulder pad means operatively mounted to the two shoulder arms for engaging the medical attendant's shoulders to restrain movement of the attendant with respect to the ambulance bed while the attendant is administering cardiopulmonary resuscitation to the patient on the ambulance bed.

4,405,172

HIGH DECK AMBULANCE CART

Richard H. Ferneau, Washington Court House, Ohio, assignor to Marianne Adler, San Diego, Calif.

Filed Oct. 21, 1981, Ser. No. 313,375

Int. Cl.³ A61G *1/02*

U.S. Cl. 296—20 **13 Claims**

1. A multi-level ambulance cart comprising,

an upper frame forming a bed,

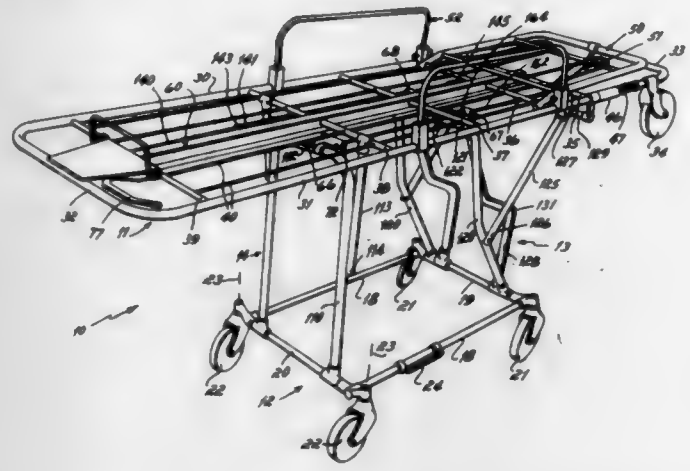
a lower frame,

wheels supported on said lower frame,

forward and rearward vertical legs connecting said upper frame to said lower frame with said lower frame approximately centered below said upper frame,

means pivotally mounting said legs to said lower frame,

means pivotally and slidably mounting said legs to said upper frame,



means for locking the upper ends of said legs selectively in a transport position in the center portion of said cart and in home bed position toward the rear of said cart,

and means maintaining said lower frame approximately centered below said upper frame as said slidable mounting means are shifted between said two positions.

4,405,173

MOTOR VEHICLE DOOR ASSEMBLY

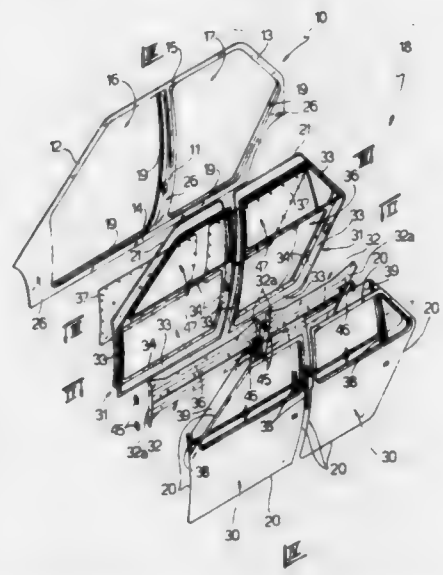
Renzo Piano, Paris, France, assignor to Fiat Auto S.p.A., Turin, Italy

Filed May 13, 1981, Ser. No. 263,135

Claims priority, application Italy, May 20, 1980, 67795 A/80

Int. Cl.³ B60J *5/00*

U.S. Cl. 296—146 **10 Claims**



1. A door assembly for the side closure of the passenger compartment of a motor vehicle comprising a carrying structure having a mechanical resistance function and provided with at least two sides, each of which comprises at least three substantially vertical stanchions and two substantially horizontal side members connected to one another, a door being hinged to at least one of the said stanchions of the respective side, characterized in comprising a frame having three substantially vertical stanchions and two substantially horizontal side members and arranged to be superimposed sideways on a corresponding side of the said carrying structure, the configuration of the said frame being such that the said stanchions and

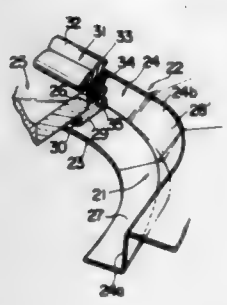
the said side members of the said frame may be superimposed on the corresponding stanchions and side members of the said side, each of the said frames being provided with continuous abutment surfaces formed on the said stanchions and the said side members and arranged to provide a continuous abutment for the rims of a door when these latter are in their closure position.

4,405,174

WINDOW STRUCTURE OF A VEHICLE BODY

Yukio Yamane, Yokosuka; Kazuhiko Yoshiyuki, Yokohama, and Toshiaki Endo, Chigasaki, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 1, 1981, Ser. No. 259,584
Claims priority, application Japan, May 7, 1980, 55-59406
Int. Cl.³ B62D *27/00*
U.S. Cl. 296—201 **1 Claim**



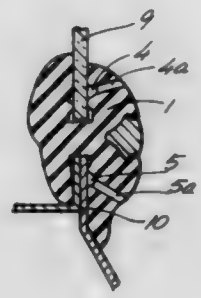
1. A window structure of a vehicle body, comprising:
an inwardly offset flange structure defining a window opening therein, the inwardly offset flange structure including inwardly bent walls which have substantially straight wall portions and curved corner wall portions each merging into adjacent two of the straight wall portions;
a window panel secured to said flange structure for closing said window opening, the window panel having an edge wall which includes a plurality of substantially straight edge wall portions respectively spaced apart from said straight wall portions and a plurality of curved corner edge wall portions each merging into adjacent two of the straight edge wall portions and respectively spaced apart from said curved corner wall portions, each of said straight edge wall portions and each of said straight wall portions forming a straight gap therebetween, and each of said curved corner edge wall portions and each of said curved corner wall portions forming therebetween a curved corner gap which merges into the adjacent two of the straight gaps and which is at least partially smaller in width than each of said straight gaps;
an adhesive compound interposed between the outer peripheral surface of said flange structure and the inner peripheral surface of said window panel for bonding the outer peripheral surface of said flange structure and the inner peripheral surface of said window panel; and
a reveal molding comprising a decorative trim portion bridging said vehicle body and said window panel, a stem portion integral with said decorative trim portion and extending in said straight and curved corner gaps, said stem portion having at its inner end an arrow-shaped bead embedded in said adhesive compound for preventing said stem portion from being dislodged out of said straight and curved corner gaps, and a plurality of retrorse fins extending outwardly from both sides of said stem portion and angled toward said decorative trim portion for engagement with said bent walls of said vehicle body and said edge wall of said window panel;
in which each of said curved corner gaps has an outer end extending on the same plane as the outer surface of said window panel and an inner end extending on the same plane as the inner surface of said window panel, each of said curved corner wall portions having an outer face inclined with respect to and away from the end face of each of said curved corner edge wall portions in such a manner that each of said curved corner gaps is smaller in width at the inner end than at the outer end thereof.

4,405,175

RESILIENT SEALING FRAME FOR THE FRONT AND REAR WINDOWS OF A VEHICLE

Elmar Hoffmann, Munich, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nurnberg GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 20, 1981, Ser. No. 313,134
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1980, 3040126
Int. Cl.³ B62D *27/02*
U.S. Cl. 296—201 **5 Claims**



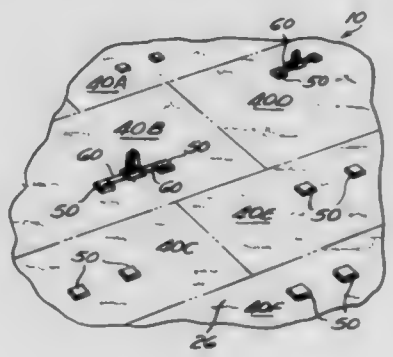
1. A resilient sealing frame adapted to extend continuously around the periphery of a vehicle window for location between the window and the vehicle body, the sealing frame including:
A continuous slot for snugly accommodating the peripheral margin of a window,
a continuous groove in one wall of the slot facing a surface of the window, the groove being flanked by prominent lips adapted to seal against the surface of the window, the open side of the groove being closed by the surface of the window which it faces,
a pair of holes extending from the groove to the exterior surface of the sealing frame, and
a resilient cement filling the length of the groove between the holes.

4,405,176

METHOD FOR HYDRAULICALLY MINING UNCONSOLIDATED SUBTERRANEAN MINERAL FORMATIONS USING REMOTE SUPPORT

Everett L. Hodges, 49 Royal St. George, Newport Beach, Calif. 92660

Filed Mar. 16, 1981, Ser. No. 243,819
Int. Cl.³ E21C *45/00*
U.S. Cl. 299—17 **5 Claims**



1. A method of hydraulically mining a subterranean mineral formation to prevent adverse bending of the mining tool apparatus during the mining operation comprising the steps of:
determining the anticipated maximum diameter of a mining cavity to be hydraulically formed within the subterranean mineral formation;

delineating the ground surface of said subterranean mineral formation into a plurality of mining zones each of said zones having a surface area greater than said anticipated maximum diameter of the mining cavity;

positioning a hydraulic mining tool apparatus within at least one of said mining zones at a location vertically aligned with the desired location of the mining cavity to be formed in the subterranean formation;

supporting the weight of said mining tool apparatus upon said ground surface at a lateral distance spaced from said vertically aligned location; and

hydraulically mining said subterranean mineral formation beneath said vertically aligned location to form said mining cavity while isolating the compressive weight of said mining tool apparatus from said vertically aligned location.

4,405,177

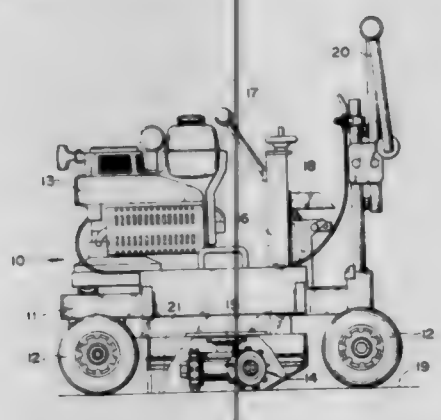
APPARATUS FOR FINISHING SURFACES

Hiroyuki Yamashita, Tokorozawa, Japan, assignor to Y K Trading Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1981, Ser. No. 255,078

Int. Cl.³ B24B *23/00*; E01C *23/00*

U.S. Cl. 299—41 **9 Claims**



1. A rotor assembly for finishing a surface, comprising:

a rotor drivably rotatable within a first plane which is substantially parallel to the surface to be finished, said rotor being drivably rotatable about a first axis which is substantially perpendicular to said surface;

three rotary scrapers individually supported on said rotor for free rotation in second planes which are substantially perpendicular to said first plane, said three rotary scrapers being disposed in a circular array about said first axis so that said three rotary scrapers are angularly spaced substantially 120° apart from one another;

each said rotary scraper being supported for free rotation on said rotor about a second axis which is substantially perpendicular to but does not intersect said first axis, said second axis being positioned closely adjacent and in parallel relationship to a radial line which projects perpendicularly outwardly from and intersects said first axis, said second axis being spaced rearwardly from the respective adjacent radial line with respect to the direction of rotation of said rotary;

each said scraper having a plurality of scraper tips mounted thereon circumferentially therearound, said scraper tips extending radially from the respective scraper for scraping contact with the surface;

said rotor being of a substantially cylindrical construction and including upper and lower rotor portions connected together by threaded fasteners with elastomeric dampers being interposed between said upper and lower rotor portions, said rotary scrapers being freely rotatably supported on said lower rotor portion; and

drive shaft means nonrotatably coupled to said upper rotor portion.

4,405,178

CUTTER BIT FOR A MINING MACHINE

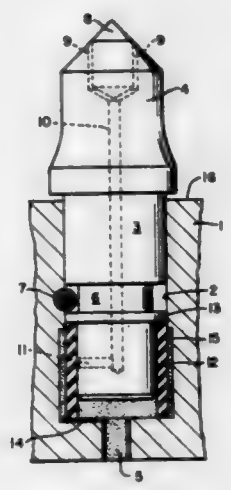
Helmut Brandenburg, Sprockhovel, Fed. Rep. of Germany, assignor to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Fed. Rep. of Germany

Filed May 14, 1981, Ser. No. 263,480

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1980, 3021821

Int. Cl.³ E21C *35/22*

U.S. Cl. 299—81 **7 Claims**



1. A bit assembly for a mining machine cutter head comprising a bit having a shank portion reciprocable within a bore formed in a bit holder, the innermost end of the shank portion being of diameter less than the bore to form a shoulder area at the transition between said innermost end and the remainder of the shank portion, a passageway in the bit for conducting fluid to nozzle means at the forward end of the bit, radial bore means connecting said passageway to the peripheral surface of said innermost end of the shank portion, means for conducting fluid under pressure to the bottom of the bore in said bit holder, and a resilient sleeve surrounding said innermost end of the shank portion to normally seal said radial bore means against fluid flow, the sleeve extending between said shoulder area and a point beyond said innermost end of the shank portion whereby movement of the bit toward said bottom of the bore will deflect the resilient sleeve to permit fluid to flow from said bottom of the bore through said radial bore means and said passageway to said nozzle means.

4,405,179

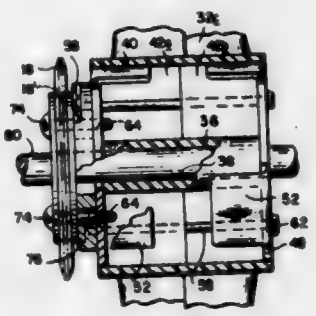
UNIVERSAL VELOCIPEDE WHEEL

Robert J. Boudreau, and Joel C. Cunard, both of Bedford, Pa., assignors to Brown Group Recreational Products, Inc., Bedford, Pa.

Filed Mar. 31, 1981, Ser. No. 249,398

Int. Cl.³ B60B *37/00*

U.S. Cl. 301—2.5 **6 Claims**



1. A wheel capable of use as the front or rear wheel of a sprocket-driven velocipede as well as the front wheel of a pedal-driven tricycle, said wheel comprising

A. a unitary molded plastic wheel section composed of

(1) a wheel rim,

(2) a central hub, and

(3) an array of spokes connecting the rim and hub, said hub including

(a) an axle tube,

(b) a second tube of appreciably larger diameter than the axle tube coaxially surrounding the axle tube, and

(c) an array of ribs connecting the two tubes and defining therewith an array of passages extending axially through the hub between the tubes, and

B. a pair of flat, rigid plates positioned against the opposite ends of the axle tube, said plates having

(1) unobstructed axial openings aligned with the opening through the axle tube and sized to snugly receive a rod that forms an axle or a rod that forms an axle or a pedal crank,

(2) an outer diameter less than the inner diameter of the second tube and sized to be snugly received therein, and

(3) a plurality of arcuate tabs projecting laterally from the faces of the plates at their peripheries into selected ones of said hub passages adjacent the junction of the second tube and the ribs defining those passages, and at least one of said plates having means to facilitate its connection to a sprocket, and

C. fastener means extending between the plates through selected ones of said hub passages for clamping the plates to the hub so that when the plates are rotated, torque is coupled by the plate tabs to the wheel section at locations spaced from the wheel axle and adjacent to the hub second tube.

4,405,180

WHEEL HUB FOR TWO-WHEELED VEHICLES

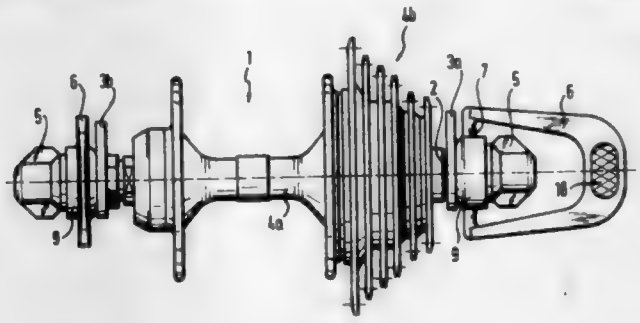
Hans Butz, Schwebheim, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,298

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1981, 3113439

Int. Cl.³ B62K *25/02*

U.S. Cl. 301—111 **10 Claims**



1. Wheel hub for two-wheeled vehicles, such as the rear wheel of a bicycle, comprising a hub axle, a hub sleeve coaxial with and rotatably supported on said hub axle, and quick-clamping means for securing said hub axle in the frame of a two-wheeled vehicle, wherein the improvement comprises that said quick-clamping means comprises a clamping unit at each of the opposite ends of said hub axle outwardly from the opposite ends of said hub sleeve, each said clamping unit comprises a nut and a thrust ring located inwardly of said nut, said thrust ring being movable to a limited extent in the axial direction of said hub axle, each said nut and thrust ring having a bearing surface area disposed in facing relationship and spaced apart in the axial direction of said hub axle, and a clamping member pivotally mounted between said bearing surface areas, and said clamping member including at least one eccentric cam located between and in contact with said bearing surface areas, said eccentric cam being pivotally displaceable relative to said bearing surface areas for selectively axially moving said thrust ring relative to said nut for locking and unlocking said quick-clamping means.

4,405,181

BRAKE VALVE

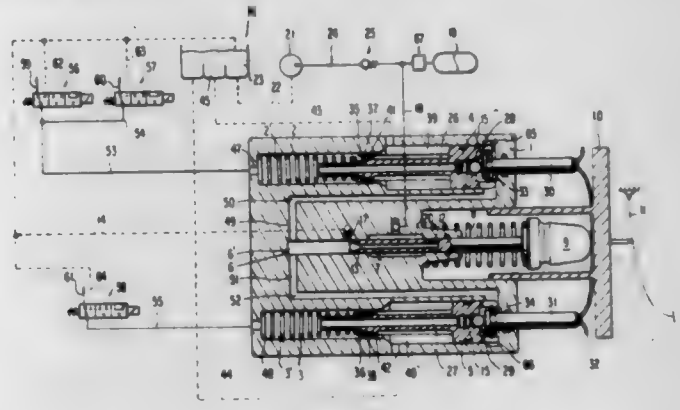
Reinhard Resch, Stuttgart, and Hellmut Krohn, Esslingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 24, 1981, Ser. No. 257,386

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1980, 3015729

Int. Cl.³ B60T *13/14*

U.S. Cl. 303—9 **9 Claims**



1. A brake valve used in connection with an anti-locking means for a vehicle brake system and actuated by means of a brake pedal against a return force of a path-simulation spring, comprising a slide valve means for shifting by operation of the brake pedal and for controlling pressure admission of a wheel brake cylinder or a dosaging of a pressure medium led from a pressure source to the wheel brake cylinders, said cylinders also controlled by blocking valves, the slide valve means controlling a pressure medium supply to inlet pressure chambers of emergency pistons, outlet pressure chambers of which, by means of the blocking valves, are connected to the wheel brake cylinders, at least two emergency pistons being provided, of which each, in the case of a breakdown of the pressure medium supply, being operated mechanically by the brake pedal, each emergency piston having a central pressure-medium duct leading from the inlet pressure chamber to the outlet pressure chamber, by means of which, during normal braking, the pressure source is connected to the outlet pressure chambers of the emergency pistons and, by the blocking valves, connected at the outlet side of said emergency pistons, being connected to the wheel brake cylinders; and during breakdown of the pressure-medium supply, these pressure-medium ducts penetrating the emergency pistons being blocked by means of valves closable by brake pedal action and the emergency pistons being operated together whereby wheel brake cylinders of the vehicle brake system are individually controlled.

4,405,182

CONTROL VALVE ARRANGEMENT FOR COMBINED BRAKE CYLINDER AND AIR RESERVOIR DEVICE

James E. Hart, Trafford, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Filed Sep. 8, 1981, Ser. No. 300,705

Int. Cl.³ B60T *8/18, 15/42*

U.S. Cl. 303—23 R **78 Claims**

1. Fluid pressure brake apparatus for a railway vehicle operative in response to variation of fluid under pressure in a brake pipe of said vehicle comprising:

(a) a brake cylinder device having:

(i) a power cylinder portion;

(ii) a power piston operatively disposed in said power cylinder portion and cooperating therewith to form an application chamber on one side of said power piston and a release chamber on the opposite side thereof;

(iii) a positioning cylinder portion;

(iv) a positioning piston operatively disposed in said positioning cylinder portion for engagement with said power piston, said positioning piston cooperating with

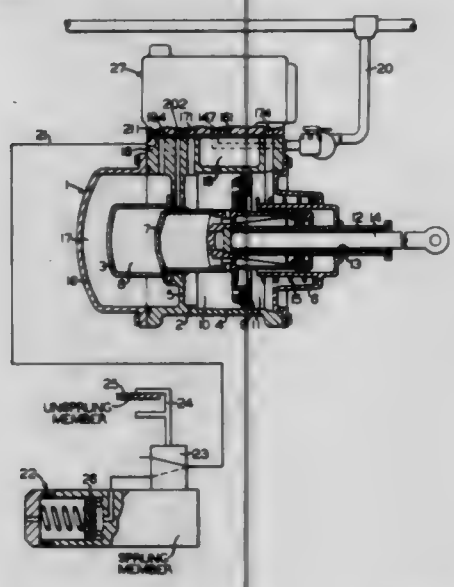
said positioning cylinder portion to form on one side thereof a positioning chamber;

(v) biasing means for urging said power piston toward a brake release position; and

(b) a control valve device including

(i) an exhaust passage;

(ii) charging valve means having a charging position in which said positioning chamber is vented and said application and release chambers are in fluid pressure communication with said brake pipe, whereby said bias means is effective to move said power piston to said brake release position and having a cut-off position in which said venting of said positioning chamber and said charging of said application and release chambers is interrupted;



(iii) service valve means operable to an application position in response to a reduction of said brake pipe fluid under pressure for operating said charging valve means to said cut-off position and for conducting flow of fluid under pressure from said release chamber to said positioning chamber, said positioning piston and accordingly said power piston being movable from said brake release position to a brake application position when the fluid under pressure in said positioning chamber reaches a predetermined value; and

(iv) transfer valve means operatively responsive to said release chamber fluid under pressure for establishing fluid pressure communication between said release chamber and said exhaust passage to thereby establish a pressure differential between said application and release chambers to cause said power piston to provide a braking force.

4,405,183

VEHICLE BRAKE VALVE WITH AN EMERGENCY PISTON

Reinhard Resch, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

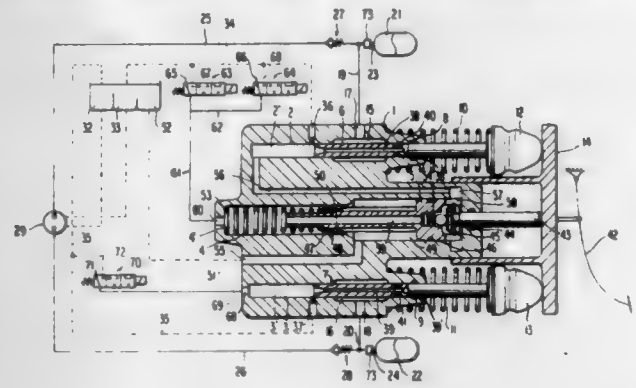
Filed Apr. 24, 1981, Ser. No. 257,324

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1980, 3015689

Int. Cl.³ B60T *8/02, 15/02*

U.S. Cl. 303—119 **9 Claims**

1. A brake valve arrangement for a vehicle braking system operable by a brake pedal and monitored by an anti-locking means, the arrangement comprising a control valve means for metering a feed of pressure medium from a source of pressure medium to wheel brake cylinders of the braking system, the control valve means includes a first and second control slide valve, means are provided for respectively connecting the first and second control slide valves with separate pressure reservoir means forming the source of the pressure medium, an emergency piston means is cooperable with one of the control slide valves for enabling a free through-flow of pressure medium during a normal operation of the brake system, means are provided for blocking the through-flow of pressure medium upon a failure of the source of pressure medium and an emptying of the pressure reservoir means such that the emergency piston means is mechanically operable by the brake pedal, spring means are interposed between the brake pedal and first and second control slide valves, the anti-locking means includes anti-lock valves arranged at the wheel cylinders for relieving the pressure medium, the emergency piston means



includes a longitudinally extending central bore through which the pressure medium flows during a normal operation of the brake system, the blocking means includes a spring loaded ball valve means for controlling an opening of the central bore, and a tappet means interposed between the brake pedal and ball valve means for urging the ball valve means into a closed position against a valve seat upon an interruption in a supply of pressure medium from the source of pressure medium, and the brake valve having an anti-locking mechanism that operates with pressure control at the wheel brakes by draining brake fluid from the wheel brake cylinders.

4,405,184

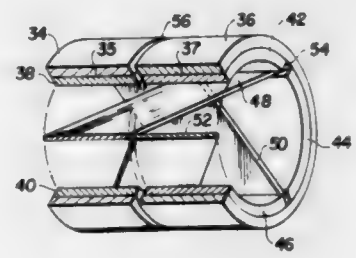
UNIDIRECTIONAL FLEXURAL PIVOT

Hossein Bahiman, Landover Hills, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 16, 1981, Ser. No. 243,684

Int. Cl.³ F16C *11/12*

U.S. Cl. 308—2 A **11 Claims**



1. A unidirectional flexural pivot, comprising:

a pair of pivot means (34, 36) located adjacent one another and generally coaxially aligned and mutually rotatable around a central axis, said pivot means being spaced apart on opposite sides of a single plane transversing said central axis and having respective inner and outer wall surfaces and a plurality of attachment points (54) located along said inner wall surfaces; and,

a plurality of substantially straight, thin flexible spring element (48/50/52) having opposed flat surfaces extending along a fixed direction of slant relative to the central axis and single plane between said inner wall surfaces of said pair of pivot means and joined at opposite ends (49, 51) of said flat surfaces to said pair of pivot means (34, 36) at a non-diametrically opposing pair of said attachment points (54) located on said inner wall surfaces (35, 37) of different

ones of said pivot means wherein said attachment points of said spring elements are axially aligned in pairs on said adjacent pivot means, whereby each of said flat surfaces defines a plane parallel to said central axis and perpendicular to said single plane when said pair of pivot means are at rest and forms a curved surface perpendicular to said single plane and bowed outwardly from said central axis when one of said pivot means is rotated relative to the other of said pivot means in said direction of slant.

4,405,185

ROLLER BEARING

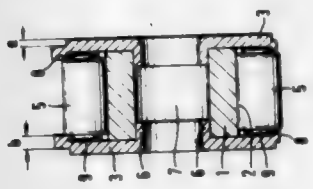
Jürgen Oetjen, Herzogenaurach, Fed. Rep. of Germany, assignor to INA Walzlager Schaeffler KG, Herzogenaurach, Fed. Rep. of Germany

Filed Dec. 21, 1981, Ser. No. 332,843

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1980, 3048228

Int. Cl.³ F16C *29/06*

U.S. Cl. 308—6 C **5 Claims**



1. A roller bearing for the longitudinally moveable mounting of an element with a straight race comprising a bearing body having two race sections of which at least one is straight, the two race sections being connected at their ends to each other by a curved race section at each end to form a closed race for cylindrical rolling element being secured by retaining means against falling out, the race being laterally bounded by separate flange plates secured to the bearing body, the flange plates being thin-walled elements having, in at least part of the race area, chiplessly formed on rims, being formed in such a way that the material in the area of the rims is offset by a partial amount of the thickness of the flange plates parallel to the latter and towards the race.

4,405,186

MOVABLE GRID STACKER FOR A FOOD SLICING MACHINE

Glenn A. Sandberg, Lockport, and Scott A. Lindee, New Lenox, both of Ill., assignors to Formax, Inc., Mokena, Ill.

Filed Oct. 5, 1981, Ser. No. 308,252

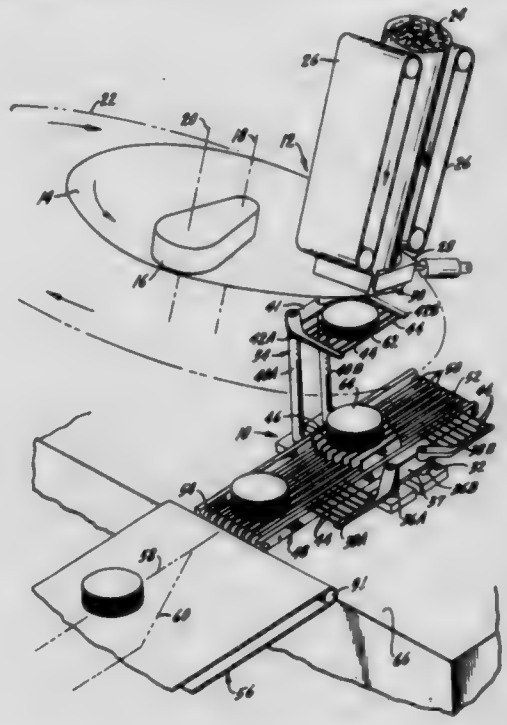
Int. Cl.³ B26C *7/30, 7/32*

U.S. Cl. 414—21 **8 Claims**

1. A stacker for a food loaf slicing machine of the kind in which a food loaf is advanced generally downwardly into a slicing station in which slices of generally uniform thickness are cyclically sliced from the lower end of the loaf, forming stacks of N slices, the stacker comprising:

first and second pairs of opposed stack supports, the stack supports of each pair each being movable along a predetermined closed-loop path from an initial slice receiving position immediately below the slicing station at which the stack support pair receives a first food loaf slice as cut with essentially no free fall, downwardly through a range of N−1 additional slice receiving positions each displaced approximately one additional slice thickness downwardly from the slicing station, further downwardly to a discharge position displaced from the final slice receiving position, pivotally outwardly of the discharge position, upwardly to a ready position adjacent to the initial slice receiving position, and pivotally inwardly to the initial slice receiving position;

stack support drive means, operatively connected to the first and second pairs of stack supports, for moving each pair of stack supports through its closed-loop path in 2N slicing cycles, with the second pair of stack supports moving from the ready position to the initial slice receiving posi-



tion immediately after the first pair of stack supports moves from the final slice receiving position toward the discharge position sufficiently to afford clearance from the top slice of a stack on the first pair of stack supports; and stack discharge means for removing a stack of slices from each pair of supports, at the discharge position, with no free fall.

4,405,187

CONNECTOR ASSEMBLY FOR PCM CABLES

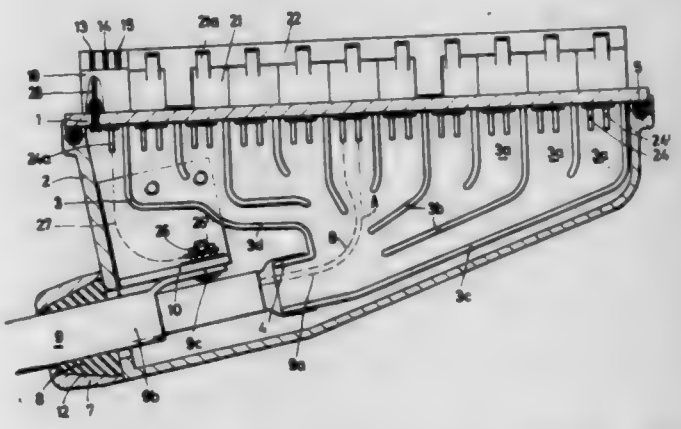
Manfred Müller, and Klaus-Peter Achtnig, both of Berlin, Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany

Filed Mar. 23, 1981, Ser. No. 246,248

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021283

Int. Cl.³ H01R *13/512*

U.S. Cl. 339—14 R **13 Claims**



1. A connector assembly for pulse-code modulation cables, said connector assembly being electrically shielded, said assembly comprising:

a generally rectangular electrically conductive base plate having top and bottom surfaces;

a plurality of contact pin pairs extending through said base plate and having top and bottom ends, said contact pins

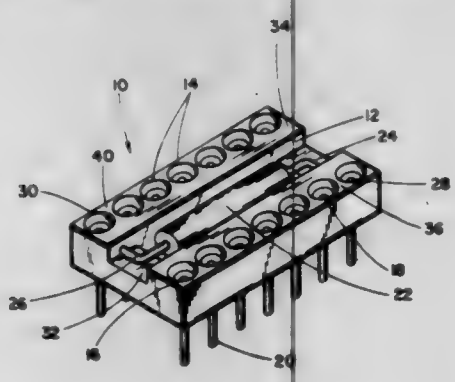
being mounted to said base plate in a pressure sealed and electrically insulated manner;
a like plurality of electrically insulative housings mounted to said top of said base plate and accommodating one of said contact pin pairs;
metal shielding means on each said insulative housing;
a plurality of contact elements in each said housing;
means in each said housing to couple said contact elements individually with the top ends of said contact pins;
metal shielding means extending generally downwardly from the bottom of said base plate in the form of a plurality of partitions forming chambers in each of which reside the bottom ends of one of said contact pin pairs; and
means adapted to receive said cable so that pairs of conductors from said cable are connectable to the bottom ends of said contact pin pairs.

4,405,188

ELECTRICAL SOCKET WITH DISCREET IMPEDANCE ELEMENT ATTACHED THERETO

William B. Schwartz, New Brunswick, N.J., assignor to Akzona Incorporated, Asheville, N.C.

Filed Apr. 6, 1981, Ser. No. 251,580
Int. Cl.[3] H01R *9/09, 13/66*
U.S. Cl. 339—17 CF 6 Claims



1. An electrical termination system comprising:
an insulator block having a pair of primary holes drilled therethrough, said primary holes each receiving an electrical socket contact; said socket contacts each having rigid exterior portions and hollow pin receiving portions located within the confines of said primary holes;
a secondary hole associated with each primary hole and each secondary hole formed as a bulge extending sidewardly from the periphery of the associated primary hole; a discrete electrical impedance element having a pair of leads; each of said secondary holes receiving a corresponding electrical lead of said impedance element; each of said rigid exterior portions of said contacts and said leads forming an interference fit with one another therebetween, said secondary holes being configured to closely surround the inserted leads.

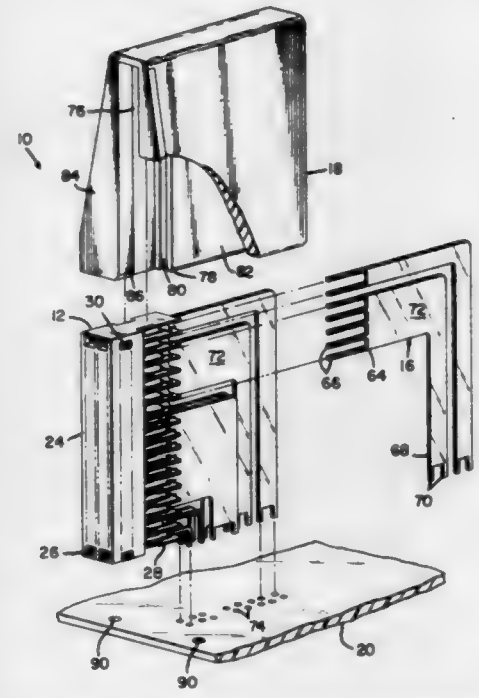
4,405,189

NARROW PROFILE POWER DISTRIBUTION BLOCK

George H. Douty, Mifflintown; Leon T. Ritchie, Mechanicsburg, and Clair W. Snyder, Jr., York, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 13, 1981, Ser. No. 292,565
Int. Cl.[3] H01R *23/68*
U.S. Cl. 339—17 C 5 Claims

1. A narrow profile connector for bussing power to circuit boards and the like without utilizing any substantial amount of real estate on the circuit board, comprising:
a connector housing of rigid insulative material having a plurality of terminal passages extending from a rear end through said housing to open on a front mating face, each passage being fully enclosed at the mating face and open channel shaped at the rear end;
a plurality of terminals each mounted in a respective one of said passages, each said terminal having a forward mating end directd toward said front mating face and lying in the fully enclosed portion of said passage and a conductor engaging slotted rear portion lying exposed in said open channel shaped portion;
a plurality of bussing members each having first and second ends extending normal to each other in the plane of the respective bussing member, at least one tine extending from each said end, first tines on said first end being engageable with the slotted rear portion of said terminals to



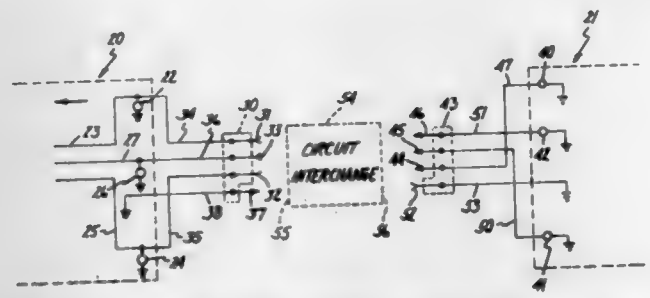
make electrical and mechanical contact therewith, second tines on said second end being engageable with circuitry of said circuit board, and
a housing shell of rigid insulative material having a central cavity defined by spaced parallel walls, said shell being profiled to mate with said connector housing and to enclose said bus members,
whereby said connector can be applied to an edge portion of a circuit board in an edgewise condition presenting a narrow profile while providing an adequate bussing for the necessary power.

4,405,190

CIRCUIT INTERCHANGE MODULE

John H. Schroeder, 1030 Jefferson St., Anoka, Minn. 55303

Filed May 11, 1981, Ser. No. 262,444
Int. Cl.[3] H01R *29/00*
U.S. Cl. 339—28 6 Claims



1. An electrical circuit interchange for use with a land vehicle assembly having a towing vehicle and a towed vehicle, comprising: a socket member including a plurality of female connector elements arranged in equal orthogonally disposed rows; a male connector element disposed at the end of each of said rows; means electrically interconnecting said male connector element to form a first circuit; means electrically interconnecting selected female elements in said rows to form second, third, and fourth circuits such that the order of the circuits in each row, reading toward the male connector ele-

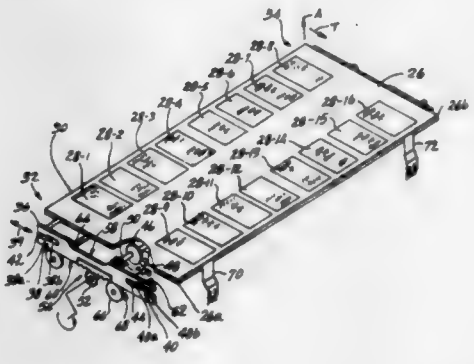
ment, is different from that in every other row, said circuits in said rows being arranged to provide alternative manners of joining electrical devices on said towing and towed vehicles by joining a mating connector to a selected one of said rows.

4,405,191

LOW INSERTION FORCE ACTUABLE INTERFACE FOR ELECTRICAL CONTACTS

Lyle A. Fettig, La Verne, Calif., assignor to Everett/Charles Test Equipment, Inc., Pomona, Calif.

Filed Oct. 17, 1980, Ser. No. 197,973
Int. Cl.³ G01R *15/12*; H01R *13/629*
U.S. Cl. 339—75 M **22 Claims**



1. A low insertion force actuable interface assembly having a carrier mounting an array of electrical contacts with axes of the contacts substantially parallel to each other so that each contact extends to a free end and a carrier moving means, the carrier moving means comprising at least one movable cam member guided for movement in a substantially straight line, the cam member comprising first and second cam portions, a cam follower connected to the carrier and positioned for following the first and second cam portions for thereby guiding the movement of the carrier during movement of the cam member, a first cam part connected for movement with the cam member, such movement of the cam member causing the cam follower to follow in sequence the first and second cam portions, the cam follower in following the first cam portion causing the carrier to move the contacts substantially parallel with the axes thereof, the second cam part forcing the first cam part to move the carrier substantially transverse to the axes of the contacts while the cam follower follows the second cam portion, the improvement comprising:

guide means for supporting and guiding the movable cam member along such substantially straight line comprising

at least one first bearing on the cam member,

at least one second bearing on the cam member,

at least one first roller positioned for supporting and rolling along the first bearing,

at least one second roller positioned for supporting and rolling along the second bearing,

an interlocked interface between the first roller and the first bearing for substantially preventing movement of the cam member transverse to such substantially straight line, the first and second bearings being at least partially oppositely facing, the first and second rollers being positioned with respect to the first and second bearing for supporting and guiding the cam member along such substantially straight line.

4,405,192

HERMAPHRODITIC CONNECTOR

Daniel G. Eaby, Mt. Joy, and John R. Shuey, Carlisle, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

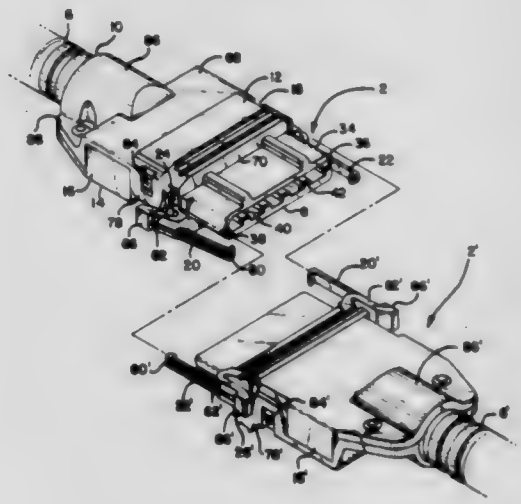
Filed Feb. 11, 1981, Ser. No. 233,543
Int. Cl.³ H01R *13/633*
U.S. Cl. 339—91 R **3 Claims**

1. An electrical connector for matable engagement with a complementary electrical connector, comprising:

an insulating housing means having terminal passageways in which electrical terminal means are to be disposed for terminating electrical conductors, said housing means having sidewalls and a mating end for matable engagement with a like matable end of a complementary electrical connector;

latch means including latch arm means and engaging means;

spring means integrally connecting said latch means to side sidewalls of said housing means so that said latch arm means extend toward a front end of said housing means alongside the mating end while said engaging means extend toward a back end of said housing means, said latch means being on one side of a medial plane which includes a longitudinal axis of said housing means;



latching ear means on said sidewalls above said spring means of said latch means and being on the other side of said medial plane;

said housing means having a body member and a cover member, said latch means being on one of said members, said latching ear means being on the other of said members;

said latch arm means adapted to latchably latch onto said latching ear means when the matable ends of complementary electrical connectors are matably engaged, said engaging means when engaged and moved inwardly toward said sidewalls moving said latch arm means free of said latching ear means to enable the matable ends of the complementary electrical connectors to be disconnected.

4,405,193

PRELOADED ELECTRICAL CONNECTOR

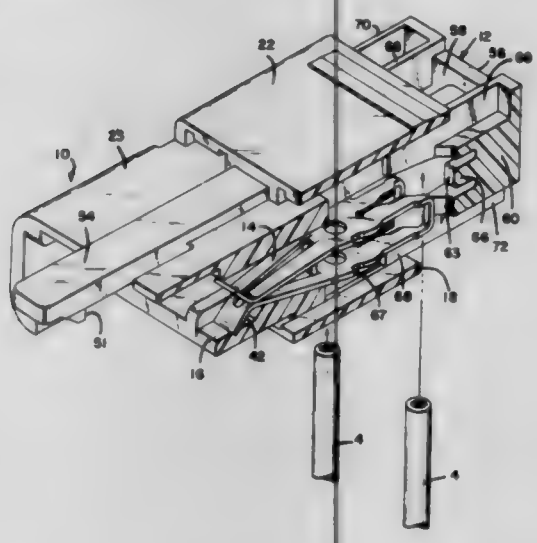
Charles H. Weidler, Lancaster, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 8, 1981, Ser. No. 271,491
Int. Cl.³ H01R *4/24*
U.S. Cl. 339—99 R **3 Claims**

1. An electrical connector assembly of the type comprising an insulating housing and a conductor retaining plug, said housing having a mating face, a conductor entry face, oppositely facing parallel sidewalls and oppositely facing parallel endwalls extending between said faces, at least one contact receiving cavity extending through said housing from said mating face to said conductor entry face, an electrical terminal in said cavity, said terminal having a conductor connecting portion which is proximate to said conductor entry face, said conductor connecting portion comprising at least one plate-like member which is parallel to said sidewalls, said plate-like member having a conductor-receiving slot having an open end which is directed towards said conductor entry face, said retaining plug being insertable into said housing at said conductor entry face and having retaining and conductor inserting projections thereon which are dimensioned to extend past said plate-like member and retain a conductor in said slot, said connector assembly being characterized in that:

said plug has spaced-apart parallel guide bars thereon ex-

tending beside, and beyond, said retaining and conductor inserting projections, said plug being partially inserted into said conductor entry face with said guide bars extending into the interior of said housing and with said retaining and conductor inserting portions spaced from said conductor connecting portion and spaced from said conductor entry face,



said guide bars and internal surface portions of said cavity having opposed shoulders thereon serving to hold said plug in said partially inserted position, whereby

upon positioning a conductor between said retaining projections and said plate like member and moving said retaining plug to its fully inserted position, said conductor will be moved into said slot by said retaining and conductor inserting projections.

4,405,194

ELECTRICAL PLUG

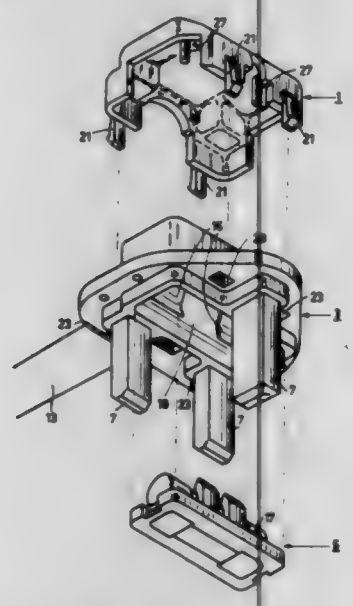
Dirk F. W. van Lierop, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 13, 1981, Ser. No. 310,669

Claims priority, application Netherlands, Nov. 28, 1980, 8006481

Int. Cl.³ H01R *3/00*

U.S. Cl. 339—147 P 2 Claims



1. An electrical plug comprising:

(a) a base including a front and a rear portion and having an opening extending from the front portion to the rear portion, said front portion having connection pins projecting therefrom and having a recess in which are disposed contacts for electrical connection to a fuse, and said rear portion having terminals electrically-connected to respective ones of the connection pins;

(b) a connection cable including wires electrically connected to respective ones of the terminals;

(c) an insulating cap for attachment to the rear portion of the base to cover at least one of the terminals, said insulating cap including a pin for projecting into the opening when the cap is attached to the base; and

(d) an injection molded plug body of plastic material for covering the rear portion of the base and the insulating cap;

said opening communicating with the recess, and said cap's pin serving as means to prevent the plastic material from flowing into the recess if the insulating cap is attached when the plug body is injection molded.

4,405,195

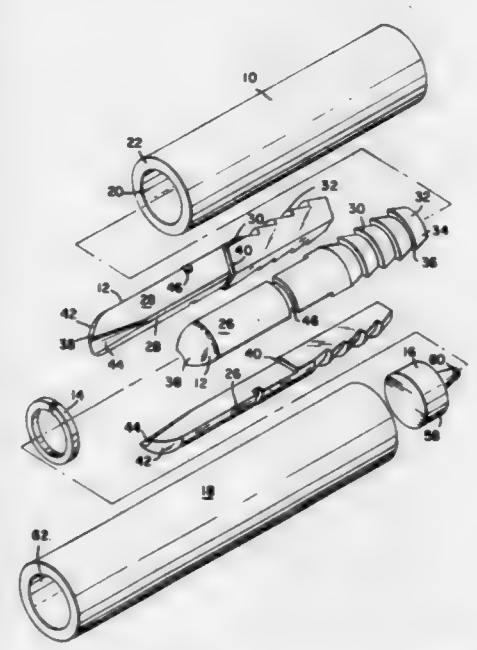
PIN AND SOCKET CONNECTOR

Hitesh Cherry, Harrisburg; Arthur L. Mueller, Camp Hill, and Walter M. Werner, Downingtown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 29, 1981, Ser. No. 258,710

Int. Cl.³ H01R *11/22*

U.S. Cl. 339—252 R 4 Claims



1. A pin and socket connector of the type formed by the pin being telescopingly received in the socket, said connector comprising:

a. a elongated pin of conductive material having cable receiving means at one end and cylindrical socket insertion means comprising a plurality of spring beams at the opposite end with the free ends of the beams collectively defining a tapered opening therebetween, and further, a groove encircling the circumference of the insertion means at a location spaced rearwardly from the free end thereof;

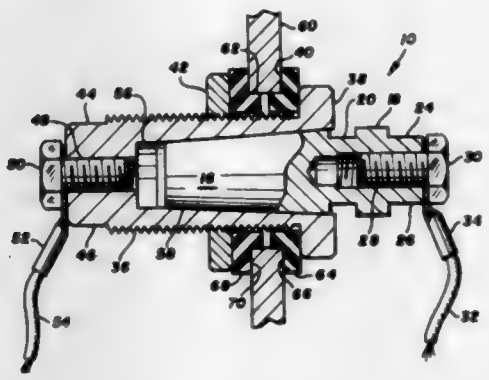
b. a compressible ring positioned in the groove with a portion of the ring extending above the surface of the pin when in a non-compressed state; and

c. en elongated socket having cable receiving means at one end and a receptacle at the opposite end adapted to receive the insertion means of said pin with the wall of the receptacle having a circumferential groove opening out into the receptacle and further a cone-shaped member positioned in the receptacle so that upon inserting the insertion means into the receptacle the ring becomes compressed until reaching the groove whereupon it expands thereinto to lock the pin in the socket and the cone-shaped member enters the tapered opening and thereby causes said beams to expand outwardly against the wall of the receptacle.

4,405,196
ELECTRICAL CONNECTOR FOR HIGH FIDELITY AUDIO EQUIPMENT

Robert W. Fulton, 4428 Zane Ave. North, Minneapolis, Minn. 55422

Filed Jan. 12, 1981, Ser. No. 224,083
Int. Cl.³ H01R 11/04
U.S. Cl. 339—273 F 5 Claims



1. A separable electrical connector for joining at least two components of a high fidelity audio system to one another, comprising:

(a) a first connector member of a first predetermined mass having a solid, frusto-conical portion of a predetermined length integrally joined at its larger base with a coaxial cylindrical portion of a lesser diameter than said larger base of said frusto-conical portion, said cylindrical portion having a coaxial threaded bore extending inward from one end thereof;

(b) a second connector member of a second predetermined mass comprising a first generally cylindrical portion having a tapered bore extending inwardly from one end thereof for a predetermined distance greater than said predetermined length and terminating internally in a second cylindrical bore of a diameter equal to the diameter of the smallest diameter of said tapered bore, said tapered bore being dimensioned to receive the entirety of said frusto-conical portion of said first connector member therein with a predetermined interference fit, said cylindrical portion of said second connector member having a threaded bore extending inwardly from the other end thereof; and

(c) fastener means insertable into said threaded bores in said first and second connector members for connecting electrical wires respectively associated with said two components to said first and second connector members, the combined mass of said first connector member and said second connector member precluding resonance at sound frequencies above about 4 Hz.

4,405,197
OPTICAL FIBER TACTILE SENSOR

Antal K. Bejczy, Pasadena, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 25, 1980, Ser. No. 210,405
Int. Cl.³ G02B 5/14; A61F 1/00
U.S. Cl. 350—96.15 3 Claims

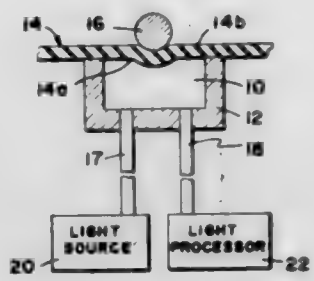
1. A tactile sensor comprising:

structure means including elastic means, and defining an array of a plurality of enclosed cells, each cell including a top side, defined by a surface area of a first surface of said elastic means, the latter having a second surface, opposite said first surface, said second surface being exposed and adapted to come in contact with an object whereby the height of a cell is affected by depression of said elastic means;

light source means;

first light conducting means connected to said light source means and terminating at each of said cells for conducting light into each cell;

light processing means; and

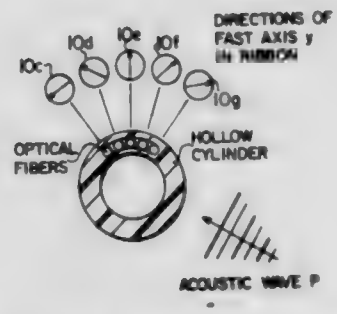


second light conducting means spaced apart from said first light conducting means and connected to said light processing means and terminating at each of said cells for conducting light from each cell to said light processing means.

4,405,198
EXTENDED FIBER OPTIC SENSOR USING BIREFRINGENT FIBERS

Henry F. Taylor, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 25, 1981, Ser. No. 295,909
Int. Cl.³ G02B 5/172; G02F 1/00
U.S. Cl. 350—96.29 11 Claims



1. In a sensor for sensing waterborne acoustic pressure waves of selected frequency, a sensor region comprising:

an elongate pressure compliant tubular member adapted to be disposed in water for receiving incident acoustic pressure waves; and,

plural parallel birefringent optical fibers fixedly secured longitudinally to the wall of the tubular member with their orthogonally disposed fast and slow axes twisted at different helical pitches of length L along their longitudinal extends which define plural response periods, respectively, of L/2 distance apart where their fast axes are disposed normal to the tubular member outer surface;

said wall adapted to apply squeeze pressure along the fibers in a direction generally only parallel to the tubular member outer surface in response to an incident acoustic pressure wave on the tubular member;

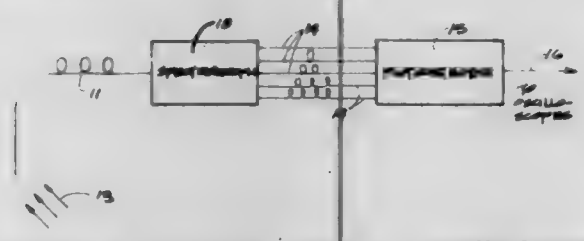
whereby acoustic sound waves whose wavelength maxima apply squeeze pressure along all the optical fibers, but, only when the maxima arrive in substantial unison at a plurality of response periods of a particular fiber, do they additively change the birefringence of that particular fiber to cause maximum relative phase shift in polarized light components passing through the fiber to identify an acoustic pressure wave of a particular frequency.

4,405,199

METHOD FOR ENHANCING SIGNALS TRANSMITTED OVER OPTICAL FIBERS

James W. Ogle, Goleta, Calif., and Peter B. Lyons, Whiterock, N. Mex., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Feb. 11, 1981, Ser. No. 233,532
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.19 2 Claims



1. A method of enhancing a short, spectrally broadband signal transmitted through an optical fiber having substantial length, said method comprising the following steps:

inserting the signal into a spectrograph;

collecting a plurality of spectral components of the signal by directing the output of the spectrograph into an array of equalizing fibers whose individual fibers have relative lengths selected to compensate for prior material dispersion of the respective spectral components of the signal during transmission;

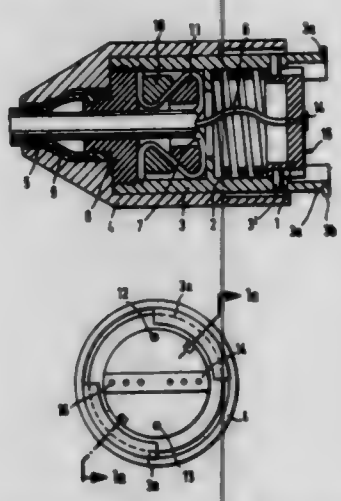
and illuminating a photodetector by the resulting output signals from the array of fibers.

4,405,200

RELEASABLE COUPLING FOR CONNECTING AT LEAST TWO LIGHT WAVEGUIDES

Hartmut Hoffmann, Leimen, and Klaus U. Baron, Heidelberg, both of Fed. Rep. of Germany, assignors to Teldix GmbH, Heidelberg, Fed. Rep. of Germany

Filed Jan. 26, 1981, Ser. No. 228,239
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1980, 3002473
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.21 16 Claims



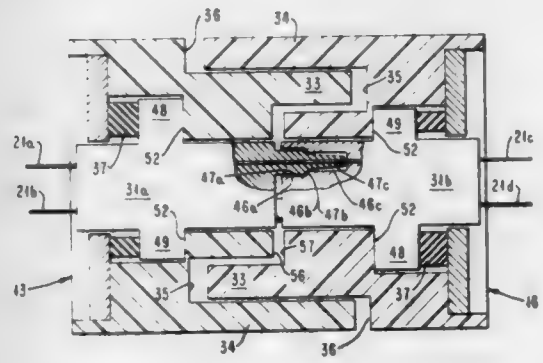
1. In a coupler for detachably placing the ends of at least two light waveguides in energy transmitting communication, which coupler is composed of two coupling halves each including a core member provided with at least two precisely positioned bores holding the ends of at least two optical fibers of an associated waveguide, a sleeve in which the core member is mounted and which is provided with at least one extension part extending axially of the sleeve, the core member having a frontal end face provided with an axially extending guide pin and a guide opening diametrically opposite the guide pin, with respect to the axis of the core member, and a sleeve nut for securing the two halves of the coupler together, the improvement wherein each said coupling half further comprises: means supporting said core member to permit said core member to be axially movable in a resilient manner in said sleeve from an end position and to have a limited axial and radial mobility therein, said core member being in its end position when said coupling halves are uncoupled and moving axially from that end position during coupling together of said coupling halves; and means associated with said sleeve for threadedly engaging said sleeve nut of the other said coupling half in order to maintain said coupling halves coupled together; and wherein said frontal end face of each said core member includes a raised portion containing the ends of the associated optical fibers, the ends of the associated optical fibers are arranged in said raised portion of each said core member along a straight line perpendicular to and bisecting the line between said guide pin and guide opening provided at said core member end face, said guide pin and said guide opening provided at said end face of each said core member are located outside of said raised portion thereof, and said guide pin provided at each said core member end face has a conical portion in the vicinity of its tip and has the form of a dowel pin in the vicinity of its base.

4,405,201

FIBER OPTIC CONNECTOR

Frank P. Cefarelli, and Robert T. Evans, both of Poughkeepsie, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed May 13, 1981, Ser. No. 263,237
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.21 12 Claims



1. In a fiber optic connector for optically coupling a plurality of pairs of single fibers in end-to-end relationships, the combination comprising:

first and second identical sub-assemblies releasably connected to each other and being movable between connected and disconnected positions;

releasable means for holding said sub-assemblies in said connected position;

first and second identical housings interfitted with each other and forming respective parts of said first and second sub-assemblies, said housings having first aligning means allowing movement of said sub-assemblies into said connected position only when said housings are in a predetermined orientation relative to each other;

first and second sets of identical holders respectively loosely mounted in said first and second housings in an abutting side-by-side relationship, said holders in each set being movable relative to each other, each holder having a plug and a receptacle, each holder being connected to two fibers with one fiber extending through such holder and terminating at the end of said plug and with the other fiber extending through said holder parallel to said one fiber and terminating at the end of said receptacle, and first and second sets of holders being interfitted with each other with said plugs of said first set mated with receptacles of said second set and said plugs of said second set mated with receptacles of said first set, said holders having second aligning means whereby the ends of said fibers in said first set are optically aligned with and coupled to the ends of said fibers in said second set, for the efficient transmission of light energy between aligned fibers;

said first aligning means being operative when said housings are in said predetermined orientation, to further coarsely align the ends of each pair of fibers;

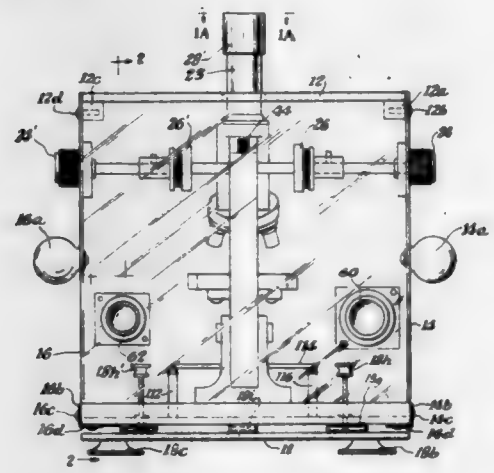
and first and second biasing means in said first and second sub-assemblies biasing said first and second sets of holders in a first direction toward engagement with first portions of said first and second housings while allowing movement of said holders in a direction opposite to said first direction and laterally thereof during movement of said sub-assemblies into said connected position, said second aligning means being operative during such movement of said sub-assemblies to laterally shift individual ones of said holders so as to exactly axially align all pairs of said fibers.

4,405,202

PROTECTIVE MICROSCOPE CONTAINER WITH REMOTE CONTROL MECHANISM

Leonard L. Kimball, 1564 NE. 191 St., Miami, Fla. 33179

Filed Mar. 30, 1981, Ser. No. 248,695
Int. Cl.³ G02B *21/00, 21/34*
U.S. Cl. 350—589 **9 Claims**



1. A protective microscope container for housing a microscope having an eyepiece, a slide viewing support and a focus control, comprising:

a transparent top wall having an aperture for receiving said eyepiece and ventilating the inside of said container;

a front wall and rear wall;

a base for supporting said microscope;

a first side wall and a second side wall;

said top wall, front wall, rear wall, base, first side wall and second side wall, operably connected together whereby limited access to the inside of said container can be obtained without dismantling a wall or said base

focus control extension means for focusing said microscope externally of said container, operably connected to said container;

first connecting means for removably connecting said focus control extension means to said focus control;

moveable slide holder for receiving at least one specimen slide;

second connecting means for connecting said specimen slide to said slide holder;

two-dimensional drive means for controlling both the longitudinal and transverse position of said slide holder relative to said eyepiece;

said slide holder operably connected to said two-dimensional drive means for viewing of specimen slides;

light source for viewing said specimen slides, operably connected to said container below said slide viewing support;

lens means for changing the color or intensity of light from said light source, positionable between said light source and said specimen slides;

lens support means for supporting said lens means, operably connected to said container;

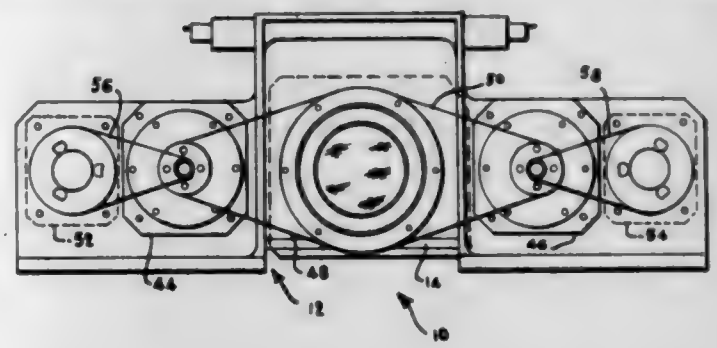
third connecting means for removably connecting said lens means to said lens support means.

4,405,203

ATMOSPHERIC DISPERSION CORRECTOR

Edward P. Wallner, Wayland, and William B. Wetherell, Stoneham, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 8, 1980, Ser. No. 195,147
Int. Cl.³ G02B *27/00, 23/00*
U.S. Cl. 350—168 **9 Claims**



1. An atmospheric dispersion corrector capable of providing optimum correction over a preselected spectral band, said corrector comprising: a housing; a first simple prism; a second simple prism; said first prism and said second prism having identical prism angles w, wherein $w=m \tan \zeta_{max}$ - $N_{Amax}'N_{P}'/2N_{P}'^2$ and m=the magnification at said corrector, ζ_{max}=the maximum zenith angle of a ray impinging on said corrector, the overbar (¯) represents a normalized intensity weighted spectral average, $N_{Amax}'(\lambda)=N_{Amax}(\lambda)-N_{Amax}$, $N_{P}'(\lambda)=N_{P}(\lambda)-N_{P}$, $N_{Amax}(\lambda)$=the refractivity of air at maximum pressure and minimum atmospheric temperature at which said corrector is to be used, $N_{P}(\lambda)$=the refractivity of prism material at λ, and λ=the wavelength of said ray; first means rotatably mounted within said housing for fixedly supporting said first prism therein; second means rotatably mounted within said housing for fixedly supporting said second prism therein adjacent to and in optical alignment with said first prism; and means operably connected to said first and said second rotatable prism supporting means for rotating said first and said second rotatable prism supporting means simultaneously with respect to each other as well as independently with respect to each other through an angle $2\phi_{OPT}$ in which $\phi_{OPT}=\cos^{-1}(\theta_{OPT}/2w)$ and wherein said optimum total prism angle θ_{OPT} is defined by the expression $\theta_{OPT}=m \tan \zeta N_{A}'N_{P}'/N_{P}'^2$ wherein ζ=the current zenith angle of a ray impinging on said corrector, $N_{A}'(\lambda)=N_{A}(\lambda)-N_{A}$, and $N_{A}(\lambda)$=the refractivity of air at λ; whereby said corrector substantially eliminates the effects of atmospheric dispersion when said angle $2\phi_{OPT}$ is achieved.

4,405,204

POSITIONING CONTROL DEVICE

Michel Saint-Sevin, Gagny; Michel Blot, Arpajon, and Jacques Moirez, Paris, all of France, assignors to Societe d'Optique, Precision Electronique & Mecanique, Levallois-Perret, France

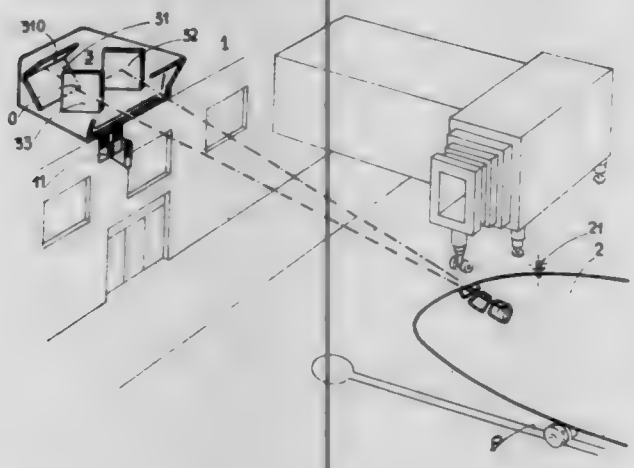
Filed Mar. 11, 1981, Ser. No. 242,762
Claims priority, application France, Mar. 19, 1980, 80 06127
Int. Cl.³ G02B *27/14*; G01B *3/00*
U.S. Cl. 350—174 **6 Claims**

1. Apparatus for controlling the positioning of an aircraft in a parking area at a predetermined parking location (P), comprising

(a) means for materializing a line of approach (PO) located in a vertical plane passing through said parking location (P) through a fixed reference point (O) located at a distance from said parking location;

(b) a semi-transparent mirror (33) the center of which is located at said reference point (O) and which forms a 45° angle with said line of approach (PO);

(c) a reflecting device (3) adapted to redirect, parallel to themselves, light beams which have passed through said semi-transparent mirror (33), so as to form in the eye of an observer in said aircraft a first image of a reference point (21) located on said aircraft;



(d) a plane mirror (32) adapted to form in the eye of said observer a second image of said reference point (21) on said aircraft, after three reflections, on said plane mirror (32), said semi-transparent mirror (33) and said reflecting device (3);

(e) said plane mirror (32) forming with said semi-transparent mirror (33) an angle (A) such that said first and second images are superimposed when said reference point (21) on said aircraft is located on the vertical axis of said predetermined parking location (P).

4,405,205

ADJUSTABLE MECHANISM FOR A PHOTO OBJECTIVE

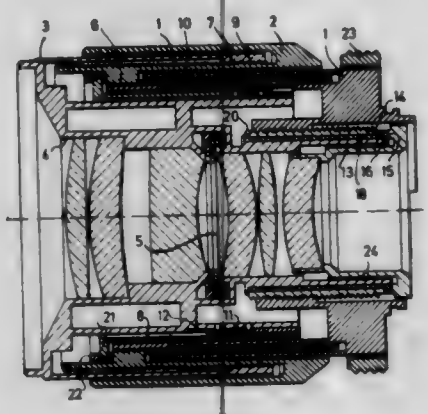
Dieter Rossmann, Aalen, Fed. Rep. of Germany, assignor to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Nov. 21, 1980, Ser. No. 209,269

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1979, 2946943

Int. Cl.³ G02B *7/04*

U.S. Cl. 350—255 **9 Claims**



1. An adjustment device for photogrpahic lenses comprising:

a stationary lens housing;

a focusing ring being threadably engaged with said lens housing by threads of a first pitch;

a first lens holder for a first lens group, said first lens holder being threadably engaged with said focusing ring by threads of equal but opposite pitch to said first pitch;

a second lens holder for a second lens group, said second lens holder having a cylindrical portion with a first set of internally threaded helical grooves of a second pitch, said second lens holder being threadably attached to said housing; and

an intermediate ring having a second set of internally threaded helical grooves of said second pitch, said first lens holder being engaged in said second set of helical grooves, said intermediate ring being engaged in said first set of helical grooves in said second lens holder such that axial and rotational movement of said intermediate ring rotates said second lens holder to cause axial displacement of said second lens holder relative to said housing.

4,405,206

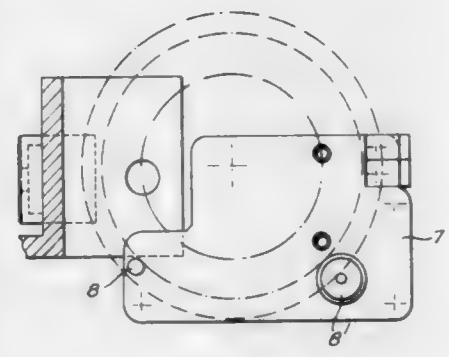
FILTER DEVICE FOR THE FILTRATION OF RADIATION

Pertti Ekholm, Helsinki, Finland, assignor to Labsystems Oy, Finland

Filed Jun. 22, 1981, Ser. No. 275,745

Int. Cl.³ G02B *5/20, 7/00*

U.S. Cl. 350—318 **2 Claims**



1. A filter device for the filtration of radiation in a device for measuring radiation, said filter device comprising a plurality of individual filters fitted into a detachable filter disk wherein the filter device comprises a first magnetic elemet which is positioned at a horizontal plane located between the center axis of the filter disk, and the bottom edge of said disk, said filter disk being provided with a second magnetic element positioned at its center axis, such that the opposite poles of said first and second magnetic elements are arranged proximate to and facing each other.

4,405,207

METHOD OF ASSEMBLING A GRADIENT INDEX LENS ARRAY HAVING REDUCTION PROPERTIES

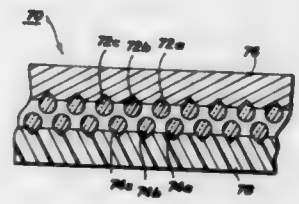
David B. Kay, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 12, 1981, Ser. No. 224,348

Int. Cl.³ G02B *5/16*

U.S. Cl. 350—320 **1 Claim**





1. A method of assembling a plurality of gradient index optical fibers into a lens array comprising a first and second row of fibers capable of transmitting an image of an object at an object plane onto an image plane at a magnification other than unity comprising the steps of:

determining the relative orientation and length of said first

and second row of fibers with respect to each other and with respect to the object and image planes, said orientation resulting in a fan-fold configuration of said fibers,

forming a plurality of grooves in a first generally rectangular binding member, each groove adapted to seat an individual fiber of said first row in their previously determined relative orientations, each groove having a length which increases from the centermost groove out to both ends of the member,

forming a plurality of grooves in a second generally rectangular binding member, each groove adapted to seat an individual fiber of said second row in their previously determined relative orientations, each groove having a length which increases from the centermost groove out to both ends of the member,

progressively deepening the depth of the grooves on said first and second member in a direction extending from a first of said entrance and exit face of the completed lens to the other face wherein, when said fibers are seated in their respective grooves, said first and second rows are tilted so as to adjoin each other at one face of the array while separated from each other at the other array face

placing gradient index optical fibers of approximately equal length into the grooves of said first and second members, the fiber length being such that the fibers extend beyond the ends of the grooves,

adhesively seating the optical fibers into the grooves,

bonding said first member to said second member to form a lens array, and

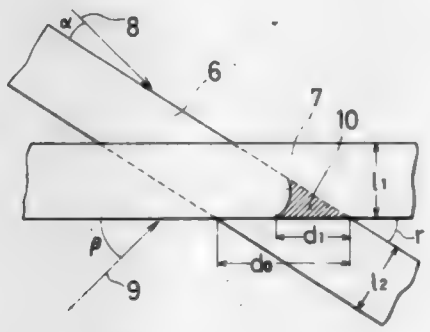
abrading and polishing the entrance and exit faces of said array so as to reduce the fiber lengths to said predetermined values and to achieve relatively smooth convex entrance and exit faces.

4,405,208

LIQUID CRYSTAL DISPLAY DEVICES WITH POLYIMIDE-SILOXANE COPOLYMER RESIN ALIGNMENT FILM

Yoshihiro Shirai, Tsurumaihigashimachi, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 2, 1981, Ser. No. 230,541
Claims priority, application Japan, Feb. 8, 1980, 55-14937
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—341 **14 Claims**



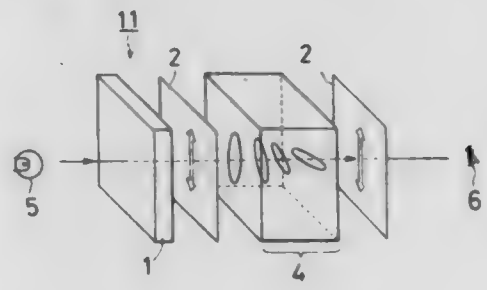
1. A liquid crystal display device comprising a pair of opposed substrates, a transparent electrode provided on at least one of the substrates, a liquid crystal composition sandwiched between the substrates and an orienting film of a polyimide-siloxane copolymer resin formed at least over the surface of the electrode which is on the substrate, said orienting film being in contact with the liquid crystal composition.

4,405,209

MATRIX LIQUID-CRYSTAL DISPLAY DEVICES

Fumiaki Funada; Toshiaki Takamatsu; Ishii Yutaka, and Tomio Wada, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 10, 1981, Ser. No. 233,091
Claims priority, application Japan, Feb. 29, 1980, 55-25913
Int. Cl.³ G02F *1/13*; C09K *3/34*
U.S. Cl. 350—341 **8 Claims**



1. A matrix liquid-crystal display device for video image using DTN mode comprising a pair of transparent substrates defining a pair of mutually facing surfaces, transparent electrodes provided on each of said surfaces, an insulating layer with orienting property formed on said electrodes on each of said surfaces, a liquid-crystal layer formed by depolarization in a twisted-nematic layer, said liquid crystal being nematic with a negative dielectric anisotropy, and sandwiched between said mutually facing insulating layers, and a polarizer provided on the opposite surface of each of said substrates from said liquid-crystal layer, and the liquid-crystal layer contains an ionic dopant such that the cut-off frequency Fc(Hz) of said liquid-crystal layer satisfies the following relationship within a range of ambient temperatures:

$$16\frac{C}{C_o}\cdot N\cdot F \gtrsim f_c \gtrsim 8\cdot N\cdot F$$

in which N stands for the number of multiplex driving, F stands for the frame frequency of an image signal, C stands for the capacitance per unit area of said insulating layers, and C_o stands for the capacitance per unit area of said insulating layers when they have a specific dielectric constant ϵ of about 4 and a thickness of about 100 A, where the f_c value of the device is at least about 29 kHz, and such that the reproduction of a video image with a half-tone is achieved.

4,405,210

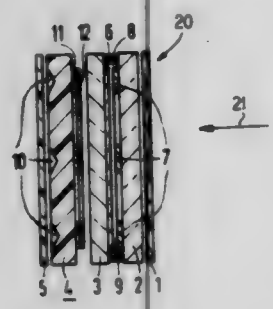
DISPLAY DEVICE FOR DISPLAYING LIGHT IMAGES ON A DARK BACKGROUND

Guenter Baur, Freiburg; Waldemar Greubel; Hans Krueger, both of Munich, and Alois Schauer, Gruenwald, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 877,461, Feb. 13, 1978, abandoned. This application May 19, 1980, Ser. No. 151,173
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1977, 2706405
The portion of the term of this patent subsequent to Dec. 23, 1997, has been disclaimed.
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—345 **4 Claims**

3. In a display device for displaying bright images on a dark background, said device including a liquid crystal cell having a liquid crystal layer which is electrically switchable by zones between an operative state and in inoperative state, said layer being enclosed by two carrier plates with a predetermined wall orientation; means for individually switching zones of the layer between the operative and inoperative states; and a light trap in the form of a body containing fluorescent particles, said body being made of material with a refractive index of more than 1

and being provided with a light emergent window disposed behind each of the switchable zones of the liquid crystal layer in the direction of observation, the improvements comprising the cell including a linear polarizer disposed adjacent one of said carrier plates, the liquid crystal layer having a dielectric constant with a negative anisotropy, said layer, while in an inoperative state, being oriented in a tilted homeotropic manner with a tilt twisted through 90° towards the plate normal and parallel with the direction of polarization of the linear



polarizer at the carrier plate near the polarizer, said layer, while in an operative state, assuming a twisted homogeneous orientation with a bias predetermined by the direction of tilt, and said liquid crystal layer containing at least one pleochroic dye, said dye being selected to absorb the excitation light for the fluorescent particles at a low level in each zone that is in the inoperative state and to absorb the fluorescent light at a high level in each zone in the operative state so that the zones are only placed in an operative state when the zone belongs to the background of the image.

4,405,211

LIQUID CRYSTAL COMPOSITIONS WITH PLEOCHROIC ANTHRAQUINONE DYES

Kenneth J. Harrison, Malvern Link; Edward P. Raynes, Malvern; Frances C. Saunders, Malvern Wells, and David J. Thompson, Whitefield, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

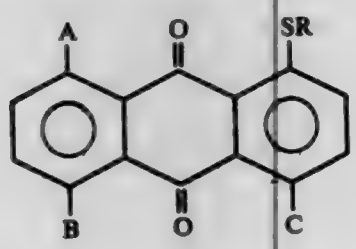
Filed Jul. 27, 1981, Ser. No. 287,118

Claims priority, application United Kingdom, Jul. 29, 1980, 8024797

Int. Cl.³ G02F *1/13*; C09K *3/34*

U.S. Cl. 350—349 **44 Claims**

1. A material suitable for a guest-host liquid crystal device comprising a solution of a liquid crystal material and a pleochroic dye, wherein the pleochroic dye comprises at least one compound having a formula:



Formula (I)

wherein:

R represents a group selected from alkyl and aryl;

each of A, B and C independently represents a group selected from H, —SR and —NR_2R_2 groups, wherein R_1 and R_2 are independently selected from H, alkyl and aryl; provided that at least one of A, B and C is other than H and that if two of A, B and C are H, then the third is NR_1R_2.

4,405,212

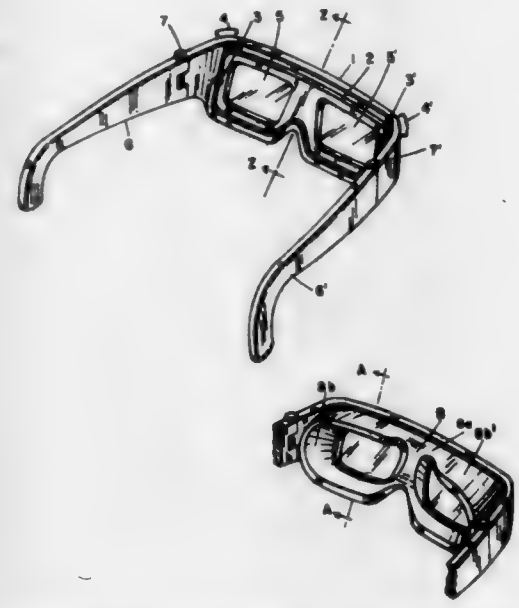
SPECTACLE FRAME AND CONVERSION ACCESSORIES THEREFOR

Leonard B. Cooper, Capri G300, Delray Beach, Fla. 33446

Continuation-in-part of Ser. No. 107,322, Dec. 26, 1979, abandoned. This application Dec. 8, 1980, Ser. No. 213,949

Int. Cl.³ G02C *5/00*

U.S. Cl. 351—43 **6 Claims**



1. A spectacle frame of the every-day type convertible into a water-tight goggle, said frame having (1) manually detachable temples, (2) means for receiving a prescription ground lens in each eyepiece, and (3) in its inner face a circumferential channel adapted to hold with a tight fit a correspondingly ridged frame-to-face seal.

4,405,213

MAKEUP EYEGLASSES WITH SLIDING FRAMES

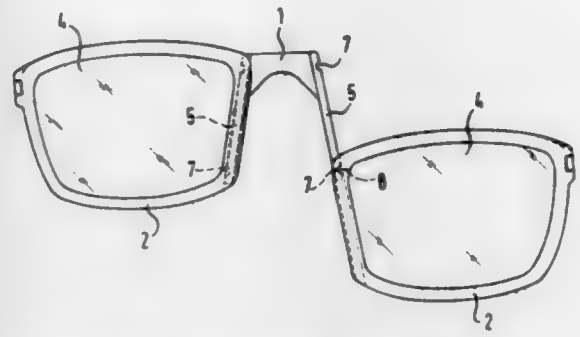
Ingeborg Kolkmann, A 6323, Bad Haring, Austria

Filed Oct. 16, 1980, Ser. No. 197,434

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1979, 7930575[U]

Int. Cl.³ G02C *5/00*

U.S. Cl. 351—59 **4 Claims**



1. Makeup glasses, comprising: a separate pair of frames (2) each adapted to mount an individual eyeglass lens, a pair of temple arms (3) individually hinged to the lens frames, a nose bridge (1), a pair of track-like shanks (5) on opposite sides of the nose bridge and extending downwardly therefrom, a pair of grooves (6) individually defined in central, proximate, substantially vertical sides of the frames and extending throughout the heights thereof, said grooves being configured to matingly engage and slidably receive said nose bridge shanks so that either the left or the right frame along with a lens (4) mounted therein can be pushed perpendicularly away and downwardly from the transverse axis of the nose bridge, and lock stops for the pushed-up and pushed-down positions of the frames provided between the shanks and the grooves, said makeup glasses having the appearance of an ordinary and conventional pair of

eyeglasses without extraneous appendages or attachments when both frames are in their pushed-up positions.

4,405,214

SAFETY GLASSES

Maurice Bolle, Oyonnax, France, assignor to Etablissements Bolle Georges, Robert et Maurice, Oyonnax, France

Filed Jan. 30, 1981, Ser. No. 229,944
Claims priority, application France, Feb. 4, 1980, 80 02353
Int. Cl.³ G03B *21/32*
U.S. Cl. 351—88 6 Claims



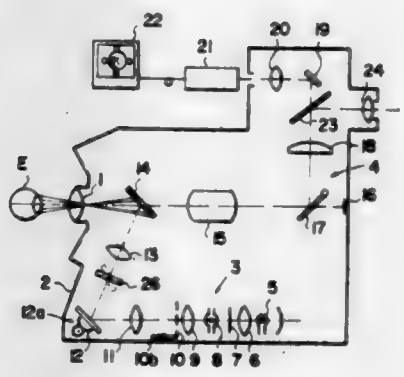
1. In a pair of safety glasses comprising a frame, to which two limbs are articulated, two lenses mounted on the inside of grooved retaining circles formed in the said frame, and a nose rest piece which fits together with the frame and is made of flexible material, the improvement wherein each of said circles is unitarily formed with lens-receiving grooves terminating in the region of said nose rest piece and with a nongrooved portion in said region, said nose rest piece having grooved walls overlying said nongrooved portions and which form part of the said grooved retaining circles by completing the lens-receiving grooves in said regions.

4,405,215

WORKING POSITION LOCATING MEANS FOR OPHTHALMOLOGIC APPARATUS

Eiichi Sano, and Kazuo Nunokawa, both of Tokyo, Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1981, Ser. No. 318,001
Claims priority, application Japan, Nov. 14, 1980, 55-160161
Int. Cl.³ G03B *29/00;* A61B *3/14*
U.S. Cl. 351—208 6 Claims



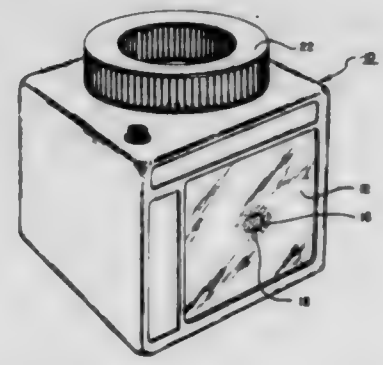
1. An ophthalmologic apparatus including objective lens means adapted to be placed opposite to an eye to be examined, a ring-shaped slit projection system having an optical axis of projection and comprising ring slit aperture means substantially conjugate with an anterior portion of the eye with respect to the objective lens means and light source means for projecting an illuminating luminous flux through said slit aperture means and said objective lens means upon said eye to produce an image of said ring slit aperture means, an observation optical system for observing light which has passed from said eye through said objective lens means, said observation optical system having a focal plane, a working position locating means including means disposed in said ring-shaped slit projection system for deviating the image of said ring slit aperture means to a predetermined extent with respect to the optical axis of projection so that a proper working position with respect to said eye will be indicated by the position of the ring slit image upon the focal plane of said observation optical system.

4,405,216

GLARE SUSCEPTIBILITY TESTER

M. Princeton Nadler, Sewickley, Pa., and David Miller, Boston, Mass., assignors to Mosebach Electric & Supply Company, Pittsburgh, Pa.

Filed May 20, 1981, Ser. No. 265,403
Int. Cl.³ A61B *3/02, 3/00*
U.S. Cl. 351—237 4 Claims



1. A glare susceptibility testing device comprising:

a a plurality of planar members each member having:

(i) a target image approximately centrally located on its surface;

(ii) a contrasting surface adjacently surrounding the target image and which provides a contrast with the target when light is directed to the target and the contrasting surface, each contrasting surface of each member varies from the contrasting surface of the other members; and

(iii) a translucent surface adjacently surrounding the contrasting surface; and

b. means supporting the planar member and directing light through the planar member to produce an image of the target and contrasting surface which is totally surrounded by a glare source produced by the light.

4,405,217

FILM SPEED CONTROL SYSTEMS FOR HIGH SPEED MOTION PICTURE CAMERAS

Gordon W. Brant, Sunnyvale, Calif., assignor to Redlake Corporation, Campbell, Calif.

Filed Sep. 1, 1981, Ser. No. 298,388
Int. Cl.³ G03B *1/00, 41/00*
U.S. Cl. 352—84 14 Claims

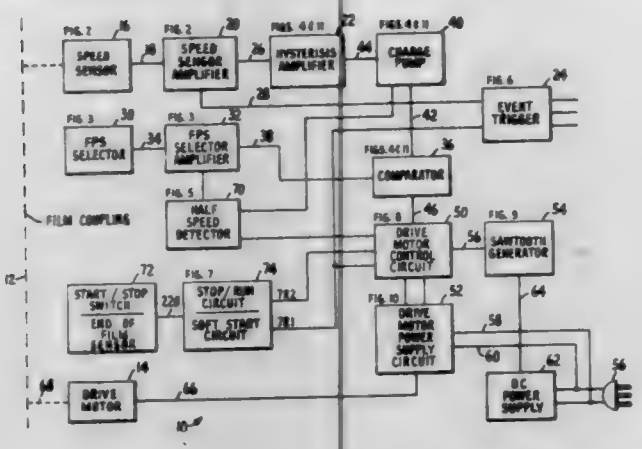
1. A film speed control system for high speed motion picture cameras, comprising:

actual film speed signal source means for producing an actual film speed signal representing the speed of the film in a high speed motion picture camera;

selected film speed signal source means for producing a selected film speed signal representing a selected speed of operation of said high speed motion picture camera;

charge pump means responsive to said actual film speed signal to produce an output signal the magnitude of which is substantially linearly related to said actual film speed

signal over a range extending at least from ten thousand pulses per second to forty thousand pulses per second; and



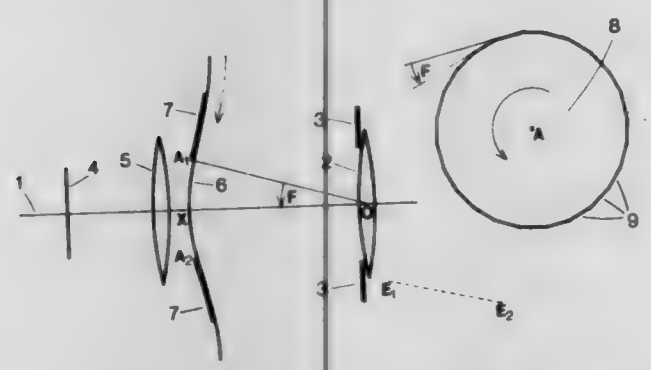
comparing means for comparing said selected film speed signal and said output signal.

4,405,218

SHUTTERLESS OPTICAL SYSTEM FOR VIEWING MOTION PICTURES

John L. Wirth, 408 Greenwood Pl., Syracuse, N.Y. 13210

Filed Jul. 30, 1981, Ser. No. 288,464
Int. Cl.³ G03B *41/06*
U.S. Cl. 352—108 2 Claims



1. The optical system for viewing motion picture film consisting of

a. the optical-mechanical mechanism consisting of

(1) a first convergent lens

(2) processed motion picture film in the standard format advancing in continuous motion at constant velocity such that points on the vertical midline of the frames of said motion picture film follow a path with the property that over an interval of said path in the vicinity of the optical axis of said first lens said points advance in a circle whose center is the optical center of said first lens; in which the length of said interval is equal to the frame height of said motion picture film; and in which, for the length of said motion picture film having said points within said interval, the curved plane of said motion picture film substantially coincides with the focal plane of said first lens

b. a mirror wheel on the side of said first lens opposite to said motion picture film, in which

(1) if 2F is the angle in degrees subtended by said interval at the optical center of said first lens, said mirror wheel has 360/F mirrored surfaces

(2) said mirror wheel rotates on an axis perpendicular to the plane through said midline points of said motion picture film such that

(A) if in a sectional view at said plane points of said motion picture film advance counterclockwise around the optical center of said first lens, said mirror wheel rotates counterclockwise, and if points advance clockwise said mirror wheel rotates clockwise

(B) if points of said motion picture film advance with angular velocity V around the optical center of said first lens, said mirror wheel rotates with angular velocity ½V

c. a stop at the curved plane of said motion picture film with an aperture such that said midline points of said motion picture film within said interval lie within said aperture and those not within said interval do not lie within said aperture, such that in the course of the advance of said film every point within every frame of said film lies within said aperture for the same interval of time, and such that no two points of said film separated by a horizontal distance greater than the width of the frames of said film simultaneously lie within said aperture

d. a film illumination system consisting of

(1) a second convergent lens, on the side of said motion picture film opposite to said first lens, whose optical axis is parallel to the plane through said midline points of said motion picture film

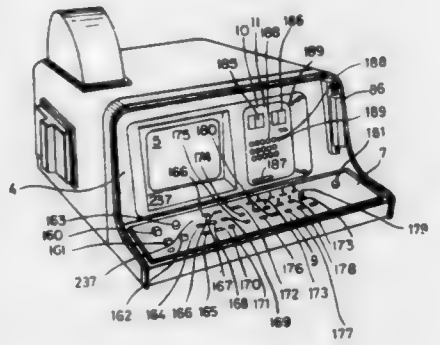
(2) a line light source parallel to the plane through said midline points of said motion picture film, intersecting the optical axis of said second lens, and in the focal plane of said second lens.

4,405,219

OPTICAL IMAGE SYNTHESIS METHOD AND APPARATUS

Mitsuo Yasuda, Tenri; Katsuji Minami, Osaka; Jiro Itokawa, Takaishi; Yoshiyuki Aoto, Nara; Yasuyuki Hatakeyama, Nishinomiya, and Shinya Sakaida, Yao, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 4, 1981, Ser. No. 240,468
Claims priority, application Japan, Mar. 17, 1980, 55-34542; Dec. 8, 1980, 55-176000
Int. Cl.³ G03B *21/26*
U.S. Cl. 353—37 27 Claims



1. A coiffure image synthesis and display system comprising:

first image display means for displaying a first image of a user of said system;

second image display means for selectively displaying one of a plurality of second images representative of prepared coiffures;

screen means for displaying images thereon;

partial reflecting means for redirecting a portion of said first image onto said screen means, a portion of said second image being passed by said partial reflecting means and displayed on said screen means;

the portions of said first and second images being displayed on said screen means in combination producing a superimposed image of the user modeling a selected coiffure image; and

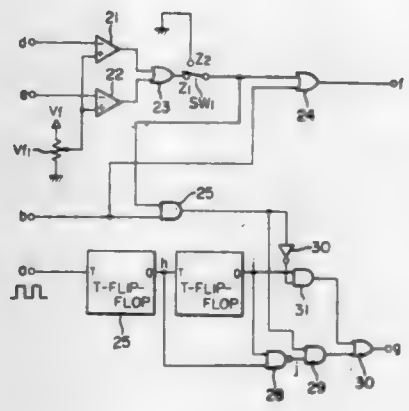
selective movement means for selectively removing said partial reflecting means from an operative position, said selected coiffure image thereby being displayed by said screen means in its entirety while said first image of the user is not displayed on said screen means.

4,405,220

AUTOMATIC FOCUSING APPARATUS FOR A CAMERA

Yosuke Kusaka, Kawasaki, and Nobuo Okabe, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 29, 1981, Ser. No. 316,440
Claims priority, application Japan, Nov. 7, 1980, 55-156574
Int. Cl.[3] G03B 3/10
U.S. Cl. 354—25 4 Claims



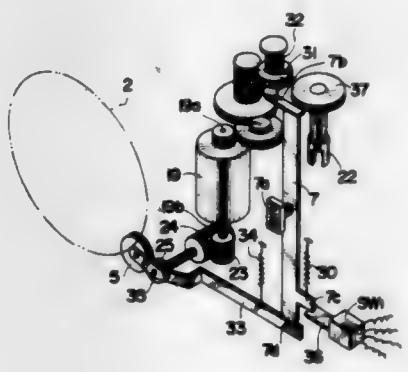
1. An automatic focusing apparatus for a camera, including:
(1) object brightness detecting means for detecting the brightness of an object and producing an output corresponding to the brightness;
(2) in-focus detecting means for detecting whether the phototaking lens of the camera lies within or outside a predetermined in-focus range near the in-focus position and producing outputs corresponding to the respective cases; and
(3) phototaking lens driving means for driving said phototaking lens to its in-focus position in accordance with the output of said object brightness detecting means and the output of said in-focus detecting means, said phototaking lens driving means driving said phototaking lens at high speed when the object is of high brightness and the phototaking lens lies outside the predetermined in-focus range and at low speed when the object is of low brightness and the phototaking lens lies within the predetermined in-focus range.

4,405,221

CAMERA MOTOR DRIVE MECHANISMS

Fumio Yoshida, Osaka; Yukio Miki, Sakai, and Takeshi Egawa, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 14, 1981, Ser. No. 311,188
Claims priority, application Japan, Nov. 6, 1980, 55-155196
Int. Cl.[3] G03B 1/18
U.S. Cl. 354—173 5 Claims



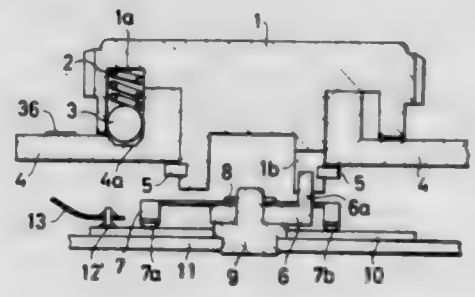
1. A motor drive camera, comprising:
a first motor;
a film winding mechanism connected to said first motor, said film winding mechanism being capable of winding a film when said first motor is actuated;
a second motor;
a control device for automatically performing a preparatory operation prior to the commencement of an exposure;
film rewinding mechanism for rewinding an exposed film; and
means for connecting said second motor alternatively to said control device and to said film rewinding mechanism.

4,405,222

MODE SETTING DEVICE FOR CAMERA

Hiroshi Yamamoto; Masanori Uchidoi, both of Yokohama, and Masaharu Kawamura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 73,799, Sep. 10, 1979, Pat. No. 4,307,953. This application Jun. 12, 1981, Ser. No. 273,030
Claims priority, application Japan, Sep. 14, 1978, 53-113052
Int. Cl.[3] G03B 9/64
U.S. Cl. 354—238 5 Claims



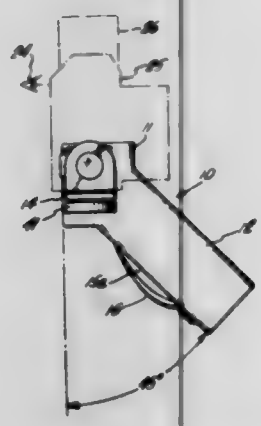
1. A camera comprising:
(a) a camera body;
(b) a mode setting dial rotatably mounted on said camera body and having a plurality of symbols, each one of said symbols representing an exposure mode, said symbols including a first symbol corresponding to automatic exposure controlled photography and a second symbol corresponding to automatic exposure controlled photography after a certain time delay;
(c) a fixed index on the camera body for selectively registering with said first and said second symbols;
(d) a shutter release member;
(e) a control circuit including a light measuring circuit, an automatic exposure control circuit for controlling an exposure on the basis of an output of said light measuring circuit, an electromagnetic release circuit for starting an exposure operation and for placing said automatic exposure control circuit in an operative state after said electromagnetic release circuit becomes operative, and a self-timer circuit connected to said electromagnetic release circuit wherein said electromagnetic release circuit becomes operative in response to an output from said self-timer circuit;
(f) a first switch coupled to said shutter release member for actuating said electromagnetic release circuit; and
(g) a second switch coupled to said mode setting dial, said second switch arranged to be in a first state when said first symbol is registered with said index and arranged to be in a second state when said second symbol is registered with said index, wherein said second switch is coupled to said self-timer circuit for holding said self-timer circuit in an inoperative state when said second switch is in said first state, and for enabling said self-timer circuit to be actuated by operation of said first switch when said second switch is in said second state, said second switch preventing a response by said release circuit to said first switch when said second switch is in said second state.

4,405,223

PISTOL GRIP

Steven W. Shull, Culver City, Calif., assignor to Vivitar Corporation, Santa Monica, Calif.

Filed Feb. 18, 1982, Ser. No. 349,922
Int. Cl.[3] G03B 17/56
U.S. Cl. 354—293 8 Claims



1. A pistol grip for photographic cameras, electronic flash units, and the like comprising

a body having a handle extending therefrom, said body having an imagery vertical axis, and said handle being disposed at an angle with respect to the body, said body further including sides for receiving mounting means for a camera bracket, and

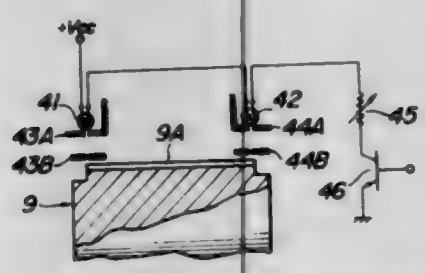
mounting means for a camera bracket comprising bracket connector means for mating with one side of said body and fastener means for mounting with the other side of said body for securing together said fastening means and bracket connector means with the bracket connector means readily disposed on either side of said body.

4,405,224

ELECTROPHOTOGRAPHIC APPARATUS HAVING MEANS FOR REMOVING UNDESIRED CHARGE CONCENTRATED ON AN EDGE PORTION OF A PHOTOSENSITIVE MEMBER

Maneo Kasuga; Masaji Nishikawa, and Tomoki Funakubo, all of Hachioji, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Nov. 17, 1980, Ser. No. 210,386
Claims priority, application Japan, Nov. 22, 1979, 54-150684
Int. Cl.[3] G03G 21/00
U.S. Cl. 355—3 R 4 Claims



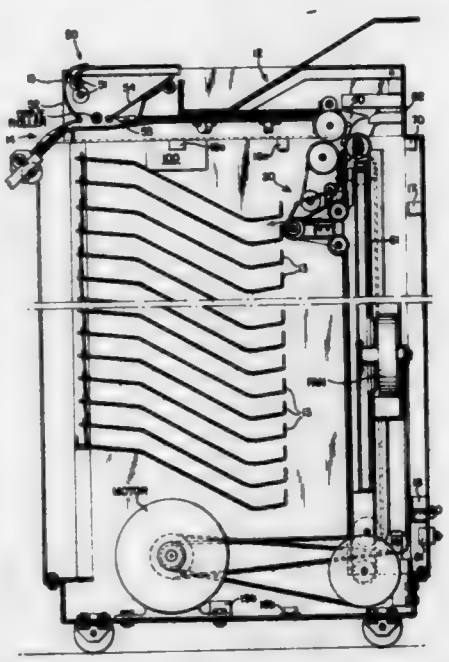
1. In an electrophotographic apparatus comprising, a moving photosensitive member whose width is narrower than that of a recording sheet of paper, a corona discharge device for uniformly charging said photosensitive member, an image-projecting member for projecting an original image on said photosensitive member so as to produce an electrostatic latent image thereon, a developing device for developing said latent image, and a transferring device for transferring the developed image onto the recording paper, whereby said corona discharge device, image projecting member, developing device and transferring device are arranged along the periphery of the photosensitive member in this order viewed in a moving direction of the photosensitive member and the electrostatic latent image once formed on the photosensitive member is repeatedly subjected to development and transferring for copying one original onto a plurality of sheets of the recording paper, the improvement comprising an electric charge removing device arranged between said transferring device and said developing device viewed in the moving direction of the photosensitive member and for removing undesired electric charge from an edge portion of said photosensitive member after said transferring but before the next succeeding development of said latent image in the course of regarding developments and transferrings of one electrostatic latent image once formed on said photosensitive member, said undesired electric charge being injected onto the edge portion of said latent image on the photosensitive member via the recording paper by the transferring device, wherein said electric charge removing device comprising a lamp and a pair of spaced slits, one slit being disposed close to the lamp and the other slit being disposed closed to the photosensitive member to produce a sharply directed light beam to the edge portion of the photosensitive member.

4,405,225

COLLATOR

Eric P. Perrault, Seattle, Wash., assignor to Donald L. Snellman, Seattle, Wash.

Filed Dec. 23, 1980, Ser. No. 219,527
Int. Cl.[3] G03G 15/00, 21/00
U.S. Cl. 355—14 R 8 Claims



1. A sophisticated collator capable of intercommunicating with a computer of a computer-controlled photocopier to receive job commands from the photocopier regarding the mode and size of a collating job to be transmitted to the collator directly from the photocopier, to store the job commands in a buffer, and to control the collating operations of the collator based upon the job commands while reporting progress of the collating operations to the photocopier during the operation, comprising:

(a) a sheet conveyor system for receiving sheets from the photocopier and for transporting the sheets to trays in a bin unit during the collating operation, the system including a movable deflector means for deflecting the sheets from a conveyor into predetermined trays;

(b) a logic control means, having a programmable computer with a stored program, for communicating with the computer of the photocopier and for controlling the collating operations in the collator upon receipt of the job commands from the photocopier, including a buffer for storing the job commands to remove dependency upon the photocopier for continued checking of the desired collating operation, the logic control means being connected to means for sensing collating operation information within

the collator to monitor the collating operation and being connected to the conveyor system to control operation of the conveyor system;

(c) means for sensing the entry of a sheet into the collator from the photocopier and for signalling the entry to the logic control means so that the logic control means can count the entry of the sheet and monitor the passage of the sheet along the conveyor system to a predetermined tray selected on the basis of the job commands;

(d) means for identifying the individual trays of the bin unit by counting the operation of the deflector means at each tray so that the position of the deflector means ready to deflect sheets to a tray represents the position of the tray; and

(e) means for sensing entry of the sheet into the predetermined tray and for signalling the entry to the logic control means so that the logic control means can count the entry and command continued collating operations based upon the entry, such as changing the deflector means or signalling a jam to the photocopier.

4,405,226

DEVELOPING MATERIAL SUPPLYING CONTROL DEVICE FOR ELECTROSTATIC COPYING APPARATUS

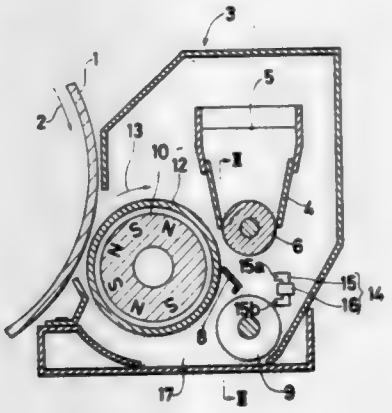
Hiroshi Kimura, Neyagawa; Masahiko Hisajima, Osaka; Yutaka Shigemura, Takarazuka; Isao Yada, Neyagawa; Yoichiro Irie, Suita, and Kiyoshi Morimoto, Osaka, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

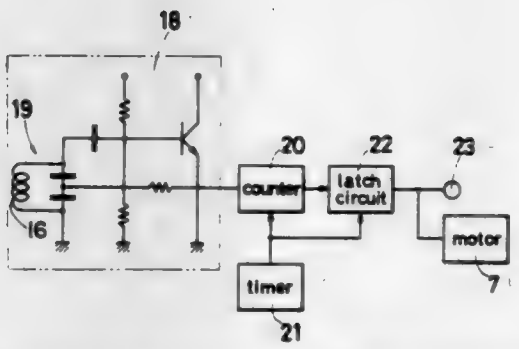
Filed Jul. 16, 1981, Ser. No. 283,942

Claims priority, application Japan, Jul. 23, 1980, 55-101770

Int. Cl.³ G03G *15/08*

U.S. Cl. 355—14 D 2 Claims





1. A developing material supply control device for use in an electrostatic copying apparatus, said device comprising:

an oscillation circuit, including an oscillation coil and adapted to be positioned along a toner supply passage, for generating an output signal representative of the relative amount of toner present at said passage;

a timer for providing predetermined time intervals;

a counter for counting said output signal from said oscillation circuit at every interval predetermined by said timer to supply a discriminating output signal when the counted value is equal to a predetermined value for each of the intervals; and

toner supply means operable in response to said discriminating output signal from said counter for supplying toner to said toner supply passage.

4,405,227

PHOTOGRAPHIC APPARATUS

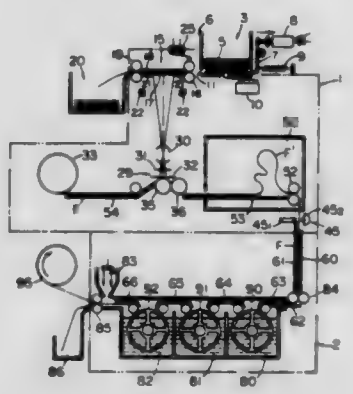
Syunzo Inoue, Yokohama; Toshio Arai, Kawasaki; Takeshi Nagasawa; Motofumi Konishi, both of Yokohama; Hitoshi Yanagawa, Tokyo; Toshio Iwaya, Machida, and Michio Kasuya, Fuchu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 114,890, Jan. 24, 1980, abandoned. This application Apr. 6, 1982, Ser. No. 366,068

Claims priority, application Japan, Feb. 9, 1979, 54-14631; Feb. 9, 1979, 54-14632; Feb. 9, 1979, 54-14633; Feb. 9, 1979, 54-14634

Int. Cl.³ G03B *27/32, 27/52*

U.S. Cl. 355—27 8 Claims



1. A recording apparatus, comprising:

means for recording an image on a long length of film at an exposure station;

storage means for storing, in a loop, the film transported from the exposure station;

means for developing the film fed from said storage means;

means for feeding the film from said storage means to said developing means;

manual switching means (130);

means for keeping said feeding means inoperative to prevent it from feeding the film stored in said storage means to a developing portion of said developing means until said switching means is actuated, and for permitting, responsive to said switching means, the operation of the feeding means for feeding the film to the developing portion;

means for halting the operation of said recording means when the amount of the film in said storage means reaches a predetermined amount;

means, responsive to said switching means, for releasing the recording means from said halting means;

means for cutting the film; and

means for operating said cutting means to cut the film after said switching means is actuated.

4,405,228

CARD NEGATIVE HOLDER AND METHOD OF MANUFACTURE

Richard D. Muscoplat, 1435 Quebec Ave. North, Golden Valley, Minn. 55427

Filed Jun. 15, 1981, Ser. No. 273,471

Int. Cl.³ G03B *27/62;* A47G *1/06;* G09F *1/10*

U.S. Cl. 355—75 6 Claims

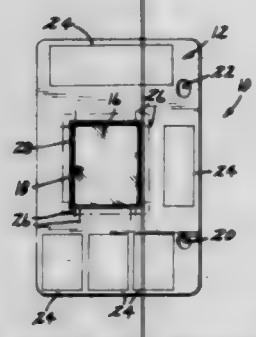
1. A mounting card for holding a photographic negative, said negative having base and emulsion sides, top and bottom edges, and opposite side edges, said mounting card comprising:

a flat member having top and bottom edges with a length therebetween and a pair of opposite side edges, said mem-

ber further having first and second sides and a window through which said negative may be exposed;

means for holding said negative to said flat member so said negative may be exposed through said window, said holding means having a top edge,

said holding means being attached to the first side of said flat member near the pair of opposite side edges, said holding



means including means for eliminating exposed edges between the top edge of said negative and the top edge of said flat member;

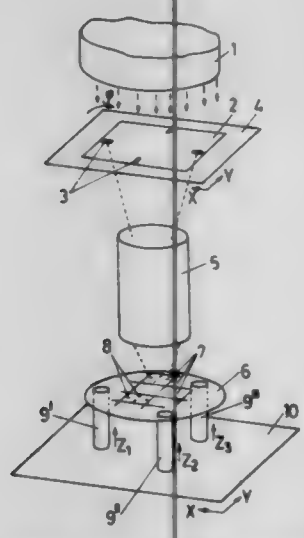
whereby said mounting card may include printed matter on the second side of said flat member and near the window on the first side of said flat member, said eliminating means preventing such mounting card from catching in an automatic processing machine.

4,405,229

METHOD OF PROJECTING PRINTING ON SEMICONDUCTOR SUBSTRATE AND WORKPIECE INCLUDING SUCH SUBSTRATE

Herbert E. Mayer, Eschen, Austria, assignor to Censor Patent- und Versuchs-Anstalt, Vaduz, Liechtenstein

Filed May 20, 1981, Ser. No. 265,549
Int. Cl.³ G03B *27/32*
U.S. Cl. 355—77 **7 Claims**



1. A method of facilitating the alignment of a photomask with a workpiece onto which the pattern of the photomask is to be imaged for projection printing, said workpiece including a light-reflecting substrate overlain by a partly reflecting layer of photosensitive character, comprising the steps of:

(a) providing a reference marking on said photomask;

(b) providing an adjustment mark correlated with said reference marking on said workpiece, said adjustment mark being a reflection-reducing discontinuity in said layer;

(c) making the thickness of said layer nonuniform in an area immediately surrounding said discontinuity while maintaining the top surface of said layer substantially planar in said area; and

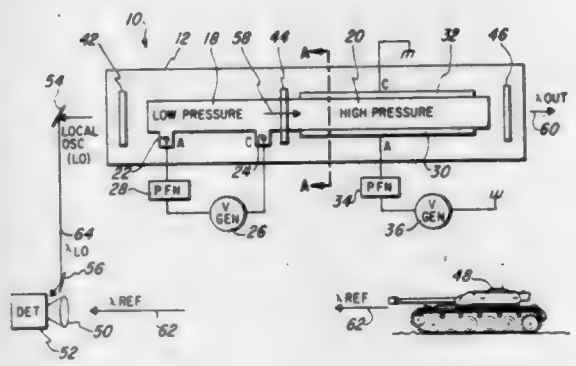
(d) jointly illuminating said adjustment mark and said reference marking with monochromatic light of a predetermined wavelength for simultaneously imaging same on a receiving surface, said thickness having at least two values differing by other than a multiple of half said wavelength to provide a contrasting background for said adjustment mark.

4,405,230

HETERODYNE LASER RANGING SYSTEM

Claude E. Tew, Dallas, and Fred E. Ellis, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 28, 1981, Ser. No. 267,940
Int. Cl.³ G01C *3/08*; H01S *3/00*
U.S. Cl. 356—5 **6 Claims**



1. A heterodyne laser ranging system comprising a waveguide housing formed of a material suitable for providing an inherently temperature stable system, said waveguide housing having first and second lasers and first, second, and third reflectors selectively mounted therein in substantially optical alignment, said first laser including electrode means including first and second electrodes for producing a low level signal for a preselected time period at a selected frequency, said first reflector operatively positioned as to the first laser to reflect a first portion of the first laser output back through the laser while passing a second portion as a low level local oscillator signal (f_{ref}), said second reflector operatively positioned between said first and second lasers and having a first reflecting surface for reflecting a first portion of the first laser energy back through the first laser while passing a second portion into the second laser as a low level stable frequency signal substantially equal to the frequency of the local oscillator signal and a second reflecting surface for reflecting the laser energy of the second laser back through the second laser, said second laser having electrode means including first and second transversely spaced electrodes operative in response to the low level stable frequency signal of the first laser for producing a high level signal at substantially the same frequency (f_{ref}), as that of the local oscillator signal, and said third reflector for reflecting a first portion of the second laser energy impinging thereon while passing a second portion as a high power output pulse at the same frequency as the low level local oscillator, whereby said first and second lasers have substantially close optical alignment tolerances and electrode spacing thereby providing substantially increased output power per cubic inch of waveguide housing, and detector means for detecting said local oscillator signal (f_{ref}) and any laser return of the high power output pulse including a doppler shifted return pulse (f_r) for mixing sid f_{ref} and f_r signals and generating desired ranging information.

4,405,231

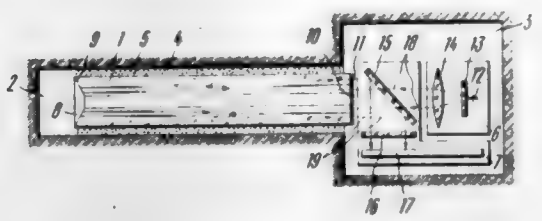
DEFORMOGRAPH

Evgeny I. Shemyakin, ulitsa Pravdy, 1, kv. 32, and Gennady I. Kulakov, ulitsa Rossiiskaya, 15, kv. 39, both of Novosibirsk, U.S.S.R.

Filed Sep. 22, 1981, Ser. No. 304,387
Int. Cl.³ G01B *11/18*; G01L *1/24, 33/24*
U.S. Cl. 356—34 **5 Claims**

1. A deformograph comprising a polarized light source designed to produce a light signal; a sensitive element shaped as a tube made of an optically sensitive material and fixed in a borehole by cementing the gap between said tube and walls of

said borehole, one of ends of said sensitive element being tapered off and provided with a specular coating, while the other end facing said light source has a specular coating with transparent sections enabling passage of a light beam through the



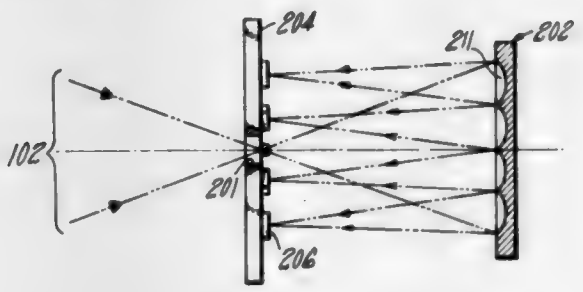
material of said sensitive element and its output after being reflected from the specular coating on the tapered end; a sensing unit designed to pick off from said sensitive element a useful light signal indicative of the changing condition of the earth's crust in a given area.

4,405,232

WAVE FRONT SENSING DEVICE

Dennis N. Mansell, Albuquerque, N. Mex., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 2, 1981, Ser. No. 298,830
Int. Cl.³ G01J *1/20*
U.S. Cl. 356—121 **3 Claims**



1. An optical device comprising:

a detector plate having a plurality of optical detectors disposed on a first side thereof and an aperture of a predetermined size for permitting the passage along a beam axis of an optical beam therethrough;

a substrate having a plurality of concentric circular mirrors thereon, said substrate being disposed along said optical axis so that said mirrors are centered on said axis, each of said mirrors having a reflective surface facing said first side of said detector plate and being configured in such a manner that an annular portion of said optical beam is focussed to a ring focus at a predetermined location on said first side, said plurality of optical detectors being disposed on said first side at predetermined locations such that each of said detectors responds to a portion of one of said ring foci.

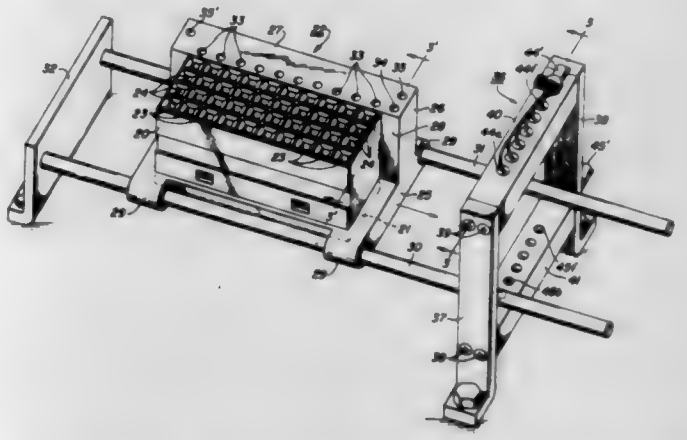
4,405,233

PHOTO-ELECTRIC APPARATUS FOR TESTING ELECTRICAL CONNECTOR CONTACTS

Thomas G. Grau, Mendham Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 5, 1980, Ser. No. 156,565
Int. Cl.³ G01N *21/00*; G01R *31/04*
U.S. Cl. 356—237 **8 Claims**

8. Apparatus for testing an article of manufacture (20) having at least one channel therethrough characterized in a carriage (22) for supporting said article (20), said carriage being formed to present an unimpeded light path therethrough at said channel, a first light emitting device (45*a*) and a first light sensing device (44*a*), said devices (45*a*, 44*a*) being spaced apart to permit movement of said carriage (22) and said article (20) therebetween, said light sensing device (44*a*) generating output signals responsive to light passing uninterruptedly from said light emitting device (45*a*) through said channel when said carriage (22) is moved between said light emitting and sensing devices (45*a*, 44*a*), further characterized in that said carriage (22) has an aperture (33) therethrough aligned with said channel when said article (20) is supported by said carriage (22) and



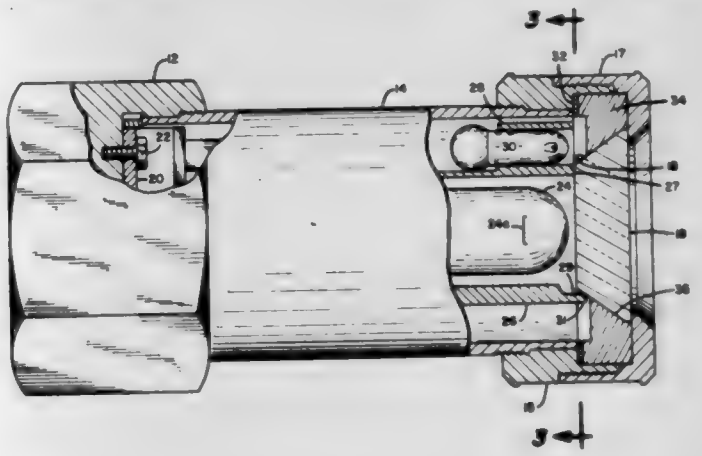
in a second light emitting device (45*e*) and a second light sensing device (44*e*) for generating an indexing signal responsive to light passing from said second light emitting device (45*e*) through said aperture (33) indicating an alignment of said channel, and further characterized in rail means (30, 31) and in that said carriage (22) is adapted for slidable movement on said rail means.

4,405,234

RADIATION DETECTION APPARATUS HAVING REFRACTIVE LIGHT CHECKING FEATURE

Michael P. Juaire, Chaska, Minn., assignor to Detector Electronics Corp., Minneapolis, Minn.

Filed Aug. 3, 1981, Ser. No. 289,813
Int. Cl.³ G01N *21/88*
U.S. Cl. 356—239 **19 Claims**



1. A radiation detection apparatus having facility for self checking of optical surface contamination, comprising:

(a) a housing having an opening at one end thereof;

(b) a radiation-sensitive receiving device in said housing;

(c) a light transmissive window mounted in said housing opening, said window having flat parallel surfaces orthogonal to said radiation sensitive receiving device and a beveled edge surface facing toward the interior of said housing;

(d) an optical shielding member about said receiving device and having an opening facing said window, said shielding member opening further comprising a first edge portion contacting said window interior flat surface and a second edge portion terminating in the region of said beveled edge surface, said second edge portion having a reflective surface area facing said beveled edge surface;

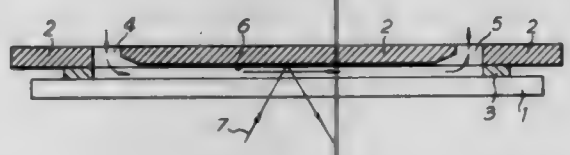
(e) a light source mounted in said housing outside said optical shielding member, and positioned relative to said beveled edge so as to cause light from said light source to travel through said beveled edge and be refracted from said window outer parallel surface to said optical shielding member second edge portion reflective surface, and reflected therefrom to said radiation-sensitive receiving device.

4,405,235

LIQUID CELL FOR SPECTROSCOPIC ANALYSIS

Val J. Rossiter, 16 Rathmore Ave., Stillorean, Dublin, Ireland

Filed Mar. 19, 1981, Ser. No. 245,427
Int. Cl.³ G01N *21/05*
U.S. Cl. 356—246 **10 Claims**



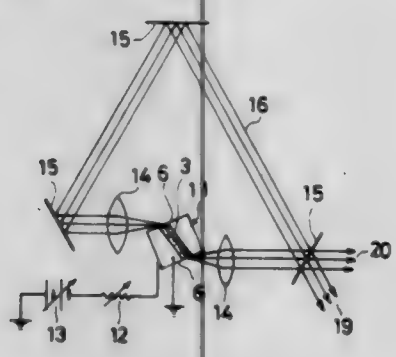
1. A liquid cell for use in spectroscopic analysis of flowing liquids formed by a front plate as an optical window, a back plate having spaced apart apertures therein, a tapered reflecting surface on the back plate between the apertures, and a sealing means between said two plates, each of said apertures being an entry and an exit port, respectively, for liquids to the cell.

4,405,236

SEMICONDUCTOR RING LASER APPARATUS

Yoshinobu Mitsuhashi; Junichi Shimada; Kenjiro Sakurai, all of Sakura, and Yukinobu Nakamura, Asaka, all of Japan, assignors to Seiichi Ishizaka and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Aug. 13, 1981, Ser. No. 292,418
Claims priority, application Japan, Aug. 13, 1980, 55-110419
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 **7 Claims**



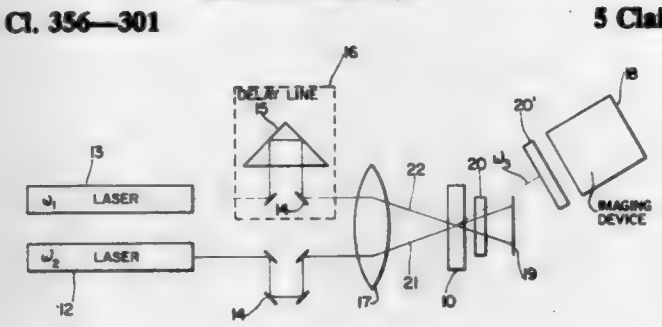
1. A semiconductor ring laser apparatus comprising a semiconductor laser element having a waveguide region therein and parallel cleavage planes formed between said waveguide region and medium adjacent thereto, wherein the waveguide region is inclined at a Brewster angle with respect to the normal to the cleavage planes in relation to the medium of the waveguide region and said adjacent medium, and optical means having a ring-formed optical path optically coupled to said waveguide region for receiving light therefrom through one of said cleavage planes and returning at least a portion of the light therefrom to the other of the cleavage planes, said semiconductor laser element and said optical means thereby forming a ring laser oscillator.

4,405,237

COHERENT ANTI-STOKES RAMAN DEVICE

Thomas J. Manuccia, Silver Spring, Md., and John F. Reintjes, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 4, 1981, Ser. No. 231,636
Int. Cl.³ G01J *3/44*
U.S. Cl. 356—301 **5 Claims**



3. A CARS imaging device for microscopically imaging a specific molecular species in a condensed-phase medium sample:

means for generating pairs of pulses from two laser beams of different frequencies, ω_1 and ω_2, and focusing each associated pair on said sample, the pulse durations being of the order of picoseconds, and each associated pair of pulses being simultaneous over at least a portion of the time duration of one of the pulses,

the laser frequencies being selected so that the frequency $\omega_v=\omega_1-\omega_2$ is the frequency of an anti-Stokes vibrational level of said specific molecular species, said anti-Stokes vibration of the molecular species emitting radiation of frequency $\omega_3=2\omega_1-\omega_2$, where ω_1, ω_2 and ω_3 are in the "visible" light spectrum; and

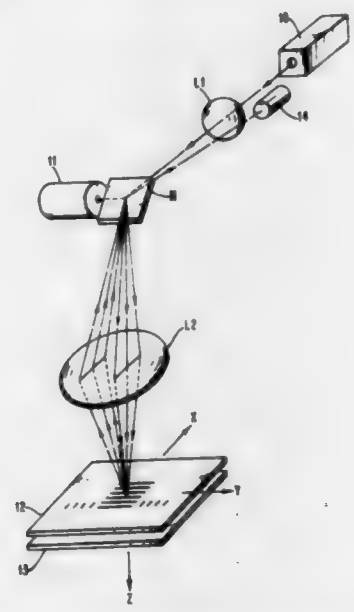
microscope means for imaging the emitted anti-Stokes radiation from the molecular species.

4,405,238

ALIGNMENT METHOD AND APPARATUS FOR X-RAY OR OPTICAL LITHOGRAPHY

Warren D. Grobman, Yorktown Heights; David A. Nelson, Jr., Carmel, and John M. Warlaumont, Croton-on-Hudson, all of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed May 20, 1981, Ser. No. 265,140
Int. Cl.³ G01B *9/02, 11/00*
U.S. Cl. 356—401 **15 Claims**



1. An alignment system wherein a first element to be aligned carries a Fresnel lens for focusing incident light to line image on a grating mark carried by a second element to be aligned therewith, the grating mark diffracting line image light to a light sensor, said Fresnel lens comprising a plurality of Fresnel zone plates, each said Fresnel zone plate with a common focal

length f_1 and in which said plurality of Fresnel zone plates is arranged as a macro Fresnel zone plate with a focal length f_2, wherein f_2 is not equal to f_1.

4,405,239

ENERGY EFFICIENT EXTRUDER SCREW

Chan I. Chung, 2483 Whitehall Ct., Schenectady, N.Y. 12309, and Robert A. Barr, P.O. Box 4476, Virginia Beach, Va. 23454

Filed Apr. 13, 1982, Ser. No. 368,081
Int. Cl.³ B29B *1/06*
U.S. Cl. 366—89 **6 Claims**



1. A screw used for a single screw extruder which houses said screw rotatably in a cylindrical barrel for plasticating or melting solid plastic material, said screw having a feed end and a discharge end:

said screw embodying a novel mixing section between the feed end and discharge end of said screw comprising: at least one pair of substantially parallel, helical, first and second threads integral with the core of said screw;

said first thread of the pair originating at the feed end of said screw creating a helical channel and having a minimum clearance to said barrel;

said second thread of the pair originating at a location about one third to two thirds of the length of said screw from the feed end of said screw by rising from the core of said screw and having a large clearance to said barrel comparable to or greater than the size of the components of said solid plastic material;

said second thread of the pair dividing said helical channel created by said first thread into two sub-channels of substantially equal width, one located toward the feed end of said screw from said second thread hereinafter called a front sub-channel and the other located toward the discharge end of said screw from said second thread hereinafter called a back sub-channel;

the depth of said front sub-channel gradually increasing to a maximum comparable to the depth of said helical channel at the feed end of said screw accompanied by gradual decrease of the depth of said back sub-channel to a minimum comparable to or greater than the size of the components of said solid plastic material over about one half to one turn of said second thread around the core of said screw, the gradual change being linear, cyclical or any other type as long as the change is gradual;

at the end of the depth reversal of said front sub-channel and said back sub-channel, said second thread converting to become said first thread with a minimum clearance to said barrel and said first thread converting to become said second thread with a large clearance to said barrel, and the maximum depth of said front sub-channel being maintained over about one half to one turn of said first thread around the core of said screw such that at this point the structural features of said screw become substantially similar to those at the beginning of the depth reversal;

then, duplicating the depth reversal between said front sub-channel and said back sub-channel;

the conversions of said first thread to said second thread and said second thread to said first thread followed by the depth reversal, being repeated as many times as desired but at least once;

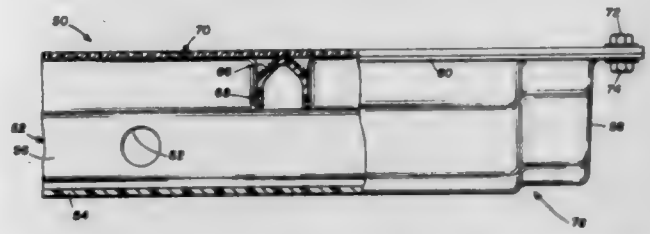
and finally, said front sub-channel and said back sub-channel being merged to a single channel with a common depth by gradually changing their depths and eliminating said second thread.

4,405,240

AEROSLIDE CONSTRUCTION

Walter Laidlaw, Dallas, Tex., assignor to Claudius Peters, Inc., Dallas, Tex.

Filed Mar. 31, 1981, Ser. No. 249,716
Int. Cl.³ B01F *13/02*; B65G *53/20*
U.S. Cl. 366—101 **9 Claims**



7. An aeroslide comprising a molded plastic base comprising a unitary structure including a bottom wall, side walls extending upwardly from the bottom wall, end walls extending upwardly from the bottom wall and connected to the side walls to enclose the interior of the base, and flanges extending outwardly from the upper ends of the side walls and the end walls to define the upper periphery of the base;

a plurality of indentations formed in the upward portion of each of the side walls at spaced points along the length of the base, each of the indentations formed in one of the side walls being aligned with a corresponding indentation formed in the other side wall;

a plurality of plastic reinforcing members each received and adhesively secured in indentations of the side walls for reinforcing the base;

a layer of porous multiply acrylic belting material extending over and substantially parallel to the bottom of the base and having a periphery coincident with the upper periphery of the base as defined by the flanges;

an adhesive layer positioned between the upper surfaces of the flanges and the adjacent undersurface of the layer of porous multiply acrylic belting material for adhesively securing the belting material to the base; and

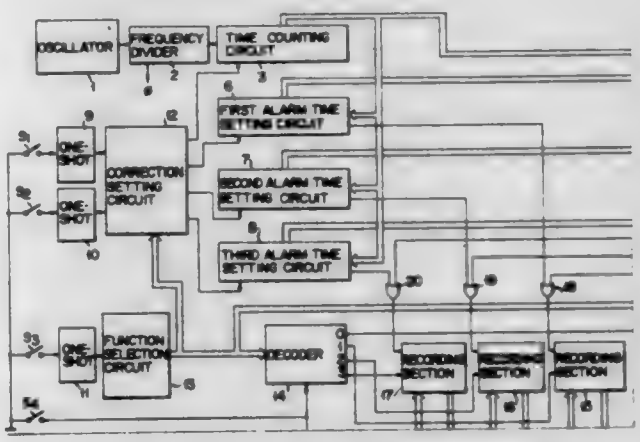
means for admitting a pressurized fluid into the base so that the fluid flows outwardly through the porous fabric layer.

4,405,241

ELECTRONIC DEVICE HAVING TIMEPIECE FUNCTION

Toshiharu Aihara, Kodaira; Iwao Tahara, Higashiyamato; Yushin Matsuo, Chofu; Naoki Takahashi, Fussa, all of Japan; Takuo Wakabayashi, deceased, late of Saitama, Japan, and Shigemasa Wakabayashi, executor, Nagano, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1980, Ser. No. 213,044
Claims priority, application Japan, Dec. 11, 1979, 54-161291
Int. Cl.³ G04C *21/32, 21/14*
U.S. Cl. 368—63 **7 Claims**



1. An electronic device having a timepiece function, comprising:

a source of reference frequency signals;

time counting means for counting said reference frequency signals to provide time data;

alarm time storing means including a plurality of alarm time memory sections for storing set alarm times;

voice data storing means including a plurality of voice data storing sections for storing messages corresponding to the respective set alarm times in any order;

voice producing means coupled to said voice data storing means for producing a sound, in the form of voice, corresponding to the message stored in said voice data storing means, when the time data provided by said time counting means reaches a set alarm time stored in said alarm time storing means;

a single external operation switch means which is operable to confirm the contents of the messages stored in said voice data storing means;

memory section designating means coupled to said single external operation switch means for producing a readout designating signal which designated a given order of said voice data storing sections of said voice data storing means for causing the messages respectively corresponding to the set alarm times to be read out in a time sequence of the count times of the timepiece when said single external operation switch means is operated; and

voice producing control means coupled to said memory section designating means and responsive to said readout designating signal for reading out the messages in said given order from said voice data storing sections designated by said memory section designating means on the basis of said readout designating signal, and for causing a sound corresponding to the read out messages to be produced by said voice producing means.

4,405,242

ELECTRONIC DEVICE AND METHOD OF FABRICATING THE SAME

Hideki Kosaka, Kodaira; Tsutomu Mimata, Akikawa; Tsuyoshi Shimizu; Hideharu Yamamoto, both of Tokyo; Kaoru Itoh, Kodaira, and Yasuhusa Shima, Sayama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 916,923, Jun. 19, 1978, Pat. No. 4,348,751.
This application Oct. 26, 1981, Ser. No. 315,155
Claims priority, application Japan, Jun. 20, 1977, 52-72041; Aug. 10, 1977, 52-95020; Aug. 10, 1977, 52-95021; Aug. 10, 1977, 52-95022; Dec. 9, 1977, 52-147084; Dec. 19, 1977, 52-151762; Dec. 19, 1977, 52-151763; Dec. 23, 1977, 52-154442; Dec. 23, 1977, 52-154443; Dec. 23, 1977, 52-154480; Jan. 20, 1978, 53-4365; May 15, 1978, 53-56697
Int. Cl.³ G04C *19/00, 23/02*
U.S. Cl. 368—82 10 Claims

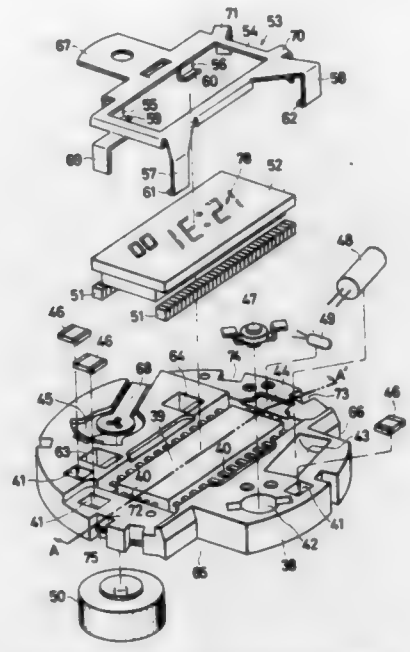
1. An electronic device comprising:

a display device for visibly displaying characters on a viewing surface;

a block having an electrical circuit, including switch terminals extending exteriorly of the block, for driving said display device;

an electrically conductive fitting frame formed from a single sheet of plate-shaped electrically conductive metal adapted to hold said display device and block together in compression, said frame having front portions which serve to retain the display device and to hold a battery within the block, respectively, fixing fit arm members for providing pressure to hold said display device and block together by engagement with said block, and at least one switch portion adapted to contact with a respective one of said terminals of said electrical circuit; and

at least one switch member arranged for bringing said switch portion into contact with said respective terminal,



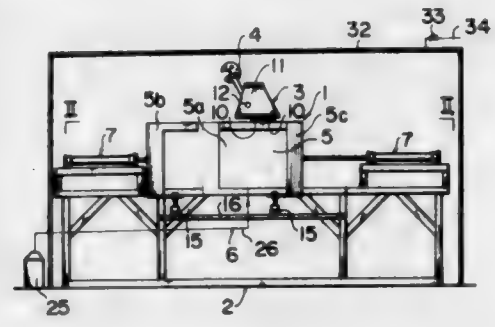
whereby said electrically conductive frame serves as a wiring for said electrical circuit.

4,405,243

CRYOGENIC IMPACT TESTING METHOD AND MACHINE

Yasuo Kuraoka, and Norihide Hosoda, both of Sapporo, Japan, assignors to Hoxan Corporation, Sapporo, Japan

Filed Dec. 21, 1981, Ser. No. 334,320
Claims priority, application Japan, Dec. 26, 1980, 55-189139; Oct. 6, 1981, 56-148441[U]
Int. Cl.³ G01N *3/30*
U.S. Cl. 374—46 4 Claims



1. A cryogenic impact testing method of Charpy's and falling weight types comprising the steps of

enclosing a testing space in a heat insulating box having an openable passage while a test piece is set on a supporting base,

atomizing low temperature liquefied gas onto the test piece,

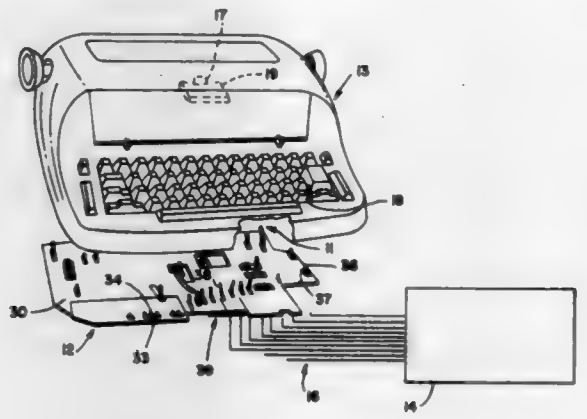
opening the passage only sufficient for a hammer or a falling weight in the heat insulating box synchronously with the impacting operation of the hammer or the falling weight when the test piece reaches a set predetermined temperature, and

conducting the impact testing of the test piece while continuing the atomizing of the low temperature liquefied gas even in the open state of the passage.

4,405,244
TYPEWRITER OPERATING ATTACHMENT PROVIDING FOR DEAD KEY OPERATIONS

Lawrence Holmes, Jr., 91 Highwood Ave., Midland Park, N.J. 07432

Filed Jul. 21, 1981, Ser. No. 285,503
Int. Cl.³ B41J 5/30
U.S. Cl. 400—66 12 Claims



1. In an attachment for generating sets of electrical signals which identify successive character printing operations at a typewriter and for initiating operations of a typewriter in response to such sets of electrical signals which identify successive printing operations to be performed, the typewriter having escapement means for causing character spacing movement to a succeeding character space following printing of a character in response to a set of print signals, the improvement comprising:

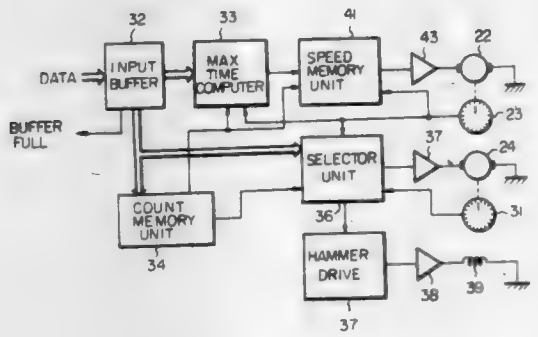
said attachment having control means for optionally adding a dead key bit to selected ones of said print signal sets, and

said attachment being provided with dead key means for temporarily disabling said escapement means of said typewriter in response to sets of said print signals which include said dead key bit.

4,405,245
VARIABLE SPEED SIGNAL PRINTING APPARATUS

Takashi Fukushima, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 60,096, Jul. 24, 1979, abandoned. This application Jul. 24, 1981, Ser. No. 286,483
Int. Cl.³ B41J 1/08
U.S. Cl. 400—144.2 6 Claims



1. A serial printing apparatus constructed to receive serial data including character data and non-character data, the apparatus including a carriage, variable speed drive means for driving the carriage, a rotary printing element mounted on the carriage and selector means mounted on the carriage for rotating the printing element to a printing position which is a predetermined function of a character data fed to the selector means, characterized by comprising;

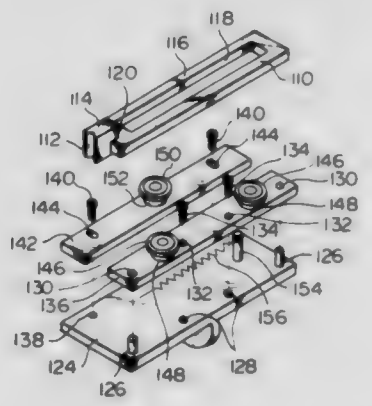
computing means for discriminating all consecutive character data between two non-character data and computing a length of time required for the selector means to rotate the printing element from a previous printing position to a new printing position for each of the consecutive character data and storing a computed maximum length of time; and

speed control means responsive to the computing means for controlling the drive means to drive the carriage at a speed corresponding to the computed maximum length of time while the consecutive character data are fed to the selector means for printing.

4,405,246
HAMMER DEVICE FOR PRINTER

Masayuki Suzaki, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 14, 1981, Ser. No. 311,118
Claims priority, application Japan, Oct. 21, 1980, 55-147482
Int. Cl.³ B41J 9/38
U.S. Cl. 400—144.2 7 Claims



1. In a serial printer having a type wheel which is provided with a multiplicity of radially arranged fingers each carrying at least one type on a front face thereof and a fount detent on a back which is positioned coaxially with the type, a hammer device comprising:

(a) a support member mounted on a frame of a carriage;

(b) an impacting means movably mounted on said support member for translation between a first position where it is clear of a fount detent and a second position where it is engaged with the fount detent at one end thereof;

(c) guide means with which the impacting means are slidably engaged to be thereby guided during translation between the first and second positions;

(d) drive means for driving the impacting means from the first position to the second position;

(e) a tension spring for constantly biasing the impacting means toward the first position; and

(f) positioning means for accurately positioning the impacting means in predetermined vertical and transverse orientations;

the guide means for guiding the translation of the impacting means comprising at least two rotary bearings each with a flange which constitute a reference side for the translation of the impacting means and at least one rotary bearing with a flange which defines the other side for the translation;

the positioning means comprising a first plate fixed in place on the support member and a second plate fixed in a place adjustable transversely toward and away from said first plate, said first plate carrying the two rotary bearings at the reference side thereon and said second plate the single rotary bearing so as to cooperate with the flanges of the rotary bearings.

4,405,247

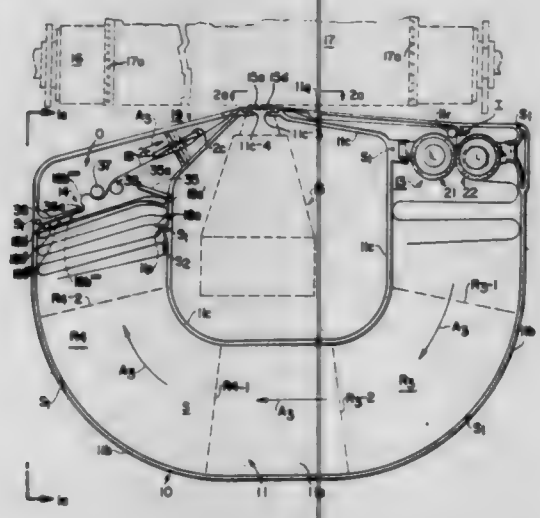
FULLY SELF-CONTAINED DISPOSABLE CARTRIDGE FOR INKED RIBBONS AND THE LIKE

Samuel Y. Hanna, Nashua, N.H., assignor to Centronics Data Computer Corp., Hudson, N.H.

Continuation of Ser. No. 912,077, Jun. 5, 1978, abandoned. This application Jun. 9, 1980, Ser. No. 157,496

Int. Cl.[3] B41J *33/10*

U.S. Cl. 400—196.1 2 Claims



1. A ribbon cartridge for use in printers having a print head assembly including a nose, and a paper support movable relative to one another to effect printing at a printing location by printing means located at the nose of the print head assembly, said cartridge comprising:

a closed loop of ribbon;

a housing having a hollow interior, a portion of said interior forming a substantially U-shaped ribbon storage region having inlet and outlet ends at the opposite ends of said U-shaped storage region and being defined by top and bottom walls joined by spaced-apart inner and outer U-shaped side walls;

drive means forming part of said cartridge at the inlet end of said storage region for driving the ribbon into the storage region to engage stripper means for imparting to the ribbon a full fan-fold configuration whereby opposite folds of ribbon extend towards said inner and outer side walls of said housing;

the inlet and outlet ends of said ribbon storage region being substantially coplanar and on opposite sides of the nose of said print head assembly;

said housing also including a hollow ribbon guiding channel spanning between and being substantially coplanar with said outlet and inlet ends of said storage region for guiding said ribbon from said outlet end to said ribbon driving means, said guiding channel having an opening coinciding with the position occupied by the nose of the print head assembly to expose a portion of the ribbon extending across the guiding channel for engagement by said printing means;

said spaced-apart inner and outer U-shaped side walls being spaced apart a sufficient distance to receive said ribbon in said full fan-fold configuration from said inlet end to said outlet end;

means located at the outlet end of said storage region for guiding the ribbon out of said storage region and including a first opening through which said ribbon passes and second and third openings on opposite sides of said first opening for accommodating opposite folds of the stored fan-fold ribbon in an alternating fashion as the ribbon is drawn through said first opening by said drive means, said first opening being defined by first and second spaced-apart projections arranged intermediate the side walls of the housing;

a third projection extending inwardly from said inner side wall towards said first projection to define said second opening;

a fourth projection extending inwardly from said outer side wall towards said second projection to define said third opening, the distance measured across said first opening being significantly greater than the thickness of the ribbon and being so constructed to prevent the ribbon from being creased in the event that multiple plies of the ribbon pass therethrough; and

said guiding channel and said U-shaped storage region cooperating to form a central opening for surrounding said print head assembly and the nose of said print head assembly.

4,405,248

ADVANCING DEVICE IN ELECTRICALLY DRIVEN TYPEWRITERS AND SIMILAR MACHINES

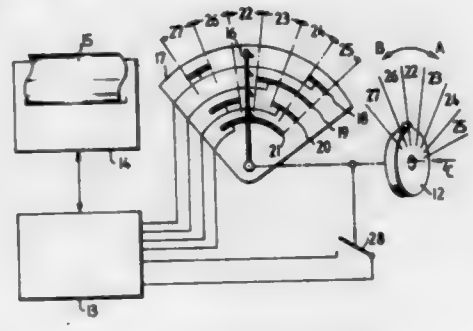
Klaus Wunderlich; Udo Schlegel, and Heinz Ricke, all of Brunswick, Fed. Rep. of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Oct. 16, 1981, Ser. No. 312,154

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1980, 3039789

Int. Cl.[3] B41J *11/36, 19/14*

U.S. Cl. 400—550 17 Claims



1. In an advancing device for the motorized vertical forward or reverse movement of a record carrier in an electrically driven office machine, which device includes an operating element mounted for displacement in either one of two directions from a zero position, and means responsive to displacement of the operating element in a first one of the two directions for effecting forward vertical movement of such carrier and responsive to displacement of the operating element in the second one of the two directions for effecting reverse vertical movement of such carrier, the improvement wherein said means are responsive to displacement of said operating element in the first direction to at least three successive distances from the zero position for moving the record carrier at a rate which increases between at least three values which increase successively from one value to the next as the extent of displacement of said operating element from the zero position increases from one successive distance to the next, with each successive distance being associated with a respective one of the three rate values.

4,405,249

DISPENSING APPARATUS AND METHOD

John T. Scales, Stanmore, England, assignor to National Research Development Corporation, London, England

Filed Mar. 19, 1981, Ser. No. 245,606

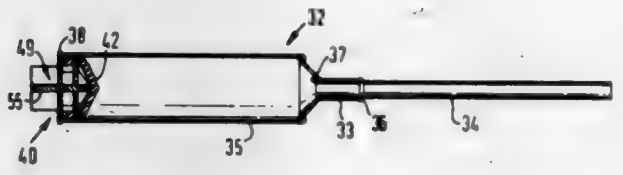
Claims priority, application United Kingdom, Mar. 28, 1980, 8010522

Int. Cl.[3] B43K *5/06*

U.S. Cl. 401—182 7 Claims

1. A disposable syringe for use with a non-disposable injection gun for dispensing bone cement which is flowable under pressure comprising a body having an internal bore with an outlet at one end of the bore and a piston having a front face for expressing viscous flowable material through the outlet by advancement of the piston towards the outlet and contact at

the front face of the piston with the flowable material and a rear face, wherein said front face is deformable and generally conically shaped with apertures therethrough which are of a size such as to allow passage of a gas but to substantially prevent passage to the viscous flowable material to said non-disposable injection gun, and one or more forward chambers are



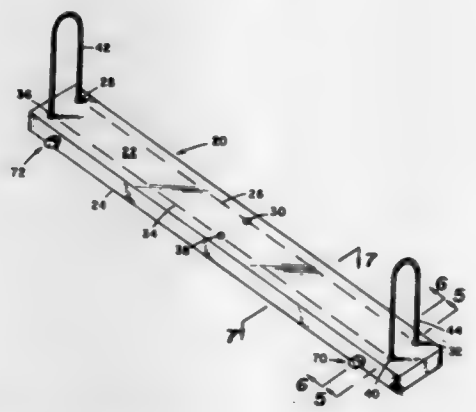
defined within the piston into which said apertures debouch, and gas flow communication from said chambers to the rear face of the piston, whereby gas but not flowable material passes to the rear face of the piston during expression of the material through the outlet, said piston because of its deformability and generally conical shape deforming radially outwardly under load to sealingly engage the wall of said bore.

4,405,250

ADJUSTABLE LOOSELEAF BINDER

Kuoeng F. Wu, 11704 Bunting Dr., Knoxville, Tenn. 37922

Filed Aug. 25, 1981, Ser. No. 296,149
Int. Cl.³ B42F *13/02*
U.S. Cl. 402—13 **12 Claims**



1. An adjustable looseleaf binder for the releasable accumulation of sheets of paper and the like having holes punched at a specific spacing along one edge thereof, which comprises:

an elongated base plate having a thickness defined by substantially parallel top and bottom surfaces, said base plate being provided with parallel first and second rows of apertures along its length extending from said top surface through at least a portion of said thickness, the spacing between apertures in each of said rows corresponding to said selected spacing of punched holes, said base plate being further provided with a passageway substantially oriented along the length of said base plate communicating with each of said apertures in said second row;

a plurality of unitary flexible binding posts to penetrate such punched holes, one end of each of said binding posts being secured in a selected one of said apertures in said first row; and

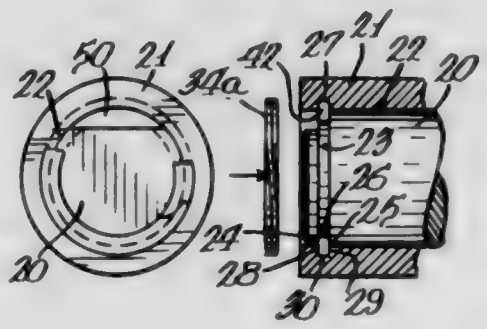
a locking element associated with said passageway for releasably engaging a second end of said binding posts when said second end is inserted within said passageway.

4,405,251

RETAINING RING LOCKING DEVICE

Abel E. Kolchinsky, Glenview; John Bouilun, and Wayne Davis, both of Bensenville, all of Ill., assignors to Miller Fluid Power Corporation, Bensenville, Ill.

Continuation of Ser. No. 128,358, Mar. 6, 1980. This application Jan. 18, 1982, Ser. No. 339,872
Int. Cl.³ B25G *3/00*
U.S. Cl. 403—9 **7 Claims**



1. Retaining ring structure for holding a shaft within a bore in a device against longitudinal relative movement, comprising:

a retaining ring;

means on said shaft defining an external circumferential groove having axially opposite sidewalls; and

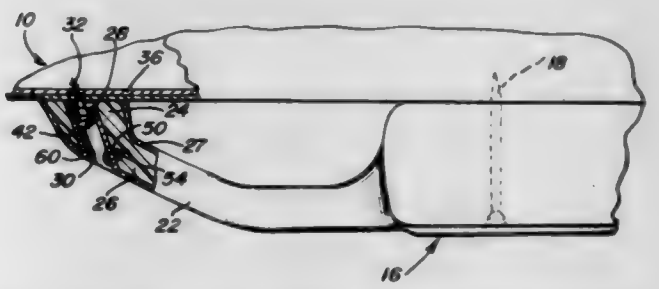
means on said device defining an internal circumferential bore groove having axially opposite sidewalls complementary to said shaft groove to define a substantially closed ring receiving groove means when the shaft and bore grooves are disposed radially opposite each other, said shaft having a chordal portion contiguous its end removed so as to provide with said device at least one access opening extending axially inwardly from an end thereof to said ring receiving groove means for exposing a portion of said ring receiving groove means from said end whereby the radially unexpanded retaining ring may be threaded from axially outwardly of said end through said opening into said ring receiving groove means for locking said device and shaft against both axially inward and axially outward displacement.

4,405,252

METHOD AND APPARATUS FOR VEHICLE DOOR ARM REST ANCHOR REPAIR

J. W. Easterling, 617 Mercury, Altus, Okla. 73521

Filed Feb. 17, 1982, Ser. No. 349,581
Int. Cl.³ B25G *3/00*; F16D *1/00*; F16G *11/00*
U.S. Cl. 403—11 **5 Claims**



1. For use with an article including a fastener receiving bore formed therethrough and wherein said bore includes an enlarged counterbore at one end extending inwardly of said one end of said bore, terminates inwardly only a slight distance from the other end of said bore and defines an axially thin shoulder of the material of which the adjacent portion of said articles is constructed surrounding said bore against which an article retaining head of a fastener secured through said bore may seat, a repair structure for use when said shoulder has been partially or fully broken away, said repair structure in-

cluding a sleeve to be snugly received and seated in said counterbore and including an end wall on the end of the sleeve opposing the shoulder with the end wall including a central aperture formed therethrough, the end portion of said sleeve remote from said end wall being beveled, the beveled end of said sleeve including a generally radial bore spaced inwardly of the tip end thereof, a first fastener securable through said aperture and a second fastener securable through said bore.

4,405,253

CONNECTION BETWEEN TWO ELEMENTS

Bernt I. Stockum, Fuxgatan 15, S-212 35 Malmö, Sweden

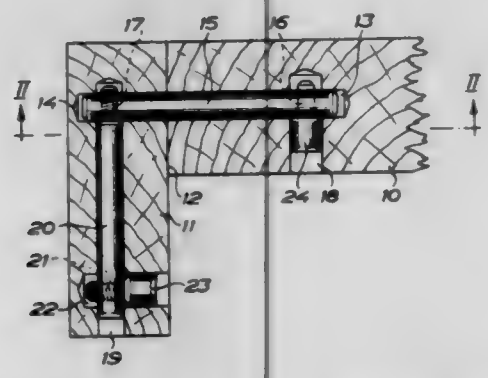
PCT No. PCT/SE79/00141, § 371 Date Feb. 17, 1981, § 102(e) Date Feb. 17, 1981, PCT Pub. No. WO80/02866, PCT Pub. Date Dec. 24, 1980

PCT Filed Jun. 20, 1979, Ser. No. 237,166

Claims priority, application Sweden, Dec. 20, 1977, 7714487

Int. Cl.³ B25G *3/00*; F16B *7/08, 9/00*; F16L *41/00*

U.S. Cl. 403—231 **4 Claims**



1. A connector which tightly and adjustably fastening together first and second directly-abutting elements of wooden furniture, comprising a substantially straight rod having first and second transverse bores therethrough, one portion including the first transverse bore extending into a first passage in the first element, and another portion including the second transverse bore extending into a second passage in the second element; a cross rod extending through a cross passage in the first element with one end passing into the first transverse bore, thereby retaining the rod in position in the first passage; a cross pin having an eccentric rotatably received in a cross passage in the second element, the pin extending to the second transverse bore of the rod; the cross rod and the cross pin locking the rod into a position fastening the first and second elements together, and the cross pin and eccentric drawing the first and second elements tightly together in an engagement that is adjustable according to the rotated position of the eccentric in the cross passage.

4,405,254

SCAFFOLDING

Jack R. Tooley, Cobham, England, assignor to Acrow Limited, London, England

Filed Jun. 11, 1981, Ser. No. 272,512

Claims priority, application South Africa, Oct. 27, 1980, 80/6590

Int. Cl.³ E04G *7/00*

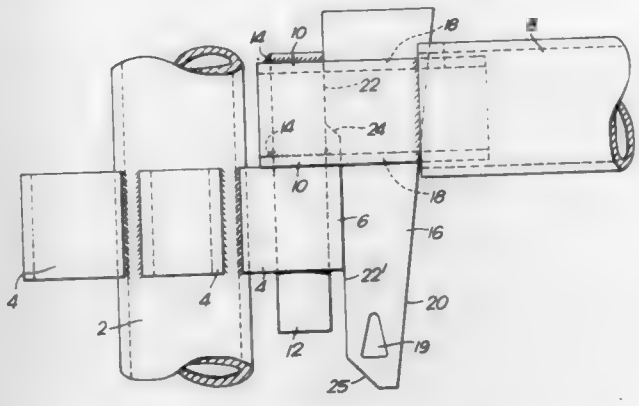
U.S. Cl. 403—246 **7 Claims**

1. A scaffolding clamp device comprising

a cross member having a first contact surface and a second contact surface, both of said contact surfaces being adjacent one end of said member,

a spigot connected to said cross member at the same end thereof as said contact surfaces,

a wedge positioned between said first contact surface and said spigot, said wedge defining a two section surface adjacent said spigot, one section of said surface being stepped inwardly from the other section of said surface by a distance equal to the distance between said spigot and the other section of said surface when said wedge is in its clamping position against said first contact surface, and



a projection mounted on said wedge, said projection being wedged against said second contact surface to hold said wedge in a non-clamping position when said wedge is withdrawn from its clamping position.

4,405,255

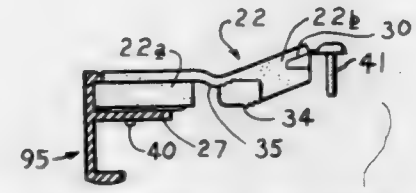
ATTACHMENT OF FRAME SECTIONS

Robert S. Wallace, 823 S. Longwood Ave., Los Angeles, Calif. 90005

Filed Feb. 2, 1982, Ser. No. 344,888

Int. Cl.³ G09F *1/12*

U.S. Cl. 403—402 **21 Claims**



1. A locking bracket adapted to join together two metallic frame members forming an L-shaped joint, said members having channel shaped cross sections, comprising

(a) an L-shaped non-metallic body with legs formed for reception into the respective members to bridge said joint,

(b) the legs having sections that taper in downward directions of reception into said members for interference interfit with shoulders defined by said members,

(c) the legs having ledges that face in upward directions opposite to said downward directions to fit closely under and forcibly engage shoulders on member flanges in response to completed reception of the legs into said members,

(d) and ribbing on and projecting downwardly from said legs to compressively engage member webs so that said ledges will forcibly engage said member flanges.

4,405,256

CUSHIONED FASTENER JOINT

John O. King, Jr., 3990 N. Ivy Rd., Atlanta, Ga. 30342

Filed Apr. 14, 1981, Ser. No. 254,324

Int. Cl.³ F16B *19/00*

U.S. Cl. 403—408 **9 Claims**

7. A joint construction including:

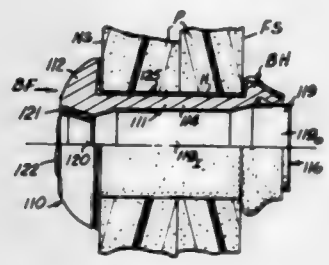
composite material workpieces each defining a hole therethrough of a first prescribed diameter;

a fastener through said holes having a bearing section within said holes of a second prescribed diameter smaller than said first prescribed diameter;

a metal sleeve member within said holes around said bearing section of said fastener and including a radially expanded continuous tubular side wall in bearing contact with said bearing section of said fastener, said tubular side wall having a third prescribed outside diameter smaller than

said first prescribed diameter and having a prescribed side wall thickness less than the threshold thickness of the material of said sleeve member below which insignificant material flow within said side wall occurs under load; and

a compressible cushion within said holes between said sleeve member and said workpieces and substantially filling the space between said sleeve member and said workpieces within said holes, said cushion having been placed in said hole while on said metal sleeve member while said cushion was uncompressed and had an initial outside diameter smaller than the hole diameter and subsequently forced



into contact with the hole surface and compressed by radially and circumferentially expanding said tubular side wall of said sleeve member, said fastener maintaining said sleeve member radially and circumferentially expanded so that said cushion is compressed to a compressed thickness such that insignificant material flow within said cushion takes place under load and so that said cushion is maintained under sufficient compression between said sleeve member and said workpieces to cause the operating load of the joint to be transferred from said workpieces to said fastener through said cushion and said sleeve member.

4,405,257

SAFETY MAT FOR USE IN PROTECTION OF WATERWASHED AREAS AGAINST EROSION AND/OR UNDERMINING

Erik Nielsen, Frederikshavn, Denmark, assignor to Daekko Presenning Kompagni A/S, Broenshoej, Denmark

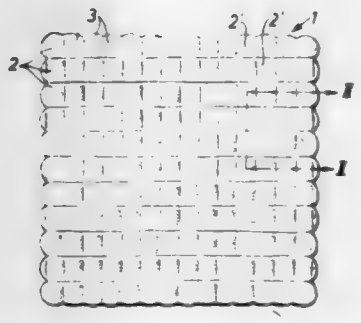
PCT No. PCT/DK80/00027, § 371 Date Dec. 22, 1980, § 102(e) Date Dec. 22, 1980, PCT Pub. No. WO80/02436, PCT Pub. Date Nov. 13, 1980

PCT Filed May 1, 1980, Ser. No. 227,105

Claims priority, application Denmark, May 3, 1979, 1828/79; Apr. 22, 1980, 1718/80

Int. Cl.³ E02B *3/12*

U.S. Cl. 405—19 **2 Claims**



1. A safety mat for use in protection of waterwashed areas against ground deformation, wherein the mat includes a number of substantially parallel, elongated hollow members, tapes interconnecting said substantially parallel members and a filling material disposed within said hollow members, said filling material comprising a mixture of pearl gravel and granulated polystyrene with an average density of 1.6 kg/dm^3 and filling the tubular members to about 75 percent capacity with the pearl gravel disposed at the ends of the tubular members and the granulated polystyrene between the ends.

4,405,258

METHOD FOR CONTAINING OIL AND/OR GAS WITHIN A BLOW-OUT COVER DOME

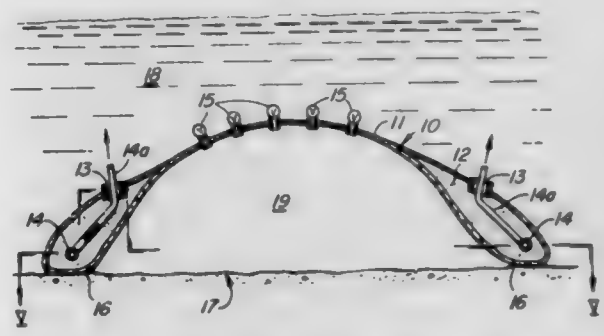
Cameron O'Rourke, and Roger Pilkington, both of Calgary, Calif.X, assignors to Dome Petroleum Limited, Canada

Continuation-in-part of Ser. No. 112,720, Jan. 16, 1980, abandoned. This application Feb. 11, 1982, Ser. No. 347,930

Claims priority, application Canada, Oct. 24, 1977, 289297

Int. Cl.³ E02B *15/04*; E02D *23/02*

U.S. Cl. 405—60 **9 Claims**



1. A method for containing a lighter-than-water fluid at a predetermined location on the seabed, which method comprises:

(A) deploying a containment dome in shallow water near said predetermined location on the seabed, said containment dome having an upper expanded dome-like fluid impervious membrane, a fluid impervious hollow peripheral ring attached to the periphery of the membrane to provide a depending bag-like container and water drainage means located within said bag-like container for connection to pump conduit means;

(B) pumping wet sand from said seabed into said bag-like container, draining water from said wet sand through said water drainage means, so as thereby to provide a body of drained sand disposed within said bag-like container, thereby providing said hollow peripheral ring as a self-supporting structure hollow peripheral torus and as an anchor for said dome-like structural unit;

(C) charging said containment dome with a buoyant amount of air;

(D) floating said buoyed dome out to the site where said containment dome is to be located;

(E) submerging said containment dome by controllably releasing said air while substantially simultaneously filling said containment dome with water, thereby sinking said containment dome until said peripheral hollow torus rests on the seabed at said predetermined location;

(F) capturing said lighter-than-water fluid in said dome while substantially simultaneously displacing water from within said dome with said lighter-than-water fluid.

4,405,259

METHOD AND APPARATUS FOR PREVENTING FOREIGN OBJECTS FROM ENTERING INTO DOCKING BASINS

Veikko Koskivirta, Vantaa, and Antti Haanterä, Helsinki, both of Finland, assignors to Valmet Oy, Finland

Filed Jan. 27, 1981, Ser. No. 228,727

Claims priority, application Finland, Jan. 29, 1980, 800260

Int. Cl.³ E02B *15/00*

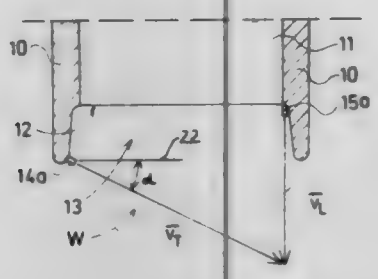
U.S. Cl. 405—62 **11 Claims**

1. A method for preventing foreign objects, such as ice floes, from entering through a two-sided inlet into the docking basin of barge supporting floater-type vessels, floating docks, basin docks, canal sluices or the like, comprising the steps of:

directing a first strong, relatively narrow surface water current in an outward direction with respect to the docking basin from the region of one side of the inlet, said first surface current defining an angle in the range of about 15°

to 35° with respect to a transverse plane passing through the inlet sides so as to constitute a transverse current; and

directing a second strong, relatively narrow surface water current in an outward direction with respect to the docking basin from the region of the other side of the inlet, said



second surface current being directed substantially normal to the transverse plane passing through the inlet sides so as to constitute a rearward current;

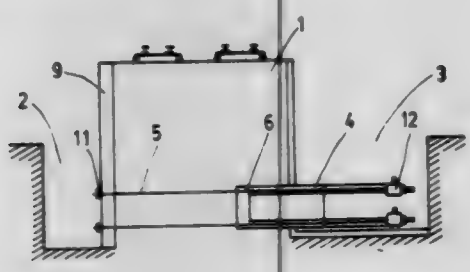
whereby a flow field is created by the transverse and rearward currents which prevents foreign objects from entering into the docking basin through the inlet.

4,405,260

METHOD OF CONSTRUCTING UNDERPASS ACROSS RAILWAY AND HIGHWAY WITHOUT AFFECTING NORMAL TRAFFIC THEREOF

Tepin Tsai, 4th Fl., 114 Fu-Hsing South Rd., Sec. 2, and Teh-Chung Tsai, 35 Chung-Hsiao East Rd., Sec. 4, both of Taipei, Taiwan

Filed Jun. 22, 1981, Ser. No. 275,771
Int. Cl.³ E21D 9/00
U.S. Cl. 405—184 **6 Claims**



1. A method of constructing an underpass comprising the steps of;

tracting a plurality of precast box culverts into the road foundation one after another in conjunction with the construction line thereof so that a predetermined inverse U-shape structure is formed therein;

building prestressed beams and support constructions against the section plane of said U-shape structure of the precast box culverts; and

directly excavating the earth volume under the U-shape structure of the precast box culverts according the predetermined passage thereof, said tracting being further characterized by including the steps of

excavating a traction ditch along one side of the road foundation and a launching ditch on the other in sufficient width as to accommodate at least two precast box culverts and the working people thereof;

building a concrete traction wall in said traction ditch along the road foundation with a plurality of traction holes preformed in said traction wall relativve to the locations of the preformed holes in the precast box culverts;

perforating horizontally from said traction hole of the traction wall through the road foundation toward said launching ditch until the point of the perforating device reached at the tail end of the precast box culvert through the preformed hole aligned thereat;

tying a steel cable at the point of the perforating device from the tail end of the precast box culvert in said launching ditch, pulling back the perforating device to said traction ditch, and fastening the cable end on said traction wall by an anchoring fitting;

securing the other end of said steel cable on a traction jack attached to the preformed hole on the tail end of the precast box culvert;

repeating the same steps of perforating, anchoring, and securing for the remaining preformed holes of the precast box culvert;

placing a steel knife edge on the advancing end of the precast box culvert; and

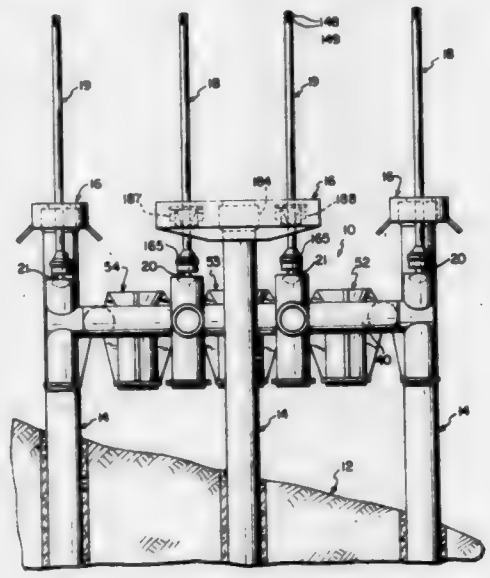
actuating said traction jacks secured on the tail end of the precast box culvert to tract said steel cables simultaneously in a direction toward said traction wall through the road foundation along with the construction line thereof so that the precast box culvert is correctly tracted into the road foundation.

4,405,261

SUBSEA TEMPLATE LEVELLING SYSTEM AND METHOD

John E. Lawson, London, England, assignor to Armco Inc., Middletown, Ohio

Filed Apr. 22, 1981, Ser. No. 256,507
Claims priority, application United Kingdom, Apr. 14, 1981, 8111788
Int. Cl.³ E02D 5/00, 5/74; E21B 33/047
U.S. Cl. 405—227 **22 Claims**



1. A template levelling system for levelling a template on a plurality of suspension joints implanted in the floor of a body of water, the combination comprising:

a plurality of passageways formed in the template, each of the suspension joints passing through one of said passageways and extending above the template;

a pair of guideposts pivotally coupled to the template adjacent each of said passageways;

a handling string movable through the water;

a hydraulic jack coupled to said handling string and including an inner member slidably received in an outer member;

an articulated tension beam pivotally coupled to said inner member;

a pair of tension joints;

means for pivotally and releasably coupling said tension joints to said articulated tension beam;

means for coupling said pair of tension joints to a pair of said guideposts;

a support beam coupled to said suspension joint and releasably coupled to said outer member; and

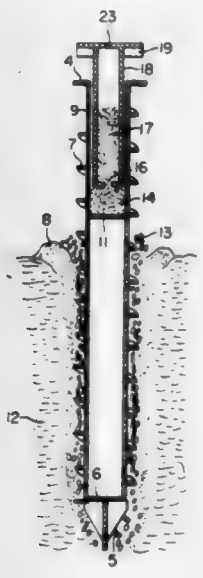
means, on said support beam, for releasably coupling said tension joints to said support beam.

4,405,262

METHOD FOR ERECTION OF A TEMPORARY BRIDGE, AND A PILE MEANS THEREFOR

Masaya Nagashima, 4-6, Takayanagi 3-chome, City of Kisarazu, Chiba Prefecture, Japan

Filed Oct. 1, 1980, Ser. No. 192,691
Claims priority, application Japan, Jan. 8, 1980, 55-663
Int. Cl.[3] E02D 5/56
U.S. Cl. 405—221 4 Claims



1. A pile means for a temporary structure comprising a pile member, a height adjusting member and a supply of sand, said pile member comprising a hollow cylindrical pile body made of metal and having a desired length with its upper and lower end being opened and closed, respectively, a spiral propelling element provided on the outer periphery of said pile body over substantially its entire length, a flange at its upper end adapted to engage a prime mover, and a partition plate provided inside said pile body at its upper portion so as to form a height adjusting chamber above said partition plate to receive said height adjusting member and said supply of sand, and said height adjusting member comprising a hollow cylinder made of metal and having an outer diameter somewhat less than the inner diameter of said pile body as well as a height somewhat higher than the depth of said height adjusting chamber of said pile body, whereby the lower end of said hollow cylinder is closed by a bottom in which a sand discharge orifice is drilled therethrough, while the upper end of said hollow cylinder is provided with a base plate in which a sand supply orifice is drilled therethrough, said bottom being configured to rest upon said supply of sand in said height adjusting chamber to support said height adjusting member at a predetermined height within said height adjusting chamber.

4,405,263

UNDERWATER DEVICES WITH REMOTELY OPERATED LATCH MEANS

Douglas D. Hall, Houston, Tex., assignor to Armco Inc., Middletown, Ohio

Filed Dec. 14, 1981, Ser. No. 330,725
Int. Cl.[3] E02D 5/74
U.S. Cl. 405—224 25 Claims

1. In a device for at least positioning a wireline or the like in a socket member when the socket member has a bore and a transverse annular latch groove opening into the bore, the combination of

at least two mutually complementary bushing members constructed to be fitted together in side-to-side relation to define a hollow bushing, each bushing member having

an outer surface which constitutes part of a cylindrial surface of a diameter to fit within the bore of the socket member,

an inner surface,

first and second end portions,

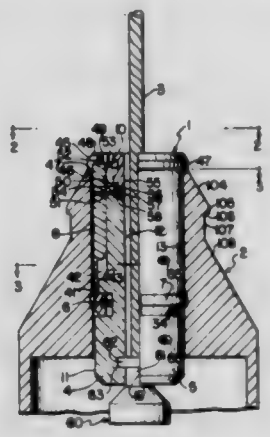
an outwardly opening recess located intermediate the end portions, and

a longitudinal retaining and guiding passage opening at one end through the first end portion and at the other end into the outwardly opening recess;

means for releasably retaining the bushing members in positions fitted together about the wireline or the like;

a plurality of latch retracting plungers each slidably retained in a different one of the retaining and guiding passages;

a plurality of latch members each located in the outwardly opening recess of a different one of the bushing members and movable laterally of the bushing member between a



retracted inactive position and an outwardly projecting active position, each of the latch members having

an outer portion dimensioned to cooperate with the latch groove of the socket member when the latch member occupies its active position, and

an inclined camming surface which extends across the respective retaining and guiding passage when the latch member is in its active position and is oriented to cam the latch member toward its inactive position when the respective plunger is driven against the camming surface; and

yieldable means operatively associated with the latch members to bias the latch members to their active positions.

4,405,264

METHOD OF PROVIDING EARTH COVERING USEFUL FOR WATER HARVESTING

Sam A. Brady, and Michael G. Elias, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jul. 30, 1981, Ser. No. 288,253
Int. Cl.[3] E02B 5/02
U.S. Cl. 405—270 33 Claims



1. A method of constructing a means suitable for directing, transporting, or holding water comprising

(A) laying cloth upon a surface, said surface being convenient to a depression suitable to direct, transport, or hold water, then

(B) coating the cloth with a liquid silicone elastomeric composition curable at atmospheric conditions to an elastomer having a modulus which provides sufficient flexibility to the coated cloth so that the coated cloth will assume the contour of the depression, the amount of liquid silicone elastomeric composition being insufficient to cause bonding to the underlying surface,

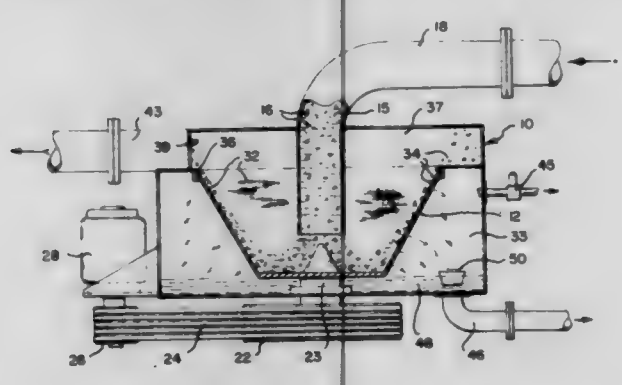
(C) allowing the coated cloth to cure, the cured cloth being impervious to liquid water,
(D) moving the cured, coated cloth to the depression, then
(E) placing the coated cloth into the depression where the coated cloth assumes the contour of the depression, then
(F) bonding the coated cloth at seams, and
(G) stabilizing the coated cloth at unseamed edges to yield a means suitable for directing, transporting, or holding water having a covering impervious to liquid water.

4,405,265

METHOD AND APPARATUS FOR THE CONTINUOUS TRANSFER OF PARTICULATES FROM A LIQUID CONVEYING MEDIUM TO A GASEOUS CONVEYING MEDIUM

John E. Powell, and Andrian J. C. Powell, both of Pittsburgh, Pa., assignors to Beloit Corporation, Beloit, Wis.

Filed Mar. 18, 1981, Ser. No. 245,078
Int. Cl.³ B04B *15/08*
U.S. Cl. 406—109 **8 Claims**



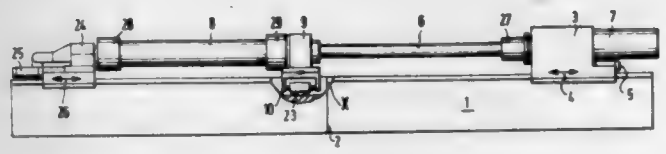
1. A centrifugal machine for transferring particulates from liquid conveying medium to gaseous conveying medium, comprising:
(a) an air-tight housing,
(b) a conical centrifuge basket rotatably mounted at its apex within said housing, said basket being open opposite its apex and having a plurality of holes sized so that a liquid conveying medium may pass through said basket leaving deliquified particulates in contact with the walls of said basket,
(c) an air-tight pick-up chamber attached to said housing and surrounding the open end of said basket to accumulate deliquified particulates,
(d) an input means attached to said pick-up chamber for inputting a pneumatic path of gaseous conveying medium around said basket in the same direction as said basket rotates,
(e) an output means attached to said pick-up chamber for outputting a pneumatic path of gaseous conveying medium, said output means positioned with respect to said input means so as to promote the travel of said pneumatic path through said pick-up chamber in a circumferential manner about the open end of said basket so that deliquified particulates moving with a velocity having a radial component and a tangential component are received by the gaseous conveying medium, the tangential velocity component of said particles is abetted by the pneumatic path of the gaseous conveying medium and the radial velocity component of said particles is neither abetted nor hindered by the pneumatic path of the gaseous conveying medium, and
(f) a channeling means attached to the exterior of the apparatus by which a liquid conveying medium is injected into the base of said centrifuge basket.

4,405,266

DEEP DRILLING MACHINE

Willi Hansen; Bernard Kunze, and Matthias Hermanns, all of Erkelenz, Fed. Rep. of Germany, assignors to Wilhelm Hegenscheidt Gesellshaft mbH, Erkelenz, Fed. Rep. of Germany

Filed Mar. 11, 1983, Ser. No. 474,272
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1979, 2935766
Int. Cl.³ B23B *51/06, 5/00;* B27C *9/04*
U.S. Cl. 408—56 **4 Claims**



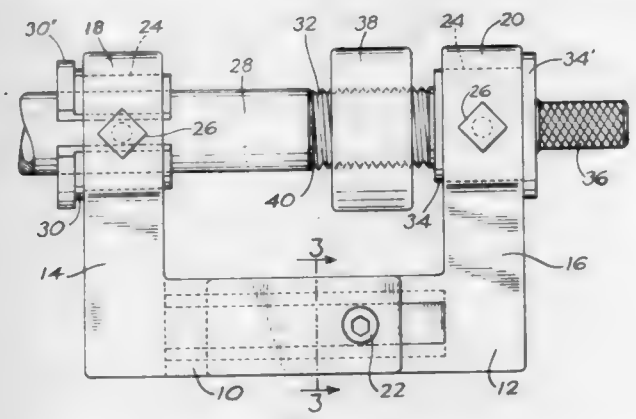
1. A deep drilling machine comprising, in combination, an elongate base, a headstock at one end of said base, a tailstock at the other end of said base, chuck means on said headstock, drive means on said headstock for rotating said chuck means about an axis parallel to said base, feed drive means interposed between each of said headstock and said tailstock and said base for independently shifting said headstock and tailstock axially of said base, a coolant supply apparatus mounted on said base at a generally central position thereon, a workpiece seating device mounted on said coolant supply apparatus for rotation about an axis coincident with the axis of rotation of said chuck means, and mounting means interposed between said workpiece seating device and said base, said mounting means including a pivot for selectively positioning said seating device between said coolant supply apparatus and said tailstock on the one hand and said coolant supply apparatus and said headstock on the other hand, said coolant supply apparatus and workpiece seating apparatus being mounted to be shiftable in the direction of the axis of said chuck means, the combination including preload means opposing shifting movement of said seating device.

4,405,267

THREADING DEVICE

Donald R. Stoken, 1040 Eighth Ave. No. 3, Longview, Wash. 98632

Filed Aug. 17, 1981, Ser. No. 293,377
Int. Cl.³ B23G *1/30, 1/46, 1/48, 1/52*
U.S. Cl. 408—101 **5 Claims**



1. A device for threading a length of pipe or rod material, comprising:
(a) a frame,
(b) a threaded die guide shaft,
(c) a thread-cutting die mounted on said threaded die guide shaft for movement along the threads thereof,
(d) shaft mounting means mounted on said frame for releasably securing said threaded die guide shaft thereto, and
(e) material mounting means on said frame for releasably securing a length of material to be threaded in end abut-

ment and axial alignment with said threaded die guide shaft for enabling transfer of said thread cutting die from said threaded guide shaft onto said material to effect threading thereof.

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TOOL HEAD

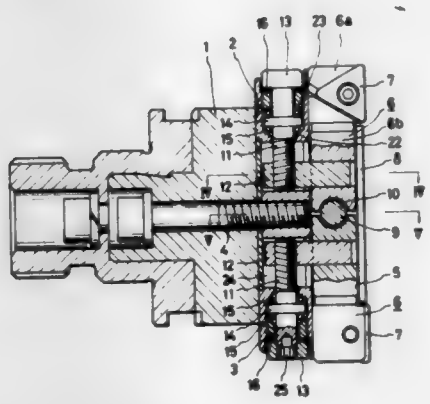
Hitoshi Abe, Utsunomiya, Japan, assignor to Kyoritsu Seiki Corporation, Tochigi, Japan

Filed Dec. 29, 1980, Ser. No. 220,979

Claims priority, application Japan, Dec. 29, 1979, 54-181927[U]; Dec. 29, 1979, 54-181928[U]

Int. Cl.³ B23B *29/03*

U.S. Cl. 408—182 **4 Claims**



1. A tool head comprising:

an arbor having a groove defined on an end surface thereof;

a holder main frame fixed into said groove of said arbor, said main frame having a cylindrical hole bored therethrough in a longitudinal direction and plural chambers adjacent thereto;

plural cutting insert holders radially, slideably fitted in said cylindrical hole;

plural female screws each fitted to one of said holders and extending into one of said chambers; and

means for radially adjusting the position of each of said holders, each said means for adjusting comprising:

a tapered surface at a bottom of a stepped-open bore in said main frame which extends into one of said chambers, said stepped bore having an axis parallel to said cylindrical hole;

an adjusting screw positioned in said stepped bore and extending into said one of said chambers, said adjusting screw tightly threadingly engaging the female screw which extends into said one of said chambers, said adjusting screw having a drum portion with a diameter and a thrust collar with a diameter larger than that of said drum portion, said thrust collar being positioned on said drum portion adjacent said tapered surface of said stepped bore;

a fastening screw threadingly received in a portion of said stepped bore opposing said tapered surface; said fastening screw having a tapered bottom surface facing said thrust collar, said drum portion of said adjusting screw being freely received in a center portion of said fastening screw; and

a plurality of steel balls interposed between said thrust collar and said tapered surface of said main frame, and between said thrust collar and said tapered bottom surface of said fastening screw, whereby shake in both the axial and radial directions of the adjusting screw is eliminated.

4,405,269

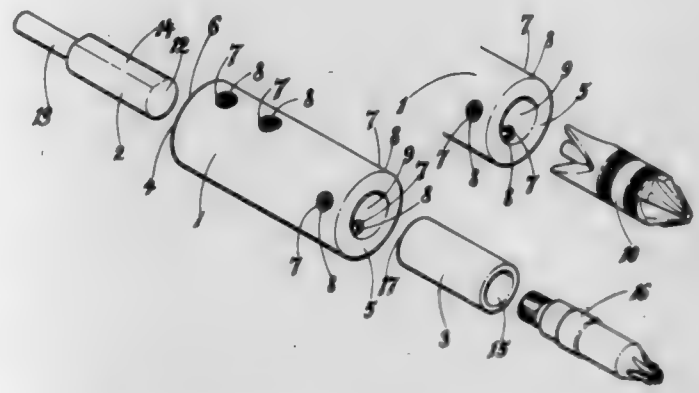
CARTRIDGE CASE REFINISHING SET

Bruce Hertzler, Rt. 5 Box 5400, Albuquerque, N. Mex. 87123

Continuation-in-part of Ser. No. 144,618, Apr. 28, 1980, abandoned. This application Oct. 23, 1981, Ser. No. 314,171

Int. Cl.³ B23B *51/08, 51/12*

U.S. Cl. 408—211 **2 Claims**



1. A cartridge refinishing set for use on the shaft of an electric motor, said set comprising an adapter barrel, said adapter barrel being generally cylindrical in shape, and having a power end and a tool end, and wherein the adapter barrel has a small cylindrical bore in the power end, said small cylindrical bore being sized to slideably mate on the shaft of an electric motor, and wherein the adapter barrel has a large counter bore in its tool end, and wherein the surface formed where the large center bore and the small cylindrical bore is a shoulder and wherein the large center bore is sized to slideably accept a double ended burring tool, and the shoulder is situated so that when the burring tool is installed the operating end of the burring tool provides sufficiently, and the non-operating end is sufficiently inside the adapter barrel, and wherein the adapter barrel has a plurality of tapped holes from its external surface through the wall of the adapter barrel into the smaller cylindrical bore and into the large center bore, said tapped holes being threaded and sized to accept Allen set screws; and

an adapter sleeve being generally cylindrical in shape and having an external diameter such that the adapter sleeve slideably inserts into the large cylindrical bore of the adapter barrel, and the adapter sleeve having in one end a center bore sized to slideably accept a primer pocket reamer of known construction, and the adapter sleeve having in the other end a tapped and threaded hole, which threadably and mateably will accept the threaded end of the primer pocket reamer; and

a case spinning tool which has a conical section and a stem wherein the tip of the conical section is sufficiently sharp so that the neck of a cartridge may be applied over the tip, and the stem mates with the adapter sleeve; and

a double ended deburring tool; and a primer pocket reamer.

4,405,270

POT BROACH MACHINE WITH TURN-OVER LOADER

Leonard A. Gabriele, , Warren, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Aug. 17, 1981, Ser. No. 293,674

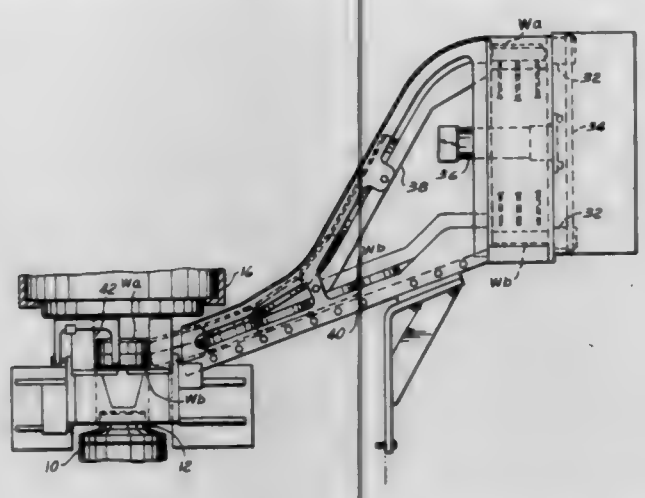
Int. Cl.³ B23D *37/12;* **B23F** *5/28*

U.S. Cl. 409—244 **10 Claims**

1. The method of broaching a succession of pairs of stacked work pieces each of which is of generally cylindrical shape having one flat side and a lateral projection at the opposite side which comprises:

advancing a series of work pieces in a single continuous array with their edges in contact and with all work pieces with like orientation with respect to the location of the lateral projections thereon,

separating the work pieces as they advance into two groups, inverting all of the work pieces in one group,



stacking the work pieces in pairs, with one work piece from each group and with the flat sides thereof in contact, and successively pot broaching the pairs of stacked work pieces.

4,405,271

CONVERTIBLE RAIL-HIGHWAY VEHICLE CHASSIS

Albert Adams, c/o Transciterne S.A. B.P. 49, 1211 Geneve 13, Switzerland

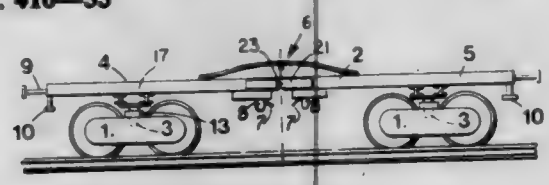
PCT No. PCT/CH80/00144, § 371 Date Jul. 22, 1981, § 102(e) Date Jul. 22, 1981, PCT Pub. No. WO81/01537, PCT Pub. Date Jun. 11, 1981

PCT Filed Nov. 24, 1980, Ser. No. 285,099

Claims priority, application Switzerland, Nov. 26, 1979, 10491/79

Int. Cl.³ B60P *3/42*; B61D *3/16, 17/00*

U.S. Cl. 410—53 **5 Claims**



1. A convertible vehicle for railway and highway transportation, comprising a two part chassis, each part having a first end engageable with the other part first end to provide a single chassis for railway transportation and disengageable from one another to provide two separate trailers for highway transportation, chassis connecting means joining said first end of one part of said chassis to the first end of the other part at approximately the middle of said chassis, each said two parts including a coupling device adjacent said end having said connecting means, each said coupling device engageable with related coupling means of a highway tractor vehicle, said chassis connecting means permitting selective rigid connection of said two parts and the separation thereof from each other, said chassis connecting means including cooperating longitudinal alignment means on said two first ends, abutment means on the upper portion of each said chassis part first end, means projecting axially from each said part first end beneath said abutment means, said projecting means of one said first end laterally aligned with said projecting means of said other first end when said abutment means of said two first ends are in mutual contact, retainer means engageable with said laterally aligned projecting means, cooperating locking means carried by both said first ends operable to secured said two chassis parts with said abutment means engaged, each of said chassis parts having a second end, and mounting means near each said second end to permit the engagement and disengagement of railroad trucks and wheel sets for highway use therefrom.

4,405,272

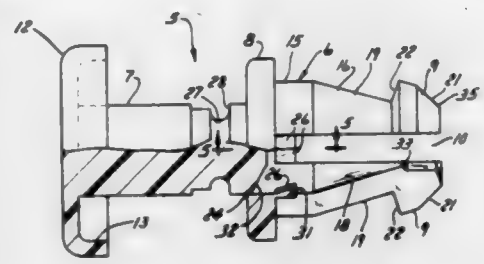
TWO-PIECE FASTENER WITH FRONT SHOULDER

Burnell J. Wollar, Barrington, Ill., assignor to Phillips Plastics Corporation, Phillips, Wis.

Filed Mar. 11, 1981, Ser. No. 242,686

Int. Cl.³ F16B *13/04*

U.S. Cl. 411—41 **4 Claims**



1. A fastener of the type comprising a sleeve-like body that is forwardly insertable into a round hole in a workpiece, said body having a laterally enlarged head at a rear end thereof and having longitudinal slots extending all the way to its front end from near said head to define forwardly projecting flexible legs which are disposed symmetrically to a longitudinal axis of the body, said fastener further comprising a plunger forwardly insertable into the body to an operative position, said plunger and said legs having cooperating camming surfaces whereby the legs are flexingly diverged by movement of the plunger to its operative position, said fastener being characterized by:

A. said plunger having a circumferential rearwardly facing shoulder which is near its front end but spaced behind the same and which is defined by a reduced diameter portion of the plunger;

B. said body having, in each of said slots, near the rear end thereof, a detent lug engageable with said shoulder to define a preliminary assembled position of the plunger in which the plunger leaves said legs undiverged, each of said detent lugs being formed in one piece with the body, projecting forwardly in its slot between adjacent legs and in detached relation to them, and being substantially shallow in the direction radial to said axis to be resiliently flexible in that direction independently of the legs, and each detent lug having

(1) an inner surface that is inclined forwardly and towards said axis and

(2) a forwardly facing surface which is engageable behind said shoulder and which meets said inner surface at an acute angle; and

C. each of said legs having near its front end a forwardly facing surface which is engageable against said shoulder when the plunger is in it operative position.

4,405,273

BLIND FASTENERS

John H. Ruhl, Tustin, and Richard D. Dixon, San Pedro, both of Calif., assignors to Huck Manufacturing Company, Irvine, Calif.

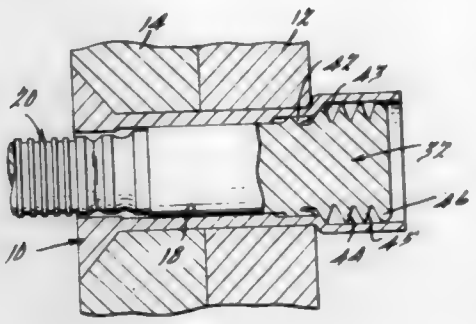
Continuation of Ser. No. 967,781, Dec. 8, 1978, abandoned, which is a continuation-in-part of Ser. No. 817,096, Jul. 19, 1977, abandoned. This application Nov. 7, 1980, Ser. No. 204,838

Int. Cl.³ F16B *13/08*

U.S. Cl. 411—43 **14 Claims**

1. A blind fastener of a selected metal for joining together a plurality of workpieces over a wide range of grips comprising a hollow tubular sleeve having a preformed head at one end and an open tubular extension at the other end, a pin including a shank disposed within said tubular sleeve having pull means formed thereon extending beyond the preformed head on the sleeve and having a solid blind head forming portion, extending beyond said other end of said sleeve, said blind head forming portion comprising a plurality of spaced annular ribs forming grooves therebetween constructed to engage and expand

said other end of said sleeve to form the blind head and to fold back successively in engagement with the inner wall of said other end as the fastener is set for different grips, said grooves having a root diameter less than the diameter of said pin shank



and the last following rib of the head forming portion is of the greatest strength and the first leading rib is of a strength more resistant to deflection than the remaining ribs intermediate said last following rib and said first leading rib.

4,405,274

SNAP RING INTENDED FOR PREVENTION OF LOOSENESS OF A NUT

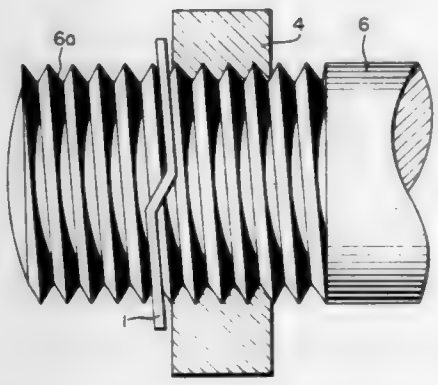
Tatsuo Saitoh, Niisato, and Tsutomu Hasebe, Koganei, both of Japan, assignors to Toho Asechiren Kabushiki-kaisha, Tokyo, Japan

Continuation of Ser. No. 137,323, Apr. 4, 1980, abandoned. This application Jan. 27, 1982, Ser. No. 343,080

Claims priority, application Japan, Nov. 13, 1979, 54-156554

Int. Cl.³ F16B *21/18, 39/02*

U.S. Cl. 411—249 **9 Claims**



1. A snap ring adapted to be disposed on a threaded element adjacent to a threaded nut to prevent the threaded nut from coming off of the threaded element, said threaded element being of the type having alternate spiral crests and troughs, said snap ring comprising a twisted section such that the snap ring extends around portions of two adjacent troughs of the threaded element with said twisted section extending across the crest of the thread between said two troughs, said snap ring having a split enabling the snap ring to expand diametrically, said split being defined by two juxtaposed end portions on said ring, said split being annularly spaced from said twisted section so as to define an annular ring portion between said split and said twisted section, said snap ring being disposed on said threaded element with said split and said annular ring portion being disposed in the trough closest to said nut such that when the nut starts to unthread, said nut engages said two end portions of said ring juxtaposed to the split to force said two end portions to spread apart annularly and to move from said one trough closest to said nut to the next trough as said two end portions pass over the crest of the thread and settle in said next trough, whereby the snap ring prevents the nut from coming off of the threaded element.

4,405,275

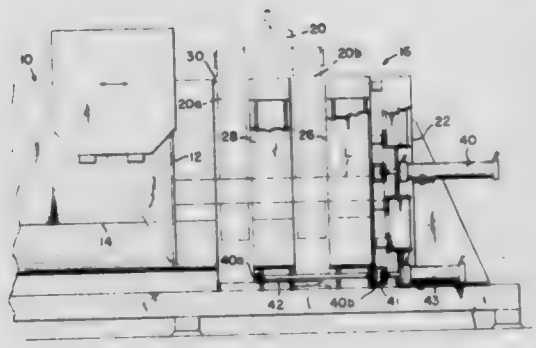
UNLOADING APPARATUS FOR LOG BATCH FORMER

Ronald A. Makos, and James W. Young, both of Grays Harbor County, Wash., assignors to Enterprises International, Inc., Olympia, Wash.

Filed Jul. 31, 1981, Ser. No. 288,992

Int. Cl.³ B65G *57/02*

U.S. Cl. 414—28 **10 Claims**



1. A batch former comprising:

a forming compartment for collecting a batch of logs, the compartment having an open end;

pusher means for pushing the batch of logs endwise through said open end out of said compartment;

unloading apparatus adjacent said open end for receiving said batch of logs, said unloading apparatus including:

(a) a movable receiver platen engageable by said logs, having a surface for supporting the logs, and being movable from a first position adjacent a log support member to a second position spaced from said member, and

(b) an intermediate log support member positionable between said compartment and said receiver platen, having a surface for supporting the logs, being movable from a first position adjacent said compartment between said receiver platen and said compartment to a second position spaced from both said compartment and said receiver platen by gaps; and

means for returning the log support member and receiver platen to their respective first positions,

wherein (1) the pusher means pushes the logs to engage the receiver platen so that initially only the platen moves away from the log support member as the logs move from the compartment, (2) the log support member moves away from the compartment after the platen has moved a predetermined distance and (3) the logs slide over the surface of the log support member when only the platen is moving.

4,405,276

APPARATUS FOR UNSTACKING PLANKS

Karl-Wolfram Wiegand, Bochum, Fed. Rep. of Germany, assignor to Dimter GmbH Maschinenfabrik, Illertissen, Fed. Rep. of Germany

Filed Jun. 10, 1981, Ser. No. 272,205

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1980, 3026613

Int. Cl.³ B65G *59/02*

U.S. Cl. 414—119 **5 Claims**

1. An apparatus for unstacking planks from a stack comprising:

(a) a traverser truck;

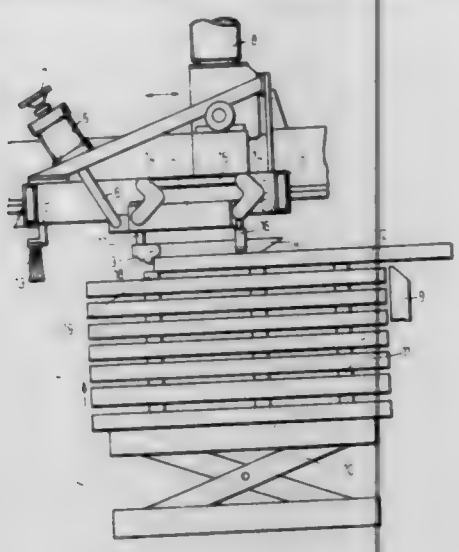
(b) a lifting unit arranged on the traverser truck for supporting a stack of planks thereon;

(c) means for raising the top layer of the plank stack to a predetermined working level;

(d) cams operatively connected to said lifting unit, the cams being moveable over the entire length of the stack and moveable vertically relative to the lifting unit; and

(e) holding down devices resiliently supported on the lifting

unit and extending in the plank feed direction, the holding down devices being pivotally connected to corresponding



cams for movement relative to said cams and against the top layer of the plank stack.

4,405,277

UNLOADING RACK WITH ELEVATING DEVICE FOR A HEAT PRESS

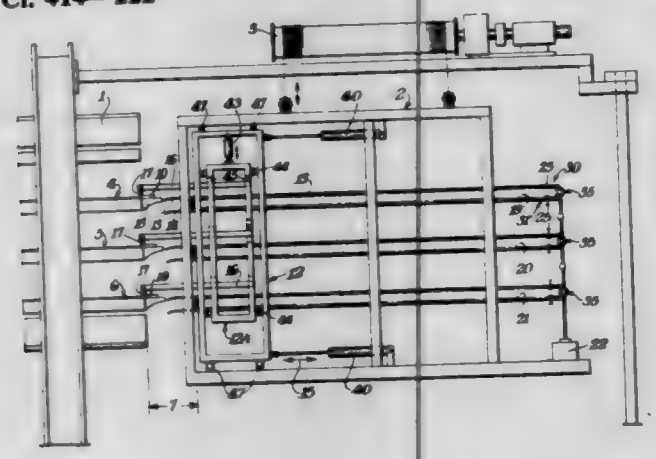
Wolfgang Bürkner, Darmstadt, and Gerhard Melzer, Lautertal, both of Fed. Rep. of Germany, assignors to Carl Schenck AG, Fed. Rep. of Germany

Filed Mar. 16, 1981, Ser. No. 244,045

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1980, 3013767

Int. Cl.³ B65H *29/00*; B29J *5/04*

U.S. Cl. 414—222 **1 Claim**



1. An unloading apparatus for a multi-level heat press that presses substantially flat elongated workpieces comprising an unloading rack having a workpiece removing device correlated with each level of the press, an elevator connected to the rack for moving it up and down, an unloading unit for each press level mounted in the unloading rack and including standard and auxiliary workpiece support levels, one workpiece removing device being constructed and arranged to cooperate with each unloading unit for removing workpieces from the press, means connected to activate the elevator to horizontally align the standard or auxiliary support level of each unloading unit with its associated press level, and unloading means associated with each unloading unit for drawing workpieces onto the standard and auxiliary support levels of each unit, the unloading means comprising a horizontally disposed chain conveyer constructed for movement in one direction and also in the reverse direction, a chain lug secured to the conveyer adapted to engage a workpiece after removal from the press by the workpiece removing device, and a reversible drive for the chain conveyer whereby horizontal alignment of the standard support level and its associated press level together with rotation of the chain conveyer in one direction causes the chain lug to draw a workpiece onto the standard support level while horizontal alignment of the auxiliary support level and that press level with rotation of the chain conveyer in the opposite direction causes the chain lug to draw a workpiece onto the auxiliary support level.

4,405,278

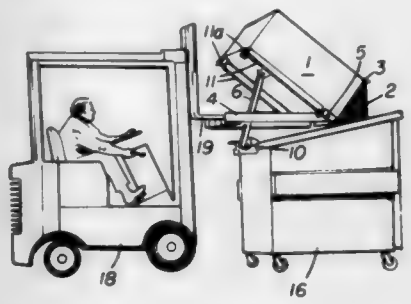
SELF-EMPTYING DUMP BOX

A. M. Kvalheim, 825 Petaluma Blvd. South, P.O. Drawer A, Petaluma, Calif. 94953

Filed Sep. 28, 1981, Ser. No. 306,293

Int. Cl.³ B66F *9/06*; B60P *1/04, 1/64*

U.S. Cl. 414—411 **5 Claims**



1. A self-emptying dump box for trash and the like adapted for operation by a forklift truck comprising:

a container of generally rectangular configuration;

said container having a first pivot on one of its bottom ends mounted on a pallet;

said pallet being adapted to receive fork members of a forklift truck;

a hinged cover positioned over the end of said container adjacent to said first pivot;

a swinging leg member having its first end mounted on a second pivot on the bottom of said container at a point opposite said first pivot;

said leg member being disposed to rotate about said second pivot from a horizontal position parallel to the bottom of said container to a vertical position at right angles to said bottom;

support means of generally U-shaped configuration disposed to support the second end of said leg member at a predetermined location under said container when said member is in a substantially vertical position;

whereby said container may be made to rotate about said pivots when the elevation of said pallet is altered by the action of said forklift;

a first engageable catch means positioned on the second end of said leg member opposite said second pivot;

a second catch means positioned on the bottom end of said hinged cover opposite the bottom of said container;

each of said catch means being disposed to engage one another and hold said cover in a closed position and to disengage said cover and said leg means to an open position by the action of said forklift truck on said pallet;

thereby causing the contents of said container to empty through said cover.

4,405,279

TAILGATE LOADER

Robert F. Davy, and Wilhelm K. Kremp, both of Scarborough, Canada, assignors to Robert F. Davy, Scarborough, Canada

Filed Aug. 18, 1981, Ser. No. 293,842

Int. Cl.³ B60P *1/44*

U.S. Cl. 414—558 **9 Claims**

1. A tailgate loader for a vehicle, comprising:

upper arm means pivoted at one end to the rear of the vehicle at a first pivot location for swinging movement in a vertical plane,

lower arm means pivoted at one end to the rear of the vehicle at a second pivot location spaced below the first pivot

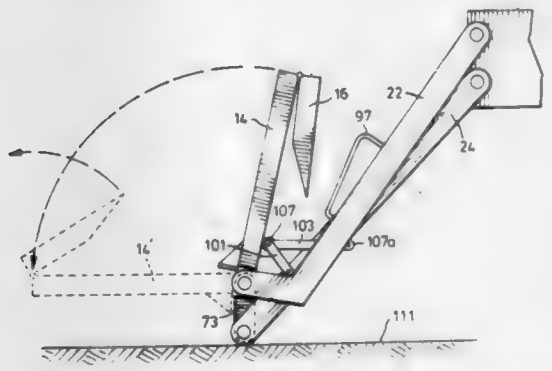
location, the lower arm means being mounted for swinging movement in a vertical plane,

a platform mounted for pivotal motion about the other end of the upper arm means, the platform being capable of swinging between a stored position in which it overlies the upper arm means and an extended position in which it projects rearwardly from the said other end of the upper arm means,

substantially vertical link means joining the other ends of the upper and lower arm means, thereby defining substantially a parallelogram mechanism,

power means for swinging the arm means about their pivot locations at the rear of the vehicle,

and an opener assembly for raising the platform from the stored position to a near-vertical position as the two arm



means swing downwardly about their pivot locations, the opener assembly including (a) a first connecting link pivoted at one end to the upper arm means at a location spaced a first distance from said other end thereof, (b) a second connecting link pivoted at one end to the lower arm means at a location spaced a second distance from the other end of the lower arm means, said second distance being greater than said first distance, the other ends of the first and second connecting links being pivotally connected together to form a knuckle,

whereby as the arm means are lowered, the knuckle moves away from the upper arm means, thus pressing on and moving the platform toward a vertical position, so that the operator need not exert great force to swing the platform to its extended position.

4,405,280

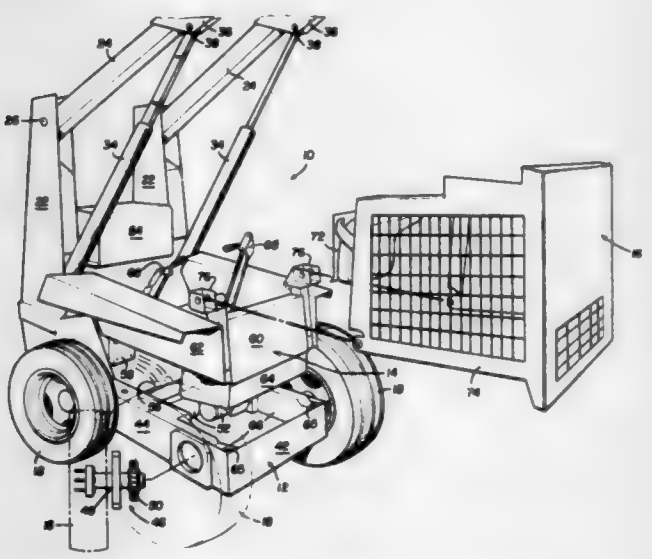
MODULAR LOADER FRAME STRUCTURE

Gary L. Cochran; James E. Dawson, and Gary D. Stromberg, all of Burlington, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Feb. 22, 1982, Ser. No. 351,067

Int. Cl.³ B66F *9/075*

U.S. Cl. 414—685 **3 Claims**



1. A modular machine having a plurality of components which are structurally interconnected for convenient assembly, disassembly, servicing or repair, said modular machine comprising a base frame assembly, an operator's control station, and a cab assembly;

said base frame assembly including opposed end members and opposed side members forming an open frame construction with an engine mounted on one end thereof, said base frame side members including stepped inner walls for forming a cavity, vertical stanchions mounted to said base frame assembly and extending above said base frame assembly on opposite sides of said engine, lift arms pivotally mounted at one end to said stanchions and a material handling implement pivotally connected to the opposite end of said lift arms, at least one axle assembly mounted to each side member and a fluid motor mounted to each side member for driving said axle assembly;

said operator's control station including a front wall portion and rearwardly extending side wall portions, a frame extending downwardly from said front and side wall portions for engagement within the cavity formed by said base frame side members, said operator's control station being removably installed on said base frame assembly by abutting said control station side wall portions against said base frame side members and inserting said frame into said base frame cavity;

said cab assembly including an operator's seat attached to a box-like frame with said box-like frame being pivotally attached to said operator's control station for movement about a horizontal axis, said cab assembly being rotatable to a position permitting complete access into the interior of said operator's control station; and

said base frame assembly, operator's control station, and cab assembly being removable from each other to permit complete access to all parts of said machine for easy servicing, repair or replacement.

4,405,281

HYDRAULIC EXCAVATOR WITH BOOM FOR LARGE RANGES OF ACTION AND LIFTING HEIGHTS

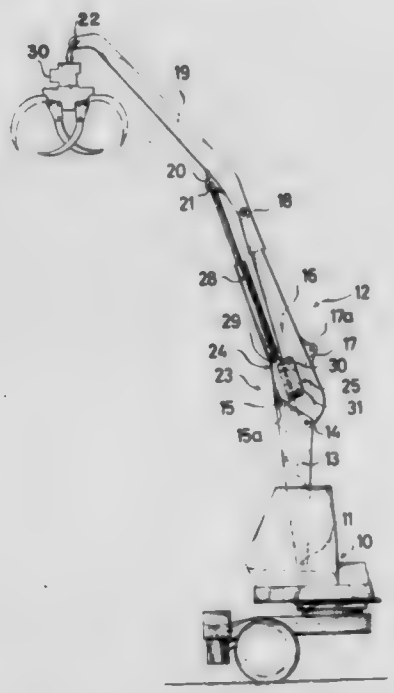
Heinz-Joachim Rüttershoff, Schwelm, Fed. Rep. of Germany, assignor to O & K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,424

Claims priority, application Fed. Rep. of Germany, May 19, 1979, 2920422

Int. Cl.³ E02F *3/38*

U.S. Cl. 414—722 **4 Claims**



1. In a hydraulic excavator having a chassis a boom compris-

ing a boom lower part pivotally mounted to said chassis, and a boom upper part normally pivotally connected to the boom lower part, and having a stick pivotally connected to the boom upper part, the improvement for conversion of the excavator to operation using a gripper with large ranges of action and lifting heights, comprising

a connecting piece constituting means for rigidly connecting said boom upper part and said boom lower part, said connecting piece being connected to the boom upper part,

said connecting piece is formed with an eye,

a hydraulic cylinder means for actuating said stick,

bolt means for swingably mounting said hydraulic cylinder means on said eye.

4,405,282

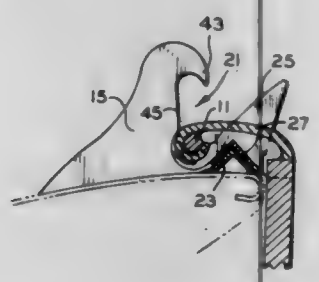
LOAD BEARING ARRANGEMENT FOR A MOVABLE BUCKET FORK LIFT ATTACHMENT

Jack D. Carter, 609 Curdes Ave., Fort Wayne, Ind. 46805

Filed Aug. 27, 1981, Ser. No. 297,038

Int. Cl.³ B66F 9/00

U.S. Cl. 414—724 **9 Claims**



1. An attachment for use with a movable bucket or the like having a plurality of substantially similar spaced retaining hooks, each of said hooks including a notch having an opening intermediate the ends thereof, and each of said hooks being fastenable to an upper portion of a movable bucket along a substantially horizontal line with the hook notch openings aligned; and support means fastenable to the upper portion of the movable bucket intermediate the retaining hooks, the attachment comprising:

(1) an elongated horizontal bar having a length greater than the distance between the outer ones of said spaced retaining hooks, said horizontal bar adapted to be easily picked up by said retaining hooks with the ends of said horizontal bar positioned outwardly of said outer spaced retaining hooks respectively;

(b) first and second fork lift elements mounted on said horizontal bar, each of said fork lift elements having a rigid, generally L-shaped configuration formed by a vertical portion and a horizontal portion, the upper end of said vertical portion being mounted on said horizontal bar and including a load bearing surface adjacent the horizontal bar for engaging the support means with the lower part of said vertical portion adapted to rest against the forward face of said bucket with the horizontal portion extending forwardly from said bucket with the end of said horizontal portion spaced from said bucket so that the weight of the fork lift elements and any load carried by those fork lift elements is carried primarily by the support means; and the support means comprising,

an elongated bar fastenable by welding to the outer surface of the upper portion of the movable bucket near the front edge thereof.

4,405,283

GAS TURBINE CONSTRUCTION AND METHOD OF CONTROLLING THE LABYRINTH SEAL CLEARANCE AUTOMATICALLY AND CONTINUOUSLY

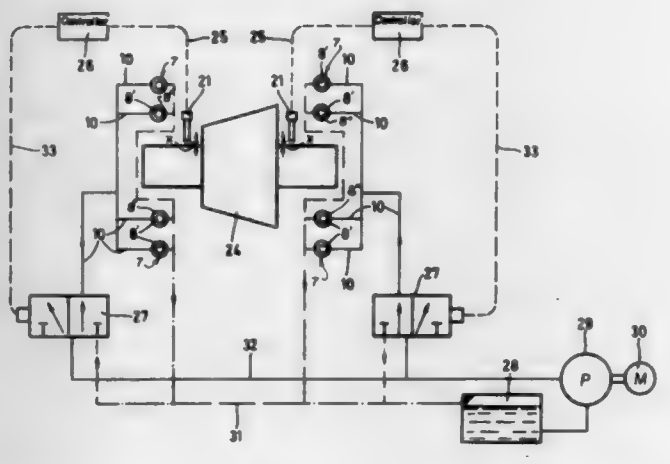
Edmund Owsianny, Oberhausen, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,379

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022861

Int. Cl.³ F01D 25/16, 25/28

U.S. Cl. 415—14 **6 Claims**



1. A hot gas turbine to be supported on a foundation, comprises:

a housing defining a rotor space;

a rotor rotatably mounted to said housing and in said rotor space, said rotor connected to a rotor shaft extending out of said rotor space from two opposite sides of said housing;

a rotor shaft bearing having a bearing block connected to said rotor shaft at each of said opposite sides of said housing and outside said rotor space, each bearing block adapted to be supported by the foundation;

a labyrinth seal connected between said rotor shaft and said housing at each opposite side of said housing, to which a pressure sealant is supplied for sealing said rotor space, each labyrinth seal having a clearance gap between said rotor shaft and said housing;

at least one traverse connected to said housing and extending to one of said bearing blocks on each opposite side of said housing;

a cushion cylinder connected to each traverse;

cushion support sleeve movable in each cylinder and each engaged on a bearing block, said sleeve and cylinder defining an annular cushion space therebetween; each cushion space being changeable in volume to adjust a distance between said traverse and an adjacent bearing block and thereby adjust said clearance gap on each side of said housing;

staybolt means connected to each bearing block and extending over each respective sleeve for limiting relative motion of each sleeve with respect to each traverse;

sensor means associated with said housing at each opposite side thereof for sensing an actual amount of each clearance gap;

fluid pressure means connected to each annular cushion space for selectively pressurizing and venting each cushion space; and

control means connected to each sensor means and to said fluid pressure means for controlling said fluid pressure means to change said actual clearance gap to a selected clearance gap, in response to a signal corresponding to the actual amount of each clearance gap from each sensor means.

4,405,284

CASING FOR A THERMAL TURBOMACHINE HAVING A HEAT-INSULATING LINER

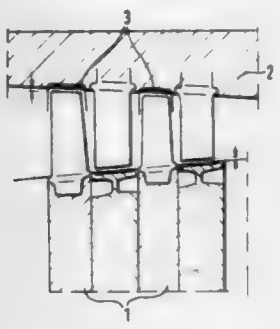
Günter Albrecht, Feldgeding; Albert Sickinger, Munich, and Hans-Jürgen Schmuhl, Wörthsee, all of Fed. Rep. of Germany, assignors to MTU Motoren-Und-Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

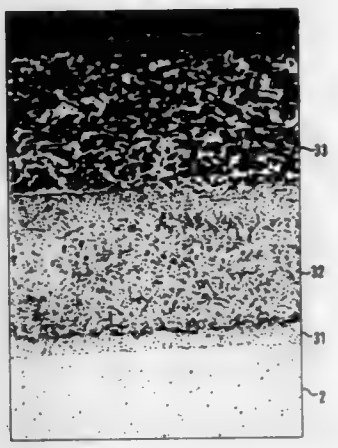
Filed May 14, 1981, Ser. No. 263,447

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018620

Int. Cl.³ B05D *1/08*

U.S. Cl. 415—174 14 Claims





1. A casing for a thermal turbomachine having a heat insulation liner, characterized by the liner being a multilayer formation comprising:

a metallic bond coat in direct contact with the casing wall,

a ceramic heat insulation layer bonded to the bond coat, and

an abradable coating in the form of a porous, predominantly metallic, top layer bonded to the ceramic layer.

4,405,285

DEVICE TO LOCK THE BLADES OF A TURBOBLOWER AND TO FASTEN THE FRONT COWL OF A TURBOJET ENGINE

Jean M. Surdi, Melun, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.-M.A.", Paris, France

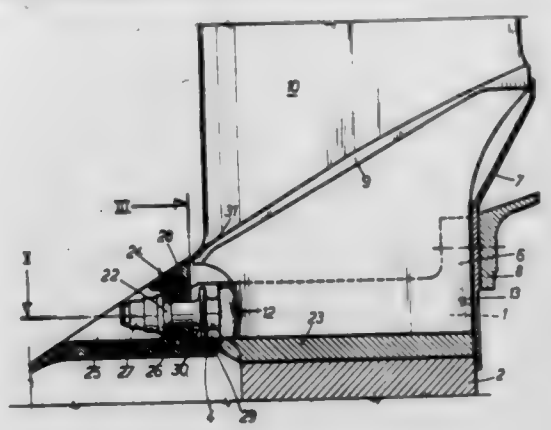
Filed Mar. 22, 1982, Ser. No. 360,882

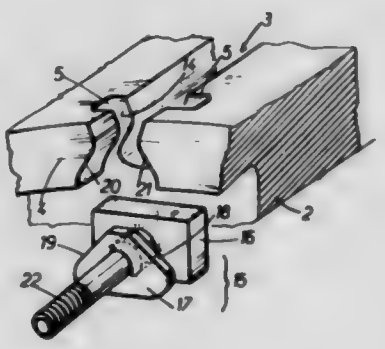
Claims priority, application France, Mar. 27, 1981, 81 06576

Int. Cl.³ F01D *5/32;* F04D *29/34*

U.S. Cl. 416—220 R 5 Claims

1. In a locking device for the blades of a fan and for fastening the forward cowl of a turbojet engine, the roots of said blades being maintained in axial grooves with a dovetail configuration on the rim of a rotor disk by means of wedges placed between the blade root and the bottom of the groove, with teeth formed in the axial upstream extension of the rim comprising opposed radial slots, the improvement comprising: a fastening piece (15) consisting of three parts: a first parallelepipedic part (16) engaging the radial slots (5) of the teeth (4) of the rims, a second prismatic part (17) the convergent faces (18, 19) whereof define an angle at the apex equal to that of the sides (20, 21) of the dovetail of the axial grooves (3) extending into the teeth and against which it radially abuts, and a third cylindrical part (22) threaded at least in part to receive fastening means (27) for the forward cowl (24), the first and the second parts (16, 17) being





parallel to each other and perpendicular to the axis of the third part (22).

4,405,286

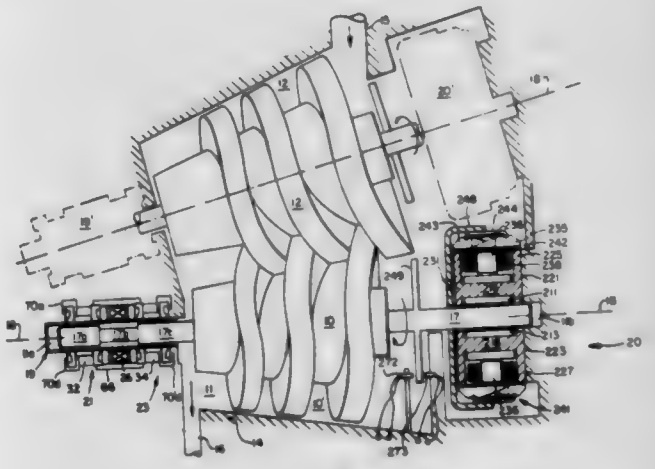
ACTIVELY SUSPENDED COUNTER-ROTATING MACHINE

Philip A. Studer, Silver Spring, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 21, 1982, Ser. No. 341,383

Int. Cl.³ F16C *35/00;* F04B *49/06, 49/00;* F04C *2/16*

U.S. Cl. 417—1 15 Claims



1. An actively suspended counter-rotating machine, comprising:

a plurality of shafts (17,17');

an equal plurality of means (10,12) mounted on said shafts in close, non-contacting fit for subjecting intermediate substances to axial and radial compression during counter-rotation of said shafts;

an equal plurality of means (19,19') coaxially disposed around one end of said shafts for generating in adjoining

sectional lengths (17*a*, 17*c*) of said shafts a first plurality of opposed, magnetic flux paths (22, 24) radially penetrating and axially traversing said sectional lengths;

a plurality of means (211–214, 216–219) symmetrically arrayed around the other end of said shafts for radiating a second plurality of opposed magnetic flux paths (22/24) each traversing central magnetic flux path segments lying within planes passing along the longitudinal axes (18,18′) through said shafts;

an equal plurality of means (237, 238) each coaxially disposed in proximity to said radiating means around said shaft ends for each creating torque about longitudinal axes when energized by electrical currents flowing orthogonally to said central magnetic flux path segments;

an equal plurality of discrete means (248, 248′) affixed to said different shafts ends in conjugate proximity to said central magnetic flux path for converting said torque into counter-rotation of said shafts; and

means (250) responsive to the angular rotation of said shafts for synchronizing the energization of said plurality of torque creating means (237,238).

4,405,287

REGULATING DEVICES FOR A PLURALITY OF PUMPS DRIVEN BY A COMMON SOURCE

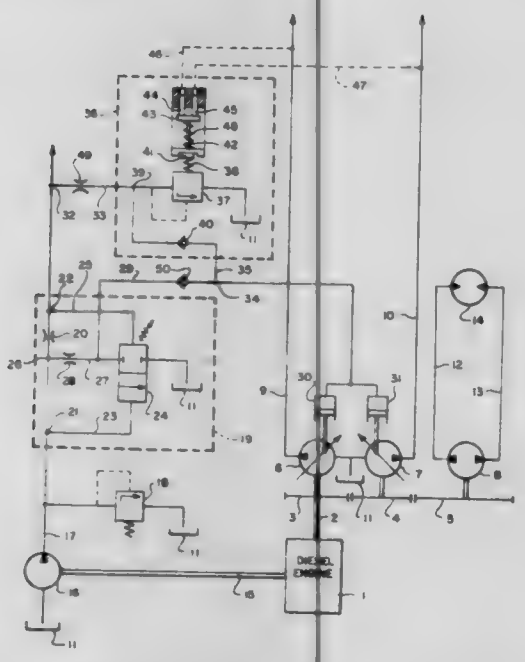
Dietrich Kuchenbecker, Aschaffenburg, and Erich Eckhardt, Grossumstadt, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Hollriegelskreuth, Fed. Rep. of Germany

Filed Jun. 23, 1981, Ser. No. 276,704

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024399

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—216 **8 Claims**



1. In a regulating device for an aggregate of several pumps driven by a common primary-energy source, at least one of which pumps is adjustable relative to its output volume per revolution, and with an auxiliary control pressure pump constant with respect to output volume per revolution and driven by the same primary-energy source, in the delivery line of which a restrictor is located, a hydraulically regulated discharge valve having at least one control pressure chamber in which case the pressure gradient in front of and beyond this restrictor acts on the at least one control pressure chambers of said hydraulically regulated discharge valve, which discharge valve is incorporated in a drain line connected to the delivery line of the auxiliary control pressure pump, the improvement wherein the drain line is connected in front of the restrictor in the direction of flow to the delivery line from the auxiliary control pressure pump, adjusting means connected to each adjustable pump and a control pressure line, to which all the adjusting means connected to each adjustable pump are connected, branching off from the said drain line in front of the discharge valve.

4,405,288

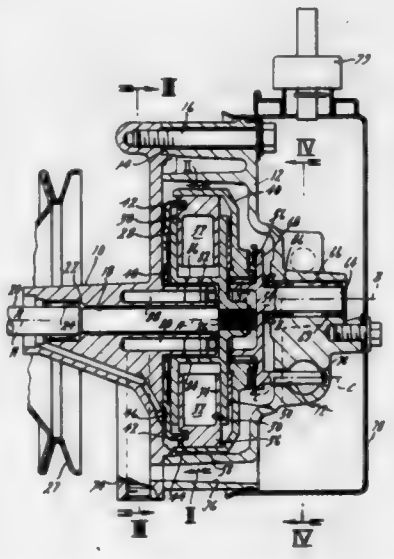
VARIABLE DISPLACEMENT HYDRAULIC PUMP AND CONTROLS THEREFOR

Thomas R. Stockton, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 3, 1980, Ser. No. 126,924

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—220 **5 Claims**



1. A hydraulic fluid pump for producing a constant flow rate comprising:

a rotor mounted for rotation about a first axis having multiple cylinders circumferentially spaced around and radially directed from the first axis and a piston slidably working in each cylinder;

means defining a first space extending over a first angular portion of the rotor, communicating a source of fluid with the cylinders and defining a second space extending over a second angular portion of the rotor communicating the cylinders with a passage that carries fluid from the cylinders;

an eccentric pivotably mounted on a second axis eccentric of the first axis providing a support hub having an arcuately movable actuator pin spaced radially from the second axis for pivoting the support hub into and out of alignment with the first axis;

a pumping ring having a guide surface with which the pistons maintain contact during rotation of the rotor, rotatably supported on the hub of the eccentric whereby the axis of the pumping ring pivots about the second axis into and out of alignment with the first axis as the eccentric pivots;

control piston means operative in response to the application of control pressure to a first control piston to pivot the actuator pin about the second axis and thereby to increase the eccentricity between the axis of the pumping ring and the first axis thus increasing the flow rate of the pump and operative in response to the application of control pressure to a second control to pivot the actuator pin about the second axis and thereby to decrease said eccentricity thus decreasing the flow rate; and

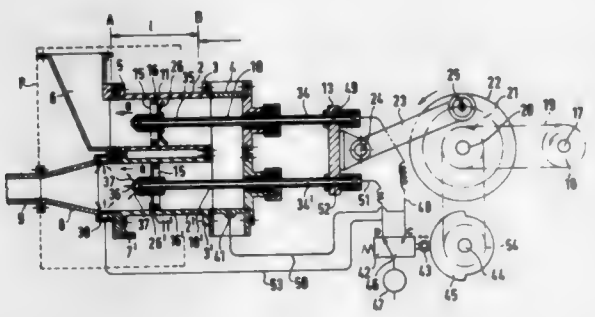
means operative in response to a differential fluid pressure corresponding to a predetermined pump flow rate for directing control pressure to one or the other of said control pistons.

4,405,289

APPARATUS FOR PUMPING A POWDERY OR GRANULAR MATERIAL

Shigeo Nakashima, No. 7-7, Tanjinnomori, Morimoto-cho, Muko, Kyoto, Japan

Filed Aug. 14, 1981, Ser. No. 292,925
Claims priority, application Japan, Aug. 31, 1980, 55-121429
Int. Cl.³ F04B *3/00*
U.S. Cl. 417—250 **7 Claims**



1. An apparatus for pumping a powdery or granular material, which comprises:

a first cylinder having a material inlet means at the front end and a second cylinder having a material outlet means at the front end, said first and second cylinders being parallel to each other;

a connector box connecting the rear ends of said cylinders for placing them in communication;

first and second pistons in said first and second cylinders, respectively, and having first and second piston rods connected to the respective first and second pistons and extending rearward from the pistons out of the cylinders;

means connected to said first and second piston rods for reciprocating said first and second pistons simultaneously in the same directions within the respective first and second cylinders;

said first and second pistons each having openings therethrough and the opening of said first piston being provided with a one-way valve which is normally closed and which is opened when said first piston is moving in the forward direction, and the opening of said second piston being provided with a one-way valve which is normally closed and which is opened when said second piston is moving in the rearward direction, one of said first and second piston rods being hollow and having at least one opening therein on the side of the piston on said one piston toward which that piston moves with the one-way valve thereon closed; and

a compressed air supply means connected to the hollow interior of said one piston rod.

4,405,290

PNEUMATIC SUPPLY SYSTEM HAVING VARIABLE GEOMETRY COMPRESSOR

George C. Rannenberg, Canton, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 24, 1980, Ser. No. 210,071
Int. Cl.³ F04B *27/02*
U.S. Cl. 417—282 **5 Claims**

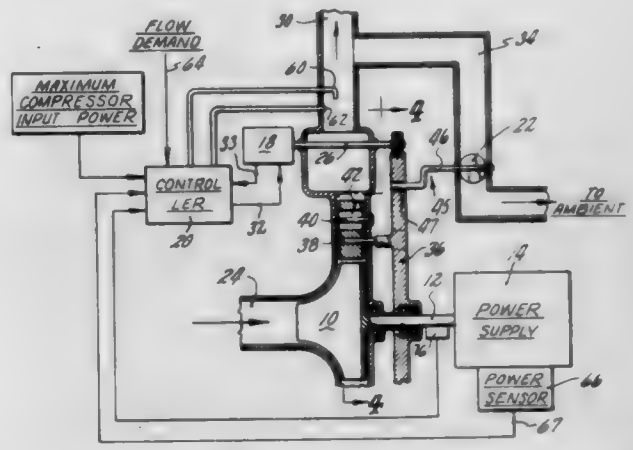
1. A pneumatic supply system characterized by:

a compressor including a variable geometry stator portion included in an outlet portion of said compressor, for providing delivery by said compressor of an airflow of varying magnitude in accordance with demands of a load;

actuator means for operating said variable geometry stator portion;

a dump valve disposed in fluid communication with said compressor outlet and sequentially operated with said variable geometry stator portion by said actuator means; and

control means responsive to the flow demand of said load, the flow output of said compressor, the power input and maximum allowable power input to said compressor and the position of said variable geometry stator portion for controlling said actuator means, thereby controlling the



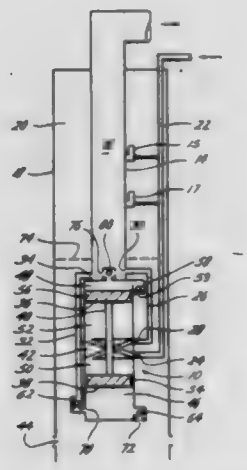
actuation of said variable geometry stator portion and said dump valve.

4,405,291

DOWNHOLE DOUBLE ACTING PUMP

Carlos R. Canalizo, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Continuation of Ser. No. 152,529, May 22, 1980, abandoned.
This application Jan. 7, 1983, Ser. No. 456,366
Int. Cl.³ F04B *47/08*
U.S. Cl. 417—393 **5 Claims**



1. A downhole double-acting pump comprising

a tubular housing,

a valve body positioned in the intermediate portion of said tubular housing providing upper and lower body chambers within said housing,

a piston positioned within each of said body chambers providing a pump chamber and a power chamber,

means connecting the pistons,

a power fluid inlet to the valve body,

check valve means associated with said pump chambers to control movement of well fluids therethrough,

said valve body having a closed main cylinder therein,

a main valve member reciprocal in said cylinder and having an intermediate and first and second endwise seals,

a fluid inlet port into said main cylinder in fluid communication with the power fluid inlet positioned such that as the main valve member reciprocates the intermediate seal passes said inlet port,

first and second outlet ports in said main valve cylinder on opposite sides of said inlet port,

passageways respectively connecting said upper and lower power chambers with said cylinder at points intermediate the inlet and outlet ports,

said first and second endwise seals alternately connecting

said passageways with said inlet port and one of said outlet ports,

a pilot valve cylinder extending through said valve body and having an inlet in fluid communication with the power fluid inlet and outlets straddling said inlet,

passageways extending respectively between each end of said main valve cylinder and the pilot valve cylinder intermediate the inlet and each outlet port of the pilot valve cylinder,

a reciprocal pilot valve member in said pilot valve cylinder having an intermedate and first and second endwise resilient seals thereon,

said pilot valve member in said pilot valve cylinder having an intermediate and first and second endwise resilient seals thereon,

said pilot valve intermediate seal passing over the pilot valve inlet port with reciprocation of said pilot valve between first and second positions,

said pilot valve intermediate and endwise seals alternately connecting said pilot valve inlet and outlets with respective ones of said passageways between the main and pilot valves, and

resilient means carried by each of said pistons and engageable with said pilot valve as each piston approaches said valve body,

at least one of said seals on said pilot valve member subject to the differential between the pilot valve inlet and a pilot valve outlet with the pilot valve in each of its first and second positions,

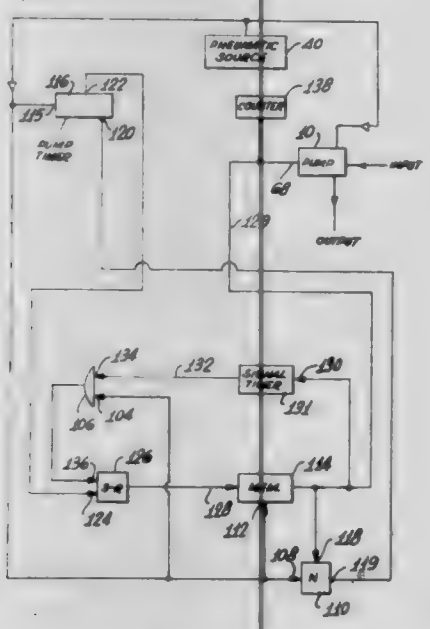
said differential expanding said seal into engagement with said pilot valve cylinder and providing breakaway frictional engagement with the cylinder resisting movement of the pilot valve member from its at rest position when engaged by said resilient means until the resilient means exerts a greater force than the differential exerted by pressure in the two power chambers on the pilot valve member and the breakaway friction of said pilot valve seals and when the breakaway friction is overcome the pilot valve may be moved between its first and second positions by said resilient means with a snap action.

4,405,292

PNEUMATICALLY CONTROLLED RATE PUMP

Willard W. Bixby, Jr., LaCanada, Calif., and Jerry Christopher, Houston, Tex., assignors to Haskel, Incorporated, Burbank, Calif.

Filed Nov. 9, 1981, Ser. No. 319,716
Int. Cl.³ F04B 17/00
U.S. Cl. 417—403 **17 Claims**



2. A pneumatic pumping apparatus having a pumping chamber, inlet and outlet valves associated with said pumping chamber, a piston reciprocable within said pumping chamber to pump a fluid into and out of said pumping chamber, an actuation chamber, an actuation piston reciprocable within said actuation chamber and connected to said pumping piston for movement therewith, a primary inlet for admitting a pressurized gas to operate said actuation piston, pneumatic cycling means for causing said actuation piston to commence a new cycle of movement within said actuation chamber upon the application thereto of a pilot signal, and a pneumatic source connected to said primary inlet to supply said pressurized gas thereto, wherein the improvement comprises:

pneumatically operated pump timer means supplied by said pneumatic source for measuring predetermined pumping intervals and for initiating said pilot signal at the beginning of each of said intervals; and

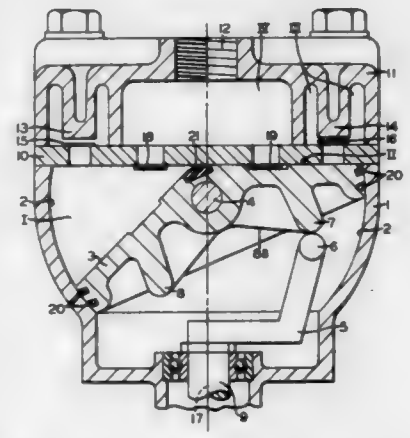
pneumatically operated means for resetting said pump timer means at the conclusion of each of said pumping intervals.

4,405,293

COMPRESSOR

Wilhelm Pape, Wunstorf, Fed. Rep. of Germany, assignor to Wabco Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Oct. 16, 1980, Ser. No. 197,448
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 2945116
The portion of the term of this patent subsequent to Jun. 9, 1998, has been disclaimed.
Int. Cl.³ F04C 21/00
U.S. Cl. 417—482 **3 Claims**



1. An oscillating piston compressor comprising:

(a) a housing having a substantially semi-spherical piston chamber characterized by a seamless surface,

(b) a disk-shaped piston comprising a pair of semi-circular sectors joined in angular relation to each other and oscillatingly disposed in said piston chamber on a bearing axle journaled in the housing in axial coincidence with the greatest diameter thereof and with the line of juncture of said pair of semi-circular sectors, the geometric centerpoint of said spherical chamber coinciding with the midpoint of the axis of said axle,

(c) sealing means disposed peripherally on said piston for making sealing contact with said seamless surface during oscillating movement of the piston,

(d) a circular flat valve plate fixed transversely in said housing so as to separate said piston chamber adjacent one side thereof from an air supply chamber and a pressure delivery chamber adjacent the opposite side thereof, said one side axially spaced from such geometric centerpoint of said spherical chamber,

(e) said piston chamber having formed therein a pair of compression chambers sealingly isolated from each other and defined by said valve plate, said housing, and said piston sectors on opposite sides of said bearing axle, respectively,

(f) each of said compression chambers being alternately communicated with said supply chamber and delivery chamber, via respective intake and delivery valves opera-

bly disposed in said valve plate, by oscillatory movement, and

(g) driving means for imparting oscillatory movement to said piston, wherein said driving means is diposed within said housing and said driving means further comprises a cylindrical undulated cam surface formed on the side of said piston opposite said compression chambers, a crankarm having a follower in rolling contact with said cam surface, and a rotatable drive-shaft carrying said crankarm for imparting rotating motion thereto on said cam surface.

4,405,294

DOSING PUMP

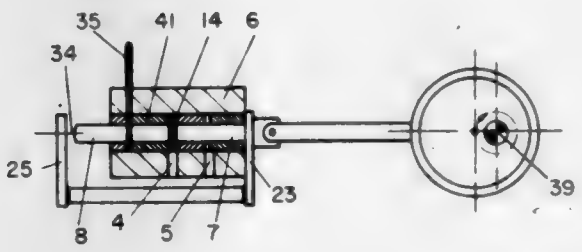
Scato Albarda, Gross Schenkenberg, Fed. Rep. of Germany, assignor to Drägerwerk AG, Fed. Rep. of Germany

Filed Aug. 18, 1981, Ser. No. 293,976

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1980, 3038525

Int. Cl.³ F04B *19/00, 19/22*

U.S. Cl. 417—488 **10 Claims**



1. A pump, comprising:

a housing having a bore therein;

a plurality of wear-resistant rings pressed into said housing bore and spaced from each other defining a common piston bore;

a first piston slidable in said common piston bore;

a second piston slidable in said common piston bore next to said first piston;

said housing having means defining an inlet and outlet communicating with said housing bore, said plurality of rings spaced from each other to form an inlet space communicating with said inlet and an outlet space communicating with said outlet;

control means connected to said first piston for moving said first piston through a pumping stroke from said inlet space to the vicinity of said outlet space, said control means engaging with said second piston to move said second piston in the same direction as movement of said first piston through a portion of said stroke, a maximum clearance between said first and second pistons in said piston bore comprising a stroke volume;

two of said plurality of wear-resistant rings define one additional space; and

a brake spring extending through said one additional space and engaging said second piston for braking the movement of said second piston.

4,405,295

METHOD OF MANUFACTURING COMPLEX METALLIC PLATE

Tetsuya Fujii; Yukio Oguchi; Norio Sumita, all of Chiba, and Isamu Goto, Kobe, all of Japan, assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Mar. 1, 1982, Ser. No. 353,400

Int. Cl.³ B22F *7/02*

U.S. Cl. 419—28 **4 Claims**

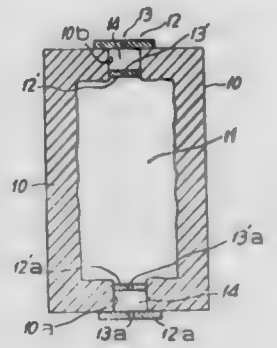
1. A method of producing complex metallic plate comprising the steps of

pressure injecting an iron base molten metal into a mold through an injection hole in the botom of the mold,

after the metal has reached predetermined height, allowing the metal to partially solidify by maintaining a near constant pressure,

after a predetermined thickness of metal has solidified, reducing the pressure in the mold to allow unsolidified metal to run out and thusly form a hollow metal piece,

injecting an inactive gas into the hollow metal piece,



filling the hollow metal piece with a metal powder mixture to form a filled metal piece, sealing each of the top and bottom openings in the hollow metal piece with two plates of a metal similar to the molten metal and each having at least one ventilation hole with a carbon base powder between said two plates,

sintering said filled metal piece and rolling said heated filled metal piece to form a complex metallic plate.

4,405,296

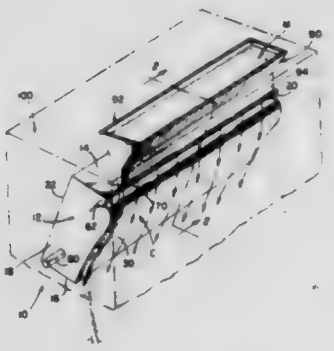
METALLIC PARTICLE GENERATION DEVICE

Earl N. Stuck, Wareham; Keith D. Pigney, Taunton, and Howard Gifford, Westport, all of Mass., assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Division of Ser. No. 300,224, Sep. 8, 1981, Pat. No. 4,374,789. This application Sep. 29, 1982, Ser. No. 427,900

Int. Cl.³ B22D *11/01*

U.S. Cl. 425—6 **5 Claims**



1. A device for producing metallic particles comprising:

means defining a Coanda surface;

means for flowing a first fluid along said Coanda surface;

a second fluid located adjacent said Coanda surface to be influenced by the flow of said first fluid toward an intersection with said first fluid;

means for introducing a flow of molten metal between said first and second fluids, said molten metal being introduced between said fluids, the entrainment of said molten metal postponing but not preventing intersection of said fluids;

intersection between said first and second fluids occurring at a location spaced from the location of molten metal introduction between said fluids, where said flow of molten metal is broken up so that metallic particles can be formed.

4,405,297

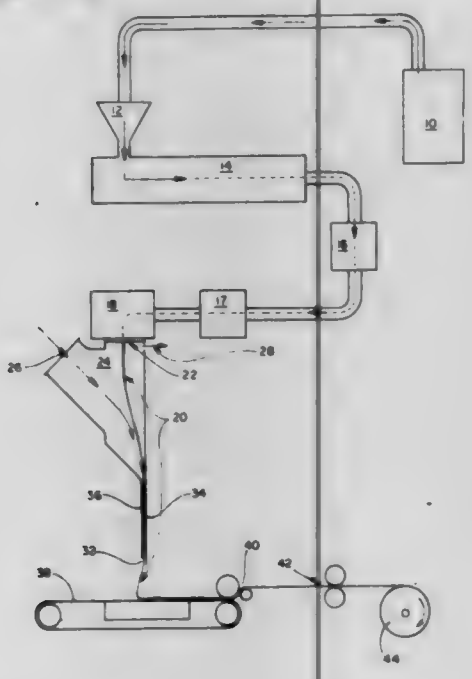
APPARATUS FOR FORMING NONWOVEN WEBS

David W. Appel, Wittenburg, and Michael T. Morman, Appleton, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 146,450, May 5, 1980, Pat. No. 4,340,563. This application May 3, 1982, Ser. No. 373,823

Int. Cl.³ D01D 5/08

U.S. Cl. 425—72 S 9 Claims



1. Apparatus for forming a nonwoven web from a fluid material comprising,

(a) a spinnerette having a capillary array forming one or more rows of closely spaced filaments from said fluid material;

(b) a low pressure quench chamber having means for receiving said filaments and an opening substantially across the machine width with dimensions and a configuration to avoid substantial contact between said filaments and the surface of said quench chamber and a volume sufficient to allow solidification of said filaments within said quench chamber;

(c) a source of low pressure quench fluid at a temperature cooler than said filaments;

(d) an inlet in said quench chamber for introducing said quench fluid on one side of said filaments and directing said fluid into said filaments to cause cooling of the filaments;

(e) a nozzle having an entrance for receiving said cooled filaments and an opening substantially across the machine width and in cooperative engagement with said quench chamber to receive said cooled filaments and quench fluid and having dimensions to produce cooling fluid velocity in the range of from about 150 to 800 feet per second to draw said filaments; and

(f) means for collecting said filaments as a web of entangled filaments.

4,405,298

MASA SHEETING APPARATUS

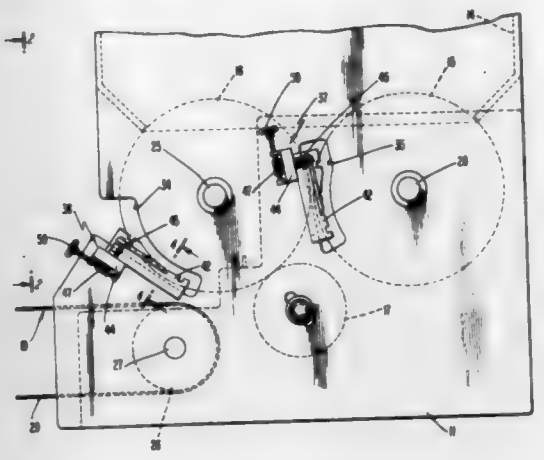
William A. Blain, Spring Valley, N.Y., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Apr. 19, 1982, Ser. No. 369,509

Int. Cl.³ A21C 3/02, 3/10, 9/00

U.S. Cl. 425—308 14 Claims

1. In masa sheeting apparatus comprising a hopper for receiving masa, first and second driven rollers positioned beneath said hopper in closely spaced relationship to form a masa sheet, means for separating said masa sheet from said first roller, a cutting member acting against said second roller for cutting said masa sheet, a take-away conveyor, and a tensioned wire extending along the surface of said second roller above said second roller, the improvement comprising said second tensioned wire being a flat band having a width and a thickness, the widthwise surface thereof being held flat against the surface of said second roller.



4,405,299

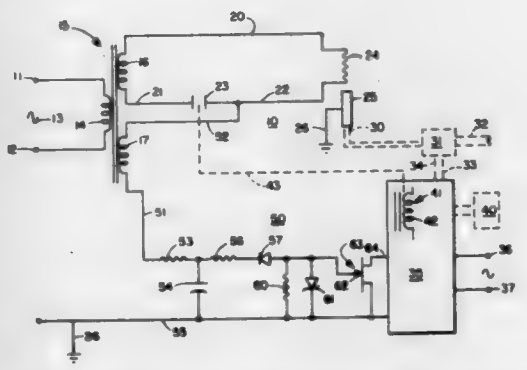
BURNER IGNITION AND FLAME MONITORING SYSTEM

Stephen L. Serber, New Hope, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 24, 1981, Ser. No. 286,500

Int. Cl.³ F23N 5/00

U.S. Cl. 431—78 10 Claims



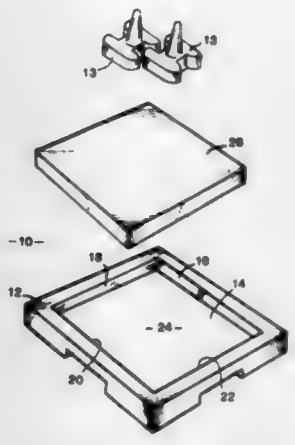
1. A burner ignition and flame monitoring system adapted to control a fuel burner in response to a condition responsive means, including: hot surface ignitor means adapted to be mounted in proximity to said fuel burner to ignite fuel issuing from said fuel burner; first power source means connected to said hot surface ignitor means in series circuit with an ignitor control switch to controllably energize said ignitor means to generate an ignition temperature at said ignitor means; flame sensing circuit means adapted to be connected to and operatively energized from alternating current power source means concurrently with the energization of said hot surface igniter means; said ignitor means being connected to said flame sensing circuit means with said flame sensing circuit means being responsive to the presence or absence of flame between said ignitor means and said burner by said flame effectively rectifying said alternating current power source means; primary control means connected to said flame sensing circuit means and being responsive to the presence or absence of said flame at said burner; and switch control means operated by said primary control means to in turn operate said ignitor control switch to deenergize said hot surface igniter means when flame is sensed.

4,405,300

FURNACE TRAY WITH CARBON PLATE

Jack Lubowsky, and Ronald Berger, both of East Brunswick, N.J., assignors to Tri-Dynamics Dental Co., Inc., East Brunswick, N.J.

Filed Feb. 27, 1981, Ser. No. 238,976
Int. Cl.[3] F24D *23/02*; F27B *5/04*; F27D *5/00*
U.S. Cl. 432—2 7 Claims



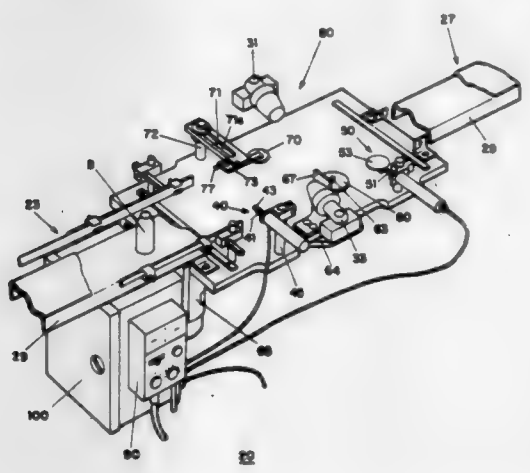
5. A method for firing false teeth comprising:
supporting false teeth to be fired on the upper surface of a carbon plate in a furnace; and
firing said teeth while the same are supported by said carbon plate and thereby simultaneously purging the interior of the furnace with the carbon.

4,405,301

BOTTLE TURNER

Robert M. Jodrey, Westboro, and Warren R. Pitts, Needham, both of Mass., assignors to Dennison Manufacturing Company, Farmingham, Mass.

Filed Nov. 9, 1981, Ser. No. 319,569
Int. Cl.[3] F27B *9/14*; C03B *23/00*; B65G *47/12*; F24J *3/00*
U.S. Cl. 432—124 20 Claims



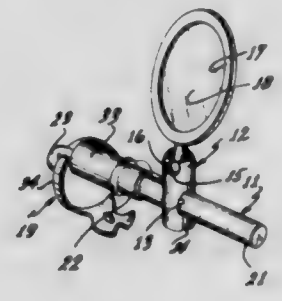
1. Apparatus for heating bottles and the like comprising:
continuously moving conveyor means for frictionally engaging bottles and urging them along a transport path;
a first gate comprising a first stop member for arresting the progress of bottles frictionally engaged by said conveyor means, and means for extending and retracting said first stop member respectively into and out of the transport path of said bottles;
a second gate, comprising a second stop member for arresting the progress of bottles frictionally engaged by said conveyor means while permitting their rotation, and means for extending and retracting said second stop member respectively into and out of the transport path of said bottles;
means for turning any bottle arrested by said second gate; and
means for heating any bottle arrested by said second gate.

4,405,302

SUPPORT FOR MOUNTING METAL MIRROR ON TEETH

Cheri J. Lewis, 240 S. La Cienega Blvd., Beverly Hills, Calif. 90211

Continuation-in-part of Ser. No. 253,796, Apr. 13, 1981, Pat. No. 4,354,835. This application Jun. 28, 1982, Ser. No. 392,528
Int. Cl.[3] A61B *1/24*
U.S. Cl. 433—30 2 Claims



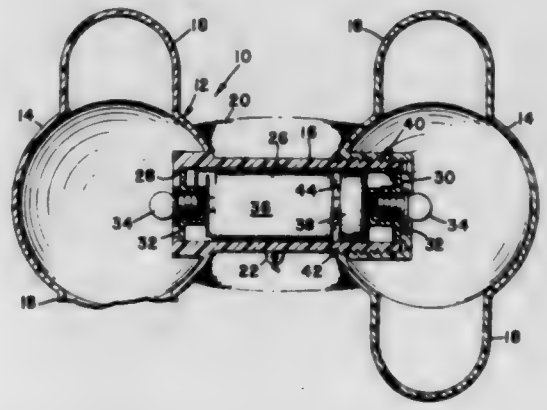
1. A support for a dental mirror capable of being mounted onto a spring clip, said support comprising:
a cylindrical body having a first cylindrical section of a first diameter and a second cylindrical section of a second diameter which is smaller than said first diameter;
a hook end disposed on said second section opposite said first section with a coil spring disposed between the hook end and against the first cylindrical section, a cup having an axially aperture and said cup is disposed between said spring and said hook, said cup being urged by the spring against the spring clip when the hook is mounted to engage the spring clip;
a link slideably mounted on said first cylindrical section;
said link having a socket formed at one end;
said mirror being and having a radially protruding ball formed thereon;
said ball being disposed within said socket in swivel relationship therein.

4,405,303

PORTABLE RECREATIONAL MARKER BUOY

Richard K. Smith, 7066 Carey La., Maple Grove, Minn. 55369

Filed Aug. 28, 1981, Ser. No. 297,134
Int. Cl.[3] B63B *21/52*
U.S. Cl. 441—16 9 Claims



1. A portable recreational marker buoy, comprising:
an elongate substantially symmetrical float body including a pair of spaced-apart hollow spherical end portions interconnected by a reduced intermediate tubular portion, one of the end portions being threaded onto the intermediate portion of said body;
a seal disposed between ajoining surfaces of the removable end portion and the intermediate portion of said body;

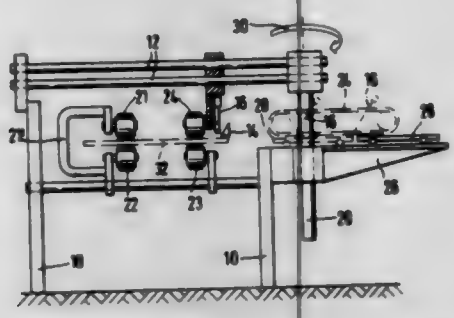
a pair of laterally extending paddles secured to each end portion of said body, said paddles being substantially coplanar;
a flexible line having two ends, said line being helically wound around and secured at one end to the intermediate portion of said body;
a sinker secured to the other end of said line, said sinker being of sufficient weight to rotate said body and paddles thereon in water to unreel said line until said sinker hits bottom;
a pair of bulbs located at opposite ends of the intermediate portion and extending into the end portions of said body;
a battery housed within the intermediate portion of said body; and
circuit means for selectively connecting said battery and bulbs to illuminate the buoy.

4,405,304

ADJUSTABLE CARTON FOLDING MACHINE

Wolfgang Bensberg, Düsseldorf, and Hartmut Klapp, Kaarst, both of Fed. Rep. of Germany, assignors to Jagenberg-Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 4, 1981, Ser. No. 270,432
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021442
Int. Cl.³ B31B *1/74*
U.S. Cl. 493—476 6 Claims



1. A folding-carton gluing machine comprising a machine frame, conveying means for the flat carton blanks, a crossbeam on the frame, carton working tools slidably mounted on the crossbeam, means for adjusting the position of the tools relative to a blank, the tools being movable from a working position which they are to occupy in the machine into a position in which they are spaced from the working position, and a sliding table for holding a flat carton blank and moving said blank under the tools when the latter are spaced from their working position to enable manual adjustment of said tools.

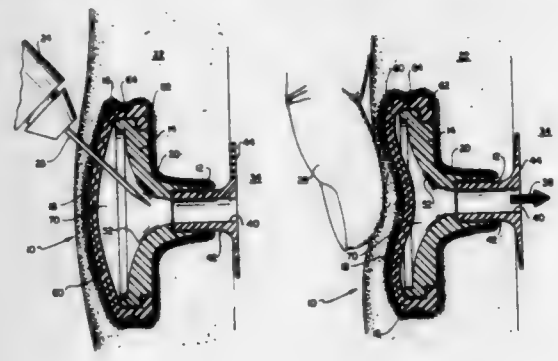
4,405,305

SUBCUTANEOUS PERITONEAL INJECTION CATHETER

Robert L. Stephen; Carl Kablitz; Barry K. Hanover; Stephen C. Jacobsen, and Jeffrey J. Harrow, all of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 200,830, Oct. 27, 1980. This application Feb. 17, 1981, Ser. No. 235,185
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—49 33 Claims

18. A method for injecting a drug into a peritoneal cavity in a direction toward the mesenteric peritoneal membrane, the method comprising the steps of:
obtaining an injection conduit, comprising:
a shallow vessel with an open top; a penetrable membrane covering the open top of the vessel;
a hollow stem having a proximal end and a distal end, the proximal end of the stem being attached to the vessel such that the stem forms a passageway extending from the vessel; and
a diametrally enlarged flange attached to the stem such that, when the conduit is implanted underneath a layer of skin adjacent the peritoneal cavity and the flange is secured adjacent the parietal peritoneal membrane, the distal end of the hollow stem is directed toward the mesenteric peritoneal membrane;
implanting the injection conduit underneath a layer of skin adjacent the peritoneal cavity with the membrane being generally parallel to the skin, the hollow stem penetrating the parietal peritoneal membrane and extending into the peritoneal cavity, the diametrally enlarged flange being secured adjacent the parietal peritoneal membrane, the distal end of the hollow stem being directed toward the



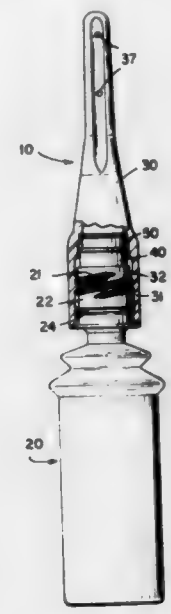
mesenteric peritoneal membrane, and the passageway communicating between the vessel and the peritoneal cavity; and
injecting a drug into the peritoneal cavity by penetrating the layer of skin and the penetrable membrane with a hollow needle and forcing the drug through the hollow needle into the vessel with the hollow stem carrying the drug into the peritoneal cavity in a direction toward the mesenteric peritoneal membrane.

4,405,306

MEDICATED DISPOSABLE DOUCHE PRODUCT

Robert W. Pritchard, Pittsburgh, Pa.; Edward J. Drozd, Lake Hiawatha, and Michael K. Lutz, Watchung, both of N.J., assignors to Beecham Inc., Clifton, N.J.

Filed Dec. 8, 1981, Ser. No. 328,734
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—87 9 Claims



1. A douche product, which comprises:
a. an elongated reservoir means having an open end and a closed end, a liquid in said reservoir means, said closed end having port means for permitting the flow of liquid into and out of said reservoir means, a cover means removably mounted in and sealing said open end, and first and second flange means for said cover means and said reservoir means, respectively;
b. a bottle having an elongated head with an opening in said head for permitting the flow of liquid into and out of said

bottle, a douching liquid in said bottle, said reservoir means being removably and sealingly mounted in said opening in a normally closed position with said closed end inside said bottle and said cover means outside said bottle, said reservoir means being movable from said closed position to an open position, sealing means engaging said reservoir means when said reservoir means is in said closed position for preventing flow of liquid between said bottle and said reservoir means via said port means;

c. tubular nozzle means threadedly engaging said head and operable to be advanced towards or away from said bottle by rotation of said nozzle means about said head in a first or second direction, respectively, said nozzle means having aperture means therein for permitting liquid to be dispensed from said bottle through said nozzle means; and

d. operating means associated with said nozzle means operable when said nozzle means is moved in a predetermined direction relative to said head to move said reservoir means from said closed position to said open position and to remove said cover means from said reservoir means, said operating means comprising (i) securing means for securing said first flange means to said nozzle means, whereby said cover means and nozzle means move as a unit when said nozzle means is rotated, and (ii) flange-engaging means on said nozzle means for engaging said second flange means after said nozzle means has been rotated through a predetermined rotation in said second direction and then moving said reservoir from said closed position to said open position upon further rotation of said nozzle means in said second direction, said sealing means being disengaged from said reservoir means when said reservoir means is in said open position, whereby said liquid in said reservoir means drains into said bottle through said port means, and said reservoir means and cover means being operable when said reservoir means is in said open position and said cover means is removed therefrom to permit dispensing of the contents of said bottle through said nozzle means.

4,405,307

NEEDLE ASSEMBLY AND METHOD FOR FABRICATING SAME

Alan N. Taylor, 2131 Martindale, SW., Wyoming, Mich. 49509

Filed Dec. 10, 1981, Ser. No. 329,200
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—165 **33 Claims**



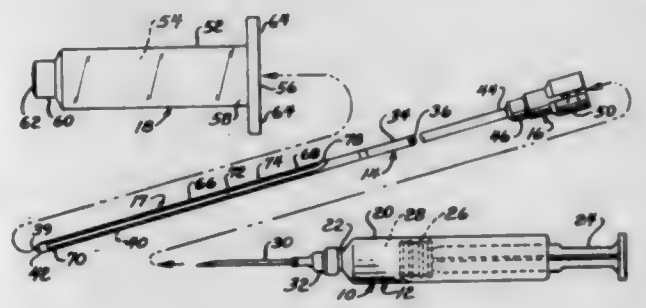
1. A method for fabricating a needle assembly comprising an outer cannula, an inner stylet, an orienting hub on the proximal end of the cannula and a mating locating cap on the proximal end of the stylet, said method comprising the steps of: fixing a plug of plastic material on the proximal end of the stylet; inserting the distal end of the stylet into the proximal end of the cannula having a hub with locating means at the proximal end of the cannula; aligning the distal end of the stylet longitudinally and rotationally with the distal end of the cannula; placing a locating cap having a throughbore over the plastic plug on the proximal end of the stylet inserted into the cannula and aligned at the outer end thereof with the stylet; positioning locating means on the cap in mating relationship with the locating means on the hub; and inserting solvent into the outer end of the bore in the cap to solvent bond the cap to the plug on the stylet with the cap and hub, and stylet and cannula in proper alignment with each other.

4,405,308

ANESTHESIA DEVICE WITH SELECTIVE SPRAY PORTS

James L. Jessup, Elk Grove Village, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Dec. 23, 1981, Ser. No. 334,029
Int. Cl.³ A61M *11/00, 25/00*
U.S. Cl. 604—200 **4 Claims**



1. An anesthesia device, comprising:

a syringe having a chamber, and means for pumping fluid from the chamber;

an elongated cannula attached to the syringe, said cannula having a lumen in communication with the chamber of the syringe, a plurality of apertures in a distal portion of the cannula communicating with the lumen, and an opening adjacent a distal end of the cannula and distal said apertures, said opening communicating with the lumen; and

means for releasably closing the apertures in the distal portion of the cannula while leaving said opening unobstructed, and for frictionally engaging the cannula to prevent dislodgment during use of the cannula, wherein the closing means comprises an elongated sleeve of flexible material snugly received on the distal portion of the cannula over said apertures, wherein the sleeve has a tear strip extending longitudinally along the sleeve to sever the sleeve.

4,405,309

SURGICAL DRAINAGE DEVICE WITH METERED AIR PUMP

Leonard D. Kurtz, Woodmere, and Joseph LiCausi, Port Jefferson Station, both of N.Y., assignors to BioResearch Inc., Farmingdale, N.Y.

Filed Apr. 21, 1981, Ser. No. 256,152
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—317 **12 Claims**

1. A metered air pump for relieving excess negativity in an inlet tube of a surgical underwater drainage device comprising:

a surgical underwater drainage device having an inlet tube;

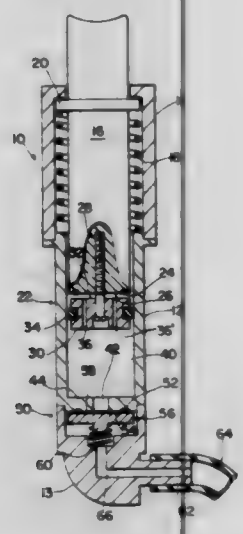
an elongate hollow body having an upper end and a lower hose fitting;

an elongate plunger means mounted for reciprocal movement in said body, said plunger means being resiliently urged toward the upper end of said body so that in a rest position a portion of said plunger means extends beyond the upper end of said body;

a metered air chamber located in said body below said plunger means;

a pump air inlet which provides fluid communication between the open atmosphere and said metered air chamber;

a pump air outlet at the bottom of said body which provides fluid communication between said metered air chamber and said lower hose fitting;



means to seal said pump air inlet fluidly from said metered air chamber when said plunger means is depressed;

means to seal said pump air outlet fluidly from said metered air chamber when said plunger means is undepressed; and

means to connect said hose fitting fluidly with the inlet tube;

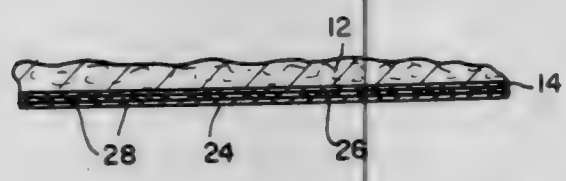
such that when excess negativity is present in the inlet tube, said plunger means causes a metered amount of air to be injected into the inlet tube to relieve the excess negativity.

4,405,310

SANITARY NAPKIN ASSEMBLY

Hamzeh Karami, Tilff, Belgium, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 27, 1981, Ser. No. 315,383
Int. Cl.³ A61F *13/16*
U.S. Cl. 604—383 3 Claims



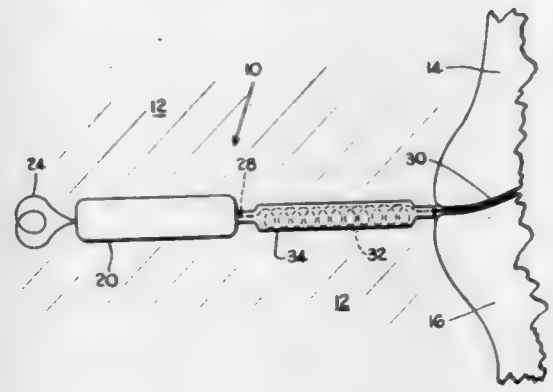
1. A sanitary napkin assembly comprising an absorbent pad, means secured to said absorbent pad for attaching the sanitary napkin assembly to a waistband, mounting means comprising a first thin sheet having a plurality of spaced openings therein, adhesive means coated on both sides of said first sheet, said adhesive means on one side of said first sheet fixedly attaching said first sheet to said absorbent pad, a second thin sheet of an imperforate waterproof material removably secured to said first sheet by said adhesive means on the other side of said thin sheet so that when said second sheet is peeled from said first sheet, an absorbent pad can be adhesively secured below said first recited absorbent pad.

4,405,311

METHOD AND APPARATUS FOR DIRECT ELECTRICAL INJECTION OF GOLD IONS INTO TISSUE SUCH AS BONE

Wilson Greatbatch, Clarence, N.Y., assignor to Greatbatch Enterprises, Inc., Clarence, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,118
Int. Cl.³ A61N *1/30*
U.S. Cl. 604—20 12 Claims



1. A method for treating rheumatoid arthritis by direct injection of electrically generated gold ions into the joint.

7. Apparatus for treating rheumatoid arthritis comprising:

(a) a source of constant direct electric current;

(b) a treating electrode of gold connected to said source electrically as an anode and adapted to be placed surgically in operative contact with the arthritic joint of a patient, said electrode being in the form of a fine wire having a monofilament portion at the end operatively connected to the joint;

(c) an indifferent electrode connected to said source electrically as a cathode and adapted to be placed in operative contact with the patient's body spaced from said joint; and

(d) said current source having a structure which provides a predetermined current magnitude and said monofilament portion of said wire having a diameter which in combination with said predetermined current magnitude produces anodal corrosion of said monofilament portion to release gold ions;

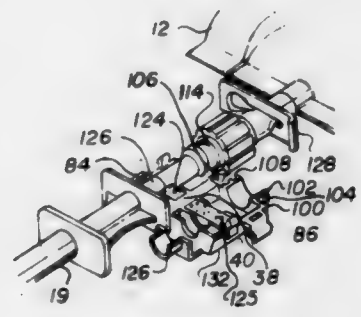
(e) whereby in response to flow of electrical current through said gold electrode gold ions are generated and injected directly into the joint for treatment.

4,405,312

CONNECTING DEVICE FOR MEDICAL LIQUID CONTAINERS

James R. Gross, Bartlett, and Mark E. Larkin, Lindenhurst, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Aug. 31, 1981, Ser. No. 298,049
Int. Cl.³ A61M *3/00*
U.S. Cl. 604—29 21 Claims



1. An aseptic covering device for the connection between the tubular port of a medical liquid container and a piercing pin comprising:

a clasp member comprising first and second substantially C-shaped body portions hingedly connected to each other and further including latching means at opposing ends thereof; said clasp member being constructed and arranged for the pivotal enclosure of said connection between said medical liquid container and said piercing pin;

a plurality of absorbent sponge members containing an antiseptic solution disposed within each of said substantially C-shaped portions constructed and arranged for asepticizing the connection between said tubular port and said piercing pin;

a coaxial tubular end port extending distally from said clasp member and having helically arranged threading disposed thereon; and

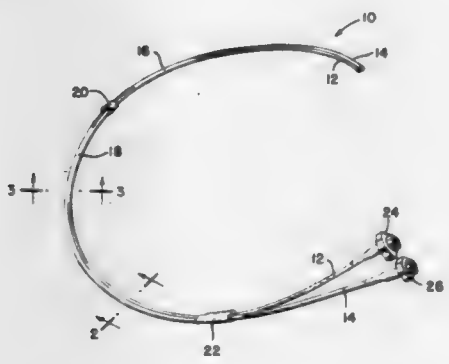
lock nut means coaxially disposed about said tubular port member, constructed and arranged for threaded engagement with said threading means on said tubular end port of said clasp member so as to fixedly attach said tubular port to said clasp member and said piercing pin.

4,405,313

FIGURE-EIGHT, DUAL-LUMEN CATHETER AND METHOD OF USING

James R. Sisley, 3450 Evergreen Point Rd., Bellevue, Wash. 98004, and Robert O. Hickman, 11100 Kulshan Dr., Edmonds, Wash. 98020

Filed Jan. 29, 1982, Ser. No. 343,736
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—43 **40 Claims**



1. A dual-lumen catheter suitable for surgical implantation in a patient through a subcutaneous tunnel having a point of entry to the skin and a point of entry to the desired vessel, comprising:

(a) two tubes attached side-by-side to form a figure-8, dual-lumen body;

(b) a first fill-in portion on the body, having a substantially convex, smoothly curving outer locus and bridging the junction of said two tubes, positionable at the point of entry to the skin to reduce the passage of bacteria along the body;

(c) a second fill-in portion on the body, having a substantially convex, smoothly curving outer locus and bridging the junction of said two tubes, positionable at the point of entry to the vessel to reduce blood leakage when the vessel is secured with a ligature; and

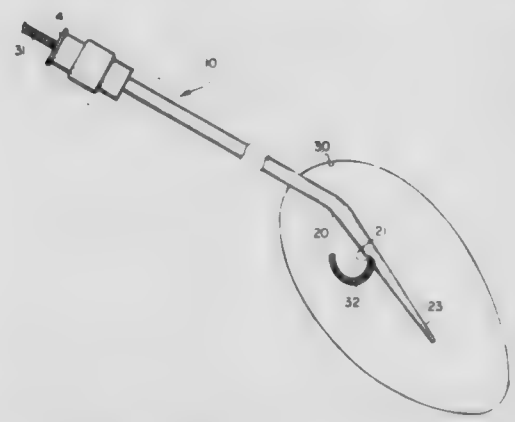
(d) a cuff positionable between the point of entry to the skin and the point of entry to the vein to promote tissue ingrowth which will fix the catheter within the patient after implantation.

4,405,314

APPARATUS AND METHOD FOR CATHETERIZATION PERMITTING USE OF A SMALLER GAGE NEEDLE

Constantin Cope, Elkins Park, Pa., assignor to Cook Incorporated, Bloomington, Ind.

Filed Apr. 19, 1982, Ser. No. 369,598
Int. Cl.³ A61B *17/00*; A61M *5/00*
U.S. Cl. 604—51 **11 Claims**



7. A method for inserting a catheter into a body cavity, comprising the steps of:

(1) percutaneously inserting a needle having a lumen into a desired position projecting into the body cavity;

(2) inserting a first wire guide through the lumen of the needle so that it projects from the distal end of the needle into the body cavity;

(3) withdrawing the needle from the first wire guide while maintaining the wire guide within the body cavity;

(4) advancing an introducing catheter over the first wire guide to the desired position within the body cavity while maintaining the position of the first wire guide relative to the body cavity;

(5) removing the first wire guide from the introducing catheter while maintaining the introducing catheter in its position relative to the body cavity.

(6) inserting into said introducing catheter a J-type wire guide having a substantially larger diameter than the internal diameter of said introducing catheter at its distal end;

(7) causing said J-type wire guide to automatically emerge through a side port in said introducing catheter by causing said wire guide to move around a curve to said introducing catheter and by positioning the side port on the inside of said curve and toward the distal end of the introducing catheter;

(8) removing said introducing catheter from said J-type wire guide while maintaining the position of said J-type wire guide relative to said body; and

(9) advancing a drainage catheter over said J-type wire guide to a desired position within the body cavity while maintaining the position of said J-type wire guide relative to said body.

4,405,315

SPIKE EXCHANGER FOR CONTINUOUS AMBULATORY PERITONEAL DIALYSIS

Alan E. Handt, Zionsville, Ind., assignor to Stephen R. Ash, Lafayette, Ind., a part interest

Filed Apr. 23, 1982, Ser. No. 371,310
Int. Cl.³ A61M *5/14*; A61J *5/00*
U.S. Cl. 604—80 **14 Claims**

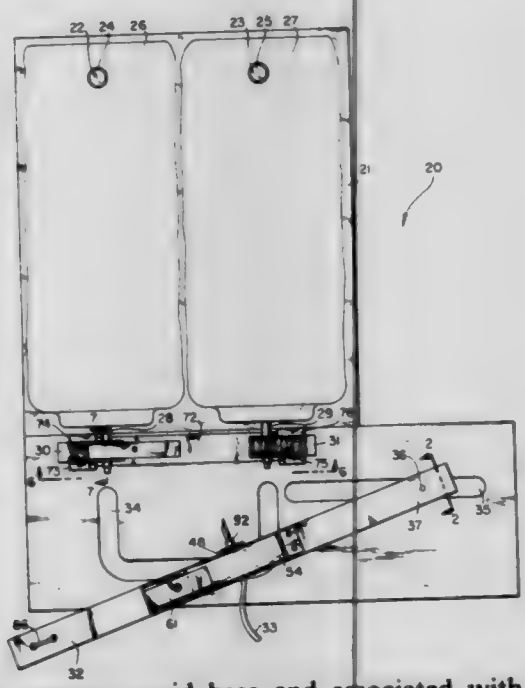
1. A spike exchanger for continous ambulatory peritoneal dialysis comprising:

a base having mounting means to releasably hold a first bag with a first port and a second bag with a second port;

clamp means on said base and engageable with said first port and said second port to releasably limit fluid flow therethrough;

spike holding and moving means movably mounted to said

base and operable to releasably hold a spike in fluid communication with said first port and move said spike away from said first port to said second port; and,



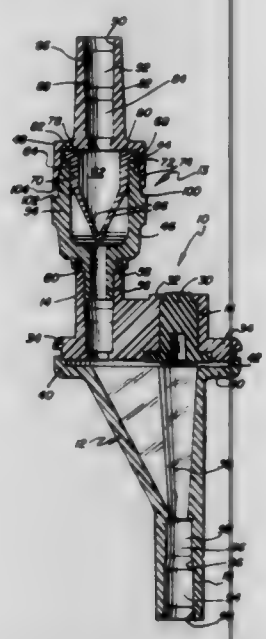
guide means on said base and associated with said spike holding and moving means to guide and align said spike with said second port as said spike is moved thereto.

4,405,316

INJECTION SITE WITH CHECK VALVE INLET

Herbert Mittleman, Deerfield, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 3, 1978, Ser. No. 892,766
Int. Cl.³ A61M 5/14
U.S. Cl. 604—86 **6 Claims**



1. In an injection site having a body portion, a first inlet, a second inlet with a self-sealing, pierceable member located therein and an outlet, the improvement comprising, in combination:

a check valve housing rigidly attached to said first inlet, said check valve housing enclosing a check valve member which acts to permit fluid flow in only one direction; and

said housing having an interior wall which securely and frictionally engages a portion of the external surface of the check valve member, said housing comprising a lower member; means attaching the lower member to said first inlet; and an upper member;

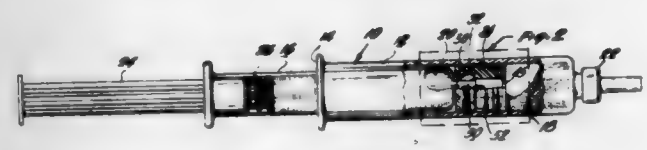
means connecting said upper member to said lower member, said upper member and said lower member cooperating to provide indicium of a proper and secure connection between said upper and lower members.

4,405,317

SYRINGE ASSEMBLY

Kirt L. Case, Warsaw, Ind., assignor to The West Company, Phoenixville, Pa.

Filed Sep. 30, 1981, Ser. No. 306,954
Int. Cl.³ A61M 5/00
U.S. Cl. 604—90 **6 Claims**



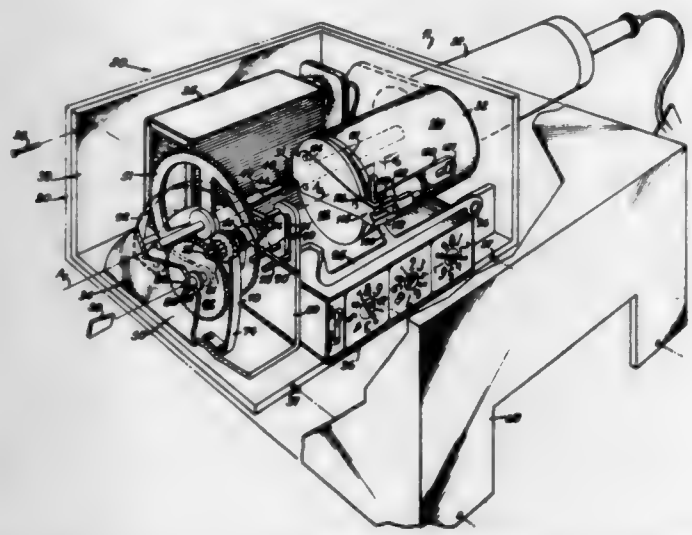
1. In a syringe assembly comprising an outer barrel for a powder medicament, an inner barrel telescopically mounted in the outer barrel for diluent, seal means isolating the powder and diluent compartments comprising a plug member made of a resilient material sealingly engaging in the discharge opening of the inner barrel, plunger means mounted on the discharge end of the inner barrel including a hollow plug chamber closed at one end remote from the discharge end of the inner barrel by a wall having a plurality of discharge openings therein, said plug member including a pintle projecting from one axial end face thereof of said plug member of a diameter less than the body portion of said plug member and greater than the discharge openings in said plunger end wall, said plug member adapted upon pressure buildup in the inner barrel to be displaced axially outwardly into said plug chamber to permit flow of diluent from the inner barrel to the powder compartment.

4,405,318

INJECTOR WITH RATCHET DRIVE AND REPRODUCING SYSTEM

Douglas S. G. Whitney, 2518 W. Wesley Rd., and John K. Martin, III, 2837 Ridge Wood Cir., both of Atlanta, Ga. 30327

Division of Ser. No. 1,091, Jan. 8, 1979, Pat. No. 4,273,122, which is a continuation-in-part of Ser. No. 741,528, Nov. 12, 1976, Pat. No. 4,150,672, and Ser. No. 964,953, Nov. 30, 1978, Pat. No. 4,235,234. This application Mar. 27, 1981, Ser. No. 248,512
Int. Cl.³ A61M 5/20
U.S. Cl. 604—155 **4 Claims**



1. Apparatus for injecting fluid into a patient at an average prescribed rate over a prolonged period of time comprising:

a housing;

carriage means mounted on said housing and defining a fluid chamber therein carrying fluid to be dispensed and an

outlet from said fluid chamber adapted to be connected to the patient;

a piston slidably mounted in said fluid chamber for forcing fluid from said outlet as said piston is moved toward said outlet;

drive screw means operatively associated with said piston for moving said piston toward said outlet as said drive screw means is rotated;

ratchet drive means including a mounting shaft having a central ratchet axis, an output ratchet member fixedly mounted on said mounting shaft about the ratchet axis and operatively connected to said drive screw means for rotating said drive screw means as said output ratchet member is rotated; an input ratchet member rotatably and slidably mounted on said mounting shaft about said ratchet axis, said output and input ratchet members defining a plurality of complementary ratchet teeth thereon facing each other so that said ratchet teeth on said output and input ratchet members engage when said input ratchet member is moved toward said output ratchet member; spring means for resiliently urging said input ratchet member toward said output ratchet member, said complementary ratchet teeth arranged so that said output ratchet member is rotated in a first direction and so that said input ratchet member can ratchet with respect to said output ratchet member as said input ratchet member is rotated in the opposite direction without rotating said output ratchet member; and a drive projection connected to said input ratchet member so that said drive projection rotates said input ratchet member about said ratchet axis as said drive projection is pivoted back and forth about said ratchet axis;

an electrically operated solenoid including an actuator member moved in response to electrically energizing said solenoid;

connection means operatively connecting said actuator member on said solenoid to said drive projection on said ratchet drive means so that said connection means will pivot said drive projection and said input ratchet member in said first direction to drivingly rotate said output ratchet member therewith when said solenoid is energized, yet said connection means will not pivot said drive projection in the direction opposite said first direction when said solenoid is de-energized so as to isolate said ratchet drive means from said solenoid;

return spring means operatively connected to said drive projection to pivot said drive projection in said opposite direction when said solenoid is de-energized;

an electrical power supply; and

control means for selectively connecting said electrical power supply to and disconnecting said electrical power supply from said solenoid to successively and alternatively energize and de-energize said solenoid at a rate such that fluid is incrementally injected into the patient at the desired average prescribed rate over the prolonged period of time so that, if said control means fails so as to continuously connect said electrical power supply to said solenoid, said piston will be moved only an incremental prescribed distance toward said outlet to prevent overdosing the patient.

4,405,319

POROUS TITANIUM COATING FOR BLOOD ACCESS DEVICE

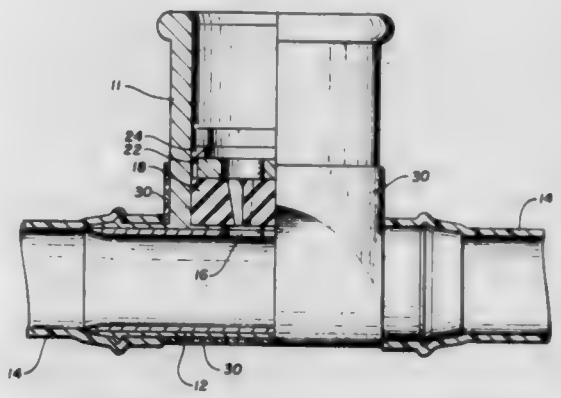
Louis C. Cosentino, Wayzata, Minn., assignor to Renal Systems, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 261,719, May 8, 1981, which is a continuation of Ser. No. 138,579, Apr. 8, 1980. This application Sep. 18, 1981, Ser. No. 303,348

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—175 **8 Claims**

1. An implantable blood access device for providing access to the circulatory system comprising a rigid body of biologically compatible material, said body having a generally T-shaped tubular configuration with the stem of the T joined to and in fluid communication with the arms of the T, said stem having a substantially constant outer diameter from the junction of the stem and the arms of the T to at least the excutaneous portion of the stem, an elastomeric septum member sup-



ported within the cavity of the stem, and removable retaining means for holding the septum with the stem in sealed relationship therewith, wherein said rigid body has a matte titanium finish on at least a portion of the subcutaneous exterior surfaces of the device and wherein said matte finish is limited to said subcutaneous surfaces.

4,405,320

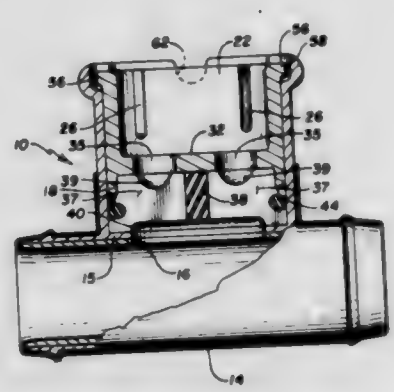
SEPTUM RETAINING MEANS FOR PERCUTANEOUS DEVICE

Raymond F. Cracauer, Minneapolis; Larry E. Fuller, Minnetonka; Felix J. Martinez, Plymouth, and Louis C. Cosentino, Wayzata, all of Minn., assignors to Renal Systems, Inc., Minneapolis, Minn.

Filed Feb. 22, 1982, Ser. No. 350,574

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—175 **15 Claims**



1. In a percutaneous device having a generally tubular body with the body exterior tubular portion including communication with a body interior portion, said device including a septum closure in the tubular portion and a removable retaining means for retaining said septum within the tubular cavity of said device, wherein the improvement resides in the retaining means, a septum closure in the stem portion, said improved retaining means comprising a tubular septum retaining insert, the exterior configuration of which closely conforms to the configuration of the stem cavity, the insert including:

an integral pressure plate member located at an intermediate region between the top and the bottom of said insert so as to define an upper insert chamber above the pressure plate and a lower insert chamber below the pressure plate, said pressure plate having at least one cannula hole therethrough; and,

at least one locking tab member projecting outwardly from near the upper edge of said insert, said locking tab sized to fit within a retaining groove within the stem cavity, each said locking tab having on either side thereof an elongated

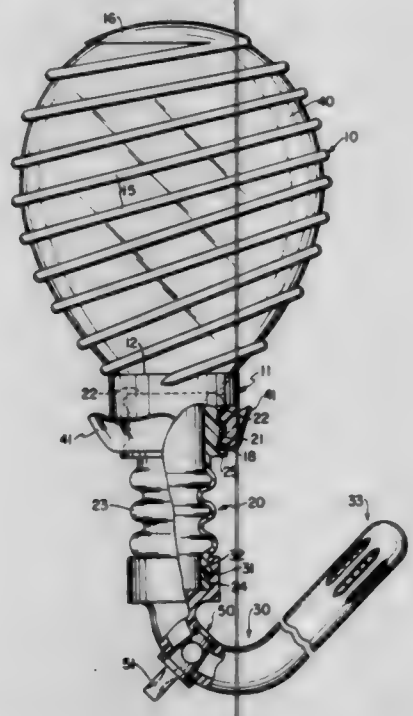
notch extending downwardly through the insert wall whereby the insert wall portion carrying the tab may be flexed inwardly and the insert may be passed into and out of the stem cavity.

4,405,321

DOUCHE DELIVERY DEVICE

Penny W. Budoff, 11 Fairbankd Blvd., Woodbury, N.Y. 11797

Filed Feb. 26, 1982, Ser. No. 352,805
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—212 **14 Claims**



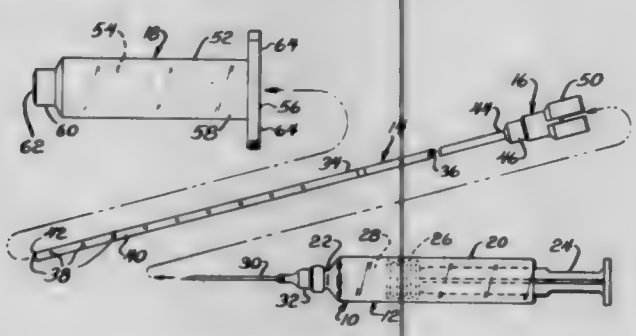
1. A douche delivery device comprising:
an outer container;
a retainer secured at its upper end to the lower portion of said outer container, said retainer having an opening formed therein extending from the upper to the lower end of said retainer;
a disposable douche preparation container positioned substantially within said outer container and secured thereto by said retainer; and
a nozzle being hollow along its length and having a valve positioned along said nozzle, one end of the nozzle being secured to the lower end of said retainer, said nozzle being arcuately shaped so as to allow easy insertion of the second end of said nozzle into the vagina for douching while seated.

4,405,322

ANESTHESIA DEVICE

James L. Jessup, Elk Grove Village, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Dec. 23, 1981, Ser. No. 334,030
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—232 **5 Claims**



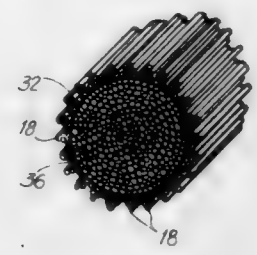
1. An anesthesia device, comprising:
a syringe having a barrel defining a chamber, a hollow needle at a distal end of the syringe and having a sharp distal end, and means for pumping fluid from the chamber through said needle;
a holding member having a wall with an inner diameter slightly larger than the outer diameter of the syringe barrel, an open proximal end, and an opening at a distal end of the holding member, with said wall defining a cavity to receive the syringe barrel;
an elongated cannula having a lumen, and a plurality of apertures in a distal portion of the cannula communicating with said lumen; and
a hollow adapter secured to a proximal end of the cannula, said adapter receiving a distal portion of the syringe with the needle received in the cannula lumen, and said holding member receiving the syringe and attached cannula with the syringe barrel received in the holding member cavity, with the cannula extending distally from the holding member opening, and with the adapter releasably received in the holding member.

4,405,323

SANITARY NAPKIN

Sidney Auerbach, 246 W. End Ave., New York, N.Y. 10023

Filed Sep. 8, 1981, Ser. No. 299,813
Int. Cl.³ A61F *13/20*
U.S. Cl. 604—285 **7 Claims**



1. A tampon comprising an elongated absorbing member having first and second ends and constructed of an absorptive material and incorporating a substance which kills pathogens within the surface or substance of said absorbing member, said member being housed within a smooth surfaced tubular container, having inner and outer surfaces, both the inner and outer surfaces of said tubular container being coated with said substance or the like.

4,405,324

ABSORBENT CELLULOSIC STRUCTURES

Mamerto M. Cruz, Jr., Pennington, N.J., assignor to Morca, Inc., Pennington, N.J.

Filed Aug. 24, 1981, Ser. No. 295,768
Int. Cl.³ A61F *13/00*
U.S. Cl. 604—376 **14 Claims**

1. Absorbent, coherent, flexible cellulosic structures for application to the body comprising water-insoluble cellulose derivatives of the group of cellulose ethers, cellulose mixed ethers and cellulose ether mixed esters prepared from highly fibrillated, chemically purified wood pulp having a CSF not exceeding about 150, the cellulose derivative having a total DS of between about 0.05 to about 0.35, said structures being further characterized in that when applied to the body and wet with aqueous body liquid the protruding fibrils and microfibrils on the surfaces and along the edges of the structures become highly swollen almost instantaneously whereby the structures

are non-irritating to the body over the area to which the structure is applied and in having a higher liquid absorbency than a like structure formed from underivatized, unfibrillated cellulose.

4,405,325

HYDROPHOBIC NONWOVEN FABRIC BONDED BY A COPOLYMER FORMED FROM A DIENE

George J. Antlfinger, Avon Lake, and Pravinchandra K. Shah, Sheffield Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Aug. 3, 1981, Ser. No. 289,343
Int. Cl.³ A61F *13/16*; B32B *27/12*; D04H *1/64*
U.S. Cl. 604—370 **11 Claims**

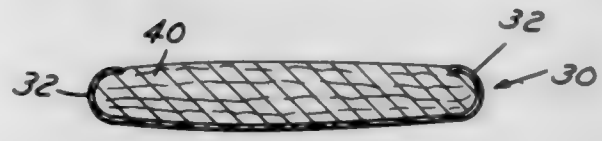
1. A nonwoven fabric comprising fibers at least 50% of which are hydrophobic fibers bonded together by means selected from the group consisting essentially of a binder comprising a water-insoluble, hydrophobic polymer of unsaturated monomers comprising 50 to 80 parts by weight of an ethylenically unsaturated monomer selected from styrene, α-methyl styrene, methyl methacrylate and mixtures thereof, and 50 to 20 parts by weight of a diene monomer selected from butadiene, isoprene, and mixtures thereof, said bonded fabric has a minimum dry and wet tensile strength of 170 g/in and 155 g/in in across machine direction, respectively, a maximum strike through of 7.0 seconds, and a maximum surface wetness of 0.5 g.

4,405,326

CATAMENIAL BANDAGE

Arlene R. Lenaghan, 674 Rudgate, Bloomfield Hills, Mich. 48013

Filed Jun. 1, 1981, Ser. No. 269,360
Int. Cl.³ A61F *13/18*
U.S. Cl. 604—385 **1 Claim**



1. A catamenial bandage pad which comprises:
(a) a molded shell of soft, resilient, form-retaining material having a plate portion elongate in form extending transversely and longitudinally of the pad, said shell having curved sides extending in a direction perpendicular to the plate portion and narrowing from the longitudinal center of the pad to the ends, and
(b) an absorbent material extending over said plate between said curved sides,
(c) said shell and absorbent material being enveloped in a gauze covering, said covering having a transverse slit on the outside of said pad adjacent one end, said covering between said slit and the end to which it is adjacent being peelable away and stretchable over the other end of said pad when folded to said first end to retain said pad in folded condition.

4,405,327
METHOD FOR INHIBITING MINERALIZATION OF NATURAL TISSUE DURING IMPLANTATION

Elisabeth M. Pollock, Sandy, Utah, assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Filed Aug. 25, 1982, Ser. No. 411,190
Int. Cl.[3] A61F *1/22*
U.S. Cl. 8—94.11 22 Claims

1. A method for inhibiting the mineralization of fixed natural tissue after implantation in a living body comprising contacting fixed natural tissue intended for implantation with an aqueous solution of a water soluble quaternary ammonium salt whose nitrogen atom has at least one alkyl group containing from 7 to 15 carbon atoms.

4,405,328
PREPARATION FOR SHRINKPROOFING WOOL

Friedhelm Nickel; Götz Koerner; Günter Schmidt, all of Essen, and Hans Rott, Gladbeck, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Aug. 26, 1981, Ser. No. 296,569
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034380
Int. Cl.[3] D06M *13/10*
U.S. Cl. 8—128 A 15 Claims

1. A composition for shrinkproofing wool comprising
(a) from about 1 to 50 weight percent of organopolysiloxanes composed of
(aa) 80 to 99.8 weight percent of units of the formula

$$R_n^1SiO_{\frac{4-n}{2}}$$

and
(ab) 0.2 to 20 weight percent of units of the formula

$$R_m^2SiO_{\frac{4-m}{2}}$$

in the form of copolymers or in the form of mixtures in each case of siloxanes with units of formula (aa) and siloxanes with units of formula (ab), wherein the R^1 radicals consist of mercaptoalkyl or mercaptoaryl radicals to the extent of 0.03 to 3 moles percent and the R^2 radicals of hydrogen atoms to the extent of 5 to 50 mole percent, the remaining portion of R^1 and R^2 radicals being methyl radicals of which up to 10 mole percent may be replaced by longer-chain alkyl, aryl, or hydrogen radicals, n has a value of 1.8 to 2.0 and m has a value of 2.0 to 2.5, and
(b) about 50 to 99 weight percent of water.

4,405,329
STABLE CONCENTRATED FLUID FORMULATIONS OF METAL-FREE DYES, PROCESS FOR THEIR PREPARATION, AND THEIR USE

Heinz Abel, Reinach, and Paul Hugelshofer, Muttenz, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

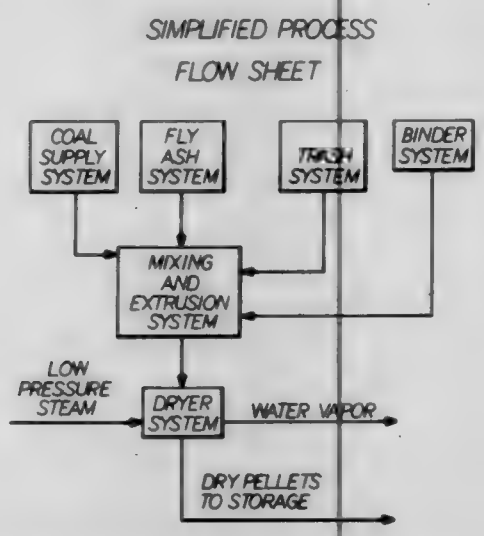
Filed Jun. 1, 1981, Ser. No. 268,978
Claims priority, application Switzerland, Jun. 4, 1980, 4334/80
Int. Cl.[3] C09B *67/42, 67/46;* D06P *1/04, 1/20*
U.S. Cl. 8—527 32 Claims

1. A method of preparation of a spray solution for dyeing leather, which comprises diluting a stable concentrated fluid formation with water, organic solvents, or a mixture of water and organic solvents, the fluid formulation containing, in the absence of metallized dyes:
(1) a metal-free leather dye consisting essentially of a monoazo or polyazo dye or an anthraquinone dye,
(2) a non-ionic compound having a hydrotropic action, at least one of the components (3) or (4), the component
(3) being a reaction product of a fatty acid having 8 to 22 carbon atoms and 1 to 2 mols of diethanolamine, and the component
(4) being a compound of the formula

$$R-A-(CH_2CHO)_m-X$$
$$\quad\quad\quad

(b) from about 40 to 70% by weight fly ash;
(c) from about 10 to 40% by weight coal fines; and
(d) from about 1 to 15% by weight binder.

18. A process for the production of a refuse derived fuel comprising intimately mixing:



(a) from about 5 to 30% by weight solid refuse which is substantially cellulose-base material substantially free of glass and metallic materials;
(b) from about 40 to 70% by weight fly ash;
(c) from about 10 to 40% by weight coal fines; and
(d) from about 1 to 15% by weight binder.

4,405,332

ALTERNATIVE FUEL COMPRISED OF SEWAGE SLUDGE AND A PARTICULATE SOLID FUEL

Larry A. Rodriguez, 7452 18th St. NE., St. Petersburg, Fla. 33702; Antonio A. Padilla, 15803 Deep Creek La., Tampa, Fla. 33624; Robert A. Ashworth, 1017 41st Ave. NE., St. Petersburg, Fla. 33703, and Ned B. Spake, 2711 Summerfield Rd., Winter Park, Fla. 32792

Filed Jul. 28, 1981, Ser. No. 287,581
Int. Cl.³ C10L *1/32*
U.S. Cl. 44—51 **6 Claims**

1. An improved fuel composition comprising from about 25 to 40 percent by weight of non-dewatered sewage sludge and from about 60 to 75 percent by weight of a particulate solid fuel, said non-dewatered sewage sludge comprising from about 85 to 99.5 percent by weight of water and from about 0.5 to 15 percent by weight of combustible solids.

4,405,333

DIESEL FUEL COMPOSITION

Paul D. Seemuth, Oak Park, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 27, 1982, Ser. No. 423,606
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—53 **7 Claims**

1. Liquid fuel adapted for use in a diesel engine, said fuel being selected from the group consisting of liquid hydrocarbons of the diesel boiling range, alcohols and mixtures thereof, said fuel containing a cetane number increasing amount of a tetrahydropyranol nitrate.

4,405,334

DIESEL FUEL COMPOSITION

Paul D. Seemuth, Oak Park, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 27, 1982, Ser. No. 424,053
Int. Cl.³ C01L *1/22*
U.S. Cl. 44—53 **13 Claims**

1. Liquid fuel adapted for use in a diesel engine, said fuel being selected from the group consisting of liquid hydrocarbons of the diesel boiling range, alcohols and mixtures thereof, said fuel containing a cetane number increasing amount of a 1-alkylpiperidinol nitrate.

4,405,335

DIESEL FUEL COMPOSITION

Paul D. Seemuth, Oak Park, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 27, 1982, Ser. No. 424,054
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—53 **3 Claims**

1. Liquid fuel adapted for use in a diesel engine, said fuel being selected from the group consisting of liquid hydrocarbons of the diesel boiling range, alcohols and mixtures thereof, said fuel containing a cetane increasing amount of a tetrahydrofurandiol dinitrate cetane improver.

4,405,336

FUEL COMPOSITION

Stephen L. Badger, Jackson, Miss., assignor to Tandy Wansley, Valley Park, Miss.

Filed Jul. 30, 1981, Ser. No. 288,418
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—56 **5 Claims**

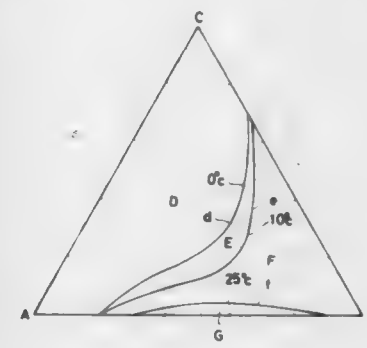
1. A composition comprising:
1000 parts by volume of at least 90%/180 proof ethyl alcohol;
60–90 parts by volume of methylisobutyl ketone;
20–50 parts by volume of kerosene;
30–60 parts by volume of xylenes, and
20–50 parts by volume of isopropyl alcohol.

4,405,337

FUEL FOR DIESEL ENGINE

Mitsuyoshi Mori, Amagasaki, Japan, assignor to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Continuation of Ser. No. 166,844, Jul. 8, 1980, abandoned. This application May 17, 1982, Ser. No. 378,814
Claims priority, application Japan, Apr. 10, 1980, 55-47132; May 14, 1980, 55-63515
Int. Cl.³ C10L *1/08*
U.S. Cl. 44—56 **4 Claims**



1. A fuel for a diesel engine which consists essentially of a mixture of (A) an alcohol, (B) gas oil and (C) castor oil, wherein the contents of the respective components satisfy requirements represented by the following formulae:
0% by volume $< A \leqq$ 80% by volume,
10% by volume $\leqq B <$ 50% by volume, and
10% by volume $\leqq C <$ 50% by volume.

4,405,338

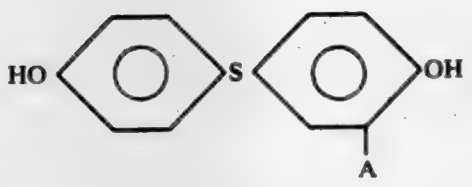
EXTENDED AVIATION JET FUEL STABILIZED WITH PHENOALDEHYDE AMINE DERIVATIVES

Robert H. Jenkins, Jr., Walden, and William M. Sweeney, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

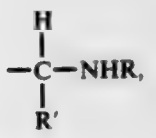
Filed Feb. 4, 1982, Ser. No. 345,878
Int. Cl.³ C10L 1/24; C07C 87/28
U.S. Cl. 44—78 23 Claims

1. The method of improving the thermal stability of a hydrocarbon fuel heavier than gasoline which comprises

mixing (i) a major portion of a hydrocarbon fuel heavier than gasoline and (ii) a minor thermal stability-improving amount of, as a thermal stability-improving additive,



wherein A is



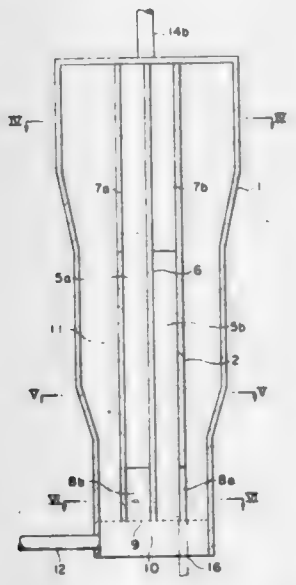
R is a primary or a secondary C_4–C_{20} alkyl, cycloalkyl, or alkenyl hydrocarbon group, and R′ is hydrogen or a C_1–C_4 alkyl hydrocarbon group, thereby forming a hydrocarbon fuel product of improved thermal stability; and recovering said product.

4,405,339

PROCESS AND APPARATUS FOR GASIFYING COMBUSTIBLE MATERIALS

Daizo Kunii, Tokyo, Japan, assignor to Mittetu Chemical Engineering, Ltd., Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,358
Claims priority, application Japan, Aug. 7, 1980, 55/107744; Mar. 19, 1981, 56/38719
Int. Cl.³ C10J 3/56
U.S. Cl. 48—62 R 7 Claims



1. An apparatus for the gasification of combustible materials, comprising:

an outer tubular housing member for enclosing a bed of fluidized solid particles;

an inner tubular housing member placed inside of said outer housing member and coaxially aligned therewith to define an annular space therebetween;

at least two partition plate members extending along the length of said housing members and radially between said outer and inner housing members for dividing said annular space into at least two compartments, one of said compartments acting as a cracking zone and another one of said compartments acting as a heat-up zone;

means extending axially within said inner housing member for dividing the inside space thereof into at least two channels, corresponding in number to the number of said compartments;

said inner housing member having an upper openings and a lower opening for each of said compartments, said openings positioned so that each one of said channels is in fluid communication with a corresponding one of said compartments through one of said upper openings and with the compartment adjacent to said corresponding compartment through one of said lower openings, whereby said compartments are connected in series as a closed loop by said channels;

means for supplying fluidizing gases to said compartments and channels so that the solid particles in the respective compartments and channels may be maintained in a fluidized state and continuously recirculated through said closed-loop, successively, up respective compartments and down respective channels;

means for feeding the combustible materials to said cracking zone, whereby the combustible materials are cracked in said cracking zone by contact with the bed of ascending solid particles to form a gaseous product and a carbonaceous material, the carbonaceous material being entrained with the solid particles and combusted, at least in part, in said heat-up zone by contact with the oxygen to heat the solid particles in said heat-up zone, the heated solid particles being recycled to said cracking zone for the utilization of their heat for effecting the cracking; and

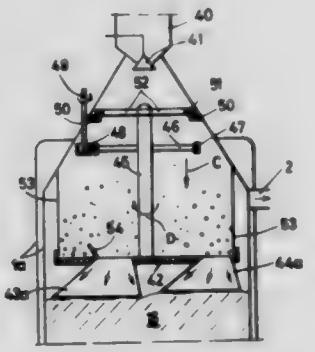
a discharge port for withdrawing the gaseous product from said cracking zone.

4,405,340

PROCESS AND APPARATUS FOR CHARGING SOLID FUELS INTO A FIXED-BED GASIFIER

Hans Küpfer, Frankfurt am Main, and Paul Rudolph, Bad Homburg, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 10, 1981, Ser. No. 272,429
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1980, 3032949
Int. Cl.³ C10J 3/30
U.S. Cl. 48—86 R 5 Claims



1. In a reactor for the gasification of solid carbonaceous fuel with oxygen, steam and/or carbon dioxide as gasifying agents, said fuel having a grained-sized distribution from dust like grains to a grain size of more than 3 mm. up to 100 mm., in said reactor said fuel forming a fixed bed and the gasifying agents passing upwardly through said fixed bed, within said reactor in its upper portion above said fixed bed a disc-shape distributor

being horizontally disposed, means for rotating said distributor about a vertical axis, means for feeding said fuel from above to fall on fuel on said distributor, and a stationary cylindrical wall surrounding the fuel on said distributor, said wall having about the same diameter as the distributor, the improvement wherein said distributor has at least one inner passage and one outer passage for fuel to flow on said fixed bed, each passage having an inlet remote from said fixed bed and an outlet close to said fixed bed, the inlet of the outer passage being disposed near the periphery of said distributor and the inlet of the inner passage being disposed near the center of rotation of said distributor and wherein said means for feeding fuel, said distributor, and said passages are arranged and constructed so that the fuel is classified with coarse fuel being delivered through said outer passage and finely sized fuel through said inner passage.

4,405,341

RESIN COATED FABRIC

Juergen Jaschek, and Wolf Krummheuer, both of Wuppertal, Fed. Rep. of Germany, assignors to Akzona, Incorporated, Asheville, N.C.

Filed Aug. 18, 1980, Ser. No. 179,252

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2933307

Int. Cl.³ C09K 3/14

U.S. Cl. 51—298 **22 Claims**



1. A coated fabric comprising a fabric of continuous multifilament threads, the fabric having a density ranging between 26% and 60%, a first coating applied to the fabric and a second coating applied over the first coating, the first and second coating each comprising a mix of a dispersable elastic and/or thermoplastic substance with a highly crosslinked duroplastic substance, the proportion of the elastic and/or thermoplastic substance to highly crosslinked duroplastic substance in each mix varying from the first coating to the second coating.

4,405,342

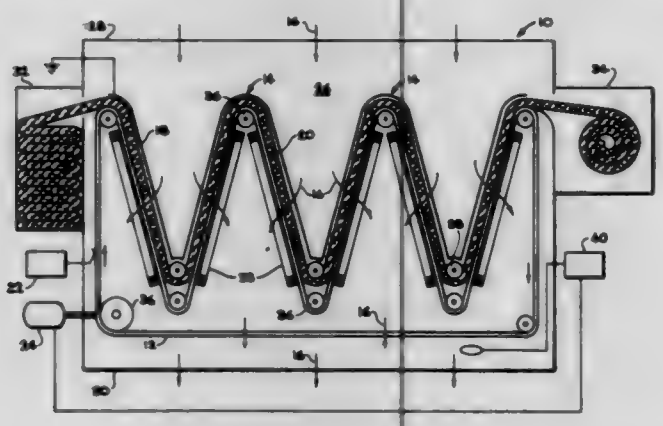
ELECTRIC FILTER WITH MOVABLE BELT ELECTRODE

Werner Bergman, Pleasanton, Calif., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Feb. 23, 1982, Ser. No. 351,679

Int. Cl.³ B03C 3/00

U.S. Cl. 55—6 **10 Claims**



1. A method for removing contaminants from an air stream, comprising:

providing an electric filter characterized by a movable, endless, perforated belt electrode having a plurality of pleats arranged generally longitudinally with respect to the flow of a gas stream, a grounded electrode adapted to fit in a closely-mated, spaced-apart relationship with said belt electrode, and a filter medium sandwiched between and engaged with said electrodes;

polarizing said filter medium by forming an electric field between said electrodes;

passing an air stream through said electric filter in a direction generally longitudinal with respect to said pleats; and

collecting contaminants dispersed throughout said air stream on said filter medium.

4,405,343

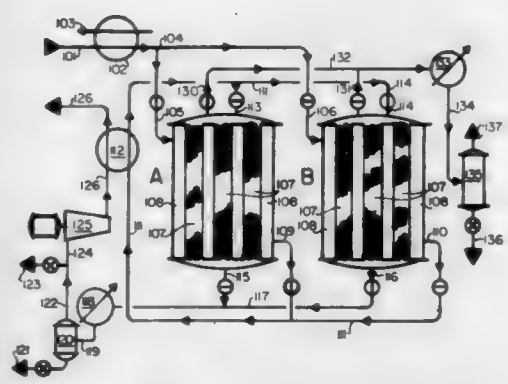
METHANOL DEHYDRATION

Donald F. Othmer, 333 Jay St., Brooklyn, N.Y. 11201

Filed Sep. 1, 1982, Ser. No. 413,744

Int. Cl.³ B01D 53/04

U.S. Cl. 55—28 **21 Claims**



1. In the process of dehydrating by adsorption on solid particulate desiccant, of water vapor from a hot gas stream containing methanol vapors and water vapors initially at a temperature of 300° C. to 500° C. and a pressure higher than atmospheric, wherein all of the mechanical and thermal energy required in said process of dehydrating by adsorption is obtained from said gas stream due to its high temperature and high pressure relative to ambient conditions.

4,405,344

METHOD AND EQUIPMENT FOR VOLUMETRICALLY CONTROLLED AND REPRODUCIBLE INTRODUCTION OF SMALL AMOUNTS OF LIQUID SAMPLES INTO CHROMATOGRAPHIC ANALYSIS SYSTEMS

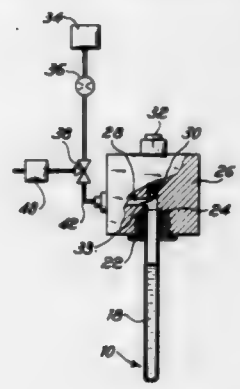
Giorgio Sisti, Milan, Italy; Sorin Trestianu, Brussels, Belgium, and Ermete Riva, Como, Italy, assignors to Carlo Erba Strumentazione S.p.A., Rodano, Italy

Filed Sep. 23, 1981, Ser. No. 304,780

Claims priority, application Italy, Sep. 30, 1980, 25018 A/80; May 4, 1981, 21504 A/81

Int. Cl.³ B01D 15/08

U.S. Cl. 55—67 **22 Claims**



1. A method for reproducibly injecting a very small, volu-

metrically controlled liquid sample for chromatographic analysis, said method comprising the steps of:

(a) preparing a sample container having a larger volume than the desired sample volume and having a pipette- or nozzle-shaped neck at its outlet, terminating in an opening with a diameter of 1–100 μm;

(b) introducing into said container a volume of liquid sample greater than the desired sample volume, in such a manner that a meniscus of the sample liquid forms at said outlet opening, and positioning the filled sample container for sample injection into the chromatographic system; and

(c) applying to the liquid inside the sample container at least one pressure pulse of controlled duration and amplitude, the maximum amplitude of each said pressure pulse being higher than the pressure necessary to overcome the surface tension of the sample liquid at said meniscus, the duration being sufficient to eject a desired volume of sample liquid, and the pressure drop at the end of each pulse being sufficiently abrupt as to avoid formation of a droplet of sample which is not ejected but instead adheres to said outlet opening.

4,405,345

DEVICE FOR SEPARATING LIQUID FROM LIQUID-CONTAINING COMPRESSED GAS

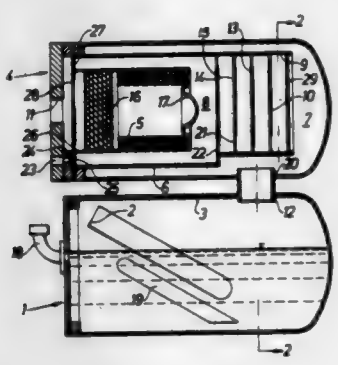
Gosewinus F. van Oorschot, Breda, Netherlands, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Feb. 5, 1982, Ser. No. 346,239

Claims priority, application Sweden, Mar. 9, 1981, 8101460

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—184 **4 Claims**



1. Device for separating liquid from liquid-containing compressed gas, comprising:

(a) a first horizontal tank (1) defining a first stage separation compartment;

(b) nozzle means (2) for injecting a stream of compressed air and liquid into said first stage compartment, said nozzle means inclining towards the interior wall of said compartment to impart a centrifugal action to said stream as it impinges against said wall to thereby separate liquid from the compressed gas;

(c) a second horizontal tank (4) defining a second stage separation compartment mounted above said first horizontal tank;

(d) a closed horizontal shell (6) having an inlet and an outlet mounted within said second tank (4), defining an outer chamber (7) and an inner chamber (8) in said second stage separation compartment;

(e) means for passing the first stage separation product into said outer chamber (7);

(f) an opening (9) in the upper wall of said shell, at the inlet end thereof, for passing the first stage separation product into said inner chamber (8);

(g) baffle means (10, 13, 14, 15) in said shell (6) downstream of said opening (9), imparting a reversing flow pattern to said first stage separation product as it is passed into said inner chamber (8) to thereby produce a further gas and liquid separation;

(h) filter means (5) in said inner chamber (8) downstream of said baffle means for final separation of liquid from the compressed gas;

(i) the outlet end of said shell having gas escape means (28) allowing the filtered compressed gas to pass into said tank (4); compressed air therefrom; and

(k) means for removing separated liquid from said second stage separation compartment.

4,405,346

CLEANER WITH DIRT CUP

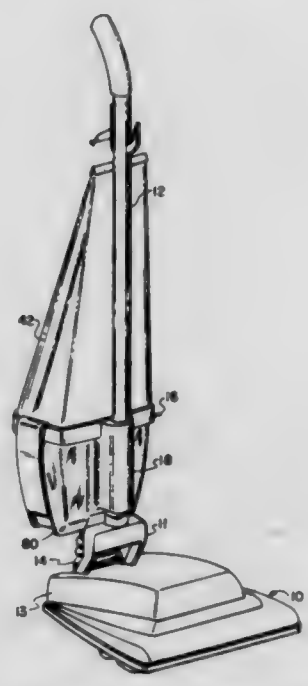
Donald B. Tschudy, and Emmett D. Lorson, both of Canton, Ohio, assignors to The Hoover Company, North Canton, Ohio

Filed Jul. 13, 1981, Ser. No. 282,443

Claims priority, application United Kingdom, May 13, 1981, 8114567

Int. Cl.³ B01D *46/48*

U.S. Cl. 55—357 **7 Claims**



1. In an upright vacuum cleaner having a handle extending from a main body portion of said cleaner, a fill tube in confluent communication with a dirt collecting bag and a dirt cup holder from which a dirt cup depends, the improvement including: a lateral extent on said dirt cup holder and a tubular portion extending downwardly from said lateral extent, said lateral extent surrounding said handle and said tubular portion extending telescopically over it so that said dirt cup holder can move freely up and down said handle, said dirt collecting bag having lower reaches adjacent to and attached to said dirt cup holder, said handle being pivoted to said main body portion of said cleaner, and said dirt cup holder telescopically moving along said handle as said handle pivots relative to said main body portion.

4,405,347

ADSORBENT UNIT FOR MOUNTING IN THE UPPER PORTION OF A REFRIGERANT RECEIVER

John S. Cullen, Buffalo; Samuel A. Incorvia, and James A. Vogt, both of Tonawanda, all of N.Y., assignors to Multiform Desiccants, Inc., Buffalo, N.Y.

Filed Jan. 11, 1982, Ser. No. 338,227

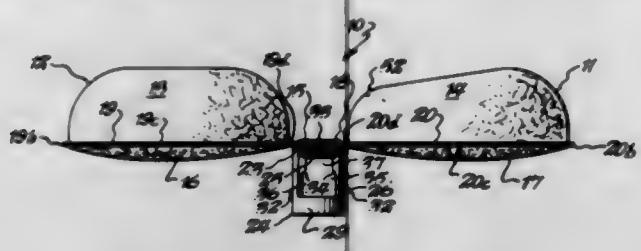
Int. Cl.³ B01D *53/04*

U.S. Cl. 55—387 **31 Claims**

1. An adsorbent unit comprising a pair of containers having porous walls, adsorbent in said containers, harness means coupling said containers to each other, and mounting means for mounting said adsorbent unit on a refrigerant conduit in the upper portion of a refrigerant receiver.

7. An adsorbent unit comprising a container having a porous wall, adsorbent in said container, a harness including a planar member extending outwardly beyond said container, and a

mounting bracket on said planar member for mounting said harness on the upper portion of a refrigerant conduit having an open end at the top of a refrigerant receiver, said mounting



bracket comprising a tubular member having a longitudinal axis which extends transversely to said planar member for mounting in telescopic relationship on said upper portion of said refrigerant conduit.

4,405,348

COOLING DEVICE PARTICULARLY FOR HEAT PROTECTIVE SUITS

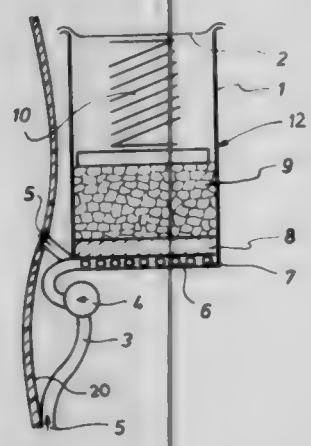
Adalbert Pasternack, Bad Schwartau, Fed. Rep. of Germany, assignor to Drägerwerk AG, Fed. Rep. of Germany

Filed Aug. 28, 1981, Ser. No. 297,179

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1980, 3045110

Int. Cl.³ F25D *23/12*

U.S. Cl. 62—259.3 **4 Claims**



1. A method of cooling a heat protective device, such as a vest, using a solid refrigerant disposed over a heat exchange surface, comprising, circulating an intermediate liquid cooling agent over said surface and through the garment, and in order to increase the heat transfer of the solid refrigerant, disposing a flexible intermediate layer between the solid refrigerant and the surface and saturating the layer with a fluid which remains liquid below the sublimation point of the solid refrigerant.

4,405,349

INDIRECT-DIRECT FREEZE EXCHANGE CONCENTRATOR AND METHOD

Shib P. Mukherjee, Naperville, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed May 20, 1982, Ser. No. 380,110

Int. Cl.³ B01D *9/04*

U.S. Cl. 62—532 **10 Claims**

1. A freeze concentration apparatus comprising:

a warm concentrator tank;

a conduit means to deliver an aqueous liquid mixture feed stream to the warm concentrator tank;

a cold concentrator tank;

conduit means to feed a liquid mixture from the cold concentrator tank to a primary freeze exchanger for indirect cooling by heat exchanger to a cold fluid to form ice crystals in the liquid mixture;

means to feed the liquid mixture containing ice crystals from the primary freeze exchanger to the cold concentrator tank;

conduit means to withdraw liquid mixture from the cold concentrator tank concentrated by the freezing of water therefrom;

means to withdraw an ice slurry from the cold concentrator tank and deliver it to the warm concentrator tank;

means to withdraw an ice slurry from the warm concentrator tank and without prior cooling in a second freeze exchanger deliver it directly to an ice slurry washer;

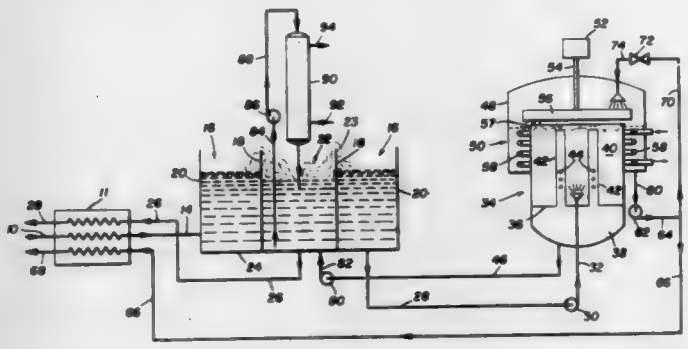
means to wash the ice slurry in the washer with water and to collect washed ice and an aqueous mixture;

conduit means to remove the aqueous mixture from the washer and deliver it directly to the cold concentrator tank; and

means to remove the washed ice from the washer.

5. A method comprising:

delivering an aqueous liquid mixture feed stream to a warm concentrator tank;



feeding a liquid mixture from a cold concentrator tank to a primary freeze exchanger for indirect cooling by heat exchanger to a cold fluid to form ice crystals in the liquid mixture;

feeding the liquid mixture containing ice crystals from the primary freeze exchanger to the cold concentrator tank;

withdrawing liquid mixture from the cold concentrator tank concentrated by the freezing of water therefrom;

withdrawing an ice slurry from the cold concentrator tank and delivering it to the warm concentrator tank;

withdrawing an ice slurry from the warm concentrator tank and without prior cooling in a second freeze exchanger delivering it directly to an ice slurry washer;

washing the ice slurry in the washer with water and collecting washed ice and an aqueous mixture;

removing the aqueous mixture from the washer and delivering it directly to the cold concentrator tank; and

removing the washed ice from the washer.

4,405,350

DRYING AND PREHEATING AGGLOMERATES CONTAINING CLAY HAVING COARSE PARTICLE SIZE

Mark A. Propster, Gahanna, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

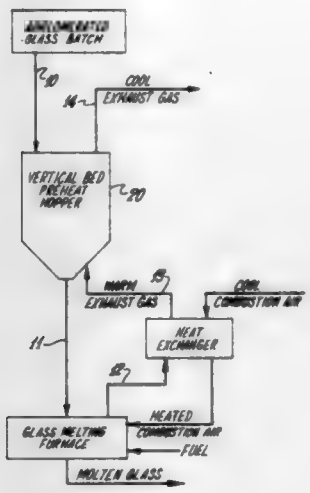
Filed Aug. 7, 1980, Ser. No. 176,165

Int. Cl.³ C03B *1/00, 3/00*

U.S. Cl. 65—27 **9 Claims**

1. In a process for producing glass by charging to a melting furnace and melting therein a batch comprising the steps of agglomerating the batch using a liquid, charging the wet agglomerates onto the upper surface of a vertical bed preheat hopper having a lower discharge end communicating with the furnace, substantially simultaneously (1) withdrawing agglomerates through said lower discharge end for charging to the furnace, (2) moving the remaining agglomerates by gravity downwardly through the bed, (3) passing the hot furnace exhaust gas upwardly through the bed to heat the agglomerates therein, and (4) drying the wet agglomerates on the upper region of the bed with spent exhaust gas which was already passed through the bed, wherein the agglomerated batch con-

tains a sufficient amount of clay having a coarse particle size which results in an agglomerate having insufficient pore vol-



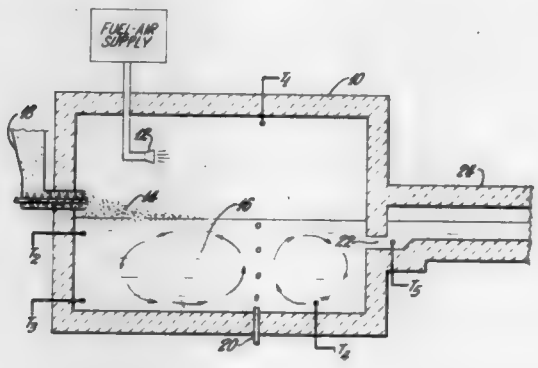
ume to induce the drying of step (4) and reduce the agglomerate's spalling tendencies.

4,405,351

METHOD FOR CONTROLLING A GLASS MELTING FURNACE

Isac M. Sheinkop, Reynoldsburg, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 29, 1981, Ser. No. 278,790
Int. Cl.³ C03B *5/24*
U.S. Cl. 65—29 **4 Claims**



1. A method for controlling the melting of heat-softenable mineral material in a furnace comprising:

a. measuring the temperature T of the mineral material in said furnace;

b. measuring the heat input Q used to raise the temperature of the mineral material in said furnace;

c. calculating the entropy E according to the equation

$$E=(Q/T)$$

d. comparing E with a setpoint entropy E_O, said setpoint being developed historically to provide the most uniform temperature for the mineral material exiting said furnace;

e. changing the rate of heat input Q to a new value of heat input Q′ responsive to the comparison of E with E_O to reduce the difference between E and E_O; and

f. supplying heat input Q′ to said furnace.

4,405,352

METHOD OF MELTING GLASS ON MOLTEN METAL ALLOYS

Karl H. Bloss, Pittsburgh, and Royann L. Stewart, Natrona Heights, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 1, 1982, Ser. No. 344,460
Int. Cl.³ C03B *18/18*
U.S. Cl. 65—99.4 **5 Claims**

1. A method of melting glass comprising: feeding a glass batch of particulate oxygen containing materials onto the surface of a pool of molten metal, the molten metal including a substantial amount of copper; heating the batch materials on the molten metal to melt the batch materials to form a molten glass layer floating on the molten metal; and maintaining in the molten metal of the pool a concentration of an additional element selected from the group consisting of silicon, aluminum, magnesium, boron, manganese, molybdenum, iron, and cobalt sufficient to inhibit oxidation of copper.

4,405,353

CARBOFURAN-CONTAINING PLANT PROTECTING COMPOSITIONS

Sandor Angyan; Istvan Racz; Erzsebet Radvanyi; Ferenc Kovats; Tamas Detre, and Jozsef Sos, all of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed Nov. 26, 1980, Ser. No. 211,321
Claims priority, application Hungary, Nov. 28, 1979, CI 1991
Int. Cl.³ A01N *25/12, 43/08*
U.S. Cl. 11—3 **6 Claims**

1. An insecticidal composition with improved plant growth accelerating properties containing 1 to 50% by weight of 2,3-dihydro-2,2-dimethyl-7-benzofuranol methyl carbamate and 50 to 99% by weight of a carrier prepared by partial hydrolysis of granulated vegetable waste matter selected from the group consisting of corncobs, cornstalks, chopped wood or sawdust from broad-leafed trees, rice hulls, and reeds.

4,405,354

ELIMINATION OF ODORS FROM WASTE MATERIAL

Johnny M. Thomas, II, Fort Collins, and Richard P. Mommer, Loveland, both of Colo., assignors to Uniscope, Inc., Johnstown, Colo.

Filed Apr. 2, 1980, Ser. No. 136,553
Int. Cl.³ A01K *1/015;* C05F *3/00*
U.S. Cl. 71—21 **24 Claims**

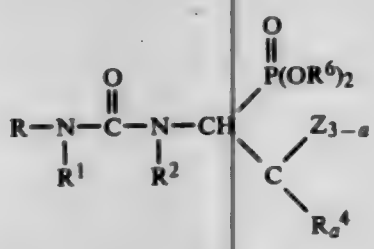
1. A method for controlling and eliminating ammonia odor from organic waste material comprising uniformly contacting said waste material with a composition consisting essentially of an effective amount of an ammonia control component selected from the group consisting of monobasic salts of dibasic acids, and mono-, di- or tri- basic acids, selected from the group consisting of dithionic acid, sulfoxylic acid, formic acid, propionic acid, lactic acid, benzoic acid, ethylenediaminetetraacetic acid, maleic acid, citric acid, malonic acid, succinic acid, malic acid, adipic acid, and furmaric acid, wherein said ammonia control component has a dissociation constant, pK_a, less than the corresponding dissociation constant of aqueous ammonia.

4,405,355
N-ALKYL OR ALKOXY-N'-SUBSTITUTED HYDROCARBYL UREA

Malcolm S. Singer, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 68,039, Aug. 20, 1979, Pat. No. 4,273,572, which is a division of Ser. No. 919,016, Jun. 26, 1978, Pat. No. 4,200,450, which is a division of Ser. No. 741,422, Nov. 12, 1976, Pat. No. 4,111,683, which is a continuation-in-part of Ser. No. 591,058, Jun. 27, 1975, abandoned, which is a continuation of Ser. No. 385,521, Aug. 3, 1973, abandoned, which is a continuation-in-part of Ser. No. 124,422, Mar. 16, 1971, abandoned, and Ser. No. 124,423, Mar. 16, 1971, abandoned. This application Jan. 26, 1981, Ser. No. 228,395
Int. Cl.³ A01N 57/20; C07F 9/40
U.S. Cl. 71—86 10 Claims

1. A compound of the formula



wherein R is an aliphatic hydrocarbyl group of 1 to 12 carbon atoms substituted with 0 to 4 halogen atoms of atomic numbers 17 to 35, an alicyclic hydrocarbyl group of 3 to 8 carbon atoms substituted with 0 to 4 halogen atoms of atomic numbers 17 to 35, an aryl group of 6 to 12 carbon atoms substituted with 0 to 5 halogen atoms of atomic numbers 9 to 35, nitro, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, or 0 to 1 alkylsulfoxy of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, trifluoromethyl, phenoxy, phenylthio, phenylsulfoxy, phenylsulfonyl, the phenoxy, phenylthio, phenylsulfoxy or phenylsulfonyl being substituted on the aromatic nucleus with 0 to 5 halogens of atomic numbers 9 to 35 or alkyl of 1 to 4 carbon atoms; or a heterocyclic group selected from the group consisting the thiazolyl, pyridyl, pyrimidyl, oxazolyl, isothiazolyl, furyl, and thienyl and wherein said heterocyclic group is attached to the urea nitrogen via a carbon atom; R^1 is hydrogen or alkyl or 1 to 4 carbon atoms; R^2 is alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; a is 0 to 1; R^4 is hydrogen or CW_3' wherein W' is hydrogen or halogen of atomic numbers 9 to 35; Z is halogen of atomic numbers 9 to 35; and R^6 is alkyl of 1 to 4 carbon atoms.

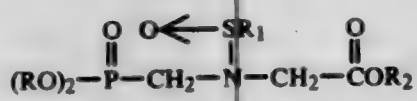
8. An herbicidal composition comprising an herbicidally effective amount of the compound of claim 1 and a biologically inert carrier.

4,405,356
ESTER DERIVATIVES OF N-ARYLSULFINYL-N-PHOSPHONOMETHYLGLYCINATES AS HERBICIDES

James A. Sikorski, West Lafayette, Ind., and Mary A. Hoobler, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

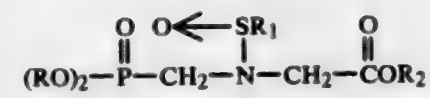
Filed Aug. 31, 1981, Ser. No. 298,057
Int. Cl.³ A01N 57/22; C07F 9/40
U.S. Cl. 71—87 27 Claims

1. A method of controlling undesired plants which comprises contacting said plants or plant growth medium with a herbicidally effective amount of a compound of the formula



wherein R is selected from the group consisting of phenyl, naphthyl or biphenylyl; or phenyl, naphthyl or biphenylyl substituted with from 1 to 3 substituents independently selected from the group consisting of hydrogen, lower alkyl, lower alkoxy and methylenedioxy, R_1 is independently phenyl or phenyl substituted with from one to three substituents selected from the group consisting of lower alkyl, lower alkoxy, halogen, trifluoromethyl, cyano and nitro and wherein R_2 is lower alkyl or araloweralkyl.

10. A compound of the formula



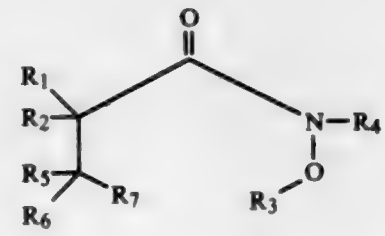
wherein R is selected from the group consisting of phenyl, naphthyl or biphenylyl; or phenyl, naphthyl or biphenylyl substituted with from 1 to 3 substituents independently selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, methylenedioxy; R_1 is independently phenyl or phenyl substituted with from one to three substituents selected from the group consisting of lower alkyl, lower alkoxy, halogen, trifluoromethyl, cyano, nitro and halogen and wherein R_2 is lower alkyl or araloweralkyl.

4,405,357
HERBICIDAL 3-ISOXAZOLIDINONES AND HYDROXAMIC ACIDS

Jun H. Chang, Lockport, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 155,353, Jun. 2, 1980, abandoned. This application May 11, 1981, Ser. No. 262,715
Int. Cl.³ A01N 43/00
U.S. Cl. 71—88 36 Claims

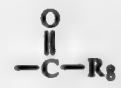
1. A compound of the formula



in which

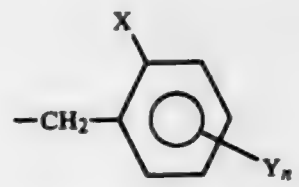
R_1 and R_2 are independently methyl or ethyl;

R_3 is hydrogen, tetrahydropyranyl, tert-butyl-dimethylsilyl, arylsulfonyl, or



in which R_8 is C_1–C_6 alkyl, haloalkyl, phenyl, methylphenyl, nitrophenyl, chlorophenyl, trifluoromethylphenyl, alkylamino, phenylamino, methylphenylamino, methoxyphenylamino, halophenylamino, trifluoromethylphenylamino, alkoxy, haloalkoxy, phenoxy, dichlorophenoxyalkyl, alkylthio, or R_3 with R_7 comprises a single carbon-oxygen bond, forming a ring structure;

R_4 is



in which X is hydrogen, methyl, chlorine, bromine, fluorine, iodine, Y is chlorine, bromine, fluorine, cyano, methoxy, 4,5-methylenedioxy, and n is 0, 1, or 2;

R_5 is hydrogen, chlorine, bromine, phenylamino, or —OR_9 in which R_9 is hydrogen, alkyl, alkenyl, alkynyl, alkoxyalkyl up to 6 carbons, benzyl, C_2–C_4 acyl, haloacyl, benzoyl, alkylcarbamoyl, phenylcarbamoyl, with the proviso that when R_3 with R_7 does not comprise a single carbon-oxygen bond, R_5 is limited to hydrogen or chlorine.

R_6 is hydrogen;

R_7 is hydrogen, chlorine, bromine, methylthio, acetoxy, benzoyloxy, or R_7 with R_3 comprises a single carbon-oxygen bond, forming a ring structure.

28. A method of controlling undesired plant growth which comprises applying to the locus to be protected an herbicidally effective amount of a compound of claim 1.

4,405,358

ARALKYLANILINE DERIVATIVES, AND HERBICIDES WHICH CONTAIN THESE COMPOUNDS

Ulrich Schirmer, Heidelberg; Wolfgang Rohr, Wachenheim, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

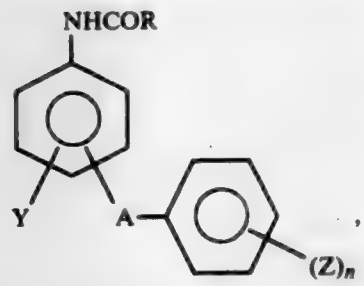
Filed May 1, 1981, Ser. No. 259,618

Claims priority, application Fed. Rep. of Germany, May 31, 1980, 3020784

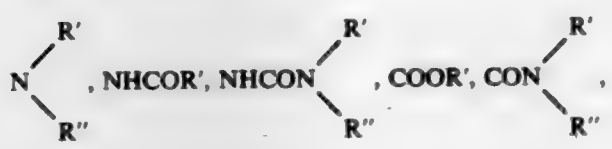
Int. Cl.[3] **A01N** *9/12, 9/14, 9/16, 9/20;* **C07C** *103/34, 69/76*

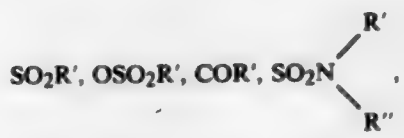
U.S. Cl. 71—98 **3 Claims**

1. An aralkylaniline derivative of the formula



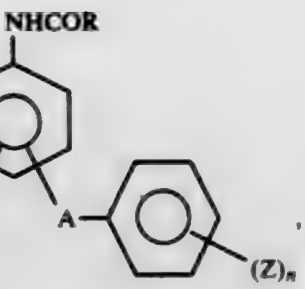
where R is alkoxy, cycloalkoxy, alkenyloxy, alkynyloxy, cyanoalkoxy, haloalkoxy, alkylthio, alkenylthio or alkynylthio or unsubstituted or halogen-, or cyano-substituted ethyl, isopropyl, n-propyl, n-butyl, sec-butyl, tert-butyl, isobutyl, sec-pentyl, cycloalkyl, alkenyl or alkynyl, Y is hydrogen, alkyl, halogen, alkoxy or haloalkyl, A is unsubstituted or alkyl-substituted alkylene which is attached at the 3- or 4-position of the phenyl radical, Z is hydrogen, alkyl, haloalkyl, alkoxyalkyl, cycloalkyl, aralkyl, aryl, aryloxy, halogen, a C_4H_4-chain which is fused to the benzene radical to form an unsubstituted or substituted naphthyl radical, alkoxy, haloalkoxy, alkylthio, thiocyanato, cyano,



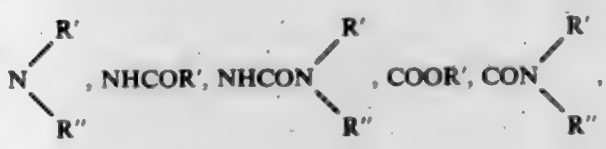


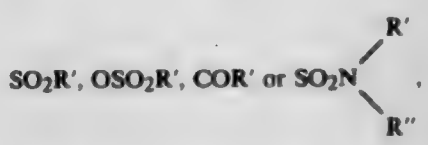
R′ and R″ each, independently of one another, being hydrogen, alkyl, alkoxy, alkylthio, cycloalkyl or unsubstituted or alkyl-, halogen- or alkoxy-substituted phenyl, and n is an integer from 1 to 4.

2. A process for combating the growth of unwanted plants, wherein the plants or the soil are treated with an effective herbicidal amount of an aralkylaniline derivative of the formula



where R is alkoxy, cycloalkoxy, alkenyloxy, alkynyloxy, cyanoalkoxy, haloalkoxy, alkylthio, alkenylthio or alkynylthio or unsubstituted or halogen-, alkoxy-, alkoxycarbonyl- or cyano-substituted alkyl, cycloalkyl, alkenyl or alkynyl, Y is hydrogen, alkyl, halogen, alkoxy or haloalkyl, A is unsubstituted or alkyl-substituted alkylene which is attached at the 3- or 4-position of the phenyl radical, Z is hydrogen, alkyl, haloalkyl, alkoxyalkyl, cycloalkyl, aralkyl, aryl, aryloxy, halogen, a C_4H_4-chain which is fused to the benzene radical to form an unsubstituted or substituted naphthyl radical, alkoxy, haloalkoxy, alkylthio, thiocyanato, cyano,





R′ and R″ each, independently of one another, being hydrogen, alkyl, alkoxy, alkylthio, cycloalkyl or unsubstituted or alkyl-, halogen- or alkoxy-substituted phenyl, and n is an integer from 1 to 4.

4,405,359

ACYCLICACYLAMINOPERFLUOROALKANESULFONANILIDES AND DERIVATIVES THEREOF

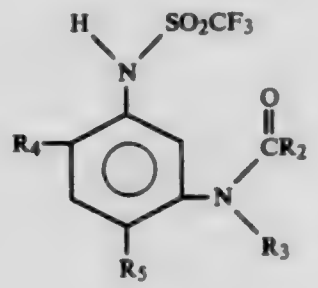
Ezzat A. Mikhail, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 188,538, Sep. 18, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,497

Int. Cl.[3] **C07C** *143/74;* **A01N** *41/06*

U.S. Cl. 71—103 **16 Claims**

1. A compound of the formula



wherein

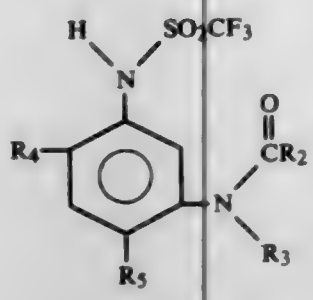
R_2 is carboxyalkyl, carboxyalkenyl, vinyl, dihaloalkenyl;

R_3 is hydrogen;

R_4 is hydrogen, halo, or lower alkyl; and

R_5 is hydrogen, halo, or lower alkyl; and agriculturally acceptable salts thereof; provided that R_2 contains not more than twelve carbon atoms.

6. A compound of the formula



wherein

R_2 is methyl or dichloromethyl;

R_3 is allyl or 2',2',2'-trihaloethyl;

R_4 is hydrogen, halo, or lower alkyl; and

R_5 is hydrogen, halo, or lower alkyl; and agriculturally acceptable salts thereof; provided that R_2 contains not more than twelve carbon atoms.

15. A method for terminating the life cycle of higher plants which comprises contacting said plants with an effective amount of a compound according to claim 6.

4,405,360

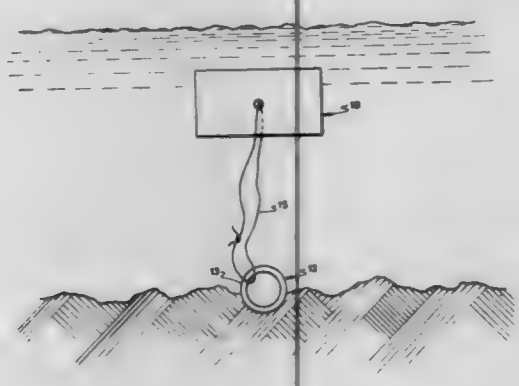
CONTROLLED RELEASE OF HERBICIDE COMPOUNDS UTILIZING A THERMOPLASTIC MATRIX

Nathan F. Cardarelli, Barberton, Ohio, assignor to Environmental Chemicals, Inc., Wauconda, Ill.

Continuation-in-part of Ser. No. 51,102, Jun. 22, 1979, Pat. No. 4,299,613, and Ser. No. 14,118, Feb. 22, 1979, Pat. No. 4,228,614, said Ser. No. 51,102, which is a continuation-in-part of Ser. No. 14,118, which is a continuation-in-part of Ser. No. 5,174, Jan. 22, 1979, Pat. No. 4,237,114, which is a continuation-in-part of Ser. No. 916,570, Jun. 19, 1978, Pat. No. 4,166,111. This application Jul. 24, 1980, Ser. No. 171,834

Int. Cl.³ A01N *37/38*

U.S. Cl. 71—117 **10 Claims**



1. A controlled release herbicide dispenser, comprising:

(a) from about 10 parts to about 160 parts by weight of a herbicide;

(b) from about 15 parts to about 80 parts by weight of an inert porosigen, said porosigen having a solubility of from about 0.0005 to about 100 grams per 100 grams of water; and

(c) about 100 parts of a polymer selected from the group consisting of thermoplastic polymers, thermoset polymers, and combinations thereof;

said herbicide and said porosigen distributed throughout said polymer to form a controlled release herbicide dispenser so that upon contact with moisture or water, said porosigen is dissolved gradually to create a pore structure within the dispenser and, said herbicide is released at a controlled rate to retard and eliminate growth of undesired plants.

4,405,361

METHOD OF INCREASING THE YIELD OF SUGAR OBTAINED FROM SUGAR CANE

Louis G. Nickell, Chicago, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 365,862, Apr. 5, 1982, abandoned. This application Jan. 3, 1983, Ser. No. 455,180

Int. Cl.³ A01N *33/02*

U.S. Cl. 71—121 **4 Claims**

1. A method of increasing the recoverable sugar contained in sugar cane which comprises contacting the sugar cane plant with an effective amount of the compound, N,N-dimethyl-N-hexadecyl-N-2-propenylammonium bromide.

4,405,362

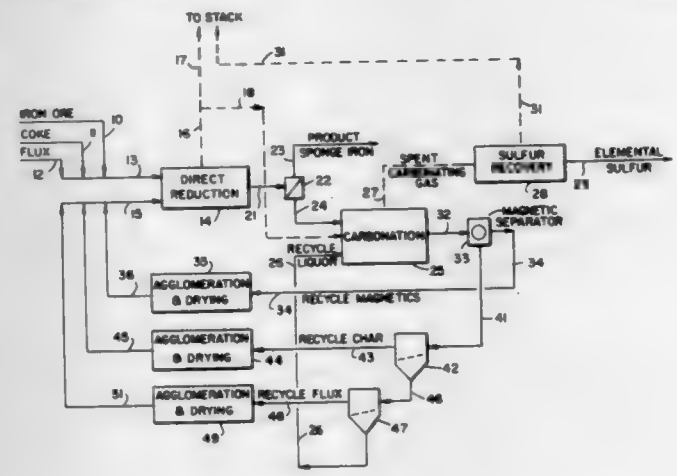
IRON ORE DIRECT REDUCTION WASTE TREATMENT

William V. Bauer, New York, N.Y., assignor to The Lummus Company, Del.

Filed Jul. 28, 1982, Ser. No. 402,716

Int. Cl.³ C21B *13/08*

U.S. Cl. 75—24 **12 Claims**



1. In a process for reducing iron ore in the presence of a carbonaceous reductant and flux wherein there is recovered from the reducing, reduced iron, carbonaceous reductant, and used flux containing calcium oxide, the improvement comprising:

separating reduced iron, as product, from a mixture of carbonaceous reductant and used flux;

carbonating the used flux in said separated mixture as a slurry in an aqueous liquid to decrepitate the used flux and facilitate separation of used flux from carbonaceous reductant

separating the carbonaceous reductant from the carbonated used flux; and

reusing separated carbonaceous reductant as at least a portion of the carbonaceous reductant in reducing the iron ore.

4,405,363

METHOD FOR REFINING OF STEEL MELTS

Bertil G. Tivelius, Viken, Sweden, assignor to Scandinavian Lancers Aktiebolag, Hoganas, Sweden

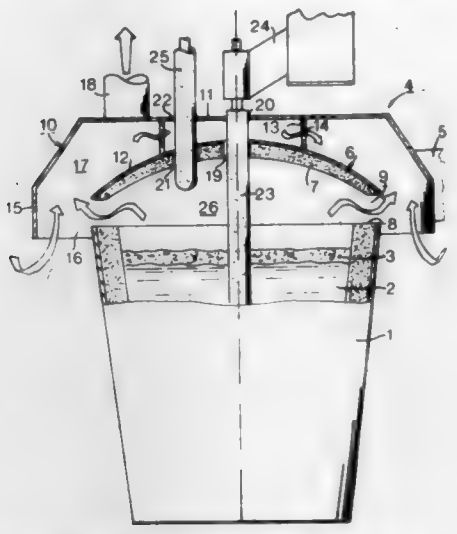
Filed Apr. 12, 1982, Ser. No. 367,796

Int. Cl.³ C21C *7/10*

U.S. Cl. 75—49 **11 Claims**

1. A method for refining steel melts to produce steel of reduced oxygen content, comprising providing a deoxidized steel melt covered by a basic reduced slag in a metallurgic ladle, and injecting at least one member selected from the group consisting of powdered non-oxidic earth alkali metal compound and alloys of said earth alkali metal by means of a non-oxidizing carrier gas into said deoxidized steel melt to oxidize at least a significant amount of the earth alkali metal by oxygen dissolved in the melt to form small particles of earth alkali metal oxide, with a portion of said earth alkali metal separating out to the slag while the remaining portion remains

in the melt in a form selected from the group consisting of the elementary form and the particulate earth alkali metal oxide in colloidal solution form, and thereafter injecting powdered



earth alkali metal oxide into the steel melt to function as nucleus forming agents for the continued reaction between oxygen and earth alkali metal dissolved in the melt, and to separate to the slag smaller inclusions in the melt.

4,405,364

PROCESS OF REFINING IRON IN OXYGEN CONVERTERS WITH ADDITIONS OF MATERIALS CONTAINING SODIUM CARBONATE

Mario Arno', Campi Salentina, and Bruno Costa, Naples, both of Italy, assignors to Nuova Italsider S.p.A., Genoa, Italy

Filed May 17, 1982, Ser. No. 379,082

Claims priority, application Italy, May 20, 1981, 40430 A/81; Feb. 16, 1982, 12439 A/82

Int. Cl.³ C21C *7/00*; C22B *9/10*

U.S. Cl. 75—52 **7 Claims**

1. A process of refining iron to convert iron to steel in an oxygen converter, wherein oxygen is blown into a metallic bath including said iron and slag containing basic compounds selected from CaO, MgO and MnO to desulfurize and dephosphorize the metallic bath, comprising charging sodium carbonate into said metallic bath while blowing oxygen thereto, said sodium carbonate being in the form of brickettes or granules of about 5 to 100 mm. in size, whereby said sodium carbonate is converted to Na_2O in said metallic bath and said Na_2O enhances the desulfurization and dephosphorization of said bath.

4,405,365

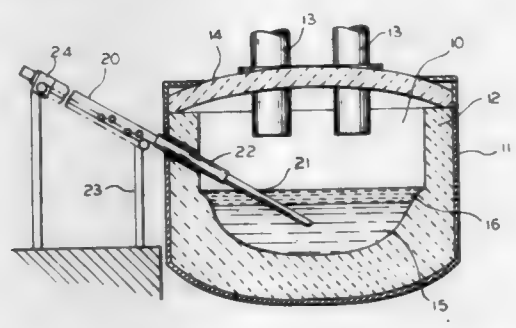
METHOD FOR THE FABRICATION OF SPECIAL STEELS IN METALLURGICAL VESSELS

Edgardo J. Robert, Buenos Aires, Argentina, assignor to Pennsylvania Engineering Corporation, Milwaukee, Wis.

Filed Aug. 30, 1982, Ser. No. 412,552

Int. Cl.³ C21C *5/32*

U.S. Cl. 75—60 **3 Claims**



3. A lance for injecting oxygen into a quantity of molten metal contained in a metallurgical vessel, comprising a hollow holder, a first pipe extending from said holder and being formed of a refractory material,

a second smaller pipe extending from said holder and disposed concentrically within said first pipe and spaced therefrom,

a first inlet pipe extending through said holder and connected to the gap between said first and second pipes for delivering a hydrocarbon fluid thereto,

a second pipe extending through said holder and connected to the interior of the inner pipe for delivering an argon-oxygen mixture thereto, and

inlet and outlet water pipes connected to the hollow interior of said holder for circulating cooling water therethrough.

4,405,366

METHOD AND DEVICE FOR GENERATING A CONVECTIVE REACTION SYSTEM BETWEEN A REACTION AGENT AND A MOLTEN BATH

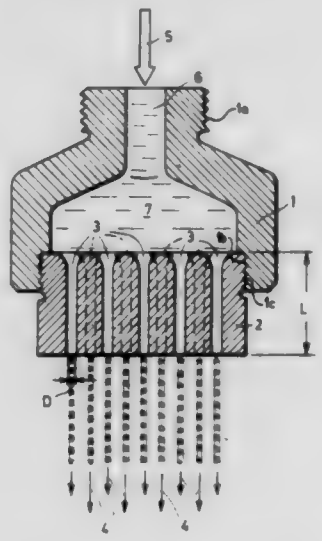
Friedrich W. Guttmann, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Continuation of Ser. No. 144,274, Apr. 28, 1980. This application Jun. 24, 1981, Ser. No. 276,837

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1979, 2924761

Int. Cl.³ C22B *9/00*

U.S. Cl. 75—93 E **18 Claims**



1. In a method for generating a spatially-limited convective reaction system between a reaction agent and a molten metal bath, the improvement comprising the step of:

forming and applying liquid droplets, in a freely falling stream, as a liquid reaction agent so that at least a portion of the droplets penetrate into the surface of the molten bath to interact with the molten metal.

4,405,367

CORROSION-RESISTANT CAST IRON

Anatoly A. Sheiko; Mikhail V. Voloschenko; Vladimir P. Latenko, all of Kiev; Gennady R. Kartashevsky, Kishenev; Evgeny I. Schegolkov; Anatoly D. Zlatkis, both of Moscow; Viktor G. Osokin, Moskovskaya; Lev V. Polyakov, Moscow; Valentin V. Zaitsev, Strasheny, and Mikhail B. Trunov, Lipetskaya, all of U.S.S.R., assignors to Institut Problem Litya Akademii Nauk Ukrainskoi SSR, Kiev and Otdelnoe Konstruktorskoe Bjuro Beshtangovykh Nassosov, Moscow, both of, U.S.S.R.

Filed Jun. 23, 1982, Ser. No. 391,252

Int. Cl.³ C22C *38/06*

U.S. Cl. 75—124 **4 Claims**

1. Corrosion resistant cast iron consisting essentially of (by mass %):

carbon	2.5 to 3.2

-continued

silicon	0.95 to 2.4
manganese	0.8 to 4.0
nickel	12.0 to 18.0
chromium	0.5 to 2.0
copper	4.0 to 8.0
aluminium	0.001 to 0.3
magnesium	0.01 to 0.07
calcium	0.01 to 0.10
rare-earth metals	0.00. to 0.08
barium	0.01 to 0.1
tantalum	0.003 to 0.02
niobium	0.005 to 0.3
cobalt	0 to 0.3
titanium	0 to 0.5
iron	balance

4,405,368

IRON-ALUMINUM ALLOYS CONTAINING BORON WHICH HAVE BEEN PROCESSED BY RAPID SOLIDIFICATION PROCESS AND METHOD

Ranjan Ray, Waltham; Viswanathan Panchanathan, Billerica, and Bill C. Giessen, Cambridge, all of Mass., assignors to Marko Materials, Inc., No. Billerica, Mass.

Filed May 7, 1981, Ser. No. 261,626
Int. Cl.³ F16H *29/10*
U.S. Cl. 75—124 8 Claims

1. A metastable crystalline solid solution alloy of composition $Fe_aAl_bM_d^1Si_eB_f$ where M^1 is at least one element selected from the group consisting of Mo,W,Nb,Ta, and V and combinations thereof, wherein the subscripts represent atom percent having the values a=40–65, b=20–40, d=0–10, e=0–5, and f=5–17 with the provisos that the sum of e+f does not exceed 17 and is not less than 7 and the sum of a+b+d+e+f is 100, wherein the said alloy is being prepared by the method comprising the following steps:

a. forming a melt of said alloy

b. depositing said melt against a rapidly moving quench surface adapted to quench said melt at a rate in the range of approximately 10^5 to $10^{7°}$ C./second and form thereby a rapidly solidified brittle strip and,

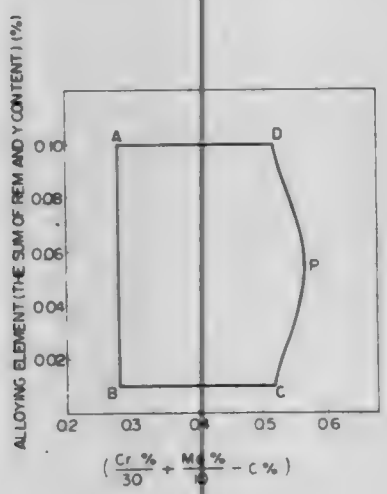
c. comminuting said strip into powders.

4,405,369

FERRITIC HEAT-RESISTING STEEL WITH AN EXCELLENT TOUGHNESS

Yasuo Otoguro, Machida; Katukuni Hashimoto, Sagamihara; Hisashi Takahashi, and Toshio Fujita, both of Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,397
Claims priority, application Japan, Jul. 30, 1980, 55-104779
Int. Cl.³ C22C *38/22, 38/24, 38/26*
U.S. Cl. 75—126 C 9 Claims



1. A ferritic heat-resisting steel having a carbon content lowered to not more than 0.10% by weight so as to provide the steel with weldability and formability that is enhanced as compared to it having higher carbon content, and containing carbide particles which are controlled so as to provide the steel with the mechanical and creep strength of said steel of higher carbon content and having a toughening alloying element giving the steel greater toughness than it has without said element, said steel consisting essentially of the following:

0.03 to 0.10% by weight of carbon,

0.1 to 1.0% by weight of silicon,

1.5% by weight or less of manganese,

1.5% to 2.7% by weight of molybdenum,

7.0% to 10.0% by weight of chromium,

0.01 to 0.1% by weight of niobium,

0.02 to 0.12% by weight of vanadium,

0.01 to 0.10% by weight of said toughening alloying element and which consists of at least one member selected from the group consisting of rare earth elements having atomic numbers 57 through 71 and yttrium,

the balance of the steel consisting of iron and unavoidable impurities, the ratio of the sum of the numbers of niobium and vanadium atoms to the number of carbon atoms being in the range of from 0.35 to 0.80; and the quantity (Cr%/30+Mo%/10−C%) and the content in percent of said alloying element falling on or within an irregular pentagon shown in FIG. 1 hereof, said irregular pentagon being defined by points of A, B, C, P and D,

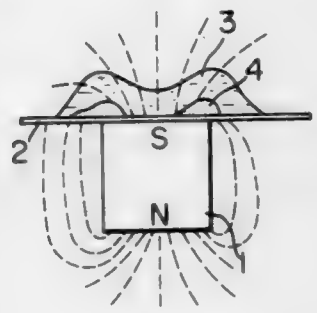
Coordinate	$\left(\frac{Cr\ \%}{30} + \frac{Mo\ \%}{10} - C\ \%\right)$	Alloying element (The Sum of REM and Y content) (%)
A	0.28	0.10
B	0.28	0.01
C	0.52	0.01
P	0.57	0.055
D	0.52	0.10

4,405,370

MAGNETIC INK REFINING METHOD

Mamoru Soga, Osaka; Wataru Shimotsuma, Ibaraki; Yoshio Kishimoto, Hirakata, and Yoichi Sekine, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 18, 1981, Ser. No. 264,562
Claims priority, application Japan, May 20, 1980, 55-67648; Jul. 28, 1980, 55-103935
Int. Cl.³ C09D *11/00*
U.S. Cl. 106—20 3 Claims



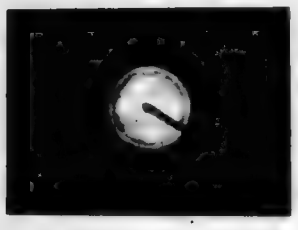
1. A method for refining a magnetic ink containing unstable fine magnetic particles dispersed in a despersing medium in a colloidal state with a surface-active agent comprising settling said unstable particles and removing same by applying a concentrated magnetic field to the ink.

4,405,371

NOVEL CLAY MINERAL COLOR DEVELOPER FOR PRESSURE SENSITIVE RECORDING PAPER AND PROCESS FOR PRODUCING SAME

Yujiro Sugahara, deceased, late of Tokyo, Japan (by Mituko Sugahara, Yoshiyuki Sugahara, heirs); Koichi Usui, Shibata, Japan; Masahide Ogawa, Shibata, Japan; Teiji Sato, Shibata, Japan; Yasuo Mizoguchi, Shibata, Japan, and Seiji Kojima, Nakajyo, Japan, assignors to Mizusawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jun. 30, 1981, Ser. No. 279,191
Claims priority, application Japan, Jul. 3, 1980, 55/89989
Int. Cl.³ C09D *11/00*
U.S. Cl. 106—21 **20 Claims**



1. A process for producing a color developer for pressure sensitive recording paper which comprises (1) acid-treating a clay mineral having a layer-structure composed of regular tetrahedrons of silica until its SiO_2 content reaches 82–96.5% by weight on dry basis (drying at 105° C. for 3 hours), and until both the X-ray diffraction analysis and electron diffraction analysis come to show substantially no diffraction pattern attributable to the crystals of layer-structure composed of regular tetrahedrons of silica possessed by the clay mineral before the acid treatment, and (2) contacting the resulting clay mineral, in an aqueous medium, with at least one member selected from the group consisting of a magnesium compound and an aluminum compound which is at least partially soluble in said aqueous medium, neutralizing the system with an alkali or an acid to form hydroxide when the soluble compound or compounds employed are other than hydroxides, thereby introducing into the acid-treated clay mineral at least one of a magnesium component and an aluminum component, and forming a clay mineral having a layer-structure composed of regular tetrahedrons of silica and which shows

(A) the diffraction pattern attributable to the crystals of layer-structure composed of regular tetrahedrons of silica when subjected to an electron diffraction analysis, but

(B) substantially no diffraction pattern attributable to the crystals of said layer-structure when subjected to an X-ray diffraction analysis, and which

(C) contains as the constituting elements besides oxygen, silicon and at least one of magnesium and aluminum.

4,405,372

GYPSUM-FREE CEMENT COMPOSITIONS

Frank G. Serafin, Peabody; Robert W. Previte, Lawrence, both of Mass.; Nathan R. Greening, Ft. Collins, Colo.; David L. Kantro, Aurora, Ohio, and Fulvio J. Tang, Mundelein, Ill., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Mar. 8, 1982, Ser. No. 355,486
Int. Cl.³ C04B *7/35*
U.S. Cl. 106—90 **17 Claims**

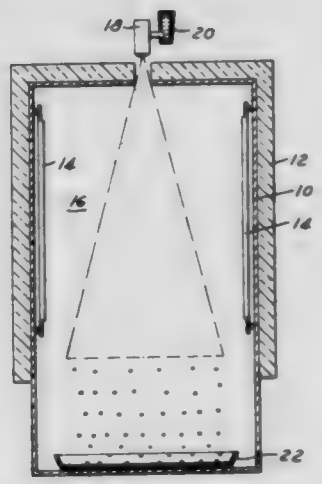
1. A gypsum-free cement composition exhibiting a compressive strength comparable to ordinary portland cement containing gypsum, and with setting properties which can be regulated, said composition comprising a portland cement clinker having from 1 to 10 weight % of limestone interground therewith to exhibit a specific surface area of from 3000 to 7000 cm^2/g, and a water-soluble amine salt in an amount of from 0.005 to 1% by weight of said clinker, said salt formed by reaction between an amine and formic or acetic acid.

4,405,373

METHOD OF ALTERING THE EFFECTIVE BULK DENSITY OF SOLID MATERIAL AND THE RESULTING PRODUCT

Lawrence B. Kool; Robert L. Nolen, and David E. Solomon, all of Ann Arbor, Mich., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Dec. 21, 1979, Ser. No. 106,132
Int. Cl.³ C08L *1/08*; C08J *3/04*
U.S. Cl. 106—198 **5 Claims**



1. A method of suspending a solid material having a predetermined first bulk density in a carrier fluid having a second bulk density substantially less than said first bulk density comprising the steps of:

(a) forming a solution at preselected concentration comprising said solid material in powdered form, a film-forming polymer and a solvent in which said polymer is soluble,

(b) forming said solution into droplets of predetermined nominal size,

(c) forming said droplets into hollow spherical shells having a bulk density which is substantially equal to said second bulk density by spraying said solution in droplet form into the upper portion of a zone heated at atmospheric pressure to a preselected temperature such that said solvent evaporates as said droplets fall by gravity through said zone and said film-forming polymer forms said hollow spherical shells each having a shell wall in which said solid material is captured and having a said shell bulk density which is a function of said preselected concentration, said predetermined nominal droplet size and said preselected temperature, and then

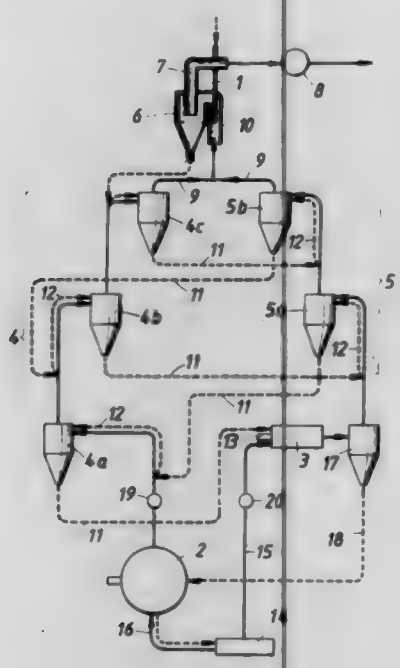
(d) suspending said spherical shells with said solid material captured in said shell walls in said carrier fluid.

4,405,374

PROCESS OF PRODUCING CEMENT AND PLANT FOR CARRYING OUT THE PROCESS

Franz Krennbauer, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Mar. 26, 1982, Ser. No. 362,499
Claims priority, application Austria, Apr. 15, 1981, 1707/81
Int. Cl.³ C04B 7/44
U.S. Cl. 106—100 **4 Claims**



1. In a process of producing cement, wherein
a powdered raw materials mixture is de-acidified in a calcinator and is subsequently burned in a kiln and before being fed to said calcinator is preheated in a plurality of stages by a heat exchange with exhaust gases from said calcinator and from said kiln in a heat exchanger in which said heat exhaust gases from said calcinator and from said kiln flow through respective parallel series of heat exchange stages and said powdered raw materials mixture is passed from heat exchange stages of each of said series to associated heat exchange stages of the other of said series,
the improvement residing in that
said exhaust gases from said calcinator and from said kiln which have flown through said respective series are combined and then passed through an additional heat exchange stage, which the last heat exchange stage in the flow path of the exhaust gases and is fed with said powdered raw materials mixture before said mixture is fed to the heat exchange stages of said two series in alternation.

4,405,375

NIYUMINOUZBITUMINOUS EMULSION ROOF RESATURANT

Richard J. Gibson, North Olmstead, and Joseph Fogel, University Heights, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed May 21, 1980, Ser. No. 151,869
Int. Cl.³ C08L 95/00
U.S. Cl. 106—277 **5 Claims**

1. A bituminous emulsion roof resaturant for application over an existing roof surface, said bituminous emulsion roof resaturant comprising a water phase and an oil phase suspended in particulate form in said water phase, said water phase containing:
(a) water,
(b) an emulsifier selected from the group consisting of hydroxypropyl methylcellulose, a partially acetylated polyvinyl alcohol or a combination of hydroxypropyl methylcellulose and a partially acetylated polyvinyl alcohol, and
(c) from about 0.1 to 2.0 parts by weight of glyoxal per 100 parts by weight of water,
said oil phase comprising a blend of bitumen and aromatic hydrocarbons with at least 50 percent by weight of said blend being aromatic hydrocarbons, said bitumen having a load penetration measured according to ASTM Designation D5 with a 50 gram load at 25° C. for 5 seconds of from 30 to 170, a softening point measured according to ASTM Designation D36 of from 32° C. to 45° C., a flash point measured according to ASTM Designation D92 above 260° C., ductility at 25° C. measured according to ASTM Designation D113 in excess of 50 centimeters, solubility in carbon tetrachloride of at least 99 percent, and a maximum heat loss measured at 163° C. according to ASTM Designation D6 of one percent, said roof resaturant comprising from 50 to 70 percent by weight of said oil phase and from 30 to 50 percent by weight of said water phase.

4,405,376

TITANIUM DIOXIDE PIGMENT AND PROCESS FOR PRODUCING SAME

Mamoru Matsunaga; Teruo Usami; Haruo Okuda, and Hideo Futamata, all of Yokkaichi, Japan, assignors to Ishihara Sangyo Kaisha, Ltd., Osaka, Japan

Filed Nov. 16, 1981, Ser. No. 321,706
Claims priority, application Japan, Nov. 18, 1980, 55-162373
Int. Cl.³ C09C 1/36
U.S. Cl. 106—300 **22 Claims**

1. A titanium dioxide pigment which consists of either (A) (1) pigmentary titanium dioxide core particle, (2) an inner coating formed of 0.1–3% by weight, based on the weight of said core particle and calculated as SnO_2, of hydrous tin oxide and 0.1–5% by weight, based on the weight of said core particle and calculated as ZrO_2, of hydrous zirconium oxide and (3) an outer coating formed of 0.1–8% by weight, based on the weight of said core particle and calculated as Al_2O_3, of hydrous aluminum oxide or (B) (1), (2), (3) and a coating of an organic agent adsorbed around the outer coating of hydrous aluminum oxide, said pigment having a high photochemical durability and excellent gloss and dispersibility.

12. A process for producing a titanium dioxide pigment which consists of (1) forming an aqueous slurry of pigmentary titanium dioxide core particles, (2) adding, to said slurry, water soluble compounds of tin and zirconium and adding an acid or an alkali for neutralizing said slurry to pH 6–8 to precipitate hydrous oxides of tin and zirconium on the surfaces of said core particles, thereby forming an inner coating consisting of 0.1–3% by weight of tin oxide and 0.1–5% by weight of zirconium oxide, both based on the weight of said core particles and calculated as SnO_2 and ZrO_2, respectively, and then (3) adding a water soluble compound of aluminum and adding an acid or an alkali for neutralizing said slurry to pH 6–8 to precipitate hydrous aluminum oxide, thereby forming an outer coating consisting of 0.1–8% by weight of aluminum oxide, based on the weight of said core particles and calculated as Al_2O_3 or after (3) adsorbing an organic agent thereon.

4,405,377

PROCESS FOR THE SEPARATION OF MONOSACCHARIDES

Richard W. Neuzil, Downers Grove, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 10, 1982, Ser. No. 347,661
Int. Cl.³ C13D 3/12
U.S. Cl. 127—46.2 **8 Claims**

1. In a process for the separation of a first monosaccharide from a feed mixture comprising an aqueous solution of a mixture of said first monosaccharide and at least one other monosaccharide by contacting said solution at adsorption conditions with an adsorbent comprising a crystalline aluminosilicate exhibiting an adsorptive selectivity towards said first monosaccharide, thereby selectively adsorbing said first monosaccharide from said mixture, and thereafter recovering said adsorbed monosaccharide, the improvement which comprises diluting said feed mixture prior to said contacting with sufficient ethanol to result in a solution containing from about 10 vol. %

ethanol to slightly less than the concentration of ethanol that would cause crystallization of a monosaccharide from said solution.

4,405,378

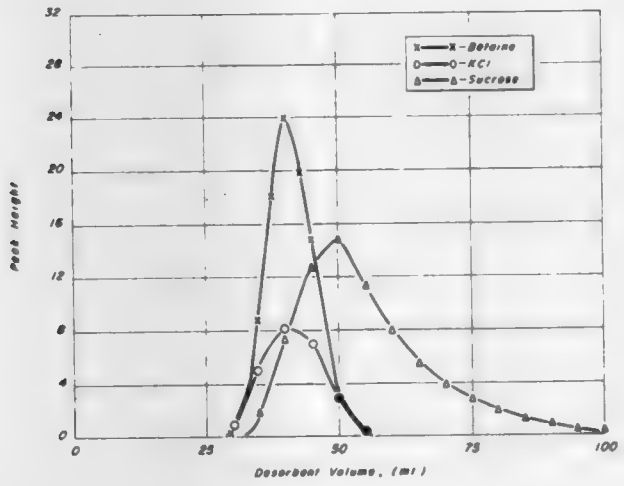
EXTRACTION OF SUCROSE

Santi Kulprathipanja, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 235,063, Feb. 17, 1981, abandoned. This application Sep. 28, 1981, Ser. No. 306,262

Int. Cl.³ C13D *3/12*

U.S. Cl. 127—55 **11 Claims**



1. A process for separating sucrose from an aqueous solution containing sucrose and at least one of the compounds selected from the group consisting of betaine and a mineral salt, which process comprises:

(a) contacting said solution, at adsorption conditions, with an adsorbent comprising activated carbon powder bound with a binder material consisting essentially of a water permeable organic polymer selected from the group consisting of a cellulose nitrate, a cellulose ester and a mixture of a cellulose nitrate and cellulose ester, thereby selectively adsorbing said sucrose thereon; and

(b) separating the solution from contact with said adsorbent, wherein the solution still contains said at least one of the compounds selected from the group consisting of betaine and a mineral salt;

and thereafter recovering said sucrose by desorption thereof from said adsorbent.

4,405,379

METHOD FOR CLEANING METAL PARTS

Jack W. Chasteen, Kettering, Ohio, assignor to University of Dayton, Dayton, Ohio

Continuation-in-part of Ser. No. 119,060, Feb. 6, 1980, Pat. No. 4,324,594, and Ser. No. 119,061, Feb. 6, 1980, Pat. No. 4,328,044, each is a continuation-in-part of Ser. No. 874,915, Feb. 2, 1978, Pat. No. 4,188,237. This application Oct. 26, 1981, Ser. No. 314,594

Int. Cl.³ B08B *5/00*; C23G *5/00*

U.S. Cl. 134—2 **16 Claims**

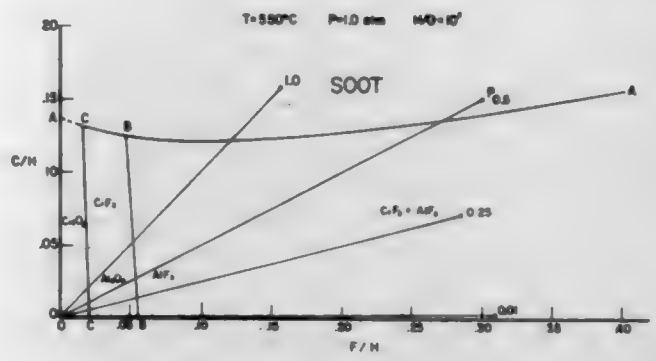
1. A method for cleaning unbrazable metal parts to render them brazable or otherwise bondable which comprises:

(a) placing said part in a hermetically sealed chamber,

(b) subjecting said part to a gaseous atmosphere, said atmosphere containing the elements C, O, H and F and having an H/O ratio of 10^4 or greater and a C/F ratio of about 0.01 to less than 2.0,

(c) raising the temperature of said chamber to a temperature less than 800° C. and establishing a F/H ratio in said atmosphere at which passivating oxides on the surface of said part are converted to fluorides,

(d) raising the temperature of said chamber above the temperature employed in step (c) to a temperature less than 1000° C. and diluting said atmosphere with additional



hydrogen to destabilize CrF_3 on the surface to elemental chromium,

(e) cooling said chamber and said part.

4,405,380

HIGH STRENGTH, LOW ALLOY STEEL WITH IMPROVED SURFACE AND MECHANICAL PROPERTIES

Cecil B. Griffith, North Royalton; Jerry D. Thomas, North Olmsted; Dionisyj W. Demianczuk, Parma; John K. Abraham, Broadview Heights, and Joseph E. Franklin, Medina, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Continuation of Ser. No. 105,735, Dec. 20, 1979, abandoned. This application Jul. 6, 1981, Ser. No. 280,914

Int. Cl.³ C22C *38/12*

U.S. Cl. 148—2 **18 Claims**

1. A high strength steel product consisting of hot rolled strip having a thickness of 0.05 to 0.5 inch produced by hot rolling to a deformation of at least 50% and as so produced having a yield strength of at least 50 ksi and bendability, without cracking, of essentially zero inside radius of bend over essentially 180°, said product consisting of a skin of rimmed steel which is essentially ferrite and has a thickness of about 0.001 to 0.01 inch, over the principal surface area of the product and beneath said skin a core of aluminum-killed steel, the steel of said skin and core being free of sulfide shape control elements and consisting essentially of 0.03 to 0.06% C, 0.2 to 0.6% Mn, 0.045 max. % P, less than 0.025% S, balance iron and incidental elements, said core also containing the following elements: 0 to 0.20% Ti, 0.02 to 0.2% Al, 0.01 to 0.15% Cb and 0 to 0.20% V.

8. A method of making a hot rolled, high strength, low alloy steel product consisting of hot rolled strip having a thickness of 0.05 to 0.5 inch, comprising pouring an ingot mold 80% to 95% full of molten steel which is free of sulfide shape control elements and consists essentially of 0.03 to 0.06% C, 0.2 to 0.6% Mn, 0.045 max. % P, less than 0.025% S, balance iron and incidental elements, allowing said filling to undergo rimming action while a shell of rimmed steel about one inch to four inches thick solidifies next to the mold surround a still-molten core, and then completing pouring of said molten steel into said ingot mold while adding to the molten steel in the mold, aluminum to provide 0.02 to 0.20% Al in the finished core and thereby to kill said core, and 0.01 to 0.15% Cb and 0 to 0.20% V in the core; and after solidification of the ingot, converting the same by hot rolling, to a hot reduced strip product having a skin of rimmed steel which is essentially ferrite and has a thickness of about 0.001 to 0.01 inch, over the principal surface area of the product, and beneath the skin a core of aluminum-killed steel, said hot rolled strip product having bendability, without cracking, of essentially zero inside radius of bend over essentially 180°.

4,405,381

STEEL PRODUCTS SUCH AS BARS, COMPOSITIONALLY NON-RIMMING AND INTERNALLY ALUMINUM KILLED, HAVING GOOD SURFACE CONDITION

Dionisyj W. Demianczuk, Parma, and Carl J. Bingel, Fairview Park, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Continuation of Ser. No. 121,879, Feb. 15, 1980, abandoned. This application Aug. 27, 1981, Ser. No. 296,637

Int. Cl.³ C21D 8/06

U.S. Cl. 148—2 5 Claims

1. A non-rimming steel bar product that has been shaped by rolling deformation and that has a non-rimmed steel skin over its principal surface, said skin having a partially killed composition consisting essentially of 0.18 to 0.45% C, 0.3 to 1.75% Mn, 0.04 max. % P, 0.045 max. % S, 0 to 2.0% Ni, 0 to 1.0% Cr, 0 to 0.5% Mo, balance iron and incidental elements, said partially killed composition being sufficiently deoxidized by inclusion of material of the class consisting of silicon and aluminum to prevent formation of blow holes at or in said skin, said included material being present in an amount of not more than 0.15% Si or 0.010 Al insufficient to constitute the composition as killed steel, and a core of non-rimming steel under said skin which is aluminum-treated to be killed or grain refined and which consists essentially of the aforesaid composition plus other material to provide 0.02 to 0.5% Al, 0 to 0.5% Si, 0.40 max. % S, 0 to 2.0% Cu, 0 to 0.05% B, 0 to 0.2% P, 0 to 0.15% Cb, 0 to 0.3% V, 0 to 0.4% Ti, 0 to 0.05% rare earth elements, said bar product being produced by rolling from an ingot having a surrounding layer ¼ to 4 inches thick which has the first-mentioned partially killed composition and the aforesaid skin of said bar product derived from said layer being 0.001 to 0.100 inch thick.

4,405,382

SCARFING BURNER ARRANGEMENT

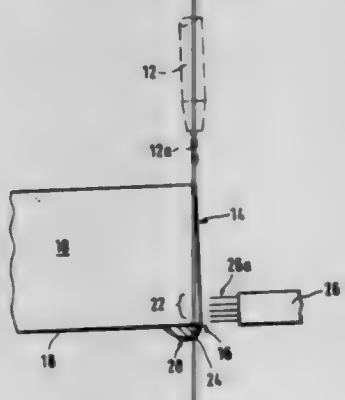
Alfred Baier, Kronberg; Alfred Lucht, Bickenbach; Gerhard Munch, Frankfurt, and Alfred Pfeuffer, Neu-Isenburg, all of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 9, 1982, Ser. No. 406,218

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1981, 3136023

Int. Cl.³ B23K 7/02

U.S. Cl. 148—9 R 6 Claims



1. In an arrangement of a scarfing burner for removing the slag bed produced during flame cutting of a workpiece, the improvement being in that the scarfing burner is directed only towards the cut surface of the flame-cut workpiece.

4,405,383

METHOD AND APPARATUS FOR A SURFACE STRIPPING TREATMENT OF OBJECTS CONSISTING OF IRON WITH A HIGH CARBON CONTENT

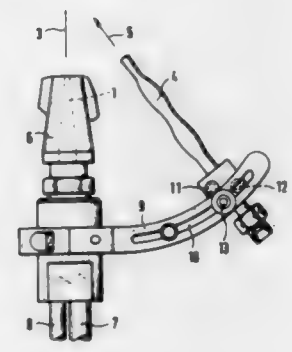
Egon Evertz, Solingen, and Helmut Rahn, Dortmund, both of Fed. Rep. of Germany, assignors to Evon Evertz, Solingen, Fed. Rep. of Germany

Filed Dec. 4, 1981, Ser. No. 327,745

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1980, 3047158

Int. Cl.³ B23K 7/06

U.S. Cl. 148—9.5 12 Claims



1. A method for a surface-stripping treatment of objects consisting of iron with a high carbon content such as cast iron, spheroidal graphite iron and pig iron wherein a flame which is formed by combustion of a heating gas with oxygen is directed at the surface which is to be stripped, the flame producing a molten pool of metal at the point of flame impingement and being conducted linearly across the entire surface for linear localised propagation of the melt and its removal, characterised in that in the impingement zone of the flame jet a gas which flows at a slower velocity than the heating gas and the oxygen and which reacts endothermically with at least one component of the flame gases and thereby absorbs heat, is also applied to the surface of the object.

4,405,384

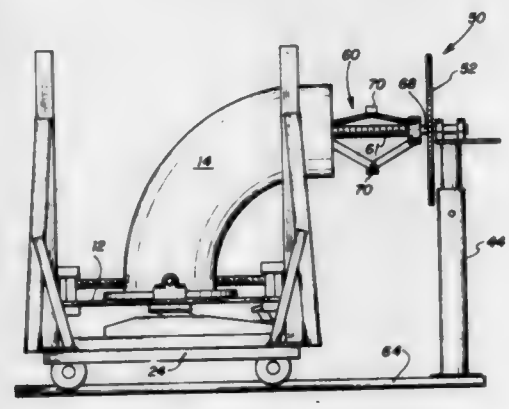
METHOD AND APPARATUS FOR SALVAGING LARGE PIPE ELBOWS

George W. Tucker, Rte. 13, Box 276, Fort Worth, Tex. 76119

Filed Sep. 30, 1982, Ser. No. 431,110

Int. Cl.³ B23K 7/04

U.S. Cl. 148—9.6 5 Claims



1. The method of re-claiming used or damaged tube turns and rendering them equivalent to new tube turns with correctly oriented openings, comprising the steps of:

(a) temporarily fixing a tube turn in a position such that the longitudinal axis of one of its ends is perpendicular to the plane of an adjacent circular track, and such that the opening of said end is near said circular track;

(b) centering the circular track with respect to the adjacent opening; and

(c) causing a cutting torch to translate around the circular

track so as to define a circular cutting path, and the torch being oriented such that some material is cut off the tube and a fresh edge is produced on the tube end when the cutting torch makes an excursion around the track.

4,405,385

PROCESS OF TREATMENT OF A PRECIPITATION HARDENABLE AL-MG-SI-ALLOY

Leo Cloostermans-Huwaert, Maarkedal, Belgium, assignor to Societe Franco-Belge des Laminoirs et Trefileries d'Anvers "Lamitreff", Hemiksem, Belgium

Continuation-in-part of Ser. No. 103,745, Dec. 14, 1979, abandoned. This application Oct. 15, 1980, Ser. No. 197,226

Claims priority, application Luxembourg, Dec. 14, 1978, 80656

Int. Cl.³ C22F *1/04*

U.S. Cl. 148—11.5 A **13 Claims**

1. A process for shaping of a precipitation hardenable Al-Mg-Si alloy into wire rod suitable as starting material for drawing into electrical conductor wire and having a minimum strength of at least about 23 Kg/mm^2 and minimum conductivity of at least about 52% IACS in the as-rolled, unaged condition, which process comprises:

(a) submitting the alloy to a rapid preliminary cooling-down step from a temperature of substanital solubility of the alloying elements towards a temperature inside the range of semi-hot temperatures, and

(b) then rolling said alloy immediately thereafter whilst rapidly cooling down from said temperature inside the range of semi-hot temperatures towards a temperature at the exit of the rolling-mill, this temperature being at least 140° C. and not higher than 200° C., this step being sufficiently short to avoid the formation of precipitates of a dimension of more than 1 micron.

4,405,386

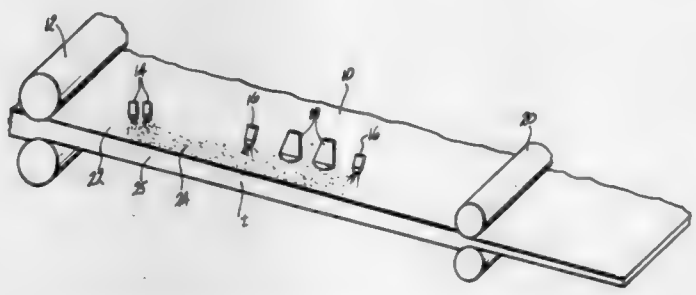
PROCESS AND APPARATUS FOR IMPROVING COLD ROLLABILITY AND/OR STRIP ANNEALABILITY OF METALS AND METAL ALLOYS

Brian Mravic, North Haven, and Eugene Shapiro, Hamden, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 5, 1982, Ser. No. 365,726

Int. Cl.³ C21D *8/02*; C22F *1/08, 1/04*

U.S. Cl. 148—11.5 A **26 Claims**



1. Process for improving the cold rollability of a strip material, said process comprising:

providing a metal or metal alloy strip material having an initial thickness;

cold working said strip material to obtain a desired reduction in said thickness;

selectively heating edge and near-edge portions of said material without significantly annealing the bulk of said strip material to increase the ductility of the material at said portions and the amount of reduction that can be taken before the onset of significant edge cracking; and

further cold working said strip material,

whereby said increased ductility at said portions and amount of reduction that can be taken permit the total reduction taken in said strip material before full annealing is required to be maximized.

4,405,387

PROCESS TO PRODUCE A REVERSIBLE TWO-WAY SHAPE MEMORY EFFECT IN A COMPONENT MADE FROM A MATERIAL SHOWING A ONE-WAY SHAPE MEMORY EFFECT

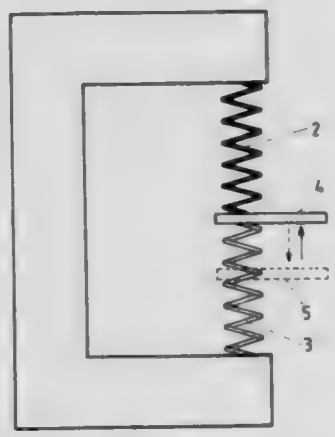
Joachim Albrecht, Mülligen; Thomas Duerig, Nussbaumen, and Walter Weber, Zürich, all of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jul. 27, 1982, Ser. No. 402,230

Claims priority, application Switzerland, Feb. 5, 1982, 704/82

Int. Cl.³ C21D *8/00*

U.S. Cl. 148—11.5 R **5 Claims**



1. A process for inducing a reversible two-way shape memory effect in an already existing component made of a shape memory alloy exhibiting a one-way effect comprising first solution treating said component in a temperature range of β-solid solution, subsequently quenching in water, and then deforming said component under operating conditions by subjecting to an external load said load being applied in the form of a counterweight, a spring, or an additional component rigidly joined to and hindering free movement of said shape memory component provoking an internal stress counteracting said one-way effect.

4,405,388

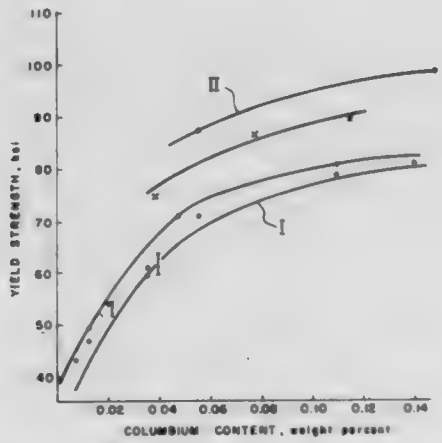
STRENGTHENING RESPONSE IN COLUMBIUM-CONTAINING HIGH-STRENGTH LOW-ALLOY STEELS

Paul E. Repas, Monroeville, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Apr. 5, 1982, Ser. No. 365,420

Int. Cl.³ C22C *38/06, 38/12*

U.S. Cl. 148—36 **7 Claims**



1. A hot-rolled, aluminum-killed steel product having a thickness less than 0.40 inches and exhibiting a yield strength in excess of 75 ksi, consisting essentially of 0.01 to 0.10% C, 0.03 to 0.15% Cb in an amount wherein Cb<7.74 times the C content of the steel, 0.30 to 1.20% Mn, 0.02 to 0.15% Al, 0.003

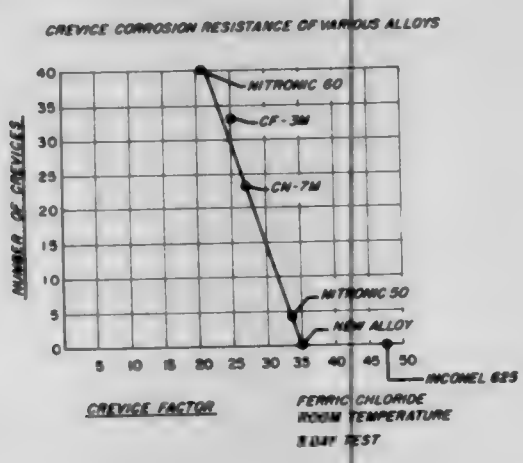
to 0.010% N, 0.010 to 0.045% Ti in an amount ≧3 times the N content of the steel, less than 0.05% Zr, balance Fe.

4,405,389

AUSTENITIC STAINLESS STEEL CASTING ALLOY FOR CORROSIVE APPLICATIONS

John A. Larson, Easton, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Oct. 21, 1982, Ser. No. 435,699
Int. Cl.³ C22C *38/44*
U.S. Cl. 148—37 **6 Claims**



1. An austenitic stainless steel casting alloy having approximately 10–15 percent ferrite consisting of the following anticipated range of critical elements:

	C	Mn	Si	Ni	Cr	Mo	N	V	P	S
% min.		0.1	0.2	10.0	20.0	3.2	0.10	0.10		
% max.	0.03	0.5	2.0	14.0	23.0	4.5	0.30	0.30	0.04	0.04

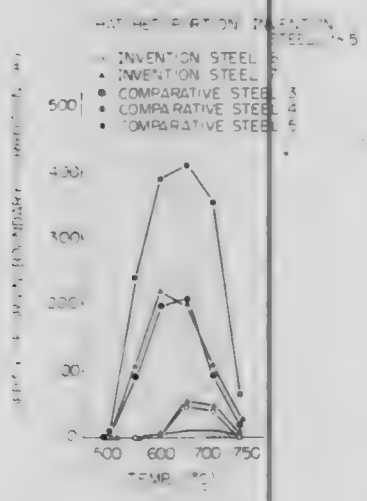
the balance of the material consisting essentially of iron.

4,405,390

HIGH STRENGTH STAINLESS STEEL HAVING EXCELLENT INTERGRANULAR CORROSION CRACKING RESISTANCE AND WORKABILITY

Kazuo Hoshino; Teruo Tanaka, and Keiichi Tachibana, all of Yamaguchi, Japan, assignors to Nisshin Steel Company, Ltd., Japan

Filed Jul. 8, 1982, Ser. No. 396,395
Claims priority, application Japan, Jul. 8, 1981, 56-105673
Int. Cl.³ C22C *38/40*
U.S. Cl. 148—37 **1 Claim**



1. A wrought high strength rolling stock stainless steel material having excellent intergranular corrosion cracking resistance and workability and a composition in % by weight consisting essentially of C: not more than 0.03%, N: 0.04–0.12%, Si: not more than 0.7%, Mn: not more than 1.75%, Ni: 6.0–10.0%, Cr: 16.0–20.0% and balance Fe and impurities inevitably incidental from the steelmaking process, and that the composition is adjusted to have an Aγ value of 19.5–20.5; where:

$$A\gamma=(\%Ni)+0.60(\%Cr)+0.70(\%Mn)+13[(\%C)+(\%N)].$$

4,405,391

HOMOGENEOUS, DUCTILE NICKEL-PALLADIUM BRAZING FOILS

Nicholas J. DeCristofaro, Chatham, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 14, 1981, Ser. No. 224,879
Int. Cl.³ C22C *19/03*
U.S. Cl. 148—403 **4 Claims**

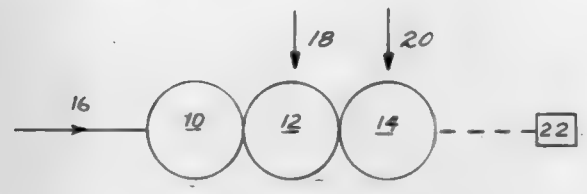
1. A homogeneous, ductile brazing foil composed of metastable material having at least 50 percent glassy structure and a composition consisting essentially of about 1 to 41 atom percent palladium, 0 to about 20 atom percent chromium, 11 to about 20 atom percent boron, and the balance essentially nickel and incidental impurities, wherein the composition is such that the total of nickel, palladium and chromium ranges from about 80 to 89 atom percent.

4,405,392

METHOD OF MAKING PRIMING COMPOSITION

John F. Hobbs, Sutton Coldfield, and Gordon R. Sutcliffe, Hartlebury Nr. Kidderminster, both of England, assignors to Imperial Metal Industries (Kynoch) Limited, Birmingham, England

Filed Sep. 3, 1976, Ser. No. 722,070
Claims priority, application United Kingdom, Sep. 11, 1975, 37385/75
Int. Cl.³ D03D *23/00*
U.S. Cl. 149—109.6 **5 Claims**



1. A method of producing in situ a priming composition which comprises a primary explosive selected from the group consisting of styphnates and azides together with at least one other ingredient, said method comprising the step of causing a reaction between components which will react to produce said primary explosive, said reaction occurring in situ with the components in admixture with the remainder of the composition, the reaction also producing a by-product which remains in the composition.

4,405,393

METHOD FOR FORMING A LAYER OF BLOWN CELLULAR URETHANE ON A CARPET BACKING

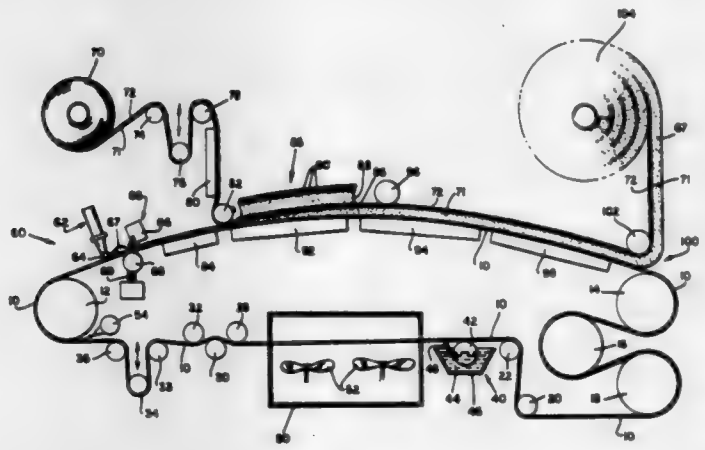
John G. Tillotson, Tiarco Dr., Dalton, Ga. 30720

Continuation of Ser. No. 872,341, Jan. 25, 1978, Pat. No. 4,132,817, which is a continuation-in-part of Ser. No. 782,636, Mar. 30, 1977, Pat. No. 4,171,395. This application Jan. 2, 1979, Ser. No. 478
The portion of the term of this patent subsequent to Jan. 2, 1996, has been disclaimed.
Int. Cl.³ B32B *31/00, 5/20*
U.S. Cl. 156—78 **11 Claims**

1. Method of forming a layer of blown cellular urethane on a carpet backing fabric comprising the steps of:

(a) preparing a mixture of reactive urethane forming agents containing sufficient water to cause chemical blowing of the mixture when heated sufficiently and controlling the

temperature of the mixture to a temperature of between about 60° and 100° F.;
(b) providing an endless conveyor belt;
(c) depositing the mixture of reactive urethane forming agents onto the conveyor belt while the temperature of the belt is controlled to a temperature of between about 50° and 100° F.;
(d) preheating the lower surface of an uncoated carpet material to a temperature of between 100° and 300° F.;
(e) preheating the urethane forming mixture to a tempera-



ture of between 90° and 150° F. to cause chemical blowing thereof and then bringing the lower surface of the preheated carpet into flush contact with the preheated urethane forming mixture;
(f) applying pressure to the carpet material while the reactive mixture is undergoing chemical blowing;
(g) heating the urethane forming mixture to a temperature of between 120° and 350° F. after the preheated carpet is brought into flush contact with the mixture; and
(h) stripping the coated carpet material from the conveyor belt.

4,405,394

LAMINATING PROCESS

Abraham B. Cohen, Springfield, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 153,636, May 27, 1980, abandoned. This application Jan. 22, 1982, Ser. No. 341,618

Int. Cl.[3] **B32B** *31/02*

U.S. Cl. 156—83 **33 Claims**

1. In a process for laminating by means of pressure a strippable film supported photosensitive layer to a cleaned nonporous substrate surface consisting essentially of copper or aluminum, the improvement comprising the sequential steps of:
(a) rendering the copper or aluminum substrate surface clean, the cleanliness of the surface being defined by the uniform water film test;
(b) within about 1 minute after rendering the substrate surface clean and immediately prior to lamination, applying a thin layer of liquid to form an interface between the substrate surface and the photosensitive layer;
(c) displacing the thin layer of liquid from the interface by absorption into the photosensitive layer during lamination; and
(d) within 30 seconds after lamination, removing the support for the photosensitive layer without delamination of the photosensitive layer from the substrate by bending the support back along a longitudinal axis of the photosensitive layer.

4,405,395

REINFORCED STRUCTURES

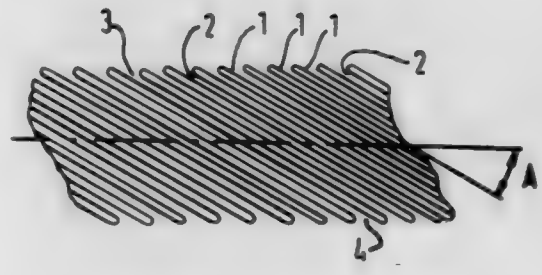
Anthony R. Wright, Nuneaton, England, assignor to W & A Bates Limited, London, England

Filed Oct. 9, 1981, Ser. No. 310,393

Claims priority, application United Kingdom, Oct. 16, 1980, 8033332

Int. Cl.[3] **B29H** *17/00, 9/04;* **D04H** *3/05*

U.S. Cl. 156—117 **25 Claims**



1. Apparatus for making a tire breaker fabric comprising an elongate sheet of tire cord fabric embedded in elastomer in which the cords extending across the sheet are formed by one single continuous tire cord which extends back and forth across the sheet so that the edges of the sheet are formed by a series of folded cord edges, the apparatus comprising:
(a) a pair of spaced apart edge forming units;
(b) a tire cord laying head for laying one single continuous tire cord in zig-zag formation between said edge forming units;
(c) said tire cord laying head having means to impart a loop to the tire cord at each edge forming unit;
(d) each edge forming unit having one loop holding pin engageable with said looped cord and a pincher head engageable about said holding pin to crimp said looped cord and the pin to form a folded cord edge;
(e) means for releasing each folded cord edge from the associated loop holding pin and transferring the cord extending between the edge forming units to a collector and holding unit to form a cord assembly comprising a plurality of cords the edges of which are formed by folded cord edges;
(f) said collector and holding unit being operable to release the cords of said cord assembly individually; and
(g) means for advancing each released cord to means for applying elastomer to the cord to produce tire breaker fabric.

24. A method of manufacture for tire breaker fabric comprising a single continuously laid, zig-zag reinforcing cord, the method comprising:
feeding a single breaker reinforcing cord to a tire cord laying head;
laying said tire cord across the width of the intended fabric;
effecting a 180° change of direction at one edge of the fabric being assembled to form a loop with a vertical axis at said edge;
bringing a first holding pin into engagement with said loop;
engaging a first pin pinching head around said pin to crimp said cord around said pin;
returning said cord across the width of the fabric;
forming a loop at the other edge of the fabric which is in turn engaged by a second holding pin and a second pinching head;
moving said first pin out of engagement with said first loop;
closing said first pinching head to crimp said first loop fully to a small radius;
opening said first pinching head to release said first loop;
propelling the first cord length across a laying table into a collecting unit and repeating the above steps to form an elongated cord assembly releasing the cords of said cord assembly individually and advancing each released cord to elastomer applying means to form a fabric sheet.

4,405,396

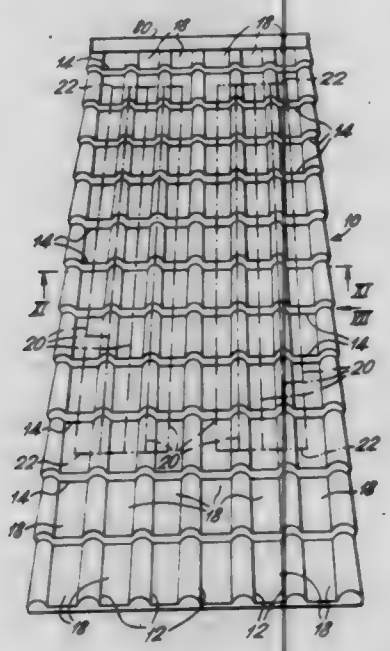
METHOD OF MAKING STATIC SOLAR HEAT COLLECTORS

Kenneth O. P. Brill-Edwards, Swansea, Wales, assignor to Crescent Roofing Company Ltd., Swansea, Wales

Division of Ser. No. 919,956, Jun. 28, 1978, Pat. No. 4,284,065. This application Mar. 3, 1981, Ser. No. 240,182

Int. Cl.[3] B32B *31/26*; B29C *1/08*

U.S. Cl. 156—155 10 Claims



1. A method of manufacturing a solar heat collector for buildings comprising

laying up successive laminae of a structural plastics material in a mould to form a building panel;

allowing each lamina to gel before laying up the next of said laminae;

forming a non-laminate substance to the shape and size of a fluid circulation channel;

placing the thusly formed non-laminate in position on a selected one of said laminae when the selected lamina has gelled;

inserting flow and return pipe connections in the non-laminate;

sealing the non-laminate to the panel;

shaping a web of rigid material to a segment of a circle having a chordal length not greater than the length of said building panel;

pressing one edge of said web against the underside of the partly-formed panel and anchoring said web normal to said panel by means of a strap passed under tension along the free edge of said web and anchored at each end to the fabric of the panel;

laying up further lamina so as to encapsulate said non-laminate and said web to lock the said flow and return pipe connections in place, and

clearing a flow path through and between the said connections.

4,405,397

PROCESS FOR MANUFACTURING ELASTIC LEG DISPOSABLE DIAPERS

Richard K. Teed, Greenwood, S.C., assignor to Riegel Textile Corporation, Greenville, S.C.

Division of Ser. No. 85,372, Oct. 16, 1979. This application Nov. 3, 1980, Ser. No. 202,943

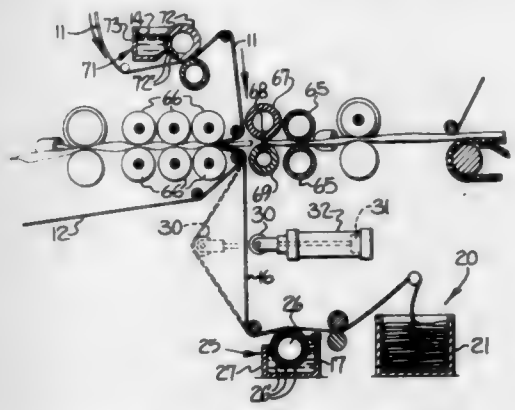
Int. Cl.[3] B32B *31/00*

U.S. Cl. 156—164 4 Claims

1. A process of securing elastic strips within longitudinal edges of elastic leg disposable diapers having central crotch-fitting areas and outer waist-fitting areas to form gathered and extendible side portions in the crotch area of the diapers during manufacture of such diapers; said process comprising the steps of:

feeding continuous elastic strips from a supply into desired position in contact within the longitudinal edges of the diapers, while effecting adhesive securement therebetween along the entire length of the edges; and

alternately stretching and substantially relaxing predetermined lengths of the continuous elastic strips during said feeding step, while adhering the stretched lengths of the continuous elastic strips to the crotch areas and the relaxed lengths of the continuous elastic strips to the waist areas along the entire longitudinal edges of the serially-interconnected diapers; so that, the stretched lengths of the elastic strips will contract and form gathered and extendible side portions in the crotch area of the diaper.



4,405,398

PROCESS FOR FASTENING A BASE PLATE TO A POLE PREPARED BY CENTRIFUGAL CASTING

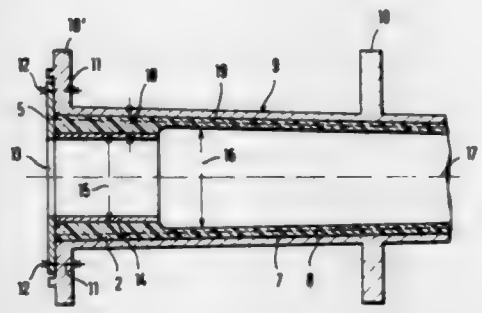
Bruno Rother, Neumarkt, and Hartmut Trommen, Postbauer-Heng, both of Fed. Rep. of Germany, assignors to G. A. Pfleiderer GmbH & Co., KG, Neumarkt, Fed. Rep. of Germany

Filed Jan. 29, 1981, Ser. No. 229,616

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032575

Int. Cl.[3] B29C *5/04*

U.S. Cl. 156—242 5 Claims



1. A process for mounting a baseplate to a pole comprised of a synthetic resin during the fabrication of said pole, the process comprising the steps of:

(a) providing a mold having an inner wall the shape of which substantially conforms to the outer surface of said pole and having at least one longitudinal end thereof open;

(b) providing a baseplate and a baseplate extension connected to said baseplate and extending substantially perpendicularly thereto and substantially centrally therefrom, said baseplate being wider than the open end of said mold and said baseplate extension being less wide than the inner wall of said mold;

(c) inserting said baseplate extension into said mold through the open end thereof such that an annular gap exists between said baseplate extension and the inner wall of said mold;

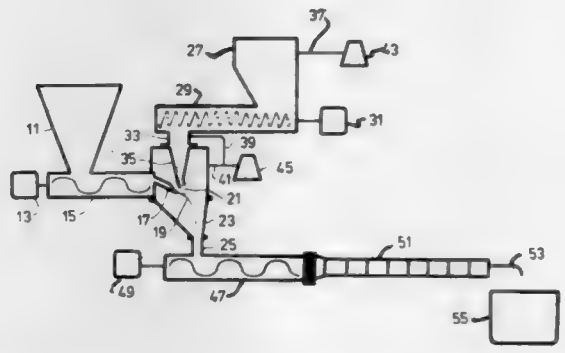
(d) placing said baseplate in a generally abuttiing relation with the open end of said mold;
(e) securing said baseplate to said mold such that when said mold is rotated about its longitudinal axis, said baseplate and said baseplate extension also rotate about the longitudinal axis with a rotational velocity equal to the rotational velocity of said mold;
(f) rotating said mold about its longitudinal axis; and
(g) injecting the synthetic resin into said mold in an amount sufficient to substantially fill the annular gap between said baseplate extension and the inner wall of said mold and thereafter solidifying said resin to thereby effect bonding between said baseplate extension and said solidified resin.

4,405,399

METHOD AND APPARATUS FOR MANUFACTURING DENTIFRICE CONTAINING DISPERSED SPECKLES

Edward J. Gibbons, Scotch Plains, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Sep. 30, 1981, Ser. No. 307,271
Int. Cl.³ A61K *7/16*
U.S. Cl. 156—243 **11 Claims**



1. A method for manufacturing a dentifrice containing dispersed discrete speckles therein which comprises producing a stream of a gel or paste dental composition continuously flowing in a direction having downward and horizontal components, which dental composition constitutes a major proportion of the dentifrice and contains a gelling agent which helps to make surfaces thereof adhesive for the speckles, producing a stream of speckles to be distributed throughout the dentifrice, directing said stream of speckles downwardly onto a surface of the stream of the dental composition and controlling the relative feed rates and the proportions of the streams of dental composition and the speckles to be dispersed in the dentifrice so that when the stream of speckles contacts the stream of dental composition the speckles are insufficient to cover the dental composition surface, so that the speckles adhere to the dental composition stream and there is produced a dentifrice containing the speckles in desired proportion distributed in it.

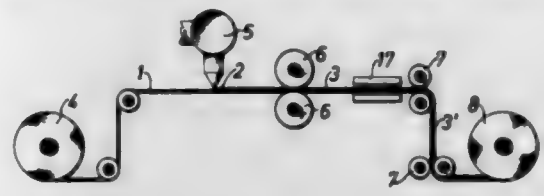
4,405,400

LAMINATED MATERIAL

Peter Petersen-Hoj, Espergärde, Denmark, assignor to Tetra Pak Developpement SA, Switzerland

Division of Ser. No. 173,649, Jul. 30, 1980, Pat. No. 4,373,002. This application Aug. 20, 1982, Ser. No. 409,974
Claims priority, application Switzerland, Jul. 30, 1979, 7027/79
Int. Cl.³ B29C *19/00*; B28B *3/20*; B32B *7/02*
U.S. Cl. 156—244.11 **3 Claims**

1. A method for the manufacture of a laminated material, comprising the steps of joining together at least two layers of polyester material, a first layer being modified polyester material and being of the type which can be subjected to a stretching treatment at a temperature below 100° C. without amorphous molecular structure being wholly lost, a second layer being polyester material whose molecular structure becomes crystalline when the material is subjected to a stretching at a temperature below 100° C., and subjecting the layers so com-



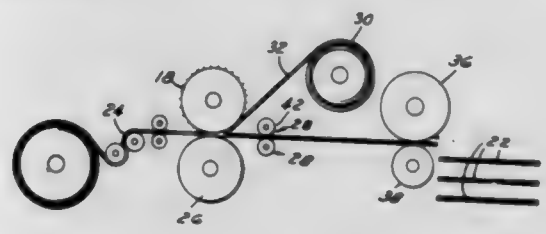
bined to a joint stretching operation at a temperature below 100° C.

4,405,401

THERMOPLASTIC LABELING AND METHOD OF MAKING SAME

Ted A. Stahl, 37101 Brynford, Mt. Clemens, Mich. 48043

Filed Jul. 15, 1981, Ser. No. 283,564
Int. Cl.³ B32B *31/00*; B65C *9/25*; C09J *5/00*
U.S. Cl. 156—248 **2 Claims**



1. The method of producing labels in the form of symbols, such as numbers, letters and the like, for bonding to clothing or the like, by the application of heat comprising the steps of:
providing a strip comprising a release carrier at least one side of which has a release surface thereon and a thermoplastic film carried by the carrier and lightly bonded by heat to the release surface and peelable therefrom;
kiss cutting the strip to form labels in the film on the carrier by cutting through the film but not through the carrier, whereby labels and waste film material are on the carrier said waste portion being lightly adhered to the release surface and peelable therefrom; and
severing the strip at longitudinally spaced intervals forming successive individual label bearing sections each having a length of the carrier with a plurality of the film labels lightly bonded to the release surface and individually peelable therefrom such that each of said labels may be bonded by heat to clothing or the like.

4,405,402

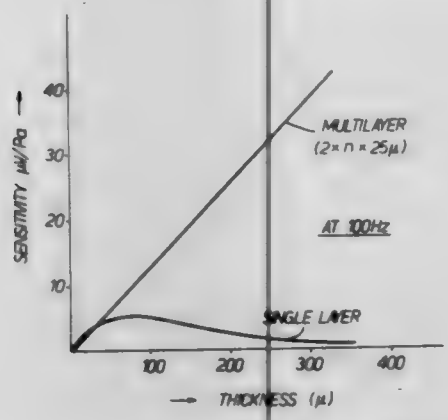
PIEZOELECTRIC/PYROELECTRIC ELEMENTS

Robert M. Quilliam, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Oct. 10, 1980, Ser. No. 195,772
Claims priority, application United Kingdom, Oct. 12, 1979, 7935443
Int. Cl.³ B32B *31/20*; H01G *7/02*; H01L *41/22*
U.S. Cl. 156—273.7 **8 Claims**

1. A method for the construction of a piezoelectric/pyroelectric element comprising an electrically-polarised laminar stack of individually thin polarisable plastics films, wherein each polarisable plastics film is essentially in face-to-face contact with its two neighbours, there being no significant gas space/pockets between any two adjacent films, in which method:
(a) the required number of films of the unpolarised but polarisable plastics substance is assembled together in the form of a multilayer sandwich adjacent individual films of which are essentially in face-to-face contact;
(b) the assembly is heated to a temperature somewhat below the deflection temperature of the plastics substance;

(c) while still hot, a polarising electric field is applied across the assembly, from end face to end face;
(d) while still applying the polarising field, the assembly is allowed to cool down; and



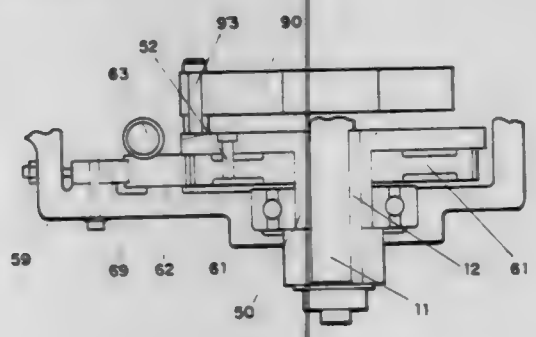
(e) after assembly but before cooling adjacent individual films of the assembly are bonded together.

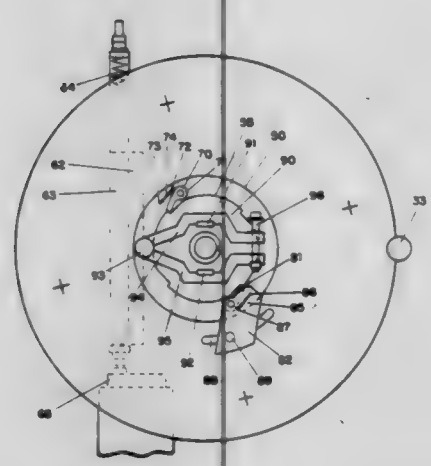
4,405,403

ARTICLE HOLDING TURRET

Robert M. Jodrey, Westboro, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Apr. 20, 1981, Ser. No. 255,968
Int. Cl.[3] B44C *1/00*; B65C *9/04, 9/00*
U.S. Cl. 156—449 12 Claims





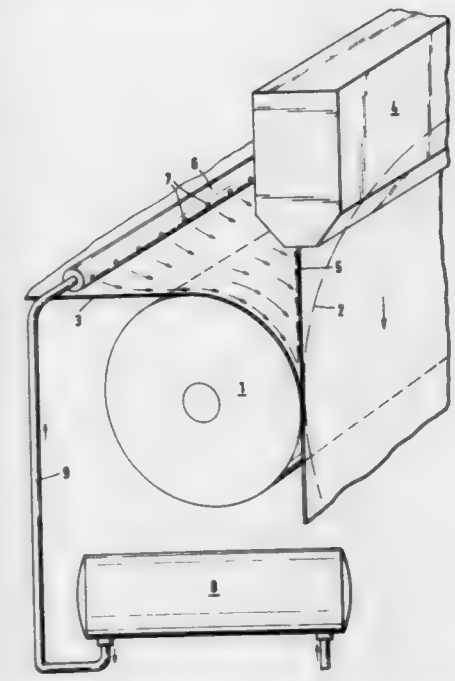
1. An improved article-holding turret of the type including a rotor assembly for engaging and rotatably conveying articles, past a labeling site whereby labels are applied to the articles an oscillating drive assembly for indexing the rotor assembly through a predetermined angle in a forward direction, and a brake for preventing the rotation of the rotor assembly in the reverse direction, wherein in the improved turret the brake rotates with the drive assembly, said turret further comprising means for preventing the reverse rotation of the rotor assembly during the reverse rotation of the drive assembly and brake.

4,405,404

APPARATUS FOR OXYGENATING AN EXTRUDED MOLTEN POLYETHYLENE FILM

Fritz Blom, Westphalia, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Dec. 1, 1981, Ser. No. 326,212
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1980, 3045413
Int. Cl.[3] B29D *7/02*; B32B *31/14, 31/22*
U.S. Cl. 156—497 2 Claims



1. An apparatus for oxygenating an extruded molten polyethylene film before compressing it with a carrier web for joining thereto comprising a pressure roller and a cooling roller forming a backing roller, a wide-slot extrusion nozzle disposed above the nip of the rollers, and an ozone nozzle, characterised in that the ozone nozzle comprises a tube (6) which has blow nozzles (7) arranged in a row, is disposed above the carrier web (3) parallel to the axis of the pressure roller (1), and touches or almost touches the carrier web (3) in the region where it runs onto the pressure roller, the direction of blowing by the nozzles being substantially tangential to the pressure roller (1).

4,405,405

BLAZED DIFFRACTION GRATING STRUCTURES AND METHOD OF MANUFACTURING THE SAME

Yohji Fujii, and Junichiro Minowa, both of Yokosuka, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Division of Ser. No. 58,382, Jul. 17, 1979, Pat. No. 4,330,175.
This application Nov. 30, 1981, Ser. No. 325,721
Claims priority, application Japan, Jul. 18, 1978, 53-87344; Apr. 4, 1979, 54-40517; Apr. 6, 1979, 54-41669
Int. Cl.[3] G02B *5/18*
U.S. Cl. 156—633 9 Claims

1. A method of manufacturing a curved diffraction grating structure in which a major surface of a single crystalline silicon substrate is provided with a plurality of triangular grooves at a pitch of P, each groove having an asymmetric cross-sectional shape and a wall inclined by an angle of θ with respect to said major surface so as to satisfy an equation

$$\theta = \sin^{-1}\frac{m\lambda_B}{2P},$$

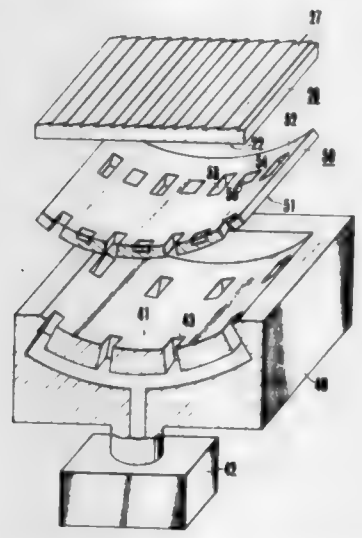
where θ represents a blaze angle, P the pitch of the groove, λ_B the blaze wavelength, and m the order of diffraction, and wherein when said plurality of triangular grooves are projected on a plane, a pattern is formed in which the projections

of the grooves are arrayed in parallel at said pitch, said method comprising the steps of:

utilizing a {hkl} plane (where h=k) inclined by said angle θ with respect to the {111} plane of said single crystalline silicon as parallel opposing first and second major surfaces;

applying an etching mask onto said first major surface;

anisotropic-etching said single crystalline silicon through said etching mask with an etching solution having different etching speeds for the different crystallographic directions of said single crystalline silicon, thus forming a planar diffraction grating, said planar diffraction grating forming a second plurality of triangular grooves when said planar diffraction grating is curved with said first major surface inward;



mounting said planar diffraction grating on a supporting member with a portion of said second major surface in contact with a portion of a curved surface of said supporting member, said curved surface being provided with recesses containing an adhesive and evacuation openings;

applying a negative pressure to the second major surface through said evacuation openings thereby bending said planar diffraction grating to conform with said curved surface.

2. A method according to claim 1 further comprising the step of applying a metal coating having a uniform thickness onto the walls of said triangular grooves upon which light impinges.

3. A method according to claim 1 which further comprises the step of isotropic-etching which is performed in immediate succession to said anisotropic etching.

4,405,406

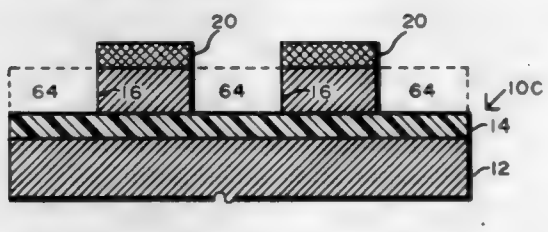
PLASMA ETCHING PROCESS AND APPARATUS

Martin J. Casey, Mesa, Ariz., and John E. Sheppard, Bensalem, Pa., assignors to Sperry Corporation, New York, N.Y.

Continuation of Ser. No. 171,790, Jul. 24, 1980, abandoned. This application Jun. 9, 1982, Ser. No. 386,826

Int. Cl.³ H01L *21/306;* B44C *1/22;* C03C *15/00, 25/06*

U.S. Cl. 156—643 **1 Claim**



1. A method of selectively etching a film comprising the steps of:

depositing a polycrystalline silicon film on an underlying substrate comprising silicon dioxide thereby forming a film-to-be-etched;

inserting said polycrystalline silicon film on said underlying substrate into a vacuum chamber;

supplying dichlorofluoro-methane gas to said vacuum chamber;

applying a radio frequency voltage across said dichlorofluoro-methane gas supplied to said chamber, thereby causing said gas to disassociate and form radicals which chemically interact to etch select areas of said film, said film being etched substantially without lateral etching and said select areas of said film being etched at a rate essentially 15 times greater than the etching rate of silicon dioxide comprising said substrate.

4,405,407

FIBROUS MATERIALS

Pudens L. Ragg, Hartburn; Graham E. Martin, Nunthorpe, and Roy Smeeton, Sedgefield, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Apr. 2, 1981, Ser. No. 250,154

Claims priority, application United Kingdom, Apr. 16, 1980, 8012488

Int. Cl.³ D21H *5/12*

U.S. Cl. 162—146 **7 Claims**

1. A process for making a shaped article comprising

(i) forming a solution of an amino-formaldehyde resin free of bound inorganic oxyacid radicals and a curing agent therefor into fibres, said solution being free of carbohydrates,

(ii) curing said fibres by heating them at above 100° C. until their degree of cure is at least 93%.

(iii) forming an aqueous pulp by dispersing fibrous material in water, said fibrous material containing at least 5% by weight of said cured amino-formaldehyde resin fibres,

(iv) forming a shaped article from said pulp, and

(v) promoting inter-fibre bonding by heating said shaped article at a sufficiently high temperature above 80° C., for sufficient time, and in the presence of a sufficient amount of water above 10% by weight of the total weight of fibrous material present, with the application of pressure, before or during said heating, at least sufficient to cause contact between adjacent fibres, so as to cause at least some of the amino-formaldehyde resin fibres to weld to one another and/or to other fibrous material present at at least some of the points where the fibres touch one another.

4,405,408

CELLULOSE PROCESSING AGENTS AND PAPER PROCESSED THEREWITH

Shigehiko Yoshioka; Hideto Yamada, and Akira Asakura, all of Akashi, Japan, assignors to Seiko Kagaku Kogyo Co., Ltd., Hyogo, Japan

PCT No. PCT/JP80/00142, § 371 Date Jan. 20, 1982, § 102(e) Date Jan. 20, 1982, PCT Pub. No. WO82/00038, PCT Pub. Date Jan. 7, 1982

PCT Filed Jun. 24, 1980, Ser. No. 346,056

Int. Cl.³ D06M *13/10;* D21H *3/02*

U.S. Cl. 162—158 **6 Claims**

1. A cellulose treating agent obtained by dispersing an alkyl ketene dimer in water in the presence of a dispersing agent, said dispersing agent comprising: (a) reaction product of a polyalkylenepolyamine and a mixture of carboxylic acids containing at least 20% by weight of aliphatic monohydroxymonocarboxylic acids having 9 to 32 carbon atoms: or (b) a product obtained by reacting epihalohydrin with said reaction product.

4. Paper sized with a cellulose treating agent which is obtained by dispersing an alkyl ketene dimer in the presence of a dispersing agent, said dispersing agent comprising: (a) a reaction product of a polyalkylenepolyamine and a mixture of carboxylic acids containing at least 20% by weight of aliphatic monohydroxymonocarboxylic acids having 9 to 32 carbon

atoms and 0 to 50% by weight of aliphatic dicarboxylic acids having 4 to 40 carbon atoms or; (b) a product obtained by reacting epihalohydrin with said reaction product.

4,405,409

METHOD AND APPARATUS FOR DEHYDRATING MIXTURES OF ORGANIC LIQUIDS AND WATER

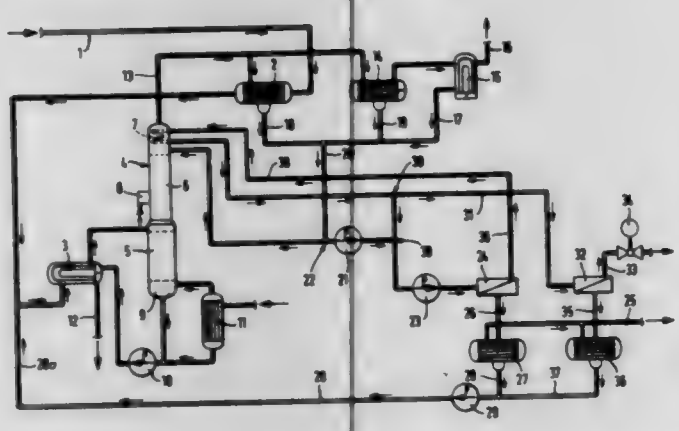
Gunter Tusel, Lieselottenstr. 12, D-6650 Homburg/Saar, and Achim Ballweg, Am Hain 4, D-6650 Homburg-Sanddorf, both of Fed. Rep. of Germany

Filed Oct. 5, 1981, Ser. No. 308,560

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1980, 3037736

Int. Cl.³ B01D 3/14, 13/00

U.S. Cl. 202—200 9 Claims



1. In a method of dehydrating a mixture of an organic liquid and water, which comprises subjecting the mixture to initial distillation to remove an initial quantity of water followed by membrane permeation to remove substantially the remaining water, the improvement which comprises withdrawing at least a portion of the material retained by the membrane separator, passing that material into indirect heat exchange relationship within the distillation column and recycling at least a portion of that withdrawn material back to the separator, the quantity of such recycle stream being such that substantially the whole of the heat required for the membrane permeation is transmitted to the recycle stream during said heat exchange within the distillation column.

8. Apparatus for dehydrating mixtures of an organic liquid and water comprising a distillation column and a membrane separator connected in series for the initial distillation and subsequent membrane separation of the mixture to remove water remaining in the distillate from the distillation column and including a recycle circuit for withdrawing at least a portion of the material retained by the separator, a heat exchanger within the distillation column connected in said recycle circuit for indirect heat exchange between said portion of withdrawn material, and a recycle conduit for return of at least a portion of the heated withdrawn material from the heat exchanger to the membrane separator.

4,405,410

MASKING OF ELONGATE THREE DIMENSIONAL OBJECTS FOR THE EXPOSURE OF PRESELECTED AREAS FOR SURFACE TREATMENT

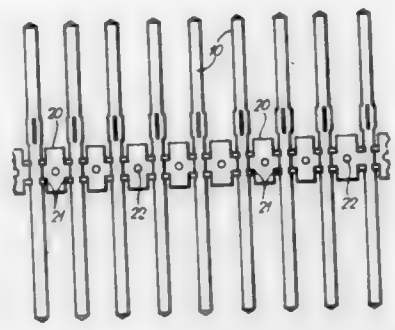
Leslie Sebastien, Montreal, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jan. 15, 1982, Ser. No. 339,394

Int. Cl.³ C25D 5/02, 17/04

U.S. Cl. 204—15 6 Claims

1. A masking member for masking at least an end portion of elongate pins, said masking member being of a flat, platelike form having top and bottom edges and including a plurality of parallel bores extending from said top edge towards said bottom edge, each bore of a size to be a close sliding fit on a pin; the masking member having a vertical cross-section with a thickened portion at top and bottom connected by a thinner central, waisted, portion, the waisted portion at least on one side extending inward to coincide with said bores, a plurality



of apertures being formed in said waisted portion, an aperture connecting with each bore.

4,405,411

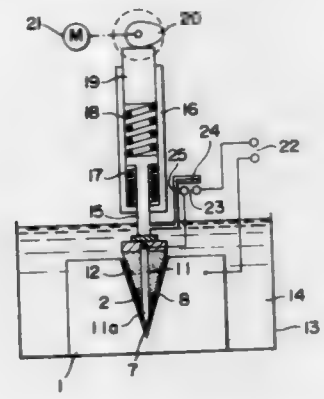
RECESS ELECTRODEPOSITING METHOD, ELECTRODE ASSEMBLY AND APPARATUS

Kiyoshi Inoue, Tokyo; Makoto Onoue, and Noriyoshi Otaki, both of Yokohama, all of Japan, assignors to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jan. 12, 1982, Ser. No. 338,901

Int. Cl.³ C25D 5/04, 17/10

U.S. Cl. 204—26 12 Claims



1. A method of forming an electrodeposited metallic layer on a wall of a recess in a workpiece and at least on a bottom area in the recess, said method comprising the steps of:

(a) preparing an electrodepositing electrode assembly comprising an electrodepositing electrode element and a support member so formed as to contain said electrode element therein and have a surface contour complementary to a surface contour of said recess in said workpiece, said support member comprising a porous mass composed at least in part of an electrically non-conductive material and having abrasive particles distributed therein at least along said contoured surface thereof;

(b) positioning said electrodepositing electrode assembly and said workpiece to establish generally a mating engagement of said support member with said recess;

(c) supplying an electrodepositing liquid electrolyte onto said wall of said recess;

(d) reciprocating at least one of said electrode assembly and said workpiece so as to repetitively bring said support member into contact with and away from the surface of said recess in the mating engagement therewith; and

(e) passing an electrodepositing electric current between said electrode element and said workpiece at least during a time period in which said support member and said surface of the recess are brought together in step (d) to electrodeposit a metal from said liquid electrolyte at least on said bottom area in said recess.

4,405,412

REMOVAL OF COPPER CONTAMINATION FROM TIN PLATING BATHS

Christy A. Nardelli, Delaware, Ohio, assignor to Dart Industries Inc., Northbrook, Ill.

Filed Mar. 29, 1982, Ser. No. 362,589
Int. Cl.³ C25D 3/32
U.S. Cl. 204—54 R 6 Claims

1. A method for the treatment of copper-contaminated aqueous acid plating baths for the electrodeposition of bright tin comprising adding to said bath which further comprises from about 5% to about 40% of a free acid; and from about 0.1 to about 10 ounces per gallon of stannous ion an additional comprising from about 0.01% to about 1% of sodium formaldehyde sulfoxylate thereby overcoming plating haze and low current density dullness due to copper contamination in the tin bath.

4,405,413

BLUSH-FREE ACID ZINC ELECTROPLATING BATHS AND PROCESS

Carol W. Skimin, Mayfield Hts., Ohio, assignor to The Harshaw Chemical Company, Cleveland, Ohio

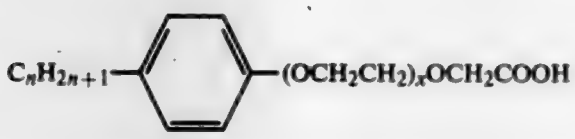
Filed May 20, 1982, Ser. No. 379,833
Int. Cl.³ C25D 3/22
U.S. Cl. 204—55 R 4 Claims

1. An aqueous acid zinc electroplating bath comprising

A. a source of zinc ions,

B. at least one organic brightening agent, and

C. a surfactant to keep the brightening agent dispersed throughout the bath and consisting of a mixture of at least two carboxy-terminated ethylene oxide adducts of a long chain alkyl phenol having the general formula



wherein one of the long chain alkyl phenols is present in an amount of between 30–70%, n is either 8 or 9, and in which x is between about 17 and about 21 and the second is present in an amount of between 70–30%, n is either 8 or 9, and x is between about 9 and about 12.

4,405,414

PROCESS FOR MANUFACTURING A SELECTIVE ABSORBER OF A SOLAR COLLECTOR AND SELECTIVE ABSORBER SO OBTAINED

Lucien Aries, Montgiscard, and Jean-Pierre Traverse, Ramonville Saint Agne, both of France, assignors to Agence Nationale de Valorisation de La Recherche (A.N.V.A.R.), Paris Cedex, France

Continuation-in-part of Ser. No. 167,042, Jul. 9, 1980, abandoned. This application Dec. 7, 1981, Ser. No. 328,135
Claims priority, application France, Jul. 11, 1979, 79 18414
Int. Cl.³ C25D 11/34
U.S. Cl. 204—56 R 15 Claims

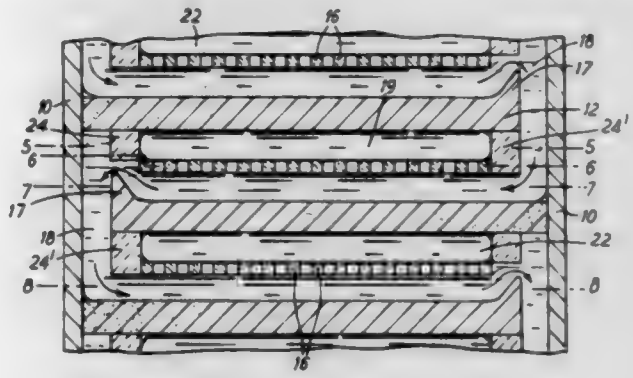
1. A process for producing a selective absorber for a solar collector panel having high absorption and low emissivity comprising providing a panel formed from an alloy of iron and at least one filler metal, comprising chromium alloyed with said iron, subjecting said panel as an anode to anodic oxidation in an acidic electrolytic bath containing at lest one electroactive substance containing atoms selected from the group consisting of sulfur, selenium and tellurium, the electrolytic potential between the anode and the cathode being set to such a value that the anode potential will be between the natural corrosion potential and the primary passivation potential of the alloy forming said panel.

4,405,415

ELECTROLYTIC REFINING OF MOLTEN METAL

Ernest W. Dewing, and Adam J. Gesing, both of Kingston, Canada, assignors to Alcan International Limited, Montreal, Canada

Filed Oct. 5, 1981, Ser. No. 308,472
Claims priority, application United Kingdom, Oct. 7, 1980, 8032268
Int. Cl.³ C25C 3/06, 3/08, 3/04
U.S. Cl. 204—67 22 Claims



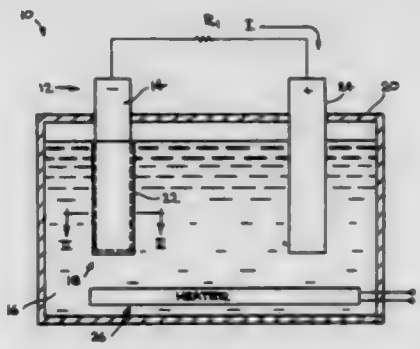
1. A process for the electrolytic refining of impure molten metal, selected from the group consisting of aluminium and magnesium by passing current between a cathode composed of relatively pure molten metal and an anode composed of the impure molten metal through an intermediate layer of molten electrolyte for transport of ions of the selected metal characterised in that the molten electrolyte is contained within the interstices of a non-conductive grille member, said interstices having a minimum transverse dimension in the range of 0.1–1 cm.

4,405,416

MOLTEN SALT LITHIUM CELLS

Ian D. Raistrick, Menlo Park; Jaime Poris, Portola Valley, and Robert A. Huggins, Stanford, all of Calif., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Division of Ser. No. 170,254, Jul. 18, 1980, Pat. No. 4,315,059. This application Sep. 15, 1981, Ser. No. 302,337
Int. Cl.³ C25C 3/02; H01M 6/36, 8/14
U.S. Cl. 204—68 3 Claims



1. A method of processing lithium comprising the steps of:

providing a quantity of an electrolyte, said electrolyte including lithium moieties and a mixture of nitrate moieties, and said electrolyte having a melting point in the range of about 100° to about 170° C.;

contacting said electrolyte with a quantity of elemental lithium; and,

selectively conducting lithium ions between said quantity of electrolyte and said quantity of elemental lithium

heating said quantity of electrolyte to a temperature in the range of about 100° to about 170° C. to form a molten state thereof, and maintaining said temperature and said molten state during the selectively conducting step.

4,405,417

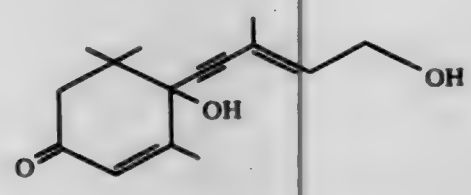
PROCESS FOR THE MANUFACTURE OF CYCLOHEXENE DERIVATIVES

Hansjörg Grass, Muttenz, and Reinhard Zell, Rodersdorf, both of Switzerland, assignors to Hoffmann- La Roche Inc., Nutley, N.J.

Filed Jan. 17, 1983, Ser. No. 458,428
Claims priority, application Switzerland, Feb. 9, 1982, 784/82
Int. Cl.³ C25B *3/00*
U.S. Cl. 204—73 R **9 Claims**

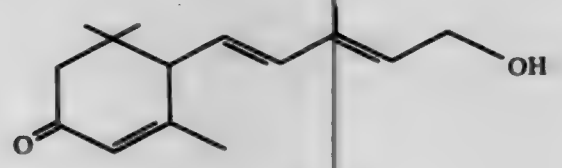
1. A process which comprises cathodically reducing the compound of the formula

I



in a basic, aqueous-organic solvent mixture to give the compound of the formula.

II

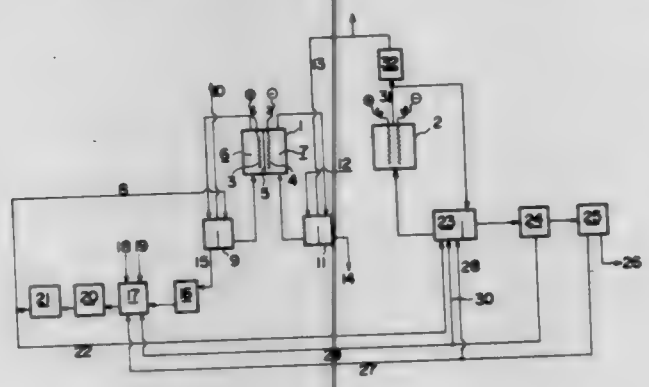


4,405,418

PROCESS FOR THE PRODUCTION OF SODIUM CHLORATE

Reiji Takemura, Nobeoka, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 3, 1981, Ser. No. 240,226
Claims priority, application Japan, Mar. 3, 1980, 55-2533; Nov. 6, 1980, 55-77858
Int. Cl.³ C25B *1/34*
U.S. Cl. 204—95 **9 Claims**



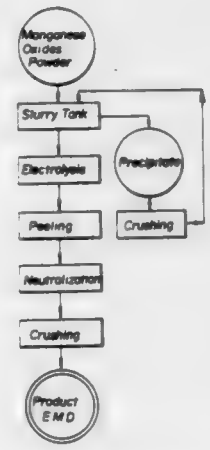
1. In a process for the electrolysis of an aqueous sodium chloride solution which comprises, in combination, a diaphragmless process for the production of sodium chlorate using a sodium chlorate cell and a cation exchange membrane process for the production of sodium hydroxide and chlorine using a chlorine-alkali cell partitioned by means of a cation exchange membrane into a anode chamber and a cathode chamber, and wherein a weak saline solution taken out of the anode chamber of the chlorine-alkali cell is fed into the sodium chlorate cell, the improvement which comprises supplying sodium chloride to the weak saline solution taken out of the anode chamber of the chlorine-alkali cell to form an aqueous sodium chloride solution which is subsequently contacted with a porous iminodiacetic acid type chelating ion exchange resin comprising as a skeleton a chloromethylstyrene-divinylbenzene type crosslinked copolymer containing 9 to 17 mole % of divinylbenzene, said resin having an ion exchange capacity of 4.2–7.2 meq/g-dry resin, a water regain of 0.6 to 2.2 ml/g-dry resin and a total volume of micro pores having a diameter ranging from 500 to 3,000 A of 0.05 to 0.60 ml/g-dry resin, at a pH of 8.0 or more to remove impurities contained in said aqueous sodium chloride solution to an extent that the amounts of Ca, Mg and Ba ions in the resulting saline solution are 0.1 mg/liter or less, and at least part of the resulting saline solution is fed into the sodium chlorate cell, thereby enabling sodium chlorate to be produced at high concentration and at a stable electrolytic voltage.

4,405,419

METHOD FOR PRODUCING ELECTROLYTIC MANGANESE DIOXIDE

Masatoshi Misawa; Kusuhiko Takahashi, both of Tokyo; Kinnosuke Okuda, Kisarazu; Kiyoshi Matsuura, Gunma; Hisao Takehara, and Keiichiro Ishikawa, both of Ichikawa, all of Japan, assignors to Japan Metal and Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 12, 1980, Ser. No. 215,849
Claims priority, application Japan, Dec. 13, 1979, 54-161839; Feb. 5, 1980, 55-12862; Dec. 13, 1979, 54-161840
Int. Cl.³ C25B *1/00*
U.S. Cl. 204—96 **16 Claims**



1. A process for producing electrolytic manganese dioxide comprising electrolysis of an electrolyte comprising manganese sulfate containing a slurry of manganese oxides, wherein the manganese oxides are present in an amount from 0.01 to 0.4 grams per liter of electrolyte, said manganese oxide being no larger than 325 mesh in size.

4,405,420

CATALYZED ELECTROCHEMICAL GASIFICATION OF CARBONACEOUS MATERIALS AT ANODE AND ELECTROWINNING OF METALS AT CATHODE

Ronald J. Vaughan, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 28, 1981, Ser. No. 305,877
Int. Cl.³ C25C *1/06, 1/08, 1/10, 1/12*
U.S. Cl. 204—105 M **10 Claims**

1. In the electrochemical method of electrowinning a metallic element from an aqueous acidic electrolyte containing a metallic component as a cationic component comprising the steps of:

introducing carbonaceous materials and said electrolyte into an electrolysis cell having a cathode electrode and an anode electrode; and applying an electromotive force across said electrodes; wherein said carbonaceous materials react at said anode and said metallic component is deposited at said cathode, the improvement which comprises adding an amount of iron in its elemental, +2 or +3 valence state, or mixtures thereof to the electrolyte containing the carbonaceous material sufficient to increase the

rate of oxidation of the carbonaceous material at the anode.

4,405,421

METHOD OF AND APPARATUS FOR ELECTROCHEMICALLY GRINDING A CONDUCTIVE WORKPIECE

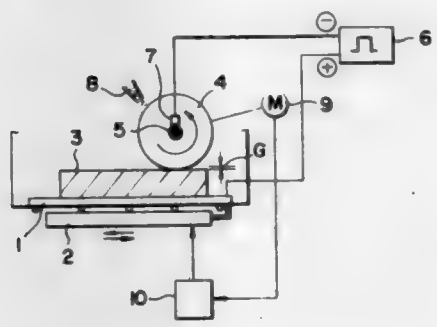
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Feb. 18, 1981, Ser. No. 235,560

Claims priority, application Japan, Feb. 22, 1980, 55-21954; Oct. 8, 1980, 55-141518; Oct. 22, 1980, 55-148471

Int. Cl.³ B23P *1/10, 1/12, 1/14*

U.S. Cl. 204—129.2 **29 Claims**



23. A method of electrochemically grinding an electrically conductive workpiece with a rotating wheel electrode constituted by an electrically conductive and abrasive electrode body wherein an electrochemical grinding current is passed between the workpiece and the rotating wheel electrode through a grinding interface flushed with a liquid electrolyte, the method comprising:

causing the workpiece to traverse the rotating wheel electrode along a predetermined rectilinear path repeatedly and over successive runs;

in each run, setting the depth of cut by the rotating wheel electrode in the workpiece as determined by the position of the workpiece traversing the rotating wheel electrode along said path to be not greater than 5 micrometers; and

repeating said each run to complete said successive runs whereby to cumulatively achieve a desired depth of cut in the workpiece.

24. The method defined in claim 23 wherein said electrochemical grinding current is passed in the form of a succession of electrical pulses.

25. The method defined in claim 24, further comprising:

applying a monitoring pulse during at least a portion of the off-time of said electrochemical grinding current pulses across said grinding interface; and

sensing an electrical magnitude of said grinding interface resulting from said monitoring pulse, thereby determining the wear of said wheel electrode.

4,405,422

METHOD OF ANODICALLY DEBURRING ARTICLES OF COPPER OR COPPER ALLOY

Karl-Imgemar Blomsterberg, Högstensgatan 60, 423 00 Torslanda, Sweden

PCT No. PCT/SE82/00010, § 371 Date Sep. 14, 1982, § 102(e) Date Sep. 14, 1982, PCT Pub. No. WO82/02408, PCT Pub. Date Jul. 22, 1982

PCT Filed Jan. 15, 1982, Ser. No. 420,253

Int. Cl.³ C25F *3/02*

U.S. Cl. 204—129.85 **10 Claims**

1. A method of anodically deburring articles of copper or copper alloy, characterized in that the treatment is carried out in an acid solution having a pH not exceeding 6.5 and containing

	grams per liter
water	100 to 300
alkali sulphamate	50 to 150
polyhydric alcohol	400 to 800
alkali nitrate	50 to 150

at a bath voltage of 5 to 30 volts and a current density of 2 to 50 amperes per square decimeter.

4,405,423

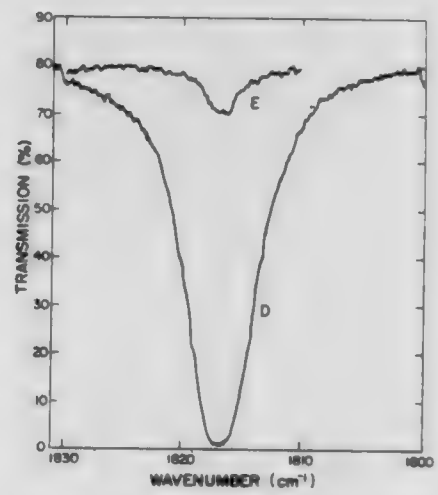
METHOD FOR REMOVAL OF PHOSGENE FROM BORON TRICHLORIDE

Samuel M. Freund, Santa Fe, N. Mex., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Sep. 3, 1981, Ser. No. 299,233

Int. Cl.³ B01J *19/12*

U.S. Cl. 204—157.1 R **9 Claims**



1. A method for the photolytic removal of phosgene impurity from samples of boron trichloride, comprising the steps of:

(a) irradiating a boron trichloride sample with ultraviolet radiation of sufficient intensity to photolyze the phosgene impurity therein; and

(b) removing the photolysis products from the boron trichloride.

4,405,424

METHOD FOR PRODUCING HYDROGEN AND ELEMENTAL SULPHUR BY PHOTOCHEMICAL OXIDATION-REDUCTION OF HYDROGEN SULPHIDE AND METAL SULPHIDES

Michael Graetzel, 2, chemin Pontfilet, 1093 La Conversion, Switzerland; Kuppuswamy Kalyanasundaram, Chavannes; Enrico Borgarello, Echandens, both of Switzerland, and Ezio Pelizzetti, Turin, Italy, assignors to Michael Graetzel, La Conversion, Switzerland

Filed May 28, 1982, Ser. No. 383,272

Claims priority, application Switzerland, Jun. 3, 1981, 3636/81

Int. Cl.³ B01J *19/12*

U.S. Cl. 204—157.1 R **13 Claims**

1. Method for producing hydrogen and elemental sulphur by photochemical oxidation-reduction of hydrogen sulphide and metal sulphides by an electromagnetic radiation comprising visible radiation, characterized in that an irradiation is effected of the hydrogen sulphide or the metal sulphide in solution in a solvent and in the presence of a catalyst consisting of a semiconductor material, the surface of the semiconductor material to be illuminated being covered by a transparent layer of RuO_2.

4,405,425

FLAME-RETARDANT POLYSILOXANE ELASTOMERS

August Schiller, Neuötting, Fed. Rep. of Germany, and Dietrich Wolfer, Untereching, Austria, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 220,473

Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018549

Int. Cl.³ C08K *3/22, 3/04*

U.S. Cl. 204—159.13 7 Claims

1. A composition capable of being cured to form a flame-retardant elastomer consisting essentially of an organopolysiloxane, graphite having a surface area of from 3 to 15 m^2/g, a compound selected from the group consisting of alumina trihydrate, ceric hydroxide, cerous hydroxide, tricalcium aluminate hexahydrate, magnesium hydroxide and mixtures thereof and a crosslinking agent.

4. The composition of claim 1, wherein the compound is alumina trihydrate.

4,405,426

SELF-CURING IRRADIATED BLEND OF EPOXY RESIN AND SALT OF QUATERNARY AMINO ESTER OF UNSATURATED ACID

Fumio Hosoi, Fujioka; Takashi Sasaki, Takasaki, and Miyuki Hagiwara, Maebashi, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Apr. 19, 1982, Ser. No. 369,612

Claims priority, application Japan, Apr. 30, 1981, 56-65840

Int. Cl.³ C08F *2/54, 220/34;* C08G *59/20;* C08L *63/00*

U.S. Cl. 204—159.15 13 Claims

1. A self-curing modified epoxy resin composition produced by irradiating with electron beams a mixture mainly composed of 60 to 98% by weight of an epoxy resin and 2 to 30% by weight of a quaternary salt containing an α,β-unsaturated carboxylic acid ester having one quaternized amine nitrogen atom in the ester group.

4,405,427

ELECTRODEPOSITION OF COATINGS ON METALS TO ENHANCE ADHESIVE BONDING

Norman R. Byrd, Villa Park, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Nov. 25, 1981, Ser. No. 317,162

Int. Cl.³ C25D *13/06, 13/08*

U.S. Cl. 204—181 R 33 Claims

1. A process for enhancing adhesive bonding of a metal substrate, which comprises passing an electric current through a non aqueous or aqueous electrolyte in which a metal substrate is the anode, the metal of said substrate being active and capable of forming an organometallic compound, said electrolyte containing a phosphorylated amide having a labile hydrogen, and capable of generating an anion during electrolysis, said phosphorylated amide being in the form of (a) an organic polymer consisting of a poly (phosphinohydrazide), a poly (phosphinoguanide) or a poly (phosphinoureide), including homopolymers and copolymers thereof, and their thio analogs, or (b) a 2:1 molar adduct of two moles of a nitrogen-containing compound of the group consisting of hydrazine, guanidine and urea, and its thio analog, to one mole of and organic phosphite or phosphonate, and their thio analogs, and electrodepositing a coating of said amide on said metal substrate wherein said anion is reacted with and is chemically bonded to the metal of said substrate.

4,405,428

BASE SOLUBILIZATION OF AN AZOLE-FUNCTIONAL RESIN AND ELECTRODEPOSITION OF SUCH SOLUBILIZED RESIN

Nicholas T. Castellucci, Pittsburgh; John F. Grunewalder, Glenshaw, both of Pa., and John S. Ostrowski, Richardson, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 229,495, Jan. 29, 1981, Pat. No. 4,360,614.

This application Jul. 26, 1982, Ser. No. 401,488

Int. Cl.³ C25D *13/10*

U.S. Cl. 204—181 R 9 Claims

1. A method of electrocoating an article comprising:

A. contacting said article which serves as an anode with an aqueous mixture of a reaction product, said reaction product comprising a product of the reaction of

(i) a N-heterocyclic compound selected from the group consisting of a triazole, a tetrazole and a mixture thereof, said N-heterocyclic compound substituted on at least one carbon atom in the N-heterocyclic ring by a group of the formula $-(X)_n-SH$ wherein X represents an alkylene group containing from 1 to 6 carbon atoms optionally halogen substituted, a cycloalkylene group containing from 5 to 8 carbon atoms optionally halogen substituted, or a phenylene group optionally substituted by halogen and/or an alkyl group containing from 1 to 6 carbon atoms, and n represents 0 or 1, and

(ii) a polyepoxide containing 1,2-epoxy groups, wherein the ratio of equivalents of said N-heterocyclic compounds to epoxide equivalents of said polyepoxide is from about 0.5:1.0 to about 1.5:1.0, said reaction product solubilized by admixture with a base in an amount at least sufficient to water solubilize said reaction product; and

B. passing a direct current of electricity through said aqueous mixture between said article and a cathode thereby electrodepositing a film on said article.

4,405,429

OXYGEN DETECTOR

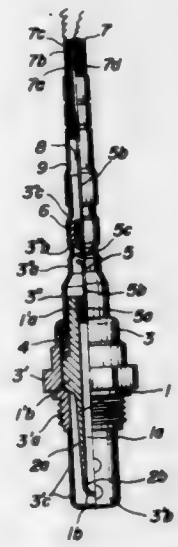
Hisaharu Nishio, Tokai, Japan, assignor to N G K Spark Plug Co., Ltd., Nagoya, Japan

Filed Feb. 11, 1981, Ser. No. 233,477

Claims priority, application Japan, Feb. 15, 1980, 55-18936[U]

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—421 13 Claims



1. An oxygen detector comprising a tubular oxygen detection element closed at one end and including outer and inner electrode layers extending upwardly from the closed end, the inner electrode layer terminating in a threaded upper end, casing means for sealing the oxygen detection element, said casing means having a metal casing electrically connected with the outer electrode layer of the oxygen detection element, a center conductor disposed within said casing means and including a flexible coil-shaped terminal threadedly engaged

with the threaded upper end of said inner electrode layer, an output delivering electric wire assembly fixed to an end of said casing means and having a coil spring lead wire (*7a*) and an annular resilient insulating material (*7b*) therearound so as to define a communicating hole (*7d*) for communicating the inner electrode layer of the oxygen detection element with the outside air, said coil spring lead wire connected electrically to said center conductor, wherein said center conductor has a resilient portion operative to apply a tensile force to the coil-shaped terminal of said center conductor to ensure contact between said coil-shaped terminal and said threaded end of said inner electrode layer, and said resilient portion is firmly fixed to said metal casing with an insulating material (6).

4,405,430

REMOTELY OPERABLE SAMPLE-TAKING APPLIANCE, ESPECIALLY FOR ASCERTAINING RADIO ACTIVITY PROFILES IN CONTAMINATED MATERIAL SURFACES

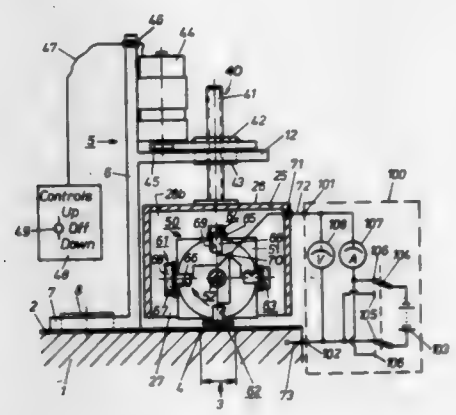
Jozef Hanulik, Zurich, Switzerland, assignor to Gesellschaft zur Forderung der Forschung an der Eidgenossischen Technischen Hochschule, Zurich, Switzerland

Filed Mar. 13, 1981, Ser. No. 243,557

Claims priority, application Switzerland, Mar. 20, 1980, 2184/80

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—400 **10 Claims**



1. A remotely-operable sample-taking appliance, especially for ascertaining radioactivity profiles in contaminated material surfaces and the chemical composition of strata close to the surface, in which a layer of material is removed electrolytically from the surface region to be examined for each sample by means of a sensor containing a sponge impregnated with an electrolyte, and in that the removed material is absorbed in the sensor sponge for a subsequent chemical analysis and/or analysis of its radioactivity, in order to produce an activity profile of the surface region from a plurality of successive samples, the improvement comprising at least three sensors, a common current connector connected to said sensors, sponges of graduated sizes of application areas associated respectively with said sensors, a sensor carrier carrying said sensors, an appliance framework in which said carrier is arranged for upward and downward movement, and remotely operable setting devices and lifting devices arranged on the framework and effective to bring the individual sensors successively and sequentially in the order of a decreasing sponge application area into a working position and thereafter to lower the sensor in said working position with the sensor carrier to an operative position with defined application pressure of its sponge on the surface region to be examined.

4,405,431

APPARATUS FOR PARTIAL ELECTROLYTIC COATING OF INDIVIDUAL METAL PARTS

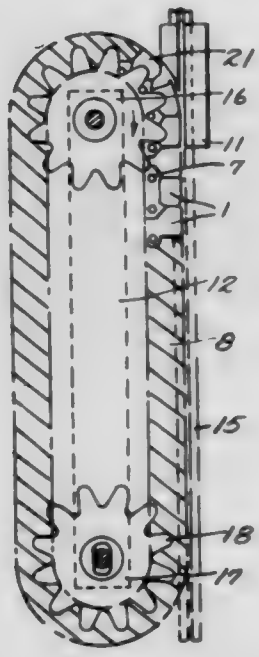
Alfred Pfeifer, Altenstadt; Rudolf Seif, Bruchkobel, and Dietmar Holdt, Leinzell, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 22, 1981, Ser. No. 285,335

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1980, 3028635

Int. Cl.³ C25D *17/06*; B05C *3/10*; C25D *17/28*

U.S. Cl. 204—202 **18 Claims**



1. An apparatus for the partial electrolytic coating of individual metal parts, especially pins, switches and belts for electrical contacts, consisting essentially of an electrolyte tank, a conveying chain means running over a pair of rolls for fastening and contacting the parts to be coated, means for loading and withdrawing the parts to be coated, said conveying chain means comprising individual holding elements which are joined directly together by pins, said holding elements comprising a contact cover plate and a clamping cover plate, means for spacing the clamping cover plate from the contact cover plate and spring means adopted to force the clamping cover plate toward the contact cover plate, said rolls being provided with a groove having a conically shaped side surrounding each roll.

4,405,432

PLATING HEAD

Lex A. Kosowsky, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 22, 1982, Ser. No. 436,090

Int. Cl.³ C25D *17/00, 21/10*

U.S. Cl. 204—206 **3 Claims**

1. A system for plating selected areas of a web of material comprising:

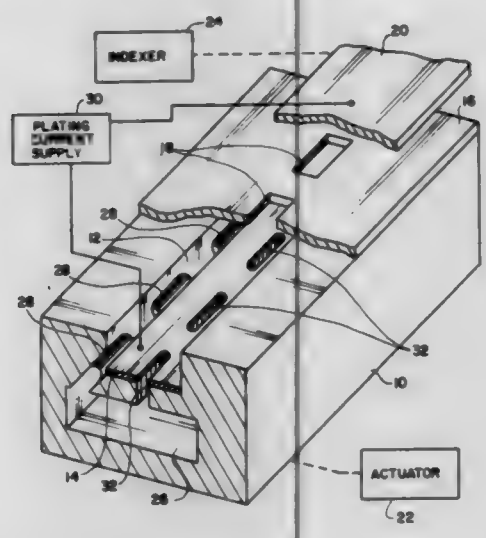
a plating head of electrically insulating material and having a recessed channel therein;

masking means operable to sealingly engage said web, said masking means having apertures so as to expose said selected areas to an electrolyte solution, said masking means disposed adjacent said plating head and over said recessed channel with said apertures in communication with said recessed channel;

an electrode in the bottom of said channel, said electrode having an extended generally planar continuous conducting surface positioned generally parallel to the masking means so as to expose the surface maximally to said apertures;

first passageways in said plating head adapted to convey the major portion of the electrolyte into the space between

said apertures and said electrode surface, said first passageways opening in the side of said recessed channel so as to supply fresh electrolyte along the length of the channel;



second passageways to convey electrolyte through small openings in said surface of the electrode so as to enhance turbulent flow of electrolyte in said channel; and

plating current supply means connected to said electrode means and to said web.

4,405,433

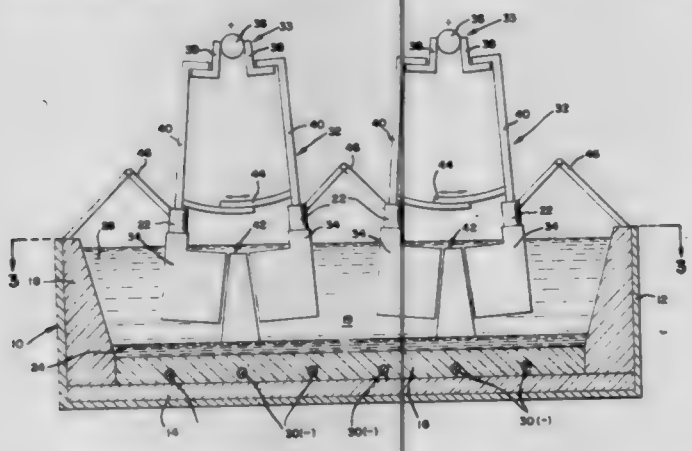
ALUMINUM REDUCTION CELL ELECTRODE

John R. Payne, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Apr. 6, 1981, Ser. No. 251,652

Int. Cl.³ C25C *3/08, 3/16*

U.S. Cl. 204—225 **12 Claims**



1. In an electrolytic cell for the reduction of alumina having a cavity lined with refractory material and adapted to contain a molten aluminum body and a less dense body of molten electrolyte containing dissolved alumina, an anode-cathode structure comprised of at least one prebake anode depending into said cavity and a refractory hard metal cathode assembly positioned in said cavity and adapted to be in electrical relationship with said anode through the medium of said electrolyte, said anode-cathode structure having at least one planar anode surface with a high degree of slope measured from a horizontal plane through the cell and in juxtaposition with a substantially parallel planar surface of said cathode assembly, the improvement comprising at least one anode-cathode structure disposed within the cell, said structure having a wedge-shaped replaceable cathode assembly having two cathode surfaces of refractory hard metal, each cathode surface having a high degree of slope and extending into the cell from a first apex and two prebake carbon anodes depending into the cell from a second apex, above said first apex, and in an angular, straddling relationship with said cathode surfaces, each anode having a surface adapted to be paired in essentially parallel planar relationship with a sloped cathode surface, means for spatially adjusting the distance between the paired anode and cathode surfaces, each of said cathode surfaces supported in operating position by clamping means located at least at one extremity thereof, said clamping means exerting a minimum of applied force on the cathode surface.

4,405,434

RANEY ALLOY COATED CATHODE FOR CHLOR-ALKALI CELLS

Thomas J. Gray, Guilford, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 179,150, Aug. 18, 1980, Pat. No. 4,370,361, which is a division of Ser. No. 25,153, Mar. 29, 1979, Pat. No. 4,240,895. This application Nov. 9, 1981, Ser. No. 338,383

Int. Cl.³ C25B *11/04*

U.S. Cl. 204—293 **3 Claims**

1. An improved low overvoltage electrode for use in a hydrogen evolution cathode in an electroytic cell, the electrode being of the type that has a Raney metal surface layer in electrical contact with a conductive metal core, wherein the improvement comprises: said electrode being a monolithic structure having a conductive core comprised of a nickel-molybdenum alloy, and wherein said Raney metal surface is an adherent Beta phase crystalline intermetallic layer derived from and integral with said core, said nickel being stabilized by a stabilizing amount of molybdenum in said crystalline structure.

4,405,435

APPARATUS FOR PERFORMING CONTINUOUS TREATMENT IN VACUUM

Hideki Tateishi, Yokohama; Tsuneaki Kamei, Kanagawa; Katsuo Abe, Yokosuka; Shigeru Kobayashi, Kawasaki; Susumu Aiuchi, Yokohama; Masashi Nakatsukasa, Tama; Nobuyuki Takahashi, Mitaka, and Ryuji Sugimoto, Sagamihara, all of Japan, assignors to Hitachi, Ltd. and Anelva Corporation, both of Tokyo, Japan

Filed Aug. 26, 1981, Ser. No. 296,314

Claims priority, application Japan, Aug. 27, 1980, 55-117069; Aug. 27, 1980, 55-117070; Oct. 3, 1980, 55-137802; Oct. 3, 1980, 55-137804

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—298 **12 Claims**

1. An apparatus for performing continuous treatment in vacuum, comprising:

(a) an inlet chamber having atmospheric leak means connected thereto and including therein a cassette elevator for moving upwardly and downwardly a cassette in which a number of shelves are arranged in a vertically spaced relation to receive a number of articles with predetermined spacing intervals defined thereamong, said inlet chamber being adapted to subject, collectively, the number of articles received in said cassette to evacuation treatment;

(b) a first intermediate chamber including therein a cassette elevator for moving upwardly and downwardly a cassette in which a number of shelves are arranged in a vertically shaped relation to receive the articles with predetermined spacing intervals defined thereamong, said first intermediate chamber being adapted to receive therein the number of articles in a manner that the articles are received in the cassette located therein;

(c) a vacuum treating chamber having at least one vacuum treating means mounted therein;

(d) a second intermediate chamber including therein a cassette elevator for moving upwardly and downwardly a cassette in which a number of shelves are arranged in a vertically spaced relation to receive the articles with predetermined spacing intervals defined thereamong, said second intermediate chamber being adapted to receive therein the number of articles in a manner that the articles are received in the cassette located therein;

(e) a withdrawing chamber including therein a cassette elevator for moving upwardly and downwardly a cassette

in which a number of shelves are arranged in a vertically spaced relation to receive said articles with predetermined spacing intervals defined thereamong, said withdrawing chamber being connected to atmospheric leak means;

(f) opening means provided between the adjacent chambers, said opening means being normally closed and opened only when said articles are passed therethrough one by one;

(g) conveyor means mounted in each of said chambers for horizontally conveying each of said articles as a single body through said opening means; and

(h) evacuating means connected to each of said chambers;

(i) said inlet chamber, first intermediate chamber, vacuum treating chamber, second intermediate chamber and withdrawing chamber being arranged successively in a direction in which the articles are successively transferred;

(j) the apparatus being constructed such that, while the number of articles in said inlet chamber and said withdrawing chamber are being subject, collectively, to the evacuation treatment, the articles received in the cassette in said first intermediate chamber are taken out successively one by one and horizontally conveyed by said conveyor means and the respective articles thus successively conveyed are successively subject to the vacuum treatment by said vacuum treating means and then conveyed by said conveyor means successively into the cassette in said second intermediate chamber.

4,405,436

SPUTTERING APPARATUS

Haruhiro Kobayashi, Zushi; Hidefumi Funaki, Hamura, and Takehiro Sakurai, Hino, all of Japan, assignors to Anelva Corporation, Fuchu, Japan

Filed Nov. 4, 1982, Ser. No. 439,044

Claims priority, application Japan, Jun. 16, 1982, 57-102260

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—298 **12 Claims**

1. In sputtering apparatus of the type wherein a cathode including a target made of ferromagnetic material and a substrate to be sputtered are disposed in an evacuated vessel in a spaced opposing relationship so as to sputter said target with ions to form a thin magnetic film on said substrate, the improvement which comprises a magnet, a shield covering a surface of said magnet facing said substrate, said shield being made of the same or similar material as said target, a metal block disposed to surround said magnet and covered by said shield and a backing plate made of ferromagnetic material which supports the magnet, the block and the shield, and a passage for passing cooling water to cool the above components.

4,405,437

PROCESS FOR COAL LIQUEFACTION EMPLOYING A SUPERIOR COAL LIQUEFACTION PROCESS SOLVENT

Conrad J. Kulik, Newark, and Linda Atherton, Los Altos, both of Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Jan. 11, 1982, Ser. No. 338,259

Int. Cl.³ C10G *1/06, 1/00*

U.S. Cl. 208—10 **16 Claims**

1. A process for coal liquefaction employing a superior coal liquefaction solvent comprising:

admixing a particulate coal with a distillable aromatic hydrocarbon solvent having a boiling temperature in the range of from about 400° F. to about 950° F. to form a slurry;

heating the slurry to a temperature level in the range of from about 700° F. to about 1000° F. in the presence of an hydrogen gas while maintaining the slurry at a pressure in the range of from about 1000 psig. to about 5000 psig. to effect a conversion of the coal in the slurry to coal liquefaction products comprising distillable and substantially nondistillable soluble coal products and insoluble coal products in admixture with the distillable aromatic hydrocarbon solvent;

distilling said coal liquefaction products to separate said intermingled distillable aromatic hydrocarbon solvent and distillable soluble coal products from the remainder;

admixing said remainder with a deashing solvent to form a prepared mixture;

separating said prepared mixture into a first light phase and a first heavy phase comprising insoluble coal products and some deashing solvent by maintaining the prepared mixture at a first temperature level in the range of from about 400° F. to about 700° F. and a pressure in the range of from about 600 psig. to about 1500 psig;

heating said first light phase to a second temperature level higher than the first temperature level while maintaining the pressure in the range of from about 600 psig. to about 1500 psig. to effect a separation of said first light phase into a second light phase comprising light soluble coal products and deashing solvent and a second heavy phase comprising heavy soluble coal products and some deashing solvent;

heating said second light phase to a third temperature level higher than the second temperature level while maintaining the pressure in the range of from about 600 psig. to about 1500 psig. to effect a separation of said second light phase into a third light phase and a third heavy phase comprising a fraction rich in basic nitrogen heterocyclic compounds;

admixing a portion of said fraction rich in basic nitrogen heterocyclic compounds with the intermingled distillable aromatic hydrocarbon solvent and distillable soluble coal products recovered from admixture with the coal liquefaction products to form a coal liquefaction solvent having a substantially nondistillable and distillable basic nitrogen heterocyclic compounds content of at least about 5 percent by weight of said coal liquefaction solvent;

contacting said coal liquefaction solvent with a particulate coal at a temperature in excess of about 700° F. in the presence of an hydrogen gas while maintaining a pressure in excess of about 1000 psig. for from about 10 minutes to 3 hours to effect a conversion of said particulate coal and said substantially nondistillable basic nitrogen heterocyclic compounds to coal liquefaction products and distillable basic nitrogen heterocyclic compounds having a boiling point of from about 400° to 1000° F.;

recovering said distillables boiling from 400° to 1000° F. that have been enriched in distillable basic nitrogen heterocyclic compounds; and

recycling said distillables as a coal liquefaction solvent.

4,405,438

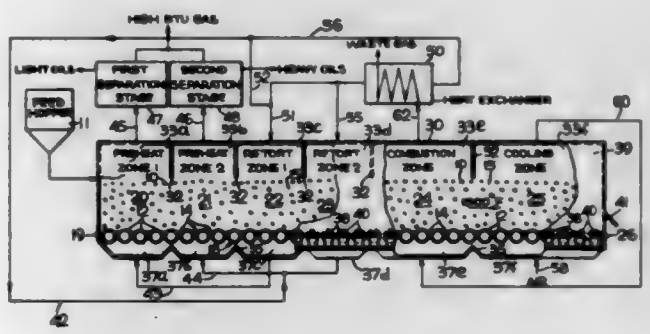
PROCESS FOR RECOVERY OF DIFFERENT WEIGHT FRACTIONS OF OIL FROM SHALE

Bobby P. Faulkner, New Berlin, and Michael H. Weinecke, Franklin, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 31, 1981, Ser. No. 336,262

Int. Cl.³ C10G *1/00*; C10B *53/00*

U.S. Cl. 208—11 R **15 Claims**



1. A method of retorting shale particles containing kerogen comprising the steps of

moving a bed of said particles along a generally horizontal path of travel,

passing through said bed at spaced apart points along said path of travel a plurality or discrete streams of nonoxidizing gas free of products of combustion heated to different temperatures sufficiently high to vaporize and educe different gaseous components from the kerogen in said particles as vapors into said gas streams, individually withdrawing said gas streams along said bed, and

separating said different components from said gas streams.

4,405,439

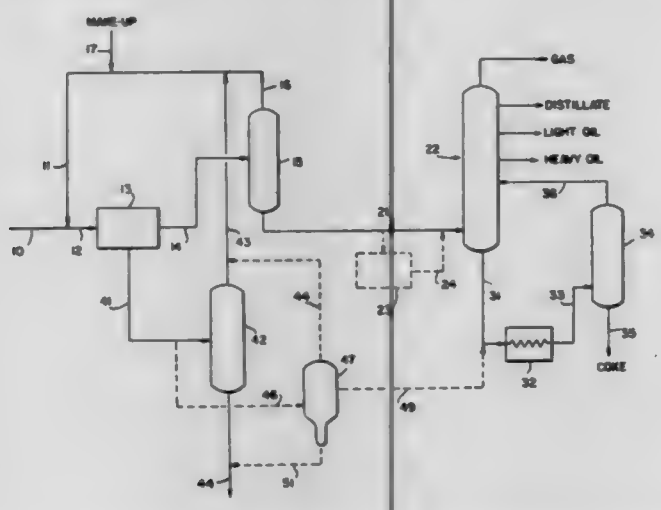
REMOVAL OF QUINOLINE INSOLUBLES FROM COAL DERIVED FRACTIONS

Andre A. Simone, Dover, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Division of Ser. No. 60,453, Jul. 25, 1979, which is a continuation of Ser. No. 819,772, Jul. 28, 1977, abandoned. This application Mar. 13, 1981, Ser. No. 243,484

Int. Cl.³ C10C *1/18, 3/08*

U.S. Cl. 208—45 **5 Claims**



1. A process for reducing the quinoline insoluble content of a coal derived binder pitch, comprising:

contacting a coal tar derived binder pitch feed with a liquid promoter which enhances and promotes the separation of quinoline insolubles, said liquid promoter being a hydrocarbon liquid having a 5-volume percent distillation temperature of at least about 250° F. and a 95-volume percent distillation temperature of at least about 350° F. and no greater than about 750° F., said liquid having a characterization factor of at least 9.75, said liquid promoter being added in an amount to provide a promoter liquid to binder pitch weight ratio of from 0.2:1 to 0.5:1 which is sufficient to recover by gravity settling an overflow stream containing a coal derived binder pitch having less than 0.5 weight percent of quinoline insolubles and in excess of 65% of the non-distillable quinoline soluble components present in the binder pitch feed;

recovering by gravity settling as an overflow stream a mixture of promoter liquid and a coal tar derived binder pitch fraction having less than 0.5 weight percent of quinoline insolubles and in excess of 65% of the non-distillable quinoline soluble components present in the binder pitch feed; and

separating said coal tar derived binder pitch fraction from the promoter liquid.

4,405,440

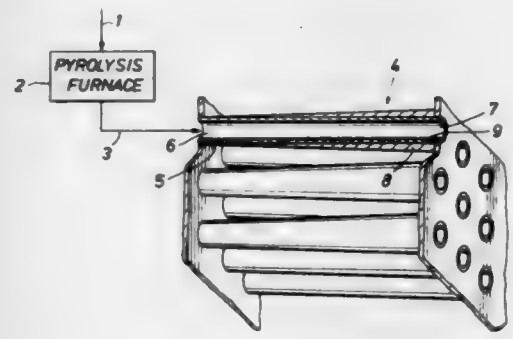
PROCESS FOR MAINTAINING THE TEMPERATURE OF A STEAM-MAKING EFFLUENT ABOVE THE DEW POINT

John E. Gwyn, Katy, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 22, 1982, Ser. No. 443,369

Int. Cl.³ C10G *9/16, 9/20*

U.S. Cl. 208—48 Q **3 Claims**



2. A process for the pyrolysis of a hydrocarbon liquid comprising,

heating the hydrocarbon liquid in a pyrolysis zone and producing an effluent having a temperature of from about 1400° F. to about 1700° F.;

quenching said effluent by passing said effluent into a quench zone wherein heat is transferred indirectly from the effluent through at least one heat exchange tube wall and through a solid heat transfer medium surrounding and in contact with the tube to water, the temperature of the wall being maintained above the dew point of the materials having a tendency to coke in the effluent partly by the provision of the solid heat transfer medium, the heat transfer medium increasing gradually in thickness from a point at or near the entry of the tube to a point at or near the exit of the tube.

4,405,441

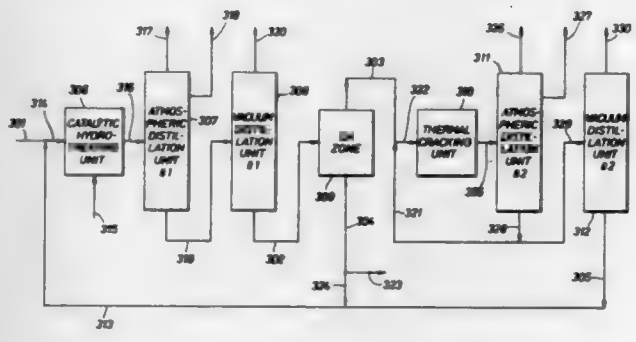
PROCESS FOR THE PREPARATION OF HYDROCARBON OIL DISTILLATES

Robert H. Van Dongen, and John R. Newsome, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 30, 1982, Ser. No. 429,780

Int. Cl.³ C10G *49/00*

U.S. Cl. 208—61 **9 Claims**



1. A process for the production of hydrocarbon oil distillates from a hydrocarbon mixture feed stream containing asphaltenes, said process comprising:

(a) catalytically hydrotreating said feed stream in a hydrotreating zone, therein producing a first product stream having a reduced asphaltenes content;

(b) fractionating said first product stream into one or more light distillate fractions and a first heavy distillate fraction;

(c) thermally cracking said first heavy distillate fraction and a deasphalted oil fraction in a thermal cracking zone into

a second product stream containing less than 20 percent by weight C_4 to C_1 hydrocarbons;

(d) fractionating said second product stream into one or more light distillate fractions and a second heavy distillate fraction;

(e) solvent deasphalting said second heavy distillate fraction in a deasphalting zone to obtain a deasphalted oil fraction and an asphaltic bitumen fraction; and

(f) routing at least a portion of said deasphalted oil fraction from step (e) to said thermal cracking zone.

4,405,442

PROCESS FOR CONVERTING HEAVY OILS OR PETROLEUM RESIDUES TO GASEOUS AND DISTILLABLE HYDROCARBONS

Andre Deschamps, Noisy le Roi; Sigismond Franckowiak, and Jean-Francois Le Page, both of Rueil-Malmaison, all of France, assignors to Institut Francais Du Petrole, Rueil-Malmaison, France

Filed Nov. 24, 1982, Ser. No. 444,268

Claims priority, application France, Nov. 24, 1981, 81 21940

Int. Cl.³ C10G *65/12, 47/20*

U.S. Cl. 208—107 **7 Claims**

1. A process of the conversion of heavy oil or oil residue to gaseous and distillable hydrocarbons, comprising the steps of:

(a) heating to 350°-450° C. a mixture of a heavy oil and/or oil residue charge with a first hydrogenated recycle oil fraction issued from step (g), then admixing it with a reducing gas containing hydrogen, carbon monoxide and steam, introduced at a temperature of at least 800° C. and produced at least partly in step (c), so as to bring the temperature of the resultant mixture charge+gas to a value ranging from 530° to 850° C., and maintaining said mixture within said temperature range, under a pressure of at least 20 bars, for a residence time between 0.1 and 60 seconds,

(b) admixing the resultant product from step (a) with a second hydrogenated recycle oil fraction issuing from step (g) and whose temperature is lower than 300° C., so as to lower the temperature of said product from said value ranging between 530° and 850° C. down to a value lower than 450° C., then directly contacting the resultant product with a gas stream containing hydrogen and steam, obtained from step (f), so as to vaporize at least 80% of the existing liquid at a temperature lower than 450° C., and separating the resultant gaseous phase from an unvaporized tar and/or coke fraction,

(c) treating the heavy fraction of tar and/or coke with oxygen and steam, under the conditions of oxyvapogasification of carbon to convert it at least partly to a reducing gas containing hydrogen, carbon monoxide and steam and feeding back at least a part of said reducing gas, whose temperature is at least 800° C., to step (a),

(d) passing the gaseous phase from step (b) containing hydrogen, carbon monoxide, carbon dioxide, steam and hydrocarbon vapors, over a hydrogenation catalyst, under hydrogenating conditions,

(e) fractionating the products from step (d) to a gaseous phase, an aqueous phase, a fraction of light liquid hydrocarbons normally distilling, at least in major part, below 250° C., and a fraction of heavy liquid hydrocarbons distilling, at least in major part, above 250° C. and whose atomic ratio H/C is from 1.2 to 1.7,

(f) treating the gaseous phase from step (e) so as to remove therefrom at least the major part of the carbon dioxide and hydrogen sulfide contained therein and recycling at least a part of it to step (b),

and

(g) recycling to steps (a) and (b) at least a part of the heavy fraction, distilling in major part above 250° C., obtained in step (e), to constitute at least a portion of said hydrogenated recycle oil streams.

4,405,443

PROCESS FOR REMOVING SULFUR OXIDES FROM A GAS

Ralph J. Bertolacini, Naperville; Eugene H. Hirschberg, Park Forest, and Frank S. Modica, Downers Grove, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 29, 1982, Ser. No. 363,269

Int. Cl.³ C10G *11/02*

U.S. Cl. 208—113 **22 Claims**

1. A process for removing sulfur oxides from a gas which comprises:

(a) absorbing sulfur oxides from the gas with an absorbent which comprises at least one inorganic oxide selected from the group consisting of the oxides of aluminum, magnesium, zinc, titanium, and calcium in association with an oxide of yttrium, at a temperature in the range from about 100° to about 900° C., wherein the ratio by weight of inorganic oxide or oxides to yttrium is from about 1 to about 1000; and

(b) removing said absorbed sulfur oxides from the absorbent as a sulfur-containing gas, which comprises hydrogen sulfide, by contacting said absorbent with a hydrocarbon in the presence of a hydrocarbon cracking catalyst at a temperature in the range from about 375° to about 900° C.

8. In a process for the cycling, fluidized catalytic cracking of a hydrocarbon feedstock containing from about 0.2 to about 6 weight percent sulfur as organic sulfur compounds wherein: (i) said feedstock is subjected to cracking in a reaction zone through contact with a particulate cracking catalyst at a temperature in the range from 430° to 700° C.; (ii) the cracking catalyst, which is deactivated by sulfur-containing coke deposits, is separated from the reaction zone effluent and passes to a stripping zone wherein volatile deposits are removed from said catalyst by contact with a stripping gas comprising steam at a temperature in the range from 430° to 700° C.; (iii) stripped catalyst is separated from stripping zone effluent and passes to a catalyst regeneration zone and non-stripped, sulfur-containing coke deposits are removed from the stripped catalyst by burning with an oxygen-containing regeneration gas at a temperature in the range from 565° to about 790° C., thereby forming sulfur oxide; and (iv) resulting catalyst is separated from regeneration zone effluent gas and recycled to the reaction zone; and wherein emissions of sulfur oxides in the regeneration zone effluent gas are reduced by the method which comprises:

(a) absorbing sulfur oxides in said regeneration zone with fluidizable particulate solids which comprise at least one inorganic oxide selected from the group consisting of the oxides of aluminum, magnesium, zinc, titanium and calcium in association with an oxide of yttrium, wherein said oxide of yttrium and inorganic oxide or oxides are present in the particulate solids in sufficient amount to effect the absorption of at least 50 percent of the sulfur oxides produced by the burning of sulfur-containing coke deposits in the regeneration zone and the ratio by weight of inorganic oxide or oxides to yttrium is from about 1 to about 1,000; and

(b) removing said absorbed sulfur oxides from the fluidizable particulate solids as a sufur-containing gas which comprises hydrogen sulfide and sulfur oxide by contacting said particulate solids with the hydrocarbon feedstock in said reaction zone.

4,405,444

METHOD AND MEANS FOR CHARGING FOAMED RESIDUAL OILS IN CONTACT WITH FLUID SOLID PARTICULATE MATERIAL

Oliver J. Zandona, Ashland, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Nov. 8, 1982, Ser. No. 439,972

Int. Cl.³ C10G *9/28, 11/00, 11/14*

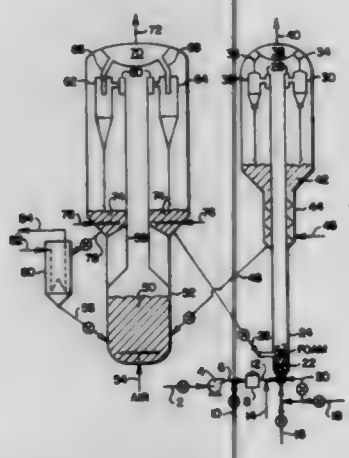
U.S. Cl. 208—113 **12 Claims**

1. A method for upgrading a high boiling portion of crude oil comprising metallo-organic and Conradson carbon produc-

ing compounds to form gasoline, lower and higher boiling hydrocarbon streams which comprises:

A. charging a high boiling portion of crude oil as a thick foam to the lower portion of a riser conversion zone;

B. charging fluidizable solid particle material at an elevated temperature in the range of 704° C. (1300° F.) up to about 815° C. (1500° F.) in intimate contact with said foamed oil feed to form a suspension thereof,



C. passing said formed suspension through a riser conversion zone under conditions of restricted residence time and temperature promoting desired conversion of the oil feed, and

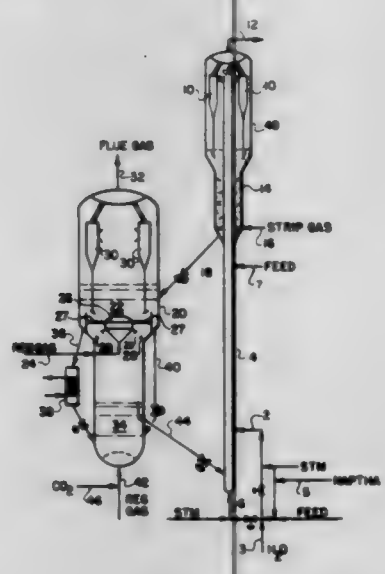
D. recovering a hydrocarbon conversion product separated from catalyst particles following traverse of said riser conversion zone.

4,405,445

HOMOGENIZATION OF WATER AND REDUCED CRUDE FOR CATALYTIC CRACKING

Stephen M. Kovach, and Edward B. Cornelius, both of Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 21, 1981, Ser. No. 295,335
Int. Cl.³ C10G *11/14*
U.S. Cl. 208—120 **28 Claims**



1. A Process for converting carbo-metallic oil feeds to lighter products comprising:

(a) providing a pre-heated carbo-metallic oil feed containing 650° F.+material, said 650° F.+material being characterized by a carbon residue on pyrolysis of at least 1 and containing at least about 4 ppm of Nickel Equivalents;

(b) introducing said feed into a homogenization zone together with liquid water at a weight ratio to feed of about 0.04 to about 0.25, and said zone being pressurized to a pressure in the range of about 100 to about 400 psig;

(c) forming in said zone a homogeneous mixture of said feed and said liquid water;

(d) atomizing said mixture into droplets having an average droplet size in the range of about 1,000 microns to about 100 microns, and introducing said droplets into the bottom of a progressive flow reaction zone for contact with crystalline zeolite cracking catalyst particles to form a suspension thereof at a cracking temperature above 900° F., passing the suspension through a progressive flow reaction zone for a vapor residence time in the range of about 0.5 to about 5 seconds and a pressure of about atmospheric up to about 100 lbs. per square inch gauge, said operating conditions causing oil feed conversion per pass in the range of about 50% to about 90% and depositing hydrocarbonaceous material on the catalyst equivalent to an amount of coke of 14% by weight based on fresh feed;

(e) separating said suspension into a catalyst phase and a vaporous product phase of said cracking at a temperature in the range of about 950° to about 1,200° F.;

(f) stripping vaporous hydrocarbon from said catalyst phase;

(g) regenerating said catalyst phase; and

(h) recycling regenerated catalyst at an elevated temperature to the riser zone.

4,405,446

PREPARATION OF BITUMEN FROTHS AND EMULSIONS FOR SEPARATION

Jan Kruyer, 9707-67A, Edmonton, Alberta, Canada T6B 1S3

Filed Mar. 15, 1982, Ser. No. 338,600
Int. Cl.³ C10G *33/06*
U.S. Cl. 208—188 **11 Claims**

1. A method for preparing a mixture of aqueous phase and oil phase for separation wherein one of said phases is dispersed and the other is continuous which comprises the steps of:

(a) introducing said mixture into a generally horizontal rotating drum containing a hydrocarbon diluent and free bodies that tumble in said drum, at least some of said free bodies having oleophilic surfaces that have affinity for the oil phase of said mixture,

(b) agitating said mixture, diluent and free bodies in said rotating drum such that said free bodies continually mix with said mixture and diluent causing said diluent to unite with the oil phase of said mixture and causing the dispersed phase volumes of said mixture to unite on the surface of the free bodies to which they are attracted and grow into larger sized volumes which are ultimately sloughed off the free bodies to which they have been attracted, and

(c) removing said diluted oil phase and said aqueous phase from said drum for subsequent separation into a separate oil phase product and a separate aqueous phase product.

4,405,447

METHOD FOR THE REMOVAL OF METAL FROM A HYDROCARBON SOLUTION CONTAINING METAL ALKARYL SULFONATE

Lee Hilfman, Mt. Prospect, and John G. Gatsis, Des Plaines, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Mar. 15, 1982, Ser. No. 358,074
Int. Cl.³ C10G *19/02*
U.S. Cl. 208—251 R **8 Claims**

1. A method for the removal of metal from a hydrocarbon solution containing metal alkaryl sulfonate, which method comprises:

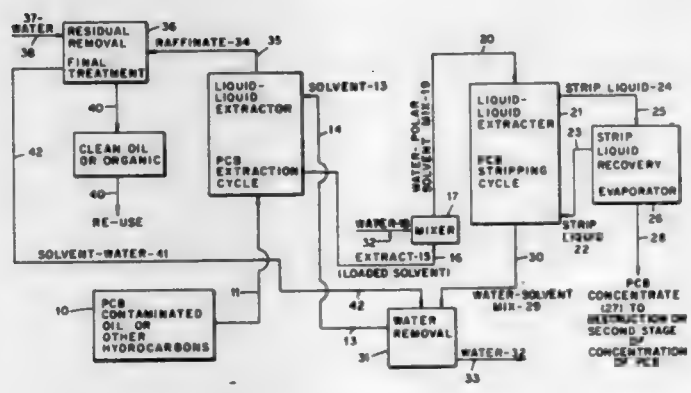
(a) contacting a hydrocarbon solution of metal alkaryl sulfonate with aqueous ammonia or aqueous ammonium salt solution; and

(b) recovering a hydrocarbon having a reduced metal concentration.

4,405,448
PROCESS FOR REMOVING HALOGENATED ALIPHATIC AND AROMATIC COMPOUNDS FROM PETROLEUM PRODUCTS

John M. Googin; John M. Napier, both of Oak Ridge, and Michael A. Travaglini, Oliver Springs, all of Tenn., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Mar. 31, 1982, Ser. No. 364,060
Int. Cl.[3] C10G *21/02, 21/12*
U.S. Cl. 208—262 8 Claims



1. A process for removing polychlorinated biphenyls from petroleum products by solvent extraction, comprising the steps of:

contacting a petroleum product containing a polychlorinated biphenyl with an adequate volume of a polar solvent selected from the group consisting of dimethyl formamide and furfural for extracting essentially all of the polychlorinated biphenyl frm the petroleum product;

separating the resulting extract phase of the polar solvent and extracted polychlorinated biphenyl from the raffinate phase;

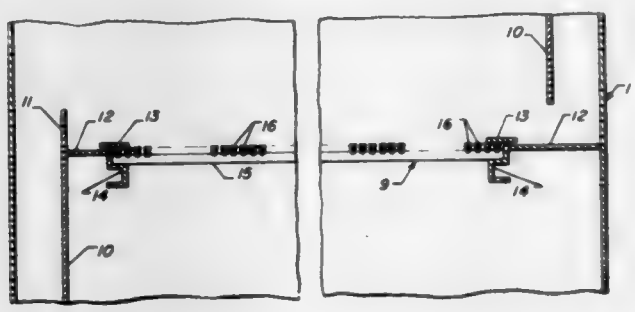
contacting the extract with an adequate volume of water or a polyhydroxy compound to extract the polychlorinated biphenyl from the polar solvent; and

recoverng polar solvent and water or polyhydroxy compound with essentially all of the polychlorinated biphenyl removed therefrom.

4,405,449
PROCESS FOR VAPOR-LIQUID CONTACTING AND FRACTIONAL DISTILLATION

John E. Trager, Arlington Heights, Ill., assignor to Procon International Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 182,355, Aug. 29, 1980, abandoned. This application Apr. 30, 1982, Ser. No. 373,593
Int. Cl.[3] C10G *7/00;* B01B *3/22*
U.S. Cl. 208—350 12 Claims



1. A vapor-liquid contacting process which comprises:

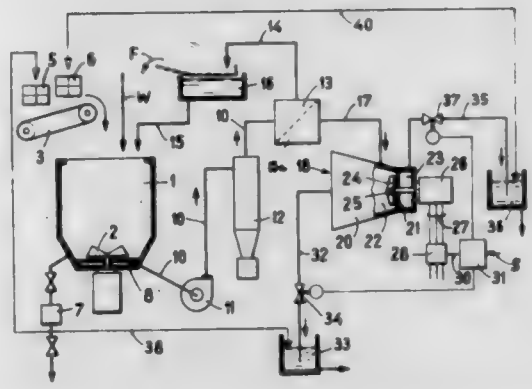
(a) passing a vapor stream upward through a liquid support plate located within a containment vessel having a substantially vertical inner surface, with the liquid support plate having an upper surface and an outer edge which is adjacent to at least a portion of the inner surface of the sidewall of the vapor containment vessel, the liquid support plate having a substantially horizontal vapor-liquid contacting area comprising a plurality of horizontal parallel members having an upper surface possessing a width of between about 0.15 and about 0.55 cm and being uniformly spaced apart by a distance between about 0.022 and about 0.080 cm, and with the parallel members being shaped such that the smallest distance between any two adjacent parallel members is located at the upper surface of the adjacent parallel members and the distance between the vertically sloping sides of adjacent parallel members is at least twice as large at the bottom of the adjacent parallel members as at the top of adjacent parallel members; and,

(b) passing a liquid stream across the vapor-liquid contacting area of the liquid support plate in a direction which is substantially perpendicular to the parallel members of the vapor-liquid contacting area while the liquid and the vapor streams are maintained at contacting conditions.

4,405,450
METHOD FOR FRACTIONATING FIBER STOCK OBTAINED FROM WASTE PAPER AND APPARATUS FOR THE PERFORMANCE OF THE AFORESAID METHOD

Harald Selder, Schlier, Fed. Rep. of Germany, assignor to Escher Wyss GmbH, Ravensburg, Württ, Fed. Rep. of Germany

Filed Sep. 9, 1981, Ser. No. 300,632
Claims priority, application Switzerland, Oct. 3, 1980, 7391/80
Int. Cl.[3] D21D *5/04;* B07B *1/04;* B03B *7/00*
U.S. Cl. 209—3 11 Claims



1. A method of fractionating fiber stock obtained from waste paper by means of a sieve device to which there is infed a cleaned fiber stock suspension freed of heavy and light contaminants and which contains longer and shorter stock fibers which are to be separated from one another, comprising the steps of:

utilizing as the sieve device a structure containing a housing with a sieve arranged therein having a size of its sieve holes in the order of 0.8 to 2.4 millimeters diameter;

providing the sieve device with a rotor driven by a drive motor and with said rotor containing arms;

moving said arms along the sieve;

providing a long fiber chamber at the side of the sieve confronting the rotor;

connecting an infeed line for the fiber stock suspension so as to flow communicate with said long fiber chamber;

directing a long fiber line out of the long fiber chamber into operative communication with a long fiber container;

forming behind the sieve a short fiber chamber;

leading a short fiber line out of the short fiber chamber into a short fiber container;

providing a throttle element in at least one of said lines; and

controlling said throttle element as a function of the viscosity of the fiber stock suspension located forwardly of the sieve and within the long fiber chamber and thus the power consumption of the rotor in a manner such that

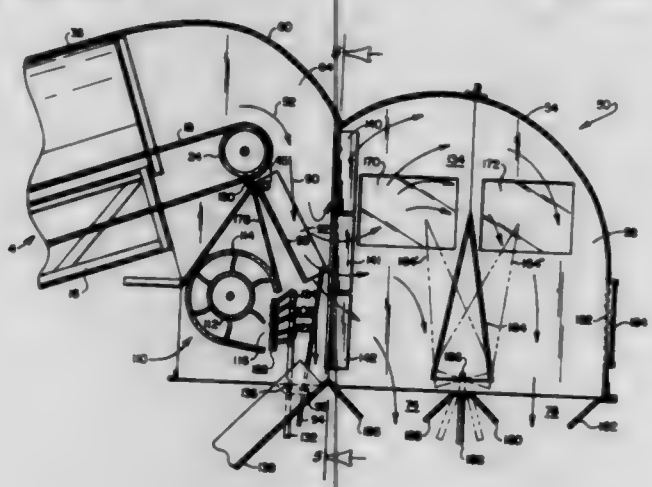
with increasing viscosity and increasing power consumption of the rotor the flow in the long fiber line leading from the long fiber chamber is intensified and with decreasing viscosity and decreasing power consumption of the rotor the flow in the long fiber line leading from the long fiber chamber is diminished.

4,405,451

AIR SEPARATION APPARATUS AND SYSTEM

Walter C. Roman, Worthington, Ohio, assignor to BancOhio National Bank, Columbus, Ohio

Filed Oct. 20, 1981, Ser. No. 313,160
Int. Cl.³ B07B 4/02
U.S. Cl. 209—136 **31 Claims**



1. Apparatus for carrying out the air separation of waste having plastic categorized materials, biodegradable categorized materials and metal and glass categorized materials said waste being continuously transported by a conveyor to a terminus thereof at an elevated location to fall therefrom as a particle stream, comprising:

a housing having an input top wall portion extending over said conveyor terminus and a pair of mutually spaced first sidewall portions extending from said input top wall portion substantially adjacent said falling particle stream, said housing having plenum wall components and including an arcuate top wall portion extending from said input top wall portion substantially at said terminus level and coupled with a spaced pair of second sidewall portions to define a plenum;

fan means for producing a stream of air at an outlet thereof, said outlet being positioned within said housing intermediate said first sidewall portions and spaced from and below said terminus;

airstream guidance means for directing said fan means stream of air along a select direction toward said plenum substantially upwardly into lifting confrontation with said particle stream and toward said plenum arcuate top wall portion;

means positioned intermediate said fan means outlet and said conveyor for restricting air flow therebetween;

first outlet means positioned below the said level of said fan means and in substantial alignment with said terminus for receiving said metal and glass categorized materials;

second outlet means located against said first outlet means and beneath said plenum for receiving said biodegradable categorized materials;

third outlet means located adjacent said second outlet means and beneath said plenum for receiving said plastic categorized material;

deflector means mounted within said housing plenum intermediate said second and third outlet means and extending toward said arcuate top wall portion for selectively adjusting the flow of air within said plenum and deflecting said biodegradable categorized material toward said second outlet means; and

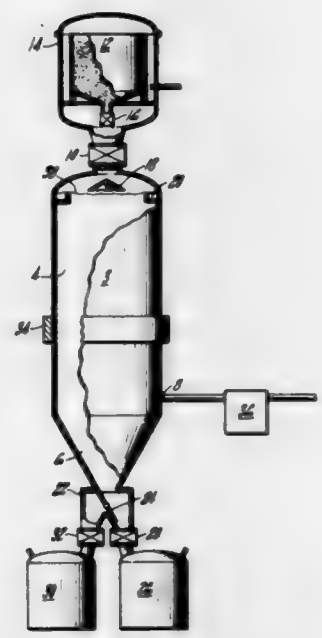
means defining openings within said plenum wall components for effecting air back pressure dissipation.

4,405,452

METHOD FOR SEPARATING PARTICULATE MATERIALS

J. Michael Wentzell, Remsen, N.Y., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 753,160, Dec. 21, 1976, abandoned.
This application Nov. 22, 1978, Ser. No. 963,074
Int. Cl.³ B03B 5/44
U.S. Cl. 209—172 **3 Claims**



1. In separating contaminant and oxide particulate materials of a density of about 2.3 gm/cc or greater from a particulate material which is metal of a density of about 8 gm/cc, the steps of:

(a) providing as a separation medium a substance which is a gas under ambient temperature and pressure, selected from the inert gas group consisting of nitrogen, neon, argon, krypton, or mixtures thereof, being substantially nonreactive in the liquid or gaseous state with said metal particulate;

(b) containing the separation medium in a pressure vessel and maintaining a pressure and temperature within the vessel which causes the separation medium to be a liquid;

(c) placing the particulate material in the medium within the pressure vessel to separate the particulates as the lighter materials float and the heavier materials sink therein;

(d) removing the separated particulate materials from the pressure vessel,

(e) allowing any separation medium residue on the particulates to volatilize, the materials thereupon being clean and free of any residue or contamination as a result of the nonreactivity and gaseous nature of said medium.

4,405,453

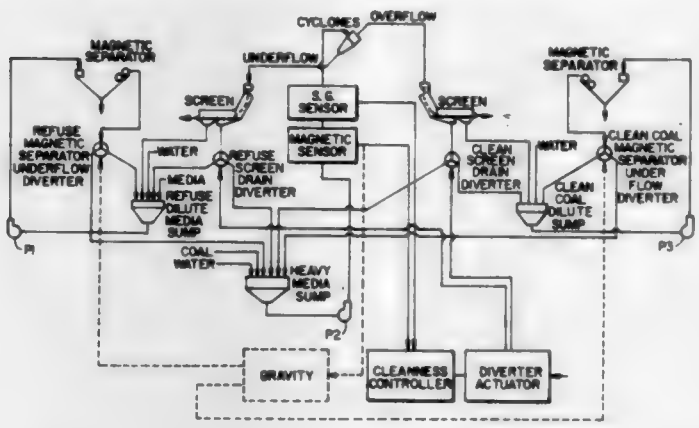
PROCESS FOR CLEANING UNDESLIMED COAL

Charles H. Wells, Portola Valley, Calif., assignor to Envirotech Corporation

Filed Feb. 23, 1982, Ser. No. 351,384
Int. Cl.³ B03B 5/34
U.S. Cl. 209—172.5 **2 Claims**

1. An improved process for cleaning a coal mixture to remove ash particles and slime particles therefrom, wherein the mixture is fed to a cyclone to separate the mixture into an overflow fraction containing coal mixture and slime particles and an underflow fraction including ash particles and slime particles, and wherein a magnetic heavy media suspension such as magnetite and water is mixed with the coal mixture to enhance separation within the cyclone, the improvement comprising sensing the bulk specific gravity of the feed mixture

containing the coal and heavy media suspension being fed to the cyclone, sensing the percentage magnetic material in said feed mixture, deriving a set-point value of the cross-correlation function of sensed values of the percentage of magnetic materials and the specific gravity at points in time immediately subsequent to start-up, continuously separating heavy media suspension from the underflow fraction from the cyclone, continuously mixing a portion of separated suspension with further coal mixture to be cleaned, generally continuously determining the value of cross-correlation function of the feed mixture containing the separated suspension, and reducing the portion of the separated suspension mixed with further coal when the subsequently determined value is less than the set-point value to thereby correspondingly reduce the slime content of the feed mixture.



4,405,454

PROCESS AND APPARATUS FOR THE DEWATERING OF SOLIDS IN SUSPENSION

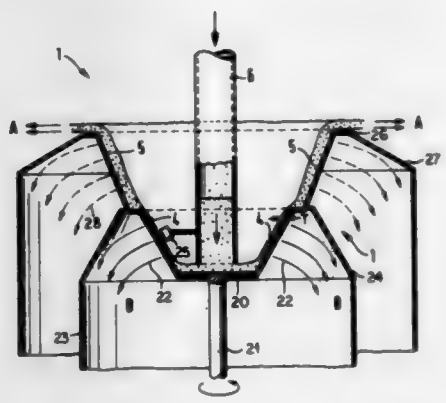
Günther Hultsch, Oberschleissheim; Franz Alstetter, Karlsfeld, and Uwe Breuer, Grobenzell, all of Fed. Rep. of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Apr. 30, 1981, Ser. No. 259,097

Claims priority, application Fed. Rep. of Germany, May 28, 1980, 3020211

Int. Cl.³ B01D *37/00*; B04B *3/00*

U.S. Cl. 209—279 **4 Claims**



1. In an apparatus for dewatering a slurry containing solids in a particle size range of 0.05 mm to 2.0 mm and in which the solids are classified into a fine fraction and a coarse fraction, the fine fraction is filtered, and the coarse fraction is dewatered, the improvement which comprises:

a centrifuge drum formed with at least one first sieve surface inclined so as to enable a thin-layer classification zone of solids to form thereon in a thickness of about 5 mm, and a second sieve surface outwardly of said first sieve surface and receiving said coarse fraction therefrom;

means for maintaining said layer at said thickness on said first sieve surface;

means for feeding said slurry onto said first surface whereby particles of said fine fraction pass through perforations in said first surface thereby classifying the solids into said coarse and fine fractions; and

means for separately collecting said fine fraction and water from said first surface, water passing through perforations in said second surface, and the coarse fraction following dewatering on said second surface.

4,405,455

ADSORPTION SEPARATION APPARATUS

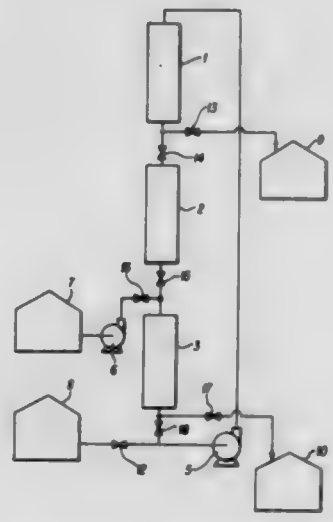
Masao Ando, Musashino; Tetsuya Hirota, Fujisawa, and Katashi Shioda, Machida, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Division of Ser. No. 90,133, Nov. 1, 1979, Pat. No. 4,332,623. This application Jan. 6, 1982, Ser. No. 337,522

Claims priority, application Japan, Nov. 2, 1978, 53-135312; Dec. 28, 1978, 53-163720; Mar. 13, 1979, 54-29126

Int. Cl.³ B01D *15/00*

U.S. Cl. 210—191 **8 Claims**



1. An adsorption separator consisting of first to third three packed sections wherein an adsorbent is packed and which are connected in series, the front end of the first packed section being communicated with the rear end of the third packed section through a fluid passage so that a fluid is able to be circulated through the respective packed sections, at least one pump mounted in the circulating system;

a first valve means located between said first and second packed sections, whereby fluid flow between said first and second packed sections can be controlled;

a second valve means located between said second and third sections, whereby fluid flow between said second and third packed sections can be controlled;

an inlet port for a starting fluid which is located between said second valve means and the front end of said third section, said inlet port being connected to a source of starting fluid through a third valve means whereby the flow of said starting fluid may be controlled;

a port for introducing a desorbent fluid into the separator which is located between the rear end of the third packed section and the front end of the first packed section, said port being connected to a source of desorbent fluid through a fourth valve means whereby the flow of said desorbent fluid may be controlled;

a first port for withdrawing a first fluid from the separator which is located between the rear end of the first packed section and said first valve means, said first port being connected to a first fluid receptacle through a fifth valve means whereby the flow of said first fluid may be controlled;

a second port for withdrawing a second fluid from the separator which is located between the rear end of the third packed section and the front end of the first packed section and upstream of the port for introducing a desorbent fluid and a sixth valve means is provided in the fluid passage between the said second port and said port for

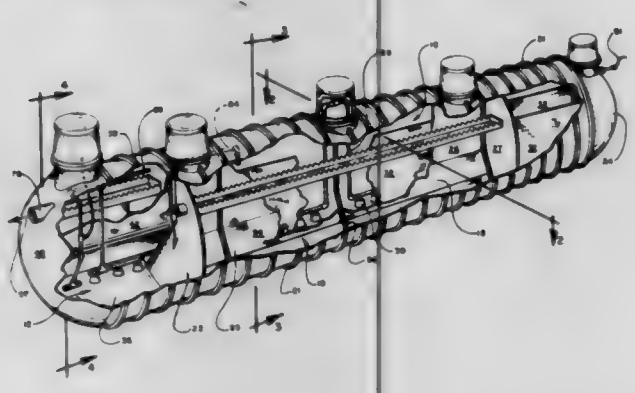
introducing a desorbent fluid to prevent the backward flow of fluid in said fluid passage, said second port being connected to a second fluid receptacle through a seventh valve means whereby the flow of said second fluid may be controlled.

4,405,456

CLARIFIER APPARATUS

Jay Kinzer, Denver, and John W. Clingman, Aurora, both of Colo., assignors to Sanilogical Corporation, Denver, Colo.

Filed Aug. 25, 1981, Ser. No. 296,019
Int. Cl.³ C02F *3/20*
U.S. Cl. 210—195.4 **6 Claims**



1. A clarifier apparatus for use in connection with a sewage treatment system to separate biological solids from mixed liquor in the system to produce a clarified effluent, comprising:

a sewage treatment system fluidly communicating with said clarifier

first tank means defining a first quiescent zone, inlet means for supplying mixed liquor from the sewage treatment system to the first quiescent zone,

second tank means defining a chamber,

baffle means in the chamber for separating the chamber into an aeration zone and a second quiescent zone,

gas supply means for supplying an oxygen containing gas to a lower portion of the aeration zone,

first fluid communication means for withdrawing partially clarified effluent from an upper portion of the first quiescent zone and supplying the partially clarified effluent to the aeration zone in the treatment chamber of the second tank means,

second fluid communication means providing fluid communication between the aeration zone and the second quiescent zone,

and outlet means for withdrawing clarified effluent from an upper portion of the second quiescent zone.

4,405,457

PLATE-TYPE FILTER PRESS WITH A CLEANING TRUCK

Oswald Busse, and Hugo Klesper, both of Aarbergen, Fed. Rep. of Germany, assignors to Passavant-Werke AG & Co. KG, Fed. Rep. of Germany

Filed Nov. 9, 1981, Ser. No. 319,141
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1980, 3043821
Int. Cl.³ B01D *25/12*
U.S. Cl. 210—225 **8 Claims**

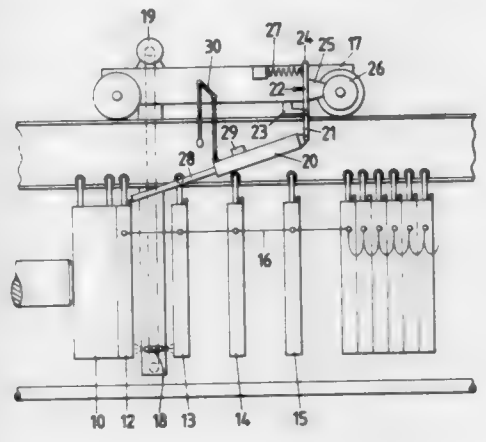
1. In a plate-type filter press having a plurality of slidable filter plates transportable longitudinally of the filter press toward an open side of the press and in an opposite direction toward a closed side of the press,

(a) distance limiting element means for connecting adjacent filter plates to each other and for providing that transport of each filter plate to said open side of the press moves the next filter plate into an intermediate position for cleaning,

(b) a self-propelled cleaning truck means mounted for movement along a guide member in the direction of transport of the filter plates,

(c) an extensible drive and pusher carried by said cleaning truck means with said pusher being extensible through a stroke by said drive in the direction of transport of said filter plates selectively into and out of engagement with each filter plate to be transported toward said open side of the press,

(d) a releasable brake means carried by said cleaning truck means for holding said cleaning truck means in a fixed position while said brake means is in an engaged position



and for permitting movement of said cleaning truck means upon release of said brake means,

(e) means urging said brake means toward said engaged position for holding said cleaning truck means in said fixed position during transport of each said filter plate toward said open side of the press and during retraction of said pusher, and

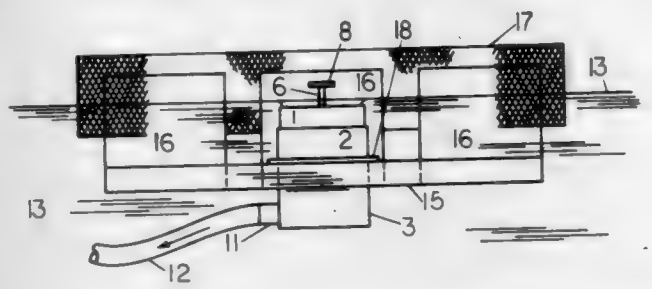
(f) brake release means operatively connecting said drive and pusher to said brake means for releasing said brake means in response to further extension of said pusher after completing the transport of each said filter plate to said open side of the press.

4,405,458

CONTINUOUS FLOW, VARIABLE CAPACITY SELF-COMPENSATING FLOATING WEIR

Leo A. McHugh, Jr., 2044 Brownsville Rd., Pittsburgh, Pa. 15210

Filed Apr. 29, 1980, Ser. No. 144,967
Int. Cl.³ E02B *15/04*
U.S. Cl. 210—242.3 **4 Claims**



1. A continuous flow, variable capacity self-compensating, floating weir apparatus for use in both fixed and mobile, free floating applications for separating liquids of different densities, for removing surface borne debris, films, scums and similar types of contaminants from liquid bodies in tanks, settlement ponds, manufacturing and waste treatment processes, rivers, lakes and other large bodies of water, and for regulating the transfer flow of liquid from one body to another comprising:

a. a float supported, vertically moveable weir collar which forms a positively bouyant weir having a weir surface for control of liquid flow,

b. a guide collar fitted to nest with, but unattached to, said

moveable weir collar to control orientation and guide movement of said moveable weir collar, said guide collar in conjunction with said weir collar forming a continuous combined liquid seal and lubricating film for restriction of bypass liquid flow and for free, unrestrained movement of said weir collar;

c. guide means for maintaining vertical, radial, rotational and central alignment of said weir collar within said guide collar,

d. means for vertically adjusting and controlling the elevation of said weir collar,

e. means for limiting the elevation of said weir collar and for retaining said weir collar within said guide collar,

f. flange means being arranged to provide strength, support, and alignment of said guide collar,

g. and a sump with a discharge connection for collecting and discharging liquid flowing over said weir surface, said weir collar being supported by and responsive to the liquid in said sump.

4,405,459

OILY WATER SEPARATOR

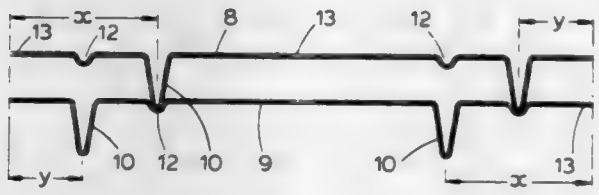
Peter B. Smith, 11, Leverton Gate, Broome Manor, Swindon, Wiltshire, England

Continuation-in-part of Ser. No. 199,466, Aug. 19, 1980, abandoned. This application Feb. 1, 1982, Ser. No. 344,680

Claims priority, application United Kingdom, Dec. 19, 1978, 49120/78

Int. Cl.³ B01D *21/00*

U.S. Cl. 210—521 **10 Claims**



1. An oil/water separator which has a stack of parallel plates between which an oil/water mixture is constrained to flow, the plates being separated in said stack one from the other by spacing means provided thereon, the spacing means defining alternative first and second predetermined spacings, either of which may be selected between any two adjacent plates of the stack.

4,405,460

PROCESS AND DEVICE FOR SEPARATING MIXTURES OF MATTER IN THE LIQUID PHASE

Dieter Disselbeck, Bad Soden am Taunus, and Klaus Speier, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 19, 1981, Ser. No. 265,343

Claims priority, application Fed. Rep. of Germany, May 21, 1980, 3019355

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—640 **5 Claims**

1. In a device for separating mixtures of matter by the use of radiant solar energy, the matter being in the liquid phase, in the form of a flat, hollow body having an upper wall and a lower wall, and being constructed of a material that is liquid-tight; comprising a lower cavity having a lower wall constituted by the body lower wall and a liquid-tight upper wall; a middle cavity having as a lower wall thereof the upper wall of the lower cavity and an upper wall which is liquid-tight but vapor-permeable; an upper cavity having as a lower wall thereof the vapor-permeable upper wall of the middle cavity and as an upper wall thereof the body upper wall; a fluid inlet communicating with the lower cavity; a residue outlet communicating with the upper cavity; a product outlet communicating with the second cavity; and a bridging conduit bridging said middle cavity and communicating with said upper and lower cavities; the improvement wherein the upper wall of the upper cavity includes means for absorbing solar radiation; and said upper and lower walls of said upper and lower cavities are formed of fabric, with the upper and lower walls of each of said upper and lower cavities being joined by spacers in the form of filaments.

4,405,461

CONTROL OF SILICA SCALING IN INDUSTRIAL PROCESSES

Alfred N. Rogers, 5333 Mallard Dr., Pleasanton, Calif. 94566

Filed Mar. 26, 1982, Ser. No. 362,225

Int. Cl.³ C02F *5/12*

U.S. Cl. 210—698 **12 Claims**

1. A method of controlling silica scaling in lines and plant equipment through which silica-containing water or brine flows comprising: providing an additive formed from

$$\left[\begin{matrix} R^1 \\ \diagdown \\ N-(CH_2)_m \\ \diagup \\ R^2 \end{matrix} \right] H_p$$

where m=0 or 1, n=1 or 2 such that m=1 when n=2, p=0 or 1 such that p+n=2, R^1 and R^2 are the same or different and are selected from the group consisting of furfuryl and a saturated or unsaturated hydrocarbon radical substituted with one or more members selected from hydroxy or a hydrohalide thereof; and directing the additive into silica-containing water or brine.

4,405,462

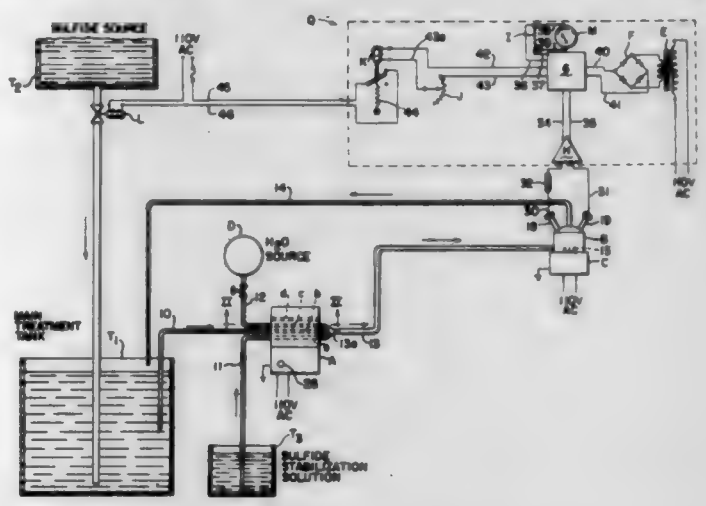
AUTOMATIC REVITALIZATION OF SULFIDE PROCESSING AND TREATMENT SOLUTIONS

David R. Kamperman, Harmony, Pa., assignor to Lancy International, Inc., Zelienople, Pa.

Filed Aug. 9, 1982, Ser. No. 406,561

Int. Cl.³ C02B *1/20*

U.S. Cl. 210—709 **16 Claims**



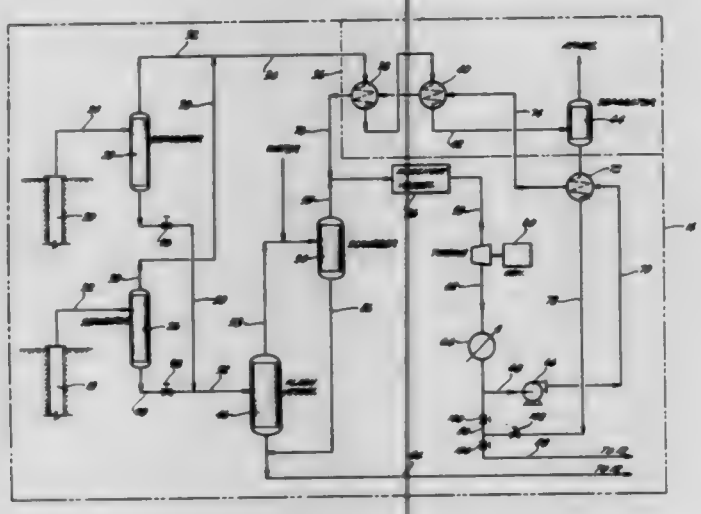
1. A process for constantly maintaining a desired concentration of soluble sulfides in a processing solution such as in an effluent or rinse water containing heavy metal contaminants to be removed which comprises, continuously withdrawing a specimen solution from the sulfide processing solution and mixing it with a sulfide stabilizing solution to provide a mixed specimen solution, employing the mixed specimen solution to proportionately energize a pair of electrodes in accordance with the soluble sulfide content of the mixed specimen solution, and employing the energy thus generated to controllably supply sulfide regenerating solution to the processing solution to maintain the soluble sulfide content thereof.

4,405,463

PROCESS FOR STABILIZING SILICA-RICH GEOTHERMAL BRINE TO PREVENT SILICA SCALING

John W. Jost, Santa Ana; William C. Lieffers, Fullerton, and Olin D. Whitesearver, Indian Wells, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 4, 1981, Ser. No. 318,127
Int. Cl.³ C02F *1/52, 1/74*
U.S. Cl. 210—712 35 Claims



1. A process for removing dissolved silica from a geothermal aqueous liquid also containing ferrous ions and having a pH of about 4.5 to 6.0, which comprises the steps of:

(a) providing a controlled supply of ferric ions, including containing said ferrous ions in said geothermal aqueous liquid with an oxidizing agent so as to oxidize at least a portion of said ferrous ions to ferric ions;

(b) allowing at least some of said ferric ions to combine with dissolved silica in said geothermal aqueous liquid so as to lower the pH of said geothermal aqueous liquid and form insoluble, iron-rich siliceous materials; and

(c) separating said insoluble, iron-rich siliceous materials from said geothermal aqueous liquid so as to form a stabilized geothermal aqueous liquid having a reduced silica content and a pH of about 3 to 5.

23. The silica removal process defined in claims 1 or 18 wherein said step of contacting said ferrous ions with an oxidizing agent results in forming hydrogen ions, thereby causing pH of said stabilized geothermal brine to be lower than pH of said untreated geothermal brine wherein said process further comprises the step of reducing the pH of said untreated geothermal brine by combining a portion of said stabilized geothermal brine with said untreated geothermal brine.

4,405,464

PROCESS FOR THE REMOVAL OF SELENIUM FROM AQUEOUS SYSTEMS

Roger A. Baldwin, Warr Acres; John C. Stauter, and Donald L. Terrell, both of Edmond, all of Okla., assignors to Kerr-McGee Nuclear Corporation, Oklahoma City, Okla.

Filed Aug. 31, 1981, Ser. No. 297,634
Int. Cl.³ C02F *1/52, 1/70*
U.S. Cl. 210—717 8 Claims

1. A process comprising:

providing an aqueous solution containing selenium ions in the Se(VI) oxidation state;

providing a quantity of metallic iron;

adjusting the pH level of said aqueous solution to a level below about 6.0;

admixing said aqueous solution and metallic iron to reduce at least a portion of said selenium ions in the Se(VI) oxidation state to at least the Se(IV) oxidation state and oxidize a portion of said metallic iron and dissolve said oxidized portion of said metallic iron in said aqueous solution;

hydrolyzing at least a portion of said dissolved oxidized iron to form ferric hydroxide that precipitates from said aqueous solution; and

separating at least a portion of said aqueous solution from at least a portion of said precipitated ferric hydroxide, said separated aqueous solution having a reduced concentration of selenium ions in the Se(VI) and lower oxidation states.

4,405,465

PROCESS FOR THE REMOVAL OF CHLORATE AND HYPOCHLORITE FROM SPENT ALKALI METAL CHLORIDE BRINES

Sanders H. Moore, and Ronald L. Dotson, both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Jun. 30, 1982, Ser. No. 393,578
Int. Cl.³ C25B *1/34*
U.S. Cl. 210—757 10 Claims

1. A process for reducing the concentration of oxyhalogen impurities in an alkali metal halide brine recovered from an electrolytic cell which comprises:

(a) circulating the alkali metal halide brine to a treatment zone outside of said electrolytic cell; and

(b) acidifying said alkali metal halide brine to maintain a pH in the range of from about 0 to about 2;

(c) admixing oxalic acid with said alkali metal halide brine to produce a purified brine having a substantially reduced concentration of said oxyhalogen impurities; and

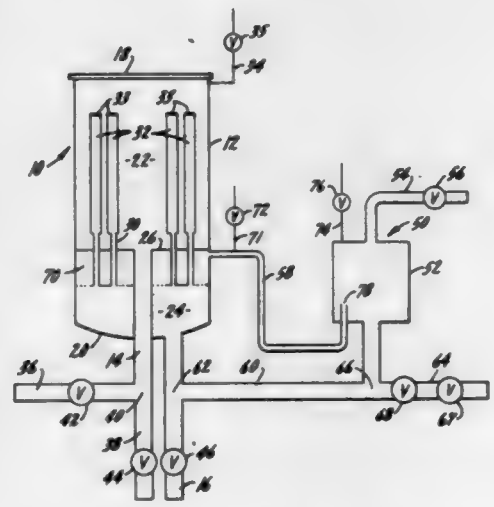
(d) recovering said purified brine from said treatment zone.

4,405,466

BACKWASH METHOD AND APPARATUS

Joseph F. Giannelli, Glen Rock; George C. Flynn, Chester, and Leo F. Ryan, Bridgewater, all of N.J., assignors to Ecodyne Corporation, Chicago, Ill.

Filed May 3, 1982, Ser. No. 374,350
Int. Cl.³ B01D *29/38*
U.S. Cl. 210—798 11 Claims



1. A method for cleaning a plurality of filter elements having inner cores vertically positioned within a filter vessel which has a tube sheet dividing the filter vessel into an upper filter compartment and a lower plenum compartment, said filter elements being positioned within said filter compartment and having fittings which extend through said tube sheet downwardly into said plenum compartment, said method comprising: draining at least a portion of the liquid from the filter vessel, establishing a low flow rate of backwash liquid through a backwash inlet line into the plenum compartment continuing through the filter elements; and intermittently directing gas under pressure through a gas supply line in communication with an external vessel containing a volume of cleaning liquid for forcing a predetermined volume of the cleaning liquid from the external vessel under gas pressure at a high flow rate into the plenum compartment and through the filter elements such that the total volume of cleaning liquid directed through the

filter elements during each cycle is in the range of 1.0 to 3.0 times the total filter element core void volume.

8. Apparatus for filtering liquids comprising: a filter vessel; a tube sheet dividing said vessel into an upper filter compartment and a lower plenum compartment; a plurality of filter element fittings extending through said tube sheet and downwardly into said plenum compartment; a plurality of filter elements vertically mounted on said fittings in said filter compartment; an external vessel positioned outside of said filter vessel at an elevation at or below the elevation of the tops of said fittings; a gas supply line in communication with an upper portion of said external vessel; a backwash liquid inlet line in communication with a lower portion of said plenum compartment and a lower portion of said external vessel; and a gas surge line in communication with a lower portion of said external vessel and an upper portion of said plenum compartment.

4,405,467

SUBLIMABLE COMPOSITIONS AND PROCESS FOR PRODUCING MOLDINGS

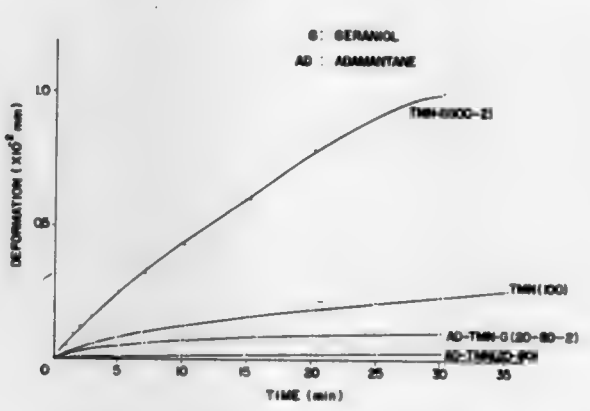
Haruhito Sato; Hiroshi Ichikawa; Hiroshi Hayashi, and Konomu Kurisaki, all of Sodegaura, Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Division of Ser. No. 862,624, Dec. 20, 1977, Pat. No. 4,301,043. This application Jul. 30, 1981, Ser. No. 288,410

Claims priority, application Japan, Dec. 25, 1976, 51-155651; Dec. 25, 1976, 51-155653; May 21, 1977, 52-58220; May 24, 1977, 52-59359; Jun. 7, 1977, 52-66298; Oct. 17, 1977, 52-123460

Int. Cl.³ C09K *3/00*; A61K *7/46*

U.S. Cl. 252—1 **11 Claims**



1. A process for producing a sublimable molded article which comprises melt-molding a composition comprising (i) adamantane and (ii) at least one compound selected from the group consisting of endo-trimethylenenorbornane and cyclododecane.

9. A sublimable multi-layer molded article comprising (i) adamantane; (ii) at least one compound selected from the group consisting of endo-trimethylenenorbornane and cyclododecane; and (iii) an effective component which is at least one compound selected from the group consisting of α-ionone, borneol, camphor, linalool, geraniol, cumarin, nerolin, citronillol, morpholine, thymol, dicyclohexylamine and diisopropylamine, wherein the ratio of the effective component contained in each layer is successively increased from the outer layer to the inside or inner layer.

4,405,468

PLACID SHALE WEIGHTING AGENT FOR WATER BASE DRILLING MUD

R. P. Haun, Jr., P.O. Box 712, Eastland, Tex. 76448

Filed Mar. 12, 1981, Ser. No. 243,032

Int. Cl.³ C09K *7/04*

U.S. Cl. 252—8.5 B **2 Claims**

1. A drilling mud comprising a slurry mixture of water, a gel viscosifier, and a dispersed clay as a weighting agent consisting essentially of chlorite, illite and kaolinite mineral components, said drilling mud having a solids concentration in the range of 1.5% to 7.27%, said mineral components being present in the following amounts:

Mineral Component	Approximate % By Weight
chlorite	7%
illite	62%
kaolinite	31%

and said clay being characterized by the following analysis:

Component	Approximate % By Weight	Approximate % By Weight (volatile free)
Silicon dioxide, SiO_2	65.07%	69.32%
Iron oxide, Fe_2O_3	5.78%	6.15%
Aluminum oxide, Al_2O_3	16.75%	17.24%
Calcium oxide, CaO	1.12%	1.19%
Magnesium oxide, MgO	2.08%	2.22%
Sulfur troxide, SO_3	1.29%	1.37%
Sodium oxide, Na_2O	0.42%	0.47%
Potassium oxide, K_2O	1.36%	1.44%
Volatiles	6.13%	

4,405,469

GREASES PREPARED FROM ORGANOSILOXANES WITH SIC-BONDED GROUPS

Walter Hafner, Furth; Erich Markl, Munich; Ludwig Elbel, Munich; Gerhard Kreis, Munich; Dietrich Samrowski, Munich; Manfred Wick, Schliersee; Bernward Deubzer, Burghausen, and Wilhelm Friedrich, Munich, all of Fed. Rep. of Germany, assignors to Consortium für Elektrochemische Ind. GmbH, Munich, Fed. Rep. of Germany

Division of Ser. No. 68,114, Aug. 20, 1979, Pat. No. 4,322,473, which is a division of Ser. No. 15,551, Feb. 26, 1979, Pat. No. 4,207,246. This application Jul. 27, 1981, Ser. No. 286,798

Int. Cl.³ C10M *3/02*

U.S. Cl. 252—28 **4 Claims**

1. A lubricating composition comprising an organosiloxane having at least one unit of the formula

$$ROOCCH_2CH(COOR)CH_2CHR'CH_2Si(CH_3)_aO\ \frac{3-a}{2}$$

in which R is selected from the group consisting of monovalent hydrocarbon radicals having from 1 to 12 carbon atoms which are free of aliphatic unsaturation and monovalent hydrocarbon radicals having one ether oxygen atom, R′ is selected from the group consisting of hydrogen and a CH_3 radical and a is 0, 1 or 2, and sufficient thickening agent to form a grease.

4. The lubricating composition of claim 1, wherein the thickening agent is selected from the group consisting of polytetrafluoroethylene, polyurea, phthalocyanine, clay, silicon dioxide and a metallic soap.

4,405,470

PHOSPHORODITHIOATE PRODUCTS OF HYDROCARBYL IMINO-METHYLENE-SUBSTITUTED HINDERED PHENOLS

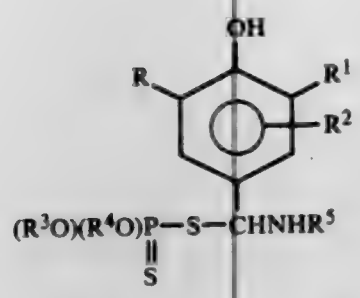
Abraham O. M. Okorodudu, West Deptford, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 22, 1982, Ser. No. 341,718

Int. Cl.³ C10M *1/48*

U.S. Cl. 252—32.7 E **18 Claims**

1. A compound of the formula



wherein R, R^1, R^2, R^3, R^4 and R^5 are hydrocarbyl groups containing from 1 to 30 carbon atoms.

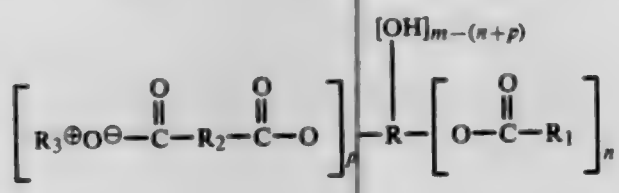
4,405,471

AQUEOUS METAL-WORKING LUBRICANT

Mans O. Manson; Carl-Axel E. Sjögreen, and Göran A. Bergvall, all of Perstorp, Sweden, assignors to Perstorp AB, Perstorp, Sweden

Filed Feb. 23, 1981, Ser. No. 237,479
Claims priority, application Sweden, Feb. 29, 1980, 80015837
Int. Cl.³ C10M *3/26*
U.S. Cl. 252—34 **4 Claims**

1. A water dilutable metal-working lubricant composition, comprising an emulsion or an aqueous solution containing 1–30% by weight of a compound having the formula



wherein

R is an alkyl radical containing 3–15 carbon atoms;

R_1 is an alkyl radical, an unsaturated hydrocarbon radical or an aryl radical containing 4–30 carbon atoms;

R_2 is an alkyl radical, an unsaturated hydrocarbon radical, an aryl radical or an alicyclic radical containing 1–20 carbon atoms;

$R_3\oplus$ is a protonized amine or an alkali metal cation;

m has a value between 3 and 8;

$n < m$; and

p has a value between 0.5 and 8;

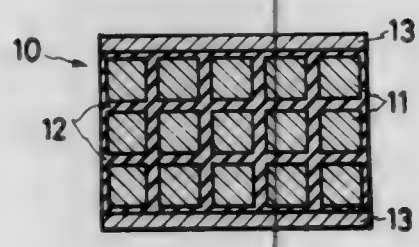
and 99–70% by weight of water.

4,405,472

DIELECTRIC CERAMIC MATERIALS WITH INSULATED BOUNDARIES BETWEEN CRYSTAL GRAINS, AND PROCESS FOR PREPARATION

Kiyoshi Murase, Takasaki; Nobutatsu Yamaoka, Harunamachi, and Masayuki Fujimoto, Hachiyamamachi, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,773
Claims priority, application Japan, Dec. 8, 1981, 56-197312
Int. Cl.³ C04B *35/46*; H01B *3/12*
U.S. Cl. 252—62.3 BT **1 Claim**



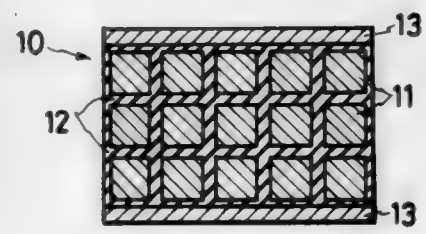
1. An insulated boundary layer ceramic having primary and secondary ingredients forming in combination a polycrystalline ceramic proper, and insulating substances dispersed throughout the intergranular boundaries of the ceramic proper, the primary ingredients consisting essentially of, in relative proportions, from about 95.18 to about 99.65 percent by weight $SrTiO_3$, from about 0.33 to about 3.32 percent by weight Ta_2O_5, and from about 0.02 to about 1.50 percent by weight CuO, the secondary ingredients consisting essentially of from about 0.02 to about 0.10 part by weight SiO_2 and from about 0.01 to about 0.03 part by weight Al_2O_3 with resepect to 100 parts by weight of the primary ingredients, the ratio in weight of SiO_2 to Al_2O_3 being from about 1.5 to about 5.0, and the insulating substances consisting essentially of from about 0.03 to about 2.75 percent by weight PbO, from about 0.11 to about 4.22 percent by weight Bi_2O_3, and from about 0.001 to about 0.18 percent by weight B_2O_3, the percentages of the insulating substances being all with respect to the total weight of the primary and the secondary ingredients.

4,405,473

DIELECTRIC CERAMIC MATERIALS WITH INSULATED BOUNDARIES BETWEEN CRYSTAL GRAINS, AND PROCESS FOR PREPARATION

Kiyoshi Murase, Takasaki; Nobutatsu Yamaoka, Harunamachi, and Masayuki Fujimoto, Hachiyamamachi, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,774
Claims priority, application Japan, Dec. 16, 1981, 56-201692
Int. Cl.³ C04B *35/46*; H01B *3/12*
U.S. Cl. 252—62.3 BT **1 Claim**



1. An insulated boundary layer ceramic having primary and secondary ingredients forming in combination a polycrystalline ceramic proper, and insulating substances dispersed throughout the intergranular boundaries of the ceramic proper, the primary ingredients consisting essentially of, in relative proportions, from about 94.50 to about 99.62 percent by weight $SrTiO_3$, from about 0.33 to about 3.00 percent by weight Ta_2O_5, and from about 0.05 to about 2.50 percent by weight ZnO, the secondary ingredients consisting essentially of from about 0.02 to about 0.10 part by weight SiO_2 and from about 0.01 to about 0.03 part by weight Al_2O_3 with respect to 100 parts by weight of the primary ingredients, the ratio in weight of SiO_2 to Al_2O_3 being from about 1.5 to about 5.0, and the insulating substances consisting essentially of from about 0.03 to about 2.8 percent by weight PbO, from about 0.11 to about 4.38 percent by weight Bi_2O_3, and from about 0.001 to about 0.18 percent by weight B_2O_3, the percentages of the insulating substances being all with respect to the total weight of the primary and the secondary ingredients.

4,405,474

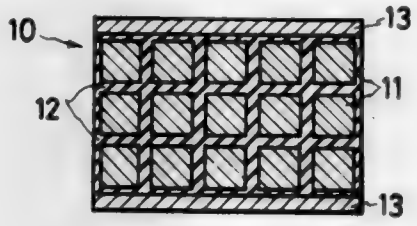
DIELECTRIC CERAMIC MATERIALS WITH INSULATED BOUNDARIES BETWEEN CRYSTAL GRAINS, AND PROCESS FOR PREPARATION

Kiyoshi Murase, Takasaki; Nobutatsu Yamaoka, Harunamachi, and Masayuki Fujimoto, Hachiyamamachi, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,775
Claims priority, application Japan, Dec. 16, 1981, 56-201693
Int. Cl.³ C04B *35/46*; H01B *3/12*
U.S. Cl. 252—62.3 BT **1 Claim**

1. An insulated boundary layer ceramic having primary and secondary ingredients forming in combination a polycrystalline ceramic proper, and insulating substances dispersed

throughout the intergranular boundaries of the ceramic proper, the primary ingredients consisting essentially of, in relative proportions, from about 96.70 to about 99.83 percent by weight $SrTiO_3$, from about 0.15 to about 2.30 percent by weight WO_3, and from about 0.02 to about 1.00 percent by weight CuO, the secondary ingredients consisting essentially of from about 0.02 to about 0.10 part by weight SiO_2 and from about 0.01 to about 0.03 part by weight Al_2O_3 with respect to



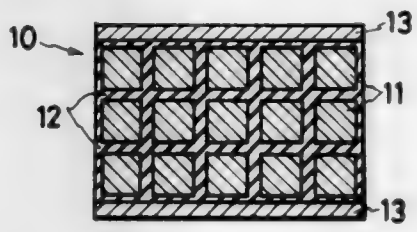
100 parts by weight of the primary ingredients, the ratio in weight of SiO_2 to Al_2O_3 being from about 1.5 to about 5.0, and the insulating substances consisting essentially of from about 0.03 to about 2.83 percent by weight PbO, from about 0.10 to about 4.30 percent by weight Bi_2O_3, and from about 0.001 to about 0.18 percent by weight B_2O_3, the percentages of the insulating substances being all with respect to the total weight of the primary and the secondary ingredients.

4,405,475

DIELECTRIC CERAMIC MATERIALS WITH INSULATED BOUNDARIES BETWEEN CRYSTAL GRAINS, AND PROCESS FOR PREPARATION

Kiyoshi Murase, Takasaki; Nobutatsu Yamaoka, Harunamachi, and Masayuki Fujimoto, Hachiyamamachi, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,776
Claims priority, application Japan, Dec. 11, 1981, 56-200499
Int. Cl.³ C04B *35/46*; H01B *3/12*
U.S. Cl. 252—62.3 BT **1 Claim**



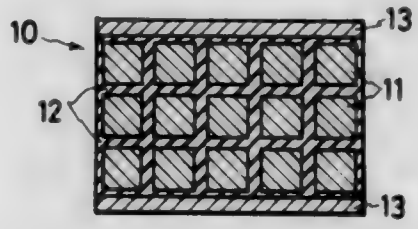
1. An insulated boundary layer ceramic having primary and secondary ingredients forming in combination a polycrystalline ceramic proper, and insulating substances dispersed throughout the intergranular boundaries of the ceramic proper, the primary ingredients consisting essentially of, in relative proportions, from about 91.18 to about 99.82 percent by weight $SrTiO_3$, from about 0.13 to about 5.32 percent by weight Nb_2O_5, and from about 0.05 to about 3.50 percent by weight ZnO, the secondary ingredients consisting essentially of from about 0.02 to about 0.10 part by weight SiO_2 and from about 0.01 to about 0.03 part by weight Al_2O_3 with respect to 100 parts by weight of the primary ingredients, the ratio in weight of SiO_2 to Al_2O_3 being from about 1.5 to about 5.0, and the insulating substances consisting essentially of from about 0.03 to about 2.90 percent by weight PbO, from about 0.11 to about 4.28 percent by weight Bi_2O_3, and from about 0.001 to about 0.18 percent by weight B_2O_3, the percentages of the insulating substances being all with respect to the total weight of the primary and the secondary ingredients.

4,405,476

DIELECTRIC CERAMIC MATERIALS WITH INSULATED BOUNDARIES BETWEEN CRYSTAL GRAINS, AND PROCESS FOR PREPARATION

Kiyoshi Murase, Takasaki; Nobutatsu Yamaoka, Harunamachi, and Masayuki Fujimoto, Hachiyamamachi, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,777
Claims priority, application Japan, Dec. 8, 1981, 56-197313
Int. Cl.³ C04B *35/46*; H01B *3/12*
U.S. Cl. 252—62.3 BT **1 Claim**



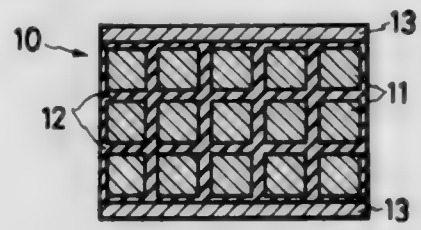
1. An insulated boundary layer ceramic having primary and secondary ingredients forming in combination a polycrystalline ceramic proper, and insulating substances dispersed throughout the intergranular boundaries of the ceramic proper, the primary ingredients consisting essentially of, in relative proportions, from about 94.50 to about 99.82 percent by weight $SrTiO_3$, from about 0.13 to about 2.50 percent by weight WO_3, and from about 0.05 to about 3.00 percent by weight GeO_2, the secondary ingredients consisting essentially of from about 0.02 to about 0.10 part by weight SiO_2 and from about 0.01 to about 0.03 part by weight Al_2O_3 with respect to 100 parts by weight of the primary ingredients, the ratio in weight of SiO_2 to Al_2O_3 being from about 1.5 to about 5.0, and the insulating substances consisting essentially of from about 0.03 to about 2.90 percent by weight PbO, from about 0.10 to about 4.28 percent by weight Bi_2O_3, and from about 0.001 to about 0.18 percent by weight B_2O_3, the percentages of the insulating substances being all with respect to the total weight of the primary and the secondary ingredients.

4,405,477

DIELECTRIC CERAMIC MATERIALS WITH INSULATED BOUNDARIES BETWEEN CRYSTAL GRAINS, AND PROCESS FOR PREPARATION

Kiyoshi Murase, Takasaki; Nobutatsu Yamaoka, Harunamachi, and Kazuji Onigata, Annaka, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1980, Ser. No. 443,780
Claims priority, application Japan, Dec. 16, 1981, 56-201694
Int. Cl.³ C04B *35/46*; H01B *3/12*
U.S. Cl. 252—62.3 BT **1 Claim**



1. An insulated boundary layer ceramic having primary and secondary ingredients forming in combination a polycrystalline ceramic proper, and insulating substances dispersed throughout the intergranular boundaries of the ceramic proper, the primary ingredients consisting essentially of, in relative proportions, from about 91.92 to about 99.62 percent by weight $SrTiO_3$, from about 0.33 to about 4.08 percent by weight Ta_2O_5, and from about 0.05 to about 4.00 percent by weight GeO_2, the secondary ingredients consisting essentially

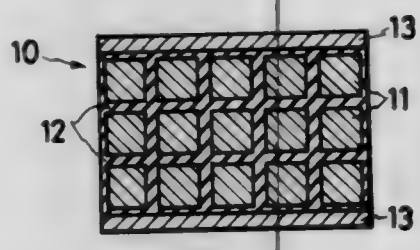
of from about 0.02 to about 0.10 part by weight SiO_2 and from about 0.01 to about 0.03 part by weight Al_2O_3 with respect to 100 parts by weight of the primary ingredients, the ratio in weight of SiO_2 to Al_2O_3 being from about 1.5 to about 5.0, and the insulating substances consisting essentially of from about 0.02 to about 2.83 percent by weight PbO, from about 0.11 to about 4.33 percent by weight Bi_2O_3, and from about 0.001 to about 0.18 percent by weight B_2O_3, the percentages of the insulating substances being all with respect to the total weight of the primary and the secondary ingredients.

4,405,478

DIELECTRIC CERAMIC MATERIALS WITH INSULATED BOUNDARIES BETWEEN CRYSTAL GRAINS, AND PROCESS FOR PREPARATION

Kiyoshi Murase, Takasaki; Nobutatsu Yamaoka, Harunamachi, and Masayuki Fujimoto, Hachiyamamachi, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,781
Int. Cl.³ C04B *35/46*; H01B *3/12*
U.S. Cl. 252—62.3 BT 1 Claim



1. An insulated boundary layer ceramic having primary and secondary ingredients forming in combination a polycrystalline ceramic proper, and insulating substances dispersed throughout the intergranular boundaries of the ceramic proper, the primary ingredients consisting essentially of, in relative proportions, from about 90.68 to about 99.88 percent by weight $SrTiO_3$, from about 0.07 to about 5.32 percent by weight of Nb_2O_5, and from about 0.05 to about 4.00 percent by weight GeO_2, the secondary ingredients consisting essentially of from about 0.02 to about 0.10 part by weight SiO_2 and from about 0.01 to about 0.03 part by weight Al_2O_3 with respect to 100 parts by weight of the primary ingredients, the ratio in weight of SiO_2 to Al_2O_3 being from about 1.5 to about 5.0, and the insulating substances consisting essentially of from about 0.03 to about 2.90 percent by weight PbO, from about 0.11 to about 4.34 percent by weight Bi_2O_3, and from about 0.001 to about 0.18 percent by weight B_2O_3, the percentages of the insulating substances being all with respect to the total weight of the primary and the seconary ingredients.

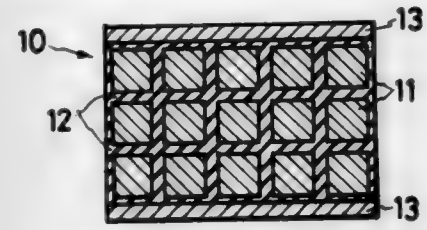
4,405,479

DIELECTRIC CERAMIC MATERIALS WITH INSULATED BOUNDARIES BETWEEN CRYSTAL GRAINS, AND PROCESS FOR PREPARATION

Kiyoshi Murase, Takasaki; Nobutatsu Yamaoka, Harunamachi, and Masayuki Fujimoto, Hachiyamamachi, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,782
Claims priority, application Japan, Dec. 4, 1981, 56-195439
Int. Cl.³ C04B *35/46*; H01B *3/12*
U.S. Cl. 252—62.3 BT 1 Claim

1. An insulated boundary layer ceramic having primary and secondary ingredients forming in combination a polycrystalline ceramic proper, and insulating substances dispersed throughout the intergranular boundaries of the ceramic proper, the primary ingredients consisting essentially of, in relative proportions, from about 95.20 to about 99.80 percent by weight $SrTiO_3$, from about 0.15 to about 2.30 percent by weight WO_3, and from about 0.05 to about 2.50 percent by weight ZnO, the secondary ingredients consisting essentially of from about 0.02 to about 0.10 part by weight SiO_2 and from about 0.01 to about 0.03 part by weight Al_2O_3 with respect to 100 parts by weight of the primary ingredients, the ratio in weight of SiO_2 to Al_2O_3 being from about 1.5 to about 5.0, and the insulating substances consisting essentially of from about 0.03 to about 2.75 percent by weight PbO, from about 0.11 to about 4.23 percent by weight Bi_2O_3, and from about 0.001 to about 0.18 percent by weight B_2O_3, the percentages of the insulating substances being all with respect to the total weight of the primary and the secondary ingredients.

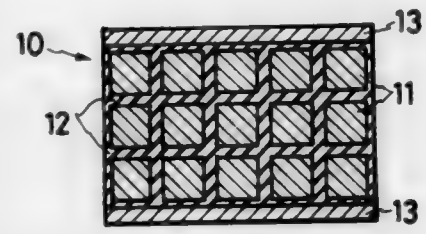


4,405,480

DIELECTRIC CERAMIC MATERIALS WITH INSULATED BOUNDARIES BETWEEN CRYSTAL GRAINS, AND PROCESS FOR PREPARATION

Kiyoshi Murase, Takasaki; Nobutatsu Yamaoka, Harunamachi, and Kazuji Onigata, Annaka, all of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1982, Ser. No. 443,783
Claims priority, application Japan, Dec. 16, 1981, 56-201695; European Pat. Off., Sep. 28, 1982, 82108979.4
Int. Cl.³ C04B *35/46*; H01B *3/12*
U.S. Cl. 252—62.3 BT 1 Claim



1. An insulated boundary layer ceramic having primary and secondary ingredients forming in combination a polycrystalline ceramic proper, and insulating substances dispersed throughout the intergranular boundaries of the ceramic proper, the primary ingredients consisting essentially of, in relative proportions, from about 93.18 to about 99.85 percent by weight $SrTiO_3$, from about 0.13 to about 5.32 percent by weight Nb_2O_5, and from about 0.02 to about 1.50 percent by weight CuO, the secondary ingredients consisting essentially of from about 0.02 to about 0.10 part by weight SiO_2 and from about 0.01 to about 0.03 part by weight Al_2O_3 with respect to 100 parts by weight of the primary ingredients, the ratio in weight of SiO_2 to Al_2O_3 being from about 1.5 to about 5.0, and the insulating substances consisting essentially of from about 0.03 to about 2.75 percent by weight PbO, from about 0.12 to about 4.23 percent by weight Bi_2O_3, and from about 0.001 to about 0.18 percent by weight B_2O_3, the percentages of the insulating substances being all with respect to the total weight of the primary and the secondary ingredients.

4,405,481

MAGNETIC RECORDING MEDIUM

Yasuyuki Yamada; Nobuo Tsuji, both of Odawara; Tsutomu Okita, Fujinomiya, and Yasuo Mukunoki, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 24, 1980, Ser. No. 220,215
Claims priority, application Japan, Dec. 28, 1979, 54-173625
Int. Cl.³ B05D 5/12
U.S. Cl. 252—62.54 9 Claims

1. A magnetic recording medium containing one or more ferromagnetic powders, one or more binders and a lubricant, said lubricant comprising (1) non-magnetic abrasive particles having a Mohs' hardness of about 6 or more and a particle size of about 5 microns or less and (2) one or more esters selected from the group consisting of ethyl erucate, butyl erucate, butoxyethyl erucate, butyl behenate, butoxyethyl behenate, octyl behenate and 2-ethylhexyl behenate.

4,405,482

SANITIZING FORMULATION

Russell A. Hayes, Castle Hill, Australia, and Gerard Duve, Slough, England, assignors to Richardson-Vicks Pty. Limited, New South Wales, Australia

Filed Aug. 31, 1981, Ser. No. 297,919
Claims priority, application Australia, Sep. 1, 1980, PE5356
Int. Cl.³ C11D 7/56
U.S. Cl. 252—99 6 Claims

1. A sanitizing and bleaching composition comprising by weight percent the following:

(a) from 5 to 95% of a peroxy hydrate compound;

(b) from 2 to 25% of a non-phosphate water softener containing the citrate ion;

(c) from 0.1 to 5% of a source of magnesium ion as a partial hydrogen peroxide stabilizer;

(d) from 0.01 to 5% of a chelating agent for transition metals;

(e) from 0 to 5% of sodium polymetaphosphate; and

(f) from 0.1 to 8% of a nonionic surfactant.

4,405,483

STABLE LIQUID DETERGENTS CONTAINING ALUMINOSILICATE ION EXCHANGE MATERIAL

Maryann Kuzel, and John W. Leikhim, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 27, 1982, Ser. No. 372,349
Int. Cl.³ C11D 1/72, 3/12, 11/00, 17/08
U.S. Cl. 252—140 13 Claims

1. A process for preparing a stable liquid detergent composition comprising:

(a) from about 5% to about 40% by weight of a detergent surfactant;

(b) from about 3% to about 30% of a finely divided aluminosilicate ion exchange material selected from the group consisting of:

(i) crystalline aluminosilicate material of the formula

$$Na_z[(AlO_2)_z.(SiO_2)_z].xH_2O$$

wherein z and y are at least 6, the molar ratio of z to y is from about 1.0 to about 0.5 and x is from about 10 to about 264, said material having a particle size diameter of from about 0.1 micron to about 10 microns, a calcium ion exchange capacity of at least about 200 mg $CaCO_3$ eq./g and a calcium ion exchange rate of at least about 2 grains Ca^{++}/gallon/minute/gram/gallon;

(ii) amorphous hydrated aluminosilicate material of the empirical formula $M_z(zAlO_2.ySiO_2)$ wherein M is sodium, potassium, ammonium, or substituted ammonium, z is from about 0.5 to about 2, y is 1 and said material has a magnesium ion exchange capacity of at least about 50 milligrams equivalents of $CaCO_3$ hardness per gram of anhydrous aluminosilicate and a Mg^{++} exchange rate of at least about 1 grain/gallon/minute/gram/gallon; and

(iii) mixtures thereof;

(c) from about 1% to about 30% by weight of a water-soluble detergency builder capable of sequestering calcium and magnesium ions in water solution, selected from the group consisting of water-soluble polycarboxylates, polyphosphonates, polyphosphates, and mixtures thereof;

(d) from about 3% to about 25% by weight of a stabilizing agent selected from the group consisting of hydrophilic surface active agents having an HLB value greater than about 14 and hydrophobic emulsifiers having an HLB value less than about 8.5; and

(e) from about 30% to about 88% water; said composition containing less than about 60% by weight of the detergent surfactant, aluminosilicate material and water-soluble detergency builder; said process comprising dispersing the aluminosilicate material in an aqueous solution having a pH less than 7 to partially gelatinize the aluminosilicate material, and mixing the dispersion with the balance of the detergent ingredients to provide a stable composition having a pH greater than 7.

4,405,484

ZEOLITE POWDER HAVING HIGH FLOWABILITY, PROCESS FOR PREPARING SAME AND DETERGENT COMPOSITION CONTAINING SAME

Hiroshi Miyazaki, Shin Nanyo, and Junji Arika, Tokuyama, both of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin Nanyo, Japan

Filed Aug. 7, 1981, Ser. No. 291,073
Claims priority, application Japan, Aug. 12, 1980, 55/109814
Int. Cl.³ C11D 3/12; C01B 33/28
U.S. Cl. 252—174.25 11 Claims

1. A process for the preparation of finely divided zeolite powders of high flowability in which at least 99% by weight of the zeolite particles have a particle size of about 1 to 5 microns, which comprises the steps of:

(1) adding about 0.1 to about 1.5 parts by weight (as Al_2O_3) of an alkali metal aluminate to 100 parts by weight (as the anhydride) to an aqueous zeolite slurry containing 30 to 52% by weight of zeolite as calculated as the anhydride and having a pH of not higher than 12.8;

(2) adjusting the pH of the slurry to a value not higher than 11; and then,

(3) drying the slurry.

11. A detergent composition comprising, based on the total weight of the composition, 1 to 50% by weight of at least one surface active agent and 1 to 60% by weight of a zeolite, said zeolite being a finely divided powder of high flowability which is represented by the formula:

$$Na_2O.Al_2O_3.nSiO_2.wH_2O$$

wherein n is number of from 1.8 to 3.0 and w is a number of from 1 to 6, and which comprises at least 99% by weight of particles having a particle size of 1 to 5 microns and has an aerated bulk density of from 0.3 to approximately 0.5 g/cc, a degree of cohesiveness of from 0 to 56%, and the general flow index expressed as the sum of indexes of the repose angle, spatula angle, compressibility and degree of cohesiveness is in the range of from 30 to approximately 50, said zeolite powder prepared by the process of claim 1.

4,405,485

ION SELECTIVE COMPOSITION

Roger N. Sargent, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 25, 1968, Ser. No. 700,654
Int. Cl.³ C02F 5/10
U.S. Cl. 252—180 4 Claims

1. A composition of matter capable of removal of cations from water and the concentration of such cations which com-

prises a cellulose substrate containing precipitated $NaAl(SiO_3)_2$ or $KAl(SiO_3)_2$ therein.

4,405,486

METHOD FOR PREPARING GRANULATED PERBORATE SALTS CONTAINING A POLYMERIC FLUOROCARBON

Anthony B. J. Eoga, Boonton, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 297,892, Aug. 31, 1981, Pat. No. 4,362,639, which is a continuation-in-part of Ser. No. 251,030, Apr. 3, 1981. This application May 20, 1982, Ser. No. 380,164

Int. Cl.³ B01J *2/22, 2/28;* **C11D** *7/28, 7/54*

U.S. Cl. 252—186.31 **18 Claims**

1. A method for preparing a granulated perborate salt, comprising:

A. forming a mixture of said perborate salt with a polymeric fluorocarbon, said mixture containing said polymeric fluorocarbon in an amount by weight of said perborate salt, of from about 0.01% to about 0.70%;

B. compacting said mixture into a plurality of preforms; and

C. comminuting said preforms under agitation, to form said granulated perborate salt.

10. A granulated perborate salt product, suitable for inclusion in a compactible composition, said product comprising a precompressed mixture of said perborate salt and from about 0.1% to about 0.70% of a polymeric fluorocarbon.

4,405,487

COMBINATION MOISTURE AND HYDROGEN GETTER

Larry A. Harrah, Albuquerque; Keith E. Mead, Peralta, both of N. Mex., and Henry M. Smith, Overland Park, Kans. (granted to U.S. Department of Energy under the provisions of 42 U.S.C. 2182)

Filed Apr. 29, 1982, Ser. No. 373,076

Int. Cl.³ C01B *3/56;* **H01J** *7/18;* **B01D** *53/34*

U.S. Cl. 252—194 **23 Claims**

1. A combination moisture and hydrogen getter composition, comprising:

(a) a moisture getter comprising a readily oxidizable metal and characterized by having standard oxidation potential relative to hydrogen in water within the range of about 0.049 to 1.86; and

(b) a hydrogen getter comprising (i) a solid acetylenic compound and (ii) a hydrogenation catalyst.

4,405,488

LIQUID-CRYSTALLINE HALOGENOBENZENE DERIVATIVES

Shigeru Sugimori; Tetsuhiko Kojima, and Masakazu Tsuji, all of Yokohamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

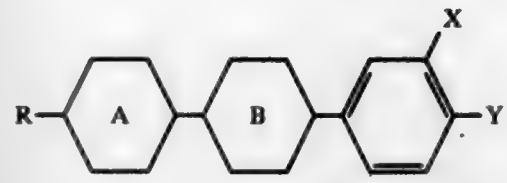
Filed Sep. 16, 1981, Ser. No. 302,517

Claims priority, application Japan, Oct. 9, 1980, 55-141536; Oct. 14, 1980, 55-143394; Oct. 24, 1980, 55-149053; Oct. 29, 1980, 55-151772; Jan. 7, 1981, 56-1029; Jan. 7, 1981, 56-1030; Feb. 14, 1981, 56-20566; Mar. 4, 1981, 56-30812; Mar. 13, 1981, 56-36148; Mar. 28, 1981, 56-46065; Apr. 8, 1981, 56-52566; Apr. 9, 1981, 56-53700

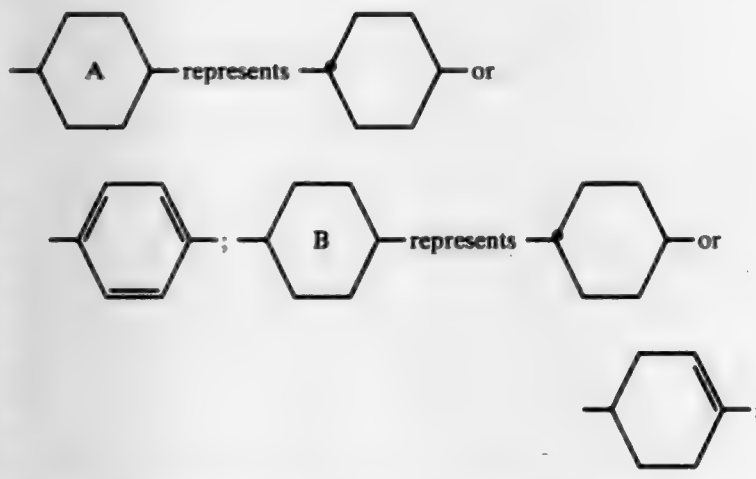
Int. Cl.³ G02F *1/13;* **C09K** *3/34;* **C07C** *25/18*

U.S. Cl. 252—299.63 **9 Claims**

1. A liquid-crystalline halogenobenzene compound expressed by the formula



wherein R represents an alkyl group having 1 to 10 carbon atoms;



and X and Y each are H, F or Cl, at least one of X and Y being F or Cl.

4,405,489

PRODUCTION OF A POST-FOAMING GEL AND SYSTEM THEREFOR

Frederick P. Sisbarro, Wayne, N.J., assignor to Carter-Wallace, Inc., New York, N.Y.

Filed Jan. 15, 1981, Ser. No. 225,389

Int. Cl.³ B01J *13/00;* **B01F** *5/04, 13/06*

U.S. Cl. 252—315.4 **26 Claims**

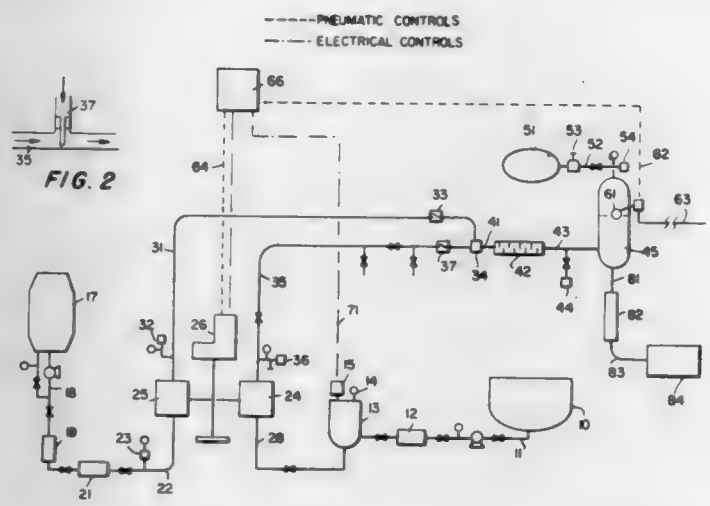


FIG. 2

1. A process for continuously producing a post-foaming gel for packaging thereof comprising:

admixing separately metered amounts of an aqueous soap ingredient and a post-foaming agent to form an intimate mixture thereof; passing said mixture to a filling machine for packaging the gel, said steps being effected in a continuous flow system under pressure, said mixture being maintained within the continuous flow system for a time and at a pressure and temperature sufficient to produce a post-foaming gel capable of continuously flowing through the system to the filling machine for packaging thereof.

20. A system for continuously producing a post-foaming gel for packaging thereof, comprising:

a supply means for an aqueous soap ingredient; a supply means for a post-foaming agent, a first metering means for metering

an aqueous soap ingredient from the supply means therefor; a second metering means for metering a post-foaming agent from the supply means therefor; mixing means; a pressurized tank; filling means for introducing a post-foaming gel into a package therefor; first fluid flow means for connecting the first metering means to said mixing means; second fluid flow means for connecting the second metering means with the first fluid flow means to mix the aqueous soap ingredient with the post-foaming agent for mixing in the mixing means; third fluid flow means connecting the mixing means with the pressurized tank; fourth fluid flow means connecting the pressurized tank with the filling means whereby the mixture of aqueous soap ingredient and post-foaming agent flows to the filling means through the pressurized tank and is formed into a post-foaming gel prior to the filling means; a supply tank for pressurized gas; and means for introducing pressurized gas from the supply tank into the pressurized tank to pressurize the pressurized tank and at least the portion of the system from the mixing means to the filling means.

4,405,490

ANTI-FOAM FORMULATION CONTAINING AN ORGANOPOLYSILOXANE

Joachim Maas, Bergheim; Helmut Steinberger, Leverkusen, and Hans-Heinrich Moretto, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 249,253

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1980, 3013923

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—358 **6 Claims**

1. An anti-foam composition comprising by weight approximately

(a) 10 to 40% of a dispersion of a silicon dioxide filler in an organopolysiloxane,

(b) 6 to 15% of an emulsifier or dispersant, and

(c) 45 to 84% of at least one water soluble compound selected from the group consisting of

(i) a divalent aliphatic alcohol containing 4 to 10 carbon atoms,

(ii) a trivalent aliphatic alcohol containing 2 to 10 carbon atoms, and

$$R_1O(-CH_2-CH_2-O)_nR_2, \quad \text{(iii)}$$

$$R_1O(-CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-O)_mR_2,$$

$$R_1O(-CH_2-CH_2-CH_2-O)_oR_2 \text{ and}$$

$$R_1O(-CH_2-CH_2-O)_p(CH_2-\underset{\displaystyle CH_3}{\underset{|}{CH}}-O)_rR_2$$

in which

R_1 and R_2 each independently is hydrogen, C_{1-8}-alkyl or C_{1-8}-alkyl-CO-, and

n,m,p,o and r are so chosen that the molecular weight of (c) does not exceed 425.

4,405,491

APPARATUS FOR FORMING FOAM

Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Tokyo, Japan

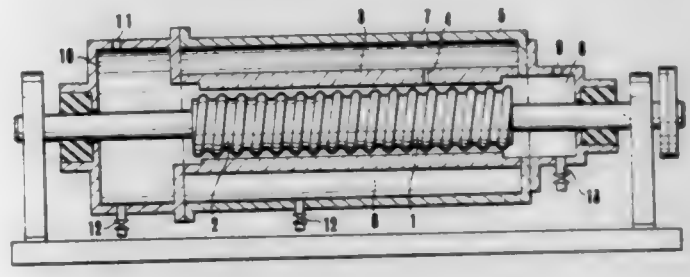
Filed Sep. 29, 1981, Ser. No. 306,768

Claims priority, application Japan, Oct. 2, 1980, 55-140970[U]; Oct. 17, 1980, 55-148148[U]

Int. Cl.³ B01F *3/04, 7/12*

U.S. Cl. 252—359 E **1 Claim**

1. An apparatus for forming foam for use in continuously applying a treating solution to a cloth, comprising an axially elongated hollow cylinder having a circular interior surface, an axially extending rotatable screw shaft located within said cylinder with the outer surface of said shaft spaced closely from the interior surface of said cylinder, said shaft having spirally extending convex stripes on the outer surface thereof with the radially outer surfaces of said stripes spaced closely inwardly from the radially inner surface of said hollow cylinder, and said cylinder having axially extending grooves formed in and extending radially outwardly from the inner surface thereof, and means for passing a treating solution including a foaming agent such as soap together with pressurized air through the space between the outer surface of the screw shaft and the inner surface of the cylinder, said grooves formed in the inner surface of said cylinder are rectangularly shaped in cross-section extending transversely of the axial direction of said cylinder and said grooves are spaced angularly apart around the inner surface of said cylinder, said convex stripes extend almost perpendicularly to the axis of said cylinder and



include a relatively short axially extending frusto-conical first section extending inwardly from the end of one stripe followed by a longer axially extending frusto-conical second section extending generally outwardly to the radial outer surface of an adjacent stripe with a generally cylindrically shaped axially extending top located in the radially outer surface of said screw shaft and abutting said first section of the following stripe, the axis of said cylinder is horizontally arranged, said means comprises a fluid supply opening through said cylinder adjacent one end of said screw shaft for supplying a treating solution containing a foaming agent along with pressurized air into the space between said screw shaft and said cylinder, said cylinder forming a foam tank at the other end of said screw shaft, a foam outlet extending through said cylinder from said foam tank with said foam outlet located in the upper part of said foam tank, and a drain outlet through said cylinder from the bottom of said foam tank.

4,405,492

PROCESS FOR MAKING HIGH-GLYCERIN SOAP BARS

John D. Nyquist, Fairfield; Gary K. Kwasniewski, Cincinnati; Arthur W. Thornton, Cincinnati; Paul E. Vest, Cincinnati, and Kenneth E. Ducklo, Hamilton, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 22, 1982, Ser. No. 360,128

Int. Cl.³ C11D *9/26, 13/10, 13/18*

U.S. Cl. 252—370 **5 Claims**

1. A process for making milled soap bars containing 2% to 25% glycerin, the said process comprising the steps of:

A. Providing a source of soap, dried to an overall moisture content of from about 8% to about 12% and containing particles of soap which are overdried and therefore harder than the remainder of the soap;

B. Mechanically working the soap by milling it or extruding it through a soap refining screen so as to break up the overdried soap particles and homogeneously distribute the overdried soap throughout the soap mass;

C. Mixing glycerin into the soap mass;

D. Mechanically working the mixture formed in Step (C) by milling it or extruding it through a soap refining screen;

E. Plodding the worked mixture of Step (D) into a log; and

F. Cutting the said log into segments and stamping the segments into the desired bar shape.

4,405,493

CORROSION INHIBITORS, METHOD OF PRODUCING THEM AND PROTECTIVE COATINGS CONTAINING THEM

David A. Pippard, Hampton Hill, England, assignor to The British Petroleum Company Limited, London, England

Filed Jan. 15, 1980, Ser. No. 112,349

Claims priority, application United Kingdom, Feb. 3, 1979, 793860

Int. Cl.³ C09D 5/08; C23F 11/18

U.S. Cl. 252—389 A 8 Claims

1. A corrosion inhibitor consisting of particles of up to 100 microns diameter of an inorganic oxide having corrosion-inhibiting anions selected from the group consisting of phosphate, chromate or benzoate chemically bound to the particles by ion exchange, whereby said anions bound to said particles can only be released by further ion exchange.

4,405,494

POLYHYDROXY-POLYALKYLENE-POLYAMINE SALTS OF MALEIC AMIDE ACIDS AS CORROSION INHIBITORS IN WATER-IN-OIL EMULSIONS

Knut Oppenlaender; Erich Schwartz, both of Ludwigshafen; Klaus Barthold, Mannheim, and Wilhelmus Slotman, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

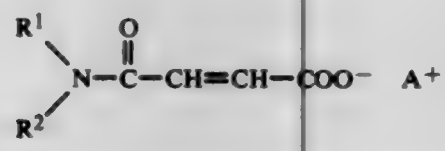
Filed Dec. 10, 1981, Ser. No. 329,381

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1980, 3047304

Int. Cl.³ C23F 11/14, 11/12

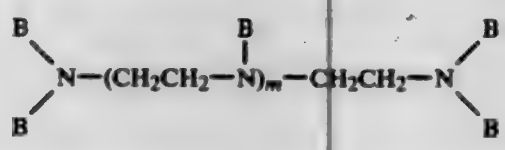
U.S. Cl. 252—392 20 Claims

1. A corrosion inhibitor compound for use in preventing the corrosion of iron and metals containing iron in contact with water-in-oil emulsions, said corrosion inhibitor having the formula



I

wherein R^{11} is an alkyl radical having 7 to 20 carbon atoms, R^2 represents hydrogen or R^1 and A^+ represents the protonized radical of an amine having the formula



II

wherein B represents hydrogen or $(C_2H_4O)_x$, wherein x is an integer of 1–3 with the proviso that the total number of C_2H_4O radicals in the molecule is 3–18 and m is 1 or 2.

4,405,495

CATALYST IMPREGNATED ON FINE SILICA, PROCESS FOR PREPARING, AND USE FOR ETHYLENE POLYMERIZATION

Kiu H. Lee, South Charleston, W. Va., and Gary S. Cieloszyk, Somerville, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1980, Ser. No. 163,959

Int. Cl.³ C08F 4/02, 4/64

U.S. Cl. 252—429 B 25 Claims

1. In a catalyst composition for copolymerizing ethylene with one or more C_3 to C_8 alpha olefins at a productivity level of ≦5 ppm of titanium per million parts of copolymer comprising a precursor composition of the formula

$$Mg_mTi_1(OR)_nX_p[ED]_q$$

wherein

R is a C_1 to C_{14} aliphatic or aromatic hydrocarbon radical, or COR′ wherein R′ is a C_1 to C_{14} aliphatic or aromatic hydrocarbon radical,

X is selected from the group consisting of Cl, Br, I or mixtures thereof,

ED is an electron donor compound,

m is ≧0.5 to ≦56,

n is 0, 1 or 2,

p is ≧2 to ≦116, and

q is ≧2 to ≦85,

said precursor composition being impregnated in a porous support in a weight ratio of 0.1:1 to 0.33:1 and being either unactivated, or

partially activated with >0 to <10 mols of activator compound per mol of Ti in said precursor composition or completely activated with ≧10 to ≦400 mols of activator compound per mol of Ti in said precursor composition,

said activator compound having the formula

$$Al(R'')_cX'_dH_e$$

wherein X′ is Cl or OR‴, R″ and R‴ are the same or different and are C_1 to C_{14} saturated hydrocarbon radicals, d is 0 to 1.5, e is 1 or 0 and c+d+e=3,

and said electron donor compound being a liquid organic compound in which said precursor composition is soluble and which is selected from the group consisting of alkyl esters of aliphatic and aromatic carboxylic acids, aliphatic ethers, cyclic ethers and aliphatic ketones,

the improvement which comprises employing as said support silica having a particle size distribution within the range of from 2 microns to 80 microns and an average particle size of from 20 microns to 50 microns.

4,405,496

HYDROFORMYLATION CATALYST AND PROCESS OF USING IT

Chao-Yang Hsu, Media, Pa., assignor to Sun Tech. Inc., Philadelphia, Pa.

Division of Ser. No. 327,867, Dec. 7, 1981. This application Dec. 20, 1982, Ser. No. 450,945

Int. Cl.³ B01J 31/22

U.S. Cl. 252—429 R 5 Claims

1. A catalyst useful for hydroformylation characterized by the formula $Pt(Acetylacetonate_2/mMX_2.nH_2O/xPR_3$ where M is a Group IVA metal, X is a halogen atom, m is an integer from about 2 to about 10, n is 0 or 2, x is an integer from about 5 to about 20, and PR_3 is a phosphine where R is an alkyl or, aryl group.

4,405,497

CATALYST SYSTEM CONTAINING A FLUORINATED ACID AND A POLYVALENT TIN COMPOUND

Chung I. Young, Roseville, and Loren L. Barber, Jr., Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 213,118, Dec. 4, 1888, abandoned, which is a continuation of Ser. No. 76,557, Sep. 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 906,744, May 17, 1978, abandoned. This application Mar. 5, 1982, Ser. No. 355,178

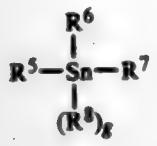
Int. Cl.³ B01J 31/12, 31/26; C07C 43/12; C08G 18/50

U.S. Cl. 252—431 R 9 Claims

1. A catalyst system comprising

(i) a fluorinated acid selected from the group consisting of bis(fluorinated aliphatic sulfonyl)alkanes, and acids of the formula H_mXF_{n+m} wherein X is selected from the group consisting of arsenic and antimony; m is 0 or 1; and n is 5; and

(ii) a polyvalent tin compound having the formula



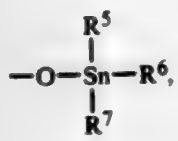
wherein

g is 0 or 1

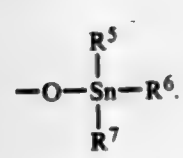
R^5 and R^6 are the same or different and are selected from saturated and unsaturated aliphatic and aromatic hydrocarbyl groups containing from 1 to about 10 carbon atoms;

R^7 is selected from the group consisting of oxygen and saturated and unsaturated aliphatic and aromatic hydrocarbyl groups containing from 1 to about 10 carbon atoms, provided that when R^7 is oxygen, then g is 0; and

R^8 is selected from the group consisting of fluorine, acyloxy groups containing less than about 10 carbon atoms, saturated aliphatic hydrocarbyl groups containing from 1 to about 10 carbon atoms and



provided that when R^5, R^6 and R^7 are each saturated aliphatic hydrocarbyl groups then R^8 is selected from the group consisting of fluorine, acyloxy groups containing less than about 10 carbon atoms and



2. A catalyst system according to claim 1 comprising (i) said bis(fluorinated aliphatic sulfonyl) alkane and (ii) said polyvalent tin compound.

4. A catalyst system according to claim 2 wherein said polyvalent tin compound is selected from the group consisting of diphenyl dibutyl tin, diallyl dibutyl tin, divinyl dibutyl tin, tributyl tin fluoride, triphenyl tin acetate, dibutyl tin oxide, and bis(tributyl tin oxide).

5. A catalyst system according to claim 2 wherein said bis(-fluorinated aliphatic sulfonyl) alkane is selected from

bis(trifluoromethylsulfonyl)methane
bis(difluorochloromethylsulfonyl)methane
tris(trifuloromethylsulfonyl)methane
bis(trifluoromethylsulfonyl)-4-bromophenylmethane
bis(trifluoromethylsulfonyl)-2-thienylmethane
bis(trifluoromethylsulfonyl)chloromethane
bis(trifluoromethylsulfonyl)benzylmethane
bis(trifluoromethylsulfonyl)phenylmethane
bis(trifluoromethylsulfonyl)-1-naphthylmethane
bis(perfluorobutylsulfonyl)methane
bis(2,2,3,3,4,4,4-heptafluorobutylsulfonyl)methane
perfluorobutylsulfonyltrifluoromethylsulfonylmethane
1,2,2,3,3,4,4,4-hepatafluorobutyltrifluoromethylsulfonylmethane
ethyl 6,6-bis(perfluoromethylsulfonyl)-4-bromohexanoate
methyl 4,4-bis(perfluoromethylsulfonyl)-2-carbomethoxy-2-bromobutanoate
ethyl 4,4-bis(perfluoromethylsulfonyl)-2-carboethoxy-2-nitrobutanoate
1,1,3,3-tetra(trifluoromethylsulfonyl)propane and
1,1-bis(trifluoromethylsulfonyl)octadecane.

4,405,498

OXIDATION AND AMMOXIDATION CATALYSTS

Jerry R. Ebner, St. Charles, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 104,625, Dec. 17, 1979, abandoned. This application Apr. 14, 1981, Ser. No. 254,231

Int. Cl.³ B01J *21/02, 27/14, 27/02, 29/16*

U.S. Cl. 252—432 17 Claims

1. A catalyst for oxidation and ammoxidation of hydrocarbons comprising catalytic elements having the empirical formula

$$BiMo_aV_bSb_c[M_d]O_x$$

wherein a is from 0.5 to 2, b is from 0.12 to 3, c is from 0.12 to 10, and x is taken to satisfy the valence requirements of the other elements present said catalyst being prepared by forming a mixture containing a preformed vanadium antimonate component and a bismuth molybdate component forming said mixture into dry particles, and calcining at a temperature of from 500° to 850° C.

4,405,499

ZEOLITE-RUTHENIUM-BORANE CATALYST COMPOSITION

Wen-Ghih Tsang, Framingham, Mass., and Lynn H. Slaugh, Cypress, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Aug. 23, 1982, Ser. No. 410,298

Int. Cl.³ B01J *29/12, 21/02*

U.S. Cl. 252—432 2 Claims

1. A catalyst composition prepared by a process which comprises:

a. ion-exchanging the sodium ions of the sodium form of a faujasite type zeolite with ruthenium ions by contacting said zeolite with a solution containing a soluble ruthenium compound,

b. calcining the ruthenium exchange zeolite in nitrogen at a temperature ranging from about 300° C. to about 600° C.

c. contacting the ruthenium-containing zeolite with hydrogen at a temperature ranging from about 300° C. to about 600° C. whereby the ruthenium is reduced to the metal,

d. contacting the ruthenium metal-containing zeolite with a solution of borane,

e. calcining the borane treated zeolite in nitrogen at a temperature ranging from about 300° C. to about 400° C. and then

f. contacting the borane-treated zeolite with hydrogen at a temperature ranging from about 300° C. to about 400° C.

4,405,500

HALOGEN COMPOUND PROMOTED AL_2O_3 AND/OR SIO_2 FOR THE PREPARATION OF ISOALKENES

Hans J. Müller, Leverkusen; Helmar Hönig, Hamburg, and Werner Horlitz, Dormagen, all of Fed. Rep. of Germany, assignors to EC Erdolchemie GmbH, Cologne, Fed. Rep. of Germany

Filed Dec. 2, 1981, Ser. No. 326,711

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048693; Apr. 29, 1981, 3117053; Sep. 19, 1981, 3137383

Int. Cl.³ B01J *27/08, 27/12, 21/02;* C07C *11/02*

U.S. Cl. 252—433 19 Claims

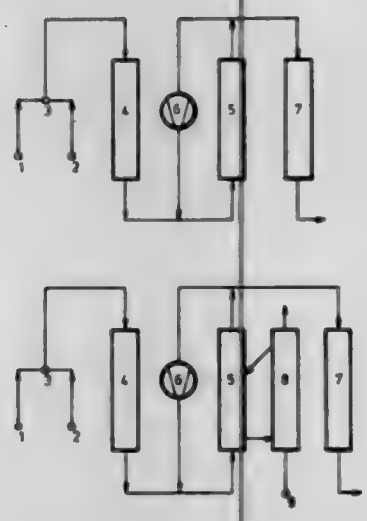
1. A catalyst comprising an Al_2O_3 and/or SiO_2 containing 0.1 to 20% by weight, relative to the quantity of Al_2O_3 and/or SiO_2, of at least one halogen compound of an element of the third to fifth main groups and/or second to eighth sub-groups of the Mendeleen periodic system and/or a hydrogen halide acid which catalyst has been prepared by a process comprising:

(a) calcining an aluminum hydroxide and/or aluminum oxide hydrate and/or silica gel having a content of about 10–70% by weight relative to dried aluminum hydroxide and/or aluminum oxide hydrate and/or silica gel of volatile ammonium salts absorptively bonded whereby to

provide Al_2O_3 and/or SiO_2 by expulsion of the volatile ammonium salts;

(b) contacting the resultant Al_2O_3 and/or SiO_2 with a halogen compound of an element of the third to fifth main groups and/or second to eighth sub-groups of the periodic system and/or a hydrogen halide acid.

2. A catalyst according to claim 1, wherein after contact of said Al_2O_3 and/or SiO_2 with said halogen compound or hydrogen halide acid the Al_2O_3 and/or SiO_2-containing catalyst is calcined.



4. A catalyst according to claim 3, which has a particle size of 0.05 to 10 mm.

5. A catalyst according to claim 1 wherein said resultant Al_2O_3 and/or SiO_2 is treated with a halogen compound of aluminum, boron, tin, germanium, titanium, arsenic, antimony, bismuth, zinc, cadmium, lanthanum, vanadium, tungsten, iron, cobalt, or nickel or a hydrogen halide acid.

4,405,501

AGING OF CHROMIUM-CONTAINING GEL AT HIGH PH

Donald R. Witt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 20, 1982, Ser. No. 340,938

Int. Cl.³ B01J *21/08, 23/26*

U.S. Cl. 252—452 **25 Claims**

1. A process comprising:

forming a co-gelled silica-chromium hydrogel;

aging said hydrogel for a time of at least one hour;

maintaining a pH of said hydrogel during at least a major portion of said aging at a value within the range of 7 to 9; and

treating said hydrogel with a volatile liquid organic compound to remove water and thus convert said hydrogel to a xerogel, said chromium being present in an amount to give 0.001 to 10 weight percent chromium based on the weight of said xerogel.

14. A catalyst produced by the method of claim 1.

15. A process comprising:

forming a silica, titania, chromium tergel hydrogel, said chromium coming from a coordination chromium compound having a nitrogen-containing group;

aging said hydrogel for at least one hour; and

treating said hydrogel with a volatile liquid organic compound to remove water and thus convert said hydrogel to a xerogel.

25. A method according to claim 15 wherein said chromium compound is selected from

(a) compounds of the formula $CrX_3.yNH_3$ where X is a halogen ion selected from Cl^-, Br^-, I^{31} and y is an integer ranging from 1 to 6;

(b) chromammines containing 6 neutral groups of the formula $[CrA_6]Z_3$ in which A is selected from NH_3, ethylenediamine and unsymmetrical propylenediamine provided further that a portion of A can be H_2O and Z is an acid radical selected from Cl^-, Br^-, I^-, NO_3^-, SO_4^{-2} and PO_4^{-3};

(c) chromammine compounds containing 5 neutral groups of the formula: $[CrA_5Y]Z_2$ where A and Z are as before and Y is a radical from a monobasic acid selected from Cl^-, Br^-, I^-, NO_2^-, NO_3^-, OH^- and CNS^-; and

(d) chromammine compounds containing 5 neutral groups of the formula $[CrA_5W]V$ where A is as before, V is Cl^-, Br^-, I^-, $(OH)^-$, and W is a radical from a dibasic acid selected from SO_3^{-2}, SO_4^{-2}, CO_3^{-2} and $C_2O_4^{-2}$.

4,405,502

CRYSTALLINE CHROMOSILICATE CATALYTIC COMPOSITIONS

Marvin R. Klotz, Batavia, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 69,236, Aug. 23, 1979, Pat. No. 4,299,808, which is a continuation-in-part of Ser. No. 927,843, Jul. 25, 1978, abandoned, which is a continuation of Ser. No. 733,269, Oct. 18, 1976, abandoned. This application Jul. 9, 1981, Ser. No. 281,828

The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

Int. Cl.³ B01J *29/00, 29/04*

U.S. Cl. 252—455 R **26 Claims**

1. A catalytic composition which comprises a crystalline chromosilicate and a porous refractory inorganic oxide, said chromosilicate and said refractory inorganic oxide having been intimately admixed with one another, said chromosilicate comprising a molecular sieve material providing an X-ray diffraction pattern comprising the following X-ray diffraction lines and assigned strengths:

Interplanar Spacing d, A	Assigned Strengths
11.15 ± 0.2	W
9.96 ± 0.2	VS
5.99 ± 0.1	VW
5.71 ± 0.1	VW
4.97 ± 0.1	W
3.85 ± 0.07	M
3.82 ± 0.07	MS
3.75 ± 0.05	M
3.32 ± 0.05	VW
1.99 ± 0.02	W

and having the following composition in terms of mole ratios of oxides:

$$0.9\pm0.2\ M_{2/n}O:Cr_2O_3:YSiO_2:ZH_2O,$$

wherein M is at least one cation having a valence of n, Y is a value within the range of about 4 to about 500, and Z is a value within the range of 0 to about 160.

4,405,503

PRODUCTION OF ZEOLITE AGGLOMERATES

John L. Barclay, Tadworth; John D. Hargrove, Aldershot, and Richard J. Prince, Hampton, all of England, assignors to The British Petroleum Company Limited, London, England

Filed Nov. 18, 1981, Ser. No. 322,579

Claims priority, application United Kingdom, Nov. 21, 1980, 8037491

Int. Cl.³ B01J *37/00, 29/18*

U.S. Cl. 252—455 Z **8 Claims**

1. A method for the preparation of a strengthened agglomerate based on a zeolitic molecular sieve which method comprises treating the agglomerate with an aqueous solution of a water soluble silicon compound characterised by the fact that the zeolitic molecular sieve is subsequently treated with an aqueous solution of a mineral acid of sufficient strength to

decationize the molecular sieve and/or increase its SiO_2:Al_2O_3 ratio.

3. A method according to either of the preceding claims wherein the mineral acid is sulphuric or hydrochloric acid.

7. A method according to claim 1 wherein after the mineral acid treating step, the resulting agglomerate is impregnated with a hydrogenating component which is a Group VIII metal.

4,405,504

CATALYTIC COMPOSITIONS

Marvin R. Klotz, Batavia, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 69,236, Aug. 23, 1979, Pat. No. 4,299,808, which is a continuation-in-part of Ser. No. 927,843, Jul. 25, 1978, abandoned, which is a continuation of Ser. No. 733,269, Oct. 18, 1976, abandoned. This application Jul. 9, 1981, Ser. No. 281,839

The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

Int. Cl.³ B01J *29/00, 29/04*

U.S. Cl. 423—458 **16 Claims**

1. A catalytic composition which comprises a mixture of a crystalline chromosilicate and an oxide of chromium, said catalytic composition providing an X-ray diffraction pattern comprising the following X-ray diffraction lines and assigned strengths:

Interplanar Spacing d, A	Assigned Strength
11.14 ± 0.2	M
9.89 ± 0.2	VS
3.85 ± 0.07	MS
3.81 ± 0.07	M
3.72 ± 0.05	M
3.63 ± 0.05	M
2.67 ± 0.02	M
2.48 ± 0.02	M

and having the following composition in terms of mole ratios of oxides:

$0.9 \pm 0.2\ M_{2/n}O:Cr_2O_3:YSiO_2:ZH_2O$,

wherein M is at least one cation having a valence of n, Y is a value within the range of about 4 to about 500, and Z is a value within the range of 0 to about 160.

4,405,505

CATALYST FOR THE PREPARATION OF PHTHALIC ANHYDRIDE

Amleto Neri, Bergamo; Lorenzo Capitanio, Mozzo, and Giancarlo Stefani, Gorle, all of Italy, assignors to Alusuisse Italia S.p.A., Milan, Italy

Filed Mar. 25, 1981, Ser. No. 247,357

Claims priority, application Italy, Apr. 2, 1980, 21134 A/80

Int. Cl.³ B01J *21/06, 23/22, 35/02*

U.S. Cl. 252—461 **3 Claims**

1. A catalyst for the preparation of phthalic anhydride by oxidation of ortho-xylol or naphthalene, comprising as the active component thereof a mixture of vanadium pentoxide and titanium dioxide in a 1:5 to 1:20 ratio by weight, said titanium dioxide having more than 50% of the total pore volume thereof with radii in the 500 to 1,500 Angstrom range, said active component being distributed over an inert support or carrier comprising half-rings.

4,405,506

SUPPORTED PLATINUM GROUP METAL CATALYSTS WITH CONTROLLED METAL PENETRATION

Gwan Kim, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Apr. 13, 1981, Ser. No. 253,970

Int. Cl.³ B01J *23/10, 23/56, 27/02*

U.S. Cl. 252—462 **28 Claims**

1. A catalyst composition comprising platinum, palladium and rhodium deposited on a refractory inorganic oxide support and having a maximum platinum concentration within 20 microns of the exterior surface of the support, at least about 70 percent of the total platinum located within 100 microns of the external surface of the support, at least about 10 percent of the total palladium located within 20 microns of the external surface of the support, a maximum rhodium concentration within 20 microns of the external surface of the support, at least about 30 percent of the total rhodium located within 20 microns of the external surface of the support, and at least about 40 percent of the total rhodium located at 20 to 100 microns from the external surface of the support.

13. A method of preparing the catalyst composition of claim 1 comprising impregnating a refractory inorganic oxide support with a palladium sulfito complex solution; impregnating the support with a mixture of a platinum sulfito complex solution, a rhodium nitrate solution, and a rhodium sulfito complex solution, said rhodium nitrate solution and rhodium sulfito complex solution being present in the mixture in amounts such that from about 30 to about 70 weight percent of the total rhodium in the mixture is provided by each solution; and activating the impregnated support.

4,405,507

OZONE ABATEMENT CATALYST HAVING IMPROVED DURABILITY AND LOW TEMPERATURE PERFORMANCE

William F. Carr, Monmouth Junction, and James M. Chen, Rahway, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Division of Ser. No. 218,374, Dec. 22, 1980, Pat. No. 4,343,776. This application Apr. 21, 1982, Ser. No. 370,427

Int. Cl.³ B01J *21/04, 23/40, 23/89*

U.S. Cl. 252—466 B **2 Claims**

1. An ozone decomposition catalyst comprising:

(a) a carrier or support consisting of a plurality of spaced catalyst beds or monoliths arranged in series within a reaction zone;

(b) at least one platinum group metal or catalytically-active compound thereof; and (c) at least one nonprecious Group VIII metal oxide or aluminate;

the arrangement of active material favoring exposure to ozone of the platinum group metal component over the nonprecious Group VIII metal oxide or aluminate and wherein about 1.0–7.00 T.O./ft^3 Pd or higher is utilized in conjunction with NiO in a weight ratio of 1.0:0.5–5.0.

4,405,508

METHOD OF PRODUCING CERAMIC MATERIAL FOR ZINC OXIDE VARISTORS

Max-Ferdinand Eckel, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 25, 1981, Ser. No. 296,150

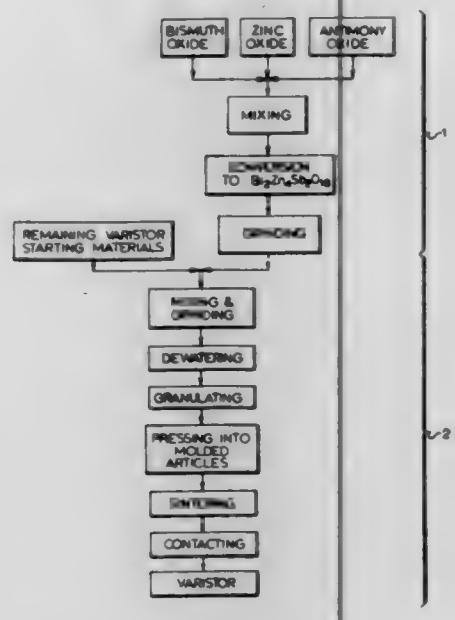
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036617

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—518 **2 Claims**

1. In a method of producing ceramic materials for zinc oxide varistors wherein such materials contain antimony, which is

added to the initial starting materials as a pentavalent compound, the improvement comprising wherein:



said antimony is added in the form of a pyrochlore compound which has the formula $Bi_6Zn_4Sb_2O_{18}$.

4,405,509

FRAGRANCE-EMITTING COMPOSITIONS AND ARTICLES

Jack M. Rogers, Tomball, Tex.; Richard Tokosh, Saddlebrook, N.J.; Charles Porter, Harriman, and James Martine, Monroe, both of N.Y., assignors to Avon Products, Inc., New York, N.Y.

Filed Oct. 9, 1981, Ser. No. 310,043
Int. Cl.³ A61K *7/46*; C11B *9/00*
U.S. Cl. 252—522 A **8 Claims**

1. A fragrance-emitting composition comprising 73 to 88 weight percent petroleum wax, 1 to 5 weight percent ethylene vinyl acetate copolymer having an average molecular weight below 10,000, 2 to 7 weight percent butyl rubber and 9 to 15 weight percent fragrance.

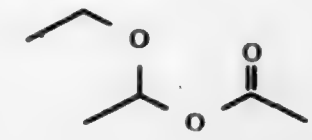
4,405,510

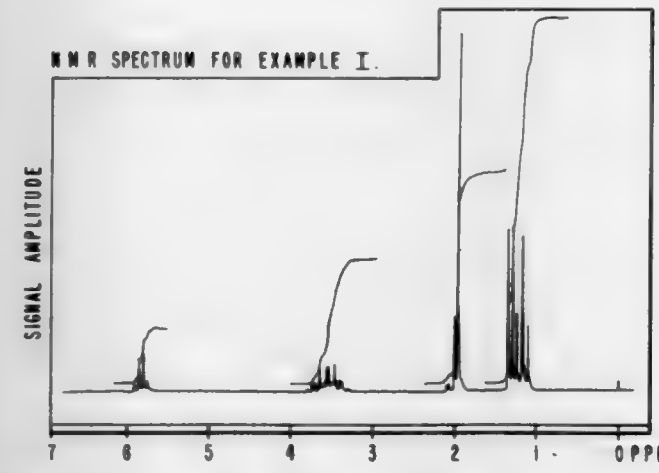
1-ETHOXY-1-ETHANOL ACETATE-ACETALDEHYDE MIXTURES AND USES THEREOF FOR AUGMENTING OR ENHANCING THE AROMA OR TASTE OF CONSUMABLE MATERIALS

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 287,935, Jul. 29, 1981, Pat. No. 4,348,146, which is a continuation-in-part of Ser. No. 176,111, Aug. 7, 1980, Pat. No. 4,296,137. This application Mar. 26, 1982, Ser. No. 362,239
The portion of the term of this patent subsequent to Sep. 7, 1999, has been disclaimed.
Int. Cl.³ C11B *9/00*
U.S. Cl. 252—522 R **1 Claim**

1. A process for augmenting or enhancing the aroma of a perfumed composition or a cologne comprising the step of adding to a perfume base or a cologne base an aroma augmenting or enhancing quantity of a mixture of 1-ethoxy-1-ethanol acetate having the structure:





and acetaldehyde, the range of weight ratios of 1-ethoxy-1-ethanol acetate: acetaldehyde being from 50:50 down to 5:95.

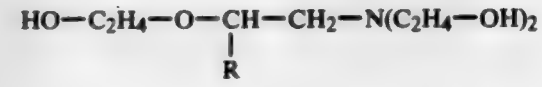
4,405,511

CLEANING INTENSIFIER FOR USE IN DRY-CLEANING MACHINES EQUIPPED WITH ADSORPTION FILTERS

Kaspar D. Hasenclever, Taunusstein, Fed. Rep. of Germany, assignor to Chemische Fabrik Kreussler & Co. GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,636
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111129
Int. Cl.³ C11D *1/40, 1/44, 3/43*; D06L *1/04*
U.S. Cl. 252—547 **4 Claims**

1. A cleaning intensifier for use in drycleaning machines equipped adsorption filters comprising in addition to a nonionic surfactant, an alcohol and water, a quaternary ammonium salt in the form of difatty alkyl dimethyl ammonium chloride containing from 12 to 18 carbon atoms in the alkyl radical or a mixture of the homologues, and the triammonium salt of a tricarboxylic acid and a tertiary amine in the form of a fatty alkyl dimethylamine containing from 8 to 18 carbon atoms in the alkyl radical or a hydroxy ethyl amine derivative corresponding to the formula



where R is a fatty alkyl radical containing from 10 to 18 carbon atoms, or a mixture of these triammonium salts wherein said recited components are present in amounts and proportions effective so as not to be adsorbed to any significant extent by the adsorption filters, to reduce discoloration of textiles and to ensure that cleaned textiles do not build up any substantial electrostatic charge.

4,405,512

PROCESS FOR ENCAPSULATING RADIOACTIVE ORGANIC LIQUIDS IN A RESIN

Harold E. Filter, and Stevens S. Drake, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 32,992, Apr. 25, 1979, abandoned. This application Dec. 3, 1980, Ser. No. 212,474
Int. Cl.³ G21F *9/16*
U.S. Cl. 252—628 **8 Claims**

1. A process for encapsulating low level radioactive liquid organic waste in a cured resin into a form suitable for burial

wherein said resin is an unsaturated polyester, a vinyl ester resin or a mixture thereof and wherein said waste is a solvent for or is soluble in the uncured resin and is more soluble in water than in the resin, said process comprising the dilution of said waste with water to an extent that the amount of waste that will partition in said uncured resin is less than the amount to retard the cure rate or to adversely affect physical properties of the cured product, followed by the uniform dispersion of the aqueous solution in said curable resin system after which said resin is cured to a solid with said waste dispersed therein.

4,405,513

NOVEL CATIONIC-SUBSTITUTED 9,10-BIS-(PHENYLETHYNYL)ANTHRACENES

Victor M. Kamhi, Middlesex, N.J., assignor to American Cyanamid Company, Stamford, Conn.

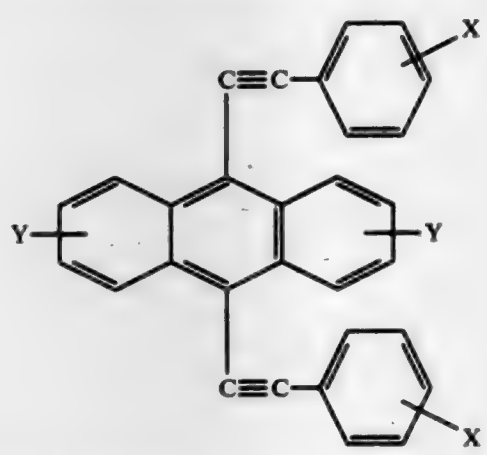
Filed Jun. 16, 1982, Ser. No. 388,853

Int. Cl.³ C09K *11/06*

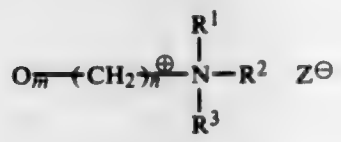
U.S. Cl. 252—700 **11 Claims**

1. A compound defined by the formula

(I)



wherein at least one of the X and Y substituents is a radical defined by the formula:



wherein

m is zero or one,

n is an integer from 1 to 5,

R^1 is C to C_8 alkyl,

R^2 and R^3 are each C_1 to C_8 alkyl or together with the N-atom form a piperidinium, morpholinium or pyrrolidinium ring,

$Z^{\ominus}$ is an anion, and

wherein any remaining X and Y substituents are hydrogen.

4,405,514

PREPARATION OF ESTERS OF RESIN ACIDS, RESINS, ROSINS, AND DERIVATIVES THEREOF

Duane F. Zinkel, Madison, Wis., and Kunio Arimoto, Takasago, Japan, assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 8, 1983, Ser. No. 473,396

Int. Cl.³ C09F *1/00, 7/00, 9/00*

U.S. Cl. 260—102 **16 Claims**

1. A process for preparing esters of sterically hindered carboxylic acid components of rosins or resin acids comprising the steps of (a) reacting at a temperature of between about 20° C. to 90° C. for about 2 to 6 hours a quaternary amine salt of said carboxylic acid components with an alkyl or alkenyl halide wherein the amine salt is derived from a quaternary ammonium hydroxide represented by the formula $N(R)_4OH$ wherein R is alkyl or aryl and each R can be the same or different and wherein the alkyl or alkenyl halide is represented by the formula $R_1(X)_n$ wherein R_1 is lower alkyl of from 1 to 6 carbon atoms or lower alkenyl of from 2 to 6 carbon atoms; X is chlorine, bromine or iodine and n is 2 or 3, with the proviso that $R_1(X)_n$ is not chloroform, carbon tetrachloride or 1,2-dichloroethylene, and (b) recovering the resulting esterified product.

4,405,515

HETEROFULVALENE GEMINAL DITHIOLATE COMPOUNDS AND THEIR SELENIUM AND TELLURIUM ANALOGS AND A METHOD OF FABRICATING THE SAME

Edward M. Engler, Wappingers Falls; Vishnubhai V. Patel, Yorktown Heights, both of N.Y., and Robert R. Schumaker, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 38,050, May 10, 1979, Pat. No. 4,312,991.

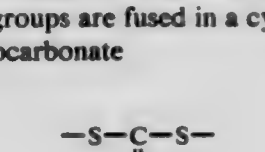
This application Aug. 17, 1981, Ser. No. 293,569

The portion of the term of this patent subsequent to Dec. 7, 1999, has been disclaimed.

Int. Cl.³ C07D *409/04*

U.S. Cl. 260—239 R **2 Claims**

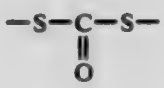
2. A composition of matter having the general structure formula



wherein,

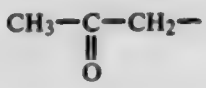
X is selected from the group consisting of S, Se and Te

R is selected from the group consisting of H, lower alkyl, phenyl, cyclopentyl, cyclohexyl and benzo and furan, thiophene and dihydrothiophene groups, cyano and where said R groups are fused in a cyclic or heterocyclic ring or a dithiocarbonate



group and where

R^1 is selected from the group consisting of



lower alkyl, lower alkenyl, lower alkynyl, phenyl, acyl from a carboxylic acid group, cyclopentyl, cyclohexyl and benzo and furan, thiophene and dihydrothiophene and where said R^1 groups are fused in a cyclic or heterocyclic ring.

4,405,516

BENZODIAZEPINE DERIVATIVES

Walter Hunkeler, Magden, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 345,852, Feb. 4, 1982, Pat. No. 4,352,815.

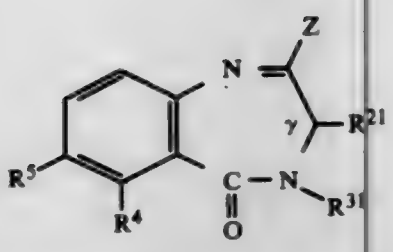
This application Jul. 30, 1982, Ser. No. 403,843

Claims priority, application Switzerland, Feb. 27, 1981, 1338/81

Int. Cl.³ C07D *434/14*

U.S. Cl. 260—239.3 B **5 Claims**

1. A compound of the formula



wherein either R^{21} is hydrogen and R^{31} is lower alkyl or R^{21} and R^{31} together are dimethylene, trimethylene or propenylene and the carbon atom denoted as γ has the (S)- or (R,S)-configuration, one of R^4 and R^5 is hydrogen and the other is nitro or cyano and Z is selected from the group consisting of a halogen atom, an alkylthio group, an aralkylthio group, an N-nitrosoalkylamino group, an alkoxy group, a mercapto group, the group



wherein R^9 is lower alkyl and the group



wherein R and R′ are lower alkyl, alkyl, phenyl or substituted phenyl or R and R′ together with the nitrogen atoms are morpholino.

4,405,517

AZETO-DIAZEPINES

Walter Hunkeler, Magden, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 349,405, Feb. 16, 1982, Pat. No. 4,352,816. This application Jul. 30, 1982, Ser. No. 403,845

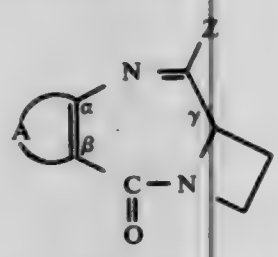
Claims priority, application Switzerland, Feb. 27, 1981, 1339/81

Int. Cl.³ C07D *513/14, 513/04*

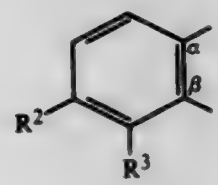
U.S. Cl. 260—239.3 T **3 Claims**

1. A compound of the formula

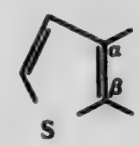
II



wherein A together with the two carbon atoms denoted as α and β is the group

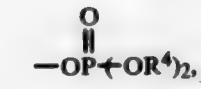


(a) or



(b);

wherein R^2 is hydrogen, trifluoromethyl or halogen; R^3 is hydrogen, trifluoromethyl, halogen or lower alkyl and Z is selected from the group consisting of halogen, alkylthio, aralkylthio, N-nitrosoalkylamino, alkoxy, mercapto,



wherein R^4 represents lower alkyl or



wherein R^5 and R^6 each represent lower alkyl, or phenyl or R^5 and R^6 together with the nitrogen atom to which they are attached represent morpholino.

4,405,518

PYRROLO[3,4-d] [2] BENZAZEPINES

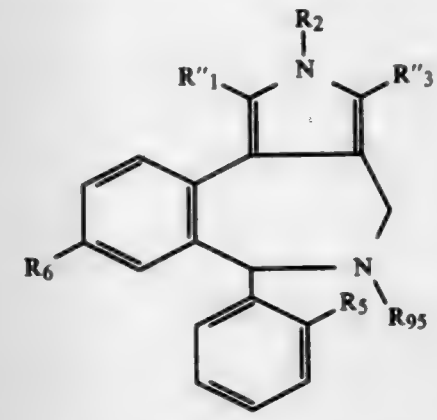
Rodney I. Fryer, North Caldwell; Eugene J. Trybulski, Parsippany, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 286,124, Jul. 23, 1981, Pat. No. 4,354,973, which is a continuation-in-part of Ser. No. 175,555, Aug. 5, 1980, abandoned. This application Aug. 2, 1982, Ser. No. 404,936

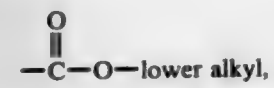
Int. Cl.³ C07D *487/04*

U.S. Cl. 260—245.7 **1 Claim**

1. The compound of the formula



wherein R_1'' and R_3'' are selected from the group consisting of hydrogen, lower alkyl, C_3 to C_7 alkenyl and C_3 to C_7 alkynyl; R_{95} is lower alkyl; R_5 is hydrogen or halogen; R_6 is halogen and R_2 is selected from the group consisting of hydrogen, lower alkyl, C_3 to C_7 alkenyl, or C_3 to C_7 alkynyl, the group



hydroxy C_2 to C_7 alkyl and amino or mono- or di-lower alkyl amino C_2 to C_7 alkyl, the group C_1 to C_6 lower alkyl-COR_{21} where R_{21} is hydroxy, lower alkoxy, amino or amino which is mono- or di-substituted by lower alkyl.

4,405,519

DI-ACETYLENE-TERMINATED POLYIMIDE DERIVATIVES

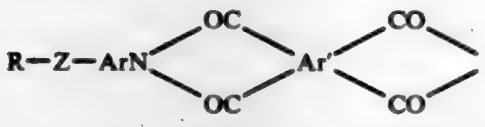
Gaetano F. D'Alelio, deceased, late of South Bend, Ind. (by St. Joseph Bank and Trust Company, executor), and Phillip A. Waitkus, Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

Continuation-in-part of Ser. No. 199,604, Oct. 22, 1980, abandoned. This application Mar. 2, 1982, Ser. No. 353,861

Int. Cl.³ C07D *209/34, 471/00*; C08F *22/40*

U.S. Cl. 548—423 **26 Claims**

1. A polyimide of the formula:





wherein:

Ar′ is a tetravalent aromatic radical, the four carbonyl groups being attached directly to separate carbon atoms of said aromatic radical and each pair of carbonyl groups being attached to adjacent carbon atoms in Ar′ except that in the case of Ar′ being a naphthalene radical, one or both pairs of the carbonyl groups may be attached to peri-carbon atoms;

Ar is a divalent aromatic radical;

n is an integer having a value of one to 20;

R is hydrogen or an organic moiety containing one to 21 carbon atoms; and

Z is the structure —C≡C—C≡C—.

4,405,520

ADDITION PRODUCTS OF DI-ACETYLENE-TERMINATED POLYMIDE DERIVATIVES AND DIENOPHILES HAVING TERMINAL MALEIMIDE GROPS

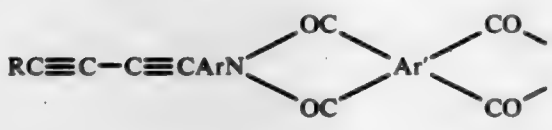
Gaetano F. D'Alelio, deceased, late of South Bend, Ind. (by St. Joseph Bank and Trust Company, executor), and Phillip A. Waitkus, Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

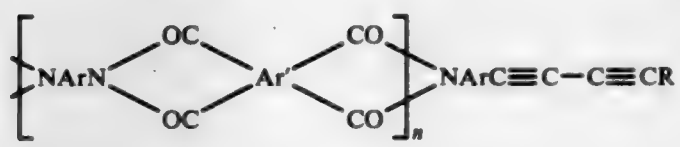
Continuation-in-part of Ser. No. 199,609, Oct. 22, 1980, abandoned. This application Mar. 2, 1982, Ser. No. 353,864

Int. Cl.³ C07D *209/34, 471/00;* C08F *22/40*

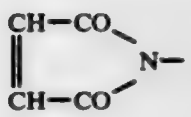
U.S. Cl. 548—423 **18 Claims**

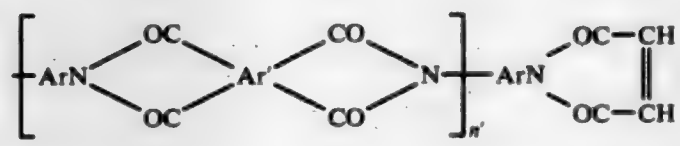
1. The Diels-Alder addition product of a composition of matter comprising a polyimide having the formula:





with a dienophile having the formula





wherein:

Ar′ is a tetravalent aromatic organic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to the adjacent carbon atoms in Ar′ except in the case of Ar′ being a naphthalene radical, one or both pairs of the carbonyl groups may be attached to peri-carbon atoms;

Ar is a divalent aromatic organic radical;

n is zero or an integer having a value of one to 20;

n′ is zero or an integer having a value of one to 20; and

R is hydrogen or an organic moiety containing 1 to 21 carbon atoms.

4,405,521

ADDITION PRODUCTS OF DI-ACETYLENE-TERMINATED POLYIMIDE DERIVATIVES WITH A POLYIMIDE HAVING TERMINAL ETHYLENIC GROUPS

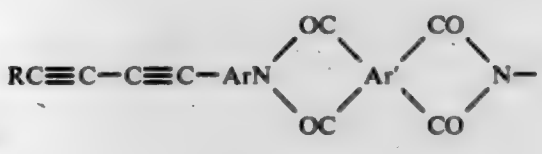
Gaetano F. D'Alelio, deceased, late of South Bend, Ind. (by St. Joseph Bank and Trust Company, executor), and Phillip A. Waitkus, Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

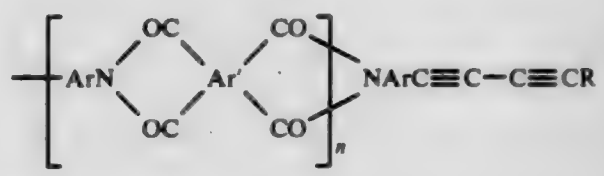
Continuation-in-part of Ser. No. 199,613, Oct. 22, 1980, abandoned. This application Mar. 2, 1982, Ser. No. 353,868

Int. Cl.³ C07D *209/34, 471/00;* C08F *22/40*

U.S. Cl. 548—423 **22 Claims**

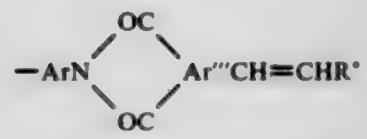
1. The Diels-Alder addition product of a composition of matter comprising a polyimide of the formula:





and a dienophile of the formula:





wherein:

Ar′ is a tetravalent aromatic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to the adjacent carbon atoms in Ar′ except in the case of Ar′ being a naphthalene radical, one or both pairs of the carbonyl groups may be attached to peri-carbon atoms;

Ar is a divalent aromatic radical;

R is hydrogen or an organic moiety containing 1 to 21 carbon atoms;

n is zero or an integer having a value of one to 20;

R° has the same definition as given for R;

n′ has the same definition as given for n; and

Ar′′′ is a trivalent aromatic radical containing 6 to 12 carbon atoms, to which the attached pair of carbonyl groups is attached to adjacent or peri carbon atoms in said Ar′′′ radical.

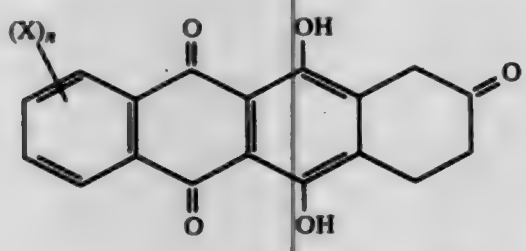
4,405,522

ANTHRACYCLINE SYNTHESIS

Lester A. Mitscher, Lawrence, Kans., assignor to Adria Laboratories Inc., Columbus, Ohio

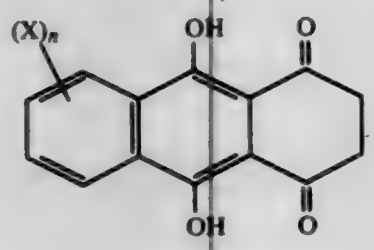
Filed Jan. 18, 1982, Ser. No. 340,434
Int. Cl.³ C07C *50/34, 50/16*
U.S. Cl. 260—365 4 Claims

1. A process for producing a 5,12-dihydroxy-1,3,4-trihydro-2,6,11-tetracenetrione compound having the formula:



where X is selected from —OH, —CH_3, —OCH_3, and Cl and n is an integer from 0–2 and when n is 2 the X's are symmetrically substituted on the ring; said process comprising:

(a) reacting a C_1–C_3 alkyl acrylate with a leucoquinizarin having the formula:



where X and n are as defined above, to produce 1,4-dihydroxy-2-(1-ethylcarboxy alkyl)-9,10-anthraquinone;

(b) reducing the compound of (a) by catalytic hydrogenation to produce 2,3-dihydro-5,10-dihydroxy-2-(1-ethylcarboxy alkyl)-anthracene-1,4-dione;

(c) reacting the compound of (b) with a C_1–C_3 alkyl glyoxylate to produce 1,4-dihydroxy-3-(1-methylcarboxy alkyl)-2-(1-ethylcarboxy alkyl)-9,10-anthraquinone;

(d) cyclization of the compound of (c) to produce 3,4-dihydro-5,12-dihydroxy-1-(alkyl-carboxy)-2,6,11-tetracenetrione; and

(e) decarboxylation of the compound of (d) to produce the 5,12-dihydroxy-1,3,4-trihydro-2,6,11-tetracenetrione compound whose formula is shown above.

4,405,523

PROCESS FOR PREPARATION OF BENZOPHENONE, ANTHRAQUINONE AND O-DIBENZOYLBENZENE

Ellis K. Fields, River Forest, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 24, 1982, Ser. No. 361,398
Int. Cl.³ C07C *50/18, 69/76, 49/657*
U.S. Cl. 260—369 12 Claims

1. A process for the synthesis of at least one compound of the group comprising benzophenone, anthraquinone, and o-dibenzoylbenzene compounds which comprises pyrolysis of a metal salt of a benzoic acid compound, said metal of said salt being selected from the group consisting essentially of yttrium, erbium, and dysprosium and mixtures thereof in an inert atmosphere at a temperature within the range of from about 200° C. to about 600° C. and a pressure of from about 0.1 to about 100 atmospheres.

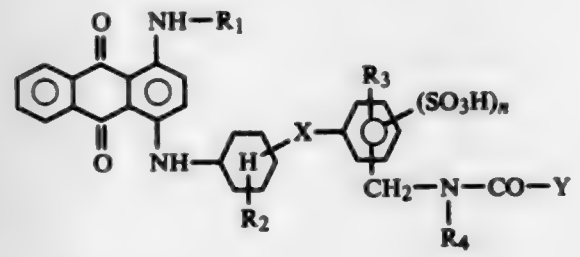
4,405,524

ANTHRAQUINONE DYES AND METHOD OF USE

Roland Wald, Huningue, France, assignor to Sandoz Ltd., Basel, Switzerland

Filed Mar. 23, 1979, Ser. No. 22,979
Claims priority, application Switzerland, Apr. 7, 1978, 3774/78
Int. Cl.³ C07C *103/76, 143/665;* C09B *1/28, 1/36*
U.S. Cl. 260—372 20 Claims

1. A compound of formula I,



I

in which

R_1 is alkyl or cycloalkyl,

R_2 is hydrogen, methyl or ethyl,

R_3 is hydrogen or methyl,

R_4 is hydrogen, methyl or ethyl, and Y—CO— is the radical of an organic aliphatic aromatic or araliphatic carboxylic acid containing a total of 2 to 12 carbon atoms,

X is a direct bond or (C_{1-3})alkylene,

n is 0 or 1

which compound, where n is 1, is in free acid or salt form.

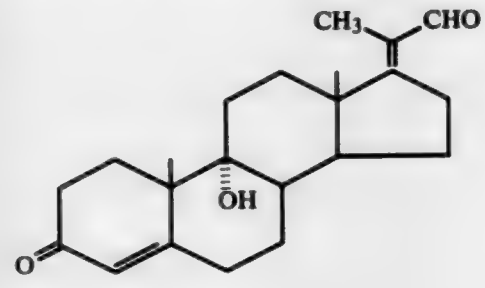
4,405,525

COMPOSITION OF MATTER AND PROCESS

John C. Knight, and Merle G. Wovcha, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 286,308, Jul. 24, 1981. This application Aug. 31, 1982, Ser. No. 413,578
Int. Cl.³ C07J *13/00*
U.S. Cl. 260—397.1 1 Claim

1. A compound of the formula



I

4,405,526

PROCESS FOR PRODUCING DIRECTLY ESTERIFIED FATTY ACYL ISETHIONATE BY A MIXED ZINC OXIDE-SULFONIC ACID CATALYST

Vincent Lamberti, Upper Saddle River, and Laurence K. Boen, Park Ridge, both of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Aug. 24, 1981, Ser. No. 295,943
Int. Cl.³ C07C *143/90;* C11D *1/28*
U.S. Cl. 260—400 5 Claims

1. A method of producing directly esterified fatty acyl isethionate consisting essentially of reacting a fatty acid with an alkali metal isethionate in the presence of a catalyst comprising a mixture of ZnO and an organic sulfonic acid wherein the molar ratio of ZnO to organic sulfonic acid is about 1:1.7 to about 1:0.5 and heating at about 200° C. to about 255° C. for sufficient time to produce the desired directly esterified fatty acyl isethionate.

4,405,527
PROCESS FOR THE PREPARATION OF POLYISOCYANATES

Gerhard Wegener, Wuppertal; Hartmut Knöfel, Odenthal; Günther Ellendt, and Marcel Petinaux, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 12, 1982, Ser. No. 397,652

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1981, 3129270

Int. Cl.³ C07C *118/02*

U.S. Cl. 260—453 PH 7 Claims

1. A process for the production of a polyisocyanate comprising:

(a) reacting a polyamine solution with a solution of phosgene;

(b) removing excess phosgene and any hydrogen chloride formed during the reaction of (a);

(c) removing the solvent and volatile isocyanate group-containing compounds from the reaction mixture of (b) by distillation;

(d) condensing the solvent and volatile compounds removed in (c);

(e) treating all or a portion of the condensate of (d) with a compound containing isocyanate reactive hydrogen atoms; and optionally,

(f) removing nonvolatile reaction products formed during the treatment (e); and

(g) recycling the treatment condensate of (e) or (f) to the reaction mixture.

4,405,528
METHOD OF PREPARING 4-(α-ALKYL-α-CYANO-METHYL)2,6-DI-SUBSTITUTED PHENOLS

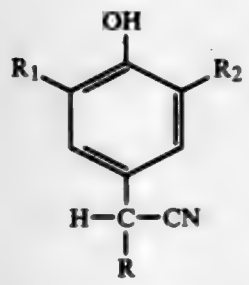
Charles Everly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Jun. 7, 1982, Ser. No. 385,610

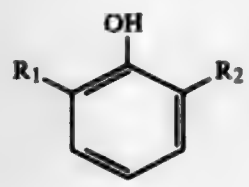
Int. Cl.³ C07C *121/75, 59/11*

U.S. Cl. 260—465 F 31 Claims

1. A process for the preparation of 4-(α-alkyl-α-cyano-methyl)2,6-di-substituted phenol having the formula

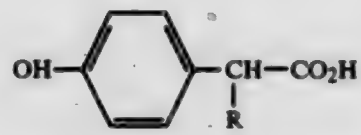


wherein R is methyl, ethyl, n-propyl, or isopropyl and R_1 and R_2 are the same or different monovalent substituent selected from the group consisting of alkyl, aralkyl and cyclic alkyl radicals which comprises reacting a (i) di-substituted phenol having the formula

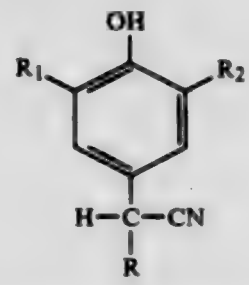


wherein R_1 and R_2 are as defined above with a Friedel-Crafts addition agent in the presence of a Friedel-Crafts catalyst to form the corresponding 4-(α-alkyl-α-oxo-methyl)2,6-di-substituted phenol, (ii) reducing said 4-(α-alkyl-α-oxo-methyl)2,6-di-substituted phenol thus produced to form the corresponding 4-(α-alkyl-α-hydroxy-methyl)2,6-di-substituted phenol and thereafter (iii) reacting said 4-(α-alkyl-α-hydroxy-methyl)2,6-di-substituted phenol with an alkali metal or an alkali earth metal cyanide in a suitable reaction solvent to form the corresponding 4-(α-alkyl-α-cyano-methyl)2,6-di-substituted phenol.

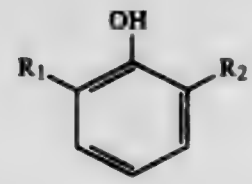
13. A process for preparing α-alkyl-4-hydroxyphenylacetic acid having the formula



wherein R is methyl, ethyl, n-propyl or isopropyl which comprises (i) preparing a 4-(α-alkyl-α-cyano-methyl)2,6-di-substituted phenol having the formula



wherein R is as defined above and R_1 and R_2 are the same or different monovalent substituent selected from the group consisting of alkyl, aralkyl and cyclic alkyl radicals by reacting a di-substituted phenol having the formula



wherein R_1 and R_2 are as defined above with a Friedel-Crafts addition agent in the presence of a Friedel-Crafts catalyst to form the corresponding 4-(α-alkyl-α-oxo-methyl)2,6-di-substituted phenol, (ii) reducing the 4-(α-alkyl-α-oxo-methyl)2,6-di-substituted phenol thus produced to form the corresponding 4-(α-alkyl-α-hydroxy-methyl)2,6-di-substituted phenol, (iii) reacting said 4-(α-alkyl-α-hydroxy-methyl)2,6-di-substituted phenol with an alkali metal or an alkaline earth metal cyanide in a suitable solvent to form the corresponding 4-(α-alkyl-α-cyano-methyl)2,6-di-substituted phenol, (iv) dealkylating the substituent groups ortho to the hydroxyl group from said 4-(α-alkyl-α-cyano-methyl)2,6-di-substituted phenol to form the corresponding 4-(α-alkyl-α-cyano-methyl)phenol and (v) converting said 4-(α-alkyl-α-cyano-methyl)phenol by hydrolysis to the corresponding α-alkyl-4-hydroxyphenylacetic acid.

4,405,529
METHOD FOR THE PREPARATION OF DIFLUOROMETHOXYAROMATIC COMPOUNDS

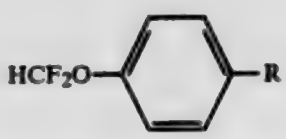
Jack K. Siddens, Princeton Junction, N.J., and Sivaraman Raghu, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sep. 20, 1982, Ser. No. 420,170

Int. Cl.³ C07C *121/75, 43/225, 69/712, 79/35*

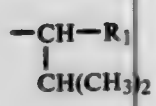
U.S. Cl. 260—465 F 9 Claims

1. A method for the preparation of a compound of the structural formula:



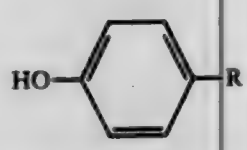
(I)

wherein R is C_1–C_3 alkyl, halogen, nitro, or R is the moiety



wherein R_1 is CN, $COOR_2$, OH, or OR_3, R_2 is C_1–C_3 alkyl, and R_3 is tosyl, mesyl, or C_2–C_4 alkanoyl, comprising: reacting one molar equivalent of a compound of structural formula

(II)



wherein R is as hereinabove defined, at a temperature ranging from approximately 20° to 40° C., in a solvent mixture, of 2-propanol:acetonitrile or 2-propanol:acetone wherein said solvent mixture contains the above solvents in 1:1 to 1:3 volume ratios and said solvent mixture is used in amounts of from 4 to 6 ml per gram of the compound of formula—(II) and in the initial presence of from approximately 870 to 1740 mol percent of water, with two to three molar equivalents of chlorodifluoromethane added under a pressure of from 0.4 to 2.5 kg cm^{-2} over a period of time ranging from approximately 30 minutes to 3.0 hours and with an aqueous solution of four molar equivalents of an alkali metal hydroxide of sodium or potassium hydroxide, wherein the concentration of said aqueous solution is such that on completion of the base addition the total amount of water added in the reaction mixture is of from approximately 1740 to 2610 mol percent, is added essentially simultaneously with the chlorodifluoromethane addition over a period of time ranging from approximately 1.0 to 5.0 hours, and on completion of the base addition the reaction mixture is further maintained at the above pressure and temperature ranges for a period of time of from 0 to 6 hours, or until said reaction is essentially complete.

4,405,530

PROCESS FOR PREPARING FLUORINATED AMINO-NITRILES

Fritz E. Gerhart, Kehl-Leutesheim, Fed. Rep. of Germany, assignor to Merrell Toraude et Compagnie, Strasbourg, France

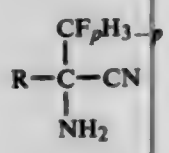
Continuation-in-part of Ser. No. 210,499, Nov. 26, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 321,505

Claims priority, application United Kingdom, Aug. 20, 1981, 8125475

Int. Cl.³ C07C *120/00, 121/43, 121/45, 121/78*

U.S. Cl. 260—465.5 R **18 Claims**

1. A process for preparing a compound of the formula:

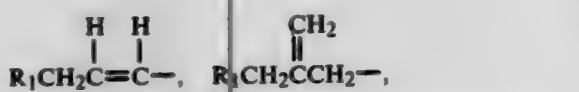


I

wherein:

p is 1 or 2 and

R is:



$R_2OCH_2CH_2CH_2$—, 

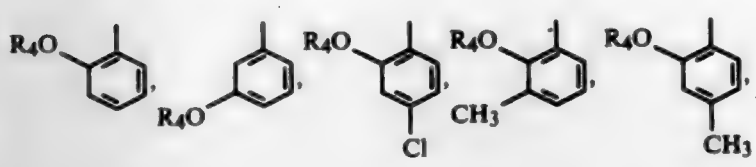
R_3CH_2—, or $CH_2{=}CHCH_2$—,

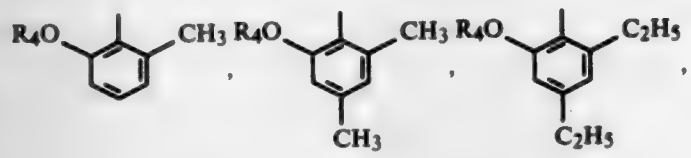
wherein:

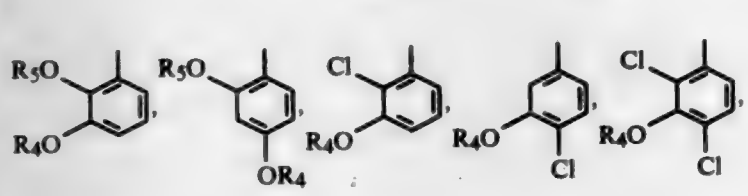
R_1 is hydrogen, methoxy, benzyloxy, diphenylmethoxy, triphenylmethoxy, or allyloxy;

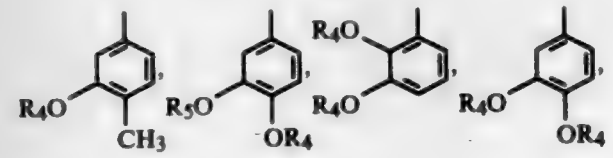
R_2 is methyl, benzyl, diphenylmethyl, triphenylmethyl, or allyl; and

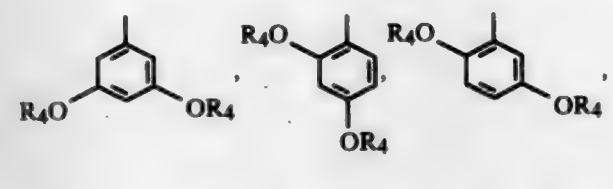
R_3 is a substituted-phenyl group of the formula:

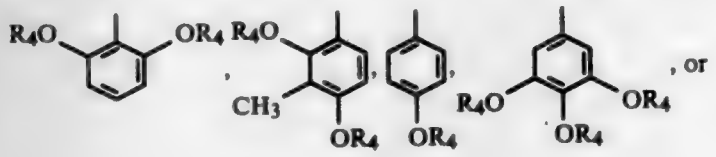


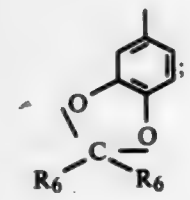




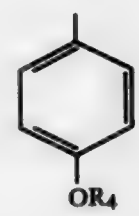






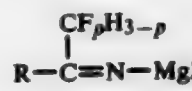


wherein R_4 is (C_1–C_8)alkyl, R_5 is benzyl, and R_6 is hydrogen or methyl; with the proviso that when R is R_3CH_2— wherein R_3 is



p cannot be 2;

which comprises treating a ketimine magnesium halide of the formula:



II

wherein R and p have the meanings hereinabove defined and Z is chloride, bromide, or iodide; with hydrogen cyanide or with an alkali metal cyanide or ammonium cyanide and a proton

source of sufficient acidity to form the corresponding imine from said ketimine magnesium halide.

4,405,531

SALTS OF N-PHOSPHONOMETHYLGLYCINE

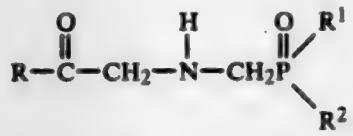
John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 630,392, Nov. 10, 1975, abandoned, which is a continuation of Ser. No. 362,712, May 22, 1973, abandoned, which is a division of Ser. No. 170,385, Aug. 9, 1971, Pat. No. 3,799,758, which is a continuation-in-part of Ser. No. 123,057, Mar. 10, 1971, abandoned. This application Mar. 8, 1982, Ser. No. 355,931

Int. Cl.³ C07C *9/38*

U.S. Cl. 260—501.12 **30 Claims**

1. A compound of the formula



wherein R, R^1 and R^2 are independently selected from the group consisting of —OH and —OR^6 wherein R^6 is a salt-forming cation selected from the group consisting of alkali metals, alkaline earth metals, copper, zinc, manganese, nickel, ammonium, and organic ammonium, and mixtures thereof provided that when the organic group is aryl the ammonium salt is a primary amine, further provided that no more than two of R, R^1 or R^2 are OR^6 when R^6 is ammonium or organic ammonium and that no more than two of R, R^1 and R^2 are —OH.

4,405,532

METHODS FOR STORAGE OF GUAYULE PLANT MATERIAL

Richard Gutierrez, Canal Fulton; Edward L. Kay, and David J. Serbin, both of Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Oct. 1, 1981, Ser. No. 307,405

Int. Cl.³ C08C *4/00, 2/00*

U.S. Cl. 260—816 R **3 Claims**

1. A method of storing guayule and guayule-like plant material prior to processing which comprises mixing the material in communited form with at least one essentially water-free organic liquid to form a slurry in which the material is protected from contact with oxygen and storing said slurry for at least about 24 hours, wherein said organic liquid is acetone or resin micella comprising acetone and at least about 4% guayule resin.

4,405,533

SUPPLY DEVICE FOR USE WITH EVAPORATIVE CONTACT BODIES

Per Norbäck, Lidingo, and Borje Eriksson, Sigtuna, both of Sweden, assignors to AB Carl Munters, Sollentuna, Sweden

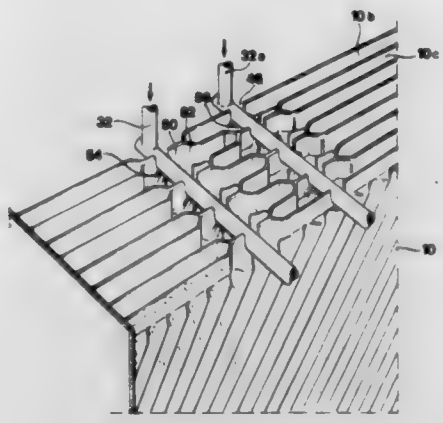
Continuation of Ser. No. 122,838, Jan. 17, 1980, abandoned, which is a continuation of Ser. No. 944,246, Sep. 21, 1978, abandoned. This application Jun. 7, 1982, Ser. No. 385,437

Claims priority, application Sweden, Sep. 21, 1978, 7710656

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—111 **5 Claims**

1. A supply device for use in a evaporative contact body of the multi-layer type having gaps between the layers of the body to which water is supplied from above and air is supplied from below, said device comprising water supply pipes and means for forming jets of water and directing said water jets deep into said gaps, said layers of the body having upper edges and laterally spaced recesses formed by said upper edges, said pipes being located in direct contact with said upper edges of the layers of the contact body within said recesses and said water jet directing means being formed on said water supply pipes and located between and inwardly spaced from said layers to direct said water jets directly inside the gaps between said layers in the path of air flow through the contact body whereby the formation of fine drops of water normally formed



by water jets striking the upper edge of the contact body is avoided, said layers of the contact body comprising first and second sets of corrugated sheets disposed alternately with each other to promote rapid distribution of said water laterally within the contact body.

4,405,534

PRODUCTION OF PLASTIC-BONDED EXPLOSIVE SUBSTANCES

Friedrich-Ulf Deisenroth, Fichtenweg 1, 8899 Rettenbach, Fed. Rep. of Germany

Filed Mar. 5, 1981, Ser. No. 240,909

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010052

Int. Cl.³ C06B *21/00*

U.S. Cl. 264—3 C **12 Claims**

1. A process for producing plastic bonded explosives consisting of the steps of providing a crystalline water insoluble explosive, and a fully reacted aqueous polyurethane dispersion substantially free of organic solvent, incorporating said explosive into said dispersion to form a uniform mixture thereof, coagulating said mixture to form granulates thereof, and drying said resultant granulates.

4,405,535

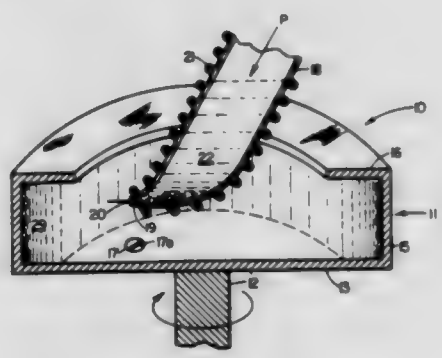
PREPARATION OF RAPIDLY SOLIDIFIED PARTICULATES

Ramaswamy V. Raman, Columbus, and Robert E. Maringer, Worthington, both of Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Continuation of Ser. No. 163,908, Jun. 27, 1980, abandoned. This application Oct. 29, 1981, Ser. No. 316,004

Int. Cl.³ B01J *2/06*

U.S. Cl. 264—11 **21 Claims**



1. A method of preparing solid particulates comprising the steps of

(a) heating a solid material to a molten state adapted to provide a molten unbroken stream of the material which at a temperature within 25 percent of its equilibrium melting point in °K. has a surface tension in the range of 10 to 2500 dynes/cm. and a viscosity in the range of 0.001 to 1 poise; and

(b) flowing the molten unbroken stream into contact with a moving wall of a centrifugally disposed rotating liquid quench fluid in a manner adapted to subdivide the molten stream and to quench into solid particulates within the quench fluid.

4,405,536

PROCESSES FOR SEVERING HOLLOW FIBER MEMBRANES

Maurice L. Woodcock, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 78,871, Sep. 26, 1979, abandoned. This application Dec. 11, 1981, Ser. No. 329,836

Int. Cl.³ B32B *31/00*

U.S. Cl. 264—25 **17 Claims**

1. A process for simultaneously severing and sealing the bores of a plurality of thermoplastic hollow fiber membranes comprising passing a heated member through a bundle consisting of said plurality of hollow fiber membranes in a path transverse to the longitudinal orientation of the hollow fiber membranes, said heated member being at a temperature above the melt temperature of the thermoplastic hollow fiber membranes and being passed through said bundle at a rate less than 50 centimeters per minute, said rate being sufficient to effect severing and sealing the bores of the hollow fiber membranes in an essentially fluid-tight manner; and maintaining said bundle adjacent to the path of said heated member in substantially a desired cross-sectional configuration during the passing of the heated member through said bundle; wherein adjacent hollow fiber membranes adhere to one and another in a zone of thermoplastic material at least about 0.2 millimeters thick such that the hollow fiber membranes at the end of the bundle formed by the severing are substantially maintained in the same desired cross-sectional configuration in the absence of external support.

4,405,537

METHOD AND APPARATUS FOR MANUFACTURING THREE-DIMENSIONAL WORK PIECES

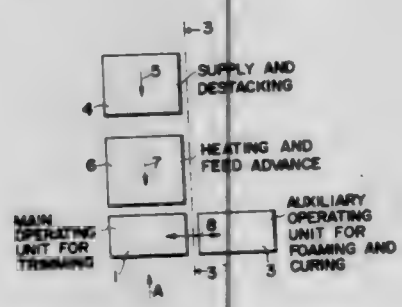
Ernst M. Spengler, Heusenstamm, Fed. Rep. of Germany, assignor to Stanztechnik GmbH R & S, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 965,745, Dec. 4, 1978, Pat. No. 4,273,738. This application May 4, 1981, Ser. No. 260,418

The portion of the term of this patent subsequent to Jun. 16, 1998, has been disclaimed.

Int. Cl.³ B29C *1/16*

U.S. Cl. 264—45.4 **21 Claims**



1. A method for manufacturing three-dimensional work pieces, comprising the following steps:

a. placing a flat blank of plastics material into or onto a primary mold means compatible for sequential cooperation with a plurality of secondary mold means,

b. shaping said flat blank while it contacts the primary mold means into a molded blank which assumes the form of the primary mold means,

c. bringing the molded blank while it still contacts the primary mold means on one side, into contact with foaming material on the other side of the molded blank for performing a foaming, and closing the primary mold means by a first, secondary mold means for confining and curing of the foaming material whereby the foamed material is bonded to the plastics material of the molded blank to form said three-dimensional work piece,

d. separating the primary mold means and the three-dimensional work piece still held by the primary mold means from the first, secondary mold means,

e. moving the primary mold means with the three-dimensional work piece still being held by the primary mold means into a cooperating position relative to a second, secondary mold means operating as a counterholder, and

f. moving trimming tools relative to a three-dimensional plane defined by at least one of said mold means for trimming the three-dimensional work piece while it is still being held by said primary mold means, whereby the work piece remains on the same primary mold means during all recited manufacturing steps for assuring the dimensional accuracy and stability of the three-dimensional work piece.

4,405,538

RESIN TRANSFER MOLDING SYSTEM WITH CONTROLLED INDUCTION PERIOD FOR EXPANDED SYNTHETIC ARTICLES

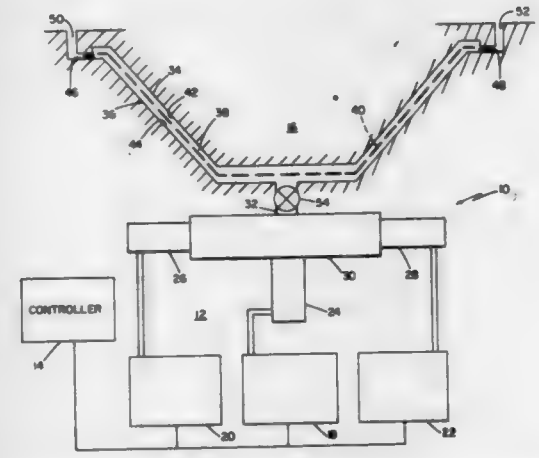
Glen W. Saidla, Stratham, N.H., assignor to Whitney & Company, Inc., Stratham, N.H.

Continuation-in-part of Ser. No. 111,664, Jan. 14, 1980, Pat. No. 4,358,548. This application Aug. 10, 1981, Ser. No. 291,315

The portion of the term of this patent subsequent to Nov. 9, 1999, has been disclaimed.

Int. Cl.³ B29D *27/00*

U.S. Cl. 264—45.5 **8 Claims**



1. A method of forming a reinforced synthetic article of polyester resin by transfer of a mixture into a closed mold and allowing it to react therein;

comprising combining a set of reactants to form a mixture which includes

a major mass of polyester resin in fluid form, at least one polyester cure accelerator, a selected quantity of isocyanate, a surfactant and a promoter,

said polyester cure accelerator comprising organic hydroperoxide,

said reactants in said mixture being substantially free of hydrogen peroxide,

said isocyanate being present in sufficient quantity to react to generate carbon dioxide throughout said mixture to cause said mixture to fill said mold and to prevent shrinkage thereof, and

said promoter comprising at least one metallic compound,

placing a reinforcing element within the mold,
closing said mold,
transferring the resultant mixture into said closed mold containing said reinforcing element prior to substantial reaction,
said reactants in said mixture being balanced
to first cause said metallic promoter compound to react exothermically with at least one component of said set to trigger said isocyanate to react with at least said organic hydroperoxide to evolve said carbon dioxide gas to generate pressure to expand said mixture to fill said mold and bring said fluid resin into pressured wetting contact with substantial regions of the surface of the reinforcement to incorporate said element within said resin by self working within the closed mold,
and thereafter, after at least about three minutes following the combining of said reactants, to cause a gellation reaction between said cure accelerator and said polyester to gel and solidify said expanded resin, with said reinforcement element incorporated therein, to produce a reinforced expanded article.

4,405,539

PROCESS FOR THE PRODUCTION OF PATTERNED TILES FROM THERMOPLASTIC SYNTHETIC RESINS

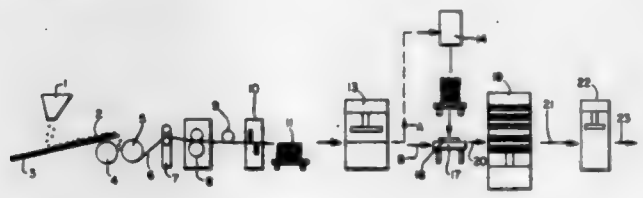
Herbert Schulte; Hans Brinkmann, and Uwe Sommermeyer, all of Troisdorf, Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Nov. 10, 1981, Ser. No. 319,988

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043245

Int. Cl.³ B29C *9/00*

U.S. Cl. 264—77 **12 Claims**



1. A process for the production of patterned tiles from thermoplastic synthetic resins which comprises forming crude sheet stock from colored thermoplastic synthetic resin; cutting at least two crude sheets of different colors from said sheet stock; punching segments and a segment frame out of said crude sheets without providing clearance between the segment frame and the segments; cooling the segments to a temperature lower than the temperature of the segment frame to cause the segments to shrink; inserting the cooled segments from at least two crude sheets of different colors into a segment frame to provide a panel so that adjacent edges of the segments and the segment frame complement one another; and thereafter press-molding the segments and the segment frame to form an intarsia tile with the use of pressure and heat whereby the segments and the segment frame are welded together along joints formed at the adjacent edges therebetween.

4,405,540

HOT SPRUE VALVE ASSEMBLY FOR AN INJECTION MOLDING MACHINE

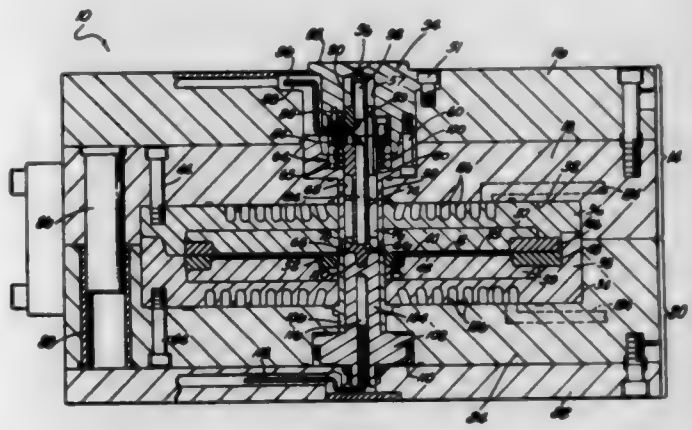
Bruno F. P. Mayer, Orange, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 202,838, Oct. 31, 1980, Pat. No. 4,340,353. This application Aug. 27, 1981, Ser. No. 296,731

Int. Cl.³ B29D *17/00*

U.S. Cl. 264—106 **4 Claims**

1. In an injection molding machine for producing centrally apertured record discs, said machine including a generally disc-shaped mold cavity and a sprue bushing for flow of molten disc-forming material into the mold cavity, a method of controlling flow of the disc-forming material into the mold cavity comprising the steps of:
positioning a poppet valve generally at the end of the sprue bushing adjacent the mold cavity;
biasing the poppet valve to a normal closed position seated upon the adjacent end of the sprue bushing to prevent flow of the molten disc-forming material from the sprue bushing into the mold cavity;
injecting molten disc-forming material into the sprue bushing at a pressure sufficient to force the poppet valve to



move generally across the mold cavity to an open position spaced from the sprue bushing to allow flow of the molten disc-forming material through the sprue bushing into the mold cavity;
returning the poppet valve to its closed position by advancing a ram on the side of the mold cavity opposite the sprue bushing into bearing engagement with the poppet valve;
allowing the disc-forming material in the mold cavity to solidify; and
ejecting the solidified molded disc from the mold cavity.

4,405,541

VIDEO DISC PROCESSING

Maurice D. Coutts, Plainsboro, and Dennis L. Matthies, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1981, Ser. No. 316,314

Int. Cl.³ B29D *17/00*

U.S. Cl. 264—107 **10 Claims**

1. In the manufacture of a conductive, high density information disc having video and audio information in the form of geometric variations in an information track which can be reconstituted in electrical signal form with a playback stylus, wherein a conductive plastic is molded to form said high density information disc, the improvement which comprises treating the surfaces of said high density information disc with an ammonium salt selected from the group consisting of ammonium chloride, tetramethyl ammonium chloride, tetramethyl ammonium bromide and ammonium bromide to render the playback quality of said high density information disc substantially resistant to and stable under conditions of high relative humidity.

4,405,542

METHOD FOR THE PRODUCTION OF A COMPOSITE MATERIAL

Marian B. Greer, RR #1, Box 74, Coulterville, Ill. 62237

Filed Jan. 25, 1982, Ser. No. 342,609

Int. Cl.³ B29J *5/00*

U.S. Cl. 264—109 **19 Claims**

1. A method for the production of a composite rigid article formed from irregularly shaped particles of comminuted wood and wood-like materials, encompassing a wide range of material sizes, thicknesses and types, comprising:
a. blending an amount of said wood particles and a sufficient

amount of suitable, curable adhesive to form a uniform mixture,

b. forming said mixture into a loosely assembled mat,

c. compressing said mat to a volume not less than about 35% of the original volume of said mat, and

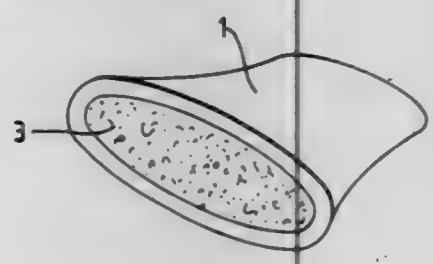
d. curing said adhesive to bond the wood particles into said composite rigid article.

4,405,543

MATERIALS SUITABLE FOR THERMOSETTING

David J. Murphy, Church Crookham, and Leslie N. Phillips, Farnborough, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation of Ser. No. 139,733, Apr. 11, 1980, abandoned.
This application Sep. 13, 1982, Ser. No. 417,516
Claims priority, application United Kingdom, Apr. 20, 1979, 7913896
Int. Cl.³ B32B *5/16*; B27V *5/00*
U.S. Cl. 264—123 **5 Claims**



1. A method of fusing particles to produce a lightweight article comprising the steps of:

(a) coating a collection of hollow particles with a hardenable Friedel-Crafts resin to obtain a moist mass;

(b) breaking up the moist mass obtained according to step (a) into grains, each of said grains comprising one or more of the hollow particles coated with the resin;

(c) drying the grains obtained according to step (b);

(d) filling a cavity defined by the article with the dried grains; and

(e) heating the article and grains filled in the cavity according to step (d) to harden the resin and thus fuse the grains one to another in the cavity to form a stiff core for the article.

4,405,544

STRENGTHENING OF CARBON BLACK-TEFLON-CONTAINING ELECTRODE

Frank Solomon, Great Neck, N.Y., assignor to Diamond Shamrock Corporation, Dallas, Tex.

Division of Ser. No. 202,876, Oct. 31, 1980, Pat. No. 4,337,140.
This application Feb. 16, 1982, Ser. No. 348,824
Int. Cl.³ B29C *6/00*; B27J *5/00*
U.S. Cl. 264—127 **3 Claims**

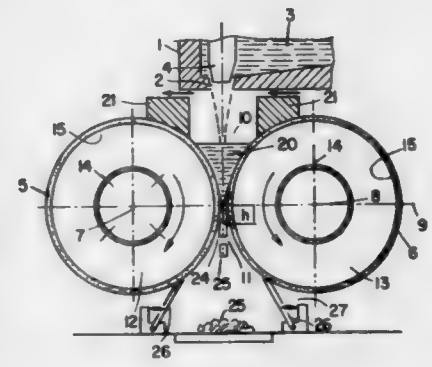
1. A method for preparing an electrode active layer comprising mixing an aqueous dispersion of particulate polytetrafluoroethylene with an aqueous suspension of particulate carbon black; washing and drying; mixing with a pore-forming agent; fibrillating said mixture; drying; adding polytetrafluoroethylene fibers while chopping said dried fibrillated mixture and thereafter forming said chopped mixture into a sheet, which was washed and dried.

4,405,545

METHOD AND APPARATUS FOR RAPIDLY SOLIDIFYING AND COOLING MELTED PRODUCTS BASED ON METAL OXIDES BY CONTINUOUS CASTING

Louis Septier, and Michel Demange, both of Le Fayet, France, assignors to Societe Francaise d'Electrometallurgie Sofrem, Paris, France

Filed Jan. 26, 1982, Ser. No. 342,847
Claims priority, application France, Jan. 30, 1981, 81 02179
Int. Cl.³ B28B *1/54*
U.S. Cl. 264—144 **25 Claims**



1. A method for rapid solidification and cooling of a melted metal oxide-base product by continuous casting comprising the steps of:

(a) feeding the melted product into a convergent space formed between two juxtaposed cylinders of predetermined radius thereby forming a pool of melted product above the nip of the cylinders, said cylinders having axes of rotation parallel and substantially horizontal, the distance between the axes being equal to the sum of the radius of each cylinder plus at least about one millimeter;

(b) cooling the walls of the cylinders;

(c) counter-rotating the cylinders at a substantially equal peripheral speed;

(d) altering the peripheral speed and cooling of the cylinders so that the melted product is not completely solidified until it passes beyond a plane passing through the axes of rotation of the cylinders; and

(e) retrieving solidified product from a divergent space formed between the cylinders on the side opposite the convergent space.

4,405,546

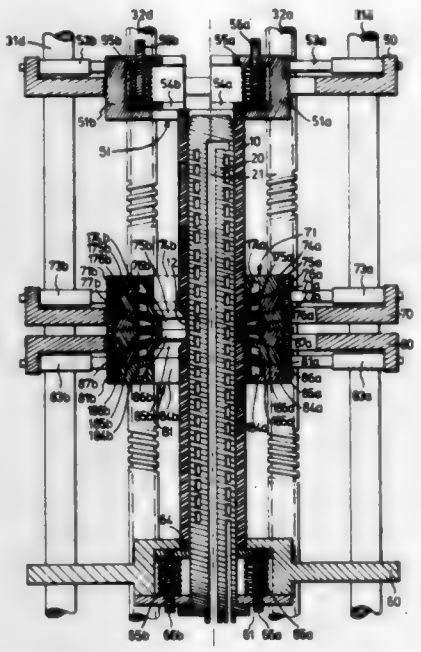
METHOD FOR PRODUCING A TUBULAR OBJECT OF POLYETHYLENE TEREPHTHALATE OR SIMILAR THERMOPLASTIC MATERIAL FROM A TUBULAR BLANK OF AMORPHOUS MATERIAL

Kjell M. Jakobsen, Hökvägen, and Claes T. Nilsson, Pramvägen, both of Sweden, assignors to PLM AB, Malmo, Sweden

Filed May 18, 1981, Ser. No. 264,665
Claims priority, application Sweden, May 29, 1980, 8004003
Int. Cl.³ B29C *17/02, 17/14*
U.S. Cl. 264—159 **20 Claims**

1. A method for producing an object of polyethylene terephthalate or similar thermoplastic material from a tubular blank with a wall of essentially amorphous material, said object being adapted to be reshaped into a container, said method comprising forming the wall of the tubular blank with a region of thinner material and a transitional zone between the thinner material and a remaining thicker portion of said wall, engaging a mechanical shaping device with said transitional zone, applying axial force to said transitional zone by relatively moving said shaping device and blank axially to move said transitional zone axially relative to said blank while simultaneously elongating the blank by increasing the length of the region of thinner material of the blank and reducing the length of said thicker portion of the blank and effecting an orientation of the thus elongated and reduced thickness of the blank in said region of thinner material corresponding to the orientation

which would be obtained by monoaxially stretching to yielding a sheet of amorphous material of the same thickness of said wall of the tubular blank, the temperature of the material at the



commencement of reduction of thickness being not higher than in the vicinity of the glass transition temperature (TG) of the material.

4,405,547

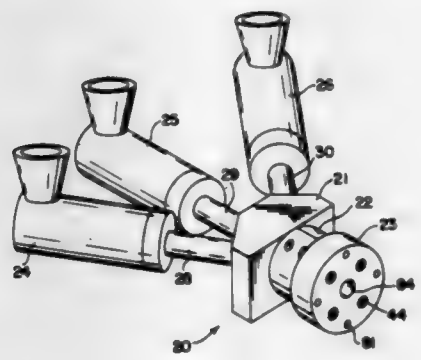
METHOD OF COEXTRUDING DIVERSE MATERIALS

Paul E. Koch, Chagrin Falls; Thomas J. Bond, and Richard C. Adams, both of Chardon, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 198,312, Oct. 20, 1980, Pat. No. 4,336,012. This application Apr. 19, 1982, Ser. No. 369,596

Int. Cl.³ B29D *7/02*; B29F *3/04*

U.S. Cl. 264—171 **7 Claims**



1. A method for reducing perturbation while coextruding layered products from at least a first and second material, said materials being dissimilar, comprising the steps of:

moving said first and second materials to a coextrusion device having sequentially a manifold, a feedblock and an adaptor;

directing said first and second materials into separate flow streams in said manifold;

feeding said flow streams into said feedblock from said manifold and maintaining each separate while passing therethrough;

reducing the cross-section area of said first and second flow streams in a portion of said feedblock;

forming at least one separate profile for said first and second flow streams in the remaining portion of said feedblock without further reducing said cross-sectional area thereof;

dividing a portion of said second flow stream into two separate profiles, a major profile having substantially more than half of said second material and a minor profile having substantially less than half of said second material wherein said minor profile is oriented between said profile of said first material and said major profile and each said profile is maintained separate from said other profiles;

combining said profile of said first flow stream, said minor profile and said major profile within said adaptor;

providing a streamlined configuration of said first and second flow streams within said adaptor mating with a conventional extrusion die; and

coextruding the layered product through said die.

4,405,548

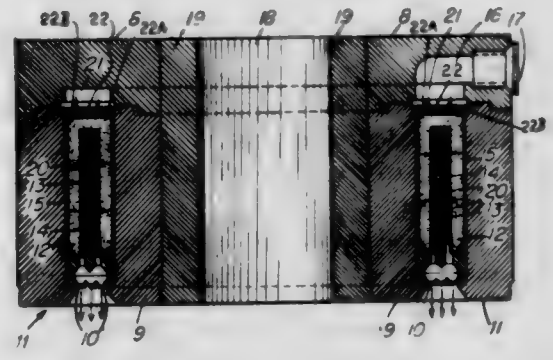
PROCESS FOR FILTERING MOLTEN POLYMER

Arnold J. Cobb, Florence, S.C., assignor to Fiber Industries, Inc., New York, N.Y.

Filed Jul. 9, 1981, Ser. No. 281,739

Int. Cl.³ D01D *1/10*

U.S. Cl. 264—176 F **4 Claims**



1. An improved process for the production of shaped polyester articles such as meltspun yarn, including the step of filtering molten polyester polymer by passing the molten polymer through a filter bed of permeable ceramic material, wherein the improvement comprises:

forcing the molten polyester polymer at pressure drops of up to 12,000 psi through a bed which comprises a plurality of microcrystalline sintered bauxite particles having a roundness of at least 0.8, as determined by Krumbein and Sloss Chart of 1955, and an API standard mesh size of at least 12, and wherein the sintered bauxite particles comprise at least 5.6 percent by weight of Fe_2O_3

whereby the filter bed's life is extended.

4,405,549

ZINC-FREE PREPARATION OF RAYON FIBERS

Albin F. Turbak, Convent Station, and Peter J. Hartmann, Dover, both of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 13, 1981, Ser. No. 283,070

Int. Cl.³ D01F *2/06*

U.S. Cl. 264—188 **6 Claims**

1. A process for preparing rayon fibers having a wet modulus of more than 0.4 g/den., a wet elongation of less than 15% and a solubility in 6.5% caustic of less than 9% comprising

preparing an unmodified viscose spinning solution from cellulose having a degree of polymerization of less than 600, said solution having a salt index of from 3 to 7,

spinning said viscose solution into a zinc-free coagulation bath comprising at least 125 g/l of Na_2SO_4, at least 125 g/l of $(NH_4)_2\ SO_4$ and from about 25 to 100 g/l of H_2SO_4 while said bath is at a temperature from about 40° to 100° C. and

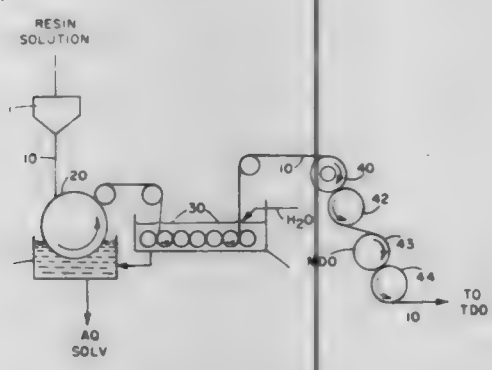
stretching the resulting coagulated filament in a secondary bath while said secondary bath is at a temperature from about 70° to 100° C.

4,405,550

MANUFACTURE OF POLYIMIDE FILM BY SOLVENT CASTING

Gordon P. Hungerford, Palmyra, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 17, 1981, Ser. No. 255,028
Int. Cl.[3] B29D *7/02, 7/24*
U.S. Cl. 264—216 12 Claims



1. A method for making optically clear oriented polyimide film comprising:

(a) applying onto a film supporting cooled surface a hot concentrated solution of polyimide in a polar aprotic organic solvent to provide a film comprising said polymer and said solvent;

(b) comparatively slowly coagulating the polymer by contacting said film with an aqueous medium containing a major amount of organic solvent and a minor amount of water;

(c) at least substantially replacing the solvent in said film with water;

(d) machine direction orienting said water-containing film; and

(e) transverse direction orienting said water-containing film; and

(f) drying the biaxially oriented film while under constraint to remove at least substantially all water.

4,405,551

PROCESS FOR PROVIDING COLOR CONTRAST ON SURFACE OF MOULDED ARTICLE

John Barnard, Letchworth, and Barry D. Bloombaum, Luton, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Mar. 10, 1982, Ser. No. 356,745
Claims priority, application United Kingdom, Mar. 20, 1981, 8108775
Int. Cl.[3] B29C *5/08, 9/00*; B29D *9/00*
U.S. Cl. 264—245 5 Claims

1. A method of moulding a shaped article from a curable composition in which the composition is cured in a mould comprising at least two mould parts defining a cavity characterised in that prior to introducing the curable composition into the mould cavity, at least part of the surface forming the mould cavity is provided with a deposit of a material which provides a colour contrast with the curable composition, the deposit being provided on areas of the mould which correspond to the areas on the cured moulding on which the colour contrast is required to be reproduced, the deposit consisting of at least one finely divided pigment mixed with at least one finely divided filler.

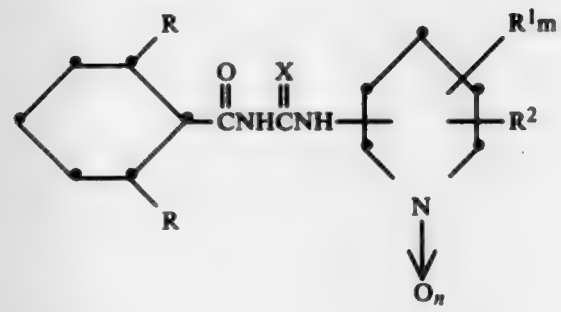
4,405,552

1-BENZOYL-3-(ARYLPHYRIDYL)UREA COMPOUNDS

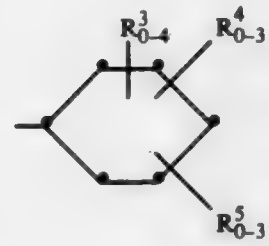
John L. Miesel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 240,331, Mar. 3, 1981, abandoned. This application May 18, 1981, Ser. No. 264,494
Int. Cl.[3] A01N *43/40*; C07D *213/74*
U.S. Cl. 424—263 237 Claims

1. Compound of the formula



wherein each R is independently
H,
Br,
Cl,
F,
CH_3, or
OCH_3
with the proviso that both R groups are not simultaneously H, and with the further proviso that when one R group is fluoro or methoxy the other R group is not simuitaneously H;
X=O or S;
n=0–1;
R^1 is independently
Cl,
Br,
CH_3, or
CH_3CH_2;
m=0–2; and
R^2 is a phenyl radical of the formula:



R^3 represents
Br,
Cl, or
F;
R^4 represents
CF_3,
OCF_3,
OC_2F_5,
OCF_2CF_2H, or
SCF_3;
R^5 represents
Methyl,
Ethyl,
Methoxy,
Ethoxy,
SCH_3, or
SCH_2CH_3
with the limitation that the entire substituted phenyl radical bears
(1) not more than 4 substituents, when all substituents are halo substituents;
(2) not more than 3 substituents, when any one substituent is other than halo;

(3) not more than 2 different substituents;

and wherein positions on the pyridine ring are as follows:

(1) the NH to pyridine bond is at the 2-position of the pyridine ring, the R^2 group is at the 5-position of the pyridine ring, and when m=1-2, any R^1 is at the 4-, 6-, or 4 and 6-positions of the pyridine ring, subject to the limitation that

(a) when simultaneously R^1 represents bromo and n=0, m=1 and R^1 is at the 6-position;

(b) when simultaneously R^1 represents Cl and m=1, R^1 is at the 6-position;

(c) when simultaneously m and n=0 and each R represents OCH_3, R^2 is not unsubstituted phenyl, 3-chlorophenyl, 3,4-dichlorophenyl, or 4-methoxyphenyl;

(d) when simultaneously m and n=0 and each R represents CH_3, R^2 is not 4-chlorophenyl;

(e) when simultaneously m and n=0 and one R represents Cl and the other R represents H, R^2 is not 3-chlorophenyl, 3,4-dichlorophenyl, 4-tolyl, 4-methoxyphenyl, or 3,4,5-trimethoxyphenyl;

(f) when simultaneously m=2 and n=0 and one R^1 moiety represents CH_3 or CH_3CH_2, the other R^1 moiety is not chloro or bromo;

(g) when n=1, neither R represents CH_3 or OCH_3, any R^1 represents CH_3 or Cl, and R^2 represents a para-substituted phenyl in which the substituent is Br, Cl, F, CH_3, or CF_3;

(h) when n=1 and one R group simultaneously represents H, m=1-2; or

(2) the NH to pyridine bond is at the 3-position of the pyridine ring, the R^2 group is at the 6-position of the pyridine ring, and when m=1, any R^1 is at the 5-position of the pyridine ring, subject to the limitation that m=0-1 and

(a) when n=0, R^1 represents CH_3 or CH_3CH_2;

(b) when simultaneously n=0 and one R represents Cl and the other R represents H, R^2 is not 3-chlorophenyl;

(c) when simultaneously n=0 and one R represents CH_3 and the other R represents H, R^2 is not unsubstituted phenyl;

(d) when n=1, each R independently represents Cl or F, any R^1 represents CH_3, and R^2 represents a para-substituted phenyl in which the substituent is Br, Cl, F, CH_3, or CF_3;

or an agriculturally acceptable acid addition salt thereof.

80. Method of suppressing insects of an order selected from the group consisting of Coleoptera, Diptera, Lepidoptera, and Orthoptera, which comprises applying to the locus of the insects an insecticidally effective amount of an active agent which is a compound of claim **1**.

159. Composition comprising an excipient and an insecticidally effective amount of an active agent which is a compound of claim **1**.

4,405,553

METHOD OF MANUFACTURING A COIL FOR AN ELECTRICAL MACHINE

Göran Lövgren, and Bengt Rothman, both of Skultuna, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Mar. 1, 1982, Ser. No. 353,389

Claims priority, application Sweden, Mar. 4, 1981, 8101400

Int. Cl.³ B29B *3/00*

U.S. Cl. 264—272.19 **6 Claims**

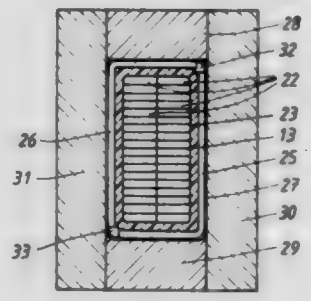
1. A method of manufacturing a coil having a slot portion intended to be arranged in a slot in a stator or rotor of an electrical machine, comprising:

forming a coil part comprising a bundle of electrically insulated conductor lengths arranged close together and insulation surrounding the bundle;

arranging a portion of the coil part destined to form the slot portion in a compressible mould having at least two mould parts;

surrounding the mould with a heat-shrinkable material, which is penetrable by an impregnating resin, to form a mould assembly;

pressing and heating the mould assembly so that said coil part portion is pressed by the mould parts into a desired final shape with the mould parts being spaced from each other so as to provide longitudinal gaps between confronting longitudinal edges thereof and so that the heat-shrinkable material is caused to shrink, the shrunk material



maintaining the coil part portion in its desired final shape after removal of the application of the heat and pressure to the mould assembly;

impregnating said insulation of the mould assembly with said impregnating resin;

transforming the impregnating resin into a solid state in said insulation; and

removing the mould parts and heat-shrinkable material to provide said coil with said slot portion.

4,405,554

USE OF HYDROGENATED POLYBENZYLS AS A MOULD-RELEASE AGENT FOR AROMATIC POLYESTERS

Dieter Freitag, Krefeld; Klaus Reinking, Wermelskirchen, and Peter Tacke, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

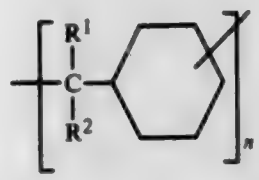
Filed Sep. 14, 1981, Ser. No. 302,057

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1980, 3035147

Int. Cl.³ B29B *5/04*

U.S. Cl. 264—300 **10 Claims**

1. In the process of moulding an aromatic polyester in the presence of a mould-release agent, the improvement wherein said mould-release agent is hydrogenated polybenzyl of the formula



wherein n is 3 to 300 and R^1 and R^2 are each hydrogen or alkyl having from 1 to 5 carbon atoms.

4,405,555

PROCESS AND DEVICE FOR VULCANIZING POWER TRANSMISSION BELTS

Paolo Egidi, Monza, and Fulvio Franchino, Milan, both of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Jun. 30, 1981, Ser. No. 279,011

Claims priority, application Italy, Jul. 18, 1980, 23522 A/80

Int. Cl.³ B29H *5/18, 5/00*; B29D *29/00, 7/22*

U.S. Cl. 264—315 **11 Claims**

1. A process for vulcanizing vulcanizable endless belts comprising the steps of:

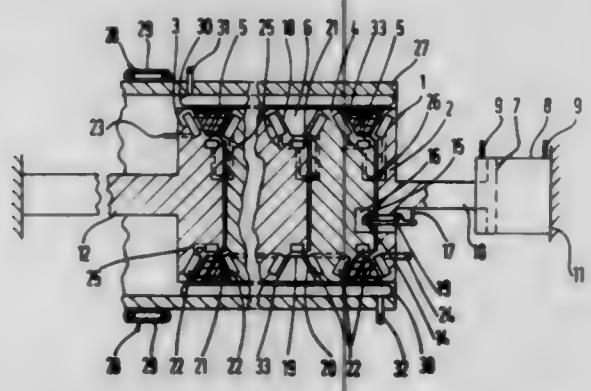
(a) disposing coaxially to each other a jacket about a drum in radially spaced relationship, said drum having at least one

circumferential groove in its surface for insertion of an endless belt to be vulcanized, and the resulting assembly having a diaphragm disposed in the space between the jacket and drum;

(b) inserting the belt in said groove;

(c) applying pressure on the outermost surface of the belt to be vulcanized by inflating the diaphragm to smooth the belt in the groove and simultaneously heating uniformly and immediately the belt to be vulcanized along at least three of its sides by exposing said sides to the walls of said groove which are directly heated at the same time by heating means disposed in correspondence of the walls of said groove;

(d) collapsing the diaphragm and moving the jacket away from the drum;



(e) cooling differentially the belt to complete the vulcanization; and

(f) removing the vulcanized belt from the drum.

6. An apparatus for vulcanizing vulcanizable power transmission belts comprising a drum provided with at least two plates having their outer surface faceted to define at least one circumferential groove when said plates are in contact with each other, a jacket coaxial with the drum, a flexible and inflatable diaphragm associated with the inner surface of the jacket, means for smoothing said belt to be vulcanized on the surface of said diaphragm in contact with said drum, means for conveying a fluid under pressure into said diaphragm, heating means disposed in correspondence of said facetings inside said plates, means for cooling differentially the belt to complete the vulcanization.

4,405,556

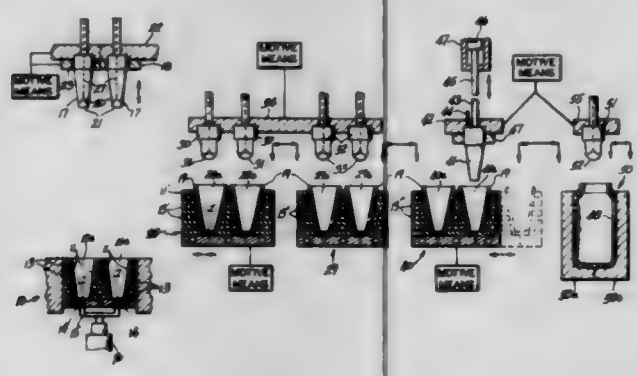
PROCESS AND APPARATUS FOR FORMING ORIENTED, BLOWN ARTICLES

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Filed Jan. 27, 1982, Ser. No. 343,172

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—513 **15 Claims**



1. A method for the preparation of oriented hollow articles of moldable organic plastic material in a rapid operating cycle by injection molding a plurality of parisons in a plurality of injection molds, tempering said parisons in at least one tempering mold to obtain uniform orientation conditions and orienting and expanding the tempered parisons to obtain the hollow articles, the improvement which comprises: providing a first group of tempering molds containing a number of mold cavities equal to the number of injection mold cavities, wherein said first group is in spaced relationship to said injection molds; transferring said parisons from said injection molds to said first group for tempering; tempering said parisons in said first group; providing a tempered parison storage facility for maintaining parisons in the fully tempered condition in spaced relationship to said first group and containing means to accommodate parisons equal to the number of cavities in said first group; transferring fully tempered parisons to said facility; maintaining said parisons in the fully tempered condition in said facility; providing a number of blow molds for final expansion in spaced relationship to said facility in an amount less than may be accommodated in said facility; transferring a first number of tempered parisons equivalent to the number of blow molds from said facility to said blow molds for orientation and expansion and orienting and expanding said first number; and transferring at least one second number of tempered parisons equivalent to the number of blow molds from said facility for orientation and expansion and orienting and expanding said second number.

9. An apparatus for the preparation of oriented hollow articles of moldable organic plastic material in a rapid operating cycle including a plurality of injection molds for forming a plurality of parisons, a plurality of tempering molds for tempering the parisons to obtain uniform orientation conditions, and a plurality of blow molds for expanding the parisons to obtain the hollow articles, the improvement which comprises: a first group of tempering molds in spaced relationship to the injection molds, wherein said group contains a number of mold cavities equal to the number of injection mold cavities; means engageable with the parisons for transferring the parisons from the injection molds to said first group for tempering; a tempered parison storage facility for maintaining parisons in the fully tempered condition in spaced relationship to said first group and containing means to accommodate parisons equal to the number of cavities in said first group; means associated with said facility for maintaining parisons in the fully tempered condition therein; means engageable with said parisons for transferring fully tempered parisons to the facility; a number of blow molds for final expansion in spaced relationship to the facility in an amount less than may be accommodated in the facility; means engageable with a first number of tempered parisons in the facility equivalent to the number of blow molds for transferring same to the number of blow molds for orientation and expansion; and means engageable with at least one second number of tempered parisons in the facility equivalent to the number of blow molds for transferring same to the number of blow molds for orientation and expansion.

4,405,557

PROCESS FOR MANUFACTURE OF HOLLOW BODIES FROM SYNTHETIC MATERIALS

Jakob Lehnard, Horhausen, Fed. Rep. of Germany, assignor to Kautex Werke Reinold hagen AG, Bonn-Holzlar, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 242,071

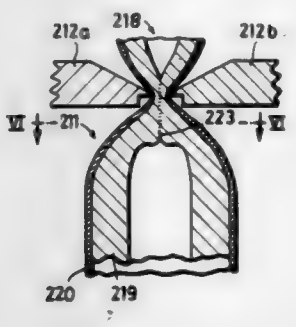
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1980, 3009463

Int. Cl.³ B29C *17/07*; B29D *9/04*

U.S. Cl. 264—515 **14 Claims**

1. A process for manufacturing a hollow body for containing a substance, said body comprising at least principally synthetic plastic materials, at least portions of the walls of said body comprising at least three layers of different plastic materials including a synthetic thermoplastic carrier layer, a bonding layer on at least one side of said carrier layer, and at least one barrier layer bonded to said carrier layer by said bonding layer, said barrier layer comprising a material with characteristics differing from those of said carrier layer the extent that a mixture of said material with those materials of said carrier layer and said bonding layer cannot be re-used or can be re-

used only to a very limited extent, said process including initially forming a premolded form and subsequently shaping said form into at least a portion of a finished product by means of pressure differential, characterized by simultaneously producing said form by co-extrusion with at least a carrier layer and a bonding layer but without a barrier layer, said carrier layer



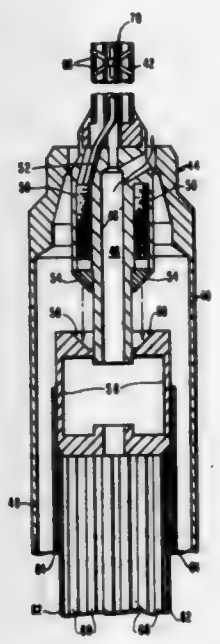
and bonding layer comprising materials which are chemically related so as to allow recycle and re-use of waste portions, shaping said form by blow molding into a finished or intermediate product with accompanying formation of waste portions for recycle and re-use, and subsequently applying at least one said barrier layer to at least a section of said product in a separate operation after said shaping.

4,405,558

NUCLEAR REACTOR SHUTDOWN SYSTEM

James D. Mangus, Hempfield Township, Westmoreland County, and Martin H. Cooper, Churchill, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 15, 1980, Ser. No. 197,380
Int. Cl.³ G21C *7/08*
U.S. Cl. 376—233 **1 Claim**



1. Nuclear reactor shutdown apparatus comprising:

neutron absorbing control rods arranged to be inserted in a control assembly of a nuclear reactor core having a coolant flowing therethrough;

a magnetic latch comprising an upper member having a bore therethrough for flow of reactor coolant, a lower member, and a coil;

said lower member slidably disposed on the lower end of said upper member and attached to said control rods for suspending said control rods above said reactor core;

said coil disposed around said upper member and connected in an electrical circuit for establishing a magnetic flux through said upper member and said lower member for magnetically suspending said lower member above said reactor core when said coil is energized;

a tubular member connected to said bore in said upper member and disposed in the flow of reactor coolant;

a plurality of conduits located remote from said coil and connected to said tubular member for conducting a portion of said reactor coolant exiting said reactor core through said tubular member; and

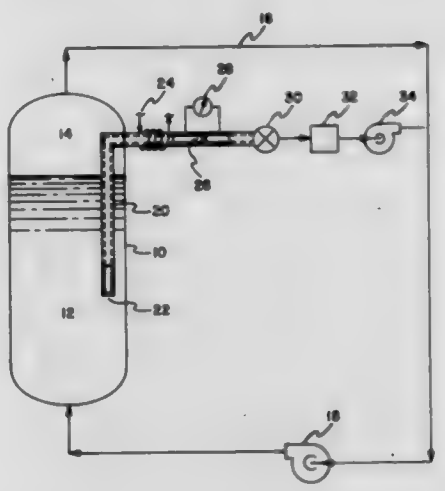
a temperature responsive resistor disposed in said tubular member near said conduits in the flow of said reactor coolant and located downstream of and remote from said coil and connected to said coil by said electrical circuit whereby an increase in said reactor coolant temperature raises the temperature and resistivity of said temperature responsive resistor thereby reducing the electrical current flowing through said coil and reducing the magnetic flux through said upper member and said lower member which causes said lower member to slide downwardly relative to said upper member thereby inserting said control rods into said control assembly.

4,405,559

COOLANT MONITORING APPARATUS FOR NUCLEAR REACTORS

Richard D. Tokarz, West Richland, Wash., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Aug. 6, 1981, Ser. No. 290,289
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—247 **6 Claims**



1. An apparatus for monitoring coolant within a nuclear reactor vessel having a pressurized circulating liquid coolant loop, said apparatus comprising:

tubing means having an open end with a first restriction means positioned within the vessel, said tubing means leading through the vessel for delivering pressurized coolant from its open end to the vessel exterior;

second restriction means operably interposed between the open end of the tubing means and said pump means for causing a pressure drop in coolant drawn along the length of the tubing means; and

sensing means connected across said second restriction means for providing an output signal as a function for the pressure drop of the coolant across the second restriction means;

wherein said first and second restriction means are arranged in series along said tubing means.

4,405,560

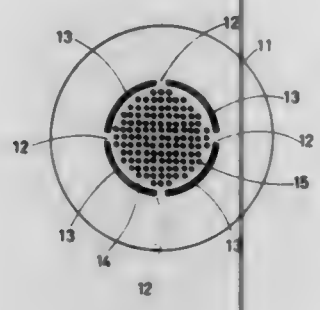
CARRIER FOR HOLDING ANALYTICAL SAMPLES

Michihiro Murata, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Oct. 7, 1981, Ser. No. 309,473
Int. Cl.³ B01L *3/00*; G01N *1/28*
U.S. Cl. 422—102 **5 Claims**

1. A carrier comprising a medium for holding analytical samples to be subjected to X-ray analysis and having a natural

porosity such that solutions of said samples are allowed to permeate into said medium by means of capillary action, comprising an island-like portion to hold said analytical samples contrasted with the surrounding region and defined by a plu-



rality of alternate slits and support portions, each support portion defined between adjacent slits, said island-like portion being formed with a plurality of fine preformed holes, each hole having a diameter of about 1 mm, which comprise 10–70% of the area of the island-like portion.

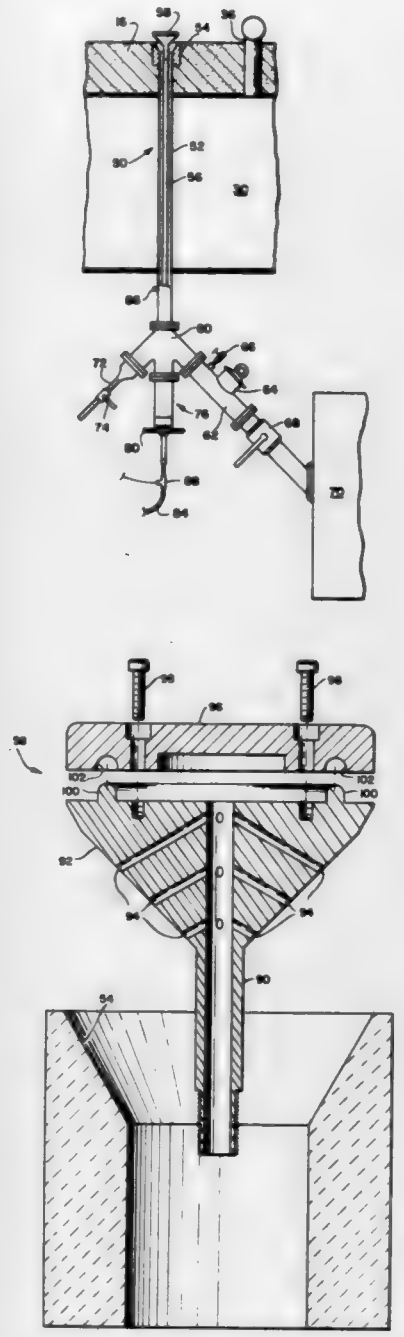
4,405,561

DRAIN AND SAMPLING VALVE ASSEMBLY FOR A FLUIDIZED BED REACTOR

Thomas J. Neale; Frederick C. Alverson, and John S. Karg, all of Harlingen, Tex., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Oct. 29, 1981, Ser. No. 316,375
Int. Cl.³ B01J *8/26, 8/18*; F27B *15/08*
U.S. Cl. 422—145 **5 Claims**

1. In a fluidized bed reactor having a material fluidizing means and a bed material discharging means; the improvement wherein said bed material discharging means comprises a pipe extending from a location external of said reactor, to said bed, a valve seat communicating with said bed, a hollow valve stem disposed in said pipe and extending for the length of said pipe, a valve head mounted at one end of said stem and adapted to cooperate with said seat, a plurality of passages registering with the interior of said stem and directed towards said valve seat, means located externally of said reactor and cooperating with the other end portion of said stem for selectively moving said stem relative to said pipe, and said valve head relative to said seat, to control the flow of material from said fluidized bed into said pipe, means for introducing a pressurized gas into said pipe for passage through the passage formed between said stem and the inner wall of said pipe and into said bed to prevent clogging of materials in said pipe, and means for introducing a



pressurized gas into said stem for passage through said stem and through said passages in said valve head to purge said seat.

4,405,562

AXIAL-RADIAL REACTOR FOR HETEROGENEOUS SYNTHESIS

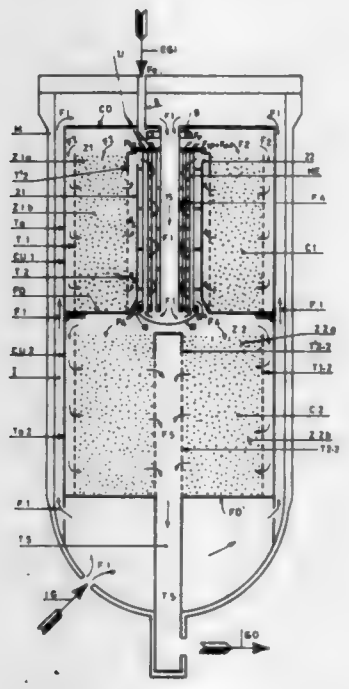
Umberto Zardi, Lugano, Switzerland, and Ettore Comandini, Rome, Italy, assignors to Ammonia Casale S.A., Lugano, Switzerland

Filed Nov. 5, 1981, Ser. No. 318,568
Int. Cl.³ B01J *8/04*; C01C *1/04*
U.S. Cl. 422—148 **5 Claims**

1. In a vertical apparatus for heterogenous exothermic catalytic reactions of gases under pressure comprising: a container having an inlet for introduction of gaseous reactants and an outlet for the efflux of products of the reactions; a cartridge having a lid and a cylindrically shaped wall mounted within the container and communicating with the inlet and the outlet; at least two stationary-bed catalyst-containing baskets supported within the cartridge, each of said baskets having an imperforate bottom section, a cylindrical perforated outer wall, a cylindrical lower-perforated concentric inner wall and an annular opening defined by said perforated outer and inner walls in the upper end of each stationary-bed catalyst-containing basket; wherein the opening formed in a plane approximately perpendicular to the longitudinal axis of the perforated outer and inner walls, the bottom section, and the perforated

inner and outer walls, cooperates with the cylindrically shaped cartridge wall to form a partially restrictive axial flow means; whereby a portion of the gaseous reactants enters or departs and passes through the annular opening in each of the stationary-bed catalyst-containing baskets substantially in the axial direction and the remainder of the gaseous reactants enters and passes through the cylindrical outer perforated wall of each of the catalyst-containing baskets substantially in a radial direction;

the improvement wherein a heat exchanger is positioned within an annular central zone defined by the perforated inner wall of at least the uppermost of said baskets; said heat exchanger comprising a central tube whose upper end is adapted to receive cold process gas which has been introduced at the lower end of said container and which has first passed upward between the container and the



cartridge and whose lower end opens to a baffle adapted to direct the process gas exiting said central tube upward through a plurality of heat exchanging tubes parallel to said central tube and mounted between said central tube and said perforated inner wall; the heated gas exiting from the top of said heat exchanging tubes then being directed radially outward to the top of said uppermost catalyst basket through a free zone defined by said cartridge lid, so that pre-heated gas leaving the heat exchanger tubes is directed through the catalyst bed of the uppermost basket and when exiting through the perforated inner wall after being heated by the catalysis the hot gas flows around the heat exchanger tubes giving up heat to the cold gas passing upward through said heat exchanger tubes, before passing to the next lower basket;

and the further improvement wherein means for introducing quenching gas into said free zone are provided.

4,405,563

SCAVENGING NATURAL GAS STREAMS WITH SLURRY APPARATUS

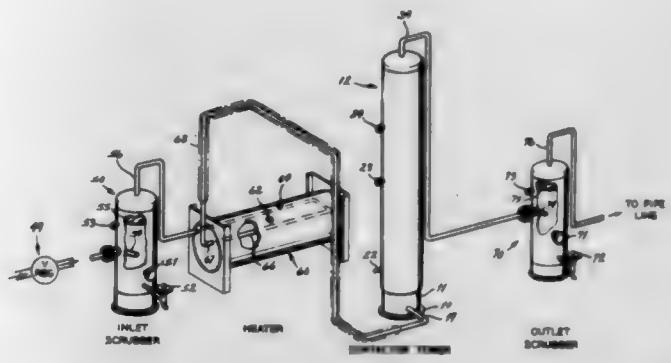
Alvin Samuels, 444 Fairway Dr., New Orleans, La. 70124, assignor to Irwin Fox, Ballwin, Mo.; Alvin Samuels, New Orleans, La. and David Samuels, St. Louis, Mo.

Continuation-in-part of Ser. No. 210,559, Nov. 26, 1980, abandoned. This application Feb. 8, 1982, Ser. No. 346,525

Int. Cl.³ B01D *50/00*

U.S. Cl. 422—169 **6 Claims**

1. For use in the line of flow from a natural gas well to a pipeline, a system of apparatus comprising in series, inlet scrubber means to separate out water and liquid hydrocarbons, means to raise the temperature of the gas so scrubbed sufficiently to avoid hydrate formation and hydrocarbon liquefaction in the contactor tower next defined, and a contactor tower including gas inlet means in its lower portion, top gas outlet means, a headspace below said top outlet means, and a downward-confining screen positioned at a design dynamic liquid level of a slurry of reactant particles to be filled in the tower,



whereby packer-spacer material may be filled therein to extend upward from the level of the gas inlet means continuously to the screen and be held confined downward by the screen as such slurrly expands to the dynamic liquid level on passage of gas therethrough.

4,405,564

TUBULAR REACTION FURNACE FOR INDIRECT HEATING OF CRACKABLE FLUIDS

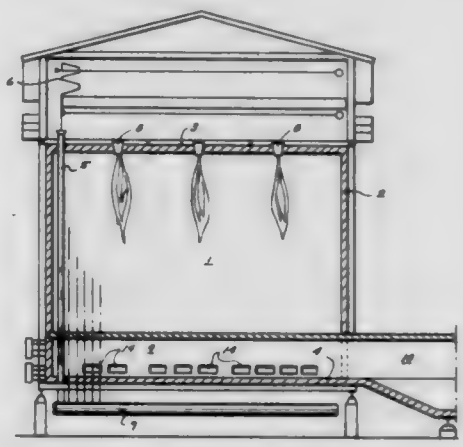
Hans-Joachim Herbort, and Heinz G. Schuster, both of Dortmund, Fed. Rep. of Germany, assignors to Uhde GmbH, Dortmund, Fed. Rep. of Germany

Filed Nov. 4, 1982, Ser. No. 439,318

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1981, 3145292

Int. Cl.³ B01J *8/06*

U.S. Cl. 422—197 **4 Claims**



1. In a tubular reaction furnace of the type having a firing chamber defined by a ceiling mounting a plurality of internal burners, a floor and including a plurality of vertically oriented reaction tubes arranged in the firing chamber for the indirect heating of crackable fluids, particularly for cracking hydrocarbons used for the extraction of gases rich in CO and H_2, the improvement comprising:

a plurality of flue gas ducts mounted on the floor of the furnace, each flue gas duct including opposed sidewalls and a ceiling;

said sidewalls and ceiling each having a plurality of parallel arranged tubes forming a tube register;

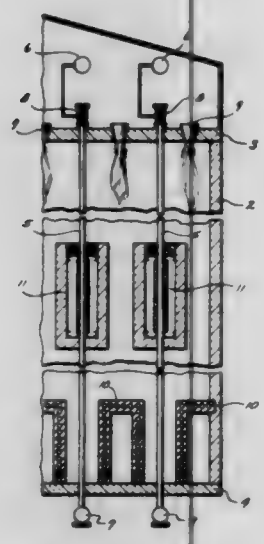
means for insulating the internal and external surfaces of said tube register;

and tubular headers operatively connected to said tube register for the circulation of a cooling medium therethrough.

4,405,565
TUBULAR REACTION FURNACE FOR INDIRECT HEATING OF CRACKABLE FLUIDS

Hans-Joachim Herbort, and Heinz G. Schuster, both of Dortmund, Fed. Rep. of Germany, assignors to UHDE GmbH, Dortmund, Fed. Rep. of Germany

Filed Nov. 4, 1982, Ser. No. 439,319
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1981, 3145292
Int. Cl.³ B01J 8/06
U.S. Cl. 422—197 5 Claims



1. In a tubular reaction furnace of the type having a firing chamber defined by opposed walls and provided with internal fuel-gas burners and a plurality of vertically oriented reaction tubes arranged in rows in the firing chamber for the indirect heating of crackable fluids, particularly for cracking hydrocarbons used for the extraction of gases rich in CO and H_2, the improvement comprising:

a plurality of spaced, parallel duct-type beams extending horizontally across the center region and between opposed walls of the firing chamber with the spaces therebetween insuring passage of the fuel gas;

each beam supporting a row of the vertically oriented reaction tubes wherein the reaction tubes penetrate said duct-type beams; and

means for insulating the external surfaces of said duct-type beams and means for affixing the reaction tubes to said duct-type beams.

2. In a tubular reaction furnace of the type having a firing chamber defined by opposed walls and provided with internal fuel-gas burners and a plurality of vertically oriented reaction tubes arranged in rows in the firing chamber for the indirect heating of crackable fluids, particularly for cracking hydrocarbons used for the extraction of gases rich in CO and H_2, the improvement comprising:

a plurality of spaced, parallel duct-type beams extending horizontally across the center region and between opposed walls of the firing chamber with the spaced between said duct-type beams insuring passage of the fuel gas;

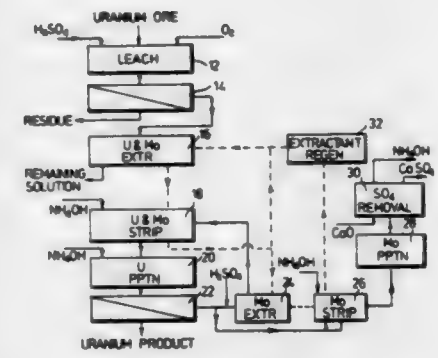
each beam supporting at least one row of the vertically oriented reaction tubes wherein the row of reaction tubes is attached to the external side of said duct-type beam; and

means for insulating the external surfaces of said duct-type beams and means for affixing the reaction tubes to said duct-type beams.

4,405,566
REMOVAL OF URANIUM FROM SULPHATE SOLUTIONS CONTAINING MOLYBDENUM

Donald R. Weir, Fort Saskatchewan, and Roman M. Genik-Sas-Berezowsky, Edmonton, both of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Oct. 1, 1980, Ser. No. 192,929
Claims priority, application Canada, Aug. 22, 1980, 358967
Int. Cl.³ C01G 43/00, 39/00, 39/06
U.S. Cl. 423—15 12 Claims

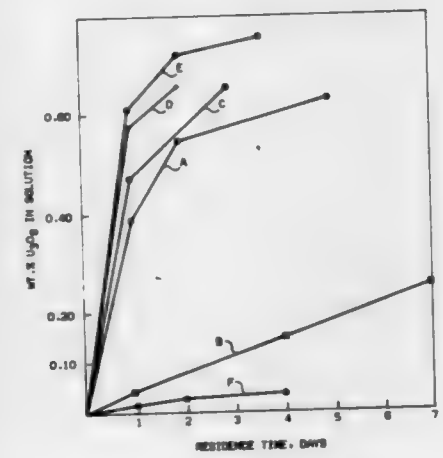


1. A process for recovering uranium values from a sulphate solution containing dissolved uranium and molybdenum and with a pH not exceeding about 5.5, comprising reacting said uranium and molybdenum containing sulphate solution with ammonia at a pH in the range of from about 8 to about 10, without the solution existing for any significant time at a pH of around 7, with resultant precipitation of uranium values relatively uncontaminated by molybdenum, and separating the uranium containing precipitate from the remaining solution while maintaining the pH of the remaining solution within said range.

4,405,567
URANIUM VALUE LEACHING WITH AMMONIUM CARBONATE AND/OR BICARBONATE PLUS NITRATE OXIDANT AND OPTIONALLY OXIDATION-CATALYTIC METAL COMPOUNDS

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 20, 1980, Ser. No. 208,717
Int. Cl.³ C22B 60/02
U.S. Cl. 423—17 19 Claims



1. A method for extracting uranium values from solid materials containing uranium in valence states lower than than its hexavalent state, comprising:

contacting said solid materials containing uranium with an aqueous alkaline leach solution selected from the group consisting of solutions of ammonium carbonate, ammonium bicarbonate and mixtures thereof and containing the ionic species NO_3^- in an amount sufficient to convert at

least a portion of said uranium in valence states lower than its hexavalent state to its hexalvalent state.

4,405,568

RECOVERY OF GADOLINIUM AND GALLIUM OXIDES

David Nalewajek, West Seneca, N.Y., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 20, 1982, Ser. No. 451,297
Int. Cl.³ C01F *17/00*; C01G *15/00*
U.S. Cl. 423—21.1 **3 Claims**

1. A method for recovering gadolinium and gallium oxides from by-product material which contains both of these oxides and various impurities comprising the steps of:

(a) thermally treating the oxides to remove organic impurities,

(b) refluxing the gadolinium and gallium oxide in nitric acid,

(c) isolating the filtrate and precipitating gadolinium oxalate from said filtrate by adding thereto oxalic acid,

(d) separating, washing and drying the precipitated gadolinium oxalate,

(e) converting the gadolinium oxalate from step (d) to gadolinium oxide by pyrolysis,

(f) distilling the filtrate from step (c) to reduce the volume and thereby precipitate therefrom gallium nitrate and any gallium oxalate present,

(g) separating the precipitate from step (f),

(h) washing and drying the gallium salts obtained in step (f), and

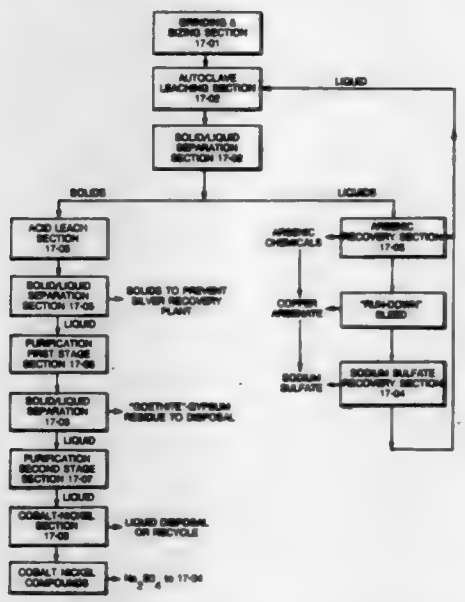
(i) calcining the precipitate from step (h) to form gallium oxide.

4,405,569

HYDROMETALLURGICAL PROCESS FOR EXTRACTING METAL VALUES FROM COMPLEX ORES CONTAINING ARSENIC AND SULFUR

Ulrich Dienstbach, New Liskeard, Canada, assignor to Sulpetro Minerals Limited, Toronto, Canada

Filed Nov. 4, 1981, Ser. No. 318,150
Int. Cl.³ C01G *5/00, 51/00, 28/02*; C22B *3/00*
U.S. Cl. 423—27 **46 Claims**



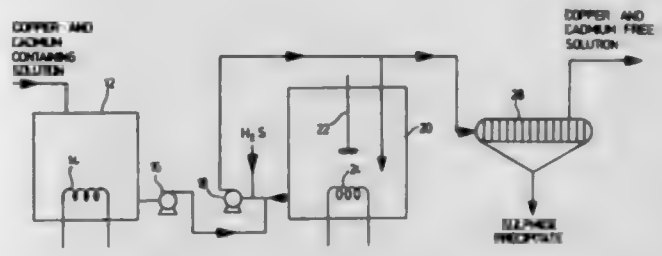
27. In a method for extracting and recovering cobalt, nickel and silver from feedstock derived from complex ore concentrates containing other mineralization including arsenic and sulphur and having a finely particulate character of the order of −400 mesh or thereabouts, the step of subjecting such feedstock to a two-stage oxidative caustic leach, commenced by heating the slurried intial reactants of feedstock and caustic to an elevated temperature of the order of between 85°–100° C., followed by the introduction of finely dispersed oxygen at a pressure of the order of between 120–140 psig and at a temperature of the order of between 120°–150° C. until the reactions are substantially complete followed by the steps of separating and recovering the liquor and solid phases therefrom, and reslurrying said recovered solids with caustic and repeating the introduction of finely dispersed oxygen at said range of pressures and at said range of temperatures until the reactions are substantially complete followed by the steps of separating and recovering the liquor and solids phases therefrom said caustic introduced in each of the aforementioned stages being an amount sufficient to produce in the converted reactants respectively a pH of the order of 13 or greater.

4,405,570

REMOVAL OF DISSOLVED CADMIUM AND COPPER FROM SULPHATE SOLUTION WITH HYDROGEN SULFIDE

Jack Van der Meulen, and Donald R. Weir, both of Fort Saskatchewan, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

Filed Sep. 14, 1982, Ser. No. 417,830
Claims priority, application Canada, Jul. 7, 1982, 406794
Int. Cl.³ C01G *3/12, 11/02*
U.S. Cl. 423—43 **9 Claims**



9. A process for selectively removing copper and cadmium ions from nickel and cobalt sulphate solution containing from about 0.1 to about 2 g/L copper, from about 0.05 to about 0.5 g/L cadmium, from about 40 to about 50 g/L nickel and from about 20 to about 50 g/L cobalt, comprising treating the solution at a temperature in the range of from about 85° to about 95° C., and at a pH in the range of from about 4.5 to about 5.5 with hydrogen sulphide to precipitate copper and cadmium sulphides, and removing the precipitated sulphides from the solution.

4,405,571

PROCESS FOR SELECTIVE DISSOLUTION OF MOLYBDENUM IN THE PRESENCE OF TUNGSTEN

Karoly Vadasdi, Korong; Laszlo Bartha, Toldy; Tivadar Millner, Mikszath; Endre Tekula, Dessexffy, and Andras Kiss, Hlma, all of Hungary, assignors to MTA Müszaki Fizikai Kutato Intezete, Budapest, Hungary

Filed Jan. 7, 1982, Ser. No. 337,685
Claims priority, application Hungary, Jun. 22, 1979, MA 3152
Int. Cl.³ C01G *39/00, 41/00*
U.S. Cl. 423—53 **7 Claims**

1. A process for the selective dissolution of molybdenum in the presence of tungsten which comprises: dissolving the molybdenum in an aqueous solution, having a pH of from −0.5 to +2.0, of a peroxy compound selected from the group consisting of hydrogen peroxide and ammonium peroxysulfate and in the presence of a catalyst selected from a salt of the group consisting of iron, nickel, copper, silver and thallium.

4,405,572

RECOVERY OF MOLYBDENUM

Calvin E. Moore; Mark E. Hutchinson, and David S. Fetterman, all of Houston, Tex., assignors to MorChem Products, Inc., Hoston, Tex.

Filed Aug. 25, 1982, Ser. No. 411,551
Int. Cl.³ C01G *39/00*
U.S. Cl. 423—54 **20 Claims**

1. A method for separating molybdenum from the liquid

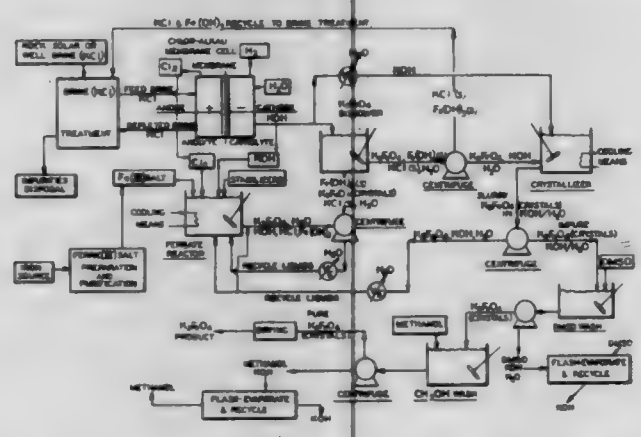
organic oxygen compound containing bottoms fraction of a molybdenum catalyzed olefin epoxidation process comprising adding aqueous alkaline material to the bottoms fraction in an amount sufficient to form an upper first organic phase and a lower alkaline aqueous phase, separating the organic phase from the aqueous phase, the amount of aqueous alkaline material being sufficient to provide a pH of 7.5 to 14 in the lower aqueous phase, acidifying the alkaline aqueous phase after separation from the first organic phase to precipitate the molybdenum, forming a second upper organic phase and a lower aqueous phase, separating the second upper organic phase, and recovering the second organic phase.

4,405,573

PROCESS FOR PREPARING POTASSIUM FERRATE (K_2FEO_4)

J. Paul Deininger, and Ronald L. Dotson, both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 17, 1981, Ser. No. 331,949
Int. Cl.³ C01G *49/00*
U.S. Cl. 423—150 **28 Claims**



1. In a process for making a stabilized potassium ferrate which comprises the steps of:
   (a) reacting KOH with Cl_2 and a ferric salt to form a reaction mixture comprising a liquid phase comprising KOH, H_2O and KOCl and a solid phase comprising said potassium ferrate, KCl and $Fe(OH)_3$; and
   (b) separating and recovering said potassium ferrate from said reaction mixture;
wherein said improvement comprises:
   carrying out said reaction step (a) with membrane cell-grade KOH, substantially pure Cl_2 and a substantially pure ferric salt in the presence of a stabilizing proportion of an alkali metal silicate as a ferrate-stabilizing compound.

22. A process for making a dry solid, substantially pure stabilized potassium ferrate product comprising the steps of:
   (a) washing an impure potassium ferrate product in a substantially pure anhydrous first organic solvent selected from the group consisting of dimethylsulfoxide, diethylsulfoxide, dibenzosulfoxide, dimethylsulfone, and sulfolane;
   (b) then washing said potassium ferrate product in a substantially pure anhydrous second organic solvent selected from the group consisting of methanol, ethanol, isopropanol and sec-butanol; and
   (c) then drying the washed potassium ferrate to form said dry solid, substantially pure potassium ferrate product.

4,405,574

REMOVAL OF MG^{++} AND CA^{++} IONS FROM NACL BRINE

John M. Lee, and William C. Bauman, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 2, 1981, Ser. No. 307,827
Int. Cl.³ B01J *41/14*
U.S. Cl. 423—157 **20 Claims**

1. Particulate macroporous anion exchange resin composites having post-deposited therein the in-situ reaction product of polymeric amorphous hydrous zirconium oxide and a source of $PO_4^{\equiv}$ ions.

4,405,575

METHOD OF DEFLUORINATING PHOSPHATES

Albert E. Henderson, 10126 Leisure La. North, Jacksonville, Fla. 32216

Filed Apr. 23, 1982, Ser. No. 371,333
Int. Cl.³ C01F *1/00, 5/00;* C01B *25/16;* C05B *11/04*
U.S. Cl. 423—167 **7 Claims**

1. A method for removing fluorine from natural phosphates, Superphosphate materials and wet process phosphoric acids starting materials comprising
   (a) admixing rock phosphate having a fluorine content above that desired with an acid mixture within the range of rock:acid mixture of about 0.8 to 1 and 1:1.4 by weight;
   (b) said acid mixture being substantially concentrated phosphoric acid and concentrated sulfuric acid in a range of phosphoric:sulfuric of about 1:1 to 5:1 by weight;
   (c) said admixing being at a temperature in the range of 215° to 265° F. while adding water in an amount of up to about 12% by weight of the total mixture and then subjecting the above charge;
   (d) in a first heating stage adding (1) recycle in an amount substantially of recycle to charge of 1:1 to 10:1 by weight (2) and water while heating to a temperature in the range of 300° F. to 400° F. for a period of time up to about 6 minutes;
   (e) and in a second heating stage, maintaining the temperature in the range of 400° to 600° F. for a period of time of up to about 6 minutes, and then;
   (f) quickly cooling the resulting product above to a temperature range below about 300° to 200° F. while neutralizing to about 1 to 6% free acid and with addition of at least sufficient amount of water to have water of hydration of substantially 2 to 9% by weight in the final product;
   (g) and, crushing the above resulting product to a desired granular size and separating and returning smaller fine particles as recycle.

4,405,576

REMOVAL OF SULFATE IONS FROM BRINE

John M. Lee, and William C. Bauman, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 2, 1981, Ser. No. 307,826
Int. Cl.³ B01J *41/12;* C02F *1/42*
U.S. Cl. 423—181 **12 Claims**

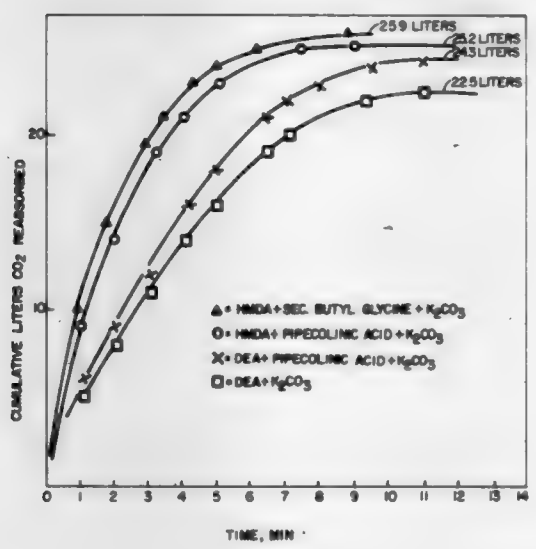
1. Macroporous cation exchange resin beads having sulfonic acid functional groups and having post-deposited therein polymeric hydrous zirconium oxide and polyacrylic acid.

9. A process for removing sulfate, borate, bicarbonate and-/or phosphate ions from an aqueous alkali metal salt solution, said process comprising
   contacting said alkali metal salt solution with a macroporous cation exchange resin having sulfonic acid functional groups and having post-deposited therein hydrous zirconium oxide and polyacrylic acid.

4,405,577
NON-STERICALLY HINDERED-STERICALLY HINDERED AMINE CO-PROMOTED ACID GAS SCRUBBING SOLUTION AND PROCESS FOR USING SAME

Guido Sartori, Linden, and David W. Savage, Summit, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 13, 1981, Ser. No. 321,103
Int. Cl.³ B01D *53/34*; C09K *3/00*
U.S. Cl. 423—223 16 Claims



1. A process for the removal of CO_2 from a gaseous stream containing CO_2 which comprises contacting said gaseous stream

(1) in an absorption step absorbing said CO_2 from said gaseous stream with an aqueous absorbing solution comprising (a) a basic alkali metal salt or hydroxide selected from the group consisting of alkali metal bicarbonates, carbonates, hydroxides, borates, phosphates and their mixtures, and (b) an activator or promoter system for said basic alkali metal salt or hydroxide, comprising:

(i) at least one non-sterically hindered amino compound, and

(ii) at least one sterically hindered amino acid, and

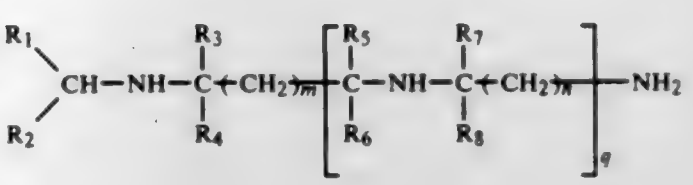
(2) in a desorption and regeneration step, desorbing at least a portion of the absorbed CO_2 from said absorbing solution.

4,405,578
CO-PROMOTED ACID GAS SCRUBBING SOLUTION AND PROCESS FOR USING SAME

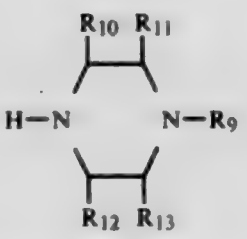
Guido Sartori, Linden, and Warren A. Thaler, Aberdeen, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 13, 1981, Ser. No. 321,060
Int. Cl.³ B01D *53/34*; C09K *3/00*
U.S. Cl. 423—223 14 Claims

1. A process for the removal of CO_2 from a gaseous stream containing CO_2 which comprises contacting said gaseous stream (1) in an absorption step with an aqueous absorbing solution comprising (a) a basic alkali metal salt or hydroxide selected from the group consisting of alkali metal bicarbonates, carbonates, hydroxides, borates, phosphates and their mixtures, and (b) an activator or promoter system for said basic alkali metal salt or hydroxide comprising (i) at least one lower aliphatic mono-substituted amino acid and (ii) at least one sterically hindered diamino or triamino compound, said amino acid being selected from the group consisting of: N-secondary butyl glycine; N-n-butyl glycine, N-2-amyl glycine, N-n-propyl-alpha-alanine, N-secondary butyl-alpha-alanine, and said sterically hindered diamino or triamino compound being represented by the following general formulae:



or

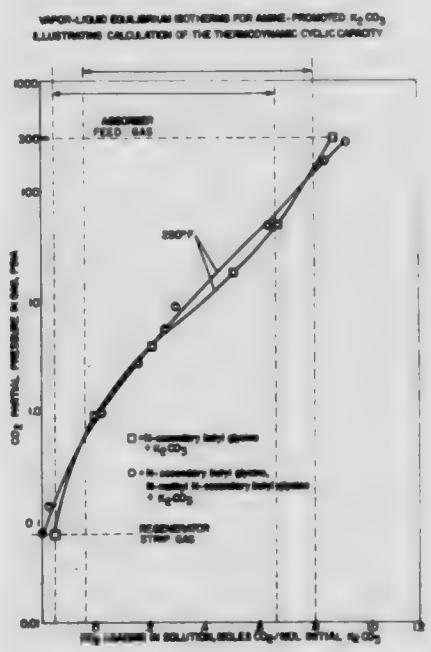


wherein R_1 and R_2 are hydrogen or C_1–C_4 aliphatic radicals or together form a $—CH_2—_p$ chain, wherein p is an integer ranging from 4 to 7, R_3 to R_8 are hydrogen or a methyl radical, R_9–R_{13} are hydrogen, C_1–C_3 alkyl, C_1–C_3 aminoalkyl, C_1–C_3 hydroxyalkyl, or C_1–C_3 carboxylalkyl such that at least one of the groups R_{10} and R_{12} is different from hydrogen, m and n are positive integers ranging from 2–6 and q is zero or a positive integer ranging from 1–3, and (2) in a desorption and regeneration step, desorbing at least a portion of the absorbed CO_2 from said absorbing solution.

4,405,579
STERICALLY HINDERED AMINO ACIDS AND TERTIARY AMINO ACIDS AS PROMOTERS IN ACID GAS SCRUBBING PROCESSES

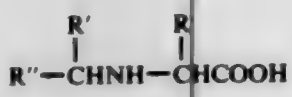
Guido Sartori, Linden, and Warren A. Thaler, Aberdeen, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 13, 1981, Ser. No. 321,061
Int. Cl.³ B01D *53/34*; C09K *3/00*
U.S. Cl. 423—223 16 Claims



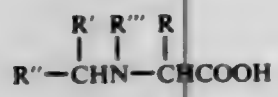
1. A process for the removal of CO_2 from a gaseous stream containing CO_2 which comprises contacting said gaseous stream (1) in an absorption step with an aqueous absorbing solution comprising (a) a basic alkali metal salt or hydroxide selected from the group consisting of alkali metal bicarbonates, carbonates, hydroxides, borates, phosphates and their mixtures, and (b) an activator or promoter system for said basic alkali metal salt or hydroxide comprising (i) at least one sterically hindered monosubstituted amino acid and (ii) at least one

tertiary amino acid, said amino acids being defined by the general formulae:



(sterically hindered monosubstituted amino acid)

and



(tertiary amino acid)

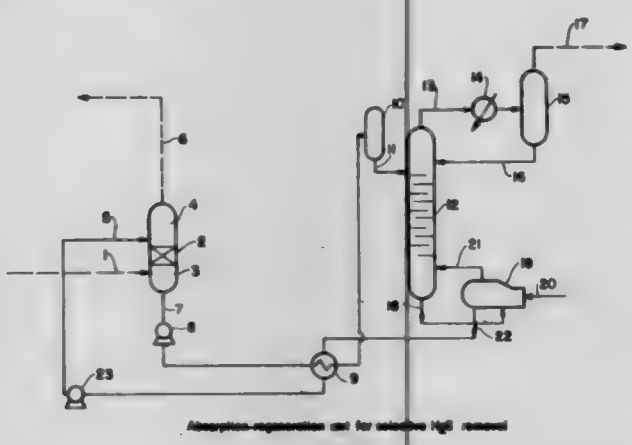
wherein R is either hydrogen or methyl, R′ and R″ are each alkyl or substituted alkyl radicals having 1 to 5 carbon atoms, and R‴ is a linear alkyl or substituted linear alkyl radical having from 1 to 6 carbon atoms; and (2) in a desorption and regeneration step, desorbing at least a portion of the absorbed CO_2 from said absorbing solution.

4,405,580

PROCESS FOR SELECTIVE REMOVAL OF H_2S FROM MIXTURES CONTAINING H_2S AND CO_2 WITH TERTIARY AMINO AZABICYCLIC ALCOHOLS

Eugene L. Stogryn, Edison; David W. Savage, Summit, and Guido Sartori, Linden, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 18, 1982, Ser. No. 339,898
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—226 23 Claims



FIG

1. A process for the selective absorption of H_2S from a normally gaseous mixture containing H_2S and CO_2 comprising contacting said normally gaseous mixture with an absorbent amino-compound-containing solution comprising a tertiary amino azabicyclic alcohol or tertiary amino azabicyclic ether alcohol under conditions whereby H_2S is selectively absorbed from said mixture.

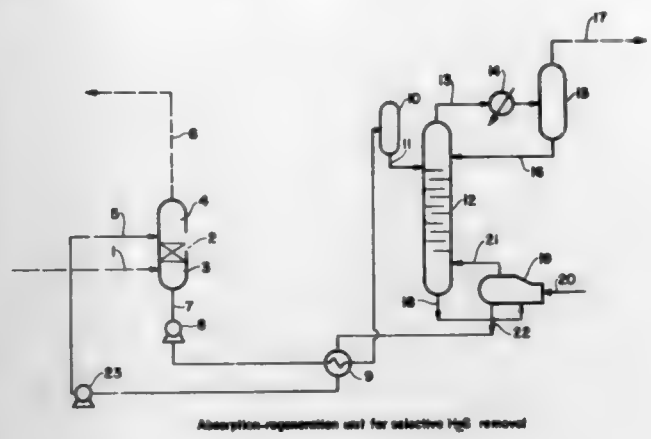
4,405,581

PROCESS FOR THE SELECTIVE REMOVAL OF HYDROGEN SULFIDE FROM GASEOUS MIXTURES WITH SEVERELY STERICALLY HINDERED SECONDARY AMINO COMPOUNDS

David W. Savage, Summit; Guido Sartori, Linden, and Eugene L. Stogryn, Edison, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 18, 1982, Ser. No. 339,901
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—226 23 Claims

1. A process for the selective absorption of H_2S from a normally gaseous mixture containing H_2S and CO_2 comprising contacting normally gaseous mixture with an amino compound solution comprising a severely sterically hindered secondary amino alchol having a cumulative $-E_s$ value (Taft's steric



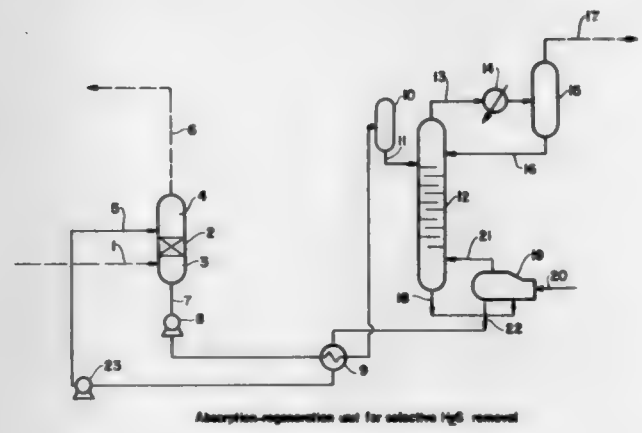
hindrance constant) greater than about 1.75 under conditions whereby H_2S is selectively absorbed from said mixture.

4,405,582

PROCESS FOR SELECTIVE REMOVAL OF H_2S FROM MIXTURES CONTAINING H_2S AND CO_2 USING DIAMINOETHER SOLUTIONS

Eugene L. Stogryn, Edison; David W. Savage, Summit, and Guido Sartori, Linden, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 18, 1982, Ser. No. 339,883
Int. Cl.³ B01D *53/34*; C09K *3/00*
U.S. Cl. 423—228 23 Claims



1. A process for the selective absorption of H_2S from a normally gaseous mixture containing H_2S and CO_2 comprising:

(a) contacting said normally gaseous mixture with an absorbent amino-compound-containing solution comprising a diaminoether wherein at least one amino group is a tertiary amine and the other amino group, if not a tertiary amine, is a severely sterically hindered secondary amine, under conditions whereby H_2S is selectively absorbed from said mixture.

4,405,583

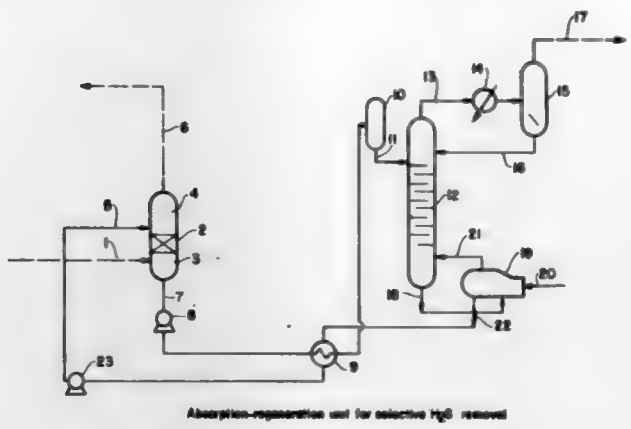
PROCESS FOR SELECTIVE REMOVAL OF H_2S FROM MIXTURES CONTAINING H_2S AND CO_2 USING DI-SEVERELY STERICALLY HINDERED SECONDARY AMINOETHERS

Eugene L. Stogryn, Edison; David W. Savage, Summit, and Guido Sartori, Linden, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 18, 1982, Ser. No. 339,900
Int. Cl.³ B01D *53/34*; C09K *3/00*
U.S. Cl. 423—228 23 Claims

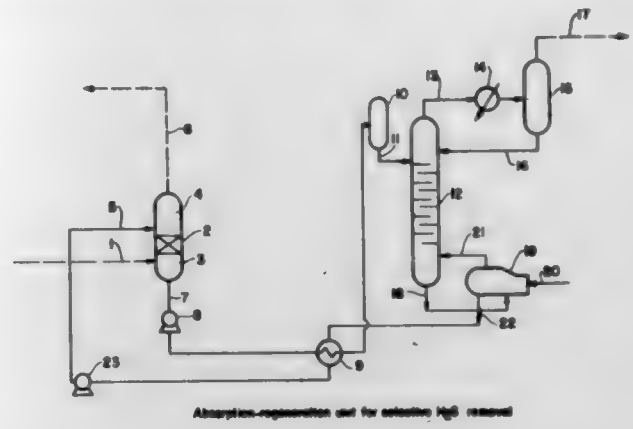
1. A process for the selective absorption of H_2S from a normally gaseous mixture containing H_2S and CO_2 comprising

contacting said normally gaseous mixture with an absorbent amino-compound-containing solution comprising a di-secondary aminoether wherein each amino group is severely sterically hindered under conditions whereby H_2S is selectively absorbed from said mixture.



Absorption-regeneration unit for selective H_2S removal

sterically hindered secondary aminoether alcohol having a cumulative $-E_s$ value (Taft's steric hindrance constant) greater than about 1.75 under conditions whereby H_2S is selectively absorbed from said mixture.



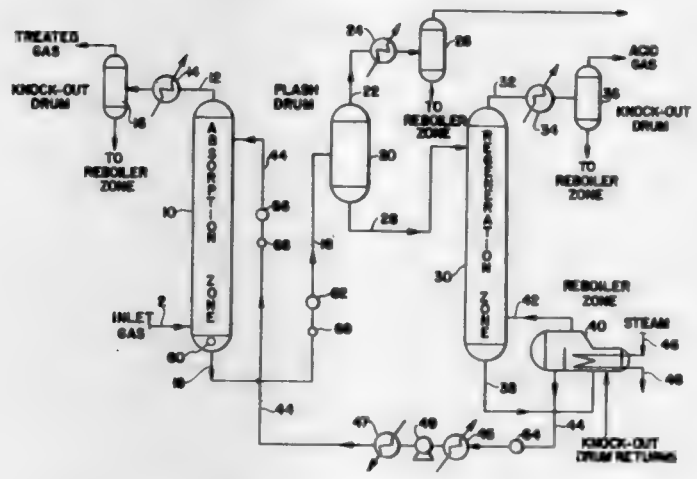
4,405,584

PROCESS FOR REMOVING ACIDIC GASES

Z. Andrew Foroulis, Mendham, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Feb. 2, 1982, Ser. No. 344,987
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—228 **22 Claims**

GAS TREATING UNIT FLOW DIAGRAM



1. In a process for removing acidic gases from a gaseous stream containing the same, wherein said gaseous stream is contacted with an amine promoted alkaline salt scrubbing solution, the improvement comprising the combination of the scrubbing solution with an effective amount of a corrosion inhibitor comprising a mixture of salts of antimony and molybdenum.

4,405,585

PROCESS FOR THE SELECTIVE REMOVAL OF HYDROGEN SULFIDE FROM GASEOUS MIXTURES WITH SEVERELY STERICALLY HINDERED SECONDARY AMINOETHER ALCOHOLS

Guido Sartori, Linden; David W. Savage, Summit, and Eugene L. Stogryn, Edison, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 18, 1982, Ser. No. 339,891
Int. Cl.³ B01D *53/34*; C09K *3/00*
U.S. Cl. 423—228 **26 Claims**

1. A process for the selective absorption of H_2S from a normally gaseous mixture containing H_2S and CO_2 comprising contacting said normally gaseous mixture with an absorbent amino-compound-containing solution comprising a severely

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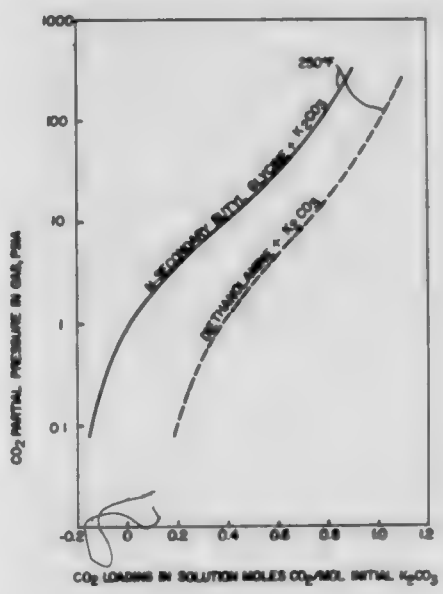
4,405,586

N-SECONDARY BUTYL GLYCINE PROMOTED ACID GAS SCRUBBING PROCESS

Guido Sartori, Linden, and Warren A. Thaler, Aberdeen, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 13, 1981, Ser. No. 321,063
Int. Cl.³ B01D *53/34*; C09K *3/00*
U.S. Cl. 423—233 **14 Claims**

VAPOR LIQUID EQUILIBRIUM ISOTHERMS FOR AMINE-PROMOTED K_2CO_3 ILLUSTRATING CALCULATION OF THE THERMODYNAMIC CYCLIC CAPACITY



1. A process for the removal of CO_2 from a gaseous stream containing CO_2 which comprises contacting said gaseous stream (1) in an absorption step with an aqueous absorbing solution comprising (a) a basic alkali metal salt or hydroxide selected from the group consisting of alkali metal bicarbonates, carbonates, hydroxides, borates, phosphates, and their mixtures, and (b) an activator or promoter system for said basic alkali metal salt or hydroxide comprising N-secondary butyl glycine; and (2) in a desorption and regeneration step, desorbing at least a portion of the absorbed CO_2 from said absorbing solution.

4,405,587

PROCESS FOR REDUCTION OF OXIDES OF NITROGEN

Eugene C. McGill, Skiatook, and Ronald D. Bell, Tulsa, both of Okla., assignors to McGill Incorporated, Tulsa, Okla.

Filed Feb. 16, 1982, Ser. No. 348,840
Int. Cl.[3] C01B *21/00*; B01D *47/00*
U.S. Cl. 423—235 20 Claims

1. A process for reducing the concentration of oxides of nitrogen in a stream comprising:

burning the stream containing oxides of nitrogen at a temperature greater than about 2000° F. in the presence of a stoichiometric excess of an amount of a reducing agent required for stoichiometric reduction of available oxygen to provide a combustion effluent substantially free of oxides of nitrogen; and

reacting the combustion effluent with a gaseous stream having an effective amount of oxygen to achieve flameless oxidation of the combustibles present in the combustion effluent at a temperature of about 1600° F. to about 1800° F. to produce an oxidation effluent substantially free of oxides of nitrogen.

4,405,588

PROCESS OF REMOVING IRON IMPURITIES FROM ORES

Alejandro J. Caballero, and Ricardo I. Holcombe, both of Monterrey, Mexico, assignors to Materias Primas, Monterrey, S.A., Col. Obispado, Mexico

Filed Dec. 21, 1981, Ser. No. 333,256
Int. Cl.[3] C01B *33/12*
U.S. Cl. 423—340 8 Claims

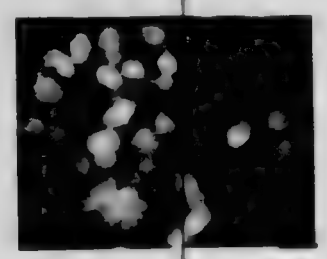
1. A process of removing iron impurities from ores comprising grinding the ore, washing and desliming the ground ore to remove the major part of the clay-type binder, attrition-scrubbing the deslimed particles to release further amounts of binder therefrom, washing and desliming to remove said binder, drying and heating the ore particles, treating the hot particles with a chemical agent suitable to convert the iron impurities into water soluble iron compounds, attrition-scrubbing the hot suspension of chemically treated particles to release the stains of iron impurities thereby forming a hot suspension of the chemically treated particles in said treating agent, and washing with cold water and desliming to recover the purified ore particles.

4,405,589

PROCESS FOR PRODUCING SILICON NITRIDE POWDER

Tadashi Iwai; Takashi Kawahito, and Tetsuo Yamada, all of Ube, Japan, assignors to UBE Industries, Ltd., Japan

Filed Nov. 5, 1982, Ser. No. 439,436
Claims priority, application Japan, Nov. 17, 1981, 56-183081
Int. Cl.[3] C01B *21/06, 33/06*
U.S. Cl. 423—344 5 Claims



1. A process for producing silicon nitride powder comprising the steps of:

(1) reacting (i) at least one compound having the general formula [I]

$$R_mSiCl_{4-m} \quad [I]$$

wherein R is an aliphatic residual group having 1 to 4 carbon atoms or an aromatic residual group having 6 to 8 carbon atoms, and m is 1, 2, or 3 and (ii) a compound having the general formula [II]

$$H_nSiCl_{4-n} \quad [II]$$

wherein n is 0, 1, 2, or 3, the ratio of silicon atom to carbon atom (Si/C) in both compounds [I] and [II] being 0.5 to 50 with ammonia and, then,

(2) calcining the resultant reaction product in the first step at a temperature of 1200° C. to 1700° C. under an inert or reducing gas atmosphere.

4,405,590

DISMUTATION/REDISTRIBUTION OF HALOGENOSILANES INTO SILANE

Gerard Simon, and Andre Soldat, both of Villeurbanne, France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Mar. 15, 1982, Ser. No. 358,387
Claims priority, application France, Apr. 3, 1981, 81 06710
Int. Cl.[3] C01B *33/04*
U.S. Cl. 423—347 10 Claims

1. A Process for the dismutation and/or redistribution of at least one halogenosilane comprising at least one Si-H function into silane, which comprises contacting said at least one halogenosilane with a compound comprising at least one α-oxoamine group at a temperature ranging from −30° to 300° C. to effect dismutation and/or redistribution of the halogenosilane to thereby yield silane, silicon tetrahalide or an alkylhalogenosilane or arylhalogenosilane, and residual halogenosilanes, then separating the silane formed by maintaining the reaction products produced in the dismutation and/or redistribution in contact with the compound comprising at least one α-oxoamine group at a temperature at which the reaction products other than silane remain dissolved in said compound comprising at least one α-oxoamine group, and then collecting the separated silane.

4,405,591

HYDROGENATION OF CHLOROSILANES TO SILANE, SiH_4, IN BATH OF MOLTEN SALTS

Jean Grosbois, L'Isle Adam, and Jean-Yves Dumousseau, Paris, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

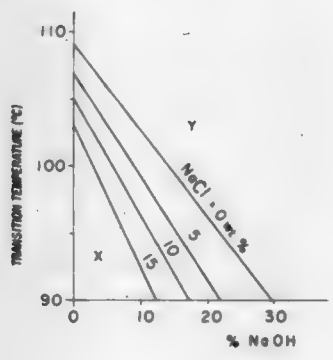
Filed Mar. 17, 1982, Ser. No. 358,853
Claims priority, application France, Apr. 17, 1981, 81 07765
Int. Cl.[3] C01B *33/04*
U.S. Cl. 423—347 4 Claims

1. A process for the preparation of SiH_4 which comprises hydrogenating a chlorosilane in a bath of molten salts, said molten bath being a ternary mixture of lithium chloride/potassium chloride/calcium chloride or lithium chloride/potassium chloride/barium chloride, with said ternary mixture having a melting point not in excess of about 400° C., and said SiH_4 being stable in the molten bath at a higher temperature than that at which SiH_4, prepared by the hydrogenation of a chlorosilane in a molten LiCl/KCl eutectic mixture, is stable in said molten LiCl/KCl eutectic mixture.

4,405,592
PROCESS FOR PRODUCING ANHYDROUS SODIUM CARBONATE CRYSTAL

Kelichi Nakaya, Chiba; Kohji Kawanami, and Suekazu Hirata, both of Ichihara, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jan. 19, 1981, Ser. No. 226,166
Claims priority, application Japan, Feb. 1, 1980, 55-10025
Int. Cl.[3] C01D *15/08, 7/00, 7/24*
U.S. Cl. 423—421 7 Claims

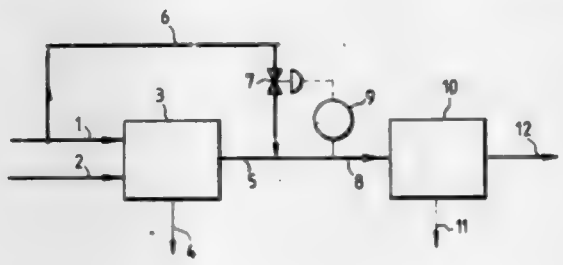


1. A process for producing an anhydrous sodium carbonate crystal which comprises (a) crystallizing substantially at atmospheric pressure an anhydrous sodium carbonate crystal from an aqueous solution of sodium carbonate by adding in said aqueous solution both sodium chloride and sodium hydroxide whereby crystals of anhydrous sodium carbonate of spherical degree ranging from 1.28 to about 1.04 are produced; and (b) separating said crystals of anhydrous sodium carbonate from a mother liquor.

4,405,593
PROCESS OF DECREASING THE SULFUR CONTENT OF EXHAUST GASES OBTAINED DURING THE RECOVERY OF SULFUR

Johann Schlauer, Frankfurt am Main; Herbert Fischer, Lollar, and Manfred Kriebel, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 16, 1981, Ser. No. 302,885
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1980, 3036132
Int. Cl.[3] C01B *17/04*
U.S. Cl. 423—574 R 3 Claims



1. A process for decreasing the sulfur content of an exhaust gas released after the recovery of sulfur from an acid gas containing H_2S reacted with an oxygen-containing gas stream in a Claus plant which comprises withdrawing from said Claus plant a tail gas containing H_2S and SO_2 at a molar ratio of up to 2:1, adjusting the molar ratio of H_2S:SO_2 to virtually exactly 2:1 in said tail gas by adding a gas containing H_2S to form a stoichiometric gas mixture, analyzing said stoichiometric gas mixture to determine the concentration of H_2S and SO_2 and, according to said analysis, adjusting the amount of said gas containing H_2S to be added, the maximum amount of said gas containing H_2S added being less than 5% of the acid gas fed into the Claus plant, catalytically reacting said stoichiometric gas mixture to form elementary sulfur and separately withdrawing said elementary sulfur and said residual gas, said gas containing H_2S being added

(i) either to the tail gas exiting from the Claus plant, or

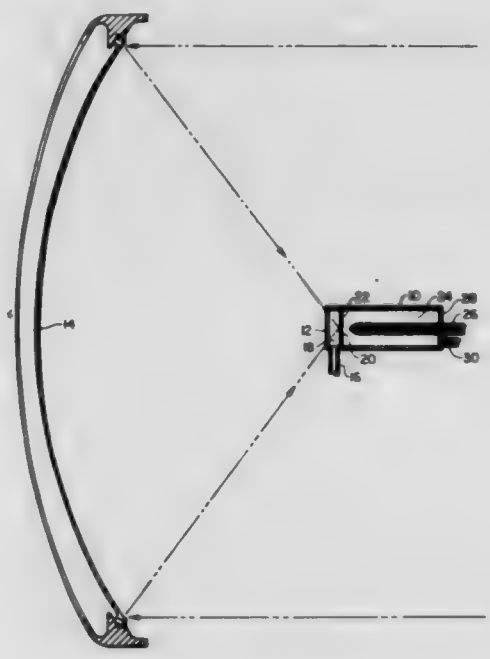
(ii) before the last contacting stage of a multi-stage Claus plant.

3. A process according to claim 1, wherein the tail gases from two or more Claus plants are conducted to a common tail gas-processing plant and jointly desulfurized therein.

4,405,594
PHOTO SEPARATORY NOZZLE

Walter R. Pyle, Richmond, Calif., assignor to Chevron Research Center, San Francisco, Calif.

Filed Sep. 21, 1981, Ser. No. 304,131
Int. Cl.[3] C01B *13/00*
U.S. Cl. 423—579 6 Claims



5. Apparatus for the thermal dissociation of gaseous matter into its lighter and heavier component species, which comprises:

a housing having a transparent wall;

a solar energy concentration means to direct solar energy through said transparent wall to provide a region of concentrated solar energy within said housing;

an inlet port in said housing for the introduction of gaseous matter into said housing and an outlet orifice in said housing for the removal of effluent component species therefrom, said outlet orifice being positioned near said region of concentrated solar energy and said inlet port being positioned to direct the gaseous matter through said region of concentrated solar energy, said outlet orifice sized for the operating conditions such that the effluent attains supersonic flow after passing through said outlet orifice; and

a separating baffle placed downstream from said outlet orifice for separating the effluent into a heavier component-rich stream and a lighter component-rich stream.

6. A method for thermally dissociating water vapor into hydrogen and oxygen, comprising:

introducing water vapor into a chamber at a first pressure between about 2 and 760 Torr;

heating said water vapor to thermally dissociate at least a portion thereof into hydrogen and oxygen with concentrated solar energy;

passing said hydrogen and oxygen and unconverted water vapor through an orifice at a second pressure between about 1 and 360 Torr, to produce a supersonic molecular jet of hydrogen, oxygen and unconverted water vapor, to produce a shock wave downstream of said orifice, to rapidly cool said hydrogen, oxygen and unconverted water vapor and to retard recombination of same; and

separating said jet in said shock wave into a hydrogen-rich stream and an oxygen-rich stream with a beam skimmer.

4,405,595

METHODS OF PRODUCING SPHERICAL LITHIUM ALUMINATE PARTICLES

Ling Yang, La Jolla; Russell R. Medico, and Wesley A. Baugh, both of San Diego, all of Calif., assignors to GA Technologies Inc., San Diego, Calif.

Filed Jan. 15, 1982, Ser. No. 339,697
Int. Cl.³ C01F *7/04*
U.S. Cl. 423—600 **16 Claims**

6. A method of forming lithium aluminate spheroids comprising:

forming aluminum hydroxide gel spheroids,

washing the gel spheroids with aqueous solution to rid said spheroids of extraneous substances,

immersing said aluminum hydroxide gel spheroids in a solution of between about 3N and about 5N LiOH to infuse lithium ions into said gel spheroids,

rinsing said lithium-infused gel spheroids in an aqueous ammonium hydroxide solution to remove excess lithium ion from the surface thereof,

soaking said lithium-infused gel spheroids in an organic liquid to remove said aqueous solution,

drying said lithium-infused gel spheroids, and

sintering said lithium-infused gel spheroids at a temperature of between about 1000° C. and about 1400° C. to form lithium aluminate spheroids.

4,405,596

PHARMACEUTICAL PREPARATIONS FOR AND TREATMENT PROCEDURES INVOLVING INCREASING PLASMA BICARBONATE LEVEL

Joachim W. Helbig, Traubinger Str.23, D-1832 Tutzing, and Klaus F. Kopp, Aschlkofener Str. 4, D-8017 Ebersberg, both of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 85,066, Oct. 15, 1979, Pat. No. 4,289,750. This application Sep. 15, 1981, Ser. No. 302,628
The portion of the term of this patent subsequent to Sep. 15, 1998, has been disclaimed.
Int. Cl.³ A61K *33/00, 33/06, 33/14*
U.S. Cl. 424—33 **22 Claims**

1. A pharmaceutical oral dosage form for use in treating altered renal function or prophylactically conditioning against such alterations of an active agent capable of forming or releasing bicarbonate ions and being for increasing plasma bicarbonate level of a subject to a value in excess of that prior to treatment, characterised in that said oral dosage form is substantially free of undesirable side effects known to exist for oral dosage forms of gastro-intestinal bicarbonate-releasing preparations, the active agent being one which forms or releases or which has been adapted in the oral dosage form to form or release resorbable bicarbonate ions only in the intestine of a subject without the possibility of reaction thereof with gastric secretions in the stomach of the subject.

19. A method of preventing severe impediment of renal function or acute renal failure, which comprises the step of orally administering to a patient likely to contract such severe impediment of renal function or renal failure, a prophylactically effective amount of the oral dosage form of claim 1.

4,405,597

MEDICAMENT CAPSULES FOR RECTAL APPLICATION

Yasushi Takagishi, Nishinomiya; Yoshio Doi, Ibaraki; Kiichiro Ohsuga, Kusatsu; Noboru Hoshi, Higashi-kurume, all of Japan, and Shionogi & Co., Ltd., 03, Osaka, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, both of Japan

Filed Aug. 11, 1981, Ser. No. 292,040
Claims priority, application Japan, Feb. 24, 1981, 56-26624
Int. Cl.³ A61K *9/48, 9/36*
U.S. Cl. 424—35 **2 Claims**

1. A method for the administration of a rectally absorbable, therapeutically effective ingredient which comprises inserting into the rectum through the anus a medicament capsule formed of a hard capsule shell made of an enterosoluble material selected from the group consisting of mixed esters of an alkylcellulose, a hydroxyalkylcellulose or a hydroxyalkyl alkylcellulose esterified with acidic succinyl groups and aliphatic monoacyl groups, and encapsulating a liquid content containing the rectally absorbable, therapeutically effective ingredient, the osmotic pressure of the liquid content being substantially higher than the osmotic pressure of the rectal fluid.

4,405,598

COMPOSITION FOR TREATING ASTHMA

Kenneth Brown, East Leake, England, assignor to Fisons, Limited, Ipswich, England

Continuation-in-part of Ser. No. 56,470, Jul. 11, 1979, abandoned, which is a continuation of Ser. No. 868,474, Jan. 11, 1978, abandoned, which is a continuation-in-part of Ser. No. 761,445, Jan. 21, 1977, abandoned, and a continuation-in-part of Ser. No. 89,033, Oct. 29, 1979, abandoned, which is a continuation of Ser. No. 920,174, Jun. 29, 1978, abandoned, which is a continuation-in-part of Ser. No. 868,474, Jan. 11, 1978, abandoned. This application Jan. 13, 1981, Ser. No. 224,747
Int. Cl.³ A61K *31/35*
U.S. Cl. 424—45 **3 Claims**

1. A method of treatment of asthma which comprises administration to an asthmatic patient of an effective amount of an inhalation composition comprising a dispersion or suspension of from 0.2 to 2.0% of disodium cromoglycate of mass median diameter 0.01 to 10 microns, from 0.15 to 2.0% by weight of a sorbitan or sorbitol ester surfactant and a propellant mixture comprising dichlorodifluoromethane and 1,2-dichloro-1,1,2,2-tetrafluoroethane and containing substantially no trichloromonofluoromethane, the ratio of dichlorodifluoromethane to 1,2-dichloro-1,1,2,2-tetrafluoroethane in said mixture being in the range from 2:1 to 1:1 by weight, the disodium cromoglycate used in the formulation containing from 0.05 to 1% w/w of water and the total formulation containing less than 0.1% w/w of water and having a vapour pressure in the range 35 to 70 pounds per square inch gauge.

4,405,599

TOOTHPASTE FOR NATURAL TEETH AS WELL AS COMPOSITE FILLING MATERIAL

Irwin E. Smigel, 140 E. 72nd St., New York, N.Y. 10021

Filed Jul. 6, 1982, Ser. No. 395,846
Int. Cl.³ A61K *7/20*
U.S. Cl. 424—53 **7 Claims**

1. A toothpaste composition consisting essentially of, in percent by weight:

Dicalcium Phosphate: 1.0% to 50%
Sorbital 70%: 1.0% to 50%
Cornstarch: 0.5% to 10%
Cellulose Gum: 0.5% to 5.0%
Calcium Peroxide: 0.5% to 5%
Sodium Perborate: 0.5% to 5%
Lathanol LAL: 0.1% to 5%
Aluminum Hydroxide: 0.01% to 1%.

4,405,600

METHODS AND MATERIALS FOR PREVENTION OF CARIOUS DEGRADATION OF TEETH

Frank C. Besic, Manitowoc, Wis., assignor to University Patents, Inc., Norwalk, Conn.

Continuation-in-part of Ser. No. 46,314, Jun. 7, 1979, abandoned. This application Apr. 11, 1980, Ser. No. 139,199

Int. Cl.[3] A23K *1/16*

U.S. Cl. 424—57 16 Claims

1. A method for diminishing the cariogenicity of sucrose, said method consisting of admixing sucrose with a soluble source of calcium ions or a soluble source of phosphate ions in a quantitative weight ratio of about one part ion source to forty parts sucrose, said ion source being at least as rapidly soluble in water as sucrose.

16. A cariostatic mouth rinse, the cariostatically active ingredients of which consist of an aqueous solution of a source of calcium ions and an osmotically active agent, the quantities of calcium ions and osmotically active agents in said mouth rinse being such that upon administration to the mouth the osmotically active agent promotes transfer of calcium ions from the mouth into saliva in salivary retention areas in the mouth in quantities such that, taking into account calcium and phosphate ions already present in the saliva, the ratio of calcium ions to phosphate ions therein is from about 0.0666 to about 4.223 and the product of the concentration of calcium ions to phosphate ions therein is from about 0.5 to about 20.

4,405,601

EXTRACTION AND PURIFICATION OF BIOLOGICALLY ACTIVE LYMPHOKINES

John E. McEntire, and Ben W. Papermaster, both of Columbia, Mo., assignors to Cancer Research Center, Columbia, Mo.

Filed May 21, 1981, Ser. No. 265,956

Int. Cl.[3] A61K *35/12;* A01N *63/02*

U.S. Cl. 424—95 25 Claims

1. In a method for the extraction and purification of biologically active lymphokines from large scale culture supernatants comprising the steps of effecting the growth of lymphoblastoid cells from human lymphoblastoid cultured cell lines, and thereafter harvesting, concentrating and clarifying the resulting supernatant culture fluids, the improvement which comprises extracting said supernatant culture fluids with a solvent selected from the group consisting of trichloroacetic acid, guanidine hydrochloride, sodium dodecyl sulfate and perchloric acid and removing said solvent to produce a lymphokine fraction which exhibits the capability of inducing cell-mediated immunity reactions and tumor regression in mammals.

4,405,602

PROCESS FOR THE OBTAINMENT OF A BIOLOGICALLY ACTIVE BEE-PRODUCT

Nicolae Ilies, Bucharest, Romania, assignor to Cooperativa Agricola de Productie Scornicesti, Judetul Olt, Romania

PCT No. PCT/RO81/00001, § 371 Date Sep. 16, 1981, § 102(e) Date Sep. 16, 1981, PCT Pub. No. WO81/02106, PCT Pub. Date Aug. 6, 1981

PCT Filed Jan. 21, 1981, Ser. No. 305,629

Claims priority, application Romania, Jan. 21, 1980, 999/21

Int. Cl.[3] A61K *35/64, 47/00;* A23L *1/34*

U.S. Cl. 424—95 8 Claims

1. A process for the preparation of a biologically active bee product under sterile conditions which comprises the steps of:

(a) picking up drone bee larvae, worker bee larvae or queen bee larvae before respective cell capping together with larval food contained in comb cells to form a mixture of crude larval triturate;

(b) triturating the mixture formed during step (a); and

(c) filtering the mixture triturated during step (b) to obtain the desired fresh product.

4,405,603

METHOD FOR RENDERING FACTORS IX AND X HEPATITIS-SAFE WITH CALCIUM IONS

Horst Schwinn; Norbert Heimburger, both of Marburg/Lahn; Gerhardt Kumpe, Wetter, and Wilfried Wormsbächer, Kirchhain, all of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg/Lahn, Fed. Rep. of Germany

Filed Nov. 25, 1981, Ser. No. 324,872

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1980, 3045153

Int. Cl.[3] A61K *35/14*

U.S. Cl. 424—101 3 Claims

1. A method for making a preparation containing at least one member selected from the group consisting of blood clotting Factor IX and blood clotting Factor X virtually hepatitis-safe, which method comprises warming said preparation in the presence of an effective amount of calcium ions and in the further presence of an effective amount of at least one member selected from the group consisting of amino acids, saccharides, and sugar alcohols.

4,405,604

VETERINARIAN SALVE

John T. Sunley, R.R. #6, Springfield, Ill. 62707

Filed Sep. 9, 1982, Ser. No. 347,051

Int. Cl.[3] A61K *33/04*

U.S. Cl. 424—165 5 Claims

1. A veterinarian salve, comprising a mixture of an oil base as the principal ingredient, flowers of sulfur, and sufficient creolin to tastewise discourage dogs from licking-off an application of said salve to a treatment area.

4,405,605

FUNGICIDAL COMPOSITIONS

Hanshelmut Itzel, Gau-Algesheim, Fed. Rep. of Germany, assignor to Celamerck GmbH & Co., KG, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 219,246, Dec. 22, 1980. This application Jul. 24, 1981, Ser. No. 286,693

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1980, 2952239

Int. Cl.[3] A01N *43/50, 43/48, 25/22*

U.S. Cl. 424—173 15 Claims

1. A fungicidal composition comprising fungicidally effective amounts of triforine and carbendazim as active ingredients, wherein the composition consists essentially of (1) from about 1 to 40 percent by weight, based upon the weight of the total composition, of carbendazim suspended in a solution of from about 1 to 20 percent by weight, based upon the weight of the total composition, of triforine in dimethylformamide, N-methylpyrrolidone, or a mixture thereof; (2) from about 1 to 40 percent by weight, based upon the weight of the total composition, of saccharide or from about 1 to 15 percent by weight, based upon the weight of the total composition, of a polyvinylpyrrolidone/polyvinylacetate mixture, the weight ratio of polyvinylpyrrolidone to polyvinylacetate in the mixture being from about 4:1 to 1:4, or a mixture thereof, as stabilizer; and (3) inert carrier.

4,405,606

METHOD FOR ARRESTING FULMINATING INFECTION

Anthony Cerami, Flanders, N.J., assignor to Evreka, Inc., Bergenfield, N.J.

Filed May 4, 1981, Ser. No. 260,144

Int. Cl.[3] A61K *37/00*

U.S. Cl. 424—177 8 Claims

1. A method for arresting fulminating infection of traumatized tissue in animals comprising administering to said tissue an agent capable of binding iron made available to infection-promoting organisms by body fluid released by the traumatization of said tissue, said agent administered in an amount suffi-

cient to bind all of said available iron, and thereby to block the adsorption of said iron by said organisms,

wherein said agent comprises at least one complexing protein, and said complexing protein comprises haptoglobin.

4,405,607

NOVEL PENTAPEPTIDES, PROCESSES FOR THEIR PRODUCTION, PHARMACEUTICAL COMPOSITIONS COMPRISING SAID PENTAPEPTIDES AND THEIR USE

Francois Cardinaux; Rene Huguenin, both of Reinach, and Janos Pless, Basel, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Jul. 10, 1981, Ser. No. 282,045

Claims priority, application Switzerland, Jul. 17, 1980, 5483/80; Nov. 26, 1980, 8752/80

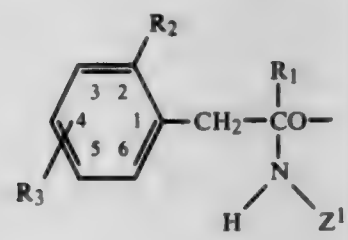
Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 **15 Claims**

1. A pentapeptide of formula I,

A—B—Gly—D—E I

wherein A is a residue of formula



wherein

Z^1 is amidino,

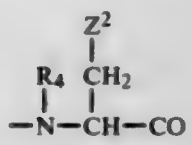
R_1 is hydrogen or C_{1-4} alkyl,

R_2 is hydrogen,

R_3 is hydroxy in the 4-position;

B is (D)-Ala

D is a residue of formula

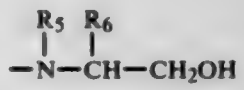


wherein

R_4 is hydrogen or C_{1-4} alkyl and

Z^2 is phenyl or phenyl mono- or di-substituted by halogen, nitro, C_{1-4} alkyl or C_{1-4} alkoxy and

E is a group of the formula



wherein

R_5 is hydrogen or C_{1-4} alkyl and

R_6 is $CH_3SCH_2CH_2$—, $HOCH_2$—, CH_3—CH(OH)— or $H_2NCOCH_2CH_2$—, a group of formula

$$-(CH_2)_m-CH_2OH$$

wherein m is an integer of from 1 to 6, or a group of formula

$$-(CH_2)_n-CH_2-S(O)_p-R_7$$

wherein

R_7 is C_{1-5} alkyl and n and p, each independently of the other, are zero, 1 or 2, with the proviso that, when n is 1 and p is zero, R_7 is other than methyl;

where the residues A and D have the (L)-configuration, and the residue E has the (D)- or (L)-configuration or a physiologically hydrolysable, physiologically acceptable ester thereof or a salt or complex of the pentapeptide or ester pharmaceutically acceptable.

4,405,608

NOVEL PEPTIDE

Alister J. Moody, Skovbovej; Lars Thim, Skiftevej, and Karin D. Jorgensen, Skovvej, all of Denmark, assignors to Novo Industri A/S, Denmark

Filed Aug. 27, 1981, Ser. No. 296,839

Int. Cl.³ C07C *103/52*; A61K *35/39, 35/38, 37/02*

U.S. Cl. 424—177 **4 Claims**

1. A purified peptide having the following amino acid sequence:

Arg—Ser—Leu—Gln—Asn—Thr—Glu—Glu—Lys—Ser—
5 10

—Arg—Ser—Phe—Pro—Ala—Pro—Gln—Thr—Asp—Pro—
15 20

—Leu—Asp—Asp—Pro—Asp—Gln—Met—Thr—Glu—Asp
25 30

and the physiologically acceptable salts thereof.

4,405,609

COMBINATION AND METHOD FOR INCREASING FEED UTILIZATION EFFICIENCY IN RUMINANTS

Emerson L. Potter, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 397,325, Jul. 12, 1982, abandoned, which is a continuation of Ser. No. 227,572, Jan. 22, 1981, abandoned. This application Nov. 22, 1982, Ser. No. 443,791

Int. Cl.³ A61K *37/00, 31/71*

U.S. Cl. 424—177 **29 Claims**

1. A composition useful for improving the efficiency of feed utilization by ruminants having a developed rumen function comprising as a first component a polyether antibiotic and as a second component a glycopeptide antibiotic, said components being present in combination in amounts which are about their respective optimal dose levels when employed alone, or are suboptimal dose levels which interact to increase feed utilization efficiency.

2. A composition of claim 1 comprising as a first component a propionate-increasing amount of a polyether antibiotic selected from monensin, ionomycin, laidlomycin, nigericin, grisorixin, dianemycin, Compound 51,532, lenoremycin, salinomycin, narasin, lonomycin, X-206, alborixin, septamycin, A-204, Compound 47,224, etheromycin, lasalocid, mutalomycin, K41, isolasalocid A, lysocellin, X-14766A, A-23187 or A-32887, and a second component which is a glycopeptide antibiotic selected from actaplanin, avoparcin, A35512, A477, ristocetin, or vancomycin.

4,405,610

DRUG FOR CURING INFLAMMATORY AND/OR DEGENERATIVE AND/OR ATROPHIC MUCOUS-MEMBRANE DISEASES

Hrvoje Krnjevic, A. Santica 2/II, 41.000 Zagreb, Yugoslavia

Filed Mar. 25, 1981, Ser. No. 247,375

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1980, 3011437

Int. Cl.³ A61K *31/70*

U.S. Cl. 424—180 **7 Claims**

1. An anti-inflammatory, degenerative, anti-atrophic drug against mucous-membrane diseases, characterized by a proportion of:

(a) the nucleoside inosine (hypoxanthine riboside), and

(b) lysine orotate,

whereby 1.5 ml of a solution of the active substances with a

concentration of 3 mg/ml in water is administered per 0.25 kg of body weight, by means of a syringe; or whereby two times per day 25 mg of the active substances per person are administered orally; or whereby topical treatment is carried out with a solution of 1–3 mg of the active substances per ml of water.

2. The drug as set forth in claim 1, characterized in that it contains vitamin A (water-soluble form) at 250 JU/ml or grams, and/or vitamin B_{12} at 0.05 mg/ml or grams, and/or folic acid at 0.05 mg/ml or grams.

3. The drug as set forth in claim 1 or 2, characterized in that it contains vitamin A at 250 JU/ml or grams, and/or thymine (=a pyrimidine base) at ¼ of the lysine orotate dose.

4,405,611

BISULFITE STABILIZATION OF 5-AZACYTIDINE

Dulal C. Chatterji, Germantown, and Joseph F. Gallelli, Bethesda, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 163,521, Jun. 27, 1980, abandoned. This application Dec. 18, 1981, Ser. No. 331,989

Int. Cl.³ A61K *31/70*

U.S. Cl. 424—180 **2 Claims**

1. In a method of administering 5-azacytidine internally in mice, the improvement comprising the steps of:

(a) a stabilizing the 5-azacytidine by forming a pro-drug form which has a bisulfite addition compound across the 5–6 imine double bond at about a pH of 2.5, and

(b) infusing the pro-drug of 5-azacytidine into the body wherein the physiological environment of the body at a pH >6 restores the pro-drug to the active 5-azacytidine form.

4,405,612

HEPARIN WEB COMPOSITIONS

Charles G. Thiel, St. Paul, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 152,751, May 23, 1980, abandoned. This application May 21, 1981, Ser. No. 267,579

Int. Cl.³ A61K *31/725*; D04H *1/04*; C08B *37/10*

U.S. Cl. 424—183 **24 Claims**

4. A microfiber of an amorphous salt of heparin and a cation selected from groups I and II of the periodic table of the elements which has an average length to diameter ratio of at least 20.

4,405,613

BIOLOGICALLY ACTIVE EXTRACTS FROM *MAYTENUS NEMEROSA* (ECKL AND ZEYH) MORAIS (CELASTRACEAE) SOUTH AFRICA AND METHOD OF OBTAINING SAME

Sidney M. Hecht, 101 Georgetown Green, Charlottesville, Va. 22901

Continuation of Ser. No. 280,085, Jul. 2, 1981, abandoned. This application Jul. 23, 1982, Ser. No. 401,305

Int. Cl.³ A61K *35/78*

U.S. Cl. 424—195 **9 Claims**

1. Biologically active materials from the plant *Maytenus nemerosa*, Eckl & Zeyh, Morais, Celastraceae, South Africa, the materials being produced by the process comprising extracting the twigs, bark and wood portions of the plant with a first solvent having a dielectric constant at 20° to 25° C. of from about 1.8 to about 2.0, a second solvent having a dielectric constant at 20° to about 25° C. of from about 3.5 to about 5.0, each extraction step being conducted for a period of 1 to 10 days, all extraction steps being conducted at room temperature, and recovering the biologically active materials which are capable of killing tumor cells derived from human carcinoma of the nasopharynx.

5. A process of obtaining biologically active materials from the plant *Maytenus nemerosa*, Eckl & Zeyh, Morais Celastraceae, South Africa, comprising extracting the twigs, bark and wood portions of the plant with a first solvent having a dielectric constant at 20° to 25° C. of from about 1.8 to 2.0, a second solvent having a dielectric constant at 20° to about 25° C. of from about 3.5 to about 5.0, each extraction step being conducted for a period of 1 to 10 days, all of the extraction steps being conducted at room temperature, and recovering the biologicaly active materials which are capable of killing tumor cells derived from human carcinoma of the nasopharynx.

4,405,614

N-SULFONYLATED THIOLPHOSPHORIC ESTER AMIDES AND THEIR USE FOR CONTROLLING PESTS

Hans-Peter Loeffler; Walter Seufert, both of Ludwigshafen, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

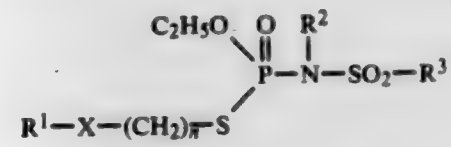
Filed Mar. 10, 1982, Ser. No. 356,722

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1981, 3112064

Int. Cl.³ C07F *9/24*; A01N *57/28*

U.S. Cl. 424—215 **9 Claims**

1. An N-sulfonylated thiolphosphoric ester amide of the formula



(I)

where R^1 is alkyl of 1 to 3 carbon atoms, R^2 is alkyl of up to 6 carbon atoms, R^3 is alkyl of 1 to 6 carbon atoms or dialkylamino where alkyl is of 1 to 6 carbon atoms, X is oxygen or sulfur, and n is 1 or 2.

9. A process for combating insects, arachnida and/or nematodes, wherein an effective amount of an N-sulfonylated thiolphosphoric ester amide of the formula I as defined in claim 1 is allowed to act on them and/or their habitat.

4,405,615

COMPOSITION FOR TREATMENT OF PSORIASIS CONTAINING 10-SUBSTITUTED 1,8-DIHYDROXY-9-ANTHRONES

Braham Shroot, Antibes; Jean Maignan, Tremblay les Gonesse, and Gerard Lang, Epinay-sur-Seine, all of France, assignors to Groupement d'Interet Economic dit: Centre International de Recherches Dermatologiques C.I.R.D., Valbonne, France

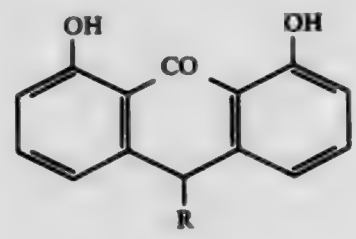
Filed Dec. 14, 1981, Ser. No. 330,472

Claims priority, application France, Dec. 15, 1980, 80 26550

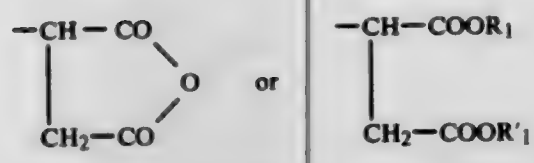
Int. Cl.³ A61K *31/625*

U.S. Cl. 424—232 **21 Claims**

1. A method of treating a patient suffering from psoriasis which comprises topically administering to the skin of said patient in a suitable vehicle a dose effective for the attenuation of psoriasis of at least one compound of the formula:



wherein R is



wherein R_1 and R'_1 are identical or diffrent and represent H, methyl or ethyl.

4,405,616

PENETRATION ENHANCERS FOR TRANSDERMAL DRUG DELIVERY OF SYSTEMIC AGENTS

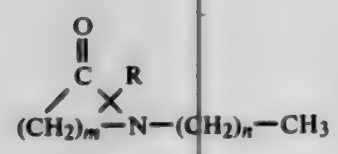
Vithal J. Rajadhyaksha, Mission Viejo, Calif., assignor to Nelson Research & Development Company, Irvine, Calif.

Continuation-in-part of Ser. No. 260,201, May 4, 1981, abandoned, which is a continuation of Ser. No. 725,490, Oct. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 588,247, Jul. 19, 1975, Pat. No. 3,989,816. This application May 20, 1982, Ser. No. 380,161

Int. Cl.³ A61K *31/33*

U.S. Cl. 424—244 **7 Claims**

1. In a method for topically administering systemically active agents through the skin or mucosal membranes of humans and animals in a transdermal device or formulation, the improvement comprising the topical administration of an effective amount of a membrane penetration enhancer having the structural formula



where R is H or a lower alkyl group having 1–4 carbon atoms, m is 5 and n is 0–17.

4,405,617

3-(PROPYNYLTETRAZOL)THIOMETHYL-3-CEPHEMS

Takao Takaya, Kawanishi; Yoshikazu Inoue, Amagasaki; Masayoshi Murata, Mino, and Hisashi Takasugi, Kohamanishi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

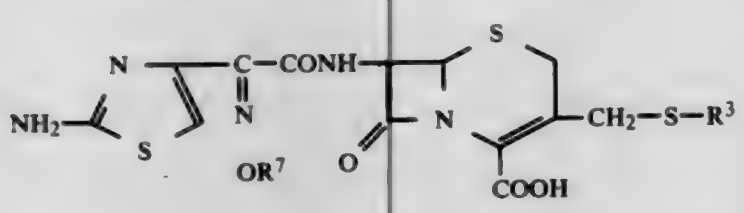
Filed Feb. 2, 1981, Ser. No. 230,675

Claims priority, application United Kingdom, Feb. 11, 1980, 8004477; Jun. 13, 1980, 8019376

Int. Cl.³ A61K *31/545*; C07D *501/56*

U.S. Cl. 424—246 **12 Claims**

1. A new cephem compound of the formula:



wherein

R^7 is lower alkyl, lower alkenyl, lower alkynyl, cycloalkyl, cyclo(lower)alkenyl,

phenyl(lower)alkyl, or carboxy(lower)alkyl; and

R^3 is 1-(2-propynyl)-1H-tetrazol-5-yl or 2-(2-propynyl)-2H tetrazol-5-yl.

12. An antimicrobial pharmaceutical composition comprising an effective amount of a compound of claim 1 or pharmaceutically acceptable salt thereof in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,405,618

THIAZOLIDINE DERIVATIVES WITH ANTIBIOTIC ACTIVITY

Michele Di Schiena, and Vittoria Orru, both of Trezzano sul Naviglio, Italy, assignors to Ausonia Farmaceutici s.r.l., Rome, Italy

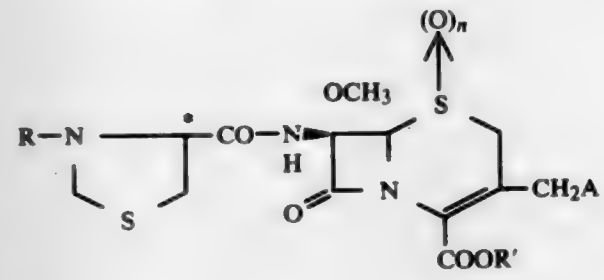
Filed Jul. 1, 1981, Ser. No. 279,454

Claims priority, application Italy, Jul. 15, 1980, 23455 A/80

Int. Cl.³ C07D *501/57*; A61K *31/545*

U.S. Cl. 424—246 **5 Claims**

1. An antibiotically active compound of formula I



(I)

wherein

R is hydrogen;

R′ is hydrogen, a pharmaceutically acceptable inorganic or organic cation;

A is O—CO—NH_2;

n is 1,

The asymmetric C-atom (*) of the thiazolidine nucleus having the D- or L-configuration or being in the racemic form.

4,405,619

ANTIINFLAMMATORY SUBSTITUTED-1,2,4-TRIAZOLO[4,3-b]-1,2,4-TRIAZINES

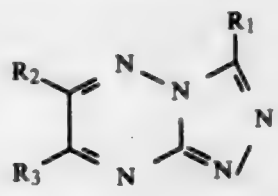
William P. Heilman, Chagrin Falls, and James M. Gullo, Perry, both of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Sep. 2, 1981, Ser. No. 298,789

Int. Cl.³ C07D *487/04*; A61K *31/41*

U.S. Cl. 424—249 **19 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable nontoxic salt thereof wherein

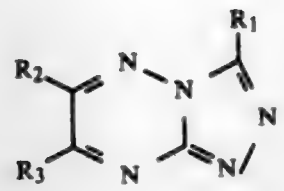
R_1 represents hydrogen, alkyl, haloalkyl, alkoxy, alkoxyalkyl, hydroxy, cycloalkyl, phenyl, halophenyl, alkylphenyl or alkoxyphenyl;

R_2 is hydrogen, alkyl, phenyl or pyridyl; and

R_3 is alkyl, haloalkyl, aryl, haloaryl, alkylaryl, alkoxyaryl, hydroxyaryl or pyridyl;

subject to the provisos that when R_3 is alkyl, phenyl or halophenyl or alkoxyphenyl, R_1 is other than hydrogen, alkyl, phenyl or alkoxyphenyl and when R_2 and R_3 are both phenyl, R_1 is other than hydrogen or phenyl; wherein the terms alkyl and alkoxy as used herein are inclusive of straight and branch chain carbon-carbon linkages and represent 1 to 5 carbon atoms and the term aryl as used herein represents a carbocyclic ring of 6 to 10 carbon atoms.

16. A method of obtaining an analgesic effect in an animal in need thereof comprising administering thereto an analgesic effective amount of an active ingredient containing a compound or mixture of compounds of the formula:



or a pharmaceutically acceptable nontoxic salt thereof wherein R_1 represents hydrogen, alkyl, haloalkyl, alkoxy, alkoxyalkyl, hydroxy, cycloalkyl, phenyl, halophenyl, alkylphenyl or alkoxyphenyl; R_2 is hydrogen, alkyl, phenyl or pyridyl; and R_3 is alkyl, haloalkyl, aryl, haloaryl, alkylaryl, alkoxyaryl, hydroxyaryl or pyridyl; wherein the terms alkyl and alkoxy as used herein are inclusive of straight and branch chain carbon-carbon linkages and represent 1 to 5 carbon atoms and the term aryl as used herein represents a carbocyclic ring of 6 to 10 carbon atoms.

4,405,620

PIPERAZINE DERIVATIVES

Derek R. Buckle, Redhill, and Harry Smith, Maplehurst Nr. Horsham, both of England, assignors to Beecham Group Limited, England

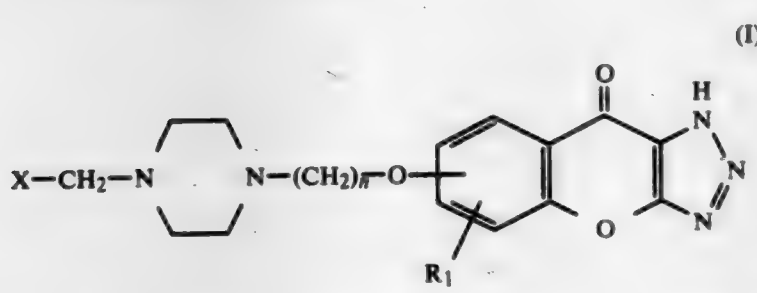
Filed Jan. 19, 1981, Ser. No. 227,621

Claims priority, application United Kingdom, Jan. 19, 1980, 8001856; Jul. 25, 1980, 8024454

Int. Cl.³ C07D *413/00;* A61K *31/495*

U.S. Cl. 424—250 **9 Claims**

1. A compound of formula (I)



(I)

wherein X is phenyl, optionally substituted by one halogen, C_{1-4} alkyl, or C_{1-4} alkoxy; or pyridyl; R_1 is hydrogen or C_{1-6} alkyl; and n is 1 to 6; or a pharmaceutically acceptable salt thereof formed with the acidic hydrogen atom of the triazole moiety or with the amino moieties.

4,405,621

HETEROCYCLIC THIOUREAS, ISOTHIOUREAS, GUANIDINES AND NITROMETHYLENE-AMIDINES

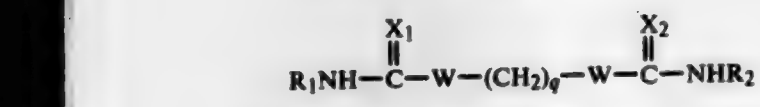
Graham J. Durant, and Charon R. Ganellin, both of Welwyn Garden City, England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 70,950, Aug. 30, 1979, Pat. No. 4,301,165, which is a division of Ser. No. 941,836, Sep. 11, 1978, Pat. No. 4,197,305, which is a division of Ser. No. 836,626, Sep. 26, 1977, Pat. No. 4,137,319, which is a division of Ser. No. 678,564, Apr. 20, 1976, Pat. No. 4,070,472, which is a division of Ser. No. 542,971, Jan. 22, 1975, Pat. No. 3,968,227. This application Jun. 11, 1981, Ser. No. 272,811

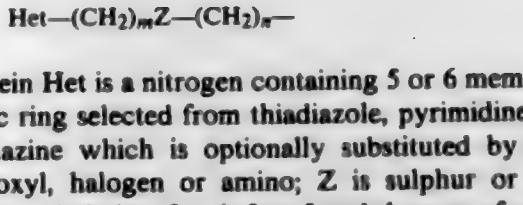
Int. Cl.³ C07D *285/06, 285/08, 285/10, 285/12, 237/22, 239/42, 241/20;* A61K *31/41, 31/50, 31/505, 31/495*

U.S. Cl. 424—250 **11 Claims**

1. A compound of the formula:



wherein R_1 and R_2, which are the same, each represent a grouping of the structure:



wherein Het is a nitrogen containing 5 or 6 membered heterocyclic ring selected from thiadiazole, pyrimidine, pyrazine or pyridazine which is optionally substituted by lower alkyl, hydroxyl, halogen or amino; Z is sulphur or a methylene group; m is 0, 1 or 2; n is 2 or 3 and the sum of m and n is 3, 4 or when Y is other than hydrogen, methyl, or hydroxyl, 2; X_1 and X_2, which may be the same or different, are each sulphur, $CHNO_2$ or NY wherein Y is hydrogen, hydroxy, lower alkyl, cyano, $CONH_2$ or SO_2R_3; R_3 is lower alkyl, phenyl, tolyl, trifluoromethyl or amino; W is NH, and when X_1 and X_2 are NH, W may also be sulphur; and q is an integer from 2 to 8; or a pharmaceutically acceptable acid addition salt thereof.

4,405,622

[1-(1,4-BENZODIOXAN-2-YL)-4-(4-AMINOPYRIMIDIN-2-YL]PIPERAZINES USEFUL AS ANTI-DEPRESSANTS

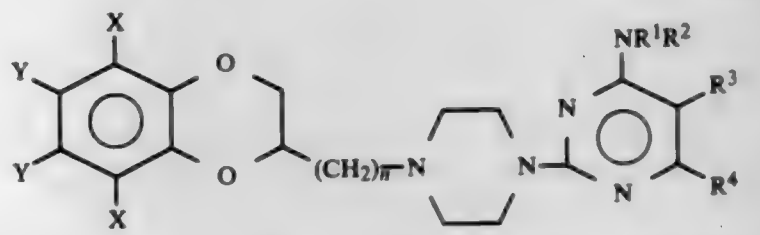
Arthur F. Kluge, Los Altos, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Oct. 16, 1980, Ser. No. 197,425

Int. Cl.³ A61K *31/495;* C07D *405/14*

U.S. Cl. 424—250 **9 Claims**

1. A composition for reducing, inhibiting or preventing depression in humans which comprises an effective amount of a compound of the formula



(I)

or the pharmaceutically acceptable acid addition salts thereof wherein:

R^1, R^2, R^3 and R^4 are independently selected from the group consisting of hydrogen and lower alkyl;

X and Y are independently selected from the group consisting of hydrogen, lower alkyl, lower alkoxy or halogen; and n is either 0, 1 or 2, in admixture with at least one pharmaceutically acceptable excipient.

4,405,623

QUINAZOLINDE-DIONE COMPOUNDS, PROCESS FOR PRODUCTION THEREOF AND PHARMACEUTICAL USE THEREOF

Masayuki Ishikawa, 14-13, Akazutsumi 3-chome, Setagaya-ku, Tokyo; Akiko Sugimoto, Hino; Yukuo Eguchi, Chiba; Fujinori Sasaki, Yokohama; Hisashi Ebisawa, Chofu; Soyao Moriguchi, and Katsuhiko Gotoh, both of Yokohama, all of Japan, assignors to Masayuki Ishikawa, Tokyo, Japan

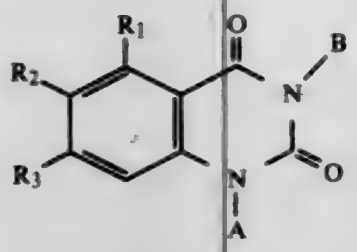
Filed May 15, 1981, Ser. No. 263,898

Claims priority, application Japan, May 15, 1980, 55/63328; May 22, 1980, 55/67085; Jun. 17, 1980, 55/80843; Jun. 30, 1980, 55/87715; Jul. 28, 1980, 55/102396; Jul. 28, 1980, 55/102397; Aug. 5, 1980, 55/106748; Aug. 11, 1980, 55/109212

Int. Cl.³ C07D *239/80;* A61K *31/505*

U.S. Cl. 424—251 **14 Claims**

14. A vasodilating and hypotensive composition composed of an effective amount of a compound selected from 5,6,7-substituted-2,4(1H,3H)-quinazolinedione compounds and their pharmaceutically acceptable acid addition salts, and a pharmaceutically acceptable diluent or carrier, said quinazolinedione compound being of the following formula



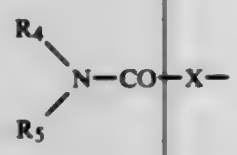
wherein

R_1 and R_3 independently represent (lower)alkyl;

R_2 represents (lower)alkoxycarbonyl;

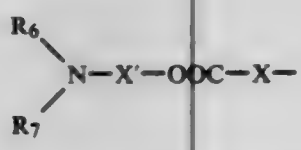
B represents a (lower)alkyl, phenyl or phenyl substituted by one or two members selected from the group consisting of halogen atoms, (lower)alkyl, (lower)alkoxy, di(lower)alkylamino, methylenedioxy, trifluoromethyl, and nitro; and

A represents a member selected from the group consisting of (a) a hydrogen atom, (b) (lower)alkyl, (c) carboxy(lower-)alkyl, (d) (lower)alkoxycarbonyl(lower)alkyl, (e) hydroxy(lower)alkyl, (f) benzyl, (g) benzyl substituted by (1) nitro or (2) (lower)alkoxy, (h) pyridylmethyl, (i) disubstituted-amino (lower)alkyl substituted by (1) two (lower-)alkyl or (2) one (lower)alkyl and one of benzyl, tetramethylene, pentamethylene, pentamethylene substituted by (lower)alkyl, hexamethylene or heptamethylene, said methylene forming a heterocycle together with the nitrogen atom of the amino (lower)alkyl, (j) (lower)alkyl bearing a piperidine or pyrrolidine ring, the nitrogen atom of which is substituted by a (lower)alkyl, (k) a moiety of the formula



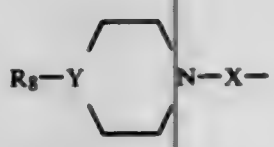
wherein X represents (lower)alkylene, R_4 represents a hydrogen atom or (lower)alkyl, R_5 represents a hydrogen atom, (lower)alkyl, di(lower)alkylamino(lower)alkyl, benzyl, piperidino(lower)alkyl, morpholino(lower)alkyl, (1-piperazinyl)(lower)alkyl, (4-(lower)acyl-1-piperazinyl)(-lower)alkyl, or (4-carbamoyl-1-piperazinyl)(lower)alkyl, the carbamoyl of which may be N-mono- or disubstituted by (lower)alkyl or phenyl, and R_4 and R_5 can form together with the nitrogen atom a piperidine or 4-(lower)alkylpiperazine ring,

(l) a moiety of the formula



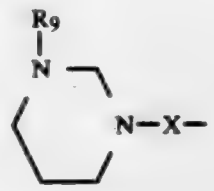
wherein X′ and X represent independently (lower)alkylene, R_6 represents (lower)alkyl, R_7 represents (lower)alkyl, benzyl, piperidino(lower)alkyl, or morpholino(lower-)alkyl, and R_6 and R_7 can form together with the nitrogen atom a piperidine ring,

(m) a moiety of the formula



wherein X represents (lower)alkylene, Y represents a nitrogen atom or methine, R_8 represents a hydrogen atom, (lower)alkyl, phenyl, phenyl(lower)alkyl, or phenyl(lower)alkene, the phenyl groups of which may be mono- or disubstituted by a chlorine atom, methoxy, benzoyl, benzoyl substituted by a halogen atom, nitro or methoxy, phenylacetyl, benzyloxycarbonyl, cinnamoyl, thenoyl, furoyl, or N-phenylcarbamoyl, provided that when Y is a methine R_8 is not hydrogen nor alkyl, and

(n) a moiety of the formula



wherein X represents (lower)alkylene, and R_9 represents phenyl or benzyl;

or an acid addition salt thereof.

4,405,624

NITRO-SUBSTITUTED DIHYDROPYRROLES AND TETRAHYDROPYRIDINES, COMPOSITIONS, COMPOUNDS, AND MEDICINAL USE

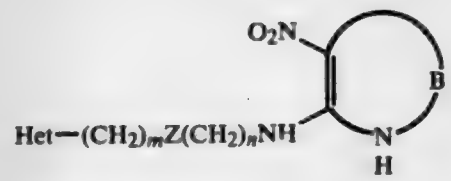
Michael L. Roantree, Welwyn Garden City, and Rodney C. Young, Bengeo, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 159,525, Jun. 16, 1980, Pat. No. 4,324,789, which is a division of Ser. No. 43,785, May 30, 1979, Pat. No. 4,238,493. This application Dec. 2, 1981, Ser. No. 326,877

Int. Cl.[3] **C07D** *207/22, 211/72;* **A61K** *31/44, 31/40*

U.S. Cl. 424—256 **3 Claims**

1. A compound represented by Structure 1:



Structure 1

in which

Het is selected from the group consisting of furyl and thienyl rings each substituted by a group R^1R^2N—A where R^1 and R^2, which can be the same or different, are each hydrogen, lower alkyl, C_3–C_6 cycloalkyl, lower alkenyl, phenyl lower alkyl, lower alkyl substituted by lower alkoxy, (lower alkyl)amino or di(loweralkyl)amino, or R^1 and R^2 together with the nitrogen atom to which they are attached form pyrrolidino or piperidino ring, and A is straight or branched C_1–C_6 alkanediyl group;

Z is sulphur, methylene or oxygen;

m is 0, 1 or 2 and n is 2 or 3 provided that m + n is 3 or 4; and

B is 1,2-ethanediyl (—CH_2—CH_2—) or 1,3-propanediyl (—$CH_2CH_2CH_2$—) group, which group is optionally substituted with one lower alkyl, aryl, aryl lower alkyl or heteroaryl lower alkyl group, aryl being phenyl optionally substituted by lower alkyl, lower alkoxy or halogen and heteroaryl being 2-furyl, 2-thienyl, 2-pyridyl, 3-pyridyl or 4-pyridyl optionally substituted by lower alkyl or lower alkoxy, or a pharmaceutically acceptable acid addition salt thereof.

4,405,625

METHOD OF TREATING HYPERGLYCEMIA WITH 1,3-DIOXO-1H-BENZ[de]ISOQUINOLINE-2(3H)-ACETIC ACID

Wilbur Lippmann, Montreal, Canada, assignor to Ayerst, McKenna and Harrison Limited, Montreal, Canada

Continuation of Ser. No. 862,801, Dec. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 818,379, Jul. 25, 1977, Pat. No. 4,118,495. This application Jun. 4, 1979, Ser. No. 45,376

Int. Cl.³ A61K *31/47*

U.S. Cl. 424—258 11 Claims

1. A method for lowering blood glucose levels in a diabetic mammal suffering from hyperglycemia which comprises administering to said mammal a hypoglycemically effective amount of 1,3-dioxo-1H-benz[de]isoquinoline-2(3H)-acetic acid or a therapeutically acceptable salt thereof.

4,405,626

9-HYDROXYOCTAHYDROBENZO(C)QUINOLINES ANALGESIC COMPOSITIONS CONTAINING THEM AND PROCESSES FOR PRODUCING ANALGESIC WITH THEM

Michael R. Johnson, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

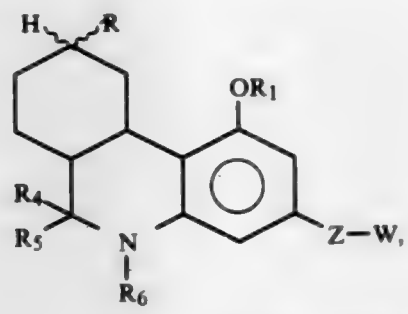
Division of Ser. No. 193,822, Oct. 3, 1980, Pat. No. 4,340,737, which is a division of Ser. No. 42,773, May 29, 1979, Pat. No. 4,260,764, which is a continuation-in-part of Ser. No. 777,928, Mar. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 753,619, Dec. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 687,332, May 17, 1976, abandoned. This application Dec. 9, 1981, Ser. No. 328,960

The portion of the term of this patent subsequent to Jun. 3, 1997, has been disclaimed.

Int. Cl.³ A61K *31/47*; C07D *221/12*

U.S. Cl. 424—258 45 Claims

22. A process for producing analgesia in a mammal which comprises administering to the mammal an analgesic producing quantity of a compound selected from the group consisting of those having the formula



and the pharmaceutically acceptable acid addition salts thereof,

wherein R is selected from the group consisting of hydroxy, alkanoyloxy having from one to five carbon atoms and hydroxymethyl;

R_1 is selected from the group consisting of hydrogen, benzoyl, alkanoyl having from one to five carbon atoms and $—CO—(CH_2)_p—NR_2R_3$ wherein p is 0 or an integer from 1 to 4; each of R_2 and R_3 when taken individually is selected from the group consisting of hydrogen and alkyl having from one to four carbon atoms; R_2 and R_3 when taken together with the nitrogen to which they are attached form a 5- or 6-membered heterocyclic ring selected from the group consisting of piperidino, pyrrolo, pyrrolidino, morpholino and N-alkylpiperazino having from one to four carbon atoms in the alkyl group;

R_4 is selected from the group consisting of hydrogen, alkyl having from 1 to 6 carbon atoms and $—(CH_2)_z—C_6H_5$ wherein z is an integer from 1 to 4;

R_5 is selected from the group consisting of hydrogen, methyl and ethyl;

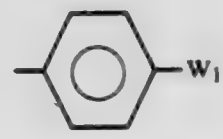
R_6 is selected from the group consisting of hydrogen, $—(CH_2)_y—$carbalkoxy having from one to four carbon atoms in the alkoxy group and wherein y is 0 or an integer from 1 to 4, carbobenzyloxy, formyl, alkanoyl having from two to five carbon atoms, alkyl having from one to six carbon atoms and $—(CH_2)_x—C_6H_5$ wherein x is an integer from 1 to 4; and $CO(CH_2)_{x-1}—C_6H_5$;

Z is selected from the group consisting of

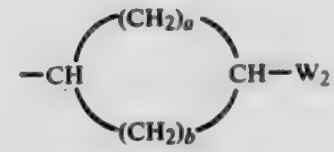
(a) alkylene having from one to nine carbon atoms;

(b) $—(alk_1)_m—X—(alk_2)_n—$ wherein each of (alk_1) and (alk_2) is alkylene having from one to nine carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than nine; each of m and n is 0 or 1; X is selected from the group consisting of O, S, SO and SO_2; and

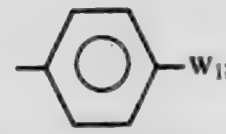
W is selected from the group consisting of hydrogen, methyl, pyridyl, piperidyl,



wherein W_1 is selected from the group consisting of hydrogen, fluoro and chloro; and



wherein W_2 is selected from the group consisting of hydrogen and



a is an integer from 1 to 5 and b is 0 or an integer from 1 to 5; with the proviso that the sum of a and b is not greater than 5

4,405,627

DIPHENYLPROPYLAMINO-PYRIDINE COMPOUNDS USEFUL AS MEDICINES

Paolo Masi, Bologna; Angela Monopoli, Milan; Adone C. Saravalle, Milan, and Cesare Zio, Milan, all of Italy, assignors to Italiana Schoum S.p.A., Milan, Italy

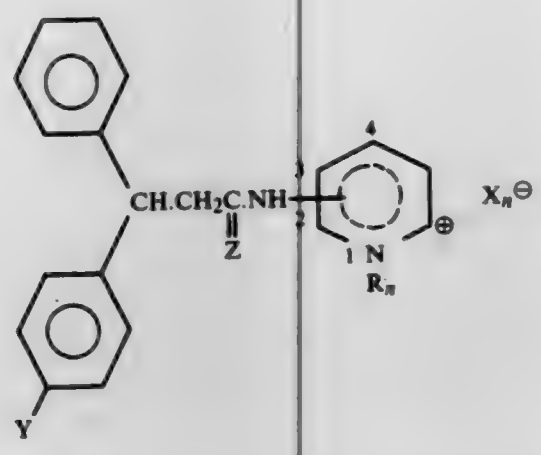
Division of Ser. No. 153,784, May 27, 1980, abandoned. This application May 7, 1981, Ser. No. 261,296

Claims priority, application Italy, May 30, 1979, 23122 A/79; Mar. 4, 1980, 20338 A/80

Int. Cl.³ A61K *31/44*

U.S. Cl. 424—263 5 Claims

1. A method of treating spastic syndromes in the muscular tissues of mammals comprising administering to the mammal a unitary dosage of from about 20 to 100 mg per kilogram of body weight of a compound having the formula:



wherein the diphenylpropylamino group is bound at position 2 or 3 of the pyridine ring; R is selected from the group consisting of hydrogen, a lower linear or branched alkyl group having from 1 to 4 carbon atoms and arakyl; X is selected from chlorine, bromine and iodine, Y is selected from hydrogen, fluorine, bromine, chlorine and methoxy; Z is Oxygen or H_2 and n is zero or 1, provided that Z is H_2 when n is one.

4,405,628

4-PYRIDYLIMIDAZOLONES AND METHOD OF USE

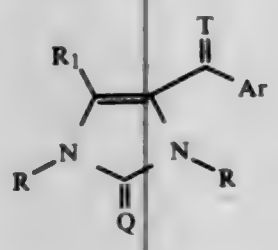
Richard C. Dage; Frank P. Palopoli; Richard A. Schnettler, all of Cincinnati, Ohio, and J. Martin Grisar, Strasbourg, France, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 240,889, Mar. 5, 1981, abandoned. This application Oct. 23, 1981, Ser. No. 314,312

Int. Cl.³ A61K *31/415*; C07D *401/06*

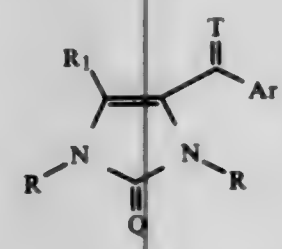
U.S. Cl. 424—263 **20 Claims**

1. A compound of the formula



wherein Q and T are each an oxygen; R is hydrogen, lower alkyl, lower alkanoyl or benzoyl; R_1 is hydrogen or lower alkyl; Ar is 4-pyridyl optionally substituted with lower alkyl, halogen, lower alkoxy or lower alkylthio; and the pharmaceutically acceptable acid base addition salts thereof.

11. A method of treating cardiac failure in a patient in need thereof which comprises administering to said patient a cardiotonically effective amount of a compound of the formula



wherein Q and T are each an oxygen atom; R is hydrogen, lower alkyl, lower alkanoyl, or benzoyl; R_1 is hydrogen or lower alkyl; Ar is 4-pyridyl optionally substituted with lower alkyl, halogen, lower alkoxy or lower alkylthio; and the pharmaceutically acceptable acid base addition salts thereof.

4,405,629

PROCESS FOR INCREASING GLYCINE LEVELS IN THE BRAIN AND SPINAL CORD

Richard J. Wurtman, Waban, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 36,925, May 7, 1979, abandoned. This application May 2, 1980, Ser. No. 145,644

Int. Cl.³ A61K *31/195, 31/445*

U.S. Cl. 424—267 **4 Claims**

1. The process for increasing the amount of glycine in the brain and spinal cord of a patient undergoing haloperidol therapy and suffering from a natural or unduced deficiency of glycine in the brain or spinal cord which comprises administering to said patient an effective amount of a neutral amino acid composition comprising L-threonine, a prcursor of L-threine or mixtures thereof.

4,405,630

ARTHROPOD REPELLENT COMPOSITIONS AND METHODS

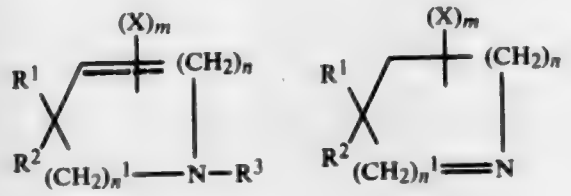
Joel Smolanoff, Chalfont, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 220,560, Dec. 29, 1980, which is a continuation-in-part of Ser. No. 29,491, Apr. 12, 1979, abandoned, which is a continuation-in-part of Ser. No. 839,156, Oct. 3, 1977, abandoned, which is a continuation-in-part of Ser. No. 751,932, Dec. 17, 1976, abandoned. This application Jul. 15, 1982, Ser. No. 398,532

Int. Cl.³ A01N *43/40*; C07D *221/20*

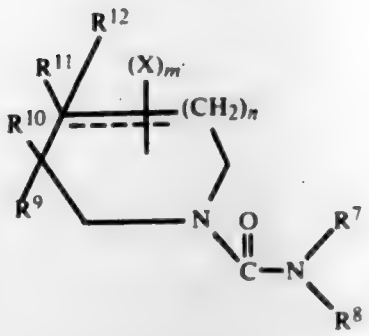
U.S. Cl. 424—267 **26 Claims**

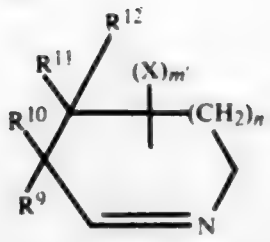
1. A method for repelling arthropods which comprises applyiing an effective repellent amount of a compound selected from:



wherein R^1 and R^2, taken together with the carbon atoms to which they are attached, form cyclopentyl, cyclohexyl, cyclononyl, cyclodecyl, cyclohexylene, cycloheptylene, cyclononylene, bicyclo-(2.2.1)-heptyl, or tetrahydropyranio; and R^3 is a radical of the formula: $-C(=Y)NR^4R^5$) wherein R^4 is hydrogen, lower alkyl of from 1 to 5 carbon atoms, lower alkenyl of from 2 to 6 carbon atoms, and R^5 is lower alkyl of from 1 to 5 carbon atoms, lower alkenyl of from 2 to 6 carbon atoms, lower alkoxy lower alkyl, carbo lower alkoxy, phenyl or substituted phenyl wherein the substituents are lower alkyl, halo or lower alkoxy or R^4 and R^5 may be joined to form, together with the nitrogen atom to which they are attached, pyrrolidinyl, piperidyl or homopiperidyl which may be substituted with a lower alkyl, carbalkoxy or ethylenedioxy; Y is O or S; X is lower alkyl of from 1 to 5 carbon atoms, lower alkoxy of from 1 to 5 carbon atoms, lower alkoxycarbonyl lower alkyl or cyano; m is an integer of 0 to 2; and n and n′ are integers each having a value of 1 to 2; and the dotted line indicates provision for a carbon to carbon double bond.

2. The method according to claim 1 wherein the repellent comprises a compound selected from one having the formula:





wherein R^7 is hydrogen; R^8 is lower alkyl of from 1 to 5 carbon atoms or R^7 and R^8 taken together with the nitrogen atom to which they are attached may be joined to form pyrrolidinyl or piperidynyl; X^1 is hydrogen, lower alkyl of from 1 to 5 carbon atoms or lower alkoxy carbonyl; R^9, R^{10}, R^{11} and R^{12} are hydrogen or R^9 or R^{11} and R^{12}, taken together with the carbon atom to which they are attached are joined to form cyclopentyl, cyclohexyl, cyclononyl, cyclodecyl, cyclohexylene, cycloheptylene, cyclononylene, bicyclo-(2.2.1)-heptyl, or tetrahydropyranio; m' is an integer of from 0 to 2, n is an integer of 1 to 3 and the dotted line represents an optional carbon to carbon double bond.

4,405,631

SPIRO[2H-1,4-BENZODIOXEPIN-3(5H)4'-PIPERIDINE AND -3'PYRROLIDINE] COMPOUNDS AND THEIR USE AS ANTIHYPERTENSIVE AGENTS

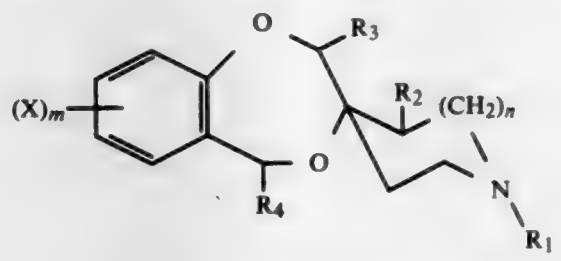
Raymond W. Kosley, Jr., Bridgewater, and Robert J. Cherill, Somerset, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Aug. 20, 1982, Ser. No. 410,155

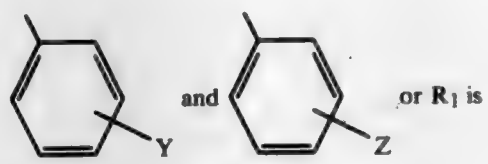
Int. Cl.³ C07D *491/113;* A61K *31/455*

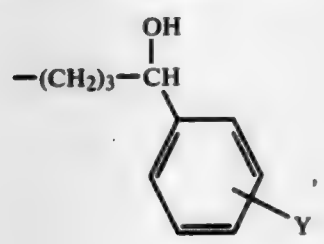
U.S. Cl. 424—267 **55 Claims**

1. A compound of the formula

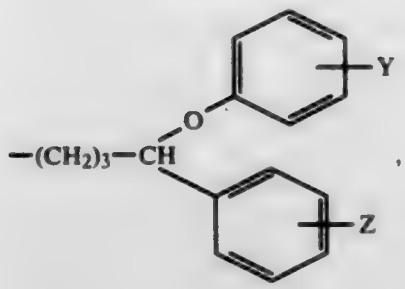


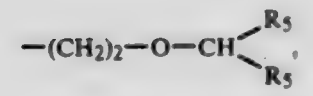
wherein R_1 is a C_3 or C_4 branched or straight chain alkyl or alkenyl group or a C_4-alkynyl group terminally substituted by one or two substituents independently selected from the group consisting of

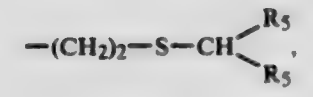


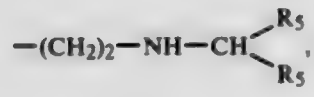


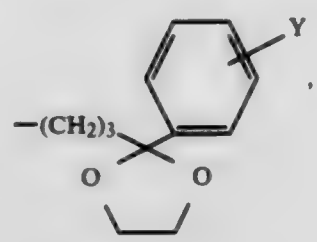
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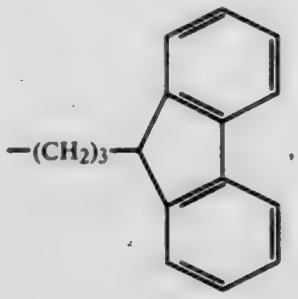


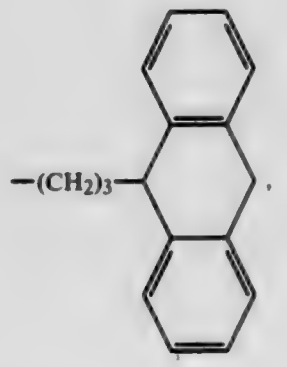








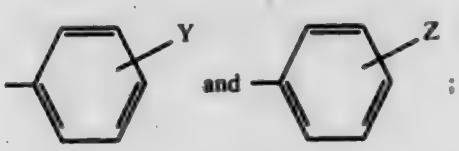




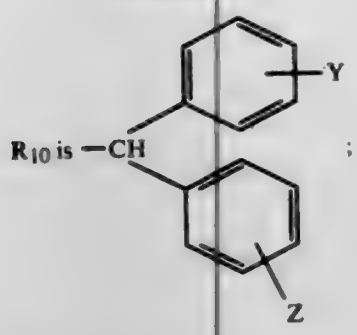
where

Y and Z are the same or different and are independently selected from the group consisting of H, Cl, F, Br, I, $—NO_2$, $—CF_3$, C_1 to C_4 straight chain alkyl, alkoxy containing C_1 to C_4 straight chain alkyl, acyl or $—NH_2$;

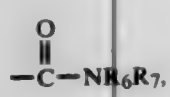
each R_5 substituent is independently selected from the group consisting of



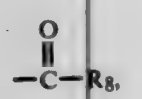
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R_2 is hydrogen when n=0 or R_2 is hydrogen or a C_1 to C_3 straight chain alkyl group when n=1;
R_3 is hydrogen or a C_1 to C_3 straight chain alkyl group;
R_4 is hydrogen or a C_1 to C_3 straight chain alkyl group;
m is zero, 1 or 2;
X is Cl, F, Br, I, $-NO_2$, $-CF_3$, $-NR_6R_7$,

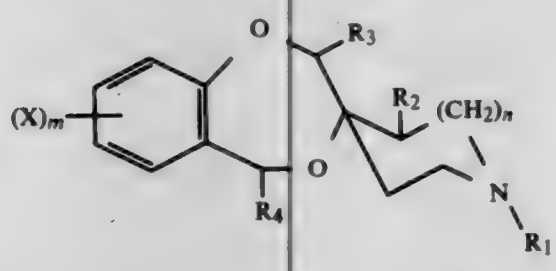


C_1 to C_6 branched or straight chain alkyl, —CN, —O—R_6, $-SR_7$, $-SO_3R_7$,

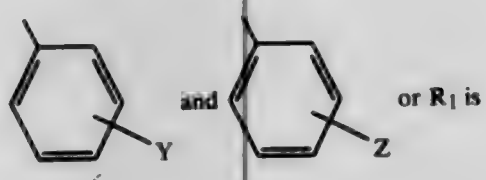


$-NHCOR_8$, $-SO_2R_9$ or $-SOR_9$ where
R_6 is hydrogen or a C_1 to C_6 straight chain alkyl group,
R_7 is hydrogen or a C_1 to C_6 straight chain alkyl group,
R_8 is a C_1 to C_6 branched or straight chain alkyl group,
R_9 is a C_1 to C_6 straight chain alkyl group;
provided that when m=2, the X-substituents can be the same only when X is selected from the group consisting of Cl, F, Br, I, C_1 to C_6 branched or straight chain alkyl or —O—R_6;
n is zero or 1;
and the pharmaceutically acceptable salts and optical and geometric isomers thereof.

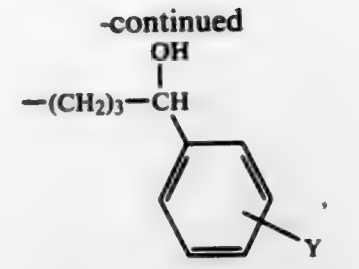
28. A method for reducing hypertension in a mammal by administering to a mammal, in an amount sufficient to reduce blood pressure in the mammal, a compound of the formula

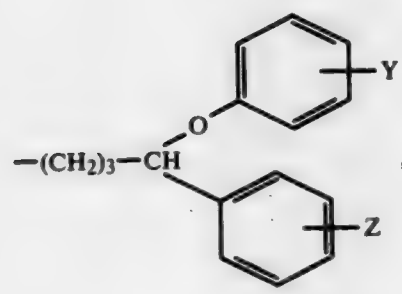


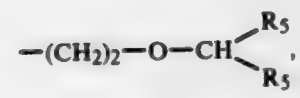
wherein R_1 is a C_3 or C_4 branched or straght chain alkyl or alkenyl group or a C_4-alkynyl group terminally substituted by one or two substituents independently selected from the group consisting of

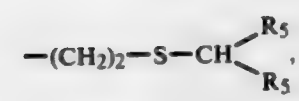


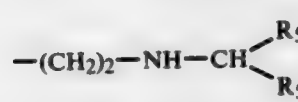
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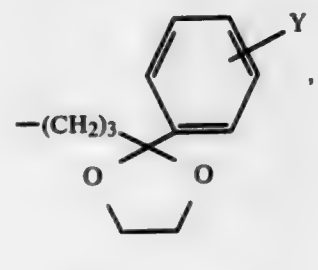


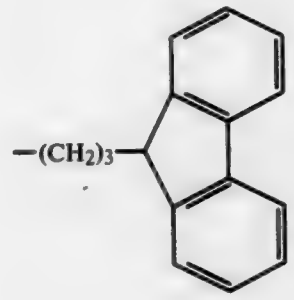


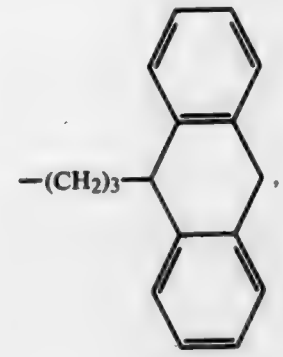




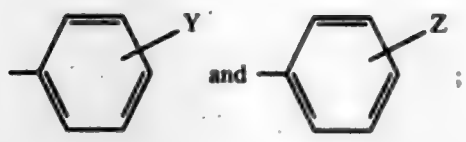


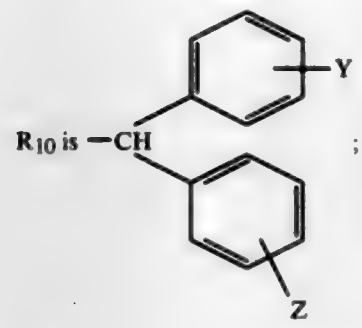






where
Y and Z are the same or different and are independently selected from the group consisting of H, Cl, F, Br, I, $-NO_2$, $-CF_3$, C_1 to C_4 straight chain alkyl, alkoxy containing C_1 to C_4 straight chain alkyl, acyl or $-NH_2$;
each R_5 substituent is independently selected from the group consisting of





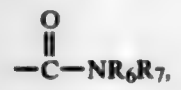
R_2 is hydrogen when n=0 or R_2 is hydrogen or a C_1 to C_3 straight chan alkyl group when n=1;

R_3 is hydrogen or a C_1 to C_3 straight chain alkyl group;

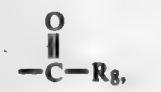
R_4 is hydrogen or a C_1 to C_3 straight chain alkyl group;

m is zero, 1 or 2;

X is Cl, F, Br, I, $—NO_2$, $—CF_3$, $—NR_6R_7$,



C_1 to C_6 branched or straight chain alkyl, —CN, —O—R_6, $—SR_7$, $—SO_3R_7$,



$—NHCOR_8$, $—SO_2R_9$ or $—SOR_9$ where

R_6 is hydrogen or a C_1 to C_6 straight chain alkyl group,

R_7 is hydrogen or a C_1 to C_6 straight chain alkyl group,

R_8 is a C_1 to C_6 branched or straight chain alkyl group,

R_9 is a C_1 to C_6 straight chain alkyl group;

provided that when m=2, the X-substituents can be the same only when X is selected from the group consisting of Cl, F, Br, I, C_1 to C_6 branched or straight chain alkyl or —O—R_6;

n is zero or 1;

and the pharmaceutically acceptable salts and optical and geometric isomers thereof.

4,405,632

NOVEL DERIVATIVES OF BICYCLIC 2-IMINOTHIAZOLIDINE OXIMES

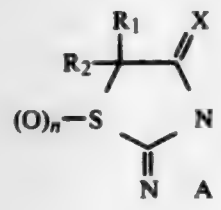
Dean F. Bushey, and Themistocles D. J. D'Silva, both of South Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 27, 1980, Ser. No. 163,496

Int. Cl.[3] **A61K** *31/41;* **C07D** *491/00, 487/00, 241/36*

U.S. Cl. 424—270 **27 Claims**

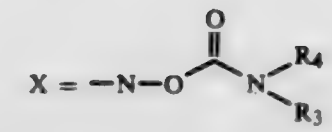
1. Compounds of the formula:



wherein

R_1 and R_2 are the same or different and are individually hydrogen, C_1–C_6 alkyl or halogen;

n=0, 1 or 2;



including E and Z isomers;

A is an acyclic, cyclic, or bicyclic alkylene or alkenylene group, or an ortho-substituted phenylene group which forms an unsaturated five membered heterocyclic ring which can also have nitrogen, or carbonyl in addition to the two nitrogens, said alkylene, alkenylene, or phenylene ring systems being optionally substituted with one or two C_1–C_4 alkyl, cyclohexyl, alkoxy, phenoxy, alkylthio, halogen, amido, alkylamido, nitrile or nitro groups;

R_3 and R_4 may be the same or different and are individually hydrogen, C_1–C_4 alkyl or C_1–C_4 alkanoyl which can be substituted with one or two halogens and in the case when R_3 is alkyl R_4 can also be $—(S)_y—R_5$ wherein:

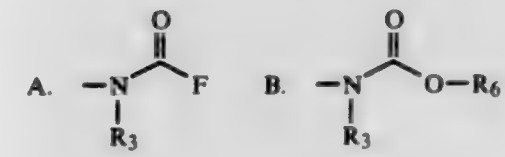
y=1 or 2;

R_5=(a) C_1–C_{18} alkyl, C_3–C_8 cycloalkyl or perhaloalkyl;

(b) dialkyl amino or pyrrolidino group each of which may be unsubstituted or substituted with one or two alkyl groups; or

(c) a phenyl group which may be unsubstituted or substituted with one or two alkyl, chloro, fluoro, cyano, nitro, alkoxy, trifluoromethyl, alkylthio, alkylsulfinyl, alkylsulfonyl, alkoxyalkyl, alkylthioalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, or dialkylamino: or

(d) a group of the formula:



wherein:

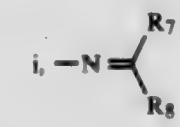
R_6 is

(1) C_1–C_{12} alkyl, alkoxyalkyl, or a phenylalkyl group; or

(2) a phenyl group which may be unsubstituted or substituted with one or two C_1–C_{12} alkyl, chloro, fluoro, alkoxy, alkylthio, alkylthioalkyl, alkylsulfinyl, alkylsulfinylalkyl, alkylsulfonyl, alkylsulfonylalkyl, alkynyloxy, dialkylamino, alkoxyimino, formamidino, cyano, dioxolanyl, or dithiolanyl groups in any combination; or

(3) a naphthyl, tetrahydronaphthyl, dihydrobenzofuranyl, benzodioxolanyl, or benzothienyl group all of which may be unsubstituted or substituted with one or two alkyl groups; or

(4) a group of the formula



wherein:

R_7 is chloro, alkyl, alkoxy, alkylthio, cyanoalkylthio, amidoalkylthio or cyano group; or R_7 is hydrogen provided R_8 is not hydrogen;

R_8 is an alkyl, alkylthio, alkoxycarbonyl, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkylthioalkyl, cyanoalkyl, alkylsulfinylalkyl, alkylsulfonylalkyl, alkoxyalkyl, nitroalkyl, hydroxyalkyl, haloalkyl, or phenyl group; said phenyl group may contain one or two alkyl, chloro, or fluoro groups in any combination; or R_8 is hydrogen provided R_7 is not hydrogen;

with the proviso that when R_6 is a phenyl group substituted with an alkyl group, no single alkyl or alkylene moiety in any R_5, R_6, R_7, or R_8 group can include more than eight carbon atoms except where indicated.

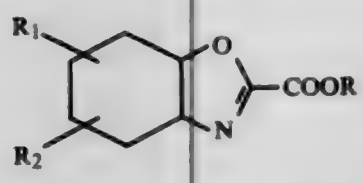
4,405,633

METHOD OF TREATMENT OF ASTHMA

Richard E. Brown, East Hanover, N.J.; Bernard Loev, Scarsdale, and Vassil St. Georgiev, Rochester, both of N.Y., assignors to USV Pharmaceutical Corporation, Tarrytown, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,307
Int. Cl.[3] A61K *31/42*
U.S. Cl. 424—272 4 Claims

1. A prophylactic method for treating an asthmatic patient comprising administering to said patient an effective dose of benzoxarole-2-carboxylic acid or ester having the formula



or pharmaceutically acceptable salts thereof, wherein

R_1 and R_2 are independently H, halo, C_1–C_7 alkyl, C_3–C_7 alkoxy, C_3–C_7 cycloalkyl, hydroxy, cyano, carboxy, C_1–C_7 carboalkoxy, nitro, trifluoromethyl or R_1 and R_2 together form a methylenedioxy group; and

R is H, C_1–C_{12} alkyl or C_3–C_{12} cycloalkyl.

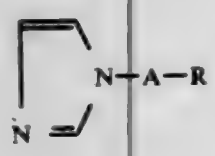
4,405,634

IMIDAZOLE DERIVATIVES FOR TREATING MYOCARDIAL INFARCTION

Peter B. Thorogood, London, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 67,379, Aug. 17, 1979, which is a continuation-in-part of Ser. No. 952,796, Oct. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 936,407, Aug. 24, 1978, abandoned. This application Feb. 9, 1981, Ser. No. 232,731
Claims priority, application United Kingdom, Oct. 19, 1977, 7743532; Feb. 1, 1978, 7803983; Feb. 1, 1978, 7803984; Aug. 8, 1978, 7832536; Aug. 22, 1978, 7834089; Nov. 27, 1979, 7946157
Int. Cl.[3] A61K *31/415*
U.S. Cl. 424—273 R 4 Claims

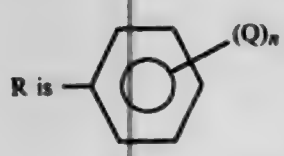
1. A method of treatment or prophylaxis of myocardial infarction in a mammal which comprises administering to the mammal an effective myocardial infarction treatment or prophylaxis amount of a compound of the formula (I)



(I)

in which

A is selected from the group consisting of straight or branched, saturated acyclic hydrocarbon radicals of 1, 2 or 3 carbon atoms, and straight or branched, unsaturated acyclic hydrocarbon radicals of 2 or 3 carbon atoms, and



wherein n is an integer which is at least 1, and

the or each Q substituent, which when n is greater than 1 may be the same or different, is a saturated hydrocarbon group of from 1 to 4 carbon atoms or an unsaturated hydrocarbon group of from 2 to 4 carbon atoms, with the provisos that

(a) when A is a methylene or ethylidene group, n is at least 2 when each Q is a saturated hydrocarbon group;

(b) when A is a branched propylene, or straight propylidene group, n is at least 3 when each Q is a saturated hydrocarbon group; and

(c) when the group A is unsaturated Q may also be selected from alkoxy of from 1 to 4 carbon atoms; alkylenedioxy of from 1 to 4 carbon atoms when n is at least 2; halo; trihalomethyl; hydroxy; carboxyl; a salt of such a carboxyl group; carboalkoxy; —NR^6R^7 or —$CONR^6R^7$, in which R^6 and R^7 may be the same or different and are hydrogen or alkyl of from 1 to 4 carbon atoms, with the further proviso that when n is 1, Q is not a saturated hydrocarbon group;

or a pharmaceutically acceptable acid addition salt thereof.

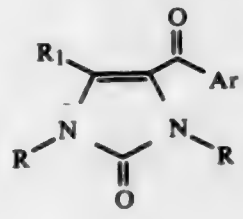
4,405,635

4-AROYLIMIDAZOL-2-ONES AND THEIR USE AS PHARMACEUTICALS

Richard A. Schnettler; Richard C. Dage, both of Cincinnati, Ohio, and Johann M. Grisar, Strasbourg, France, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 373,457, Apr. 30, 1982, abandoned, which is a continuation of Ser. No. 235,453, Feb. 18, 1981, abandoned, which is a continuation-in-part of Ser. No. 159,048, Jun. 13, 1980, abandoned, which is a continuation-in-part of Ser. No. 119,207, Feb. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 49,808, Jun. 18, 1979, abandoned. This application Sep. 13, 1982, Ser. No. 417,805
Int. Cl.[3] A61K *31/415*; C07D *233/70*
U.S. Cl. 424—273 R 16 Claims

13. A method for the treatment of cardiac failure in a patient in need thereof which comprises administering to said patient a cardiotonically effective amount of a compound of the formula



wherein Ar is 2-furyl, 2-thienyl, phenyl, phenyl monosubstituted at the ortho, meta or para position with X_1, or disubstituted phenyl substituted at the para position with X_2 and at the ortho or meta position with X_3; X_1 is halogen, hydroxy, a straight or branched chain lower alkyl of from 1 to 4 carbon atoms, a straight or branched chain lower alkoxy of from 1 to 4 carbon atoms, a straight or branched chain lower alkylthio of from 1 to 4 carbon atoms, a straight or branched chain lower alkylsulfoxide of from 1 to 4 carbon atoms, or a straight or branched chain lower alkylsulfone of from 1 to 4 carbon atoms, trifluoromethyl, —$SO_2N(R_2)_2$, NR_3R_4, pyrrolidino, piperidino, morpholino, piperazino or N'-alkyl-piperazino; X_2 and X_3 are halogen, hydroxy, a straight or branched chain lower alkyl of from 1 to 4 carbon atoms, a straight or branched chain lower alkoxy of from 1 to 4 carbon atoms, or when X_3 is at the meta position, X_2 and X_3 together may be methylenedioxy optionally substituted by one or two methyl groups; R is hydrogen, a straight or branched chain lower alkyl of from 1 to 4 carbon atoms, a straight or branched chain lower alkylcarbonyl of from 1 to 4 carbon atoms, or a benzoyl; each of R_1, R_2, R_3 and R_4 are hydrogen or a straight or branched chain lower alkyl of from 1 to 4 carbon atoms; or a pharmaceutically acceptable salt thereof.

16. A method of claim 13 wherein R is hydrogen, R_1 is a methyl group, and Ar is a 4-(methylthio)-phenyl group, that is the compound, 1,3-dihydro-4-methyl-5-[4-(methylthio)benzoyl]-2H-imidazol-2-one or a pharmaceutically acceptable salt thereof.

4,405,636

N-(1-ALLYL-2-PYRROLIDINYL-METHYL)2-METHOXY-4-AMINO-5-METHYLSUFAMOYL BENZAMIDE, ITS METHOD OF PREPARATION AND ITS USE AS A MEDICAMENT

Jacques Perrot, and Michel Thominet, both of Paris, France, assignors to Societe d'Etudes Scientifiques et Industrielles de l'Ile-de France, Paris, France

Filed Aug. 25, 1981, Ser. No. 296,164
Claims priority, application France, Aug. 28, 1980, 80 18635
Int. Cl.³ A61K *31/40*
U.S. Cl. 424—274 2 Claims

1. Method for treating patients subject to migraines which comprises administering to said patients N-(1-allyl-2-pyrrolidinyl-methyl) 2-methoxy-4-amino-5-methylsulfamoyl benzamide, quaternary ammonium salts thereof, N-oxides thereof, optical isomers thereof and its pharmacologically acceptable acid addition salts.

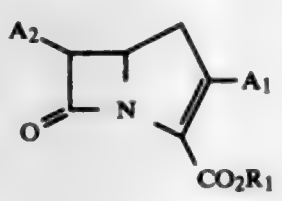
4,405,637

β-LACTAM ANTIBACTERIAL AGENTS

Kay H. Dickinson nee Berryman, Reading; Terence C. Smale, Epsom Downs, and Robert Southgate, Warnham, all of England, assignors to Beecham Group Limited, England

Continuation of Ser. No. 887,844, Mar. 17, 1978, abandoned.
This application Sep. 28, 1981, Ser. No. 306,535
Claims priority, application United Kingdom, Mar. 19, 1977, 11747/77
Int. Cl.³ C07D *487/04;* A61K *31/40*
U.S. Cl. 424—274 62 Claims

1. A compound of the formula (II):



(II)

wherein R_1 is a group such that CO_2R_1 is a pharmaceutically acceptable ester group; A_1 is hydrogen; and A_2 is a group $CR_2R_3R_4$ wherein R_2 is hydrogen or hydroxyl; R_3 is hydrogen or lower alkyl; and R_4 is CHX wherein X is oxygen or CR_6R_7 wherein R_6 is hydrogen, lower alkyl, phenyl, CN, COR_8 or CO_2R_8 wherein R_8 is lower alkyl, phenyl or benzyl and R_7 is hydrogen or lower alkyl or R_7 is joined to R_6 to form part of a carbocyclic ring of 5 to 7 carbon atoms or R_4 is $CH{=}CHCO_2R_9$, $CH{=}CHCOR_9$ or $CH{=}CHR_{10}$ wherein R_9 is methyl, ethyl or benzyl and R_{10} is hydrogen, methyl, ethyl or benzyl.

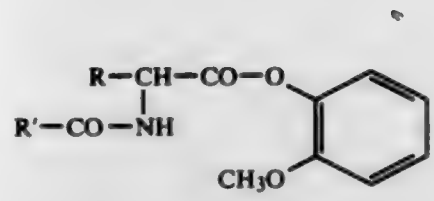
4,405,638

2-METHOXYPHENYL ESTERS OF N-SUBSTITUTED AMINO ACIDS, A PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Claudio Cavazza; Massimo Carloni, and Maria T. Ramacci, all of Rome, Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A, Rome, Italy

Filed Apr. 29, 1982, Ser. No. 372,985
Claims priority, application Italy, May 11, 1981, 21620 A/81; May 15, 1981, 48485 A/81
Int. Cl.³ A61K *31/38, 31/22;* C07C *69/00;* C07D *333/16*
U.S. Cl. 424—275 16 Claims

1. 2-methoxyphenyl esters of formula I

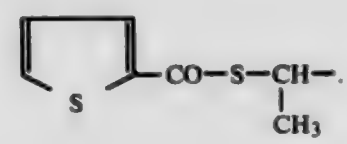


(I)

in which:

R is hydrogen, $-CH_3$ or $-CH_2SR''$, wherein R'' represents hydrogen, $-COCH_3$ or $-CH_2COOH$;

R' is $-CH_3$ or



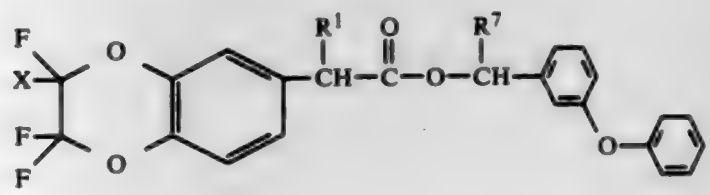
4,405,639

COMBATING ARTHROPODS WITH FLUORINE-CONTAINING PHENYLACETIC ACID ESTERS

Rainer Fuchs, Wuppertal; Erich Klauke, Odenthal; Ingeborg Hammann, Cologne; Bernhard Homeyer, Leverkusen; Wolfgang Behrenz, Overath; Wilhelm Stendel, Wuppertal; Reinhard Lantzsch, and Albrecht Marhold, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 226,289, Jan. 19, 1981, Pat. No. 4,348,323, which is a division of Ser. No. 64,253, Aug. 6, 1979, Pat. No. 4,284,643. This application May 3, 1982, Ser. No. 374,370
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837524; Oct. 14, 1978, 2844816
Int. Cl.³ A01N *43/32;* C07D *319/20*
U.S. Cl. 424—278 5 Claims

1. A compound of the formula



in which

R^1 is ethyl, n-propyl, iso-propyl, iso-propenyl or cyclopropyl,

X is hydrogen or fluorine, and

R^7 is hydrogen, cyano or ethynyl.

5. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of a compound according to claim 1.

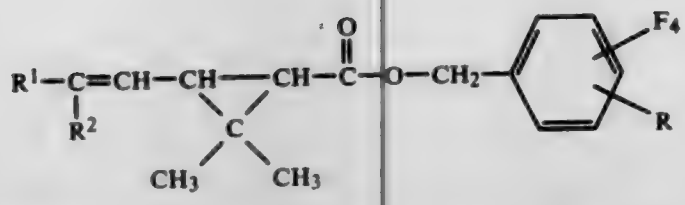
4,405,640

SUBSTITUTED FLUOROBENZYL CYCLOPROPANE CARBOXYLATES USEFUL AS INSECTICIDES

Nazim Punja, Crowthorne, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Dec. 1, 1980, Ser. No. 211,943
Claims priority, application United Kingdom, Dec. 21, 1979, 7944151
Int. Cl.³ A01N *53/00;* C07C *69/743*
U.S. Cl. 424—305 8 Claims

1. A compound of formula:



where one of R^1 and R^2 is halo and the other is trifluoromethyl, and R is alkyl of up to four carbon atoms, alkenyl of from three to five carbon atoms, methoxy, ethoxy, allyloxy, ethylthio or ethanesulphonyl, benzyl, dimethylamino, ethylamino, acetamido or n-methylacetamido, and R is in the 4-position with respect to the cyclopropane ester group.

4. An insecticidal composition comprising an insecticidally effective amount of a compound according to claim 1 in association with an agriculturally and horticulturally acceptable diluent.

4,405,641

CONSISTENCY REGULATOR FOR COSMETIC AND PHARMACEUTICAL PREPARATIONS

Karl Seibert, Duren, Fed. Rep. of Germany, assignor to Akzona Incorporated, Asheville, N.C.

Filed Jul. 6, 1981, Ser. No. 280,037

Claims priority, application Fed. Rep. of Germany, Jul., 1980, 3026071

Int. Cl.³ A01N *37/08*; A61K *47/00*

U.S. Cl. 424—305 **7 Claims**

1. A cosmetic or pharmaceutical preparation comprising an effective amount of a pharmaceutically active material or a cosmetically useful material and an effective amount of a consistency regulator comprising a monocarboxylic-2-hydroxyalkylester or mixture thereof made by reacting under esterification conditions one or more monocarboxylic acids containing at least twelve carbons atoms with one or more 1,2-alkylene oxides containing from about 8 to about 40 carbon atoms.

4,405,642

METHOD FOR TREATMENT OR PROPHYLAXIS OF CARDIAC DISORDERS

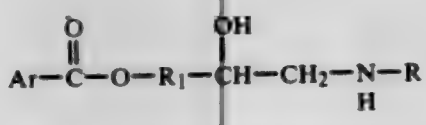
Sheung-tsam Kam, Vernon Hills; Paul W. Erhardt; Robert J. Borgman, both of Mundelein, all of Ill., and John P. O'Donnell, Morgantown, W. Va., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Nov. 28, 1980, Ser. No. 211,341

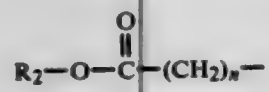
Int. Cl.³ A61K *31/24*; C07C *101/48*

U.S. Cl. 424—309 **29 Claims**

1. A method for the treatment or prophylaxis of cardiac disorders in a mammal, comprising administering by intravenous infusion into a mammal having a critical cardiac illness a -blocking ester compound of the formula



wherein R is lower alkyl, lower alkenyl, or aralkyl; R_1 is lower alkylene; and Ar is phenyl or naphthyl optionally substituted with lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, halogen, acetamido, amino, nitro, alkylamino, hydroxy, hydroxyalkyl, cyano, or a group of the formula:



wherein R_2 is lower alkyl, aryl, or aralkyl and n is an integer from 0 to about 10; or a pharmaceutically acceptable salt thereof; which β-blocking ester compound rapidly converts to inactive metabolites upon in vivo enzymatic cleavage; wherein said β-blocking ester compound is intravenously infused at a rate sufficient to establish an effective β-blockade in said mammal, and said infusion is then terminated to effect substantial recovery of said mammal from the β-blocking effects of said compound within about one hour.

4,405,643

TREATMENT OF ACUTE PULMONARY EDEMA WITH ARGININE ESTERS

Giancarlo Sportoletti, and Alessandro Baglioni, both of Milan, Italy, assignors to Italfarmaco S.p.A., Milan, Italy

Division of Ser. No. 162,008, Jun. 23, 1980, Pat. No. 4,308,280. This application Aug. 27, 1981, Ser. No. 296,830

Claims priority, application Italy, Dec. 28, 1979, 28416 A/79

Int. Cl.³ A61K *31/22*

U.S. Cl. 424—311 **1 Claim**

1. A method of protecting an animal from pulmonary edema caused by adrenaline which consists of administering parenterally to said animal the ethyl or methyl ester of L-arginine as the hydrochloride salt in an aqueous solution at a pH between 5.5 and 8.5 in an amount effective to protect said animal from edema.

4,405,644

MEDICAMENTS FOR THE TREATMENT OF DISORDERS OF LIPOMETABOLISM AND THEIR USE

Hans-Joachim Kabbe, Leverkusen; Erich Klauke, Odenthal; Hans P. Krause, Wuppertal; Mithat Mardin, Wuppertal, and Rüdiger Sitt, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

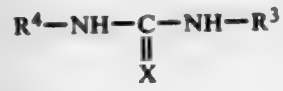
Continuation of Ser. No. 164,387, Jun. 30, 1980, abandoned. This application Dec. 17, 1981, Ser. No. 331,712

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928485

Int. Cl.³ A61K *31/275, 31/17*

U.S. Cl. 424—322 **9 Claims**

1. A method of combating lipometabolic illnesses in warm-blooded animals which comprises administering to the animals a hypolipidemically effective amount of a urea derivative of the formula



in which

R^3 and R^4 are identical or different and in each case represent a mono-or bi-cyclic carbocyclic aryl radical, optionally substituted by 1 or 2 identical or different substituents selected from cyano, halogen, alkyl, alkoxy and alkylmercapto, the alkyl, alkoxy and alkylmercapto radicals mentioned being in turn substituted by 1 or more fluorine atoms with the proviso that (a) R^3 and R^4 contain a total of 2 or 3 substituents including a total of 1 or 2 halogen substituents (b) R^3 and R^4 are devoid of ortho substituents and (c) R^3 and R^4 are so chosen that p,p'-substituted compounds and m,m'-disubstituted compounds in which the substituents are fluorinated alkyl groups are excluded, and X represents an oxygen or sulphur atom either alone or in admixture with an inert carrier or in the form of a medicament.

4,405,645

TREATMENT OF DANDRUFF WITH BIGUANIDES

Rudi Röthlisberger, Fribourg, and Friedrich Noser, Bonnefontaine, both of Switzerland, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

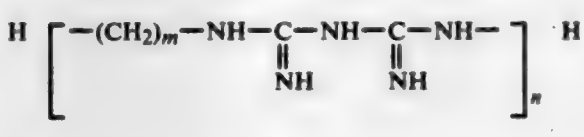
Filed Mar. 26, 1981, Ser. No. 249,666

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012767

Int. Cl.[3] A61K *7/06, 31/155*

U.S. Cl. 424—326 5 Claims

1. A method for the treatment of dandruff, comprising applying to the scalp of an individual requiring such treatment an effective amount of a pharmaceutically acceptable lotion, cream, gel or shampoo containing as an active ingredient, from about 1.0% by weight to about 5.0% by weight of a compound represented by the formula



wherein m is from 1 to 10 and n is from 1 to 6 or the hydrochloride thereof.

4,405,646

USE OF CYCLIC CARBONATE IN AUGMENTING OR ENHANCING THE AROMA OR TASTE OF FOODSTUFFS AND CHEWING GUMS

Richard M. Boden, Monmouth Beach, and Michael Licciardello, Farmingdale, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

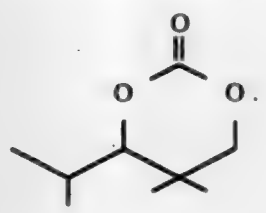
Division of Ser. No. 329,212, Dec. 10, 1981, abandoned. This application Jul. 8, 1982, Ser. No. 396,260

The portion of the term of this patent subsequent to Sep. 6, 2000, has been disclaimed.

Int. Cl.[3] A23L *1/226*

U.S. Cl. 426—3 1 Claim

1. A process for augmenting or enhancing the aroma or taste of a foodstuff or chewing gum comprising the step of adding to said foodstuff base or chewing gum base from 0.10 parts per million up to about 50 parts per million by weight based on total composition of a cyclic carbonate having the structure:



4,405,647

METHOD OF COMPACTING CHEWING GUM BASE

E. Eugene Fisher, Elgin; R. Ray Estes, Downers Grove, both of Ill.; Orrin D. Lokken, and Elmer G. Paguette, both of Madison, Wis., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Filed Jun. 15, 1981, Ser. No. 273,361

Int. Cl.[3] A23G *3/30*

U.S. Cl. 426—4 17 Claims

1. A method of compacting chewing gum base comprising the steps of:

providing a fluidized bed consisting of a powdered solid turbulently suspended within a gaseous medium, the weight ratio of said powdered solid to said gum base being at least two to one;

comminuting said gum base into particles within said bed, said powdered solid serving to coat said particles to prevent cohesion therebetween;

periodically classifying said coated particles to identify sizes thereof suitable for tableting; and

tableting said identified particles to form a compact body.

4,405,648

METHOD FOR PRODUCING BREAD

Shin-Ichi Atsumi, Kawagoe; Masayuki Sasaki, Tsurugashima, and Ikuo Kitamura, Kamifukuoka, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Ohi, Japan

Continuation of Ser. No. 70,322, Aug. 24, 1979, abandoned. This application Feb. 13, 1981, Ser. No. 235,160

Int. Cl.[3] A21D *2/06, 2/22*

U.S. Cl. 426—19 2 Claims

1. A method for producing bread comprising the steps of (1) kneading a dough containing wheat flour with an additive mixture consisting of a L-ascorbic acid; a reducing agent selected from the group consisting of cysteine, glucose-cysteine, glutathione, thioctic acid and their salts, keratin hydrolysates containing cysteine, powdered yeast, germs of grains which contain glutathione, alkaline metal sulfites, alkali metal hydrosulfites and alkali metal metabisulfites; and a thickener selected from the group consisting of xanthan gum, carrageenan, tamarind seed gum, guar gum, locust bean gum, furcellaran, gum Arabic, alginic acid, ghatti gum, tragacanth gum, karaya gum, powdered yams, carboxymethyl starch and pullulan, wherein the L-ascorbic acid is added in the amount of 2 to 100 ppm of weight of the wheat flour, the reducing agent is added in the amount of 0.02 to 1.0 microgram equivalent of its reducing functional group per gram of wheat flour and the thickener is added in the amount of 10 to 3000 ppm of the weight of the wheat flour, (2) allowing the kneaded dough to ferment, and (3) baking the fermented dough.

4,405,649

PROCESS FOR PRODUCING PREMIUM QUALITY FISH MEAL FROM WHOLE FISH

George A. Jeffreys; James F. Tobey, Jr., and Jean L. Price, all of Salem, Va., assignors to Marvin Dudley, Beaumont, Tex.

Continuation of Ser. No. 36,293, May 7, 1979, abandoned, which is a continuation of Ser. No. 853,532, Nov. 21, 1977, abandoned. This application Sep. 9, 1980, Ser. No. 185,429

Int. Cl.[3] C12K *1/00*

U.S. Cl. 426—59 1 Claim

1. A continuous process for producing a liquefied intermediate for protein fish meal comprising mixing and mashing comminuted whole fish with water and a proteolytic protein liquefying enzyme used at pH parameter of 4.5–8.0 and a temperature parameter of 30°–87° C. forming an aqueous mixture, vigorously agitating the lower portion of the aqueous mixture to reduce the mixture to flesh and bone particles and concurrently agitating the upper portion of said mixture at a relatively slow rate to maintain the lighter particles in suspension while the heavier particles sink to said lower portion and further compartmentalizing said aqueous mixture into multiple closed compartments while agitating and liquefying said comminuted fish at progressively increasing and controlled temperatures in each of said closed compartments.

4,405,650

COMPRESSED YEAST PRODUCT AND PROCESS

Paul F. Spadafora, Lagrangeville, N.Y., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jul. 27, 1981, Ser. No. 286,723

Int. Cl.[3] A23J *1/18, 3/00*

U.S. Cl. 426—62 14 Claims

1. A process for preparing compressed yeast, which comprises:

contacting a first stage yeast suspension with a sufficient amount of an osmotically-active material to withdraw water from the interior of individual yeast cells, maintaining contact for a period of time effective to withdraw water and soluble solids which interfere with filtration

from the interior of individual yeast cells, dispersing the first stage yeast suspension in additional water, removing a portion of the water containing dissolved osmotically-active material and soluble solids freed from the yeast cells during contact to prepare a second stage yeast suspension; then contacting the second stage yeast suspension with an osmotically-active material at a concentration lower than that employed to contact the first stage suspension but sufficient to withdraw water from the interior of individual yeast cells; and then filtering the yeast.

4,405,651

PROCESS FOR CONTINUOUSLY SEPARATING FAT FROM BUTTER

Jacques Entremont, Veyrier du Lac, and Raymond Levardon, Paris, both of France, assignors to Entremont S.A., Annecy, France

Filed Apr. 13, 1981, Ser. No. 253,348

Claims priority, application France, Apr. 29, 1980, 80 10117; Jan. 21, 1981, 81 01073

Int. Cl.³ A23C *15/14*

U.S. Cl. 426—241 **5 Claims**

1. A process for the separation of fat from butter comprising the steps of:

(a) forming a layer of molten butter;

(b) irradiating said molten butter with microwaves to such an extent that the increase in temperature of the molten butter due to said microwave irradiation does not exceed about 6° Celsius;

(c) said layer of molten butter during said irradiation being in a condition of rest or laminar flow and having a thickness less than the depth of penetration of said microwaves; and

(d) allowing the fat to separate from the molten butter after said microwave irradiation by settling of water and protein from the butter.

4,405,652

PREPARATION OF WINE HAVING A LOW CALORIE CONTENT AND A REDUCED ALCOHOL CONTENT

Armand R. Boucher, Stamford, Conn., assignor to Joseph E. Seagram & Sons, Inc., New York, N.Y.

Filed Jan. 21, 1982, Ser. No. 341,363

Int. Cl.³ C12G *1/00, 3/08, 3/12*

U.S. Cl. 426—494 **16 Claims**

1. A continuous method of directly substantially reducing the alcohol content of the entire original wine to produce a low calorie wine having a substantial amount of its original alcohol content comprising:

feeding an original wine product from a source through an inlet line to a centrifugal film evaporator having an air tight chamber;

pulling a vacuum in the chamber;

forming a thin film of the original wine product by centrifugation within the chamber;

utilizing indirect heat exchange with the thin film while it is subject to centrifugation;

exposing the thin film for a relatively short period of time to elevated temperatures and the vacuum in the chamber while it is subjected to centrifugation to remove alcohol as a vaporized product from the original wine product leaving a reduced alcohol wine;

feeding the reduced alcohol wine under the influence of centrifugal force from the evaporator and then into a receiving tank to obtain said low calorie wine;

passing the vaporized product through a condensor; and

collecting the vaporized product as a high proof by-product.

4,405,653

DEHYDRATED FISH CONCENTRATE AND PROCESS FOR SAME

Robert D. Gray, 6 Clarendon St., Gloucester, Mass. 01930

Continuation-in-part of Ser. No. 135,733, Mar. 31, 1980, abandoned. This application Jul. 29, 1981, Ser. No. 287,858

Int. Cl.³ A22C *25/00;* A23B *4/04*

U.S. Cl. 426—643 **5 Claims**

1. A process for production under non-foaming conditions of a dehydrated sea food product which consists essentially of dehydrating in one step, in a mechanically agitated evaporator minced raw sea food products in the absence of any other added ingredients under reduced pressure no higher than 30 inches of mercury, in the absence of an oxidizing atmosphere, and at a temperature of up to 95° C., whereby solid masses of the sea food product are unable to form and whereby there is produced a dry, dehydrated product, which, when rehydrated, possesses the fibrous texture, odor and flavor of the original sea food product.

4,405,654

4'-HALO-SUBSTITUTED SUCROSE DERIVATIVES

Cheang K. Lee, Singapore, Singapore, assignor to Tate & Lyle Public Limited Company, England

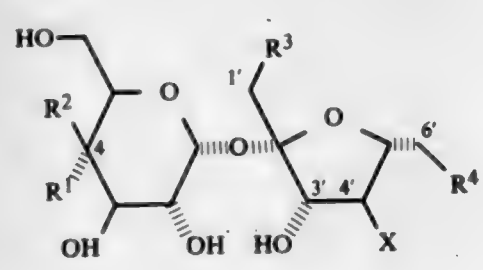
Continuation-in-part of Ser. No. 315,479, Oct. 27, 1981, abandoned. This application Apr. 26, 1982, Ser. No. 371,995

Claims priority, application United Kingdom, Oct. 28, 1980, 8034666; Aug. 21, 1981, 8125621

Int. Cl.³ A23G *3/30;* A23L *1/236;* A61K *7/16;* C07H *5/02*

U.S. Cl. 426—658 **12 Claims**

1. A compound of the formula (I)



(I)

wherein

X represents a halogen atom;

R^1 and R^2 respectively represent a combination selected from the group consisting of: a hydroxy group and a hydrogen atom; a halogen atom and a hydrogen atom; and a hydrogen atom and a halogen atom; and

R^3 and R^4 independently represent a substituent selected from the group consisting of a halogen atom and a hydroxy group;

at least one of R^1, R^2 and R^3 representing a halogen atom.

4,405,655

METHOD AND ARRANGEMENT FOR INTERNALLY COATING A TUBE BY REACTIVE DEPOSITION FROM A GAS MIXTURE ACTIVATED BY A PLASMA

Hermanus N. Tuin, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 23, 1982, Ser. No. 371,093

Claims priority, application Netherlands, May 1, 1981, 8102149

Int. Cl.³ B05D *7/22*

U.S. Cl. 427—38 **6 Claims**

1. A method of internally coating a tube consisting of an electrically insulating material, said method comprising the steps of:

passing a reactive gas mixture through the tube;

forming flames contacting the outside of the tube at two longitudinally-spaced sites;

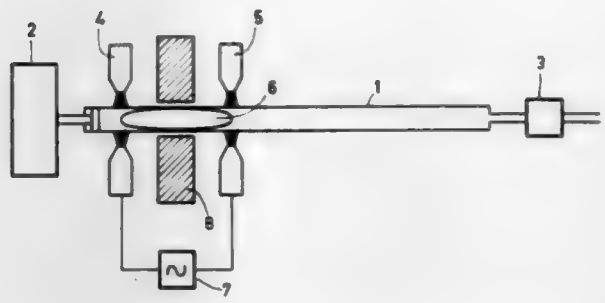
reciprocally moving the flame sites along the tube; and

forming a plasma in the tube by high-frequency electric

energy capacitively coupled to the gas mixture by means of the two flames.

3. An apparatus for internally coating a tube consisting of an electrically insulating material, said apparatus comprising:

means for supplying a reactive gas mixture to the inside of the tube;



two burners which, in operation, produce flames which contact the tube at longitudinally spaces sites;

a high-frequency generator, electrically connected to the burners, for producing a plasma in the gas mixture in the tube; and

means for reciprocally moving the burners along the tube.

4,405,656

PROCESS FOR PRODUCING PHOTOCONDUCTIVE MEMBER

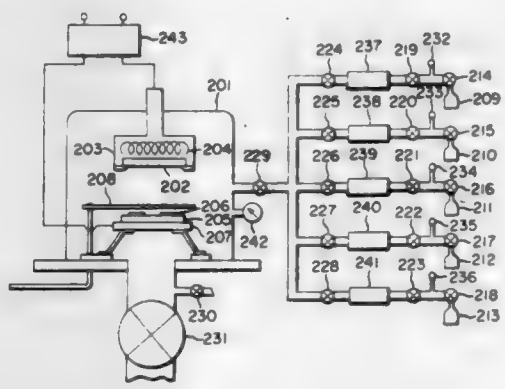
Isamu Shimizu, Yokohama; Kyosuke Ogawa, and Eiichi Inoue, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1981, Ser. No. 310,484

Claims priority, application Japan, Oct. 16, 1980, 55-144797

Int. Cl.³ H01L *45/00*

U.S. Cl. 427—39 **13 Claims**



1. A process for producing photoconductive members which comprises:

(a) evacuating a pressure-reducible deposition chamber to reduce the pressure;

(b) introducing silicon hydride compound gas, halogen-containing silicon compound gas, and diluent gas in a volume flow ratio of 4–30:2–60:36–81, respectively, into said deposition chamber;

(c) forming a gas plasmic atmosphere by generating glow discharge in said surrounding gas mixture;

(d) thereby forming, on the surface of a support, for producing the photoconductive member, which has been arranged previously in said deposition chamber, a photoconductive layer constructed of an amorphous material comprising silicon atoms as matrix.

4,405,657

NON-SKID PLASTIC FLOORING PRODUCT AND METHOD OF MANUFACTURE

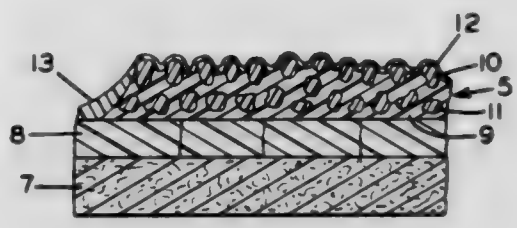
Jesse D. Miller, Jr., and James R. Petzold, both of Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Division of Ser. No. 237,666, Feb. 24, 1981, Pat. No. 4,348,447.

This application Mar. 1, 1982, Ser. No. 353,195

Int. Cl.³ B32B *5/16, 5/26*

U.S. Cl. 427—54.1 **3 Claims**



1. A method of manufacturing a non-skid decorative plastic floor covering comprising:

(a) providing a plastic base as a liquid matrix;

(b) applying elements in a preselected pattern to the base, said elements being of a depth and breadth such that when elements are applied to the base and embedded therein, there is curable base material in an amount sufficient to bind together the elements embedded in the base material in substantially abutting relationship but in an amount insufficient to cover the uppermost layer of elements allowing these elements to protrude from the base material;

(c) said elements are rounded inorganic quartz particles and have a Moh hardness greater than about 4 and a particle size distribution such that none are greater than about 715 microns, about 80% are between about 300 and 595 microns and none are smaller than 150 microns;

(d) embedding said particles throughout the base material in a substantially abutting relationship with the uppermost layer of particles protruding from the base material;

(e) curing the base material;

(f) applying an overall clear or translucent curable wear coating to form a continuous film over the cured base material having the protruding particles in an amount such that a rough skid-resistant texture is imparted to the coating by the underlying protruding particles; and

(g) curing the wear layer.

4,405,658

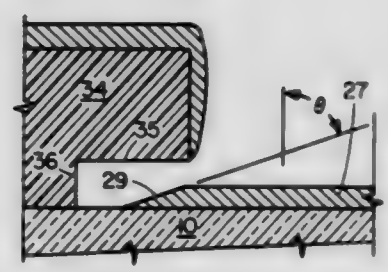
METHOD OF PRODUCING POSITIVE SLOPE STEP CHANGES ON VACUUM DEPOSITED LAYERS

Peter L. Young, North Wales, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 26, 1982, Ser. No. 362,577

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—63 **6 Claims**



1. A method of producing positive slope step changes between layers of material being deposited in a vacuum chamber on a wafer being processed, comprising:

applying a lift-off photoresist overhang pattern to the layer

of the wafer to be processed to define the overhang areas of said layer on which material shall be deposited,

placing said wafer in a vacuum chamber,

reducing the pressure in said vacuum chamber to a pressure sufficiently low to remove harmful traces of oxygen, water vapor and carbon monoxide,

introducing an inert gas into said vacuum chamber to provide an inert gas environment therein,

stabilizing said inert gas environment pressure at a high predetermined value of 1×10^{-4} to 5×10^{-2} torr,

evaporating and depositing a layer of atoms of material over said lift-off pattern and onto said areas of said layer on which material shall be deposited,

maintaining said inert gas environment pressure at said high predetermined value to cause the atoms of said material to be directly deposited and to disperse under said overhang of said photoresist areas and form positive slope step changes in excess of twenty degrees, and

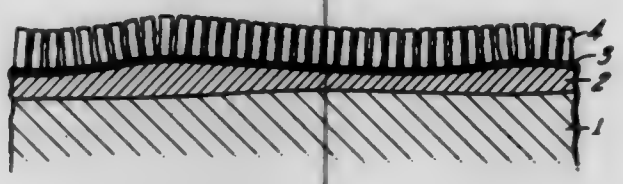
removing said lift-off photoresist overhang pattern leaving said deposited material with positive slope step changes at the edges.

4,405,659

METHOD FOR PRODUCING COLUMNAR GRAIN CERAMIC THERMAL BARRIER COATINGS

Thomas E. Strangman, Phoenix, Ariz., assignor to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 109,956, Jan. 7, 1980, Pat. No. 4,321,311.
This application Dec. 4, 1981, Ser. No. 327,305
Int. Cl.³ C23C *11/00, 13/00*
U.S. Cl. 427—248.1 **9 Claims**



1. A method for producing a metallic article having a durable ceramic thermal barrier coating thereon, said method consisting essentially of:

a. providing a superalloy substrate with a clean surface

b. applying a thin adherent layer of MCrAlY to the clean surface

c. developing a thin uniform adherent alumina layer on the MCrAlY layer

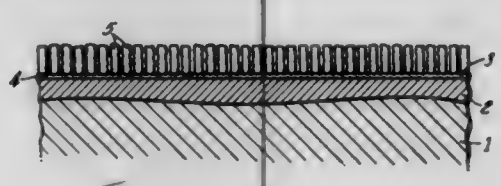
d. applying a columnar ceramic coating to the alumina layer by vapor deposition.

4,405,660

METHOD FOR PRODUCING METALLIC ARTICLES HAVING DURABLE CERAMIC THERMAL BARRIER COATINGS

Nicholas E. Ulion, Marlborough, and Duane L. Ruckle, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 109,955, Jan. 7, 1980, Pat. No. 4,321,310.
This application Dec. 4, 1981, Ser. No. 327,376
Int. Cl.³ C23C *11/00, 13/00*
U.S. Cl. 427—248.1 **13 Claims**



1. A method for producing a metallic article having a durable ceramic thermal barrier coating thereon, said method consisting essentially of:

a. providing a superalloy substrate with a clean surface;

b. applying a thin adherent layer of MCrAlY to the clean surface;

c. polishing the MCrAlY layer;

d. developing a thin uniform adherent alumina layer on the polished MCrAlY layer;

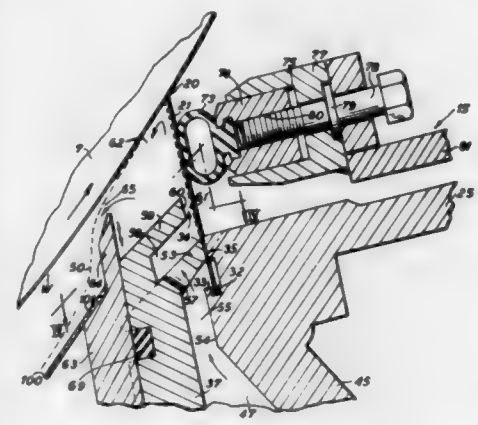
e. applying a columnar grained ceramic coating to the alumina layer by vapor deposition.

4,405,661

BLADE TYPE FOUNTAIN COATER AND METHOD

Robert J. Alheid, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Sep. 10, 1981, Ser. No. 301,111
Int. Cl.³ B05D *3/12;* B05C *5/02*
U.S. Cl. 427—356 **20 Claims**



19. A method of coating a web travelling continuously on backing surface means and including supplying the coating material from delivering means to a coating nip provided by an upper edge of an upwardly projecting doctor blade in coating nip relation across the width of said web, and controlling flow of the coating material from said delivering means to said coating nip and including subjecting the coating material to a plurality of successive pressure drops so that the coating material reaches said coating nip uniformly throughout the extent of said blade edge, the improvement comprising:

effecting the final pressure drop through a slit orifice formed in part by a surface of said doctor blade and the orifice being located in spaced relation below said coating nip; and

directing the coating material substantially rectilinearly upwardly across said blade surface to said nip.

4,405,662

THERMOSETTING RESINOUS BINDER COMPOSITIONS AND THEIR USE AS COATING MATERIALS

Werner T. Raudenbusch; Adrianus J. M. Barnhoorn; Petrus G. Kooijmans; Willem L. Sederel; Adrianus M. C. Van Steenis, and Theresia F. M. Schets, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 24, 1982, Ser. No. 423,407
Claims priority, application United Kingdom, Nov. 5, 1981, 8133385
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—386 **8 Claims**

1. A thermosetting resinous binder composition, heat-curable in combination with a transesterification-promoting metal compound as a catalyst to provide an insoluble infusible coating, comprising a mixture of:

(1) a non-acidic resinous compound essentially free of ethylenical unsaturation, having a molecular weight of at least 900 and a hydroxyl content of at least 0.2 equivalent per 100 g, and

(2) as cross-linking agent a non-acidic polyester of a polycarboxylic acid having more than one beta-hydroxyl ester group per molecule, at least one of components (1) and (2) having a hydroxyl or beta-hydroxyl ester functionality, respectively, of more than 2,

characterized in that the beta-hydroxyl ester group is substituted in the gamma-position by a hydroxyl, amino and/or transferable ester group derived from a polycarboxylic acid.

4,405,663

TIN PLATING BATH COMPOSITION AND PROCESS

Edmund W. Kinkelaar, Strongsville, and Paul Golar, Shaker Heights, both of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Mar. 29, 1982, Ser. No. 363,069
Int. Cl.³ B05D *1/28*
U.S. Cl. 427—428 **10 Claims**

1. An aqueous immersion plating bath for plating tin over zinc coated steel, said bath comprising:

(a) stannous ion in an amount ranging from 50 to 100 grams per liter of water;

(b) sulfuric acid in an amount ranging from 20 to 100 grams per liter of water;

(c) nonylphenoxy-poly(ethyleneoxy)ethanol having a molecular weight of from about 740 to 1600 in an amount ranging from 1.5 to 3.0 grams per liter of water; and

(d) Guar gum resin in an amount ranging from 1.5 to 11.5 grams per liter of water.

8. A method of immersion plating tin over zinc coated steel web on a continuous basis by roll coating application comprising the steps of:

(a) continuously running the coated steel web through a tin plating bath having the following composition:

1. about 65 to 85 grams of stannous ion per liter of water;
2. sulfuric acid in an amount of 40 to 80 grams per liter of water;
3. nonylphenoxy-poly(ethyleneoxy)ethanol in an amount of about 1.5 grams per liter and having an average molecular weight of from about 800 to about 1540; and,
4. Guar gum resin in amount of about 7.5 grams per liter of water;

(b) applying a wet film to said web in a thickness ranging from about 3.0 to 4.0 mils;

(c) contacting the strip with the bath for about 10 to 20 seconds; and,

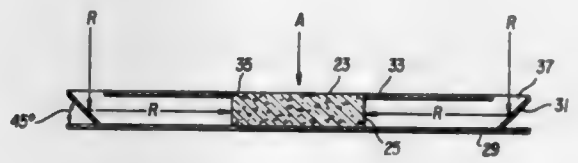
(d) operating said bath at a temperature of approximately 24° C.

4,405,664

EXHIBIT OF A DECORATIVE ART WORK

Lisa M. Talbert, 355 Folkstone Way, York, Pa. 17402

Division of Ser. No. 263,255, May 13, 1981. This application Dec. 28, 1981, Ser. No. 334,600
Int. Cl.³ A47G *1/12*
U.S. Cl. 428—14 **5 Claims**



1. A device for exhibiting a light transparent art work comprising:

(a) a pair of spaced substantially opaque planar members for enclosing the art work therebetween;

(b) one of the planar members including an aperture through which the art work may be viewed from a direction substantially perpendicular to such planar member;

(c) reflective means disposed around peripheral edges of the planar members for reflecting and directing light inwardly through the art work and towards opposed portions of the reflective means; and

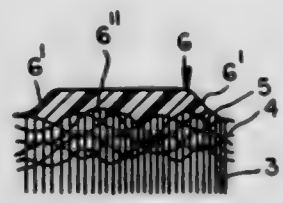
(d) whereby light and color patterns generated by the art work and the reflective means are viewable from a direction substantially perpendicular to the one planar member.

4,405,665

GROUND COVERING WITH DRAINAGE-PROMOTING MEMBERS

Michel Beaussier, Balan; Henry Leach, and Emile Evon, both of Mouzon, all of France, assignors to Societe Internationale de Revetements de sol S.A. - S.I.R.S., Neuilly-Sur-Seine, France

Filed Apr. 21, 1982, Ser. No. 370,396
Claims priority, application France, Jul. 28, 1981, 81 15063
Int. Cl.³ A01N *3/00*; B32B *33/00*
U.S. Cl. 428—17 **9 Claims**



1. A water-permeable artificial turf ground covering, comprising:

a water-permeable wear layer formed with:

a grass-like array of nonputrescible synthetic resin pile tufts

a water-permeable nonwoven or woven synthetic resin support thermally bonded to said tufts at lower ends thereof, and

a nonwoven layer composed of polyester or glass fibers reinforcing said support and located therebelow; and

an array of drainage-promoting members formed on an underside of said nonwoven layer opposite said elements, said members being disposed discontinuously along said underside of said layer and being composed of synthetic resin material and having the form of truncated pyramids with substantially rectangular bases.

4,405,666

FILM LAMINATE FOOD WRAP AND FOOD POUCH THEREFROM

Joann H. Squier, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 2, 1982, Ser. No. 364,747
Int. Cl.³ B32B *27/08*
U.S. Cl. 428—35 **17 Claims**

1. A flexible film laminate comprising:

(a) an oriented polyacrylonitrile film containing an adhesion promoting proportion of a liquid heterized ethylene oxide-propylene oxide copolymer prepared by reacting said oxides with at least one monohydric alcohol active hydrogen compound initiator having from about 1 to about 10 aliphatic carbon atoms;

(b) an adhesive layer contacting said polyacrylonitrile film, said adhesive layer being a combination of (1) a styrene-butadiene block copolymer having a monomer parts by weight ratio of from about 1:3 to about 3:1 and (2) a random terpolymer of from about 30 to about 40 parts by weight of 1,3-pentadiene; about 30 to about 40 parts by weight of a monocyclic terpene and from about 25 to about 35 parts by weight of alpha methylstyrene, said combination

consisting essentially of from 1 to about 3 parts by weight of the block copolymer to from about 3 to about 1 part by weight of the terpolymer; and

(c) a second oriented polyacrylonitrile film or a heat-sealable polyolefin film contacting said adhesive layer.

14. A process for laminating two or more polyacrylonitrile

films or a polyacrylonitrile film and a heat-sealable polyolefin film comprising:

(a) incorporating into said polyacrylonitrile film an adhesion promoting proportion of a liquid heterized ehtylene oxide-propylene oxide copolymer prepared by reacting said oxides with at least one monohydroxy alcohol active hydrogen compound initiator having from 1 to about 10 atoms;

(b) interposing between said films a layer of an adhesive composition comprising a combination of (1) a styrene-butadiene block copolymer having a monomer parts by weight ratio of from about 1:3 to about 3:1 and (2) a random terpolymer of from about 30 to about 40 parts by weight of 1,3-pentadiene, about 30 to about 40 parts by weight of a monocyclic terpene; and from about 25 to about 35 parts by weight of alpha methylstyrene, said combination consisting essentially of from about 1 to about 3 parts by weight of the block copolymer to from about 3 to about 1 part by weight of the terpolymer; and

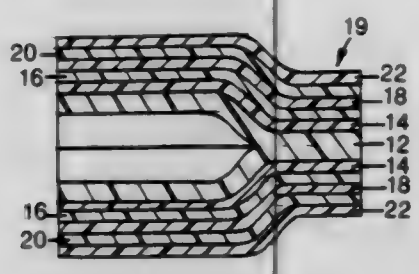
(c) applying presure or pressure and heat to the film surfaces.

4,405,667

RETORTABLE PACKAGING STRUCTURE

Ronald C. Christensen, Oshkosh; Roger P. Genske; Dennis E. Kester, both of Neenah, and William F. Ossian, Appleton, all of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Aug. 6, 1982, Ser. No. 405,716
Int. Cl.³ B65D *85/72, 65/40, 81/18*
U.S. Cl. 428—35 **9 Claims**



1. A multiple layer flexible packaging structure, wherein the layers are firmly adhered to each other in face to face contact, the structure comprising, in order:

(a) a first layer of linear low density polyethylene;

(b) a second layer of a blend of 20% to 80% linear low density polyethylene and 80% to 20% propylene ethylene copolymer;

(c) optionally, one or more of third, fourth and fifth layers of propylene ethylene copolymer;

(d) a sixth layer of anhydride modified polypropylene;

(e) a seventh layer of nylon;

(f) an eighth layer of ethylene vinyl alcohol copolymer; and

(g) a ninth layer of nylon.

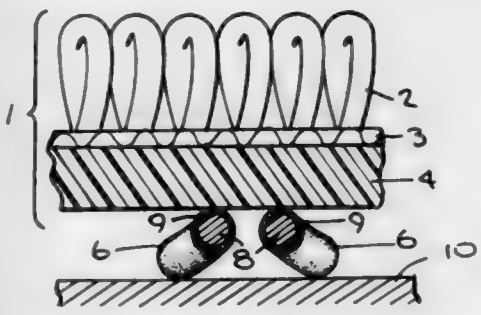
4,405,668

ONE PIECE BINDER-CARPET CONSTRUCTION

William Wald, Greenville, S.C., assignor to Lewis J. McDermott, III, Cartersville, Ga.

Continuation of Ser. No. 298,095, Aug. 31, 1981, which is a continuation of Ser. No. 112,952, Jan. 17, 1980, abandoned. This application Dec. 10, 1982, Ser. No. 448,478
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—40 **10 Claims**

1. A combined cover-binder unit for strippable attachment to a rigid holding surface comprising a cover portion, said cover portion having an upper face and a lower face, said lower face including a backing layer, a binder portion beneath the lower face of the cover portion, said binder portion comprising a binder material having an upper surface and a lower surface, and comprising a plurality of spaced frame elements which intersect each other to form a grid-like construction, the entire surfaces of said spaced frame elements of the said binder material being coated with an adhesive coating, the entire upper surface of the binder material being substantially permanently adhered to the entire lower face of the cover portion by said adhesive, the space between said spaced frame elements being devoid of adhesive so that the areas of the lower face of the cover portion not adhered to said binder portion are exposed areas, the adhesive on said lower surface of the binder material being of the pressure-sensitive type, the lower surface of the binder material being adapted to be removably adhered



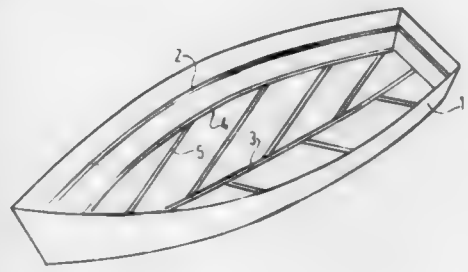
to a rigid holding surface by said pressure-sensitive adhesive, the entire binder material extending over the entire area of the lower face of said cover portion, and the exposed areas of said lower face of said cover portion between said spaced frame elements being devoid of adhesive whereby they are not adhered to said rigid holding surface, said cover portion comprising a carpet having a pile and a backing layer permanently attached therebeneath and wherein the binder material is permanently embedded and adhered to the underside of said backing layer.

4,405,669

LAMINATE REINFORCEMENT FOR FIBRE-REINFORCED SYNTHETIC RESINS

Richard Pott, Lage, Fed. Rep. of Germany, assignor to Koninklijke Textielfabrieken Nijverdal-Ten Cate N.V., Almelo, Netherlands

Filed Sep. 8, 1981, Ser. No. 300,109
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—61 **9 Claims**



1. A laminate reinforcement in a fibre-reinforced synthetic resin, characterized in that the laminate reinforcement is obtained by means of at least two parallel tissue tapes forming by their tissue seams (14) a paunch gap (15), which is covered with a similar, but narrower covering tape (16) to provide doubling of the reinforcing fibres in the area of the paunch gap in parallel relationship producing a Stringer effect, in which the warp and weft yarns of the tissue tape are made from reinforcing fibres such as carbon, aramid, boron and like fibres having a higher elasticity modulus and a higher specific tensile strength than glass fibres, the warp yarns of carbon (11) and aramid (12) being closely spaced with one another and the weft yarns (13) being spaced apart in parallel relationship by a larger distance than the warp yarns (11) and (12).

4,405,670

CAPACITANCE ELECTRONIC DISC STAMPER HAVING IMPROVED STAIN RESISTANCE AND METHOD FOR THE MANUFACTURE THEREOF

Mohamed E. Labib, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 28, 1982, Ser. No. 383,264
Int. Cl.[3] B32B *3/00*; C23C *15/00*
U.S. Cl. 428—64 2 Claims



1. An improved stamper for molding a capacitive electronic disc, said stamper being formed of nickel and having an information containing track defined in the molding surface thereof, said molding surface having formed thereon a continuous conformal layer of nickel oxide which is free, to substantially free, of microdefects and which is about 10 to 40 angstroms in thickness.

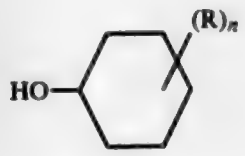
4,405,671

OPTICAL INFORMATION RECORDING DISK

Hiroshi Ozawa; Masaaki Shin; Akio Fuziwara; Mitsuyoshi Nakamura; Ichiro Otsuka, and Kazuo Sugazaki, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jan. 20, 1982, Ser. No. 341,010
Claims priority, application Japan, May 11, 1981, 56-69352
Int. Cl.[3] B32B *3/02*
U.S. Cl. 428—65 11 Claims

1. An optical information recording disk comprising as a base material thereof a polymer or copolymer having a glass transition temperature of at least 50° C., a melt index determined in accordance with ASTM-D1238 at 230° C. and under a 3800 g load condition in the range of from 1 to 50, and having from 10 to 100% by weight of a structural unit derived from a monomer (A) based on the total amount of said polymer or copolymer, said monomer (A) being an ester of an α,β-unsaturated carboxylic acid and an alicyclic alcohol represented by the general formula:



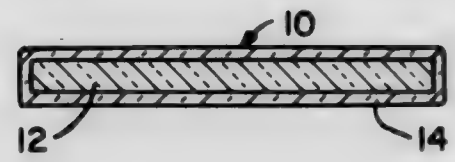
wherein n is an integer of 1-5, R denotes a hydrogen or an alkyl or alkenyl group, and, when n stands for an integer of 2-5, the Rs may be the same or different.

4,405,672

COMPOSITE PHOTOCHROMIC GLASS ARTICLE AND METHOD OF MAKING

Roger J. Araujo, Horseheads; Nicholas F. Borrelli, Elmira; Paul A. Tick, and Donald M. Trotter, both of Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 15, 1982, Ser. No. 358,351
Int. Cl.[3] B32B *1/04, 17/06*
U.S. Cl. 428—68 12 Claims



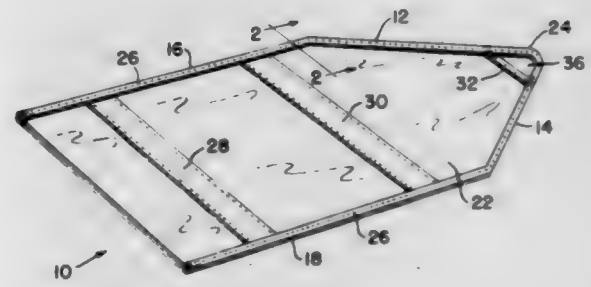
1. A composite photochromic glass article comprising a core portion and a thin surface layer substantially encasing that core portion, one of said core portion and encasing layer being composed of a first glass containing a copper-cadmium halide photochromic phase in a surface layer thereof, and the other of said component parts being composed of a second glass that has a copper-cadmium-silver halide photochromic phase developed therein, the depth of photochromic development in the article being not over about ten mils and exhibiting, in the darkened state, a color intermediate the characteristic red and green of the component glasses.

4,405,673

SKID PAD FOR MOVING HEAVY ITEMS

Kenneth P. Fridley, 1537 E. Vine, West Covina, Calif. 91791, and Robert E. Fridley, 5132 Hedda St., Lakewood, Calif. 90712

Filed Oct. 26, 1981, Ser. No. 314,885
Int. Cl.[3] B32B *1/04, 3/10*; A47B *91/00*
U.S. Cl. 428—80 6 Claims



1. A skid pad apparatus which comprises:

an elongated generally planar flexible member having first and second side edges and a forward edge, the side edges converging forwardly; and

a reinforcing strip extending along said first and second side edges and extending beyond said forward edge to define an opening intermediate said reinforcing strip and said flexible member and to define a handle continuous with the reinforcing strip for maneuvering heavy loads positioned on the skid pad.

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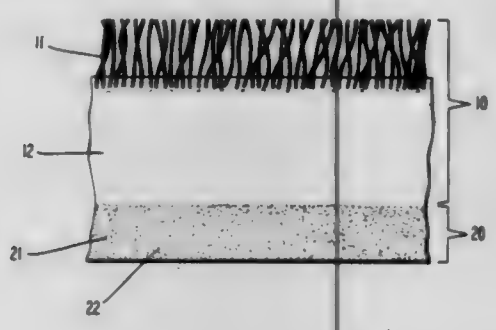
PROCESS FOR MAKING A MAGNETIC MATERIAL CONTAINING CARPET TILE AND CARPET TILE

Joseph H. Kyle, LaGrange, Ga., assignor to Carpets International-Georgia (Sales), Inc., LaGrange, Ga.

Continuation of Ser. No. 259,566, May 1, 1981, abandoned. This application Aug. 16, 1982, Ser. No. 408,597

Int. Cl.[3] B32B *3/02*

U.S. Cl. 428—96 9 Claims



1. A process for manufacturing a magnetic material containing carpet tile comprising:

forming by high shear dispersal a uniform fluid plastisol mixture of a liquid resinous material comprising a polymer of a vinyl or vinylidene chloride, a wetting agent and at least about 60 percent by weight of the mixture of a particulate magnetizable material;

applying the said uniform fluid mixture to the back of a carpet facing to form a carpet composite;

heating the said carpet composite to solidify the mixture and fuse the mixture with the carpet facing and thereby provide a carpet covering;

cutting the resulting magnetized carpet covering into carpet tiles; and

applying a magnetic force to the carpet tiles to magnetize the particulate magnetizable material.

4,405,675

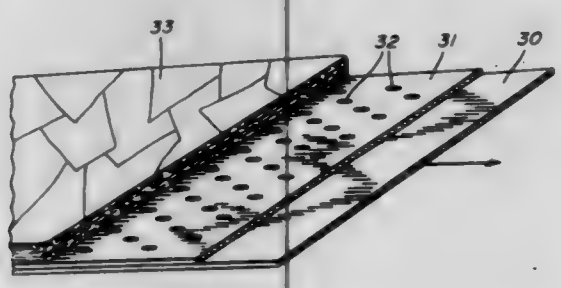
PANELBOARD WITH FRICTION SURFACE

Jan A. H. Dessens, Saskatchewan, Canada, assignor to MacMillan Bloedel Limited, Vancouver, Canada

Filed May 17, 1982, Ser. No. 379,258

Int. Cl.[3] B29J *5/00*

U.S. Cl. 428—156 7 Claims



1. A process for producing a waferboard panel having at least one friction surface, comprising the steps of assembling wood wafers coated with an adhesive binder into a mat with a plate, the plate having a surface adjacent the mat with a plurality of indentations or holes therein in a predetermined pattern, and pressing the mat in a press at a high temperature with the plate adjacent the mat to form the wafers into a waferboard panel such that the friction surface of the waferboard panel has a plurality of raised protrusions spaced apart in a predetermined pattern.

4,405,676

DECORATIVE RIBBON OR SHEET MATERIAL

Daniel P. Pohl, Grant, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed May 13, 1981, Ser. No. 263,048

Int. Cl.[3] B32B *3/00*

U.S. Cl. 428—164 9 Claims



1. A decorative sheet material comprising:

(a) a plastic film embossed over substantially its entire top surface in a first pattern and over substantially its entire bottom surface in a second pattern, said first pattern being a substantially regular parallel convex cylindrical lens configuration wherein the radius of curvature of the convex cylindrical lens is about one-half the thickness of said plastic film, and said second pattern being of a type which is capable of diffusing light;

(b) a first color coat adhered to said bottom surface of said plastic film;

(c) a reflective coat adhered to the underside of said first color coat, said reflective coat comprising a metallic powder dispersed in an organic resin binder; and

(d) a second color coat adhered to the underside of said reflective coat.

4,405,677

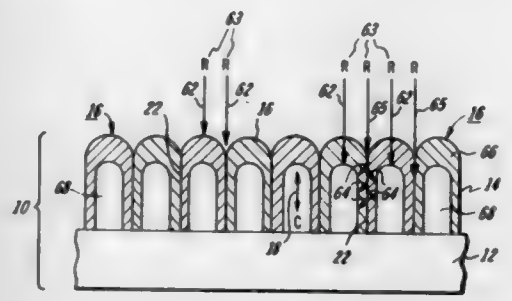
POST TREATMENT OF PERPENDICULAR MAGNETIC RECORDING MEDIA

Tu Chen, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 28, 1981, Ser. No. 306,125

Int. Cl.[3] H01F *10/02*; C23C *15/00*

U.S. Cl. 428—172 9 Claims



1. A method of post treatment to a continuous thin film magnetic medium comprising a substrate upon which is deposited a thin magnetic layer comprising acicular shaped crystalline magnetic particles with the crystallographic "c" axis of the crystal in each particle oriented parallel to the longitudinal axis of the particle acicula and the longitudinal axis of the acicular particles oriented substantially normal to the plane of said magnetic layer, said post treatment effectively increasing the separation between magnetic particles and thereby increasing their coercivity while decreasing their demagnetization field of the film, said method comprising the step of utilizing enhanced grain boundary reaction at the interganular boundary of said particles to achieve particle separation effectively either by diffusing the magnetic layer with a reagent or etching the magnetic layer with an etching agent.

4,405,678

PROTECTED VAPOR-DEPOSITED METAL LAYERS

Edward J. Downing, and Richard S. Fisch, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 22, 1982, Ser. No. 350,437
Int. Cl.[3] B05D *1/36*; B32B *15/08*
U.S. Cl. 428—215 17 Claims

1. An article comprising a substrate having on at least one surface thereof a vapor deposited metal layer and adhered to said metal layer a layer of 1 to 600 nm comprising an organic material having a vapor pressure at 20° C. less than or equal to that of 1-n-octanol and having (a) a carbonyl group which is not part of a carboxyl group, (b) a phenoxy group, (c) an ester group, or (d) an alcohol group.

4,405,679

COATED SHAPED ARTICLE OF POLYCARBONATE TYPE RESIN

Akira Fujioka, Osaka; Kazuo Sakiyama, Ibaraki; Akio Takigawa, and Motoaki Yoshida, both of Nishinomiya, all of Japan, assignors to Nippon Sheet Glass Co. Ltd. and Sumitomo Chemical Company, Limited, both of Osaka, Japan

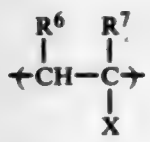
Filed Jan. 5, 1981, Ser. No. 222,577
Claims priority, application Japan, Jan. 10, 1980, 55-1531
Int. Cl.[3] B32B *27/30, 27/36*
U.S. Cl. 428—216 18 Claims

1. A coated shaped article of a polycarbonate type resin possessed of improved abrasion resistance, which comprises:

(I) a shaped substrate of a polycarbonate type resin,

(II) an undercoat layer formed on said substrate in a thickness of at least about 0.1 micron, which undercoat is formed of a composition containing a polymer selected from the group consisting of:

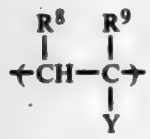
(i) a polymer having repeating structural units represented by the general formula (3):



(3)

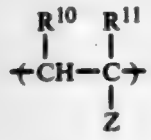
wherein, R^6 and R^7 independently stand for a hydrogen atom or an alkyl group of 1 to 5 carbon atoms or carboxyl group and X for a side chain containing carboxyl group, amino group or epoxy group, and

(ii) a polymer having repeating structural units represented by the general formula (4):



(4)

wherein, R^8 and R^9 indepedently stand for a hydrogen atom or a lower alkyl group of 1 to 5 carbon atoms or carboxyl group and Y for a side chain containing a hydroxyl group and repeating structural units represented by the general formula (5):



(5)

wherein, R^{10} and R^{11} independently stand for a hydrogen atom or a lower alkyl group or carboxyl group and Z for a side chain containing a carboxyl group, alkoxycarbonyl group, amino group, substituted amino group, epoxy group or tetrahydro-furyl group, and

(III) an overcoat layer applied to and cured on said undercoat layer in a thickness of at least about 1 micron, which overcoat is formed of a composition containing: as component (A)

at least one hydrolyzate selected from the group of epoxy group-containing silicon compounds represented by the general formula (1):



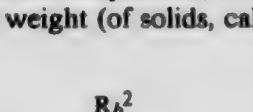
(1)

wherein, R^1 stands for an organic group containing an epoxy group, R^2 for a hydrogen atom, a hydrocarbon group of 1 to 6 carbon atoms, or vinyl group, R^3 for a hydrocarbon group of 1 to 5 carbon atoms, an alkoxy-alkyl group or an acyl group of 1 to 4 carbon atoms, a for an integer of 1 to 3 and b for an interger of 0 to 2, providing that $a+b \leqq 3$ is satisfied; as component (B) at least one member selected from the group consisting of hydrolyzates of organic silicon compounds represented by the general formula (2):

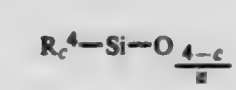


(2)

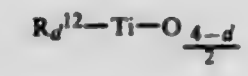
wherein, R^4 stands for a hydrocarbon group of 1 to 6 carbon atoms, vinyl group, methacryloxy group, amino group, mercapto group or organic group containing fluorine or chlorine, R^5 for a hydrocarbon group of 1 to 5 carbon atoms, an alkoxy-alkyl group or acyl group of 1 to 4 carbon atoms, and c for an integer of 0 to 3, and b for an interger of 0 to 3, colloidal silica and organic titanium compounds; and as component (C) a curing catalyst, wherein component (A) is used in an amount of 100 parts by weight (of solids, calculated as



and component (B) is used in an amount falling within the range of from 1 to 567 parts by weight (of solids, calculated as



in the case of an organic silicon compound of the general formula (2), as SiO_2 in the case of colloidal silica, or as



in the case of an organic titanium compound, wherein R^{12} stands for an unhydrolyzed group containing no hydroxyl group and d for an integer of 1 to 4), said undercoating being of a thickness which promotes adhesion of the overcoating and said overcoating being of a thickness which gives satisfactory abrasion resistance and adhesion without cracking.

4,405,680

ROOFING SHINGLE

David R. Hansen, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 23, 1982, Ser. No. 452,595
Int. Cl.[3] B32B *15/00*
U.S. Cl. 428—285 7 Claims

1. A roofing shingle having improved low temperature flexibility comprising:

(a) a flexibilized mat prepared by impregnating a fiber glass mat with a mixture of about 70 to about 94 percent by weight of an unblown bitumen having an asphaltene content (heptane insolubles) below twenty percent by weight and about 6 to about 30 percent by weight of a monoalkenyl arene-conjugated diene block copolymer; and

(b) an asphalt composition coated on at least one surface of said flexibilized mat, said asphalt composition comprising the blend of a blown bitumen and a filler, said asphalt composition having a softening point of about 100° C. to about 120°0 C.

4,405,681

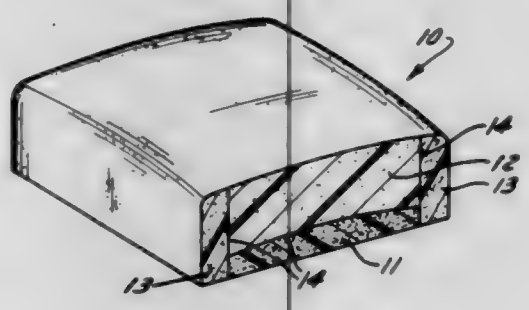
FOAM ARTICLE AND METHOD OF PREPARATION

James T. McEvoy, Oak Creek, Wis., assignor to Milsco Manufacturing Company, Milwaukee, Wis.

Filed Jan. 20, 1983, Ser. No. 459,370

Int. Cl.³ B32B *3/26, 5/14, 5/20*

U.S. Cl. 428—309.9 **7 Claims**



4. An article suitable for use as a cushion which includes a firm foam top layer, a soft foam bottom layer and a border or side wall of foam of intermediate density, said layers and side wall being bonded and knitted together along their common boundaries without the use of adhesives.

4,405,682

METHOD FOR PRODUCING FIRE-RESISTANT, THERMALLY INSULATING BOARD

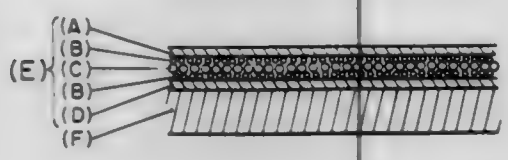
Shoichi Fujita, Minoo; Katsuhisa Kodama, Nishinomiya, and Kiyohiro Yuge, Yawata, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 13, 1981, Ser. No. 243,452

Claims priority, application Japan, Mar. 19, 1980, 55-35194

Int. Cl.³ B32B *5/18;* **C29K** *3/28;* **B32B** *5/30;* **B29D** *27/04*

U.S. Cl. 428—317.7 **16 Claims**



1. A method for producing a fire-resistant, thermally insulating board, which consists essentially of applying liquid hydrated sodium silicate (B) onto the inner surface of a facing material or sheet (A), spreading powdery hydrated sodium silicate (C) over the said applied surface, laying the said spread surface on

(1) a facing material or sheet (D), or

(2) a facing material or sheet (D) applied in advance with liquid hydrated sodium silicate (B) or

(3) a facing material or sheet having powdery hydrated sodium silicate (C) spread further over the applied surface of (2),

and then heating and pressing the thus-produced assembly to cure the liquid hydrated sodium silicate-powdery hydrated sodium silicate layers between the facing material (A) and the opposing facing material (D) to glue the assembly together to form a fire-resistant board (E), followed by laminating the resulting fire-resistant board (E) with a rigid isocyanurate foam (F).

4,405,683

SURFACE PLATE AND SLIDEWAY ELEMENTS

Hansjörg Renker, Hilterfingen, Switzerland, assignor to Fritz Studer AG, Glockenthal, Switzerland

Filed Mar. 5, 1981, Ser. No. 240,911

Claims priority, application Switzerland, Mar. 21, 1980, 2219/80

Int. Cl.³ B32B *5/16, 9/00*

U.S. Cl. 428—323 **1 Claim**



1. A low friction plastic-like coating on a substantially planar base of natural or artificial rock forming a hardened layer that when ground has specified low friction properties, said coating consisting essentially of a mixture of particulate solid lubricants selected from the group consisting of ultra-fine particles of graphite, poly (tetra-fluoroethylene), molybdenum disulfide, and boron nitride, a relatively hard particulate filler selected from the group consisting of aluminum oxide, silica, silicon carbide, silicon dioxide, diamond and metal carbides, and a resinous binding agent selected from the group consisting of epoxy and polyester resins, said solid lubricants comprising approximately 20 percent, by weight, of the mixture and having a particle size that ranges from 0.05 to 0.1 mm, said filler comprising approximately 50 percent, by weight, of the mixture and having a particle size from 1 μm to 1 mm, said resinous binding agent comprising approximately 20 to 50 percent, by weight, of the mixture whereby when the mixture sets and is ground, the surface formed thereby contains exposed solid lubricants.

4,405,684

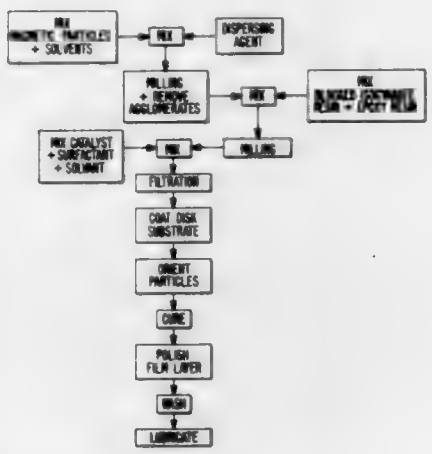
RIGID MAGNETIC COATING COMPOSITION WITH THERMOSETTING BINDER FOR HARD FILE

Bruce F. Blumentritt, and John C. Shyan Shen, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 304,445, Sep. 21, 1981, abandoned. This application Nov. 15, 1982, Ser. No. 441,469

Int. Cl.³ B32B *15/04;* **H01F** *10/02*

U.S. Cl. 428—336 **20 Claims**



1. A rigid magnetic recording medium having finely divided magnetic particles dispersed in a typical thermosetting resin

binder composition applied as a thin film, having a thickness of less than 80 micro inches, closely adhered to a rigid non-magnetic substrate wherein the coating composition includes 50 to 80 percent by weight of magnetic particles, 20 to 50 percent by weight of binder and comprises:

20 to 60 parts by weight of a blocked isocyanate having at least three reactive sites per chain;

40 to 80 parts by weight of an oligomer having at least two hydroxy reactive sites per polymer chain and a molecular weight of 200 to 800 per hydroxy site;

said oligomer consisting of one of the group of bisphenol A epoxy and any combination of bisphenol A epoxy, acrylic polyol and polyester polyol wherein each constituent is present in a concentration no greater than 97% by weight; and

additives not exceeding 30 parts by weight.

4,405,685

CARBON FIBERS WITH DUPLEX METAL CARBIDE COATING AND METHODS FOR MANUFACTURE THEREOF

Kuniaki Honjo, Ikeda, and Akio Shindo, Kawanishi, both of Japan, assignors to Agency of Industrial Science & Technology, Ministry of International Trade & Industry, Tokyo, Japan

Filed Nov. 10, 1981, Ser. No. 319,911

Claims priority, application Japan, Nov. 13, 1980, 55/160606; Aug. 19, 1981, 56/130515

Int. Cl.³ B32B *9/04, 33/00;* D02G *3/02*

U.S. Cl. 428—368 **10 Claims**

1. A uniaxially aligned carbon fiber coated with a duplex film consisting of an inner-layer film containing free carbon and metal carbide at a weight ratio in the range from 95:5 to 5:95 and an outer-layer film substantially solely of metal carbide, the total thickness of the inner-layer film and the outer-layer film being in the range of 0.01 to 3 μm, the thickness ratio of said inner-layer film to said outer-layer film falling in the range of 5:1 to 1:5.

4. A method for the manufacture of a uniaxially aligned carbon fiber coated with a duplex film which method comprises the steps of heating the carbon fiber to be coated to a temperature in the range of 800°–1800° C. in an inert atmosphere, feeding a mixed gas containing a compound containing a carbide-forming metal, a carbon containing compound, and hydrogen gas into contact with the heated carbon fiber thereby depositing on the carbon fiber (a) an inner-layer film of a mixture of free carbon and a metal carbide, and then feeding a mixed gas containing a carbon compound, a metal compound, and hydrogen into contact with the coated carbon fiber thereby depositing on said inner-layer film an outer-layer film of a metal carbide, the total thickness of said inner-layer film and said outer-layer film being in the range of 0.01 to 3 μm.

4,405,686

CRIMPABLE CONJUGATE FILAMENTARY YARNS HAVING A FLATTENED CROSS-SECTIONAL CONFIGURATION

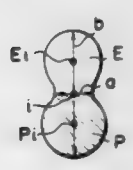
Toshimasa Kuroda, Takatsuki; Seiji Ishii, Matsuyama, and Tatsuya Shibata, Ibaraki, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jun. 7, 1982, Ser. No. 385,942

Claims priority, application Japan, Jun. 5, 1981, 56-85611

Int. Cl.³ B32B *27/02;* D02G *3/02*

U.S. Cl. 428—374 **12 Claims**







1. A conjugate filamentary yarn, characterized in that each of the individual constituents whose cross-sectional view presents a compressed flat figure, which comprises an elastomeric thermoplastic elastomer and a non-elastomeric polyamide or a polyester, wherein the respective components are arranged in such a way as to satisfy the following formulas (I) to (III) simultaneously:

$$4 \geqq \frac{b}{a} \geqq 1.2 \quad \text{(I)}$$

$$2.3 \geqq \frac{EA}{PA} \geqq 0.43 \quad \text{(II)}$$

$$\overline{EiPi} \geqq \frac{a}{2} \quad \text{(III)}$$

where a indicates the length of the minor axis which passes the centroid on the cross section of the filament; b, the length of the major axis which passes the centroid on the cross section of the filament; EA, the area occupied by the thermoplastic elastomer on the cross section of the filament; PA, the area occupied by non-elastomeric polyamide or polyester on the cross section of the filament; and EiPi, the distance between the centroid Ei of the thermoplastic elastomer component on the cross section of the filament and the centroid Pi of the non-elastomeric polyamide or polyester component.

4,405,687

POLYBOROSILOXANE COMPOSITION FOR PRODUCTION OF ELECTRICALLY INSULATING LAYER AND INSULATED ELECTRIC WIRE USING THE COMPOSITION

Minoru Morita; Etsuo Hosokawa, and Kohzoh Arahara, all of Yokohama, Japan, assignors to Showa Electric Wire & Cable Co., Ltd., Japan

Filed Apr. 9, 1982, Ser. No. 367,025

Claims priority, application Japan, Apr. 13, 1981, 56-54359; Jun. 2, 1981, 56-84667; Jun. 30, 1981, 56-102044; Jul. 17, 1981, 56-112695

Int. Cl.³ B32B *27/12;* H01B *3/46, 17/62*

U.S. Cl. 428—383 **6 Claims**

1. A polyborosiloxane composition for the production of an electrically insulating layer on a conductor surface, which composition comprises:

(A) a polyborosiloxane obtained by the polycondensation reaction at a temperature of 50° to 800° C. of

(1) at least one boron compound selected from the group consisting of boric acids, boric anhydride, metallic salts of boric acid, halogenated borons, and boric esters,

(2) at least one silane compound selected from the group consisting of silane compounds represented by the general formulas, SiX_4, $SiRX_3$, and $SiRR'X_2$ (wherein, R and R' each denote a methyl group or a phenyl group, and X denotes a hydroxyl group (providing that, in SiX_4, at least one of the X's is a halogen atom), or a halogen atom, providing that where X is a hydroxyl group, a dehydration condensate is embraced), and

(3) at least one silicone oil selected from the group consisting of dimethyl silicone oil and phenyl methyl silicone oil having a viscosity of at least 1.0 centistoke at 25° C.,

(B) at least one thermally resistant synthetic resin selected from the group consisting of silicone resins and synthetic resins containing a nitrogen-containing heterocyclic ring,

(C) an inorganic filler, and

(D) a common solvent for (A) the polyborosiloxane and (B) the thermally resistant synthetic resin.

5. An insulated electric wire characterized by having a thin electrically insulating layer of a polyborosiloxane composition comprising:

(A) a polyborosiloxane obtained by the polycondensation reaction at a temperature of 50° to 800° C. of

(1) at least one boron compound selected from the group

consisting of boric acids, boric anhydride, metallic salts of boric acid, halogenated borons, and boric esters,

(2) at least one silane compound selected from the group consisting of silane compounds represented by the general formulas, SiX_4, $SiRX_3$, and $SiRR'X_2$ (wherein, R and R' each denote a methyl group or a phenyl group, and X denotes a hydroxyl group (providing that, in SiX_4, at least one of the X's is a halogen atom), or a halogen atom, providing that where X is a hydroxyl group, a dehydration condensate is embraced), and

(3) at least one silicone oil selected from the group consisting of dimethyl silicone oil and phenyl methyl silicone oil having a viscosity of at least 1.0 centistoke at 25° C.,

(B) at least one thermally resistant synthetic resin selected from the group consisting of silicone resins and synthetic resins containing a nitrogen-containing heterocyclic ring, and

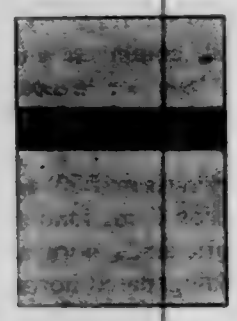
(C) an inorganic filler.

4,405,688

MICROPOROUS HOLLOW FIBER AND PROCESS AND APPARATUS FOR PREPARING SUCH FIBER

James J. Lowery, Charlotte, N.C.; Neil D. Plotkin, Scotch Plains, N.J., and Jack Robinson, Waxhaw, N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Feb. 18, 1982, Ser. No. 349,795
Int. Cl.³ D02G *3/00*
U.S. Cl. 428—398 5 Claims



1. A microporous polyolefinic hollow fiber having:

(a) an average wall thickness in the range of from about one micron to about 75 microns;

(b) a coefficient of variation in wall thickness throughout a cross-section taken perpendicular to the axis of the fiber of less than about 20%;

(c) an average inner diameter in the range of from about 5 microns to about 1500 microns;

(d) a coefficient of variation in inner diameter throughout a cross-section taken perpendicular to the axis of the fiber of less than about 8%;

(e) a substantially uniform porosity across the circumference of said fiber as determined by the average ratio of the minimum pore density to the maximum pore density around the circumference of said fiber of less than about 3:1;

(f) an oxygen flux of at least 100 cc/cm^2-min. at 10 p.s.i.g.; and

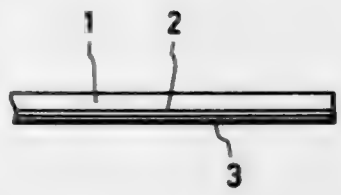
(g) an average pore size as measured by electron micrograph of from about 50 to about 2000 Angstroms in width and from 500 to 10,000 Angstroms in length.

4,405,689

ULTRAVIOLET-CURING COMPOSITION, PREPREG SHEET CONTAINING THE SAME, AND METALLIC MATERIAL HAVING ANTICORROSIVE COATING

Hideo Watanabe, Yugawaramachi, Japan, assignor to The Yokohama Rubber Co., Ltd., Tokyo, Japan

Division of Ser. No. 219,935, Dec. 24, 1980, Pat. No. 4,377,458.
This application Dec. 8, 1981, Ser. No. 328,628
Claims priority, application Japan, Dec. 26, 1979, 54-169907
Int. Cl.³ B32B *15/08*
U.S. Cl. 428—467 7 Claims



1. A prepreg sheet comprising a fibrous base and a B-staged ultraviolet-curing composition containing an ultraviolet-curing resin having an active OH group or COOH group, a vinyl monomer, a thickening agent which is reactive with the active OH group or COOH group of the ultraviolet-curing resin and a photosensitizer.

4,405,690

POLYETHYLENE GLYCOL MODIFIED MELAMINE ALDEHYDE RESIN AND POSTFORMABLE LAMINATE MADE THEREWITH

Lenon G. Brooker, Hampton, and Halbert Mungin, Varnville, both of S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 19, 1980, Ser. No. 208,591
Int. Cl.³ B32B *27/08*
U.S. Cl. 428—503 5 Claims

1. A high pressure, postformed laminate, comprising postformable core stock comprising a plurality of absorbent sheets impregnated with a postformable phenol-aldehyde resin to which is bonded, at a pressure of at least about 1,000 psi., an absorbent print sheet impregnated with a resinous composition consisting essentially of the cured admixture of:

(A) melamine and aldehyde, where the mole ratio melamine:mole ratio aldehyde is from about 1:1.5 to about 1:3;

(B) about 1 weight percent to about 45 weight percent, based on weight of melamine, of water soluble polyethylene glycol having a molecular weight of from about 200 to about 1,000; and

(C) sufficient water to form a solution of about 15 percent solids to about 65 percent solids; where the polyethylene glycol, melamine, and aldehyde are reacted together in the presence of heat and water, and where the bonded high pressure laminate has a portion thereof postformed to a predetermined radius at temperatures of about 118° C. or higher.

4,405,691

TERBIUM ACTIVATED YTTRIUM GADOLINIUM OXYSULFIDE X-RAY PHOSPHOR AND SCREEN CONTAINING THE SAME

Ramon L. Yale, Ulster, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Aug. 10, 1981, Ser. No. 291,756
Int. Cl.³ C09K *11/475*
U.S. Cl. 428—690 3 Claims

1. An X-ray phosphor consisting essentially of $(Y,Gd)_2O_2S:Tb$ where the ratio of yttrium to gadolinium is between about 97/3 and 91/9 exhibiting greater brightness under X-ray excitation than said phosphor absent Gd or said phosphor having a ratio of yttrium to gadolinium that is not between about 97/3 and 91/9.

4,405,692

MOISTURE-PROTECTED ALKALI HALIDE INFRARED WINDOWS

Frederick G. Yamagishi, Newbury Park, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 4, 1981, Ser. No. 327,385
Int. Cl.[3] B32B *27/28, 27/06;* B05D *3/06;* G02B *1/10*
U.S. Cl. 428—696 17 Claims

1. An infrared optical element comprising an alkali halide crystal having topologically smooth outer surfaces chemically bound to a non-infrared absorbing surfactant and overcoated with a polymerized saturated hydrocarbon film.

4,405,693

HIGH RATE METAL-SULFURYL CHLORIDE BATTERIES

Narayan Doddapaneni, Glenside, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 5, 1981, Ser. No. 308,337
Int. Cl.[3] H01M *4/36*
U.S. Cl. 429—101 10 Claims

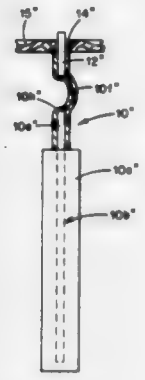
1. In an electrochemical cell having an alkali metal anode, an electrolyte salt, a sulfuryl chloride depolarizer and a cathode, the improvement comprising a dopant in said cathode, wherein said dopant is one selected from a group consisting of monomeric and polymeric phthalocyanine complexes of iron and cobalt.

4,405,694

ELECTROCHEMICAL CELL

Franz Goebel, Sudbury, and Kathleen M. Kealey, Newburyport, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 21, 1981, Ser. No. 333,093
Int. Cl.[3] H01M *6/14*
U.S. Cl. 429—101 21 Claims



1. An electrochemical cell comprising;
a metal housing and a cover for said housing, said cover having a metal electrical terminal extending therethrough; and
an electrochemical system within the metal housing and including an electrolytic solution and a battery stack exposed to the electrolytic solution, said electrolytic solution including a catalytically-reducible soluble cathode, and said battery stack comprising:
a cathode structure adjacent to the metal housing and operative during discharge of the cell to catalytically reduce the soluble cathode of the electrolytic solution; and
an anode structure comprising:
a metal electrode spaced from the cathode structure and the metal housing;
a metal electrically-conductive assembly at the potential of the metal electrode and connected between the metal electrode and the electrical terminal in the cover; the metal electrically-conductive assembly comprising:
an electrically-conductive metal conductor in physical and electrical contact with the metal electrode and having a first portion disposed within the metal electrode and a second portion extending outwardly from the metal electrode; and
an electrically-conductive metal jumper element physically and electrically connected between the second portion of the metal conductor and the electrical terminal in the cover; and
a chemically-stable, anti-parasitic discharge material covering at least a portion of the metal electrically-conductive assembly and operative to prevent the catalytic reduction of the soluble cathode in the electrolytic solution at the surfaces of the portions of the metal electrically-conductive assembly covered by the anti-parasitic discharge material.

4,405,695

CELLS HAVING CATHODES DERIVED FROM ALKALI SALTS OF CHROMIUM DICHALCOGENIDES

Raphael Moshtev, Sofia, Bulgaria; Gianfranco Pistoia, Rome, Italy; Veselin Manev, and Anna Nasalevska, both of Sofia, Bulgaria, assignors to Consiglio Nazional delle Ricerche, Roma, Italy and Accademia Bulgara delle Scienze, Bulgaria, Bulgaria

Filed Jun. 12, 1981, Ser. No. 273,086
Claims priority, application Italy, Jun. 17, 1980, 48998 A/80
Int. Cl.[3] H01M *10/36*
U.S. Cl. 429—103 12 Claims

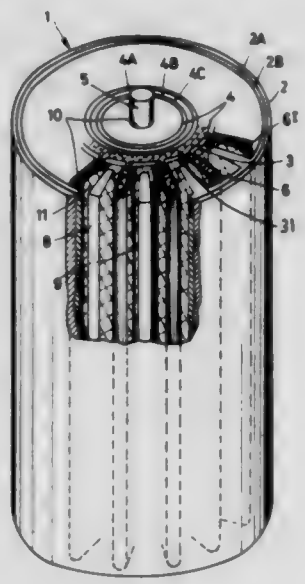
1. An electrochemical secondary cell comprising:
(a) an anode comprising a material selected from the group consisting of an alkali metal, an earth-alkali metal and their mixtures;
(b) a non-aqueous electrolytic solution;
(c) a cathode comprising a alkali metal salt of chromium dichalcogenides having the general formula $M'_xM''_yCrB$, wherein M' and M'' are metals of group I A of the Periodic Table, B is a chalcogen and x and y have values between zero and one.

4,405,696

ELECTROCHEMICAL STORAGE CELL

Wilfried Fischer, Neckargemünd, and Dieter Hasenauer, Weinheim, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed Apr. 22, 1982, Ser. No. 370,662
Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3117384
Int. Cl.[3] H01M *10/39*
U.S. Cl. 429—104 31 Claims



1. Electrochemical storage cell based on alkali metal and chalcogen comprising at least one anode space for the alkali metal anolyte and a cathode space for the chalcogen catholyte, with the anode, space and the cathode space separated from each other by an alkali ion-conducting solid electrolyte wall, a

metallic housing bounding the cell, said solid electrolyte wall having a plurality of spaced, outwardly extending hollow recesses, and at least one current collector disposed between each pair of adjacent recesses.

4,405,697

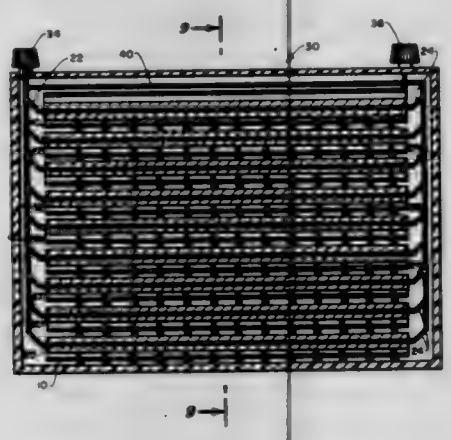
LEAD-ACID BATTERY

John J. Rowlette, Monrovia, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed May 29, 1981, Ser. No. 268,484

Int. Cl.³ H01M *39/00*

U.S. Cl. 429—161 **15 Claims**



1. A battery having positive and negative terminals comprising a sealed casing:

one or more cells received in said casing serially connected in conductive relation wherein said cells include a plurality of horizontally oriented grids of alternately stacked positive and negative monoplates forming a vertical grid stack having four sides;

two vertical positive bus bar means, each connected to opposed side edges of each said positive monoplate for conducting current to said positive terminal and providing structural support to said grid stack; and

two vertical negative bus bar means, each connected to the two opposed, remaining side edges of said negative monoplates for conducting current to said negative terminal and for further structurally supporting said grid stack.

4,405,698

SILVER OXIDE CELLS

Tooru Nagaura, Koriyama, Japan, assignor to Sony Eveready Inc., Tokyo, Japan

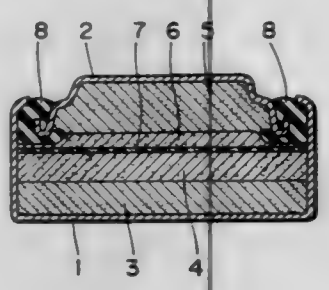
PCT No. PCT/JP81/00081, § 371 Date Dec. 7, 1981, § 102(e) Date Dec. 7, 1981, PCT Pub. No. WO81/02950, PCT Pub. Date Oct. 15, 1981

PCT Filed Apr. 8, 1981, Ser. No. 329,351

Claims priority, application Japan, Apr. 9, 1980, 55-46584

Int. Cl.³ H01M *10/32, 10/04*

U.S. Cl. 429—219 **10 Claims**



1. A silver oxide cell having a cathodic material comprising AgO, an anodic material, a separator disposed between said anodic material and said cathodic material, and an electrolyte; the improvement wherein a layer of a reaction product is disposed between and in contact with the separator and the cathodic material which layer comprises a reacted mixture of an oxide of manganese or an oxide of nickel, an electrolyte and a reducing material.

4,405,699

MANGANESE DIOXIDE ELECTRODE FOR LITHIUM BATTERIES

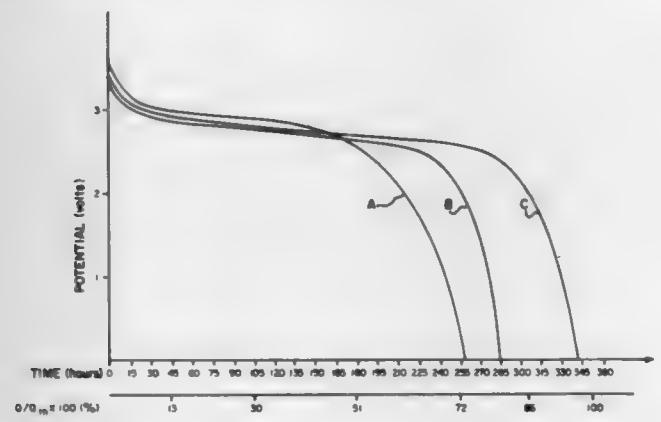
Franz J. Kruger, Wiesbaden, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Mar. 24, 1982, Ser. No. 361,440

Claims priority, application Fed. Rep. of Germany, Jun. 11, 1981, 3123100

Int. Cl.³ H01M *4/02, 4/04*

U.S. Cl. 429—224 **6 Claims**



1. A positive manganese dioxide electrode for galvanic elements with negative lithium electrode, characterized in that the active electrode material is a γ-MnO_2 produced by oxidizing tempering of α-MnO(OH).

4,405,700

ELECTRODE COATING COMPOSED OF COPOLYMERS DERIVED FROM DIACETONE ACRYLAMIDE

Guy Rampel, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Continuation of Ser. No. 157,313, Jun. 9, 1980, which is a division of Ser. No. 966,745, Dec. 5, 1978, Pat. No. 4,245,016.

This application Mar. 17, 1981, Ser. No. 244,701

The portion of the term of this patent subsequent to Nov. 3, 1998, has been disclaimed.

Int. Cl.³ H01M *2/16*

U.S. Cl. 429—248 **7 Claims**

1. In a battery separator, the improvement comprising a separator coating consisting essentially of a copolymer derived from diacetone acrylamide and a polymerizable monomer.

4,405,701

METHODS OF FABRICATING A PHOTOMASK

Edward L. Banks, Willingboro Township, Burlington County, N.J.; Bruce E. Truax, Durham Township, Middlesex County, Conn., and Laurence S. Watkins, Hopewell Township, Mercer County, N.J., assignors to Western Electric Co., New York, N.Y.

Division of Ser. No. 287,970, Jul. 29, 1981, Pat. No. 4,361,643, which is a continuation-in-part of Ser. No. 222,451, Jan. 5, 1981, abandoned. This application Sep. 17, 1982, Ser. No. 419,644

Int. Cl.³ B32B *31/00;* G03C *5/06;* G03F *9/00*

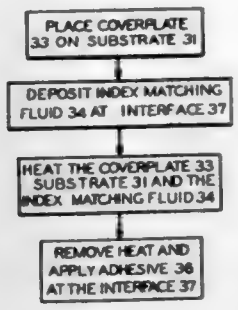
U.S. Cl. 430—5 **2 Claims**

1. A method of fabricating a photomask, comprising the steps of:

placing a substantially flat, light transmissive coverplate in intimate contact with a light transmissive baseplate having a metallic pattern thereon;

depositing at least one drop of, a refractive index matching fluid at the interface edge of the coverplate and baseplate,

said fluid having substantially the same refractive index as said baseplate and said coverplate; and



heating the baseplate, coverplate and the refractive index matching fluid to cause the fluid to flow between the patterned baseplate and the coverplate.

4,405,702

ELECTROPHOTOGRAPHIC IMAGE-FORMING MEMBER WITH LADDER-TYPE SILICON RESIN LAYER

Shigeru Shirai, Yamato; Junichiro Kanbe, and Shigeru Ohno, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1982, Ser. No. 338,046
Claims priority, application Japan, Jan. 16, 1981, 56-5643
Int. Cl.³ G03G *5/082*
U.S. Cl. 430—60 **26 Claims**

1. An electrophotographic image-forming member which comprises:

an electrophotographic supporting substrate;

a photoconductive layer comprising an amorphous material which contains silicon atoms as matrix and at least one of hydrogen atoms and halogen atoms; and

a resin layer formed by use of a ladder type of silicon resin, between said supporting substrate and photoconductive layer.

4,405,703

ELECTROPHOTOGRAPHIC PLATE HAVING AN AGE-HARDENED ALUMINUM SUBSTRATE AND PROCESS FOR PRODUCING THE SAME

Shigeharu Onuma; Kunihiro Tamahashi; Akira Hosoya, all of Hitachi; Atsushi Kakuta, Hitachiota; Yasuki Mori, and Hirosada Morishita, both of Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed Sep. 30, 1981, Ser. No. 307,203
Claims priority, application Japan, Oct. 3, 1980, 55/137704
Int. Cl.³ G03G *5/10*
U.S. Cl. 430—69 **8 Claims**

1. An electrophotographic plate comprising a substrate made of an age-hardening type aluminum alloy having a surface hardness of 60 Hv or higher in terms of Vickers hardness and a photoconductive layer made of amorphous selenium or a selenium alloy formed on the substrate by a vacuum evaporation method; said photoconductive layer and said substrate then having been cooled at a rate of 5° C/min. or higher.

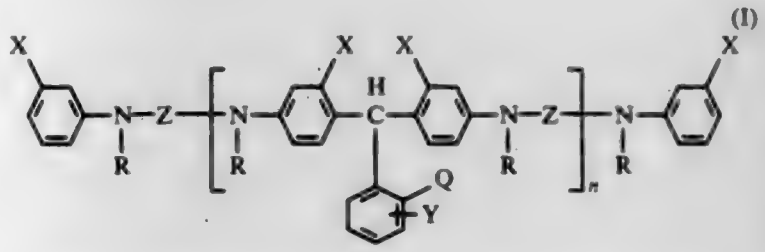
4,405,704

TRIPHENYLMETHANE POLYMER, PROCESS FOR PRODUCTION THEREOF, AND PHOTOCONDUCTIVE COMPOSITIONS AND MEMBERS FORMED THEREFROM

Shu Watarai; Kazuo Ishii, and Takeshi Takayama, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd.,, Kanagawa, Japan

Division of Ser. No. 218,227, Dec. 19, 1980, Pat. No. 4,360,660.
This application May 28, 1982, Ser. No. 382,047
Claims priority, application Japan, Dec. 22, 1979, 54-166306; May 16, 1980, 55-65052
Int. Cl.³ G03G *5/06*
U.S. Cl. 430—74 **7 Claims**

1. An electrophotographic photoconductive composition comprising a sensitizer and at least one triphenylmethane represented by formula (I)



wherein R is an alkyl group, X is H or a methyl group, Z is an alkylene group having 1 to 5 carbon atoms or a p-xylylene group, Y is H, a methyl group, a methoxy group, a tertiary amino group, halogen, a nitro group or a cyano group, Q is H or a methyl group, and n represents a polymerization degree sufficient to obtain an intrinsic viscosity [η] of the polymer from 0.005 to 1.000.

4,405,705

PHOTOSENSITIVE RESIN COMPOSITION CONTAINING BASIC POLYMERIC COMPOUNDS AND ORGANIC CARBOXYLIC ACIDS

Kuniomi Etoh; Masaru Nampei, and Shinichi Tanaka, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha t/a Toyoba Co., Ltd., Japan

Filed Jul. 27, 1981, Ser. No. 286,825
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—270 **11 Claims**

1. A photosensitive resin composition which comprises (1) at least one of the group comprising basic polymeric compounds which have a molecular weight of not less than 1,000, contain basic nitrogen atoms and are themselves poor in hydrophilic properties but, which in the presence of an acidic substance, show good hydrophilic properties due to the acid-based interaction, and (2) at least one of the group comprising organic carboxylic acids which are themselves acidic but, when irradiated with light, lose their acidic property due to a chemical conversion.

4,405,706

OPTICAL INFORMATION RECORDING MEDIUM

Yonosuke Takahashi; Minoru Wada, and Eiichi Hasegawa, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 14, 1982, Ser. No. 388,366
Claims priority, application Japan, Jun. 12, 1981, 56-90377
Int. Cl.³ G01D *15/34*
U.S. Cl. 430—271 **19 Claims**

1. An optical information recording medium, comprising:

a plastic substrate comprised of an acrylic resin;

an undercoating layer positioned on a surface of the substrate, the undercoating layer being comprised of a compound selected from the group consisting of polyvinyl pyrrolidone and polyvinyl formal; and

a heat mode recording layer positioned on the undercoating layer, the recording layer being comprised of a metal.

4,405,707

METHOD OF PRODUCING RELIEF STRUCTURES FOR INTEGRATED SEMICONDUCTOR CIRCUITS

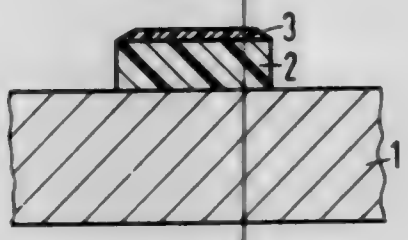
Hartwig Bierhenke, Grafing; Siegfried Birkle, Hoechstadt an der Aisch, and Roland Rubner, Roettenbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 16, 1981, Ser. No. 284,099

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1980, 3027941

Int. Cl.[3] B05D *3/06*

U.S. Cl. 430—281 18 Claims



1. In a method for producing relief structures comprised of double lacquer layers on substrates which already contain relief structures for integrated semiconductor circuits wherein high-energy radiation, such as particulate or photon radiation, is utilized for structuring, the improvement comprising:

applying said double lacquer layer to said substrate with a lower lacquer layer positioned directly on said substrate and an upper lacquer layer positioned on said lower lacquer layer;

said lower lacquer layer being composed of a decomposable positive lacquer material which is only somewhat sensitive to particulate or photon radiation and having a sensitivity in the range of about 10 through 100 μm C/cm^2;

said upper lacquer layer being thinner relative to the thickness of said lower lacquer layer by at least a factor of 2 and being comprised of a highly sensitive negative lacquer material having sensitive of less than about 5 μm C/cm^2;

generating desired relief structures in said upper negative lacquer layer; and

removing those portions of said lower lacquer layer which are not covered by said upper negative lacquer layer.

4,405,708

METHOD OF APPLYING A RESIST PATTERN ON A SUBSTRATE, AND RESIST MATERIAL MIXTURE

Pieter van Pelt, Sunnyvale, Calif., and Jacob Wijdenes, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

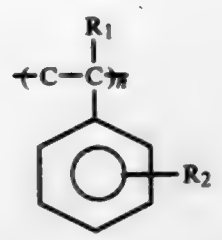
Filed Mar. 8, 1982, Ser. No. 355,977

Claims priority, application Netherlands, Mar. 12, 1981, 8101200

Int. Cl.[3] G03C *5/00, 1/68*

U.S. Cl. 430—281 4 Claims

1. A method of forming a resist pattern on a substrate wherein a resist material is uniformly applied to the surface of said substrate to form a photosensitive layer thereupon, the resultant layer of resist material is selectively irradiated with actinic radiation and the irradiated portion of said layer is then removed, characterized in that the resist material is a mixture of a positive-working methylmethacrylate polymer or polymethylisopropenyl ketone and 1–25% by weight of a negative-working styrene homopolymer of the formula:



wherein R_1 is hydrogen or alkyl, R_2 is halogen, alkyl or alkoxy and n represents the degree of polymerization.

4,405,709

PROCESS FOR FABRICATING GRAVURE PRINTING PLATE BLANK

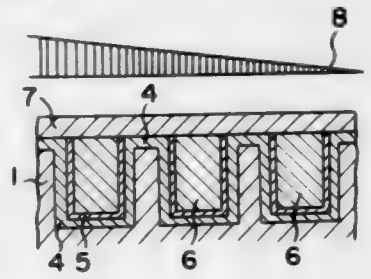
Seiji Katano, Oiso, and Masataka Atsumi, Tokyo, both of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Division of Ser. No. 35,072, May 1, 1979, abandoned. This application Mar. 31, 1981, Ser. No. 249,403

Claims priority, application Japan, May 4, 1978, 53-53450

Int. Cl.[3] C23F *1/02;* C03C *15/00, 25/06;* B41C *1/00*

U.S. Cl. 430—307 7 Claims



1. A process for the fabrication of a gravure printing plate blank comprising the steps of providing a base having a surface, forming a multiplicity of minute pockets of equal size and uniform placement in the surface of the base, forming a non-etchable layer over the surface of the base including its portions bounding the pockets, the non-etchable layer being of a material resistive to a prescribed etchant, forming an intermediate layer within each pocket, forming thereafter a multiplicity of dot-like etchable portions by filling the pockets with a material corrodible by the prescribed etchant whereby the intermediate layer lies between the non-etchable layer and the etchable portion in each pocket, said intermediate layer being made of a material having a high degree of adhesion both to the material of the non-etchable layer and to the material of the etchable portions, and smoothing the exposed surface portions to the non-etchable layer and the surfaces of etchable portions.

4,405,710

ION BEAM EXPOSURE OF ($G\text{-}GE_xSE_{1-x}$) INORGANIC RESISTS

Karanam Balasubramanyam, and Arthur L. Ruoff, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jun. 22, 1981, Ser. No. 276,115

Int. Cl.[3] G03C *5/00*

U.S. Cl. 430—311 8 Claims

1. A method of forming a predetermined pattern on a substrate which comprises

(a) forming a thin ($g\text{-}Ge_xSe_{1-x}$) film on a solid substrate by vacuum vapor deposition wherein the angle of deposition is an angle between 5° to about 85° with respect to the normal,

(b) masking a portion of said film with an ion beam penetration retarding masking material,

(c) exposing the unmasked portion of the film to an ion beam at a voltage adapted to and with an ion dose sufficient to provide a substantial differential dissolution rate between

the masked and unmasked portion of the film when developed with a solvent for said film, and

(d) developing said film by removing the exposed portion of that film to uncover the corresponding portion of the substrate while the portion of said film which was masked during the exposure remains adhered to the substrate.

4,405,711

ANALYSIS ELEMENT FOR IMMUNOCHEMICAL MEASUREMENT OF TRACE COMPONENTS AND METHOD FOR IMMUNOCHEMICAL MEASUREMENT USING THE SAME

Nobuhito Masuda; Shigeru Nagatomo, and Yuji Mihara, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 2, 1981, Ser. No. 298,812

Claims priority, application Japan, Sep. 2, 1980, 55-120599

Int. Cl.³ G01N *33/54, 33/52*

U.S. Cl. 435—4 **3 Claims**

1. In an analysis element, comprising a support having provided thereon a silver halide emulsion layer, for immunochemical assay of a trace component utilizing an immunological reaction which comprises: (1) labelling an antigen or antibody with a photographically active substance selected from the group consisting of a spectral sensitizer and a fogging agent, (2) competitively reacting said antigen or antibody labelled with said photographically active substance with an antibody or antigen which specifically reacts with the respective antigen or antibody, (3) bringing either the reaction product or the unreacted material into contact with said silver halide, (4) exposing the resulting product to light having a wavelength which said photographically active substance absorbs followed by photographic development when said spectral sensitizer is used as said photographically active substance, or developing the same without exposure to light having a wavelength which said photographically active substance absorbs when said fogging agent is used as said photographically active substance, and (5) measuring the resulting optical density of the formed silver image and/or colored dye,

the improvement which comprises a water absorbing layer is provided between said support and said silver halide emulsion layer, wherein said water absorbing layer has a thickness of from 1 to 100μ and is composed of a porous membrane, a filter paper, a fiber or a binder comprising gelatin and/or a polymer.

4,405,712

LTR-VECTORS

George F. Vande Woude, Berryville, Va.; William L. McClements, Silver Spring, Md.; Marianne K. Oskarsson, Bethesda, Md., and Donald G. Blair, Kensington, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jul. 1, 1981, Ser. No. 279,443

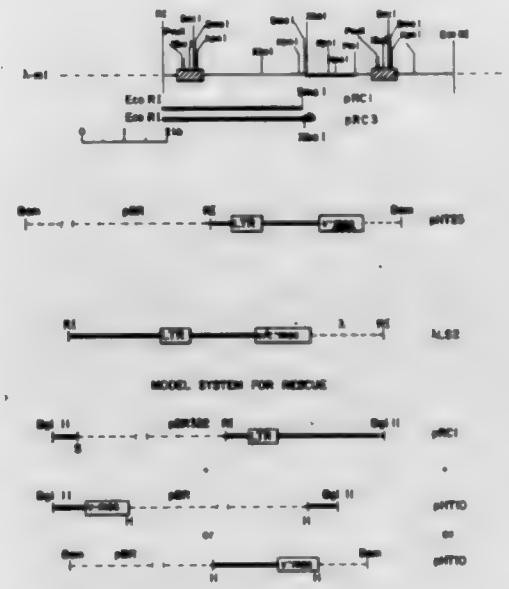
Int. Cl.³ C12Q *1/70;* C12P *21/00, 21/02;* C12N *15/00;* C12N *5/00;* C12N *1/00;* C12N *7/00*

U.S. Cl. 435—5 **10 Claims**

1. A process for activating the expression of any gene comprising the steps of:

(a) isolating the gene

(b) ligating to the gene a vector comprising the LTR sequences from a retroviral provirus genome to provide a hybrid gene



(c) inserting the hybrid gene into a mammalian recipient cell using DNA transfection

(d) screening for the phenotype of the gene.

4,405,713

PROCESS FOR THE PREPARATION OF OPTICALLY ACTIVE ANTHRACYCLINE GLYCOSIDES A AND B

Akiko Fujiwara, and Tatsuo Hoshino, both of Kamakura, Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 28, 1981, Ser. No. 334,620

Int. Cl.³ C12P *19/56;* C12R *1/465*

U.S. Cl. 435—78 **6 Claims**

1. A process for producing optically active anthracycline glycosides A and B with 7S-configuration comprising stereoselectively glycosidating an enantiomer with 7S-configuration starting from a racemic anthracyclinone by means of *Streptomyces galilaeus* OBB-111-848 (FERM-P No. 5316, ATCC 31598).

4,405,714

PRODUCTION OF N-SUBSTITUTED DERIVATIVES OF 1-DESOXYNOJIRIMICIN

Günther Kinast; Michael Schedel, and Wolfgang Koebernick, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

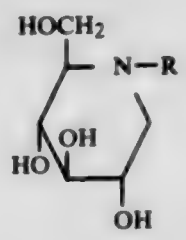
Filed Sep. 25, 1981, Ser. No. 305,656

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1980, 3038901

Int. Cl.³ C12P *19/26;* C07D *211/46*

U.S. Cl. 435—84 **9 Claims**

1. A process for the production of a compound of the formula

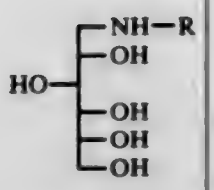


(I)

wherein

R denotes a hydrogen atom or an optionally substituted alkyl radical,

which comprises reacting glucose with a compound of the formula H_2N-R wherein R has the meaning given above to form a 1-amino-sorbitol of the formula



(IV)

wherein R has the meaning given above, reacting said 1-aminosorbitol with a compound providing a protective group which can be split off under acid conditions and is stable in the subsequent microbiological oxidation process, aerobically oxidizing the compound thus obtained microbiologically to give a protected 6-amino-sorbose, splitting off the protective group under acid conditions and hydrogenating the 6-aminosorbose salt thus obtained either after being isolated or in one operation, to give the compound of the formula (I).

4,405,715

ENZYMES IMMOBILIZED ON A SOLID SUPPORT CONTAINING CELLULOSE AND LIGNIN

Pierre Monsan, Toulouse, France, assignor to Beghin-Say, S.A., Thumeries, France

PCT No. PCT/FR80/00185, § 371 Date Dec. 18, 1980, § 102(e) Date Aug. 3, 1981, PCT Pub. No. WO81/01860, PCT Pub. Date Jul. 9, 1981

PCT Filed Aug. 3, 1981, Ser. No. 290,804

Claims priority, application France, Dec. 21, 1979, 79 31382

Int. Cl.³ C12P *19/02;* C12N *11/12, 11/06*

U.S. Cl. 435—105 **17 Claims**

1. In a process for preparing enzyme derivatives wherein the enzyme is fixed by a covalent bond onto a water-insoluble support by the steps of

(a) washing a support material having an oside fraction and containing essentially cellulose and more than 25% lignin with water;

(b) oxidizing the oside fraction of the support by controlled oxidation to provide aldehyde groups;

(c) condensing a diamine onto the aldehyde groups contained on the support provided by step (b) to provide an amine-supported bond; and

(d) stabilizing the amine-support bond by reduction to provide stabilized aminated groups, the improvement wherein

(i) activating the aminated groups with a dialdehyde to provide an activated support, and

(ii) coupling the enzyme onto the activated support with a covalent bond.

4,405,716

PROCESS FOR PREPARING 1-CARBA-2-PENEM-3-CARBOXYLIC ACID

Richard B. Sykes, Belle Mead, and Jerry S. Wells, Ringoes, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 23, 1982, Ser. No. 371,087

Int. Cl.³ C12P *17/18, 17/10, 7/40;* C12R *1/18*

U.S. Cl. 435—119 **4 Claims**

1. A process for the preparation of 1-carba-2-penem-3-carboxylic acid which comprises culturing aerobically *Erwinia carotovora* SC 12,637 A.T.C.C. No. 39048 or *Erwinia herbicola* SC 12,638 A.T.C.C. No. 39049 in a culture medium containing assimilable carbon and nitrogen sources until 1-carba-2-penem-3-carboxylic acid is accumulated, and then recovering the 1-carba-2-penem-3-carboxylic acid from the medium.

4,405,717

RECOVERY OF ACETIC ACID FROM A FERMENTATION BROTH

Branko Urbas, Darien, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Oct. 26, 1981, Ser. No. 314,627

Int. Cl.³ C07C *51/48, 51/50;* C12P *7/54*

U.S. Cl. 435—140 **20 Claims**

1. A process for the recovery of acetic acid from an aqueous solution of clacium acetate which comprises the steps of:

(a) adding a molar equivalent of a water-soluble tertiary amine carbonate to the calcium acetate solution to form a trialkylammonium acetate solution and a precipitate of calcium carbonate;

(b) concentrating the trialkylammonium acetate solution; and

(c) heating the concentrated trialkylammonium acetate solution to obtain acetic acid and the tertiary amine.

4,405,718

METHOD AND COMPOSITION FOR UROBILINOGEN CONTROL STANDARD

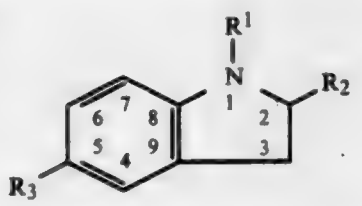
Myron C. Rapkin, Elkhart, Ind., and David L. Tabb, Beaumont, Tex., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jul. 20, 1981, Ser. No. 284,556

Int. Cl.³ G01N *33/48, 33/72*

U.S. Cl. 436—8 **11 Claims**

1. A method of preparing a substantially odor-free urobilinogen-free urobilinogen control standard for use in testing for the presence of urobilinogen in a urine sample which closely simulates the properties of a urobilinogen-containing urine sample when reacted with a urobilinogen assay system, which comprises dissolving a substituted indole having the formula:



wherein R_1 and R_2 are the same or different and are H or unsubstituted C_1-C_4 alkyl, and R_3 is H, unsubstituted C_1-C_4 alkyl, unsubstituted C_1-C_4 alkoxy, or halogen with the proviso that R_1, R_2 and R_3 cannot simultaneously be hydrogen, in a nonionic detergent selected from the group consisting of an alkanolamide, an ethoxy alkanolamide, and ethoxy phenol and an ethoxy fatty alcohol.

4,405,719

METHOD OF STABILIZING PLATELETS FOR DETERMINING MULTIPLE PLATELET PARAMETERS IN REFERENCE CONTROL AND CALIBRATOR COMPOSITIONS; DILUENTS THEREFOR; AND COMBINATION STABILIZATION PROCEDURES

Harold R. Crews, Miami; James H. Carter, II, Ft. Lauderdale, and Ted Sena, Miami, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed May 29, 1981, Ser. No. 268,050

Int. Cl.³ C09K *3/00;* G01N *33/48*

U.S. Cl. 436—10 **11 Claims**

1. A method for long term stabilization of blood platelets without the use of aldehydes or other cross-linking fixative agents for use in determining multiple platelet parameters in reference controls for electronic instrumentation, which method comprises adding to platelets in a suspending fluid a stabilizing solution which is an aqueous solution of:

(1) iodoacetamide in a concentration of approximately 0.5 to 2.0 g per liter; and

(2) one or more compounds selected from the group consisting of an iminodiacetic acid in a concentration of approxi-

mately 0.5 to 2.0 g per liter, and an equivalent weight of an alkali metal or alkaline buffer salt thereof, wherein the resultant media is maintained at a preselected range of pH and osmolality.

10. A hematology reference control media for determining multiple platelet parameters utilizing electronic instrumentation comprising a suspension of platelets which is stabilized by adding a stabilizing solution which is an aqueous solution of:

(1) iodoacetamide in a concentration of approximately 0.5 to 2.0 g per liter.

(2) one or more compounds selected from the group consisting of an iminodiacetic acid in a concentration of approximately 0.5 to 2.0 g per liter, and an equivalent weight of an alkali metal or alkaline buffer salt thereof, wherein the resultant media is maintained at a preselected range of pH and osmolality.

4,405,720

SILVER STAINS FOR PROTEIN IN GELS

Carl R. Merril, Rockville, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 240,577, Mar. 4, 1981, abandoned. This application Jan. 18, 1982, Ser. No. 339,886

Int. Cl.³ G01N *33/68*

U.S. Cl. 436—86 **16 Claims**

1. A silver stain method for polypeptides fixed in gels comprising the sequential steps without substantial non-ambient illumination of

photo-reversing the polypeptide-gel by treatment with an oxidizing agent,

forming a latent stain image by treating the polypeptide-gel with a photosensitive salt, and

developing the stain image by treating the polypeptide-gel with a reducing agent.

4,405,721

DIAGNOSTIC AGENT FOR THE DETECTION OF KETONE BODIES

Helmut Kohl, Wetter, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Mar. 20, 1981, Ser. No. 246,057

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011168

Int. Cl.³ G01N *33/16, 33/48, 33/64*

U.S. Cl. 436—128 **12 Claims**

8. A diagnostic agent as in claim 7 wherein said crown ether is 12-crown-4, 15-crown-5, 18-crown-6, dibenzo-18-crown-6, or dicyclohexano-18-crown-6.

4,405,722

SEALING GLASS COMPOSITIONS

Yoshinori Kokubu, Tokyo; Jiro Chiba; Nobuyoshi Ichimura, both of Yokohama; Takashi Iwai, Yachiyo, and Toshiyasu Kawaguchi, Yokohama, all of Japan, assignors to Asahi Glass Company Ltd. and Iwaki Glass Company Ltd., both of Tokyo, Japan

Filed Jan. 2, 1980, Ser. No. 109,079

Claims priority, application Japan, Jan. 23, 1979, 54-5542; Nov. 9, 1979, 54-144428

Int. Cl.³ C03C *3/12*

U.S. Cl. 501—15 **9 Claims**

1. In a sealing glass composition, used for sealing an alumina package containing a semiconductor integrated circuit, consisting essentially of low melting glass powder and refractory filler powder of low coefficient of thermal expansion, the improvement wherein said low melting glass has a composition consisting essentially of by weight %:

PbO	77.0–86.0
B_2O_3	6.0–15.0
ZnO	0.5–6.9
SiO_2	0.1–3.0
Al_2O_3	0–3.0
MgO, CaO, BaO, SrO	0–2.0
SnO_2	0–1.5
Li_2O, Na_2O, K_2O	0–1.0

wherein said refractory filler is cordierite in a proportion of 2–30% by weight of the total composition and optionally, β-eucryptite, β-spodumene, lead titanate or zircon in a proportion, respectively, not exceeding 15% by weight of the total composition wherein said sealing glass composition can achieve a matched seal to a material having a thermal expansion coefficient of $65-70\times10^{-7}$° C.$^{-1}$ (25°–400° C.) at a non-devitrified state by a heat-treatment at a temperature between 400° C. and 430° C. within a period of 10 minutes and wherein the weight loss of the composition, heat-treated at 400° to 430° C. for 10 minutes, is less than 100 mg/cm^2 when dipped in 5 wt. % nitric acid or 20 wt. % acetic acid for 10 minutes at 25° C.

4,405,723

CERAMIC FIBERS AND WOOLS AND A PROCESS FOR THEIR PRODUCTION

Adolf Kainzner; Wolfgang Gerger, both of Gmunden, and Walter Lukas, Innsbruck, all of Austria, assignors to Gmundner Zementwerke Hans Hatschek Aktiengesellschaft, Gmunden, Austria

Continuation-in-part of Ser. No. 194,826, Oct. 7, 1980, abandoned. This application Mar. 3, 1982, Ser. No. 354,447

Claims priority, application Austria, Oct. 8, 1979, 6558/79

Int. Cl.³ C03C *13/14*

U.S. Cl. 501—36 **36 Claims**

1. Ceramic fibers and wools produced from silicate-containing melts of the combusion residues of fossile fuels, said fibers and wools being characterized as comprising a melt of untreated fly ash heated to temperatures of from 700° to 1650° C.

4,405,724

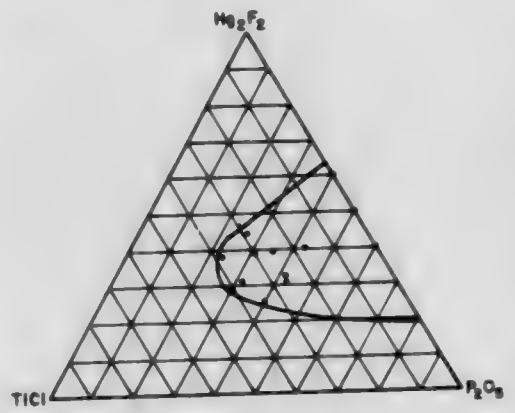
MERCURY THALLIUM FLUOROPHOSPHATE GLASSES

Paul A. Tick, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 4, 1982, Ser. No. 439,033

Int. Cl.³ C03C *3/16, 3/18*

U.S. Cl. 501—44 **6 Claims**



4. A mercury thallium fluorophosphate glass having a transition temperature not over 250° C., a refractive index greater than 1.6, and being resistant to a moisture attack, the glass composition, as calculated in mole percent from the glass batch, being within and to the right of the heavy line in the appended drawing.

5. A glass having a transition temperature not over 250° C., having a refractive index greater than 1.6, being resistant to

moisture attack, and the glass containing, in weight percent on an atomic basis as analyzed, 5 to 50% Hg, 5 to 15% P, up to 60% Tl, 0 to 15% other non-alkali metals, and 0.1 to 1.0% total F+Cl+N.

4,405,725

FOAMED POLYISOCYANURATES

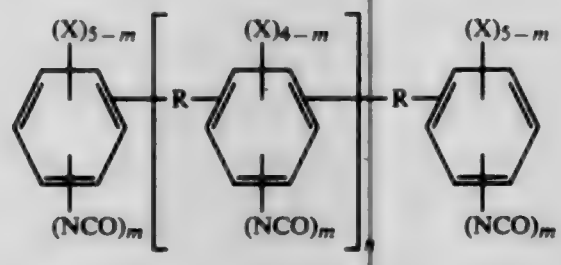
David L. Bernard, Pittsburgh; John K. Backus, Allison Park, and Anthony J. Doheny, Jr., Pittsburgh, all of Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 687,140, May 17, 1976, abandoned, which is a continuation of Ser. No. 829,145, May 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 625,635, Mar. 24, 1967, abandoned. This application Jul. 20, 1977, Ser. No. 817,308

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—112 **6 Claims**

1. A foamed polymer prepared by a process which comprises reacting a mixture of polyaryl alkylene polyisocyanates having the formula:



wherein R is an organic radical obtained by removing the carbonyl oxygen from an aldehyde or ketone, m is 1 or 2, X is halogen, lower alkyl or hydrogen and n is 0.1 to 1.5 with from about 2 to about 15 parts by weight of an organic compound per 100 parts of the polyisocyanate mixture, the organic compound containing from 2 to 4 hydroxyl groups as determined by the Zerewitinoff method and having a molecular weight of 350 to 10,000, in the presence of a foam stabilizer, a blowing agent and a catalyst which will trimerize isocyanate groups.

4,405,726

CATALYSTS AND BINDER SYSTEMS FOR MANUFACTURING SAND SHAPES

George S. Everett, Clarendon Hills, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Division of Ser. No. 217,451, Dec. 17, 1980, Pat. No. 4,366,267. This application Apr. 22, 1982, Ser. No. 370,984

Int. Cl.³ C08L *45/00*

U.S. Cl. 523—144 **4 Claims**

1. A method of preparing a core sand material adapted for the rapid manufacture of resin bound sand shapes, said method including treating a core sand material with a catalyst selected from the group consisting of aluminum perchlorate, cupric perchlorate and chromic perchlorate to form a treated core sand material, and thoroughly mixing said treated core sand material with an acid curable resin binder material to provide a curable core sand material capable of being cured in a core-making pattern.

4,405,727

REINFORCED POLYMER COMPOSITIONS AND THEIR PREPARATION

Thomas F. Brownscombe, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 25, 1981, Ser. No. 296,032

Int. Cl.³ C08K *3/34*; C08L *25/04*

U.S. Cl. 523—205 **17 Claims**

1. A reinforced thermoplastic composition comprising a thermoplastic polymer matrix having intimately distributed therein a chemically modified mineral reinforcing component, wherein said matrix is a non-elastomeric thermoplastic poly(-vinylarene) and said reinforcing component is a particulate or filamentary mineral polymer-reinforcing material having chemically bonded to its surface by covalent chemical bonding a thin layer averaging about 5–500 Angstrom in thickness of silicon-free and heavy metal-free organic molecules which contain at least a substantial segment capable of interacting with said matrix polymer to provide improved adhesion, said segment having an average molecular weight at least about one-sixth that of said matrix polymer.

4,405,728

COMPOSITIONS FOR ON-SITE MANNICH POLYMER PROCESS

Richard F. Krebs, LaGrange; Patrick J. Marek, Geneva, and Kenneth G. Phillips, River Forest, all of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jan. 15, 1982, Ser. No. 339,563

Int. Cl.³ C08J *3/06*; C08L *33/26*

U.S. Cl. 523—336 **9 Claims**

1. A method of rapidly preparing a dilute aqueous solution of poly N,N lower dialkylaminomethyl acrylamide and copolymers thereof having a molecular weight greater than 500,000 and a cationic charge of 1–9% which comprises:

A. forming a water-in-oil emulsion of a water-soluble acrylamide polymer containing at least 10% by weight of acrylamide, said water-in-oil emulsion contaning in weight percentages:
   (1) 5 to 60% polymer;
   (2) 5 to 75% organic hydrophobic liquid;
   (3) 0.1 to 21% low HLB water-in-oil emulsifying agent;
   (4) 2 to 90% water;

B. adding to the water-in-oil emulsion of step A a water-soluble salt of a secondary amine having alkyl groups contaning 1–3 carbon atoms in an amount so as to provide 0.1–1.1 moles of secondary amine for each mole of amide functionality on said polymer;

C. preparing a dry formaldehyde composition by mixing together:
   (1) paraformaldehyde;
   (2) dry alkalinity control agent;
   (3) water-soluble high HLB surfactant capable of inverting the water-in-oil emulsion of step A, the dry alkalinity control agent being present in an amount to provide from 0.5–1.5 moles of neutralization capability per mole of formaldehyde;

D. mixing together the water-in-oil emulsion containing the lower alkyl secondary amine salt with a quantity of the dry formaldehyde composition sufficient to provide from 0.1–1.1 mole of formaldehyde per mole of secondary amine and from 0.05–10% water-soluble surfactant based on the weight of water-in-oil emulsion used with a quantity of water, so as to obtain a 0.1–10% by weight aqueous solution of poly N,N-dialkylaminomethyl acrylamide.

4,405,729

PIGMENT GRIND WITH FUMED SILICA

Francis E. Schweitzer, Philadelphia, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 17, 1982, Ser. No. 389,286

Int. Cl.³ C08K *3/36*; C08L *67/02*

U.S. Cl. 523—466 **3 Claims**

1. In the process of formulating a pigmented coating composition, said composition comprising:
   (1) inorganic pigment,
   (2) a film-forming blend and a solvent for the blend,
   (3) an additive to provide pseudoplastic rheology to said composition, said additive comprising fumed silica,
   wherein said film-forming blend consists essentially of low molecular weight polyester oligomers, a curing agent for said oligomers, and optionally an epoxy resin or the ester of an epoxy resin and monocarboxylic acid, and said film-forming blend is present in an amount of at least 50% by weight of said composition,

the improvement wherein a co-dispersion of said inorganic pigment and at least a portion of said fumed silica is prepared and incorporated into said composition, said fumed silica being present in said co-dispersion in an amount sufficient to yield enhanced color stability to said composition.

4,405,730

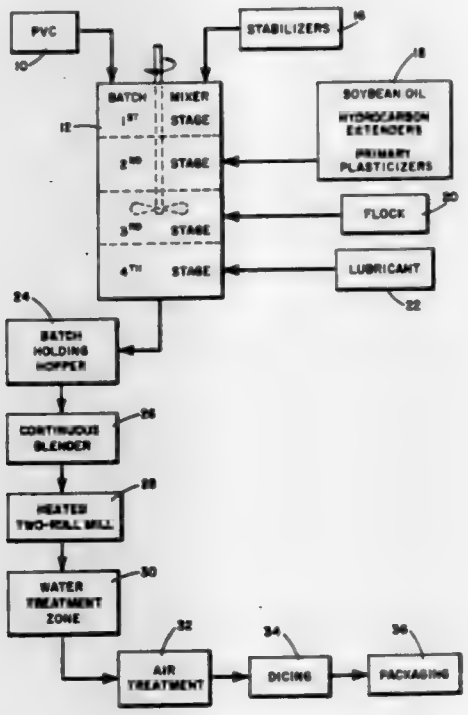
POLYVINYL CHLORIDE SHOE SOLE COMPOSITION

Arnold Cohen, Cohasset, Mass., assignor to Reichhold Chemicals, Incorporated, White Plains, N.Y.

Division of Ser. No. 87,712, Oct. 24, 1979, Pat. No. 4,343,727. This application Jun. 22, 1982, Ser. No. 390,879

Int. Cl.³ C08L *1/02, 1/08;* **A43B** *1/14, 13/04*

U.S. Cl. 524—35 **14 Claims**



1. A polyvinyl chloride based shoe sole formed from a molding composition, said molding composition having as a primary feature a dull non-glossy surface appearance, consisting of a polyvinyl chloride homopolymer resin containing essentially from 5 to 30 parts of a natural organic cellulosic fibrous flock homogeneously dispersed therein having an average length of from about 30 to about 300 microns, and from about 75 to about 100 parts of plasticizer and from about 0.5 to about 1.5 parts of a stabilizer, all based upon 100 parts of polyvinyl chloride homopolymer resin.

4,405,731

POLYCARBONATE-STARCH COMPOSITIONS

Russell P. Carter, Jr., New Martinsville, W. Va., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jan. 12, 1982, Ser. No. 339,012

Int. Cl.³ C08J *5/14;* **C08L** *3/00;* **C08K** *3/34;* **B32B** *27/36*

U.S. Cl. 524—47 **15 Claims**

1. A polycarbonate molding composition comprising an aromatic thermoplastic polycarbonate resin and between 0.025 and 1.0 phr of starch.

4,405,732

FLAME RETARDANT POLYAMIDE COMPOSITIONS

Li-Chung Chao, Grand Island, and Daniel J. Scharf, East Amherst, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation of Ser. No. 126,617, Mar. 3, 1980, abandoned. This application Mar. 15, 1982, Ser. No. 358,087

Int. Cl.³ C08K *5/47*

U.S. Cl. 524—83 **10 Claims**

1. A flame retardant nylon composition comprising a nylon polymer and about 0.5 to about 50 weight percent of a Zn, Mn, Ba, Ni, Co, Fe, Cu, Mo, or Cr metal salt of 2,5-dimercapto-1,3,4-thiadiazole and about 0.5 to about 25 weight percent of red phosphorus.

4,405,733

COMPOSITE QUASI-CRYSTALLINE MATERIAL

David J. Williams; Gerald R. Meredith, both of Fairport, and George R. Olin, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 3, 1981, Ser. No. 289,594

Int. Cl.³ C08L *35/02*

U.S. Cl. 524—87 **19 Claims**

1. A composite material which comprises:

(a) polar quasi-crystals of photochromic spiropyran complexes of the formula A_nB, wherein A represents the uncolored photochromic spiropyran molecule and B represents the colored merocyanine form which is the product from photo-induced ring opening of A at the spiro carbon atom, and n is 2 or 3; and

(b) a polymeric support matrix; said polar quasi-crystals being present within said polymeric support matrix in a substantially polar aligned form.

4,405,734

PROCESS FOR MASS COLORING THERMOPLASTIC PLASTICS

Otto Fuchs, Grabenstätt; Adolf Kroh, Selters, and Wolfgang Teige, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

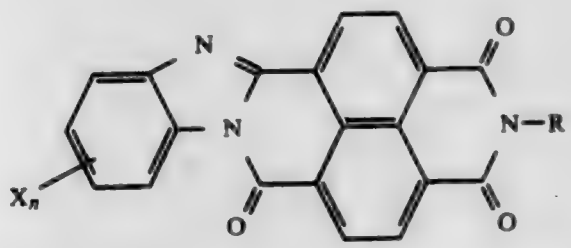
Filed Sep. 3, 1982, Ser. No. 414,812

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135328

Int. Cl.³ C08L *77/00, 67/02*

U.S. Cl. 524—90 **4 Claims**

1. A process for coloring water-insoluble thermoplastic plastics with dyestuffs of the formula



in which R denotes alkyl having 3 to 18 carbon atoms, hydroxyalkyl, alkoxyalkyl, hydroxyalkoxyalkyl, alkoxyalkoxyalkyl, carbalkoxyalkyl, carboxyalkyl or phenylalkyl having in each case 1 to 14 carbon atoms in the alkyl and alkoxy part respectively, X denotes halogen, alkyl, alkoxy, acylamino, acyl, carboxyl, carbalkoxy, carbamoyl, mono- or dialkylcarbamoyl, sulfamoyl, mono- or dialkylsulfamoyl having in each case up to 8 carbon atoms in the radicals, nitro or cyano, and n is 0 to 3, with the X substituents being identical or different, which comprises adding these dyestuffs to the melt of the thermoplastic plastic or to its precursors.

4,405,735

SUBSTITUTED DIAZASPIRODECANES, THEIR PREPARATION AND THEIR USE AS STABILIZERS FOR ORGANIC POLYMERS, AND THE POLYMERS THUS STABILIZED

Hartmut Wiezer, Gersthofen; Gerhard Pfahler, Augsburg, and Helmut Korbanka, Adelsried, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

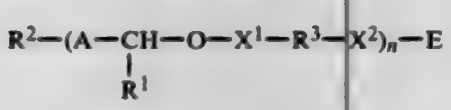
Filed Feb. 3, 1982, Ser. No. 345,250

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1981, 3104294

Int. Cl.³ C07D *498/10*; C08K *5/35*; C08L *79/04*

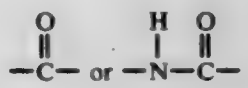
U.S. Cl. 524—95 **4 Claims**

1. A compound of the general formula (I)

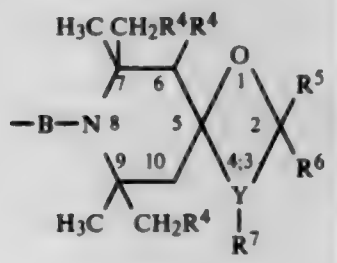


(I)

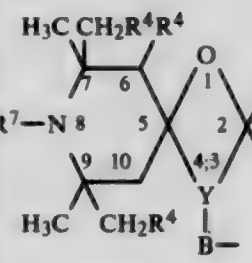
wherein n is an integer from 1 to 100, X^1 and X^2 are either identical and represent a bond or



in which n is 1, are different, in which case X^2 then has no meaning, R^1 is, if A is a group of formula (Va), hydrogen, C_1 to C_{30} alkyl, phenyl or otherwise a group of the formula (IIa) or (IIb)

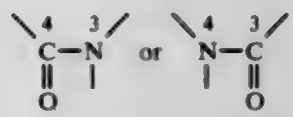


(IIa)

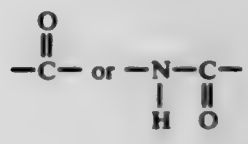


(IIb)

in which formulae Y is a radical



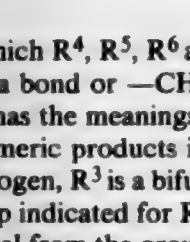
which occupies the ring positions 3;4, B is methylene, R^4 denotes hydrogen or methyl, R^5 and R^6 are identical or different and denote hydrogen, C_1 to C_{18} alkyl, phenyl which is unsubstituted or substituted by chlorine or C_1 to C_4 alkyl, or C_7 to C_{14} aralkyl which is unsubstituted or substituted by C_1 to C_4 alkyl, or, together with the carbon atom linking these radicals, form a C_5 to C_{12} cycloalkyl ring which is unsubstituted or substituted by up to four C_1 to C_4 alkyl groups, or form a piperidine ring which is unsubstituted or substituted by up to four C_1- to C_4-alkyl groups, R^7 denotes a hydrogen atom or a C_1 to C_4 alkyl group and R^2 is, if R^1 denotes a group of formula (IIb) and A denotes a bonding or A is a group of formula (Va), hydrogen or C_1 to C_{30} alkyl or phenyl, or otherwise a group of the formulae (II), or hydrogen in case of A=—CH_2O—, or a



group which is substituted by C_1 to C_{18} alkyl, C_5 or C_6 cycloalkyl or phenyl and which has



linked to A, or C_2 to C_{18} alkylene, or phenylene which is unsubstituted or substituted by up to two C_1 to C_4 alkyl groups, or C_7 to C_{14} aralkylene or α,ω-dicarboxy-C_1 to-C_8 alkylene or a dicarboxy-C_6 ring or a radical>N-alkyl having 1 to 6 C atoms or a group of the formula (III)



(III)

in which R^5 and R^6 have the meanings indicated above, or an isocyanuric acid radical or a nitrogen atom or a

radical, R^3 represents hydrogen if X^1, X^2 and E have no meaning, or, if X^2 and E have no meaning, represents C_1 to C_{18} alkyl or phenyl, which is unsubstituted or substituted by chlorine, hydroxyl, amino or C_1 to C_4 alkyl, C_7 to C_{14} aralkyl or C_5 or C_6 cycloalkyl or denotes C_2 to C_{12} alkylene or phenylene which is unsubstituted or substituted by one to four C_1 to C_4 alkyl groups, or denotes C_7 to C_{14} aralkylene, A represents a bond or —CH_2— or —OCH_2— having —O— linked to R^2, or a group of the formula (IV)

(IV)

in which Q represents a radical (IIa) or (IIb), B^1 is a bond or —O— and R^8 has the same meaning as R^2, free valences being saturated by the group

or A represents a group of the formula (Va)

(Va)

in which R^4, R^5, R^6 and Y have the meanings indicated above, Z is a bond or —CH(OH)— and R^9 represents an OH group and has the meanings of R^1, and m is 0 or 1, in oligomeric or polymeric products in which n>1 R^2, as a terminal group, is hydrogen, R^3 is a bifunctional or trifunctional radical, from the group indicated for $R^3$and A has the meaning of a bifunctional radical from the group indicated for A, and E is a group of the formula R^2—A—CH(R^1)-O-wherein R^1, R^2 and A have the meanings indicated above, or E has no meaning, and at least in formula I one of the radicals R^1, R^2 or A contains a diazaspira-

decane system of the formulae (II) or (V), or E is a terminal group which can be a lower alkyl ester, —NCO or halogen.

4. Synthetic polymers which have been stabilized against UV light decomposition and which contain 0.01 to 5 parts by weight, relative to the polymer, of a stabilizer as claimed in claim 1.

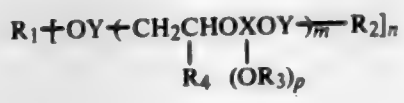
4,405,736

2,2,6,6-TETRAMETHYL-4-PIPERIDYL SPIRO ALIPHATIC ETHERS AND STABILIZERS FOR SYNTHETIC POLYMERS

Naohiro Kubota, Ageo; Toshihiro Shibata, Omiya; Kazuo Sugibuchi, Tokyo, and Yutaka Nakahara, Iwatsuki, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

Filed Jun. 9, 1981, Ser. No. 271,888
Claims priority, application Japan, Jun. 23, 1980, 55-84714
Int. Cl.³ C07D *491/113;* C08K *5/34, 5/35*
U.S. Cl. 524—102 44 Claims

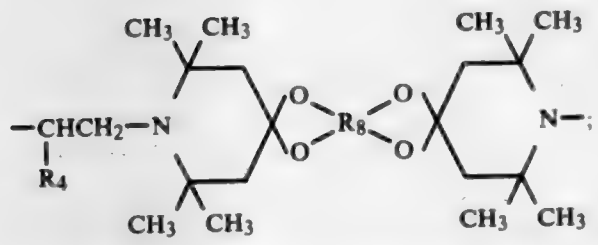
1. A compound having the formula:



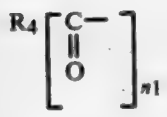
(I)

wherein:

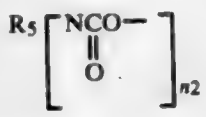
Y is



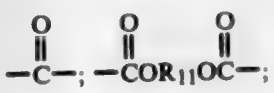
X is selected from the group consisting of alkylene having from one to about eighteen carbon atoms; cycloalkylene having from three to about eight carbon atoms; phenylene and biphenylene which when substituted with OR_3 have up to about eighteen carbon atoms; polyacyl



wherein n_1 is a number from 2 to 4; polycarbamoyl

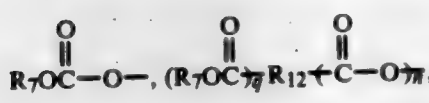


wherein n_2 is a number from 2 to 4;

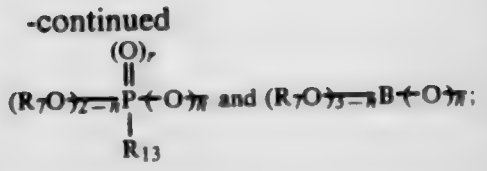


and di- and trivalent phosphorous acid, phosphoric acid, phosphonous acid, phosphonic acid, boric acid and silicic acid groups;

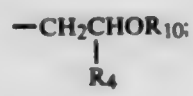
R_1 is selected from the group consisting of hydrogen,



-continued



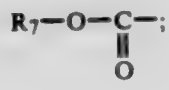
R_2 is selected from the group consisting of hydrogen and



R_3 is selected from the group consisting of alkyl having from one to about eighteen carbon atoms; cycloalkyl having from three to about eight carbon atoms; phenyl; alkylphenyl having from about seven to about eighteen carbon atoms; and —X—O—R_1;

R_4 is selected from the group consisting of hydrogen; alkyl having from one to about eighteen carbon atoms; cycloalkyl having from three to about eight carbon atoms; phenyl; and alkylphenyl having from seven to about eighteen carbon atoms;

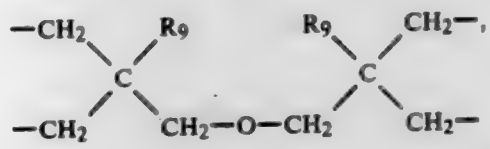
R_5 is selected from the group consisting of alkyl having from one to about eighteen carbon atoms; cycloalkyl having from three to about eight carbon atoms; phenyl; alkylphenyl having from seven to about eighteen carbon atoms;

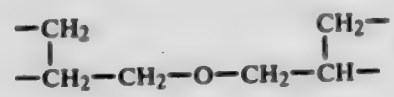


and monovalent phosphorous acid, phosphoric acid, phosphonous acid, phosphonic acid, boric acid and silicic acid groups;

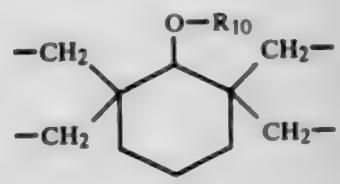
R_7 is selected from the group consisting of alkyl having from one to about eighteen carbon atoms; phenyl; alkylphenyl and cycloalkylphenyl having up to about fifty carbon atoms;

R_8 is selected from the group consisting of



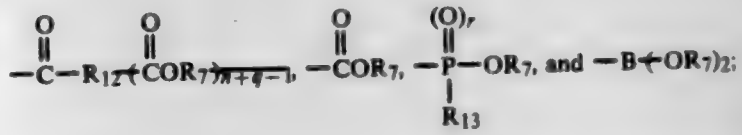


and



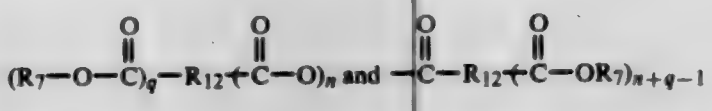
R_9 is selected from the group consisting of alkyl having from one to about eighteen carbon atoms; cycloalkyl having from three to about eight carbon atoms; and —CH_2OR_{10};

R_{10} is selected from the group consisting of hydrogen,



R_{11} is selected from the group consisting of alkylene and oxyalkylene having from two to about ten carbon atoms and from zero to about five oxyether groups; cycloalkylene having from three to about eight carbon atoms; and

phenylene, alkylphenylene, and bis(phenylene) and bis(alkylphenylene) having the phenylene linked by a member selected from the group consisting of oxo, thio, alkylene having from one to nine carbon atoms, alkylidene having from three to four carbon atoms, cyclohexylidene and benzylidene; and isocyanurate;



from the group consisting of R_7 esters having q or n+q−1 R_7 ester groups of mono-, di-, tri- or tetracarboxylic acids selected from the group consisting of aliphatic mono, di, tri and tetracarboxylic acids having from one to about eighteen carbon atoms and such acids substituted with a group selected from hydroxyl, keto, amino, imino, mercapto and alkyl hydroxy phenyl groups; benzoic acid; toluic acid; benzoic acid substituted with a group selected from alkyl and hydroxyl groups; trimellitic acid; nicotinic acid; isonicotinic acid; 2,2,6,6-tetramethyl piperidine-4-carboxylic acid, 3,8,8,10,10-pentamethyl-9-aza-1,5-dioxaspiro-[5,5]-undecane-3-carboxylic acids; phthalic acid; tetrahydrophthalic acid; isophthalic acid; terephthalic acid; endomethylene tetrahydrophthalic acid; thiophene dicarboxylic acid; furane dicarboxylic acid; and dicarboxyethyl piperidine;

R_{13} is selected from the group consisting of hydrogen, R_5, and —O—R_5;

m is a number from zero to 10;

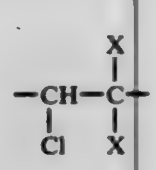
n is a number from zero to 4;

p is zero or 1;

q is a number from zero to 3; and

r is zero or 1.

35. A polyvinyl chloride resin composition having improved resistance to deterioration when heated at 350° F., comprising a polyvinyl chloride resin formed at least in part of the recurring group:



and having a chlorine content in excess of 40%, where X is either hydrogen or chlorine; and a 2,2,6,6-tetramethyl-4-piperidyl spiro aliphatic ether in accordance with claim **1**.

4,405,737

N-2-HYDROXYPROPYL PIPERIDINES AND COMPOSITIONS THEREOF

Bunji Hirai, Kuki; Naohiro Kubota, Ageo, and Kazuo Sugibuchi, Tokyo, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

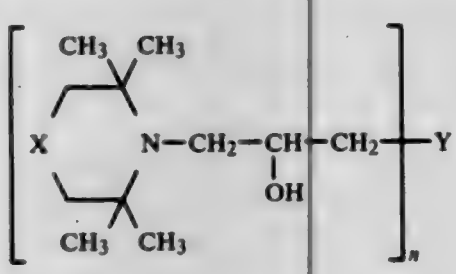
Filed Feb. 5, 1982, Ser. No. 346,424

Claims priority, application Japan, Feb. 17, 1981, 56-22039

Int. Cl.³ C08K *5/45*; C07D *211/22*

U.S. Cl. 524—102 **35 Claims**

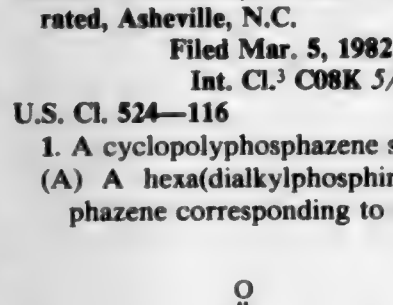
1. An N-2-hydroxypropyl piperidine having the formula:



(I)

wherein

X is selected from the group consisting of



wherein

R_1 is selected from the group consisting of hydrogen; alkyl; alkenyl; cycloalkyl; alkaryl; hydroxyalkyl; oxyalkyl; carboxylic acyl; and aroyl, all of the preceding having from one to about eighteen carbon atoms;

R_2 and R_3 are each selected from the group consisting of alkyl, alkenyl, cycloalkyl, alkaryl, hydroxyalkyl, oxyalkyl and haloalkyl having from one to about eighteen carbon atoms;

R_4, R_5 and R_6 each are selected from the group consisting of hydrogen, alkyl, alkenyl, cycloalkyl, alkaryl, hydroxyalkyl, oxyalkyl and haloalkyl having from one to about eighteen carbon atoms; and —CH_2—O—R_1;

n is 1 or 2; and

Y, when n is 1, is hydroxy or

and when n is 2, is oxy—O—.

30. An olefin polymer composition having improved resistance to deterioration by light comprising an olefin polymer selected from the group consisting of polymers of alpha-olefins having from two to six carbon atoms and polystyrene, and an amount to enhance the resistance of the polymer to deterioration of an N-2-hydroxypropyl piperidine compound in accordance with claim **1**.

4,405,738

FLAME RETARDANT ADDITIVES AND FLAME RETARDANT POLYESTER COMPOSITIONS

Gerald W. McNeely, Arden, N.C., assignor to Akzona Incorporated, Asheville, N.C.

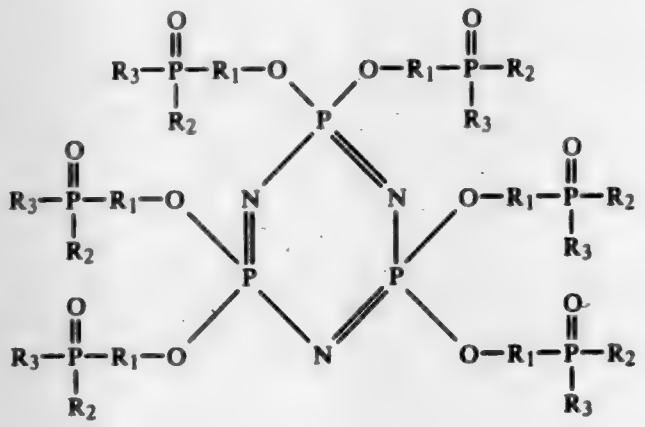
Filed Mar. 5, 1982, Ser. No. 354,981

Int. Cl.³ C08K *5/51*; C08L *85/02*

U.S. Cl. 524—116 **23 Claims**

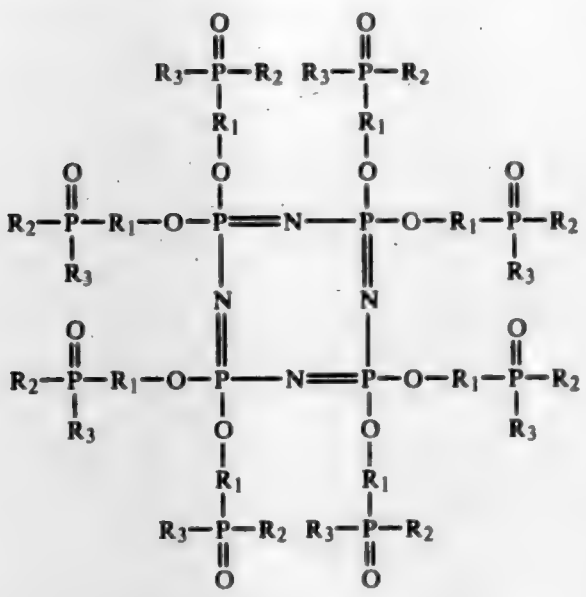
1. A cyclopolyphosphazene selected from the group of

(A) A hexa(dialkylphosphinylmethyleneoxy)cyclotriphosphazene corresponding to the formula:



and

(B) An octa(dialkylphosphinylmethyleneoxy)cyclotetraphosphazene corresponding to the formula:



where R_1 is $—CH_2—$ and each R_2 and R_3 is independently a C_1-C_4 lower alkyl or substituted alkyl group.

4,405,739

POLYPHENYLENE ETHER RESINS AND COMPOSITIONS HEAT STABILIZED WITH PHOSPHITE COMPOUNDS

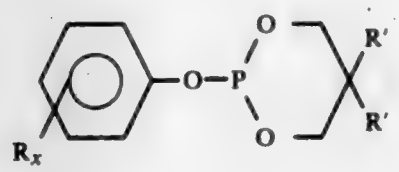
Philip L. Kinson, Rexford, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Nov. 17, 1981, Ser. No. 322,225

Int. Cl.³ C08K *5/52*

U.S. Cl. 524—117 **9 Claims**

1. A thermoplastic composition which comprises an intimate admixture of a polyphenylene ether resin with an effective amount of a thermal oxidative stabilizing agent selected from among compounds having the formula:



in which x is 0 or an integer of from 1 to 5 representing the number of substituents on the phenyl ring; R is independently hydrogen, alkyl having 1 to 10 carbon atoms, halogen or hydroxyl; and R′ is independently hydrogen, or (lower) alkyl having from 1 to 6 carbon atoms.

4,405,740

POLYARYLENE SULPHIDE COMPOSITIONS

Glyndwr J. Davies, Southall, England, assignor to The Glacier Metal Company Limited, Middlesex, England

PCT No. PCT/GB81/00127, § 371 Date Mar. 3, 1982, § 102(e) Date Mar. 3, 1982, PCT Pub. No. WO82/00153, PCT Pub. Date Jan. 21, 1982

PCT Filed Jul. 2, 1981, Ser. No. 355,741

Claims priority, application United Kingdom, Jul. 4, 1980, 8022066

Int. Cl.³ G08K *5/09*

U.S. Cl. 524—287 **7 Claims**

1. A composition of matter comprising a polyarylene sulphide having a molecular weight of between 5,000 and 17,500 intimately admixed with an aryl ester of an aryl alcohol in an amount sufficient to solvate said polyarylene sulphide.

4,405,741

FAST CRYSTALLIZING POLYALKYLENETEREPHTHALATE RESIN COMPOSITIONS

Chung J. Lee, Sheboygan, Wis., assignor to Plastics Engineering Company, Sheboygan, Wis.

Filed Sep. 20, 1982, Ser. No. 420,569

Int. Cl.³ C08K *5/12, 5/06;* C08L *67/02*

U.S. Cl. 524—299 **15 Claims**

1. A fast crystallizing molding composition comprising essentially:

a. a polyalkyleneterephthalate in which the alkylene group has 2-4 carbon atoms;

b. a complex of NaSCN and a polymeric compound having at least two recurring units having the formula $—CH_2C-H_2O—$, the amount of said complex being enough to give a proportion of 0.05-4 percent by weight of NaSCN based on the weight of said polyalkyleneterephthalate.

4,405,742

PROCESS FOR THE PRODUCTION OF HIGH MOLECULAR WEIGHT POLYCHLOROPRENE AND ITS USE AS A STARTING MATERIAL FOR ADHESIVES

Rüdiger Musch; Rüdiger Schubart, both of Berg-Gladbach; Wilhelm Göbel, Leverkusen; Heinrich Alberts, Cologne, and Gerhard Hohmann, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

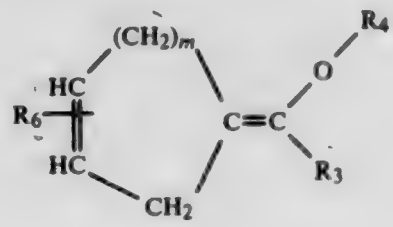
Filed Jun. 30, 1981, Ser. No. 280,018

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1980, 3025076; Jul. 2, 1980, 3025077; Jul. 12, 1980, 3026502

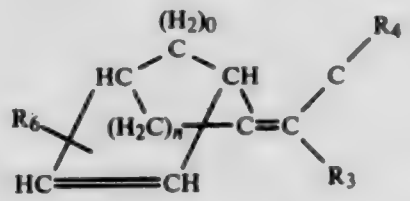
Int. Cl.³ C09J *3/12;* C08F *2/38, 2/24*

U.S. Cl. 524—315 **8 Claims**

1. A process for the production of high molecular weight polychloroprene having a viscosity in the range of from 80 to 200 MU by polymerizing chloroprene with from 0 to 20% by weight of a comonomer copolymerizable therewith in aqueous emulsion in the presence of a regulator at a temperature of from 0° to 60° C. up to a monomer conversion of from 50 to 96%, characterized in that a compound of the formula



or a compound of the formula



is added in a quantity of from 0.05 to 3% by weight, based on 100 parts by weight of monomer, at the beginning of the reaction, during or after polymerization but at the latest before residual monomers are removed, m being a number of from 1 to 8; n being a number of from 1 to 7; o being a number of from 1 to 4; R_3 being hydrogen, C_1-C_{19}-alkyl, C_2-C_{19}-alkenyl, phenyl, C_1-C_4-alkylene phenyl, acryl, formyl or acetyl; R_4 being C_1-C_{19}-alkyl, C_2-C_{19}-alkenyl, phenyl, C_1-C_4-alkylene phenyl, acryl, C_5-C_{12}-cycloalkyl or C_5-C_{12}-cycloalkenyl and R_6 being hydrogen, C_1-C_5-alkyl or C_2-C_5-alkenyl.

4,405,743

PYRAZOLYLPYRIMIDINE DERIVATIVES

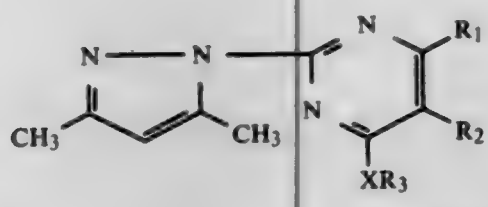
Tamio Nishimura, Sagamihara; Yoshiko Miyamoto, Kawasaki; Hiroshi Ohyama, Chigasaki; Hiroshi Yamamura, Oiso; Ken Morita, Atsugi; Kuniomi Matsumoto, Machida, and Tetsuro Watanabe, Yokohama, all of Japan, assignors to Hokko Chemical Industry Co., Ltd. and Meiji Seika Kaisha Ltd., both of Tokyo, Japan

Continuation of Ser. No. 71,691, Aug. 31, 1979, abandoned. This application Oct. 15, 1981, Ser. No. 311,655

Int. Cl.[3] A61K *31/505;* C07D *403/04*

U.S. Cl. 424—321 2 Claims

2. A fungicide composition comprising as active ingredient, a fungicidally effective amount of a pyrazolylpyrimidine of the formula



wherein R_1 is hydrogen or C_{1-6} alkyl, R_2 is hydrogen or C_{1-4} alkyl, X is oxygen or sulfur and R_3 is lower alkyl, phenyl or phenyl substituted with from 1 to 3 substituents selected from the group consisting of halogen, C_{1-4} alkyl, methoxy, methylthio, cyano, nitro, trifluoromethyl and carbethoxy; provided that when R_1 is C_{1-6} alkyl, R_2 is C_{1-4} alkyl and X is sulfur, R_3 is ethyl or when R_1 is C_{1-6} alkyl, R_2 is hydrogen and X is oxygen, R_3 is said substituted phenyl in a suitable carrier.

4,405,744

FILLER FOR PAPER, CARD OR BOARD, A PROCESS FOR ITS MANUFACTURE, AND PAPER, CARD OR BOARD CONTAINING THE FILLER

Herbert Greinecker, Hallein, and Gerhard Stern, Linz, both of Austria, assignors to Chemie Linz Aktiengesellschaft, Austria

Filed May 20, 1981, Ser. No. 265,570

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1980, 3020854

Int. Cl.[3] C08L *61/10, 33/26*

U.S. Cl. 524—423 7 Claims

1. A filler for paper, card or board, which has a good retention comprising a substantially water insoluble, white and inorganic core material and a hydrophilic coating in an amount of 0.5 to 10% by weight, consisting of a polyacrylamide or its mixture with a urea-formaldehyde condensation resin, wherein the molar ratio of urea:formaldehyde is at least 1:1.2, said polyacrylamide having a molecular weight of 10^5 to 10^7 and having been made water-insoluble by crosslinking to an extent that it is able to swell and to become tacky in the presence of water.

4,405,745

POLYMER STABILIZATION

Ronald D. Mathis, and Jerry O. Reed, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 24, 1982, Ser. No. 422,786

Int. Cl.[3] C08K *3/28*

U.S. Cl. 524—429 12 Claims

1. A polymer composition exhibiting improved heat stability comprising an arylene sulfide polymer containing an effective stabilizing amount sufficient to retard polymer curing and cross-linking of at least one alkaline earth metal nitrite.

4,405,746

AQUEOUS, ADHESIVE COATING COMPOSITION WITH A NON-SELF-CROSSLINKABLE ELASTOMER FOR USE WITH FILAMENTARY MATERIALS

Mikhail M. Girgis, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 27, 1981, Ser. No. 238,725

Int. Cl.[3] C08L *61/10*

U.S. Cl. 524—501 17 Claims

1. An aqueous adhesive coating composition for treating filamentary materials to reinforce elastomeric matrix materials, comprising:

A. a vinyl-pyridine-containing elastomeric latex selected from the group consisting of an elastomeric copolymer latex produced from a vinyl pyridine-containing monomer and 1,3-diene hydrocarbon monomer and an elastomeric terpolymer latex produced from vinyl pyridine-containing monomer, 1,3-diene hydrocarbon monomer and a vinyl-containing monomer,

B. phenolic aldehyde condensate polymer,

C. non-self-crosslinkable elastomeric homopolymer or interpolymer latex wherein the elastomer has been formed by the reaction of 1,3-diene hydrocarbon monomers, and where the elastomeric latex has a gel content of less than 40% and an average particle size of less than around 2000 angstroms present in the coating composition in a predominant amount over the amount of the vinyl pyridine-containing copolymer or terpolymer,

D. carboxylated butadiene-styrene copolymer present in the amount of about 0.5 to about 3 weight percent of the dried solids of the aqueous coating composition,

E. and water.

4,405,747

AQUEOUS POLYVINYL ESTER DISPERSION, PROCESS FOR ITS PREPARATION, AND THE USE

Werner Ehmann, Frankfurt am Main, and Helmut Rinno, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 13, 1982, Ser. No. 367,883

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1981, 3115163

Int. Cl.[3] C08F *18/08;* C08L *31/02;* C08J *3/06;* C09J *3/14*

U.S. Cl. 524—503 4 Claims

1. An aqueous polyvinyl ester dispersion having a solids content of 40 to 70 percent by weight, in which a part of the solids is a waxy, fatty or oily additive, which dispersion consists essentially of 5 to 60 percent by weight of a waxy, fatty or oily additive and 3 to 15 percent by weight (relative to the total amount of polyvinyl ester and additive) of a polyvinyl alcohol which has a degree of hydrolysis of 65 to 99.5 mole percent and which has, at a 4 percent by weight strength aqueous solution, a viscosity of 2 to 50 mPa.s, measured at a temperature of 20° C.

4,405,748

HIGH-IMPACT POLYAMIDE MOULDING COMPOSITIONS

Werner Nielinger, Krefeld; Christian Lindner, Cologne; Ulrich Grigo, Krefeld; Rudolf Binsack, Krefeld; Friedrich Fahnler, Krefeld, and Bert Brassat, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 26, 1981, Ser. No. 278,337

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1980, 3025606

Int. Cl.[3] C08L *77/00;* C08K *3/40*

U.S. Cl. 524—504 6 Claims

1. A thermoplastic moulding composition comprising:

(I) from more than 35 to less than 99% by weight of polyamide; and

(II) from more than 1 to less than 65% by weight of a graft product produced from

(a) 70 to 95% by weight of a cross-linked (co)polymer of butadiene and/or substituted butadiene, which consists of at least 95% by weight of optionally substituted butadiene units, as the graft substrate and

(b) 5 to 30% by weight of methyl methacrylate as graft monomer,

the gel content of the graft substrate amounting to ≧70%, as measured in toluene, the grafting yield G to ≧0.15 and the average particle diameter of the graft copolymer to between 0.2 and 0.6μ; optionally

(III) from 10 to 60% by weight, based on the total moulding composition, of reinforcing materials; and optionally

(IV) standard auxiliaries and additives,

the total sums of I to IV and of (a) and (b), respectively, amounting always to 100% by weight.

4,405,749

THERMOPLASTIC ELASTOMER COMPOSITIONS

Suzanne B. Nelsen, Bergenfield, N.J., assignor to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 196,958, Oct. 14, 1980, Pat. No. 4,355,155. This application Jun. 4, 1982, Ser. No. 385,165

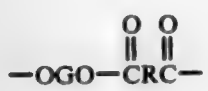
The portion of the term of this patent subsequent to Oct. 19, 1999, has been disclaimed.

Int. Cl.³ C08K *5/34*; C08L *67/02*

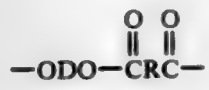
U.S. Cl. 524—100 **7 Claims**

1. White thermoplastic elastomer composition consisting essentially of:

(a) segmented thermoplastic copolyester elastomer consisting essentially of a multiplicity of recurring long chain ester units and short chain ester units joined head to tail through ester linkages, said long chain units being represented by the formula



and said short chain units being represented by the formula



where G is a divalent radical remaining after the removal of the terminal hydroxyl groups from a difunctional polyether glycol having a molecular weight in the range from about 400 to about 6,000, R is a hydrocarbon radical remaining after removal of the carboxyl groups from terephthalatic acid or isophthalic acid, and D is a divalent radical remaining after removal of hydroxyl groups from 1,4 butanediol or 1,4 butenediol; provided,

(i) said short chain segments amount to between about 30% and about 85% by weight of the copolyester, and

(ii) between about 10% and about 40% of the D groups represent divalent radicals remaining after removal of hydroxyl groups from 1,4 butenediol; and

(b) between about 0.1% and about 5% by weight of said copolyester of 3,5-di-tert-butyl-4-hydroxyhydrocinnamic acid triester with 1,3,5-tris-(2-hydroxyethyl)-s-triazine-2,4,6-(1H, 3H, 5H) trione.

4,405,750

COLORED CYANOACRYLATE ADHESIVE COMPOSITION

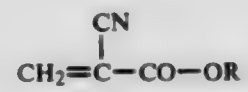
Tiaki Nakata, Ibaraki; Noriyuki Kawazoe, Motomachi, and Toshio Takenaka, Toyono, all of Japan, assignors to Sumitomo Chemical Company, Ltd. and Taoka Chemical Company, Ltd., both of Osaka, Japan

Filed Sep. 13, 1982, Ser. No. 417,155

Int. Cl.³ C08L *33/14*

U.S. Cl. 524—717 **4 Claims**

1. An adhesive composition comprising an α-cyanoacrylate having the formula,



wherein R is a C_1–C_{16} alkyl, C_2–C_6 alkenyl, C_1–C_6 alkoxy C_2–C_4 alkyl, tetrahydrofurfuryl, phenyl or cyclohexyl group, and at least one dye selected from the group consisting of C.I. Solvent Green 5, C.I. Acid Red 50 and C.I. Acid Red 52.

4,405,751

AQUEOUS AMINOPLASTIC RESIN DISPERSIONS

Hanns P. Müller, Odenthal; Kuno Wagner, Leverkusen; Peter Mummenhoff, Cologne; Gottfried Wallpott, Neuss, and Karl-heinz Scheuss, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

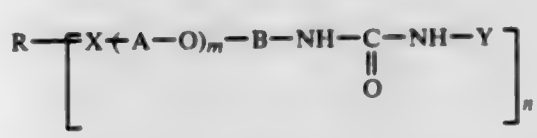
Filed Mar. 8, 1982, Ser. No. 355,644

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1981, 3112435

Int. Cl.³ C08L *61/28*

U.S. Cl. 524—720 **9 Claims**

1. Aqueous dispersions of aminoplastic resins obtained by condensation of aldehydes with aminoplastic resin formers in aqueous medium, in the presence of water-soluble compounds of the formula



(I)

wherein

R represents an n-valent hydrocarbon radical,

X represents O, NR′, —CONH— or —COO—,

A represents a similar or different alkylene radical,

B represents —CHR′— or —OC—NH—Z—,

Y represents H or an optionally substituted alkyl radical,

R′ represents H, lower alkyl or phenyl and

Z represents a radical such as that formed by removal of the isocyanate groups from an organic diisocyanate,

n represents an integer from 1 to 6 and

m represents an integer from 5 to 100.

4,405,752

PROCESS FOR PRODUCING FIBER-REINFORCED MOLDED PRODUCTS

Klaus Recker, Cologne; Gerd Reinecke, Bergisch-Gladbach; Albert Awater, Odenthal; Gerhard Grögler, and Karl J. Kraft, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 30, 1980, Ser. No. 192,389

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1979, 2941051

Int. Cl.³ C08L *75/04*

U.S. Cl. 524—847 **10 Claims**

1. A process for the production of fiber-reinforced molded products, comprising:

(1) mixing at a temperature of from 10° to 50° C.,

(a) 7 to 35% by weight of a polyisocyanate having a melting point above 100° C., and
(b) 14 to 35% by weight of a polyisocyanate which is liquid at the reaction temperature of mixing with
(c) 43 to 62% by weight of one or more compounds having molecular weights of 300 to 10,000 containing 2 to 8 hydroxyl groups, and
(d) 3 to 10% by weight of a chain-lengthening agent having a molecular weight of 62 to 250 containing 2 to 4 hydroxyl groups,
(e) 0 to 5% by weight of a compound having a molecular weight below 1,000 containing from 2 to 4 amino groups or an equivalent quantity of water,
(f) 0 to 5% by weight of a molecular sieve of the sodium aluminum silicate type, and
(g) 0 to 5% by weight of one or more activators,
all percentages being based on the total weight of (a) through (g), and components (b) through (e) being liquid at the chosen reaction temperature of mixing and having an average functionality of isocyanate-reactive groups of 2.5 to 3.5, the equivalent ratio of isocyanate groups in component (b) to isocyanate-reactive hydrogen atoms in components (c) through (e) being from 0.4:1 to 0.85:1 and the equivalent ratio of isocyanate groups in component (a) to isocyanate-reactive hydrogen atoms in components (c) through (e), taking into account any masked isocyanate groups being from 0.15:1 to 1.2:1, with the proviso that the average functionality of components (c) through (e) should be at least 2.65 when the first-mentioned equivalent ratio is less than or equal to 0.65:1 and not more than 3.0 when the equivalent ratio is greater than or equal to 0.70:1;
(2) adding a fiber material having a fiber length of from 10 to 100 mm; and
(3) after storing for from one hour to four days, curing and shaping the molding compound at a temperature above 90° C. and at a pressure of from 20 to 300 bars.

4,405,753
POLYBLENDS
Gary L. Deets, and Quiriano A. Trementozzi, both of Springfield, Mass., assignors to Monsanto Company, St. Louis, Mo.
Filed Feb. 3, 1982, Ser. No. 345,286
Int. Cl.³ C08L *61/04*
U.S. Cl. 525—68 **4 Claims**

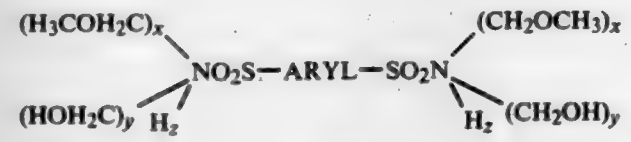
1. A polyblend comprising:
A. from 40 to 60% by weight of a polyphenylene oxide;
B. from 10 to 30% by weight of a polymer comprising: from 2 to 15% by weight of an unsaturated nitrile monomer; from 65 to 94% by weight of a vinylaromatic monomer; and from 5 to 20% by weight of a rubber having a glass transition temperature below 0° C.; and
C. from 10 to 30% by weight of a polymer comprising from 2 to 18% of an ethylenically unsaturated dicarboxylic acid anhydride, from 95 to 65% by weight of a vinylaromatic monomer, and from 0 to 12% by weight of a rubber having a glass transition temperature below 0° C.; in which
(i) the weight proportion of rubber in the polyblend is less than 8%; and
(ii) the proportions of the nitrile monomer and the anhydride monomer are selected such that, when plasticized only with four parts of triphenyl phosphate for each 100 parts by weight of Component A, the Izod impact strength of annealed compression molded samples of the polyblend measured according to ASTM Procedure D-256 is at least 50 joules/meter notch and the distortion temperature under load of similar samples measured according to ASTM Procedure D-648, is at least 110° C.

4,405,754
HAZE-FREE, CLEAR, IMPACT-RESISTANT RESINOUS POLYMERS
George A. Moczygemba, Bartlesville, Okla., and Kishore Udipi, East Longmeadow, Mass., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jan. 13, 1982, Ser. No. 339,251
Int. Cl.³ C08L *25/10, 9/06, 53/02*
U.S. Cl. 525—102 **17 Claims**

1. In a process of coupling an alkali metal-terminated polymer derived from the solution polymerization of at least one conjugated diene, monovinylarene, or both, the improvement which comprises employing an effective amount of coupling agents comprising at least one lactone and at least one halosilane wherein said halosilane contains at least two halogen atoms per molecule; and wherein the total amount of said coupling agents is in the range of about 0.2 to 20 mhm, and the mole ratio of lactone:halosilane is in the range of about 1:5 to 20:1.

4,405,755
NOVEL N-METHYLOLATED/METHOXYMETHYLATED ARYLDISULFONAMIDES
Hans Dressler, Monroeville, Pa.; Donald A. Lederer, and James Noe, both of Wadsworth, Ohio, assignors to Koppers Company, Inc., Pittsburgh, Pa.
Filed Dec. 10, 1981, Ser. No. 329,198
Int. Cl.³ C08L *7/00, 9/06*
U.S. Cl. 525—138 **17 Claims**

1. Methylolated/methoxymethylated disulfonamides of the general formula:



wherein x is between about 1 and 2, and y is between about 1 and 3, z is between about 0 and 1.5, the total of x, y and z being about 4.

4,405,756
CO-VULCANIZABLE RUBBER COMPOSITION
Motofumi Oyama, Yokosuka, and Kinro Hashimoto, Yokohama, both of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan
Filed Aug. 25, 1982, Ser. No. 411,586
Claims priority, application Japan, Sep. 2, 1981, 56-138212
Int. Cl.³ C08L *9/02*
U.S. Cl. 525—237 **5 Claims**

1. A rubber composition co-vulcanizable with a sulfur cure system, said composition comprising
(1) 95 to 20% by weight of a partially hydrogenated unsaturated nitrile-conjugated diene copolymer rubber in which at least 50% of units derived from the conjugated diene are hydrogenated.
(2) 5 to 80% by weight of an ethylene-propylene-nonconjugated diene terpolymer rubber, and
(3) a required amount of at least one vulcanization accelerator selected from the group of thiuram accelerators and dithiocarbamate accelerators.

4,405,757

MACROMOLECULAR COMPLEXES OF AMIDOCARBONYLIC WATER-SOLUBLE POLYMERS AND SQUARE PLANAR PLATINOUS AND EQUIVALENT ORGANOMETALLICS

Bobby A. Howell, 1948 Willow Dr., Mount Pleasant (County of Isabella), Mich. 48858, and Erik W. Walles, 4369 E. Wing Rd., Mount Pleasant, Mich. 48858

Filed Sep. 14, 1979, Ser. No. 75,722
Int. Cl.³ C08F 8/42
U.S. Cl. 525—326.9 43 Claims

1. A complexed chemical composition comprising, in effectively bonded association:

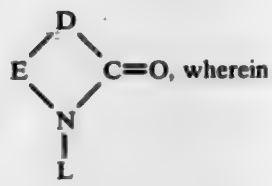
a normally water-soluble polymerizable compound having amidocarbonylic units in its structure and polyerizates of same and other amidocarbonylic polymerizates from nitrogenous precursors therefor (i.e., "WSP") as the complectant in and for the complex; and

a square planar platinous and equivalent metalled organometallic compound (i.e., "SPOM") as the complectate in and for the complex;

said WSP being a member of the polymer-providing materials and polymerizates selected from the Group consisting of: monomers and polymers and mixtures thereof of the hereinafter-defined Formula (I); and polymers and mixtures thereof of the hereinafter-defined Formula (II); and any of their possible mixtures;

said SPOM being an organometallic compound of the hereinafter-defined Formula (III);

the general arrangement of Formula (I) being:



(I)

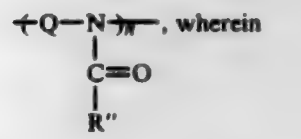
, wherein

"D" is selected from the Group consisting of: oxygen; amino, methylene; alkyl-substituted methylenes of the structure "CHR—" in which R contains from 1 to about 3 carbon atoms; methylene carbonyl; ethylene carbonyl; and amido anhydride;

"E" is a divalent link of 2 to 3 carbon atoms having the structure "—(CHR′)$_x$" in which x is an integer of value 2 to 3 and R′ is hydrogen with the exception that in any single given instance R′ can be selected from the Group consisting of: hydroxyl; alkyl radicals containing from 1 to about 3 carbon atoms; haloalkyl radicals containing from 1 to about 30 carbon atoms; phenylalkyl radicals in which the alkyl unit contains from 1 to about 30 carbon atoms; halophenylalkyl radicals in which the alkyl unit contains from 1 to about 30 carbon atoms; cycloalkyl radicals containing from about 5 to about 6 carbon atoms; alkyl-substituted about 5 to about 6 carbon atom-containing cycloalkyl radicals in which the alkyl unit contains from 1 to about 30 carbon atoms; halogenated alkyl-substituted about 5 to about 6 carbon atom-containing cycloalkyl radicals in which the alkyl unit contains from 1 to about 30 carbon atoms; phenyl radicals; alkyl-substituted phenyl radicals in which the alkyl unit contains from 1 to about 30 carbon atoms; halophenyl radicals; alpha-naphthyl radicals; alkyl-substituted alpha-naphthyl radicals in which the alkyl unit contains from 1 to about 30 carbon atoms; halogenated alpha-naphthyl radicals; halogenated alkyl-substituted alpha-naphthyl radicals in which the alkyl unit contains from 1 to about 30 carbon atoms and halogen attachment to the extent present is randomly positioned throughout the radical structure; beta-naphthyl radicals; alkyl-substituted beta-naphthyl radicals in which the alkyl unit contains from about 1 to about 30 carbon atoms; halogenated beta-naphthyl radicals; halogenated alkyl-substituted beta naphthyl radicals in which the alkyl unit contains from 1 to about 30 carbon atoms and halogen attachment to the extent present is randomly positioned throughout the radical structure; haloalkyl-substituted phenyl radicals in which the alkyl unit contains from 1 to about 30 carbon atoms; and halogenated alkyl-substituted phenyl radicals in which the alkyl unit contains from 1 to about 30 carbon atoms and halogen attachment to the extent present is randomly positioned throughout the radical structure; and

"L" is selected from the Group consisting of: vinyl; allyl; and isopropenyl;

the general arrangement of Formula (II) being:



(II)

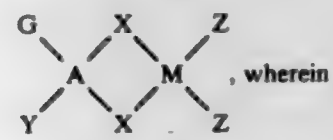
, wherein

"Q" is an alkylene radical selected from the Group consisting of those of the structures "—$(CH_2)_{1-4}$"; and "—$(R_s$-$CH)_{1-2}$" in which R_s is a lower alkyl radical containing from 1 to about 6 carbon atoms; and

"R″" is a radical containing in total from 1 to about 10 carbon atoms and is selected from the Group of those having said quantitative carbon-atom-limitations consisting of: alkyl radicals; alkyl-substituted alkyl radicals; haloalkyl radicals; halogenated alkyl-substituted radicals in which the halogen attachment to the extent present is randomly positioned throughout the radical structure; alkyl-substituted cycloalkyl radicals; halogenated alkyl-substituted cycloalkyl radicals in which the halogen attachment to the extend present is randomly positioned throughout the radical structure; and aminoalkyl radicals; with

"n" being an integer of from 2 to about 5,000;

the general arrangement of Formula (III) being:



(III)

, wherein

"M" is a purposively oxidation-numbered, combined, metaliferous constituent capable of accepting 8 orbital electrons from ligands at the interconnecting level of the metallic atoms selected from the Group consisting of: Pt(II); Pd(II); Ni(II); Rh(I); Ir(I); Au(III) and Cu(II), each of which is capable of making tetraligandal attachments;

each "Z" is a ligand that as a radical is monovalent when individually taken and divalent when taken as a single, paired cluster of both of the Z's in coalescence and which can be independently chosen when monovalent and is selected from the Group consisting of: chloro; bromo; fluoro; iodo; ammonia; nitrate, divalent 1,2-diaminocyclohexane; cyclopropylamine; cyclobutylamine; cyclopentyl amine; cyclohexyl amine; ethylene imine; propylene imine; butylene imine; substituted amines of the structure "—NR_sH_2" in which R_s is a lower alkyl radical containing from 1 to about 6 carbon atoms; monovalent and divalent ethylene diamine; substituted carboxylates of the structure "—O—CO—R_a" in which R_a is a radical containing in total from 1 to not more than about 10 carbon atoms and in its characterizability is any one of those that are alkyl, cycloalkyl, cycloalkyl-substituted alkyl and aryl-substituted alkyl; divalent dibasic acids of the structure "—O—CO—$(CH_2)_{0-3}$—CO—O—"; univalent half-acid dibasic acids of the structure "—O—CO—$(CH_2)_{0-3}$—CO—OJ" in which J is any one of the alkali metals and ammonium; divalent 1,2-cycloalkane dicarboxylates of the structure "—O—CO—CyAlk—CO—O" in which CyAlk in its characterizability is any one of those containing in total from 3 to about 10 carbon atoms exclusive of the carboxylate carbons that are cycloalkane, halocycloal-

kane, alkyl-substituted cycloalkane, cycloalkyl-substituted cycloalkane and aryl-substituted cycloalkane;

divalent 1,2-aryl dicarboxylates of the structure "—O—CO—Ar—CO—O—" in which Ar in its characterizability is any one of those containing in total from 6 to about 12 carbon atoms exclusive of the carboxylate carbons that are aryl, haloaryl, alkyl-substituted aryl, cycloalkyl-substituted aryl, aryl-substituted aryl, halogenated alkyl-substituted aryl, halogenated cycloalkyl-substituted aryl and halogenated aryl-substituted aryl; monovalent glycerates of the structure "—O—CO—CHOH—CH_2OH"; any of the members of the below-defined Group for the substituent Y; any of the members of the below-defined Group for the entity A when that entity is in bidentate ligandal attachment to M and accordingly in effect constituting a divalent paired cluster of both Z's including clustered Z's independently integral and linking said entity A to M, clustered Z's connected with at least a single substituent grouping on said entity A and clustered Z's founded as constitutional and integral component atoms in said entity A; and any of the members of the below-defined Group for the substituent G depending from said entity A;

"A" is an entity that in its characterizability is any one of those that are aromatic and heterocyclic and which is in bidentate ligandal connection with both members of the below-defined Group for the divalent, linking X units including independently integral X's connected with and accepting said entity A, independently integral X's interlinkingly connected with at least a single substituent grouping on said entity A and X's founded as constitutional and integral component atoms in said entity A and which entity A is selected from the Group consisting of: an X-connected substituted benzene that has 0–3 G substituents and 1–4 Y substituents therefrom depending; an X-connected substituted naphthalene that has 0–5 G substitutents and 1–6 Y substitutents therefrom depending; an X-connected substituted bipyridyl that has 0–5 G substituents and 1–6 Y substituents therefrom depending; an X-connected substituted 1,8-naphthpyridine that has 0–5 G substituents and 1–6 Y substituents therefrom depending; an X-connected 1,9-anthracene that has 0–7 G substituents and 1–8 Y substituents therefrom depending; an X-connected 4,5-phenanthrene that has 0–7 G substituents and 1–8 Y substituents therefrom depending; an X-connected 1,2-fluorene that has 0–5 G substituents and 1–6 Y substituents therefrom depending; and an X-connected 4,5-phenanthroline that has 0–7 substituents and 1–8 Y substituents therefrom depending;

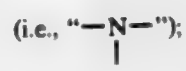
"Y" is at least a single substituent depending from said entity A that is selected and done independently so when in plurality from the Group consisting of: hydroxyl radicals; sulfhydryl radicals; sulfonic acid radicals; nitro radicals; carboxylate radicals; omega carboxylic acid ether radicals of the structure "$O—O(CH_2)_{1\text{-}6}CO—OH$"; chloro omega carboxylic acid ether radicals; bromo omega, carboxylic acid ether radicals; sulfonyl radicals; imino radicals; thiosulfonic acid radicals following the general typical structure "—O—OSS—OH"; substituted ureido radicals of the structure



"—N—C—N—H";

ureylene radicals of the structure "—NR_5—CO—N—H"; in which R_5 is a lower alkyl unit containing from 1 to about 6 carbon atoms; amido radicals of the structure "—CO—NH_2"; alkali metal salts of any of said above-described Y radicals; and ammonium salts of any of said above-described Y radicals;

each "X" is an at least equivalently if not actually divalent in function linking unit depending on residual protonation therein and thereof which makes paired connection between "M" and the entity "A" and each of which X units can be identical or independently different excepting when both X's are the N's in said above-identified heterocyclic entities for "A", which X units are selected from the Group consisting of: bivalent oxygen (i.e., "—O—"); bivalent sulfur (i.e., "—S—"); bivalent amine (i.e., "—NH_2—"); bivalent sulfoxyl units (i.e., "—SO_3—"); bivalent carboxyl units (i.e., "—COO—"); effectively bivalent 1–6 methylene group(s)-containing omega carboxylic acid ether units and chloro- and bromo- substituted derivatives thereof; effectively bivalent derivatives of mercapto carbonyl units (i.e., "—CO—S—"); effectively bivalent derivatives of hydroxy(thiocarbonyl) units (i.e., "—CS—O—"); effectively bivalent 0–6 methylene group(s)-containing omega mercapto(thiocarbonyl) ether units and chloro- and bromo- derivatives thereof; effectively divalent sulfonyl units (i.e., "—SO_2—"); effectively divalent imino units



(i.e., "—N—");

effectively divalent thiosulfonic acid units of representative structure "—O—SSO—O"; effectively divalent substituted ureido units.

4,405,758

VULCANIZABLE ACRYLATE RUBBER COMPOSITIONS

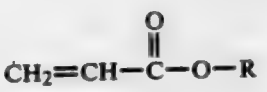
Dane E. Jablonski, Brunswick, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed May 17, 1982, Ser. No. 379,215

Int. Cl.³ C08F *8/34*

U.S. Cl. 525—329.8 **8 Claims**

1. A composition comprising (1) an acrylate rubber containing (a) from about 40 percent to about 98 percent by weight of an acrylate of the formula



$CH_2=CH-C(=O)-O-R$

wherein R is selected from the group consisting of an alkyl radical containing 1 to 18 carbon atoms, an alkoxyalkyl, an alkylthioalkyl, and a cyanoalkyl radical containing 2 to about 12 carbon atoms, (b) from about 0.1 percent to about 30 percent by weight of a halogen-containing monomer selected from the group consisting of halogen-containing vinylene hydrocarbons and halogen-containing vinyl monomers having the halogen group at least two carbon atoms removed from an oxygen atom, (c) from about 0.1 percent to about 20 percent by weight of an unsaturated carboxyl-containing monomer, containing 3 to about 8 carbon atoms, and (d) 0 to 35 percent by weight of a copolymerizable monomer containing a terminal vinylidene group, and (2) as the curative, vulcanizing amounts of sodium stearate and tetramethyl thiuram disulfide or a Group IB, IIB, IVA, or VIA metal salt thereof.

4,405,759

PROCESS FOR HALOGENATION OF BUTADIENE POLYMER IN THE PRESENCE OF ALUMINUM-CONTAINING MATERIAL

Asvinkumar N. Jagtap, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 5, 1982, Ser. No. 365,438

Int. Cl.³ C08F *8/22*

U.S. Cl. 525—356 **52 Claims**

1. In a process for producing halogenated butadiene polymer wherein butadiene polymer dissolved in solvent is reacted with chlorine, bromine or a mixture thereof under conditions that would lead to crosslinking of said halogenated butadiene polymer, the improvement comprising conducting at least a portion of said reaction in the presence of a crosslinking-reducing

amount of aluminum-containing material comprising trialkyl aluminum, dialkyl aluminum halide, alkyl aluminum dihalide, alkyl aluminum sesquihalide, aluminum trihalide or a mixture thereof, to substantially reduce said crosslinking.

4,405,760

CHLORINATION AND CROSSLINKING OF SELECTED POLYMERS WITH Cl_2O OR HOCL

Edward G. Howard, Jr., Hockessin, and Frank D. Marsh, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Dec. 28, 1981, Ser. No. 334,910
Int. Cl.³ C08F *8/20*
U.S. Cl. 525—383 **23 Claims**

1. A process for the substitutive chlorination of one or a mixture of organic polymers having a backbone composed predominantly of carbon atoms and being substantially free of carboxamide linkages and readily oxidizable groups, said organic polymers additionally having one or both of these characteristics: (i) a repeating unit comprising at least one saturated carbon bearing at least one hydrogen, and (ii) a repeating unit comprising carbon-to-carbon unsaturation, the process comprising contacting the polymer(s) with Cl_2O or HOCl, thereby substitutively chlorinating the polymer(s) at the saturated carbon, and crosslinking and adding chlorine across the carbon-to-carbon unsaturation.

4,405,761

NON-EMISSIVE, FLAME-RETARDANT COATING COMPOSITIONS

Stephen D. Rodgers, Bowie, Md.; Richard J. Dick, Columbus, and Vincent D. McGinniss, Delaware, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Oct. 23, 1980, Ser. No. 199,843
Int. Cl.³ C08L *63/10*
U.S. Cl. 525—404 **18 Claims**

1. A room-temperature curable, non-emissive, flame-retardant coating composition which comprises:

(A) a flame-retardant polymer selected from
  (1) an air-dryable flame-retardant polymer,
  (2) a room-temperature curable mixture of a flame-retardant polymer and curing agent therefor; and
  (3) mixtures thereof;

(B) a solvent selected from
  (1) water,
  (2) a liquid, curable, non-emissive, non-flame promoting solvent comprising a polyhalogenated organic ring substituted with an air-dryable group; and
  (3) mixtures thereof; and

(C) optionally, a non-emissive, non-flame promoting surface-active agent selected from
  (1) a cationic, non-emissive, non-flame promoting, curable polyhalogenated compound containing an air-dryable group and a cationic surface-active group;
  (2) an anionic, non-emissive, non-flame promoting, curable, polyhalogenated compound containing an air-dryable group and an anionic surface-active group; and
  (3) a nonionic, non-emissive, non-flame promoting polyhalogenated compound containing a nonionic surface-active group;

said coating composition containing at least said solvent (B)(2) or one of said surface-active agents (C)(1) or (C)(2).

4,405,762

PREPARATION OF HYDROXY-TERMINATED POLY(3,3-BISAZIDOMETHYLOXETANES)

Robert A. Earl, and James S. Elmslie, both of Salt Lake City, Utah, assignors to Hercules Incorporated, Wilmington, Del.

Filed Dec. 7, 1981, Ser. No. 327,825
Int. Cl.³ C08G *65/22, 65/32*
U.S. Cl. 525—410 **22 Claims**

1. A method of making a hydroxy terminated poly(azidomethyloxetane), which comprises:

(a) reacting (i) a 3,3-bishalomethyloxetane with (ii) a polyhydric initiator at a molar ratio of (i) to (ii) of at least about 3:1 in the presence of a strong or Lewis acid catalyst at a polymerization temperature to produce a halomethyl polymer product having a molecular weight between about 500 and 15,000 and a hydroxy number above about 1.5; and

(b) contacting the halomethyl polymer product of (a) and a metal azide at an elevated temperature for a time sufficient to displace a portion of the halide groups of the halomethyl polymer product with azido groups.

4,405,763

THERMOSETTING RESINOUS BINDER COMPOSITIONS, THEIR PREPARATION, AND USE AS COATING MATERIALS

Petrus G. Kooymans; Johannes J. M. H. Wintraecken; Werner T. Raudenbusch; Josepha M. E. Seelen-Kruijssen, and Gerardus C. M. Schreurs, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 99,363, Dec. 3, 1979, Pat. No. 4,332,711. This application Feb. 16, 1982, Ser. No. 349,219
Int. Cl.³ C08L *63/00*
U.S. Cl. 525—438 **7 Claims**

1. A thermosetting binder composition, heatcurable to give an insoluble infusible coating, comprising:

(I) a mixture of:
  (1) a non-acidic polyester prepared by esterifying a polyglycidyl polyether of 2,2-bis(4-hydroxyphenyl) propane with a hydroxy alkane monocarboxylic acid said polyester being essentially free of ethylenic unsaturation, having a molecular weight of at least 900 and a hydroxyl content of at least 0.2 equivalent per 100 g, and
  (2) a non-acidic polyester having an acid number of not more than 10 of a polycarboxylic acid cross-linking agent having more than one β-hydroxyl ester group per molecule, at least one of components (1) and (2) having a hydroxyl functionality of more than 2, and

(II) a transesterification-promoting metal salt or metal complex curing catalyst which is soluble in liquid hydrocarbons.

4,405,764

THERMOSETTABLE POLYESTER RESIN COMPOSITIONS CONTAINING CAPROLACTONE

Michael A. Tobias, Bridgewater, and Conrad L. Lynch, Metuchen, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,816
Int. Cl.³ C08G *63/76*; C08F *283/02*
U.S. Cl. 525—443 **8 Claims**

1. A thermosettable polyester resin composition comprising

A. 25 to 40 weight percent of ethylene glycol, 1,2-propylene glycol, 1,3-butanediol, neopentyl glycol, 1,4-cyclohexanedimethanol, or mixtures thereof;

B. 2 to 8 weight percent of glycerol, trimethylolethane, trimethylolpropane or mixtures thereof;

C. 15 to 25 weight percent epsilon-caprolactone; and

D. 40 to 50 weight percent of a benzenedicarboxylic acid or anhydride thereof.

2. The composition of claim 1 which contains aminoplast cross-linking agent and acid catalyst.

4,405,765

CURABLE EPOXY RESINS

Kurt Demmler, Ludwigshafen, and Wolfram Ochs, Wachenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 30, 1982, Ser. No. 413,084

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1981, 3135636

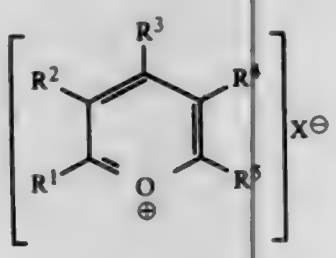
Int. Cl.³ C08G *59/68*

U.S. Cl. 525—506 **7 Claims**

1. A curable resin composition, containing

A. a cationic polymerizable epoxy resin, and

B. from 0.5 to 10% by weight of an onium salt as a hardening catalyst, wherein the catalyst is a pyrylium salt of the formula



(I)

where R^1 and R^5 are identical and are each alkyl or alkaryl, each of 1 to 8 carbon atoms, R^2, R^3 and R^4 are identical or different and are each hydrogen, or alkyl, alkaryl or cycloalkyl, each of not more than 8 carbon atoms, or an unsubstituted or alkyl-substituted phenyl, naphthyl, indenyl, indanyl or fluorenyl group or a heterocyclic substituent containing one or two heteroatoms, and $X^{\ominus}$ is a non-nucleophilic anion.

4,405,766

PHOSPHONIUM BICARBONATE CATALYSTS FOR PROMOTING REACTION OF EPOXIDES WITH CARBOXYLIC ACIDS OR ANHYDRIDES

James L. Bertram, Lake Jackson, Tex.; George A. Doorakian, Bedford, and Lawrence G. Duquette, Maynard, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 30, 1982, Ser. No. 403,692

Int. Cl.³ C08G *59/68*

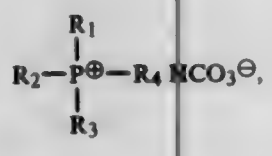
U.S. Cl. 525—507 **7 Claims**

1. In the process of reacting

(a) a vicinal epoxy-containing material with

(b) carboxylic acid or anhydride

the improvement comprising conducting the reaction in the presence of a catalytic amount of a compound represented by the formula



wherein R_1–R_4 each independently is hydrocarbyl or intertly-substituted hydrocarbyl radical, having from 1 to about 20 carbon atoms.

4,405,767

TREATMENT OF POLY(ARYLENE SULFIDE)

William H. Beever, and Donnie G. Brady, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

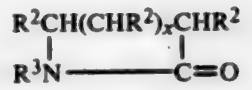
Filed Jun. 22, 1982, Ser. No. 391,067

Int. Cl.³ C08F *283/00*

U.S. Cl. 525—537 **8 Claims**

1. A process for treating a poly(arylene sulfide) polymer comprising:

(a) combining a poly(arylene sulfide) polymer, at least one alkali metal sulfide, and at least one N-alkyl lactam represented by the formula



where each R^2 is selected from the group consisting of hydrogen and R^3, R^3 is an alkyl radical having 1 to 3 carbon atoms, x is an integer of 1 to 3, and the total number of carbon atoms in the N-alkyl lactam is within the range of from about 5 to about 10 under temperature conditions sufficient to react the above ingredients; and

(b) reacting the mixture from step (a) with at least one polyhaloaromatic compound represented by the formula ArX_n where each X is selected from a group consisting of chlorine, bromine, and iodine, n is an integer of 3 to 6 and Ar is a polyvalent aromatic radical of valence n which can have up to about 4 methyl substituents, the total number of carbon atoms in Ar being within the range of about 6 to about 16 such that the molar ratio of the polyhaloaromatic to the poly(arylene sulfide) polymer is in the range from about 0.08:1.0 to about 0.5:1.0 and the mole ratio of the alkali metal sulfide to the polyhaloaromatic compound is in the range from about 1.0:1.0 to about 1.0:1.3, at a temperature in the range from about 100° C. to about 450° C. for about 0.5 to about 10 hours.

4,405,768

POLYMERIZATION PROCESS USING CHROMIUM ON A SUPPORT TREATED WITH TITANIUM POLYMER

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 292,962, Aug. 14, 1981. This application Sep. 24, 1982, Ser. No. 422,780

Int. Cl.³ C08F *4/24*

U.S. Cl. 526—96 **13 Claims**

1. A process comprising:

combining an inorganic support with a titanium polymer, said support having a chromium compound combined therewith either before, during or after said titanium polymer and said support are combined;

activating the resulting support-titanium-chromium composition in an oxygen-containing atmosphere at a temperature within the range of 500°–1000° C., said titanium polymer being present in an amount sufficient to give 2 to 30 weight percent titanium based on the weight of the thus activated composition to produce a catalyst;

contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule in a reaction zone under polymerization conditions with said catalyst; and

recovering a polymer.

4,405,769

CATALYST, METHOD OF PRODUCING THE CATALYST, AND POLYMERIZATION PROCESS EMPLOYING THE CATALYST

Charles E. Capshew; James N. Short; M. Bruce Welch, all of Bartlesville, Okla., and Richard E. Dietz, Borger, Tex.

Division of Ser. No. 177,313, Aug. 12, 1980, Pat. No. 4,325,837. This application Feb. 22, 1982, Ser. No. 350,856

Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—119 **17 Claims**

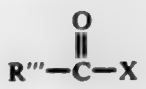
1. A process for producing a polyolefin comprising contacting at least one polymerizable compound selected from the group consisting of aliphatic mono-1-olefins, conjugated diolefins, and vinyl aromatic compounds under polymerization conditions with a cocatalyst comprising at least one organometallic compound selected from the group consisting of organometallic compounds of Groups I to III of the Periodic Table and a catalyst prepared by

(A) preparing a first catalyst component by reacting in a suitable dry, essentially inert diluent reactants comprising

(1) a metal halide compound selected from the group consisting of metal dihalide compounds and metal hydroxyhalide compounds and the metal of the metal halide compound is selected from the group consisting of Group IIA metals and Group IIB metals of the Mendeleev Periodic Table; and

(2) a transition metal compound in which the transition metal is selected from the group consisting of Group IVB and Group VB transition metals of the Mendeleev Periodic Table and the transition metal is bonded to at least one radical selected from the group consisting of hydrocarbyloxides, amides, imides, and mercaptides; and

(B) reacting a solution of said first catalyst component with a second catalyst component in the presence of an atmosphere of a polymerizable olefin monomer selected from the group consisting of aliphatic mono-1-olefins and conjugated dienes at a pressure in the range of about 1 to about 1,000 psia, wherein the molar ratio of the transition metal compound to the metal halide compound is in the range of about 10:1 to about 1:10, and wherein the concentration of the metal halide in said diluent is in the range of about 0.2 molar to about 1.2 molar, and wherein said second catalyst component comprises a precipitating agent selected from the group consisting of organometallic compounds of Groups I, II, and III selected from the group consisting of lithium alkyls, Grignard reagents, dialkyl magnesium compounds, dialkyl zinc compounds, and hydrocarbyl aluminum halides; metal halides and oxyhalides of metals of Groups IIIA, IVA, IVB, VA, and VB; hydrogen halides; and organic acid halides selected from the group consisting of compounds having the formula



wherein R''' is an alkyl, aryl, or cycloalkyl group or combinations thereof and X is a halide, and

wherein said precipitating agent is combined with said solution of said first catalyst component in either an undiluted form or as an admixture with a suitable essentially inert diluent, the concentration of said precipitating agent in said diluent being at least 0.2 molar, further wherein said solution of said first catalyst component and said second catalyst component are added together during an addition time of less than about two hours, and then

(C) reacting the solid product resulting from step (B), which optionally has been reacted with a halide ion exchanging source selected from the group consisting of titanium tetrahalides, vanadium oxychloride, and zirconium tetrachloride, with a polymerizable olefin selected from aliphatic mono-1-olefins and conjugated dienes in the presence of an adequate amount of a cocatalyst selected from the group consisting of organometallic compounds of Groups I to III of the Periodic Table to produce a catalyst containing 1 to 50 weight percent prepolymer.

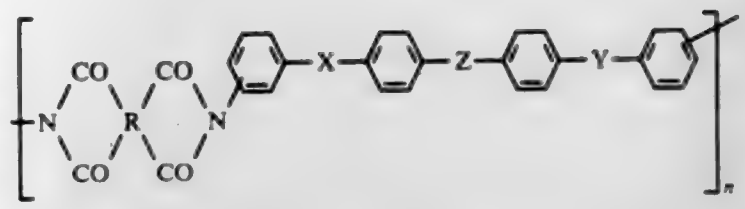
4,405,770

NOVEL POLYIMIDES, AND POLYAMIC ACID AND ESTER INTERMEDIATES THEREOF

Jules E. Schoenberg, Scotch Plains, N.J., and Stephen P. Anderson, South Gate, Calif., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Aug. 12, 1981, Ser. No. 292,257
Int. Cl.³ C08G 73/10, 73/12
U.S. Cl. 526—259 **9 Claims**

1. A polyimide resin, consisting essentially of a chain of chain of recurring units of the formula:



wherein R is a tetravalent aliphatic, cycloaliphatic, or aromatic radical; Z is oxygen or sulfur; X and Y are carbonyl or carbinol groups and X and Y may be the same or different; and n is greater than 1.

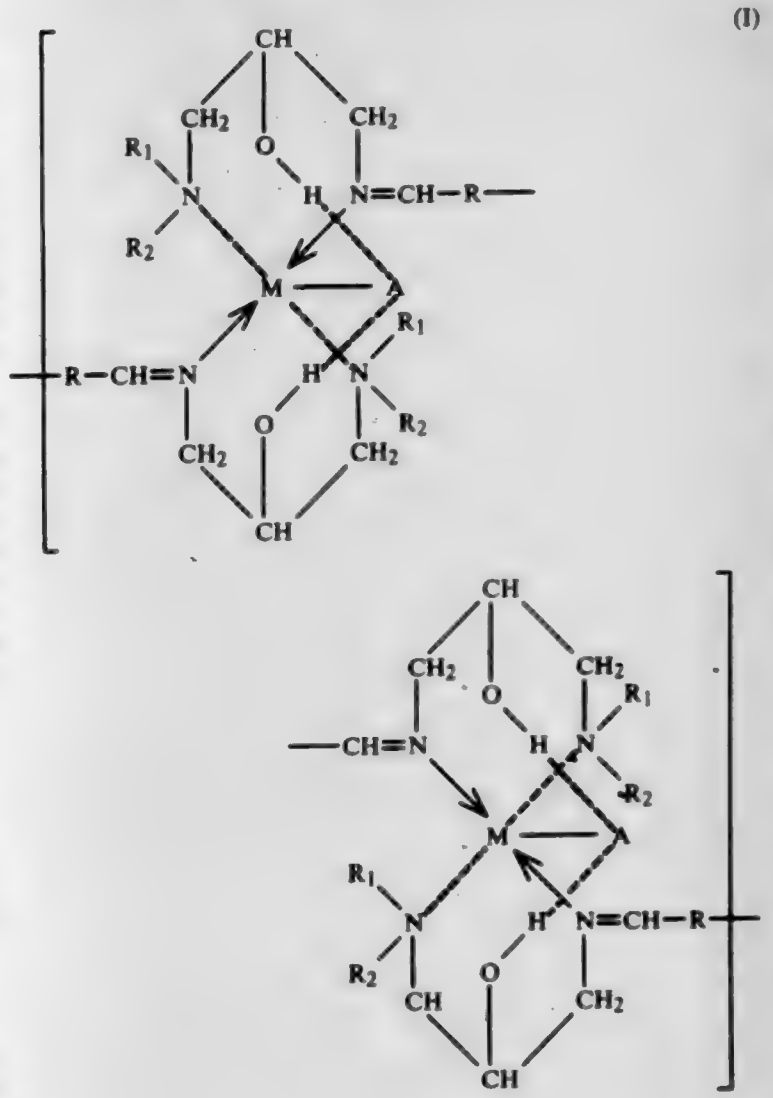
4,405,771

ORGANOMETALLIC POLYMERS, THEIR PREPARATION AND COMPOSITIONS CONTAINING THEM

Joseph Jagur, Rehovot, Israel, assignor to Yeda Research & Development Co., Ltd., Rehovot, Israel

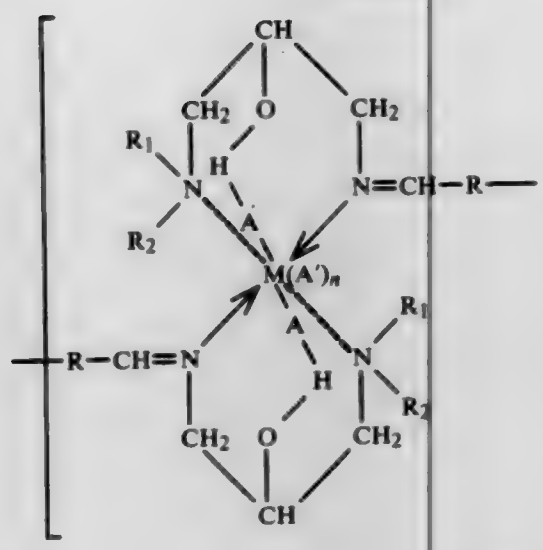
Filed Oct. 16, 1981, Ser. No. 312,319
Claims priority, application Israel, Oct. 27, 1980, 61351
Int. Cl.³ C08G 12/06
U.S. Cl. 528—266 **7 Claims**

1. Polymeric compounds of formulas (I) and (II)

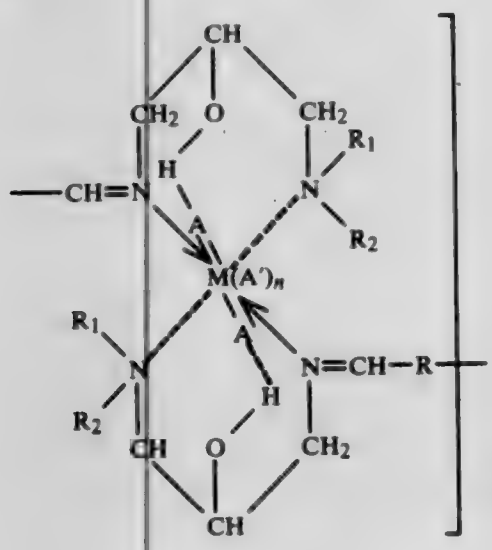


(I)

-continued



(II)



wherein

R designates a bivalent aromatic hydrocarbon group,

R_1 and R_2 designate monovalent hydrocarbon groups,

M is a metal cation capable of forming coordination bonds with imino- and amino-nitrogen atoms,

A and A^1 are anions acting as counter ions of M,

n is zero or an integer depending on the valency of M.

5. A process for the production of polymers of Formula I and II defined in claim **1** which comprises:

a. Condensing an aromatic dialdehyde with a β-hydroxy-α,γ-diamine to form the "monomeric" polydentate ligand;

b. preparing a solution of the "monomeric" polydentate ligand in an organic solvent, preferably an aprotic volatile solvent, such as toluene or chloroform;

c. dissolving a chosen inorganic salt in the "monomeric" polydentate ligand solution;

d. evaporating of the solvent from the thus obtained solution to result in a solid product in the form of a thin layer, powder or flakes.

4,405,772

BUTENE-1-VINYLCYCLOHEXENE COPOLYMER

Pui K. Wong, Katy; Carl L. Willis, and Thomas F. Brownscombe, both of Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 23, 1982, Ser. No. 391,202

Int. Cl.³ C08F *210/08*

U.S. Cl. 526—308 **6 Claims**

1. A solid copolymer of butene-1 and about 0.1 and about 2.0 mole percent 4-vinylcyclohexene, prepared by copolymerizing said butene-1 monomer and said 4-vinylcyclohexene monomer in the presence of a titanium halide coordination catalyst, said copolymer having an initial form II crystalline state which transforms to a stable form I crystalline state, and, as compared to butene-1 homopolymers prepared with identical catalysts, a broader molecular weight distribution, shorter cyrstallization half-time, greater isotacticity as measured by ^{13}C NMR and greater crystallinity as measured by x-ray diffraction.

4,405,773

HYDROPHYLIC CONTACT LENSES AND METHODS FOR MAKING SAME

Samuel Loshaek, and Chah M. Shen, both of Chicago, Ill., assignors to Schering Corporation, Kenilworth, N.J.

Filed Feb. 5, 1982, Ser. No. 346,323

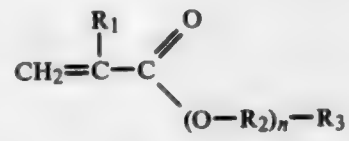
Int. Cl.³ C08F *220/20, 220/28*

U.S. Cl. 526—317 **16 Claims**

1. A hydrophilic contact lens comprising the polymerization reaction product of monomers consisting essentially of by weight on a water-free basis:

(a) 75 to 95 percent hydroxy straight-or-branched-chain C_2–C_4 alkyl monoester of acrylic or methacrylic acid;

(b) 5 to 20 percent monomer having the formula



wherein R_1 is hydrogen or methyl, R_2 is C_2–C_4 straight-or-branched-chain alkylene, R_3 is C_2 to C_4 straight-or-branched-chain alkoxy, and n is 1; and

(c) 0.3 to 4 percent acrylic acid or methacrylic acid, wherein the weight ratio of (b) to (c) is no higher than 25 to 1.

4,405,774

ETHYLENE COPOLYMER

Yukimasa Miwa, Nagoya; Takeo Shimada, Yokkaichi; Shigekazu Hayashi, Yokkaichi; Michito Ukita, Yokkaichi; Hideaki Nakagawa, Suzuka, and Mitsuyuki Matsuura, Kameyama, all of Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Dec. 18, 1981, Ser. No. 331,966

Claims priority, application Japan, Dec. 23, 1980, 55-181346

Int. Cl.³ C08F *210/16*

U.S. Cl. 526—348.2 **10 Claims**

1. A copolymer of ethylene and a minor proportion of an α-olefin having 4 to 10 carbon atoms, characterized by having in combination the properties of:

(1) a melt flow rate (MFR) of 0.1 to 100 g/10 min.;

(2) a density of 0.91 to 0.94 g/cm³; and

(3) a xylene absorption per unit amorphous region (Y) satisfying the following formula:

$$Y < -0.80X + 0.67$$

wherein X is the degree of crystallinity of the copolymer.

4,405,775

BIAXIALLY ORIENTED POLYPROPYLENE FILM AND METHOD FOR ITS PRODUCTION

Fukashi Hashimoto, Yokkaichi, Japan, assignor to Mitsubishi Petrochemical Company Limited, Japan

Filed Jun. 11, 1981, Ser. No. 272,701

Claims priority, application Japan, Jun. 20, 1980, 55-82713

Int. Cl.³ C08L *23/12;* B29D *7/24*

U.S. Cl. 526—351 **8 Claims**

1. A biaxially oriented polypropylene film, wherein a refractive index Nx of the polypropylene film at a temperature of 20° C. to a longitudinal orientation is no less than 1.5040, while a refractive index Ny of the polypropylene film at the same temperature to a lateral orientation is no less than 1.5120, and the total of the former refractive index and the latter refractive index is at least about 3.023.

3. A method for producing a biaxially oriented polypropylene film, comprising the steps of:

fusing and extruding a sheet of polypropylene;

cooling said sheet to produce a solid sheet;
orienting said sheet in a first longitudinal orientation;
orienting said sheet in at least a second longitudinal orientation without an intervening orientation in a lateral direction;
said first and at least a second longitudinal orientations producing a total longitudinal elongation of from about 4 to about 15 times;
said first longitudinal elongation being from about 50 to about 90 percent of the total longitudinal orientation; and
orienting said sheet in a lateral direction after said first and at least a second longitudinal orientation for a lateral elongation of from about 8 to about 15 times.

4,405,776

POSITIVE RADIATION SENSITIVE RESIST TERPOLYMER FROM OMEGA ALKYNOIC ACID

Thomas R. Pampalone, Belle Mead, and Kurt B. Kilichowski, Mercerville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 244,104, Mar. 16, 1981, Pat. No. 4,355,094. This application Jul. 9, 1982, Ser. No. 396,663
Int. Cl.³ C08G *75/22*
U.S. Cl. 528—364 **4 Claims**

1. A film forming terpolymer comprising an organic monomer component and sulfur dioxide in a 1:1 molar ratio, said monomer component being comprised of 3-methylcyclopentene, and an omega alkynoic acid represented by the formula

$$CH{\equiv}C{-}(CH_2)_n{-}COOH$$

wherein n is an integer from 1 to 20.

4,405,777

PREPARATION OF A POLYAMIDE FROM LACTAM, AMMONIUM SALT OF UNSATURATED ACID AND UNSATURATED NITRILE

Mu-Yen M. Wu, and Lawrence E. Ball, both of Cuyahoga Falls, Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 219,782, Dec. 24, 1980, abandoned. This application Jul. 14, 1982, Ser. No. 398,178
Int. Cl.³ C08G *69/14*
U.S. Cl. 528—323 **11 Claims**

1. A process for producing a solid copolyamide comprising polymerizing an ammonium salt of an alpha,beta-unsaturated carboxylic acid and an alpha,beta-unsaturated nitrile with a lactam.

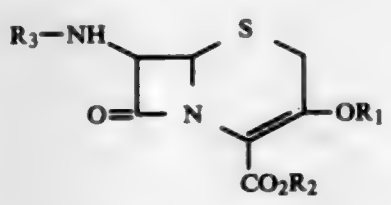
4,405,778

PROCESS FOR PREPARING CEPHALOSPORIN ETHERS

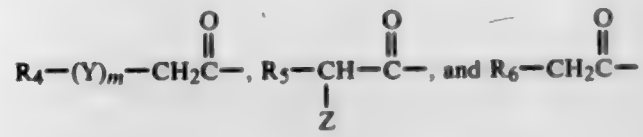
Riccardo Scartazzini, Allschwil, and Hans Bickel, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 373,818, Jun. 26, 1973, abandoned. This application Feb. 13, 1976, Ser. No. 657,904
Claims priority, application Switzerland, Jun. 29, 1972, 9788; Aug. 17, 1972, 12195; Dec. 22, 1972, 18722; Feb. 23, 1973, 2655
Int. Cl.³ C07D *501/04*; A61K *31/545*
U.S. Cl. 544—16 **4 Claims**

1. A process for preparing a cephalosporin ether of the formula



wherein
R_1 is C_1-C_4 alkyl;
R_2 is a readily removable ester forming group; and
R_3 is a carboxylic acid acyl residue selected from the group consisting of



wherein
R_4 is phenyl or phenyl substituted by chlorine, bromine, fluorine, iodine hydroxy, nitro, amino, cyano,
Y is O or S, and m is zero or one;
R_5 is R_4, 2-thienyl or 3-thienyl;
Z is protected hydroxy or protected amino;
R_6 is 2-thienyl, 3-thienyl, 2-furyl, 3-furyl or 5-tetrazolyl;
comprising treating a 7-acylamido-3-hydroxy-3-cephem-4-carboxylic acid ester with a non-hydroxylic base selected from the group consisting of alkali metal carbonates or bicarbonates or N-lower alkyl amines,
and a lower alkyl fluorosulfonate in an unreactive organic solvent.

4,405,779

6-(CARBO-T-BUTOXY)-3-MERCAPTO-4-ACETAMINO-1,2,4-TRIAZIN-5-ONES

Richard H. Wiley, 8 Roosevelt Cir., Palo Alto, Calif. 94306

Filed Jul. 9, 1981, Ser. No. 281,699
Int. Cl.³ C07D *253/06*
U.S. Cl. 544—182 **3 Claims**

1. 6-(Carbo-t-butoxy)-3-mercapto-4-acetamino-1,2,4-triazin-5-one.

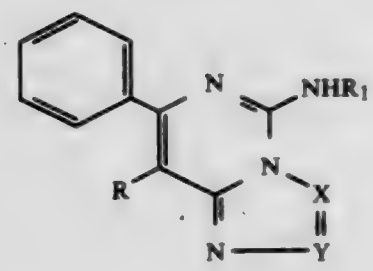
4,405,780

8-SUBSTITUTED 7-PHENYL-1,2,4,-TRIAZOLO[4,3-C]/[2,3-C]PYRIMIDINES-5-AMINES AND AMIDES

Hans Wagner, Skokie, Ill., assignor to G. D. Searle & Co., Skokie, Ill.

Continuation-in-part of Ser. No. 64,707, Aug. 8, 1979, abandoned. This application Feb. 26, 1982, Ser. No. 352,913
Int. Cl.³ C07D *487/04*; A61K *31/505*
U.S. Cl. 544—263 **11 Claims**

1. A compound of the formula



wherein R is:
(a) hydrogen
(b) alkyl having 1 to 4 carbon atoms;
(c) alkoxyalkyl having 2 to 4 carbon atoms;
(d) alkenyl having 2 to 4 carbon atoms; or
(e) alkynyl having 2 to 4 carbon atoms;
wherein R_1 is
(a) hydrogen
(b) 1-oxoalkyl having 1 to 2 carbon atoms;
wherein X and Y are carbon or nitrogen with the proviso that one of X and Y must be nitrogen and the other carbon.

4,405,781

METHOD FOR PREPARING SALTS OF 6-CHLOROPURINE

Henry Bader, Newton Center, and Yuan H. Chiang, Andover, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 2, 1981, Ser. No. 238,055
Int. Cl.³ C07D *473/40*
U.S. Cl. 544—264 12 Claims

1. A method for preparing a salt of 6-chloropurine and a strong acid comprising the steps of:

(a) reacting hypoxanthine and phosphorus oxychloride in the presence of an organic base to form 6-chloropurine;

(b) adding a solvent for said 6-chloropurine to the reaction mixture obtained in step (a) and reacting said reaction mixture with a strong acid to form a salt of 6-chloropurine and said acid; and

(c) isolating said salt.

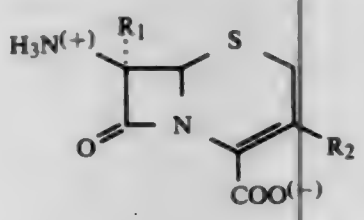
4,405,782

PROCESS FOR THE PREPARATION OF SOLUTIONS OF 7-AMINOCEPHALOSPORANIC ACIDS

Alberto Palomo-Coll, and Antonio L. Palomo-Coll, both of Barcelona, Spain, assignors to GEMA, S.A., Spain

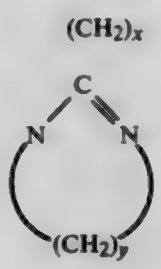
Filed Nov. 20, 1981, Ser. No. 323,403
Claims priority, application Spain, Nov. 22, 1980, 497.076; Jul. 16, 1981, 504.011
Int. Cl.³ C07D *501/18*; A61K *31/545*
U.S. Cl. 544—21 7 Claims

1. A process for the preparation of solutions of 7-aminocephalosporanic acids which comprises forming a suspension, in an organic non-aqueous solvent, of a compound of the formula



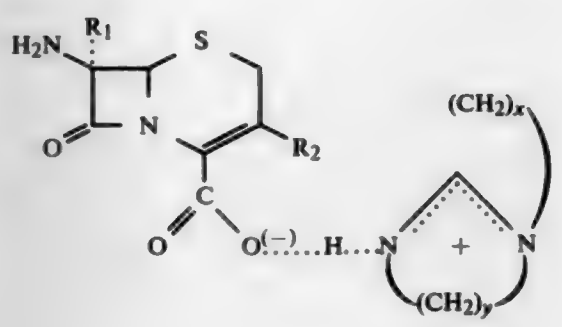
(I)

wherein R_1 is a member of the group consisting of hydrogen, methyl, methoxy, ethoxy, or isopropoxy and R_2 is a member of the group consisting of methyl, methoxy, azido, chloro, carbamoylmethyl, acetoxy, thiomethyl, phenylmethyl, alkylthiocarbonyl, arylthiocarbonyl, methylthiocarbonyl heterocyclic heterocyclic derivative having a five or six member ring with at least one atom of oxygen, sulphur or nitrogen, methylthioheterocycles of thiazole, thiadiazole, triazole, tetrazole, pyridine, pirimidine or of a heterocycle condensed to an aromatic ring, such as thiadiazole, oxadiazole or triazole or a thiadiazolyl, oxadiazolyl or triazolyl radical, is associated by a salt-forming reaction with a bicyclic amidine having the formula:



(II)

where X is from 3 to 5 carbon atoms and Y from 2 to 4 carbon atoms, to obtain a solution of the corresponding salt of 7-aminocephalosporanic acid having the formula:



(III)

4,405,783

PROCESS FOR THE PRODUCTION OF DIHYDROXYPROPYLTHEOPHYLLINE

Volker Binder, Gelnhausen; Wolfgang Merk, Hanau, and Peter Werle, Gelnhausen, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany and Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 14, 1982, Ser. No. 388,464
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1981, 3133553
Int. Cl.³ C07D *473/08*
U.S. Cl. 544—267 18 Claims

1. In a process for the production of pure dihydroxypropyltheophylline by the catalytic reaction of glycidol and theophylline the improvement comprising carrying out the process in the presence of a catalyst which is a hydroxide or short chain alcoholate of an alkali metal or an alkali metal salt of a pseudohydrohalic acid which has a readily polarizable anion, the amount of catalyst being 0.01 to 0.2 mole per mole of theophylline.

4,405,784

METHOD OF MAKING TRIETHYLENEDIAMINE

James E. Wells, Ardmore, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 29, 1981, Ser. No. 278,814
Int. Cl.³ C07D *295/2*
U.S. Cl. 544—352 9 Claims

1. In a method for synthesis of triethylenediamine from nitrogen-containing compounds selected from the group consisting of hydroxyethylpiperazine, crude hydroxyethylpiperazine, N-aminoethyl piperazine, ethanolamines and substituted ethanolamines by condensation reactions in the presence of acidic catalyst, the improvement which comprises the use as such catalyst of a product consisting essentially of $SrHPO_4$.

4,405,785

VAT DYESTUFF PREPARED FROM CRUDE ANTHRAQUINONE MIXTURES

Joseph W. Fitzpatrick, and Harold N. Schmidt, both of Toms River, N.J., assignors to Toms River Chemical Corporation, Toms River, N.J.

Continuation of Ser. No. 11,477, Feb. 12, 1979, abandoned, which is a continuation of Ser. No. 808,579, Jun. 21, 1977, abandoned, which is a continuation of Ser. No. 559,451, Mar. 18, 1975, abandoned, which is a division of Ser. No. 346,544, Mar. 30, 1973, Pat. No. 3,917,640. This application Oct. 15, 1980, Ser. No. 197,371
Int. Cl.³ C09B *5/40*
U.S. Cl. 546—30 3 Claims

1. A process for manufacturing a vat dyestuff comprising the steps of (1) nitrating athraquinone in the presence of sulfuric acid; (2) reducing the crude nitration product from step (1) to give a crude mixture of aminoanthraquinones which is 65–80% 1-aminoanthraquinone with the rest being a mixture of 2-aminoanthraquinone, 1,5-diaminoanthraquinone and 1,8-diaminoanthraquinone; (3) condensing the crude mixture of

aminoanthraquinones from step (2) with a halogenated benzanthrone; and (4) ring closing the crude condensate of step (3) to give a vat dyestuff which is of substantially the same shade and dyeing strength as a vat dyestuff obtained by condensing the halogenated benzathrone with substantially pure 1-aminoanthraquinone and ring-closing the resulting condensate.

4,405,786

ADDITION PRODUCTS OF DI-ACETYLENE-TERMINATED POLYIMIDE DERIVATIVES AND AN DIENOPHILE HAVING ETHYLENE GROUPS

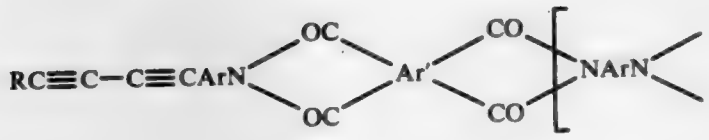
Gaetano F. D'Alelio, deceased, late of South Bend, Ind. (by St. Joseph Bank and Trust Company, executor), and Phillip A. Waitkus, Sheboygan, Wis., assignors to Plastics Engineering Company, Sheboygan, Wis.

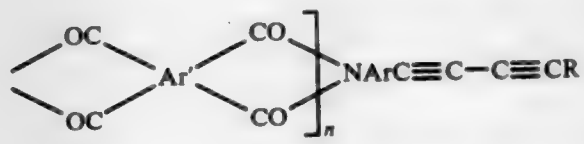
Continuation-in-part of Ser. No. 199,608, Oct. 22, 1980, abandoned. This application Mar. 2, 1982, Ser. No. 353,863

Int. Cl.[3] **C07D** *209/34, 471/00;* **C08F** *22/40*

U.S. Cl. 546—66 **20 Claims**

1. The Diels-Alder addition product of (1) a conjugated diacetylene compound of the formula:





wherein:

Ar′ is a tetravalent aromatic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms in Ar′ except in the case of Ar′ being a naphthalene radical, one or both pairs of the carbonyl groups may be attached to peri-carbon atoms;

Ar is a divalent aromatic radical;

n is zero or an integer having a value of one to 20;

R is hydrogen or an organic moiety containing 1 to 21 carbon atoms;

and (2) a dienophile containing one to four acceptor moieties having the formula RCH=C(R°)— wherein R is as defined above and R° is defined as for R.

4,405,787

3-CARBOXY-2-AZABICYCLO[2.2.1]HEPTANE DERIVATIVES

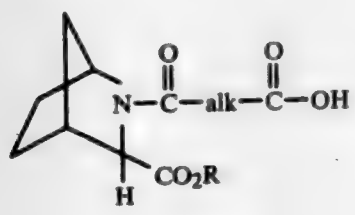
Dimitri Gaitanopoulos, Eagleville, and Joseph Weinstock, Phoenixville, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Apr. 5, 1982, Ser. No. 365,139

Int. Cl.[3] **C07D** *487/00*

U.S. Cl. 546—112 **10 Claims**

1. A compound of the formula:

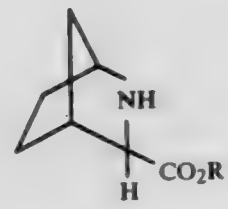


in which:

R is hydrogen, lower alkyl of 1–5 carbons or benzyl; and

alk is an alkylene chain of 2–5 carbons separating the carboxy and carboxamido groups to which it is attached by at least 2 carbons; or a pharmaceutically acceptable alkali metal or organic amine salt thereof.

6. A compound of the formula:



in which R is hydrogen, benzyl or lower alkyl; and its acid addition salts, or, when R is hydrogen, alkali metal or organic amine salts suitable for chemical intermediate use.

4,405,788

BICYCLO NITROGENHETEROCYCLIC SUBSTITUTED SULFOFLUORESCEINS, FLUORESCEINS AND XANTHENES

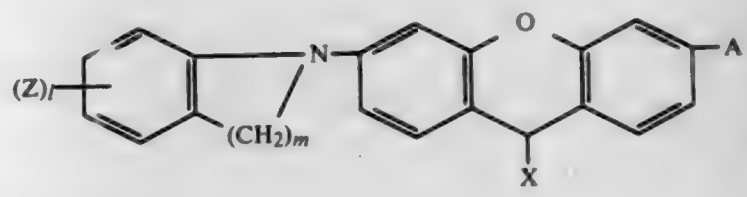
Louis Locatell, Jr., Wellesley Hills; Charles M. Zepp, Boylston, and Ronald F. Cieciuch, Brookline, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 26, 1979, Ser. No. 106,898

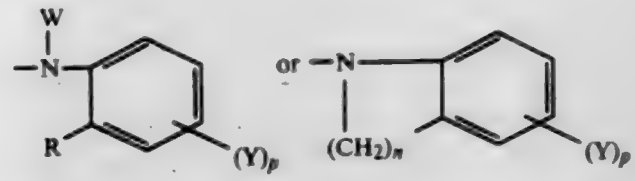
Int. Cl.[3] **C07D** *405/04, 405/14*

U.S. Cl. 546—165 **9 Claims**

1. A compound represented by the formula



where A is



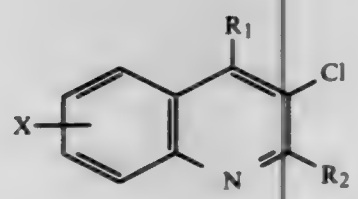
X is H, alkyl having from 1 to 6 carbon atoms, phenyl, naphthyl, phenyl substituted with $CO_2^{\ominus}$, $SO_3^{\ominus}$ or alkyl having from 1 to 6 carbon atoms; or naphthyl substituted with $CO_2^{\ominus}$, $SO_3^{\ominus}$ or alkyl having from 1 to 6 carbon atoms; W is H or alkyl having from 1 to 6 carbon atoms; R is H or alkyl having from 1 to 6 carbon atoms; Z and Y are each H or a monovalent radical selected from the group consisting of $—CH_3$, $—NO_2$, $—SO_3Na$ and $—N(CH_3)_2$; m and n are each integers of from 2 to 6; and l and p are each 1 or 2.

4,405,789
2 PHENYL-3-CHLORO-4[PIPERIDYL ALKYL]QUINOLINES

Alain A. Champseix, Orsay, and Gerard R. Le Fur, Plessis Robinson, both of France, assignors to Pharmindustrie, Genevilliers, France

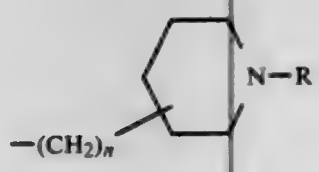
Filed Feb. 24, 1981, Ser. No. 237,784
Claims priority, application France, Mar. 7, 1980, 80 05152
Int. Cl.[3] C07D *401/06;* A61K *31/47*
U.S. Cl. 546—176 4 Claims

1. Compounds of the general formula:



(I)

in which X is fixed in positions 5, 6, 7 or 8 of the quinoline ring and represents hydrogen, chlorine, or alkyl or alkoxy having 1 to 4 carbon atoms, one of the substituents R_1 and R_2 is hydrogen, alkyl having 1 to 4 carbon atoms or unsubstituted phenyl, and the other of the substituents R_1 and R_2 is a group of the formula:



in which n is a whole number equal to 1 or 2, R is hydrogen or alkyl having 1 to 4 carbon atoms, and the radical $(CH_2)_n$ is fixed in position 3 or 4 on the piperidine ring, and their pharmaceutically acceptable salts of addition with mineral or organic acids.

4,405,790
PROCESS FOR PREPARING 2-ALKYLAMINO- AND 2-AMINO-5-ALKYLPYRIDINES

Charles K. McGill, and Thomas D. Bailey, both of Indianapolis, Ind., assignors to Reilly Tar & Chemical Corp., Indianapolis, Ind.

Filed Apr. 8, 1982, Ser. No. 366,599
Int. Cl.[3] C07D *213/74*
U.S. Cl. 546—304 41 Claims

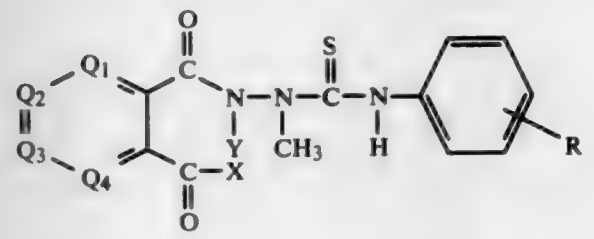
1. In a substituted Chichibabin amination of a 3-alkylpyridine base in an organic solvent, the improvement comprising a process for improving the ratio of 2,5-:2,3-isomer products of the reaction comprising the step of reacting the 3-alkylpyridine directly with the sodium salt of a primary alkylamine wherein each alkyl group has from 1 to about 20 carbon atoms.

4,405,791
ARYLTHIOUREIDO PYRIDINECARBAMINO COMPOUNDS AND USE AS PLANT GROWTH REGULANTS

Jerry L. Rutter; Charles G. Gibbs, both of Shawnee Mission, and Loren W. Hedrich, Overland Park, all of Kans., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Dec. 10, 1979, Ser. No. 101,654
Int. Cl.[3] C07D *213/56, 213/55, 213/86*
U.S. Cl. 546—316 40 Claims

1. A compound having the general structural formula



in which one of Q_1, Q_2, Q_3 or Q_4 is N, X is —OH or —O—(C_1-C_4 alkyl) and Y is H or X and Y together represent a bond between carbon and nitrogen atoms and R is H or one or two of the following substituents: —Br, —Cl, —F, —I, —CF_3, —CH_3, —NO_2 or —C≡N.

4,405,792
SUBSTITUTED PYRIDINES AND THEIR PREPARATION

Thomas J. Walter, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Sep. 8, 1981, Ser. No. 300,046
Int. Cl.[3] C07D *213/04*
U.S. Cl. 546—346 9 Claims

1. A process for the preparation of 4-(chlorophenyl)pyridines in which the chlorine atom is in the 3- or 4-position of the phenyl group which comprises reacting a 4-vinyl pyridine with chloroprene to form a 4-(3- or 4-chlorocyclohex-3-enyl)pyridine and then catalytically dehydrogenating the 4-(3- or 4-chlorocyclohex-3-enyl)pyridine to form a 4-(3- or 4-chlorophenyl)pyridine.

5. A process for the preparation of 4(chlorocyclohex-3-enyl)pyridines in which the chlorine is in the 3- or 4-position which comprises heating a 4-vinyl pyridine with chloroprene in an inert solvent to an elevated temperature at which a Diels-Alder type condensation occurs to form a 4-(3- or 4-chlorocyclohex-3-enyl)pyridine.

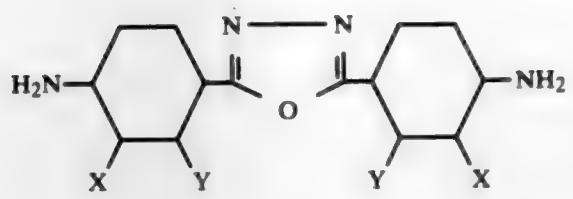
7. A process for the preparation of 4-(chlorophenyl)pyridines in which the chlorine is in the 3- or 4-position which comprises heating a 4-(3- or 4-chlorocyclohex-3-enyl)pyridine with a palladium catalyst in the presence of a hydrogen acceptor to a dehydrogenation temperature so that a 4-(3- or 4-chlorophenyl)pyridine is formed.

4,405,793
1,3,4-OXADIAZOLES

Otto Fuchs, Frankfurt am Main; Klaus Hunger, Kelkheim; Dieter Weber, Kelkheim, and Reinhard Zunker, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 865,490, Dec. 29, 1977, abandoned.
This application Feb. 1, 1979, Ser. No. 8,394
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1976, 2659709
Int. Cl.[3] C08K *5/23;* C09B *35/34*
U.S. Cl. 548—131 3 Claims

1. A compound of the formula (1)



(1)

wherein one of the substituents X and Y is hydrogen and the other one is chlorine.

4,405,794

PREPARATION OF 2-OXAZOLIDINONE AND ETHYLENEUREA

Robert M. Harnden, Russellville, Ark., and Daniel W. Baugh, Jr., Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 18, 1981, Ser. No. 332,290

Int. Cl.³ C07D *263/22, 233/30*

U.S. Cl. 548—229 **8 Claims**

1. A process for making 2-oxazolidinone and ethyleneurea, which comprises the step of reacting urea with beta-hydroxyethylcarbamate at elevated temperatures.

4,405,795

2,6-DIALKOXY-3-(α-ALKOXYBENZYL)TETRAHYDROPYRANS USED AS INTERMEDIATES TO MAKE 2-BENZYLIDENEGLUTARALDEHYDES

Wolfgang Münzenmaier, Wennigsen; Heinz Eggensperger, Hamburg; Helmut H. Ehlers, Hamburg; Wolfgang Beilfuss, Hamburg; Lothar Bücklers, Norderstedt, and Hans-Peter Harke, Hamburg, all of Fed. Rep. of Germany, assignors to Sterling Drug Inc., New York, N.Y.I

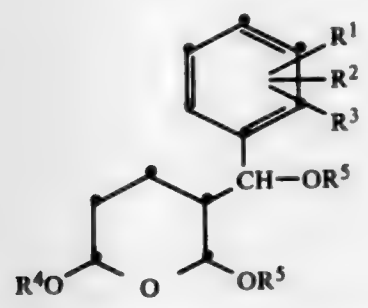
Division of Ser. No. 294,890, Aug. 21, 1981, Pat. No. 4,371,547. This application Jun. 7, 1982, Ser. No. 385,522

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1980, 3032794

Int. Cl.³ C07D *309/06*

U.S. Cl. 549—417 **10 Claims**

1. A 2,6-dialkoxy-3-(α-alkoxybenzyl)tetrahydropyran represented by the formula



where R^1, R^2 and R^3 independently are hydrogen or a substituent selected from the group consisting of halo, lower-alkyl, phenyl, carboxy, lower-alkoxycarbonyl, phenoxycarbonyl, aminocarbonyl, hydroxysulfonyl, nitro, cyano, hydroxy, lower-alkoxy and phenoxy; and R^4 and R^5 independently are alkyl of one to four carbon atoms.

4,405,796

PROCESSES FOR MAKING PHOSPHORUS DERIVATIVES OF AMINOTHIOMETHYLCARBAMATES

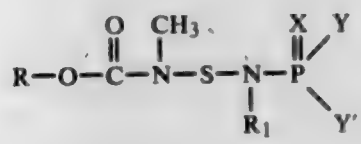
Stephen J. Nelson, Comstock Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 170,342, Jul. 21, 1980, Pat. No. 4,354,975, which is a continuation of Ser. No. 43,277, Jun. 1, 1979, abandoned. This application Mar. 8, 1982, Ser. No. 355,649

Int. Cl.³ C07F *9/22*

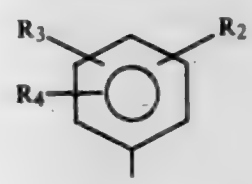
U.S. Cl. 549—220 **51 Claims**

1. A process for preparing a compound having the formula:



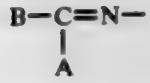
I

wherein R is selected from the group consisting of:



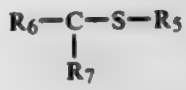
a.

wherein R_2, R_3, and R_4 are the same or different and are selected from the group consisting of hydrogen, lower-alkyl of one to five carbon atoms, inclusive, halogen, lower-alkoxy of one to five carbon atoms, inclusive, lower-alkylthio of one to five carbon atoms, inclusive, dialkylamino with each alkyl the same or different and having one to three carbon atoms, inclusive, and N=CHN(CH₃)₂;

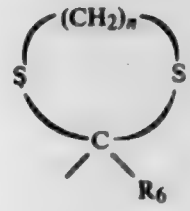


b.

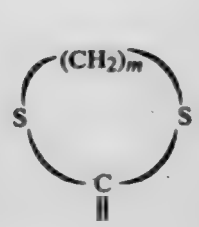
wherein A and B are the same or different and are selected from the group consisting of lower-alkyl of one to five carbon atoms, inclusive, lower-alkylthio of one to five carbon atoms, inclusive, phenylthio wherein phenyl is unsubstituted or substituted with one to three substituents, same or different, selected from the group consisting of halogen and lower-alkyl of one to four carbon atoms, inclusive, monocyano substituted alkylthio of one to five carbon atoms, inclusive, cyano, alkoxy having one to five carbon atoms, inclusive, phenyl, and hydrogen, with the proviso that when A is hydrogen, B is of the formula:



wherein R_5 is selected from the group consisting of alkyl of one to three carbon atoms, inclusive, and phenyl; R_6 is alkyl of one to three carbon atoms, inclusive; R_7 is selected from the group consisting of alkyl of one to three carbon atoms, inclusive, and SR_8, wherein R_8 is alkyl and is the same alkyl group as R_5, and taking R_5 and R_8 together with the atoms to which they are attached form a dithio heterocyclic of the formula:

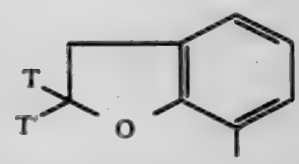


wherein n is 2 or 3 and the alkylene portion of the ring is unsubstituted or substituted with one or two methyl groups; A and B taken together with the carbon atoms to which they are attached form a dithio heterocyclic of the formula:



wherein m is 2 or 3 and the alkylene portion of the ring is unsubstituted or substituted with one to two methyl groups; and

c.



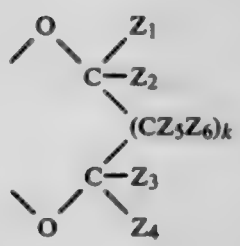
wherein T and T′ can be the same or different and are selected from the group consisting of hydrogen and lower alkyl of from one to six carbons; R_1 is selected from the group consisting of lower-alkyl, phenyl, substituted phenyl, phenyl lower-alkyl, and cyclo-alkyl; X is oxygen or sulfur; Y and Y′ are the same or different and are selected from the group consisting of:

Y_1 and Y_1' I_1

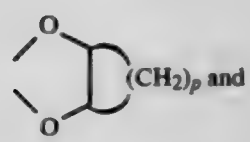
and

Y and Y′

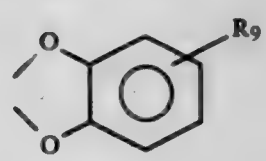
taken together to form a functionality selected from the group consisting of:



I′

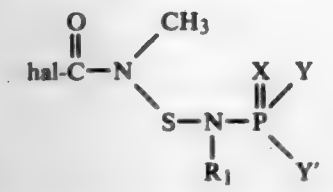


I″



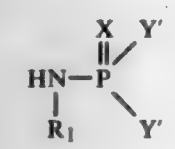
I‴

wherein Y_1 and Y_1' are selected from the group consisting of lower-alkyl, lower-alkoxy, lower-alkylthio, cycloalkyl, phenyl, substituted phenyl, phenoxy, substituted phenoxy, thiophenoxy, and substituted thiophenoxy, Z_1 through Z_6 are the same or different and are selected from the group consisting of hydrogen, methyl and ethyl; and k is 0 or 1, p is three or four and R_9 is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy and halogen; which comprises step (1) preparing intermediate having the formula



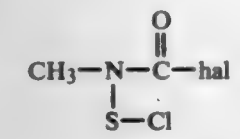
II

in a process wherein a compound having the formula



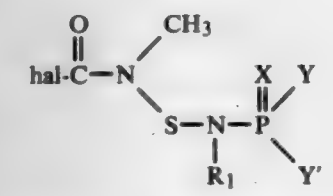
V

is reacted with a compound having the formula



IV

and, step (2) contacting the intermediate



II

wherein R_1, X, Y and Y′ are as defined above, and Hal is fluorine or chlorine; with a compound having the formula ROH wherein R is the same as above.

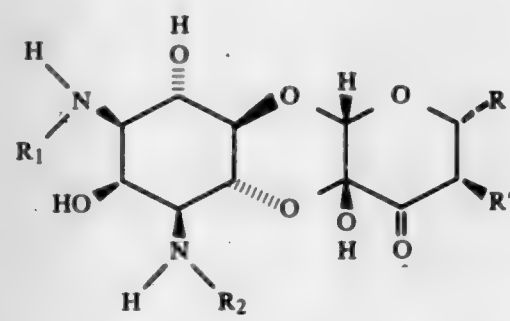
4,405,797

PROCESS FOR PREPARING SPECTINOMYCIN ANALOGS: N-DEMETHYLATION OF SPECTINOMYCIN OR ITS ANALOGS AND REALKYLATION OF THE INTERMEDIATES

Richard C. Thomas, Oshtemo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 16, 1981, Ser. No. 312,035
Int. Cl.³ C07D *323/04*
U.S. Cl. 549—361 **8 Claims**

1. A process for the preparation of a compound having the formula



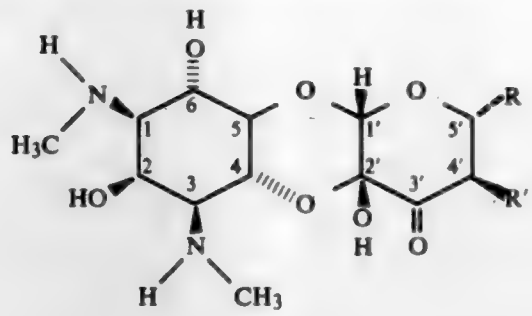
II

wherein R_1 and R_2 may be the same or different such that R_1 and R_2 are both hydrogen, and a mixture such that in one compound of the mixture when R_1 is hydrogen then R_2 is methyl and that in another compound of the mixture when R_2 is hydrogen then R_1 is methyl, and R and R′ are the same or different and are hydrogen, alkyl of from C_1 to C_8, inclusive, lower alkenyl, lower haloalkyl, lower aminoalkyl, lower alkynyl, —OX, and $(CH_2)n$—OX

wherein n is an integer of from one to four, and X is lower alkyl, lower alkenyl, benzyl and acyl or pharmacologi-

cally acceptable acid addition salts thereof which comprises:

treating a compound having the formula



I

wherein R and R′ is as defined above, or the pharmacologically acceptable acid addition salts thereof in an aqueous solvent with oxygen in the presence of a catalyst at a temperature between 0° and 100° C. to obtain the product compound II.

4,405,798

ACRYLATE AND METHACRYLATE MONOESTERS OF PENTAERYTHRITOL AND PENTAERYTHRITOL ORTHOESTERS AND POLYMERS AND COPOLYMERS DERIVED THEREFROM

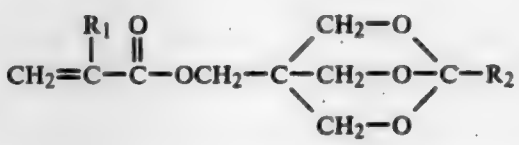
Henry K. Hall, Tucson, Ariz., and Donald R. Wilson, Warren, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 30, 1981, Ser. No. 248,183

Int. Cl.³ C07D *319/14*

U.S. Cl. 549—363 **3 Claims**

1. An alpha, beta-ethylenically unsaturated orthoester of the general formula



in which R_1 is hydrogen or a methyl group and R_2 is hydrogen or a lower alkyl group.

4,405,799

TREATMENT OF EFFLUENTS CONTAINING DIOXANE

Paritosh M. Chakrabarti, Cedar Grove; Mohamed M. Hashem, and Tom M. H. Cheng, both of Wayne, all of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,740

Int. Cl.³ C07D *319/06, 319/12*

U.S. Cl. 549—369 **15 Claims**

1. A process for removing dioxane from an alkoxylated product waste gas having a dioxane concentration of up to about 25%, which comprises contacting said gas with an acid having a pK_1 value of not more than 5 at an acid concentration above 50%.

4,405,800

N-ACETYL-PARA-AMINOPHENYL N′-ACETYLAMINO-S-(TETRAHYDRO-2-PYRANYL)THIOALKANOATES

George Margetts, Billingshurst; Roderic S. Andrews, Chapelhouse, both of England, and Jean Legros, Dijon, France, assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 246,234, Mar. 23, 1981, Pat. No. 4,361,703, which is a division of Ser. No. 26,329, Apr. 2, 1979, which is a division of Ser. No. 909,846, May 26, 1978, Pat. No. 4,181,719.

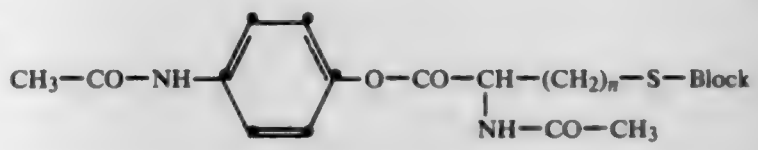
This application Mar. 22, 1982, Ser. No. 360,312

Claims priority, application United Kingdom, May 26, 1977, 22218/77

Int. Cl.³ C07D *309/08*

U.S. Cl. 549—419 **1 Claim**

1. N-acetyl-para-aminophenyl N′-acetylaminothioalkanoate having the general formula



wherein n is 1 or 2, and "Block" is tetrahydro-2-pyranyl.

4,405,801

SILICON-CONTAINING NITRO DYES AND PROCESS FOR MAKING THE SAME

Bodo Hirsch, Graupa; Gunter Horn, Nuenchritz, and Hellmut Reuther, Dresden, all of German Democratic Rep., assignors to VEB Chemiewerk Nünchritz, Radebeul, German Democratic Rep.

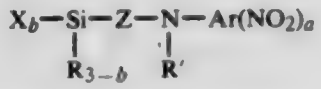
Continuation of Ser. No. 27,266, Apr. 5, 1979, abandoned. This application Jun. 24, 1982, Ser. No. 391,657

Claims priority, application German Democratic Rep., Apr. 5, 1978, 204588

Int. Cl.³ C07F *7/10*

U.S. Cl. 556—422 **3 Claims**

1. Silicon-containing nitro dyes having the formula:



wherein the coloring component is bonded with the Si-atom by homopolar bonds and wherein X represents same or different hydrolyzable groups or a siloxane radical, Z is a bivalent alkylene radical with 1–10 carbon atoms which may be interrupted by NR′ groups, R is a monovalent organic radical, R′ is hydrogen, alkyl with 1–10 C-atoms, aryl, aralkyl or said substituted radicals, Ar is a substituted or unsubstituted aryl radical, and a and b are integers from 1–3.

4,405,802

CHIRAL BORON ENOLATE REAGENTS

Satoru Masamune, Newton, and William Choy, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

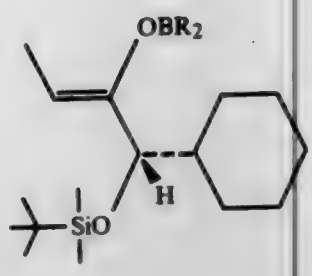
Filed Feb. 22, 1982, Ser. No. 350,854

Int. Cl.³ C07F *5/02, 5/04, 5/05, 7/08*

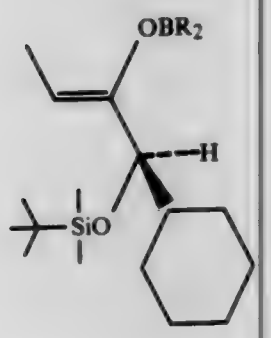
U.S. Cl. 556—402 **8 Claims**

1. The compound of the formula selected from the group consisting of:

Formula I



Formula II



wherein R is selected from the group consisting of n-butyl and cyclopentyl or R_2B is 9-borobicyclo[3.3.1]non-9-yl.

4,405,803

PROCESS FOR THE PREPARATION OF SILYLISOCYANATES

Rudolf Fauss, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 21, 1982, Ser. No. 380,581

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1981, 3122014

Int. Cl.³ C07F *7/10*

U.S. Cl. 556—410 4 Claims

1. A process for the production of a silylisocyanate of the formula

$$R_aSi(NCO)_bX_c$$

wherein

R represents an aliphatic hydrocarbon group having from 1 to 18 carbon atoms which group may be olefinically unsaturated and/or contain an inert substituent; an aromatic hydrocarbon group having 6 to 18 carbon atoms and optionally containing an inert substituent; an araliphatic hydrocarbon group having 7 to 18 carbon atoms optionally containing an inert substituent; a cycloaliphatic hydrocarbon group having 5 to 18 carbon atoms optionally containing an inert substituent; an alkoxy group having 1 to 18 carbon atoms; or an aryloxy group having 6 to 18 carbon atoms;

X represents chlorine or bromine;

a represents an integer from 1 to 3;

b represents an integer from 1 to 3; and

c represents an integer from 0 to 2

provided that the sum of a+b+c is equal to 4 comprising reacting a halogen silane corresponding to the general formula

$$R_aSiX_{b+c}$$

with urea in a polar solvent at a temperature greater than or equal to 100° C. without application of pressure.

4,405,804

METHOD FOR PREPARING 2-CHLOROETHYLSILANES

Peter John; Reinhold Artes; Volker Frey, all of Burghausen, and Matthias Scherer, Emmerting, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 2, 1982, Ser. No. 414,161

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1981, 3144020

Int. Cl.³ C07F *7/08*

U.S. Cl. 556—476 5 Claims

1. A method for preparing 2-chloroethylsilanes which comprises reacting a vinylchlorosilane with hydrogen chloride in the presence of a catalyst selected from the group consisting of an organoaluminum compound, and the product obtained from the in situ reaction of the organoaluminum compound with at least one of the reactants.

4,405,805

PROCESS FOR RECOVERING AND PURIFYING HERBICIDAL PHENOXYBENZOIC ACID DERIVATIVES

Thomas J. Giacobbe, Skillman, and Grace Tsien, Colonia, both of N.J., assignors to Rhone-Poulenc, Inc., Monmouth Junction, N.J.

Filed Jul. 27, 1981, Ser. No. 286,996

Int. Cl.³ C07C *79/46*

U.S. Cl. 560—21 8 Claims

1. A process for recovering and purifying acifluorfen or salt thereof in which said acifluorfen or salt is in admixture with one or more isomers thereof and/or one or more other by-products resulting from the process by which said acifluorfen is manufactured, which comprises contacting said acifluorfen or salt with an inert solvent selected from the group consisting of xylene or mixed xylenes which selectively dissolves undesired isomer/other by-product and thereafter separating the acifluorfen or salt from the solution of undesired isomer/other by-product.

4,405,806

BROMINE-CONTAINING 2,4-DIAMINOTRIAZINES

Leon H. Chance, New Orleans, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 276,768, Jun. 24, 1981, Pat. No. 4,352,930.

This application Apr. 20, 1982, Ser. No. 370,009

Int. Cl.³ C07C *101/44*

U.S. Cl. 560—43 1 Claim

1. Ethyl N-(2,4,6-tribromophenyl)glycinate.

4,405,807

TETRAKIS[3-(3,5-DI-T-BUTYL-4-HYDROXYPHENYL)-PROPIONYLOXYMETHYL]METHANE HAVING A NOVEL CRYSTAL STRUCTURE AND PROCESS FOR PRODUCTION THEREOF

Hiroshi Hasui, Tokyo; Toshikazu Furihata, Ichihara; Kazuko Takanashi, Futtsu, and Masahiko Ohmori, Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Japan

Filed Jan. 13, 1981, Ser. No. 224,831

Claims priority, application Japan, Jan. 14, 1980, 55-2101; Apr. 1, 1980, 55-41177

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—75 7 Claims

1. Tetrakis[3-(3,5-di-t-butyl-4-hydroxyphenyl)propionyloxymethyl]-methane having a novel crystal structure characterized by the fact that its X-ray diffraction pattern obtained by X-ray analysis using Cu-K_{60} rays shown a sharp peak at a diffraction angle $2\theta = 10.90°$.

4,405,808

PROCESS FOR PREPARING ACETIC ACID ESTERS

Kazuhisa Nakajima, Minoo; Masahiko Miyashita, Takatsuki; Susumu Hakozaki, Hirakata, and Yoshinori Chosakon, Ibaraki, all of Japan, assignors to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 20, 1982, Ser. No. 370,037

Claims priority, application Japan, Apr. 24, 1981, 56-63086; Apr. 30, 1981, 56-66601

Int. Cl.³ C07C *67/04*

U.S. Cl. 560—247 5 Claims

1. A process for preparing an acetic acid ester which comprises reacting acetic acid and an aliphatic lower olefin in vapor phase in the presence of steam on a catalyst selected from the group consisting of an aromatic disulfonic acid and an ester thereof.

4,405,809

PROCESS FOR THE MANUFACTURE OF AROMATIC POLYCARBOXYLIC ACIDS HAVING DELTA Y VALUES BELOW TEN

Eric N. Stech, Mount Pleasant, S.C.; Mark S. Montgomery, Homewood, Ill., and J. Frederick Bates, Mount Pleasant, S.C., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 4, 1981, Ser. No. 327,606

Int. Cl.³ C07C *51/42*

U.S. Cl. 562—487 10 Claims

1. In a process for purifying aromatic polycarboxylic acid produced by liquid phase catalytic oxidation of polyalkyl aromatic hydrocarbon to remove undesirable aldehyde aromatic carboxylic acid and other impurities including the step of contacting a water solution of said impure acid and hydrogen gas with a noble metal-containing catalyst; the improvement comprising eliminating any gas phase during the contacting step and conducting said contacting step with said water solution by maintaining hydrogen at about 10 to about 75 percent of saturation in the liquid reaction medium to produce purified aromatic polycarboxylic acid having delta Y values below ten.

4,405,810

7-ARYL-HEPT-5-YNOIC ACIDS AND DERIVATIVES THEREOF

David Blythin, West Caldwell, and Michael J. Green, Skillman, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Jun. 14, 1982, Ser. No. 388,060

Int. Cl.³ C07C *63/64*

U.S. Cl. 562—495 11 Claims

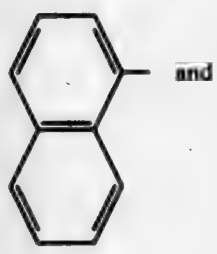
1. A compound of the formula



wherein Aryl is selected from the group consisting of



and



-continued



wherein

R is hydrogen; phenyl; straight- or branched-chain alkyl containing from 1 to 12 carbon atoms; (cycloalkyl)alkyl containing from 3 to 12 carbon atoms; phenoxy; phenyl$(CH_2)_m$—wherein m is 0,1 or 2;

C_nH_{2n+1}—O—CH_2—wherein n is 1-10; or

C_pH_{2p+1}—O— wherein p is 1-12;

R_1 is hydrogen, lower alkyl or phenyl; and the nontoxic pharmaceutically acceptable alkali metal, alkalineearth metal, ethanolamine and N-methylglucamine salts thereof.

4,405,811

SEVERELY STERICALLY HINDERED TERTIARY AMINO COMPOUNDS

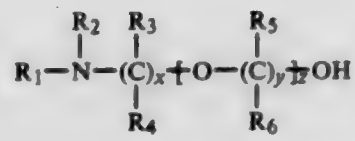
Eugene L. Stogryn, Edison, and Guido Sartori, Linden, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 18, 1982, Ser. No. 339,881

Int. Cl.³ C07C *91/10, 91/12, 93/04, 91/04*

U.S. Cl. 564—506 7 Claims

1. A severely sterically hindered tertiary amino compound of the general formula:



wherein R_1 and R_2 are each independently selected from the group consisting of alkyl radicals having 1 to 8 carbon atoms and hydroxyalkyl radicals having 2 to 8 carbon atoms and cycloalkyl and hydroxycycloalkyl radicals having 3 to 8 carbon atoms, R_3, R_4, R_5 and R_6 are each independently selected from the group consisting of hydrogen and C_1–C_4 alkyl and hydroxyalkyl radicals, with the proviso that if the carbon atoms of R_1 and R_2 directly attached to the nitrogen atom are primary, both R_3 and R_4 directly bonded to the carbon which is bonded to the nitrogen are alkyl or hydroxyalkyl radicals, and with the proviso that if the carbon atom of R_1 directly attached to the nitrogen atom is secondary and the carbon atom of R_2 directly attached to the nitrogen atom is primary, at least one of R_3 or R_4 directly bonded to the carbon which is bonded to the nitrogen is an alkyl or hydroxyalkyl radical, x and y are each positive integers independently ranging from 2 to 4, and z is either zero or a positive integer ranging from 1 to 4.

4,405,812

PROCESS FOR ORTHO DEALKYLATION OF AROMATIC AMINES

Walter K. Dean, Huntington Woods, and Bernard R. Meltsner, Royal Oak, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Filed Feb. 19, 1982, Ser. No. 350,204

Int. Cl.³ C07C *85/24, 85/20*

U.S. Cl. 564—409 5 Claims

1. A process for selectively removing an ortho-methyl substituent from an aromatic amine having at least one nuclear methyl substituent ortho to an amine group, said process com-

prising contacting said aromatic amine with a nickel catalyst at an elevated temperature of about 200°-400° C.

4,405,813

PROCESS FOR THE PREPARATION OF 3,5-DIMETHYLANILINE

Rüdiger Berthold, Bad Soden am Taunus, and Werner H. Müller, Eppstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 4, 1981, Ser. No. 318,116

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041899

Int. Cl.³ C07C *85/00, 85/20*

U.S. Cl. 564—415 **10 Claims**

1. A process for the preparation of 3,5-dimethylaniline from 3,5-dimethyl-2-cyclohexen-one azine by heating it in an inert solvent in the presence of a catalyst containing a noble metal of the 8th auxiliary group of the Periodic Table of Elements, wherein the solvent is an aliphatic ether.

4,405,814

HYDROFORMYLATION OF FORMALDEHYDE WITH RHODIUM CATALYSTS

W. Eamon Carroll, Creve Coeur, and Albert S. Chan, St. Charles, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 5, 1981, Ser. No. 290,622

Int. Cl.³ C07C *45/49*

U.S. Cl. 568—462 **11 Claims**

1. A process for the production of glycol aldehyde which comprises reacting carbon monoxide, hydrogen and formaldehyde in a solvent system and in the presence of (1) an amount of a rhodium catalyst sufficient to catalyze the formation of glycol aldehyde and wherein the rhodium catalyst has at least one modifying ligand associated with one rhodium atom and said ligand is a tertiary organo phosphorus moiety or a tertiary organo arsenic moiety or combinations thereof and (2) a basic organo amine composition having a pKa of at least 1.0 serving to improve reaction rate and yield of glycolaldehyde, said process being further characterized in that it is carried out under conditions of elevated pressure not in excess of 6000 psig and elevated temperature in the range of 70° C. up to 150° C., conducive to the formation of glycol aldehyde.

4,405,815

PROCESS FOR THE PRODUCTION OF ACETALDEHYDE AND ETHANOL

Karl-Heinz Keim, Heimerzheim, and Joachim Korff, Bornheim-Sechtem, both of Fed. Rep. of Germany, assignors to Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft, Wesseling, Fed. Rep. of Germany

Filed Nov. 30, 1981, Ser. No. 325,812

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1980, 3045891

Int. Cl.³ C07C *45/49*

U.S. Cl. 568—487 **6 Claims**

1. In a process for the production of acetaldehyde and ethanol by reacting methanol with hydrogen and carbonmonoxide at elevated temperature and pressure in the presence of a catalyst system containing cobalt, and a promoter selected from the group consisting of iodine, bromine, an iodine compound and a bromine compound and one or more polydentate ligands with donor atoms of the group consisting of phosphorus, arsenic, antimony and bismuth, the improvement which comprises additionally introducing into the catalyst system one or more metals from the group consisting of chromium, molybdenum, tungsten, uranium, titanium, vanadium, iron and nickel.

4,405,816

4,4'-DIPHENYL ETHER-DIALDEHYDE-BIS-DIMETHYLACETAL

Detlef H. Skaletz, Mainz, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 21, 1981, Ser. No. 333,013

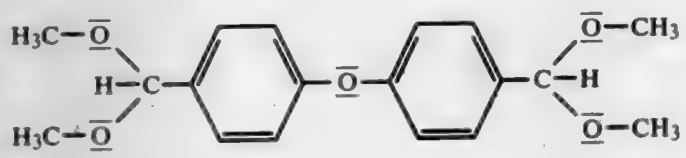
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3048992

Int. Cl.³ C07C *43/263*

U.S. Cl. 568—592 **1 Claim**

1. 4,4'-Diphenyl ether-dialdehyde-bis-dimethylacetal, having the formula

VII



4,405,817

STABILIZED HYDROXYL TERMINATED REACTIVE LIQUID POLYMERS

Walter T. Murphy, Cuyahoga Falls, and Clifford D. Guiley, Jr., Medina, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 30, 1981, Ser. No. 258,979

Int. Cl.³ C07C *29/64, 67/62*

U.S. Cl. 568—701 **3 Claims**

1. Stabilized hydroxyl terminated reactive liquid polymer selected from the group consisting of butadiene polymers and alkyl acrylate polymers containing sufficient amount of an acid with an ionization constant of 1×10^{-4} and greater that inhibits viscosity increase with time.

4,405,818

PRODUCTION OF META-ISOPROPYLPHENOLIC PRODUCTS

George E. Stead, Piscataway, and Lewis B. Young, Skillman, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 30, 1981, Ser. No. 307,049

Int. Cl.³ C07C *37/14, 39/06*

U.S. Cl. 568—781 **13 Claims**

1. A process for producing a meta-isopropylphenol-containing product mixture, said process comprising:

(A) alkylating phenol with an alkylating agent selected from propylene and isopropanol under alkylation conditions which include a temperature of from about 150° C. to 600° C. and a pressure of from about 10^3 N/m^2 to 10^7 N/m^2, to produce an alkylation product comprising isomers of isopropylphenol, and

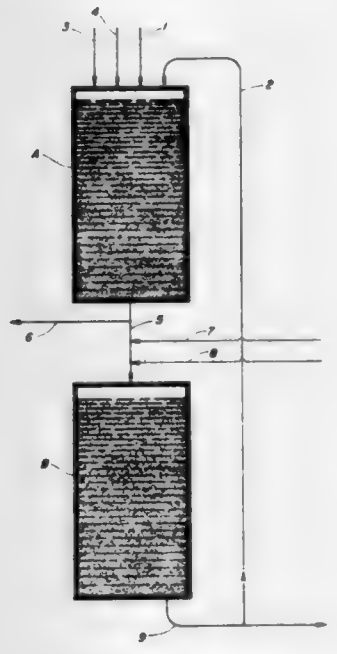
(B) contacting a mixture containing meta and para isopropylphenol isomers from said alkylation product, with a crystalline zerolite catalyst having a silica-to-alumina molar ratio of at least about 12 and a constraint index within the approximate range of 1 to 12 at a temperature of from about 150° C. to about 600° C. and a pressure of from about 10^4 N/m^2 to 10^6 N/m^2, to thereby selectively crack para-isopropylphenol into phenol and propylene within said mixture and to thereby provide a product mixture enriched in meta-isopropylphenol relative to para-isopropylphenol.

4,405,819

PROCESS FOR THE PRODUCTION OF ALCOHOLS FROM CARBOXYLIC ACIDS

Louis R. Duckwall, Jr., Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed May 3, 1982, Ser. No. 374,212
Int. Cl.[3] C07C *29/00*
U.S. Cl. 568—814 7 Claims



1. An improved continuous fixed bed acid process for the production of alcohols from carboxylic acids in high yields comprising

(a) reacting at a temperature of from about 100° C. to about 400° C. and a pressure of from about 1 atmosphere to about 350 atmospheres, carboxylic acids having the general formula RCOOH, wherein R is an alkyl group containing from 1 to 24 carbon atoms and which can contain additional organic acid groups, with alcohols having the general formula R^2OH, wherein R^2 is a linear or branched alkyl containing from 1 to 30 carbon atoms, to produce carboxylic acid esters, then hydrogenating the carboxylic acid esters at a temperature of from about 200° C. to about 350° C. and a pressure of from about 100 atmospheres to about 350 atmospheres with hydrogen and carbon monoxide over a hydrogenation catalyst selected from the group consisting of metallic and metallic oxide compounds of transition elements in subgroup I, subgroup II, subgroup V, subgroup VI and subgroup VIII of the Periodic Table to produce product alcohols, the improvement comprising adding a mixture of hydrogen and carbon monoxide as a sweep gas to the ester formation reaction.

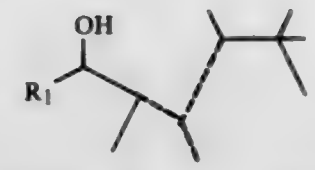
4,405,820

BRANCHED CHAIN OLEFINIC ALCOHOLS, THIOLS, ESTERS AND ETHERS, ORGANOLEPTIC USES THEREOF, PROCESSES FOR PREPARING SAME AND INTERMEDIATES THEREFOR

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 252,334, Apr. 9, 1981, Pat. No. 4,336,164, which is a continuation-in-part of Ser. No. 212,887, Dec. 4, 1980, Pat. No. 4,318,934. This application Mar. 2, 1982, Ser. No. 354,389
Int. Cl.[3] C07C *33/025;* A23L *1/226;* A24B *3/12;* C11D *3/50*
U.S. Cl. 568—840 6 Claims

1. At least one compound defined according to the structure:



wherein R_1 is selected from the group consisting of methyl and isopropyl and wherein one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represent carbon-carbon single bond.

4,405,821

PROCESS FOR PREPARING GLYCOLALDEHYDE AND/OR ETHYLENE GLYCOL

Richard W. Goetz, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Aug. 11, 1981, Ser. No. 291,749
Int. Cl.[3] C07C *29/14, 31/20*
U.S. Cl. 568—862 21 Claims

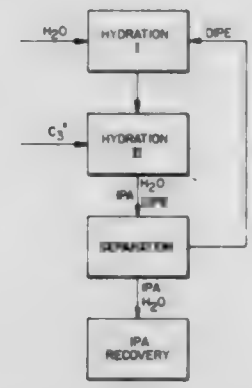
1. In a process in which formaldehyde, carbon monoxide and hydrogen are reacted in a first stage reaction in a non-amide solvent at elevated temperature and superatmospheric pressure in the presence of a catalytic amount of a rhodium-containing catalyst to provide glycolaldehyde, and the glycolaldehyde is subsequently catalytically reduced in a second stage reaction to provide ethylene glycol, the improvement which comprises carrying out said first stage reaction in the presence of a glycolaldehyde yield-enhancing phosphine oxide.

4,405,822

DIISOPROPYL ETHER HYDRATION IN ISOPROPANOL PRODUCTION

Susan A. Bezman, Point Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 30, 1981, Ser. No. 316,580
Int. Cl.[3] C07C *29/04*
U.S. Cl. 568—899 8 Claims



1. A process for producing isopropanol comprising:

(a) contacting a reactant stream comprising water and diisopropyl ether in a first reaction zone with a first hydration catalyst under hydration conditions including a molar ratio of water to diisopropyl ether of from about 20 to 600;

(b) contacting the effluent from the first reaction zone and a feedstock comprising propylene with a second hydration catalyst comprising an acid ion exchange resin under mixed phase hydration conditions in a second reaction zone including a temperature of from about 275° to 375° C. and a pressure of from about 1000 to 2000 psig;

(c) separating the liquid effluent from the second reaction zone into a product stream comprising water and isopropanol and a recycle stream comprising diisopropyl ether;

(d) passing the recycle stream to step (a); and

(e) recovering isopropanol from the product stream.

4,405,823

PROCESS FOR THE PRODUCTION OF PHENOLS

Takao Maki, Fujisawa; Tetsuo Masuyama, Machida, and Toshiharu Yokoyama, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Aug. 24, 1982, Ser. No. 411,122

Claims priority, application Japan, Aug. 24, 1981, 56-132481; Oct. 7, 1981, 56-159716; Nov. 5, 1981, 56-177582

Int. Cl.³ C07C *37/56*

U.S. Cl. 568—801 10 Claims

1. A process for producing phenols which comprises contacting benzenemonocarboxylic acids, or their salts, esters, or acid anhydrides with molecular oxygen-containing gas and steam in a liquid phase at a temperature of from 180° to 300° C. and a pressure of from 0.1 to 10 atmospheric pressure in the presence of a copper compound, a manganese compound, and a rare earth element compound.

4,405,824

PROCESS FOR PRODUCING ARYL- OR ARALKYLBENZENE HAVING TWO BENZENE RINGS AT LEAST ONE OF WHICH IS SUBSTITUTED BY AT LEAST ONE 3,3,3-TRIFLUOROPROPYL GROUP

Yoshiro Kobayashi, Tokyo; Itsumaro Kumadaki, Hachiohji; Masaaki Takahashi, Tokyo, and Takashi Yamauchi, Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

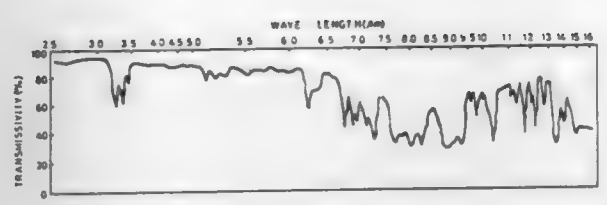
Division of Ser. No. 233,715, Feb. 12, 1981, Pat. No. 4,356,335. This application Feb. 10, 1982, Ser. No. 347,727

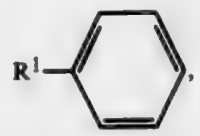
Claims priority, application Japan, Feb. 22, 1980, 55-21090; Feb. 22, 1980, 55-21091; Feb. 22, 1980, 55-21092; Feb. 22, 1980, 55-21093; Feb. 22, 1980, 55-21094; Sep. 1, 1980, 55-120928; Nov. 21, 1980, 55-164434

Int. Cl.³ C07C *17/32*

U.S. Cl. 570—144 4 Claims

1. A process for producing an aryl- or aralkylbenzene having at least one benzene ring substituted by at least one 3,3,3-trifluoropropyl group, which comprises bringing an aryl- or aralkylbenzene of the formula





wherein R^1 represents phenyl group, benzyl group, phenethyl group or alpha-methylbenzyl group, into reaction with 3,3,3-trifluoropropylene in the presence of an acid catalyst selected from the group consisting of hydrogen fluoride and boron trifluoride.

4,405,825

POUR POINT REDUCTION OF SYNCRUDE

Donald M. Fenton, Anaheim; Dennis D. Delaney, Placentia, and Frank W. Stechmeyer, Irvine, all of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Oct. 30, 1981, Ser. No. 316,893

Int. Cl.³ C10L *1/22;* F17D *1/16, 1/17;* C10G *29/20*

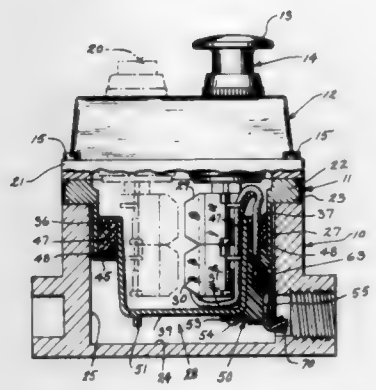
U.S. Cl. 585—13 19 Claims

1. A syncrude composition having improved pour point characteristics consisting essentially of a syncrude derived from oil shale, tar sands, oil-impregnated diatomite ore or coal and an effective pour point depressant amount of a water-soluble nitrogen-containing compound which has an alkaline pH in aqueous solution selected from the group consisting of ammonia, ammonium hydroxide, and primary, secondary and tertiary aliphatic amines and alkanolamines having one or more alkyl groups containing 1 to 4 carbon atoms.

4,405,826
ENCLOSURE SEALING WELL CONSTRUCTION

Gilbert A. Reichert, Greendale, and Richard A. Pankowski, Franklin, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Sep. 24, 1981, Ser. No. 305,003
Int. Cl.[3] H05K *5/06*
U.S. Cl. 174—59 10 Claims

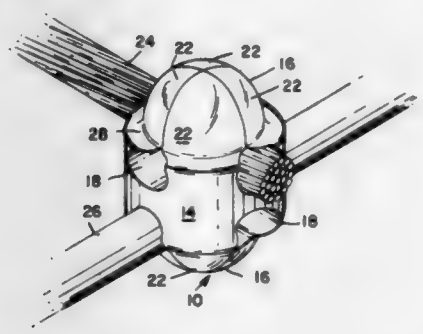


1. In an enclosure including a cup-like base member defining a cavity for receiving an electrical device and having an end wall apertured to receive a first conductive lead, a cup-like sealing well seated within the base member cavity and an enclosure cover including means for supporting said electrical device, a portion of said electrical device being received within the cavity of the sealing well: the combination therewith of a terminal block supported externally of a wall surface of said sealing well and in the space between facing wall surfaces of the sealing well and base member, said terminal block including means for receiving a second conductive lead having one end disposed in the sealing well cavity for electrical connection to the electrical device; detachable connecting means for joining the said first and second conductive leads.

4,405,827
ELECTRICAL CONNECTOR

James L. Mixon, Jr., Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 22, 1981, Ser. No. 276,306
Int. Cl.[3] H01R *4/20*
U.S. Cl. 174—94 R 1 Claim

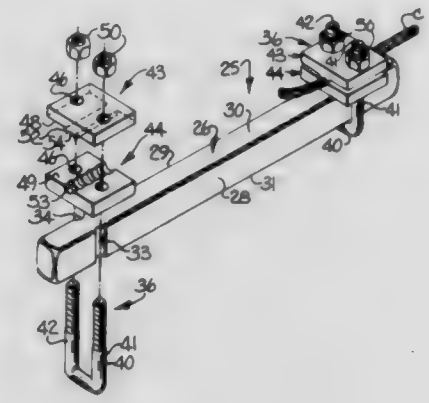


1. An electrical connector for connecting two wires together, comprising an elongated body of conductive material having a midsection and end sections with two circular passages extending through the midsection adjacent each end section with one passage being perpendicular to and intersecting the other passage, and further, slots parallel to and extending from intersection with the passages outwardly through the end sections to define four fingers, said fingers being adapted to be compressed in towards each other and the passages to thereby crimp wires which may be positioned therein.

4,405,828
BREAKING AND INSULATING CLAMP FOR ELECTRICAL CONDUCTORS

David W. Shook, Gastonia, N.C., assignor to Insulating Breaking Clamp, Inc., Mount Holly, N.C.

Filed Mar. 31, 1982, Ser. No. 363,848
Int. Cl.[3] H01B *17/00;* H02G *1/02*
U.S. Cl. 174—138 R 13 Claims



1. A breaking and insulating clamp for tensioned electrical conductors and the like, and which is characterized by the ability to clamp spaced portions of the conductor to permit the severance of the conductor between the spaced portions while maintaining the tensioned condition of the conductor, and comprising

an elongate bar composed of an electrical insulating material having a relatively high tensile strength, said bar defining a longitudinal direction along its length and including shoulder means disposed on the exterior surface thereof at each of two longitudinally spaced apart clamping locations,

clamping means mounted on said bar at each of said spaced apart clamping locations for separately securing a portion of an electrical conductor or the like at each location, each of said clamping means comprising

(a) bolt means having two parallel legs, with said legs straddling said bar and positioned adjacent said shoulder means so as to preclude relative longitudinal movement between the bar and bolt, and with the legs having a length sufficient to extend beyond the surface of the bar,

(b) a pair of cooperating plates each having a pair of apertures, with the apertures of the plates being received on the portions of the legs of the associated bolt means which extend beyond the bar, said plates defining opposing surfaces adapted to receive therebetween an electrical conductor or the like which extends in the longitudinal direction and between the legs of the associated bolt, and

(c) means for clampingly pressing the cooperating plates together so that the plates are adapted to securely retain the electrical conductor or the like extending therebetween.

4,405,829
CRYPTOGRAPHIC COMMUNICATIONS SYSTEM AND METHOD

Ronald L. Rivest, Belmont; Adi Shamir, Cambridge, and Leonard M. Adleman, Arlington, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 14, 1977, Ser. No. 860,586
Int. Cl.[3] H04K *1/00;* H04I *9/04*
U.S. Cl. 178—22.1 40 Claims

8. A communications system for transferring a message signal M_i comprising k terminals, wherein each terminal is characterized by an encoding key $E_i=(e_i, n_i)$ and decoding key $D_i=(e_i, n_i)$, where $i=1,2, \ldots ,k$, and wherein

M_i corresponds to a number representative of a message signal to be transmitted from the ith terminal,

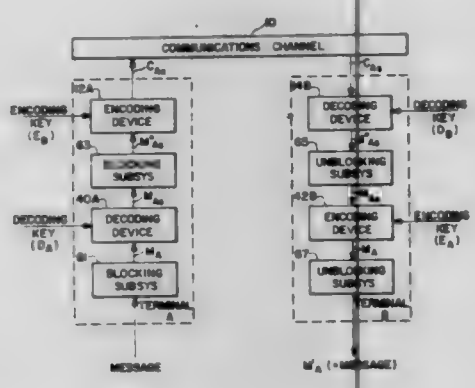
n_i is a composite number of the form

$$n_i=p_iq_i$$

P_i and q_i are prime numbers,
e_i is relatively prime to 1 cm(p_i-1,q_i-1),
d_i is a multiplicative inverse of

$$e_A(\text{mod}(1\ \text{cm}((p_i-1),(q_i-1))))$$

wherein a first terminal includes means for encoding a digital message word signal M_A for transmission from said first terminal (i=A) to a second terminal (i=B), said first terminal including:



means for transforming said message word signal M_A to one or more message block word signals M_A', each block word signal M_A being a number representative of a portion of said message word signal M_A in the range $0 \leqq M_A \leqq n_B-1$, means for transforming each of said message block word signals M_A'' to a ciphertext word signal C_A, C_A corresponding to a number representative of an encoded form of said message block word signal M_A'', whereby:

$$C_A = M_A''^{e_B} (\text{mod } n_B).$$

4,405,830

ELIMINATION OF DISPLAY BLANKS RESULTING FROM THE USE OF CHARACTER ATTRIBUTE CODES IN A VIDEOTEX TYPE SYSTEM

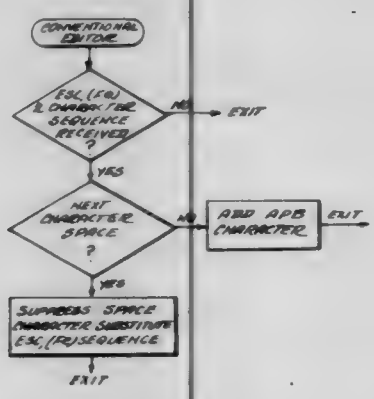
Robert A. L. Foster, Woodbridge, and Geoffrey H. L. Childs, Felixstowe, both of England, assignors to Post Office, London, England

Filed Jul. 1, 1981, Ser. No. 279,514

Claims priority, application United Kingdom, Jul. 3, 1980, 8021817; Oct. 23, 1980, 8034195

Int. Cl.³ H04L *13/16*

U.S. Cl. 178—30 **9 Claims**



1. A videotex type data transmission system comprising:
central information processing and storage means for storing and retrieving coded digital information signals representing display characters and character attributes thereof;
a plurality of remotely situated data displaying terminals, some having split memory character oriented attribute display systems and others having string oriented attribute display systems; and
digital data communication means connecting said central information processing and storage means situated at a central site to said plurality of remotely situated data displaying terminals for selective serial transmission of said coded information signals to said remote terminals;
said central data processing means effecting transmission of a cursor backspace code substantially adjacent a transmitted display control code representing a display character attribute unless the just previous display character is to be followed by a display space thereby permitting successful compatible videotex transmission of the same said coded information signals to the remote terminals having split memory character oriented attribute display systems as well as to the remote terminals having a string oriented attribute display system without requiring a displayed space between changes in displayed character attributes on any remote terminal.

4,405,831

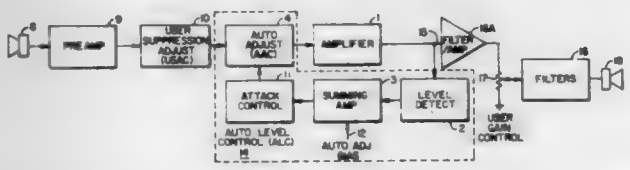
APPARATUS FOR SELECTIVE NOISE SUPPRESSION FOR HEARING AIDS

Robin P. Michelson, Redwood City, Calif., assignor to The Regents of The University of California, Berkeley, Calif.

Filed Dec. 22, 1980, Ser. No. 219,342

Int. Cl.³ H04B *15/00*; H04R *25/00*

U.S. Cl. 179—1 P **5 Claims**



1. An improved sound amplifying apparatus of the type which includes transducer means for converting sound signals into electrical signals, amplifying means, and means for audibly reproducing electrical signals, wherein the improvement is a selective signal level suppression circuit, the suppression circuit comprising:
manually adjustable attenuating means responsive to electrical signals from the transducer means for selectively attenuating the transducer electrical signals; and
automatic signal level control means, responsive to the attenuated transducer signals and to amplified signals from the amplifying means, for supplying the attenuated transducer signals to the amplifying means for amplification; the automatic signal level control means having means for limiting the level of the attenuated transducer signal which are supplied to the amplifying means to maintain the level of the amplified attenuated transducer signals from the amplifying means at no greater than a predetermined threshold value, whereby adjustment of the attenuation provided by the manually adjustable attenuating means modifies the response of the signal level suppression circuit to the transducer electrical signals by altering the magnitude required in the transducer electrical signals before level limiting of the attenuated transducer signal will occur in the automatic signal level control means.

4,405,832

CIRCUIT FOR DISTORTING AN AUDIO SIGNAL

Jack C. Sondermeyer, Meridian, Miss., assignor to Peavey Electronics Corp., Meridian, Miss.

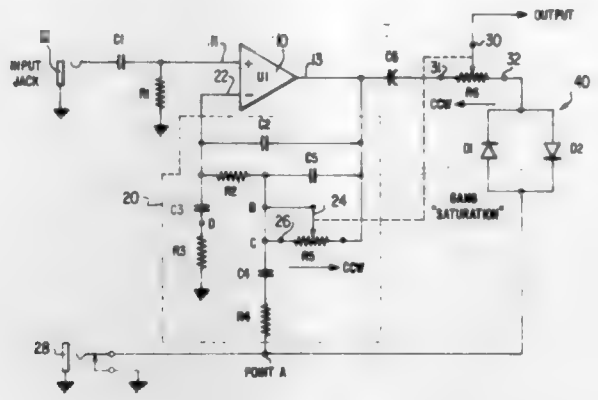
Filed May 29, 1981, Ser. No. 268,647

Int. Cl.³ G10H *1/06*

U.S. Cl. 179—1 D **10 Claims**

1. A circuit for distorting an input signal comprising
(a) amplifier means for receiving said input signal and producing an output signal,
(b) distortion means having one terminal connected to said output signal for distorting said output signal, and another terminal connected to a switch for selectively connecting said another terminal to a ground voltage or to voltage which substantially equals said output signal,
(c) whereby said distortion means distorts said output signal

when said another terminal is connected to ground and does not distort said output signal when said another



terminal is connected to said voltage which substantially equals said output signal.

4,405,833

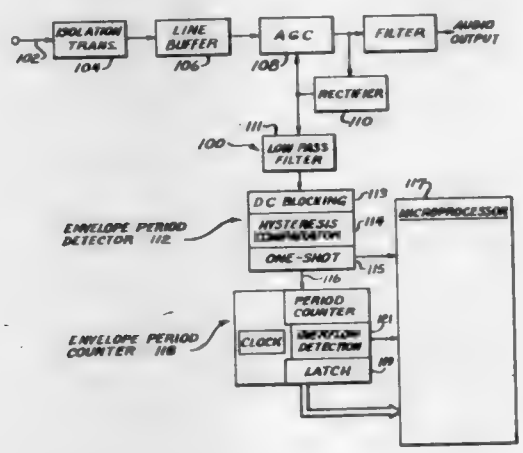
TELEPHONE CALL PROGRESS TONE AND ANSWER IDENTIFICATION CIRCUIT

Ellis K. Cave, and Neil Hazelwood, both of Garland, Tex., assignors to TBS International, Inc., Richardson, Tex.

Filed Jun. 17, 1981, Ser. No. 274,691

Int. Cl.³ H04M *1/26*

U.S. Cl. 179—1 MN **36 Claims**



8. A call progress detector circuit for identifying the progress of telephone calls, including detecting and identifying call progress tones and identifying an apparent answer to the telephone call, comprising:

first means for receiving a telephone signal and for detecting envelope cycles therein; and

identification means responsive to said first means for identifying the progress of a telephone call based on relationships of information about said detected envelope cycles and known telephone call progress tones, said information including the period of said envelope cycles.

26. A method for automatically and electronically identifying the progress of a telephone call on a telephone communication system comprising:

detecting envelope cycles in the telephone signal;

identifying the progress of the telephone call based on relationships of information about said detected envelope cycles and characteristics about known telephone call progress tones, said information including the period of said envelope cycles.

4,405,834

CIRCUIT FOR RECEIVING TWO-TONE/STEREOPHONIC PROGRAMS

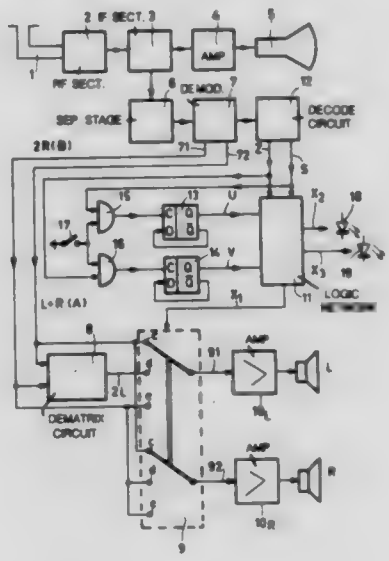
Ulf Buhse, Kollmar, and Henning Schwarz, Reinbek, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 6, 1981, Ser. No. 280,390

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1980, 3036973

Int. Cl.³ H04N *5/60*; H04H *5/00*

U.S. Cl. 179—1 GB **4 Claims**



1. A circuit for use in a receiver which is arranged for receiving two-tone and stereo programs, each program being accompanied by a pilot signal each having a different characteristic frequency, said circuit enabling an operator to select one of the tones for reproduction from a two-tone program or monophonic or stereophonic reproduction from a stereo program, characterized in that said circuit comprises:

means for generating, in the alternative, two characteristic signals from said pilot signals, said means having outputs for respectively providing said characteristic signals;

two bistable multivibrator circuits coupled, respectively, to said generating means outputs,

an operator controllled switch coupled to said bistable multivibrator circuits for changing the state of one of said bistable multivibrator circuits;

means responsive to said characteristic signals and said operator controllable switch for controlling which of said bistable multivibrator circuits changes state:

a logic circuit coupled to the outputs of said bistable multivibrator circuits and said generating means outputs, said logic circuit producing a data word representing the type of program being received and the operator selected form of reproduction; and

automatic switching means controlled by said data word for selecting the desired mode of reproduction.

4,405,835

RECEIVER FOR AM STEREO SIGNALS HAVING A CIRCUIT FOR REDUCING DISTORTION DUE TO OVERMODULATION

Winfried Jansen, Hasloh, and Wolfgang Nolde, Hamburg, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 14, 1981, Ser. No. 301,567

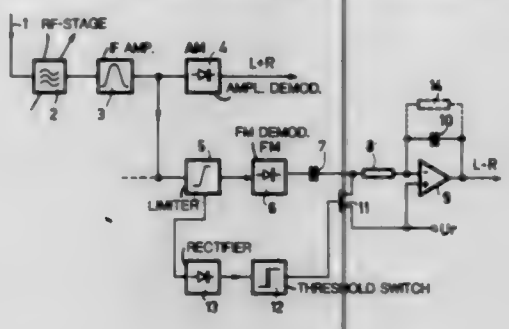
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1980, 3047386

Int. Cl.³ H04H *5/00*

U.S. Cl. 179—1 GS **3 Claims**

1. A receiver for receiving AM-signals the carrier being amplitude modulated with a first signal (L+R) and phase modulated with a second signal (L−R), said receiver comprising a signal channel having a phase demodulator as well as an

electronic switch for blocking and releasing the signal channel, said electronic switch being controlled by an overmodulation detector, which is energized by an amplitude overmodulation



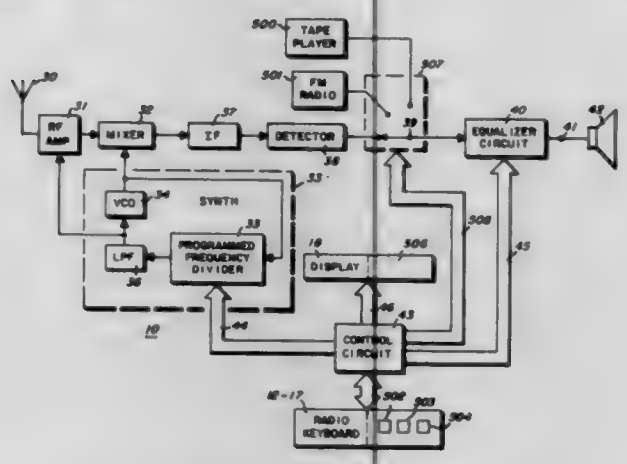
of the carrier, characterized in that said phase demodulator comprises an FM-demodulator and a subsequent integrator, said electronic switch being connected between the FM-demodulator and the integrator.

4,405,836

SIGNAL EQUALIZATION SELECTOR

Jerome D. Meyerhoff, Buffalo Grove, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 4, 1982, Ser. No. 336,979
Int. Cl.³ H03G *5/16*
U.S. Cl. 179—1 D **8 Claims**



1. A signal equalization selector comprising:

signal source selector means for selecting a first one of a plurality of signal sources for providing a desired selected signal comprising frequencies within a predetermined frequency band;

equalizer means coupled to said signal source selector means for receiving said selected signal and effectively adjusting the relative emphasis of said selected signal in each of a plurality of subbands within said frequency band, the emphasis of said selected signal in each of said subbands being in accordance with an associated subband equalizer control signal received by said equalizer means for each of said subbands;

memory means for storing at least a first plurality of predetermined control signals and effectively supplying said first plurality of control signals to said equalizer means as said equalizer control signals while said first one of said plurality of signal sources is selected by said signal source selector means;

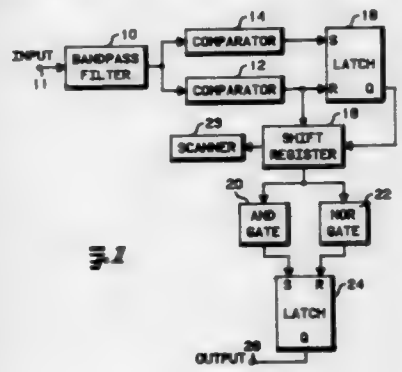
wherein the improvement comprises said memory means storing at least a second plurality of predetermined control signals, and wherein said signal source selector means has structure for selecting a second one of said plurality of signal sources to provide said selected signal and also simultaneously selecting, by selective coupling between said equalizer means and control signals stored in said memory means, said second plurality of control signals, instead of said first plurality of control signals, as said equalizer control signals, whereby equalization for signals derived from said first and second signal sources occurs in accordance with said first and second pluralities of stored control signals, respectively.

4,405,837

TONE DETECTOR CIRCUIT

Lawrence M. Ecklund, Wheaton, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1980, Ser. No. 218,878
Int. Cl.³ H04H *5/00*
U.S. Cl. 179—1 GS **16 Claims**



1. Tone detector means comprising:

input means for receiving signals which may include one signal of a predetermined frequency;

filter means coupled to the input means for outputting only those received signals at or near the predetermined frequency;

latching means coupled to the filter means and including comparator means for determining the peak amplitude of each detected cycle, shift register means coupled to the comparator means, and logic means coupled to the shift register means outputs for providing a first output signal only in response to the reception of a first predetermined number of consecutive cycles of said signal frequency, each said cycle having at least a predetermined peak amplitude, and a second output signal only in response to the reception of a second predetermined number of consecutive cycles of said signal frequency having an absolute value less than the predetermined peak amplitude; and

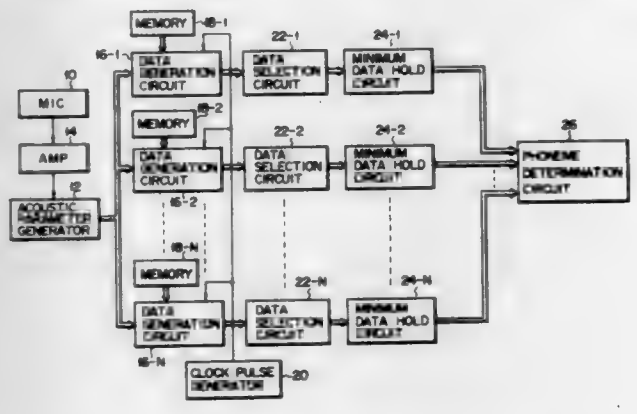
means coupled to the latching means and responsive to the first and second output signals.

4,405,838

PHONEME INFORMATION EXTRACTING APPARATUS

Tsuneo Nitta, Yokohama, and Hideki Kasuya, Utsunomiya, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 15, 1981, Ser. No. 273,400
Claims priority, application Japan, Jun. 21, 1980, 55-84207
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SD **13 Claims**



1. A phoneme information extracting apparatus comprising:

memory means in which a plurality of reference acoustic

parameters corresponding to respective reference phonemes are stored;

acoustic parameter generating means for sequentially generating acoustic parameters corresponding to input voice;

similarity data generating means for sequentially generating similarity related to the similarity between the acoustic parameter generated from said acoustic parameter generating means in each of the reference acoustic parameter is read out from said memory means;

checking means for checking whether the received similarity data represents a greater degree of similarity than a predetermined degree of similarity;

data selecting means for successively generating, when it is detected that a predetermined number of successive similarity data regarding the same reference acoustic parameter represent similarity degree greater than said predetermined similarity degree, the successive similarity data for the same reference acoustic parameter which are dealt as effective similarity data; and

phoneme determining means for successively receiving effective similarity data from said data selecting means, holding data representing the maximum similarity degree among the effective similarity data and generating phoneme data representing a reference phoneme corresponding to the similarity data representing the maximum similarity degree.

4,405,839

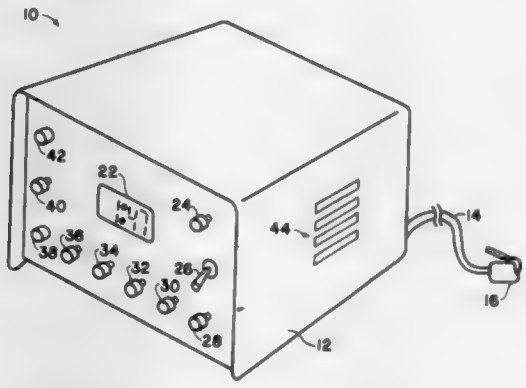
TIMED TELEPHONE RING SILENCER DEVICE

James W. Groff, P.O. Box 38, Morgan Hill, Calif. 95037

Filed Mar. 1, 1982, Ser. No. 353,644

Int. Cl.³ H04M *1/21, 11/02*

U.S. Cl. 179—84 C 4 Claims



1. A timed telephone ring silencer device for selectively silencing the ringer mechanism of a telphone set for a predetermined timed interval, intended to be connected between a telephone line and a telephone set, said silencer device comprising in combination: a housing equipped with a telephone cord and attached modular plug for connecting said silencer device to a telephone line; timing means for controlling said silencer device, said timing means including a clock, calendar, and alarm mode, the outputs thereof being selectively displayed by an operatively associated alphanumeric readout, said timing means further including sounding means for providing an audible alarm subsequent to a preset timed interval and switch control means for setting said clock, calendar, and alarm modes and for selecting each mode displayed by said alphanumeric readout; a primary power supply for energizing said timing means; a secondary power supply for energizing the remainder of said silencer device; a recharge circuit connected in parallel to said secondary power supply for recharging said secondary power supply; a plurality of switching contacts operatively associated with a first relay coil and a second relay coil of a bistable relay for connecting said secondary power supply to said silencer device and for disabling the ringer mechanism of said telephone set subsequent to energizing said first relay coil, and for disconnecting said secondary power supply from said silencer device and for enabling said ringer mechanism of said telephone set subsequent to energizing said second relay coil; a modular jack operatively connected to said telephone cord and attached modular plug via said plurality of switching contacts for electrically connecting said telephone set to said silencer device; a first manual switching means momentarily connecting said secondary power supply with said first relay coil for connecting said secondary power supply to said silencer device and simultaneously disabling the ringer mechanism of said telephone set when said first relay coil is momentarily energized; a second manual switching means momentarily connecting said secondary power supply with said second relay coil for disconnecting said secondary power supply from said silencer device and simultaneously enabling the ringer mechanism of said telephone set when said second relay coil is momentarily energized; a third manual switching means connecting the alarm mode output of said timing means to either said sounding means, if an alarm function is desired, or to an interface circuit, if timed telephone silencing is desired, the output of said interface circuit being connected to said second relay coil for automatically energizing said second relay coil subsequent to a preset timed interval as controlled by said alarm mode of said timing means; an indicator light connected to said secondary power supply subsequent to energizing said first relay coil for indicating when a timed silent interval is in progress; a voltage comparator and operatively associated voltage divider connected to said secondary power supply for providing an output signal when the voltage of said secondary power supply drops below a predetermined level; and an indicator light connected to the output of said voltage comparator for indicating a low voltage condition.

4,405,840

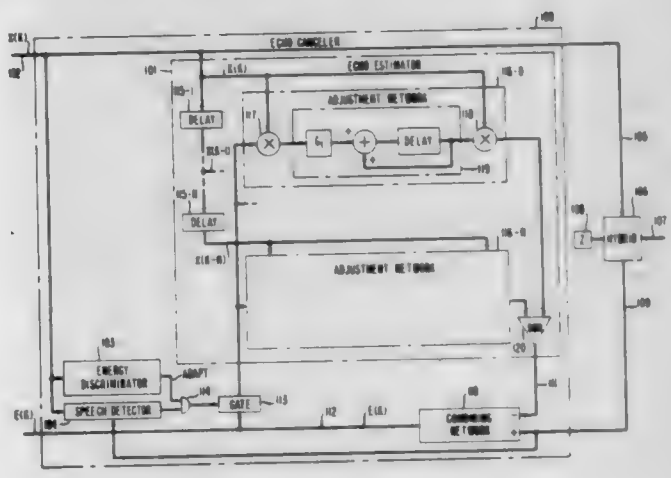
ECHO CANCELER FAR END ENERGY DISCRIMINATOR

Timothy J. Zebo, Marlboro, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 5, 1981, Ser. No. 240,979

Int. Cl.³ H04B *3/24*

U.S. Cl. 179—170.2 10 Claims



1. An echo canceler of the type including,

adjustable signal processing means coupled to a first transmission path for generating an echo estimate signal,

means coupled to a second transmission path for combining a signal in the second path with the echo estimate signal to generate an error signal,

means responsive to the error signal for adjusting the processing means, and

means for controllably supplying the error signal to the adjusting means, the echo canceler, CHARACTERIZED BY,

means for discriminating between whole band energy and partial band energy in a received signal in the first transmission path and for generating a control signal indicative thereof,

said discriminating means including

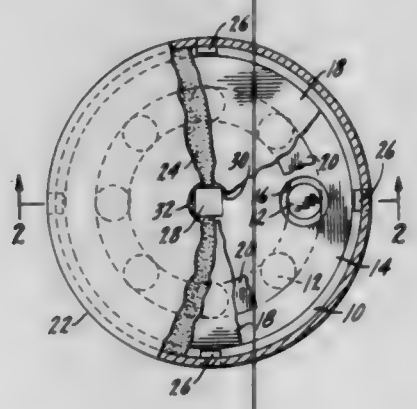
means for generating a first signal representative of an average value of the received signal,
means for generating a second signal representative of a magnitude of the received signal, and
means for comparing said first and second signals to generate a first state of said control signal when said second signal is greater than said first signal, said control signal being supplied to the controllable supplying means for enabling supplying the error signal to the adjusting means during intervals that said control signal first state is generated.

4,405,841

MOVABLE MEMBER MEMBRANE SWITCH

Anthony J. Van Zeeland, Crystal Lake, Ill., assignor to Oak Industries Inc., Rancho Bernardo, Calif.

Filed Jul. 23, 1982, Ser. No. 401,075
Int. Cl.³ H01H *19/60, 21/80, 27/04*
U.S. Cl. 200—11 R **5 Claims**



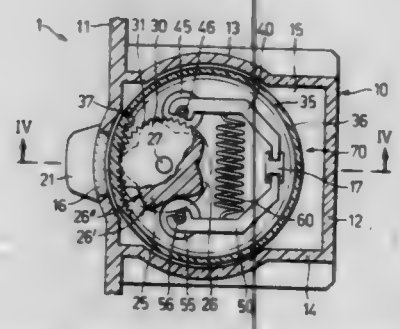
1. A rotary switch using membrane technology including a substrate having annularly arranged contact means thereon, a membrane positioned opposite said substrate and having annularly arranged contact means thereon, a spacer member positioned between and separating said membrane and substrate and having opening means therein registrable with said membrane and substrate contact means, means for applying constant pressure upon said membrane to cause its contact means to move through said spacer opening means to close upon the substrate contact means, and means for causing relative rotation between one or more of said substrate, membrane and spacer to vary the position of a membrane and substrate contact means closure.

4,405,842

STEPPING MECHANISM FOR AN ENCODING ROTARY SWITCH

Hans Wermelinger, Rümlang, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Filed Oct. 26, 1981, Ser. No. 314,956
Claims priority, application Switzerland, Nov. 10, 1980, 8314/80
Int. Cl.³ H01H *3/00*
U.S. Cl. 200—17 R **2 Claims**



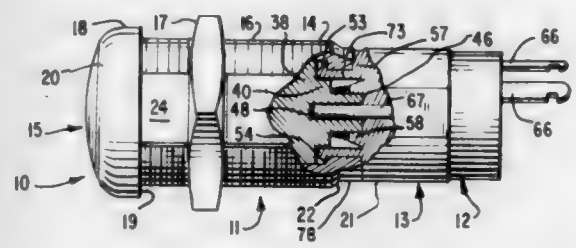
1. A stepping mechanism for an encoding rotary switch comprising:
a switch housing;
a character wheel rotatably arranged in said switch housing;
an indexing element arranged eccentrically with respect to said character wheel;
a locking device which comprises a locking wheel and two locking levers;
each said locking lever having opposed ends;
one of said ends of each locking lever being mounted in said switch housing and the other end resiliently engaging with said locking wheel;
a first pivot shaft at which there is rotatably mounted said character wheel;
a gear provided with external teeth;
a second pivot shaft at which there is rotatably mounted said gear;
said gear being arranged in spaced relationship from and substantially axially parallel to the character wheel;
said character wheel having internal teeth which mesh with said external teeth of said gear;
said locking wheel being rotatably mounted at said second pivot shaft;
said locking levers being arranged substantially mirror-image symmetrically to opposite sides of the locking wheel;
a respective roller rotatably mounted at said other end of each locking lever;
a single spring secured to both locking levers; and
said single spring acting upon said locking levers for placing the locking levers into engagement by means of said roller with the locking wheel into their latching position and said locking levers being deflectable against the restoring force of said single spring out of their latching position.

4,405,843

ANTI-STATIC SWITCH LOCK

Stanley C. Wolniak, Chicago; Elbert M. Spencer, Wildwood, and Ronald L. Brown, Waukegan, all of Ill., assignors to The Eastern Company, Naugatuck, Conn.

Filed Jul. 16, 1981, Ser. No. 283,938
Int. Cl.³ H01H *27/06*
U.S. Cl. 200—44 **5 Claims**



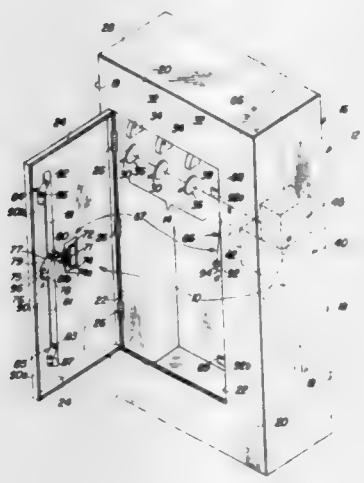
3. In an improved switch lock having a lock with a barrel, a plug extending into one end of the barrel and rotatable therein and a nonconductive hub having resilient mounting legs extending into the other end of the barrel, said legs having outwardly extending surfaces engaging shoulders in the barrel to hold the hub to the barrel, the improvement comprising:
a shaft on said plug axially adjacent to said legs, preventing axial movement of the hub;
a leg support on said plug disposed radially inward of and extending coaxially from said shaft to lie radially adjacent to said legs to prevent radial movement of said legs;
an extension on said shaft disposed radially inward of and projecting coaxially from said leg support;
a seat on the hub between the legs, said seat having a bore to receive a portion of said plug extension; and
a coil spring to bias the rotation of said plug, said spring surrounding said extension and having one end attached to said extension and the other end bearing against one of said legs, said spring disposed between said leg support and said seat to prevent said spring from engaging said legs or said seat and binding the rotation of said plug.

4,405,844

DOOR INTERLOCK FOR ELECTRICAL APPARATUS

Edmund S. Dizon, Chicago, and Joseph P. Moninski, Jr., Northbrook, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Filed Apr. 1, 1982, Ser. No. 364,354
Int. Cl.³ H01H 9/20
U.S. Cl. 200—50 A 14 Claims



1. An improved interlock for electrical apparatus located in a walled enclosure, the interlock being of the type which prevents opening a door of the enclosure if the apparatus is in a first condition and permits opening the door to provide access to the apparatus only if the apparatus is in a second condition, the interlock preventing the apparatus from assuming the first condition when the door is open, wherein the improvement comprises:

latching means movable between a first position, for latching the closed door against opening, and a second position, for unlatching the closed door for opening;

cam follower means movable between a first position, for holding the latching means in its first position, and a second position, for holding the latching means in its second position;

means for biasing the cam follower toward its second position;

locking means operable from the exterior of the enclosure and movable between a first position, for locking the closed door against opening and for holding the cam follower means in its first position, and a second position, for unlocking the closed door for opening and for freeing the cam follower means for movement to its second position by the biasing means, the closed door being openable only if the locking means and the latching means are both in their second positions;

control means movable between a first and a second position, the control means being unable to move out of its first position if the apparatus is not in its second condition and being movable to its second position only if the apparatus is in its second condition;

means for preventing the apparatus from assuming its first condition if the control means is in its second position; and

means interconnecting the control means and the cam follower means for

(a) holding the control means in its first position when the cam follower means is held in its first position,

(b) moving the control means to its second position when the cam follower means moves to its second position and the apparatus is in its second condition, and

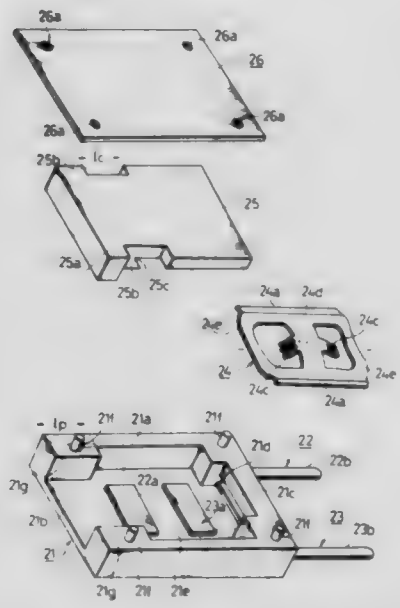
(c) preventing the cam follower means from moving to its second position if the control means is unable to move to its second position.

4,405,845

PUSH-BUTTON SWITCH

Shiro Kondo, Furukawa, and Ken Mizuta, Miyagi, both of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Nov. 5, 1981, Ser. No. 318,422
Claims priority, application Japan, Nov. 8, 1980, 55-159695[U]
Int. Cl.³ H01H 5/18, 13/52
U.S. Cl. 200—67 DB 1 Claim



1. A push-button switch comprising a movable contact piece formed of a resilient and conductive material, said contact piece having a contact portion provided centrally, tongue portions extending away from said contact portion, parallel coupling portions formed on respective sides of said contact portion, and arm portions connecting respective end parts of said coupling portions; a casing having an engaging portion adapted to engage one of said arm portions, stationary contacts fixed in said casing; a slider having a push button portion and an engaging portion adapted to engage the other of said arm portions; and means holding said slider for reciprocal movement in a first direction within said casing so that said coupling portions of said movable contact piece can be inverted in a second direction to bring said tongue portions into engagement with said stationary contacts and control electrical conduction between said contact portion and said stationary contacts upon pressing said push-button portion in said first direction, said coupling portions extending parallel to the direction of movement of said slider and being bent along their longitudinal direction to form a generally V-shaped section.

4,405,846

ARC CHAMBER CHANNEL

Harold E. Belttary, Rio Piedras, P.R., assignor to GTE Products Corporation, Stamford, Conn.

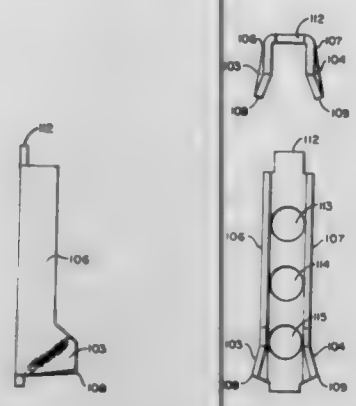
Filed May 6, 1981, Ser. No. 260,857
Int. Cl.³ H01H 33/08, 33/10
U.S. Cl. 200—144 R 4 Claims

1. A channel for providing electric arc cooling and quenching, for use in a circuit breaker, comprising an integral, generally U-shaped member forming a base and opposing side walls from one end to an opposite end,

said one end of said opposing side walls having extending tabs which are folded outwardly, thereby providing a pair of point contacts for engaging side walls of a circuit breaker housing,

said opposite end of said base being formed with an extending tab for engaging a molded feature of a side wall of said

circuit breaker housing, whereby all said extending tabs are adapted to space said channel away from said side



walls of said circuit breaker, thereby exposing outer surfaces of said channel when in use in a circuit breaker, and said base having an arrangement of venting holes therein.

4,405,847

ARC CHUTES

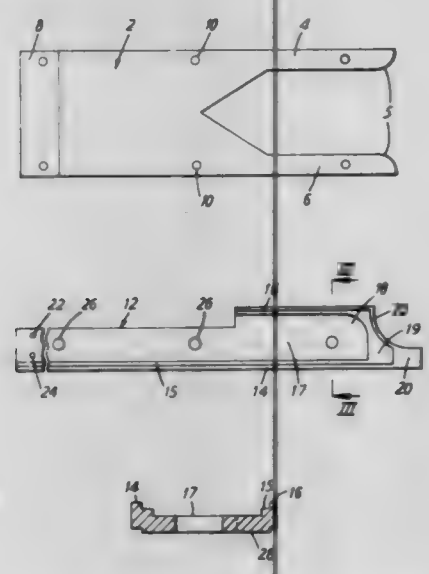
John S. Morton, Wilmslow, England, assignor to Whipp & Bourne (1975) Limited, Lancaster, England

Filed Dec. 15, 1981, Ser. No. 330,808

Claims priority, application United Kingdom, Dec. 23, 1980, 8041216

Int. Cl.³ H01H *33/08*

U.S. Cl. 200—144 R **12 Claims**



1. An arc chute for a circuit breaker including a plurality of arc splitter plates each plate having a pair of spaced parallel limbs merging into a block portion, a pair of spaced apart insulating barriers each barrier containing a row of spaced parallel channels arranged normally into a major longitudinal edge of the barrier each channel encompassing one of the limbs of each of the arc splitter plates, the block portions thereof extending intermediate the barriers, and a pair of arc conductors traversing the block portions of the arc splitter plates adjacent the end portions of the barriers and extending axially in register with respect to each other intermediate the barriers.

4,405,848

ELECTRIC CONTACT ARRANGEMENT

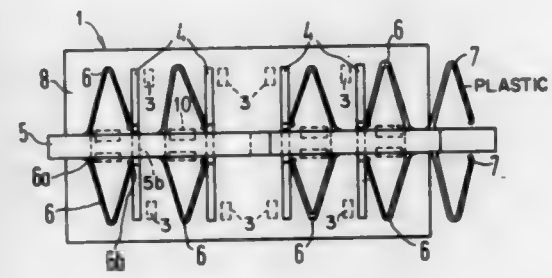
Bruno Jaegle, Petershausen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 13, 1981, Ser. No. 282,713

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1980, 3031725

Int. Cl.³ H01H *1/20*

U.S. Cl. 200—243 **12 Claims**



1. An electric contact arrangement comprising a plurality of movable contact elements and a like plurality of pairs of fixed contact elements, each pair of fixed contact elements being respectively associated with a movable contact element for making and breaking an electrical connection, a slidable carrier having a longitudinally extending centrally disposed bar having a plurality of notches therein for respectively receiving and retaining said movable contact elements for making and breaking with said pairs of fixed contact elements upon actuation of said carrier, a plurality of elastic plastic pressure springs laterally attached to sides of said bar of said carrier and respectively associated with said movable contact elements for biasing said movable contact elements in a direction toward an associated fixed contact element pair, a coverplate having a plurality of recesses therein, and said bar having a plurality of stems extending therefrom receivable in said recesses for retaining said bar against said cover plate.

4,405,849

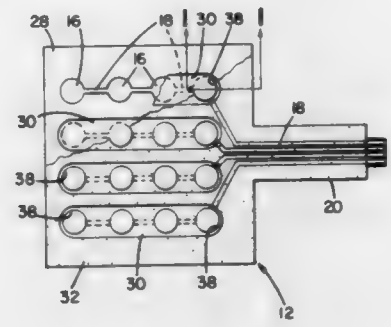
SWITCHING CONTACT

Norman J. Frame, Whitefish Bay, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Mar. 8, 1982, Ser. No. 355,511

Int. Cl.³ H01H *1/02*

U.S. Cl. 200—262 **6 Claims**



1. A multilayered membrane switch comprising a pair of plastic layers carrying pairs of opposing electrically conducting contacts connected to external circuitry by conducting portions on the surfaces of said plastic layers,

a spacer layer between said pair of plastic layers and having openings aligned with said pairs of opposing contacts to normally space said contacts from each other and to permit them to be brought together upon the application of an external force, and

coatings on and extending over said contacts onto adjacent portions of said plastic layers and onto portions of said conducting portions within said openings, said coatings being made of one of $Ti_{2-x}N$ or $Ta_{2-x}N$ material to

reduce oxidation of the surfaces of said contacts and conducting portions, where x is less than or equal to 1.

4,405,850

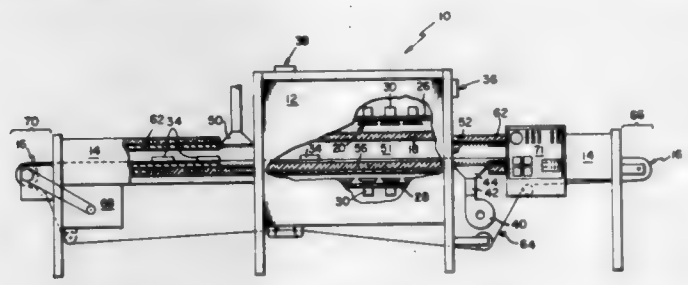
COMBINATION MICROWAVE HEATING APPARATUS

Richard H. Edgar, Chelmsford, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 103,262, Dec. 13, 1979, abandoned, which is a continuation of Ser. No. 949,294, Oct. 6, 1978, abandoned. This application Apr. 15, 1981, Ser. No. 254,221

Int. Cl.³ H05B *6/78*

U.S. Cl. 219—10.55 A **4 Claims**



1. A conveyorized microwave hot air oven, comprising:

a conductive enclosure having entrance and exit openings;

thermally insulating material defining a tunnel from said entrance opening to said exit opening, said material being substantially transparent to microwave energy;

said material being spaced from the walls of said enclosure wherein the volume within said tunnel is substantially less than the volume within said enclosure;

a conveyor system running through said tunnel for transporting objects therethrough;

means for directing heated air under pressure into said tunnel at a first region of said tunnel;

means for exhausting said heated air from a second region of said tunnel; and

a directive microwave radiator positioned within said enclosure but outside said tunnel, said radiator radiating microwave energy toward said microwave transparent tunnel, said energy radiating through said microwave transparent material to heat objects passing through said tunnel on said conveyor system.

4,405,851

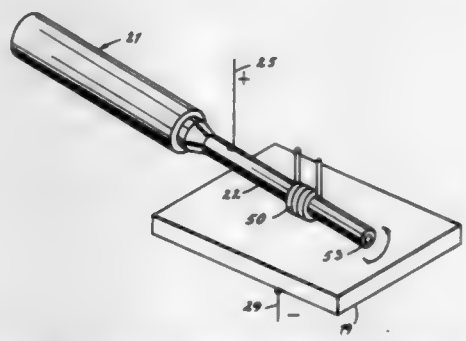
APPARATUS FOR TRANSFER OF METALLIC MATERIALS BY ELECTRIC DISCHARGE

Gary L. Sheldon, Pullman, Wash., assignor to Washington State University Research Foundation, Inc., Pullman, Wash.

Filed Jun. 11, 1981, Ser. No. 272,641

Int. Cl.³ B23P *1/18*

U.S. Cl. 219—76.13 **30 Claims**



1. Apparatus for transferring material from one metallic conductor to another metallic conductor by electric discharge deposition, comprising:

a capacitive charging circuit;

switching means connected in the circuit for successively discharging the circuit at a prescribed rate;

wherein one of said conductors is an electrode having a central axis;

said circuit having positive and negative discharge leads operably connected to a source of direct current electrical power, one lead being directly connected to the electrode and the other being adapted for connection to the other conductor, so contact between the electrode and other conductor will complete the circuit when said circuit is being discharged by said switching means; and

powered clamp means for reversibly oscillating the electrode continuously about the central electrode axis through a prescribed arc of less than 360 degrees.

4,405,852

PROCESS FOR DECORATING SPECTACLE FRAMES

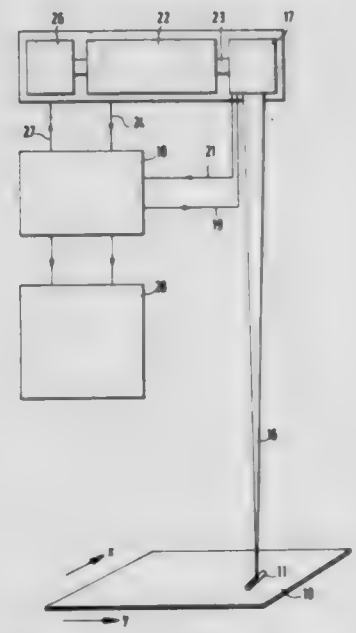
Walter Bononi, Zeppelinstrasse 9, 7012 Fellbach Schmieden, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 248,724

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014361

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LJ **7 Claims**



1. A process of decorating spectacle frame parts provided with a metal core having a bright surface, with a jacket of a different material over the core, comprising:

Placing the frame part in the path of a laser beam, the energy of which lies below the energy required to weld the metal and above the energy required to evaporate the jacket, and

Controlling a mirror apparatus in the path of the laser beam, according to the desired course of the decoration, to control the point of impingement of the laser beam on the jacket.

4,405,853

PLASMA SPRAY GUN WITH COOLING FIN NOZZLE AND DEIONIZER

John F. Klein, Port Washington, N.Y., assignor to Metco Inc., Westbury, N.Y.

Filed Aug. 14, 1981, Ser. No. 292,764

Int. Cl.³ B23K *9/00*

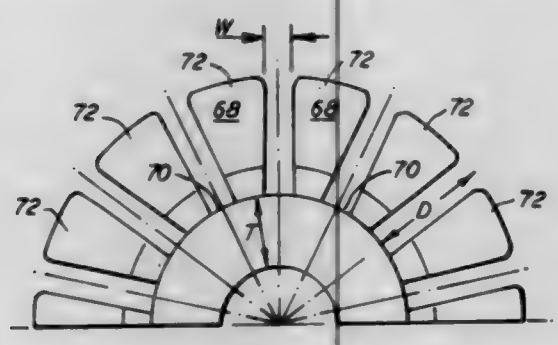
U.S. Cl. 219—121 PP **20 Claims**

1. A plasma flame spray gun nozzle comprising, in combination:

an inner member generally cylindrical in shape with a longitudinal axis and defining a passage in which an arc may be formed to create a plasma flame, the arc striking said inner member in an arc striking area on the inner surface of said inner member, said inner member being formed of a material having substantially the same electrical and thermal properties as substantially pure copper;

a plurality of fins on the outer surface of and comprising part of said inner member, each said fin being disposed to form a

slot in a generally longitudinal direction between it and each adjacent fin, each said slot being formed with a slot width at its base in the range of between 0.127 mm and 3.8 mm and a slot depth in the range of between 0.127 mm and 7.6 mm, each said fin having, in the region radially outward of said arc striking area, a base width in the range of between 0.127 mm and 6.35 mm, said inner member having a wall thickness



in the range of between 1.9 mm and 2.8 mm at the base of each said slot; and

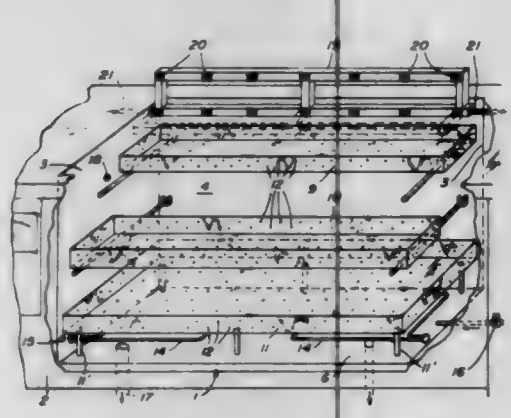
an outer member disposed around said inner member and having an inner surface located not greater than 2.5 mm away from the radially outwardmost surface of each said fin to form a passage between said outer member and said inner member for channeling a coolant.

4,405,854

COMBINED DENTURE MOLD DEWAXER AND CURING BASIN

Denis Lapointe, rue de la Colline - P.O. Box 128, St. Jovite, Canada J0T 2H0

Filed Jun. 18, 1982, Ser. No. 389,985
Int. Cl.³ F27B *14/00*
U.S. Cl. 219—421 **8 Claims**



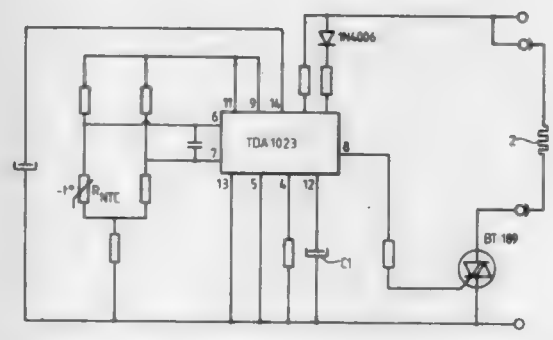
1. An apparatus for dewaxing and curing denture molds, comprising a frame and a basin mounted within said frame, said basin having a pair of spaced end walls, a rear wall, a front wall and a bottom floor wall; said basin adapted to be filled with a liquid; said basin being provided with a first topmost tray mounted on first support means in the upper portion of said basin; a second and a third, middle and lowermost, trays respectively spaced downwardly from said first tray and vertically from each other; second and third support means for said second and third trays respectively; said topmost tray being adapted to support denture flask halves for the dewaxing thereof; further comprising a frame-arm extending across the top portion of said basin and pivotally secured to the latter adjacent the upper rear edge thereof; said frame-arm being of hollow construction and provided with a plurality of shower nozzles adapted to spray liquid over the entire area of said topmost tray; said frame-arm being pivotable between a horizontal spray position and a non-use vertical position; a recirculating pump mounted in said frame and operatively connected to said frame-arm and to said basin; further comprising a heating element located adjacent said floor wall and below said lowermost tray; and a thermostat connected to said heating element to selectively control the temperature of said liquid.

4,405,855

METHOD AND APPARATUS FOR REGULATING THE TEMPERATURE OF A HEATING ELEMENT IN A WATER HEATER

Kjell Kolle, Arnes, and Svein Johannessen, Oslo, both of Norway, assignors to FerroFil A/S, Norway

PCT No. PCT/N080/00013, § 371 Date Dec. 20, 1980, § 102(e) Date Nov. 24, 1980, PCT Pub. No. WO80/02352, PCT Pub. Date Oct. 30, 1980
PCT Filed Apr. 14, 1980, Ser. No. 224,526
Claims priority, application Norway, Apr. 20, 1979, 791325
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—501 **6 Claims**



1. Method for regulating the power which is supplied to a heating element in a water heater, preferably a reservoir water heater containing water which is to be heated to a certain temperature, the supplied power being regulated as a function of the temperature of the water, characterized in that the power which is supplied to the heating element for heating the water, is regulated not only in dependence on the temperature of the water, but also in dependence on the temperature of the heating element, the temperature of the heating element being measured directly and/or indirectly so that

(a) when the temperature of the element is below a certain critical value and the temperature of the water in the water heater is below the rated value, maximum power is supplied to the heating element,

(b) when the temperature of the element has reached the critical value, but the temperature of the water in the water heater is below the rated value, less power than the maximum power is supplied to the element for further heating of the water, so that the temperature of the element is kept below the critical value, and

(c) when the water temperature reaches the rated value, no power is supplied

the critical temperature of the heating element being sensed indirectly by measuring the water temperature, the relation between the temperature of the heating element (T_l) and the water (T_v) being given by

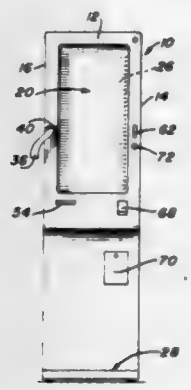
$$T_l = T_v + P \cdot R$$

wherein T denotes the water temperature, P supplied power and R thermal resistance between the heating element and the water in the heater.

4,405,856
APPARATUS FOR RECORDING IDENTIFYING DATA CONCERNING THE USE OF A CREDIT CARD, CHEQUE OR THE LIKE

Paul Poisson, Box 121, Rouyn, Quebec, Canada J9X 5C1

Continuation-in-part of Ser. No. 328,709, Dec. 8, 1981, abandoned. This application Nov. 4, 1982, Ser. No. 439,297
Claims priority, application Canada, Feb. 23, 1982, 396858
Int. Cl.³ G06F *7/08*
U.S. Cl. 235—381 **28 Claims**

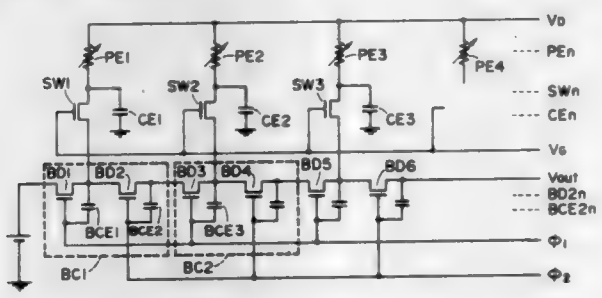


1. An apparatus for recording identifying data relative to the use of a credit card, cheque or like document, comprising:
- a housing;
- a one-way mirror mounted to said housing and disposed in a face viewing relative to the user of said credit card, cheque, or like document;
- camera means mounted in said housing in photographic view of said mirror;
- height indication means in photographic view of said camera means to record indication relative to the height of the user when said camera means are actuated;
- identifying data on the inner side of said mirror in photographic view of said camera means to record information relative to the use of said apparatus when said camera means are actuated;
- means for causing actuation of said camera means; and
- means for dispensing outside said housing a receipt giving information including at least part of said identifying data.

4,405,857
SOLID-STATE PHOTOELECTRIC CONVERTER

Yutaka Hirai, Tokyo; Katsunori Hatanaka, Yokohama; Naoki Ayata, Machida, and Shunichi Uzawa, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,290
Claims priority, application Japan, Mar. 31, 1980, 55-42203; Mar. 31, 1980, 55-42204; Mar. 31, 1980, 55-42205; Mar. 31, 1980, 55-42206
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—211 J **12 Claims**

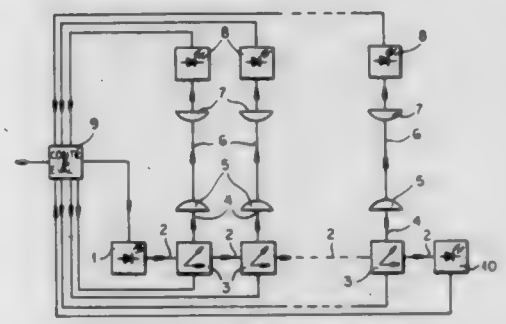


1. A photoelectric converter in solid-state assembly, comprising the following sections juxtaposed integrally on the same substrate:
- a photoelectric converting section constituted of a number of photoelectric converting elements arranged in an array, each element having a light-receiving surface for input of light-information;
- a charge accumulating section constituted of a number of accumulating means, each being provided for each of said photoelectric converting elements, for accumulation of charge signals photoelectrically converted by corresponding photoelectric converting elements;
- a transistor section for transfer constituted of a number of transistors for transfer, each being provided for each of said accumulating means, perform a switching operation for transfer of the signals accumulated in corresponding accumulating means; and
- a BBD transfer section for outputting the signals transferred from each of said accumulating means by arrangement in time series thereof, wherein; said BBD section includes a number of transistors and a number of capacitors; and said photoelectric converting elements, said transistors for transfer and the transistors constituting said BBD transfer section includes thin semiconductor films.

4,405,858
LIGHT GATE WITH CONTROLLED OPTICAL COUPLERS

Hans-Hermann Spratte, Mülheim, Fed. Rep. of Germany, assignor to Krohne Messtechnik GmbH & Co. KG, Duisburg, Fed. Rep. of Germany

PCT No. PCT/EP80/00108, § 371 Date Jun. 12, 1981, § 102(e) Date Jun. 12, 1981, PCT Pub. No. WO81/01200, PCT Pub. Date Apr. 30, 1981
PCT Filed Oct. 10, 1980, Ser. No. 276,373
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1979, 2941739
Int. Cl.³ G01V *9/04*
U.S. Cl. 250—221 **4 Claims**



1. Light gate with a single light source whose light beam can be successively directed by means of a light-distributing unit, energized by a control device, to several optical channels each comprising a light conductor on the transmission side, as well as with a light-receiving device which is coupled with these channels and is followed by an electronic evaluator, characterized by the following features:
- (a) the light-distributing unit comprises a number of directive optical couplers (3) identical with the number of optical channels (6),
- (b) each of the secondary waveguides of the directive optical couplers (3) adjoins a respective light conductor (4) of an optical channel (6),
- (c) the directive optical couplers (3) are disposed via a further light conductor (2) in series with the light source (1) and with one another,
- (d) the electrodes of the directive optical couplers (3) are connected to a control and evaluation device (9) consisting of the control device and the electronic evaluator.

4,405,859

NOMINAL VALUE PICK UP FOR DRIVE CONTROLS

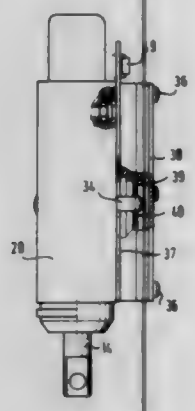
Rudolf Kling, Darmstadt, and Bernd Scheider, Darmstadt-Eberstadt, both of Fed. Rep. of Germany, assignors to Quick-Rotan Elektromotoren GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,403

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1980, 3003138

Int. Cl.³ G01D 5/34

U.S. Cl. 250—229 8 Claims



1. In a drive control for controlling a speed and positions of a drive shaft driven by a drive motor, a combination comprising a control box for the drive motor and having an outside wall, and a nominal value pick up for advancing a nominal speed and a nominal stopping position of the drive shaft, said nominal value pick up being releasably attachable to said outside wall of the control box and provided with an adjustment pin, the nominal value pick up being pivotable on said pin with respect to said control box and being fixedly adjusted thereon in one of a plurality of fixed positions, the nominal value pick up including a housing formed with an internal space, a pull rod device mounted in said space and having a pull rod extended outwardly of said housing, said pull rod being movable by an external force, a connecting cable disposed in said internal space and having a first end extended outside the pull rod device and terminated with a plug connected to the control box and a second end, a plurality of light barrier means on said pull rod device and codeable in accordance with a continuous progression code, conductor means interconnected between said second end of said cable and said light barrier means, and a blinding plate in the region of said light barriers and movable in response to the movement of said pull rod to interrupt said light barrier means.

4,405,860

AUTOMATICALLY CONTROLLABLE LOADING APPARATUS FOR MASS SPECTROMETERS OR THE LIKE

Curt Brunnee; Lothar Delgmann, and Günter Marten, all of Bremen, Fed. Rep. of Germany, assignors to Finnigan Mat GmbH, Bremen, Fed. Rep. of Germany

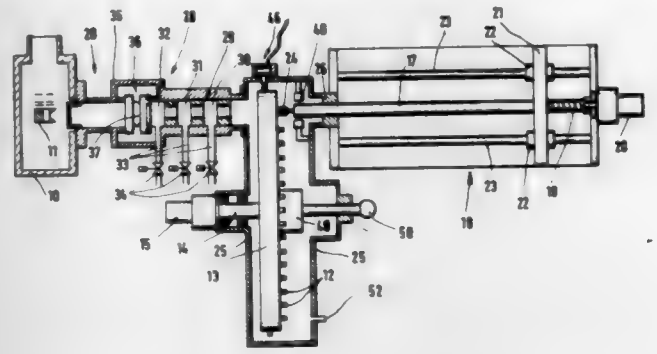
Filed Jan. 19, 1981, Ser. No. 225,828

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1980, 3002575

Int. Cl.³ H01J 49/26

U.S. Cl. 250—288 6 Claims

1. Automatically controllable loading apparatus for loading a sample holder carried by a bush rod into a high vacuum chamber of a mass spectrometer, said high vacuum chamber having an entrance channel closed by a valve and having a plurality of aligned stuffing boxes and vacuum chambers arranged in the axis of movement of said push rod comprising: a stationary frame for slidably retaining said push rod with an axis of movement coincident with said stuffing boxes; a disc mounted for rotation on said stationary frame on an axis displaced from but parallel to said axis of movement of said push rod and carrying adjacent its periphery a plurality of removable sample holdes, such holders having a circular locus of movement intersecting said axis of movement of said push rod; said disc also having in place of one of said sample holders a peripheral recess for permitting passage of said push rod



toward said high vacuum chamber; means for rotating said disc to place said peripheral recess in the axis of movement of said push rod; and means for advancing said push rod through said recess and into said entrance channel.

4,405,861

SECONDARY-ELECTRON DETECTOR FOR ANALYZING IRRADIATED SAMPLES FOR SCANNING ELECTRON MICROSCOPES AND MICROPROBES

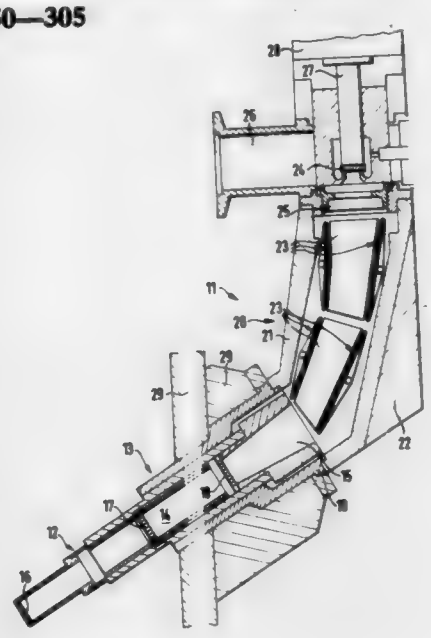
Giancarlo Giacchetti, Karlsruhe; Jürgen Ränsch, Munich, and Clive T. Walker, Karlsruhe, all of Fed. Rep. of Germany, assignors to European Atomic Energy Community (Euratom), Plateau du Kirchberg, Luxembourg

Filed Aug. 20, 1981, Ser. No. 294,674

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1980, 30320139

Int. Cl.³ H01J 40/00

U.S. Cl. 250—305 6 Claims



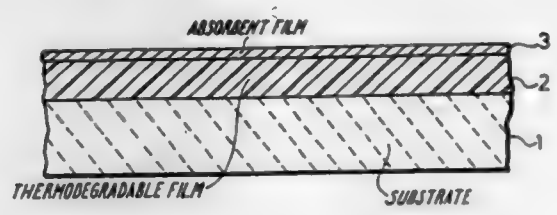
1. A secondary-electron detector for the analysis of irradiated samples for scanning electron microscopes and microprobes, including an electron collector arranged along a curved or angular path, an electron accelerator, a scintillator, a light guide and a photomultiplier, characterized by: an electron spectrometer (20) and a Wehnelt cylinder (25) disposed between the electron accelerator (13) and the scintillator (24).

4,405,862

THERMOSENSITIVE DATA-CARRIER DESIGNED FOR THE RECORDING OF INFORMATION AND A METHOD OF RECORDING INFORMATION ON SUCH A DATA-CARRIER

Claude Bricot; Jean-Claude Dubois; Francois LeCarvennec; Jean-Claude Lehureau, and Henriette Magna, all of Paris, France, assignors to Thomson-Brandt, Paris, France

Continuation of Ser. No. 31,873, Apr. 20, 1979, abandoned, which is a division of Ser. No. 843,508, Oct. 18, 1977, Pat. No. 4,176,277. This application Nov. 30, 1981, Ser. No. 326,025
Claims priority, application France, Oct. 22, 1976, 76 31867
Int. Cl.³ G03C 5/16
U.S. Cl. 250—318 14 Claims



1. A thermosensitive data-carrier for storing information recorded with a concentrated beam of radiation forming an etching spot on said data-carrier, said recorded information being solely generated by causing said etching spot to strike said data carrier at a plurality of points of impact, said data carrier consisting of:

a substrate;

a thermosensitive film of a material which liberates gases by thermal decomposition at a degradation temperature T_1, said thermosensitive film being uniformly affixed to said substrate; and

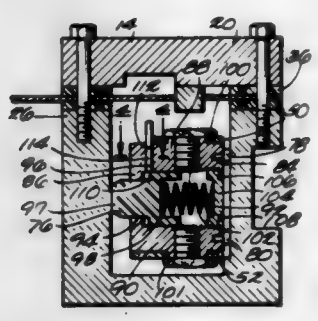
a further film of material, said further film not carrying any of said information prior to any decomposition of said thermosensitive film as a result of heat generated by said radiation and extending over said substrate prior to said decomposition for absorbing radiation of said beam, thereby converting said radiation into heat at said points of impact and selectively diffusing said heat into a portion of said thermosensitive film, for causing said portion to reach said degradation temperature T_1 and creating said decomposition in at least said thermosensitive film in the vicinity of said points of impact.

4,405,863

DETECTOR ARRAY RETAINING AND POSITIONING SYSTEM

Dennis H. Pritzkow, New Berlin; Jack H. Zabel, Milwaukee, and George R. Lang, New Berlin, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 19, 1981, Ser. No. 312,557
Int. Cl.³ G01T 1/18; H01J 1/88
U.S. Cl. 250—385 9 Claims



1. in a multicell radiation detector comprising:

a housing having top, bottom, front, and rear walls and first and second ends defining a chamber for being filled with a gas ionizable by x-rays, said front wall having an x-ray transmissive window;

an array of juxtaposed electrode elements mounted to a pair of frame members for being supported in transversely spaced relation within said chamber to define a multiplicity of adjacent ionization cells; and

mounting means to mount said array between said front and rear walls with said cells opening toward said window and with the front edge of each said element substantially equidistantly spaced from said window to define a uniform, transversely extending gap between said forward edges and said window; improved mounting means comprising:

first and second end blocks interposed between and joined to said frame members to support the respective ends of said array, each end block having front, rear, top, and bottom walls respectively facing the front, rear, top, and bottom walls of said chamber;

a plunger extending from the rear wall of each said end block;

spring means to urge each plunger against the rear wall of said chamber, thereby biasing each end block toward the front wall of said chamber; and

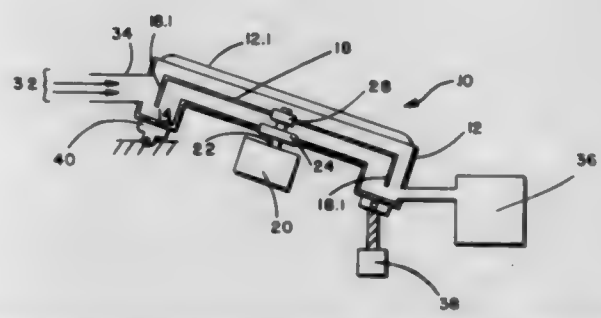
a front spacer positioned between the front wall of each said end block and the front wall of said chamber to maintain said gap.

4,405,864

ION IMPLANTER END PROCESSING STATION

Eddy H. del Rio, Jupiter, Fla., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 8, 1981, Ser. No. 300,118
Int. Cl.³ G21K 5/08, 5/10; H01J 37/18, 37/20
U.S. Cl. 250—441.1 4 Claims



1. In an ion implantation system having an evacuation hamber and a carousel, the carousel having provisions for supporting a plurality of substrates around its periphery and rotatably mounted within the chamber to sequentially expose the substrates to a beam of ions to be implanted in the substrate, the substrates supported around the periphery of the carousel substantially perpendicular to the plane of rotation of the carousel, the improvement in the evacuation chamber comprising:

the inner contour of the chamber configured to closely follow both the contour of the carousel and the contour of the perpendicularly disposed substrates; and

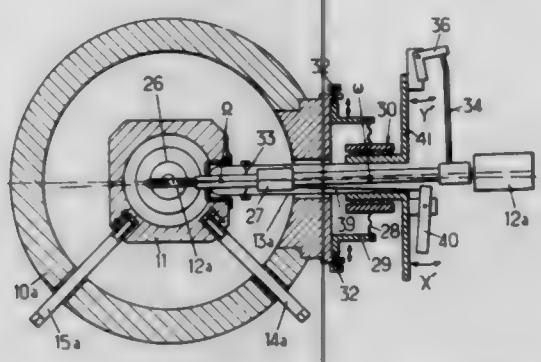
the ratio of the volume of the chamber to the volumetric displacement of the carousel within the chamber being of the order of about 3:1.

4,405,865

DEVICE FOR ADJUSTING THE POSITION AND THE ORIENTATION AROUND AN AXIS OF A SAMPLE HOLDER FOR AN ELECTRON MICROSCOPE

Bernard Genty, Versailles; Alain Marraud, Villebon, and Roger Valle, Clamart, all of France, assignors to Office National d'Etudes et de Recherches Aerospatiales, France

Filed Aug. 26, 1981, Ser. No. 296,549
Claims priority, application France, Aug. 29, 1980, 80 18836
Int. Cl.³ H01J *37/20*
U.S. Cl. 250—442.1 7 Claims



1. In an electron microscope having a column and an internal structure, a device for adjusting the location and angular position of a specimen holder, comprising:

a tube projecting through said column and having a hemispherical end portion resting on a cooperating surface of said internal structure,

means for supporting said tube with respect to said column and for rotating said tube about an orientation axis,

a specimen holder located in said tube and projecting from said tube,

and control means connecting said tube and specimen holders and constructed to adjust said specimen holder in position along the three axes of a reference triad,

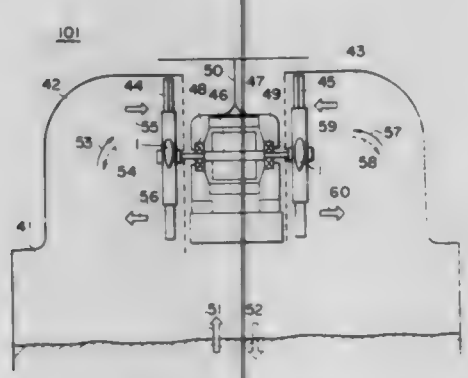
wherein said control means comprises annular diaphragm means connecting said specimen holder and tube and located in proximity to the center of said hemispherical surface, manually actuatable linkage means having two sets of push rods and levers for tilting said specimen holder about the center of said diaphragm means into perpendicular directions.

4,405,866

WAVE-POWER GENERATOR ASSEMBLY

Yoshio Masuda, Yokosuka; Takeaki Miyazaki, Yokohama; Osamu Yamada, Kawasaki, and Akira Hiramoto, Kamakura, all of Japan, assignors to Japan Marine Science; Technology Center and Fuji Electric Company, Ltd., all of, Japan

Filed Oct. 9, 1981, Ser. No. 310,290
Claims priority, application Japan, Oct. 18, 1980, 55-145069
Int. Cl.³ F03B *13/12*
U.S. Cl. 290—53 4 Claims



1. A wave-power generator assembly comprising:

a pair of one-way turbines of the identical structure symmetrically mounted on a common rotating shaft;

bearing means for rotatably supporting said common rotating shaft;

a generator driven to generate electricity by said common rotating shaft;

an air chamber with its bottom opened toward and into the water surface; and

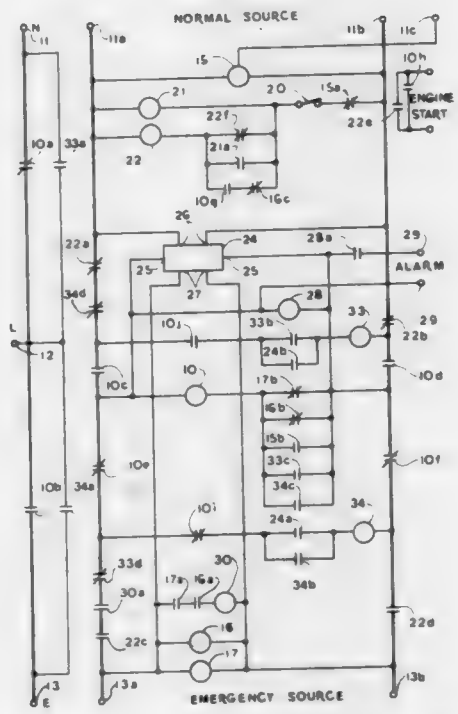
air passage means including first duct means for fluiddynamically connecting said air chamber to the open air through one of said one-way turbines and second duct means for fluiddynamically connecting said air chamber to the open air through the other one-way turbine, whereby the up and down motion of the water surface inside said air chamber causes to direct air flows opposite in direction through said respective one-way turbines in an alternating manner so that the common rotating shaft is driven to rotate in a predetermined direction at all times irrespective of the direction of the air flows through said first and second duct means.

4,405,867

SYSTEM FOR TRANSFERRING A LOAD BETWEEN TWO POWER SOURCES WITHOUT INTERRUPTION OF POWER TO THE LOAD

William A. Moakler, Basking Ridge, and Ralph H. Ringstad, Whippany, both of N.J., assignors to Automatic Switch Company, Florham Park, N.J.

Filed Jan. 23, 1980, Ser. No. 114,521
Int. Cl.³ H02J *3/42*
U.S. Cl. 307—64 15 Claims



1. A system for transferring a load from a first AC power source to a second AC power source without interrupting power supply to the load, comprising:

(a) a monitor for sensing both power sources and producing an output signal when the differences between certain characteristics of the two sources are within prescribed limits,

(b) contact means which when closed and open connect and disconnect, respectively, the first AC power source to the load,

(c) contact means which when closed and open connect and disconnect, respectively, the second AC power source to the load, one of said contact means being open and the other closed during steady state operation of the system,

(d) additional contact means connected in parallel with one of said contact means (b) and (c), the additional contact means, when closed, connecting one of the power sources to the load,

(e) means responsive to an output signal from the monitor for closing the additional contact means, and

(f) means responsive to closing of the previously open contact means (b) and (c) and to opening of the previously closed contact means (b) and (c) for opening the additional contact means.

4,405,868

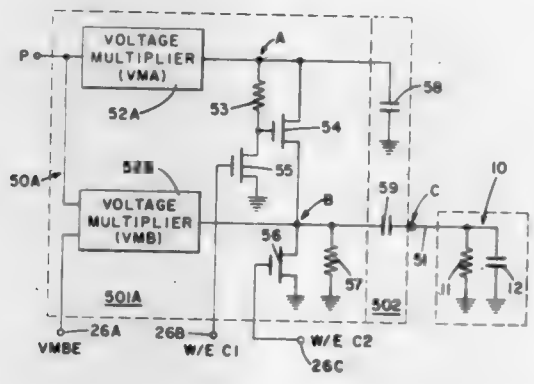
WRITE/RESTORE/ERASE SIGNAL GENERATOR FOR VOLATILE/NON-VOLATILE MEMORY SYSTEM

George C. Lockwood, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 20,123, Mar. 13, 1979, abandoned. This application Jun. 11, 1981, Ser. No. 272,605

Int. Cl.³ H02M *7/537;* **H03K** *5/02;* **H03L** *5/00*

U.S. Cl. 307—296 A **5 Claims**



1. A signal generator for supplying relatively large magnitude pulse signals of opposite polarity to a device having an input terminal with a parallel resistor capacitor circuit, said signal generator being operated by a power supply providing a first polarity voltage of substantially less magnitude than said opposite polarity signals and comprising:

multiplier circuit means couplable to said power supply for multiplying the magnitude of said power supply voltage and supplying said multiplied voltage at a multiplier output terminal;

a first large value capacitor coupled to said multiplier output terminal for storing said multiplied voltage;

a second large value capacitor having one terminal connectable to said input terminal of said device; and

control circuit means responding to control signals on at least one input line for providing, in operating relationship with said multiplier circuit means and said first capacitor, a predetermined sequence of voltages on said second terminal of said second capacitor to produce said pulse signals of opposite polarity during predetermined different time intervals when said first terminal of said second capacitor is connected to said input terminal of said device, a relatively large magnitude pulse of a first polarity being produced when said second capacitor is in a discharged condition and a positive voltage pulse supplied by said first capacitor is applied to said second terminal of said second capacitor, and a relatively large magnitude pulse of an opposite polarity being produced when said second capacitor is in a positively charged condition and a negative going pulse is applied to said second terminal of said second capacitor.

4,405,869

OPTICAL PARAMETRONS

George A. May, R.R. 1, E. Sooke Rd., Sooke, B. C., Canada V0S 1N0

Filed Aug. 27, 1982, Ser. No. 412,178

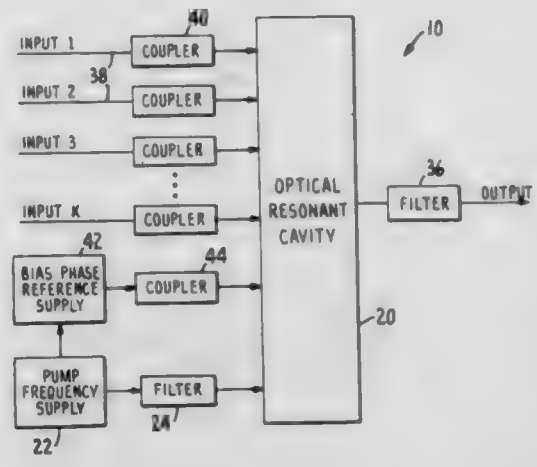
Int. Cl.³ G11C *11/20*

U.S. Cl. 307—405 **6 Claims**

1. An optical gate for performing a logical operation on optical input signals having a frequency f comprising:

pump frequency supply means for generating an optical pump signal having a frequency 2f;

optical resonant cavity means connected to said pump frequency supply means, said cavity means having non-linear optical characteristics such that when said pump signal, received by said cavity means from said supply means has sufficient power, said cavity means will generate a subharmonic output signal having a frequency f, said output signal having one of two possible phases which differ by π radians to one another, said two phases being representative of binary 1 and 0, respectively; and



bias supply means connected to said optical resonant cavity means and generating an optical reference signal having a frequency f, with the power level of said bias signal being adjusted to reflect the type of gate logic desired, whereby any optical input signals supplied to said cavity means are summed with said bias supply signal to produce a resultant seed input signal having one of said two phases, with said one phase being imparted to said output signal from said cavity means.

4,405,870

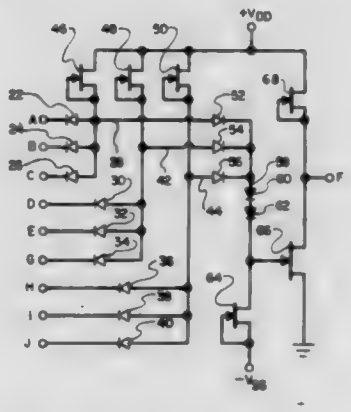
SCHOTTKY DIODE-DIODE FIELD EFFECT TRANSISTOR LOGIC

Richard C. Eden, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 10, 1980, Ser. No. 214,924

Int. Cl.³ H03K *19/094, 19/12, 19/20, 19/017*

U.S. Cl. 307—446 **16 Claims**



1. A logic circuit, comprising:

a plurality of AND logic elements, each AND element including a plurality of Schottky diodes each having an anode and a cathode, with each cathode connected to a logic input and the anodes connected in common to establish an AND output;

a diode pull up connected to each AND output and to a source of positive bias potential to raise the level of said AND output;

an OR logic element, including a plurality of Schottky diodes each having an anode and a cathode, with each anode connected to one of said AND outputs and the cathodes connected in common to establish an OR output;

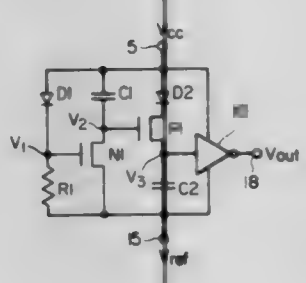
a first level shifting element connected to said OR output;
a diode pull down connected to said OR output and to a source of negative bias potential to lower the level of said OR output; and
an output field effect transistor having a source, a gate, and a drain, with the gate connected to said first level shifting element, the source connected to ground, and the drain providing a logic output from said circuit.

4,405,871

CMOS RESET CIRCUIT

Gerald B. Buurma, and John M. Jorgensen, both of San Jose, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 1, 1980, Ser. No. 145,416
Int. Cl.[3] H03K *5/153, 17/20, 17/687;* H02J *13/00*
U.S. Cl. 307—594 11 Claims



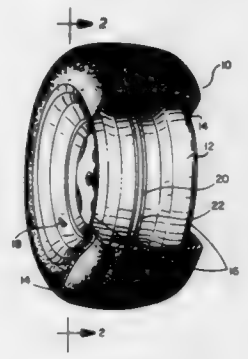
1. A CMOS integrated power-on reset circuit for providing an output signal in response to the application of a voltage across a supply terminal and a reference terminal; the circuit comprising:
a first circuit comprising a first capacitor having a first terminal and a second terminal, a first N-channel transistor having a drain coupled to the second terminal of the first capacitor, a source coupled to the reference terminal, and a gate, and first circuit means including a forward-biased diode coupled between the supply and reference terminals in series circuit with the gate and source of the first N-channel transistor;
a second circuit comprising a second capacitor having a first terminal coupled to the reference terminal and a second terminal, a first P-channel transistor having a drain coupled to the second terminal of the second capacitor, a source coupled to the supply terminal, and a gate, and second circuit means including a forward-biased diode coupled between the supply and reference terminals in series circuit with the source of the first P-channel transistor;
inverter means comprising a second P-channel transistor coupled in series circuit with a second N-channel transistor between the supply and reference terminals, the gates of the second transistors coupled, for providing the output signal in response to the voltage applied to the gates of the second transistors;
wherein the second terminal of the capacitor of one of the first and second circuits is coupled to the gate of the transistor of the other of the first and second circuits and the second terminal of the capacitor of the other circuit is coupled to the gates of the second transistors.

4,405,872

METHOD AND APPARATUS FOR GENERATING ELECTRICAL ENERGY FROM THE ROTATION OF A WHEEL

Stephen E. Thomas, 196 Patricia Way, Grass Valley, Calif. 95945

Continuation-in-part of Ser. No. 940,351, Sep. 7, 1978, abandoned. This application Mar. 2, 1981, Ser. No. 239,624
Int. Cl.[3] H02K *7/10*
U.S. Cl. 310—75 R 8 Claims



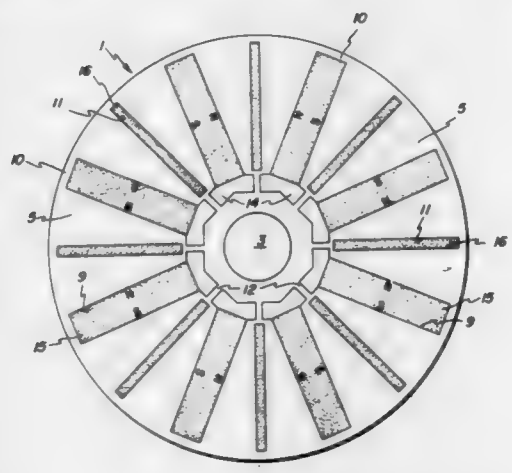
1. An apparatus for generating electrical energy from the rotation of a wheel comprising:
an electric generation pair including a means which develops a magnetic flux and another means which, when cut by said lines of magnetic flux due to relative motion between the pair, generates electrical energy;
a non-magnetic support track circumferentially affixed to a non-magnetic wheel rim and within a tire associated with said wheel;
attachment means for attaching a first means of said electric generation pair proximate at least one fixed point of said support track;
means for slidably coupling a second means of said electric generation pair to said support track; and
drag producing means attached to said second means.

4,405,873

ROTOR FOR A LINE-START PERMANENT-MAGNET MOTOR

Thomas A. Nondahl, Milwaukee, Wis., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 26, 1981, Ser. No. 314,617
Int. Cl.[3] H02K *21/12*
U.S. Cl. 310—156 10 Claims



1. A rotor for a self-starting permanent magnet motor comprising:
a shaft;
a cylindrical steel matrix having an aperture extending through the cylinder along its axis for mounting on said shaft, said matrix having a plurality of slots of a first width

extending axially through said matrix and radially spaced about the axis of said matrix, said matrix having a slot of a second width between each pair of circumferentially-successive slots of said first width, said slots of a second width extending axially through said matrix; and

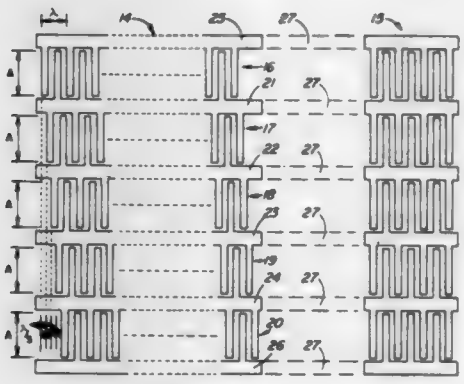
permanent magnet material positioned in said slots, said material in said slots of a first width polarized so that circumferentially-successive faces of said material in said slots of a first width have like polarity, said magnet material in said slots of a second width being sufficiently narrow to be driven completely about its hysterisis loop when said rotor is subjected to a rotating magnetic field in said motor and said rotor is rotating at below synchronous speed, said magnetic material in said slots of a first width being sufficiently wide to retain its polarity when said rotor is subjected to a rotating magnetic field in said motor.

4,405,874

SURFACE ACOUSTIC WAVE (SAW) DEVICES HAVING SERIES-CONNECTED INTER-DIGITAL TRANSDUCERS

Mark S. Suthers, Lanark, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 1, 1982, Ser. No. 353,075
Int. Cl.³ H03H *9/25*
U.S. Cl. 310—313 B **8 Claims**



1. A surface acoustic wave device comprising a substrate and two transducer means disposed on a surface of the substrate for propagation of surface acoustic waves therebetween, each transducer means comprising a plurality of inter-digital transducers, electrically connected in series, for operation at a common frequency, wherein each transducer means comprises N inter-digital transducers, the 1st to Nth transducers of the two transducer means being respectively aligned with one another for propagation of N surface acoustic waves between the two transducer means, the transducers of at least one of the transducer means being offset with respect to one another to provide said N surface acoustic waves with N different path lengths between the two transducer means, said path lengths differing from one another to propagate the Nth harmonic of said common frequency between said two transducer means.

4,405,875

HERMETICALLY SEALED FLAT-TYPE PIEZO-ELECTRIC OSCILLATOR ASSEMBLY

Kiyoshi Nagai, 169-1, Nishibori, Urawa-shi, Saitama Prefecture, Japan

Filed Apr. 10, 1981, Ser. No. 253,043
Claims priority, application Japan, Jul. 24, 1980, 55-101686; Aug. 26, 1980, 55-120791[U]; Dec. 28, 1980, 55-185654; Dec. 28, 1980, 55-185655
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—344 **28 Claims**

1. A hermetically sealed piezo-electric oscillator assembly comprising:

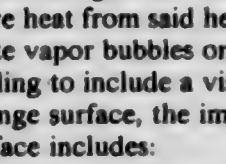
a flat-type package comprising a metal frame and an insulating material portion connected to said metal frame,

said metal frame having an upper surface and an inwardly facing surface portion which faces inwardly of said package;

at least a part of said insulating material portion forming a side wall of said package;

said insulating material side wall having an upper, outwardly facing surface portion which is held in contact with said inwardly facing surface portion of said metal frame;

said inwardly facing surface portion of said metal frame



having an area larger than the area defined by the corresponding upper surface of said metal frame; and

said package including lead wires passing through said insulating material portion to provide terminals inside said package;

a piezo-electric oscillator element mounted inside said package on said terminals; and

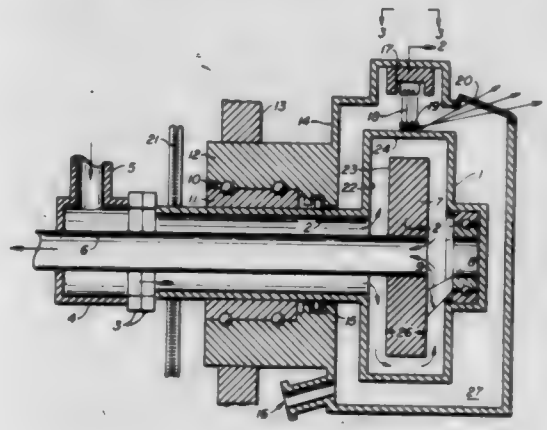
a lid closing the package to encase and hermetically seal said piezo-electric oscillator element inside said package.

4,405,876

LIQUID COOLED ANODE X-RAY TUBES

Arthur H. Iversen, 15315 Sobey Rd., Saratoga, Calif. 95070

Filed Apr. 2, 1981, Ser. No. 250,275
Int. Cl.³ H01J *35/10*
U.S. Cl. 313—30 **52 Claims**



1. In x-ray generating apparatus of the type including a rotating anode adapted for irradiation by an energy beam, and including a heat exchange surface on the interior surface thereof, said apparatus including means for providing a flow of coolant liqui to remove heat from said heat exchange surface by formation of nucleate vapor bubbles on said heat exchange surface, said liquid tending to include a viscous sublayer adjacent to said heat exchange surface, the improvement wherein said heat exchange surface includes:

means, disposed on said heat exchange surface, for forming nucleate bubbles or predetermined size and distribution to thereby increase heat flux.

4,405,877

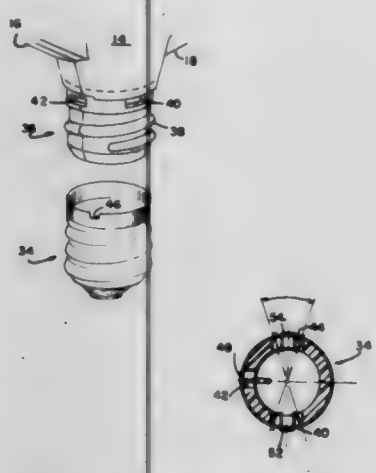
VARIABLY POSITIONAL LAMP HOLDER ASSEMBLY

Thomas Haraden, Ipswich, and Harold L. Hough, Beverly, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 11, 1981, Ser. No. 329,908
Int. Cl.³ H01J *5/48, 5/50*
U.S. Cl. 313—318 **6 Claims**

1. A variably positional lamp holder assembly comprising: a housing having a longitudinal extending central body with a

plurality of radial arms attached thereto and transversely projecting therefrom, the terminal ends of said arms remote from said housing being formed to receive and hold a circular fluo-



rescent lamp; said body having a lower portion carrying an electrically conductive base, said base being fixed to said lower portion in a manner to allow a limited amount of rotational movement of said base relative to said lower portion.

4,405,878

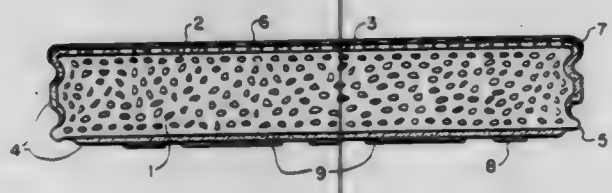
BONDED GRID-CATHODE ELECTRODE STRUCTURE

David W. Oliver, Schenectady, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 149,204, May 12, 1980, abandoned, which is a division of Ser. No. 37,258, May 9, 1979, Pat. No. 4,237,209. This application Oct. 1, 1981, Ser. No. 307,404

Int. Cl.³ H01J *1/14*

U.S. Cl. 313—346 R **9 Claims**



1. A bonded grid-cathode structure comprising a hot thermionic cathode planar structure for operating temperature greater than 1000° C., covered by an insulating layer of boron nitride and that layer covered by a grid layer of molybdenum or tungsten refractory metal, there being identical, aligned openings completely through both grid and insulating layers, the openings having rectangular, elliptical or dog-boned top shape, width of grid openings substantially smaller than two mils, planar aspect ratio of openings at least 10/1 length-to-width, and having grid transparency of at least approximately 70 percent formed by the method of making a bonded grid on a cathode, comprising the steps of:

(a) forming an insulator on said cathode,

(b) forming a metal layer for the grid, on the insulating layer,

(c) forming a photo-resist layer on the metal layer,

(d) exposing the photo-resist layer with means to form a grid pattern, followed by a developing process which selectively removes part of the photo-resist layer to expose openings of said grid pattern,

(e) removing the metal layer in said openings,

(f) using air blasting with an abrasive powder to remove the insulator layer in said openings, with the photo-resist on the metal layer acting as a mask, wherein a special nozzle and scanning provides substantially uniform abrasion over the entire exposed surface of said insulator layer.

4,405,879

PHOTOELECTRIC CONVERSION DEVICE AND METHOD OF PRODUCING THE SAME

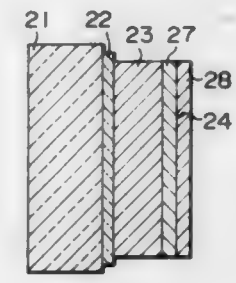
Saburo Ataka, Tokyo; Yoshinori Imamura, Hachioji; Yasuo Tanaka, Kokubunji; Hirokazu Matsubara, Hamuramachi, and Eiichi Maruyama, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,588

Claims priority, application Japan, Mar. 24, 1980, 55-36071

Int. Cl.³ H01J *29/45, 31/38;* B05D *1/36*

U.S. Cl. 313—386 **12 Claims**



1. A photoelectric conversion device comprising a transparent substrate;

a transparent conductive film formed on said substrate;

a photoconductive layer made of amorphous silicon formed on said transparent conductive film; and

a chalcogen glass film formed on said photoconductive layer, wherein

said chalcogen glass film is a composite film comprising at least a first chalcogen glass layer being made of at least one selected from the group consisting of antimony trisulfide and arsenic trisulfide and a second chalcogen glass layer being made of at least one selected from the group consisting of antimony trisulfide, arsenic trisulfide, antimony triselenide and arsenic triselenide, said first chalcogen glass layer is formed in a lower pressure atmosphere and said second chalcogen gas layer is formed in a higher pressure atmosphere.

4,405,880

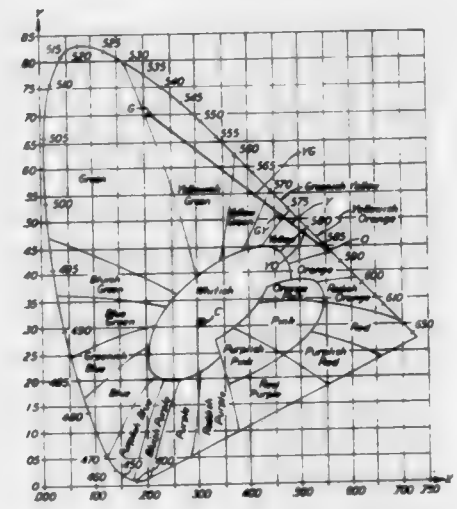
DATA DISPLAY CRT HAVING A YELLOW-EMITTING SCREEN

Anthony V. Gallaro, Auburn, and Robert A. Hedler, Seneca Falls, both of N.Y., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Jun. 11, 1981, Ser. No. 272,610

Int. Cl.³ H01J *31/00*

U.S. Cl. 313—467 **5 Claims**



1. A monochrome data display cathode ray tube having means for forming and directing an electron beam to impinge a cathodoluminescent screen disposed on the viewing area and constituted of a bright substantially yellow-emitting screen

component evidencing medium-long image persistence and capable of exhibiting a selected hue substantially defined by C.I.E. color coordinates within the range substantially delineated by "x" 0.505, "y" 0.475 and "x" 0.410, "y" 0.545, said screen component being formed of a discrete blend of phosphors comprising:

a medium-long persistence green-emitting phosphor evidencing an excited hue substantially defined by C.I.E. color coordinates having an "x" value in the order of 0.210 ± 0.010 and a "y" value of substantially 0.700 ± 0.010; said green emitting phosphor is a zinc orthosilicate host co-activated with manganese and arsenic (Zn_2SiO_4:Mn:As); and

a medium-long persistence orange-emitting phosphor evidencing an excited hue substantially defined by an "x" value in the order of 0.550 ± 0.010 and a "y" value of substantially 0.440 ± 0.010, said orange-emitting phosphor is a cadmium silicate host co-activated with manganese and arsenic ($CdSiO_3$:Mn:As).

4,405,881

COLOR CATHODE RAY TUBE INCLUDING Nd_2O_3 AND Cr_2O_3 IN FACE GLASS

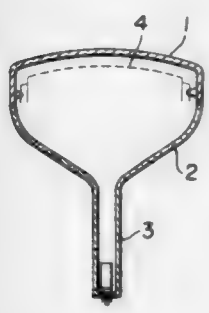
Hiroo Kobayashi, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1981, Ser. No. 265,678

Claims priority, application Japan, May 29, 1980, 55/72382; Aug. 28, 1980, 55/119983

Int. Cl.³ H01J *29/86*

U.S. Cl. 313—480 **7 Claims**



1. In a color cathode ray tube comprising a fluorescent screen having at least one phosphor on an inner surface of the face glass for plural color emission, the improvement comprising:

incorporating 0.3 to 1.5 wt% per 10 mm glass thickness, of Nd_2O_3 and a small amount of the colorant Cr_2O_3 and optionally other colorants in said face glass to impart wavelength selectivity to said face glass.

4,405,882

AIR FLOW SENSOR

Stephen J. Reinsch, Vista, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 8, 1980, Ser. No. 213,986

Int. Cl.³ H01J *61/52*

U.S. Cl. 315—118 **2 Claims**

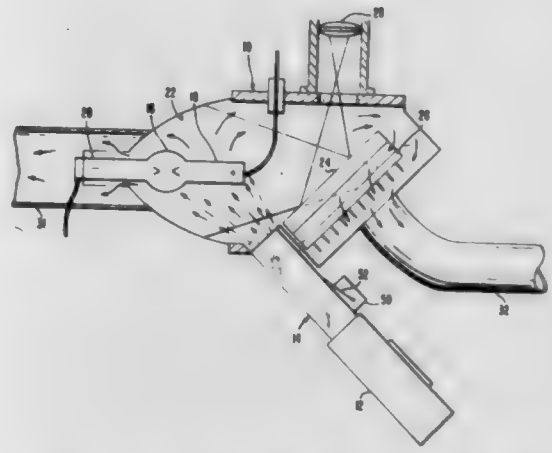
1. An air flow sensor comprising:

walls defining a duct having an inlet end and an outlet end for passing air therethrough from said inlet end to said outlet end, a blower connected to said inlet end of said duct to blow air therethrough and a lamp housing connected to said outlet end of said duct, said lamp housing having a lamp therein;

an opening in the wall of said duct said wall having said opening therein being substantially planar, said opening being vented away from said duct;

a vane pivoted in said duct on said wall having an opening therein adjacent the upsteam end of said opening, said vane having a first position wherein said vane lies against said wall on the interior of said duct to be unobstructive to air flow through said duct, said vane being configured to cover said opening when in said first position so that pressure in said duct holds said vane in said first position, said vane having a second position wherein said vane uncovers said opening and extends into said duct;

means for urging said vane from said first position toward said second position; and



means for detecting when said vane is in said first position so as to signal air flow through said duct, said detecting means comprising an electric switch connected to be actuated by said vane when said vane is in its first position, said switch being connected to said lamp to prevent energization of said lamp when said vane is away from said first position to prevent energization of said lamp in the absence of sufficient air flow to hold said vane in said first position.

4,405,883

APPARATUS FOR STOPPING ROTATION OF TAPE REELS

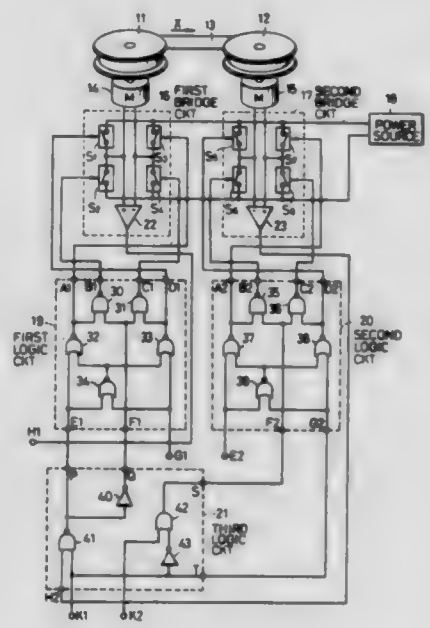
Kazutaka Ashida, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jul. 29, 1981, Ser. No. 287,985

Claims priority, application Japan, Jul. 30, 1980, 55-108006

Int. Cl.³ H01J *9/395*

U.S. Cl. 318—6 **3 Claims**



1. An apparatus for stopping rotation of tape reels, said apparatus having a first motor for rotationally driving a first tape reel, a second motor for rotationally driving a second tape reel, and a control circuit means for controlling the rotation of the motors by independently controlling the rotation of the first and second motors, and for stopping the first and second tape reels after a recording medium in a tape form has been fed

from the first tape reel and taken up by the second tape reel, said control circuit means comprising:

first bridge circuit means having four switches which respectively form four sides of said first bridge circuit, the contiguous sides of said bridge joining each other at four apexes, said first motor having motor terminals respectively connected between one pair of opposing apexes of the first bridge circuit;

second bridge circuit means having four switches which respectively form four sides of said second bridge circuit, the contiguous sides of said bridge joining each other at four apexes, said second motor having its motor terminals respectively connected between one pair of opposing apexes of the second bridge circuit;

first terminal means having at least three terminals for receiving input digital signals;

first logic circuit means having outputs connected to said first bridge circuit means and being responsive to said input digital signals from the first terminal means for producing digital signals from four output terminals in response to said input digital signals supplied to said three input terminals of said first terminal means, to independently switch ON or OFF each of the four switches of said first bridge circuit;

second terminal means having at least three terminals for receiving input digital signals;

second logic circuit means having outputs connected to said second bridge circuit means and being responsive to said input digital signals from the second terminal means for producing digital signals from four output terminals in response to said input digital signals supplied to said three input terminals of said second terminal means, to independently switch ON or OFF each of the four switches of said second bridge circuit;

comparator means having a digital output signal and being coupled to terminals of said second motor for comparing the voltage difference therebetween; and

third logic circuit means responsive to said output digital signal of said comparator which compares the voltage difference between motor terminals of said second motor, a train of pulses for controlling the rotational speed or the rotational torque of said second motor, and a digital signal indicating a rotation mode or a stop mode, respectively,

said third logic circuit means producing and supplying output digital signals to said first and second logic circuit means in response to the digital signal indicating the rotation mode supplied thereto, to control said first and second logic circuit means so that the motor terminals of said first motor are released, and so that a train of pulses is applied to the motor terminals of said second motor so that said second tape reel takes up said recording medium of a tape form,

said third logic circuit means producing and supplying output digital signals to said first and second logic circuit means in response to the digital signal indicating the stop mode supplied thereto, to control said first and second logic circuit means so that a voltage is applied to the motor terminals of said first motor to obstruct said second tape reel from taking up said recording medium of a tape form, and so that after the motor terminals of said second motor are released, the motor terminals of said first and second motors are respectively disconnected to release said first and second motors when said comparator detects that a counter electromotive voltage generated by said second motor is zero.

4,405,884

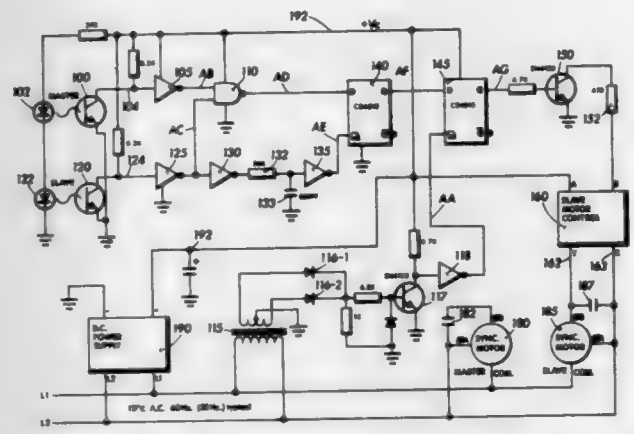
SHAFT POSITION SYNCHRONIZATION MEANS FOR MULTIPLE SYNCHRONOUS INDUCTION MOTORS

Harold J. Weber, 20 Whitney Dr., Sherborn, Mass. 01770

Filed Apr. 27, 1981, Ser. No. 257,575

Int. Cl.³ G05B *19/28*

U.S. Cl. 318—85 **31 Claims**



1. Motor shaft angle synchronization method effective to produce a state of relative angular conincidence between the rotating shaft positions of a master and at least one slave alternating current induction motor operating from a common frequency power signal, through the combination of:

a. operating all said induction motors from the common frequency power signal thereby substantially locking the relative rotational rates therebetween;

b. receiving a leading shaft position signal from the master;

c. receiving a following shaft position signal from each slave;

d. adapting the leading signal in combination with each following signal to effectively produce a control signal from each combination that is superimposed upon the relatively constant frequency said power signal exciting each slave motor thereby serving to intermittently retard the normal substantially synchronous shaft speed of the correspondent slave to bring about sufficient slippage of the instant shaft position of the slave relative to the master to produce angular coincidence therebetween; and,

e. inhibiting said control signal retardation effect when angular coincidence between the master and the slave is achieved.

4,405,885

BRUSHLESS DC MOTOR

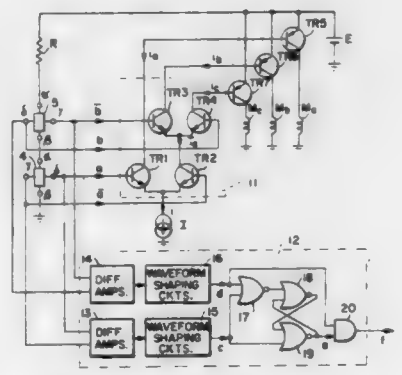
Hiroshi Okamoto, Yao, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 20, 1981, Ser. No. 284,531

Claims priority, application Japan, Jul. 23, 1980, 55-101615; Oct. 17, 1980, 55-146165

Int. Cl.³ H02K *29/00*

U.S. Cl. 318—254 **6 Claims**



1. A brushless dc motor comprising a rotor including a permanent magnet of 2n-poles (n: an integer), a stator including three-phase stator windings, a position signal generator for generating a position signal corresponding to a rotating posi-

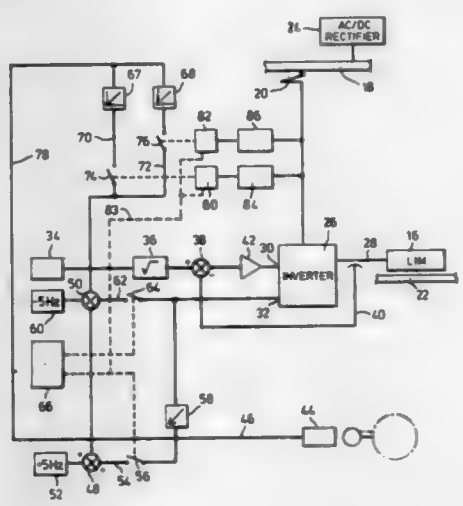
tion of said rotor, and a current divider for controlling a period of time for energizing said three-phase stator windings according to said position signal, wherein said position signal generator comprises a position detecting rotary member, a first position detecting element, a second position detecting element, and a position detecting means, said position detecting rotary member being provided with a first position detecting track which is ring-like in shape and which has two states, A and B, which are different in physical properties and which are coded sequentially at an angular ratio of approximately 1 to 2 corresponding to the number of the polarities of said permanent magnet and being provided with a second position detecting track which is ring-like in shape and which has two states which are different in physical properties and which are coded sequentially at a different angular position from said first position detecting track, and rotating integrally with said rotor, said first position detecting element detecting said coded physical state of said first position detecting track corresponding to a rotating position of said position detecting rotary member, said second position detecting element detecting said coded physical state of said second position detecting track, said position detecting means providing a coding ratio of said two coded physical states of said second position detecting track and mounting said second position detecting element, so that within a zone where said first position detecting element detects the physical state A, said physical state detected by said second position detecting element changes an odd number of times and at a substantially central angle of an angular width in which said first position detecting element detects said physical state B, and said physical state detected by said first position detecting element changes once.

4,405,886

BRAKING CONTROL

Dennis F. Williamson, 850 Ludgate Crescent, Kingston, Ontario, Canada K7M 6C8

Filed Feb. 25, 1981, Ser. No. 238,076
Int. Cl.³ H02P *3/18*
U.S. Cl. 318—376 **9 Claims**



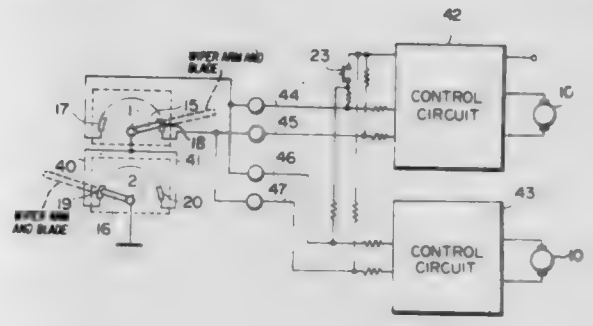
1. A regenerative braking system comprising an electric induction motor, an external conductor connected to said motor to transfer power between said motor and a source, sensing means to sense the voltage in said external conductor, and control means to control the regenerative capacity of said motor, said control means being operable to increase the slip frequency between the synchronous frequency of said motor and the control frequency supplied to said motor to reduce said regenerative capacity upon said sensing means sensing a predetermined voltage in said conductor and thereby reduce the power delivered by said motor to the conductor.

4,405,887

DRIVE CIRCUIT FOR A WIPER DEVICE

Takeo Tamura, Yokohama; Hiroshi Hara, Funabashi, and Takayoshi Kido, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Tokyo, Japan

Filed Oct. 9, 1981, Ser. No. 310,362
Claims priority, application Japan, Oct. 13, 1980, 55-141968
Int. Cl.³ H02P *1/04*
U.S. Cl. 318—443 **33 Claims**



1. A wiper device for an automotive vehicle comprising:
first and second wiper assemblies having wiper blades and wiper arms respectively;
first and second reversible driving motors connected with said first and second wiper assemblies for driving said first and second wiper assemblies in first and second directions alternately, said first and second driving motors being adapted to be simultaneously driven in the same directions with respect to each other;
a first drive control circuit associated with said first driving motor for controlling the driving direction of said first driving motor;
a second drive control circuit associated with said second driving motor for controlling the driving direction of said second driving motor;
first and second switch means, incorporated in said first and second drive control circuits for switching direction of current supplied to each of said first and second driving motor for reversing the driving directions of said driving motor; and
first and second end detectors for detecting given motion ends of said first and second wiper assemblies in said first and second directions, said first and second end detectors being coupled with each other so that there is derived a switching signal for switching said first and second switch means of said first and second drive control circuits between a first position for driving said first and second driving motors in said first direction and a second position for driving said first and second driving motors in said second direction, said switching signal being derived when both of said first and second detectors detect the motion ends of said first and second wiper assemblies.

4,405,888

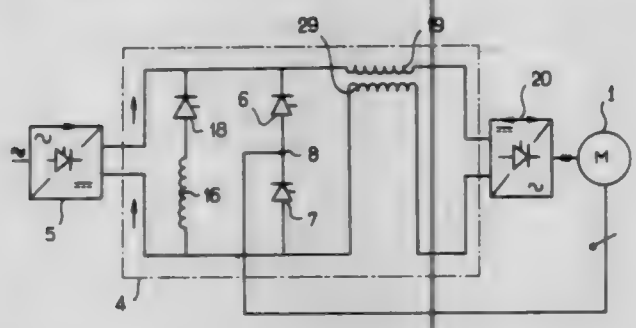
ADAPTER FOR INTERMEDIARY CIRCUIT OF A STATIC CONVERTER ASSEMBLY

Albert C. Wiart, Sannois, France, assignor to Jeumont Schneider Corporation, Puteaux, France

Filed Apr. 21, 1981, Ser. No. 256,115
Claims priority, application France, Apr. 24, 1980, 80 09187
Int. Cl.³ H02P *5/40*; H02M *5/45*
U.S. Cl. 318—803 **2 Claims**

1. A direct current intermediary circuit of an assembly for transforming input power to output alternating current power by the commutation of input and output static converter means to drive electric motor means connected to the output converter means, the circuit comprising a first branch including in series a free-wheeling switch and a first inductance connected to output terminals of the input converter means, said free-wheeling switch being arranged to be operated upon commu-

tation of the input converter means when the output converter means is not being commutated so as to connect the first inductance to the output terminals of the input converter means; a second branch including in series two thyristors connected to the output terminals of the input converter means; and second and third inductances with a high mutual inductance coupling coefficient, the second and third inductances each being connected to a different output terminal of the input converter means and to a different input terminal of the output converter means, the first inductance having a value selected to be equal to the sum of the loss inductance of the electric motor means and the mutual inductance of said second and third inductances so as to afford substantially the same inductance value on the output terminals of the input converter means upon operation of the free-wheeling switch.

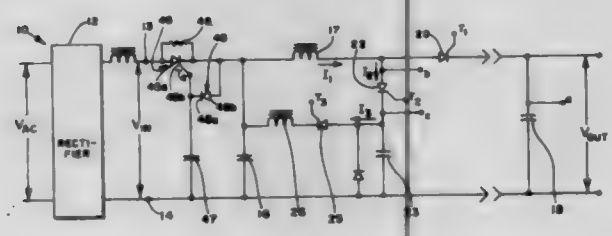


4,405,889

POWER SUPPLY FOR REPETITIVE DISCHARGE APPARATUS

Scott M. Overstreet, Los Altos Hills, and C. Henning Swenson, Los Altos, both of Calif., assignors to GTE Products Corporation, Stamford, Conn.

Filed Oct. 29, 1981, Ser. No. 316,157
Int. Cl.³ H02J *15/00*
U.S. Cl. 320—1 **2 Claims**



1. A power supply for repetitively charging utilizing apparatus from an unregulated DC voltage source having a pair of terminals comprising

first and second capacitors connected across said terminals, said first capacitor being adapted to be charged by said source, said second capacitor constituting part of said utility apparatus,

a first inductor connected in series between said capacitors,

a first bistable switch connected between said inductor and said second capacitor,

a first means to trigger said switch to the conducting state for electrically connecting said capacitors through said inductor whereby said first capacitor discharges current through said inductor to resonantly charge said second capacitor,

a third capacitor connected across said terminals in between said inductor and said switch,

a second bistable switch connected in series with said third capacitor,

second means responsive to a predetermined voltage on said second capacitor for triggering said second switch to the conducting state and electrically connecting said inductor to said third capacitor whereby charging current from said first capacitor to said second capacitor is diverted to said third capacitor to resonantly charge the latter,

a second inductor and a third bistable switch connected in series between said first and third capacitors, and

third means for triggering said third switch to the conducting state and electrically connecting said third and first capacitors through said second inductor whereby energy in said third capacitor is transferred to said first capacitor,

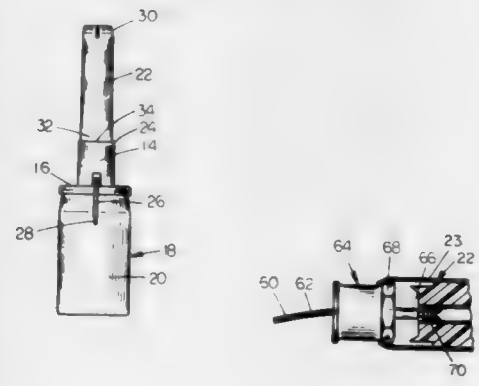
said first and third means both being responsive to said predetermined voltage on said second capacitor for triggering said first and third switches simultaneously.

4,405,890

RECHARGEABLE GLOW PLUG ENERGIZER

Wilford L. Hicks, Jr., 3421 Biggs, Omaha, Nebr. 68123

Filed Aug. 3, 1981, Ser. No. 289,506
Int. Cl.³ H02J *7/02*
U.S. Cl. 320—2 **8 Claims**



1. A hand held rechargeable energizer for energizing the glow plug of a glow fuel combustion engine comprising,

a rechargeable battery having oppositely charged terminal portions,

an extension means having one end connected to one terminal portion of said battery and an opposite end extended outwardly therefrom,

a Headlock connector having a free end having a pair of terminals adapted for releasable electrical connection to a glow plug and a rechargeable plug of a recharger unit and an opposite base end connected to said opposite end of the extension means so that said free end extends outwardly from said battery by a distance greater than the length of said Headlock connector,

one terminal of said Headlock connector being electrically connected to said one terminal of the battery, and

means for electrically connecting the other terminal of the Headlock connector to the opposite terminal portion of the battery.

4,405,891

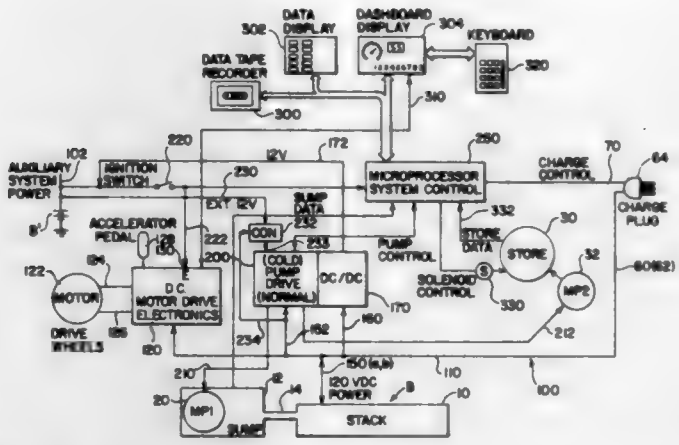
CONTROL SYSTEM FOR ELECTRIC POWERED VEHICLE

James H. Galloway, New Baltimore, Mich., assignor to Energy Development Associates, Inc., Madison Heights, Mich.

Filed Jul. 13, 1981, Ser. No. 282,497
Int. Cl.³ H01M *10/44*
U.S. Cl. 320—15 **16 Claims**

1. In a control system for an electric powered motor vehicle of the type including a D.C. motor drivingly connected to roadway engaging drive wheels of said vehicle, said control system including control means for operating said D.C. drive motor with a voltage having a pre-selected magnitude; a first storage battery supported on said vehicle and having a charging mode and discharging mode with a voltage rating during both of said modes generally equal to said pre-selected magnitude; a circulating pump associated with said first storage battery for activating said first storage battery; and, means for driving said pump by said first storage battery during said discharging mode of said first storage battery, the improvement in said system comprising: a second storage battery; manually actuated start means producing an enabling signal to

allow said D.C. motor to be driven by said first storage battery, means for driving said circulation pump for the first storage



battery with said second storage battery for a limited time after manual actuation of said start means.

4,405,892

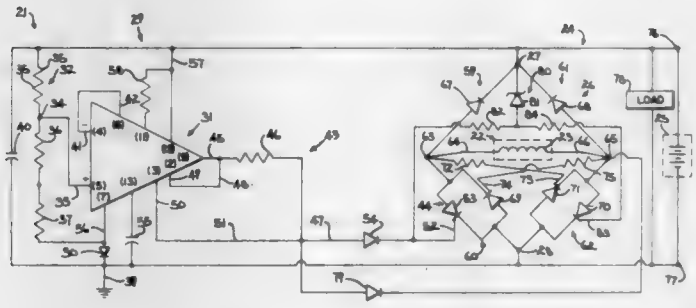
REGULATOR FOR A GENERATOR ENERGIZED BATTERY

Richard E. Staerzl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Continuation-in-part of Ser. No. 59,054, Jul. 19, 1979, Pat. No. 4,320,335. This application Dec. 31, 1980, Ser. No. 221,624

Int. Cl.³ H02J *7/10*; H02P *9/00*

U.S. Cl. 322—89 **2 Claims**



1. An energy regulating system to maintain a charge on a battery by an electrical energy generating winding of a generator, said regulating system comprising

a full wave rectifying bridge circuit having first and second legs including first and second diodes, respectively, having cathode circuits mutually electrically connected to a first terminal of said battery and third and fourth legs including first and second controlled rectifiers, respectively, having anode circuits mutually electrically connected to a second terminal of said battery,

said winding having a first end electrically connected to a first connection joining said first and third bridge legs and a second end electrically connected to a second connection joining said second and fourth bridge legs,

a first firing control circuit connected to said first connection and to a gate circuit of said second controlled rectifier to gate said second rectifier into conduction in response to a predetermined energy phase supplied by said winding,

a second firing control circuit connected to said second connection and to a gate circuit of said first controlled rectifier to gate said first rectifier into conduction in response to a predetermined energy phase supplied by said winding;

a first switch connecting said first connection to a system ground and a second switch connecting said second connection to said system ground,

a charge sensor electrically connected to said battery and operating from a first condition to a second condition to provide a charge signal in response to said battery charge being above a predetermined magnitude,

a phase sensor electrically connected to said winding to provide a phase signal in response to the energy generated by said winding,

a control circuit electrically connected to said charge and phase sensors to operate said first switch from a first condition to a second condition to interrupt the energy flow to the battery in response to said charge and phase signals, and

a second sensor electrically connected to said rectifying circuit to sense the energy thereat and to operate said first and second switches from a first condition to a second condition in response to the sensed energy exceeding a second predetermined magnitude greater than said first magnitude to de-activate said rectifying circuit.

4,405,893

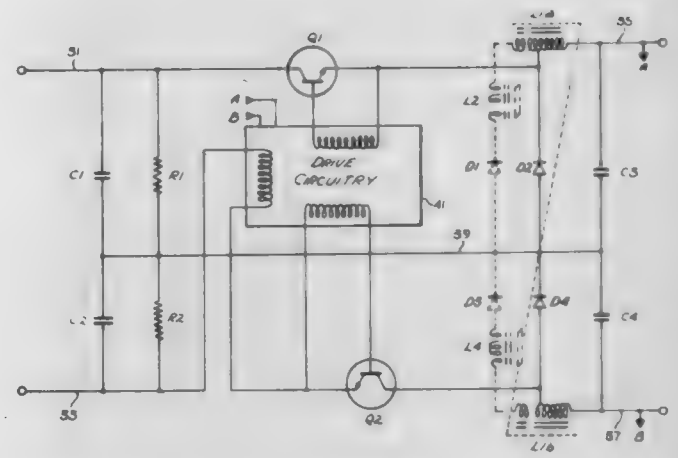
PULSE WIDTH REGULATOR

John E. Rance, Redondo Beach, Calif., assignor to Gulton Industries, Inc., Hawthorne, Calif.

Filed Jul. 6, 1981, Ser. No. 280,205

Int. Cl.³ H02P *13/32*

U.S. Cl. 323—271 **4 Claims**



1. A pulse width regulator comprising:

(a) means for dividing an unregulated input DC voltage into a plurality of unregulated input DC voltages;

(b) switch means including a plurality of semi-conductor switches coupled to said voltage dividing means, wherein each semi-conductor switch is adapted to switch one of said plurality of input voltages on and off to produce a plurality of pulses;

(c) integrating means for integrating said plurality of pulses, said integrating means coupled to said switch means, whereby said pulses are converted into a regulated DC output voltage;

(d) storage means for improving switching losses of said semi-conductor switches, said storage means comprising a plurality of saturable reactor-inductor pairs electrically connected to each other through diodes and coupled to said integrating means.

4,405,894

VOLTAGE CONTROL AND BALANCING CIRCUIT

Richard M. Rice, Afton, and Stanley M. Hartman, Harrisonburg, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

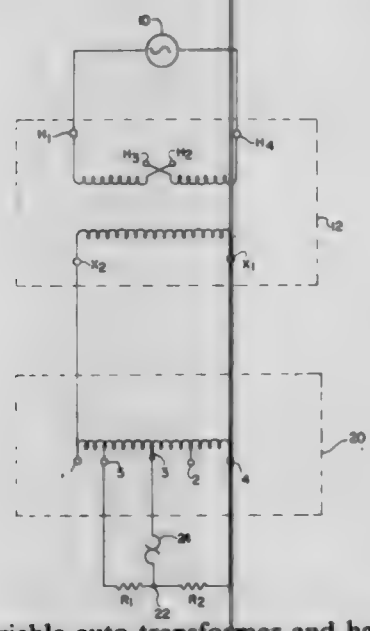
Filed Oct. 21, 1981, Ser. No. 313,265

Int. Cl.³ H02J *3/00*

U.S. Cl. 323—340 **5 Claims**

1. A circuit for controlling an alternating current voltage supply to a pair of resistances comprising a main transformer, said main transformer having a plurality of taps, a pair of which may be connected as an input from said alternating current voltage supply and another pair of which may be selected to thereby provide a plurality of fixed step down or step up transformation ratio outputs, and a variable auto trans-

former having a plurality of taps, a pair of which are connected as an input thereof to said output of said main transformer and another pair of which may be selected to thereby provide a plurality of fixed step down or step up transformation ratio outputs, said resistances being connected in series to said out-



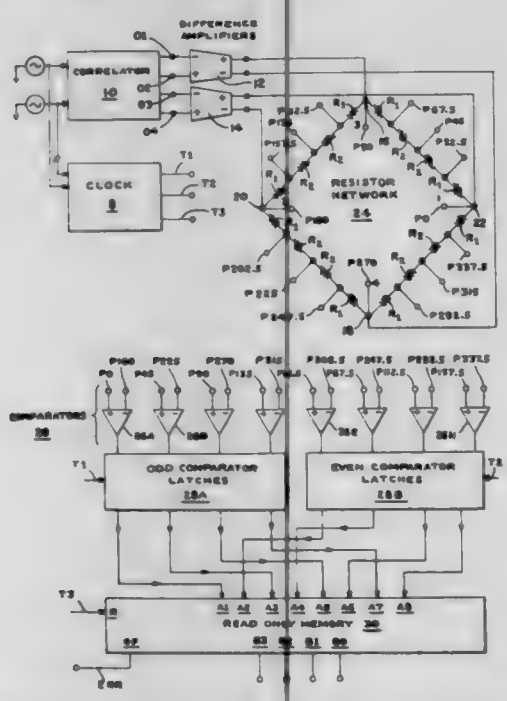
put of said variable auto transformer and having a null point between said resistances connected to a variable output tap of said variable auto transformer, whereby a selected transformation ratio provided by said main transformer and said variable auto transformer may be balanced by said variable output tap between said resistances.

4,405,895

ANGLE DIGITIZING METHOD

Carl W. Gerst, Skaneateles; Leonard J. Paciorek, North Syracuse, and Thomas L. Sly, Cicero, all of N.Y., assignors to Anaren Microwave, Inc., Syracuse, N.Y.

Filed Jun. 11, 1981, Ser. No. 272,489
Int. Cl.[3] G01R *25/00*
U.S. Cl. 324—83 D **11 Claims**



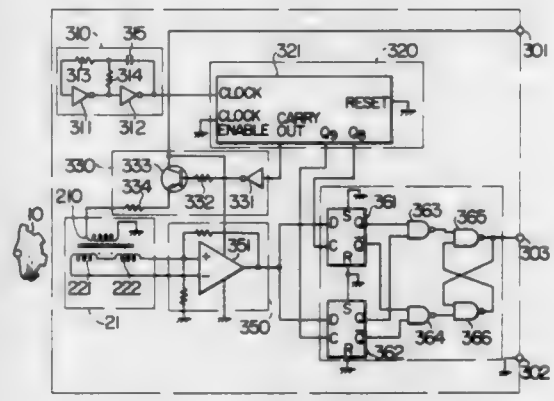
1. In apparatus for converting a signal representing sin θ and a signal representing cos θ to a digital value representing the angle θ which includes first and second input terminals across which is applied a signal proportional to sin θ, third and fourth input terminals across which is applied a signal proportional to cos θ, four sets of the same number of impedors, a first of the sets being connected between the first and third input terminals, a second of the sets being connected between the third and second input terminals, a third of the sets being connected between the second and fourth input terminals, a fourth of the sets being connected between the fourth and first input terminals, a plurality of output terminals, each of the output terminals being connected to the junction of each pair of adjacent impedors, and a plurality of two-input logic means for giving a first level signal at an output when the signal at one input is greater than the signal at the other input and for giving a second level signal at said output when the signal at said one input is less than the signal at said other input, the two inputs of each logic means being connected to a pair of said output terminals which have an antiphase relationship whereby each logic means generates a bit value associated with a different position of a digital word, the method of increasing the reliability of the apparatus comprising the steps of sampling a first subset of the logic means to obtain the bits of a first partial digital word, a given time thereafter sampling a second subset of the logic means to obtain the bits of a second partial digital word, combining the first and second partial digital words to form a complete digital word, and determining if said full digital word is in a set of digital words representing angles.

4,405,896

TRANSFORMER COUPLED POSITION DETECTING APPARATUS WITH PHASE CHANGE DETECTOR

Sigeyuki Akita, Okazaki, Japan, assignor to Nippon Soken, Inc., Nishio, Japan

Continuation of Ser. No. 86,034, Oct. 18, 1979, abandoned. This application Nov. 9, 1981, Ser. No. 319,679
Claims priority, application Japan, Nov. 23, 1978, 53-145031
Int. Cl.[3] G01B *7/00*; G01P *3/48*; G01R *25/00*
U.S. Cl. 324—208 **3 Claims**



1. A position detecting apparatus comprising:

a transformer having a primary coil and a pair of secondary coils arranged on both sides of said primary coil, said primary coil and said secondary coils being respectively wound on a coil bobbin having a bore in which a single rod-shaped iron core is placed, said secondary coils being connected to each other in opposition to the polarity of each other, and one of said secondary coils being smaller in number of turns than the other of said secondary coils;

an energizing source including an oscillator circuit oscillated at a predetermined frequency for energizing said primary coil;

a rotating body made of a magnetic material and having a plurality of alternate projections and depressions of predetermined shapes along a surface thereof disposed to oppose one end of said transformer whereby rotation of said rotating body varies a magnetic coupling between said primary coil and said secondary coils so as to change the phase of a composite voltage signal produced by said secondary coils;

a comparator circuit having two comparison inputs respectively connected directly to one and the other ends of said secondary coils connected in opposite polarity to each other so as to generate a digital signal of high and low levels in response to said composite voltage signal applied from said secondary coils to said comparison inputs; and

a signal generating circuit for generating a first and a second

detection signal having a phase different from each other in synchronism with oscillation signals from said oscillator circuit;

a phase change detecting circuit for detecting the phase of said rectangular wave output generated from said comparator circuit whereby a rotational position signal is generated in response to a change in the phase of said rectangular wave output of said comparator circuit caused in response to the rotation of said rotating body,

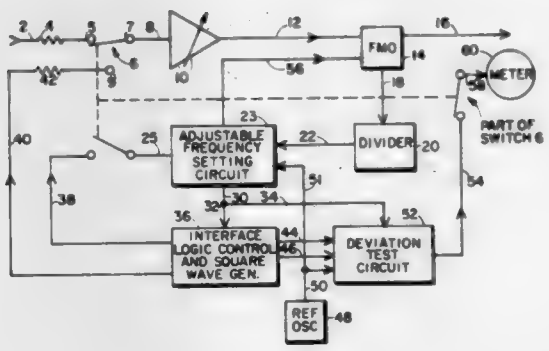
said phase change detecting circuit comprising a first and a second memory circuit each including a D-type flip-flop respectively responsive to said first and second detection signals to store said rectangular wave output of said comparator circuit, a first NAND circuit for producing a logical product of non-inverted output signals of said first and second memory circuits and a second AND circuit for producing a logical product of inverted output signals of said first and second memory circuits, and a final-stage memory circuit driven by said logical product signals.

4,405,897

FREQUENCY DEVIATION TESTING AND ADJUSTING SYSTEM FOR FREQUENCY MODULATED OSCILLATORS

Alistair W. Taylor, North Vancouver; Josef Fikart, Port Coquitlam, and David Thompson, Coquitlam, all of Canada, assignors to AEL Microtel Ltd., Burnaby, Canada

Filed Mar. 2, 1981, Ser. No. 239,757
Int. Cl.³ G01R *23/15*
U.S. Cl. 324–78Z **5 Claims**



1. Apparatus for setting the frequency deviation of a frequency modulated oscillator (FMO) that operates at a prescribed carrier frequency and has a frequency control input and a modulation signal input, comprising:

a square wave modulation signal generating circuit generating a square wave that is selectively applied to the FMO's modulation signal input, and that is of amplitude that is adjusted to modulate the FMO so as to produce a predetermined amount of symmetrical periodic frequency shift or deviation above and below the carrier frequency for a desired setting of the modulation sensitivity of the FMO;

an adjustable frequency setting circuit providing at a first output terminal that is coupled to the control input of the FMO a signal controlling the carrier frequency, accepting at a first input terminal the output signal of the FMO so as to provide at a second output terminal a binary signal having a predetermined pulse repetition rate when the carrier frequency is present, and accepting at a second input terminal the square wave modulation signal so as to vary the frequency adjustment in order to obtain the predetermined pulse repetition rate at said second output terminal when the FMO produces the predetermined deviation and a different pulse repetition rate otherwise;

a reference oscillator for providing a binary signal having a pulse repetition rate at said predetermined rate;

means for comparing the binary output signals from said adjustable frequency setting circuit and from said reference oscillator to determine if there is a difference therebetween; and

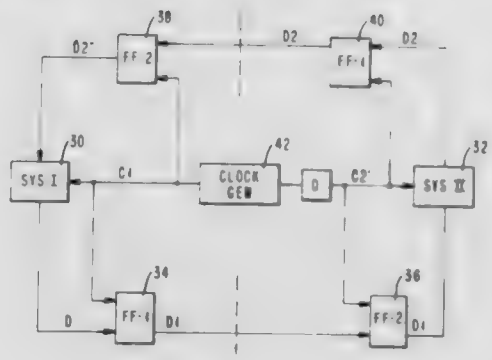
means for indicating when said difference is at a minimum; the modulation sensitivity of the FMO being adjusted to produce the predetermined amount of deviation in the output thereof.

4,405,898

PSEUDO SYNCHRONOUS CLOCKING

Donald C. Flemming, Rhinebeck, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,380
Int. Cl.³ H03L *7/06*; H03K *5/00*
U.S. Cl. 328—72 **9 Claims**



1. In a computer system in which data is transmitted across an interface between parts of the computer under the control of separate clocks operated at different frequencies, the method comprising:

operating the two clocks at two mutually non-harmonic frequencies whose periods T_1 and T_2 form a ratio

$$S = \frac{T_{2/a}}{T_{1/a}}$$

that is a rational number so that there is a limited number of different phase relationships between sets of critical transitions in the pulses of the two clocks where α is the largest common denominator of the periods T_1 and T_2 in the ratio S

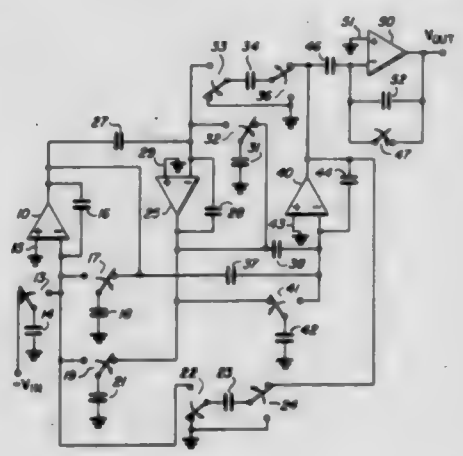
offsetting the occurrence of one set of critical sets of transitions of said two clock pulses by an amount less than $T_{n/a}$ whereby metastability is prevented from occurring as a result of use of mutually non-harmonic frequencies in the two clocks.

4,405,899

HIGH PASS FILTER AND METHOD OF MAKING SAME

Henry Wurzburg, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 1, 1979, Ser. No. 16,695
Int. Cl.³ H03F *1/34*
U.S. Cl. 330—107 **12 Claims**



1. A high pass, switched capacitor filter having an input and

an output, comprising: a first operational amplifier having a first and a second input and an output, the second input being coupled to a reference terminal; a first capacitor coupled to the reference terminal; a first switch for switching the first capacitor to the filter input and then to the first input of the first amplifier; a second capacitor coupled between the first input and the output of the first amplifier; a third capacitor coupled to the reference terminal; a second switch for switching the third capacitor to the output of the first amplifier or to the first input; a second operational amplifier having a first and a second input and an output, the second input being coupled to the reference terminal; a fourth capacitor coupled between the output of the first amplifier and the first input of the second amplifier; a fifth capacitor coupled between the first input of the second amplifier and the output of the second amplifier; a sixth capacitor coupled to the reference terminal; a third switch for coupling the sixth capacitor to the output of the second amplifier or to the first input of the second amplifier; a seventh capacitor coupled to the reference terminal; a fourth switch for switching the seventh capacitor to the output of the second amplifier or to the first input of the first amplifier; a third operational amplifier having a first and a second input and an output, the second input being coupled to the reference terminal; an eighth capacitor coupled between the output of the second amplifier and the first input of the third amplifier; a ninth capacitor coupled between the output of the first amplifier and the first input of the third amplifier; a tenth capacitor coupled to the reference terminal; a fifth switch for switching the tenth capacitor to the output of the second amplifier or to the first input of the third amplifier; an eleventh capacitor coupled between the output of the third amplifier and the first input of the third amplifier; a twelfth capacitor having a first and a second terminal; a sixth switch for switching the first terminal of the twelfth capacitor to the output of the third amplifier or to the reference terminal; a seventh switch for switching the second terminal of the twelfth capacitor to the first input of the first amplifier or to the reference terminal; a thirteenth capacitor having a first and a second terminal; an eighth switch for switching the first terminal of the thirteenth capacitor to the output of the third amplifier or to the reference terminal; and a ninth switch for switching the second terminal of the thirteenth capacitor to the reference terminal or to the first input of the second amplifier.

4,405,900

OPERATIONAL AMPLIFIER

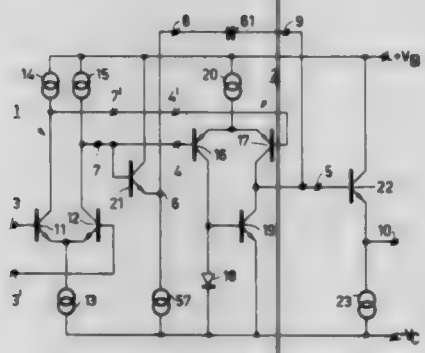
Rudy J. van de Plassche, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 8, 1981, Ser. No. 252,483

Claims priority, application Netherlands, May 9, 1980, 8002666

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—151 **9 Claims**



1. An operational amplifier comprising at least a first amplifier stage, a second amplifier stage, which is driven by the first amplifier stage, and a first and a second junction point between which a capacitive signal path, for improving the high-frequency properties of the operational amplifier, is included characterized in that the first junction point is coupled to an output of the first amplifier stage and that the second junction point is coupled to an output of the second amplifier stage, the capacitive signal path, relative to the signal path via the second amplifier stage, constituting a positive feed-forward and the impedance at the second junction point, viewed from said capacitive signal path, being comparatively high-relative to the impedance at the first junction point, viewed from said capacitive signal path.

4,405,901

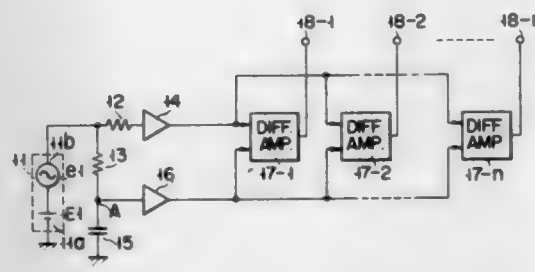
SIGNAL PROCESSING CIRCUIT

Shinichiro Taguchi; Nobuya Nagao, and Yutaka Ogihara, all of Fukaya, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 23, 1981, Ser. No. 237,111

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—261 **6 Claims**



1. A signal processing circuit comprising:

at least one differential amplifier having first and second input terminals;

means for providing a first signal including a DC component to said first input terminal;

a low-pass filter connected to said first signal providing means for extracting said DC component from said first signal, said filter including a first resistor and a capacitor connected in series between said first input terminal and a reference potential source;

means for providing a DC bias to said second input terminal, said bias means including a compensation resistor for compensating for the voltage drop across said first resistor;

a select switch connected between said compensation resistor and said first input terminal and having a first fixed terminal connected to one end of said compensation resistor, a movable terminal and a second fixed terminal for receiving a second signal; and

a second resistor of a high resistance value connected between said second fixed terminal and said second input terminal.

4,405,902

PUSH-PULL OUTPUT STAGE

Rudy J. van de Plassche, and Eise C. Dijkmans, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 22, 1981, Ser. No. 256,364

Claims priority, application Netherlands, May 27, 1980, 8003053

Int. Cl.³ H03F *3/30*

U.S. Cl. 330—271 **7 Claims**

1. A push-pull output stage having an input terminal, an output terminal, a first supply terminal, and a second supply terminal, which output stage comprises:

a first transistor of a first conductivity type, connected in common-collector arrangement, the collector thereof being coupled to the first supply terminal, the emitter thereof being coupled to the output terminal and the base thereof being coupled to the input terminal;

a second transistor of the first conductivity type, connected

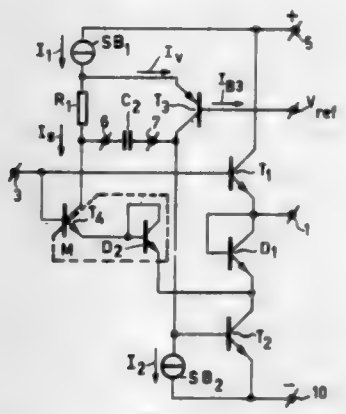
in common-emitter arrangement, the emitter thereof being coupled to the second supply terminal;

a first semiconductor junction having a first and a second electrode, which semiconductor junction is included in the collector main current path of the second transistor, the first electrode thereof being coupled to the output terminal and the emitter of the first transistor, in such a way that, viewed from the output terminal, the forward direction of the first semiconductor junction is opposed to the forward direction of the base-emitter junction of the first transistor, and the second electrode thereof being coupled to the collector of the second transistor;

a third transistor of a second conductivity type opposite to the first conductivity type, connected in common-base arrangement, the base thereof being coupled to a reference potential; and

a first signal path, which includes the emitter-collector path of the third transistor, the collector of the third transistor being coupled to the base of the second transistor;

characterized in that the push-pull output stage further comprises:



a measuring circuit comprising the base-emitter junction of a fourth transistor of the first conductivity type, said measuring circuit being coupled between the base of the first transistor and the second electrode of the first semiconductor junction, the collector of the fourth transistor being coupled to said first signal path for applying a drive current, generated thereby from the voltage between the base of the first transistor and the second electrode of the first semiconductor junction, to the base of the second transistor in phase opposition to the input signal;

a first impedance in the first signal path, having one terminal coupled to the emitter of the third transistor and the other terminal coupled to the collector of the fourth transistor; and

first means for bypassing a part of the first signal path, coupled between the other terminal of the first impedance and the collector of the third transistor, said first means for bypassing comprising a second impedance which, at least, transfers signals of comparatively high frequencies, whereby, in the case of poor high-frequency properties of the third transistor, the push-pull output stage still performs satisfactorily at high frequencies.

4,405,903

VARIOLOSSER FOR AN AUTOMATIC GAIN CONTROL CIRCUIT

Tom L. Blackburn, San Jose, Calif., assignor to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Mar. 27, 1981, Ser. No. 248,659

Int. Cl.³ H03G *3/30*

U.S. Cl. 330—284 **4 Claims**

1. In an automatic gain control circuit, a variolosser interposed between a signal and a fixed gain amplifier for maintaining a substantially constant output level from the latter, comprising:

first means for electrically connecting at least a pair of DC impedance elements in series with an input terminal of the amplifier;

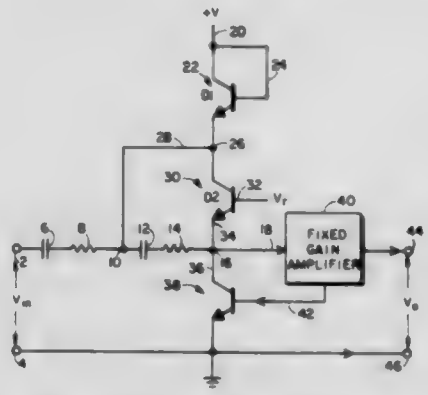
second means for developing a control voltage that is proportional to the output voltage of the amplifier;

a first transistor responsive to said control voltage for developing a control current that is proportional to said output voltage;

a supply voltage source;

a reference voltage source; and

a network including at least a second transistor and a diode means, which is a variable impedance element, having their primary conduction paths electrically connected in series with the primary conduction path of said first transistor across said supply voltage source for passing the control current, and third means for electrically connecting a first junction, that is between said diode means and said second transistor, to a second junction, which is between said pair of DC impedance elements; said second transistors base and emitter being electrically connected to said reference voltage source and to one of said first transistors emitter and collector, respectively; said second transistor providing bias voltage for said fixed gain amplifier, with the base-emitter portion thereof also operating as a variable impedance element in said network, whereby the output of the amplifier is maintained constant over a wide range of input signals to said network.



4,405,904

POWER CONTROL CIRCUIT FOR A MAGNETRON OSCILLATOR

Yoshio Oida, Funabashi; Masayuki Sasaki, Sagamihara, and Hidetoshi Semi, Kamakura, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation-in-part of Ser. No. 217,845, Dec. 18, 1980, abandoned, which is a continuation of Ser. No. 70,125, Aug. 27, 1979, abandoned, which is a continuation of Ser. No. 928,868, Jul. 28, 1978, abandoned. This application May 25, 1982, Ser. No. 381,760

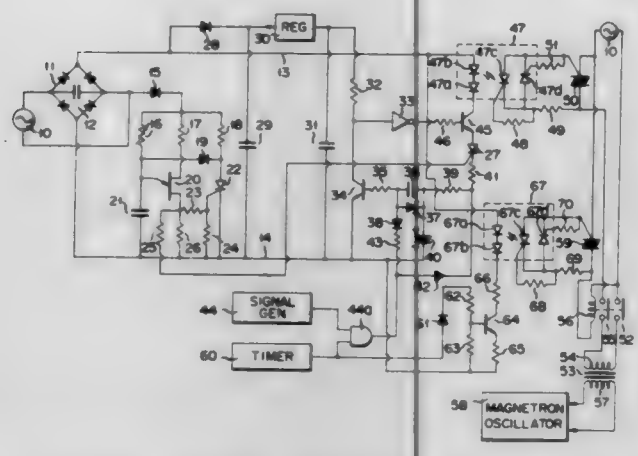
Claims priority, application Japan, Jul. 30, 1977, 52-91616

Int. Cl.³ H05B *6/68*

U.S. Cl. 331—87 **6 Claims**

1. A microwave generator comprising means for generating a zero-crossing trigger signal in response to input current supplied from an alternating current power source, an SCR turned on by said zero-crossing trigger signal, a first switch element connected in series with said SCR across a direct current power supply, means for generating a power control signal having a pulse width corresponding to an amount of power to be supplied, a first switch element operating circuit for on-off operating said first switch element according to said power control signal, a magnetron oscillator, a second switch

element inserted between the magnetron oscillator and alternating current power source, a second switch element operating circuit for turning on said second switch element when said SCR and first switch element are turned on.



4,405,905

ATOMIC FREQUENCY STANDARD HAVING MICROWAVE LOOP AROUND ABSORPTION CELL

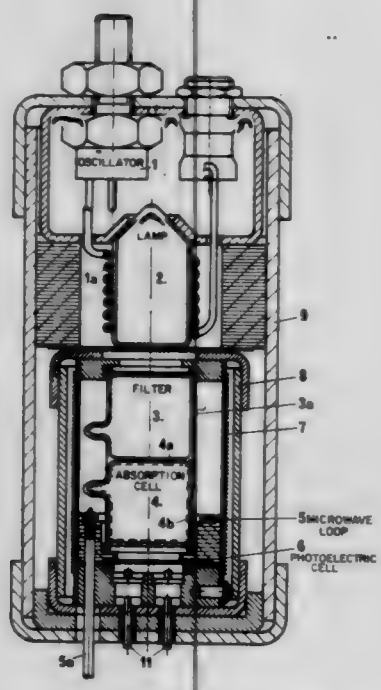
Giovanni Busca, Neuchatel, and Leland Johnson, La Chaux-de-Fonds, both of Switzerland, assignors to Oscilloquartz S.A., Switzerland

Filed Jan. 12, 1981, Ser. No. 224,133

Claims priority, application Switzerland, Jan. 11, 1980, 204/80

Int. Cl.³ H03L *7/26*

U.S. Cl. 331—94.1 **10 Claims**



1. An atomic frequency standard comprising an optical pumping device comprising a source of light of a given spectral composition, a cell containing an alkali metal in gas form which is disposed to receive said light, means for detecting the light transmitted by the cell and producing a detection signal representing the transmission of the light; and means for applying a substantially constant magnetic field to the cell; an arrangement for subjecting the cell to an electromagnetic wave inducing a hyperfine spectral transition of the atoms of the metal, which increases the absorption of the light by the cell; and control means responsive to the variations in the detection signal for modifying the frequency of the said wave so as to center it substantially on the frequency of the hyperfine spectral transition, the improvement wherein

(1) said cell lacks a buffer gas and is internally covered with a non-disorienting layer; and

(2) said arrangement produces a progressive electromagnetic wave widening the line of absorption of the cell by the Doppler effect in order to permit a reduction in the control time constant.

4,405,906

LOW POWER CONSUMPTION C-MOS OSCILLATOR

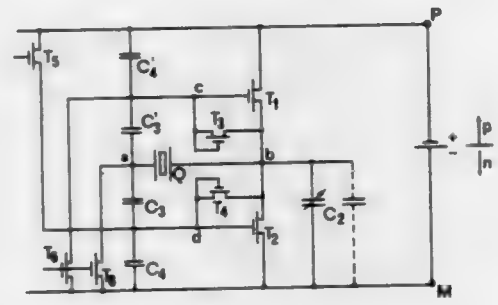
Jakob Luscher, Venthone, Switzerland, assignor to Asulab S.A., Bienne, Switzerland

Filed Jul. 10, 1981, Ser. No. 282,030

Claims priority, application Switzerland, Jul. 21, 1980, 5555/80

Int. Cl.³ H03B *5/36*

U.S. Cl. 331—116 FE **10 Claims**



1. In a C-MOS oscillator circuit of the type having input and output terminals, between which a resonator can be connected, first and second supply terminals adapted to be connected to the positive and negative poles, respectively, of a source of d.c. supply voltage, a first P-type MOS transistor and a second N-type MOS transistor, the sources of said transistors being connected to the first and second supply terminals, respectively, and the drains of said transistors being connected to one another and to said output terminal, an output capacitor connected between said output terminal and one of said supply terminals, and means for independently biasing said first and second transistors, the improvement wherein said biasing means comprises:

a third P-type MOS transistor, the gate and drain thereof being connected to the gate of said first transistor and the source thereof having connected to the drain of said first transistor;

a first current source connected between the gate of said first transistor and said second supply terminal;

a first capacitive divider connected between said input terminal and said first supply terminal, the intermediate point of said divider being connected to the gate of said first transistor;

a fourth N-type MOS transistor, the gate and drain thereof being connected to the gate of said second transistor and the source thereof being connected to the drain of said second transistor;

a second current source connected between the gate of said second transistor and said first supply terminal; and

a second capacitive voltage divider connected between said input terminal and said second supply terminal, the intermediate point of said divider being connected to the gate of said second transistor.

4,405,907

CONTROLLABLE PHASE SHIFTER COMPRISING GYROMAGNETIC AND NON-GYROMAGNETIC SECTIONS

Maurice E. Breese, Moorestown, N.J., and Arthur S. Robinson, Reston, Va., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 26, 1981, Ser. No. 314,848

Int. Cl.³ H01P *1/195*

U.S. Cl. 333—24.1 **8 Claims**

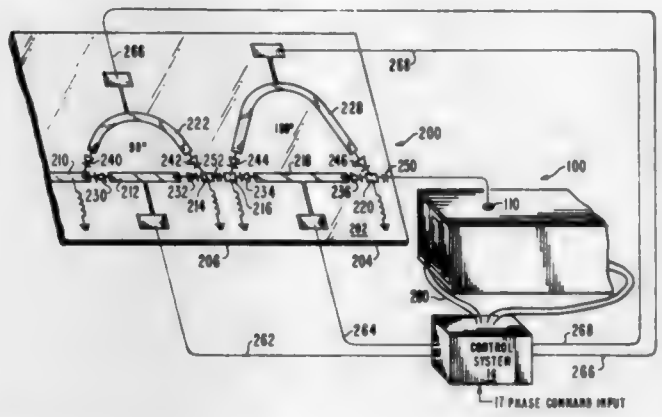
1. A phase shifter for controllably shifting the phase of RF signals by selected amounts comprising:

first and second transmission line sections connected in series;

said first section including gyromagnetic material and means

for controlling the magnetic field in said gyromagnetic material to provide a controllable phase shift; and

said second section being non-gyromagnetic and including controllable switching means for reversing the sense of the RF current and hence the phase of RF signals propagating along said second section;



said phase shifter designed for said first and second sections to each make a variable contribution to the overall phase shift, that contribution being dependent on the selected overall phase shift.

4,405,908
FILTER CIRCUIT HAVING A CHARGE TRANSFER DEVICE

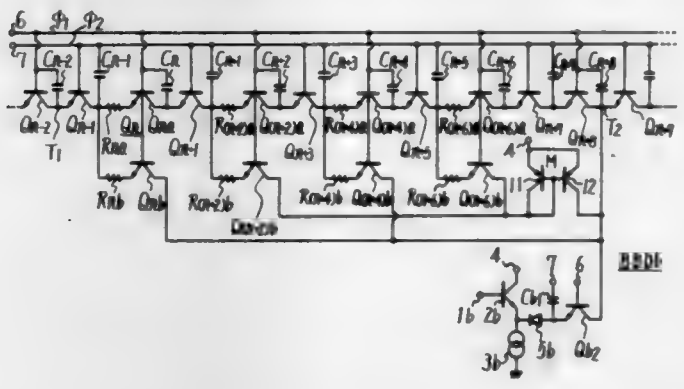
Mitsuo Soneda, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 17, 1981, Ser. No. 255,161

Claims priority, application Japan, Apr. 11, 1980, 55/48478; Apr. 15, 1980, 55/49660; Sep. 16, 1980, 55/128179; Sep. 26, 1980, 55/134610

Int. Cl.³ H03H *15/02;* **G11C** *27/00, 27/02*

U.S. Cl. 333—165 **43 Claims**



1. A filter circuit comprising charge transfer means, including first and second sets of charge storage means, said first set of charge storage means being supplied with a first clock signal and said second set of charge storage means being supplied with a second clock signal, first and second sets of switch means, said first set of switch means being actuated in response to said first clock signal and said second set of switch means being actuated in response to said second clock signal, respective ones of said switch means in said first set being operable when actuated to transfer charge between a charge storage means in said first set and a charge storage means in said second set and respective ones of said switch means in said second set being operable when actuated to transfer charge between a charge storage means in said second set and a charge storage means in said first set, and means for supplying said first and second clock signals to said first and second sets of charge storage means, respectively, and to said first and second sets of switch means, respectively, thereby transferring a charge through succeeding switch means to be temporarily stored in succeeding charge storage means; means for supplying an input signal to a predetermined one of said charge storage means; semiconductor means actuated in response to a selected one of said first or second clock signals for transferring the charge stored in a predetermined first charge storage means to a predetermined second charge storage means, said predetermined first charge storage means and said predetermined second charge storage means being selected from any of said first and second sets of charge storage means; and output means coupled to a preselected charge storage means, which is selected from said first and second sets of charge storage means, for deriving an output signal from said filter circuit.

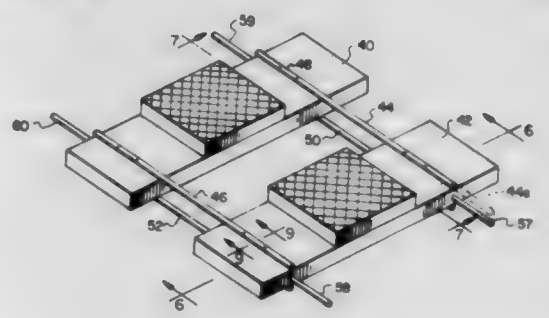
4,405,909
MECHANICAL FILTER WITH BOX-TYPE COUPLING STRUCTURE

Robert A. Johnson, Tustin, and Donald P. Havens, Costa Mesa, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 28, 1981, Ser. No. 335,122

Int. Cl.³ H03H *9/50, 9/205*

U.S. Cl. 333—198 **6 Claims**



1. A mechanical bandpass filter comprising:

a pair of flexure-mode resonators each having first and second opposing planar sides, positioned in juxtaposed but spaced parallel planar relation by a parallelpiped-type coupling structure comprising wire-like coupling means having longitudinal axis on both planar sides of said resonators wherein flexure of said resonators causes primarily twisting of said coupling around said longitudinal axis thereof.

4,405,910
CONVERGENCE APPARATUS FOR COLOR CATHODE-RAY TUBE

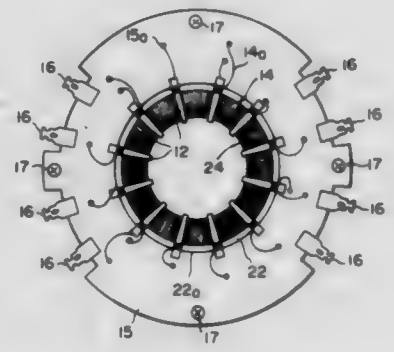
Shinji Ohtsu, Tokyo, Japan, assignor to Denki Onkyo Company Limited, Tokyo, Japan

Filed Sep. 27, 1982, Ser. No. 424,186

Claims priority, application Japan, Sep. 25, 1981, 56-142382[U]; Sep. 25, 1981, 56-142383[U]; Sep. 25, 1981, 56-142384[U]; Sep. 29, 1981, 56-144314[U]; Sep. 30, 1981, 56-145952[U]; Jan. 11, 1982, 57-1872[U]; Jan. 18, 1982, 57-4775[U]; May 31, 1982, 57-81319[U]; Jun. 11, 1982, 57-100162

Int. Cl.³ H01F *7/00*

U.S. Cl. 335—210 **10 Claims**



1. A convergence apparatus for color cathode-ray tube, which is provided with electron guns which emit three electron beams in in-line arrangement toward a screen of said color

cathode-ray tube at its neck part where said electron beams are deflected and scanned on said screen by a deflection yoke mounted on said neck part, comprising:

(a) a first bobbin which is annular in shape and has a flat plate, said bobbin being provided with 12N (N is an integer) segments which are radially extended on said annular plate and located to divide the circumference of said annular plate into 12N parts to form 12N winding sectors, said segments being extended outside the radial direction to respectively provide thereon a terminal plate fixing part and being provided with a segment base on the inner end part of the radial direction of said segment as being extended in a direction at right angles to said annular plate,

(b) an annular core made of a magnetic material to be mounted on said bobbin,

(c) two groups of 6-pole coils which are toroidally wound around said annular core by use of said winding sectors divided by said segments, said two groups of 6-pole coils being formed to generate six magnetic poles independently at positions with equidistance of approximately 30° therebetween in a circumferential direction of said annular core when a convergence current is supplied,

(d) two groups of 4-pole coils which are toroidally wound around said annular core by use of said winding sectors divided by said segments, said two groups of 4-pole coils being formed to generate four magnetic poles independently at positions with equidistance approximately 45° therebetween in a circumferential direction of said annular core when a convergence current is supplied,

(e) a terminal plate which has a through hole into which said bobbin can be accommodated, said terminal plate being provided with a number of recessions in its internal circumference to fix said bobbin to the terminal plate by engaging the terminal plate fixing part of said bobbin with said recessions, and

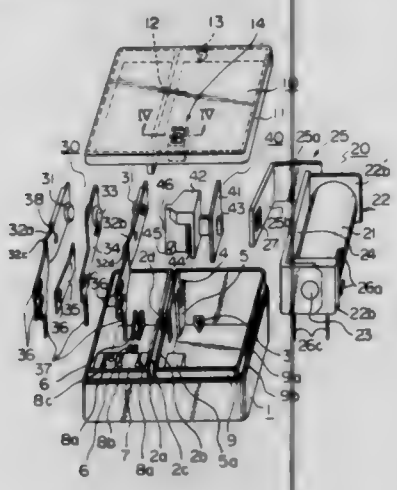
(f) a holder which engages with said terminal plate to support said terminal plate on the neck of said cathode-ray tube, said holder supporting said 6-pole coils and 4-pole coils at the specified position of said neck of the cathode-ray tube in a specified arrangement.

4,405,911

ELECTROMAGNETIC RELAY

Hiroshi Hasegawa; Moriyasu Negita; Yoshiaki Kamiya; Masaru Tamura; Masaru Tamura, and Yuji Kinoshita, all of Suzaka, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 23, 1981, Ser. No. 304,904
Claims priority, application Japan, Sep. 26, 1980, 55-133733
Int. Cl.³ H01H *50/04*
U.S. Cl. 335—202 **13 Claims**



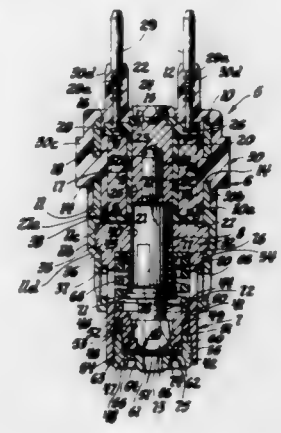
1. An electromagnetic relay comprising: a box-shaped relay case having an upper opening which is made of insulating material and which accommodates therein an electromagnet including at least a coil, a core and an armature, a group of resilient contacts, including holding resilient contacts and movable resilient contacts, and an operation card for transmitting a pivoting force of said armature to said movable resilient contacts in order to make or break electrical contact between said holding resilient contacts and said movable resilient contacts; and a relay cover which covers said upper opening of said relay case, wherein both said relay case and said relay cover have a partition wall for partitioning said electromagnet from said group of resilient contacts, said partition walls being formed integrally with said relay case and said relay cover on the inner sides of said relay case and said relay cover, and each partition wall overlapping the other when said relay cover is engaged with said relay case.

4,405,912

SOLENOID ASSEMBLY AND METHOD OF MAKING SAME

James D. Palma, Grand Rapids, and Michael J. Seino, Wyoming, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 28, 1982, Ser. No. 343,431
Int. Cl.³ H01F *7/08, 3/00*
U.S. Cl. 335—260 **2 Claims**



1. A solenoid assembly for use in an electromagnetic fuel injector for gasoline engines, said solenoid assembly including a sheet metal housing means having a tubular outer housing portion with radial openings therethrough and a perforated flange portion extending radially inward from one end of said housing portion, said flange portion having a central aperture therein; a cylindrical pole piece having one end received in said aperture and fixed to said flange portion with the other end of said pole piece located concentrically within said housing portion and extending toward the opposite open end of said housing portion; a solenoid coil means including a bobbin and a wire coil encircling said pole piece within said housing portion with portions of said solenoid coil means radially spaced from said housing portion; annularly grooved electrical lead means operatively connected at one end to said solenoid coil means with the opposite ends thereof extending outward of said housing means through said perforated flange portion; and, a plastic envelope means encircling said solenoid coil means to form a fluid tight seal between said solenoid coil means and the interior of said housing means and to fully envelop said flange portion and said one end of said pole piece and, to envelop at least an outer circumferential portion of said outer housing portion next adjacent to said flange portion and the grooved portion of each of said lead means.

4,405,913

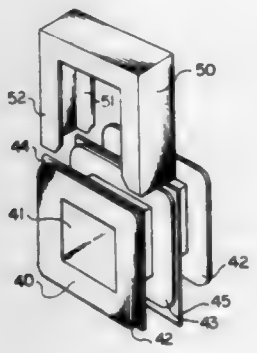
COIL BODY

Ernest Finkbeiner, Grayslake, Ill., assignor to Mid-West Transformer Company, Grayslake, Ill.

Filed Aug. 17, 1981, Ser. No. 293,199
Int. Cl.³ H01F *27/02, 27/30*
U.S. Cl. 336—98 **3 Claims**

1. A coil body comprising: a rectangular hollow core having an outer surface and having first and second spaced axial walls projecting outwardly from the core surface around all four

sides of the core substantially equidistantly from the outer surface, the projections being substantially to a first distance from the core outer surface, a first additional wall parallel to and closely spaced from the first wall projecting from the core outer surface to substantially the first distance around at least three sides of the core and substantially to at least the first distance on the fourth side of the core to create a first space between the first additional wall and the associated first wall, a second additional wall intermediate the first and second walls projecting from the core outer surface substantially equidistantly around the core to substantially the first distance to divide the area between the first and second walls and the primary and secondary winding areas, a third additional wall projecting from the outer surface parallel and closely spaced to the second additional wall to create a second space therebetween, the third additional wall projecting to substantially the first distance around three sides of the core and projecting to a second distance, greater than the first distance on the fourth side of the core, the projection on the fourth side being uninterrupted from the core's outer surface to the second distance, the second distance being greater than the first distance by an amount sufficient to establish a reverse path around the third additional wall on the fourth side at least equal to a minimum



creepage between the primary and secondary winding areas, established for a transformer to be constructed from said coil body, said second distance being less than the amount necessary to establish a minimum creepage path therearound a single channel cap member having a top and two legs projecting from the top at right angles thereto with axially spaced inturned wall portions of the top and leg portions, the inturned wall portion sides being spaced from one another equal to the axial distance between the first and second spaces and having a thickness dimensioned to be received in the first and second spaces, said cap assembled onto the coil body with the inturned end wall portions received in the spaces on the three sides of the core where the third additional wall projects to substantially the first distance and with the top and two legs of the cap covering the area around the core for at least one of the primary and secondary winding areas on said three sides, the fourth side of both primary and secondary winding areas being open and not covered by a cap whereby the creepage path length on the fourth side is established solely by the projection of the third additional wall to the second distance and the coil body axis length between the primary and secondary winding areas, the top of the cap lying on the side of the coil body opposite the third wall projection to the second distance.

4,405,914

FUSIBLE LINKS

Donald R. Ruegsegger, 425 W. Maple, Waterloo, Ind. 46793

Filed Sep. 18, 1981, Ser. No. 303,203
Int. Cl.³ H01H *85/04*
U.S. Cl. 337—152 **6 Claims**

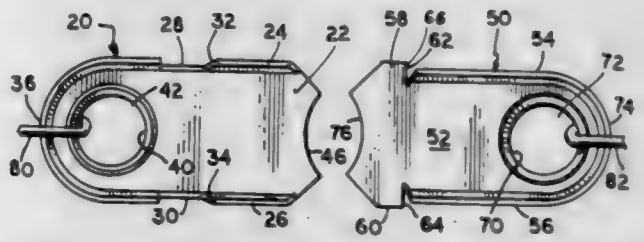
1. A break-away fuse comprising a pair of flat, thin metallic plates;

each plate including an upwardly extending elongated flange along opposite edges thereof;

said plates being in overlapping relation to one another, one end of one plate extending in one direction from the overlapped plates and one end of the other plate extending in the opposite direction; the lower section of the upper plate confronting the upper surface of the lower plate, said confronting surfaces adapted to be soldered together;

said flanges of said lower plate each having a notch formed therein;

said notches each having an edge inclined to the lower plate and forming a ramp edge, the inclinations of said ramp edges being substantially equal;



said upper plate having a tab extending transversely from each flange thereof, said tabs alignable with and insertable in a respective notch;

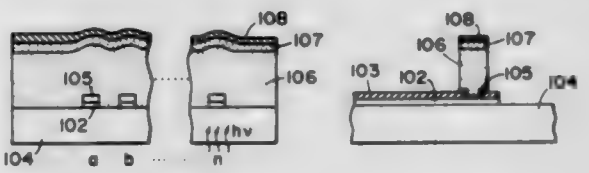
an edge corner of each tab being engageable with and slidable up the ramp edge of the respective notch when said ends are longitudinally pulled apart to lift said upper plate away from said lower plate.

4,405,915

PHOTOELECTRIC TRANSDUCING ELEMENT

Toshiyuki Komatsu, Yokohama; Masaki Fukaya, Kawasaki; Shunichi Uzawa; Seishiro Yoshioka, both of Tokyo, and Yoshiaki Shirato, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,218
Claims priority, application Japan, Mar. 28, 1980, 55-40064; Mar. 28, 1980, 55-40066; Mar. 28, 1980, 55-40067
Int. Cl.³ H01L *31/08, 27/14*
U.S. Cl. 338—15 **33 Claims**



26. A photoelectric transducer comprising:

(a) a light transmissive substrate;

(b) a light transmissive electrode provided on said substrate;

(c) a light transmissive contact layer to form an ohmic contact with said light transmissive electrode with respect to electric charge in at least one polarity;

(d) a photoconductive layer provided in contact with said light transmissive contact layer and comprising an amorphous material containing silicon as a matrix and at least one member selected from the group of hydrogen and halogen;

(e) second contact layer provided in contact with said photoconductive layer;

(f) a second electrode to form an ohmic contact with said second contact layer with respect to said charge;

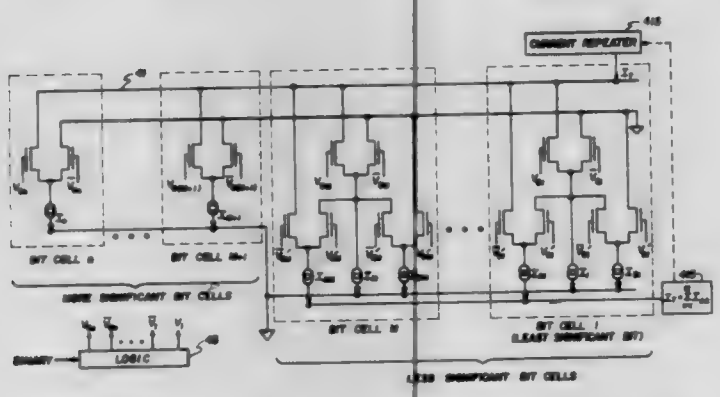
(g) non-light transmissive layer provided in contact with said light transmissive electrode except where light is to be received.

4,405,916

DIGITAL-TO ANALOG CONVERTER HAVING SUPPLEMENTARY CURRENTS TO ENHANCE LOW CURRENT SWITCHING SPEED

Thomas Hornak, Portola Valley, and Gary L. Baldwin, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 21, 1982, Ser. No. 341,384
Int. Cl.[3] H03K 13/02
U.S. Cl. 340—347 DA 15 Claims



1. A bit cell to controllably provide a weighted current I_k, said bit cell comprising:

a first switch having a switch input and a switch output, said first switch being responsive to an applied control signal V_{Gk} to conduct current applied at the switch input to the switch output when V_{Gk} assumes a first value V_1 and to divert that current away from the switch output when V_{Gk} assumes a second value V_2;

a source of current connected to the input of the first switch to supply a total current equal to the sum of the weighted current I_k and a supplementary current; and

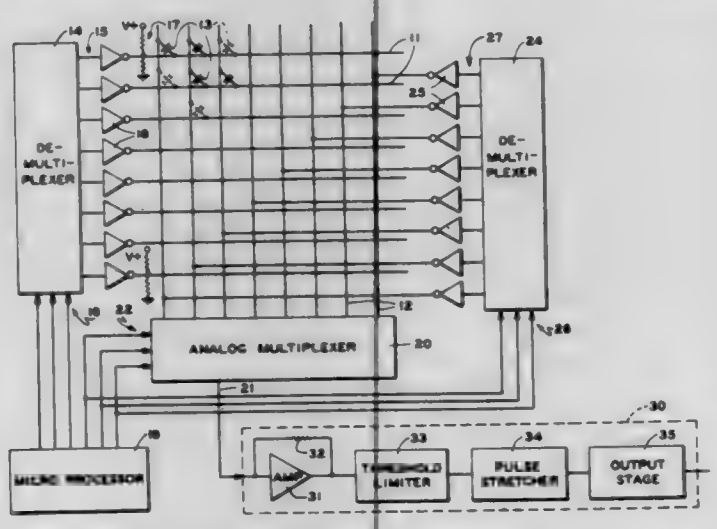
means for subtracting from the output of the first switch a current sufficient to cancel any supplementary current conducted to the output of the first switch so that the net current supplied by the bit cell at the output of the first switch is I_k when V_{Gk} equals V_1 and is zero when V_{Gk} equals V_2.

4,405,917

MATRIX SCREENING AND GROUNDING ARRANGEMENT AND METHOD

Thomas Y. Chai, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 28, 1981, Ser. No. 258,248
Int. Cl.[3] G06F 3/02
U.S. Cl. 340—365 C 9 Claims



1. Capacitive keyboard apparatus comprising:

a matrix of capacitive key switches having first and second sets of conductors and a plurality of capacitors, each capacitor having fixed and movable plates, the fixed plates being connected to the first set of conductors and the movable plates being connected to the second set of conductors so that each capacitor is connected to a unique pair of conductors comprising one conductor from each of the first and second sets of conductors;

scanning drive means for sequentially supplying a drive signal to individual conductors of one of the first and second sets of conductors while maintaining all other conductors of the set at a reference potential;

a first digital demultiplexer having a plurality of output terminals which are normally at a logical high state and are selectively caused to go to a logical low state in response to an address signal supplied to address signal means thereon;

a plurality of inverters, each connecting an output terminal of said first digital demultiplexer to a separate conductor of the other of the first and second sets of conductors, whereby individual conductors of said other set are normally at the reference potential, and are selectively permitted to go to a different potential to permit sensing of capacitive coupling with conductors of said one of the first and second sets;

an analogue multiplexer having a plurality of input terminals each connected to a separate conductor in the set of conductors on which capacitive coupling is sensed, said analogue multiplexer being operable to transfer the signal from a selected conductor to an output terminal in response to an address signal supplied to address signal means; and

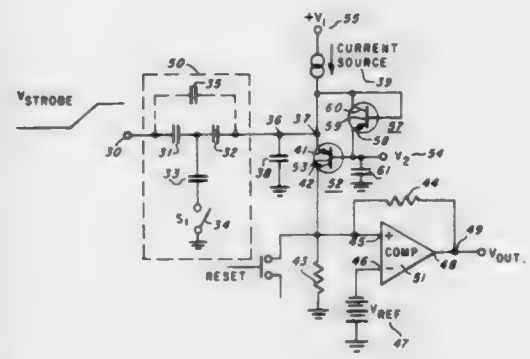
an address generator for supplying coordinated address signals to said first digital demultiplexer and said analogue multiplexer so that the conductor permitted to assume a potential different from the reference potential is the conductor whose signal is transferred by said analogue multiplexer, thereby precluding any transfer of signals between conductors other than the conductor receiving the drive signal and the conductor on which capacitive coupling is sensed.

4,405,918

CURRENT SENSING OF CAPACITIVE KEYBOARD ARRAYS

Frederick G. Wall, Garland, and Stephen C. Kwan, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 3, 1980, Ser. No. 126,601
Int. Cl.[3] G06F 3/02
U.S. Cl. 340—365 C 17 Claims



1. In combination, a capacitive keyboard having keys each exhibiting a first value of capacitance when touched and a different value when untouched, electrical interrogating means connected to said keyboard and effective periodically to apply to the keys of said keyboard an interrogating electrical signal, means also interconnected with said keys and responsive to the application of said interrogating electrical signal for developing a first level of current flow when a key is touched and for developing a second different level of current flow when said key is untouched, both of said levels of current flow being greater than zero, said means for developing said first and said different level of current flow includes a capacitor and circuit

means including a transistor for establishing across said capacitor a first voltage when said key is touched and essentially the same voltage when said key is untouched and sensing means interconnected with said keyboard and responsive to said current flow for distinguishing between said first level and said second level.

4,405,919

METHOD OF FIRE DETECTION AND FIRE DETECTION INSTALLATION

Andreas Scheidweiler, Uerikon, Switzerland, assignor to Cerberus AG, Männedorf, Switzerland

Filed Apr. 27, 1981, Ser. No. 257,783

Claims priority, application Switzerland, May 9, 1980, 3640/80

Int. Cl.³ G08B *17/10*

U.S. Cl. 340—522 **18 Claims**

1. In a method for fire detection, wherein an electrical signal is generated as a function of combustion phenomena by a fire alarm installation containing at least two sensors responsive to different combustion phenomena and a common evaluation circuit for the evaluation of the condition changes of the sensors and for giving an alarm signal, the sensors operating according to respectively different principles and delivering respective electrical output signals as a function of the condition changes of the sensors resulting from detected combustion phenomenon, the improvement which comprises the steps of:

forming the quotient of the electrical signals delivered by the two sensors, in order to detect the transition from one type of combustion phenomenon to another type of combustion phenomenon; and

generating an alarm signal when the quotient exceeds a predetermined value or there arises a rapid change in the quotient.

4,405,920

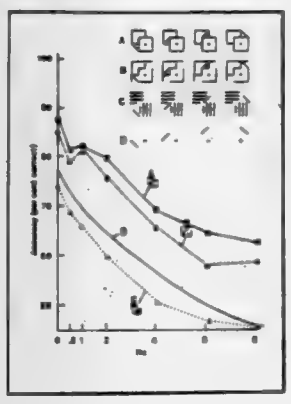
ENHANCING THE PERCEPTIBILITY OF BARELY PERCEPTIBLE IMAGES

Naomi Weisstein, 407 Bleeker St., New York, N.Y. 10014

Filed Dec. 31, 1980, Ser. No. 221,849

Int. Cl.³ G09G *3/00*

U.S. Cl. 340—700 **11 Claims**



1. A method of enhancing the perceptibility to an observer of a target image in the presence of a noise image, the target image and the noise image forming a composite image, the noise image rendering the target image substantially unrecognizable when the composite image is viewed statically, the method comprising: (a) positioning the composite image to be viewable by an observer, and (b) repetitively exhibiting and obscuring at least a portion of the composite image at a frequency in the range of from about 0.2 to about 10 hz, the portion of the composite image repetitively exhibited and obscured including elements of the target image and elements of the noise image, whereby the perceptibility of the target image to the observer is enhanced.

4,405,921

LIQUID CRYSTAL DISPLAY DEVICE

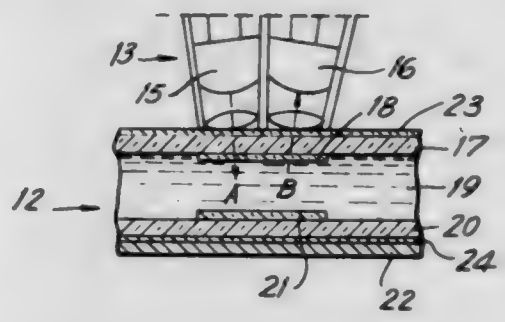
Fumiaki Mukaiyama, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed May 11, 1981, Ser. No. 262,357

Claims priority, application Japan, May 12, 1980, 55-62536

Int. Cl.³ G09G *3/36*

U.S. Cl. 340—708 **14 Claims**



1. A liquid crystal display device comprising liquid crystal display means including a plurality of liquid crystal display dots arranged in a matrix array to define a group of rows and a group of columns, each said liquid crystal display dot having a row position and a column position, driving circuit means including flickering means for selectively flickering; each of said display dots between light-transmissive and non-transmissive states in a predetermined flickering timing, said flickering means providing a different switching time between said light-transmissive and non-transmissive states for each said row and column, respectively, in one of said groups of rows and columns of said display dots, said flickering means providing a different length of time that each respective row and column in the other one of said groups of rows and columns is in said light-transmissive state whereby each display dot has a unique flickering timing, light means for selectively directing light to selected display dots, said light being flickering by the switching of said selected display dots through which the light passes, and sensor means including light receiving means for detecting the flickered light passing through said selected display dots.

4,405,922

FAILURE DETECTION CIRCUIT FOR IMPACT PRINTERS OR THE LIKE

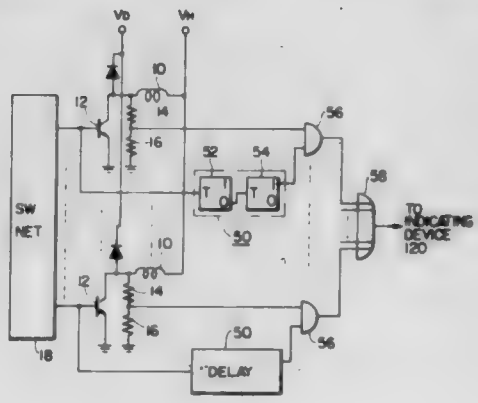
Shinichi Nishino; Shigenobu Katagiri, and Kazuyuki Kubo, all of Katsuta, Japan, assignors to Hitachi Koki Company, Limited, Tokyo, Japan

Filed May 20, 1980, Ser. No. 151,573

Claims priority, application Japan, May 23, 1979, 54-64339

Int. Cl.³ H04Q *5/00*; G08B *21/00*

U.S. Cl. 340—825.36 **10 Claims**



1. A failure detection circuit for an apparatus having at least one electromagnet and a switching means connected therewith in series between the terminals of a voltage source for energizing said electromagnet, and a moving element movable from

an inactive to an active position in response to the energization of said electromagnet, comprising:

means for activating said switching means with a current insufficient to cause said electromagnet to be energized so that said moving element remains in said inactive position in response to a control signal at a first logic level and successively deactivating said switching means in response to a control signal at a second logic level; and

means for detecting when the signal level at a circuit junction between said electromagnet and switching means has a predetermined relationship with said logic levels to give warning indication.

4,405,923

GARAGE DOOR CONTROL SYSTEM

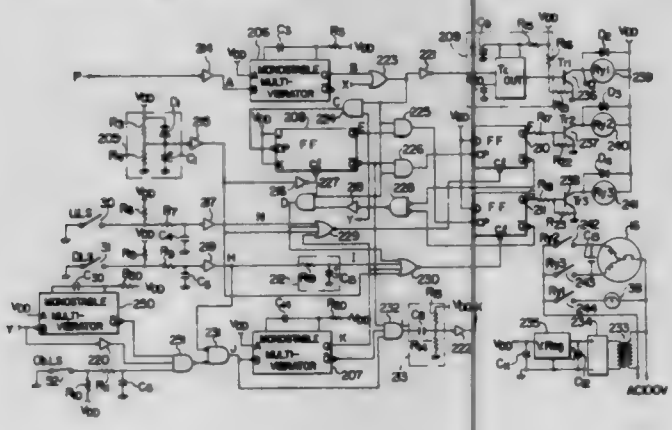
Shigeru Matsuoka; Takeshi Tokunaga; Seiji Yonekura; Kogi Yamauchi, and Mitsuo Suzuki, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 23, 1981, Ser. No. 227,678

Claims priority, application Japan, Jan. 31, 1980, 55-11343

Int. Cl.³ H04Q *9/00*; H02P *1/04*; E05F *11/60*

U.S. Cl. 340—825.56 **16 Claims**



1. A garage door control system comprising a door operating apparatus for operating a garage door, a plurality of push buttons for issuing a plurality of operating commands associated with the door operation by predetermined button operations, means for setting operating commands issued by said plurality of said push buttons, control means for controlling the operation of said door operating apparatus on the basis of an operating command set by said setting means, and a door stopping device for stopping the door operation by depressing a given one of said push buttons during door operation.

4,405,924

REMOTE CONTROL SWITCH APPARATUS FOR AUTOMOBILES

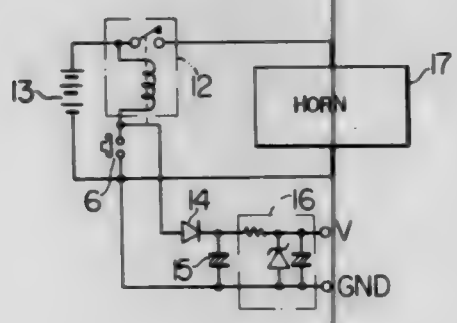
Yoshio Shinoda, Aichi, and Akira Kuno, Oobu, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 18, 1981, Ser. No. 245,208

Claims priority, application Japan, Mar. 21, 1980, 55-37789

Int. Cl.³ G08C *19/00*

U.S. Cl. 340—825.72 **3 Claims**



1. A remote control switch apparatus for changing the driving condition of a car including a steering wheel said steering wheel including a horn switch for selectively completing a current path to actuate a horn, said steering wheel being rotatably mounted relative to both a nonmovable outer cover portion thereof and an instrument panel, said apparatus comprising:

at least one instruction switch for mounting on said steering wheel to project toward the inside of the passenger compartment of a car away from said instrument panel of the car so as to specify a driving condition;

an ultrasonic wave transmitter for mounting on said steering wheel and for generating an ultrasonic signal associated with said instruction switch; power supply means, comprising a diode and a capacitor connected across said horn switch, for providing power to said transmitter; and

an ultrasonic wave receiver for mounting on one of said instrument panel and said nonmovable outer cover portion of said steering wheel to oppose said transmitter and for generating a control signal corresponding to said ultrasonic signal when said transmitter and receiver are within a predetermined degree of alignment.

4,405,925

MICROWAVE TRANSCEIVER, PARTICULARLY FOR A DOPPLER RADAR SYSTEM

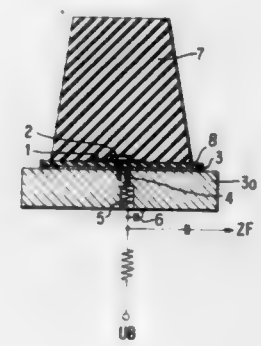
Kurt Lindner, Ulm, and Theodor Schütz, Memmingen, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 23, 1981, Ser. No. 246,693

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011238

Int. Cl.³ G01S *13/56*

U.S. Cl. 343—5 PD **12 Claims**



2. In a microwave transceiver for a Doppler radar system, which transceiver includes an antenna and a self-oscillating semiconductor mixer stage for both generating a microwave signal to be transmitted via the antenna and mixing that microwave signal with reflected microwave signal components received by the antenna, the mixer stage being composed of a nonlinear microwave diode connected to give the stage a negative impedance to permit oscillation and to effect mixing, and a half-wavelength disc-type resonator providing a resonant circuit for the oscillator and having the form of a stripline piece element composed of two strip conductors between which the microwave diode is electrically conductively connected, the antenna being a dielectric antenna disposed on one of the strip conductors, the diode having at least one lead which is brought through the resonator, and the transceiver further including a high frequency choke disposed on the side of the resonator facing away from the antenna and connected to the one diode lead, the improvement wherein said resonator and said antenna are constructed to be axially symmetrical and are positioned coaxially to one another and said microwave diode is positioned coaxially with respect to said resonator and said antenna.

4,405,926

METHODS AND APPARATUS FOR WARNING AIRCRAFT OF THE PRESENCE AND DIRECTION OF ELECTRICAL TRANSMISSION LINES

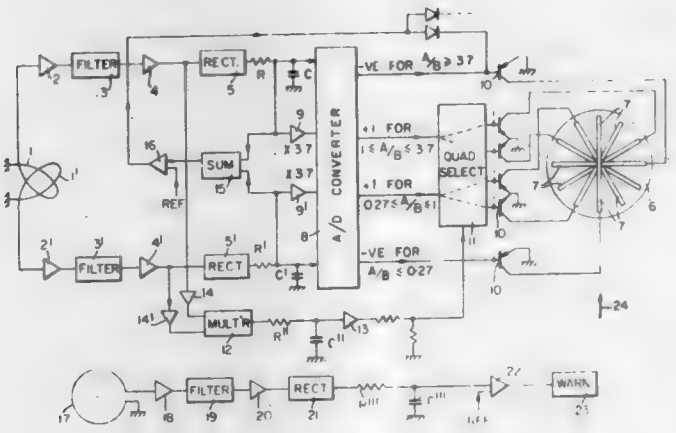
Keith E. Potter, Malvern, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Continuation of Ser. No. 816,515, Jul. 8, 1977. This application May 6, 1980, Ser. No. 147,295

Claims priority, application United Kingdom, Jul. 12, 1976, 28968/76

Int. Cl.³ G01S 5/04

U.S. Cl. 343—123 22 Claims



1. A method of warning a low-flying aircraft of the presence and direction, with respect to the aircraft, of a plurality of vertically separated electrical power transmission lines comprising:

intercepting the horizontal component of the resultant magnetic flux from said lines by two aircraft-mounted coils having their axes aligned generally horizontally and at an angle to one another;

deriving two signals proportional to the emf's induced in the respective coils by said flux;

and utilising the ratio of said two signals to indicate in the aircraft the direction of the transmission line with respect thereto.

4,405,927

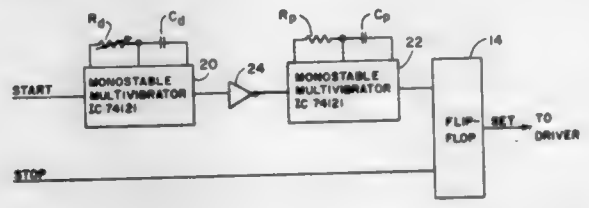
PHASE SHIFTER START/STOP ELECTRONIC TRIMMING

Jester M. Loomis, III, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 26, 1981, Ser. No. 266,771

Int. Cl.³ H01Q 3/38

U.S. Cl. 343—854 4 Claims



1. A phase shifter circuit for providing controllable time delay in phase shifter logic and comprising: a current driver for providing an output command signal to a load and adapted to receive an input control signal; a logic circuit having an output coupled as the input control signal for said driver, and having first and second inputs; and time delay means having an output coupled to said logic circuit first input, and having an input adapted for receiving an activating input signal; said time delay input and said logic circuit second input being adapted to receive respective start and stop input pulses for activating and deactivating said phase shifter circuit and thereby controlling the output command signal duration of said current driver; and said time delay means being a time delay and pulse forming network comprising first and second monostable multivibrators, each having an input and an output, the output of the first multivibrator being coupled to provide the input to the second multivibrator, the output of the second multivibrator being coupled as the first input to said logic circuit, and said first multivibrator input being the time delay means input.

4,405,928

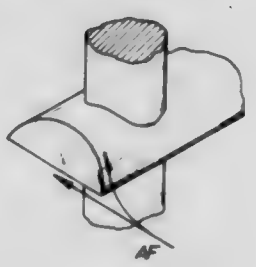
WIND LOAD REDUCTION IN TOWER MOUNTED BROADCAST ANTENNAS

Gerald F. Elsbernd, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Filed Mar. 17, 1980, Ser. No. 130,741

Int. Cl.³ H01Q 15/14

U.S. Cl. 343—912 6 Claims



1. In the stationary, tower mounted broadcast antenna structure having horizontally disposed elongated members through which the wind must blow, the improvement wherein said horizontally disposed elongated members have a cross section streamlined in the horizontal plane whereby wind load introduced by said horizontal members is reduced, said streamlined horizontal members having a curved surface and a flat surface, and being disposed so that said flat surface is horizontal.

4,405,929

THERMAL HEAD DEVICE

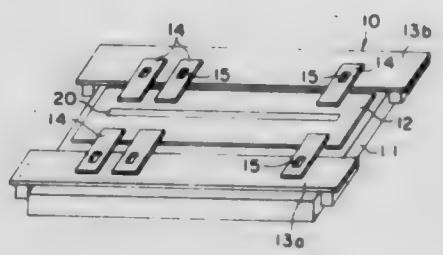
Osamu Sugano, Ikeda, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Jun. 26, 1981, Ser. No. 277,999

Claims priority, application Japan, Jun. 27, 1980, 55-87515; Jul. 3, 1980, 55-90999

Int. Cl.³ H05H 1/00; G01D 15/10

U.S. Cl. 346—76 PH 30 Claims



1. A thermal head device for converting electrical signals, containing an image information, into heat signals to obtain a visual image on a medium such as a thermosensitive paper comprising:

a first substrate;

a plurality of resistive elements formed on said first substrate in the form of a single array having a lengthwise direction, said resistive elements being grouped into blocks, each block having a predetermined number of said resistive elements;

a plurality of first electrodes individually connected to a respective resistive element(s) in each of said blocks, all of said first electrodes in one block being provided on the

same side of said array with the positions of said first electrodes alternating from side to side relative to said array from block to block, said first electrodes in one block including at least horizontal sections which extend approximately in parallel with the lengthwise direction of said array to define at the end portions of said horizontal sections a group of contacts along an imaginary first contact line extending substantially perpendicularly to the lengthwise direction of said array so that said first contact line is defined on both sides of said array in an alternating manner with a pitch corresponding to the number of blocks defined along said array;

second electrode means provided in opposed relation against said first electrodes with respect to said array; and

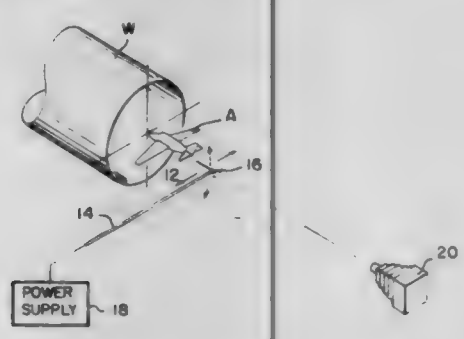
interconnection means mounted on said first substrate with one for each block, said interconnection means having a group of contacts along a second imaginary contact line matchingly contactable with the corresponding first contact line and a predetermined number of conductive paths for forming interconnections between an external circuit and said contacts along said second contact line.

4,405,930

SYSTEM FOR MAPPING A PHYSICAL VARIABLE

James P. Crowder, 3834 E. Mercer Way, Mercer Island, Wash. 98040

Filed Oct. 27, 1980, Ser. No. 201,019
Int. Cl.³ G01D *9/42, 9/00*
U.S. Cl. 346—107 R **13 Claims**



1. A system for mapping a physical variable, comprising:

a movable, elongated probe supported at a support location for scanning movement;

sensing means mounted on said probe at a location spaced apart from said support location for generating an output indicative of said physical variable;

light-emitting means mounted on said probe closely adjacent said sensing means so that said sensing means and light-emitting means move with each other despite any deflection of said probe, said light-emitting means receiving the output of said sensing means for generating illumination having a characteristic which varies in response to said output; and

photographic recording means receiving light from said light-emitting means for recording a characteristic of said light-emitting means as said movable probe causes said sensing means and said light-emitting means to scan over an area to be measured.

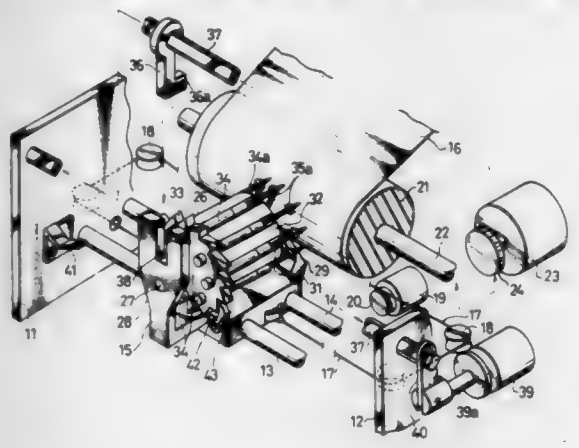
4,405,931

PEN TYPE MULTI-COLOR RECORDING DEVICE

Kyuichi Fujisawa, Tonan, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1982, Ser. No. 348,143
Claims priority, application Japan, Feb. 16, 1981, 56-19221[U]
Int. Cl.³ G01D *15/16, 9/28*
U.S. Cl. 346—139 R **3 Claims**

1. A recording device for recording data in any of a plurality of colors, including a carriage having a rotary drum carrying a plurality of recording pens spaced around the periphery of said drum and capable of writing in respective colors, means for moving said carriage across the path of movement of a recording paper through a printing region opposite said recording paper and a pen-selecting region adjacent said printing region, pen-selection means for rotating said drum when said carriage is in said pen-selecting region to bring a selected pen into a printing position and for holding said drum against rotation when said carriage is in said printing region, and means carried by said carriage for urging the pen in said printing position



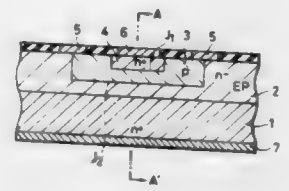
outward into contact with said printing paper, said pen-selection means including a cam mounted for rotation with said drum and having a plurality of teeth engaged by a stationary projection during movement of said carriage in said pen-selecting region whereby said drum can be rotated to bring a selected pen into the printing position by reciprocating said carriage within said pen-selecting region.

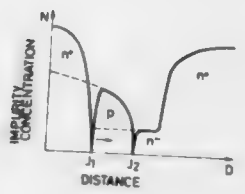
4,405,932

PUNCH THROUGH REFERENCE DIODE

Kiyoichi Ishii, Ohme; Hideharu Fujii, Yamanashi, and Kenji Kobayashi, Koufu, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering, Ltd., both of Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 220,974
Claims priority, application Japan, Dec. 26, 1979, 54-168395
Int. Cl.³ H01L *29/90*
U.S. Cl. 357—13 **19 Claims**





1. A punch-through reference diode comprising:

a semiconductor body;

a first semiconductor region of a first conductivity type which is formed within said semiconductor body;

a second semiconductor region of a second conductivity type which is formed within said semiconductor body, said second semiconductor region adjoining said first semiconductor region and defining a first PN-junction with said first semiconductor region; and

a third semiconductor region of said first conductivity type which is formed within said semiconductor body, said third semiconductor region adjoining said second semiconductor region and defining a second PN-junction with said second semiconductor region, whereby said second semiconductor region is located between said first PN-junction and said second PN-junction;

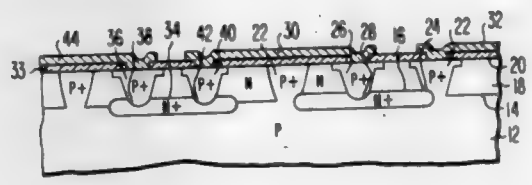
wherein said second semiconductor region has an impurity concentration distribution in which a concentration of an impurity of said second conductivity type increases from said first PN-junction towards said second PN-junction; said first and second semiconductor regions are provided with a connection for electrically connecting them in order to short said first PN-junction; said first and third semiconductor regions are respectively provided with connections for supplying a voltage so as to reverse-bias said second PN-junction; and a Zener breakdown voltage of said second PN-junction is greater than a punch-through voltage between said first and third semiconductor regions.

4,405,933

PROTECTIVE INTEGRATED CIRCUIT DEVICE UTILIZING BACK-TO-BACK ZENER DIODES

Leslie R. Avery, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 4, 1981, Ser. No. 231,288
Int. Cl.³ H01L *29/90*
U.S. Cl. 357—13 **8 Claims**



1. A semiconductor device comprising: a substrate of one type conductivity having an interfacial surface,

a first region of the opposite type conductivity disposed adjacent a portion of said interfacial surface,

an epitaxial layer of said opposite type conductivity disposed over said interfacial surface and covering said first region, said epitaxial layer having a top surface opposite said interfacial surface,

a second region of said one type conductivity disposed adjacent said top surface and extending through said epitaxial layer to contact said first region and form a first PN junction therewith,

a third region of said one type conductivity disposed adjacent said top surface but spaced physically away from said second region and extending through said epitaxial layer to contact said first region and form a second PN junction therewith, and

first and second conductors in direct contact respectively with said third and said second regions at said top surface, whereby said first and said second PN junctions function as back-to-back zener diodes when a voltage potential exists between said first and said second conductors.

4,405,934

NPM ANTI-SATURATION CLAMP FOR NPN LOGIC GATE TRANSISTOR

Benjamin J. Sloan, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 13, 1981, Ser. No. 253,444
Int. Cl.³ H01L *29/48*
U.S. Cl. 357—15 **4 Claims**

1. In an integrated circuit device, the logic gate comprising:

a P-type semiconductor substrate;

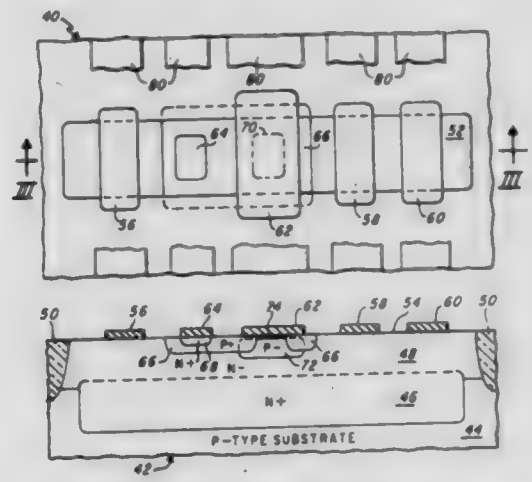
an epitaxial layer disposed on the substrate and having an upper surface upon which electrical contacts to the logic gate are made;

means extending from the upper surface to the substrate to define an isolated region of the epitaxial layer within which the logic gate is formed;

a low-resistivity N-type region disposed in the substrate immediately under the epitaxial layer and substantially laterally coextensive with the isolated region of the epitaxial layer;

the epitaxial layer having a high-resistivity N-type region adjacent to and overlying the low-resistivity N-type region and extending to the upper surface, a high-concentration P-type region formed within the high resistivity N-type regin and extending to the upper surface, a high concentration N-type region formed within the high-concentration P-type region and extending to the upper surface, a transport zone, and a high resistivity P-type region extending laterally through the transport zone and into the high-concentration P-type region to separate the high-resistivity N-type region of the transport zone into a surface portion and a lower portion; and

conductors of like metallic material forming first, second and third terminals in contact with the upper surface, the first terminal forming a Schottky barrier contact with the high resistivity N-type region, the second terminal forming an ohmic contact with the high-concentration N-type



region, the third terminal forming a Schottky barrier contact with the high-resistivity surface portion of the transport zone and forming an ohmic contact with the high-concentration P-type region, wherein the depth of said high-resistivity P-type region is such that it is not fully depleted in the zero bias condition of said third terminal Schottky barrier contact;

whereby an NPN switch transistor, an NPM clamp transistor and a Schottky barrier output diode are defined, wherein the high-resistivity N-type region in combination with the low-resistivity N-type region defines the collector of the switch transistor and the emitter of the clamp transistor as well as the cathode of the output diode, the high-concentration P-type region defines the base of the switch transistor, the high-concentration N-type region defines the emitter of the switch transistor, the high-resistivity P-type region defines the base of the clamp transistor, and wherein the portion of the third terminal contacting the high resistivity surface portion of the transport zone defines the collector of the clamp transistor.

4,405,935

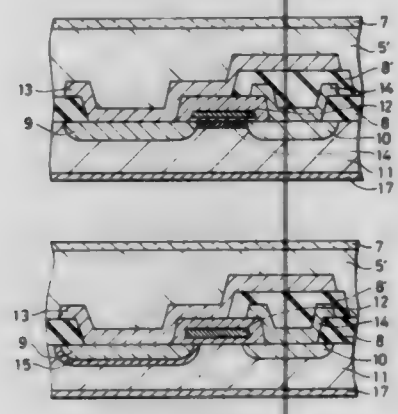
SOLID-STATE IMAGING DEVICE

Toru Baji, Kokubunji; Norio Koike, Tokyo; Toshihisa Tsukada, Sekimachi; Iwao Takemoto, Hinodemachi; Hideaki Yamamoto, and Yukio Takasaki, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 23, 1981, Ser. No. 227,679
Claims priority, application Japan, Jan. 23, 1980, 55-5756
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—31 **6 Claims**

1. A solid-state imaging device comprising: a semiconductor integrated circuit in which a plurality of switching elements are disposed on a semiconductor substrate, the switching elements being adapted for selecting positions of picture elements; a photoconductive film which is disposed over the integrated circuit and which is connected to one end of each of the

switching elements; and a light transmitting electrode which is disposed on the photoconductive film; each of the switching elements including first and second impurity regions in the semiconductor substrate which have a conductivity type opposite to that of the semiconductor substrate, one of the impurity regions acting to store carriers generated with incidence of



light; and means for controlling current in a current path between the two impurity regions; wherein the breakdown voltage (BV_j) of the junction which is formed between said semiconductor substrate and the impurity region which stores carriers generated with incidence of light is made smaller than the breakdown voltage (BV_{DS}) between said first and second impurity regions.

4,405,936

METHOD OF AND ARRANGEMENT FOR DIGITIZING A COLOR VIDEO SIGNAL

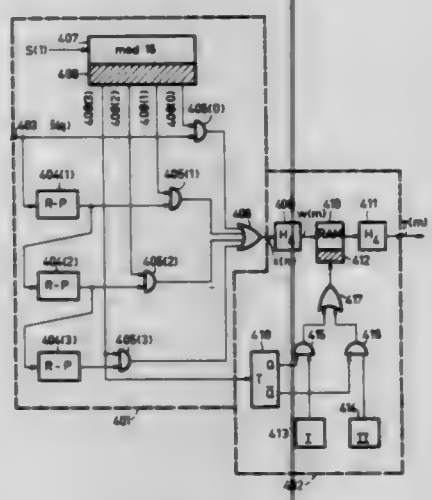
Joseph H. Peters, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 27, 1981, Ser. No. 288,231

Claims priority, application Netherlands, Aug. 8, 1980, 8004521

Int. Cl.³ H04N 9/32

U.S. Cl. 358—13 **2 Claims**



1. A method of digitizing a color video signal which is formed by a sequence of line signals each comprising a superposition of a brightness signal and two color information signals u(t) and v(t) which are each formed by a color difference signal modulated on subcarrier with a color subcarrier frequency f_{sc}, the method comprising the following steps:

(a) sampling the color video signal with a sampling frequency f_s which is equal to twice the color subcarrier frequency f_{sc} and at instants which coincide with the phase points $\pm\pi/4+M\pi$ of the color information signal u(t) in the line signal, M representing an integer, to generate video signal samples x(n);

(b) forming a subpicture comprising Q video groups which are each formed by a sequence of P video signal samples of the relevant line signal and are associated with Q consecutive line signals;

(c) converting such a subpicture into a group of coefficients consisting of N coefficients y(m) which are each equal to the sum of versions of the subpicture video signal samples which have been weighted with a factor +1 or −1, wherein m=0, 1, 2, -N−1 and wherein N is equal to the product of P and Q; and

(d) converting each of the coefficients y(m) into a code word z(m) which comprises a number of bits assigned to the relevant coefficient.

4,405,937

CHROMINANCE SIGNAL REPRODUCING APPARATUS

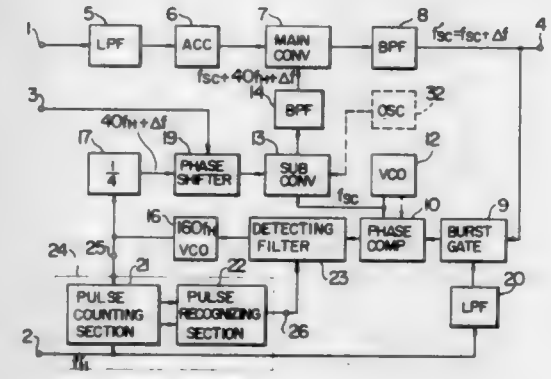
Mitsuru Kudo, and Isao Nakagawa, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 16, 1981, Ser. No. 274,275

Claims priority, application Japan, Jul. 4, 1980, 55-90646

Int. Cl.³ H04N 5/93, 9/493

U.S. Cl. 358—40 **7 Claims**



1. A chrominance signal reproducing apparatus comprising:

a reproduced-video signal input terminal;

a low-pass filter connected to said input terminal to produce a low-frequency converted carrier chrominance signal;

a first voltage-controlled oscillator oscillating at a first frequency;

a second voltage-controlled oscillator oscillating at a second frequency;

a frequency divider for dividing the output frequency of said first voltage-controlled oscillator;

a sub frequency converter circuit for producing the sum of the output frequencies of said frequency divider and said second voltage-controlled oscillator;

a main frequency converter circuit for frequency-converting the low-frequency converted carrier chrominance signal from said low-pass filter to produce a difference component, by the application of the sum frequency from the sub frequency converter circuit;

a burst gate supplied with the difference component from the main frequency converter circuit to produce a color burst signal;

a phase comparator for comparing the phases of the outputs from said burst gate and said second voltage-controlled oscillator to supply a phase difference signal to said first voltage-controlled oscillator, thus controlling its oscillation frequency; and

a frequency discriminator for counting the output frequency of said first voltage-controlled oscillator for a predetermined time and applying a control voltage to said first voltage-controlled oscillator, depending on the count value;

said frequency discriminator operating only when the frequency of the frequency converted carrier chrominance signal from said main frequency converter is deviated $\pm\frac{1}{8}$ f_H wherein f_H horizontal synchronizing frequency or above with respect to the carrier chrominance signal, to apply a control voltage to said first voltage-controlled

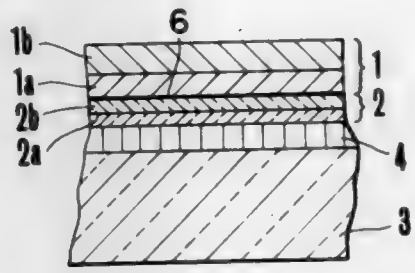
oscillator thereby driving the deviation in the range of $\pm\frac{1}{4}$ f_H.

4,405,938

IMAGE PICKUP TUBE FACEPLATE STRUCTURE

Saburo Nobutoki, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 21, 1981, Ser. No. 265,810
Claims priority, application Japan, Jun. 16, 1980, 55-80203
Int. Cl.³ H04N 9/04
U.S. Cl. 358—44 6 Claims



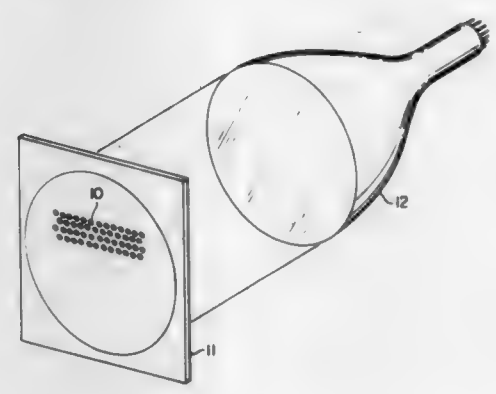
1. In an image pickup tube having a color separation filter mainly comprising organic materials, an inorganic transparent conductive film and an inorganic photoconductive film sequentially laminated in the order named on the central part of a transparent glass faceplate, the improvement wherein the inorganic transparent conductive film and the inorganic photoconductive film are non-porous and the transparent conductive film and the photoconductive film have areas greater than the area of the color separation filter to completely cover the color separation filter for isolating said organic materials from the inner vacuum of said tube.

4,405,939

METHOD FOR MAKING A DIRECTION SENSITIVE CONTRAST ENHANCEMENT FILTER

Mitchell Aron, Harrington Park, and Emanuel Sosinsky, Teaneck, both of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Oct. 30, 1981, Ser. No. 316,465
Int. Cl.³ H04N 9/16
U.S. Cl. 358—65 7 Claims



1. A method for making a direction sensitive contrast enhancement filter from a planar piece of material to provide unnoticeable moire pattern interference when used with a shadow mask color cathode ray tube (CRT) display having a phosphor dot size substantially 0.130 millimeters diameter in high ambient light environments comprising the steps of:

(1) determining the center-to-center spacing and radius of a plurality of holes to be placed through said planar piece of material in making said filter by performing the substeps of:

(a) selecting a curve of a particular Ratio A in FIG. 7 of the drawings, where Ratio A equals the center-to-center spacing between filter holes divided by the radius of a filter hole, the valley or minimum point of said selected curve indicating a percent variation in light output and a filter hole size accordingly,

(b) locating the point on a curve in FIG. 8 of the drawings having the same Ratio A and filter hole radius as selected and indicated in substep (a) to determine the transmission ratio of a filter having holes of such radius and Ratio A, said transmission ratio being an indicator of the amount of light generated by said CRT that will pass through said filter,

(c) determining if the transmission ratio indicated in substep (b) is acceptable, and if said transmission ratio is acceptable going to Step (2),

(d) when said transmission ratio is unacceptable as determined in Substep (b), selecting another curve on FIG. 7 having a new Ratio A, said new Ratio A having a lower numerical value to increase said transmission ratio and said Ratio A having a higher numerical value to decrease said transmission ratio, the minimum or valley of the curve in FIG. 7 for said new Ratio A indicating a new filter hole radius which along with said new Ratio A indicates a corresponding new transmission ratio on FIG. 8; and

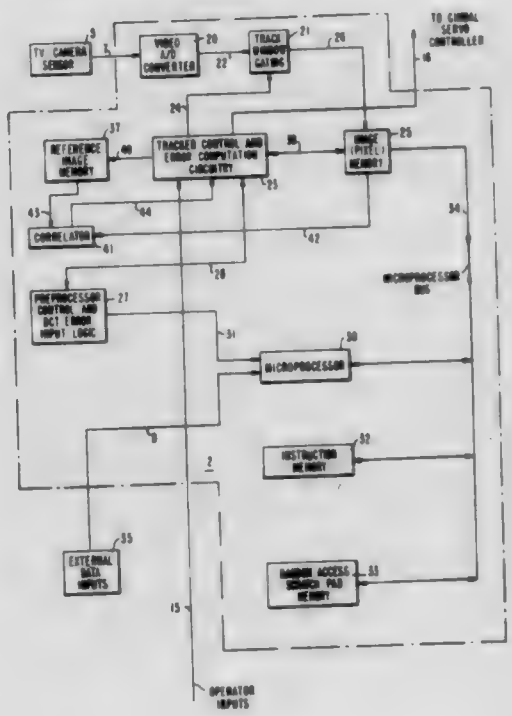
(2) producing holes through said planar piece of material to convert same to said direction sensitive contrast enhancement filter, each hole having the radius as determined by either Substeps (c) or (d) of Step (1) above, with all holes being equidistant, and the center-to-center spacing of said holes being determined by multiplying said Ratio A determined by either Substeps (c) or (d) of Step (1) above, by the filter hole radius determined from Steps (1) and utilized in producing said holes.

4,405,940

APPARATUS AND METHOD FOR PREPROCESSING VIDEO FRAME SIGNALS

Martin G. Woolfson, Baltimore, and John G. Romanski, Kingsville, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 31, 1977, Ser. No. 802,086
Int. Cl.³ H04N 7/18
U.S. Cl. 358—93 24 Claims



1. Apparatus for preprocessing the video content of video frame signals generated sequentially by an electro-optical sensor for discriminating a target image therefrom, comprising:

means for selecting a predetermined portion of video signal from each video frame signal;

means for dividing the selected predetermined portion of each video frame signal into a predetermined number of elements, said elements being indexed in accordance with

their corresponding time dependent positions within the predetermined portion of video signal;

means for assigning to each element a gray level value selected from a plurality of discrete gray level values as a measure of the video content thereof;

means for segregating the elements of the predetermined portion of a selected video frame signal into inner and outer portions with respect to their time dependent position index;

means for classifying the elements of the outer portion as a function of their assigned gray level values;

means for classifying the elements of the inner portion as a function of their gray level values;

means for generating a discriminant function of gray level values based on the gray level classification of elements of the inner and outer portions;

means for selecting from the selected predetermined portion of each video frame signal only those elements having assigned gray level values corresponding to that of the discriminant function generated from the selected video frame signal; and

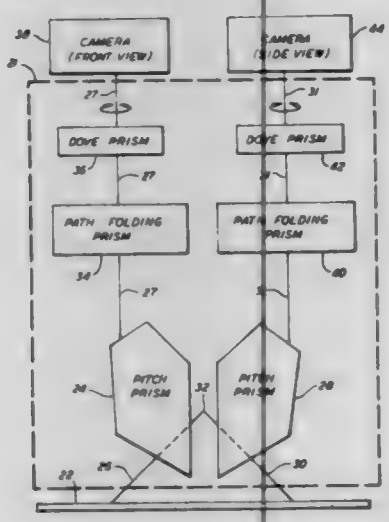
means for replacing the video content of the selected predetermined portion of each video frame signal with only the video content of the elements selected therefrom corresponding to the indexed position thereof, whereby the composition of the selected elements represents, at times, a substantial image of the target within the predetermined portion of each video frame signal.

4,405,941

OPTICAL PROBE

Richard A. Mecklenborg, Conklin, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,801
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—104 **27 Claims**



1. An optical probe, for use in a camera model system, and which is capable of generating both front and side views comprising:

(a) first means for defining a first aperture having a field of view corresponding to said front view and an external first apparent pupil;

(b) second means for deviating the direction of radiation passing through said first aperture;

(c) third means for defining a second aperture having a field of view corresponding to said side view and an external second apparent pupil;

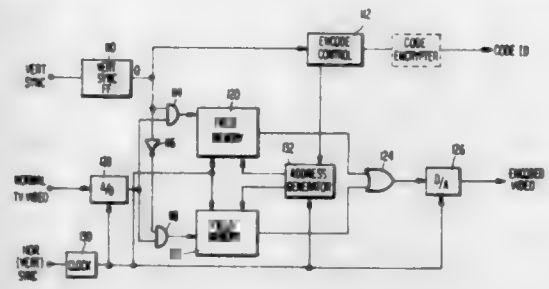
(d) fourth means for deviating the direction of radiation passing through said second aperture; said first and second pupils being located substantially at the same location and external to said first and second means respectively, whereby images corresponding to a front view and side view from said location are provided.

4,405,942

METHOD AND SYSTEM FOR SECURE TRANSMISSION AND RECEPTION OF VIDEO INFORMATION, PARTICULARLY FOR TELEVISION

Robert S. Block, Marina Del Ray, Calif., and John R. Martin, Milwaukee, Wis., assignors to Telease, Inc., Los Angeles, Calif.

Continuation of Ser. No. 124,656, Feb. 25, 1981, abandoned.
This application Mar. 3, 1982, Ser. No. 354,376
Int. Cl.³ H04N *7/16*; H04K *1/04*
U.S. Cl. 358—119 **40 Claims**



1. A method for transmitting a television video signal in a nonstandard form comprising the steps of:

(a) sequentially storing signals representing discrete samples of the video signal for one horizontal line in a first storage device;

(b) transferring the stored signals for the one horizontal line from the first storage device into a second storage device while simultaneously modifying the stored signals to form an encoded video signal;

(c) retrieving the stored signals from the second storage device; and

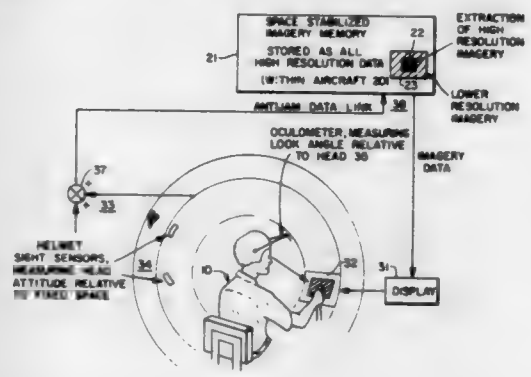
(d) transmitting the encoded video signal.

4,405,943

LOW BANDWIDTH CLOSED LOOP IMAGERY CONTROL AND COMMUNICATION SYSTEM FOR REMOTELY PILOTED VEHICLE

David B. Kanaly, Melbourne, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Aug. 19, 1981, Ser. No. 294,190
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—133 **47 Claims**



1. A system for displaying, at a local station a high resolution image of a portion of scene optically imaged at a remote station comprising:

at said remote station,

a memory;

first means for generating high resolution data representative of said optically imaged scene to be displayed and storing said data in said memory;

second means for selectively accessing said memory to read out therefrom a first portion of said data as high resolution image information and a second portion of said data as low resolution image information; and

third means for transmitting signals corresponding to said first portion of said data containing said high resolution

image information and said second portion of said data containing said low resolution image information to said local station; and

at said local station,

fourth means for generating signals representative of a prescribed portion of said scene for which a high resolution image is to be displayed; and

fifth means for transmitting signals representative of the signals generated by said fourth means to said remote station to cause said second means to selectively access said memory to read out therefrom as high resolution image information that portion of said data corresponding to said prescribed portion of said scene.

4,405,944

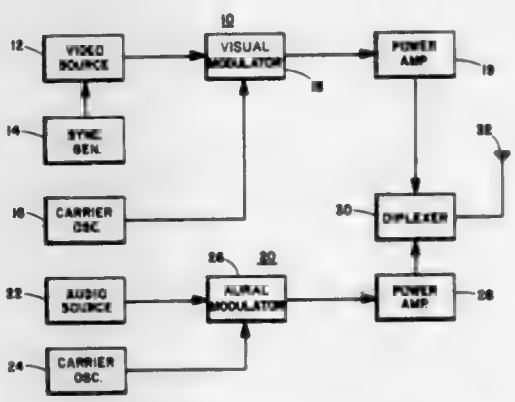
TV SOUND TRANSMISSION SYSTEM

Carl G. Eilers, River Forest, and Pieter Fockens, Glenview, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 196,491, Oct. 14, 1980, Pat. No. 4,339,772. This application Mar. 12, 1982, Ser. No. 357,520

Int. Cl.³ H04N *5/40, 5/44*

U.S. Cl. 358—144 **22 Claims**



1. In a television signal transmitter of the type having a signal source defining a horizontal scanning line frequency and means for generating an audio transmission signal comprising a main carrier signal frequency modulated by a composite modulation function, the improved apparatus for developing said composite modulation function comprising:

means for developing first and second stereophonically related audio signals;

means for developing a third audio signal;

means for developing first and second subcarrier signals having frequencies equal to two and five times said horizontal scanning line frequency respectively;

means for developing a first modulation function component comprising the sum of said stereophonically related audio signals;

means for developing a second modulation function component comprising a double sideband suppressed carrier signal formed by amplitude modulating said first subcarrier signal in accordance with the difference between said stereophonically related audio signals;

means for developing a third modulation function component comprising said second subcarrier signal frequency modulated in accordance with said third audio signal; and

means for combining said first, second and third modulation function components for producing said composite modulation function.

4,405,945

SYNCHRONIZING SIGNAL DETECTOR CIRCUIT

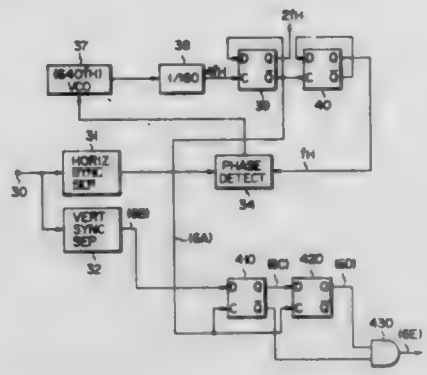
Kenzi Sato, Fukaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 19, 1982, Ser. No. 350,148

Claims priority, application Japan, Sep. 17, 1979, 54-128405

Int. Cl.³ H04L *7/00;* **H04N** *5/08;* **H03K** *17/28*

U.S. Cl. 358—154 **3 Claims**



1. A synchronizing signal detector circuit comprising:

a first synchronizing signal separator circuit for separating aifrst synchronizing signal from a composite synchronizing signal in which first and second synchronizing signals are included;

a second synchronizing signal separator circuit for separating the second synchronizing signal from the composite synchronizing signal;

an AFC loop for generating therein a signal synchronized in phase with the first synchronizing signal;

a first synchronous flip-flop which receives, as a clock pulse, the signal generated by said AFC loop and synchronized with the first synchronizing signal, and, as an input, the second synchronizing signal;

a second synchronous flip-flop which receives, as an input, the output of said first flip-flop, and operates in synchronism with the clock pulse; and

a logical product operation circuit for performing a logical product operation between outputs of said first and second flip-flops.

4,405,946

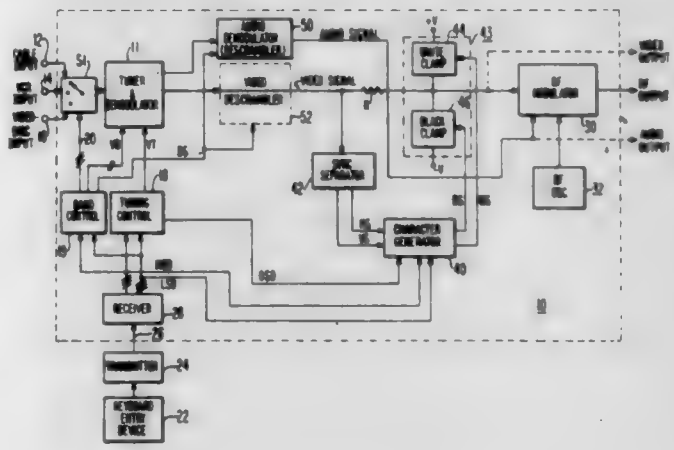
TELEVISION SIGNAL CONVERTING APPARATUS PROVIDING AN ON-SCREEN TUNING DISPLAY

Stanley P. Knight, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 16, 1982, Ser. No. 348,675

Int. Cl.³ H04N *5/50*

U.S. Cl. 358—192.1 **9 Claims**



1. A signal converting apparatus for television signals comprising:

input means including RF input means for providing a plurality of modulated RF carriers;

tuning and demodulating means for selecting one of said modulated RF carriers and for developing a video signal from said selected modulated RF carrier in response to a carrier selection control signal;

selection means coupled to said tuning and demodulating means for generating said carrier selection control signal;

detection means for developing a synchronization signal responsive to said video signal;

character generator means responsive to said carrier selection control signal and to said synchronization signal for generating a character signal identifying the selected one of said RF carriers;

combining means for combining said video signal and said character signal; and

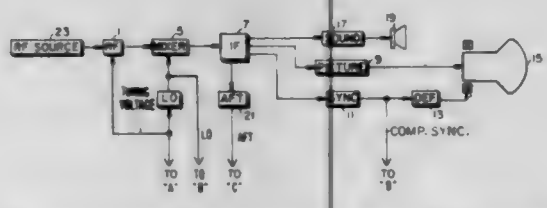
modulating means for modulating said combined video and character signals on a second radio frequency carrier signal.

4,405,947

DUAL SEARCH MODE TYPE TUNING SYSTEM

Juri Tults, and Michael P. French, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed May 8, 1981, Ser. No. 261,450
Int. Cl.³ H04B *1/16*; H04N *5/50*
U.S. Cl. 358—193.1 **12 Claims**



1. In a television receiver including RF means for selecting an RF signal from among a plurality of RF signals associated with respective channels which may be selected, local oscillator means for generating a local oscillator signal, mixer means for generating an IF signal by heterodyning said selected RF signal and said local oscillator signal, automatic fine tuning (AFT) means responsive to said IF signal for generating an AFT signal representing the deviation between the frequency of the picture carrier of said IF signal and its nominal value, and synchronization processing means for generating a picture synchronization signal in response to said IF signal, apparatus comprising:

tuning control means for controlling the frequency of said local oscillator signal including step means for changing the frequency of said local oscillator signal in steps;

first search means coupled to said step means and responsive to said synchronization signal for causing said step means to change the frequency of said local oscillator signal in steps from a first value toward a second value in a first frequency range until said synchronization signal has a predetermined condition or the frequency of said local oscillator signal has said second value;

second search means coupled to said step means and responsive to said AFT signal for causing said step means to change the frequency of said local oscillator signal in steps from a third value toward a fourth value in a second frequency range substantially the same as said first range until said AFT signal has a predetermined condition or the frequency of said local oscillator signal has said fourth value; and

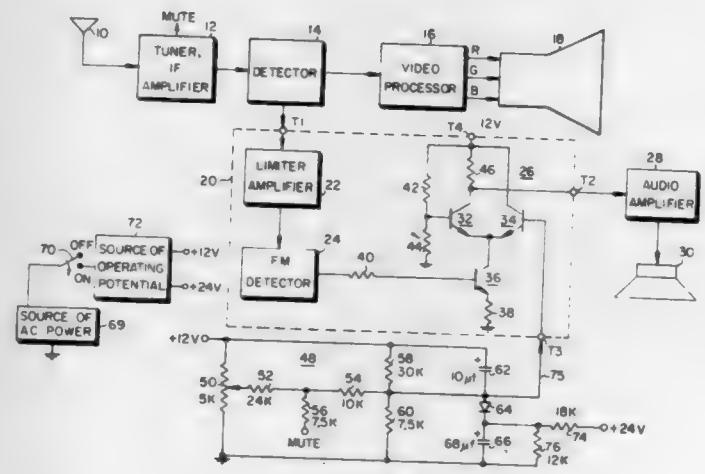
search mode control means for first enabling the operation of said first search means and thereafter enabling the operation of said second search means if the frequency of said local oscillator signal reaches said second value under the control of said first search means.

4,405,948

VOLUME CONTROL SIGNAL COUPLING CIRCUIT IN AN AUDIO SIGNAL PROCESSING SYSTEM

Patrick D. Griffis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 26, 1982, Ser. No. 342,896
Int. Cl.³ H04N *5/60*
U.S. Cl. 358—198 **22 Claims**



10. In a television receiver responsive to received composite television signals corresponding to plural color television signal channels, said receiver including means for processing video components of said television signal, tuner means for selectably rendering said receiver responsive to individual ones of said television channels and providing a sound muting signal during channel changing intervals when said receiver is being tuned from one channel to another; and means for processing a sound component of said television signal, said sound processing means comprising:

a gain controlled amplifier having a signal input for receiving said sound component of said television signal, a gain control input, and a signal output;

sound reproducing means responsive to audio output signals from said amplifier for reproducing said sound component;

means for generating a gain control signal suitable for controlling the signal gain of said amplifier;

means for coupling said gain control signal to said gain control input of said amplifier via a coupling path;

means selectively operative for supplying operating potentials to said amplifier and to said generating means when said system is energized, and for removing said operating potentials when said system is de-energized, said operating potentials including an undesired transient component appearing momentarily when said system is initially energized, and a steady-state component appearing at other times when said system is energized;

a first capacitor defining a transient signal current path between said gain control signal coupling path and a first operating potential;

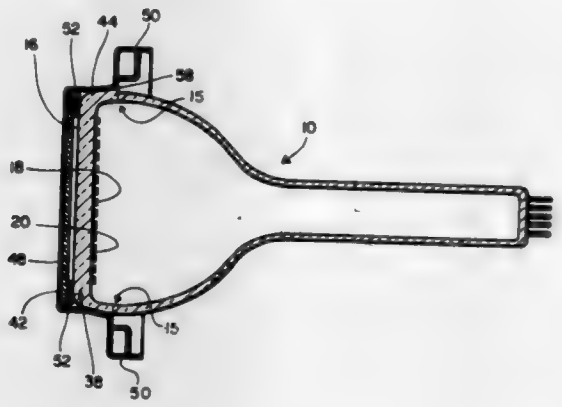
a second capacitor and a threshold conduction device responsive to said transient component for defining a selectively operative transient signal current path between said gain control path and a second operating potential; and wherein

said sound muting signal is coupled to said gain control input of said amplifier via said gain control signal coupling path.

4,405,949
LIQUID COOLING IN PROJECTION CATHODE RAY TUBES

Richard L. Hockenbrock, Mundelein, and Paul Strauss, Chicago, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Mar. 22, 1982, Ser. No. 360,741
Int. Cl.[3] H04N *5/74*
U.S. Cl. 358—237 4 Claims



1. Cooling means for cooling the face panel of a projection cathode ray tube, said face panel including a window section and a rearwardly extending flange having a forwardly tapering section, and a cathodoluminescent screen on the inner surface thereof for forming a television image, said cooling means comprising:

a housing having a rearwardly extending flange with a forwardly tapering section configured to nest with the forwardly tapering section of the face panel when mated therewith, said housing having a window section for framing and passing said image, and including tube mounting ears in the corner regions thereof for supporting said cathode ray tube;

spacing means for spacing said window section of said housing from said face panel window section

bonding means for bonding and sealing said tapering sections together;

a cooling medium located in the space between said windows for cooling the entirety said face panel;

such that said tapering sections provide for mechanically attaching said housing and said tube into firm exact adjacency for sealing, in conjunction with said bonding means, said housing to said face panel, and for physically supporting said tube in conjunction with said mounting ears.

4,405,950
TELEVISION DISPLAY SYSTEM HANDLING AND ADJUSTMENT APPARATUS

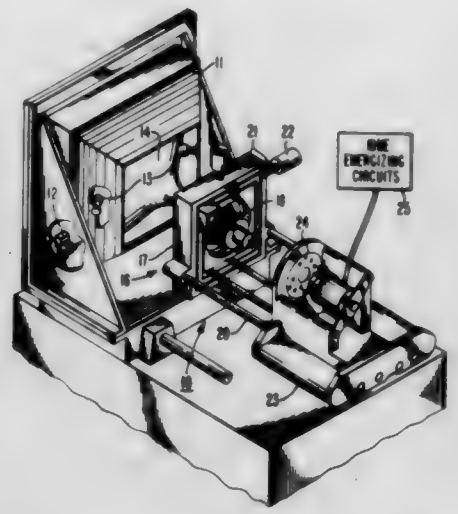
Myron H. Wardell, Jr., Lititz, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 15, 1981, Ser. No. 264,211
Int. Cl.[3] H04N *5/64;* G01R *31/22;* H01J *9/44;* H01F *1/00*
U.S. Cl. 358—248 4 Claims

1. An apparatus for positioning a deflection yoke on the neck of a color television kinescope to converge a plurality of electron beams on the face of said kinescope, comprising:

a yoke holder coupled to one end of said yoke, said yoke holder comprising a rigid member and a flexible member disposed between said rigid member and said yoke; and

means for moving said yoke holder in a direction transverse with respect to said kinescope neck through a first distance in which both ends of said yoke are free to move with respect to said kinescope neck and in the same transverse direction through a second distance such that the end of said yoke remote from said yoke holder contacts said kinescope at a contact point, causing said yoke to pivot about said contact point, movement of said yoke through said first and second distances converging said beams from a first and second misconverged condition, respectively, said pivoting of said yoke causing the shape of said yoke holder flexible member to distort in order to

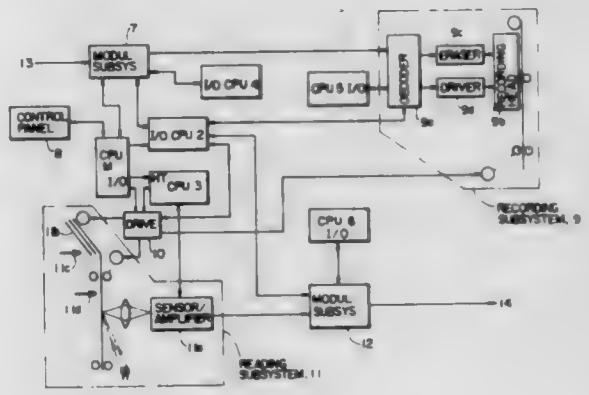


maintain said yoke holder rigid member in orthogonal alignment with respect to said kinescope neck.

4,405,951
FACSIMILE CONTROL SYSTEM

Takashi Omori; Kenji Koguchi, both of Kanagawa; Masahiko Yamagishi, and Higehumi Takeuchi, both of Nagano, all of Japan, assignors to Fuji Xerox Co., Ltd., Kanagawa, Japan

Filed Dec. 17, 1980, Ser. No. 217,304
Claims priority, application Japan, Dec. 18, 1979, 54-163599
Int. Cl.[3] H04N *1/32*
U.S. Cl. 358—256 3 Claims



1. A facsimile system, comprising:

a first microcomputer (CPU M) functioning as a master microcomputer coupled through input/output ports thereof to control system drive control means, said drive control means being coupled through input/output ports thereof to a second microcomputer (CPU 3) functioning as a slave microcomputer, said second slave microcomputer being coupled through halt/reset inputs thereof to said master microcomputer;

a reading subsystem, controlled through input ports thereof connected to said drive control means, comprising a sensor/amplifier, said sensor/amplifier being controlled through input/output port couplings thereof by said second microcomputer functioning as a slave microcomputer and being coupled through an output port thereof to a modulating subsystem; and

a third microcomputer functioning as a slave microcomputer coupled through an input port thereof to respond to said master microcomputer and through input/output ports thereof to monitor said drive control means and said modulating subsystem, said modulating subsystem being further responsive through input/output port couplings thereof to a fourth microcomputer serving as a slave microcomputer.

4,405,952

APPARATUS FOR DETECTING FAULTY SECTORS AND FOR ALLOCATING REPLACEMENT SECTORS IN A MAGNETIC DISC MEMORY

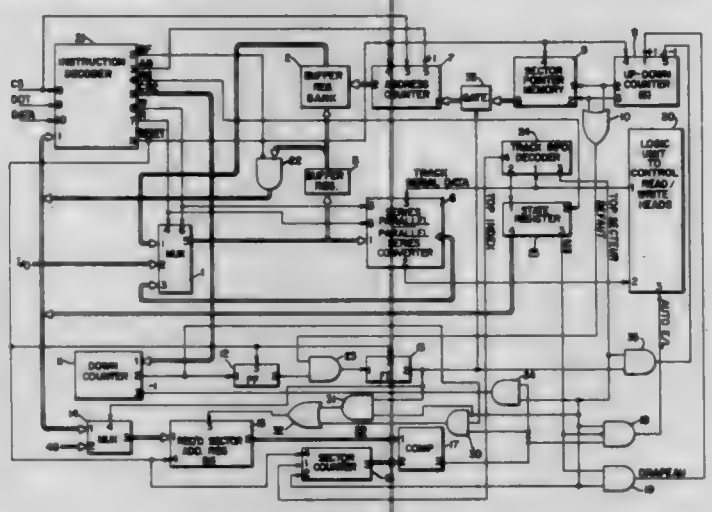
Gilbert Slakmon, Paris, France, assignor to CII Honeywell Bull, Paris, France

Filed May 25, 1979, Ser. No. 42,416

Claims priority, application France, May 26, 1978, 78 15763

Int. Cl.³ G11B 5/09

U.S. Cl. 360—49 **11 Claims**



1. Apparatus for detecting faulty sectors and for allocating replacement sectors in a magnetic disc memory connected to a central processing unit, each face of a disc included in the memory being divided into sectors of a circle and into concentric tracks on which are recorded or from which are recovered data which are transferred between the central processing unit and the magnetic disc memory, said disc memory being associated with: (a) adjusting means for each track and sector, (b) magnetic transducers positioned immediately opposite each face of the disc for recovering and recording data from the disc, and (c) means for temporarily storing data which are transferred between the central processing unit and the disc memory, the apparatus comprising first means for recording data on and recovering data from fault-free sectors, second means for detecting faulty sectors and for indicating the order in which faulty sectors are detected, addressing means for sectors of the memory, the first means, second means and addressing means being coupled with third means for assigning a number of replacement sectors equal to the number of detected faulty sectors, said means for assigning being activated at the end of a track address by the addressing means.

4,405,953

MAGNETIC RECORDING AND REPRODUCING DEVICE

Akira Inomata; Tsunao Hasegawa, and Yasushi Ohtake, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Division of Ser. No. 174,389, Oct. 29, 1979. This application Oct. 26, 1981, Ser. No. 315,337

Claims priority, application Japan, Mar. 1, 1978, 53-23400; Oct. 4, 1978, 53-122899; Oct. 4, 1978, 53-122900; Oct. 5, 1978, 53-123071; Oct. 5, 1978, 53-123073; Oct. 5, 1978, 53-123074; Oct. 5, 1978, 53-123075

Int. Cl.³ G11B 5/45, 5/02

U.S. Cl. 360—65 **7 Claims**

1. A magnetic recording and reproducing device comprising:

a recording bias signal source;

means for setting a level of said recording bias signal in response to a first digital control signal;

a recording level adjusting signal source;

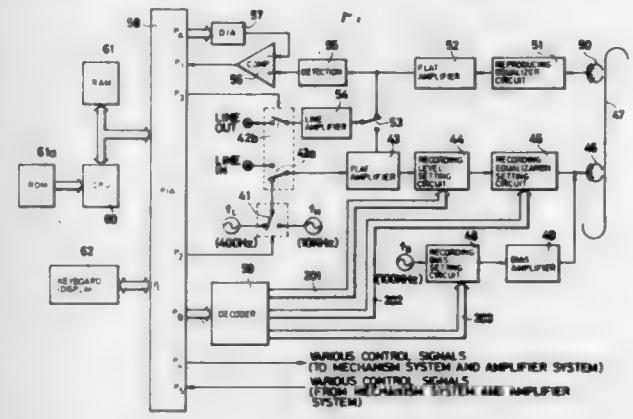
a recording equalization adjusting signal source;

switch means for selecting one of said recording level adjusting signal and said recording equalization adjusting signal;

amplifying means for amplifying the selected one of said recording level adjusting signal and said recording equalization adjusting signal;

recording level setting means for adjusting a level of an output of said amplifying means in response to a second digital control signal;

recording equalization setting means for setting the equalization of an output of said recording level setting means in response to a third digital control signal;



means for recording an output signal from said recording equalization setting means superposed on an output of said recording bias setting means on a recording medium;

means for reproducing signals recorded on said recording medium;

means for comparing a reproduced signal outputted by said reproducing means with a reference signal; and

digital computing means for producing said first, second and third digital control signals in response to an output of said comparing means.

4,405,954

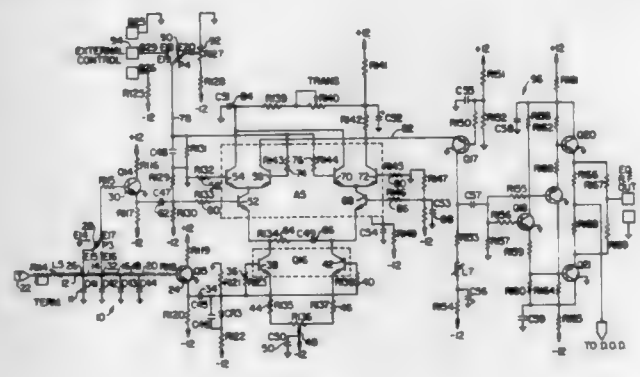
RADIO FREQUENCY EQUALIZER

Barrett E. Guisinger, Saratoga, Calif., assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 25, 1981, Ser. No. 324,773

Int. Cl.³ G11B 5/45, 5/02

U.S. Cl. 360—65 **12 Claims**



1. A circuit for selectively combining two or more input signals to produce a combined output signal in response to a control signal without introducing the control signal into the output signal, the circuit comprising

a first and a second amplifier circuit, each circuit having corresponding separate pairs of input stages and separate pairs of parallel connected, selectively gain controllable output stages driven by the input stages,

a combined output terminal,

a circuit ground,

means for connecting corresponding ones of the output stages of the first and second amplifier circuits to supply their outputs to the circuit ground and for connecting the other output stages of each amplifier circuit to supply their outputs to the combined output terminal,

means responsive to the control signal for controlling the

gains of opposite ones of the output stages of the first and second amplifier circuits, the other output stages having predetermined, fixed, gains,

means for supplying a first input signal to one of the input stages of both the first and second amplifier circuits, and

means for supplying a second input signal in inverted form to the other input stage of the first amplifier circuit and in non-inverted form to the other input stage of the second amplifier circuit.

4,405,955

VIDEO SIGNAL REPRODUCING APPARATUS

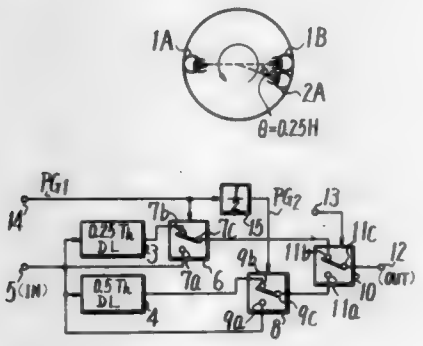
Hiroyuki Kaimai, Kawasaki; Masakazu Sonoda, Urawa; Masaaki Komatsu, Tokyo; Atsuo Sakai, Tokyo, and Toshimitsu Kamai, Higashikurume, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 1, 1981, Ser. No. 269,428

Claims priority, application Japan, Jun. 4, 1980, 55-75299

Int. Cl.³ H04N *5/783*

U.S. Cl. 360—10.3 **8 Claims**



1. An apparatus for reproducing video signals recorded in successive parallel tracks extending at an angle to the length of a tape, comprising:

two main reproducing heads having different azimuth angles with respect to each other and disposed diametrically opposite each other;

at least one auxiliary reproducing head having the same azimuth angle as one of said main reproducing heads, said auxiliary reproducing head being disposed to be circumferentially displaced by $(n+0.25)H'$ from the other of said main reproducing heads, where n is zero or a positive integer, and H' is an angle corresponding to one horizontal scan line on the tape;

head control means for controlling said main and auxiliary reproducing heads to reproduce said video signals with said main reproducing heads when the tape is transported lengthwise at a standard speed and to reproduce said video signals alternately with said one of said main reproducing heads and said auxiliary reproducing head when said tape is stopped; and

delay control means operative when said tape is stopped for relatively delaying the video signal reproduced by said one main reproducing head and the video signal reproduced by said auxiliary reproducing head so as to compensate for any variation in the periodicity of the horizontal synchronizing pulses which occurs upon a change in the reproduction of said video signals by said one of said main reproducing heads and said auxiliary reproducing head.

4,405,956

TRACKING APPARATUS FOR READ/WRITE HEAD

Sidney W. Marshall, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 22, 1981, Ser. No. 256,334

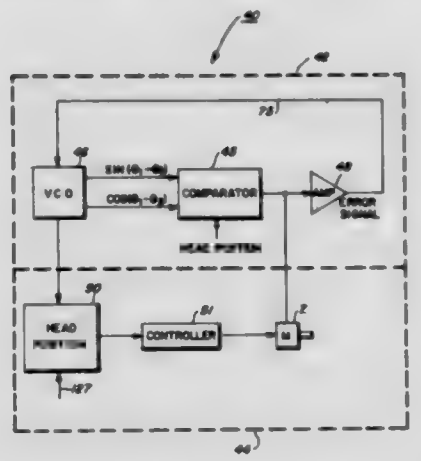
Int. Cl.³ G11B *21/10*

U.S. Cl. 360—78 **12 Claims**

1. In a tracking apparatus for locating the read/write head on a data recording disk, the disk having a plurality of data tracks separated into radially projecting data and servo sectors, the improvement comprising:

(a) a first series of positive and negative servo marks in each of said servo sectors, said servo marks being disposed so that each plus and minus servo mark pair has a data track therebetween;

(b) a second series of positive and negative servo marks in each of said sectors, said second servo marks being offset



from said first servo marks by one half a track, said first and second servo marks providing tracking signals that are 90° out of phase;

(c) means for reading said first and second servo marks, as said head moves relative to said disk to provide said tracking signals; and

(d) tracking means for locating the position of said head on said disk in response to said tracking signals.

4,405,957

PLUG-IN DEVICE FOR DISC-SHAPED RECORDING MEDIA IN A DRIVE

Guenther Vorbach Schwindegg, and Georg Böehmer, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,622

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1980, 3021604

Int. Cl.³ G11B *5/016, 17/02*

U.S. Cl. 360—99 **13 Claims**



1. A drive apparatus for a flexible disc-shaped recording medium having a central opening through which said recording medium is driven, comprising rotatable drive means and means for loading and positioning said recording medium, including an introductin slot means, a resiliently mounted stop

member positioned across from said slot means, a pivotally mounted flap member for opening and closing said slot means, a spring element mounted on said flap member for pressing said recording medium against said stop member during closing of said flap member over said slot means for resilient loading and positioning of said recording medium for operation in said drive apparatus, and engagement means associated with said flap member for frictionally connecting said recording medium adjacent said central opening with said drive means as said flap member is closed.

4,405,958

MAGNETIC REPRODUCING APPARATUS WITH MAGNETORESISTIVE HEAD

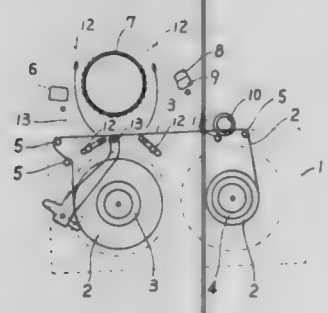
Masaya Hijikigawa, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 116,890, Jan. 30, 1980, abandoned. This application Mar. 16, 1982, Ser. No. 358,633

Claims priority, application Japan, Jul. 19, 1979, 54-100482[U]

Int. Cl.³ G11B *5/12*

U.S. Cl. 360—113 **3 Claims**



1. In a magnetic-record reproduction system which selectively reproduces magnetic information signals recorded as a plurality of programs on a magnetic-tape including program selection means for selectively retrieving for reproduction a specific program from said plurality of programs, each program location being defined on said tape by associated magnetic cue signals on said tape, said magnetic tape having a record layer on which said magnetic information and cue signals are recorded and a base layer with a top surface contiguous to said record layer and a bottom surface opposite thereto and tape drive means for transporting the tape through said system the improvement comprising:

magnetoresistive detector means in contact with said bottom surface of said base layer for sensing said magnetic cue signals to said program selection means to enable the selective reproduction of said programs.

4,405,959

MAGNETIC HEAD FOR RECORDING AND READING MAGNETIC DATA WITH VARIABLE TRACK WIDTH

Jacques Chabrolle, Bagnolet, France, assignor to L.C.C.-C.I.C.E. Compagnie Europeenne de Composants Electroniques, Bagnolet, France

Filed Mar. 9, 1981, Ser. No. 242,157

Claims priority, application France, Mar. 11, 1980, 80 05418

Int. Cl.³ G11B *5/25, 5/27, 5/28*

U.S. Cl. 360—119 **11 Claims**

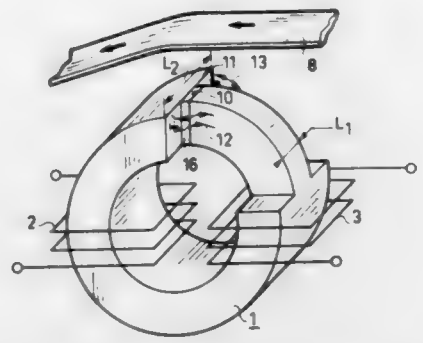
1. A magnetic head for recording and reading magnetic data, with variable track width, on a mobile support medium, comprising:

a magnetic circuit in ring form;

electric means for respectively applying and retrieving recording and reading signals;

an air gap provided in said magnetic circuit cooperating with the mobile support medium and delimited by two polar faces, of rectangular contour, disposed facing each other, with the respective dimensions of the two polar faces transversely to the plane of the ring being different, and with the greatest dimension determining, on the mobile support medium, the recorded width, and the smallest dimension determining the width read;

two ferromagnetic side-plates, respectively formed on each side of said polar face having the smallest dimension transversely to the plane of the ring and forming therewith a rectangular contour in order to provide a lateral field distributor in the air gap to increase the effective induction,



4,405,960

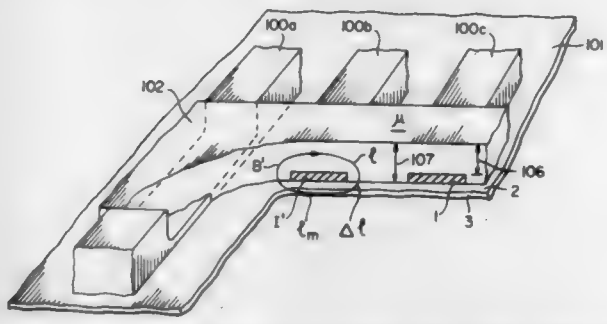
MAGNETOGRAPHIC RECORDING HEADS

George G. Pick, Mendham, and Houshang Rasekhi, Convent Station, both of N.J., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Jun. 1, 1981, Ser. No. 268,934

Int. Cl.³ G11B *5/16*

U.S. Cl. 360—125 **4 Claims**



1. A magnetic recording head formed using thin film metallization techniques for recording on a magnetizable medium responsive to a signal current applied to said head, and comprising:

a relatively flat, elongated conductor formed using said metallization techniques, said conductor having a reduced cross sectional area at a section of said conductor adjacent to said magnetizable medium and defining a recording zone thereat, said conductor having a first surface closest to said medium and a second surface furthest from said medium, and said current creating a magnetic field around said conductor which penetrates said medium and records thereon, and

a magnetic shunt made of high permeability, high remanence material which is contiguous to said second surface of said conductor at said reduced cross sectional area. said shunt being placed in a remanent magnetized state by applying a first current of sufficient magnitude to said conductor prior to said signal current being applied thereto, said signal current never being of a magnitude to place said shunt in its remanent magnetic state, said shunt allowing more flux lines to be created around said conductor in the recording zone than elsewhere around said conductor away from said recording zone, and the remanent magnetic field from said magnetized shunt introducing a prebiasing magnetic field into said medium to assist in recording thereon but of itself not having a magnetic field strong enough to effect recording on said medium, thus

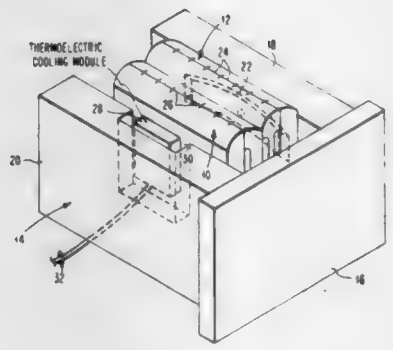
allowing lower magnitude signal currents in order to record on said medium.

4,405,961

THERMOELECTRIC COOLING OF MAGNETIC HEAD ASSEMBLIES

William W. Chow, Tucson; Davis S. Fields, Jr., Pima County; Paul Y. Hu, Pima County, and Jorge L. Lopez, Pima County, all of Ariz., assignors to International Business Machines, Armonk, N.Y.

Filed Aug. 6, 1981, Ser. No. 290,646
Int. Cl.³ F25B *21/02*; G11B *5/10, 5/40*
U.S. Cl. 360—129 **8 Claims**



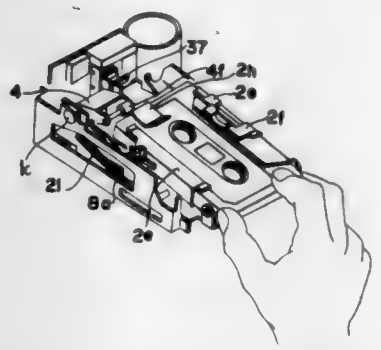
1. A magnetic head assembly comprising:
at least one magnetic head module;
a thermoelectric cooling element thermally coupled to said head module; and
a heat sink in thermal contact with said cooling element.

4,405,962

CASSETTE LOADING AND UNLOADING APPARATUS

Masao Haruta, Kawaguchi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 10, 1981, Ser. No. 300,961
Claims priority, application Japan, Sep. 12, 1980, 55/127408; Sep. 12, 1980, 55/131022[U]
Int. Cl.³ G03B *1/04*; G11B *15/00*
U.S. Cl. 360—96.6 **14 Claims**



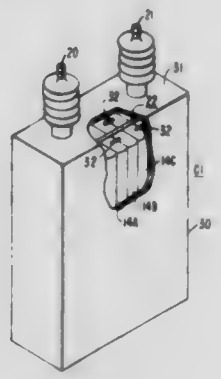
4. A cassette loading and unloading mechanism for use in an information signal recording and/or reproducing apparatus, comprising:
support means;
cassette holding means mounted on said support means and adapted to move between a first loading position and a second operative position, wherein a cassette is adapted to be inserted into said cassette holding means to a loaded position in response to a force applied to said cassette when said cassette holding means is in said first loading position;
retention means adapted to engage said cassette holding means to retain the latter in said first loading position;
first biasing means for biasing said cassette holding means to said second operative position from said first loading position when said retention means is disengaged from said cassette holding means; and
means for disengaging said retention means from said cassette holding means only after the cassette has been inserted to said loaded position and the force applied to said cassette has been reduced below a first value, said means for disengaging including threading arm means adapted to be biased from a first inactive position to a second active position by said cassette when the latter is inserted into said cassette holding means to said loaded position, release means for disengaging said retention means from said cassette holding means and adapted to be engaged by said threading arm means when the latter is biased to said second active position, and second biasing means for biasing said threading arm means from said second active position toward said first inactive position when said cassette has been inserted into said cassette holding means to said loaded position and when the force applied to said cassette has been reduced below said first value.

4,405,963

CAPACITOR APPARATUS WITH AN INDIVIDUAL DISCHARGE DAMPING DEVICE FOR EACH CAPACITOR UNIT

Barry L. Holtzman, Richland Township, Monroe County, Ind., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 11, 1981, Ser. No. 291,747
Int. Cl.³ H02H *7/16*
U.S. Cl. 361—16 **7 Claims**

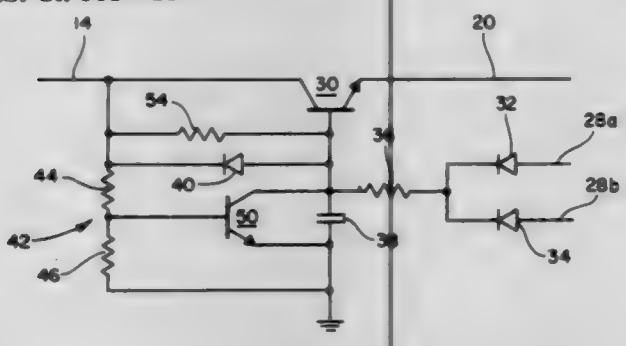


1. A capacitor unit comprising:
a stack of capacitor sections, each of said sections comprising a wound composite of dielectric sheet material and electrode material, said capacitor sections being interconnected and presenting a predetermined capacitance at first and second stack connection points;
said stack being contained within a closed housing having a pair of terminals extending therethrough;
a discharge damping device contained within said housing and connected between said first stack connection point and one of said pair of terminals, said discharge damping device comprising a predominantly resistive circuit path in parallel with a predominantly inductive circuit path for damping a high frequency discharge occurring across said terminals;
said predominantly resistive circuit path of said discharge damping device comprising a length of resistive conductor extending substantially directly between said first stack connection point and said one of said pair of terminals; and said predominantly inductive circuit path comprising a length of low resitance conductor looped within the space between said first stack connection point and said one of said pair of terminals.

4,405,964
OVER VOLTAGE CIRCUIT FOR A SWITCHING REGULATOR POWER SUPPLY

Jonathan L. Woods, and Leroy A. Sutton, both of Wheeling, Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Mar. 29, 1982, Ser. No. 363,184
Int. Cl.[3] H02H 3/20, 7/122
U.S. Cl. 361—18 11 Claims



1. A protection circuit for a switching regulator power supply operable in response to a source of DC potential V_b for developing a bootstrap signal having a voltage level greater than V_b, said protection circuit comprising:

a series-pass transistor having a collector-emitter circuit connected between said source of DC potential and said power supply;

means for coupling said bootstrap signal to the base of said series-pass transistor;

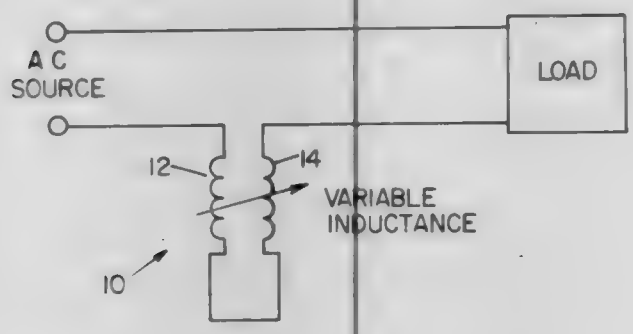
a shunting transistor having a collector-emitter circuit connected between the base of said series-pass transistor and a point of reference potential; and

a voltage divider connected between said source of DC potential and said reference potential for coupling a control voltage to the base of said shunting transistor, said control voltage causing said shunting transistor to be non-conductive for values of V_b less than a predetermined threshold value and to be conductive for values V_b greater than said predetermined threshold value so as to reduce the base drive of said series-pass transistor for limiting the DC potential supplied to said power supply to a safe level.

4,405,965
CURRENT LIMITING DEVICE FOR OVERCURRENT PROTECTION

William F. Weldon, and Herbert H. Woodson, both of Austin, Tex., assignors to Board of Regents, University of Texas System, Austin, Tex.

Filed Dec. 21, 1981, Ser. No. 332,445
Int. Cl.[3] H02H 9/02, 9/08
U.S. Cl. 361—43 7 Claims



1. A current limiting device for an electric power system, comprising:

a first coil winding;

a second coil winding;

said coil windings being electrically connected for current flow therethrough, and magnetically linked for mutual inductive coupling;

said connected coil windings having an effective total inductance functionally related to their relative positioning;

said coil windings being disposed for relative movement, so as to provide for variation in the effective total inductance;

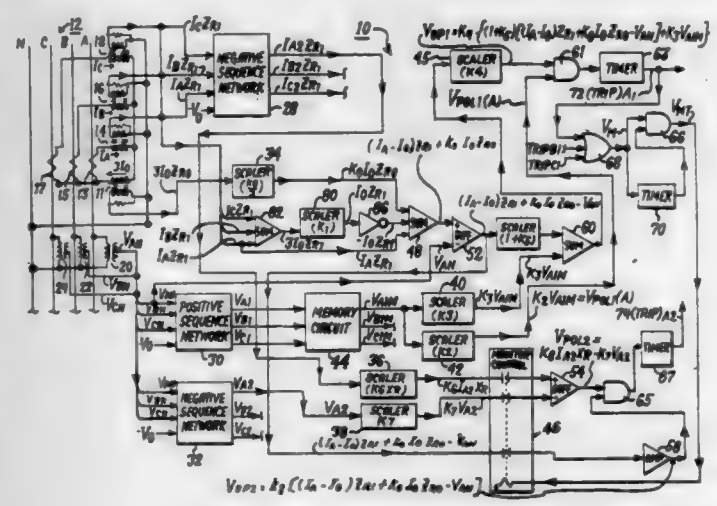
means for positioning said coil windings in an initial relative positioning to establish an initial effective total inductance; and

means for resisting movement of said coil windings under a force produced between said coils due to current flow therethrough, and for yielding to movement of said coils under a force produced between said coils due to a predetermined magnitude of current through the coil windings, so as to permit a change in relative positioning of the coils which acts to limit the flow of current therethrough.

4,405,966
SYSTEM FOR PROVIDING PROTECTION FOR A HIGH VOLTAGE TRANSMISSION LINE

Leonardo P. Cavero, Media, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Oct. 7, 1981, Ser. No. 309,549
Int. Cl.[3] H02H 3/26, 7/26
U.S. Cl. 361—80 6 Claims



2. A phase selector relay for protecting one or more phases of one or more zones of a high voltage A.C. transmission line, said phase selector relay developing an operating signal V_{OP1} and a polarizing signal V_{POL1} for each phase of the transmission line and each representative of the current and voltage conditions existing in each phase, said phase selector relay further having a phase angle comparator comprising an AND circuit means and a TIMER means, said AND circuit means being responsive to the phase coincidence between the V_{OP1} and V_{POL1} signals for developing an output signal which is routed to and activates said TIMER means, said TIMER means generating a control signal upon the expiration of a predetermined time duration, said control signal being adapted to control circuit breaking means for causing said one or more phases of the one or more zones of the transmission line to be decoupled from the remainder of the transmission line, said phase selector relay further comprising means for developing said V_{OP1} and V_{POL1} signals respectively representative of the following relationships:

$$V_{OP1}=K_4\{(1+K_5)[(I_P-I_O)Z_{R1}+K_OI_OZ_{RO}-V_{PN}]+K_3V_{P1M}\} \quad (a)$$

where the subscript P shown for the current (I) and voltage (V) quantities is either A, B, or C to indicate the particular phase of the transmission line related to the particular phase of the V_{OP1} signal;

K_3, K_4, and K_5 are phase selector relay constants;

K_O is a zero-sequence line impedance compensation factor substantially equal to the amplitude of the quantity Z_{LO}/Z_{L1}, where Z_{LO} is equal to the zero-sequence line

impedance and Z_{L1} is equal to the positive-sequence line impedance;

I_O is the zero-sequence current flowing within the three (3) phase of the transmission line;

Z_{R1} is the replica positive sequence impedance of the transmission line;

Z_{RO} is the replica positive sequence impedance of the transmission line, but with the phase angle of the zero-sequence impedance of the transmission line;

I_P is representative of the current flowing in the transmission line related to the particular phase of the V_{OP1} signal;

V_{P1M} is the positive sequence component of a prefaulted transmission line voltage related to the particular phase of the V_{OP1} signal, and;

V_{PN} is the phase-to-neutral voltage of the transmission line related to the particular phase of the V_{OP1} signal;

$$V_{POL1} - K_2 V_{P1M} \quad \text{(b)}$$

where K_2 is a phase selector relay constant, and;

V_{P1M} is the positive sequence component of the prefaulted transmission line voltage related to the particular phase of the V_{POL1} signal.

4,405,967

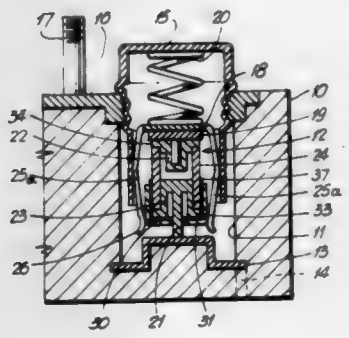
GAS TUBE OVERVOLTAGE PROTECTOR WITH BACK-UP GAP

Casimir Cwirzen, Arlington Heights, Ill., assignor to Northern Telecom Inc., Nashville, Tenn.

Filed Dec. 4, 1981, Ser. No. 327,572

Int. Cl.³ H02H 9/06

U.S. Cl. 361—124 **10 Claims**



1. A gas tube overvoltage protector comprising:

a tubular dielectric housing;

two opposed electrodes sealed in said housing, said electrodes having opposed inner end surfaces defining a primary gap, said gap at a sub-atmospheric pressure;

said electrodes forming upper and lower electrodes and including outer ends extending from said dielectric housing;

an extension of reduced diameter extending axially from said outer end of the lower electrode;

a metal cap fitting over said dielectric housing at a lower end, said cap having an aperture, said extension extending through said aperture, there being a clearance between said cap and said extension sufficient to prevent electrical breakdown between the cap and the extension;

a thin dielectric member positioned between said metal cap and the adjacent outer end of the lower electrode, said extension passing through said dielectric member;

at least one aperture in said dielectric member, said aperture defining an auxiliary gap between said outer end of the lower electrode and said metal cap.

4,405,968

CONTROL CIRCUITS

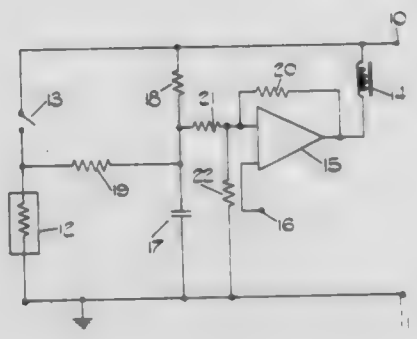
Stephen A. White, London, England, assignor to Lucas Industries plc, Birmingham, England

Filed May 12, 1982, Ser. No. 377,587

Claims priority, application United Kingdom, May 28, 1981, 8116266

Int. Cl.³ H01H 47/18

U.S. Cl. 361—195 **3 Claims**



1. A control circuit for controlling the operation of an electrically powered heating device of the kind intended to be operated from a source of electric supply the terminal voltage of which can vary when the device is in use, the circuit comprising first and second terminals for connection to a source of d.c. supply, the first of said terminals in use being connected to one terminal of the heating device, the other terminal of the heating device in use being connected to the second of said terminals by way of switch means, a capacitor having one plate connected to said first terminal and its other plate connected to said second terminal by way of a first resistor, and in use, to the other terminal of said heating device by way of a second resistor, a comparator which compares the voltage developed across said capacitor with a reference voltage and a relay winding responsive to the output of said comparator for controlling the operation of said switch means.

4,405,969

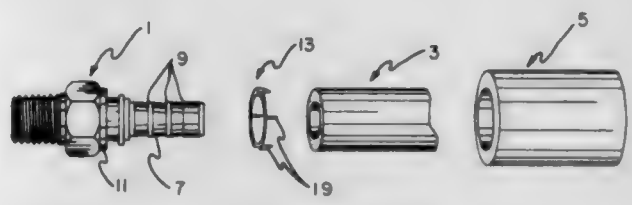
ANTI-STATIC HOSE ASSEMBLIES

Donald F. Swavely, Kenhorst, Pa., assignor to The Polymer Corporation, Reading, Pa.

Filed Oct. 2, 1981, Ser. No. 307,843

Int. Cl.³ H05F 3/00

U.S. Cl. 361—215 **4 Claims**



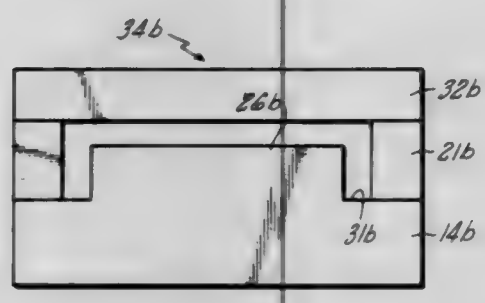
1. An anti-static hose assembly comprising a hose, an anti-static element enbedded between a cover and a tube of the hose, and a stem fitting mounted on the hose, the improvement comprising a conductive coupling ring seated between and in contacting relationship with the stem fitting and the hose: the conductive coupling ring having a plurality of tines extending away from the stem fitting and into the end of the hose in a region between the cover and the tube and into electrical contacting relationship with the anti-static element.

4,405,970

SILICON-GLASS-SILICON CAPACITIVE PRESSURE TRANSDUCER

James L. Swindal, East Hampton, and Daniel H. Grantham, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 13, 1981, Ser. No. 310,598
Int. Cl.³ H01G 7/00
U.S. Cl. 361—283 4 Claims



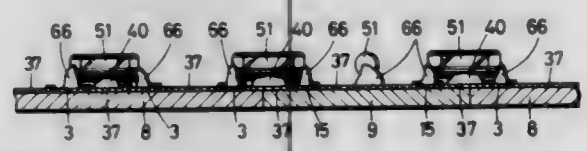
1. A silicon, capacitive pressure transducer comprising:
a first piece of conductive silicon having disposed thereon a pedestal, said pedestal having a conductive surface;
a second piece of conductive silicon having a conductive surface thereon; and
a wall of glass joining said first piece of silicon with said second piece of silicon and providing a chamber between said pieces and said wall, the conductive surface on said pedestal being spaced a short distance from the conductive surface of said second piece of silicon, forming the plates of a capacitor, said distance and therefore the capacitance of said capacitor varying in response to changes in fluidic pressure external to said transducer, the length of said wall between said pieces of silicon being at least four times greater than the distance between said capacitor plates.

4,405,971

ELECTRICAL CIRCUIT APPARATUS

Mitsuo Ohsawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,529
Claims priority, application Japan, Dec. 10, 1979, 54-160049
Int. Cl.³ H05K 1/14
U.S. Cl. 361—401 3 Claims



1. Electric circuit apparatus comprising a mother board having a pattern of conductive leads disposed on a surface thereof and including at least one opening therein of predetermined size and shape; at least one daughter board of substantially the same size and shape as said opening, and being structurally distinct from said mother board, said daughter board being of substantially the same thickness as said mother board and being disposed in said opening, and said daughter board having a pattern of conductive leads disposed on a surface thereof; electrical circuit components mounted on said mother board and daughter board, and having electrodes electrically connected to the patterns of conductive leads of said mother and daughter boards; at least some of the patterns of conductive leads on said mother and daughter boards being electrically interconnected; and at least one of said electrical circuit components bridges the joint between said mother and daughter boards to provide electrical interconnection between a conductive lead on said mother board and a conductive lead on said daughter board and is substantially rigidly secured to both said boards to add mechanical strength to said joint.

4,405,972

CLAMP DEVICE FOR RETAINING PRINTED CIRCUIT BOARDS UNDER HIGH SHOCK CONDITIONS

Ermenegildo Fiorentino, Bridgeport; Edward A. Wojtowicz, Bryn Mawr, and Robert J. Leadlie, Frazer, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 8, 1982, Ser. No. 356,083
Int. Cl.³ H05K 7/12
U.S. Cl. 361—417 11 Claims



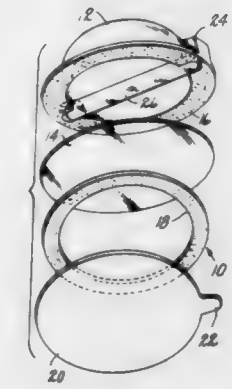
1. A clamp device for restraining a printed circuit board comprising:
a base member against which said printed circuit board is to be clamped,
at least one clamping bar having in its free unclamped state a clamping surface which exhibits a convex curvature when viewed from the direction of said printed circuit board,
fastener means for applying clamping forces to the respective extremities of said clamping bar of such magnitude that the curved clamping surface thereof is straightened and brought to bear against the surface of said printed circuit board,
said clamping bar exerting in its clamped state a substantially evenly distributed force to said printed circuit board, said last mentioned force being a function of the clamping forces required to straighten said curved clamping surface.

4,405,973

EMERGENCY LIGHT SOURCES

Thomas L. Moscarillo, 59 S. Village Green, Ipswich, Mass. 01938

Filed Mar. 2, 1981, Ser. No. 239,360
Int. Cl.³ F21K 2/00
U.S. Cl. 362—34 5 Claims



1. A light cell comprising a flexible plastic container including a generally dome shaped member, a generally flat base of transparent flexible plastic material sealed to the dome shaped member to form a liquid tight container, a frangible elongated glass pod containing a first chemiluminescence producing substance adapted to produce chemiluminescent light when mixed with a second substance substantially filling the container outside the pod, means including a pair of opposed indentations in the dome shaped member for retaining the pod against displacement from a position in which it may readily be ruptured by flexure of the container and means on the base

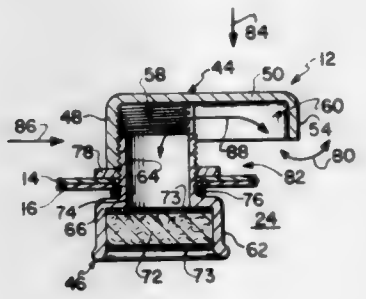
including an adhesive covering part of the base for attaching the cell to an article to be illuminated, whereby light is directed onto the article through the transparent base.

4,405,974

FILTER ASSEMBLY FOR LUMINAIRE

Honesto D. Quiogue, Blacksburg, Va., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Feb. 6, 1981, Ser. No. 231,990
Int. Cl.³ F21V *17/02*
U.S. Cl. 362—362 **12 Claims**



1. A filter assembly for a luminaire, comprising:

a fitting having an axially extending passageway opening at opposite ends thereof and a cavity receiving an air-permeable filter across said passageway; and

an elongated cap having a first portion coupled to said fitting to cover one end of said fitting passageway, a second portion extending laterally from said first portion and a solid back member extending over said first and second portions, said portions and back member defining a non-linear passageway in fluid communication with said fitting passageway, said fitting and cap being rotatably coupled, said first portion having a cylinder depending from said back member and a lateral slot communicating with said second portion, and said second portion being defined by said cylinder and lateral walls depending from said back member with said non-linear passageway opening in a direction generally parallel to and towards said fitting, said lateral walls extending from said back member to a lesser extent than said cylinder;

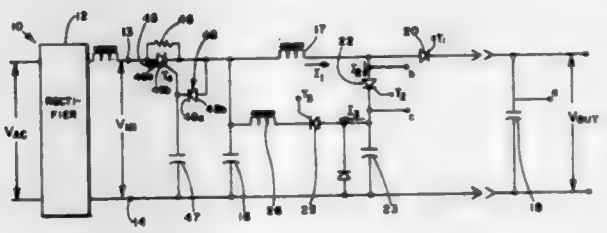
whereby, said cap can be adjustably positioned on the luminaire to maximize protection of said filter against damage from environmental conditions.

4,405,975

POWER SUPPLY START-UP CIRCUIT

Scott M. Overstreet, and C. Henning Swenson, both of Los Altos, Calif., assignors to GTE Products Corporation, Stamford, Conn.

Filed Oct. 29, 1981, Ser. No. 316,158
Int. Cl.³ H02M *3/135*
U.S. Cl. 363—49 **6 Claims**



1. In a power supply for electrical discharge apparatus comprising a source of DC voltage having first and second terminals and a storage capacitor connected across said terminals, a start-up circuit comprising

a bistable switch having a trigger terminal, said switch being connected to said storage capacitor and to said first terminal,

a shunt resistor connected across said switch,

a trigger capacitor connected between said second terminal and said trigger terminal, and

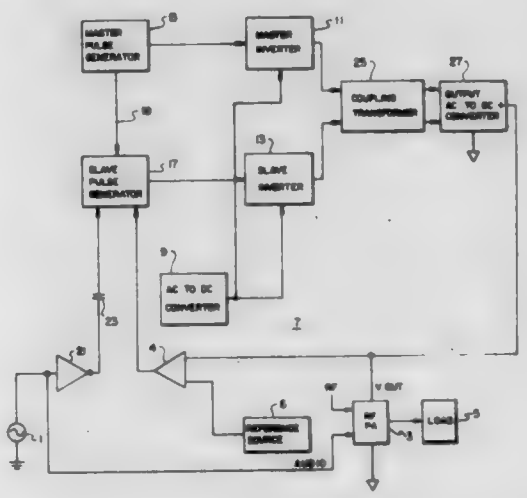
a diode having an anode and a cathode, said anode being connected between said storage capacitor and said switch, said cathode being connected between said trigger capacitor and said trigger electrode.

4,405,976

AUDIO TRACKING PULSE-WIDTH MODULATED POWER SUPPLY

Daniel M. Mitchell, Cedar Rapids, and William J. Durspek, Marion, both of Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 16, 1981, Ser. No. 331,037
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—72 **15 Claims**



1. An audio signal tracking power supply, comprising:

master pulse generator means for generating master control pulses;

slave pulse generator means, responsive to the audio signal, for generating slave control pulses;

dc power supply means for providing dc power;

master inverter means for inverting a first part of the dc power to a first ac signal, the master inverter means being controlled by the master control pulses;

slave inverter means for inverting a second part of the dc power to a second ac signal, the slave inverter means being controlled by the slave control pulses; and

output converter means for converting the first and second ac signals to a dc output signal.

4,405,977

COMMUTATION CIRCUITS FOR THYRISTOR INVERTERS

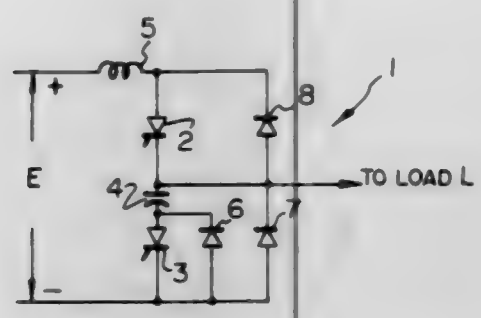
Pradeep M. Bhagwat, Baltimore, Md., and Victor R. Stefanovic, Charlottesville, Va., assignors to Canadian Patents and Dev. Limited, Ottawa, Canada

Filed Aug. 26, 1981, Ser. No. 296,296
Claims priority, application Canada, Sep. 25, 1980, 363141
Int. Cl.³ H02M *1/06, 7/515*
U.S. Cl. 363—124 **11 Claims**

1. In a thyristor circuit for applying a dc voltage through a thyristor to a load, a commutation circuit for the thyristor comprising:

inductance means, normally discharged capacitance means and a commutation thyristor connected in series with said thyristor;

a first diode connected in reverse polarity across the commutation thyristor; and



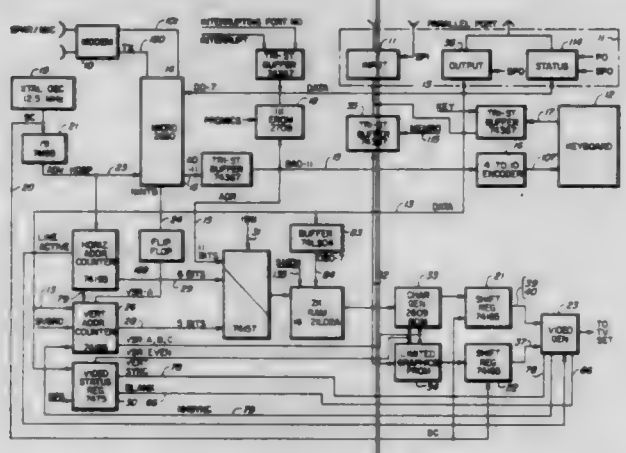
a second diode connected in reverse polarity across the series connected capacitance means and commutation thyristor.

4,405,978

MICROPROCESSOR BASED COMPUTER TERMINAL

Ronald E. Lange, and Steve E. King, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jun. 25, 1979, Ser. No. 51,473
Int. Cl.³ G06F *3/023*
U.S. Cl. 364—200 **2 Claims**



1. A computer terminal apparatus for sending data to and receiving data from another data processing device comprising:

(a) a keyboard means for allowing entry of data and control signals by an operator;

(b) a port means for interfacing with said other data processing device so that data may be received from and sent to said other data processing device;

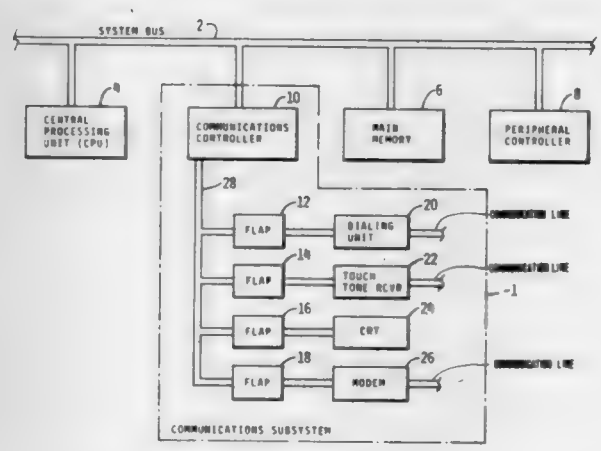
(c) logic means selectively coupled to said keyboard means and said port means, said logic means including means for scanning said keyboard means, means for receiving and encoding data and control signals therefrom, means for presenting data received by said computer terminal at an output thereof, and means responsive to a predetermined control signal received from said keyboard for simultaneously transmitting data being received from said keyboard out through said port means to said other data processing device, said logic means including a microprocessor programmed to effect the stated functions, said microprocessor having an address bus, a data bus and a control output signal, and where said computer terminal apparatus includes a decoder means for decoding signals on a portion of said address bus, and where said keyboard is comprised of a matrix of switches, one side of each column of said switches being connected to a scan line connected to one of the outputs of said decoder means, and each row in said matrix of switches having one side connected to a sense line, said apparatus also including a tri-state buffer having a plurality of inputs connected respectively to said sense lines and an output connected to said data bus, said tri-state buffer having a control input for receiving said control output signal from said microprocessor for connecting said sense lines to said data bus when said microprocessor effects the scan of said keyboard means, said scanning being effected by said microprocessor by sequentially addressing each said scan line and reading the output of said tri-state buffer via said data bus.

4,405,979

DATA PROCESSING SYSTEM HAVING APPARATUS IN A COMMUNICATIONS SUBSYSTEM FOR ESTABLISHING BYTE SYNCHRONIZATION

Thomas O. Holtey, Newton; Steven S. Noyes, Boylston, and James C. Raymond, Framingham, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Oct. 6, 1980, Ser. No. 194,495
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—200 **7 Claims**



1. In combination with a communication line coupled to a communications subsystem, a data processing system comprising a system bus, at least one central processing unit (CPU), one main memory system, one peripheral controller and said communications subsystem, all coupled in common to the system bus, said communications subsystem including a communications controller coupled to said system bus, a plurality of flexible line adapters (FLAPs), each coupled to said communications controller, and further including typical communication devices such as a modem, a dialing unit, a touch-tone receiver, a cathode ray tube (CRT), a plurality of each of said typical devices coupled to one each of said FLAPs, an apparatus in said each of said FLAPs for establishing byte synchronization comprising:

(a) a U-bus and an M-bus coupled to each other, and further coupled to said system bus;

(b) a microprocessor (μP) coupled to said U-bus;

(c) a random access memory (RAM) coupled to said M-bus;

(d) a programmable read only memory (PROM) also coupled to said M-bus;

(e) a universal synchronous receiver (USRT) coupled to said U-bus for transmitting bytes of information read from said main memory to a selected one of said typical devices via said FLAPs, and receiving bytes of information from said selected one of said typical devices via said FLAPs for writing in said main memory, said bytes of information being transferred in a byte control protocol mode when one of said typical devices generates a sequence of byte timing pulses of which successive pulses are separated by one byte width; and

(f) synchronizing means included in said FLAPs and coupled to said USRT and to said typical devices, said synchronizing means synchronizing said bytes of information to the sequence of byte timing pulses.

4,405,980

PROCESS CONTROL COMPUTER WHEREIN DATA AND ADDRESSES ARE SEPARATELY PROCESSED

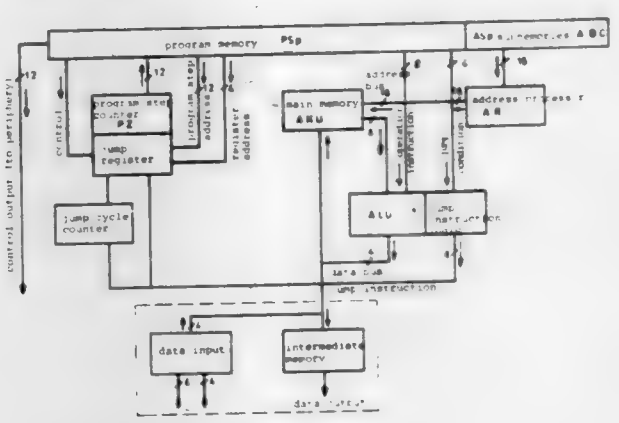
Bruno M. Hess, Am Born 16, 5451 Horhausen/Westerwald, Fed. Rep. of Germany

Filed Oct. 27, 1980, Ser. No. 201,361

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1979, 2944757

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—200 **24 Claims**



1. A sequentially pulse-frequency driven process control computer, comprising

a data input/output unit;

an address memory;

a separate address processor;

an address bus;

a main memory directly connected to said data input/output unit and, via said address processor and said address bus, to said address memory;

a program memory;

a clock generator connected to said program memory and said address memory and supplying sequential clock pulses for the execution of the program and for the simultaneous delivery of addresses in each program step;

a data bus separate from said address bus;

an arithmetic logic unit, said main memory storing the data from said data-output unit after the feeding of the addresses from said address processor supplying the data for the program step to said arithmetic logic unit via said data bus, said arithmetic logic unit simultaneously receiving pulse-frequency driven operation commands from said program memory and feeding the operation results via said data bus to said data input/output unit and to said main memory for storing; and

a program step counter connected to said program memory and continuing switching of the program steps and controlling the output of the operation commands from said program memory.

4,405,981

COMMUNICATION MULTIPLEXER HAVING AN APPARATUS FOR ESTABLISHING A SINGLE LINE PRIORITY

Kin C. Yu, Burlington, Mass., and Angelo D. Kachemov, Plattsburgh, N.Y., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 29, 1980, Ser. No. 191,580

Int. Cl.³ G06F *3/04*

U.S. Cl. 364—200 **6 Claims**

1. A data processing system for transferring data bytes comprising:

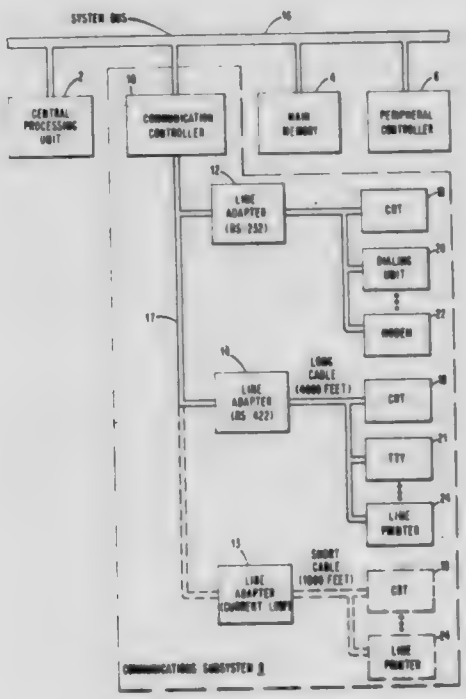
a system bus;

a main memory coupled to said system bus for storing said data bytes;

a communication multiplexer coupled to said system bus for transferring said data bytes between said main memory and a plurality of devices, each device coupled to said communication multiplexer and being enabled for operation in a receive and a transmit mode respectively in response to receive and transmit channel numbers from said communication multiplexer;

said communication multiplexer being operative in a synchronous mode with one of said plurality of devices and in an asynchronous mode with the remainder of said plurality of devices;

said communication multiplexer including polling means coupled to said system bus for first transferring each of said received channel numbers in a predetermined sequence to said system bus then transferring each of said transmit channel numbers in a predetermined sequence to said system bus, said predetermined sequence of said received channel numbers having a first priority and said predetermined sequence of said transmit channel numbers



having a second priority each of said received channel numbers and each of said transmit channel numbers being applied to said system bus for enabling the transfer of said data bytes between said main memory and each of said plurality of devices;

said communication multiplexer further including means responsive to a first received channel number when in said received mode and responsive to a second received channel number when in said transmit mode for enabling the transfer of said data bytes between said synchronous device and said main memory;

said polling means including multiplexer means coupled to said system bus for translating a transmit channel number of said synchronous device to said second received channel number.

4,405,982

ARRANGEMENT FOR MONITORING THE FUNCTION OF A PROGRAMMABLE ELECTRONIC SWITCHING CIRCUIT

Gerhard Ruhnau; Klaus Grubert, both of Hanover; Karl-Heinz Hesse, Gehrden, and Rudolf Auding, Hanover, all of Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Oct. 20, 1980, Ser. No. 198,698

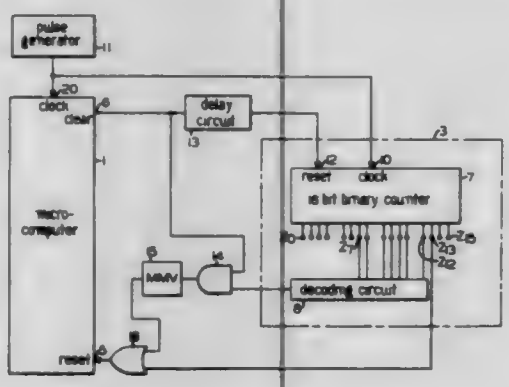
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1979, 2946081

Int. Cl.³ G06F *9/22, 9/32*

U.S. Cl. 364—200 **2 Claims**

1. An arrangement for monitoring the normal time required to execute a program comprising, a programmable electronic control circuit for processing the program and having reset and clear terminals, a monitoring switching circuit for monitoring the time of the program, circuit electronic control cir-

cuit, said monitoring switching circuit includes a decoding circuit having a plurality of inputs, a pulse generator, said monitoring switching circuit includes a binary counter having a clock input and a plurality of outputs, means connecting said clock input to said pulse generator, means connecting said plurality of binary counter outputs to said plurality of inputs of said decoding circuit, a delay circuit, means connecting said delay circuit between a reset terminal of said binary counter and said clear terminal of said programmable electronic control circuit, an AND gate, means connecting an output of said decoding circuit and said clear terminal of said programmable electronic control circuit to said AND gate, a monostable multivibrator having an input, means connecting said input of



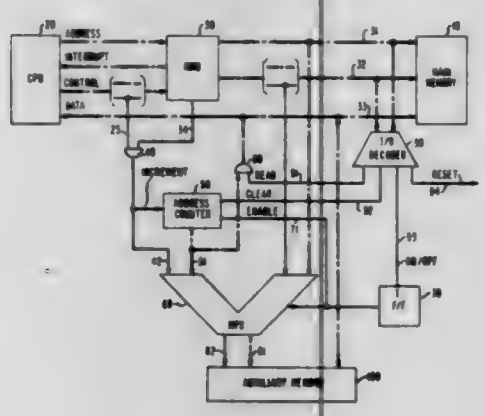
said monostable multivibrator to the output of said AND gate, a two-input OR gate, means connecting the output of the monostable multivibrator and the output of said binary counter which correspond to the maximum program period to the respective inputs of said OR gate, means connecting the output of the OR gate to said reset terminal of said programmable electronic control circuit, said programmable electronic control circuit having a clock input, and means connecting said clock input of said programmable electronic control circuit to said pulse generator for correlating a pulse count and for causing said binary counter to provide a pulse on said reset terminal of said programmable electronic control circuit when the normal time of the program is incorrect.

4,405,983

AUXILIARY MEMORY FOR MICROPROCESSOR STACK OVERFLOW

Pedro I. Perez-Mendez, Westminster, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 17, 1980, Ser. No. 217,571
Int. Cl.³ G06F *9/18*
U.S. Cl. 364—200 **7 Claims**



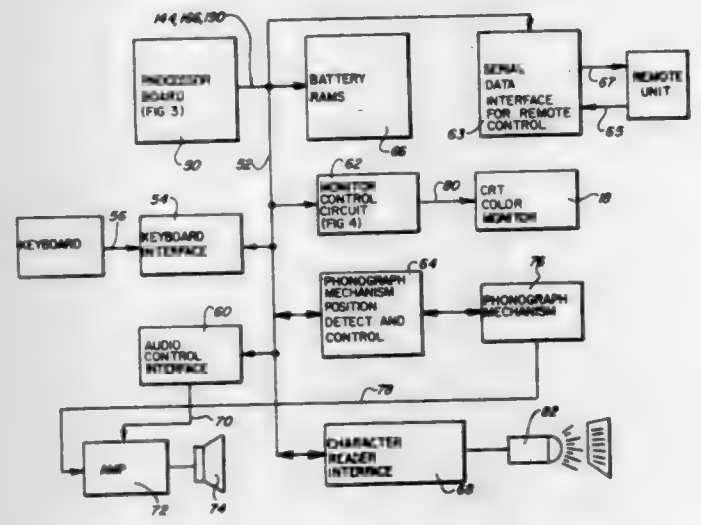
1. A computer system comprising
a central processing unit (CPU),
a main memory having protected areas of storage and unprotected areas of storage and a memory block of defined size in an unprotected area for storing CPU interrupt data,
an auxiliary memory,
means for detecting an attempt by the CPU to write data into a protected area of the main memory and for interrupting the CPU in response thereto,
means for detecting an overflow of the memory block occurring during the storing of interrupt data in the memory block, and
means responsive to the last-mentioned detecting means for writing the overflow data into the auxiliary memory.

4,405,984

COIN-OPERATED PHONOGRAPH

Lawrence Siegel, Chicago; Edward L. Polanek, Woodstock; Anthony J. Miller, Skokie, and Alan L. Woodman, Mount Prospect, all of Ill., assignors to Stern Electronics, Inc., Elk Grove Village, Ill.

Filed Feb. 2, 1981, Ser. No. 230,398
Int. Cl.³ G05D *29/00*; G07F *17/00*
U.S. Cl. 364—410 **9 Claims**



1. A coin-operated phonograph including a cabinet, coin-receiving means, means for playing selected sound recordings, means for customer selection of sound recordings to be played, a mechanism for detecting the customer's selection, for locating the sound recording and for relatively positioning the selected sound recording and playing means for playing of the selected sound recording, the improvement comprising, in combination:
(a) means for storing alphanumeric information to be displayed; said alphanumeric information being stored in digital form;
(b) means for entering the alphanumeric information into storage in said storage means;
(c) means responsive to said storage means for controlling the presentation of the alphanumeric information on electronic display means; and
(d) electronic display means for displaying the information in alphanumeric form.

4,405,985

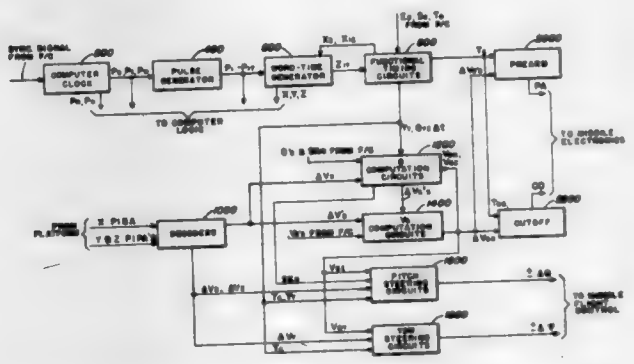
GUIDANCE COMPUTER

Eldon C. Hall, Wollaston; Harold H. Seward; Joseph D. Sabo, both of Arlington; Vincent R. De Marco, Reading, all of Mass., and Millard B. Prisant, Bayside, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 22, 1965, Ser. No. 502,689
Int. Cl.³ G06F *15/14*
U.S. Cl. 364—423 **8 Claims**

1. A digital computer comprising:
timing means for generating
bit time pulses,
word time pulses so that said computer operates on a time-shared basis of M words each N bit in length;
pulses indicative of elapsed time from a start computation signal which is applied to said means from an external source;

a plurality of special pulses for use in said computer;
a decoder network having
means for substantially continually sampling at least M varying signals;
means for simultaneously comparing the most recent sampling of said signals with the present sampling of said signals and generating at least M output signals indicative of changes in said signals;
and
means for receiving said output signals indicative of changes and the bit timing signals from said timing means signals and generating at least M signals on a time shared basis suitable for use in said computer;
first computation circuits operatively connected to said timing means, and said decoder network;
a first binary adder operatively connected to said first computation circuits;
M serial shift register, each capable of storing N bits of information, and connected in series circuit arrangement one with the other, connected in a loop with said adder, and operatively connected to said input circuit;
means for reading M words, each N bits in length, into said registers, prior to the start of computation;
means for incrementally circulating the contents of said registers to said adder circuit which up-dates certain of said M words by a constant increment each addition and others of said words by a variable increment dependent upon an input signal received from said decoder network, and for returning said up-dated words to said registers on a time-shared basis, whereby said adder operates upon said words on a time-shared, real-time basis;



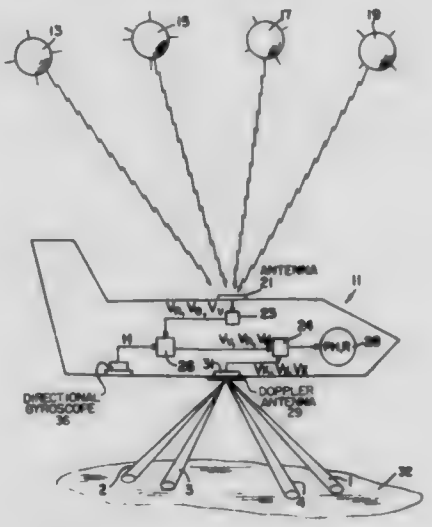
means for sensing the overflow from said adder circuit during certain of said M word times;
second computation circuits operatively connected to said timing means, decoder network and said overflow sensing means;
a second binary adder circuit operatively connected to said second computation circuits;
M serial shift registers each capable of storing N bits of information and connected in series arrangement one with the other, connected in a loop with said second adder circuit, and operatively connected to said input circuits, each of said registers having output means connected thereto;
means for reading M words, each N bit in length, into said registers prior to the start of computation;
means for incrementally circulating the contents of said registers to said adder circuit wherein said words are updated as a function of elapsed time, the outputs of said decoder network and said overflow sensing means on a time-shared, real-time basis;
third and fourth computation circuits each connected to said timing means, decoder network, first computation circuits and second computation circuits;
a full binary adder circuit connected to said third and fourth computation circuits, signals from said circuit applied as the addend to said adder;
a control register connected in a loop with said adder circuit;
means for initially reading information into said register and for incrementally shifting said information to said adder which information is the augend of said adder and shifting the sum back to said register;
means for holding a portion of the output of said adder if said sum is greater than the capacity of said register;
comparator means for substantially continually sampling the contents of said register and comparing said contents to a constant read into said means prior to flight;
means connected to said input circuit to change said constants upon receipt of a special signal from said timing circuits;
means connected to said comparator means for ;issuing command signals in response to said comparisons;
fourth and fifth computation circuits operatively connected to said timing means and said second computation circuit, which upon receipt of signals indicative of predetermined elapsed time and signals of less than a predetermined magnitude from said second computation circuits, issue output signals in response thereto.

4,405,986

GSP/DOPPLER SENSOR VELOCITY DERIVED ATTITUDE REFERENCE SYSTEM

Jack Gray, Bricktown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 17, 1981, Ser. No. 255,030
Int. Cl.³ G06F *15/50*; G06G *7/78*
U.S. Cl. 364—434 **4 Claims**



1. An attitude reference control system for a vehicle comprising:
a receiver/processor including:
an antenna for receiving ranging signals from a plurality of orbiting navigation satellites;
storage apparatus for storing signals representing ephemeris information relating to said satellites;
a correlator device providing range and range rate signals from said ranging signals and for correlating said range and range rate signals with said stored signals to provide signals representing the vehicle's velocity along the local meridian, V_n, its velocity along the local parallel of latitude, V_e, and its vertical velocity, V_v;
a directional gyroscope providing a vehicle heading reference signal, H;
a converter circuit connected to said receiver/processor and said directional gyroscope for correlating said local meridian velocity signal, V_n, and said local parallel velocity signal, V_e, with said heading reference signal, H, to provide signals representing the along-track velocity, V_h, and the cross-track velocity, V_d, of said vehicle;
axial velocity sensing apparatus for measuring and providing signal representing the vehicle's axial velocities, V_x, V_y and V_z along the roll, pitch and yaw axes, respectively;
a velocity correlator connected to said axial velocity sensing apparatus and said converter circuit for correlating said

along-track velocity and said cross-track velocity signals with said axial velocity signals to provide signals representing the instantaneous pitch and roll angles of said vehicles; and

apparatus connected to said velocity correlator for utilizing said pitch and roll angle signals for the navigation of said vehicle.

4,405,987

MEASURING PROCESSES AND APPARATUS FOR DETERMINING TARIFF VALUES FOR ENERGY CONSUMERS

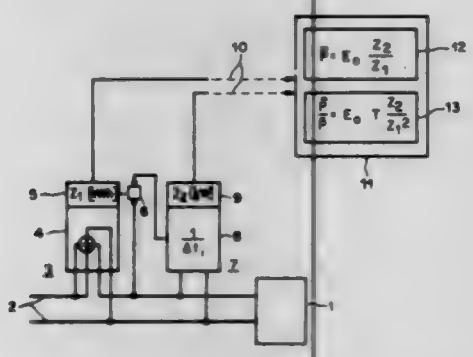
Alfred Spalti, Zug, Switzerland, assignor to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Continuation-in-part of Ser. No. 973,625, Dec. 27, 1978, abandoned. This application Jun. 12, 1980, Ser. No. 158,867

Claims priority, application Switzerland, Dec. 29, 1977, 16167/77

Int. Cl.³ G06F *15/20*

U.S. Cl. 364—483 **18 Claims**



7. A measuring apparatus for determining a tariff value for energy consumed by an energy consumer during a period of energy consumption, said tariff being dependent on the power of said energy consumed, comprising a consumption meter for measuring energy consumed during said energy consumption period, a pulse generator associated with said consumption meter for producing fixed quantity pulses each of which pulses represents the consumption of a fixed quantity of energy, a measuring and calculating means for forming measurement value each time a fixed quantity pulse is produced proportional to the reciprocal of the time intervals between said fixed quantity pulse and the immediately preceding fixed quantity pulse, a summing means for summing said measurement values during said consumption period, and an evaluation means for forming the quotient of the said summed measurement values and the measurement value for said consumption period by dividing the said summed measurement values by the said measurement value; said summing means and said consumption meter being in communication with a common evaluation means by way of communication channel, said quotient representing said tariff value for said consumption period.

4,405,988

PROCESS AND DEVICE FOR MONITORING THE FUNCTIONING OF A LIQUID-LIQUID EXTRACTION COLUMN

Michel Forster, Valence; Adrien Jaouen, Champigny; Alain Jorda, Massy, and Pierre Rampin, Valence, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 9, 1981, Ser. No. 241,472

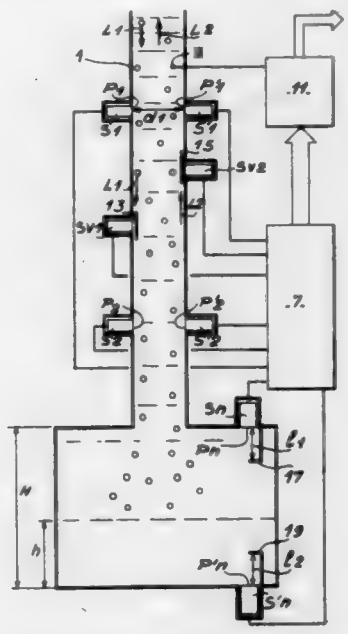
Claims priority, application France, Mar. 12, 1980, 80 05526

Int. Cl.³ G01F *1/66*

U.S. Cl. 364—502 **12 Claims**

1. Process for monitoring the functioning of a liquid-liquid extraction column in which two non-mixing liquids, constituted respectively by a heavy liquid L1 and a light liquid L2, circulate in countercurrent, said process comprising the following steps of:

determining the time t taken by an ultrasonic signal to propagate in the column from a point P to a point P' located at a distance d from point P,



determining the speeds v_1 and v_2 of propagation of this ultrasonic signal in the liquid L1 and in the liquid L2 respectively, and

calculating from this time t, the distance d and the speeds v_1 and v_2 thus determined, the voluminal fraction ϵ_1 of the liquid L1 and/or the voluminal fraction ϵ_2 of the liquid L2 from the formula:

$$\epsilon_1 = \frac{v_1}{d} \cdot \frac{v_2 t - d}{v_2 - v_1} \text{ and } \epsilon_2 = \frac{v_2}{d} \cdot \frac{v_1 t - d}{v_1 - v_2}.$$

4,405,989

SPECTRAL MONITORING DEVICE FOR BOTH PLASMA ETCHING AND SPUTTERING

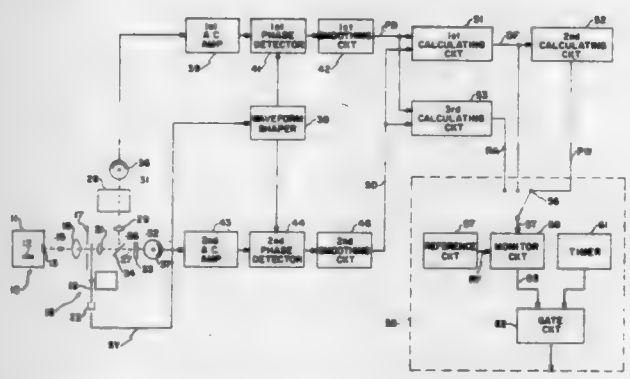
Tsutomu Tsukada, and Katsumi Ukai, both of Tokyo, Japan, assignors to Anelva Corporation, Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,368

Claims priority, application Japan, Mar. 24, 1980, 55-36256

Int. Cl.³ H01L *21/306;* H03K *5/18;* G06F *15/46*

U.S. Cl. 364—525 **7 Claims**



1. A monitoring device operated responsive to a single light beam which is produced in a chamber of a layer processing device, said chamber including a source of plasma which proceeses said layer in gradual status changes, said device monitoring the instantaneous changes in status of said layer, said gradual status changes resulting from gradual variations of thickness of said layer, said light beam including a first component in a first spectrum region and a second component in a second spectrum region which is different from said first spectrum region, said monitoring device comprising:

beam splitting merans for splitting said beam according to said first and said second spectrum regions into first and second split beams comprising said first and said second components and having first and second variable intensities, respectively;

detecting means responsive to said first and said second split beams for detecting said first and said second variable intensities to produce a first electrical signal having a first variable level which is representative of said first variable intensity and a second electrical signal having a second variable level which is representative of said second variable intensity, respectively whereby the instantaneous levels of each of said electrical signals corresponds to the then instantaneous intensities of the respective components;

first calculating means responsive to said first and said second electrical signals for calculating an instantaneous difference between said first and said second variable levels to produce a different signal having a difference level which is representative of said difference;

second calculating means responsive to said difference signal for calculating a power of said difference to produce a power signal having a power level which is representative of said power;

third calculating means responsive to said first and said second electrical signals for calculating a ratio of said first variable level to said second variable level to produce a ratio signal having a ratio level which is representative of said ratio; and processing means coupled to said first through said third calculating means and operated responsive to the level of a selected one of said difference, said power, and said ratio signals to monitor the instantaneous and gradual changes in the status of said layer.

4,405,990

APPARATUS FOR DETERMINING THE RATIO OF TWO SIGNAL REPETITION RATES

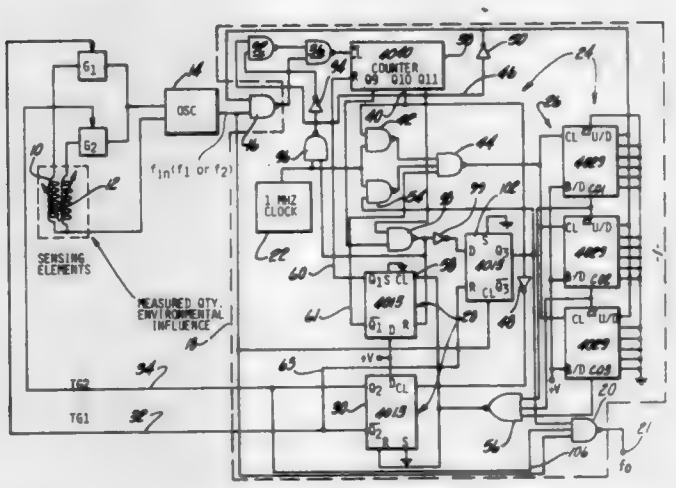
William Pickering, Cuyahoga County, Ohio, and David J. Urbanc, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00711, § 371 Date May 26, 1981, § 102(e) Date May 26, 1981, PCT Pub. No. WO82/04338, PCT Pub. Date Dec. 9, 1982

PCT Filed May 26, 1981, Ser. No. 282,999

Int. Cl.³ G06F *7/68;* G01L *19/04*

U.S. Cl. 364—703 **19 Claims**



1. Apparatus for producing an output signal (f_0) the average repetition rate of which is proportional to the ratio of two input signals having respective repetition rates f_1 and f_2 comprising:

input means (**18**) for receiving at least representative portions of the two signals f_1 and f_2;

means (**38, 70**) for generating a gating pulse which is inversely proportional in length to the repetition rate of the signal f_1;

gate means (**20, 74**) for receiving the signal f_2 and the gating pulse and outputting the signal f_2 as the output signal (f_0) for the duration of the gating pulse, said gate means (**20, 74**) being responsive to said gating pulse;

means (**102, 72**) for synchronizing the delivery of said gating pulse and the signal f_2 to said gate means; and

output means (**21**) for receiving said output signal (f_0).

4,405,991

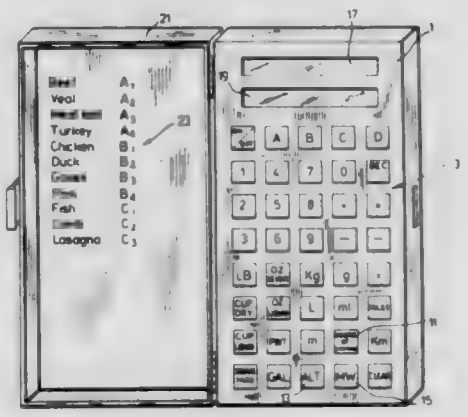
KITCHEN CALCULATOR

Robert A. Stanley, 198 Sorauren Ave., Toronto, Ontario, Canada M6R 2E9

Filed Apr. 7, 1981, Ser. No. 251,754

Int. Cl.³ G06F *15/20;* H05B *6/66*

U.S. Cl. 364—715 **10 Claims**



1. An electronic hand held calculator for automatically calculating cooking times and cooking temperatures for various quantities of different foods, said calculator having an input control system comprising a first, a second and a third group of finger operable input control members, processing means adapted to receive a first input from members in said first and second groups for designation of food type and to receive a second input from members in said second and third groups for designation of food quantity and to process said first and second inputs to provide cooking time at a cooking temperature output information for producing a desired degree of cooking and display means for receiving and displaying said first and second inputs as they are entered and for thereafter displaying such output information.

4,405,992

ARITHMETIC UNIT FOR USE IN DATA PROCESSING SYSTEMS

Jonathan S. Blau, Natick, and Josh Rosen, Westboro, both of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Apr. 23, 1981, Ser. No. 256,772

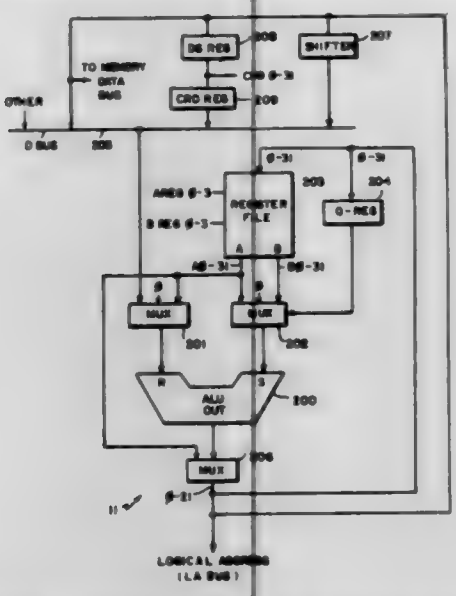
Int. Cl.³ G06F *7/52*

U.S. Cl. 364—748 **10 Claims**

1. In a data processing system having an arithmetic unit responsive to one or more instructions for performing multiplication or division operations requiring a plurality of computation cycles, each of which cycles requires the result thereof to be extended by a selected number of bits, said arithmetic unit comprising

programmable array logic means responsive to selected bits generated by said instructions and by said arithmetic unit in performing said multiplication or division operations identifying selected characteristics of the computation being performed for providing operand extension bits; and

further logic means responsive to said operand extension bits for providing said selected number of extension bits for



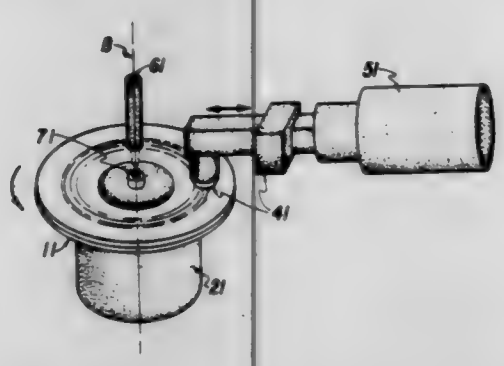
extending the computation result during the current computation cycle.

4,405,993

LIQUID CRYSTAL DISC MEMORY SYSTEM

Frederic J. Kahn; Henryk Birecki, both of Palo Alto, and Robert A. Burmeister, Jr., Saratoga, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 2, 1981, Ser. No. 221,880
Int. Cl.³ G11B *7/00, 7/24*
U.S. Cl. 365—108 **18 Claims**



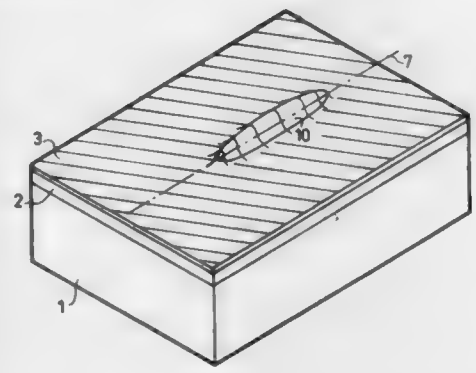
1. An information storage and retrieval device comprising:
a liquid crystal disc memory comprising:
confinement means for confining a liquid crystal medium, said confinement means configured for rotation about an axis;
a liquid crystal medium confined by said confinement means, said liquid crystal medium having localized spots therein which act as radiation scattering centers, said spots created by local heating of said liquid crystal medium and representing a desired pattern of information;
reading means for detecting radiation scattered from individual spots; and
rotating means for rotating said confinement means and said liquid crystal therein relative to said reading means, said rotation to provide high speed access to said information by said reading means.

4,405,994

THERMO-OPTIC INFORMATION WRITING PROCESS AND INFORMATION SUPPORT FOR IMPLEMENTING THIS PROCESS

Jean Cornet; Jean-Claude Lehureau, and Henriette Magna, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 21, 1981, Ser. No. 226,804
Claims priority, application France, Jan. 23, 1980, 80 01425
Int. Cl.³ G11C *13/04*
U.S. Cl. 365—126 **17 Claims**



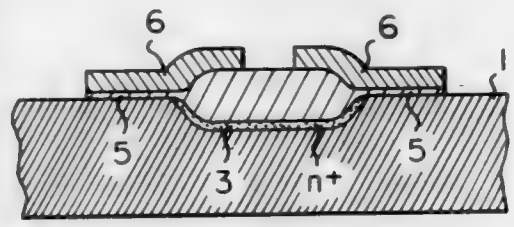
1. In a thermo-optic information writing process consisting in heating superficially in two successive writing phases by means of a focused radiation beam modulated in intensity a thermosensitive information support comprising a metal layer which covers an organic layer deposited on a substrate, the heat energy released in the metal layer by impact of the beam causes local expansion without change of state of the organic layer; this expansion creating in the metal layer stretching situated beyond the elastic limit and short of the rupture elongation of the ductile material forming said metal layer.

4,405,995

SEMICONDUCTOR MEMORY DRIVE

Kazunari Shirai, and Izumi Tanaka, both of Yokohama, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 24, 1981, Ser. No. 295,617
Claims priority, application Japan, Aug. 29, 1980, 55-119213
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—174 **10 Claims**



1. An improved semiconductor memory device formed on a substrate having a channel region, comprising:
an insulating layer formed on the channel region;
a first gate electrode, formed on the insulating layer, in an electrically floating state, at least a part of which being positioned over the channel region of the semiconductor device and being separated by the insulating layer from the channel region;
a second gate electrode, formed over the first gate electrode, comprising a control electrode, at least a part of which facing the first gate electrode and being separated by the insulating layer from the first gate electrode; and
a third gate electrode, formed over the first gate electrode, the second gate electrode and the channel region, comprising an erasing electrode, at least a part of which facing the first gate electrode and being separated by the insulating layer from the first gate electrode;
said insulating layer separating at least a part of the erasing electrode from the first gate electrode having a thickness

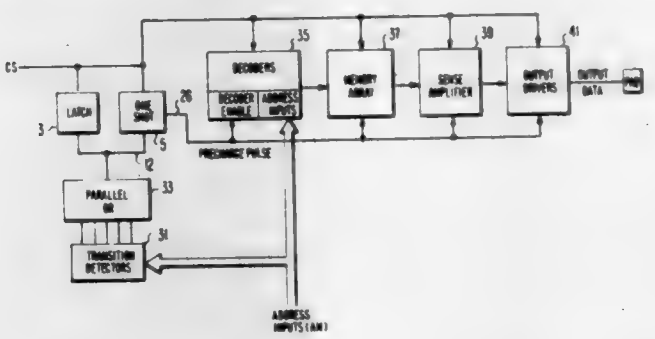
sufficient to allow passage of charges from the first gate electrode to the erasing electrode through a tunneling effect, thereby discharging the first gate electrode.

4,405,996

PRECHARGE WITH POWER CONSERVATION

Roger G. Stewart, Neshanic Station, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 6, 1981, Ser. No. 232,303
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—203 **10 Claims**



7. In a memory system in which various subsystems are precharged for proper operation and in which a precharge signal is generated when any one of certain inputs to the memory system changes state and which further includes control means for selecting or deselecting the various portions of the memory system asynchronously with respect to the occurrence of changes of said certain inputs,

the improvement comprising:

means for sensing and storing a signal manifesting the occurrence of a change of state of any one of said certain inputs when said various portions of the memory system are deselected; and

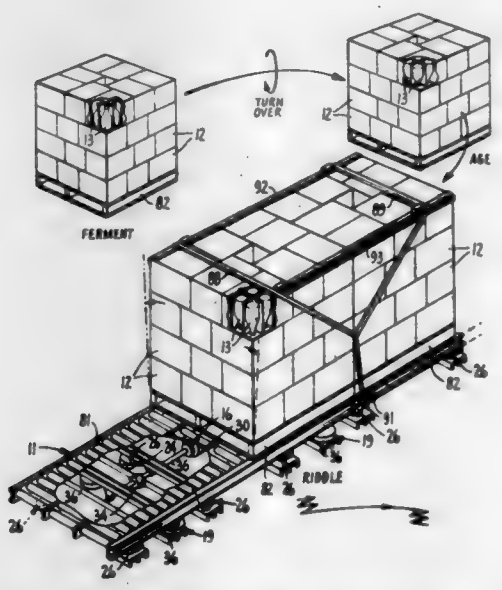
means responsive to said stored signal manifestation for subsequently producing a precharge signal when said various portions of the memory system are selected.

4,405,997

APPARATUS FOR RIDDLING BOTTLED WINES

James L. Jordan, Guerneville; James E. Huntsinger, Windsor; Dale F. Steinke, Guerneville, and David W. Williams, Bakersfield, all of Calif., assignors to F. Korbel and Bros., Guerneville, Calif.

Continuation-in-part of Ser. No. 151,129, May 19, 1980, Pat. No. 4,356,208, which is a continuation-in-part of Ser. No. 890,305, Mar. 27, 1978, Pat. No. 4,235,940. This application May 26, 1981, Ser. No. 266,833
Int. Cl.³ B01F *11/00*
U.S. Cl. 366—111 **12 Claims**



1. In an apparatus for riddling wine having a frame formed for supporting a plurality of bottles of wine in an inverted neck down position and means for repeatedly tilting the frame to a first position and vibrating it while in such first position, then tilting the frame to a second position and vibrating it while such second position, a frame support comprising

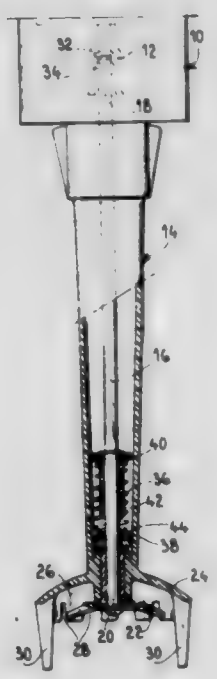
resilient support means at opposite sides of the frame formed for permitting freedom of tilting and freedom of vibration of the frame and bottles of wine carried thereon.

4,405,998

DOMESTIC MIXER

Marc P. Brison, Saint-Lo, France, assignor to Moulinex, Societe Anonyme, Bagnolet, France

Filed Oct. 12, 1982, Ser. No. 433,696
Claims priority, application France, Oct. 28, 1981, 81 20209
Int. Cl.³ B01F *7/26*
U.S. Cl. 366—264 **5 Claims**



1. A domestic mixer for use in a liquid, comprising a motor unit arranged to be held by hand, a rotatable driver fixed in the motor unit, a mixing foot extending from the motor unit, and a shaft extending within said mixing foot, one end of said shaft being coupled to the said driver, a mixing screw coupled to the other end of said shaft, and a protective cover at the free end of the foot, wherein said mixing screw is movable between a safety position, in which it is located within the cover and a mixing position in which it projects beyond the cover, elastic restoring means urging said mixing screw into its safety position, said mixing screw being arranged to move against the action of the said restoring means to its mixing position when it rotates in a liquid, this displacement resulting from the screwing effect of the mixing screw in the said liquid.

4,405,999

METHOD FOR COLLECTING AND GENERATING COMPOSITE TRACE SIGNALS WITH IMPROVED SIGNAL TO NOISE RATIOS

Robert G. Zachariadis, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,735
Int. Cl.³ G01V *1/36, 1/38*
U.S. Cl. 367—23 **9 Claims**

1. A method of improving the signal to noise ratio of collected reflection seismic traces gathered over a water covered seafloor area having irregular geophysical statics generating irregular phase shifts in the seismic traces gathered comprising the steps of:

towing a plurality of seismic sources in a first linear array and a plurality of seismic sensors in a second linear array over the seafloor area to be surveyed;

firing during said towing step one of said seismic sources at a first source location with respect to the seafloor to generate a first seismic wave;

detecting returns of said first seismic wave with a first seismic sensor located at a first sensor location with respect to the seafloor;

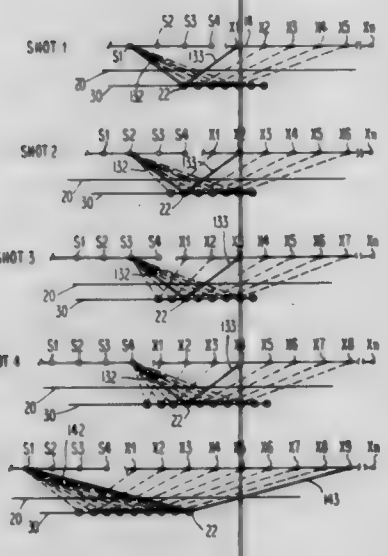
generating as a result of said detecting step a first seismic trace signal representing returns of said first seismic wave traveling to said one sensor;

firing at a later time during said towing step another of said seismic sources located at said first source location with respect to the seafloor to generate a second seismic wave;

detecting returns of said second seismic wave with a second sensor located at said first sensor location with respect to the seafloor;

generating as a result of said second detecting step a second seismic trace signal representing returns of said second seismic wave traveling to the second sensor;

repeating the firing, detecting, and generating twice with different seismic sources, each located at a second source location with respect to the seafloor during each firing step and different seismic sensors each located at a second sensor location with respect to the seafloor during each



detecting step to generate a third trace and a fourth trace having the same seismic wave propagation path between the second source location and the second sensor location, the second source location and the second sensor location each being equidistant from a midpoint location between the first seismic source location and the first seismic sensor locations whereby the four traces have the same reflection points;

stacking said first and second trace signals to produce a first composite trace having a signal to noise ratio higher than the signal to noise ratio of said first and second seismic trace signals and said third and fourth trace signals to produce a second composite trace having a signal to noise ratio higher than the signal to noise ratio of said third and fourth trace signals;

correcting said first composite trace and said second composite trace for irregular phase shifts caused by irregular geological statics between the path followed by the seismic waves generating the first composite trace and the path followed by the seismic waves generating the second composite trace; and

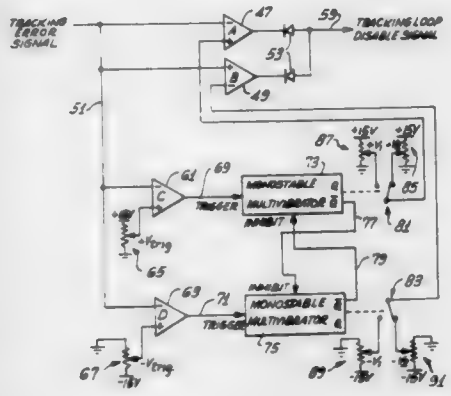
stacking together the pair of corrected composite trace signals to generate a second level composite trace signal.

4,406,000

TRACKING SYSTEM FOR OPTICAL RECORD MEDIUM

Robert M. Shoji, Gardena; John S. Chudy, and Carlyle J. Eberly, both of Long Beach, all of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Filed Mar. 31, 1981, Ser. No. 249,549
Int. Cl.³ G11B *21/10*
U.S. Cl. 369—44 **17 Claims**



1. An improvement in a tracking apparatus for aligning a scanning reading beam in a prescribed position relative to a selected recording track on a record medium, and of the type comprising:

means for determining the location of the reading beam relative to the selected track on the record medium, and for producing a corresponding tracking error signal;

beam steering means, responsive to the tracking error signal, for controllably positioning the reading beam in the prescribed position relative to the selected track;

threshold detector means for comparing the tracking error signal to a prescribed pair of thresholds and for producing a disable signal whenever either threshold is exceeded, the disable signal indicating that a record medium defect of a prescribed type is being scanned; and

means, responsive to the disable signal, for selectively uncoupling the tracking error signal from the beam steering means, whereby the reading beam is maintained in its current position relative to the record medium whenever the reading beam scans a record medium defect of the prescribed type;

said improvement comprising:

first means for monitoring the tracking error signal to detect when the reading beam scans a first type of defect in the record medium, and for producing a corresponding first control signal;

second means for monitoring the tracking error signal to detect when the reading beam scans a second type of defect in the record medium, and for producing a corresponding second control signal; and

means for selecting the pair of thresholds from two possible pairs of thresholds based on whether the first control signal is present or the second control signal is present.

4,406,001

TIME COMPRESSION/EXPANSION WITH SYNCHRONIZED INDIVIDUAL PITCH CORRECTION OF SEPARATE COMPONENTS

Michael A. Klasco, New York, and Irwin H. Kornfeld, Brooklyn, both of N.Y., assignors to The Variable Speech Control Company ("VSC"), San Francisco, Calif.

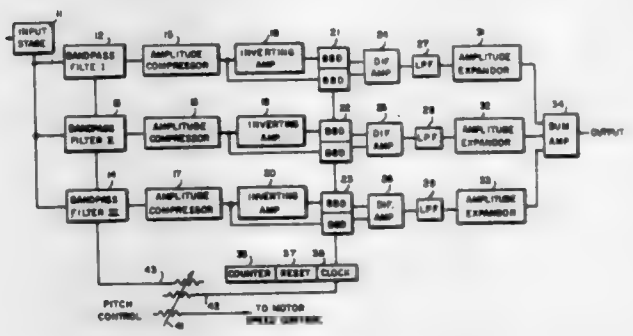
Filed Aug. 18, 1980, Ser. No. 179,180
Int. Cl.³ H04B *1/66;* G11B *31/00*
U.S. Cl. 369—88 **15 Claims**

1. In a time compression/expansion system in which the playback speed for a record is selected such that the frequencies of electric signals derived from playback of a recorded work are different than their original values and said electric signals are processed to change their frequency by periodic variable time delay the improvement comprising:

means for deriving from said record a plurality of separate electrical signal components which together represent the composite of the recorded work;

means for separately processing each of said plural signal components with period variable time delays;

means for synchronizing said periodic variable time delays for each of said components to obtain time coincidence between corresponding portions of said components after they have been delayed, and



means for combining the delayed signal components into a composite signal representation of the original work;

wherein said means for deriving said plurality of separate electrical signal components includes

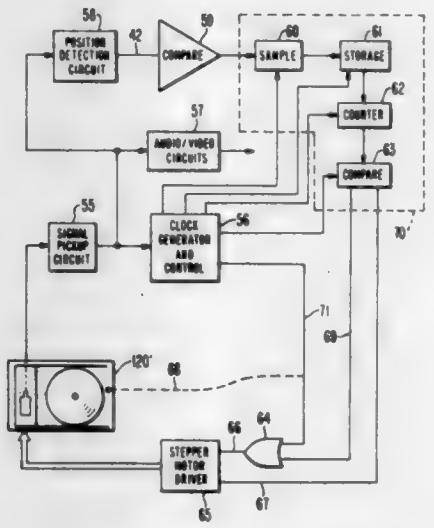
means for separating the signals derived from said record into approximately contiguous frequency bands, said bands being said signal components which are separately processed with the same periodic variable time delay.

4,406,002

SERVO SYSTEM FOR A VIDEODISC PLAYER CARRIAGE ASSEMBLY

Charles M. Wine, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 22, 1981, Ser. No. 304,349
Int. Cl.³ G11B *21/04, 17/00*
U.S. Cl. 369—220 **10 Claims**



1. A disc record player for recovering recorded signal from a rotatable disc record by means of a track following stylus housed in a carriage for translating said stylus radially across the disc record, said carriage being translated by a stepper motor coupled thereto, said player including stepper motor drive circuitry comprising:

sensor means for generating a continuous signal having a period equal to the reciprocal of the rotation rate of said disc and proportional to a relative stylus-carriage position in a direction radial to the disc record;

first means for reducing said position signal to a bilevel signal, having first and second amplitudes depending on the position signal being greater or lesser than a substantially constant reference signal respectively; and

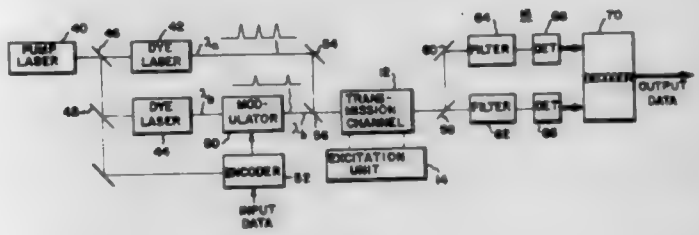
second means responsive to said bilevel signal for determining the relative duration of the first to second level amplitudes for substantially 360 degrees of signal track and generating respective stepper motor control signals for the duration of the first level amplitude being a prescribed amount greater or lesser than the duration of the second level amplitude.

4,406,003

OPTICAL TRANSMISSION SYSTEM

Joseph H. Eberly; Peter D. Drummond, both of Rochester, N.Y., and Marek J. Konopnicki, Albuquerque, N. Mex., assignors to The University of Rochester, Rochester, N.Y.

Filed Jul. 20, 1981, Ser. No. 284,868
Int. Cl.³ H04B *9/00*
U.S. Cl. 370—3 **31 Claims**



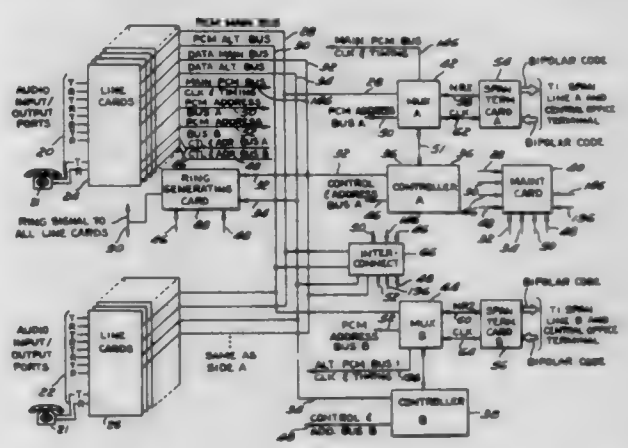
1. The method for simultaneous propagation of a plurality of electromagnetic pulses of different wavelengths which comprises the step of applying said pulses in at least partially overlapping relationship in time to a channel containing a medium having a multiplicity of energy levels, and matching the wavelength of said pulses and the transitions between successive pairs of said levels so that different ones of said pulses are in resonant and energy interactional relationship with different ones of said transitions.

4,406,004

RING SCHEDULING APPARATUS FOR A DIGITAL MULTIPLEXED TELECOMMUNICATION SYSTEM

Jay D. Hall, Westminster; Theodore M. Stump, Costa Mesa, and Charles W. Thode, Tustin, all of Calif., assignors to Anaconda-Ericsson, Inc., Greenwich, Conn.

Filed Nov. 5, 1980, Ser. No. 204,298
Int. Cl.³ H04J *3/12;* H04M *3/02;* H04Q *5/08*
U.S. Cl. 370—15 **34 Claims**



1. A telephone system ring signal scheduler, comprising:

clock means for establishing successive clock periods;

first and second telephone lines, each said line for coupling to a plurality of telephones, each said telephone responsive to a ring signal having a different characteristic;

ring signal generator means responsive to said clock means for producing a ring signal having a first characteristic during a first one of said successive clock periods, and a different second characteristic during a second one of said successive clock periods; and

a controller means for sorting telephones being called into ring signal compatible groups of less than or equal to a predetermined maximum number of lines coupled to tele-

phones responsive to a ring signal of common characteristics and for causing said ring signal generator means to generate and apply a ring signal having said common characteristics to each said group, each said group receiving its particular common ring signal during a particular clock period selected by said controller means.

21. An apparatus for generating a ring signal in a digital multiplexed telecommunication system including:

a transformer having a primary winding and a secondary winding, said transformer having a ring signal output and a D.C. input coupled to its secondary winding;

an amplifier having its output coupled to and driving the primary winding of said transformer;

a signal generator having a control word input for receiving digital data indicating the frequency of periodic waveform to be generated and having an output coupled to the input of said amplifier;

a latch means for storing control word data having a data output coupled to the control word input of the signal generator and having a polarity data output and having a data input for receiving digital data indicating frequency and polarity and an address and control input for receiving signals indicating when data is to be loaded from said data input into the latch; and

a means coupled to the polarity data output of said latch means and to the D.C. input of the secondary winding for controlling whether a positive or negative DC voltage is applied to the DC input.

4,406,005

DUAL RAIL TIME CONTROL UNIT FOR A T-S-T-DIGITAL SWITCHING SYSTEM

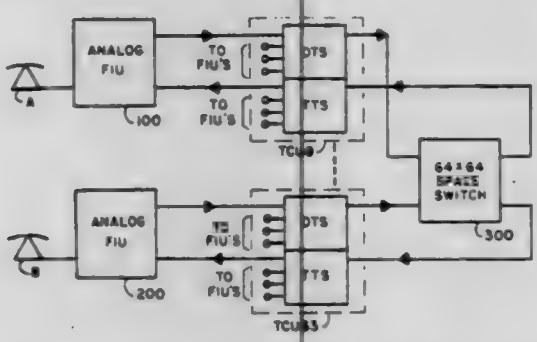
Nathaniel Simmons; Stig Magnusson, both of Phoenix; Sergio E. Puccini, Scottsdale, all of Ariz.; Donald W. McLaughlin, Naperville, and David J. Stelt, Lombard, both of Ill., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Dec. 23, 1980, Ser. No. 219,547

The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.

Int. Cl.³ H04J *3/00*

U.S. Cl. 370—63 **7 Claims**



1. In a time-space-time switching system including first and a second buses, each bus transmitting a plurality of PCM voice samples to a switching network, said buses being connected between said network and subscriber interface equipment, said switching network comprising:

first and second space switching means;

first and second terminating time switching means connected respectively to said first and second space switching means and connected to said subscriber interface equipment, each of said terminating time switching means being operated to switch said PCM voice samples to said subscriber interface equipment;

first and second originating time switching means, each of said originating time switching means being operated to switch said PCM voice samples from said subscriber interface equipment, connected respectively between said first and said second buses and said first and second space switching means and said subscriber interface equipment;

each of said originating time switching means including:

first and second memory means each connected to said first and second buses, said first and said second memory means being interconnected so that said first and said second memory means are written into simultaneously in sequential time slots with said PCM samples transmitted via said buses; and

said first and said second memory means further being operated so that said PCM samples contained on said first bus may be switched through said second space switching means to said second terminating time switching means and said PCM samples contained on said second bus may be switched through said first space switching means to said first terminating time switching means.

4,406,006

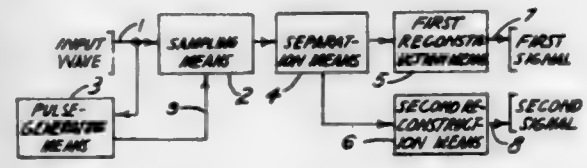
DUAL-SIGNAL A-M RECEIVING APPARATUS

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec, Canada (H3H 1T1), and Sidney T. Fisher, 53 Morrison Ave., Montreal, Quebec, Canada H3R 1K3

Filed Jun. 18, 1982, Ser. No. 389,914

Int. Cl.³ H04J *15/00*; H04H *5/00*

U.S. Cl. 370—119 **7 Claims**



1. Receiving apparatus for an input wave, comprising a first carrier, transmitted or partly suppressed, double-sideband amplitude modulated by a first signal with a first highest frequency, and a second carrier, with the same frequency as, and spaced in phase angle from, said first carrier, double-sideband amplitude modulated by a second signal with a second highest frequency, and superimposed noise in the frequency band of said first and said second modulated carriers; which comprises:

pulse-generating means, which receives said input wave and which generates a sequence of short gating pulses occurring alternately substantially at zero-crossings of said second carrier, at a frequency greater than twice the highest frequency of said first and said second signals, and at zero-crossings of said first carrier, at the same frequency, and

sampling means, consisting of a gate which receives and samples said input wave at instants of gating pulses received from said pulse-generating means, and

separation means, which receives the output of said sampling means and separates the components of said input wave, and

first reconstruction means, which receives a first output of said separation means, and reconstructs and delivers said first signal, substantially free from said second signal, and

second reconstruction means, which receives a second output of said separation means, and reconstructs and delivers said second signal, substantially free from said first signal.

4,406,007

CIRCUIT ARRANGEMENT FOR TIME DIVISION MULTIPLEX DATA TRANSMISSION WITH A BUS SYSTEM

Horst Kister, Wehrheim, and Horst Ullrich, Schöneck, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Fed. Rep. of Germany

Division of Ser. No. 35,003, May 1, 1979. This application Oct. 22, 1981, Ser. No. 313,917

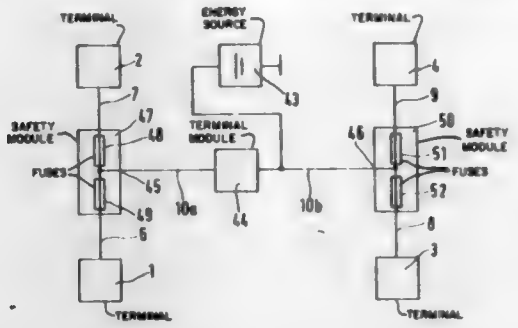
Claims priority, application Fed. Rep. of Germany, May 31, 1978, 2823708; Jul. 7, 1978, 2829839

Int. Cl.³ H04J *3/14*

U.S. Cl. 370—85 **2 Claims**

1. An arrangement for time division multiplex data transmission through a bus system which includes a bus line and a

plurality of terminals connected to the bus line in a predetermined succession and in a predetermined combination, in which each terminal establishes a data transmitting connection to the bus line and means connected in the bus system for detecting short circuits and shutting down individual sections



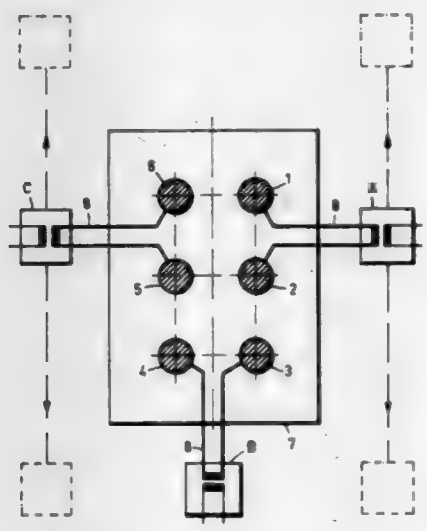
of the bus line to protect the individual sections without shutting down all sections, including safety devices respectively connecting the terminals to the individual sections of the bus line, and an energy source connected to the bus line at point of common connection to said safety devices.

4,406,008

THREE PHASE ARC MELTING AND REDUCTION FURNACE

Heribert König, Duisburg, and Heinz Stark, Essen, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed May 18, 1981, Ser. No. 264,946
Int. Cl.³ H05B *7/144, 7/18*
U.S. Cl. 373—102 **5 Claims**



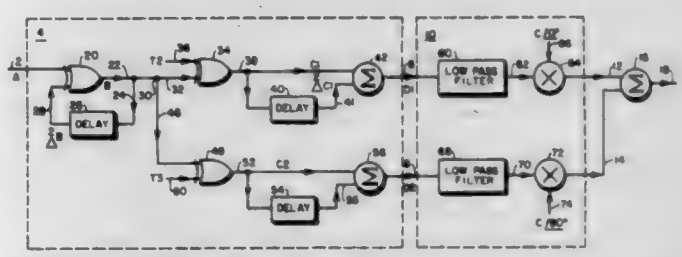
1. A three phase arc metallurgical furnace, comprising:
(a) a stationarily maintained elongated furnace vessel having a substantially rectangular floor plan and a longitudinal axis;
(b) at least six electrodes providing electrical energy, said electrodes being arranged symmetrically in at least two rows and equidistantly about said longitudinal axis of said furnace vessel;
(c) said electrodes being divided into pairs of adjacent electrodes, each such pair being electrically connected in series as a single phase circuit, each of said circuits being electrically independent of the remaining circuits;
(d) a transformer for each of said pair of electrodes to form bifilar conductor leads, said transformers being connected to said electrode pairs by high voltage conduits;
(e) said electrodes being arranged such that each two adjacent electrodes and two opposite electrodes to said adjacent electrodes are located in the corners of an imaginary square;
(f) the distance of the electrodes from the walls of said furnace and the mutual distance of the electrodes from each other are determined so that the individual process-technically active bath surfaces extending about the electrodes form a substantially continuous surface covering a maximum horizontal cross section of said vessel;
(g) said high voltage conduits being positioned symmetrically about said longitudinal axis of said vessel and;
(h) the current flow in said high voltage conduits to one of said electrodes of each pair of electrodes is opposite in direction to the current flow in said high voltage conduit to the other of said electrodes in each pair to thereby reduce the circuit's inductive reactance.

4,406,009

METHOD AND APPARATUS FOR CONVERTING BINARY INFORMATION INTO A SINGLE-SIDEBAND 3-LEVEL CORRELATIVE SIGNAL

Adam Lender, Palo Alto, Calif., assignor to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Apr. 30, 1979, Ser. No. 34,320
Int. Cl.³ H04L *25/34, 27/02*
U.S. Cl. 375—18 **28 Claims**



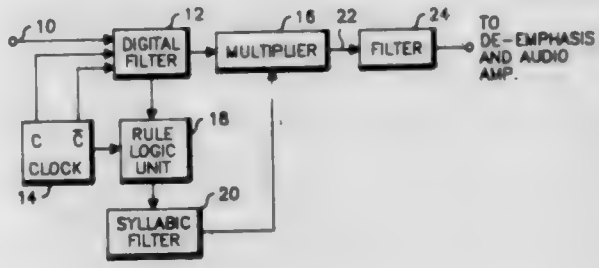
1. Apparatus for generating a single-sideband signal from a serial bit stream, which comprises:
binary means for processing said serial bit stream to obtain in-phase and quadrature-phase 2-level correlative signals;
means for digitally converting said in-phase and said quadrature-phase 2-level correlative signals, respectively, into in-phase and quadrature-phase 3-level correlative signals;
a line-frequency oscillator arranged to provide in-phase and quadrature-phase line carrier frequency components;
means for separately analog modulating the in-phase and quadrature-phase line carrier frequency components, respectively, with the in-phase and quadrature-phase 3-level signals; and
means for summing the modulation products obtained from the in-phase and quadrature-phase analog modulation processes, whereby the single-sideband signal is obtained.

4,406,010

RECEIVER FOR CVSD MODULATION WITH INTEGRAL FILTERING

David L. Weiss, Roselle; Eric F. Ziolko, Schaumburg, both of Ill., and Tim A. Williams, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 30, 1980, Ser. No. 221,189
Int. Cl.³ H03K *13/22*
U.S. Cl. 375—32 **4 Claims**



1. A CVSD receiver for producing an analog output from a CVSD bit stream comprising:
(a) a digital filter receiving a bit stream containing CVSD modulation and filtering the bit stream to produce a filtered output;

(b) a rule logic circuit connected to the digital filter and responsive to the bit stream to generate a signal on the occurence of a predetermined number of consecutive bits of the same polarity;

(c) a syllabic filter connected to the rule logic circuit to produce a voltage that varies in response to the output of the rule circuit; and

(d) means for multiplying the voltage produced by the syllabic filter by the filtered output of the digital filter to produce the analog output.

4,406,011

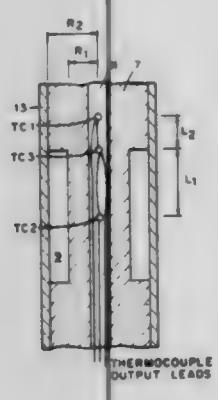
GAMMA THERMOMETER BASED REACTOR CORE LIQUID LEVEL DETECTOR

Thomas J. Burns, Knoxville, Tenn., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Jun. 16, 1981, Ser. No. 274,121

Int. Cl.³ G21C *17/00*

U.S. Cl. 376—247 **4 Claims**



1. A nuclear reactor core liquid-level detector comprising:

at least one elongated gamma heated member disposed within said reactor core and submerged in reactor core coolant during normal operation, said gamma heated member including a central bore, at least one axially extending thermal sensing region having a first portion formed by a circumferential thermal resistance zone to inhibit radial heat flow in said first portion of said thermal sensing region thereby forming a hot zone in said sensing region and a second portion axially adjacent said first portion having no means to inhibit radial heat flow thereby forming a relatively cold zone in said sensing region, and a mid zone at a transition between said first portion and said second potion and a dual differential thermocouple assembly disposed in said central bore at said sensing region having a first thermocouple junction located at said cold zone, and a second thermocouple junction located at said hot zone, and a third thermocouple junction located at said mid zone, each of said first, second and third thermocouple junctions being connected electrically in series to provide a first voltage signal (ΔV_3) between said first and third thermocouple junctions which is proportional to the difference in temperature between said hot zone and said mid zone ($T_{hot}-T_{mid}$) and a second voltage signal (ΔV_2) between said second and third thermocouple junctions which is proportional to the difference in temperature between said mid zone and said cold zone ($T_{mid}-T_{cold}$); and

a signal processing means responsive to said first and second voltage signals for generating an output signal proportional to the ratio of said first voltage signal to said second voltage signal ($\Delta V_3/\Delta V_2$) which is indicative of the presence or absence of core coolant at said sensing region.

4,406,012

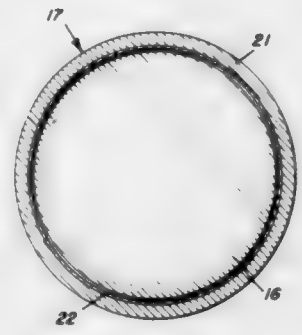
NUCLEAR FUEL ELEMENTS HAVING A COMPOSITE CLADDING

Gerald M. Gordon; Robert L. Cowan, II, both of Fremont, and John H. Davies, San Jose, all of Calif., assignors to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 95,161, Nov. 19, 1979, abandoned, which is a continuation of Ser. No. 725,824, Sep. 23, 1976, abandoned, which is a continuation of Ser. No. 522,769, Nov. 11, 1974, abandoned. This application Jan. 26, 1981, Ser. No. 228,344

Int. Cl.³ G21C *3/20*

U.S. Cl. 376—414 **6 Claims**



1. A nuclear fission fuel element comprising a composite cladding container for fissionable fuel having an inside surface rendered resistant to stress corrosion cracking and attack attributable to nuclear fission and the effects thereof, said fuel element consisting essentially of a cladding container for fissionable fuel of at least one zirconium metal selected from the group consisting of zirconium and zirconium alloys and having bonded on the inside surface thereof a protective shielding layer of copper metal of less than about one weight percent impurities providing a barrier over the inside surface of the zirconium metal shielding said inside surface from the deleterious action of fission products, said protective shielding layer being of a thickness of about 0.0001 to about 0.002 inches, said cladding container having enclosed therein a body of fissionable fuel forming a central core with a gap between said container and body of fissionable fuel.

4,406,013

MULTIPLE BIT OUTPUT DYNAMIC RANDOM-ACCESS MEMORY

Edmund A. Reese, Portland; Dieter W. Spaderna, and Stephen T. Flannagan, both of Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 1, 1980, Ser. No. 192,740

Int. Cl.³ G06F *11/00*; G06M *3/00*

U.S. Cl. 377—29 **4 Claims**

1. In a dynamic random-access memory which includes memory cells coupled to sense amplifiers by bit lines, and a digital counter for selecting cells for refreshing, an improvement in said memory for checking the operation of said counter comprising:

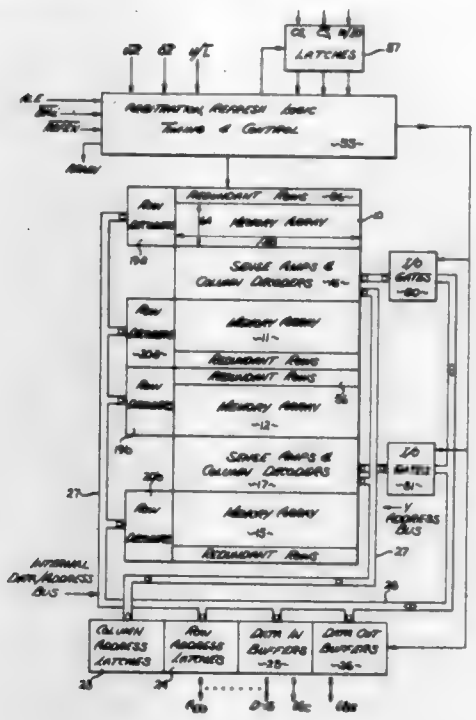
writing means for writing one binary state into said cells, said writing means coupled to said cells;

charging means for charging said bit lines, said charging means coupled to said bit lines;

selection means coupled to said counter for selecting said cells in response to signals from said counter;

disabling means coupled to said sense amplifiers, for preventing sensing by said amplifiers, such that as said cells are selected by said selection means, charge from said bit lines causes said cells to be charged to the other binary state; and,

reading means coupled to said cells for reading the contents of said cells;



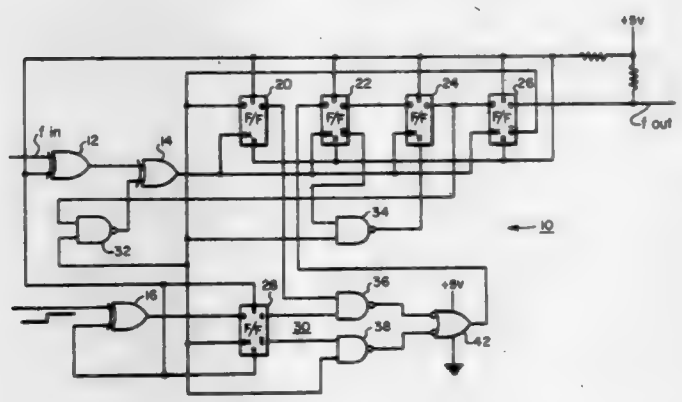
whereby if said counter is operating properly said cells will all be charged to said other binary state.

4,406,014

SWITCHED FREQUENCY DIVIDER

Joseph Doron, West Hartford, Conn., assignor to Bristol Babcock Inc., Waterbury, Conn.

Filed Apr. 3, 1981, Ser. No. 250,860
Int. Cl.³ H03K *21/36*
U.S. Cl. 377—107 **7 Claims**



1. Apparatus for dividing the frequency of a signal comprising:

an array of clocked bistable devices which are linked together so as to propagate through the array a cycle of a high signal and a low signal applied to an input to the array, said array producing at an output from the array an output signal which goes through a cycle of a high signal and a low signal at a first frequency which is less than that of a clock signal applied to said bistable devices;

first gating means for inserting at least one more clocked bistable device into the array in response to a control signal applied to said apparatus, whereby the frequency of the output signal is changed to a second frequency,

second gating means for making such an insertion only when the output signal from the array completes one of said cycles, and

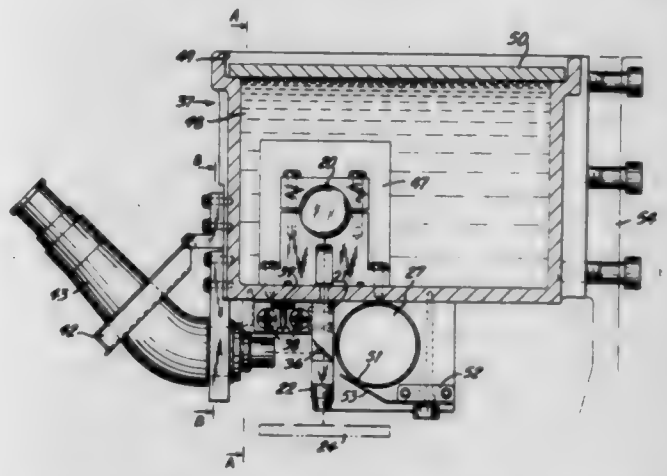
means for imparting a duty cycle of approximately 50 percent to said output signal at both said first frequency and said second frequency.

4,406,015

FLUORESCENT X-RAY FILM THICKNESS GAUGE

Toshiyuki Koga, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Apr. 28, 1981, Ser. No. 258,518
Claims priority, application Japan, Sep. 22, 1980, 55-135058
Int. Cl.³ G01N *23/20*; G21K *1/00*
U.S. Cl. 378—050 **5 Claims**



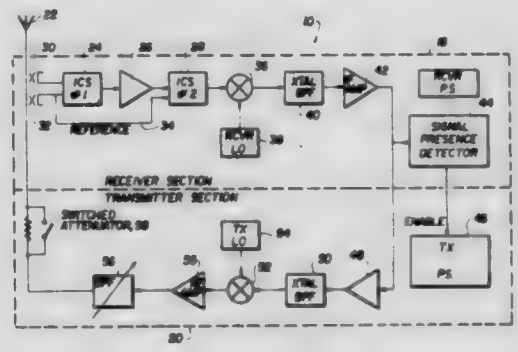
1. A fluorescent X-ray film thickness gauge comprising: an X-ray tube for irradiating an X-ray; a detector for detecting a fluorescent X-ray from a sample to which an X-ray is irradiated from the X-ray tube; a collimator for guiding the X-ray to the sample; a shutter interposed between the collimator and the X-ray tube slidably in the horizontal direction; a mirror positionable on a passing axis of the X-ray; and a viewing means for viewing a point to irradiate the X-ray on the sample; wherein an optical axis of the viewing means corresponds with the passing axis of the X-ray.

4,406,016

VHF SENSOR IN-BAND RADIO RELAY

Burton S. Abrams, and Andrew E. Zeger, both of Wyndmoor, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 27, 1981, Ser. No. 325,162
Int. Cl.³ H04B *7/14*
U.S. Cl. 455—19 **16 Claims**



1. Radio apparatus for operating as a signal repeater for the relaying of information signals from one location to another over a network, comprising:

co-located receiver and transmitter means coupled to a common antenna and being operable such that RF signals received by said receiver means are retransmitted without substantial delay from said transmitter means and wherein said receiver means includes RF input amplifier means, and further includes a first adaptive interference signal cancellation means coupled between said common antenna and said RF input amplifier means for preventing RF signals being currently retransmitted from rendering said receiver means unresponsive to concurrently received RF signals, and further including a second adaptive interference signal cancellation means coupled to the

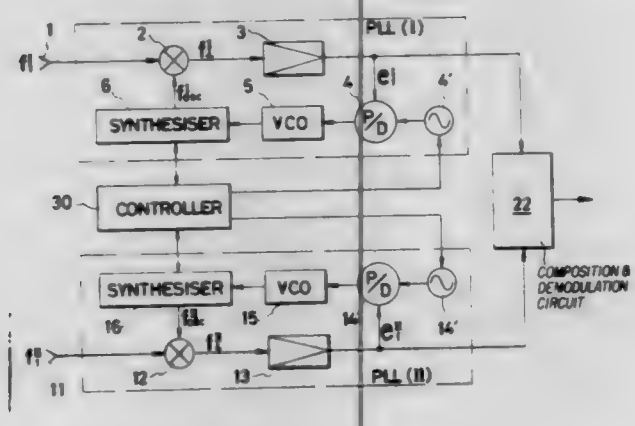
output of said RF input amplifier means to cancel any residue of interference signals not cancelled by said first adaptive interference signal cancellation means, whereby said receiver and transmitter means may be simultaneously operated without signal interference between one another thereby permitting near continuous use of both said receiver and transmitter means at a substantially 100% duty cycle.

4,406,017

METHOD FOR DIVERSITY RECEPTION AND APPARATUS THEREFOR

Kozo Takahashi, Higashi-Kurume, Japan, assignor to Radio Research Laboratories Ministry of Posts & Telecommunications, Koganei, Japan

Filed Mar. 17, 1980, Ser. No. 130,717
Claims priority, application Japan, Jun. 2, 1979, 54-68219
Int. Cl.³ H04B *7/08*
U.S. Cl. 455—137 **14 Claims**



1. A method of diversity reception, comprising the steps of transmitting one type of information signals in the form of one or more coherently interrelated signals, receiving the transmitted information signals in two or more receiving systems and locking the phases of the received information signals in phase-lock loops of the respective receiving systems by means of local oscillation frequencies produced in the phase-lock loops, thereby stabilizing the reception of said information signals, which method of diversity reception is characterized by causing the local oscillation frequency of the phase-lock loop of one of the receiving systems still locking the phase of said received information signals to be applied to the phase-lock loop of one of said receiving systems which has accidentally lost the phase-lock of the received signals, by utilizing the coherence of the separately received signals, thereby to resume the phase-lock of the received signals in said one of said receiving systems which has lost the phase lock.

4,406,018

AUTOMATIC FM TUNER

Minoru Motohashi, Kawagoe, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 7, 1981, Ser. No. 291,181
Int. Cl.³ H03J *7/24, 7/28;* H04B *1/26*
U.S. Cl. 455—164 **1 Claim**

1. An automatic FM tuner in which a broadcasting station frequency is searched by varying an output frequency of a voltage controlled oscillator in response to a voltage synthesizer having clock pulses coupled thereto, comprising:

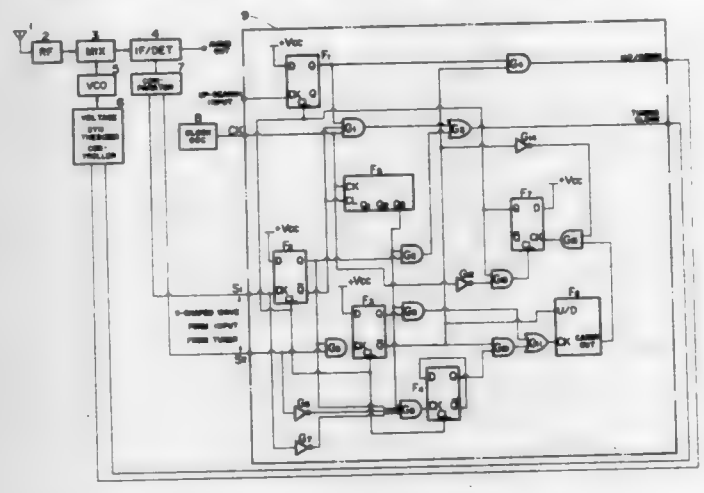
an FM detector having an S-shaped detection characteristic defining a normal tuning point within a receiving range,

a comparator connected to an output of said FM detector to sense the presence of a broadcasting station frequency within said receiving range,

means responsive to said clock pulses to decrease the frequency thereof for providing decreased frequency clock pulses,

means for counting a first number of said decreased frequency clock pulses in a predetermined direction while said broadcasting station frequency is present within said receiving range, and

means for terminating the feeding of clock pulses to said synthesizer when said counting means counts a second



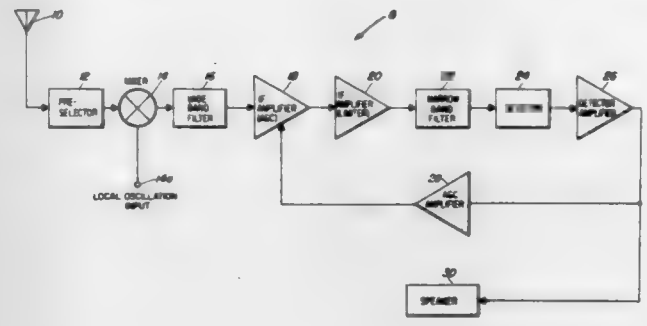
number of decreased frequency clock pulses equal to one-half of said first number of pulses while said comparator senses the broadcasting station frequency within said receiving range, and thereby terminating the variation of the output frequency of said voltage controlled oscillator.

4,406,019

SELECTIVITY MEANS IN AMPLITUDE MODULATED RADIO RECEIVERS

John D. Ide, Margate; David J. Settlemire, Pompano Beach, and Mario C. Novo, Miami, all of Fla., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 16, 1981, Ser. No. 322,107
Int. Cl.³ H04B *1/16*
U.S. Cl. 455—245 **3 Claims**



1. In a superheterodyne type receiver for amplitude modulated radio signals, said receiver including mixer and tunable local oscillator stages for converting to intermediate frequency signals appearing on a selected frequency channel from amongst a plurality of frequency channels within the receiver operating band, said receiver further including a variable gain intermediate frequency amplifier for amplifying said converted signals, a detector for said amplified intermediate frequency signals and an automatic gain control amplifier for controlling the gain of said intermediate frequency amplifier;

improved means for preventing detection of signals by said receiver whenever the frequency of such signals is within a frequency channel adjacent to the selected frequency channel of said receiver, comprising,

a relatively wide band filter to which frequency converted signals from said mixer stage are applied and from which signals are applied as inputs to said intermediate frequency amplifier, said wide band filter having an attenuation v. frequency characteristic which is substantially flat from a first frequency below the lowest intermediate frequency of said receiver to a second frequency above the highest intermediate frequency of said receiver and having a

lower skirt sloping from said first frequency toward frequencies lower than said first frequency to define increasing attenuation with decreasing frequency and having an upper skirt sloping from said second frequency toward frequencies higher than said second frequency to define increasing attenuation with increasing frequency;

a relatively narrow band filter to which signals amplified by said intermediate frequency are applied and from which signals are applied as inputs to said detector, said narrow band filter having an attenuation v. frequency characteristic which is substantially flat from the lowest intermediate frequency of said receiver to the highest intermediate frequency of said receiver and having a lower skirt sloping from said lower intermediate frequency toward frequencies lower than said lowest intermediate frequency to define increasing attenuation with decreasing frequency and having an upper skirt sloping from said highest intermediate frequency toward higher frequencies to define increasing attenuation with increasing frequency;

means for applying the output of said detector to said automatic gain control amplifier for controlling the gain of said intermediate frequency amplifier, said automatic gain control amplifier being adjusted to increase the gain of said intermediate frequency amplifier to saturation whenever an interfering signal is present at the input to said wide band filter, said interfering signal having a frequency such that said wide band filter affords less attenuation at such frequency than he attenuation afforded by said narrow band filter at such frequency.

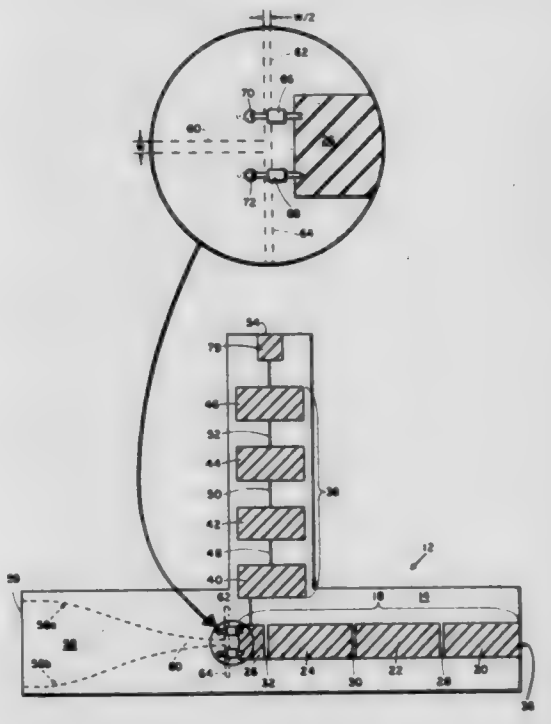
4,406,020

MILLIMETER WAVE PRINTED CIRCUIT MIXER

John Reindel, San Diego, Calif., assignor to The United States of America represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 29, 1981, Ser. No. 288,229
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—327 **11 Claims**

10. In a millimeter wave balanced mixer having a printed circuit card situated within a waveguide housing, and having a waveguide to slotline transition on said circuit card for receiving an RF signal, a section of slotline on said circuit card coupled to said slotline transition for propagating said RF signal, a microstrip filter on said printed circuit card for receiving an LO signal, an IF output port on said circuit card, first and second mixer diodes connected to said circuit card adjacent said section of slotline said diodes further operably coupled to said microstrip filter for providing an IF signal to said



IF output port in response to said RF and LO signals, the improvement comprising:

first and second slotline stubs extending from said section of slotline, each respective slotline stub being shorted at respective ends thereof; and

said first mixer diode extending over said first slotline stub and said second mixer diode extending over said second slotline stub.

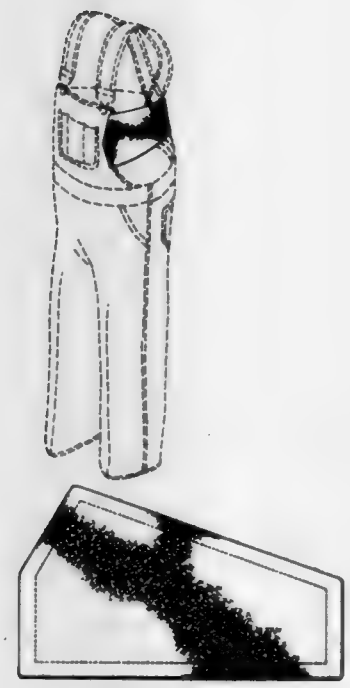
DESIGN PATENTS

GRANTED SEP. 20, 1983

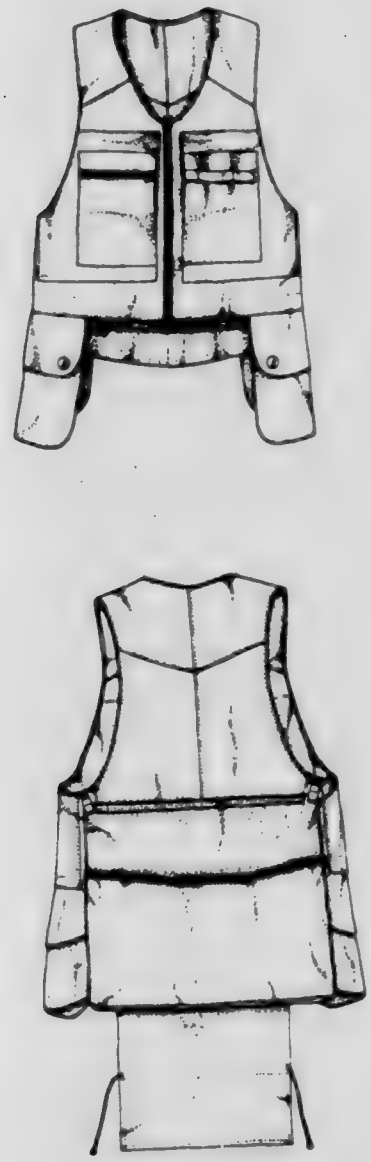
ERRATA

For CLASS	See PATENT NO.
D09–317	270,614

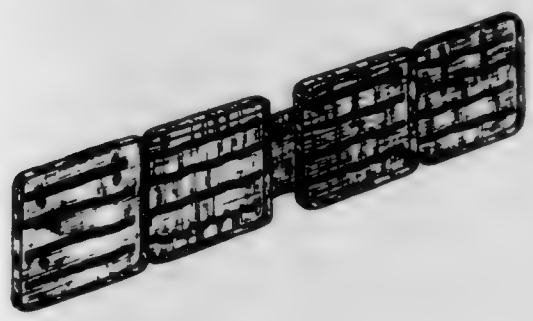
270,584
OVERALL SIDE PANELS
Joyce E. Ogden, P.O. Box 92, Austin, Colo. 81410
Filed May 4, 1981, Ser. No. 260,041
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—29



270,585
HUNTING VEST
Matti Viio, Box 563, S-191 05 Sollentuna, Sweden
Filed Jan. 5, 1981, Ser. No. 222,915
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—184



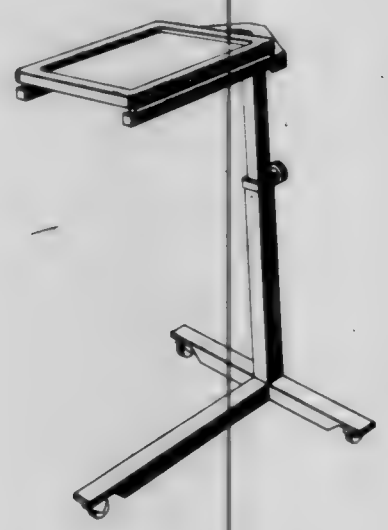
270,586
EMERGENCY PACK
William A. Tatnall, Auburn, and Malcolm L. Frost, Buena Park, both of Calif., assignors to Rescue Services, Inc., Auburn, Calif.
Filed Apr. 20, 1981, Ser. No. 255,690
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—32



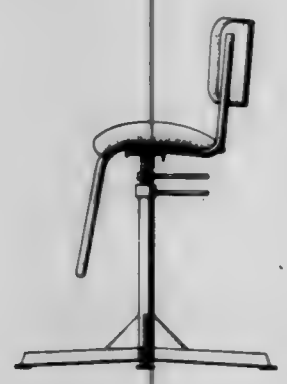
270,587
CHILD'S ROCKING HORSE
Timothy A. O'Connell, 12625 W. Atlantic Pl., Lakewood, Colo. 80228
Filed Jul. 6, 1981, Ser. No. 280,374
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—11



270,588
SURGICAL INSTRUMENT TABLE
Samuel B. Kemple, Independence, Mo., assignor to LJM Enterprises, Inc., Prairie Village, Kans.
Filed Jul. 20, 1981, Ser. No. 285,158
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—27



270,589
CHAIR
Frank E. Bird, Jr., P.O. Box 345, Loganville, Ga. 30249
Filed Mar. 16, 1981, Ser. No. 243,721
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—30



270,590
STEPSTOOL
France Berlic, Rozna dolina c.III/5, Ljubljana, Yugoslavia 61000
Filed Jun. 9, 1981, Ser. No. 271,985
Claims priority, application Yugoslavia, Apr. 7, 1981, M-122/81
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—32



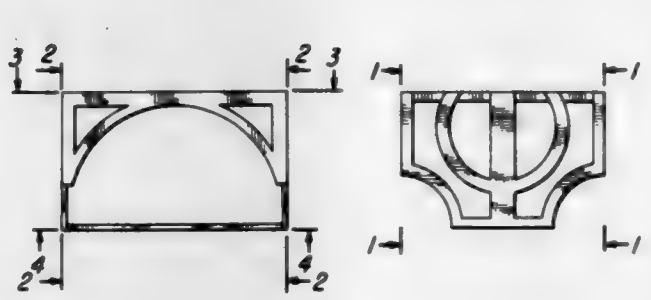
270,591
TABLE
Walter F. Harper, Jr., and Thomas W. Winecoff, both of P.O. Box 147, Eagle Springs, N.C. 27242
Filed Jul. 6, 1981, Ser. No. 280,464
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—146



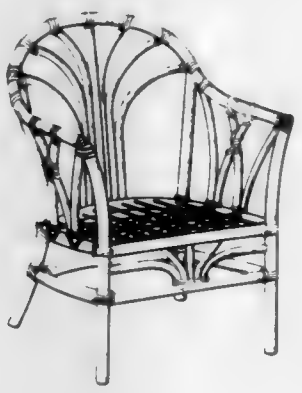
270,592
ADJUSTABLE TABLE
Virginia DuBrucq, 336 S. Washington, Denver, Colo. 80209
Filed Feb. 27, 1981, Ser. No. 238,947
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—178



270,593
COFFEE TABLE
Bruce N. Lee, 19 Columbia Ave., Trenton, N.J. 08618
Filed Jun. 22, 1981, Ser. No. 276,314
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

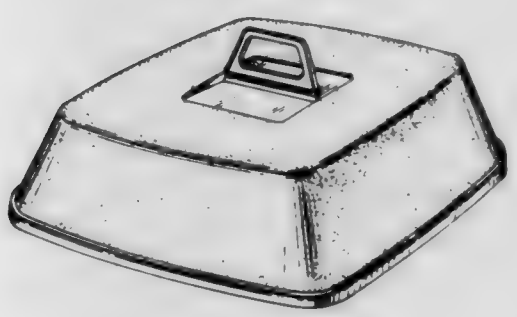


270,594
CHAIR FRAME
Mike T. Claman, New York, N.Y., assignor to Lewittes Furniture Enterprises, Inc., New York, N.Y.
Filed Mar. 27, 1981, Ser. No. 248,332
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191

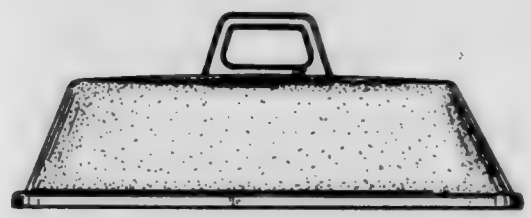


270,595
SEAT FOR USE WITH A BENCH
Victor H. Yates, Shelley, England, assignor to Sutcliffe Engineering Holdings Limited, West Yorkshire, England
Filed Mar. 2, 1981, Ser. No. 239,381
Claims priority, application United Kingdom, Sep. 11, 1980, 996529
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—197





270,596
DISH COVER LID
Abigail H. Gallagher, and Robert P. Trudeau, both of Chicago, Ill., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Apr. 20, 1981, Ser. No. 255,973
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—40



270,597

BUTTER DISH COVER OR THE LIKE

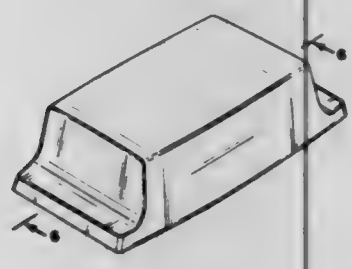
Rino Conti, Stoughton, Mass., assignor to Dart Industries, Inc., Northbrook, Ill.

Filed Jun. 18, 1981, Ser. No. 274,949

Term of patent 14 years

Int. Cl. D07—*01*

U.S. Cl. D7—40





270,598

FOOD MOLD

David W. Miller, Salem, Mass., assignor to Benjamin & Medwin, Inc., New York, N.Y.

Filed Apr. 1, 1981, Ser. No. 249,860

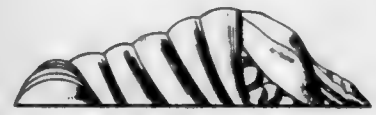
Term of patent 14 years

Int. Cl. D07—*02*

U.S. Cl. D7—43







270,599

COOKIE CUTTER

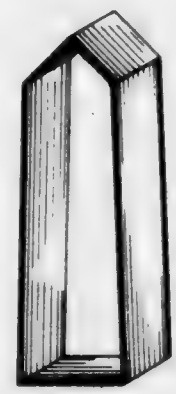
Arthur P. Gershman, 1300 Belleview Blvd., Alexandria, Va. 22307

Filed Dec. 18, 1981, Ser. No. 331,905

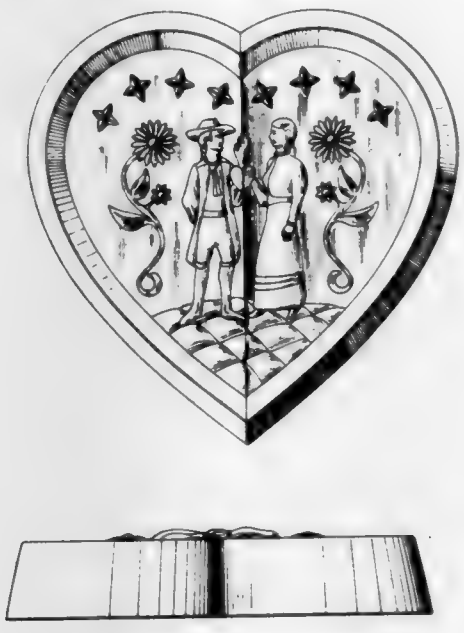
Term of patent 14 years

Int. Cl. D07—*04*

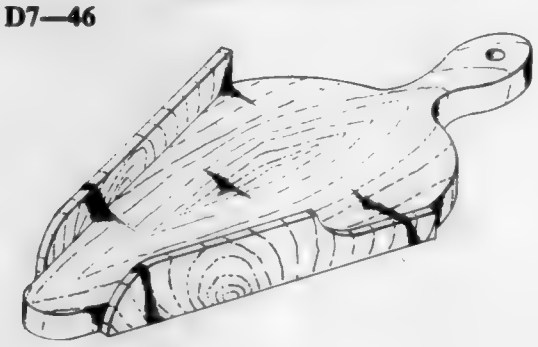
U.S. Cl. D7—43

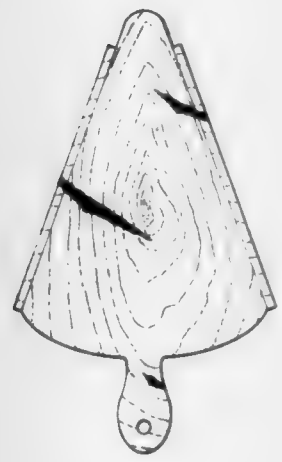


270,600
FOOD MOLD
David W. Miller, Salem, Mass., assignor to Benjamin & Medwin, Inc., New York, N.Y.
Filed Apr. 1, 1981, Ser. No. 249,859
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—44



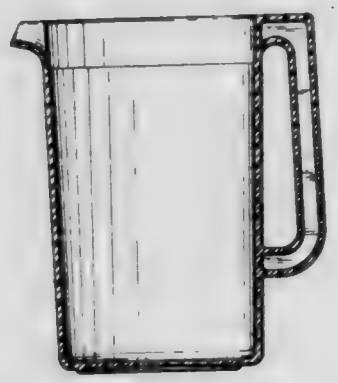
270,601
CUTTING BOARD
Edwin A. Price, 16001 E. 11th Ave., Denver, Colo. 80211
Filed Apr. 13, 1981, Ser. No. 253,788
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—46





270,602
PITCHER OR THE LIKE
Ann K. Fritz, Auburndale, Mass., assignor to Dart Industries Inc., Northbrook, Ill.
Continuation-in-part of Ser. No. 60,554, Jul. 25, 1979, abandoned. This application Jun. 12, 1981, Ser. No. 272,834
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—319



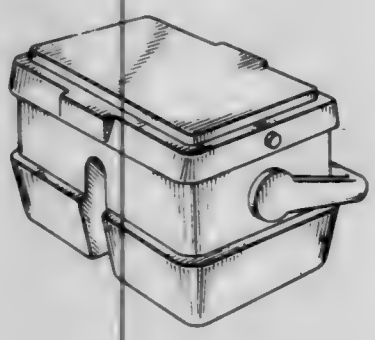




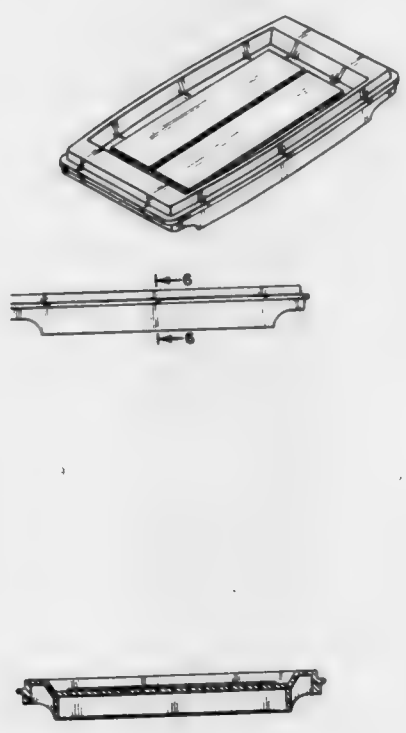
270,603
WINE BUCKET
Sheamus J. McGlade, 88 Winter St., City Island, N.Y. 10464
Filed Jul. 24, 1981, Ser. No. 286,707
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—70



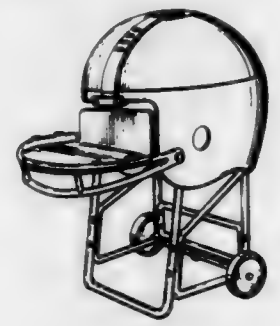
270,604
PORTABLE COOLER
Donald A. Zauft, 390 San Miguel, San Luis Obispo, Calif. 93401
Filed May 11, 1981, Ser. No. 262,341
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D7—77



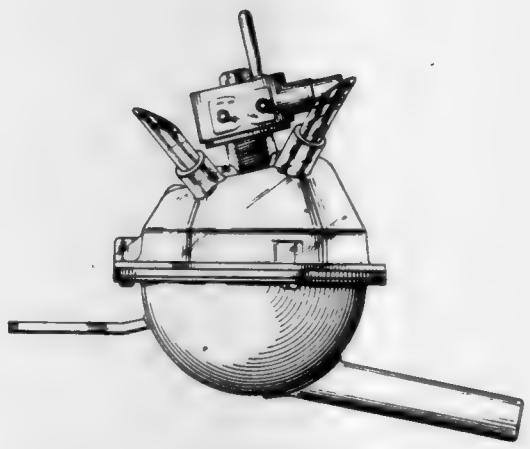
270,605
BUTTER TRAY OR THE LIKE
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Jun. 18, 1981, Ser. No. 274,948
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—84



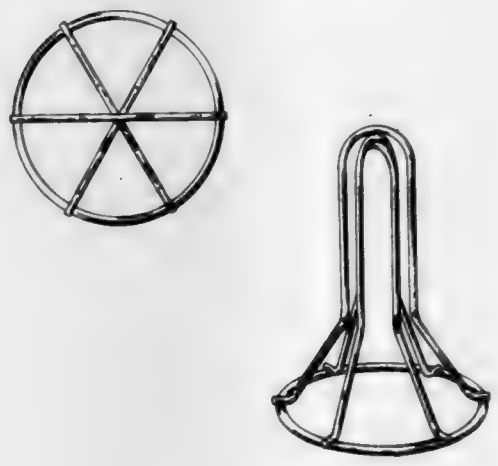
270,606
BARBEQUE GRILL
David N. McCrary, P.O. Box 734, Valdosta, Ga. 31601, and
Robert O. Binford, 1002 Elizabeth St., Seguin, Tex. 78155
Filed Feb. 12, 1982, Ser. No. 348,432
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—334



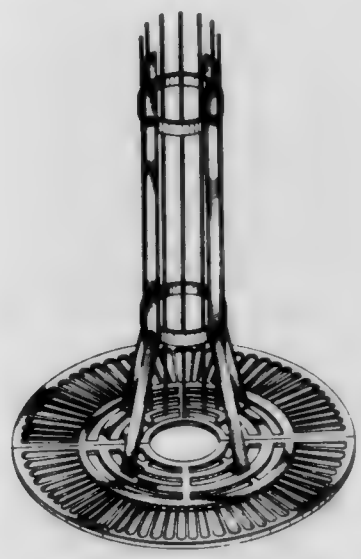
270,607
MILKER
Harold V. Swanson, Downers Grove, Ill., assignor to Babson Bros. Co., Oak Brook, Ill.
Filed Mar. 5, 1981, Ser. No. 240,997
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D7—368



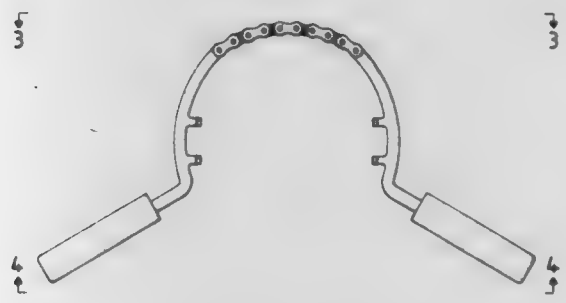
270,608
GAME HEN ROASTING RACK
George Spanek, and Denis C. Spanek, both of 855 San Mateo Dr., San Mateo, Calif. 94401
Filed Apr. 27, 1981, Ser. No. 257,964
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—409



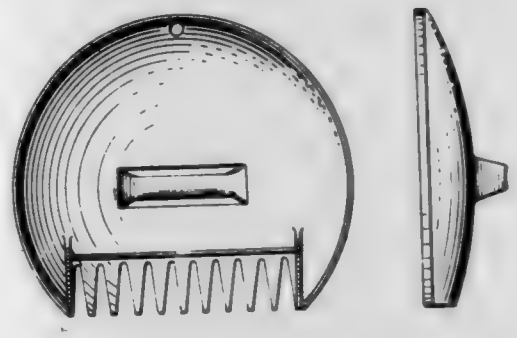
270,609
TREE GUARD
Robert E. Haggard, Everett, Wash., assignor to Merry Haggard, Snohomish, Wash.
Division of Ser. No. 158,937, Jun. 12, 1980. This application Sep. 13, 1982, Ser. No. 417,030
Term of patent 14 years
Int. Cl. D8—*99*; D31—*00*
U.S. Cl. D8—01



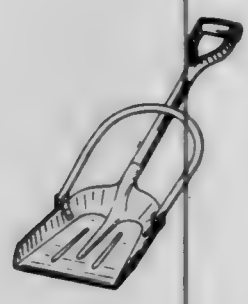
270,610
TRUNK GRIPPING CLAMP FOR TREE CLIMBING
Olis R. Kinard, Jr., Rte. 3, Box 156, Dora, Ala. 35062
Filed May 26, 1981, Ser. No. 266,915
Term of patent 14 years
Int. Cl. D8—*04*
U.S. Cl. D8—4



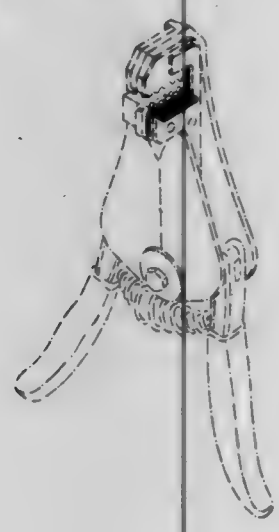
270,611
HAND SCOOP FOR GRASS AND LEAVES
Mathias M. Check, 34 Bowman Dr., Greenwich, Conn. 06830, and Elia L. Goodby, 22 Barrow Dr., East Greenwich, R.I. 02818
Filed Sep. 8, 1981, Ser. No. 299,732
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—9

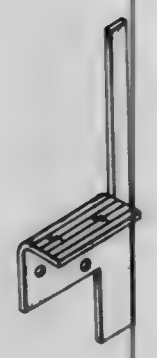


270,612
COMBINED SHOVEL AND LIFT ATTACHMENT
John W. Storlie, Box 56, Santiago, Minn. 55377
Filed Feb. 27, 1981, Ser. No. 239,023
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—10



270,613
WIRE STRIPPING MEASURING GUIDE
Paul W. Morgan, Utica, N.Y., assignor to Partlow Corporation, New Hartford, N.Y.
Filed Jan. 15, 1981, Ser. No. 225,352
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—58

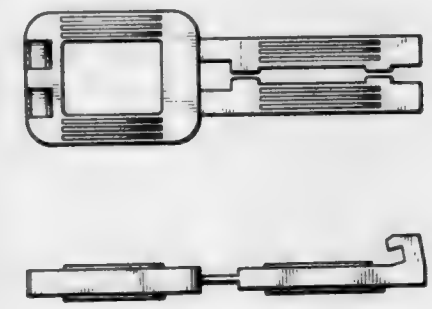




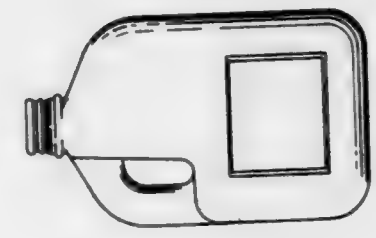
270,614
BOTTLE
Joel Desgrippes, Paris, France, assignor to L'Oreal, Paris, France
Filed Nov. 26, 1980, Ser. No. 210,784
Claims priority, application France, Jun. 2, 1980, 801742
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—317



270,615
BUCKLE FOR STRAPPING PARCEL OR THE LIKE
Bruce W. Stuart, 1911 Heliotrope Dr., Santa Ana, Calif. 92710
Filed Apr. 6, 1981, Ser. No. 251,508
Term of patent 14 years
Int. Cl. D08—*08*
U.S. Cl. D8—383



270,616
JUG
John A. Cox, Bethel Park, Pa., assignor to Liqui-Box Corporation, Worthington, Ohio
Filed Aug. 5, 1980, Ser. No. 173,381
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—378



270,617
PACKAGING CONTAINER
Roman L. Skowronski, and John M. Szekeres, both of Cuyahoga County, Ohio, assignors to Emerson Electric Co., St. Louis, Mo.
Filed Jan. 12, 1981, Ser. No. 224,615
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—415



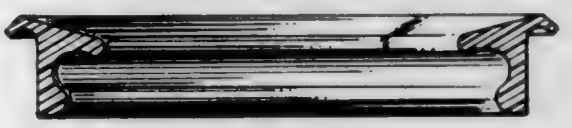
270,618
PACKAGING CONTAINER
Irving Shillman, Brooklyn, N.Y., assignor to M. & S. Shillman, Inc., Brooklyn, N.Y.
Filed Mar. 20, 1981, Ser. No. 246,052
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—415



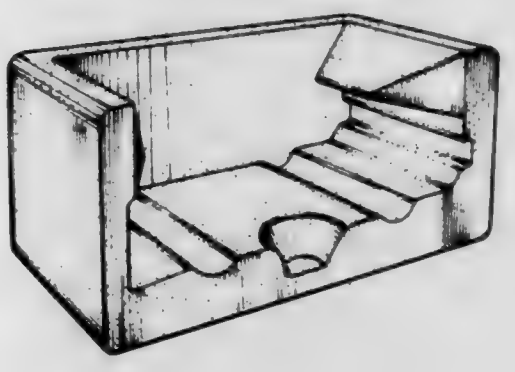
270,619
COMBINED CONTAINER AND LID
Raymond Zimmer, 14, rue du Chateau, Horbourg-Wihr, 68000 Colmar, France
Filed May 21, 1981, Ser. No. 266,126
Claims priority, application France, Dec. 18, 1980, 803903
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—424



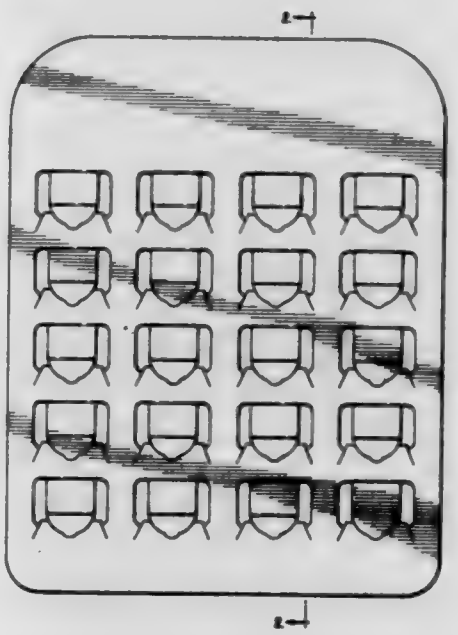
270,620
POURING ATTACHMENT FOR CONTAINERS OR THE LIKE
Phillip J. Owens, Louisville, Ky., assignor to The West Company, Phoenixville, Pa.
Filed Apr. 3, 1981, Ser. No. 250,648
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—447



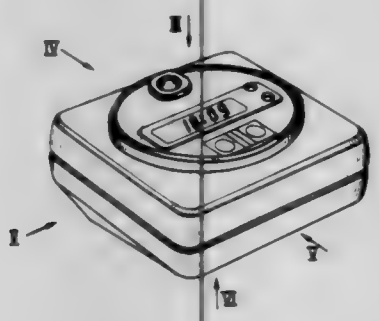
270,621
PACKAGING FORM
Ennio Sala, Milan, Italy, assignor to Polistil S.p.A., Milan, Italy
Filed May 4, 1981, Ser. No. 260,433
Claims priority, application Italy, Nov. 4, 1980, 2327180[U]
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—456



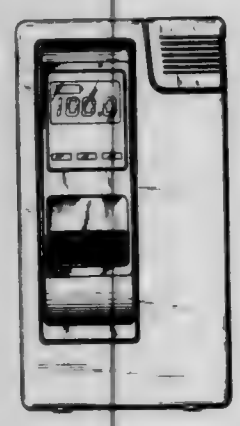
270,622
ARTICLE DISPLAY CARD
Gregory J. Hardy, 152 South Ave., Newark, N.Y. 14523
Filed May 21, 1981, Ser. No. 265,846
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—457



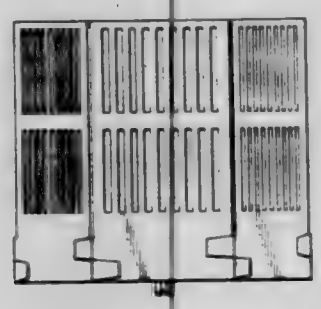
270,623
COMBINED LCD-CLOCK AND HOLDER FOR A BALL POINT PEN
Walter Henkels, Holunderweg 1, D-5142 Hückelhoven, Fed. Rep. of Germany
Filed May 22, 1981, Ser. No. 266,476
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1981, MR134
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—2



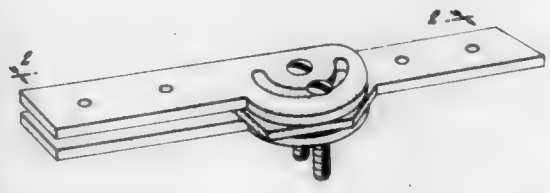
270,624
DIGITAL FEVER THERMOMETER
John T. Houlihan, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.
Filed Aug. 24, 1981, Ser. No. 295,342
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57



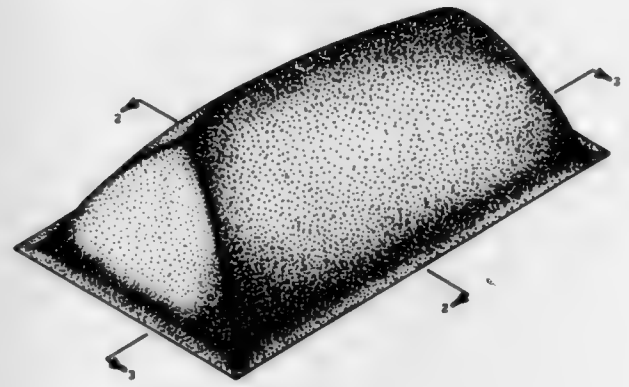
270,625
UNIPOLAR CHAMBER FOR IONIZATION SMOKE DETECTOR
Richard E. Hiltenbrand, Naperville, Ill., assignor to Pittway Corporation, Aurora, Ill.
Filed Aug. 24, 1981, Ser. No. 295,676
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—121



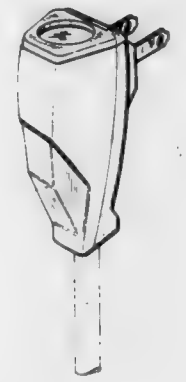
270,626
VEHICLE TOWING HITCH
Jean P. Caron, Rte. 1, Pain Ct., Ontario, Canada NOP 1ZO
Filed Nov. 21, 1980, Ser. No. 209,125
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—162



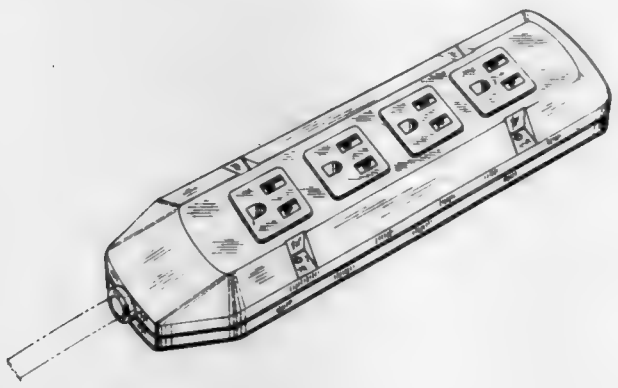
270,627
WIND DEFLECTOR FOR TRUCK TRAILERS OR THE LIKE
David R. Williams, 1822 Huntsville Rd., Birmingham, Ala. 35234
Filed Nov. 6, 1980, Ser. No. 204,463
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181



270,628
RIGHT ANGLED PLUG FOR ELECTRIC CORD
Bert Bobrovniczky, Don Mills, Canada, assignor to Noma Canada Ltd., Scarborough, Canada
Filed Mar. 25, 1981, Ser. No. 247,479
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—28



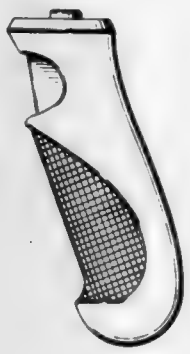
270,629
MULTIPLE OUTLET STRIP
Douglas Drew, Toronto, Canada, assignor to Noma Canada Ltd., Scarborough, Canada
Filed Apr. 13, 1981, Ser. No. 253,996
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—30



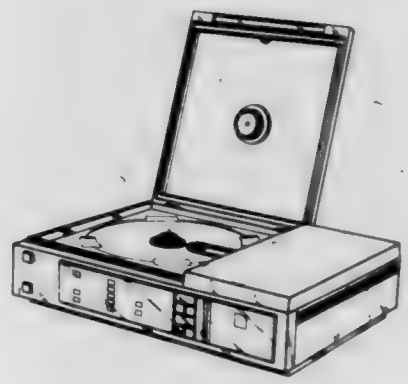
270,630
VIDEO GAME CONTROL UNIT OR THE LIKE
Jeffrey M. Moskin, 3106 Barry Ave., Los Angeles, Calif. 90066, and Keith J. Wertz, 2533 S. Deegan Dr., Santa Ana, Calif. 92704
Filed Jun. 4, 1982, Ser. No. 384,900
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—38



270,631
VIDEO GAME CONTROL GRIP OR THE LIKE
Jeffrey M. Moskin, 3106 Barry Ave., Los Angeles, Calif. 90066, and Keith J. Wertz, 2533 S. Deegan Dr., Santa Ana, Calif. 92704
Filed Jun. 4, 1982, Ser. No. 384,901
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—38



270,632
VIDEO DISC PLAYER
Hideaki Kurata; Hirokazu Hamano, and Hiroshi Shindo, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Jun. 15, 1981, Ser. No. 273,810
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—1



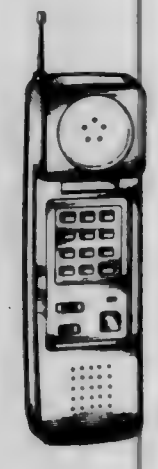
270,633
VIDEO DISC PLAYER
Hiroshi Shindo; Hideaki Kurata, and Hirokazu Hamano, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Jun. 15, 1981, Ser. No. 273,811
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—1



270,634
HEADPHONES
Leon B. Ungar, Malibu, Calif., assignor to Culver Electronic Sales, Inc., Gardena, Calif.
Filed Jun. 29, 1981, Ser. No. 278,743
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—36



270,635
CORDLESS TELEPHONE HANDSET
Richard E. Bloem, Sr., Arcadia, Calif., assignor to American Telecommunications Corporation, El Monte, Calif.
Filed Mar. 23, 1981, Ser. No. 246,403
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—64





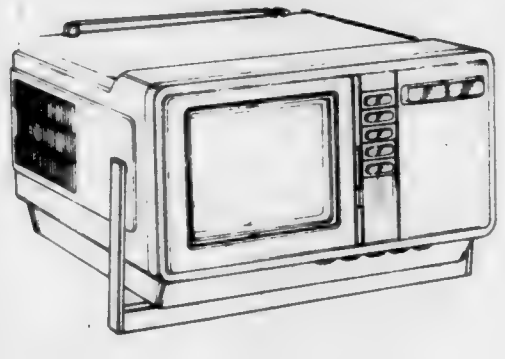
270,636
EASEL FOR ATTACHING TO A TELEPHONE TO SUPPORT A BOOK OR THE LIKE
Thomas V. Foreman, Sr., 17706 Carelia La., Spring, Tex. 77379
Filed Dec. 6, 1979, Ser. No. 97,143
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—65



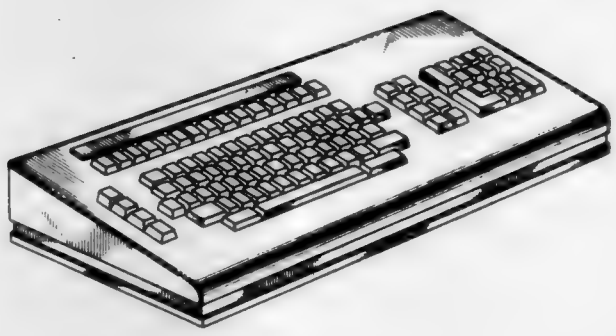
270,637
DIALING PAD
Hisao Fukushima, and Masaharu Tarao, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jul. 6, 1981, Ser. No. 280,286
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66



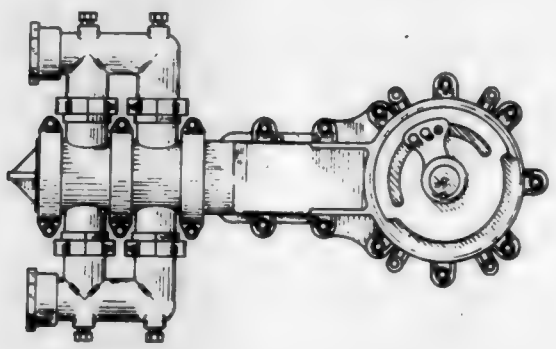
270,638
TELEVISION RECEIVER
Akira Takahashi; Yasusuke Seki, and Takeshi Abe, all of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 12, 1979, Ser. No. 47,922
Claims priority, application Japan, Dec. 12, 1978, 53-54226
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—80



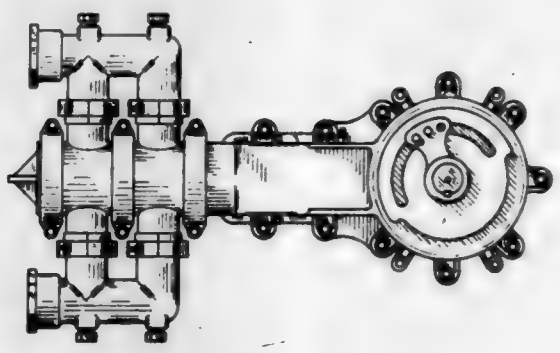
270,639
COMPUTER KEYBOARD
John W. Goodin, Long Beach, and David A. Sharbaugh, Irvine, both of Calif., assignors to USAC Electronics Industry Co., Ltd., Unokemachi, Japan
Filed May 18, 1981, Ser. No. 264,651
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—100



270,640
LIQUID MANURE PUMP
Ernest C. Hollander, Boyden, Iowa, assignor to Dethmers Manufacturing Company, Boyden, Iowa
Filed Jun. 18, 1981, Ser. No. 275,136
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7



270,641
LIQUID MANURE PUMP
Ernest C. Hollander, Boyden, Iowa, assignor to Dethmers Manufacturing Company, Boyden, Iowa
Filed Jun. 19, 1981, Ser. No. 275,358
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7

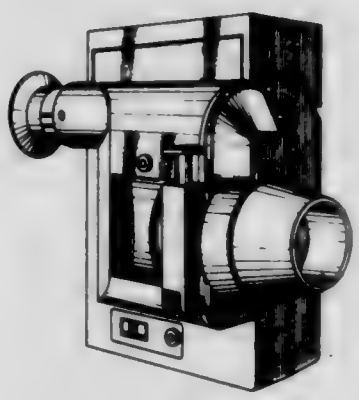


270,642
ABRASIVE BLASTING WHEEL PIN
W. David Watts, P.O. Box 48474, Atlanta, Ga. 30362
Filed Feb. 3, 1981, Ser. No. 231,246
Term of patent 14 years
Int. Cl. D15—*09*; D8—*06, 08*
U.S. Cl. D15—126

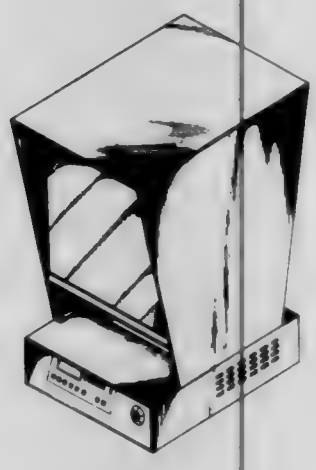




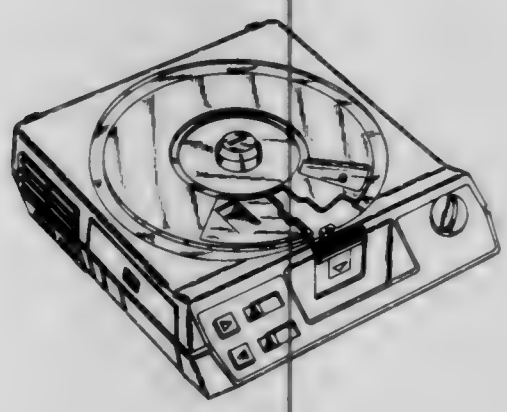
270,643
PHOTOGRAPHIC CAMERA OR SIMILAR ARTICLE
Enrique Alie, Brooklyn, N.Y.; Donald R. Bishop, Westwood, Mass., and James M. Ryan, New York, N.Y., assignors to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of Ser. No. 199,853, Oct. 23, 1980, Pat. No. Des. 268,267. This application Mar. 17, 1981, Ser. No. 244,642
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—1



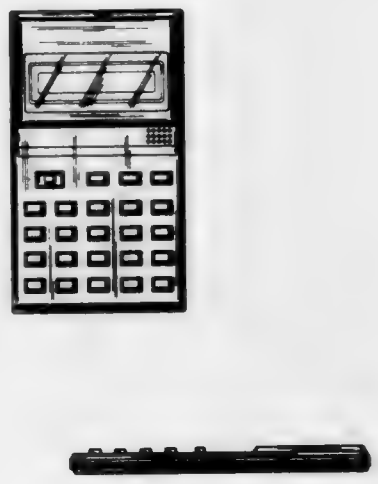
270,644
MICROFILM VIEWER
William C. Kinney, Kennesaw, Ga., assignor to Grayscale Labs, Inc., Marietta, Ga.
Filed Apr. 24, 1981, Ser. No. 257,006
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—14



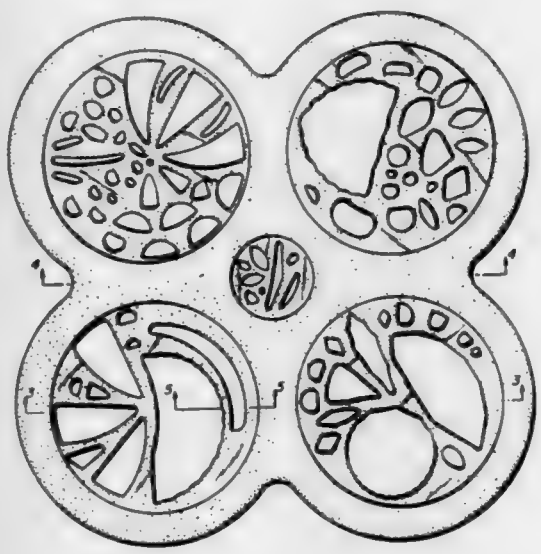
270,645
SLIDE PROJECTOR OR SIMILAR ARTICLE
Richard K. Weiss, Mansfield, Ohio, and Richard J. Olson, Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 5, 1981, Ser. No. 240,743
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D16—21



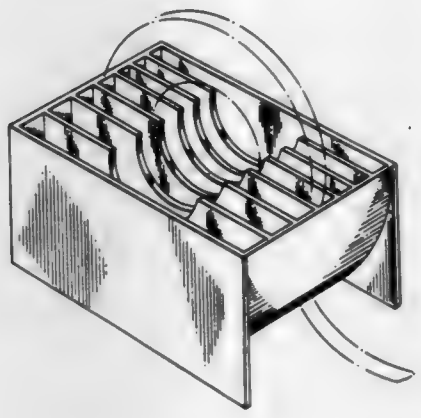
270,646
ELECTRONIC CALCULATOR
Keiji Sakata, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Jul. 10, 1981, Ser. No. 282,096
Claims priority, application Japan, Dec. 24, 1980, 55-1127
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—7



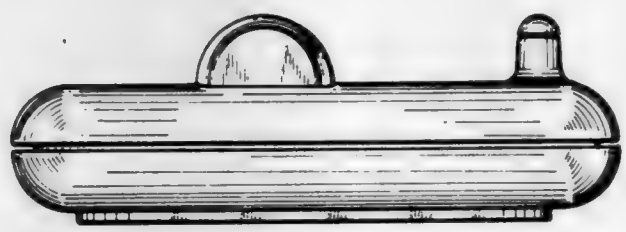
270,647
DRAWING TEMPLATE
Denys Fisher, Kirkconnel Lea, Glencaple, Dumfries, DG1 4RG, Scotland
Filed Sep. 11, 1980, Ser. No. 186,052
Claims priority, application United Kingdom, Jun. 20, 1980, 995391
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—39



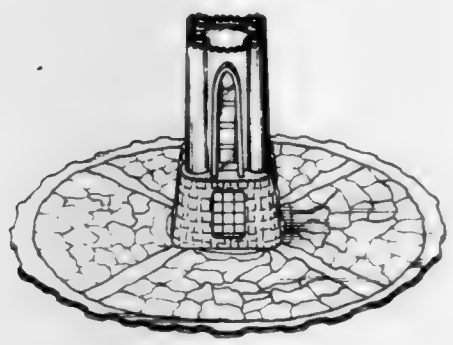
270,648
COMBINED HOLDER AND DISPENSER FOR ROLLS OF TAPE
Gene L. Mayo, 135 Dolton Ave., San Carlos, Calif. 94070
Filed Jun. 22, 1981, Ser. No. 276,090
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—67



270,649
TAPE DISPENSER
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Hawthorne, Calif.
Filed Sep. 25, 1981, Ser. No. 305,515
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—69



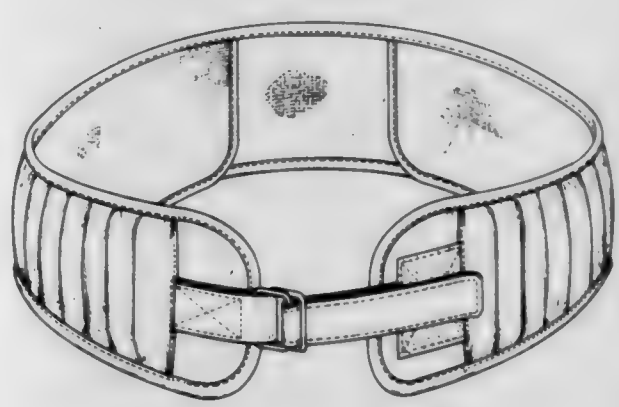
270,650
GAME BOARD
Vincent A. A. J. Erato, Hatfield, Mass., assignor to Milton Bradley International, Inc., Springfield, Mass.
Filed Mar. 19, 1981, Ser. No. 245,619
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—31



270,651
STUFFED CLOWN DOLL
Cynthia B. Wilkerson, P.O. Box 532, Crowley, La. 70526
Filed May 11, 1981, Ser. No. 262,486
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—173



270,652
EXERCISE BELT
Edith Winston, 135 Hazelwood Dr., Jericho, N.Y. 11753
Filed Jun. 15, 1981, Ser. No. 273,981
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—196



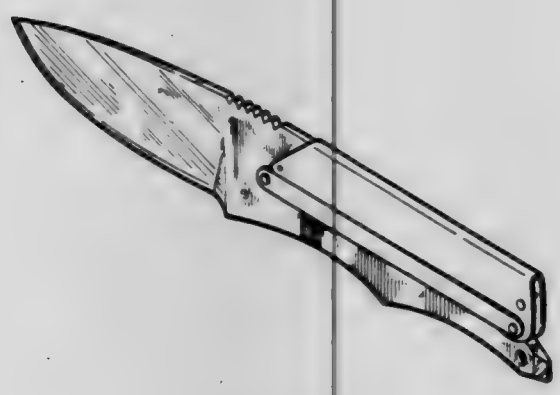
270,653
CAMEL FIGURE PLAYGROUND CLIMBER
James E. Miller, 655 Ridgedale, Birmingham, Mich. 48008
Filed Mar. 16, 1981, Ser. No. 244,148
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—245



270,654
THROWING AX
James Barrett, 333 Rauhut, St. Louis, Mo. 63125
Filed Jul. 13, 1981, Ser. No. 282,940
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—1



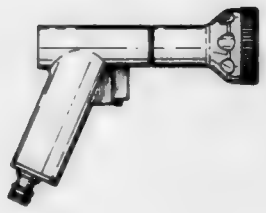
270,655
COMBINATION KNIFE AND UTILITY TOOL WITH PIVOTAL BLADE COVER
Walter W. Collins, Rock Hill, S.C., assignor to Jenkins Metal Corporation, Gastonia, N.C.
Filed Jul. 30, 1981, Ser. No. 288,911
Term of patent 14 years
Int. Cl. D8—*03*; D22—*05*
U.S. Cl. D22—1



270,656
DUCK DECOY STABILIZER FOR USE IN STORMY WEATHER
Chris Fulster, 2810 3rd Ave., Sacramento, Calif. 95818
Filed Nov. 4, 1981, Ser. No. 318,250
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—18

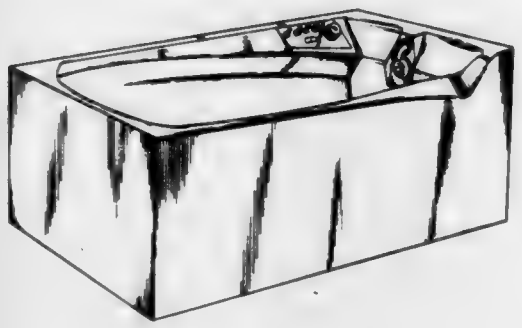


270,657
SPRAYER
Franco Clivio, and Dieter Raffler, both of Ulm, Fed. Rep. of Germany, assignors to GARDENA Kress & Kastner GmbH, Fed. Rep. of Germany
Filed Jan. 30, 1981, Ser. No. 230,148
Claims priority, application Fed. Rep. of Germany, Aug. 5, 1980, 1244/80
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—37





270,658
BATHTUB
Arthur A. Sills; John H. Kraft; Raymond T. Houle, all of Traverse City, Mich.; Stewart D. Reed, El Toro, Calif.; Michael A. Redwine, Acme, and Fredrick A. Kilborn, Suttons Bay, both of Mich., assignors to Silchor, Traverse City, Mich.
Filed Sep. 15, 1980, Ser. No. 187,337
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



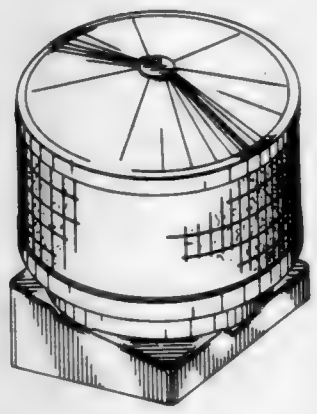
270,659
WATER SAVER FOR A TOILET FLUSH SYSTEM
John Marmon, 2597 Hinda Rd., Lake Park, Fla. 33403, and Evan Davies, 1130 SW. 6th St., Ft. Lauderdale, Fla. 33312
Filed Feb. 27, 1981, Ser. No. 238,933
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—69



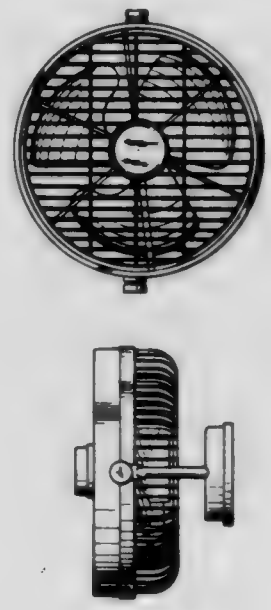
270,660
FRAME MEMBER FOR A SOLAR COLLECTOR
Sterling L. Ort, R.D. #1, Box #14, Lewisberry, Pa. 17339
Filed Mar. 24, 1981, Ser. No. 247,121
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



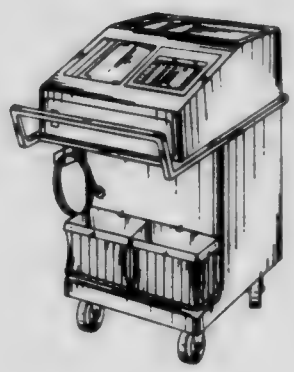
270,661
EVAPORATIVE COOLER
Julian K. Pettengill, 4243 W. Ironwood, Phoenix, Ariz. 85021
Filed Apr. 3, 1981, Ser. No. 250,832
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—139



270,662
FAN
Arthur Scotto, 619 Shore Rd., N. Palm Beach, Fla. 33408
Filed Aug. 26, 1982, Ser. No. 411,614
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155



270,663
ELECTROCARDIOGRAPH
Walter W. Wiebe, Brewster, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 951,217, Oct. 13, 1978, Pat. No. Des. 260,173. This application Mar. 10, 1981, Ser. No. 242,512
Term of patent 14 years
Int. Cl. D24—*01, 02*
U.S. Cl. D24—17



270,664

INFANT TEETHING TOY

Harold J. Greenberg, and Irma S. Greenberg, both of P.O. Box 450, Dyersburg, Tenn. 38024

Filed Mar. 2, 1981, Ser. No. 239,885
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—45

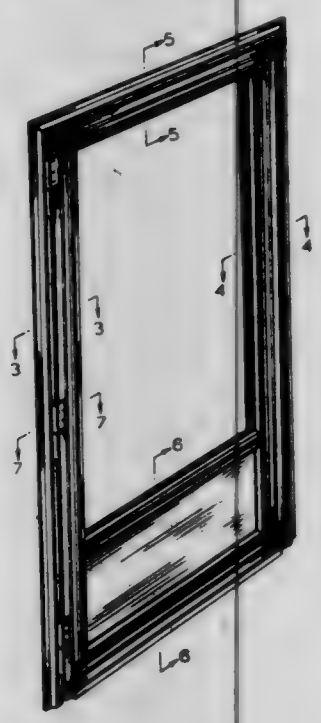


270,665

COMBINED DOOR AND FRAME STRUCTURE

Ernesto Cascone, 279 Cocksfield Ave., Downsview, Ontario, Canada M3H 3T8, and Vincent Cascone, 36 Mayvern Crescent, Richmond Hill, Ontario, Canada L4C 5J4

Filed Apr. 7, 1981, Ser. No. 251,996
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—48

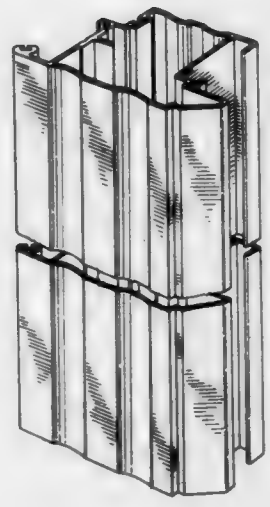


270,666

DOOR FRAME MEMBER

Ernesto Cascone, 279 Cocksfield Ave., Downsview, Ontario, Canada M3H 3T8, and Vincent Cascone, 36 Mayvern Crescent, Richmond Hill, Ontario, Canada L4C 5J4

Filed Apr. 7, 1981, Ser. No. 251,994
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

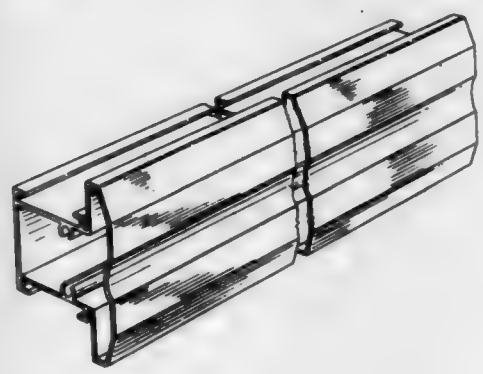


270,667

DOOR FRAME MEMBER

Ernesto Cascone, 279 Cocksfield Ave., Downsview, Ontario, Canada M3H 3T8, and Vincent Cascone, 36 Mayvern Crescent, Richmond Hill, Ontario, Canada L4C 5J4

Filed Apr. 7, 1981, Ser. No. 251,995
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—75



270,668

DECORATIVE COMPOSITE GLASS PANEL

B. Jeremiah Shaffer, Worthington, and William T. Russell, Columbus, both of Ohio, assignors to Pease Company, Fairfield, Ohio

Filed Jul. 20, 1981, Ser. No. 285,210
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—72



270,669

COSMETIC APPLICATOR WITH UNIVERSAL JOINT

Henry J. Cassai, 95-15 107 St., Ozone Park, N.Y. 11416, and
Gino H. Cassai, 924 E. 96th St., Brooklyn, N.Y. 11236

Filed Jan. 11, 1982, Ser. No. 338,717
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—7

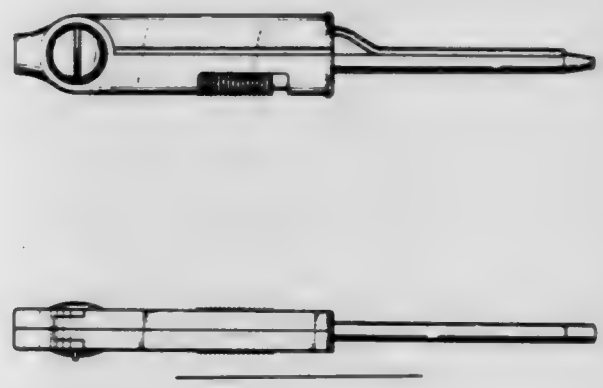


270,670

HAIR IRON

Akio Goto; Kuniharu Ichikawa, both of Kyoto, and Keiji Kuribayashi, Ueno, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jun. 14, 1982, Ser. No. 378,194
Claims priority, application Japan, Nov. 30, 1981, 56-53146
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35

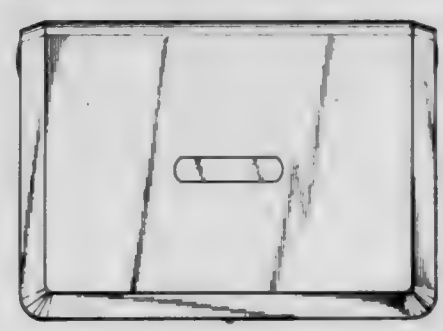


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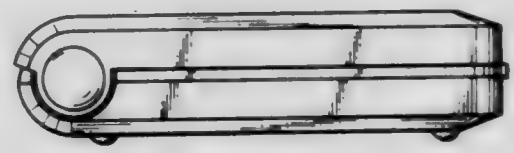
CASE FOR A HAIR ROLLER SET

Shinji Yamamoto, Osaka, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

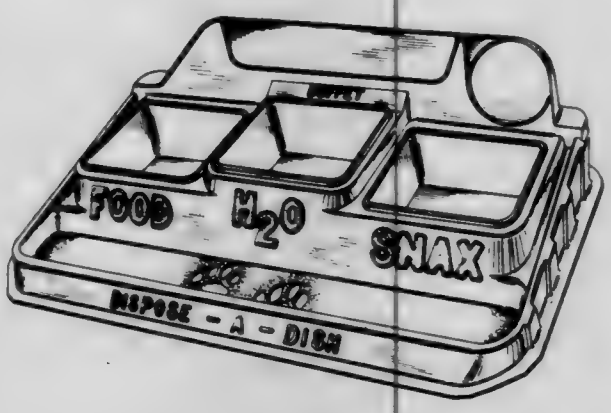
Filed Apr. 17, 1981, Ser. No. 255,181
Claims priority, application Japan, Nov. 14, 1980, 55-47815
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—38





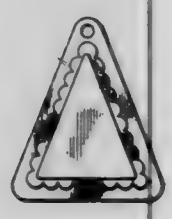


270,672
PET FOOD TRAY
Alan Zelinger, Monsey, N.Y., assignor to Ethical Products, Inc., Newark, N.J.
Filed Jul. 2, 1981, Ser. No. 279,838
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—16



270,673
ANIMAL TAG
Lois M. Erdmann, P.O. Box 1063, Minot, N. Dak. 58701
Filed Jul. 2, 1981, Ser. No. 279,773
Term of patent 14 years
Int. Cl. D30—*08*
U.S. Cl. D30—43



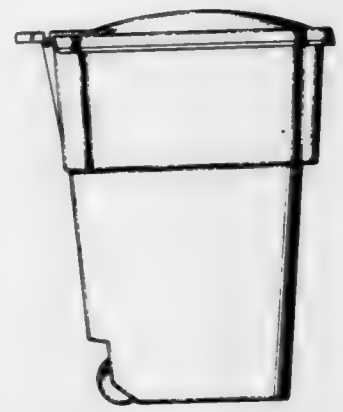


270,674
ANIMAL LEASH
Lois M. Erdmann, P.O. Box 1063, Minot, N. Dak. 58701
Filed Jul. 2, 1981, Ser. No. 279,777
Term of patent 14 years
Int. Cl. D30—*04*
U.S. Cl. D30—39

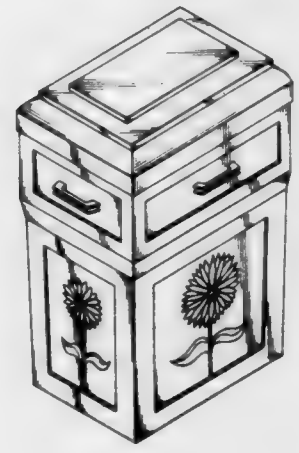




270,675
RECEPTACLE
Bruce H. Parker, Valencia, Calif., assignor to Turn-Key Container Systems, Inc., Sepulveda, Calif.
Filed Apr. 13, 1981, Ser. No. 253,225
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D34—5



270,676
GARBAGE CONTAINER
Patrick F. Pease, 618 Bent Tree, Euless, Tex. 76039
Filed Jul. 9, 1981, Ser. No. 281,909
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D34—7



270,677
WASTE RECEPTACLE
E. J. Creske, Wausau Tile, P.O. Box 1520, Wausau, Wis. 54401
Filed Oct. 23, 1981, Ser. No. 314,404
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D34—8

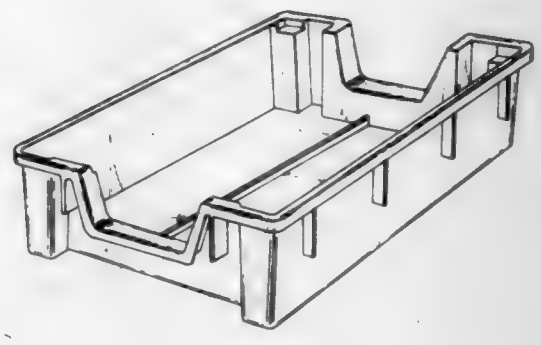


270,678

CARRYING TRAY

Eric D. Stein, Cincinnati, Ohio, assignor to Nestier Corporation, Cincinnati, Ohio

Filed Mar. 26, 1981, Ser. No. 247,912
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D34—40



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TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF SEPTEMBER, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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AB Carl Munters: *See—*
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Ab Volvo: *See—*
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Albrecht, Gunter; Sickinger, Albert; and Schmuhl, Hans-Jurgen, to MTU Motoren-Und-Turbinen-Union Munchen GmbH. Casing for a thermal turbomachine having a heat-insulating liner. 4,405,284, Cl. 415-174.000.

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Lippmann, Wilbur, 4,405,625, Cl. 424-258.000.
B. F. Goodrich Company, The: *See*—
Antlfinger, George J.; and Shah, Pravinchandra K., 4,405,325, Cl. 604-370.000.
Gibson, Richard J.; and Fogel, Joseph, 4,405,375, Cl. 106-277.000.
Jablonski, Dane E., 4,405,758, Cl. 525-329.800.
Murphy, Walter T.; and Guiley, Clifford D., Jr., 4,405,817, Cl. 568-701.000.
Bacal, Kazimierz; Wierusz, Lech; and Kossek, Stanislaw, to Wyzsza Szkola Inzynierska Im. Jurija Gagarina. Surgical strut for treatment of the back-bone. 4,404,967, Cl. 128-69.000.
Backus, John K.: *See*—
Bernard, David L.; Backus, John K.; and Doheny, Anthony J., Jr., 4,405,725, Cl. 521-112.000.
Bader, Henry; and Chiang, Yunn H., to Polaroid Corporation. Method for preparing salts of 6-chloropurine. 4,405,781, Cl. 544-264.000.
Badger, Stephen L., to Wansley, Tandy. Fuel composition. 4,405,336, Cl. 44-56.000.
Baglioni, Alessandro: *See*—
Sportoletti, Giancarlo; and Baglioni, Alessandro, 4,405,643, Cl. 424-311.000.
Bahiman, Hossein. Unidirectional flexural pivot. 4,405,184, Cl. 308-2.00A.
Bahr, Theodor; Heinrich, Hans-Otto; and Thumm, Helmut, to J. M. Voith GmbH. Apparatus for the production of mechanical wood pulp. 4,405,091, Cl. 241-33.000.
Baier, Alfred; Lucht, Alfred; Munch, Gerhard; and Pfeuffer, Alfred, to Messer Griesheim GmbH. Scarfing burner arrangement. 4,405,382, Cl. 148-9.00R.
Bailey, Thomas D.: *See*—
McGill, Charles K.; and Bailey, Thomas D., 4,405,790, Cl. 546-304.000.
Baji, Toru; Koike, Norio; Tsukada, Toshihisa; Takemoto, Iwao; Yamamoto, Hideaki; and Takasaki, Yukio, to Hitachi, Ltd. Solid-state imaging device. 4,405,935, Cl. 357-31.000.
Baker International Corporation: *See*—
Allen, Richard G.; and Glaser, Mark C., 4,405,017, Cl. 166-382.000.
Baker Perkins Holdings Limited: *See*—
Hazelwood, Geoffrey, 4,404,787, Cl. 53-502.000.
Balasubramanyam, Karanam; and Ruoff, Arthur L., to Cornell Research Foundation, Inc. Ion beam exposure of (g-Ge_x-Se_{1-x}) inorganic resists. 4,405,710, Cl. 430-311.000.
Baldwin, Gary L.: *See*—
Hornak, Thomas; and Baldwin, Gary L., 4,405,916, Cl. 340-347.0DA.
Baldwin, Roger A.; Stauter, John C.; and Terrell, Donald L., to Kerr-McGee Nuclear Corporation. Process for the removal of selenium from aqueous systems. 4,405,464, Cl. 210-717.000.
Ball, Douglas C.; Stumpf, William S.; and Ludwig, Gary R., to Hauserman Ltd. Hanging components for space divider system. 4,404,776, Cl. 52-29.000.
Ball, Lawrence E.: *See*—
Wu, Mu-Yen M.; and Ball, Lawrence E., 4,405,777, Cl. 528-323.000.
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BancOhio National Bank: *See*—
Roman, Walter C., 4,405,451, Cl. 209-136.000.
Banks, Edward L.; Truax, Bruce E.; and Watkins, Laurence S., to Western Electric Co. Methods of fabricating a photomask. 4,405,701, Cl. 430-5.000.
Barba, Robert L., to Sterling Drug, Inc. Unit package for poultry vaccination. 4,405,047, Cl. 206-570.000.
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Young, Chung I.; and Barber, Loren L., Jr., 4,405,497, Cl. 252-431.00R.
Barber, William R., Jr.: *See*—
Hahn, Frecerick C.; Barber, William R., Jr.; and Hampel, David A., 4,404,760, Cl. 37-142.00R.
Barclay, John L.; Hargrove, John D.; and Prince, Richard J., to British Petroleum Company Limited, The. Production of zeolite agglomerates. 4,405,503, Cl. 252-455.00Z.
Barnard, John; and Bloombaum, Barry D., to Imperial Chemical Industries PLC. Process for providing color contrast on surface of moulded article. 4,405,551, Cl. 264-245.000.
Barnhoorn, Adrianus J. M.: *See*—
Raudenbusch, Werner T.; Barnhoorn, Adrianus J. M.; Kooijmans, Petrus G.; Sederel, Willem L.; Van Steenis, Adrianus M. C.; and Schets, Theresia F. M., 4,405,662, Cl. 427-386.000.
Baron, Klaus U.: *See*—
Hoffmann, Hartmut; and Baron, Klaus U., 4,405,200, Cl. 350-96.210.
Barr, Robert A.: *See*—
Chung, Chan I.; and Barr, Robert A., 4,405,239, Cl. 366-89.000.
Barr & Stroud Limited: *See*—
McAlpine, Frederick W., 4,404,890, Cl. 89-41.00E.
Bartha, Laszlo: *See*—
Vadasdi, Karoly; Bartha, Laszlo; Millner, Tivadar; Tekula, Endre; and Kiss, Andras, 4,405,571, Cl. 423-53.000.
Barthold, Klaus: *See*—
Oppenlaender, Knut; Schwartz, Erich; Barthold, Klaus; and Slotman, Wilhelmus, 4,405,494, Cl. 252-392.000.
BASF Aktiengesellschaft: *See*—
Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Kermer, Wolf-Dieter, 4,405,330, Cl. 8-639.000.
Demmler, Kurt; and Ochs, Wolfram, 4,405,765, Cl. 525-506.000.
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Oppenlaender, Knut; Schwartz, Erich; Barthold, Klaus; and Slotman, Wilhelmus, 4,405,494, Cl. 252-392.000.
Schirmer, Ulrich; Rohr, Wolfgang; and Wuerzer, Bruno, 4,405,358, Cl. 71-98.000.
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Raman, Ramaswamy V.; and Maringer, Robert E., 4,405,535, Cl. 264-11.000.
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Zinn, Michael; Bauch, Tamil D.; and Schiff, Morton, 4,404,962, Cl. 126-450.000.
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Harnden, Robert M.; and Baugh, Daniel W., Jr., 4,405,794, Cl. 548-229.000.
Baugh, Wesley A.: *See*—
Yang, Ling; Medico, Russell R.; and Baugh, Wesley A., 4,405,595, Cl. 423-600.000.
Bauman, William C.: *See*—
Lee, John M.; and Bauman, William C., 4,405,574, Cl. 423-157.000.
Lee, John M.; and Bauman, William C., 4,405,576, Cl. 423-181.000.
Baur, Guenter; Greubel, Waldemar; Krueger, Hans; and Schauer, Alois, to Siemens Aktiengesellschaft. Display device for displaying light images on a dark background. 4,405,210, Cl. 350-345.000.
Baxter Travenol Laboratories, Inc.: *See*—
Mittleman, Herbert, 4,405,316, Cl. 604-86.000.
Bayer Aktiengesellschaft: *See*—
Fauss, Rudolf, 4,405,803, Cl. 556-410.000.
Freitag, Dieter; Reinking, Klaus; and Tacke, Peter, 4,405,554, Cl. 264-300.000.
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; Stendel, Wilhelm; Lantzsch, Reinhard; and Marhold, Albrecht, 4,405,639, Cl. 424-278.000.
Kabbe, Hans-Joachim; Klauke, Erich; Krause, Hans P.; Mardin, Mithat; and Sitt, Rudiger, 4,405,644, Cl. 424-322.000.
Kinast, Gunther; Schedel, Michael; and Koebernick, Wolfgang, 4,405,714, Cl. 435-84.000.
Maas, Joachim; Steinberger, Helmut; and Moretto, Hans-Heinrich, 4,405,490, Cl. 252-358.000.
Muller, Hanns P.; Wagner, Kuno; Mummenhoff, Peter; Wallpott, Gottfried; and Scheuss, Karlheinz, 4,405,751, Cl. 524-720.000.
Musch, Rudiger; Schubart, Rudiger; Gobel, Wilhelm; Alberts, Heinrich; and Hohmann, Gerhard, 4,405,742, Cl. 524-315.000.
Nielinger, Werner; Lindner, Christian; Grigo, Ulrich; Binsack, Rudolf; Fahnler, Friedrich; and Brassat, Bert, 4,405,748, Cl. 524-504.000.
Recker, Klaus; Reinecke, Gerd; Awater, Albert; Grogler, Gerhard; and Kraft, Karl J., 4,405,752, Cl. 524-847.000.
Wegener, Gerhard; Knofel, Hartmut; Ellendt, Gunther; and Petinaux, Marcel, 4,405,527, Cl. 260-453.0PH.
Bayerle, Armin; Holz, Karl-Heinz; Luke, Johannes; and Riederer, Wolfgang, to Hoechst Aktiengesellschaft. Equipment and process for heating water by solar energy. 4,404,957, Cl. 126-419.000.
Bazell, Seymour: *See*—
Goldberg, Edward M.; and Bazell, Seymour, 4,404,924, Cl. 116-270.000.
BBC Brown, Boveri & Company Limited: *See*—
Albrecht, Joachim; Duerig, Thomas; and Weber, Walter, 4,405,387, Cl. 148-11.50R.
Brand, Andreas; and Datz, Rudolf, 4,404,929, Cl. 122-412.000.
Beale, William T., to Sunpower, Inc. Center-porting and bearing system for free-piston stirling engines. 4,404,802, Cl. 60-520.000.
Beard Industries, Inc.: *See*—
Noyes, Ronald T., 4,404,756, Cl. 34-65.000.
Beard, Walter C. Tilt valve structure with bridged stop for viscous flow liquids. 4,405,065, Cl. 222-153.000.
Beasley, Albert C.: *See*—
Beasley, Albert W.; and Beasley, Albert C., 4,404,814, Cl. 62-171.000.
Beasley, Albert W.; and Beasley, Albert C. Auxiliary condenser cooling tool for refrigerated air conditioners. 4,404,814, Cl. 62-171.000.
Beaussier, Michel; Lesch, Henry; and Evon, Emile, to Societe Internationale de Revetements de sol S.A. - S.I.R.S. Ground covering with drainage-promoting members. 4,405,665, Cl. 428-17.000.
Beecham Group Limited: *See*—
Buckle, Derek R.; and Smith, Harry, 4,405,620, Cl. 424-250.000.
Dickinson nee Berryman, Kay H.; Smale, Terence C.; and Southgate, Robert, 4,405,637, Cl. 424-274.000.
Beecham Inc.: *See*—
Pritchard, Robert W.; Drozd, Edward J.; and Lutz, Michael K., 4,405,306, Cl. 604-87.000.
Beever, William H.; and Brady, Donnie G., to Phillips Petroleum Company. Treatment of poly(arylene sulfide). 4,405,767, Cl. 525-537.000.
Beghin-Say, S.A.: *See*—
Monsan, Pierre, 4,405,715, Cl. 435-105.000.
Behr, Hans: *See*—
Vetter, Kurt, 4,405,086, Cl. 239-224.000.

Behrenz, Wolfgang: *See*—
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; Stendel, Wilhelm; Lantzsch, Reinhard; and Marhold, Albrecht, 4,405,639, Cl. 424-278.000.

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Kohl, Helmut, 4,405,721, Cl. 436-128.000.
Schwinn, Horst; Heimburger, Norbert; Kumpe, Gerhardt; and Wormsbacher, Wilfried, 4,405,603, Cl. 424-101.000.

Beier, Rudolf: *See*—
Welschof, Hans-Heinrich; and Beier, Rudolf, 4,405,032, Cl. 180-259.000.

Beijbom, Peter: *See*—
Severinsson, Lars M.; Beijbom, Peter; and Martensson, Anders K., 4,405,037, Cl. 188-196.00D.

Beilfuss, Wolfgang: *See*—
Munzenmaier, Wolfgang; Eggensperger, Heinz; Ehlers, Helmut H.; Beilfuss, Wolfgang; Bucklers, Lothar; and Harke, Hans-Peter, 4,405,795, Cl. 549-417.000.

Bejczy, Antal K., to United States of America, National Aeronautics and Space Administration. Optical fiber tactile sensor. 4,405,197, Cl. 350-96.150.

Bell, Albert H., III; and Hyde, James C., to General Motors Corporation. Gas turbine prechamber and fuel manifold structure. 4,404,806, Cl. 60-737.000.

Bell, Frank H.; and Peterson, John A., to Thiokol Corporation. Self-sparging inertia armed nose fuze. 4,404,911, Cl. 102-221.000.

Bell, Lon E., to Technar Incorporated. Heated diesel fuel filter. 4,404,949, Cl. 123-557.000.

Bell, Ronald D.: *See*—
McGill, Eugene C.; and Bell, Ronald D., 4,405,587, Cl. 423-235.000.

Bell Telephone Laboratories, Incorporated: *See*—
Grau, Thomas G., 4,405,233, Cl. 356-237.000.
Perez-Mendez, Pedro I., 4,405,983, Cl. 364-200.000.
Zebo, Timothy J., 4,405,840, Cl. 179-170.200.

Bellmann, Manfred: *See*—
Pfeiffer, Gerd; Biller, Horst; Bellmann, Manfred; Oberem, Karl; Lampe, Alfred; and Frentzen, Hermann-Josef, 4,404,832, Cl. 72-209.000.

Beloit Corporation: *See*—
Alheid, Robert J., 4,405,661, Cl. 427-356.000.
Frye, Kenneth G.; Grody, Donald R.; and Guild, Gerald A., 4,405,126, Cl. 271-279.000.
Powell, John E.; and Powell, Andrian J. C., 4,405,265, Cl. 406-109.000.

Belsky, Valentin I.; Suturin, Serafim N.; Orlov, Gennady I.; Dolgov, Anatoly V.; Goncharov, Boris K.; Antonov, Vladimir I.; and Naryshkin, Jury A. Apparatus for refining molten metals from insoluble impurities. 4,405,118, Cl. 266-227.000.

Belttary, Harold E., to GTE Products Corporation. Arc chamber channel. 4,405,846, Cl. 200-144.00R.

Bendix Corporation, The: *See*—
Aron, Mitchell; and Sosinsky, Emanuel, 4,405,939, Cl. 358-65.000.
Ide, John D.; Settlemire, David J.; and Novo, Mario C., 4,406,019, Cl. 455-245.000.
Walter, Richard P.; and Muller, Robert D., 4,405,082, Cl. 239-91.000.

Bennett, Robert C. Survey data collecting system. 4,405,157, Cl. 283-58.000.

Bensberg, Wolfgang; and Klapp, Hartmut, to Jagenberg-Werke AG. Adjustable carton folding machine. 4,405,304, Cl. 493-476.000.

Bentley, Rick J.: *See*—
Turnquist, Edwin W.; and Bentley, Rick J., 4,404,891, Cl. 91-45.000.

Bergandy, Wieslaw, to National Instrument Co., Inc. Filling machine. 4,405,061, Cl. 222-21.000.

Berger, Ronald: *See*—
Lubowsky, Jack; and Berger, Ronald, 4,405,300, Cl. 432-2.000.

Bergman, Hans I.; and Nyman, Bjorn D., to Saab-Scania Aktiebolag. Arrangement for limiting uncontrolled articulation movements at the picot between vehicle units in articulated vehicles, preferably articulated buses. 4,405,145, Cl. 280-432.000.

Bergman, Werner. Electric filter with movable belt electrode. 4,405,342, Cl. 55-6.000.

Bergmann, Eduard: *See*—
Kinzl, Marwin; and Bergmann, Eduard, 4,404,939, Cl. 123-333.000.

Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Kermer, Wolf-Dieter, to BASF Aktiengesellschaft. Navy disperse dye mixtures. 4,405,330, Cl. 8-639.000.

Bergvall, Goran A.: *See*—
Manson, Mans O.; Sjogreen, Carl-Axel E.; and Bergvall, Goran A., 4,405,471, Cl. 252-34.000.

Bernard, David L.; Backus, John K.; and Doheny, Anthony J., Jr., to Mobay Chemical Corporation. Foamed polyisocyanurates. 4,405,725, Cl. 521-112.000.

Berrill, William H.; and Price, Frank C., to USM Corporation. Machine for lasting side portions of shoes. 4,404,700, Cl. 12-12.000.

Berthold, Rudiger; and Muller, Werner H., to Hoechst Aktiengesellschaft. Process for the preparation of 3,5-dimethylaniline. 4,405,813, Cl. 564-415.000.

Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., to Standard Oil Company (Indiana). Process for removing sulfur oxides from a gas. 4,405,443, Cl. 208-113.000.

Bertram, James L.; Doorakian, George A.; and Duquette, Lawrence G., to Dow Chemical Company, The. Phosphonium bicarbonate catalysts for promoting reaction of epoxides with carboxylic acids or anhydrides. 4,405,766, Cl. 525-507.000.

Besic, Frank C., to University Patents, Inc. Methods and materials for prevention of carious degradation of teeth. 4,405,600, Cl. 424-57.000.

Best, Michael J. A., to Smith International, Inc. Underwater Christmas tree cap and lockdown apparatus. 4,405,016, Cl. 166-337.000.

Bezman, Susan A., to Chevron Research Company. Diisopropyl ether hydration in isopropanol production. 4,405,822, Cl. 568-899.000.

Bhagwat, Pradeep M.; and Stefanovic, Victor R., to Canadian Patents and Dev. Limited. Commutation circuits for thyristor inverters. 4,405,977, Cl. 363-124.000.

Bickel, Hans: *See*—
Scartazzini, Riccardo; and Bickel, Hans, 4,405,778, Cl. 544-16.000.

Bierhenke, Hartwig; Birkle, Siegfried; and Rubner, Roland, to Siemens Aktiengesellschaft. Method of producing relief structures for integrated semiconductor circuits. 4,405,707, Cl. 430-281.000.

Biller, Horst: *See*—
Pfeiffer, Gerd; Biller, Horst; Bellmann, Manfred; Oberem, Karl; Lampe, Alfred; and Frentzen, Hermann-Josef, 4,404,832, Cl. 72-209.000.

Binder, Volker; Merk, Wolfgang; and Werle, Peter, to Degussa Aktiengesellschaft; and Degussa Aktiengesellschaft. Process for the production of dihydroxypropyltheophylline. 4,405,783, Cl. 544-267.000.

Bingel, Carl J.: *See*—
Demianczuk, Dionisyj W.; and Bingel, Carl J., 4,405,381, Cl. 148-2.000.

Binsack, Rudolf: *See*—
Nielinger, Werner; Lindner, Christian; Grigo, Ulrich; Binsack, Rudolf; Fahnler, Friedrich; and Brassat, Bert, 4,405,748, Cl. 524-504.000.

Bione, Angelo A., to Marmon Group, Inc., The. Integrated harmony generating circuit for electronic organ. 4,404,883, Cl. 84-1.030.

BioResearch Inc.: *See*—
Kurtz, Leonard D.; and LiCausi, Joseph, 4,405,309, Cl. 604-317.000.

Birecki, Henryk: *See*—
Kahn, Frederic J.; Birecki, Henryk; and Burmeister, Robert A., Jr., 4,405,993, Cl. 365-108.000.

Birkle, Siegfried: *See*—
Bierhenke, Hartwig; Birkle, Siegfried; and Rubner, Roland, 4,405,707, Cl. 430-281.000.

Bixby, Willard W., Jr.; and Christopher, Jerry, to Haskel, Incorporated. Pneumatically controlled rate pump. 4,405,292, Cl. 417-403.000.

Blachford, John, to H. L. Blachford Ltd/Ltee. Method of drawing a metal wire and lubricant composition therefor. 4,404,828, Cl. 72-42.000.

Blackburn, Tom L., to GTE Automatic Electric Incorporated. Variolosser for an automatic gain control circuit. 4,405,903, Cl. 330-284.000.

Blain, William A., to Nabisco Brands, Inc. Masa sheeting apparatus. 4,405,298, Cl. 425-308.000.

Blair, Bruce A. Portable roll-riding tape cutter. 4,405,068, Cl. 225-65.000.

Blair, Donald G.: *See*—
Vande Woude, George F.; McClements, William L.; Oskarsson, Marianne K.; and Blair, Donald G., 4,405,712, Cl. 435-5.000.

Blake, Edward W.: *See*—
Allen, Robert J.; Blake, Edward W.; Rao, Manjeshwar S.; and Hahn, Kurt L., 4,404,837, Cl. 72-349.000.

Blanchard, Bradley V.: *See*—
Blanchard, Vernon F.; and Blanchard, Bradley V., 4,404,878, Cl. 82-2.500.

Blanchard, Vernon F.; and Blanchard, Bradley V. Bar stock feed apparatus. 4,404,878, Cl. 82-2.500.

Blaschek, Otto, to Arnold & Richter Cinetechnik GmbH, & Co. Betriebs KG. Film transport mechanism. 4,405,070, Cl. 226-55.000.

Blau, Jonathan S.; and Rosen, Josh, to Data General Corporation. Arithmetic unit for use in data processing systems. 4,405,992, Cl. 364-748.000.

Blaustein, Eric W.; and Patton, Edward J., to Acres American Incorporated. Refuse derived fuel and a process for the production thereof. 4,405,331, Cl. 44-1.00D.

Blechinger, Chester J., to Ford Motor Company. Velocity and mass air flow sensor. 4,404,858, Cl. 73-861.020.

Block, Robert S.; and Martin, John R., to Telease, Inc. Method and system for secure transmission and reception of video information, particularly for television. 4,405,942, Cl. 358-119.000.

Blom, Fritz, to Windmoller & Holscher. Apparatus for oxygenating an extruded molten polyethylene film. 4,405,404, Cl. 156-497.000.

Blomsterberg, Karl-Imgemar. Method of anodically deburring articles of copper or copper alloy. 4,405,422, Cl. 204-129.850.

Bloombaum, Barry D.: *See*—
Barnard, John; and Bloombaum, Barry D., 4,405,551, Cl. 264-245.000.

Bloss, Karl H.; and Stewart, Royann L., to PPG Industries, Inc. Method of melting glass on molten metal alloys. 4,405,352, Cl. 65-99.400.

Blot, Michel: *See*—
Saint-Sevin, Michel; Blot, Michel; and Moirez, Jacques, 4,405,204, Cl. 350-174.000.

Blumentritt, Bruce F.; and Shyan Shen, John C., to International Business Machines Corporation. Rigid magnetic coating composition with thermosetting binder for hard file. 4,405,684, Cl. 428-336.000.

Blythin, David; and Green, Michael J., to Schering Corporation. 7-Aryl-hept-5-ynoic acids and derivatives thereof. 4,405,810, Cl. 562-495.000.

Board of Regents, University of Texas System: *See—*
Weldon, William F.; and Woodson, Herbert H., 4,405,965, Cl. 361-43.000.

Boden, Richard M., to International Flavors & Fragrances Inc. 1-Ethoxy-1-ethanol acetate-acetaldehyde mixtures and uses thereof for augmenting or enhancing the aroma or taste of consumable materials. 4,405,510, Cl. 252-522.00R.

Boden, Richard M.; and Licciardello, Michael, to International Flavors & Fragrances Inc. Use of cycle carbonate in augmenting or enhancing the aroma or taste of foodstuffs and chewing gums. 4,405,646, Cl. 426-3.000.

Boden, Richard M., to International Flavors & Fragrances Inc. Branched chain olefinic alcohols, thiols, esters and ethers, organoleptic uses thereof, processes for preparing same and intermediates therefor. 4,405,820, Cl. 568-840.000.

Boehmer, Georg: *See—*
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Boen, Laurence K.: *See—*
Lamberti, Vincent; and Boen, Laurence K., 4,405,526, Cl. 260-400.000.

Boettcher, Alfred, to Boettcher, Alfred. Solar energy collector, and water heater and heating device with a heat pump containing the said collector. 4,404,958, Cl. 126-426.000.

Bohannon, William D., Jr., to Western Electric Company, Inc. Apparatus for forming a metallic tape into a tube having an overlapped seam. 4,404,720, Cl. 29-33.00E.

Bolen, Ralph A., to Sawyer, John. Apparatus for activating system in response to impact. 4,405,099, Cl. 244-1.00R.

Bolle, Maurice, to Etablissements Bolle Georges, Robert et Maurice. Safety glasses. 4,405,214, Cl. 351-88.000.

Bond, Thomas J.: *See—*
Koch, Paul E.; Bond, Thomas J.; and Adams, Richard C., 4,405,547, Cl. 264-171.000.

Bononi, Walter. Process for decorating spectacle frames. 4,405,852, Cl. 219-121.0LJ.

Book Covers, Inc.: *See—*
Carter, Leewood C.; and Neary, Robin P., 4,405,156, Cl. 281-29.000.

Borgarello, Enrico: *See—*
Graetzel, Michael; Kalyanasundaram, Kuppuswamy; Borgarello, Enrico; and Pelizzetti, Ezio, 4,405,424, Cl. 204-157.10R.

Borgman, Robert J.: *See—*
Kam, Sheung-tsam; Erhardt, Paul W.; Borgman, Robert J.; and O'Donnell, John P., 4,405,642, Cl. 424-309.000.

Borrelli, Nicholas F.: *See—*
Araujo, Roger J.; Borrelli, Nicholas F.; Tick, Paul A.; and Trotter, Donald M., 4,405,672, Cl. 428-68.000.

Boucher, Armand R., to Joseph E. Seagram & Sons, Inc. Preparation of wine having a low calorie content and a reduced alcohol content. 4,405,652, Cl. 426-494.000.

Boudreau, Robert J.; and Cunard, Joel C., to Brown Group Recreational Products, Inc. Universal velocipede wheel. 4,405,179, Cl. 301-2.500.

Bouilun, John: *See—*
Kolchinsky, Abel E.; Bouilun, John; and Davis, Wayne, 4,405,251, Cl. 403-9.000.

Bowen, James B.; and Kramer, Charles F., to Steel Heddle Manufacturing Co. Heddle frame assembly construction and method. 4,404,995, Cl. 139-92.000.

Boyadjieff, George I., to Varco International, Inc. Gripping jack system. 4,405,115, Cl. 254-106.000.

Brady, Donnie G.: *See—*
Beever, William H.; and Brady, Donnie G., 4,405,767, Cl. 525-537.000.

Brady, Sam A.; and Elias, Michael G., to Dow Corning Corporation. Method of providing earth covering useful for water harvesting. 4,405,264, Cl. 405-270.000.

Brand, Andreas; and Datz, Rudolf, to BBC Brown Boveri & Company Limited. Liquid distributor head actuated by fluid pressure. 4,404,929, Cl. 122-412.000.

Brandenburg, Helmut, to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H. Cutter bit for a mining machine. 4,405,178, Cl. 299-81.000.

Brandewie, Joseph E.; and Hart, Granville S., to AMP Incorporated. Electrical harness fabrication using improved wire measuring method. 4,404,743, Cl. 29-857.000.

Brant, Gordon W., to Redlake Corporation. Film speed control systems for high speed motion picture cameras. 4,405,217, Cl. 352-84.000.

Brassat, Bert: *See—*
Nielinger, Werner; Lindner, Christian; Grigo, Ulrich; Binsack, Rudolf; Fahnler, Friedrich; and Brassat, Bert, 4,405,748, Cl. 524-504.000.

Braun, Howard R.: *See—*
Johnson, Arthur W.; and Braun, Howard R., 4,404,809, Cl. 62-49.000.

Braun, Martin: *See—*
Hild, Berthold; Braun, Martin; and Munker, Max, 4,404,831, Cl. 72-148.000.

Braun, Morris; and Wavering, Karen A., to W. Braun Co. Container including pressure mounted inner cover. 4,405,054, Cl. 215-277.000.

Breese, Maurice E.; and Robinson, Arthur S., to RCA Corporation. Controllable phase shifter comprising gyromagnetic and non-gyromagnetic sections. 4,405,907, Cl. 333-24.100.

Breuer, Uwe: *See—*
Hultsch, Gunther; Alstetter, Franz; and Breuer, Uwe, 4,405,454, Cl. 209-279.000.

Bricot, Claude; Dubois, Jean-Claude; LeCarvennec, Francois; Lehureau, Jean-Claude; and Magna, Henriette, to Thomson-Brandt. Thermosensitive data-carrier designed for the recording of information and a method of recording information on such a data-carrier. 4,405,862, Cl. 250-318.000.

Bridgeport Metal Goods Manufacturing Company, The: *See—*
Vasas, Martin M., 4,404,977, Cl. 132-88.700.

Bridigum, Robert J.; and Johnston, William S., to American Standard Inc. Cap nut for a trip cock device including a detent arrangement for overriding automatic reset. 4,404,987, Cl. 137-556.000.

Brill-Edwards, Kenneth O. P., to Crescent Roofing Company Ltd. Method of making static solar heat collectors. 4,405,396, Cl. 156-155.000.

Brill, Garrett W. Keeper device for door lock. 4,404,826, Cl. 70-416.000.

Brinkmann, Hans: *See—*
Schulte, Herbert; Brinkmann, Hans; and Sommermeyer, Uwe, 4,405,539, Cl. 264-77.000.

Brison, Marc P., to Moulinex, Societe Anonyme. Domestic mixer. 4,405,998, Cl. 366-264.000.

Bristol Babcock Inc.: *See—*
Doron, Joseph, 4,406,014, Cl. 377-107.000.

British Petroleum Company Limited, The: *See—*
Barclay, John L.; Hargrove, John D.; and Prince, Richard J., 4,405,503, Cl. 252-455.00Z.
Pippard, David A., 4,405,493, Cl. 252-389.00A.

Broadbent, George T., to Automotive Products Limited. Clutch release mechanism for a pull type clutch. 4,405,041, Cl. 192-98.000.

Brooker, Lenon G.; and Mungin, Halbert, to Westinghouse Electric Corp. Polyethylene glycol modified melamine aldehyde resin and postformable laminate made therewith. 4,405,690, Cl. 428-503.000.

Brown, Boveri & Cie AG: *See—*
Fischer, Wilfried; and Hasenauer, Dieter, 4,405,696, Cl. 429-104.000.

Brown Boveri Kent Limited: *See—*
Wass, Colin, 4,404,861, Cl. 73-861.830.

Brown Group Recreational Products, Inc.: *See—*
Boudreau, Robert J.; and Cunard, Joel C., 4,405,179, Cl. 301-2.500.

Brown, Kenneth, to Fisons, Limited. Composition for treating asthma. 4,405,598, Cl. 424-45.000.

Brown, Richard E.; Loev, Bernard; and St. Georgiev, Vassil, to USV Pharmaceutical Corporation. Method of treatment of asthma. 4,405,633, Cl. 424-272.000.

Brown, Ronald L.: *See—*
Wolniak, Stanley C.; Spencer, Elbert M.; and Brown, Ronald L., 4,405,843, Cl. 200-44.000.

Brownscombe, Thomas F., to Shell Oil Company. Reinforced polymer compositions and their preparation. 4,405,727, Cl. 523-205.000.

Brownscombe, Thomas F.: *See—*
Wong, Pui K.; Willis, Carl L.; and Brownscombe, Thomas F., 4,405,772, Cl. 526-308.000.

Brunnee, Curt; Deigmann, Lothar; and Marten, Gunter, to Finnigan Mat GmbH. Automatically controllable loading apparatus for mass spectrometers or the like. 4,405,860, Cl. 250-288.000.

Brunswick Corporation: *See—*
Staerzl, Richard E., 4,405,892, Cl. 322-89.000.

BS&B Safety Systems, Ltd.: *See—*
Ou, Sam A., 4,404,982, Cl. 137-68.00R.

Buckle, Derek R.; and Smith, Harry, to Beecham Group Limited. Piperazine derivatives. 4,405,620, Cl. 424-250.000.

Bucklers, Lothar: *See—*
Munzenmaier, Wolfgang; Eggensperger, Heinz; Ehlers, Helmut H.; Beilfuss, Wolfgang; Bucklers, Lothar; and Harke, Hans-Peter, 4,405,795, Cl. 549-417.000.

Budoff, Penny W. Douche delivery device. 4,405,321, Cl. 604-212.000.

Buhse, Ulf; and Schwarz, Henning, to U.S. Philips Corporation. Circuit for receiving two-tone/stereophonic programs. 4,405,834, Cl. 179-1.0GB.

Buning, Onno; and Lawes, Peter, to Howmedica International Inc. Modular prosthesis assembly. 4,404,691, Cl. 3-1.911.

Burghart, George L. Dynamically balanced vibratory system. 4,405,043, Cl. 198-769.000.

Burkner, Wolfgang; and Melzer, Gerhard, to Carl Schenck AG. Unloading rack with elevating device for a heat press. 4,405,277, Cl. 414-222.000.

Burlington Industries, Inc.: *See—*
Koncelik, Joseph A.; Chaney, David B.; Lockard, Walter G.; Reeder, Kevin J.; and Hontz, Thomas D., 4,404,698, Cl. 5-507.000.

Burmeister, Robert A., Jr.: *See—*
Kahn, Frederic J.; Birecki, Henryk; and Burmeister, Robert A., Jr., 4,405,993, Cl. 365-108.000.

Burns, Thomas J. Gamma thermometer based reactor core liquid level detector. 4,406,011, Cl. 376-247.000.

Burr, Bruce H.; and Marshek, Kurt M. Device for evaluating abrasive wear of elastomeric O-ring materials. 4,404,840, Cl. 73-7.000.

Burroughs Corporation: *See—*
Fiorentino, Ermenegildo; Wojtowicz, Edward A.; and Leadlie, Robert J., 4,405,972, Cl. 361-417.000.

Burroughs Wellcome Co.: *See—*
Thorogood, Peter B., 4,405,634, Cl. 424-273.00R.

Busca, Giovanni; and Johnson, Leland, to Oscilloquartz S.A. Atomic frequency standard having microwave loop around absorption cell. 4,405,905, Cl. 331-94.100.

Buschbom, Floyd E.; and Henke, Donald L., to Veda, Inc. Releasable drive apparatus. 4,405,040, Cl. 192-67.00R.

Bushey, Dean F.; and D'Silva, Themistocles D. J., to Union Carbide Corporation. Novel derivatives of bicyclic 2-iminothiazolidine oximes. 4,405,632, Cl. 424-270.000.

Busse, Oswald; and Klesper, Hugo, to Passavant-Werke AG & Co. KG. Plate-type filter press with a cleaning truck. 4,405,457, Cl. 210-225.000.

Butz, Hans, to Fichtel & Sachs AG. Wheel hub for two-wheeled vehicles. 4,405,180, Cl. 301-111.000.

Buurma, Gerald B.; and Jorgensen, John M., to National Semiconductor Corporation. CMOS Reset circuit. 4,405,871, Cl. 307-594.000.

Byrd, Norman R., to McDonnell Douglas Corporation. Electrodeposition of coatings on metals to enhance adhesive bonding. 4,405,427, Cl. 204-181.00R.

C. A. Weidmuller K.G.: *See*—
Stenz, Paul; and Wilmes, Manfred, 4,404,744, Cl. 29-883.000.

Caballero, Alejandro J.; and Holcombe, Ricardo I., to Materias Primas, Monterrey, S.A. Process of removing iron impurities from ores. 4,405,588, Cl. 423-340.000.

Calfee, Richard V.: *See*—
Gordon, Pat L.; Calfee, Richard V.; and Miner, Jay, 4,404,972, Cl. 128-419.0PG.

Calhoun, L. Owen; and Murray, Michael A., to CTS Corporation. Trenchduct construction having adjustable lid-supporting means. 4,404,779, Cl. 52-126.200.

California Institute of Technology: *See*—
Rowlette, John J., 4,405,697, Cl. 429-161.000.

Camp, Howard C. Automatic-locking toilet seat lid. 4,404,695, Cl. 4-253.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Johnson, Arthur W.; and Braun, Howard R., 4,404,809, Cl. 62-49.000.

Canadian Patents and Dev. Limited: *See*—
Bhagwat, Pradeep M.; and Stefanovic, Victor R., 4,405,977, Cl. 363-124.000.

Canalizo, Carlos R., to Otis Engineering Corporation. Downhole double acting pump. 4,405,291, Cl. 417-393.000.

Cancer Research Center: *See*—
McEntire, John E.; and Papermaster, Ben W., 4,405,601, Cl. 424-95.000.

Candor, James T. Electrostatic method for treating material. 4,404,754, Cl. 34-1.000.

Cannella, Vincent D.: *See*—
McCormick-Goodhart, Mark H.; Cannella, Vincent D.; and Minko, Robert, 4,404,926, Cl. 118-641.000.

Canon Kabushiki Kaisha: *See*—
Hirai, Yutaka; Hatanaka, Katsunori; Ayata, Naoki; and Uzawa, Shunichi, 4,405,857, Cl. 250-211.00J.
Inoue, Syunzo; Arai, Toshio; Nagasawa, Takeshi; Konishi, Motofumi; Yanagawa, Hitoshi; Iwaya, Toshio; and Kasuya, Michio, 4,405,227, Cl. 355-27.000.
Komatsu, Toshiyuki; Fukaya, Masaki; Uzawa, Shunichi; Yoshioka, Seishiro; and Shirato, Yoshiaki, 4,405,915, Cl. 338-15.000.
Shimizu, Isamu; Ogawa, Kyosuke; and Inoue, Eiichi, 4,405,656, Cl. 427-39.000.
Shirai, Shigeru; Kanbe, Junichiro; and Ohno, Shigeru, 4,405,702, Cl. 430-60.000.
Yamamoto, Hiroshi; Uchidoi, Masanori; and Kawamura, Masaharu, 4,405,222, Cl. 354-238.000.

Capitanio, Lorenzo: *See*—
Neri, Amleto; Capitanio, Lorenzo; and Stefani, Giancarlo, 4,405,505, Cl. 252-461.000.

Capshew, Charles E.; Short, James N.; Welch, M. Bruce; and Dietz, Richard E. Catalyst, method of producing the catalyst, and polymerization process employing the catalyst. 4,405,769, Cl. 526-119.000.

Cardarelli, Nathan F., to Environmental Chemicals, Inc. Controlled release of herbicide compounds utilizing a thermoplastic matrix. 4,405,360, Cl. 71-117.000.

Cardinaux, Francois; Huguenin, Rene; and Pless, Janos, to Sandoz Ltd. Novel pentapeptides, processes for their production, pharmaceutical compositions comprising said pentapeptides and their use. 4,405,607, Cl. 424-177.000.

Carl Schenck AG: *See*—
Burkner, Wolfgang; and Melzer, Gerhard, 4,405,277, Cl. 414-222.000.

Carl Zeiss-Stiftung: *See*—
Rossmann, Dieter, 4,405,205, Cl. 350-255.000.

Carlo Erba Strumentazione S.p.A.: *See*—
Sisti, Giorgio; Trestianu, Sorin; and Riva, Ermete, 4,405,344, Cl. 55-67.000.

Carloni, Massimo: *See*—
Cavazza, Claudio; Carloni, Massimo; and Ramacci, Maria T., 4,405,638, Cl. 424-275.000.

Carlson, Raymond G.; and Stone, Robert A., to United Technologies Corp. Vibration isolation system. 4,405,101, Cl. 244-17.270.

Caron, Peter L. Ampoule opener. 4,405,067, Cl. 225-93.000.

Carpets International-Georgia (Sales), Inc.: *See*—
Kyle, Joseph H., 4,405,674, Cl. 428-96.000.

Carr, William F.; and Chen, James M., to Engelhard Corporation. Ozone abatement catalyst having improved durability and low temperature performance. 4,405,507, Cl. 252-466.00B.

Carrier Corporation: *See*—
Gilson, John D., 4,404,815, Cl. 62-180.000.
Mount, Gordon L.; and Hesler, Benjamin F., 4,404,811, Cl. 62-84.000.
Zinsmeyer, Thomas M., 4,404,812, Cl. 62-84.000.

Carroll, W. Eamon; and Chan, Albert S., to Monsanto Company. Hydroformylation of formaldehyde with rhodium catalysts. 4,405,814, Cl. 568-462.000.

Carter, Jack D. Load bearing arrangement for a movable bucket fork lift attachment. 4,405,282, Cl. 414-724.000.

Carter, James H., II: *See*—
Crews, Harold R.; Carter, James H., II; and Sena, Ted, 4,405,719, Cl. 436-10.000.

Carter, Leewood C.; and Neary, Robin P., to Book Covers, Inc. Reinforced hinge for book cover. 4,405,156, Cl. 281-29.000.

Carter, Russell P., Jr., to Mobay Chemical Corporation. Polycarbonate-starch compositions. 4,405,731, Cl. 524-47.000.

Carter-Wallace, Inc.: *See*—
Sisbarro, Frederick P., 4,405,489, Cl. 252-315.400.

Cartwright, Clifford S., Jr. Practice arrow adapter simulating hunting arrow characteristics. 4,405,133, Cl. 273-419.000.

Casbeer, Jesse I., Jr. Rodent barrier for door over railroad track. 4,404,769, Cl. 49-58.000.

Case, Kirt L., to West Company, The. Syringe assembly. 4,405,317, Cl. 604-90.000.

Casey, Martin J.; and Sheppard, John E., to Sperry Corporation. Plasma etching process and apparatus. 4,405,406, Cl. 156-643.000.

Casio Computer Co., Ltd.: *See*—
Aihara, Toshiharu; Tahara, Iwao; Matsuo, Yushin; Takahashi, Naoki; Wakabayashi, Takuo, deceased; and Wakabayashi, Shigemasa, executor, 4,405,241, Cl. 368-63.000.

Castellucci, Nicholas T.; Grunewalder, John F.; and Ostrowski, John S., to PPG Industries, Inc. Base solubilization of an azole-functional resin and electrodeposition of such solubilized resin. 4,405,428, Cl. 204-181.00R.

Catalano, Giordano. Planing form. 4,405,002, Cl. 144-2.00R.

Caterpillar Tractor Co.: *See*—
Larson, Larry A., 4,404,847, Cl. 73-119.00A.
Pickering, William; and Urbanc, David J., 4,405,990, Cl. 364-703.000.

Cavazza, Claudio; Carloni, Massimo; and Ramacci, Maria T., to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. 2-Methoxyphenyl esters of N-substituted amino acids, a process for their preparation and pharmaceutical compositions containing them. 4,405,638, Cl. 424-275.000.

Cave, Ellis K.; and Hazelwood, Neil, to TBS International, Inc. Telephone call progress tone and answer identification circuit. 4,405,833, Cl. 179-1.0MN.

Cavero, Leonardo P., to General Electric Company. System for providing protection for a high voltage transmission line. 4,405,966, Cl. 361-80.000.

Cefarelli, Frank P.; and Evans, Robert T., to International Business Machines Corp. Fiber optic connector. 4,405,201, Cl. 350-96.210.

Celamerck GmbH & Co., KG: *See*—
Itzel, Hanshelmut, 4,405,605, Cl. 424-173.000.

Celanese Corporation: *See*—
Hall, Henry K.; and Wilson, Donald R., 4,405,798, Cl. 549-363.000.
Lowery, James J.; Plotkin, Neil D.; and Robinson, Jack, 4,405,688, Cl. 428-398.000.

Censor Patent- und Versuchs-Anstalt: *See*—
Mayer, Herbert E., 4,405,229, Cl. 355-77.000.

Central Mine Equipment Company: *See*—
Rassieur, Charles L., 4,405,020, Cl. 173-89.000.

Centronics Data Computer Corp.: *See*—
Hanna, Samuel Y., 4,405,247, Cl. 400-196.100.

Cerami, Anthony, to Evreka, Inc. Method for arresting fulminating infection. 4,405,606, Cl. 424-177.000.

Cerberus AG: *See*—
Scheidweiler, Andreas, 4,405,919, Cl. 340-522.000.

Chabrolle, Jacques, to L.C.C.-C.I.C.E. Compagnie Europeenne de Composants Electroniques. Magnetic head for recording and reading magnetic data with variable track width. 4,405,959, Cl. 360-119.000.

Chai, Thomas Y., to Honeywell Inc. Matrix screening and grounding arrangement and method. 4,405,917, Cl. 340-365.00C.

Chakrabarti, Paritosh M.; Hashem, Mohamed M.; and Cheng, Tom M. H., to GAF Corporation. Treatment of effluents containing dioxane. 4,405,799, Cl. 549-369.000.

Chambers, Arthur D. Self aligning truck trailer. 4,405,144, Cl. 280-404.000.

Champion International Corporation: *See*—
Dutcher, Daniel P.; and Roccaforte, Harry I., 4,405,078, Cl. 229-52.00B.
Roccaforte, Harry I., 4,405,066, Cl. 225-43.000.

Champseix, Alain A.; and Le Fur, Gerard R., to Pharmindustrie. 2 Phenyl-3-chloro-4[piperidyl alkyl]quinolines. 4,405,789, Cl. 546-176.000.

Chan, Albert S.: *See*—
Carroll, W. Eamon; and Chan, Albert S., 4,405,814, Cl. 568-462.000.

Chance, Leon H., to United States of America, Agriculture. Bromine-containing 2,4-diaminotriazines. 4,405,806, Cl. 560-43.000.

Chaney, David B.: *See*—
Koncelik, Joseph A.; Chaney, David B.; Lockard, Walter G.; Reeder, Kevin J.; and Hontz, Thomas D., 4,404,698, Cl. 5-507.000.

Change, Jun H., to FMC Corporation. Herbicidal 3-isoxazolidinones and hydroxamic acids. 4,405,357, Cl. 71-88.000.

Chao, Li-Chung; and Scharf, Daniel J., to Occidental Chemical Corporation. Flame retardant polyamide compositions. 4,405,732, Cl. 524-83.000.

Charlebois, Leonard J.; and Huszarik, Fred A., to Northern Telecom Limited. Moulding apparatus for encapsulating cable splices. 4,405,083, Cl. 249-97.000.
Charman, David H.; Turner, Clara; and Turner, Henry W., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Panel breaking apparatus. 4,405,104, Cl. 244-122.0AF.
Chasteen, Jack W., to University of Dayton. Method for cleaning metal parts. 4,405,379, Cl. 134-2.000.
Chatterji, Dulal C.; and Gallelli, Joseph F., to United States of America, Health and Human Services. Bisulfite stabilization of 5-azacytidine. 4,405,611, Cl. 424-180.000.
Chaudoir, Roderick J., to Hatco Corporation. Toaster with product warmer. 4,404,898, Cl. 99-331.000.
Chemie Linz Aktiengesellschaft: *See—*
Greinecker, Herbert; and Stern, Gerhard, 4,405,744, Cl. 524-423.000.
Chemische Fabrik Kreussler & Co. GmbH: *See—*
Hasenclever, Kaspar D., 4,405,511, Cl. 252-547.000.
Chen, James M.: *See—*
Carr, William F.; and Chen, James M., 4,405,507, Cl. 252-466.00B.
Chen, Thomas Y. C. Methods and apparatus for transferring liquid against high pressure resistance. 4,404,930, Cl. 122-451.00R.
Chen, Tu, to Xerox Corporation. Post treatment of perpendicular magnetic recording media. 4,405,677, Cl. 428-172.000.
Cheng, Tom M. H.: *See—*
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Cherill, Robert J.: *See—*
Kosley, Raymond W., Jr.; and Cherill, Robert J., 4,405,631, Cl. 424-267.000.
Cherot, Harrison, to Abbott Laboratories. Tamperproof closure system for plastic containers. 4,405,053, Cl. 215-32.000.
Cherry, Hitesh; Mueller, Arthur L.; and Werner, Walter M., to AMP Incorporated. Pin and socket connector. 4,405,195, Cl. 339-252.00R.
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Pyle, Walter R., 4,405,594, Cl. 423-579.000.
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Bezman, Susan A., 4,405,822, Cl. 568-899.000.
Singer, Malcolm S., 4,405,355, Cl. 71-86.000.
Vaughan, Ronald J., 4,405,420, Cl. 204-105.00M.
Chiang, Yunn H.: *See—*
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Kokubu, Yoshinori; Chiba, Jiro; Ichimura, Nobuyoshi; Iwai, Takashi; and Kawaguchi, Toshiyasu, 4,405,722, Cl. 501-15.000.
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Mukherjee, Shib P., 4,405,349, Cl. 62-532.000.
Trammell, Joel H., 4,404,988, Cl. 137-565.000.
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Foster, Robert A. L.; and Childs, Geoffrey H. L., 4,405,830, Cl. 178-30.000.
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Chisso Corporation: *See—*
Sugimori, Shigeru; Kojima, Tetsuhiko; and Tsuji, Masakazu, 4,405,488, Cl. 252-299.630.
Chosakon, Yoshinori: *See—*
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Chow, William W.; Fields, Davis S., Jr.; Hu, Paul Y.; and Lopez, Jorge L., to International Business Machines. Thermoelectric cooling of magnetic head assemblies. 4,405,961, Cl. 360-129.000.
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Masamune, Satoru; and Choy, William, 4,405,802, Cl. 556-402.000.
Christ, Alfred; and Miesch, Johann, to Escher Wyss Limited. Hydrostatic support element, especially for a controlled deflection roll. 4,404,724, Cl. 29-116.0AD.
Christensen, Ronald C.; Genske, Roger P.; Kester, Dennis E.; and Ossian, William F., to American Can Company. Retortable packaging structure. 4,405,667, Cl. 428-35.000.
Christopher, Jerry: *See—*
Bixby, Willard W., Jr.; and Christopher, Jerry, 4,405,292, Cl. 417-403.000.
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Ciba-Geigy Corporation: *See—*
Abel, Heinz; and Hugelshofer, Paul, 4,405,329, Cl. 8-527.000.
Scartazzini, Riccardo; and Bickel, Hans, 4,405,778, Cl. 544-16.000.
Ciecluch, Ronald F.: *See—*
Locatell, Louis, Jr.; Zepp, Charles M.; and Ciecluch, Ronald F., 4,405,788, Cl. 546-165.000.
Cieloszyk, Gary S.: *See—*
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Claassen, Peter: *See—*
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Clark, Floyd R.: *See—*
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Claudius Peters, Inc.: *See—*
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Clayman, John M.; and Weiner, Norman, to P. Clayman & Sons, Inc. Shanked innersole construction. 4,404,702, Cl. 12-146.00S.
Clingman, John W.: *See—*
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Clyburn, C. Wayne, to Hamilton Stands, Incorporated. Clamp system for telescoping tubes. 4,405,107, Cl. 248-122.000.
Cobb, Arnold J., to Fiber Industries, Inc. Process for filtering molten polymer. 4,405,548, Cl. 264-176.00F.
Cochran, Gary L.; Dawson, James E.; and Stromberg, Gary D., to J. I. Case Company. Modular loader frame structure. 4,405,280, Cl. 414-685.000.
Coffinberry, George A., to United States of America, National Aeronautics and Space Administration. Apparatus for improving the fuel efficiency of a gas turbine engine. 4,404,793, Cl. 60-39.070.
Cohen, Abraham B., to Du Pont de Nemours, E. I., and Company. Laminating process. 4,405,394, Cl. 156-83.000.
Cohen, Arnold, to Reichhold Chemicals, Incorporated. Polyvinyl chloride shoe sole composition. 4,405,730, Cl. 524-35.000.
Coker, William R.: *See—*
Wydro, Jan J.; Scholl, Charles H.; and Coker, William R., 4,405,063, Cl. 222-146.0HE.
Colgate-Palmolive Company: *See—*
Gibbons, Edward J., 4,405,399, Cl. 156-243.000.
Karami, Hamzeh, 4,405,310, Cl. 604-383.000.
Collins & Aikman Corporation: *See—*
Woodall, Leigh C., Jr.; Hayes, John T.; and Currier, Robert G., 4,404,703, Cl. 15-230.110.
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Collins, Walter W., to Schur, Inc. Knife and sheath assembly. 4,404,747, Cl. 30-151.000.
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Zechlin, Richard; and Henderson, Robert M., 4,404,951, Cl. 123-595.000.
Comandini, Ettore: *See—*
Zardi, Umberto; and Comandini, Ettore, 4,405,562, Cl. 422-148.000.
Combustion Engineering, Inc.: *See—*
Roddy, Robert L., 4,405,075, Cl. 228-49.00B.
Commissariat a l'Energie Atomique: *See—*
Forster, Michel; Jaouen, Adrien; Jorda, Alain; and Rampin, Pierre, 4,405,988, Cl. 364-502.000.
Conoco Inc.: *See—*
Duckwall, Louis R., Jr., 4,405,819, Cl. 568-814.000.
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Moshtev, Raphael; Pistoia, Gianfranco; Manev, Veselin; and Nasalevska, Anna, 4,405,695, Cl. 429-103.000.
Consortium fur Elektrochemische Ind. GmbH: *See—*
Hafner, Walter; Markl, Erich; Eibel, Ludwig; Kreis, Gerhard; Samrowski, Dietrich; Wick, Manfred; Deubzer, Bernward; and Friedrich, Wilhelm, 4,405,469, Cl. 252-28.000.
Contraves AG: *See—*
Wermelinger, Hans, 4,405,842, Cl. 200-17.00R.
Cook Incorporated: *See—*
Cope, Constantin, 4,405,314, Cl. 604-51.000.
Cooper, Leonard B. Spectacle frame and conversion accessories therefor. 4,405,212, Cl. 351-43.000.
Cooper, Martin H.: *See—*
Mangus, James D.; and Cooper, Martin H., 4,405,558, Cl. 376-233.000.
Cooperativa Agricola de Productie Scornicesti: *See—*
Ilies, Nicolae, 4,405,602, Cl. 424-95.000.
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Cornelius, Edward B.: *See—*
Kovach, Stephen M.; and Cornelius, Edward B., 4,405,445, Cl. 208-120.000.
Cornell Research Foundation, Inc.: *See—*
Balasubramanyam, Karanam; and Ruoff, Arthur L., 4,405,710, Cl. 430-311.000.
Cornet, Jean; Lehureau, Jean-Claude; and Magna, Henriette, to Thomson-CSF. Thermo-optic information writing process and information support for implementing this process. 4,405,994, Cl. 365-126.000.
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Araujo, Roger J.; Borrelli, Nicholas F.; Tick, Paul A.; and Trotter, Donald M., 4,405,672, Cl. 428-68.000.
Tick, Paul A., 4,405,724, Cl. 501-44.000.
Cosentino, Louis C., to Renal Systems, Inc. Porous titanium coating for blood access device. 4,405,319, Cl. 604-175.000.
Cosentino, Louis C.: *See—*
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Coulter Electronics, Inc.: *See—*
Crews, Harold R.; Carter, James H., II; and Sena, Ted, 4,405,719, Cl. 436-10.000.
Coutts, Maurice D.; and Matthies, Dennis L., to RCA Corporation. Video disc processing. 4,405,541, Cl. 264-107.000.

Couture, Fernand: *See—*
Allard, Rene; Couture, Fernand; and Couture, Raynald, 4,405,169, Cl. 296-3.000.
Couture, Raynald: *See—*
Allard, Rene; Couture, Fernand; and Couture, Raynald, 4,405,169, Cl. 296-3.000.
Cowan, Robert L., II: *See—*
Gordon, Gerald M.; Cowan, Robert L., II; and Davies, John H., 4,406,012, Cl. 376-414.000.
Cox, Herman G., III. Satellite ice plant. 4,404,817, Cl. 62-320.000.
CPC International Inc.: *See—*
Urbas, Branko, 4,405,717, Cl. 435-140.000.
Cracauer, Raymond F.; Fuller, Larry E.; Martinez, Felix J.; and Cosentino, Louis C., to Renal Systems, Inc. Septum retaining means for percutaneous device. 4,405,320, Cl. 604-175.000.
Crescent Roofing Company Ltd.: *See—*
Brill-Edwards, Kenneth O. P., 4,405,396, Cl. 156-155.000.
Cresswell, Arnold W.; Ernsting, John; Turnbull, James A.; and Voss, Waldemar E. Respirators. 4,404,969, Cl. 128-201.230.
Crews, Harold R.; Carter, James H., II; and Sena, Ted, to Coulter Electronics, Inc. Method of stabilizing platelets for determining multiple platelet parameters in reference control and calibrator compositions; diluents therefor; and combination stabilization procedures. 4,405,719, Cl. 436-10.000.
Cristy, Nicholas G. Arrangement for releasing a fire curtain in a theater. 4,404,768, Cl. 49-5.000.
Cronin, John V. Automated screener. 4,404,903, Cl. 101-123.000.
Crowder, James P. System for mapping a physical variable. 4,405,930, Cl. 346-107.00R.
Cruz, Mamerto M., Jr., to Morca, Inc. Absorbent cellulosic structures. 4,405,324, Cl. 604-376.000.
CTS Corporation: *See—*
Calhoun, L. Owen; and Murray, Michael A., 4,404,779, Cl. 52-126.200.
Cullen, John S.; Incorvia, Samuel A.; and Vogt, James A., to Multiform Desiccants, Inc. Adsorbent unit for mounting in the upper portion of a refrigerant receiver. 4,405,347, Cl. 55-387.000.
Cullen, Mark, to Donahue Enterprises, Inc. Valve control assembly. 4,404,991, Cl. 137-636.100.
Cummins Engine Company, Inc.: *See—*
Smith, Joel D.; and Johnson, Joseph M., 4,404,931, Cl. 123-179.00H.
Cumpton, Wayne L.: *See—*
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Cunard, Joel C.: *See—*
Boudreau, Robert J.; and Cunard, Joel C., 4,405,179, Cl. 301-2.500.
Cuno Melcher KG ME-Sportwaffen, Firma: *See—*
Wiethoff, Gunter, 4,404,748, Cl. 30-161.000.
Curchod, Donald B. Base assembly for wheel balancing machine. 4,404,851, Cl. 73-460.000.
Curran, Thomas F. System for controlling fan-out in a web offset press. 4,404,906, Cl. 101-211.000.
Currier, Robert G.: *See—*
Woodall, Leigh C., Jr.; Hayes, John T.; and Currier, Robert G., 4,404,703, Cl. 15-230.110.
Woodall, Leigh C., Jr.; Hayes, John T.; and Currier, Robert G., 4,404,999, Cl. 139-391.000.
Curtil, Remi, to Societe d'Etudes de Machines Thermiques S.E.M.T. Method of and system for power generation by supercharged internal combustion engine. 4,404,805, Cl. 60-606.000.
Cwirzen, Casimir, to Northern Telecom Inc. Gas tube overvoltage protector with back-up gap. 4,405,967, Cl. 361-124.000.
Cyphelly, Ivan J. Fluid pressure unit with hydrostatic torque transmission by roller pistons. 4,404,895, Cl. 91-488.000.
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Nielsen, Erik, 4,405,257, Cl. 405-19.000.
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Schnettler, Richard A.; Dage, Richard C.; and Grisar, Johann M., 4,405,635, Cl. 424-273.00R.
Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Katano, Seiji; and Atsumi, Masataka, 4,405,709, Cl. 430-307.000.
Daido Tokushuko Kabushiki Kaisha: *See—*
Tanaka, Teruaki, 4,404,834, Cl. 72-221.000.
Daimler-Benz Aktiengesellschaft: *See—*
Resch, Reinhard; and Krohn, Hellmut, 4,405,181, Cl. 303-9.000.
Resch, Reinhard, 4,405,183, Cl. 303-119.000.
Scheurenbrand, Dieter; and Kleinschmit, Einhard, 4,404,983, Cl. 137-74.000.
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D'Alelio, Gaetano F., deceased (by St. Joseph Bank and Trust Company, executor); and Waitkus, Phillip A., to Plastics Engineering Company. Addition products of di-acetylene-terminated polymide derivatives and dienophiles having terminal maleimide grops. 4,405,520, Cl. 548-423.000.
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Dallman, Alfred C. Automotive fuel saving system. 4,404,950, Cl. 123-572.000.
Daniels, Peter, to United States of America, Navy. Turbulence generator for maximizing configuration tolerances of free flight ordnance. 4,405,100, Cl. 244-3.100.
D'Antonio, Nicholas F.: *See—*
Knabel, Walter; Klubitschko, Gerd; Stempfhuber, Lorenz; and D'Antonio, Nicholas F., 4,405,151, Cl. 280-612.000.
Dart Industries Inc.: *See—*
Nardelli, Christy A., 4,405,412, Cl. 204-54.00R.
Dassler, Armin A., to PUMA-Sportschuhfabriken Rudolf Dassler KG. Athletic shoe, especially jogging shoe. 4,404,759, Cl. 36-129.000.
Data General Corporation: *See—*
Blau, Jonathan S.; and Rosen, Josh, 4,405,992, Cl. 364-748.000.
Datz, Rudolf: *See—*
Brand, Andreas; and Datz, Rudolf, 4,404,929, Cl. 122-412.000.
Davies, Glyndwr J., to Glacier Metal Company Limited, The. Polyarylene sulphide compositions. 4,405,740, Cl. 524-287.000.
Davies, John H.: *See—*
Gordon, Gerald M.; Cowan, Robert L., II; and Davies, John H., 4,406,012, Cl. 376-414.000.
Davis, Wayne: *See—*
Kolchinsky, Abel E.; Bouilun, John; and Davis, Wayne, 4,405,251, Cl. 403-9.000.
Davy, Robert F.; and Kremp, Wilhelm K., to Davy, Robert F. Tailgate loader. 4,405,279, Cl. 414-558.000.
Dawson, James E.: *See—*
Cochran, Gary L.; Dawson, James E.; and Stromberg, Gary D., 4,405,280, Cl. 414-685.000.
Dean, Walter K.; and Meltsner, Bernard R., to Ethyl Corporation. Process for ortho dealkylation of aromatic amines. 4,405,812, Cl. 564-409.000.
Dechaux, Charles. Turbo-generator for a rotary wing helicopter. 4,404,794, Cl. 60-39.161.
Decol Co., Ltd.: *See—*
Ushimaru, Chuji, 4,404,778, Cl. 52-101.000.
DeCristofaro, Nicholas J., to Allied Corporation. Homogeneous, ductile nickel-palladium brazing foils. 4,405,391, Cl. 148-403.000.
Deere & Company: *See—*
Wittren, Richard A., 4,405,030, Cl. 180-153.000.
Deets, Gary L.; and Trementozzi, Quiriano A., to Monsanto Company. Polyblends. 4,405,753, Cl. 525-68.000.
Degen, Helmut: *See—*
Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Kermer, Wolf-Dieter, 4,405,330, Cl. 8-639.000.
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Binder, Volker; Merk, Wolfgang; and Werle, Peter, 4,405,783, Cl. 544-267.000.
Binder, Volker; Merk, Wolfgang; and Werle, Peter, 4,405,783, Cl. 544-267.000.
Pfeifer, Alfred; Seif, Rudolf; and Holdt, Dietmar, 4,405,431, Cl. 204-202.000.
Dehne, Clarence A., to Jervis B. Webb Company. Combination enclosure/support for conveyor apparatus, and methods of constructing and utilizing same. 4,405,042, Cl. 198-687.000.
Deininger, J. Paul; and Dotson, Ronald L., to Olin Corporation. Process for preparing potassium ferrate (K_2FeO_4). 4,405,573, Cl. 423-150.000.
Deisenroth, Friedrich-Ulf. Production of plastic-bonded explosive substances. 4,405,534, Cl. 264-3.00C.
Deitz, Stephen J. Capsule inspection device. 4,405,049, Cl. 209-630.000.
Delaney, Dennis D.: *See—*
Fenton, Donald M.; Delaney, Dennis D.; and Stechmeyer, Frank W., 4,405,825, Cl. 585-13.000.
Delgmann, Lothar: *See—*
Brunnee, Curt; Delgmann, Lothar; and Marten, Gunter, 4,405,860, Cl. 250-288.000.
del Rio, Eddy H., to RCA Corporation. Ion implanter end processing station. 4,405,864, Cl. 250-441.100.
DeLuca, Raymond F., to Georgia-Pacific Corporation. Method for web cutting in rolled sheet material dispensers. 4,404,880, Cl. 83-42.000.
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Septier, Louis; and Demange, Michel, 4,405,545, Cl. 264-144.000.
De Marco, Vincent R.: *See—*
Hall, Eldon C.; Seward, Harold H.; Sabo, Joseph D.; De Marco, Vincent R.; and Prisant, Millard B., 4,405,985, Cl. 364-423.000.
Demartini, Robert J. Rain gutter devices. 4,404,775, Cl. 52-12.000.
Demianczuk, Dionisyj W.; and Bingel, Carl J., to Republic Steel Corporation. Steel products such as bars, compositionally non-rimming and internally aluminum killed, having good surface condition. 4,405,381, Cl. 148-2.000.
Demianczuk, Dionisyj W.: *See—*
Griffith, Cecil B.; Thomas, Jerry D.; Demianczuk, Dionisyj W.; Abraham, John K.; and Franklin, Joseph E., 4,405,380, Cl. 148-2.000.
Demmler, Kurt; and Ochs, Wolfram, to BASF Aktiengesellschaft. Curable epoxy resins. 4,405,765, Cl. 525-506.000.
Denki Onkyo Company Limited: *See—*
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Denning, Elizabeth R. Animal eye protection device. 4,404,789, Cl. 54-80.000.
Dennison Manufacturing Company: *See—*
Jodrey, Robert M.; and Pitts, Warren R., 4,405,301, Cl. 432-124.000.
Jodrey, Robert M., 4,405,403, Cl. 156-449.000.
Deschamps, Andre; Franckowiak, Sigismond; and Le Page, Jean-Francois, to Institut Francais Du Petrole. Process for converting heavy oils or petroleum residues to gaseous and distillable hydrocarbons. 4,405,442, Cl. 208-107.000.
Dessens, Jan A. H., to MacMillan Bloedel Limited. Panelboard with friction surface. 4,405,675, Cl. 428-156.000.
Detector Electronics Corp.: *See—*
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Angyan, Sandor; Racz, Istvan; Radvanyi, Erzsebet; Kovats, Ferenc; Detre, Tamas; and Sos, Jozsef, 4,405,353, Cl. 11-3.000.
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Devienne, Jules H. P., to Societe Nationale Industrielle Aerospatiale. Multichannel connection and method for transmitting pyrotechnic orders. 4,404,910, Cl. 102-200.000.
DeWan, Thomas E. Flexible container. 4,404,689, Cl. 2-247.000.
Dewing, Ernest W.; and Gesing, Adam J., to Alcan International Limited. Electrolytic refining of molten metal. 4,405,415, Cl. 204-67.000.
Diamond Shamrock Corporation: *See—*
Heilman, William P.; and Gullo, James M., 4,405,619, Cl. 424-249.000.
Solomon, Frank, 4,405,544, Cl. 264-127.000.
Dick, Richard J.: *See—*
Rodgers, Stephen D.; Dick, Richard J.; and McGinniss, Vincent D., 4,405,761, Cl. 525-404.000.
Dicke, William C., to Singer Company, The. Dovetail fixture. 4,405,004, Cl. 144-87.000.
Dickerson, Eugene D. Insert for vehicle tow bar. 4,405,148, Cl. 280-491.00E.
Dickinson nee Berryman, Kay H.; Smale, Terence C.; and Southgate, Robert, to Beecham Group Limited. β-Lactam antibacterial agents. 4,405,637, Cl. 424-274.000.
Diehl GmbH & Co.: *See—*
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Dienstbach, Ulrich, to Sulpetro Minerals Limited. Hydrometallurgical process for extracting metal values from complex ores containing arsenic and sulfur. 4,405,569, Cl. 423-27.000.
Dietz, Richard E.: *See—*
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Diez, Jacques: *See—*
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Dijkmans, Eise C.: *See—*
van de Plassche, Rudy J.; and Dijkmans, Eise C., 4,405,902, Cl. 330-271.000.
Dilmaghani, Hommayoun; Sgarz, Hugo; and Schulz, Hartmut, to Vereinigte Flugtechnische Werke GmbH. Airfoil flap actuation. 4,405,105, Cl. 244-213.000.
Dimter GmbH Maschinenfabrik: *See—*
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Di Schiena, Michele; and Orru, Vittoria, to Ausonia Farmaceutici s.r.l. Thiazolidine derivatives with antibiotic activity. 4,405,618, Cl. 424-246.000.
Discovision Associates: *See—*
Mayer, Bruno F. P., 4,405,540, Cl. 264-106.000.
Shoji, Robert M.; Chudy, John S.; and Eberly, Carlyle J., 4,406,000, Cl. 369-44.000.
Disselbeck, Dieter; and Speier, Klaus, to Hoechst Aktiengesellschaft. Process and device for separating mixtures of matter in the liquid phase. 4,405,460, Cl. 210-640.000.
Dixon, David; and Krupicka, William A., to Scovill Inc. Padlock having a replaceable cylinder. 4,404,825, Cl. 70-368.000.
Dixon, Richard D.: *See—*
Ruhl, John H.; and Dixon, Richard D., 4,405,273, Cl. 411-43.000.
Dizon, Edmund S.; and Moninski, Joseph P., Jr., to S&C Electric Company. Door interlock for electrical apparatus. 4,405,844, Cl. 200-50.00A.
Documation Incorporated: *See—*
Funkhouser, Richard L., 4,404,901, Cl. 101-93.020.
Doddapaneni, Narayan, to Honeywell Inc. High rate metal-sulfuryl chloride batteries. 4,405,693, Cl. 429-101.000.
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Doi, Yoshio: *See—*
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Dolgov, Anatoly V.: *See—*
Belsky, Valentin I.; Suturin, Serafim N.; Orlov, Gennady I.; Dolgov, Anatoly V.; Goncharov, Boris K.; Antonov, Vladimir I.; and Naryshkin, Jury A., 4,405,118, Cl. 266-227.000.
Dome Petroleum Limited: *See—*
O'Rourke, Cameron; and Pilkington, Roger, 4,405,258, Cl. 405-60.000.
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Dootson, Peter A.: *See—*
Payne, Charles E. G.; Jones, Thomas I. Y.; and Dootson, Peter A., 4,404,797, Cl. 60-39.281.
Dorakovski, Vanco. Method and apparatus for the manufacture of pulleys. 4,404,829, Cl. 72-84.000.
Doron, Joseph, to Bristol Babcock Inc. Switched frequency divider. 4,406,014, Cl. 377-107.000.
Dorsey, Edmund. Clutch using partial vacuum to resist separation. 4,404,713, Cl. 24-217.00R.
Dotson, Ronald L.: *See—*
Deininger, J. Paul; and Dotson, Ronald L., 4,405,573, Cl. 423-150.000.
Moore, Sanders H.; and Dotson, Ronald L., 4,405,465, Cl. 210-757.000.
Doubleday, Max; and Gallis, Anthony J., to Harsco Corporation. Gang form bolt. 4,405,112, Cl. 249-207.000.
Douty, George H.; Ritchie, Leon T.; and Snyder, Clair W., Jr., to AMP Incorporated. Narrow profile power distribution block. 4,405,189, Cl. 339-17.00C.
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Filter, Harold E.; and Drake, Stevens S., 4,405,512, Cl. 252-628.000.
Harnden, Robert M.; and Baugh, Daniel W., Jr., 4,405,794, Cl. 548-229.000.
Lee, John M.; and Bauman, William C., 4,405,574, Cl. 423-157.000.
Lee, John M.; and Bauman, William C., 4,405,576, Cl. 423-181.000.
Sargent, Roger N., 4,405,485, Cl. 252-180.000.
Dow Corning Corporation: *See—*
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Downing, Edward J.; and Fisch, Richard S., to Minnesota Mining and Manufacturing Company. Protected vapor-deposited metal layers. 4,405,678, Cl. 428-215.000.
Doyen, Jean: *See—*
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Dragerwerk AG: *See—*
Albarda, Scato, 4,405,294, Cl. 417-488.000.
Pasternack, Adalbert, 4,405,348, Cl. 62-259.300.
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Filter, Harold E.; and Drake, Stevens S., 4,405,512, Cl. 252-628.000.
Dravo Corporation: *See—*
Fenton, Edward A., Jr.; and Simpson, John F., Jr., 4,405,050, Cl. 209-668.000.
Dressler, Hans; Lederer, Donald A.; and Noe, James, to Koppers Company, Inc. Novel N-methylolated/methoxymethylated aryldisulfonamides. 4,405,755, Cl. 525-138.000.
Driggers, Randolph W.: *See—*
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Drozd, Edward J.: *See—*
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Drummond, Peter D.: *See—*
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Bushey, Dean F.; and D'Silva, Themistocles D. J., 4,405,632, Cl. 424-270.000.
Dubois, Jean-Claude: *See—*
Bricot, Claude; Dubois, Jean-Claude; LeCarvennec, Francois; Lehureau, Jean-Claude; and Magna, Henriette, 4,405,862, Cl. 250-318.000.
Ducklo, Kenneth E.: *See—*
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Duckwall, Louis R., Jr., to Conoco Inc. Process for the production of alcohols from carboxylic acids. 4,405,819, Cl. 568-814.000.
Dudek, Edmund C., to Thor Power Tool Company. Pneumatic tool with muffler. 4,404,799, Cl. 60-370.000.
Dudley, Marvin: *See—*
Jeffreys, George A.; Tobey, James F., Jr.; and Price, Jean L., 4,405,649, Cl. 426-59.000.
Duerig, Thomas: *See—*
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Dumousseau, Jean-Yves: *See—*
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Dunne, James. Rope ladder. 4,405,034, Cl. 182-190.000.
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Austin, Ronald, 4,405,071, Cl. 227-7.000.
Du Pont de Nemours, E. I., and Company: *See—*
Cohen, Abraham B., 4,405,394, Cl. 156-83.000.
Howard, Edward G., Jr.; and Marsh, Frank D., 4,405,760, Cl. 525-383.000.
Schweitzer, Francis E., 4,405,729, Cl. 523-466.000.
Duquette, Lawrence G.: *See—*
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Duran, John A., to Avibank Mfg., Inc. Coupling mechanism. 4,404,714, Cl. 24-230.0AL.

Durant, Graham J.; and Ganellin, Charon R., to Smith Kline & French Laboratories Limited. Heterocyclic thioureas, isothioureas, guanidines and nitromethylene-amidines. 4,405,621, Cl. 424-250.000.

Durkoppwerke GmbH: *See—*
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Dutcher, Daniel P.; and Roccaforte, Harry I., to Champion International Corporation. Article carrier and a blank for forming the same. 4,405,078, Cl. 229-52.00B.

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Hayes, Russell A.; and Duve, Gerard, 4,405,482, Cl. 252-99.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Schulte, Herbert; Brinkmann, Hans; and Sommermeyer, Uwe, 4,405,539, Cl. 264-77.000.

Dynatech Precision Sampling Corporation: *See—*
Harris, Rano J., Sr., 4,404,862, Cl. 73-864.160.

E. R. Squibb & Sons, Inc.: *See—*
Sykes, Richard B.; and Wells, Jerry S., 4,405,716, Cl. 435-119.000.

Eaby, Daniel G.; and Shuey, John R., to AMP Incorporated. Hermaphroditic connector. 4,405,192, Cl. 339-91.00R.

Earl, Robert A.; and Elmslie, James S., to Hercules Incorporated. Preparation of hydroxy-terminated poly(3,3-bisazidomethyloxetanes). 4,405,762, Cl. 525-410.000.

Easterling, J. W. Method and apparatus for vehicle door arm rest anchor repair. 4,405,252, Cl. 403-11.000.

Eastern Company, The: *See—*
Wolniak, Stanley C.; Spencer, Elbert M.; and Brown, Ronald L., 4,405,843, Cl. 200-44.000.

Eberly, Carlyle J.: *See—*
Shoji, Robert M.; Chudy, John S.; and Eberly, Carlyle J., 4,406,000, Cl. 369-44.000.

Eberly, Joseph H.; Drummond, Peter D.; and Konopnicki, Marek J., to University of Rochester, The. Optical transmission system. 4,406,003, Cl. 370-3.000.

Ebisawa, Hisashi: *See—*
Ishikawa, Masayuki; Sugimoto, Akiko; Eguchi, Yukuo; Sasaki, Fujinori; Ebisawa, Hisashi; Moriguchi, Soyao; and Gotoh, Katsuhiko, 4,405,623, Cl. 424-251.000.

Ebner, Jerry R., to Monsanto Company. Oxidation and ammoxidation catalysts. 4,405,498, Cl. 252-432.000.

EC Erdolchemie GmbH: *See—*
Muller, Hans J.; Honig, Helmar; and Horlitz, Werner, 4,405,500, Cl. 252-433.000.

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Eckhardt, Erich: *See—*
Kuchenbecker, Dietrich; and Eckhardt, Erich, 4,405,287, Cl. 417-216.000.

Ecklund, Lawrence M., to Motorola, Inc. Tone detector circuit. 4,405,837, Cl. 179-1.0GS.

Ecodyne Corporation: *See—*
Giannelli, Joseph F.; Flynn, George C.; and Ryan, Leo F., 4,405,466, Cl. 210-798.000.

Eden, Richard C., to Rockwell International Corporation. Schottky diode-diode field effect transistor logic. 4,405,870, Cl. 307-446.000.

Edgar, Richard H., to Raytheon Company. Combination microwave heating apparatus. 4,405,850, Cl. 219-10.55A.

Eftekhar, Nas S. Centering system for hip replacement. 4,404,692, Cl. 3-1.912.

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Tatebe, Yoshikazu; Egami, Masafumi; and Miyawaki, Toshimitsu, 4,404,936, Cl. 123-196.00R.

Egawa, Takeshi: *See—*
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Eggensperger, Heinz: *See—*
Munzenmaier, Wolfgang; Eggensperger, Heinz; Ehlers, Helmut H.; Beilfuss, Wolfgang; Bucklers, Lothar; and Harke, Hans-Peter, 4,405,795, Cl. 549-417.000.

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Eguchi, Yukuo: *See—*
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Ehmann, Werner; and Rinno, Helmut, to Hoechst Aktiengesellschaft. Aqueous polyvinyl ester dispersion, process for its preparation, and the use. 4,405,747, Cl. 524-503.000.

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Eickmann, Karl. Hydraulically operated air borne rotor craft. 4,405,103, Cl. 244-60.000.

Eilers, Carl G.; and Fockens, Pieter, to Zenith Radio Corporation. TV Sound transmission system. 4,405,944, Cl. 358-144.000.

Eisenberg, Hans-Jochen. Adjustable pedestal trestle for theater stages or the like. 4,405,116, Cl. 254-122.000.

Ekholm, Pertti, to Labsystems Oy. Filter device for the filtration of radiation. 4,405,206, Cl. 350-318.000.

Electric Power Research Institute: *See—*
Kulik, Conrad J.; and Atherton, Linda, 4,405,437, Cl. 208-10.000.

Eli Lilly and Company: *See—*
Miesel, John L., 4,405,552, Cl. 424-263.000.
Potter, Emerson L., 4,405,609, Cl. 424-177.000.

Elias, Michael G.: *See—*
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Wegener, Gerhard; Knofel, Hartmut; Ellendt, Gunther; and Petinaux, Marcel, 4,405,527, Cl. 260-453.0PH.

Elliott, Lloyd E., Jr.; and Hudson, John L., to Texaco Inc. Fail-safe methods for generating a pulse indicating the precise moment of firing of a gas exhausting gun. 4,405,033, Cl. 181-120.000.

Ellis, Fred E.: *See—*
Tew, Claude E.; and Ellis, Fred E., 4,405,230, Cl. 356-5.000.

Elmslie, James S.: *See—*
Earl, Robert A.; and Elmslie, James S., 4,405,762, Cl. 525-410.000.

Elsbernd, Gerald F., to Harris Corporation. Wind load reduction in tower mounted broadcast antennas. 4,405,928, Cl. 343-912.000.

Elsing, John W.; and Knopp, Steven D., to Magnetic Peripherals Inc. Pneumatic cartridge seal for computer disc drive cartridge. 4,405,136, Cl. 277-12.000.

Emerson, Clarence A., to King Tool Inc. Combination tool apparatus. 4,404,749, Cl. 30-164.900.

Emerson Electric Co.: *See—*
Loyd, Ronald C., 4,404,706, Cl. 15-344.000.

Endo, Hiroshi: *See—*
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Endo, Toshiaki: *See—*
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Energy Conversion Devices, Inc.: *See—*
McCormick-Goodhart, Mark H.; Cannella, Vincent D.; and Minko, Robert, 4,404,926, Cl. 118-641.000.

Energy Development Associates, Inc.: *See—*
Galloway, James H., 4,405,891, Cl. 320-15.000.

Engelhard Corporation: *See—*
Carr, William F.; and Chen, James M., 4,405,507, Cl. 252-466.00B.

Engler, Edward M.; Patel, Vishnubhai V.; and Schumaker, Robert R., to International Business Machines Corporation. Heterofulvalene geminal dithiolate compounds and their selenium and tellurium analogs and a method of fabricating the same. 4,405,515, Cl. 260-239.00R.

Enokimoto, Akito; Tsuchiya, Toshio; Masuda, Tatsuo; and Takano, Suwaji, to Honda Giken Kogyo Kabushiki Kaisha. Motor vehicle. 4,405,027, Cl. 180-56.000.

Enrich, Carlos W. Plant growing apparatus. 4,404,767, Cl. 47-67.000.

Enterprises International, Inc.: *See—*
Makos, Ronald A.; and Young, James W., 4,405,275, Cl. 414-28.000.

Enting, David E.: *See—*
Frohwerk, Arthur E.; and Enting, David E., 4,404,879, Cl. 83-22.000.

Entremont, Jacques; and Levardon, Raymond, to Entremont S.A. Process for continuously separating fat from butter. 4,405,651, Cl. 426-241.000.

Entremont S.A.: *See—*
Entremont, Jacques; and Levardon, Raymond, 4,405,651, Cl. 426-241.000.

Environmental Chemicals, Inc.: *See—*
Cardarelli, Nathan F., 4,405,360, Cl. 71-117.000.

Envirotech Corporation: *See—*
Wells, Charles H., 4,405,453, Cl. 209-172.500.

Eoga, Anthony B. J., to Warner-Lambert Company. Method for preparing granulated perborate salts containing a polymeric fluorocarbon. 4,405,486, Cl. 252-186.310.

Erhardt, Paul W.: *See—*
Kam, Sheung-tsam; Erhardt, Paul W.; Borgman, Robert J.; and O'Donnell, John P., 4,405,642, Cl. 424-309.000.

Erickson, Alve J.: *See—*
Thulman, Robert D.; and Erickson, Alve J., 4,404,953, Cl. 126-77.000.

Eriksson, Borje: *See—*
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Erlandsson, Lars: *See—*
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Ernsting, John: *See—*
Cresswell, Arnold W.; Ernsting, John; Turnbull, James A.; and Voss, Waldemar E., 4,404,969, Cl. 128-201.230.

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Erwin, Robert L., deceased; and Erwin, Josiephine Reed, executrix, 4,405,113, Cl. 251-168.000.

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Escher Wyss GmbH: *See—*
Selder, Harald, 4,405,450, Cl. 209-3.000.

Escher Wyss Limited: *See—*
Christ, Alfred; and Miesch, Johann, 4,404,724, Cl. 29-116.0AD.

Esco Corporation: *See—*
Hahn, Frecerick C.; Barber, William R., Jr.; and Hampel, David A., 4,404,760, Cl. 37-142.00R.
Northe, Melvin M.; and Larson, Dean W., 4,404,712, Cl. 24-129.00R.

Esper, Herbert. Collapsible skis. 4,405,150, Cl. 280-603.000.

Estes, R. Ray: *See—*
Fisher, E. Eugene; Estes, R. Ray; Lokken, Orrin D.; and Paguette, Elmer G., 4,405,647, Cl. 426-4.000.

Etablissements Bolle Georges, Robert et Maurice: *See—*
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Ethicon, Inc.: *See—*
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Ethyl Corporation: *See—*
Dean, Walter K.; and Meltsner, Bernard R., 4,405,812, Cl. 564-409.000.
Everly, Charles, 4,405,528, Cl. 260-465.00F.
Seemuth, Paul D., 4,405,333, Cl. 44-53.000.
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Seemuth, Paul D., 4,405,335, Cl. 44-53.000.
Walter, Thomas J., 4,405,792, Cl. 546-346.000.

Etoh, Kuniomi; Nampei, Masaru; and Tanaka, Shinichi, to Toyo Boseki Kabushiki Kaisha t/a Toyoba Co., Ltd. Photosensitive resin composition containing basic polymeric compounds and organic carboxylic acids. 4,405,705, Cl. 430-270.000.

European Atomic Energy Community (Euratom): *See—*
Giacchetti, Giancarlo; Ransch, Jurgen; and Walker, Clive T., 4,405,861, Cl. 250-305.000.

Evans, Alvin S., Sr. Pump and valve assembly for penile implant. 4,404,968, Cl. 128-79.000.

Evans, Robert T.: *See—*
Cefarelli, Frank P.; and Evans, Robert T., 4,405,201, Cl. 350-96.210.

Evans, Walter R.: *See—*
Miller, Harry C.; and Evans, Walter R., 4,404,823, Cl. 70-333.00A.

Everett/Charles Test Equipment, Inc.: *See—*
Fettig, Lyle A., 4,405,191, Cl. 339-75.00M.

Everett, George S., to Quaker Oats Company, The. Catalysts and binder systems for manufacturing sand shapes. 4,405,726, Cl. 523-144.000.

Everly, Charles, to Ethyl Corporation. Method of preparing 4-(α-alkyl-α-cyano-methyl)2,6-di-substituted phenols. 4,405,528, Cl. 260-465.00F.

Evertz, Egon; and Rahn, Helmut, to Evon Evertz. Method and apparatus for a surface stripping treatment of objects consisting of iron with a high carbon content. 4,405,383, Cl. 148-9.500.

Evon, Emile: *See—*
Beaussier, Michel; Lesch, Henry; and Evon, Emile, 4,405,665, Cl. 428-17.000.

Evon Evertz: *See—*
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Evreka, Inc.: *See—*
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Ex-Cell-O Corporation: *See—*
Skrycki, Robert R., 4,405,138, Cl. 277-235.00B.

Excalibur Automobile Corporation: *See—*
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Exploration Logging, Inc.: *See—*
Mumby, Edward S., 4,405,021, Cl. 175-48.000.

Extracorporeal Medical Specialties, Inc.: *See—*
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Foroulis, Z. Andrew, 4,405,584, Cl. 423-228.000.
Sartori, Guido; and Savage, David W., 4,405,577, Cl. 423-223.000.
Sartori, Guido; and Thaler, Warren A., 4,405,578, Cl. 423-223.000.
Sartori, Guido; and Thaler, Warren A., 4,405,579, Cl. 423-223.000.
Sartori, Guido; Savage, David W.; and Stogryn, Eugene L., 4,405,585, Cl. 423-228.000.
Sartori, Guido; and Thaler, Warren A., 4,405,586, Cl. 423-233.000.
Savage, David W.; Sartori, Guido; and Stogryn, Eugene L., 4,405,581, Cl. 423-226.000.
Stogryn, Eugene L.; Savage, David W.; and Sartori, Guido, 4,405,580, Cl. 423-226.000.
Stogryn, Eugene L.; Savage, David W.; and Sartori, Guido, 4,405,582, Cl. 423-228.000.
Stogryn, Eugene L.; Savage, David W.; and Sartori, Guido, 4,405,583, Cl. 423-228.000.
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F. Korbel and Bros.: *See—*
Jordan, James L.; Huntsinger, James E.; Steinke, Dale F.; and Williams, David W., 4,405,997, Cl. 366-111.000.

Fahnler, Friedrich: *See—*
Nielinger, Werner; Lindner, Christian; Grigo, Ulrich; Binsack, Rudolf; Fahnler, Friedrich; and Brassat, Bert, 4,405,748, Cl. 524-504.000.

Fahrion, Karl. Method of connecting flexible tubular duct and a connector. 4,404,726, Cl. 29-432.200.

Faltin, Hans G. High speed feeding and transport of paper sheet products. 4,405,122, Cl. 271-8.00A.

Farmer, Douglas A., Jr.: *See—*
Lines, Ellwood L., Jr.; and Farmer, Douglas A., Jr., 4,405,076, Cl. 229-3.5MF.

Farquharson, Charles R., to Amer Sport International Inc. Hockey helmet. 4,404,690, Cl. 2-420.000.

Faulkner, Bobby P.; and Weinecke, Michael H., to Allis-Chalmers Corporation. Process for recovery of different weight fractions of oil from shale. 4,405,438, Cl. 208-11.00R.

Fauss, Rudolf, to Bayer Aktiengesellschaft. Process for the preparation of silylisocyanates. 4,405,803, Cl. 556-410.000.

Feltrin, Galiano. Fuel systems for internal combustion engines. 4,404,948, Cl. 123-546.000.

Fenton, Donald M.; Delaney, Dennis D.; and Stechmeyer, Frank W., to Union Oil Company of California. Pour point reduction of syncrude. 4,405,825, Cl. 585-13.000.

Fenton, Edward A., Jr.; and Simpson, John F., Jr., to Dravo Corporation. Quick roll adjustment for a roller screen conveyor. 4,405,050, Cl. 209-668.000.

Ferneau, Richard H., to Adler, Marianne. High deck ambulance cart. 4,405,172, Cl. 296-20.000.

FerroFil A/S: *See—*
Kolle, Kjell; and Johannessen, Svein, 4,405,855, Cl. 219-501.000.

Fetterman, David S.: *See—*
Moore, Calvin E.; Hutchinson, Mark E.; and Fetterman, David S., 4,405,572, Cl. 423-54.000.

Fettig, Lyle A., to Everett/Charles Test Equipment, Inc. Low insertion force actuable interface for electrical contacts. 4,405,191, Cl. 339-75.00M.

Fiat Auto S.p.A.: *See—*
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Fiber Industries, Inc.: *See—*
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Fichtel & Sachs AG: *See—*
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Fields, Davis S., Jr.: *See—*
Chow, William W.; Fields, Davis S., Jr.; Hu, Paul Y.; and Lopez, Jorge L., 4,405,961, Cl. 360-129.000.

Fields, Ellis K., to Standard Oil Company (Indiana). Process for preparation of benzophenone, anthraquinone and O-dibenzoylbenzene. 4,405,523, Cl. 260-369.000.

Fikart, Josef: *See—*
Taylor, Alistair W.; Fikart, Josef; and Thompson, David, 4,405,897, Cl. 324-782.000.

Filter, Harold E.; and Drake, Stevens S., to Dow Chemical Company, The. Process for encapsulating radioactive organic liquids in a resin. 4,405,512, Cl. 252-628.000.

Finkbeiner, Ernest, to Mid-West Transformer Company. Coil body. 4,405,913, Cl. 336-98.000.

Finnigan Mat GmbH: *See—*
Brunnee, Curt; Delgmann, Lothar; and Marten, Gunter, 4,405,860, Cl. 250-288.000.

Fiorentino, Ermenegildo; Wojtowicz, Edward A.; and Leadlie, Robert J., to Burroughs Corporation. Clamp device for retaining printed circuit boards under high shock conditions. 4,405,972, Cl. 361-417.000.

Firestone Tire & Rubber Company, The: *See—*
Gutierrez, Richard; Kay, Edward L.; and Serbin, David J., 4,405,532, Cl. 260-816.00R.

Fisch, Richard S.: *See—*
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Fischer, Herbert: *See—*
Schlauer, Johann; Fischer, Herbert; and Kriebel, Manfred, 4,405,593, Cl. 423-574.00R.

Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Ink supply arrangement for an offset printing machine. 4,404,909, Cl. 101-350.000.

Fischer, Michael A., to Grinnell Fire Protection Systems Company, Inc. Deflector with surface for circumferentially redistributing fluid for improved spray uniformity. 4,405,018, Cl. 169-37.000.

Fischer, Wilfried; and Hasenauer, Dieter, to Brown, Boveri & Cie AG. Electrochemical storage cell. 4,405,696, Cl. 429-104.000.

Fisher, Charles B.; and Fisher, Sidney T. Dual-signal A-M receiving apparatus. 4,406,006, Cl. 370-119.000.

Fisher, E. Eugene; Estes, R. Ray; Lokken, Orrin D.; and Paguette, Elmer G., to Wm. Wrigley Jr. Company. Method of compacting chewing gum base. 4,405,647, Cl. 426-4.000.

Fisher, Sidney T.: *See—*
Fisher, Charles B.; and Fisher, Sidney T., 4,406,006, Cl. 370-119.000.

Fisons, Limited: *See—*
Brown, Kenneth, 4,405,598, Cl. 424-45.000.

Fitzpatrick, Joseph W.; and Schmidt, Harold N., to Toms River Chemical Corporation. Vat dyestuff prepared from crude anthraquinone mixtures. 4,405,785, Cl. 546-30.000.

Flannagan, Stephen T.: *See—*
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Flemming, Donald C., to International Business Machines Corporation. Pseudo synchronous clocking. 4,405,898, Cl. 328-72.000.

Flexello Casters & Wheels Limited: *See—*
Walker, Philip S., 4,404,707, Cl. 16-31.00R.

Flower, David I.; and Schuler, Michael, to Ethicon, Inc. Dispenser box for packages of sterile sutures. 4,405,044, Cl. 206-44.120.
Floyd, John: *See—*
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Flynn, George C.: *See—*
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FMC Corporation: *See—*
Change, Jun H., 4,405,357, Cl. 71-88.000.
Talafuse, Larry J., 4,405,014, Cl. 166-72.000.
Williams, Michael R., 4,405,162, Cl. 285-95.000.
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Ford Motor Company: *See—*
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Stockton, Thomas R., 4,405,288, Cl. 417-220.000.
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Formax, Inc.: *See—*
Sandberg, Glenn A.; and Lindee, Scott A., 4,405,186, Cl. 414-21.000.
Foroulis, Z. Andrew, to Exxon Research and Engineering Co. Process for removing acidic gases. 4,405,584, Cl. 423-228.000.
Forster, Michel; Jaouen, Adrien; Jorda, Alain; and Rampin, Pierre, to Commissariat a l'Energie Atomique. Process and device for monitoring the functioning of a liquid-liquid extraction column. 4,405,988, Cl. 364-502.000.
Foster, Robert A. L.; and Childs, Geoffrey H. L., to Post Office. Elimination of display blanks resulting from the use of character attribute codes in a videotex type system. 4,405,830, Cl. 178-30.000.
Foster Wheeler Energy Corporation: *See—*
Neale, Thomas J.; Alverson, Frederick C.; and Karg, John S., 4,405,561, Cl. 422-145.000.
Stewart, Robert D.; and Gamble, Robert L., 4,404,755, Cl. 34-57.00A.
Foust, Robert K. Coffin bed adjusting apparatus. 4,404,716, Cl. 27-12.000.
Fox, Irwin: *See—*
Samuels, Alvin, 4,405,563, Cl. 422-169.000.
Frame, Norman J., to W. H. Brady Co. Switching contact. 4,405,849, Cl. 200-262.000.
Franchino, Fulvio: *See—*
Egidi, Paolo; and Franchino, Fulvio, 4,405,555, Cl. 264-315.000.
Franckowiak, Sigismond: *See—*
Deschamps, Andre; Franckowiak, Sigismond; and Le Page, Jean-Francois, 4,405,442, Cl. 208-107.000.
Franke, Horst; Linder, Ernst; Moser, Winfried; Muller, Klaus; and Rieger, Franz, to Robert Bosch GmbH. Optical combustion sensor system. 4,404,841, Cl. 73-35.000.
Franklin, Joseph E.: *See—*
Griffith, Cecil B.; Thomas, Jerry D.; Demianczuk, Dionisyj W.; Abraham, John K.; and Franklin, Joseph E., 4,405,380, Cl. 148-2.000.
Franklin, Paul R., Jr. CO_2 Snow cooler with snow splitting bottom. 4,404,818, Cl. 62-384.000.
Franz, John E., to Monsanto Company. Salts of N-phosphonomethylglycine. 4,405,531, Cl. 260-501.120.
Franz Plasser Bahnbauma-Schinen-Industriegesellschaft mbH: *See—*
Theurer, Josef, 4,404,913, Cl. 104-12.000.
Fraval, Robert H.; and Oakford, Howerd P., to National Research Development Corporation. Weighing devices. 4,405,024, Cl. 177-200.000.
Frederick, David C., to Hope Plastics Corporation. Traversing core yarn guide for spinning frames. 4,404,790, Cl. 57-12.000.
Freiborg, Bennie. Multi purpose roof piece. 4,404,783, Cl. 52-518.000.
Freitag, Dieter; Reinking, Klaus; and Tacke, Peter, to Bayer Aktiengesellschaft. Use of hydrogenated polybenzyls as a mould-release agent for aromatic polyesters. 4,405,554, Cl. 264-300.000.
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Tults, Juri; and French, Michael P., 4,405,947, Cl. 358-193.100.
Frentzen, Hermann-Josef: *See—*
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Freund, Samuel M. Method for removal of phosgene from boron trichloride. 4,405,423, Cl. 204-157.10R.
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Frick Company: *See—*
Garland, Milton W., 4,404,810, Cl. 62-73.000.
Fridley, Kenneth P.; and Fridley, Robert E. Skid pad for moving heavy items. 4,405,673, Cl. 428-80.000.
Fridley, Robert E.: *See—*
Fridley, Kenneth P.; and Fridley, Robert E., 4,405,673, Cl. 428-80.000.
Friedrich, Wilhelm: *See—*
Hafner, Walter; Markl, Erich; Bibel, Ludwig; Kreis, Gerhard; Samrowski, Dietrich; Wick, Manfred; Deubzer, Bernward; and Friedrich, Wilhelm, 4,405,469, Cl. 252-28.000.
Frisbee, Claude M., to J. I. Case Company. Adjustment and stabilizer mechanism for dozer blade. 4,405,019, Cl. 172-816.000.
Frith, Marvin E. Tool. 4,404,835, Cl. 72-325.000.
Fritz Studer AG: *See—*
Renker, Hansjorg, 4,405,683, Cl. 428-323.000.
Fritz, Thomas A.; and Shrode, James W. Portable chain saw sharpening kit with cutting link alignment means and method for using same. 4,404,871, Cl. 76-25.00A.
Fritz, Thomas A. Portable chain saw sharpening kit with depth gauge filing attachment and method of using same. 4,404,872, Cl. 76-25.00A.
Fritzsche, Eldred N.; Josephson, Edgar F.; and Pulcrano, Frank C., to ACF Industries, Incorporated. Clamping assembly for lifting heavy objects having a bulbous engagement portion. 4,405,168, Cl. 294-103.00R.
Frohlich, Alfons; and Griessbaum, Karl, to Opti Patent-, Forschungs- und Fabrikations AG. Woven slide fastener stringer. 4,404,998, Cl. 139-384.00B.
Frohwerk, Arthur E.; and Enting, David E., to Procter & Gamble Company, The. Accurately placed stress concentrating aperture in flexible packages. 4,404,879, Cl. 83-22.000.
Frye, Kenneth G.; Grody, Donald R.; and Guild, Gerald A., to Beloit Corporation. Air reject gate. 4,405,126, Cl. 271-279.000.
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, to Hoffmann-La Roche Inc. Pyrrolo[3,4-d] [2] benzazepines. 4,405,518, Cl. 260-245.700.
Fuchs, Otto; Kroh, Adolf; and Teige, Wolfgang, to Hoechst Aktiengesellschaft. Process for mass coloring thermoplastic plastics. 4,405,734, Cl. 524-90.000.
Fuchs, Otto; Hunger, Klaus; Weber, Dieter; and Zunker, Reinhard, to Hoechst Aktiengesellschaft. 1,3,4-Oxadiazoles. 4,405,793, Cl. 548-131.000.
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; Stendel, Wilhelm; Lantzsch, Reinhard; and Marhold, Albrecht, to Bayer Aktiengesellschaft. Combating arthropods with fluorine-containing phenylacetic acid esters. 4,405,639, Cl. 424-278.000.
Fuhrmeister, Ralph, to Furma Manufacturing Co. Pty. Ltd. Method and apparatus for mounting rivets or the like in a flexible carrier. 4,404,742, Cl. 29-798.000.
Fuji Electric Company, Ltd.: *See—*
Masuda, Yoshio; Miyazaki, Takeaki; Yamada, Osamu; and Hiramoto, Akira, 4,405,866, Cl. 290-53.000.
Fuji Photo Film Co., Ltd.: *See—*
Masuda, Nobuhito; Nagatomo, Shigeru; and Mihara, Yuji, 4,405,711, Cl. 435-4.000.
Takahashi, Yonosuke; Wada, Minoru; and Hasegawa, Eiichi, 4,405,706, Cl. 430-271.000.
Watarai, Shu; Ishii, Kazuo; and Takayama, Takeshi, 4,405,704, Cl. 430-74.000.
Yamada, Yasuyuki; Tsuji, Nobuo; Okita, Tsutomu; and Mukunoki, Yasuo, 4,405,481, Cl. 252-62.540.
Fuji Xerox Co., Ltd.: *See—*
Omori, Takashi; Koguchi, Kenji; Yamagishi, Masahiko; and Takeuchi, Higehumi, 4,405,951, Cl. 358-256.000.
Takeyama, Kokichi; Sugawara, Kiyoshi; and Fukagawa, Yasuyuki, 4,405,123, Cl. 271-22.000.
Fujieda, Mamoru: *See—*
Yamauchi, Teruo; Ohyama, Yoshishige; Kuroiwa, Hiroshi; Fujieda, Mamoru; and Kirisawa, Tadashi, 4,404,846, Cl. 73-118.000.
Fujii, Hideharu: *See—*
Ishii, Kiyoichi; Fujii, Hideharu; and Kobayashi, Kenji, 4,405,932, Cl. 357-13.000.
Fujii, Tetsuya; Oguchi, Yukio; Sumita, Norio; and Goto, Isamu, to AMSTED Industries Incorporated. Method of manufacturing complex metallic plate. 4,405,295, Cl. 419-28.000.
Fujii, Yohji; and Minowa, Junichiro, to Nippon Telegraph and Telephone Public Corporation. Blazed diffraction grating structures and method of manufacturing the same. 4,405,405, Cl. 156-633.000.
Fujikawa, Yasuo, to Nissan Motor Company, Limited. Fuel-supply control system for gas-turbine engine. 4,404,945, Cl. 123-478.000.
Fujimoto, Masayuki: *See—*
Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, 4,405,472, Cl. 252-62.3BT.
Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, 4,405,473, Cl. 252-62.3BT.
Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, 4,405,474, Cl. 252-62.3BT.
Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, 4,405,475, Cl. 252-62.3BT.
Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, 4,405,476, Cl. 252-62.3BT.
Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, 4,405,478, Cl. 252-62.3BT.
Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, 4,405,479, Cl. 252-62.3BT.
Fujimoto, Takanori; and Tada, Yasuo, to Mitsubishi Denki Kabushiki Kaisha. Magnet ignition device. 4,404,952, Cl. 123-602.000.
Fujioka, Akira; Sakiyama, Kazuo; Takigawa, Akio; and Yoshida, Motoaki, to Nippon Sheet Glass Co. Ltd.; and Sumitomo Chemical Company, Limited. Coated shaped article of polycarbonate type resin. 4,405,679, Cl. 428-216.000.
Fujisawa, Kyuichi, to Alps Electric Co., Ltd. Pen type multi-color recording device. 4,405,931, Cl. 346-139.00R.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Takaya, Takao; Inoue, Yoshikazu; Murata, Masayoshi; and Takasugi, Hisashi, 4,405,617, Cl. 424-246.000.

Fujita, Shoichi; Kodama, Katsuhisa; and Yuge, Kiyohiro, to Takeda Chemical Industries, Ltd. Method for producing fire-resistant, thermally insulating board. 4,405,682, Cl. 428-317.700.

Fujita, Toshio: *See—*
Otoguro, Yasuo; Hashimoto, Katukuni; Takahashi, Hisashi; and Fujita, Toshio, 4,405,369, Cl. 75-126.00C.

Fujitsu Limited: *See—*
Hasegawa, Hiroshi; Negita, Moriyasu; Kamiya, Yoshiaki; Tamura, Masaru; Tamura, Masaru; and Kinoshita, Yuji, 4,405,911, Cl. 335-202.000.
Sakurai, Junji, 4,404,735, Cl. 29-576.00W.
Sasaki, Nobuo, 4,404,733, Cl. 29-571.000.
Shirai, Kazunari; and Tanaka, Izumi, 4,405,995, Cl. 365-174.000.

Fujiwara, Akiko; and Hoshino, Tatsuo, to Hoffmann-La Roche Inc. Process for the preparation of optically active anthracycline glycosides A and B. 4,405,713, Cl. 435-78.000.

Fukagawa, Yasuyuki: *See—*
Takeyama, Kokichi; Sugawara, Kiyoshi; and Fukagawa, Yasuyuki, 4,405,123, Cl. 271-22.000.

Fukaya, Masaki: *See—*
Komatsu, Toshiyuki; Fukaya, Masaki; Uzawa, Shunichi; Yoshioka, Seishiro; and Shirato, Yoshiaki, 4,405,915, Cl. 338-15.000.

Fukushima, Takashi, to Ricoh Company, Ltd. Variable speed signal printing apparatus. 4,405,245, Cl. 400-144.200.

Fulghum Industries, Inc.: *See—*
McKnight, James B., 4,404,986, Cl. 137-355.170.

Fuller, Larry E.: *See—*
Cracauer, Raymond F.; Fuller, Larry E.; Martinez, Felix J.; and Cosentino, Louis C., 4,405,320, Cl. 604-175.000.

Fuller, William J., to Auto Stop Corporation. Automatic shutoff valve. 4,405,000, Cl. 141-198.000.

Fulton, Robert W. Electrical connector for high fidelity audio equipment. 4,405,196, Cl. 339-273.00F.

Funada, Fumiaki; Takamatsu, Toshiaki; Yutaka, Ishii; and Wada, Tomio, to Sharp Kabushiki Kaisha. Matrix liquid-crystal display devices. 4,405,209, Cl. 350-341.000.

Funaki, Hidefumi: *See—*
Kobayashi, Haruhiro; Funaki, Hidefumi; and Sakurai, Takehiro, 4,405,436, Cl. 204-298.000.

Funakubo, Tomoki: *See—*
Kasuga, Muneo; Nishikawa, Masaji; and Funakubo, Tomoki, 4,405,224, Cl. 355-3.00R.

Funkhouser, Richard L., to Documation Incorporated. Striker assembly for line printers. 4,404,901, Cl. 101-93.020.

Furihata, Toshikazu: *See—*
Hasui, Hiroshi; Furihata, Toshikazu; Takanashi, Kazuko; and Ohmori, Masahiko, 4,405,807, Cl. 560-75.000.

Furma Manufacturing Co. Pty. Ltd.: *See—*
Fuhrmeister, Ralph, 4,404,742, Cl. 29-798.000.

Furukawa, Akihiko: *See—*
Sasaki, Gen; Taguchi, Minoru; Kanzaki, Koichi; and Furukawa, Akihiko, 4,404,738, Cl. 29-577.00C.

Futamata, Hideo: *See—*
Matsunaga, Mamoru; Usami, Teruo; Okuda, Haruo; and Futamata, Hideo, 4,405,376, Cl. 106-300.000.

Fuziwara, Akio: *See—*
Ozawa, Hiroshi; Shin, Masaaki; Fuziwara, Akio; Nakamura, Mitsuyoshi; Otsuka, Ichiro; and Sugazaki, Kazuo, 4,405,671, Cl. 428-65.000.

G. A. Pfleiderer GmbH & Co., KG: *See—*
Rother, Bruno; and Trommen, Hartmut, 4,405,398, Cl. 156-242.000.

G. D. Searle & Co.: *See—*
Wagner, Hans, 4,405,780, Cl. 544-263.000.

Gabriele, Leonard A., to Lear Siegler, Inc. Pot broach machine with turn-over loader. 4,405,270, Cl. 409-244.000.

Gadelius K.K.: *See—*
Okamoto, Eiji, 4,405,013, Cl. 165-86.000.

GAF Corporation: *See—*
Chakrabarti, Paritosh M.; Hashem, Mohamed M.; and Cheng, Tom M. H., 4,405,799, Cl. 549-369.000.
Nelsen, Suzanne B., 4,405,749, Cl. 524-100.000.

Gaitanopoulos, Dimitri; and Weinstock, Joseph, to SmithKline Beckman Corporation. 3-Carboxy-2-azabicyclo[2.2.1]heptane derivatives. 4,405,787, Cl. 546-112.000.

Gallaro, Anthony V.; and Hedler, Robert A., to North American Philips Consumer Electronics Corp. Data display CRT having a yellow-emitting screen. 4,405,880, Cl. 313-467.000.

Gallelli, Joseph F.: *See—*
Chatterji, Dulal C.; and Gallelli, Joseph F., 4,405,611, Cl. 424-180.000.

Gallis, Anthony J.: *See—*
Doubleday, Max; and Gallis, Anthony J., 4,405,112, Cl. 249-207.000.

Galloway, James H., to Energy Development Associates, Inc. Control system for electric powered vehicle. 4,405,891, Cl. 320-15.000.

Gamble, Robert L.: *See—*
Stewart, Robert D.; and Gamble, Robert L., 4,404,755, Cl. 34-57.00A.

Ganellin, Charon R.: *See—*
Durant, Graham J.; and Ganellin, Charon R., 4,405,621, Cl. 424-250.000.

Garland, Milton W., to Frick Company. Method of making ice using hot gas defrost. 4,404,810, Cl. 62-73.000.

Gatsis, John G.: *See—*
Hilfman, Lee; and Gatsis, John G., 4,405,447, Cl. 208-251.00R.

Gauger, Richard L. Tool grinding fixture. 4,404,773, Cl. 51-218.00A.

Gauthier, Aurele: *See—*
Vivier, Ghislain; and Gauthier, Aurele, 4,405,069, Cl. 225-93.000.

Gebeke, Charles D., to Minnesota Mining and Manufacturing Company. Cassette with a slack limiter tab. 4,405,097, Cl. 242-199.000.

Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H.: *See—*
Brandenburg, Helmut, 4,405,178, Cl. 299-81.000.

Gebr. Happich GmbH: *See—*
Janz, Joachim; and Svejkovsky, Ulrich, 4,404,709, Cl. 16-111.00R.

Geisler, Erich, to Marker-Patentverwertungsgesellschaft mbH. Testing device for force measuring apparatus. 4,404,839, Cl. 73-1.00B.

GEMA, S.A.: *See—*
Palomo-Coll, Alberto; and Palomo-Coll, Antonio L., 4,405,782, Cl. 544-21.000.

General Dynamics, Pomona Division: *See—*
Piesik, Edward T., 4,404,887, Cl. 89-1.816.

General Electric Company: *See—*
Cavero, Leonardo P., 4,405,966, Cl. 361-80.000.
Gordon, Gerald M.; Cowan, Robert L., II; and Davies, John H., 4,406,012, Cl. 376-414.000.
Kinson, Philip L., 4,405,739, Cl. 524-117.000.
Nondahl, Thomas A., 4,405,873, Cl. 310-156.000.
Pritzkow, Dennis H.; Zabel, Jack H.; and Lang, George R., 4,405,863, Cl. 250-385.000.
Rampel, Guy, 4,405,700, Cl. 429-248.000.

General Foods Corporation: *See—*
Zemelman, Valery B.; and Kleiner, Fredric, 4,404,807, Cl. 62-1.000.

General Motors Corporation: *See—*
Bell, Albert H., III; and Hyde, James C., 4,404,806, Cl. 60-737.000.
Palma, James D.; and Seino, Michael J., 4,405,912, Cl. 335-260.000.
Rosenkrands, Johannes W., 4,405,143, Cl. 280-403.000.

Genik-Sas-Berezowsky, Roman M.: *See—*
Weir, Donald R.; and Genik-Sas-Berezowsky, Roman M., 4,405,566, Cl. 423-15.000.

Genske, Roger P.: *See—*
Christensen, Ronald C.; Genske, Roger P.; Kester, Dennis E.; and Ossian, William F., 4,405,667, Cl. 428-35.000.

Gentiluomo, Joseph A., to United States of America, Army. Obturator system. 4,404,888, Cl. 89-26.000.

Genty, Bernard; Marraud, Alain; and Valle, Roger, to Office National d'Etudes et de Recherches Aerospatiales. Device for adjusting the position and the orientation around an axis of a sample holder for an electron microscope. 4,405,865, Cl. 250-442.100.

Georgia-Pacific Corporation: *See—*
DeLuca, Raymond F., 4,404,880, Cl. 83-42.000.

Georgiev, Vesselin Y.; and Mednikarov, Vladimir S., to Institute Po Mechanika I Biomechanika. Hydro-pneumatic accumulator for impulse sprinkling. 4,405,084, Cl. 239-99.000.

Gerger, Wolfgang: *See—*
Kainzner, Adolf; Gerger, Wolfgang; and Lukas, Walter, 4,405,723, Cl. 501-36.000.

Gerhart, Fritz E., to Merrell Toraude et Compagnie. Process for preparing fluorinated amino-nitriles. 4,405,530, Cl. 260-465.50R.

Gerst, Carl W.; Paciorek, Leonard J.; and Sly, Thomas L., to Anaren Microwave, Inc. Angle digitizing method. 4,405,895, Cl. 324-83.00D.

Gesellschaft zur Forderung der Forschung an der Eidgenossischen Technischen Hochschule: *See—*
Hanulik, Jozef, 4,405,430, Cl. 204-400.000.

Gesing, Adam J.: *See—*
Dewing, Ernest W.; and Gesing, Adam J., 4,405,415, Cl. 204-67.000.

GF Business Equipment, Inc.: *See—*
McCracken, Richard W.; Textoris, Melvin A.; and Williams, Philip J., 4,404,785, Cl. 52-290.000.

Giacchetti, Giancarlo; Ransch, Jurgen; and Walker, Clive T., to European Atomic Energy Community (Euratom). Secondary-electron detector for analyzing irradiated samples for scanning electron microscopes and microprobes. 4,405,861, Cl. 250-305.000.

Giacobbe, Thomas J.; and Tsien, Grace, to Rhone-Poulenc, Inc. Process for recovering and purifying herbicidal phenoxybenzoic acid derivatives. 4,405,805, Cl. 560-21.000.

Giannelli, Joseph F.; Flynn, George C.; and Ryan, Leo F., to Ecodyne Corporation. Backwash method and apparatus. 4,405,466, Cl. 210-798.000.

Gibbons, Alfred M., to Kanmark, Inc. Fixture for perforated board. 4,405,110, Cl. 248-221.200.

Gibbons, Edward J., to Colgate-Palmolive Company. Method and apparatus for manufacturing dentifrice containing dispersed speckles. 4,405,399, Cl. 156-243.000.

Gibbs, Charles G.: *See—*
Rutter, Jerry L.; Gibbs, Charles G.; and Hedrich, Loren W., 4,405,791, Cl. 546-316.000.

Gibson, Richard J.; and Fogel, Joseph, to B. F. Goodrich Company, The. Niyuminouzbituminous emulsion roof resaturant. 4,405,375, Cl. 106-277.000.

Giessen, Bill C.: *See—*
Ray, Ranjan; Panchanathan, Viswanathan; and Giessen, Bill C., 4,405,368, Cl. 75-124.000.

Gifford, Howard: *See—*
Stuck, Earl N.; Pigney, Keith D.; and Gifford, Howard, 4,405,296, Cl. 425-6.000.

Gilb, Tyrell T., to Simpson Strong-Tie Company, Inc. Mud-sill anchor. 4,404,781, Cl. 52-295.000.

Gilson, John D., to Carrier Corporation. Air conditioning economizer control method and apparatus. 4,404,815, Cl. 62-180.000.

Gipson, Robert M.: *See*—
McCoy, David R.; McEntire, Edward E.; and Gipson, Robert M., 4,405,015, Cl. 166-267.000.

Girgis, Mikhail M., to PPG Industries, Inc. Aqueous, adhesive coating composition with a non-self-crosslinkable elastomer for use with filamentary materials. 4,405,746, Cl. 524-501.000.

Glacier Metal Company Limited, The: *See*—
Davies, Glyndwr J., 4,405,740, Cl. 524-287.000.

Glaser, Mark C.: *See*—
Allen, Richard G.; and Glaser, Mark C., 4,405,017, Cl. 166-382.000.

Gmundner Zementwerke Hans Hatschek Aktiengesellschaft: *See*—
Kainzner, Adolf; Gerger, Wolfgang; and Lukas, Walter, 4,405,723, Cl. 501-36.000.

Gobel, Wilhelm: *See*—
Musch, Rudiger; Schubart, Rudiger; Gobel, Wilhelm; Alberts, Heinrich; and Hohmann, Gerhard, 4,405,742, Cl. 524-315.000.

Goebel, Franz; and Kealey, Kathleen M., to GTE Products Corporation. Electrochemical cell. 4,405,694, Cl. 429-101.000.

Goetz, Richard W., to National Distillers and Chemical Corporation. Process for preparing glycolaldehyde and/or ethylene glycol. 4,405,821, Cl. 568-862.000.

Golar, Paul: *See*—
Kinkelaar, Edmund W.; and Golar, Paul, 4,405,663, Cl. 427-428.000.

Goldberg, Edward M.; and Bazell, Seymour, to UreSil Company. Body fluid suction device indicators. 4,404,924, Cl. 116-270.000.

Goncharov, Boris K.: *See*—
Belsky, Valentin I.; Suturin, Serafim N.; Orlov, Gennady I.; Dolgov, Anatoly V.; Goncharov, Boris K.; Antonov, Vladimir I.; and Naryshkin, Jury A., 4,405,118, Cl. 266-227.000.

Goodyear Tire & Rubber Company, The: *See*—
Welter, Thomas N. H., 4,405,007, Cl. 152-353.00R.

Googin, John M.; Napier, John M.; and Travaglini, Michael A. Process for removing halogenated aliphatic and aromatic compounds from petroleum products. 4,405,448, Cl. 208-262.000.

Gordon, Gerald M.; Cowan, Robert L., II; and Davies, John H., to General Electric Company. Nuclear fuel elements having a composite cladding. 4,406,012, Cl. 376-414.000.

Gordon, Pat L.; Calfee, Richard V.; and Miner, Jay, to Intermedics, Inc. Implantable device with microprocessor control. 4,404,972, Cl. 128-419.0PG.

Gorman, Kenneth G.; and Marx, Richard A., to Valley Rolling Mills, Inc. Antisiphon lap joint for building sheets. 4,404,784, Cl. 52-534.000.

Goto, Isamu: *See*—
Fujii, Tetsuya; Oguchi, Yukio; Sumita, Norio; and Goto, Isamu, 4,405,295, Cl. 419-28.000.

Goto, Norio, to Hitachi, Ltd.; Hitachi Metals, Ltd.; and Research Development Cooperation of Japan. Frost sensor. 4,404,852, Cl. 73-599.000.

Gotoh, Katsuhiko: *See*—
Ishikawa, Masayuki; Sugimoto, Akiko; Eguchi, Yukuo; Sasaki, Fujinori; Ebisawa, Hisashi; Moriguchi, Soyao; and Gotoh, Katsuhiko, 4,405,623, Cl. 424-251.000.

Graetzel, Michael; Kalyanasundaram, Kuppuswamy; Borgarello, Enrico; and Pelizzetti, Ezio, to Graetzel, Michael. Method for producing hydrogen and elemental sulphur by photochemical oxidation-reduction of hydrogen sulphide and metal sulphides. 4,405,424, Cl. 204-157.10R.

Grantham, Daniel H.: *See*—
Swindal, James L.; and Grantham, Daniel H., 4,405,970, Cl. 361-283.000.

Grass, Hansjorg; and Zell, Reinhard, to Hoffmann- La Roche Inc. Process for the manufacture of cyclohexene derivatives. 4,405,417, Cl. 204-73.00R.

Grau, Thomas G., to Bell Telephone Laboratories, Incorporated. Photo-electric apparatus for testing electrical connector contacts. 4,405,233, Cl. 356-237.000.

Gravity Guidance, Inc.: *See*—
Miller, Jack V., 4,405,127, Cl. 272-62.000.

Gray, Jack, to United States of America, Army. GSP/Doppler sensor velocity derived attitude reference system. 4,405,986, Cl. 364-434.000.

Gray, James W. Adaptor for disposable cans for siphon-type spray paint guns. 4,405,088, Cl. 239-302.000.

Gray, Robert D. Dehydrated fish concentrate and process for same. 4,405,653, Cl. 426-643.000.

Gray, Thomas J., to Olin Corporation. Raney alloy coated cathode for chlor-alkali cells. 4,405,434, Cl. 204-293.000.

Greatbatch Enterprises, Inc.: *See*—
Greatbatch, Wilson, 4,405,311, Cl. 604-20.000.

Greatbatch, Wilson, to Greatbatch Enterprises, Inc. Method and apparatus for direct electrical injection of gold ions into tissue such as bone. 4,405,311, Cl. 604-20.000.

Green, Leonard O. Pre-coiled cable-lock device. 4,404,822, Cl. 70-233.000.

Green, Michael J.: *See*—
Blythin, David; and Green, Michael J., 4,405,810, Cl. 562-495.000.

Greening, Nathan R.: *See*—
Serafin, Frank G.; Previte, Robert W.; Greening, Nathan R.; Kantro, David L.; and Tang, Fulvio J., 4,405,372, Cl. 106-90.000.

Greer, Marian B. Method for the production of a composite material. 4,405,542, Cl. 264-109.000.

Greinecker, Herbert; and Stern, Gerhard, to Chemie Linz Aktiengesellschaft. Filler for paper, card or board, a process for its manufacture, and paper, card or board containing the filler. 4,405,744, Cl. 524-423.000.

Greubel, Waldemar: *See*—
Baur, Guenter; Greubel, Waldemar; Krueger, Hans; and Schauer, Alois, 4,405,210, Cl. 350-345.000.

Griessbaum, Karl: *See*—
Frohlich, Alfons; and Griessbaum, Karl, 4,404,998, Cl. 139-384.00B.

Griffis, Patrick D., to RCA Corporation. Volume control signal coupling circuit in an audio signal processing system. 4,405,948, Cl. 358-198.000.

Griffith, Cecil B.; Thomas, Jerry D.; Demianczuk, Dionisyj W.; Abraham, John K.; and Franklin, Joseph E., to Republic Steel Corporation. High strength, low alloy steel with improved surface and mechanical properties. 4,405,380, Cl. 148-2.000.

Grigo, Ulrich: *See*—
Nielinger, Werner; Lindner, Christian; Grigo, Ulrich; Binsack, Rudolf; Fahnler, Friedrich; and Brassat, Bert, 4,405,748, Cl. 524-504.000.

Grinnell Fire Protection Systems Company, Inc.: *See*—
Fischer, Michael A., 4,405,018, Cl. 169-37.000.

Grisar, J. Martin: *See*—
Dage, Richard C.; Palopoli, Frank P.; Schnettler, Richard A.; and Grisar, J. Martin, 4,405,628, Cl. 424-263.000.

Grisar, Johann M.: *See*—
Schnettler, Richard A.; Dage, Richard C.; and Grisar, Johann M., 4,405,635, Cl. 424-273.00R.

Grobman, Warren D.; Nelson, David A., Jr.; and Warlaumont, John M., to International Business Machines Corporation. Alignment method and apparatus for x-ray or optical lithography. 4,405,238, Cl. 356-401.000.

Grody, Donald R.: *See*—
Frye, Kenneth G.; Grody, Donald R.; and Guild, Gerald A., 4,405,126, Cl. 271-279.000.

Groff, James W. Timed telephone ring silencer device. 4,405,839, Cl. 179-84.00C.

Grogler, Gerhard: *See*—
Recker, Klaus; Reinecke, Gerd; Awater, Albert; Grogler, Gerhard; and Kraft, Karl J., 4,405,752, Cl. 524-847.000.

Grosbois, Jean; and Dumousseau, Jean-Yves, to Rhone-Poulenc Specialites Chimiques. Hydrogenation of chlorosilanes to silane, SiH_4, in bath of molten salts. 4,405,591, Cl. 423-347.000.

Gross, James R.; and Larkin, Mark E., to Abbott Laboratories. Connecting device for medical liquid containers. 4,405,312, Cl. 604-29.000.

Groupement d'Interet Economic dit: Centre International de Recherches Dermatologiques C.I.R.D.: *See*—
Shroot, Braham; Maignan, Jean; and Lang, Gerard, 4,405,615, Cl. 424-232.000.

Grubert, Klaus: *See*—
Ruhnau, Gerhard; Grubert, Klaus; Hesse, Karl-Heinz; and Auding, Rudolf, 4,405,982, Cl. 364-200.000.

Grundfos Pumpenfabrik GmbH: *See*—
Jensen, Niels D.; and Johansen, Arne, 4,404,729, Cl. 29-568.000.

Grunewalder, John F.: *See*—
Castellucci, Nicholas T.; Grunewalder, John F.; and Ostrowski, John S., 4,405,428, Cl. 204-181.00R.

GTE Automatic Electric Incorporated: *See*—
Blackburn, Tom L., 4,405,903, Cl. 330-284.000.
Lender, Adam, 4,406,009, Cl. 375-18.000.

GTE Automatic Electric Labs Inc.: *See*—
Simmons, Nathaniel; Magnusson, Stig; Puccini, Sergio E.; McLaughlin, Donald W.; and Stelt, David J., 4,406,005, Cl. 370-63.000.

GTE Products Corporation: *See*—
Belttary, Harold E., 4,405,846, Cl. 200-144.00R.
Goebel, Franz; and Kealey, Kathleen M., 4,405,694, Cl. 429-101.000.
Haraden, Thomas; and Hough, Harold L., 4,405,877, Cl. 313-318.000.
Overstreet, Scott M.; and Swenson, C. Henning, 4,405,889, Cl. 320-1.000.
Overstreet, Scott M.; and Swenson, C. Henning, 4,405,975, Cl. 363-49.000.
Yale, Ramon L., 4,405,691, Cl. 428-690.000.

Guardiola, Agustin D. Apparatus for handling and weighing fruits and the like. 4,405,023, Cl. 177-59.000.

Guild, Gerald A.: *See*—
Frye, Kenneth G.; Grody, Donald R.; and Guild, Gerald A., 4,405,126, Cl. 271-279.000.

Guiley, Clifford D., Jr.: *See*—
Murphy, Walter T.; and Guiley, Clifford D., Jr., 4,405,817, Cl. 568-701.000.

Guisinger, Barrett E., to Sony Corporation. Radio frequency equalizer. 4,405,954, Cl. 360-65.000.

Gulf Oil Corporation: *See*—
Rutter, Jerry L.; Gibbs, Charles G.; and Hedrich, Loren W., 4,405,791, Cl. 546-316.000.

Gullo, James M.: *See*—
Heilman, William P.; and Gullo, James M., 4,405,619, Cl. 424-249.000.

Gulton Industries, Inc.: *See*—
Rance, John E., 4,405,893, Cl. 323-271.000.

Guntulis, Raymond S.: *See*—
Sadanandan, Kunissey P.; and Guntulis, Raymond S., 4,404,875, Cl. 81-53.200.

Gutierrez, Richard; Kay, Edward L.; and Serbin, David J., to Firestone Tire & Rubber Company, The. Methods for storage of guayule plant material. 4,405,532, Cl. 260-816.00R.

Guttler, Hermann: *See—*
Wolf, Horst; and Guttler, Hermann, 4,404,791, Cl. 57-80.000.

Guttmann, Friedrich W., to Klockner-Humboldt-Deutz AG. Method and device for generating a convective reaction system between a reaction agent and a molten bath. 4,405,366, Cl. 75-93.00E.

Gwyn, John E., to Shell Oil Company. Process for maintaining the temperature of a steam-making effluent above the dew point. 4,405,440, Cl. 208-48.00Q.

H. L. Blachford Ltd/Ltee: *See—*
Blachford, John, 4,404,828, Cl. 72-42.000.

Haacke, Claus: *See—*
Voges, Karl-Friedrich; Haacke, Claus; and Heise, Peter, 4,405,163, Cl. 285-305.000.

Haantera, Antti: *See—*
Koskivirta, Veikko; and Haantera, Antti, 4,405,259, Cl. 405-62.000.

Haemonetics Corporation: *See—*
Schoendorfer, Donald W., 4,405,079, Cl. 494-1.000.

Hafner, Walter; Markl, Erich; Eibel, Ludwig; Kreis, Gerhard; Samrowski, Dietrich; Wick, Manfred; Deubzer, Bernward; and Friedrich, Wilhelm, to Consortium fur Elektrochemische Ind. GmbH. Greases prepared from organosiloxanes with SiC-bonded groups. 4,405,469, Cl. 252-28.000.

Hager, Markus. Convertible outerwear and carrying bag. 4,404,687, Cl. 2-94.000.

Hagg, Rune; and Lundstrom, Lennart, to ASEA Aktiebolag. Method for mounting a winding in a transformer. 4,404,740, Cl. 29-606.000.

Hagiwara, Miyuki: *See—*
Hosoi, Fumio; Sasaki, Takashi; and Hagiwara, Miyuki, 4,405,426, Cl. 204-159.150.

Hahn, Frecerick C.; Barber, William R., Jr.; and Hampel, David A., to Esco Corporation. Excavating tooth. 4,404,760, Cl. 37-142.00R.

Hahn, Kurt L.: *See—*
Allen, Robert J.; Blake, Edward W.; Rao, Manjeshwar S.; and Hahn, Kurt L., 4,404,837, Cl. 72-349.000.

Hakli, Reijo S., to Lannen Tehtaat Oy. Method and device for planting plants. 4,404,917, Cl. 111-3.000.

Hakozaki, Susumu: *See—*
Nakajima, Kazuhisa; Miyashita, Masahiko; Hakozaki, Susumu; and Chosakon, Yoshinori, 4,405,808, Cl. 560-247.000.

Hall, Douglas D., to Armco Inc. Underwater devices with remotely operated latch means. 4,405,263, Cl. 405-224.000.

Hall, Eldon C.; Seward, Harold H.; Sabo, Joseph D.; De Marco, Vincent R.; and Prisant, Millard B., to United States of America, Navy. Guidance computer. 4,405,985, Cl. 364-423.000.

Hall, Henry K.; and Wilson, Donald R., to Celanese Corporation. Acrylate and methacrylate monoesters of pentaerythritol and pentaerythritol orthoesters and polymers and copolymers derived therefrom. 4,405,798, Cl. 549-363.000.

Hall, Jay D.; Stump, Theodore M.; and Thode, Charles W., to Anaconda-Ericsson, Inc. Ring scheduling apparatus for a digital multiplexed telecommunication system. 4,406,004, Cl. 370-15.000.

Hamilton Stands, Incorporated: *See—*
Clyburn, C. Wayne, 4,405,107, Cl. 248-122.000.

Hammann, Ingeborg: *See—*
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; Stendel, Wilhelm; Lantzsch, Reinhard; and Marhold, Albrecht, 4,405,639, Cl. 424-278.000.

Hampel, David A.: *See—*
Hahn, Frecerick C.; Barber, William R., Jr.; and Hampel, David A., 4,404,760, Cl. 37-142.00R.

Handt, Alan E., to Ash, Stephen R., a part interest. Spike exchanger for continuous ambulatory peritoneal dialysis. 4,405,315, Cl. 604-80.000.

Hanifl, Paul H., to Sage Products, Inc. Needle and syringe destructor. 4,404,881, Cl. 83-167.000.

Hanna, John W. Clip-on compass. 4,404,752, Cl. 33-347.000.

Hanna, Samuel Y., to Centronics Data Computer Corp. Fully self-contained disposable cartridge for inked ribbons and the like. 4,405,247, Cl. 400-196.100.

Hanover, Barry K.: *See—*
Stephen, Robert L.; Kablitz, Carl; Hanover, Barry K.; Jacobsen, Stephen C.; and Harrow, Jeffrey J., 4,405,305, Cl. 604-49.000.

Hansen, David R., to Shell Oil Company. Roofing shingle. 4,405,680, Cl. 428-285.000.

Hansen, Guenter: *See—*
Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Kermer, Wolf-Dieter, 4,405,330, Cl. 8-639.000.

Hansen, Willi; Kunze, Bernard; and Hermanns, Matthias, to Wilhelm Hegenscheidt Gesellshaft mbH. Deep drilling machine. 4,405,266, Cl. 408-56.000.

Hanulik, Jozef, to Gesellschaft zur Forderung der Forschung an der Eidgenossischen Technischen Hochschule. Remotely operable sample-taking appliance, especially for ascertaining radio activity profiles in contaminated material surfaces. 4,405,430, Cl. 204-400.000.

Hara, Hiroshi: *See—*
Tamura, Takeo; Hara, Hiroshi; and Kido, Takayoshi, 4,405,887, Cl. 318-443.000.

Haraden, Thomas; and Hough, Harold L., to GTE Products Corporation. Variably positional lamp holder assembly. 4,405,877, Cl. 313-318.000.

Hardison, Leslie C.; and Sandstrom, Kenneth A., to National Seal Company. Seam tester. 4,404,857, Cl. 73-827.000.

Hare, Charles E. System for straightening bent automobile bodies. 4,404,838, Cl. 72-457.000.

Hargrove, John D.: *See—*
Barclay, John L.; Hargrove, John D.; and Prince, Richard J., 4,405,503, Cl. 252-455.00Z.

Harke, Hans-Peter: *See—*
Munzenmaier, Wolfgang; Eggensperger, Heinz; Ehlers, Helmut H.; Beilfuss, Wolfgang; Bucklers, Lothar; and Harke, Hans-Peter, 4,405,795, Cl. 549-417.000.

Harnden, Robert M.; and Baugh, Daniel W., Jr., to Dow Chemical Company, The. Preparation of 2-oxazolidinone and ethyleneurea. 4,405,794, Cl. 548-229.000.

Harrah, Larry A.; Mead, Keith E.; and Smith, Henry M. Combination moisture and hydrogen getter. 4,405,487, Cl. 252-194.000.

Harris Corporation: *See—*
Elsbernd, Gerald F., 4,405,928, Cl. 343-912.000.
Kanaly, David B., 4,405,943, Cl. 358-133.000.

Harris, Rano J., Sr., to Dynatech Precision Sampling Corporation. Microdispensing springs with a needle in a tubular extension. 4,404,862, Cl. 73-864.160.

Harrison, Kenneth J.; Raynes, Edward P.; Saunders, Frances C.; and Thompson, David J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Liquid crystal compositions with pleochroic anthraquinone dyes. 4,405,211, Cl. 350-349.000.

Harrow, Jeffrey J.: *See—*
Stephen, Robert L.; Kablitz, Carl; Hanover, Barry K.; Jacobsen, Stephen C.; and Harrow, Jeffrey J., 4,405,305, Cl. 604-49.000.

Harsco Corporation: *See—*
Doubleday, Max; and Gallis, Anthony J., 4,405,112, Cl. 249-207.000.

Harshaw Chemical Company, The: *See—*
Skimin, Carol W., 4,405,413, Cl. 204-55.00R.

Hart, Granville S.: *See—*
Brandewie, Joseph E.; and Hart, Granville S., 4,404,743, Cl. 29-857.000.

Hart, James E., to American Standard Inc. Control valve arrangement for combined brake cylinder and air reservoir device. 4,405,182, Cl. 303-23.00R.

Hartman, Lawrence. Headrest for a chiropractic device. 4,404,966, Cl. 128-69.000.

Hartman, Stanley M.: *See—*
Rice, Richard M.; and Hartman, Stanley M., 4,405,894, Cl. 323-340.000.

Hartmann, Peter J.: *See—*
Turbak, Albin F.; and Hartmann, Peter J., 4,405,549, Cl. 264-188.000.

Hartshorn, Frank; Murphy, Brian J. M.; and Storer, Richard E., to USM Corporation. Shoe support. 4,404,701, Cl. 12-127.000.

Haruta, Masao, to Sony Corporation. Cassette loading and unloading apparatus. 4,405,962, Cl. 360-96.600.

Harvey Hubbell Incorporated: *See—*
Quiogue, Honesto D., 4,405,974, Cl. 362-362.000.

Harvey, William: *See—*
Lancaster, Jack; Floyd, John; and Harvey, William, 4,404,973, Cl. 128-654.000.

Hasebe, Tsutomu: *See—*
Saitoh, Tatsuo; and Hasebe, Tsutomu, 4,405,274, Cl. 411-249.000.

Hasegawa, Eiichi: *See—*
Takahashi, Yonosuke; Wada, Minoru; and Hasegawa, Eiichi, 4,405,706, Cl. 430-271.000.

Hasegawa, Hiroshi; Negita, Moriyasu; Kamiya, Yoshiaki; Tamura, Masaru; Tamura, Masaru; and Kinoshita, Yuji, to Fujitsu Limited. Electromagnetic relay. 4,405,911, Cl. 335-202.000.

Hasegawa, Tsunao: *See—*
Inomata, Akira; Hasegawa, Tsunao; and Ohtake, Yasushi, 4,405,953, Cl. 360-65.000.

Hasenauer, Dieter: *See—*
Fischer, Wilfried; and Hasenauer, Dieter, 4,405,696, Cl. 429-104.000.

Hasenclever, Kaspar D., to Chemische Fabrik Kreussler & Co. GmbH. Cleaning intensifier for use in dry-cleaning machines equipped with adsorption filters. 4,405,511, Cl. 252-547.000.

Hashem, Mohamed M.: *See—*
Chakrabarti, Paritosh M.; Hashem, Mohamed M.; and Cheng, Tom M. H., 4,405,799, Cl. 549-369.000.

Hashimoto, Fukashi, to Mitsubishi Petrochemical Company Limited. Biaxially oriented polypropylene film and method for its production. 4,405,775, Cl. 526-351.000.

Hashimoto, Katukuni: *See—*
Otoguro, Yasuo; Hashimoto, Katukuni; Takahashi, Hisashi; and Fujita, Toshio, 4,405,369, Cl. 75-126.00C.

Hashimoto, Kinro: *See—*
Oyama, Motofumi; and Hashimoto, Kinro, 4,405,756, Cl. 525-237.000.

Haskel, Incorporated: *See—*
Bixby, Willard W., Jr.; and Christopher, Jerry, 4,405,292, Cl. 417-403.000.

Hasui, Hiroshi; Furihata, Toshikazu; Takanashi, Kazuko; and Ohmori, Masahiko, to Mitsui Petrochemical Industries, Ltd. Tetrakis[3-(3,5-di-t-butyl-4-hydroxyphenyl)propionyloxymethyl]methane having a novel crystal structure and process for production thereof. 4,405,807, Cl. 560-75.000.

Hatakeyama, Yasuyuki: *See—*
Yasuda, Mitsuo; Minami, Katsuji; Itokawa, Jiro; Aoto, Yoshiyuki; Hatakeyama, Yasuyuki; and Sakaida, Shinya, 4,405,219, Cl. 353-37.000.

Hatanaka, Katsunori: *See*—
Hirai, Yutaka; Hatanaka, Katsunori; Ayata, Naoki; and Uzawa, Shunichi, 4,405,857, Cl. 250-211.00J.
Hatcher, Frank L., to Intermatic Incorporated. Remote control system for spas. 4,404,697, Cl. 4-492.000.
Hatco Corporation: *See*—
Chaudoir, Roderick J., 4,404,898, Cl. 99-331.000.
Haun, R. P., Jr. Placid shale weighting agent for water base drilling mud. 4,405,468, Cl. 252-8.50B.
Hauser, Kurt, to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co., KG. Fluid friction clutch. 4,405,039, Cl. 192-58.00B.
Hauserman Ltd.: *See*—
Ball, Douglas C.; Stumpf, William S.; and Ludwig, Gary R., 4,404,776, Cl. 52-29.000.
Havens, Donald P.: *See*—
Johnson, Robert A.; and Havens, Donald P., 4,405,909, Cl. 333-198.000.
Hayashi, Hiroshi: *See*—
Sato, Haruhito; Ichikawa, Hiroshi; Hayashi, Hiroshi; and Kurisaki, Konomu, 4,405,467, Cl. 252-1.000.
Hayashi, Shigekazu: *See*—
Miwa, Yukimasa; Shimada, Takeo; Hayashi, Shigekazu; Ukita, Michito; Nakagawa, Hideaki; and Matsuura, Mitsuyuki, 4,405,774, Cl. 526-348.200.
Hayes, John T.: *See*—
Woodall, Leigh C., Jr.; Hayes, John T.; and Currier, Robert G., 4,404,703, Cl. 15-230.110.
Woodall, Leigh C., Jr.; Hayes, John T.; and Currier, Robert G., 4,404,999, Cl. 139-391.000.
Hayes, Russell A.; and Duve, Gerard, to Richardson-Vicks Pty. Limited. Sanitizing formulation. 4,405,482, Cl. 252-99.000.
Hazelwood, Geoffrey, to Baker Perkins Holdings Limited. Density control system for tea packaging apparatus. 4,404,787, Cl. 53-502.000.
Hazelwood, Neil: *See*—
Cave, Ellis K.; and Hazelwood, Neil, 4,405,833, Cl. 179-1.0MN.
Hazlett, Effie Hoopman: *See*—
Hazlett, Robert L., 4,405,008, Cl. 160-213.000.
Hazlett, Robert L., to Hazlett, Effie Hoopman. Adjustable heat shield. 4,405,008, Cl. 160-213.000.
Hecht, Sidney M. Biologically active extracts from *Maytenus nemerosa* (Eckl and Zeyh) Morais (Celastraceae) South Africa and method of obtaining same. 4,405,613, Cl. 424-195.000.
Hedler, Robert A.: *See*—
Gallaro, Anthony V.; and Hedler, Robert A., 4,405,880, Cl. 313-467.000.
Hedrich, Loren W.: *See*—
Rutter, Jerry L.; Gibbs, Charles G.; and Hedrich, Loren W., 4,405,791, Cl. 546-316.000.
Hegler, Roy E., to Knopik, Duane L. Leak detecting method. 4,404,844, Cl. 73-49.200.
Heilman, William P.; and Gullo, James M., to Diamond Shamrock Corporation. Antiinflammatory substituted-1,2,4-triazolo[4,3-b]-1,2,4-triazines. 4,405,619, Cl. 424-249.000.
Heimburger, Norbert: *See*—
Schwinn, Horst; Heimburger, Norbert; Kumpe, Gerhardt; and Wormsbacher, Wilfried, 4,405,603, Cl. 424-101.000.
Heimen, Jochen, to Siemens Aktiengesellschaft. Method of producing luminescent or laser diodes having an internally limited luminescent surface. 4,404,730, Cl. 29-569.00L.
Heinrich, Hans-Otto: *See*—
Bahr, Theodor; Heinrich, Hans-Otto; and Thumm, Helmut, 4,405,091, Cl. 241-33.000.
Heinze, Walter O.; Tufts, Wesley M.; and White, Jeffrey F., to International Water Saving Systems, Inc. Fluid velocity assist. 4,404,696, Cl. 4-420.000.
Heise, Peter: *See*—
Voges, Karl-Friedrich; Haacke, Claus; and Heise, Peter, 4,405,163, Cl. 285-305.000.
Helbig, Joachim W.; and Kopp, Klaus F. Pharmaceutical preparations for and treatment procedures involving increasing plasma bicarbonate level. 4,405,596, Cl. 424-33.000.
Helix Technology Corporation: *See*—
Andeen, Bruce R., 4,404,808, Cl. 62-6.000.
Henderson, Albert E. Method of defluorinating phosphates. 4,405,575, Cl. 423-167.000.
Henderson, Robert M.: *See*—
Zechlin, Richard; and Henderson, Robert M., 4,404,951, Cl. 123-595.000.
Henke, Donald L.: *See*—
Buschbom, Floyd E.; and Henke, Donald L., 4,405,040, Cl. 192-67.00R.
Hennessy, Thomas F., to Lori Corporation. Side-bar lock. 4,404,824, Cl. 70-364.00A.
Herbort, Hans-Joachim; and Schuster, Heinz G., to Uhde GmbH. Tubular reaction furnace for indirect heating of crackable fluids. 4,405,564, Cl. 422-197.000.
Herbort, Hans-Joachim; and Schuster, Heinz G., to UHDE GmbH. Tubular reaction furnace for indirect heating of crackable fluids. 4,405,565, Cl. 422-197.000.
Hercules Incorporated: *See*—
Earl, Robert A.; and Elmslie, James S., 4,405,762, Cl. 525-410.000.
Hermann Werner GmbH & Co., Firma: *See*—
Lieser, Karl, 4,404,874, Cl. 81-438.000.
Hermanns, Matthias: *See*—
Hansen, Willi; Kunze, Bernard; and Hermanns, Matthias, 4,405,266, Cl. 408-56.000.
Hertzler, Bruce. Cartridge case refinishing set. 4,405,269, Cl. 408-211.000.
Hesler, Benjamin F.: *See*—
Mount, Gordon L.; and Hesler, Benjamin F., 4,404,811, Cl. 62-84.000.
Hess, Bruno M. Process control computer wherein data and addresses are separately processed. 4,405,980, Cl. 364-200.000.
Hesse, Karl-Heinz: *See*—
Ruhnau, Gerhard; Grubert, Klaus; Hesse, Karl-Heinz; and Auding, Rudolf, 4,405,982, Cl. 364-200.000.
Hewlett-Packard Company: *See*—
Hornak, Thomas; and Baldwin, Gary L., 4,405,916, Cl. 340-347.0DA.
Kahn, Frederic J.; Birecki, Henryk; and Burmeister, Robert A., Jr., 4,405,993, Cl. 365-108.000.
Hewlett-Packard GmbH: *See*—
Schrenker, Helge, 4,404,845, Cl. 73-61.10C.
Hickman, Robert O.: *See*—
Sisley, James R.; and Hickman, Robert O., 4,405,313, Cl. 604-43.000.
Hickmann, Horst R. Aneurysm clip testing instrument. 4,404,850, Cl. 73-161.000.
Hicks, Wilford L., Jr. Rechargeable glow plug energizer. 4,405,890, Cl. 320-2.000.
Hijikigawa, Masaya, to Sharp Kabushiki Kaisha. Magnetic reproducing apparatus with magnetoresistive head. 4,405,958, Cl. 360-113.000.
Hild, Berthold; Braun, Martin; and Munker, Max, to SMS Schloemann-Siemag Aktiengesellschaft. Strip-guide assembly for a metal strip coiler. 4,404,831, Cl. 72-148.000.
Hilfman, Lee; and Gatsis, John G., to UOP Inc. Method for the removal of metal from a hydrocarbon solution containing metal alkaryl sulfonate. 4,405,447, Cl. 208-251.00R.
Hill, James. Cutting and collating sheets of paper, card, etc. 4,405,121, Cl. 270-58.000.
Hillard, Randy H.: *See*—
Paulin, Stephen V.; Hillard, Randy H.; and Youngers, Stephen A., 4,404,761, Cl. 37-191.00A.
Hilti Aktiengesellschaft: *See*—
Kindle, Edwin; and Jochum, Peter, 4,405,072, Cl. 227-10.000.
Oesterle, Helmut, 4,404,894, Cl. 91-461.000.
Hirai, Bunji; Kubota, Naohiro; and Sugibuchi, Kazuo, to Adeka Argus Chemical Co., Ltd. N-2-Hydroxypropyl piperidines and compositions thereof. 4,405,737, Cl. 524-102.000.
Hirai, Yutaka; Hatanaka, Katsunori; Ayata, Naoki; and Uzawa, Shunichi, to Canon Kabushiki Kaisha. Solid-state photoelectric converter. 4,405,857, Cl. 250-211.00J.
Hiramoto, Akira: *See*—
Masuda, Yoshio; Miyazaki, Takeaki; Yamada, Osamu; and Hiramoto, Akira, 4,405,866, Cl. 290-53.000.
Hirata, Suekazu: *See*—
Nakaya, Keiichi; Kawanami, Kohji; and Hirata, Suekazu, 4,405,592, Cl. 423-421.000.
Hirota, Tetsuya: *See*—
Ando, Masao; Hirota, Tetsuya; and Shioda, Katashi, 4,405,455, Cl. 210-191.000.
Hirsch, Bodo; Horn, Gunter; and Reuther, Hellmut, to VEB Chemiewerk Nunchritz. Silicon-containing nitro dyes and process for making the same. 4,405,801, Cl. 556-422.000.
Hirschberg, Eugene H.: *See*—
Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., 4,405,443, Cl. 208-113.000.
Hisajima, Masahiko: *See*—
Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; and Morimoto, Kiyoshi, 4,405,226, Cl. 355-14.00D.
Hitachi Koki Company, Limited: *See*—
Nishino, Shinichi; Katagiri, Shigenobu; and Kubo, Kazuyuki, 4,405,922, Cl. 340-825.360.
Onuma, Shigeharu; Tamahashi, Kunihiro; Hosoya, Akira; Kakuta, Atsushi; Mori, Yasuki; and Morishita, Hirosada, 4,405,703, Cl. 430-69.000.
Hitachi, Ltd.: *See*—
Ataka, Saburo; Imamura, Yoshinori; Tanaka, Yasuo; Matsubara, Hirokazu; and Maruyama, Eiichi, 4,405,879, Cl. 313-386.000.
Baji, Toru; Koike, Norio; Tsukada, Toshihisa; Takemoto, Iwao; Yamamoto, Hideaki; and Takasaki, Yukio, 4,405,935, Cl. 357-31.000.
Goto, Norio, 4,404,852, Cl. 73-599.000.
Ishii, Kiyoichi; Fujii, Hideharu; and Kobayashi, Kenji, 4,405,932, Cl. 357-13.000.
Kosaka, Hideki; Mimata, Tsutomu; Shimizu, Tsuyoshi; Yamamoto, Hideharu; Itoh, Kaoru; and Shima, Yasuhusa, 4,405,242, Cl. 368-82.000.
Kudo, Mitsuru; and Nakagawa, Isao, 4,405,937, Cl. 358-40.000.
Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Yamauchi, Kogi; and Suzuki, Mitsuo, 4,405,923, Cl. 340-825.560.
Nakamura, Ichiro; Takenoshita, Mitsuaki; Ichiryu, Ken; Akasaka, Yoshimichi; and Watanabe, Haruo, 4,404,892, Cl. 91-396.000.
Nobutoki, Saburo, 4,405,938, Cl. 358-44.000.
Onuma, Shigeharu; Tamahashi, Kunihiro; Hosoya, Akira; Kakuta, Atsushi; Mori, Yasuki; and Morishita, Hirosada, 4,405,703, Cl. 430-69.000.
Tateishi, Hideki; Kamei, Tsuneaki; Abe, Katsuo; Kobayashi, Shigeru; Aiuchi, Susumu; Nakatsukasa, Masashi; Takahashi, Nobuyuki; and Sugimoto, Ryuji, 4,405,435, Cl. 204-298.000.

Yamauchi, Teruo; Ohyama, Yoshishige; Kuroiwa, Hiroshi; Fujieda, Mamoru; and Kirisawa, Tadashi, 4,404,846, Cl. 73-118.000.

Hitachi Metals, Ltd.: *See—*
Goto, Norio, 4,404,852, Cl. 73-599.000.

Hitachi Microcomputer Engineering, Ltd.: *See—*
Ishii, Kiyoichi; Fujii, Hideharu; and Kobayashi, Kenji, 4,405,932, Cl. 357-13.000.

Hoard, John W.; and Tuttle, Richard R., to Ford Motor Company. Method for improving fuel control in an internal combustion engine. 4,404,946, Cl. 123-486.000.

Hobbs, John F.; and Sutcliffe, Gordon R., to Imperial Metal Industries (Kynoch) Limited. Method of making priming composition. 4,405,392, Cl. 149-109.600.

Hobbs, Larry R. Apparatus for cleaning the bore of a flintlock muzzleloading rifle. 4,404,979, Cl. 134-166.00C.

Hochtemperatur-Reaktorbau GmbH: *See—*
Koerdt, Reinhold; Schoening, Josef; and Schwiers, Hans-Georg, 4,405,055, Cl. 220-215.000.

Hockenbrock, Richard L.; and Strauss, Paul, to Zenith Radio Corporation. Liquid cooling in projection cathode ray tubes. 4,405,949, Cl. 358-237.000.

Hodges, Everett L. Method for hydraulically mining unconsolidated subterranean mineral formations using remote support. 4,405,176, Cl. 299-17.000.

Hoechst Aktiengesellschaft: *See—*
Bayerle, Armin; Holz, Karl-Heinz; Luke, Johannes; and Riederer, Wolfgang, 4,404,957, Cl. 126-419.000.
Berthold, Rudiger; and Muller, Werner H., 4,405,813, Cl. 564-415.000.
Disselbeck, Dieter; and Speier, Klaus, 4,405,460, Cl. 210-640.000.
Ehmann, Werner; and Rinno, Helmut, 4,405,747, Cl. 524-503.000.
Fuchs, Otto; Kroh, Adolf; and Teige, Wolfgang, 4,405,734, Cl. 524-90.000.
Fuchs, Otto; Hunger, Klaus; Weber, Dieter; and Zunker, Reinhard, 4,405,793, Cl. 548-131.000.
Skaletz, Detlef H., 4,405,816, Cl. 568-592.000.
Wiezer, Hartmut; Pfahler, Gerhard; and Korbanka, Helmut, 4,405,735, Cl. 524-95.000.

Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Kosley, Raymond W., Jr.; and Cherill, Robert J., 4,405,631, Cl. 424-267.000.

Hoffmann, Elmar, to M.A.N. Maschinenfabrik Augsburg-Nurnberg GmbH. Resilient sealing frame for the front and rear windows of a vehicle. 4,405,175, Cl. 296-201.000.

Hoffmann, Hartmut; and Baron, Klaus U., to Teldix GmbH. Releasable coupling for connecting at least two light waveguides. 4,405,200, Cl. 350-96.210.

Hoffmann-La Roche Inc.: *See—*
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,405,518, Cl. 260-245.700.
Fujiwara, Akiko; and Hoshino, Tatsuo, 4,405,713, Cl. 435-78.000.
Grass, Hansjorg; and Zell, Reinhard, 4,405,417, Cl. 204-73.00R.
Hunkeler, Walter; and Kyburz, Emilio, 4,405,516, Cl. 260-239.30B.
Hunkeler, Walter; and Kyburz, Emilio, 4,405,517, Cl. 260-239.30T.

Hohmann, Gerhard: *See—*
Musch, Rudiger; Schubart, Rudiger; Gobel, Wilhelm; Alberts, Heinrich; and Hohmann, Gerhard, 4,405,742, Cl. 524-315.000.

Hokko Chemical Industry Co., Ltd.: *See—*
Nishimura, Tamio; Miyamoto, Yoshiko; Ohyama, Hiroshi; Yamamura, Hiroshi; Morita, Ken; Matsumoto, Kuniomi; and Watanabe, Tetsuro, 4,405,743, Cl. 424-321.000.

Holcombe, Ricardo I.: *See—*
Caballero, Alejandro J.; and Holcombe, Ricardo I., 4,405,588, Cl. 423-340.000.

Holdt, Dietmar: *See—*
Pfeifer, Alfred; Seif, Rudolf; and Holdt, Dietmar, 4,405,431, Cl. 204-202.000.

Holmes, Lawrence, Jr. Typewriter operating attachment providing for dead key operations. 4,405,244, Cl. 400-66.000.

Holtey, Thomas O.; Noyes, Steven S.; and Raymond, James C., to Honeywell Information Systems Inc. Data processing system having apparatus in a communications subsystem for establishing byte synchronization. 4,405,979, Cl. 364-200.000.

Holtzman, Barry L., to Westinghouse Electric Corp. Capacitor apparatus with an individual discharge damping device for each capacitor unit. 4,405,963, Cl. 361-16.000.

Holz, Karl-Heinz: *See—*
Bayerle, Armin; Holz, Karl-Heinz; Luke, Johannes; and Riederer, Wolfgang, 4,404,957, Cl. 126-419.000.

Hombak Maschinenfabrik GmbH U. Co. KG: *See—*
Sybertz, Hans; Sybertz, Ferdinand; and Schmidt, Arnold, 4,405,092, Cl. 241-294.000.

Homeyer, Bernhard: *See—*
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; Stendel, Wilhelm; Lantzsch, Reinhard; and Marhold, Albrecht, 4,405,639, Cl. 424-278.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Asaka, Urataro; Kurata, Noboru; and Masumura, Masanori, 4,404,934, Cl. 123-190.0BD.
Enokimoto, Akito; Tsuchiya, Toshio; Masuda, Tatsuo; and Takano, Suwaji, 4,405,027, Cl. 180-56.000.
Mitsuhashi, Yoshinobu; Shimada, Junichi; Sakurai, Kenjiro; and Nakamura, Yukinobu, 4,405,236, Cl. 356-350.000.

Honda, Harukichi; Kawada, Toshiya; and Tsujitsugu, Yoshiyuki, to Kyowa Electronic Instruments Co., Ltd. Strain measuring device. 4,404,856, Cl. 73-765.000.

Honeywell Inc.: *See—*
Chai, Thomas Y., 4,405,917, Cl. 340-365.00C.
Doddapaneni, Narayan, 4,405,693, Cl. 429-101.000.
Kompelien, Arlon D., 4,405,080, Cl. 236-78.00D.
Serber, Stephen L., 4,405,299, Cl. 431-78.000.

Honeywell Information Systems Inc.: *See—*
Holtey, Thomas O.; Noyes, Steven S.; and Raymond, James C., 4,405,979, Cl. 364-200.000.
Lange, Ronald E.; and King, Steve E., 4,405,978, Cl. 364-200.000.
Yu, Kin C.; and Kachemov, Angelo D., 4,405,981, Cl. 364-200.000.

Honig, Helmar: *See—*
Muller, Hans J.; Honig, Helmar; and Horlitz, Werner, 4,405,500, Cl. 252-433.000.

Honjo, Kuniaki; and Shindo, Akio, to Agency of Industrial Science & Technology, Ministry of International Trade & Industry. Carbon fibers with duplex metal carbide coating and methods for manufacture thereof. 4,405,685, Cl. 428-368.000.

Hontz, Thomas D.: *See—*
Koncelik, Joseph A.; Chaney, David B.; Lockard, Walter G.; Reeder, Kevin J.; and Hontz, Thomas D., 4,404,698, Cl. 5-507.000.

Hoobler, Mary A.: *See—*
Sikorski, James A.; and Hoobler, Mary A., 4,405,356, Cl. 71-87.000.

Hoover Company, The: *See—*
Tschudy, Donald B.; and Lorson, Emmett D., 4,405,346, Cl. 55-357.000.

Hope Plastics Corporation: *See—*
Frederick, David C., 4,404,790, Cl. 57-12.000.

Horii, Juichi; Nakajima, Shuichi; and Takahashi, Eiji, to Horii Toshado Kabushiki Kaisha. Rotary duplicating machine with automatic stencil paper discharge. 4,404,902, Cl. 101-122.000.

Horii Toshado Kabushiki Kaisha: *See—*
Horii, Juichi; Nakajima, Shuichi; and Takahashi, Eiji, 4,404,902, Cl. 101-122.000.

Horino, Shigeo: *See—*
Ohba, Hiroshi; and Horino, Shigeo, 4,404,723, Cl. 29-33.520.

Horlitz, Werner: *See—*
Muller, Hans J.; Honig, Helmar; and Horlitz, Werner, 4,405,500, Cl. 252-433.000.

Horn, Gunter: *See—*
Hirsch, Bodo; Horn, Gunter; and Reuther, Hellmut, 4,405,801, Cl. 556-422.000.

Hornak, Thomas; and Baldwin, Gary L., to Hewlett-Packard Company. Digital-to analog converter having supplementary currents to enhance low current switching speed. 4,405,916, Cl. 340-347.0DA.

Horsman, John; and Ryden, James W., to U-Haul Technical Center. Trailer steering device for spaced axle trailer. 4,405,147, Cl. 280-443.000.

Horvath, Tibor. Puzzle cube. 4,405,131, Cl. 273-153.00S.

Hoshi, Noboru: *See—*
Takagishi, Yasushi; Doi, Yoshio; Ohsuga, Kiichiro; Hoshi, Noboru; and Shionogi & Co., Ltd., 4,405,597, Cl. 424-35.000.

Hoshino, Kazuo; Tanaka, Teruo; and Tachibana, Keiichi, to Nisshin Steel Company, Ltd. High strength stainless steel having excellent intergranular corrosion cracking resistance and workability. 4,405,390, Cl. 148-37.000.

Hoshino, Tatsuo: *See—*
Fujiwara, Akiko; and Hoshino, Tatsuo, 4,405,713, Cl. 435-78.000.

Hosoda, Norihide: *See—*
Kuraoka, Yasuo; and Hosoda, Norihide, 4,405,243, Cl. 374-46.000.

Hosoi, Fumio; Sasaki, Takashi; and Hagiwara, Miyuki, to Japan Atomic Energy Research Institute. Self-curing irradiated blend of epoxy resin and salt of quaternary amino ester of unsaturated acid. 4,405,426, Cl. 204-159.150.

Hosokawa, Etsuo: *See—*
Morita, Minoru; Hosokawa, Etsuo; and Arahara, Kohzoh, 4,405,687, Cl. 428-383.000.

Hosoya, Akira: *See—*
Onuma, Shigeharu; Tamahashi, Kunihiro; Hosoya, Akira; Kakuta, Atsushi; Mori, Yasuki; and Morishita, Hirosada, 4,405,703, Cl. 430-69.000.

Hough, Harold L.: *See—*
Haraden, Thomas; and Hough, Harold L., 4,405,877, Cl. 313-318.000.

Howard, Edward G., Jr.; and Marsh, Frank D., to Du Pont de Nemours, E. I., and Company. Chlorination and crosslinking of selected polymers with Cl_2O or HOCl. 4,405,760, Cl. 525-383.000.

Howell, Bobby A.; and Walles, Erik W. Macromolecular complexes of amidocarbonylic water-soluble polymers and square planar platinous and equivalent organometallics. 4,405,757, Cl. 525-326.900.

Howmedica International Inc.: *See—*
Buning, Onno; and Lawes, Peter, 4,404,691, Cl. 3-1.911.

Hoxan Corporation: *See—*
Kuraoka, Yasuo; and Hosoda, Norihide, 4,405,243, Cl. 374-46.000.

Hsei, Paul K., to American Hospital Supply Corporation. Tablet dispensing device. 4,405,060, Cl. 221-135.000.

Hsu, Chao-Yang, to Sun Tech. Inc. Hydroformylation catalyst and process of using it. 4,405,496, Cl. 252-429.00R.

Hu, Paul Y.: *See—*
Chow, William W.; Fields, Davis S., Jr.; Hu, Paul Y.; and Lopez, Jorge L., 4,405,961, Cl. 360-129.000.

Huberman, Richard. Air filler adapter. 4,405,158, Cl. 285-7.000.

Huck Manufacturing Company: *See—*
Ruhl, John H.; and Dixon, Richard D., 4,405,273, Cl. 411-43.000.
Hudson, John L.: *See—*
Elliott, Lloyd E., Jr.; and Hudson, John L., 4,405,033, Cl. 181-120.000.
Huff, James F.: *See—*
Werner, Kenneth R.; and Huff, James F., 4,405,036, Cl. 181-110.000.
Hugelshofer, Paul: *See—*
Abel, Heinz; and Hugelshofer, Paul, 4,405,329, Cl. 8-527.000.
Huggins, Robert A.: *See—*
Raistrick, Ian D.; Poris, Jaime; and Huggins, Robert A., 4,405,416, Cl. 204-68.000.
Hughes Aircraft Company: *See—*
Reinsch, Stephen J., 4,405,882, Cl. 315-118.000.
Yamagishi, Frederick G., 4,405,692, Cl. 428-696.000.
Huguenin, Rene: *See—*
Cardinaux, Francois; Huguenin, Rene; and Pless, Janos, 4,405,607, Cl. 424-177.000.
Hultsch, Gunther; Alstetter, Franz; and Breuer, Uwe, to Krauss-Maffei Aktiengesellschaft. Process and apparatus for the dewatering of solids in suspension. 4,405,454, Cl. 209-279.000.
Hunger, Klaus: *See—*
Fuchs, Otto; Hunger, Klaus; Weber, Dieter; and Zunker, Reinhard, 4,405,793, Cl. 548-131.000.
Hungerford, Gordon P., to Mobil Oil Corporation. Manufacture of polyimide film by solvent casting. 4,405,550, Cl. 264-216.000.
Hunkeler, Walter; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Benzodiazepine derivatives. 4,405,516, Cl. 260-239.30B.
Hunkeler, Walter; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Azeto-diazepines. 4,405,517, Cl. 260-239.30T.
Hunt, Hugh S. Hybrid vehicles. 4,405,029, Cl. 180-65.00A.
Huntsinger, James E.: *See—*
Jordan, James L.; Huntsinger, James E.; Steinke, Dale F.; and Williams, David W., 4,405,997, Cl. 366-111.000.
Huszarik, Fred A.: *See—*
Charlebois, Leonard J.; and Huszarik, Fred A., 4,405,083, Cl. 249-97.000.
Hutchinson, Mark E.: *See—*
Moore, Calvin E.; Hutchinson, Mark E.; and Fetterman, David S., 4,405,572, Cl. 423-54.000.
Hyde, James C.: *See—*
Bell, Albert H., III; and Hyde, James C., 4,404,806, Cl. 60-737.000.
Ibrahim, Fayez F.; and Wessel, Terry, to Tyler Refrigeration Corporation. Modular refrigeration assembly having air defrost system. 4,404,816, Cl. 62-282.000.
Ichikawa, Hiroshi: *See—*
Sato, Haruhito; Ichikawa, Hiroshi; Hayashi, Hiroshi; and Kurisaki, Konomu, 4,405,467, Cl. 252-1.000.
Ichimura, Nobuyoshi: *See—*
Kokubu, Yoshinori; Chiba, Jiro; Ichimura, Nobuyoshi; Iwai, Takashi; and Kawaguchi, Toshiyasu, 4,405,722, Cl. 501-15.000.
Ichiryu, Ken: *See—*
Nakamura, Ichiro; Takenoshita, Mitsuaki; Ichiryu, Ken; Akasaka, Yoshimichi; and Watanabe, Haruo, 4,404,892, Cl. 91-396.000.
Ide, John D.; Settlemire, David J.; and Novo, Mario C., to Bendix Corporation, The. Selectivity means in amplitude modulated radio receivers. 4,406,019, Cl. 455-245.000.
Idemitsu Kosan Company Limited: *See—*
Sato, Haruhito; Ichikawa, Hiroshi; Hayashi, Hiroshi; and Kurisaki, Konomu, 4,405,467, Cl. 252-1.000.
Idota, Yoshinori: *See—*
Ohsawa, Katsuyuki; Sugiyama, Katsuhiko; and Idota, Yoshinori, 4,404,859, Cl. 73-861.180.
Igarashi, Mikio: *See—*
Sakano, Takashi; and Igarashi, Mikio, 4,404,763, Cl. 37-250.000.
Iidaka, Toshiharu: *See—*
Koike, Shyouichi; Iidaka, Toshiharu; and Ohyama, Akio, 4,404,866, Cl. 74-546.000.
Ilies, Nicolae, to Cooperativa Agricola de Productie Scornicesti. Process for the obtainment of a biologically active bee-product. 4,405,602, Cl. 424-95.000.
Imamura, Yoshinori: *See—*
Ataka, Saburo; Imamura, Yoshinori; Tanaka, Yasuo; Matsubara, Hirokazu; and Maruyama, Eiichi, 4,405,879, Cl. 313-386.000.
Imperial Chemical Industries PLC: *See—*
Barnard, John; and Bloombaum, Barry D., 4,405,551, Cl. 264-245.000.
Punja, Nazim, 4,405,640, Cl. 424-305.000.
Ragg, Pudens L.; Martin, Graham E.; and Smeeton, Roy, 4,405,407, Cl. 162-146.000.
Imperial Metal Industries (Kynoch) Limited: *See—*
Hobbs, John F.; and Sutcliffe, Gordon R., 4,405,392, Cl. 149-109.600.
INA Walzlager Schaeffler KG: *See—*
Oetjen, Jurgen, 4,405,185, Cl. 308-6.00C.
Incorvia, Samuel A.: *See—*
Cullen, John S.; Incorvia, Samuel A.; and Vogt, James A., 4,405,347, Cl. 55-387.000.
Industrie Pirelli S.p.A.: *See—*
Egidi, Paolo; and Franchino, Fulvio, 4,405,555, Cl. 264-315.000.
Ingersoll-Rand Company: *See—*
Larson, John A., 4,405,389, Cl. 148-37.000.
Ingram, Bert M., to Ingram Security Inc. Multiple entry closure for a safe or vault. 4,404,916, Cl. 109-67.000.
Ingram Security Inc.: *See—*
Ingram, Bert M., 4,404,916, Cl. 109-67.000.
Inomata, Akira; Hasegawa, Tsunao; and Ohtake, Yasushi, to Pioneer Electronic Corporation. Magnetic recording and reproducing device. 4,405,953, Cl. 360-65.000.
Inoue, Eiichi: *See—*
Shimizu, Isamu; Ogawa, Kyosuke; and Inoue, Eiichi, 4,405,656, Cl. 427-39.000.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi; Onoue, Makoto; and Otaki, Noriyoshi, 4,405,411, Cl. 204-26.000.
Inoue, Kiyoshi, 4,405,421, Cl. 204-129.200.
Inoue, Kiyoshi; Onoue, Makoto; and Otaki, Noriyoshi, to Inoue-Japax Research Incorporated. Recess electrodepositing method, electrode assembly and apparatus. 4,405,411, Cl. 204-26.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of and apparatus for electrochemically grinding a conductive workpiece. 4,405,421, Cl. 204-129.200.
Inoue, Syunzo; Arai, Toshio; Nagasawa, Takeshi; Konishi, Motofumi; Yanagawa, Hitoshi; Iwaya, Toshio; and Kasuya, Michio, to Canon Kabushiki Kaisha. Photographic apparatus. 4,405,227, Cl. 355-27.000.
Inoue, Yoshikazu: *See—*
Takaya, Takao; Inoue, Yoshikazu; Murata, Masayoshi; and Takasugi, Hisashi, 4,405,617, Cl. 424-246.000.
Institut Francais Du Petrole: *See—*
Deschamps, Andre; Franckowiak, Sigismond; and Le Page, Jean-Francois, 4,405,442, Cl. 208-107.000.
Institut Problem Litya Akademii Nauk Ukrainskoi SSR: *See—*
Sheiko, Anatoly A.; Voloschenko, Mikhail V.; Latenko, Vladimir P.; Kartashevsky, Gennady R.; Schegolkov, Evgeny I.; Zlatkis, Anatoly D.; Osokin, Viktor G.; Polyakov, Lev V.; Zaitsev, Valentin V.; and Trunov, Mikhail B., 4,405,367, Cl. 75-124.000.
Institute Po Mechanika I Biomechanika: *See—*
Georgiev, Vesselin Y.; and Mednikarov, Vladimir S., 4,405,084, Cl. 239-99.000.
Insulating Breaking Clamp, Inc.: *See—*
Shook, David W., 4,405,828, Cl. 174-138.00R.
Intel Corporation: *See—*
Reese, Edmund A.; Spaderna, Dieter W.; and Flannagan, Stephen T., 4,406,013, Cl. 377-29.000.
Intermatic Incorporated: *See—*
Hatcher, Frank L., 4,404,697, Cl. 4-492.000.
Intermedicat GmbH: *See—*
Voges, Karl-Friedrich; Haacke, Claus; and Heise, Peter, 4,405,163, Cl. 285-305.000.
Intermedics, Inc.: *See—*
Gordon, Pat L.; Calfee, Richard V.; and Miner, Jay, 4,404,972, Cl. 128-419.0PG.
International Business Machines: *See—*
Chow, William W.; Fields, Davis S., Jr.; Hu, Paul Y.; and Lopez, Jorge L., 4,405,961, Cl. 360-129.000.
International Business Machines Corporation: *See—*
Andrade, Thomas L., 4,404,732, Cl. 29-571.000.
Blumentritt, Bruce F.; and Shyan Shen, John C., 4,405,684, Cl. 428-336.000.
Cefarelli, Frank P.; and Evans, Robert T., 4,405,201, Cl. 350-96.210.
Engler, Edward M.; Patel, Vishnubhai V.; and Schumaker, Robert R., 4,405,515, Cl. 260-239.00R.
Flemming, Donald C., 4,405,898, Cl. 328-72.000.
Grobman, Warren D.; Nelson, David A., Jr.; and Warlaumont, John M., 4,405,238, Cl. 356-401.000.
International Cryogenics, Inc.: *See—*
Leonard, Rex D., 4,404,819, Cl. 62-514.00R.
International Flavors & Fragrances Inc.: *See—*
Boden, Richard M., 4,405,510, Cl. 252-522.00R.
Boden, Richard M.; and Licciardello, Michael, 4,405,646, Cl. 426-3.000.
Boden, Richard M., 4,405,820, Cl. 568-840.000.
International Rectifier Corporation: *See—*
Yang, Ling; Medico, Russell R.; and Baugh, Wesley A., 4,405,595, Cl. 423-600.000.
International Telephone and Telegraph Corporation: *See—*
Turbak, Albin F.; and Hartmann, Peter J., 4,405,549, Cl. 264-188.000.
International Water Saving Systems, Inc.: *See—*
Heinze, Walter O.; Tufts, Wesley M.; and White, Jeffrey F., 4,404,696, Cl. 4-420.000.
Irie, Yoichiro: *See—*
Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; and Morimoto, Kiyoshi, 4,405,226, Cl. 355-14.00D.
Isett, Don D.: *See—*
Martell, Charles R.; Leslie, Elmer N.; Isett, Don D.; and Treadwell, Stephen S., 4,404,919, Cl. 112-121.110.
Ishidoshiro, Hiroshi: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,404,699, Cl. 8-149.100.
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,405,491, Cl. 252-359.00E.
Ishihara Sangyo Kaisha, Ltd.: *See—*
Matsunaga, Mamoru; Usami, Teruo; Okuda, Haruo; and Futamata, Hideo, 4,405,376, Cl. 106-300.000.
Ishii, Kazuo: *See—*
Watarai, Shu; Ishii, Kazuo; and Takayama, Takeshi, 4,405,704, Cl. 430-74.000.

Ishii, Kiyoichi; Fujii, Hideharu; and Kobayashi, Kenji, to Hitachi, Ltd.; and Hitachi Microcomputer Engineering, Ltd. Punch through reference diode. 4,405,932, Cl. 357-13.000.

Ishii, Seiji: *See*—
Kuroda, Toshimasa; Ishii, Seiji; and Shibata, Tatsuya, 4,405,686, Cl. 428-374.000.

Ishikawa, Kazutomi, to Mori Machinery Co., Ltd. Tool pot cleaning system for tool magazine. 4,404,728, Cl. 29-568.000.

Ishikawa, Keiichiro: *See*—
Misawa, Masatoshi; Takahashi, Kusuhiko; Okuda, Kinnosuke; Matsuura, Kiyoshi; Takehara, Hisao; and Ishikawa, Keiichiro, 4,405,419, Cl. 204-96.000.

Ishikawa, Masayuki; Sugimoto, Akiko; Eguchi, Yukuo; Sasaki, Fujinori; Ebisawa, Hisashi; Moriguchi, Soyao; and Gotoh, Katsuhiko, to Masayuki Ishikawa. Quinazolinde-dione compounds, process for production thereof and pharmaceutical use thereof. 4,405,623, Cl. 424-251.000.

Ishikawa, Shigeru: *See*—
Mizuno, Megumi; Ishikawa, Shigeru; and Kubo, Eiki, 4,404,877, Cl. 81-57.370.

Ishizaka, Seiichi: *See*—
Mitsuhashi, Yoshinobu; Shimada, Junichi; Sakurai, Kenjiro; and Nakamura, Yukinobu, 4,405,236, Cl. 356-350.000.

Italfarmaco S.p.A.: *See*—
Sportoletti, Giancarlo; and Baglioni, Alessandro, 4,405,643, Cl. 424-311.000.

Italiana Schoum S.p.A.: *See*—
Masi, Paolo; Monopoli, Angela; Saravalle, Adone C.; and Zio, Cesare, 4,405,627, Cl. 424-263.000.

Itoh, Kaoru: *See*—
Kosaka, Hideki; Mimata, Tsutomu; Shimizu, Tsuyoshi; Yamamoto, Hideharu; Itoh, Kaoru; and Shima, Yasuhusa, 4,405,242, Cl. 368-82.000.

Itokawa, Jiro: *See*—
Yasuda, Mitsuo; Minami, Katsuji; Itokawa, Jiro; Aoto, Yoshiyuki; Hatakeyama, Yasuyuki; and Sakaida, Shinya, 4,405,219, Cl. 353-37.000.

ITT Industries, Inc.: *See*—
Steffes, Helmut, 4,404,803, Cl. 60-547.100.

Itzel, Hanshelmut, to Celamerck GmbH & Co., KG. Fungicidal compositions. 4,405,605, Cl. 424-173.000.

Iversen, Arthur H. Liquid cooled anode x-ray tubes. 4,405,876, Cl. 313-30.000.

Iwai, Tadashi; Kawahito, Takashi; and Yamada, Tetsuo, to UBE Industries, Ltd. Process for producing silicon nitride powder. 4,405,589, Cl. 423-344.000.

Iwai, Takashi: *See*—
Kokubu, Yoshinori; Chiba, Jiro; Ichimura, Nobuyoshi; Iwai, Takashi; and Kawaguchi, Toshiyasu, 4,405,722, Cl. 501-15.000.

Iwaki Glass Company Ltd.: *See*—
Kokubu, Yoshinori; Chiba, Jiro; Ichimura, Nobuyoshi; Iwai, Takashi; and Kawaguchi, Toshiyasu, 4,405,722, Cl. 501-15.000.

Iwaki, Masato: *See*—
Tadokoro, Tomoo; Iwaki, Masato; and Okimoto, Haruo, 4,404,804, Cl. 60-602.000.

Iwama, Atsuaki; Maikuma, Yoshimata; Okamoto, Masayoshi; Tanaka, Toshikazu; and Oikawa, Yuji, to Kabushiki Kaisha Kobe Seiko Sho. Method for correcting measurement errors in tire uniformity inspecting machines. 4,404,848, Cl. 73-146.000.

Iwama, Atsuaki; Maikuma, Yoshimata; Okamoto, Masayoshi; Tanaka, Toshikazu; and Oikawa, Yuji, to Kabushiki Kaisha Kobe Seiko Sho. Method and system for correcting errors of measurement in tire uniformity inspecting machines. 4,404,849, Cl. 73-146.000.

Iwaya, Toshio: *See*—
Inoue, Syunzo; Arai, Toshio; Nagasawa, Takeshi; Konishi, Motofumi; Yanagawa, Hitoshi; Iwaya, Toshio; and Kasuya, Michio, 4,405,227, Cl. 355-27.000.

Izawa, Fumio, to Tokyo Shibaura Electric Co., Ltd. Endless tape travelling device. 4,405,093, Cl. 242-55.19R.

J. I. Case Company: *See*—
Cochran, Gary L.; Dawson, James E.; and Stromberg, Gary D., 4,405,280, Cl. 414-685.000.
Frisbee, Claude M., 4,405,019, Cl. 172-816.000.
Paulin, Stephen V.; Hillard, Randy H.; and Youngers, Stephen A., 4,404,761, Cl. 37-191.00A.

J. M. Voith GmbH: *See*—
Bahr, Theodor; Heinrich, Hans-Otto; and Thumm, Helmut, 4,405,091, Cl. 241-33.000.

Jablonski, Dane E., to B. F. Goodrich Company, The. Vulcanizable acrylate rubber compositions. 4,405,758, Cl. 525-329.800.

Jacobsen, Stephen C.: *See*—
Stephen, Robert L.; Kablitz, Carl; Hanover, Barry K.; Jacobsen, Stephen C.; and Harrow, Jeffrey J., 4,405,305, Cl. 604-49.000.

Jaegle, Bruno, to Siemens Aktiengesellschaft. Electric contact arrangement. 4,405,848, Cl. 200-243.000.

Jagenberg-Werke AG: *See*—
Bensberg, Wolfgang; and Klapp, Hartmut, 4,405,304, Cl. 493-476.000.

Jagtap, Asvinkumar N., to PPG Industries, Inc. Process for halogenation of butadiene polymer in the presence of aluminum-containing material. 4,405,759, Cl. 525-356.000.

Jagur, Joseph, to Yeda Research & Development Co., Ltd. Organometallic polymers, their preparation and compositions containing them. 4,405,771, Cl. 528-266.000.

Jakobsen, Kjell M.; and Nilsson, Claes T., to PLM AB. Method for producing a tubular object of polyethylene terephthalate or similar thermoplastic material from a tubular blank of amorphous material. 4,405,546, Cl. 264-159.000.

James, Robert G., to Armco Inc. Counterbalanced pumps and method of using same. 4,404,863, Cl. 74-89.200.

Jansen, Winfried; and Nolde, Wolfgang, to U.S. Philips Corporation. Receiver for AM stereo signals having a circuit for reducing distortion due to overmodulation. 4,405,835, Cl. 179-1.0GS.

Jansson, Conny; Erlandsson, Lars; and Appelkvist, Rolf, to AB Bahco Verktyg. Wire retainer and diagonal cutting nipper with wire retainer. 4,404,746, Cl. 30-124.000.

Janz, Joachim; and Svejkovsky, Ulrich, to Gebr. Happich GmbH. Fastening device for handles, arms rests etc. on the wall of a vehicle, or the like. 4,404,709, Cl. 16-111.00R.

Jaouen, Adrien: *See*—
Forster, Michel; Jaouen, Adrien; Jorda, Alain; and Rampin, Pierre, 4,405,988, Cl. 364-502.000.

Japan Atomic Energy Research Institute: *See*—
Hosoi, Fumio; Sasaki, Takashi; and Hagiwara, Miyuki, 4,405,426, Cl. 204-159.150.

Japan Marine Science: *See*—
Masuda, Yoshio; Miyazaki, Takeaki; Yamada, Osamu; and Hiramoto, Akira, 4,405,866, Cl. 290-53.000.

Japan Metal and Chemical Co., Ltd.: *See*—
Misawa, Masatoshi; Takahashi, Kusuhiko; Okuda, Kinnosuke; Matsuura, Kiyoshi; Takehara, Hisao; and Ishikawa, Keiichiro, 4,405,419, Cl. 204-96.000.

Jaschek, Juergen; and Krummheuer, Wolf, to Akzona, Incorporated. Resin coated fabric. 4,405,341, Cl. 51-298.000.

Jeffreys, George A.; Tobey, James F., Jr.; and Price, Jean L., to Dudley, Marvin. Process for producing premium quality fish meal from whole fish. 4,405,649, Cl. 426-59.000.

Jenkins, Robert H., Jr.; and Sweeney, William M., to Texaco Inc. Extended aviation jet fuel stabilized with phenoaldehyde amine derivatives. 4,405,338, Cl. 44-78.000.

Jensen, Niels D.; and Johansen, Arne, to Grundfos Pumpenfabrik GmbH. Multi-spindle machine tools. 4,404,729, Cl. 29-568.000.

Jervis B. Webb Company: *See*—
Dehne, Clarence A., 4,405,042, Cl. 198-687.000.

Jessup, James L., to Kendall Company, The. Anesthesia device with selective spray ports. 4,405,308, Cl. 604-200.000.

Jessup, James L., to Kendall Company, The. Anesthesia device. 4,405,322, Cl. 604-232.000.

Jeumont Schneider Corporation: *See*—
Wiart, Albert C., 4,405,888, Cl. 318-803.000.

Jochum, Peter: *See*—
Kindle, Edwin; and Jochum, Peter, 4,405,072, Cl. 227-10.000.

Jodrey, Robert M.; and Pitts, Warren R., to Dennison Manufacturing Company. Bottle turner. 4,405,301, Cl. 432-124.000.

Jodrey, Robert M., to Dennison Manufacturing Company. Article holding turret. 4,405,403, Cl. 156-449.000.

Johannessen, Svein: *See*—
Kolle, Kjell; and Johannessen, Svein, 4,405,855, Cl. 219-501.000.

Johansen, Arne: *See*—
Jensen, Niels D.; and Johansen, Arne, 4,404,729, Cl. 29-568.000.

John, Peter; Artes, Reinhold; Frey, Volker; and Scherer, Matthias, to Wacker-Chemie GmbH. Method for preparing 2-chloroethylsilanes. 4,405,804, Cl. 556-476.000.

Johns, Blair E. Temporary door locking device. 4,405,165, Cl. 292-258.000.

Johnson, Arthur W.; and Braun, Howard R., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Liquid nitrogen level controller. 4,404,809, Cl. 62-49.000.

Johnson, Bertram; and Smith, Arthur R., to Wildt Mellor Bromley Limited. Yarn feeder and changer unit. 4,404,821, Cl. 66-139.000.

Johnson, Irvin D.; Timlin, Gary M.; and Yuill, Robert D., to Marathon Oil Company. Cryogenic storage tank leak detection system. 4,404,843, Cl. 73-49.200.

Johnson, Joseph M.: *See*—
Smith, Joel D.; and Johnson, Joseph M., 4,404,931, Cl. 123-179.00H.

Johnson, Leland: *See*—
Busca, Giovanni; and Johnson, Leland, 4,405,905, Cl. 331-94.100.

Johnson, Michael R., to Pfizer Inc. 9-Hydroxyoctahydrobenzo(c-)quinolines analgesic compositions containing them and processes for producing analgesic with them. 4,405,626, Cl. 424-258.000.

Johnson, Robert A.; and Havens, Donald P., to Rockwell International Corporation. Mechanical filter with box-type coupling structure. 4,405,909, Cl. 333-198.000.

Johnston, William S.: *See*—
Bridigum, Robert J.; and Johnston, William S., 4,404,987, Cl. 137-556.000.

Jones, James S. Gas-liquid mixing metering system. 4,404,984, Cl. 137-88.000.

Jones, Thomas I. Y.: *See*—
Payne, Charles E. G.; Jones, Thomas I. Y.; and Dootson, Peter A., 4,404,797, Cl. 60-39.281.

Jorda, Alain: *See*—
Forster, Michel; Jaouen, Adrien; Jorda, Alain; and Rampin, Pierre, 4,405,988, Cl. 364-502.000.

Jordan, James L.; Huntsinger, James E.; Steinke, Dale F.; and Williams, David W., to F. Korbel and Bros. Apparatus for riddling bottled wines. 4,405,997, Cl. 366-111.000.

Jorgensen, John M.: *See*—
Buurma, Gerald B.; and Jorgensen, John M., 4,405,871, Cl. 307-594.000.

Jorgensen, Karin D.: *See*—
Moody, Alister J.; Thim, Lars; and Jorgensen, Karin D., 4,405,608, Cl. 424-177.000.

Joseph E. Seagram & Sons, Inc.: *See*—
Boucher, Armand R., 4,405,652, Cl. 426-494.000.

Josephson, Edgar F.: *See*—
Fritzsche, Eldred N.; Josephson, Edgar F.; and Pulcrano, Frank C., 4,405,168, Cl. 294-103.00R.

Josephson, Martin. Support system for restraining lateral movement of pier-mounted building. 4,404,780, Cl. 52-126.700.

Jost, John W.; Lieffers, William C.; and Whitescarver, Olin D., to Union Oil Company of California. Process for stabilizing silica-rich geothermal brine to prevent silica scaling. 4,405,463, Cl. 210-712.000.

Juaire, Michael P., to Detector Electronics Corp. Radiation detection apparatus having refractive light checking feature. 4,405,234, Cl. 356-239.000.

Julich, Werner; and Muller, Gunter, to Sulzer Brothers Limited. Clutch arrangement for controlling a heddle of a weaving machine. 4,404,993, Cl. 139-66.00R.

Jurek, Leonard B. Servicing steps to be mounted on the bumper of a truck. 4,405,141, Cl. 280-163.000.

Kabbe, Hans-Joachim; Klauke, Erich; Krause, Hans P.; Mardin, Mithat; and Sitt, Rudiger, to Bayer Aktiengesellschaft. Medicaments for the treatment of disorders of lipometabolism and their use. 4,405,644, Cl. 424-322.000.

Kablitz, Carl: *See*—
Stepher., Robert L.; Kablitz, Carl; Hanover, Barry K.; Jacobsen, Stephen C.; and Harrow, Jeffrey J., 4,405,305, Cl. 604-49.000.

Kabushiki Kaisha Daini Seikosha: *See*—
Koga, Toshiyuki, 4,406,015, Cl. 378-050.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Iwama, Atsuaki; Maikuma, Yoshimata; Okamoto, Masayoshi; Tanaka, Toshikazu; and Oikawa, Yuji, 4,404,848, Cl. 73-146.000.
Iwama, Atsuaki; Maikuma, Yoshimata; Okamoto, Masayoshi; Tanaka, Toshikazu; and Oikawa, Yuji, 4,404,849, Cl. 73-146.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Nakamura, Tadao, 4,404,932, Cl. 123-179.00H.

Kabushiki Kaisha Suwa Seikosha: *See*—
Mukaiyama, Fumiaki, 4,405,921, Cl. 340-708.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Ohsawa, Katsuyuki; Sugiyama, Katsuhiko; and Idota, Yoshinori, 4,404,859, Cl. 73-861.180.
Oishi, Kiyohiko; Suzuki, Yoshihiro; Kobashi, Kiyoshi; Matsumoto, Shinichi; Yoshida, Takashi; and Kogiso, Takeshi, 4,404,795, Cl. 60-274.000.

Kabushiki Kaisha Yakult Honsha: *See*—
Ozawa, Kazumi; and No, Shinichiro, 4,404,900, Cl. 101-40.000.

Kachemov, Angelo D.: *See*—
Yu, Kin C.; and Kachemov, Angelo D., 4,405,981, Cl. 364-200.000.

Kahn, Frederic J.; Birecki, Henryk; and Burmeister, Robert A., Jr., to Hewlett-Packard Company. Liquid crystal disc memory system. 4,405,993, Cl. 365-108.000.

Kaimai, Hiroyuki; Sonoda, Masakazu; Komatsu, Masaaki; Sakai, Atsuo; and Kamai, Toshimitsu, to Sony Corporation. Video signal reproducing apparatus. 4,405,955, Cl. 360-10.300.

Kainzner, Adolf; Gerger, Wolfgang; and Lukas, Walter, to Gmundner Zementwerke Hans Hatschek Aktiengesellschaft. Ceramic fibers and wools and a process for their production. 4,405,723, Cl. 501-36.000.

Kaiser Aluminum & Chemical Corporation: *See*—
Payne, John R., 4,405,433, Cl. 204-225.000.

Kakuta, Atsushi: *See*—
Onuma, Shigeharu; Tamahashi, Kunihiro; Hosoya, Akira; Kakuta, Atsushi; Mori, Yasuki; and Morishita, Hirosada, 4,405,703, Cl. 430-69.000.

Kalyanasundaram, Kuppuswamy: *See*—
Graetzel, Michael; Kalyanasundaram, Kuppuswamy; Borgarello, Enrico; and Pelizzetti, Ezio, 4,405,424, Cl. 204-157.10R.

Kam, Sheung-tsam; Erhardt, Paul W.; Borgman, Robert J.; and O'Donnell, John P., to American Hospital Supply Corporation. Method for treatment or prophylaxis of cardiac disorders. 4,405,642, Cl. 424-309.000.

Kamai, Toshimitsu: *See*—
Kaimai, Hiroyuki; Sonoda, Masakazu; Komatsu, Masaaki; Sakai, Atsuo; and Kamai, Toshimitsu, 4,405,955, Cl. 360-10.300.

Kambara, Koji, to Olympus Optical Co., Ltd. Endoscope ocular device. 4,404,964, Cl. 128-4.000.

Kamei, Tsuneaki: *See*—
Tateishi, Hideki; Kamei, Tsuneaki; Abe, Katsuo; Kobayashi, Shigeru; Aiuchi, Susumu; Nakatsukasa, Masashi; Takahashi, Nobuyuki; and Sugimoto, Ryuji, 4,405,435, Cl. 204-298.000.

Kamhi, Victor M., to American Cyanamid Company. Novel cationic-substituted 9,10-bis-(phenylethynyl)anthracenes. 4,405,513, Cl. 252-700.000.

Kamiya, Shigeru: *See*—
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,404,798, Cl. 60-296.000.

Kamiya, Yoshiaki: *See*—
Hasegawa, Hiroshi; Negita, Moriyasu; Kamiya, Yoshiaki; Tamura, Masaru; Tamura, Masaru; and Kinoshita, Yuji, 4,405,911, Cl. 335-202.000.

Kamperman, David R., to Lancy International, Inc. Automatic revitalization of sulfide processing and treatment solutions. 4,405,462, Cl. 210-709.000.

Kanaly, David B., to Harris Corporation. Low bandwidth closed loop imagery control and communication system for remotely piloted vehicle. 4,405,943, Cl. 358-133.000.

Kanbe, Junichiro: *See*—
Shirai, Shigeru; Kanbe, Junichiro; and Ohno, Shigeru, 4,405,702, Cl. 430-60.000.

Kanegae, Tosiyuki: *See*—
Murase, Yasushi; Kanegae, Tosiyuki; Mitsuzawa, Hideaki; and Tatsumi, Tosiyuki, 4,404,771, Cl. 49-425.000.

Kanmark, Inc.: *See*—
Gibbons, Alfred M., 4,405,110, Cl. 248-221.200.

Kantro, David L.: *See*—
Serafin, Frank G.; Previte, Robert W.; Greening, Nathan R.; Kantro, David L.; and Tang, Fulvio J., 4,405,372, Cl. 106-90.000.

Kanzaki, Koichi; and Taguchi, Minoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a semiconductor integrated circuit utilizing polycrystalline silicon deposition, oxidation and etching. 4,404,737, Cl. 29-577.00C.

Kanzaki, Koichi: *See*—
Sasaki, Gen; Taguchi, Minoru; Kanzaki, Koichi; and Furukawa, Akihiko, 4,404,738, Cl. 29-577.00C.

Karami, Hamzeh, to Colgate-Palmolive Company. Sanitary napkin assembly. 4,405,310, Cl. 604-383.000.

Karg, John S.: *See*—
Neale, Thomas J.; Alverson, Frederick C.; and Karg, John S., 4,405,561, Cl. 422-145.000.

Kartashevsky, Gennady R.: *See*—
Sheiko, Anatoly A.; Voloschenko, Mikhail V.; Latenko, Vladimir P.; Kartashevsky, Gennady R.; Schegolkov, Evgeny I.; Zlatkis, Anatoly D.; Osokin, Viktor G.; Polyakov, Lev V.; Zaitsev, Valentin V.; and Trunov, Mikhail B., 4,405,367, Cl. 75-124.000.

Kastrup, Eberhard; and Oberschelp, Heinz-Rolf, to Durkoppwerke GmbH. Buttonhole machine with automatic thread clipping. 4,404,921, Cl. 112-291.000.

Kasuga, Muneo; Nishikawa, Masaji; and Funakubo, Tomoki, to Olympus Optical Company Limited. Electrophotographic apparatus having means for removing undesired charge concentrated on an edge portion of a photosensitive member. 4,405,224, Cl. 355-3.00R.

Kasuya, Hideki: *See*—
Nitta, Tsuneo; and Kasuya, Hideki, 4,405,838, Cl. 179-1.0SD.

Kasuya, Michio: *See*—
Inoue, Syunzo; Arai, Toshio; Nagasawa, Takeshi; Konishi, Motofumi; Yanagawa, Hitoshi; Iwaya, Toshio; and Kasuya, Michio, 4,405,227, Cl. 355-27.000.

Katagiri, Shigenobu: *See*—
Nishino, Shinichi; Katagiri, Shigenobu; and Kubo, Kazuyuki, 4,405,922, Cl. 340-825.360.

Katano, Seiji; and Atsumi, Masataka, to Dai Nippon Insatsu Kabushiki Kaisha. Process for fabricating gravure printing plate blank. 4,405,709, Cl. 430-307.000.

Kate Models Pty., Limited: *See*—
Pfuhl, Jakob, 4,404,920, Cl. 112-121.150.

Katsuyama Kinzoku Kogyo Kabushiki Kaisha: *See*—
Sugimoto, Mutsumi, 4,404,715, Cl. 24-230.00A.

Kautex Werke Reinold hagen AG: *See*—
Lehnard, Jakob, 4,405,557, Cl. 264-515.000.

Kawada, Toshiya: *See*—
Honda, Harukichi; Kawada, Toshiya; and Tsujitsugu, Yoshiyuki, 4,404,856, Cl. 73-765.000.

Kawaguchi, Toshiyasu: *See*—
Kokubu, Yoshinori; Chiba, Jiro; Ichimura, Nobuyoshi; Iwai, Takashi; and Kawaguchi, Toshiyasu, 4,405,722, Cl. 501-15.000.

Kawahard, Kuniaki. Boards for sliding on snow. 4,405,139, Cl. 280-12.00H.

Kawahito, Takashi: *See*—
Iwai, Tadashi; Kawahito, Takashi; and Yamada, Tetsuo, 4,405,589, Cl. 423-344.000.

Kawamura, Masaharu: *See*—
Yamamoto, Hiroshi; Uchidoi, Masanori; and Kawamura, Masaharu, 4,405,222, Cl. 354-238.000.

Kawanami, Kohji: *See*—
Nakaya, Keiichi; Kawanami, Kohji; and Hirata, Suekazu, 4,405,592, Cl. 423-421.000.

Kawazoe, Noriyuki: *See*—
Nakata, Tiaki; Kawazoe, Noriyuki; and Takenaka, Toshio, 4,405,750, Cl. 524-717.000.

Kay, David B., to Xerox Corporation. Method of assembling a gradient index lens array having reduction properties. 4,405,207, Cl. 350-320.000.

Kay, Edward L.: *See*—
Gutierrez, Richard; Kay, Edward L.; and Serbin, David J., 4,405,532, Cl. 260-816.00R.

Kealey, Kathleen M.: *See*—
Goebel, Franz; and Kealey, Kathleen M., 4,405,694, Cl. 429-101.000.

Kearney & Trecker Corporation: *See*—
Zankl, Frank, 4,404,727, Cl. 29-568.000.

Keim, Karl-Heinz; and Korff, Joachim, to Union Rheinische Braunkohlen Kraftstoff Aktiengesellschaft. Process for the production of acetaldehyde and ethanol. 4,405,815, Cl. 568-487.000.

Kellner, Gerd: *See*—
Reudelsterz, Helmut; and Kellner, Gerd, 4,404,765, Cl. 42-77.000.

Kelman, Charles D. Intraocular lens. 4,404,694, Cl. 3-13.000.

Kendall Company, The: *See*—
Jessup, James L., 4,405,308, Cl. 604-200.000.
Jessup, James L., 4,405,322, Cl. 604-232.000.

Kermer, Wolf-Dieter: *See—*
Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Kermer, Wolf-Dieter, 4,405,330, Cl. 8-639.000

Kerr-McGee Nuclear Corporation: *See—*
Baldwin, Roger A.; Stauter, John C.; and Terrell, Donald L., 4,405,464, Cl. 210-717.000.

Kester, Dennis E.: *See—*
Christensen, Ronald C.; Genske, Roger P.; Kester, Dennis E.; and Ossian, William F., 4,405,667, Cl. 428-35.000.

Kido, Takayoshi: *See—*
Tamura, Takeo; Hara, Hiroshi; and Kido, Takayoshi, 4,405,887, Cl. 318-443.000.

Kiley, Richard F.; and Larson, Ralph I., Jr., to Thermal Associates, Inc. Method for mounting, electrically isolating and maintaining constant pressure on a semiconductor element. 4,404,739, Cl. 29-588.000.

Kilichowski, Kurt B.: *See—*
Pampalone, Thomas R.; and Kilichowski, Kurt B., 4,405,776, Cl. 528-364.000.

Kim, Gwan, to W. R. Grace & Co. Supported platinum group metal catalysts with controlled metal penetration. 4,405,506, Cl. 252-462.000.

Kim, Snyg N., to Wico Corporation. Trackball device. 4,404,865, Cl. 74-471.0XY.

Kimball, Leonard L. Protective microscope container with remote control mechanism. 4,405,202, Cl. 350-589.000.

Kimberly-Clark Corporation: *See—*
Appel, David W.; and Morman, Michael T., 4,405,297, Cl. 425-72.00S.

Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; and Morimoto, Kiyoshi, to Mita Industrial Company Limited. Developing material supplying control device for electrostatic copying apparatus. 4,405,226, Cl. 355-14.00D.

Kinast, Gunther; Schedel, Michael; and Koebernick, Wolfgang, to Bayer Aktiengesellschaft. Production of N-substituted derivatives of 1-desoxynojirimicin. 4,405,714, Cl. 435-84.000.

Kindle, Edwin; and Jochum, Peter, to Hilti Aktiengesellschaft. Setting device powered by an explosive gas mixture. 4,405,072, Cl. 227-10.000.

King, John O., Jr. Cushioned fastener joint. 4,405,256, Cl. 403-408.000.

King, Steve E.: *See—*
Lange, Ronald E.; and King, Steve E., 4,405,978, Cl. 364-200.000.

King Tool Inc.: *See—*
Emerson, Clarence A., 4,404,749, Cl. 30-164.900.

Kinkelaar, Edmund W.; and Golar, Paul, to Republic Steel Corporation. Tin plating bath composition and process. 4,405,663, Cl. 427-428.000.

Kinoshita, Yuji: *See—*
Hasegawa, Hiroshi; Negita, Moriyasu; Kamiya, Yoshiaki; Tamura, Masaru; Tamura, Masaru; and Kinoshita, Yuji, 4,405,911, Cl. 335-202.000.

Kinshofer, Alfred. Clamshell. 4,405,167, Cl. 294-70.000.

Kinson, Philip L., to General Electric Company. Polyphenylene ether resins and compositions heat stabilized with phosphite compounds. 4,405,739, Cl. 524-117.000.

Kinzer, Jay; and Clingman, John W., to Sanilogical Corporation. Clarifier apparatus. 4,405,456, Cl. 210-195.400.

Kinzl, Marwin; and Bergmann, Eduard, to Kostal of America. Electrical circuit for actuation of the relays of a fuel pump. 4,404,939, Cl. 123-333.000.

Kirisawa, Tadashi: *See—*
Yamauchi, Teruo; Ohyama, Yoshishige; Kuroiwa, Hiroshi; Fujieda, Mamoru; and Kirisawa, Tadashi, 4,404,846, Cl. 73-118.000.

Kishimoto, Yoshio: *See—*
Soga, Mamoru; Shimotsuma, Wataru; Kishimoto, Yoshio; and Sekine, Yoichi, 4,405,370, Cl. 106-20.000.

Kiss, Andras: *See—*
Vadasdi, Karoly; Bartha, Laszlo; Millner, Tivadar; Tekula, Endre; and Kiss, Andras, 4,405,571, Cl. 423-53.000.

Kister, Horst; and Ullrich, Horst, to VDO Adolf Schindling AG. Circuit arrangement for time division multiplex data transmission with a bus system. 4,406,007, Cl. 370-85.000.

Kitamura, Ikuo: *See—*
Atsumi, Shin-Ichi; Sasaki, Masayuki; and Kitamura, Ikuo, 4,405,648, Cl. 426-19.000.

Klapp, Hartmut: *See—*
Bensberg, Wolfgang; and Klapp, Hartmut, 4,405,304, Cl. 493-476.000.

Klasco, Michael A.; and Kornfeld, Irwin H., to Variable Speech Control Company ("VSC"), The. Time compression/expansion with synchronized individual pitch correction of separate components. 4,406,001, Cl. 369-88.000.

Klauke, Erich: *See—*
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; Stendel, Wilhelm; Lantzsch, Reinhard; and Marhold, Albrecht, 4,405,639, Cl. 424-278.000.
Kabbe, Hans-Joachim; Klauke, Erich; Krause, Hans P.; Mardin, Mithat; and Sitt, Rudiger, 4,405,644, Cl. 424-322.000.

Klein, John F., to Metco Inc. Plasma spray gun with cooling fin nozzle and deionizer. 4,405,853, Cl. 219-121.0PP.

Kleine, William H. Wagon transmission. 4,404,868, Cl. 74-665.0GE.

Kleiner, Fredric: *See—*
Zemelman, Valery B.; and Kleiner, Fredric, 4,404,807, Cl. 62-1.000.

Kleinschmit, Einhard: *See—*
Scheurenbrand, Dieter; and Kleinschmit, Einhard, 4,404,983, Cl. 137-74.000.

Klesper, Hugo: *See—*
Busse, Oswald; and Klesper, Hugo, 4,405,457, Cl. 210-225.000.

Kling, Rudolf; and Scheider, Bernd, to Quick-Rotan Elektromotoren GmbH. Nominal value pick up for drive controls. 4,405,859, Cl. 250-229.000.

Klockner-Humboldt-Deutz AG: *See—*
Guttmann, Friedrich W., 4,405,366, Cl. 75-93.00E.

Klok, Henri. Carpenter's saw guide and square. 4,404,753, Cl. 33-451.000.

Klotz, Marvin R., to Standard Oil Company (Indiana). Crystalline chromosilicate catalytic compositions. 4,405,502, Cl. 252-455.00R.

Klotz, Marvin R., to Standard Oil Company (Indiana). Catalytic compositions. 4,405,504, Cl. 423-458.000.

Klubitschko, Gerd: *See—*
Knabel, Walter; Klubitschko, Gerd; Stempfhuber, Lorenz; and D'Antonio, Nicholas F., 4,405,151, Cl. 280-612.000.

Kluge, Arthur F., to Syntex (U.S.A.) Inc. [1-(1,4-Benzodioxan-2-yl)-4-(4-aminopyrimidin-2-yl]piperazines useful as anti-depressants. 4,405,622, Cl. 424-250.000.

Kluttermann, Jurgen, to Trudtzschler GmbH & Co. KG. Apparatus for withdrawing and gathering a fiber web. 4,404,711, Cl. 19-106.00R.

Knabel, Walter; Klubitschko, Gerd; Stempfhuber, Lorenz; and D'Antonio, Nicholas F., to Marker Patentverwertungsgesellschaft mbH. Locking device for an electronic safety ski binding. 4,405,151, Cl. 280-612.000.

Knight, John C.; and Wovcha, Merle G., to Upjohn Company, The. Composition of matter and process. 4,405,525, Cl. 260-397.100.

Knight, Phyllis. Combination scarf. 4,404,688, Cl. 2-207.000.

Knight, Stanley P., to RCA Corporation. Television signal converting apparatus providing an on-screen tuning display. 4,405,946, Cl. 358-192.100.

Knofel, Hartmut: *See—*
Wegener, Gerhard; Knofel, Hartmut; Ellendt, Gunther; and Petinaux, Marcel, 4,405,527, Cl. 260-453.0PH.

Knopik, Duane L.: *See—*
Hegler, Roy E., 4,404,844, Cl. 73-49.200.

Knopp, Steven D.: *See—*
Elsing, John W.; and Knopp, Steven D., 4,405,136, Cl. 277-12.000.

Kobashi, Kiyoshi: *See—*
Oishi, Kiyohiko; Suzuki, Yoshihiro; Kobashi, Kiyoshi; Matsumoto, Shinichi; Yoshida, Takashi; and Kogiso, Takeshi, 4,404,795, Cl. 60-274.000.
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,404,798, Cl. 60-296.000.

Kobayashi, Haruhiro; Funaki, Hidefumi; and Sakurai, Takehiro, to Anelva Corporation. Sputtering apparatus. 4,405,436, Cl. 204-298.000.

Kobayashi, Hiroo, to Mitsubishi Denki Kabushiki Kaisha. Color cathode ray tube including Nd_2O_3 and Cr_2O_3 in face glass. 4,405,881, Cl. 313-480.000.

Kobayashi, Kenji: *See—*
Ishii, Kiyoichi; Fujii, Hideharu; and Kobayashi, Kenji, 4,405,932, Cl. 357-13.000.

Kobayashi, Shigeru: *See—*
Tateishi, Hideki; Kamei, Tsuneaki; Abe, Katsuo; Kobayashi, Shigeru; Aiuchi, Susumu; Nakatsukasa, Masashi; Takahashi, Nobuyuki; and Sugimoto, Ryuji, 4,405,435, Cl. 204-298.000.

Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing aryl- or aralkylbenzene having two benzene rings at least one of which is substituted by at least one 3,3,3-trifluoropropyl group. 4,405,824, Cl. 570-144.000.

Kober, Marvin, to O.K. Machine and Tool Corporation. Printed circuit board holder. 4,405,120, Cl. 269-71.000.

Kobler, Ingo; and Winterholler, Johann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Web threading apparatus for rotary printing machines. 4,404,907, Cl. 101-228.000.

Koch, Annekathrin, Klaus-Michael Koch, executors: *See—*
Koch, Friedrich-Karl, deceased, 4,404,830, Cl. 72-128.000.

Koch, Friedrich-Karl, deceased (by Koch, Annekathrin, Klaus-Michael Koch, executors), to L. Schuler GmbH. Method and apparatus for pressing parts from round stock. 4,404,830, Cl. 72-128.000.

Koch, Paul E.; Bond, Thomas J.; and Adams, Richard C., to Standard Oil Company, The. Method of coextruding diverse materials. 4,405,547, Cl. 264-171.000.

Kodama, Katsuhisa: *See—*
Fujita, Shoichi; Kodama, Katsuhisa; and Yuge, Kiyohiro, 4,405,682, Cl. 428-317.700.

Koebernick, Wolfgang: *See—*
Kinast, Gunther; Schedel, Michael; and Koebernick, Wolfgang, 4,405,714, Cl. 435-84.000.

Koerdt, Reinhold; Schoening, Josef; and Schwiers, Hans-Georg, to Hochtemperatur-Reaktorbau GmbH. Vaulted cover with flange and plurality of pipe fittings. 4,405,055, Cl. 220-215.000.

Koerner, Gotz: *See—*
Nickel, Friedhelm; Koerner, Gotz; Schmidt, Gunter; and Rott, Hans, 4,405,328, Cl. 8-128.00A.

Koga, Toshiyuki, to Kabushiki Kaisha Daini Seikosha. Fluorescent X-ray film thickness gauge. 4,406,015, Cl. 378-050.000.

Kogiso, Takeshi: *See—*
Oishi, Kiyohiko; Suzuki, Yoshihiro; Kobashi, Kiyoshi; Matsumoto, Shinichi; Yoshida, Takashi; and Kogiso, Takeshi, 4,404,795, Cl. 60-274.000.

Koguchi, Kenji: *See*—
Omori, Takashi; Koguchi, Kenji; Yamagishi, Masahiko; and Takeuchi, Higehumi, 4,405,951, Cl. 358-256.000.
Kohl, Helmut, to Behringwerke Aktiengesellschaft. Diagnostic agent for the detection of ketone bodies. 4,405,721, Cl. 436-128.000.
Kohno, Tsutomu, to Victor Company of Japan, Limited. Magnetic tape shifting device. 4,405,095, Cl. 242-179.000.
Kohri, Kitijiro, to Olympus Optical Co., Ltd. Endoscope. 4,404,963, Cl. 128-4.000.
Koike, Norio: *See*—
Baji, Toru; Koike, Norio; Tsukada, Toshihisa; Takemoto, Iwao; Yamamoto, Hideaki; and Takasaki, Yukio, 4,405,935, Cl. 357-31.000.
Koike, Shyouichi; Iidaka, Toshiharu; and Ohyama, Akio, to Nissan Motor Co. Ltd.; and Kokusan Kinzoku Kogyo Kabushiki Kaisha. Regulator handle assembly for the operation of car window glass. 4,404,866, Cl. 74-546.000.
Kojima, Seiji: *See*—
Sugahara, Yujiro, deceased; Usui, Koichi; Ogawa, Masahide; Sato, Teiji; Mizoguchi, Yasuo; and Kojima, Seiji, 4,405,371, Cl. 106-21.000.
Kojima, Tetsuhiko: *See*—
Sugimori, Shigeru; Kojima, Tetsuhiko; and Tsuji, Masakazu, 4,405,488, Cl. 252-299.630.
Kokubu, Yoshinori; Chiba, Jiro; Ichimura, Nobuyoshi; Iwai, Takashi; and Kawaguchi, Toshiyasu, to Asahi Glass Company Ltd.; and Iwaki Glass Company Ltd. Sealing glass compositions. 4,405,722, Cl. 501-15.000.
Kokusan Kinzoku Kogyo Kabushiki Kaisha: *See*—
Koike, Shyouichi; Iidaka, Toshiharu; and Ohyama, Akio, 4,404,866, Cl. 74-546.000.
Kolchinsky, Abel E.; Bouilun, John; and Davis, Wayne, to Miller Fluid Power Corporation. Retaining ring locking device. 4,405,251, Cl. 403-9.000.
Kolkmann, Ingeborg. Makeup eyeglasses with sliding frames. 4,405,213, Cl. 351-59.000.
Kolle, Kjell; and Johannessen, Svein, to FerroFil A/S. Method and apparatus for regulating the temperature of a heating element in a water heater. 4,405,855, Cl. 219-501.000.
Komatsu, Masaaki: *See*—
Kaimai, Hiroyuki; Sonoda, Masakazu; Komatsu, Masaaki; Sakai, Atsuo; and Kamai, Toshimitsu, 4,405,955, Cl. 360-10.300.
Komatsu, Toshiyuki; Fukaya, Masaki; Uzawa, Shunichi; Yoshioka, Seishiro; and Shirato, Yoshiaki, to Canon Kabushiki Kaisha. Photoelectric transducing element. 4,405,915, Cl. 338-15.000.
Kompelien, Arlon D., to Honeywell, Inc. Electronic temperature control from a mechanical temperature responsive means. 4,405,080, Cl. 236-78.00D.
Koncelik, Joseph A.; Chaney, David B.; Lockard, Walter G.; Reeder, Kevin J.; and Hontz, Thomas D., to Burlington Industries, Inc. Overbed tray arrangement. 4,404,698, Cl. 5-507.000.
Kondo, Shiro; and Mizuta, Ken, to Alps Electric Co., Ltd. Push-button switch. 4,405,845, Cl. 200-67.0DB.
Konig, Heribert; and Stark, Heinz, to Mannesmann Aktiengesellschaft. Three phase arc melting and reduction furnace. 4,406,008, Cl. 373-102.000.
Koninklijke Textielfabrieken Nijverdal-Ten Cate N.V.: *See*—
Pott, Richard, 4,405,669, Cl. 428-61.000.
Konishi, Motofumi: *See*—
Inoue, Syunzo; Arai, Toshio; Nagasawa, Takeshi; Konishi, Motofumi; Yanagawa, Hitoshi; Iwaya, Toshio; and Kasuya, Michio, 4,405,227, Cl. 355-27.000.
Konopnicki, Marek J.: *See*—
Eberly, Joseph H.; Drummond, Peter D.; and Konopnicki, Marek J., 4,406,003, Cl. 370-3.000.
Kooijmans, Petrus G.: *See*—
Raudenbusch, Werner T.; Barnhoorn, Adrianus J. M.; Kooijmans, Petrus G.; Sederel, Willem L.; Van Steenis, Adrianus M. C.; and Schets, Theresia F. M., 4,405,662, Cl. 427-386.000.
Kool, Lawrence B.; Nolen, Robert L.; and Solomon, David E. Method of altering the effective bulk density of solid material and the resulting product. 4,405,373, Cl. 106-198.000.
Koomey, Inc.: *See*—
LeMoine, Joseph L., 4,404,989, Cl. 137-596.180.
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., to Shell Oil Company. Thermosetting resinous binder compositions, their preparation, and use as coating materials. 4,405,763, Cl. 525-438.000.
Kopp, Ernst, to Skischuhfabrik Dynafit Gesellschaft m.b.H. Skiing boot. 4,404,758, Cl. 36-121.000.
Kopp, Klaus F.: *See*—
Helbig, Joachim W.; and Kopp, Klaus F., 4,405,596, Cl. 424-33.000.
Koppers Company, Inc.: *See*—
Dressler, Hans; Lederer, Donald A.; and Noe, James, 4,405,755, Cl. 525-138.000.
Korbanka, Helmut: *See*—
Wiezer, Hartmut; Pfahler, Gerhard; and Korbanka, Helmut, 4,405,735, Cl. 524-95.000.
Korff, Joachim: *See*—
Keim, Karl-Heinz; and Korff, Joachim, 4,405,815, Cl. 568-487.000.
Kornfeld, Irwin H.: *See*—
Klasco, Michael A.; and Kornfeld, Irwin H., 4,406,001, Cl. 369-88.000.
Kosaka, Hideki; Mimata, Tsutomu; Shimizu, Tsuyoshi; Yamamoto, Hideharu; Itoh, Kaoru; and Shima, Yasuhusa, to Hitachi, Ltd. Electronic device and method of fabricating the same. 4,405,242, Cl. 368-82.000.
Koshino, Yutaka; Ajima, Takashi; Ohshima, Jiro; and Abe, Masahiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a semiconductor device of mesa type. 4,404,736, Cl. 29-576.00W.
Koskivirta, Veikko; and Haantera, Antti, to Valmet Oy. Method and apparatus for preventing foreign objects from entering into docking basins. 4,405,259, Cl. 405-62.000.
Kosley, Raymond W., Jr.; and Cherill, Robert J., to Hoechst-Roussel Pharmaceuticals Inc. Spiro[2H-1,4-benzodioxepin-3(5H)4'-piperidine and -3'pyrrolidine] compounds and their use as antihypertensive agents. 4,405,631, Cl. 424-267.000.
Kosowsky, Lex A., to National Semiconductor Corporation. Plating head. 4,405,432, Cl. 204-206.000.
Kossek, Stanislaw: *See*—
Bacal, Kazimierz; Wierusz, Lech; and Kossek, Stanislaw, 4,404,967, Cl. 128-69.000.
Kostal of America: *See*—
Kinzl, Marwin; and Bergmann, Eduard, 4,404,939, Cl. 123-333.000.
Kovach, Stephen M.; and Cornelius, Edward B., to Ashland Oil, Inc. Homogenization of water and reduced crude for catalytic cracking. 4,405,445, Cl. 208-120.000.
Kovats, Ferenc: *See*—
Angyan, Sandor; Racz, Istvan; Radvanyi, Erzsebet; Kovats, Ferenc; Detre, Tamas; and Sos, Jozsef, 4,405,353, Cl. 11-3.000.
Kraft, Edwin H., to Kyocera International, Inc. Ceramic capped piston. 4,404,935, Cl. 123-193.00P.
Kraft, Karl J.: *See*—
Recker, Klaus; Reinecke, Gerd; Awater, Albert; Grogler, Gerhard; and Kraft, Karl J., 4,405,752, Cl. 524-847.000.
Krallmann, Reinhold: *See*—
Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Kermer, Wolf-Dieter, 4,405,330, Cl. 8-639.000.
Kramer, Charles F.: *See*—
Bowen, James B.; and Kramer, Charles F., 4,404,995, Cl. 139-92.000.
Root, Stephen J.; and Kramer, Charles F., 4,404,994, Cl. 139-91.000.
Krause, Hans P.: *See*—
Kabbe, Hans-Joachim; Klauke, Erich; Krause, Hans P.; Mardin, Mithat; and Sitt, Rudiger, 4,405,644, Cl. 424-322.000.
Krauss-Maffei Aktiengesellschaft: *See*—
Hultsch, Gunther; Alstetter, Franz; and Breuer, Uwe, 4,405,454, Cl. 209-279.000.
Krebs, Richard F.; Marek, Patrick J.; and Phillips, Kenneth G., to Nalco Chemical Company. Compositions for on-site mannich polymer process. 4,405,728, Cl. 523-336.000.
Kreis, Gerhard: *See*—
Hafner, Walter; Markl, Erich; Eibel, Ludwig; Kreis, Gerhard; Samrowski, Dietrich; Wick, Manfred; Deubzer, Bernward; and Friedrich, Wilhelm, 4,405,469, Cl. 252-28.000.
Kremp, Wilhelm K.: *See*—
Davy, Robert F.; and Kremp, Wilhelm K., 4,405,279, Cl. 414-558.000.
Krempl, Peter; Zeiringer, Rudolf; and Claassen, Peter, to List, Hans. Transducer device for measuring mechanical values on hollow bodies. 4,404,854, Cl. 73-730.000.
Krennbauer, Franz, to Voest-Alpine Aktiengesellschaft. Process of producing cement and plant for carrying out the process. 4,405,374, Cl. 106-100.000.
Kriebel, Manfred: *See*—
Schlauer, Johann; Fischer, Herbert; and Kriebel, Manfred, 4,405,593, Cl. 423-574.00R.
Krnjevic, Hrvoje. Drug for curing inflammatory and/or degenerative and/or atrophic mucous-membrane diseases. 4,405,610, Cl. 424-180.000.
Kroh, Adolf: *See*—
Fuchs, Otto; Kroh, Adolf; and Teige, Wolfgang, 4,405,734, Cl. 524-90.000.
Krohn, Hellmut: *See*—
Resch, Reinhard; and Krohn, Hellmut, 4,405,181, Cl. 303-9.000.
Krohne Messtechnik GmbH & Co. KG: *See*—
Spratte, Hans-Hermann, 4,405,858, Cl. 250-221.000.
Krone GmbH: *See*—
Muller, Manfred; and Achtnig, Klaus-Peter, 4,405,187, Cl. 339-14.00R.
Krueger, Hans: *See*—
Baur, Guenter; Greubel, Waldemar; Krueger, Hans; and Schauer, Alois, 4,405,210, Cl. 350-345.000.
Kruger, Franz J., to Varta Batterie Aktiengesellschaft. Manganese dioxide electrode for lithium batteries. 4,405,699, Cl. 429-224.000.
Krummheuer, Wolf: *See*—
Jaschek, Juergen; and Krummheuer, Wolf, 4,405,341, Cl. 51-298.000.
Krupicka, William A.: *See*—
Dixon, David; and Krupicka, William A., 4,404,825, Cl. 70-368.000.
Kruyer, Jan. Preparation of bitumen froths and emulsions for separation. 4,405,446, Cl. 208-188.000.
Kubo, Eiki: *See*—
Mizuno, Megumi; Ishikawa, Shigeru; and Kubo, Eiki, 4,404,877, Cl. 81-57.370.
Kubo, Kazuyuki: *See*—
Nishino, Shinichi; Katagiri, Shigenobu; and Kubo, Kazuyuki, 4,405,922, Cl. 340-825.360.
Kubota, Naohiro; Shibata, Toshihiro; Sugibuchi, Kazuo; and Nakahara, Yutaka, to Adeka Argus Chemical Co., Ltd. 2,2,6,6-Tetramethyl-4-

piperidyl spiro aliphatic ethers and stabilizers for synthetic polymers. 4,405,736, Cl. 524-102.000.
Kubota, Naohiro: *See*—
Hirai, Bunji; Kubota, Naohiro; and Sugibuchi, Kazuo, 4,405,737, Cl. 524-102.000.
Kuchenbecker, Dietrich; and Eckhardt, Erich, to Linde Aktiengesellschaft. Regulating devices for a plurality of pumps driven by a common source. 4,405,287, Cl. 417-216.000.
Kuczenski, Steven R., to Tecumseh Products Company. Self-mounting pneumatic fuel primer. 4,404,933, Cl. 123-187.50R.
Kudo, Mitsuru; and Nakagawa, Isao, to Hitachi, Ltd. Chrominance signal reproducing apparatus. 4,405,937, Cl. 358-40.000.
Kulakov, Gennady I.: *See*—
Shemyakin, Evgeny I.; and Kulakov, Gennady I., 4,405,231, Cl. 356-34.000.
Kulicke and Soffa Industries Inc.: *See*—
Levintov, Chaim; and Shienfeld, Michael, 4,405,074, Cl. 228-41.000.
Kulik, Conrad J.; and Atherton, Linda, to Electric Power Research Institute. Process for coal liquefaction employing a superior coal liquefaction process solvent. 4,405,437, Cl. 208-10.000.
Kull, Leo. Selectable coupling mechanism including article dispensers. 4,405,059, Cl. 221-129.000.
Kulpa, Walter J.; and Paulik, John R., to Pitney Bowes Inc. Paper stacking device. 4,405,125, Cl. 271-195.000.
Kulprathipanja, Santi, to UOP Inc. Extraction of sucrose. 4,405,378, Cl. 127-55.000.
Kumadaki, Itsumaro: *See*—
Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, 4,405,824, Cl. 570-144.000.
Kumpe, Gerhardt: *See*—
Schwinn, Horst; Heimburger, Norbert; Kumpe, Gerhardt; and Wormsbacher, Wilfried, 4,405,603, Cl. 424-101.000.
Kunii, Daizo, to Mittetu Chemical Engineering, Ltd. Process and apparatus for gasifying combustible materials. 4,405,339, Cl. 48-62.00R.
Kuno, Akira: *See*—
Shinoda, Yoshio; and Kuno, Akira, 4,405,924, Cl. 340-825.720.
Kunze, Bernard: *See*—
Hansen, Willi; Kunze, Bernard; and Hermanns, Matthias, 4,405,266, Cl. 408-56.000.
Kupersmit, Julius B. Collapsible tall container. 4,405,077, Cl. 229-41.00R.
Kupfer, Hans; and Rudolph, Paul, to Metallgesellschaft Aktiengesellschaft. Process and apparatus for charging solid fuels into a fixed-bed gasifier. 4,405,340, Cl. 48-86.00R.
Kuraoka, Yasuo; and Hosoda, Norihide, to Hoxan Corporation. Cryogenic impact testing method and machine. 4,405,243, Cl. 374-46.000.
Kurata, Noboru: *See*—
Asaka, Urataro; Kurata, Noboru; and Masumura, Masanori, 4,404,934, Cl. 123-190.0BD.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, 4,405,824, Cl. 570-144.000.
Kurisaki, Konomu: *See*—
Sato, Haruhito; Ichikawa, Hiroshi; Hayashi, Hiroshi; and Kurisaki, Konomu, 4,405,467, Cl. 252-1.000.
Kuroda, Toshimasa; Ishii, Seiji; and Shibata, Tatsuya, to Teijin Limited. Crimpable conjugate filamentary yarns having a flattened cross-sectional configuration. 4,405,686, Cl. 428-374.000.
Kuroiwa, Hiroshi: *See*—
Yamauchi, Teruo; Ohyama, Yoshishige; Kuroiwa, Hiroshi; Fujieda, Mamoru; and Kirisawa, Tadashi, 4,404,846, Cl. 73-118.000.
Kurtz, Leonard D.; and LiCausi, Joseph, to BioResearch Inc. Surgical drainage device with metered air pump. 4,405,309, Cl. 604-317.000.
Kusaka, Yosuke; and Okabe, Nobuo, to Nippon Kogaku K.K. Automatic focusing apparatus for a camera. 4,405,220, Cl. 354-25.000.
Kutzner, Luitpold; and Postenrieder, Erwin, to Kutzner, Luitpold. Furnace with draft-limiter and ventilation. 4,404,956, Cl. 126-293.000.
Kuzel, Maryann; and Leikhim, John W., to Procter & Gamble Company, The. Stable liquid detergents containing aluminosilicate ion exchange material. 4,405,483, Cl. 252-140.000.
Kvalheim, A. M. Self-emptying dump box. 4,405,278, Cl. 414-411.000.
Kwan, Stephen C.: *See*—
Wall, Frederick G.; and Kwan, Stephen C., 4,405,918, Cl. 340-365.00C.
Kwasniewski, Gary K.: *See*—
Nyquist, John D.; Kwasniewski, Gary K.; Thornton, Arthur W.; Vest, Paul E.; and Ducklo, Kenneth E., 4,405,492, Cl. 252-370.000.
Kyburz, Emilio: *See*—
Hunkeler, Walter; and Kyburz, Emilio, 4,405,516, Cl. 260-239.30B.
Hunkeler, Walter; and Kyburz, Emilio, 4,405,517, Cl. 260-239.30T.
Kyle, Joseph H., to Carpets International-Georgia (Sales), Inc. Process for making a magnetic material containing carpet tile and carpet tile. 4,405,674, Cl. 428-96.000.
Kyocera International, Inc.: *See*—
Kraft, Edwin H., 4,404,935, Cl. 123-193.00P.
Kyoritsu Seiki Corporation: *See*—
Abe, Hitoshi, 4,405,268, Cl. 408-182.000.
Kyowa Electronic Instruments Co., Ltd.: *See*—
Honda, Harukichi; Kawada, Toshiya; and Tsujitsugu, Yoshiyuki, 4,404,856, Cl. 73-765.000.
L.C.C.-C.I.C.E. Compagnie Europeenne de Composants Electroniques: *See*—
Chabrolle, Jacques, 4,405,959, Cl. 360-119.000.
L. Schuler GmbH: *See*—
Koch, Friedrich-Karl, deceased, 4,404,830, Cl. 72-128.000.
La Compagnie Normand Ltee: *See*—
Allard, Rene; Couture, Fernand; and Couture, Raynald, 4,405,169, Cl. 296-3.000.
Labib, Mohamed E., to RCA Corporation. Capacitance electronic disc stamper having improved stain resistance and method for the manufacture thereof. 4,405,670, Cl. 428-64.000.
Labsystems Oy: *See*—
Ekholm, Pertti, 4,405,206, Cl. 350-318.000.
Laidlaw, Walter, to Claudius Peters, Inc. Aeroslide construction. 4,405,240, Cl. 366-101.000.
Laing, Karsten. Roof skin forming a heat sink. 4,404,960, Cl. 126-432.000.
Lallier, Jean-Claude: *See*—
Allart, Bernard R.; Lallier, Jean-Claude; and Noel, Alain W., 4,404,896, Cl. 91-491.000.
Lamberti, Vincent; and Boen, Laurence K., to Lever Brothers Company. Process for producing directly esterified fatty acyl isethionate by a mixed zinc oxide-sulfonic acid catalyst. 4,405,526, Cl. 260-400.000.
Lampe, Alfred: *See*—
Pfeiffer, Gerd; Biller, Horst; Bellmann, Manfred; Oberem, Karl; Lampe, Alfred; and Frentzen, Hermann-Josef, 4,404,832, Cl. 72-209.000.
Lancaster, Jack; Floyd, John; and Harvey, William. Heart muscle evaluation method and apparatus. 4,404,973, Cl. 128-654.000.
Lancy International, Inc.: *See*—
Kamperman, David R., 4,405,462, Cl. 210-709.000.
Lang, George R.: *See*—
Pritzkow, Dennis H.; Zabel, Jack H.; and Lang, George R., 4,405,863, Cl. 250-385.000.
Lang, Gerard: *See*—
Shroot, Braham; Maignan, Jean; and Lang, Gerard, 4,405,615, Cl. 424-232.000.
Lange, Ronald E.; and King, Steve E., to Honeywell Information Systems Inc. Microprocessor based computer terminal. 4,405,978, Cl. 364-200.000.
Lannen Tehtaat Oy: *See*—
Hakli, Reijo S., 4,404,917, Cl. 111-3.000.
Lantzsch, Reinhard: *See*—
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; Stendel, Wilhelm; Lantzsch, Reinhard; and Marhold, Albrecht, 4,405,639, Cl. 424-278.000.
Lapointe, Denis. Combined denture mold dewaxer and curing basin. 4,405,854, Cl. 219-421.000.
Larkin, Mark E.: *See*—
Gross, James R.; and Larkin, Mark E., 4,405,312, Cl. 604-29.000.
Larson, Dean W.: *See*—
Northe, Melvin M.; and Larson, Dean W., 4,404,712, Cl. 24-129.00R.
Larson, John A., to Ingersoll-Rand Company. Austenitic stainless steel casting alloy for corrosive applications. 4,405,389, Cl. 148-37.000.
Larson, Larry A., to Caterpillar Tractor Co. Fuel supply conditioning and flow measurement circuit. 4,404,847, Cl. 73-119.00A.
Larson, Ralph I., Jr.: *See*—
Kiley, Richard F.; and Larson, Ralph I., Jr., 4,404,739, Cl. 29-588.000.
Latenko, Vladimir P.: *See*—
Sheiko, Anatoly A.; Voloschenko, Mikhail V.; Latenko, Vladimir P.; Kartashevsky, Gennady R.; Schegolkov, Evgeny I.; Zlatkis, Anatoly D.; Osokin, Viktor G.; Polyakov, Lev V.; Zaitsev, Valentin V.; and Trunov, Mikhail B., 4,405,367, Cl. 75-124.000.
Lawes, Peter: *See*—
Buning, Onno; and Lawes, Peter, 4,404,691, Cl. 3-1.911.
Lawson, John E., to Armco Inc. Subsea template levelling system and method. 4,405,261, Cl. 405-227.000.
Leadlie, Robert J.: *See*—
Fiorentino, Ermenegildo; Wojtowicz, Edward A.; and Leadlie, Robert J., 4,405,972, Cl. 361-417.000.
Lear Siegler, Inc.: *See*—
Gabriele, Leonard A., 4,405,270, Cl. 409-244.000.
Masser, Lloyd D., 4,405,154, Cl. 280-686.000.
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Oishi, Kiyohiko; Suzuki, Yoshihiro; Kobashi, Kiyoshi; Matsumoto, Shinichi; Yoshida, Takashi; and Kogiso, Takeshi, 4,404,795, Cl. 60-274.000.
Matsunaga, Mamoru; Usami, Teruo; Okuda, Haruo; and Futamata, Hideo, to Ishihara Sangyo Kaisha, Ltd. Titanium dioxide pigment and process for producing same. 4,405,376, Cl. 106-300.000.
Matsuo, Yushin: *See*—
Aihara, Toshiharu; Tahara, Iwao; Matsuo, Yushin; Takahashi, Naoki; Wakabayashi, Takuo, deceased; and Wakabayashi, Shigemasa, executor, 4,405,241, Cl. 368-63.000.
Matsuoka, Hideoki, to Nissan Motor Co., Ltd. Seat belt device for an automotive vehicle. 4,405,155, Cl. 280-802.000.
Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Yamauchi, Kogi; and Suzuki, Mitsuo, to Hitachi, Ltd. Garage door control system. 4,405,923, Cl. 340-825.560.
Matsushita Electric Industrial Co., Ltd.: *See*—
Okamoto, Hiroshi, 4,405,885, Cl. 318-254.000.
Soga, Mamoru; Shimotsuma, Wataru; Kishimoto, Yoshio; and Sekine, Yoichi, 4,405,370, Cl. 106-20.000.
Matsuura, Kiyoshi: *See*—
Misawa, Masatoshi; Takahashi, Kusuhiko; Okuda, Kinnosuke; Matsuura, Kiyoshi; Takehara, Hisao; and Ishikawa, Keiichiro, 4,405,419, Cl. 204-96.000.
Matsuura, Mitsuyuki: *See*—
Miwa, Yukimasa; Shimada, Takeo; Hayashi, Shigekazu; Ukita, Michito; Nakagawa, Hideaki; and Matsuura, Mitsuyuki, 4,405,774, Cl. 526-348.200.
Matth. Hohner AG: *See*—
Zacharias, Ernst, 4,404,884, Cl. 84-258.000.
Matthe-Doret, Fernand: *See*—
Lebet, Jean-Philippe; Peterle, Leonardo; and Matthe-Doret, Fernand, 4,404,741, Cl. 29-721.000.
Matthies, Dennis L.: *See*—
Coutts, Maurice D.; and Matthies, Dennis L., 4,405,541, Cl. 264-107.000.
Mauro, Gene A.: *See*—
Payne, Arnold F.; Mauro, Gene A.; Cumpton, Wayne L.; and Orr, George J., 4,405,171, Cl. 296-19.000.
Mauser-Werke Oberndorf GmbH: *See*—
Reudelsterz, Helmut; and Kellner, Gerd, 4,404,765, Cl. 42-77.000.
May, George A. Optical parametrons. 4,405,869, Cl. 307-405.000.
Mayer, Bruno F. P., to Discovision Associates. Hot sprue valve assembly for an injection molding machine. 4,405,540, Cl. 264-106.000.
Mayer, Herbert E., to Censor Patent- und Versuchs-Anstalt. Method of projecting printing on semiconductor substrate and workpiece including such substrate. 4,405,229, Cl. 355-77.000.
McAlpine, Frederick W., to Barr & Stroud Limited. Fire control system. 4,404,890, Cl. 89-41.00E.
MCC Corporation: *See*—
Ohyama, Taketomo, 4,404,721, Cl. 29-33.00T.
McCabe, Francis J., to Prefco Products, Inc. Economy, angle-blade damper kit. 4,404,990, Cl. 137-601.000.
McClements, William L.: *See*—
Vande Woude, George F.; McClements, William L.; Oskarsson, Marianne K.; and Blair, Donald G., 4,405,712, Cl. 435-5.000.
McCormick-Goodhart, Mark H.; Cannella, Vincent D.; and Minko, Robert, to Energy Conversion Devices, Inc. Apparatus for recording surface topology. 4,404,926, Cl. 118-641.000.
McCoy, David R.; McEntire, Edward E.; and Gipson, Robert M., to Texaco Inc. Demulsification of bitumen emulsions. 4,405,015, Cl. 166-267.000.
McCracken, Richard W.; Textoris, Melvin A.; and Williams, Philip J., to GF Business Equipment, Inc. Post cover plate. 4,404,785, Cl. 52-290.000.
McDaniel, Max P., to Phillips Petroleum Company. Polymerization process using chromium on a support treated with titanium polymer. 4,405,768, Cl. 526-96.000.
McDermott, Lewis J., III: *See*—
Wald, William, 4,405,668, Cl. 428-40.000.
McDonnell Douglas Corporation: *See*—
Byrd, Norman R., 4,405,427, Cl. 204-181.00R.
McEntire, Edward E.: *See*—
McCoy, David R.; McEntire, Edward E.; and Gipson, Robert M., 4,405,015, Cl. 166-267.000.
McEntire, John E.; and Papermaster, Ben W., to Cancer Research Center. Extraction and purification of biologically active lymphokines. 4,405,601, Cl. 424-95.000.
McEvoy, James T., to Milsco Manufacturing Company. Foam article and method of preparation. 4,405,681, Cl. 428-309.900.
McGill, Charles K.; and Bailey, Thomas D., to Reilly Tar & Chemical Corp. Process for preparing 2-alkylamino- and 2-amino-5-alkylpyridines. 4,405,790, Cl. 546-304.000.
McGill, Eugene C.; and Bell, Ronald D., to McGill Incorporated. Process for reduction of oxides of nitrogen. 4,405,587, Cl. 423-235.000.
McGill Incorporated: *See*—
McGill, Eugene C.; and Bell, Ronald D., 4,405,587, Cl. 423-235.000.
McGinniss, Vincent D.: *See*—
Rodgers, Stephen D.; Dick, Richard J.; and McGinniss, Vincent D., 4,405,761, Cl. 525-404.000.
McHugh, Leo A., Jr. Continuous flow, variable capacity self-compensating floating weir. 4,405,458, Cl. 210-242.300.
McKnight, James B., to Fulghum Industries, Inc. Take up system for long lengths of high pressure hose. 4,404,986, Cl. 137-355.170.
McLaughlin, Donald W.: *See*—
Simmons, Nathaniel; Magnusson, Stig; Puccini, Sergio E.; McLaughlin, Donald W.; and Stelt, David J., 4,406,005, Cl. 370-63.000.
Mclaughlin, Thomas M.; McLeod, William D.; Madsen, Nels H.; and Peyton, Ronald G., to Totem, Inc. Muscular exercise apparatus and method. 4,405,128, Cl. 272-117.000.
McLeod, William D.: *See*—
Mclaughlin, Thomas M.; McLeod, William D.; Madsen, Nels H.; and Peyton, Ronald G., 4,405,128, Cl. 272-117.000.
McNeely, Gerald W., to Akzona Incorporated. Flame retardant additives and flame retardant polyester compositions. 4,405,738, Cl. 524-116.000.
Mead, Keith E.: *See*—
Harrah, Larry A.; Mead, Keith E.; and Smith, Henry M., 4,405,487, Cl. 252-194.000.
Mecklenborg, Richard A., to Singer Company, The. Optical probe. 4,405,941, Cl. 358-104.000.
Medico, Russell R.: *See*—
Yang, Ling; Medico, Russell R.; and Baugh, Wesley A., 4,405,595, Cl. 423-600.000.
Mednikarov, Vladimir S.: *See*—
Georgiev, Vesselin Y.; and Mednikarov, Vladimir S., 4,405,084, Cl. 239-99.000.
Meiji Seika Kaisha Ltd.: *See*—
Nishimura, Tamio; Miyamoto, Yoshiko; Ohyama, Hiroshi; Yamamura, Hiroshi; Morita, Ken; Matsumoto, Kuniomi; and Watanabe, Tetsuro, 4,405,743, Cl. 424-321.000.
Meltsner, Bernard R.: *See*—
Dean, Walter K.; and Meltsner, Bernard R., 4,405,812, Cl. 564-409.000.
Melzer, Gerhard: *See*—
Burkner, Wolfgang; and Melzer, Gerhard, 4,405,277, Cl. 414-222.000.
Meredith, Gerald R.: *See*—
Williams, David J.; Meredith, Gerald R.; and Olin, George R., 4,405,733, Cl. 524-87.000.
Merk, Wolfgang: *See*—
Binder, Volker; Merk, Wolfgang; and Werle, Peter, 4,405,783, Cl. 544-267.000.
Merrell Dow Pharmaceuticals Inc.: *See*—
Dage, Richard C.; Palopoli, Frank P.; Schnettler, Richard A.; and Grisar, J. Martin, 4,405,628, Cl. 424-263.000.
Schnettler, Richard A.; Dage, Richard C.; and Grisar, Johann M., 4,405,635, Cl. 424-273.00R.

Merrell Toraude et Compagnie: *See—*
Gerhart, Fritz E., 4,405,530, Cl. 260-465.50R.

Merrifield, Donald V., to Lockheed Missiles & Space Company, Inc. Mounting mechanism for endless traction band system. 4,405,026, Cl. 180-9.620.

Merril, Carl R., to United States of America, Health and Human Services. Silver stains for protein in gels. 4,405,720, Cl. 436-86.000.

Messer Griesheim GmbH: *See—*
Baier, Alfred; Lucht, Alfred; Munch, Gerhard; and Pfeuffer, Alfred, 4,405,382, Cl. 148-9.00R.

Messier-Hispano-Bugatti: *See—*
Masclet, Jean; and Turiot, Andre, 4,405,119, Cl. 267-64.220.

Metallgesellschaft Aktiengesellschaft: *See—*
Kupfer, Hans; and Rudolph, Paul, 4,405,340, Cl. 48-86.00R.
Schlauer, Johann; Fischer, Herbert; and Kriebel, Manfred, 4,405,593, Cl. 423-574.00R.

Metco Inc.: *See—*
Klein, John F., 4,405,853, Cl. 219-121.0PP.

Meyer, Larry P., to Nelson Irrigation Corporation. Water distributing assembly. 4,405,085, Cl. 239-178.000.

Meyerhoff, Jerome D., to Motorola, Inc. Signal equalization selector. 4,405,836, Cl. 179-1.00D.

Michelson, Robin P., to University of California, The Regents of The. Apparatus for selective noise suppression for hearing aids. 4,405,831, Cl. 179-1.00P.

Microdynamics, Inc.: *See—*
Martell, Charles R.; Leslie, Elmer N.; Isett, Don D.; and Treadwell, Stephen S., 4,404,919, Cl. 112-121.110.

Mid-West Transformer Company: *See—*
Finkbeiner, Ernest, 4,405,913, Cl. 336-98.000.

Miesch, Johann: *See—*
Christ, Alfred; and Miesch, Johann, 4,404,724, Cl. 29-116.0AD.

Miesel, John L., to Eli Lilly and Company. 1-Benzoyl-3-(arylphyridyl-)urea compounds. 4,405,552, Cl. 424-263.000.

Miguel, Anthony S., to United States of America, Army. Composite floor armor for military tanks and the like. 4,404,889, Cl. 89-36.00A.

Mihara, Yuji: *See—*
Masuda, Nobuhito; Nagatomo, Shigeru; and Mihara, Yuji, 4,405,711, Cl. 435-4.000.

Mikhail, Ezzat A., to Minnesota Mining and Manufacturing Company. Acyclicacylaminoperfluoroalkanesulfonanilides and derivatives thereof. 4,405,359, Cl. 71-103.000.

Miki, Yukio: *See—*
Yoshida, Fumio; Miki, Yukio; and Egawa, Takeshi, 4,405,221, Cl. 354-173.000.

Miles Laboratories, Inc.: *See—*
Rapkin, Myron C.; and Tabb, David L., 4,405,718, Cl. 436-8.000.

Miller, Anthony J.: *See—*
Siegel, Lawrence; Polanek, Edward L.; Miller, Anthony J.; and Woodman, Alan L., 4,405,984, Cl. 364-410.000.

Miller, David: *See—*
Nadler, M. Princeton; and Miller, David, 4,405,216, Cl. 351-237.000.

Miller Fluid Power Corporation: *See—*
Kolchinsky, Abel E.; Bouilun, John; and Davis, Wayne, 4,405,251, Cl. 403-9.000.

Miller, Harry C.; and Evans, Walter R., to Sargent & Greenleaf, Inc. View limiting dial and ring structure for combination locks and the like. 4,404,823, Cl. 70-333.00A.

Miller, Jack V., to Gravity Guidance, Inc. Doorway mounted horizontal bar. 4,405,127, Cl. 272-62.000.

Miller, Jesse D., Jr.; and Petzold, James R., to Armstrong World Industries, Inc. Non-skid plastic flooring product and method of manufacture. 4,405,657, Cl. 427-54.100.

Millner, Tivadar: *See—*
Vadasdi, Karoly; Bartha, Laszlo; Millner, Tivadar; Tekula, Endre; and Kiss, Andras, 4,405,571, Cl. 423-53.000.

Milsco Manufacturing Company: *See—*
McEvoy, James T., 4,405,681, Cl. 428-309.900.

Mimata, Tsutomu: *See—*
Kosaka, Hideki; Mimata, Tsutomu; Shimizu, Tsuyoshi; Yamamoto, Hideharu; Itoh, Kaoru; and Shima, Yasuhusa, 4,405,242, Cl. 368-82.000.

Minami, Katsuji: *See—*
Yasuda, Mitsuo; Minami, Katsuji; Itokawa, Jiro; Aoto, Yoshiyuki; Hatakeyama, Yasuyuki; and Sakaida, Shinya, 4,405,219, Cl. 353-37.000.

Miner, Jay: *See—*
Gordon, Pat L.; Calfee, Richard V.; and Miner, Jay, 4,404,972, Cl. 128-419.0PG.

Minko, Robert: *See—*
McCormick-Goodhart, Mark H.; Cannella, Vincent D.; and Minko, Robert, 4,404,926, Cl. 118-641.000.

Minnesota Mining and Manufacturing Company: *See—*
Downing, Edward J.; and Fisch, Richard S., 4,405,678, Cl. 428-215.000.
Gebeke, Charles D., 4,405,097, Cl. 242-199.000.
Mikhail, Ezzat A., 4,405,359, Cl. 71-103.000.
Patterson, Richard A., 4,405,056, Cl. 220-271.000.
Pohl, Daniel P., 4,405,676, Cl. 428-164.000.
Young, Chung I.; and Barber, Loren L., Jr., 4,405,497, Cl. 252-431.00R.

Minolta Camera Kabushiki Kaisha: *See—*
Yoshida, Fumio; Miki, Yukio; and Egawa, Takeshi, 4,405,221, Cl. 354-173.000.

Minowa, Junichiro: *See—*
Fujii, Yohji; and Minowa, Junichiro, 4,405,405, Cl. 156-633.000.

Misawa, Masatoshi; Takahashi, Kusuhiko; Okuda, Kinnosuke; Matsuura, Kiyoshi; Takehara, Hisao; and Ishikawa, Keiichiro, to Japan Metal and Chemical Co., Ltd. Method for producing electrolytic manganese dioxide. 4,405,419, Cl. 204-96.000.

Mita Industrial Company Limited: *See—*
Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; and Morimoto, Kiyoshi, 4,405,226, Cl. 355-14.00D.

Mitchell, Daniel M.; and Durspek, William J., to Rockwell International Corporation. Audio tracking pulse-width modulated power supply. 4,405,976, Cl. 363-72.000.

Mitchell, David C. Coupling for an articulated vehicle or the like. 4,405,146, Cl. 280-432.000.

Mitscher, Lester A., to Adria Laboratories Inc. Anthracycline synthesis. 4,405,522, Cl. 260-365.000.

Mitsubishi Chemical Industries Limited: *See—*
Ando, Masao; Hirota, Tetsuya; and Shioda, Katashi, 4,405,455, Cl. 210-191.000.
Maki, Takao; Masuyama, Tetsuo; and Yokoyama, Toshiharu, 4,405,823, Cl. 568-801.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Fujimoto, Takanori; and Tada, Yasuo, 4,404,952, Cl. 123-602.000.
Kobayashi, Hiroo, 4,405,881, Cl. 313-480.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Tatebe, Yoshikazu; Egami, Masafumi; and Miyawaki, Toshimitsu, 4,404,936, Cl. 123-196.00R.

Mitsubishi Petrochemical Company Limited: *See—*
Hashimoto, Fukashi, 4,405,775, Cl. 526-351.000.
Miwa, Yukimasa; Shimada, Takeo; Hayashi, Shigekazu; Ukita, Michito; Nakagawa, Hideaki; and Matsuura, Mitsuyuki, 4,405,774, Cl. 526-348.200.

Mitsuhashi, Yoshinobu; Shimada, Junichi; Sakurai, Kenjiro; and Nakamura, Yukinobu, to Ishizaka, Seiichi; and Honda Giken Kogyo Kabushiki Kaisha. Semiconductor ring laser apparatus. 4,405,236, Cl. 356-350.000.

Mitsui Petrochemical Industries, Ltd.: *See—*
Hasui, Hiroshi; Furihata, Toshikazu; Takanashi, Kazuko; and Ohmori, Masahiko, 4,405,807, Cl. 560-75.000.

Mitsui Toatsu Chemicals, Inc.: *See—*
Ozawa, Hiroshi; Shin, Masaaki; Fuziwara, Akio; Nakamura, Mitsuyoshi; Otsuka, Ichiro; and Sugazaki, Kazuo, 4,405,671, Cl. 428-65.000.

Mitsuzawa, Hideaki: *See—*
Murase, Yasushi; Kanegae, Tosiyuki; Mitsuzawa, Hideaki; and Tatsumi, Tosiyuki, 4,404,771, Cl. 49-425.000.

Mittetu Chemical Engineering, Ltd.: *See—*
Kunii, Daizo, 4,405,339, Cl. 48-62.00R.

Mittleman, Herbert, to Baxter Travenol Laboratories, Inc. Injection site with check valve inlet. 4,405,316, Cl. 604-86.000.

Miura, Yosinari: *See—*
Sasaki, Takesada; Endo, Hiroshi; Zama, Yoshimasa; Shiraishi, Masahiko; Miura, Yosinari; and Yamaguchi, Masayuki, 4,404,992, Cl. 138-140.000.

Miwa, Yukimasa; Shimada, Takeo; Hayashi, Shigekazu; Ukita, Michito; Nakagawa, Hideaki; and Matsuura, Mitsuyuki, to Mitsubishi Petrochemical Company Limited. Ethylene copolymer. 4,405,774, Cl. 526-348.200.

Mixon, James L., Jr., to AMP Incorporated. Electrical connector. 4,405,827, Cl. 174-94.00R.

Miyamoto, Yoshiko: *See—*
Nishimura, Tamio; Miyamoto, Yoshiko; Ohyama, Hiroshi; Yamamura, Hiroshi; Morita, Ken; Matsumoto, Kuniomi; and Watanabe, Tetsuro, 4,405,743, Cl. 424-321.000.

Miyane, Masashi: *See—*
Yanagita, Shuichi; Miyoshi, Tsutomu; and Miyane, Masashi, 4,405,025, Cl. 177-210.0FP.

Miyashita, Masahiko: *See—*
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Miyawaki, Toshimitsu: *See—*
Tatebe, Yoshikazu; Egami, Masafumi; and Miyawaki, Toshimitsu, 4,404,936, Cl. 123-196.00R.

Miyazaki, Hiroshi; and Arika, Junji, to Toyo Soda Manufacturing Co., Ltd. Zeolite powder having high flowability, process for preparing same and detergent composition containing same. 4,405,484, Cl. 252-174.250.

Miyazaki, Takeaki: *See—*
Masuda, Yoshio; Miyazaki, Takeaki; Yamada, Osamu; and Hiramoto, Akira, 4,405,866, Cl. 290-53.000.

Miyoshi, Tsutomu: *See—*
Yanagita, Shuichi; Miyoshi, Tsutomu; and Miyane, Masashi, 4,405,025, Cl. 177-210.0FP.

Mizoguchi, Yasuo: *See—*
Sugahara, Yujiro, deceased; Usui, Koichi; Ogawa, Masahide; Sato, Teiji; Mizoguchi, Yasuo; and Kojima, Seiji, 4,405,371, Cl. 106-21.000.

Mizuno, Megumi; Ishikawa, Shigeru; and Kubo, Eiki, to Sanyo Industries, Ltd.; and Muro Kinzoku Kogyo Co., Ltd. Power-driven screwdriver. 4,404,877, Cl. 81-57.370.

Mizusawa Kagaku Kogyo Kabushiki Kaisha: *See—*
Sugahara, Yujiro, deceased; Usui, Koichi; Ogawa, Masahide; Sato, Teiji; Mizoguchi, Yasuo; and Kojima, Seiji, 4,405,371, Cl. 106-21.000.

Mizuta, Ken: *See—*
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MM Systems Corporation: *See—*
Lolley, Ted E.; and Driggers, Randolph W., 4,404,777, Cl. 52-60.000.

Moakler, William A.; and Ringstad, Ralph H., to Automatic Switch Company. System for transferring a load between two power sources without interruption of power to the load. 4,405,867, Cl. 307-64.000.

Mobay Chemical Corporation: *See—*
Bernard, David L.; Backus, John K.; and Doheny, Anthony J., Jr., 4,405,725, Cl. 521-112.000.
Carter, Russell P., Jr., 4,405,731, Cl. 524-47.000.

Mobil Oil Corporation: *See—*
Hungerford, Gordon P., 4,405,550, Cl. 264-216.000.
Okorodudu, Abraham O. M., 4,405,470, Cl. 252-32.70E.
Squier, Joann H., 4,405,666, Cl. 428-35.000.
Stead, George E.; and Young, Lewis B., 4,405,818, Cl. 568-781.000.
Tobias, Michael A.; and Lynch, Conrad L., 4,405,764, Cl. 525-443.000.
Zachariadis, Robert G., 4,405,999, Cl. 367-23.000.

Mock, George E., to Western Electric Company, Inc. Method and apparatus for trimming elongated articles. 4,404,882, Cl. 83-869.000.

Moczygemba, George A.; and Udipi, Kishore, to Phillips Petroleum Company. Haze-free, clear, impact-resistant resinous polymers. 4,405,754, Cl. 525-102.000.

Modern Inventions (Proprietary) Limited: *See—*
Winter, Albert J., 4,404,708, Cl. 16-110.00R.

Modica, Frank S.: *See—*
Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., 4,405,443, Cl. 208-113.000.

Moirez, Jacques: *See—*
Saint-Sevin, Michel; Blot, Michel; and Moirez, Jacques, 4,405,204, Cl. 350-174.000.

Mommer, Richard P.: *See—*
Thomas, Johnny M., II; and Mommer, Richard P., 4,405,354, Cl. 71-21.000.

Mondragon, Ralph. Solar heating system. 4,404,959, Cl. 126-429.000.

Moninski, Joseph P., Jr.: *See—*
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Monopoli, Angela: *See—*
Masi, Paolo; Monopoli, Angela; Saravalle, Adone C.; and Zio, Cesare, 4,405,627, Cl. 424-263.000.

Monsan, Pierre, to Beghin-Say, S.A. Enzymes immobilized on a solid support containing cellulose and lignin. 4,405,715, Cl. 435-105.000.

Monsanto Company: *See—*
Carroll, W. Eamon; and Chan, Albert S., 4,405,814, Cl. 568-462.000.
Deets, Gary L.; and Trementozzi, Quiriano A., 4,405,753, Cl. 525-68.000.
Ebner, Jerry R., 4,405,498, Cl. 252-432.000.
Franz, John E., 4,405,531, Cl. 260-501.120.
Sikorski, James A.; and Hoobler, Mary A., 4,405,356, Cl. 71-87.000.
Woodcock, Maurice L., 4,405,536, Cl. 264-25.000.

Montgomery, Mark S.: *See—*
Stech, Eric N.; Montgomery, Mark S.; and Bates, J. Frederick, 4,405,809, Cl. 562-487.000.

Monvoisin, Jacques, to Societe Tecal. Automatic silk-screen printing machine including an electromagnet device for moving the doctor blade downwards. 4,404,904, Cl. 101-126.000.

Moody, Alister J.; Thim, Lars; and Jorgensen, Karin D., to Novo Industri A/S. Novel peptide. 4,405,608, Cl. 424-177.000.

Mooney, Joseph R. Leak detector for intermittent pressure pipe lines. 4,404,842, Cl. 73-40.50R.

Moore, Calvin E.; Hutchinson, Mark E.; and Fetterman, David S., to MorChem Products, Inc. Recovery of molybdenum. 4,405,572, Cl. 423-54.000.

Moore, Sanders H.; and Dotson, Ronald L., to Olin Corporation. Process for the removal of chlorate and hypochlorite from spent alkali metal chloride brines. 4,405,465, Cl. 210-757.000.

Morane, Bruno P.; and Legras, Gilbert L., to L'Oreal. Ageing indicator. 4,404,922, Cl. 116-206.000.

Morca, Inc.: *See—*
Cruz, Mamerto M., Jr., 4,405,324, Cl. 604-376.000.

MorChem Products, Inc.: *See—*
Moore, Calvin E.; Hutchinson, Mark E.; and Fetterman, David S., 4,405,572, Cl. 423-54.000.

Moretto, Hans-Heinrich: *See—*
Maas, Joachim; Steinberger, Helmut; and Moretto, Hans-Heinrich, 4,405,490, Cl. 252-358.000.

Mori Machinery Co., Ltd.: *See—*
Ishikawa, Kazutomi, 4,404,728, Cl. 29-568.000.

Mori, Mitsuyoshi, to Yanmar Diesel Engine Co., Ltd. Fuel for diesel engine. 4,405,337, Cl. 44-56.000.

Mori, Yasuki: *See—*
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Moriguchi, Soyao: *See—*
Ishikawa, Masayuki; Sugimoto, Akiko; Eguchi, Yukuo; Sasaki, Fujinori; Ebisawa, Hisashi; Moriguchi, Soyao; and Gotoh, Katsuhiko, 4,405,623, Cl. 424-251.000.

Morimoto, Kiyoshi: *See—*
Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; and Morimoto, Kiyoshi, 4,405,226, Cl. 355-14.00D.

Morishita, Hirosada: *See—*
Onuma, Shigeharu; Tamahashi, Kunihiro; Hosoya, Akira; Kakuta, Atsushi; Mori, Yasuki; and Morishita, Hirosada, 4,405,703, Cl. 430-69.000.

Morita, Ken: *See—*
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Morita, Minoru; Hosokawa, Etsuo; and Arahara, Kohzoh, to Showa Electric Wire & Cable Co., Ltd. Polyborosiloxane composition for production of electrically insulating layer and insulated electric wire using the composition. 4,405,687, Cl. 428-383.000.

Morman, Michael T.: *See—*
Appel, David W.; and Morman, Michael T., 4,405,297, Cl. 425-72.00S.

Morton, John S., to Whipp & Bourme (1975) Limited. Arc chutes. 4,405,847, Cl. 200-144.00R.

Moscarillo, Thomas L. Emergency light sources. 4,405,973, Cl. 362-34.000.

Mosebach Electric & Supply Company: *See—*
Nadler, M. Princeton; and Miller, David, 4,405,216, Cl. 351-237.000.

Moser, Winfried: *See—*
Franke, Horst; Linder, Ernst; Moser, Winfried; Muller, Klaus; and Rieger, Franz, 4,404,841, Cl. 73-35.000.

Moshtev, Raphael; Pistoia, Gianfranco; Manev, Veselin; and Nasalevska, Anna, to Consiglio Nazional delle Ricerche; and Accademia Bulgara delle Scienze. Cells having cathodes derived from alkali salts of chromium dichalcogenides. 4,405,695, Cl. 429-103.000.

Motohashi, Minoru, to Pioneer Electronic Corporation. Automatic FM tuner. 4,406,018, Cl. 455-164.000.

Motorola, Inc.: *See—*
Ecklund, Lawrence M., 4,405,837, Cl. 179-1.0GS.
Meyerhoff, Jerome D., 4,405,836, Cl. 179-1.00D.
Weiss, David L.; Ziolko, Eric F.; and Williams, Tim A., 4,406,010, Cl. 375-32.000.
Wurzburg, Henry, 4,405,899, Cl. 330-107.000.

Moulinex, Societe Anonyme: *See—*
Brison, Marc P., 4,405,998, Cl. 366-264.000.

Mount, Gordon L.; and Hesler, Benjamin F., to Carrier Corporation. Method of preventing refrigeration compressor lubrication pump cavitation. 4,404,811, Cl. 62-84.000.

Mravic, Brian; and Shapiro, Eugene, to Olin Corporation. Process and apparatus for improving cold rollability and/or strip annealability of metals and metal alloys. 4,405,386, Cl. 148-11.50A.

MTA Muszaki Fizikai Kutato Intezete: *See—*
Vadasdi, Karoly; Bartha, Laszlo; Millner, Tivadar; Tekula, Endre; and Kiss, Andras, 4,405,571, Cl. 423-53.000.

MTD Products Inc.: *See—*
Parikh, Bhupendra A., 4,404,864, Cl. 74-197.000.

MTU Motoren-Und-Turbinen-Union Munchen GmbH: *See—*
Albrecht, Gunter; Sickinger, Albert; and Schmuhl, Hans-Jurgen, 4,405,284, Cl. 415-174.000.

Mueller, Arthur L.: *See—*
Cherry, Hitesh; Mueller, Arthur L.; and Werner, Walter M., 4,405,195, Cl. 339-252.00R.

Mueller, Gerhard; and Puritscher, Ernst, to Siemens Aktiengesellschaft. Gear unit. 4,404,867, Cl. 74-665.0GA.

Muirhead, Walter B. Magnetic tool retaining device. 4,405,108, Cl. 248-206.00A.

Mukaiyama, Fumiaki, to Kabushiki Kaisha Suwa Seikosha. Liquid crystal display device. 4,405,921, Cl. 340-708.000.

Mukherjee, Shib P., to Chicago Bridge & Iron Company. Indirect-direct freeze exchange concentrator and method. 4,405,349, Cl. 62-532.000.

Mukunoki, Yasuo: *See—*
Yamada, Yasuyuki; Tsuji, Nobuo; Okita, Tsutomu; and Mukunoki, Yasuo, 4,405,481, Cl. 252-62.540.

Mullany, David A. Location indicator for use in baseball and similar games. 4,405,130, Cl. 273-25.000.

Muller, Gunter: *See—*
Julich, Werner; and Muller, Gunter, 4,404,993, Cl. 139-66.00R.

Muller, Hanns P.; Wagner, Kuno; Mummenhoff, Peter; Wallpott, Gottfried; and Scheuss, Karlheinz, to Bayer Aktiengesellschaft. Aqueous aminoplastic resin dispersions. 4,405,751, Cl. 524-720.000.

Muller, Hans J.; Honig, Helmar; and Horlitz, Werner, to EC Erdolchemie GmbH. Halogen compound promoted Al_2O_3 and/or SiO_2 for the preparation of isoalkenes. 4,405,500, Cl. 252-433.000.

Muller, Klaus: *See—*
Franke, Horst; Linder, Ernst; Moser, Winfried; Muller, Klaus; and Rieger, Franz, 4,404,841, Cl. 73-35.000.

Muller, Manfred; and Achtnig, Klaus-Peter, to Krone GmbH. Connector assembly for PCM cables. 4,405,187, Cl. 339-14.00R.

Muller, Robert D.: *See—*
Walter, Richard P.; and Muller, Robert D., 4,405,082, Cl. 239-91.000.

Muller, Werner H.: *See—*
Berthold, Rudiger; and Muller, Werner H., 4,405,813, Cl. 564-415.000.

Multiform Desiccants, Inc.: *See—*
Cullen, John S.; Incorvia, Samuel A.; and Vogt, James A., 4,405,347, Cl. 55-387.000.

Mumby, Edward S., to Exploration Logging, Inc. Apparatus for well logging while drilling. 4,405,021, Cl. 175-48.000.

Mummenhoff, Peter: *See—*
Muller, Hanns P.; Wagner, Kuno; Mummenhoff, Peter; Wallpott, Gottfried; and Scheuss, Karlheinz, 4,405,751, Cl. 524-720.000.

Munch, Gerhard: *See—*
Baier, Alfred; Lucht, Alfred; Munch, Gerhard; and Pfeuffer, Alfred, 4,405,382, Cl. 148-9.00R.

Mungin, Halbert: *See—*
Brooker, Lenon G.; and Mungin, Halbert, 4,405,690, Cl. 428-503.000.

Munker, Max: *See—*
Hild, Berthold; Braun, Martin; and Munker, Max, 4,404,831, Cl. 72-148.000.

Munsterer, Gerald A. Ski trail resurfacing apparatus. 4,404,762, Cl. 37-219.000.

Munzenmaier, Wolfgang; Eggensperger, Heinz; Ehlers, Helmut H.; Beilfuss, Wolfgang; Bucklers, Lothar; and Harke, Hans-Peter, to Sterling Drug Inc. 2,6-Dialkoxy-3-(α-alkoxybenzyl)tetrahydropyrans used as intermediates to make 2-benzylideneglutaraldehydes. 4,405,795, Cl. 549-417.000.

Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, to Taiyo Yuden Co., Ltd. Dielectric ceramic materials with insulated boundaries between crystal grains, and process for preparation. 4,405,472, Cl. 252-62.3BT.

Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, to Taiyo Yuden Co., Ltd. Dielectric ceramic materials with insulated boundaries between crystal grains, and process for preparation. 4,405,473, Cl. 252-62.3BT.

Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, to Taiyo Yuden Co., Ltd. Dielectric ceramic materials with insulated boundaries between crystal grains, and process for preparation. 4,405,474, Cl. 252-62.3BT.

Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, to Taiyo Yuden Co., Ltd. Dielectric ceramic materials with insulated boundaries between crystal grains, and process for preparation. 4,405,475, Cl. 252-62.3BT.

Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, to Taiyo Yuden Co., Ltd. Dielectric ceramic materials with insulated boundaries between crystal grains, and process for preparation. 4,405,476, Cl. 252-62.3BT.

Murase, Kiyoshi; Yamaoka, Nobutatsu; and Onigata, Kazuji, to Taiyo Yuden Co., Ltd. Dielectric ceramic materials with insulated boundaries between crystal grains, and process for preparation. 4,405,477, Cl. 252-62.3BT.

Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, to Taiyo Yuden Co., Ltd. Dielectric ceramic materials with insulated boundaries between crystal grains, and process for preparation. 4,405,478, Cl. 252-62.3BT.

Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, to Taiyo Yuden Co., Ltd. Dielectric ceramic materials with insulated boundaries between crystal grains, and process for preparation. 4,405,479, Cl. 252-62.3BT.

Murase, Kiyoshi; Yamaoka, Nobutatsu; and Onigata, Kazuji, to Taiyo Yuden Co., Ltd. Dielectric ceramic materials with insulated boundaries between crystal grains, and process for preparation. 4,405,480, Cl. 252-62.3BT.

Murase, Yasushi; Kanegae, Tosiyuki; Mitsuzawa, Hideaki; and Tatsumi, Tosiyuki, to Nippon Aluminum Mfg. Co., Ltd., The; Nippon Alumi Jutaku-Kenzai Kogyo Co., Ltd.; Nippon Aluminum Mfg. Co., Ltd., The; and Nippon Alumi Jutaku-Kenzai Kogyo Co., Ltd. Roller assembly for sliding closures. 4,404,771, Cl. 49-425.000.

Murata Manufacturing Co., Ltd.: *See—*
Murata, Michihiro, 4,405,560, Cl. 422-102.000.

Murata, Masayoshi: *See—*
Takaya, Takao; Inoue, Yoshikazu; Murata, Masayoshi; and Takasugi, Hisashi, 4,405,617, Cl. 424-246.000.

Murata, Michihiro, to Murata Manufacturing Co., Ltd. Carrier for holding analytical samples. 4,405,560, Cl. 422-102.000.

Murdoch, Merle A. Portable bathroom hangers for hygienic irrigation equipment. 4,405,109, Cl. 248-215.000.

Muro Kinzoku Kogyo Co., Ltd.: *See—*
Mizuno, Megumi; Ishikawa, Shigeru; and Kubo, Eiki, 4,404,877, Cl. 81-57.370.

Murphy, Brian J. M.: *See—*
Hartshorn, Frank; Murphy, Brian J. M.; and Storer, Richard E., 4,404,701, Cl. 12-127.000.

Murphy, David J.; and Phillips, Leslie N., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Materials suitable for thermosetting. 4,405,543, Cl. 264-123.000.

Murphy, Walter T.; and Guiley, Clifford D., Jr., to B. F. Goodrich Company, The. Stabilized hydroxyl terminated reactive liquid polymers. 4,405,817, Cl. 568-701.000.

Murray, Michael A.: *See—*
Calhoun, L. Owen; and Murray, Michael A., 4,404,779, Cl. 52-126.200.

Musante, Louis P.: *See—*
Marx, Michael K.; and Musante, Louis P., 4,404,750, Cl. 33-1.00B.

Musch, Rudiger; Schubart, Rudiger; Gobel, Wilhelm; Alberts, Heinrich; and Hohmann, Gerhard, to Bayer Aktiengesellschaft. Process for the production of high molecular weight polychloroprene and its use as a starting material for adhesives. 4,405,742, Cl. 524-315.000.

Muscoplat, Richard D. Card negative holder and method of manufacture. 4,405,228, Cl. 355-75.000.

N G K Spark Plug Co., Ltd.: *See—*
Nishio, Hisaharu, 4,405,429, Cl. 204-421.000.

Nabisco Brands, Inc.: *See—*
Blain, William A., 4,405,298, Cl. 425-308.000.
Spadafora, Paul F., 4,405,650, Cl. 426-62.000.

Nadler, M. Princeton; and Miller, David, to Mosebach Electric & Supply Company. Glare susceptibility tester. 4,405,216, Cl. 351-237.000.

Nagai, Kiyoshi. Hermetically sealed flat-type piezo-electric oscillator assembly. 4,405,875, Cl. 310-344.000.

Nagao, Nobuya: *See—*
Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, 4,405,901, Cl. 330-261.000.

Nagasawa, Takeshi: *See—*
Inoue, Syunzo; Arai, Toshio; Nagasawa, Takeshi; Konishi, Motofumi; Yanagawa, Hitoshi; Iwaya, Toshio; and Kasuya, Michio, 4,405,227, Cl. 355-27.000.

Nagashima, Masaya. Method for erection of a temporary bridge, and a pile means therefor. 4,405,262, Cl. 405-221.000.

Nagashima, Tugio: *See—*
Sugiyama, Shigeo; Soya, Masahiro; and Nagashima, Tugio, 4,405,001, Cl. 141-220.000.

Nagatomo, Shigeru: *See—*
Masuda, Nobuhito; Nagatomo, Shigeru; and Mihara, Yuji, 4,405,711, Cl. 435-4.000.

Nagaura, Tooru, to Sony Eveready Inc. Silver oxide cells. 4,405,698, Cl. 429-219.000.

Nakagawa, Hideaki: *See—*
Miwa, Yukimasa; Shimada, Takeo; Hayashi, Shigekazu; Ukita, Michito; Nakagawa, Hideaki; and Matsuura, Mitsuyuki, 4,405,774, Cl. 526-348.200.

Nakagawa, Isao: *See—*
Kudo, Mitsuru; and Nakagawa, Isao, 4,405,937, Cl. 358-40.000.

Nakahara, Yutaka: *See—*
Kubota, Naohiro; Shibata, Toshihiro; Sugibuchi, Kazuo; and Nakahara, Yutaka, 4,405,736, Cl. 524-102.000.

Nakajima, Kazuhisa; Miyashita, Masahiko; Hakozaki, Susumu; and Chosakon, Yoshinori, to Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha. Process for preparing acetic acid esters. 4,405,808, Cl. 560-247.000.

Nakajima, Shuichi: *See—*
Horii, Juichi; Nakajima, Shuichi; and Takahashi, Eiji, 4,404,902, Cl. 101-122.000.

Nakamura, Ichiro; Takenoshita, Mitsuaki; Ichiryu, Ken; Akasaka, Yoshimichi; and Watanabe, Haruo, to Hitachi, Ltd. Hydraulic operating apparatus. 4,404,892, Cl. 91-396.000.

Nakamura, Mitsuyoshi: *See—*
Ozawa, Hiroshi; Shin, Masaaki; Fuziwara, Akio; Nakamura, Mitsuyoshi; Otsuka, Ichiro; and Sugazaki, Kazuo, 4,405,671, Cl. 428-65.000.

Nakamura, Tadao, to Kabushiki Kaisha Komatsu Seisakusho. Preheating system for diesel engines. 4,404,932, Cl. 123-179.00H.

Nakamura, Yukinobu: *See—*
Mitsuhashi, Yoshinobu; Shimada, Junichi; Sakurai, Kenjiro; and Nakamura, Yukinobu, 4,405,236, Cl. 356-350.000.

Nakashima, Shigeo. Apparatus for pumping a powdery or granular material. 4,405,289, Cl. 417-250.000.

Nakata, Tiaki; Kawazoe, Noriyuki; and Takenaka, Toshio, to Sumitomo Chemical Company, Ltd.; and Taoka Chemical Company, Ltd. Colored cyanoacrylate adhesive composition. 4,405,750, Cl. 524-717.000.

Nakatsukasa, Masashi: *See—*
Tateishi, Hideki; Kamei, Tsuneaki; Abe, Katsuo; Kobayashi, Shigeru; Aiuchi, Susumu; Nakatsukasa, Masashi; Takahashi, Nobuyuki; and Sugimoto, Ryuji, 4,405,435, Cl. 204-298.000.

Nakaya, Keiichi; Kawanami, Kohji; and Hirata, Suekazu, to Asahi Glass Company Ltd. Process for producing anhydrous sodium carbonate crystal. 4,405,592, Cl. 423-421.000.

Nalco Chemical Company: *See—*
Krebs, Richard F.; Marek, Patrick J.; and Phillips, Kenneth G., 4,405,728, Cl. 523-336.000.

Nalewajek, David, to Allied Corporation. Recovery of gadolinium and gallium oxides. 4,405,568, Cl. 423-21.100.

Nampei, Masaru: *See—*
Etoh, Kuniomi; Nampei, Masaru; and Tanaka, Shinichi, 4,405,705, Cl. 430-270.000.

Napier, John M.: *See—*
Googin, John M.; Napier, John M.; and Travaglini, Michael A., 4,405,448, Cl. 208-262.000.

Nardelli, Christy A., to Dart Industries Inc. Removal of copper contamination from tin plating baths. 4,405,412, Cl. 204-54.00R.

Naryshkin, Jury A.: *See—*
Belsky, Valentin I.; Suturin, Serafim N.; Orlov, Gennady I.; Dolgov, Anatoly V.; Goncharov, Boris K.; Antonov, Vladimir I.; and Naryshkin, Jury A., 4,405,118, Cl. 266-227.000.

Nasalevska, Anna: *See—*
Moshtev, Raphael; Pistoia, Gianfranco; Manev, Veselin; and Nasalevska, Anna, 4,405,695, Cl. 429-103.000.

National Distillers and Chemical Corporation: *See—*
Goetz, Richard W., 4,405,821, Cl. 568-862.000.
Stasiunas, Carl, 4,404,985, Cl. 137-234.500.

National Instrument Co., Inc.: *See—*
Bergandy, Wieslaw, 4,405,061, Cl. 222-21.000.

National Research Development Corporation: *See—*
Fraval, Robert H.; and Oakford, Howerd P., 4,405,024, Cl. 177-200.000.
Scales, John T., 4,405,249, Cl. 401-182.000.

National Seal Company: *See—*
Hardison, Leslie C.; and Sandstrom, Kenneth A., 4,404,857, Cl. 73-827.000.
National Semiconductor Corporation: *See—*
Buurma, Gerald B.; and Jorgensen, John M., 4,405,871, Cl. 307-594.000.
Kosowsky, Lex A., 4,405,432, Cl. 204-206.000.
National Starch and Chemical Corporation: *See—*
Schoenberg, Jules E.; and Anderson, Stephen P., 4,405,770, Cl. 526-259.000.
National Steel Corporation: *See—*
Saunders, William T., 4,404,836, Cl. 72-332.000.
NCR Corporation: *See—*
Lockwood, George C., 4,405,868, Cl. 307-296.00A.
Neale, Thomas J.; Alverson, Frederick C.; and Karg, John S., to Foster Wheeler Energy Corporation. Drain and sampling valve assembly for a fluidized bed reactor. 4,405,561, Cl. 422-145.000.
Neary, Robin P.: *See—*
Carter, Leewood C.; and Neary, Robin P., 4,405,156, Cl. 281-29.000.
Negita, Moriyasu: *See—*
Hasegawa, Hiroshi; Negita, Moriyasu; Kamiya, Yoshiaki; Tamura, Masaru; Tamura, Masaru; and Kinoshita, Yuji, 4,405,911, Cl. 335-202.000.
Nelsen, Suzanne B., to GAF Corporation. Thermoplastic elastomer compositions. 4,405,749, Cl. 524-100.000.
Nelson, David A., Jr.: *See—*
Grobman, Warren D.; Nelson, David A., Jr.; and Warlaumont, John M., 4,405,238, Cl. 356-401.000.
Nelson Irrigation Corporation: *See—*
Meyer, Larry P., 4,405,085, Cl. 239-178.000.
Nelson Research & Development Company: *See—*
Rajadhyaksha, Vithal J., 4,405,616, Cl. 424-244.000.
Nelson, Stephen J., to Upjohn Company, The. Processes for making phosphorus derivatives of aminothiomethylcarbamates. 4,405,796, Cl. 549-220.000.
Nelson, Warren J., to Reynolds Metals Company. Method and apparatus for measuring ingot production. 4,405,009, Cl. 164-413.000.
Nemec, James: *See—*
Wade, Mark W., 4,404,980, Cl. 135-102.000.
Neri, Amleto; Capitanio, Lorenzo; and Stefani, Giancarlo, to Alusuisse Italia S.p.A. Catalyst for the preparation of phthalic anhydride. 4,405,505, Cl. 252-461.000.
Nestier Corporation: *See—*
Spiros, Dennis J., 4,405,052, Cl. 211-49.00D.
Stein, Eric D., 4,405,057, Cl. 220-346.000.
Neubauer, Jeffrey A.; and Sarni, Vincent A., to PPG Industries, Inc. Environmental control of needled mat production. 4,404,717, Cl. 28-107.000.
Neuzil, Richard W., to UOP Inc. Process for the separation of monosaccharides. 4,405,377, Cl. 127-46.200.
Newman, Paul: *See—*
Sargent, Raymond F.; and Newman, Paul, 4,405,134, Cl. 277-3.000.
Newsome, John R.: *See—*
Van Dongen, Robert H.; and Newsome, John R., 4,405,441, Cl. 208-61.000.
Nickel, Friedhelm; Koerner, Gotz; Schmidt, Gunter; and Rott, Hans, to Th. Goldschmidt AG. Preparation for shrinkproofing wool. 4,405,328, Cl. 8-128.00A.
Nickell, Louis G., to Velsicol Chemical Corporation. Method of increasing the yield of sugar obtained from sugar cane. 4,405,361, Cl. 71-121.000.
Niederer, Kurt W., to Terrell Machine Company, The. Apparatus for stripping residual yarn from textile bobbins or the like. 4,404,719, Cl. 28-297.000.
Nielinger, Werner; Lindner, Christian; Grigo, Ulrich; Binsack, Rudolf; Fahnler, Friedrich; and Brassat, Bert, to Bayer Aktiengesellschaft. High-impact polyamide moulding compositions. 4,405,748, Cl. 524-504.000.
Nielsen, Erik, to Daekko Presenning Kompagni A/S. Safety mat for use in protection of waterwashed areas against erosion and/or undermining. 4,405,257, Cl. 405-19.000.
Niigata Engineering Co., Ltd.: *See—*
Sakano, Takashi; and Igarashi, Mikio, 4,404,763, Cl. 37-250.000.
Nikolic, Zivomir. Four-stroke-cycle internal combustion engine with fuel injection. 4,404,938, Cl. 123-256.000.
Nilsson, Claes T.: *See—*
Jakobsen, Kjell M.; and Nilsson, Claes T., 4,405,546, Cl. 264-159.000.
Nippon Alumi Jutaku-Kenzai Kogyo Co., Ltd.: *See—*
Murase, Yasushi; Kanegae, Toshiyuki; Mitsuzawa, Hideaki; and Tatsumi, Tosiyuki, 4,404,771, Cl. 49-425.000.
Murase, Yasushi; Kanegae, Toshiyuki; Mitsuzawa, Hideaki; and Tatsumi, Tosiyuki, 4,404,771, Cl. 49-425.000.
Nippon Aluminum Mfg. Co., Ltd., The: *See—*
Murase, Yasushi; Kanegae, Toshiyuki; Mitsuzawa, Hideaki; and Tatsumi, Tosiyuki, 4,404,771, Cl. 49-425.000.
Murase, Yasushi; Kanegae, Toshiyuki; Mitsuzawa, Hideaki; and Tatsumi, Tosiyuki, 4,404,771, Cl. 49-425.000.
Nippon Gohsei Kagaku Kogyo Kabushiki Kaisha: *See—*
Nakajima, Kazuhisa; Miyashita, Masahiko; Hakozaki, Susumu; and Chosakon, Yoshinori, 4,405,808, Cl. 560-247.000.
Nippon Kogaku K.K.: *See—*
Kusaka, Yosuke; and Okabe, Nobuo, 4,405,220, Cl. 354-25.000.
Nippon Sheet Glass Co. Ltd.: *See—*
Fujioka, Akira; Sakiyama, Kazuo; Takigawa, Akio; and Yoshida, Motoaki, 4,405,679, Cl. 428-216.000.
Nippon Soken, Inc.: *See—*
Akita, Sigeyuki, 4,405,896, Cl. 324-208.000.
Shinoda, Yoshio; and Kuno, Akira, 4,405,924, Cl. 340-825.720.
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,404,798, Cl. 60-296.000.
Nippon Steel Corporation: *See—*
Otoguro, Yasuo; Hashimoto, Katukuni; Takahashi, Hisashi; and Fujita, Toshio, 4,405,369, Cl. 75-126.00C.
Sasaki, Takesada; Endo, Hiroshi; Zama, Yoshimasa; Shiraishi, Masahiko; Miura, Yosinari; and Yamaguchi, Masayuki, 4,404,992, Cl. 138-140.000.
Nippon Telegraph and Telephone Public Corporation: *See—*
Fujii, Yohji; and Minowa, Junichiro, 4,405,405, Cl. 156-633.000.
Nippon Thompson, Co., Ltd.: *See—*
Sadao, Yamanaka, 4,404,774, Cl. 51-325.000.
Nippon Zeon Co., Ltd.: *See—*
Oyama, Motofumi; and Hashimoto, Kinro, 4,405,756, Cl. 525-237.000.
Nishikawa, Masaji: *See—*
Kasuga, Muneo; Nishikawa, Masaji; and Funakubo, Tomoki, 4,405,224, Cl. 355-3.00R.
Nishimura, Tamio; Miyamoto, Yoshiko; Ohyama, Hiroshi; Yamamura, Hiroshi; Morita, Ken; Matsumoto, Kuniomi; and Watanabe, Tetsuro, to Hokko Chemical Industry Co., Ltd.; and Meiji Seika Kaisha Ltd. Pyrazolylpyrimidine derivatives. 4,405,743, Cl. 424-321.000.
Nishino, Shinichi; Katagiri, Shigenobu; and Kubo, Kazuyuki, to Hitachi Koki Company, Limited. Failure detection circuit for impact printers or the like. 4,405,922, Cl. 340-825.360.
Nishio, Hisaharu, to N G K Spark Plug Co., Ltd. Oxygen detector. 4,405,429, Cl. 204-421.000.
Nissan Motor Company, Limited: *See—*
Fujikawa, Yasuo, 4,404,945, Cl. 123-478.000.
Koike, Shyouichi; Iidaka, Toshiharu; and Ohyama, Akio, 4,404,866, Cl. 74-546.000.
Masaki, Kenji, 4,404,941, Cl. 123-339.000.
Matsuoka, Hideoki, 4,405,155, Cl. 280-802.000.
Tamura, Takeo; Hara, Hiroshi; and Kido, Takayoshi, 4,405,887, Cl. 318-443.000.
Ushiro, Masayuki; and Tsubokura, Takeki, 4,404,997, Cl. 139-291.00R.
Yamane, Yukio; Yoshiyuki, Kazuhiko; and Endo, Toshiaki, 4,405,174, Cl. 296-201.000.
Yamazaki, Masafumi; and Suzuki, Mikio, 4,404,944, Cl. 123-458.000.
Nisshin Flour Milling Co., Ltd.: *See—*
Atsumi, Shin-Ichi; Sasaki, Masayuki; and Kitamura, Ikuo, 4,405,648, Cl. 426-19.000.
Nisshin Steel Company, Ltd.: *See—*
Hoshino, Kazuo; Tanaka, Teruo; and Tachibana, Keiichi, 4,405,390, Cl. 148-37.000.
Nitschko, Theodor, to TMC Corporation. Ski binding jaw. 4,405,152, Cl. 280-625.000.
Nitta, Tsuneo; and Kasuya, Hideki, to Tokyo Shibaura Denki Kabushiki Kaisha. Phoneme information extracting apparatus. 4,405,838, Cl. 179-1.0SD.
Niveau AG, Firma: *See—*
Preusker, Werner, 4,405,006, Cl. 152-170.000.
No, Shinichiro: *See—*
Ozawa, Kazumi; and No, Shinichiro, 4,404,900, Cl. 101-40.000.
Nobutoki, Saburo, to Hitachi, Ltd. Image pickup tube faceplate structure. 4,405,938, Cl. 358-44.000.
Noe, James: *See—*
Dressler, Hans; Lederer, Donald A.; and Noe, James, 4,405,755, Cl. 525-138.000.
Noel, Alain W.: *See—*
Allart, Bernard R.; Lallier, Jean-Claude; and Noel, Alain W., 4,404,896, Cl. 91-491.000.
Nolde, Wolfgang: *See—*
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Nolen, Robert L.: *See—*
Kool, Lawrence B.; Nolen, Robert L.; and Solomon, David E., 4,405,373, Cl. 106-198.000.
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Novo, Mario C.: *See*—
Ide, John D.; Settlemire, David J.; and Novo, Mario C., 4,406,019, Cl. 455-245.000.
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Bergman, Hans I.; and Nyman, Bjorn D., 4,405,145, Cl. 280-432.000.
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Kober, Marvin, 4,405,120, Cl. 269-71.000.
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Van Zeeland, Anthony J., 4,405,841, Cl. 200-11.00R.
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Demmler, Kurt; and Ochs, Wolfram, 4,405,765, Cl. 525-506.000.
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Ohlaug, Raymond O. Guiding attachment for a cutting torch. 4,405,117, Cl. 266-66.000.
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Ohno, Shigeru: *See*—
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Yamada, Yasuyuki; Tsuji, Nobuo; Okita, Tsutomu; and Mukunoki, Yasuo, 4,405,481, Cl. 252-62.540.
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Misawa, Masatoshi; Takahashi, Kusuhiko; Okuda, Kinnosuke; Matsuura, Kiyoshi; Takehara, Hisao; and Ishikawa, Keiichiro, 4,405,419, Cl. 204-96.000.
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Deininger, J. Paul; and Dotson, Ronald L., 4,405,573, Cl. 423-150.000.
Gray, Thomas J., 4,405,434, Cl. 204-293.000.
Lines, Ellwood L., Jr.; and Farmer, Douglas A., Jr., 4,405,076, Cl. 229-3.5MF.
Moore, Sanders H.; and Dotson, Ronald L., 4,405,465, Cl. 210-757.000.
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Kambara, Koji, 4,404,964, Cl. 128-4.000.
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Kohri, Kitijiro, 4,404,963, Cl. 128-4.000.
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Belsky, Valentin I.; Suturin, Serafim N.; Orlov, Gennady I.; Dolgov, Anatoly V.; Goncharov, Boris K.; Antonov, Vladimir I.; and Naryshkin, Jury A., 4,405,118, Cl. 266-227.000.

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Payne, Arnold F.; Mauro, Gene A.; Cumpton, Wayne L.; and Orr, George J., 4,405,171, Cl. 296-19.000.

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Di Schiena, Michele; and Orru, Vittoria, 4,405,618, Cl. 424-246.000.

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Busca, Giovanni; and Johnson, Leland, 4,405,905, Cl. 331-94.100.

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Vande Woude, George F.; McClements, William L.; Oskarsson, Marianne K.; and Blair, Donald G., 4,405,712, Cl. 435-5.000.

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Christensen, Ronald C.; Genske, Roger P.; Kester, Dennis E.; and Ossian, William F., 4,405,667, Cl. 428-35.000.

Ostrowski, John S.: *See*—
Castellucci, Nicholas T.; Grunewalder, John F.; and Ostrowski, John S., 4,405,428, Cl. 204-181.00R.

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Canalizo, Carlos R., 4,405,291, Cl. 417-393.000.

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Ou, Sam A., to BS&B Safety Systems, Ltd. Rupturable pressure relief apparatus. 4,404,982, Cl. 137-68.00R.

Overstreet, Scott M.; and Swenson, C. Henning, to GTE Products Corporation. Power supply for repetitive discharge apparatus. 4,405,889, Cl. 320-1.000.

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Propster, Mark A., 4,405,350, Cl. 65-27.000.
Sheinkop, Isac M., 4,405,351, Cl. 65-29.000.

Owsianny, Edmund, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Gas turbine construction and method of controlling the labyrinth seal clearance automatically and continuously. 4,405,283, Cl. 415-14.000.

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Ozawa, Hiroshi; Shin, Masaaki; Fuziwara, Akio; Nakamura, Mitsuyoshi; Otsuka, Ichiro; and Sugazaki, Kazuo, to Mitsui Toatsu Chemicals, Inc. Optical information recording disk. 4,405,671, Cl. 428-65.000.

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Clayman, John M.; and Weiner, Norman, 4,404,702, Cl. 12-146.00S.

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Turnquist, Edwin W.; and Bentley, Rick J., 4,404,891, Cl. 91-45.000.

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Gerst, Carl W.; Paciorek, Leonard J.; and Sly, Thomas L., 4,405,895, Cl. 324-83.00D.

Paddock, Stephen W.; and Tate, Ralph, Jr., to Whirlpool Corporation. Door mounted electronic housing assembly for a refrigerator. 4,404,813, Cl. 62-127.000.

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Rodriguez, Larry A.; Padilla, Antonio A.; Ashworth, Robert A.; and Spake, Ned B., 4,405,332, Cl. 44-51.000.

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Scheufeld, Heinz; and Lossa, Ulrich, 4,405,094, Cl. 242-149.000.

Palm, Dieter. Method of generating energy from different water levels. 4,404,801, Cl. 60-496.000.

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Palopoli, Frank P.: *See*—
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Pampalone, Thomas R.; and Kilichowski, Kurt B., to RCA Corporation. Positive radiation sensitive resist terpolymer from omega alkynoic acid. 4,405,776, Cl. 528-364.000.

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Ray, Ranjan; Panchanathan, Viswanathan; and Giessen, Bill C., 4,405,368, Cl. 75-124.000.

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Reichert, Gilbert A.; and Pankowski, Richard A., 4,405,826, Cl. 174-59.000.

Pape, Wilhelm, to Wabco Fahrzeugbremsen GmbH. Compressor. 4,405,293, Cl. 417-482.000.

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McEntire, John E.; and Papermaster, Ben W., 4,405,601, Cl. 424-95.000.

Parikh, Bhupendra A., to MTD Products Inc. Variable speed driving mechanism. 4,404,864, Cl. 74-197.000.

Parker, Alan; and Clough, Douglas O. Friction spinning apparatus. 4,404,792, Cl. 57-401.000.

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Busse, Oswald; and Klesper, Hugo, 4,405,457, Cl. 210-225.000.

Pasternack, Adalbert, to Dragerwerk AG. Cooling device particularly for heat protective suits. 4,405,348, Cl. 62-259.300.

Patel, Vishnubhai V.: *See*—
Engler, Edward M.; Patel, Vishnubhai V.; and Schumaker, Robert R., 4,405,515, Cl. 260-239.00R.

Patterson, Richard A., to Minnesota Mining & Manufacturing Company. Container closure system with vent opening through the closure tape. 4,405,056, Cl. 220-271.000.

Patton, Edward J.: *See*—
Blaustein, Eric W.; and Patton, Edward J., 4,405,331, Cl. 44-1.00D.

Paulik, John R.: *See*—
Kulpa, Walter J.; and Paulik, John R., 4,405,125, Cl. 271-195.000.

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Payne, John R., to Kaiser Aluminum & Chemical Corporation. Aluminum reduction cell electrode. 4,405,433, Cl. 204-225.000.

Peake, Gilbert R. Fuel tank drain kit and process. 4,405,048, Cl. 206-582.000.

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Sondermeyer, Jack C., 4,405,832, Cl. 179-1.00D.

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Graetzel, Michael; Kalyanasundaram, Kuppuswamy; Borgarello, Enrico; and Pelizzetti, Ezio, 4,405,424, Cl. 204-157.10R.

Penney, Edison P. Gas energized engine system. 4,404,800, Cl. 60-370.000.

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Perrault, Eric P., to Snellman, Donald L. Collator. 4,405,225, Cl. 355-14.00R.

Perrot, Jacques; and Thominet, Michel, to Societe d'Etudes Scientifiques et Industrielles de l'Ile-de France. N-(1-Allyl-2-pyrrolidinyl-methyl)2-methoxy-4-amino-5-methylsufamoyl benzamide, its method of preparation and its use as a medicament. 4,405,636, Cl. 424-274.000.

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Manson, Mans O.; Sjogreen, Carl-Axel E.; and Bergvall, Goran A., 4,405,471, Cl. 252-34.000.

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Petersen-Hoj, Peter, to Tetra Pak Developpement SA. Laminated material. 4,405,400, Cl. 156-244.110.
Peterson, John A.: *See—*
Bell, Frank H.; and Peterson, John A., 4,404,911, Cl. 102-221.000.
Petinaux, Marcel: *See—*
Wegener, Gerhard; Knofel, Hartmut; Ellendt, Gunther; and Petinaux, Marcel, 4,405,527, Cl. 260-453.0PH.
Petzold, James R.: *See—*
Miller, Jesse D., Jr.; and Petzold, James R., 4,405,657, Cl. 427-54.100.
Peyton, Ronald G.: *See—*
Mclaughlin, Thomas M.; McLeod, William D.; Madsen, Nels H.; and Peyton, Ronald G., 4,405,128, Cl. 272-117.000.
Pfahler, Gerhard: *See—*
Wiezer, Hartmut; Pfahler, Gerhard; and Korbanka, Helmut, 4,405,735, Cl. 524-95.000.
Pfeifer, Alfred; Seif, Rudolf; and Holdt, Dietmar, to Degussa Aktiengesellschaft. Apparatus for partial electrolytic coating of individual metal parts. 4,405,431, Cl. 204-202.000.
Pfeiffer, Gerd; Biller, Horst; Bellmann, Manfred; Oberem, Karl; Lampe, Alfred; and Frentzen, Hermann-Josef, to Mannesmann Aktiengesellschaft. Operating a rolling mill working on seamless tubing. 4,404,832, Cl. 72-209.000.
Pfeuffer, Alfred: *See—*
Baier, Alfred; Lucht, Alfred; Munch, Gerhard; and Pfeuffer, Alfred, 4,405,382, Cl. 148-9.00R.
Pfizer Inc.: *See—*
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Pfuhl, Jakob, 4,404,920, Cl. 112-121.150.
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Pfuhl, Jakob, 4,404,920, Cl. 112-121.150.
Phalin, Thomas L., to American Can Company. Container. 4,405,058, Cl. 220-458.000.
Pharmindustrie: *See—*
Champseix, Alain A.; and Le Fur, Gerard R., 4,405,789, Cl. 546-176.000.
Philip Morris Inc.: *See—*
Stewart, Lawrence L., Jr., 4,404,976, Cl. 131-339.000.
Phillips, Kenneth G.: *See—*
Krebs, Richard F.; Marek, Patrick J.; and Phillips, Kenneth G., 4,405,728, Cl. 523-336.000.
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Murphy, David J.; and Phillips, Leslie N., 4,405,543, Cl. 264-123.000.
Phillips Petroleum Company: *See—*
Beever, William H.; and Brady, Donnie G., 4,405,767, Cl. 525-537.000.
Mathis, Ronald D.; and Reed, Jerry O., 4,405,745, Cl. 524-429.000.
McDaniel, Max P., 4,405,768, Cl. 526-96.000.
Moczygemba, George A.; and Udipi, Kishore, 4,405,754, Cl. 525-102.000.
Stapp, Paul R., 4,405,567, Cl. 423-17.000.
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Phillips Plastics Corporation: *See—*
Wollar, Burnell J., 4,405,272, Cl. 411-41.000.
Photon Power, Inc.: *See—*
Singh, Vijay P., 4,404,734, Cl. 29-572.000.
Piano, Renzo, to Fiat Auto S.p.A. Motor vehicle door assembly. 4,405,173, Cl. 296-146.000.
Pick, George G.; and Rasekhi, Houshang, to Wang Laboratories, Inc. Magnetographic recording heads. 4,405,960, Cl. 360-125.000.
Pickering, William; and Urbanc, David J., to Caterpillar Tractor Co. Apparatus for determining the ratio of two signal repetition rates. 4,405,990, Cl. 364-703.000.
Piegay, Yves, to Skis Rossignol S.A. Ski with vibration-damping means. 4,405,149, Cl. 280-602.000.
Piesik, Edward T., to General Dynamics, Pomona Division. Recoil reducer. 4,404,887, Cl. 89-1.816.
Pigney, Keith D.: *See—*
Stuck, Earl N.; Pigney, Keith D.; and Gifford, Howard, 4,405,296, Cl. 425-6.000.
Pilkington, Roger: *See—*
O'Rourke, Cameron; and Pilkington, Roger, 4,405,258, Cl. 405-60.000.
Pioneer Electronic Corporation: *See—*
Inomata, Akira; Hasegawa, Tsunao; and Ohtake, Yasushi, 4,405,953, Cl. 360-65.000.
Motohashi, Minoru, 4,406,018, Cl. 455-164.000.
Pippard, David A., to British Petroleum Company Limited, The. Corrosion inhibitors, method of producing them and protective coatings containing them. 4,405,493, Cl. 252-389.00A.
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Moshtev, Raphael; Pistoia, Gianfranco; Manev, Veselin; and Nasalevska, Anna, 4,405,695, Cl. 429-103.000.
Pitney Bowes Inc.: *See—*
Kulpa, Walter J.; and Paulik, John R., 4,405,125, Cl. 271-195.000.
Pitts, Warren R.: *See—*
Jodrey, Robert M.; and Pitts, Warren R., 4,405,301, Cl. 432-124.000.
Plastics Engineering Company: *See—*
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,405,519, Cl. 548-423.000.
D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,405,520, Cl. 548-423.000.
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Lee, Chung J., 4,405,741, Cl. 524-299.000.
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Cardinaux, Francois; Huguenin, Rene; and Pless, Janos, 4,405,607, Cl. 424-177.000.
PLM AB: *See—*
Jakobsen, Kjell M.; and Nilsson, Claes T., 4,405,546, Cl. 264-159.000.
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Lowery, James J.; Plotkin, Neil D.; and Robinson, Jack, 4,405,688, Cl. 428-398.000.
Poclain Hydraulics: *See—*
Allart, Bernard R.; Lallier, Jean-Claude; and Noel, Alain W., 4,404,896, Cl. 91-491.000.
Pohl, Daniel P., to Minnesota Mining & Manufacturing Company. Decorative ribbon or sheet material. 4,405,676, Cl. 428-164.000.
Poisson, Paul. Apparatus for recording identifying data concerning the use of a credit card, cheque or the like. 4,405,856, Cl. 235-381.000.
Polanek, Edward L.: *See—*
Siegel, Lawrence; Polanek, Edward L.; Miller, Anthony J.; and Woodman, Alan L., 4,405,984, Cl. 364-410.000.
Polaroid Corporation: *See—*
Bader, Henry; and Chiang, Yunn H., 4,405,781, Cl. 544-264.000.
Locatell, Louis, Jr.; Zepp, Charles M.; and Cieciuch, Ronald F., 4,405,788, Cl. 546-165.000.
Poleshuk, Michael, to Xerox Corporation. Method of forming a thin film transistor. 4,404,731, Cl. 29-571.000.
Pollock, Elisabeth M., to Extracorporeal Medical Specialties, Inc. Method for inhibiting mineralization of natural tissue during implantation. 4,405,327, Cl. 8-94.110.
Polyakov, Lev V.: *See—*
Sheiko, Anatoly A.; Voloschenko, Mikhail V.; Latenko, Vladimir P.; Kartashevsky, Gennady R.; Schegolkov, Evgeny I.; Zlatkis, Anatoly D.; Osokin, Viktor G.; Polyakov, Lev V.; Zaitsev, Valentin V.; and Trunov, Mikhail B., 4,405,367, Cl. 75-124.000.
Polymer Corporation, The: *See—*
Swavely, Donald F., 4,405,969, Cl. 361-215.000.
Polytronic AG: *See—*
Thalmann, Claude, 4,405,132, Cl. 273-348.100.
Poris, Jaime: *See—*
Raistrick, Ian D.; Poris, Jaime; and Huggins, Robert A., 4,405,416, Cl. 204-68.000.
Porter, Charles: *See—*
Rogers, Jack M.; Tokosh, Richard; Porter, Charles; and Martine, James, 4,405,509, Cl. 252-522.00A.
Possis Medical, Inc.: *See—*
Titus, John S., 4,404,974, Cl. 128-670.000.
Possl, Hans, to Wyder AG. Magnetic tape cassette. 4,405,096, Cl. 242-199.000.
Post Office: *See—*
Foster, Robert A. L.; and Childs, Geoffrey H. L., 4,405,830, Cl. 178-30.000.
Postenrieder, Erwin: *See—*
Kutzner, Luitpold; and Postenrieder, Erwin, 4,404,956, Cl. 126-293.000.
Pott, Richard, to Koninklijke Textielfabrieken Nijverdal-Ten Cate N.V. Laminate reinforcement for fibre-reinforced synthetic resins. 4,405,669, Cl. 428-61.000.
Potter, Emerson L., to Eli Lilly and Company. Combination and method for increasing feed utilization efficiency in ruminants. 4,405,609, Cl. 424-177.000.
Potter, Keith E., to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, The. Methods and apparatus for warning aircraft of the presence and direction of electrical transmission lines. 4,405,926, Cl. 343-123.000.
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Perot, Francois; Pouderoux, Jacqueline; and Diez, Jacques, 4,404,928, Cl. 122-32.000.
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Powell, John E.; and Powell, Andrian J. C., to Beloit Corporation. Method and apparatus for the continuous transfer of particulates from a liquid conveying medium to a gaseous conveying medium. 4,405,265, Cl. 406-109.000.
PPG Industries, Inc.: *See—*
Bloss, Karl H.; and Stewart, Royann L., 4,405,352, Cl. 65-99.400.
Castellucci, Nicholas T.; Grunewalder, John F.; and Ostrowski, John S., 4,405,428, Cl. 204-181.00R.
Girgis, Mikhail M., 4,405,746, Cl. 524-501.000.
Jagtap, Asvinkumar N., 4,405,759, Cl. 525-356.000.
Neubauer, Jeffrey A.; and Sarni, Vincent A., 4,404,717, Cl. 28-107.000.
Prefco Products, Inc.: *See—*
McCabe, Francis J., 4,404,990, Cl. 137-601.000.
Preusker, Werner, to Niveau AG, Firma. Anti-skidding device for tired, particularly pneumatic-tired vehicle wheels on ice and snow. 4,405,006, Cl. 152-170.000.

Previte, Robert W.: *See—*
Serafin, Frank G.; Previte, Robert W.; Greening, Nathan R.; Kantro, David L.; and Tang, Fulvio J., 4,405,372, Cl. 106-90.000.

Price, Cosby G. Drive system for electric vehicles. 4,405,028, Cl. 180-65.00E.

Price, Frank C.: *See—*
Berrill, William H.; and Price, Frank C., 4,404,700, Cl. 12-12.000.

Price, Jean L.: *See—*
Jeffreys, George A.; Tobey, James F., Jr.; and Price, Jean L., 4,405,649, Cl. 426-59.000.

Priester, Handy C.: *See—*
Wills, David V.; and Wills, Angela B., 4,404,764, Cl. 40-124.100.

Prince, Richard J.: *See—*
Barclay, John L.; Hargrove, John D.; and Prince, Richard J., 4,405,503, Cl. 252-455.00Z.

Prisant, Millard B.: *See—*
Hall, Eldon C.; Seward, Harold H.; Sabo, Joseph D.; De Marco, Vincent R.; and Prisant, Millard B., 4,405,985, Cl. 364-423.000.

Pritchard, Robert W.; Drozd, Edward J.; and Lutz, Michael K., to Beecham Inc. Medicated disposable douche product. 4,405,306, Cl. 604-87.000.

Pritzkow, Dennis H.; Zabel, Jack H.; and Lang, George R., to General Electric Company. Detector array retaining and positioning system. 4,405,863, Cl. 250-385.000.

Procon International Inc.: *See—*
Trager, John E., 4,405,449, Cl. 208-350.000.

Procter & Gamble Company, The: *See—*
Frohwerk, Arthur E.; and Enting, David E., 4,404,879, Cl. 83-22.000.
Kuzel, Maryann; and Leikhim, John W., 4,405,483, Cl. 252-140.000.
Nyquist, John D.; Kwasniewski, Gary K.; Thornton, Arthur W.; Vest, Paul E.; and Ducklo, Kenneth E., 4,405,492, Cl. 252-370.000.

Propster, Mark A., to Owens-Corning Fiberglas Corporation. Drying and preheating agglomerates containing clay having coarse particle size. 4,405,350, Cl. 65-27.000.

Puccini, Sergio E.: *See—*
Simmons, Nathaniel; Magnusson, Stig; Puccini, Sergio E.; McLaughlin, Donald W.; and Stelt, David J., 4,406,005, Cl. 370-63.000.

Pulcrano, Frank C.: *See—*
Fritzsche, Eldred N.; Josephson, Edgar F.; and Pulcrano, Frank C., 4,405,168, Cl. 294-103.00R.

PUMA-Sportschuhfabriken Rudolf Dassler KG: *See—*
Dassler, Armin A., 4,404,759, Cl. 36-129.000.

Punja, Nazim, to Imperial Chemical Industries PLC. Substituted fluorobenzyl cyclopropane carboxylates useful as insecticides. 4,405,640, Cl. 424-305.000.

Purdue Research Foundation: *See—*
Leidenfrost, Wolfgang, 4,404,855, Cl. 73-747.000.

Puritscher, Ernst: *See—*
Mueller, Gerhard; and Puritscher, Ernst, 4,404,867, Cl. 74-665.0GA.

Pyle, Walter R., to Chevron Research Center. Photo separatory nozzle. 4,405,594, Cl. 423-579.000.

Quaker Oats Company, The: *See—*
Everett, George S., 4,405,726, Cl. 123-144.000.

Quick-Rotan Elektromotoren GmbH: *See—*
Kling, Rudolf; and Scheider, Bernd, 4,405,859, Cl. 250-229.000.

Quilliam, Robert M., to Marconi Company Limited, The. Piezoelectric/pyroelectric elements. 4,405,402, Cl. 156-273.700.

Quiogue, Honesto D., to Harvey Hubbell Incorporated. Filter assembly for luminaire. 4,405,974, Cl. 362-362.000.

Rabban, Philipp. Cleaning kit. 4,404,704, Cl. 15-257.00R.

Racz, Istvan: *See—*
Angyan, Sandor; Racz, Istvan; Radvanyi, Erzsebet; Kovats, Ferenc; Detre, Tamas; and Sos, Jozsef, 4,405,353, Cl. 11-3.000.

Radio Research Laboratories Ministry of Posts & Telecommunications: *See—*
Takahashi, Kozo, 4,406,017, Cl. 455-137.000.

Radish, Madeline L., to Longbrake, Howard Ray. Blade sharpener. 4,404,873, Cl. 76-82.000.

Radvanyi, Erzsebet: *See—*
Angyan, Sandor; Racz, Istvan; Radvanyi, Erzsebet; Kovats, Ferenc; Detre, Tamas; and Sos, Jozsef, 4,405,353, Cl. 11-3.000.

Ragg, Pudens L.; Martin, Graham E.; and Smeeton, Roy, to Imperial Chemical Industries PLC. Fibrous materials. 4,405,407, Cl. 162-146.000.

Raghu, Sivaraman: *See—*
Siddens, Jack K.; and Raghu, Sivaraman, 4,405,529, Cl. 260-465.00F.

Rahn, Helmut: *See—*
Evertz, Egon; and Rahn, Helmut, 4,405,383, Cl. 148-9.500.

Raistrick, Ian D.; Poris, Jaime; and Huggins, Robert A. Molten salt lithium cells. 4,405,416, Cl. 204-68.000.

Rajadhyaksha, Vithal J., to Nelson Research & Development Company. Penetration enhancers for transdermal drug delivery of systemic agents. 4,405,616, Cl. 424-244.000.

Ramacci, Maria T.: *See—*
Cavazza, Claudio; Carloni, Massimo; and Ramacci, Maria T., 4,405,638, Cl. 424-275.000.

Raman, Ramaswamy V.; and Maringer, Robert E., to Battelle Memorial Institute. Preparation of rapidly solidified particulates. 4,405,535, Cl. 264-11.000.

Rampel, Guy, to General Electric Company. Electrode coating composed of copolymers derived from diacetone acrylamide. 4,405,700, Cl. 429-248.000.

Rampin, Pierre: *See—*
Forster, Michel; Jaouen, Adrien; Jorda, Alain; and Rampin, Pierre, 4,405,988, Cl. 364-502.000.

Rance, John E., to Gulton Industries, Inc. Pulse width regulator. 4,405,893, Cl. 323-271.000.

Rando Machine Corporation: *See—*
Wood, Dennis E., 4,404,710, Cl. 19-105.000.

Rannenberg, George C., to United Technologies Corporation. Pneumatic supply system having variable geometry compressor. 4,405,290, Cl. 417-282.000.

Ransch, Jurgen: *See—*
Giacchetti, Giancarlo; Ransch, Jurgen; and Walker, Clive T., 4,405,861, Cl. 250-305.000.

Rao, Manjeshwar S.: *See—*
Allen, Robert J.; Blake, Edward W.; Rao, Manjeshwar S.; and Hahn, Kurt L., 4,404,837, Cl. 72-349.000.

Rapkin, Myron C.; and Tabb, David L., to Miles Laboratories, Inc. Method and composition for urobilinogen control standard. 4,405,718, Cl. 436-8.000.

Rasekhi, Houshang: *See—*
Pick, George G.; and Rasekhi, Houshang, 4,405,960, Cl. 360-125.000.

Rassieur, Charles L., to Central Mine Equipment Company. Automatic drive hammer system. 4,405,020, Cl. 173-89.000.

Raudenbusch, Werner T.; Barnhoorn, Adrianus J. M.; Kooijmans, Petrus G.; Sederel, Willem L.; Van Steenis, Adrianus M. C.; and Schets, Theresia F. M., to Shell Oil Company. Thermosetting resinous binder compositions and their use as coating materials. 4,405,662, Cl. 427-386.000.

Raudenbusch, Werner T.: *See—*
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,405,763, Cl. 525-438.000.

Ray, Ranjan; Panchanathan, Viswanathan; and Giessen, Bill C., to Marko Materials, Inc. Iron-aluminum alloys containing boron which have been processed by rapid solidification process and method. 4,405,368, Cl. 75-124.000.

Raya, Ruben N. Demountable carrier rack assembly for pickup truck. 4,405,170, Cl. 296-10.000.

Raybend Associates: *See—*
Zinn, Michael; Bauch, Tamil D.; and Schiff, Morton, 4,404,962, Cl. 126-450.000.

Raymond, James C.: *See—*
Holtey, Thomas O.; Noyes, Steven S.; and Raymond, James C., 4,405,979, Cl. 364-200.000.

Raynes, Edward P.: *See—*
Harrison, Kenneth J.; Raynes, Edward P.; Saunders, Frances C.; and Thompson, David J., 4,405,211, Cl. 350-349.000.

Raytheon Company: *See—*
Edgar, Richard H., 4,405,850, Cl. 219-10.55A.

RCA Corporation: *See—*
Avery, Leslie R., 4,405,933, Cl. 357-13.000.
Breese, Maurice E.; and Robinson, Arthur S., 4,405,907, Cl. 333-24.100.
Coutts, Maurice D.; and Matthies, Dennis L., 4,405,541, Cl. 264-107.000.
del Rio, Eddy H., 4,405,864, Cl. 250-441.100.
Griffis, Patrick D., 4,405,948, Cl. 358-198.000.
Knight, Stanley P., 4,405,946, Cl. 358-192.100.
Labib, Mohamed E., 4,405,670, Cl. 428-64.000.
Pampalone, Thomas R.; and Kilichowski, Kurt B., 4,405,776, Cl. 528-364.000.
Stewart, Roger G., 4,405,996, Cl. 365-203.000.
Tults, Juri; and French, Michael P., 4,405,947, Cl. 358-193.100.
Wardell, Myron H., Jr., 4,405,950, Cl. 358-248.000.
Wine, Charles M., 4,406,002, Cl. 369-220.000.

Recker, Klaus; Reinecke, Gerd; Awater, Albert; Grogler, Gerhard; and Kraft, Karl J., to Bayer Aktiengesellschaft. Process for producing fiber-reinforced molded products. 4,405,752, Cl. 524-847.000.

Redlake Corporation: *See—*
Brant, Gordon W., 4,405,217, Cl. 352-84.000.

Reed, Jerry O.: *See—*
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Reeder, Kevin J.: *See—*
Koncelik, Joseph A.; Chaney, David B.; Lockard, Walter G.; Reeder, Kevin J.; and Hontz, Thomas D., 4,404,698, Cl. 5-507.000.

Reese, Edmund A.; Spaderna, Dieter W.; and Flannagan, Stephen T., to Intel Corporation. Multiple bit output dynamic random-access memory. 4,406,013, Cl. 377-29.000.

Reichert, Gilbert A.; and Pankowski, Richard A., to Allen-Bradley Company. Enclosure sealing well construction. 4,405,826, Cl. 174-59.000.

Reichhold Chemicals, Incorporated: *See—*
Cohen, Arnold, 4,405,730, Cl. 524-35.000.

Reilly Tar & Chemical Corp.: *See—*
McGill, Charles K.; and Bailey, Thomas D., 4,405,790, Cl. 546-304.000.

Reindel, John, to United States of America, Navy. Millimeter wave printed circuit mixer. 4,406,020, Cl. 455-327.000.

Reinecke, Gerd: *See—*
Recker, Klaus; Reinecke, Gerd; Awater, Albert; Grogler, Gerhard; and Kraft, Karl J., 4,405,752, Cl. 524-847.000.

Reinking, Klaus: *See—*
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Reinsch, Stephen J., to Hughes Aircraft Company. Air flow sensor. 4,405,882, Cl. 315-118.000.
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Manuccia, Thomas J.; and Reintjes, John F., 4,405,237, Cl. 356-301.000.
Renal Systems, Inc.: *See—*
Cosentino, Louis C., 4,405,319, Cl. 604-175.000.
Cracauer, Raymond F.; Fuller, Larry E.; Martinez, Felix J.; and Cosentino, Louis C., 4,405,320, Cl. 604-175.000.
Renker, Hansjorg, to Fritz Studer AG. Surface plate and slideway elements. 4,405,683, Cl. 428-323.000.
Repas, Paul E., to United States Steel Corporation. Strengthening response in columbium-containing high-strength low-alloy steels. 4,405,388, Cl. 148-36.000.
Republic Steel Corporation: *See—*
Demianczuk, Dionisyj W.; and Bingel, Carl J., 4,405,381, Cl. 148-2.000.
Griffith, Cecil B.; Thomas, Jerry D.; Demianczuk, Dionisyj W.; Abraham, John K.; and Franklin, Joseph E., 4,405,380, Cl. 148-2.000.
Kinkelaar, Edmund W.; and Golar, Paul, 4,405,663, Cl. 427-428.000.
Resch, Reinhard; and Krohn, Hellmut, to Daimler-Benz Aktiengesellschaft. Brake valve. 4,405,181, Cl. 303-9.000.
Resch, Reinhard, to Daimler-Benz Aktiengesellschaft. Vehicle brake valve with an emergency piston. 4,405,183, Cl. 303-119.000.
Research Development Cooperation of Japan: *See—*
Goto, Norio, 4,404,852, Cl. 73-599.000.
Resneau, Jean C.; Doyen, Jean; and Ribier, Robert, to Thomson-CSF. Process for sealing VHF component in case. 4,404,745, Cl. 29-841.000.
Reudelsterz, Helmut; and Kellner, Gerd, to Mauser-Werke Oberndorf GmbH. Gun barrel insert. 4,404,765, Cl. 42-77.000.
Reuther, Hellmut: *See—*
Hirsch, Bodo; Horn, Gunter; and Reuther, Hellmut, 4,405,801, Cl. 556-422.000.
Reynolds Metals Company: *See—*
Nelson, Warren J., 4,405,009, Cl. 164-413.000.
Rice, Richard M.; and Hartman, Stanley M., 4,405,894, Cl. 323-340.000.
Rhone-Poulenc, Inc.: *See—*
Giacobbe, Thomas J.; and Tsien, Grace, 4,405,805, Cl. 560-21.000.
Rhone-Poulenc Specialites Chimiques: *See—*
Grosbois, Jean; and Dumousseau, Jean-Yves, 4,405,591, Cl. 423-347.000.
Simon, Gerard; and Soldat, Andre, 4,405,590, Cl. 423-347.000.
Ribier, Robert: *See—*
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Rice, Richard M.; and Hartman, Stanley M., to Reynolds Metals Company. Voltage control and balancing circuit. 4,405,894, Cl. 323-340.000.
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Hayes, Russell A.; and Duve, Gerard, 4,405,482, Cl. 252-99.000.
Ricke, Heinz: *See—*
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Ricoh Company, Ltd.: *See—*
Fukushima, Takashi, 4,405,245, Cl. 400-144.200.
Sugano, Osamu, 4,405,929, Cl. 346-76.0PH.
Suzaki, Masayuki, 4,405,246, Cl. 400-144.200.
Rieckenberg, Ivan L. Hand tool for mounting an electrical box. 4,404,751, Cl. 33-180.00R.
Riederer, Wolfgang: *See—*
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Riegel Textile Corporation: *See—*
Teed, Richard K., 4,405,397, Cl. 156-164.000.
Rieger, Franz: *See—*
Franke, Horst; Linder, Ernst; Moser, Winfried; Muller, Klaus; and Rieger, Franz, 4,404,841, Cl. 73-35.000.
Ries, Donald L., to Rockwell International Corporation. Wheel hub and spindle seal. 4,405,135, Cl. 277-11.000.
Riker Laboratories, Inc.: *See—*
Thiel, Charles G., 4,405,612, Cl. 424-183.000.
Ringstad, Ralph H.: *See—*
Moakler, William A.; and Ringstad, Ralph H., 4,405,867, Cl. 307-64.000.
Rinno, Helmut: *See—*
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Ritchie, Leon T.: *See—*
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Riva, Ermete: *See—*
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Rivest, Ronald L.; Shamir, Adi; and Adleman, Leonard M., to Massachusetts Institute of Technology. Cryptographic communications system and method. 4,405,829, Cl. 178-22.100.
Roantree, Michael L.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. Nitro-substituted dihydropyrroles and tetrahydropyridines, compositions, compounds, and medicinal use. 4,405,624, Cl. 424-256.000.
Robert Bosch GmbH: *See—*
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Robert, Edgardo J., to Pennsylvania Engineering Corporation. Method for the fabrication of special steels in metallurgical vessels. 4,405,365, Cl. 75-60.000.
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Robinson, Jack: *See—*
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Roccaforte, Harry I., to Champion International Corporation. Dispenser carton with improved end closure. 4,405,066, Cl. 225-43.000.
Roccaforte, Harry I.: *See—*
Dutcher, Daniel P.; and Roccaforte, Harry I., 4,405,078, Cl. 229-52.00B.
Rockwell International Corporation: *See—*
Eden, Richard C., 4,405,870, Cl. 307-446.000.
Johnson, Robert A.; and Havens, Donald P., 4,405,909, Cl. 333-198.000.
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Ries, Donald L., 4,405,135, Cl. 277-11.000.
Sullivan, William C., 4,404,725, Cl. 29-252.000.
Roddy, Robert L., to Combustion Engineering, Inc. Structure for aligning and butt-welding tube ends. 4,405,075, Cl. 228-49.00B.
Rodgers, Stephen D.; Dick, Richard J.; and McGinniss, Vincent D., to Battelle Development Corporation. Non-emissive, flame-retardant coating compositions. 4,405,761, Cl. 525-404.000.
Rodriguez, Larry A.; Padilla, Antonio A.; Ashworth, Robert A.; and Spake, Ned B. Alternative fuel comprised of sewage sludge and a particulate solid fuel. 4,405,332, Cl. 44-51.000.
Rogers, Alfred N. Control of silica scaling in industrial processes. 4,405,461, Cl. 210-698.000.
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Smolanoff, Joel, 4,405,630, Cl. 424-267.000.
Rohr, Wolfgang: *See—*
Schirmer, Ulrich; Rohr, Wolfgang; and Wuerzer, Bruno, 4,405,358, Cl. 71-98.000.
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Payne, Charles E. G.; Jones, Thomas I. Y.; and Dootson, Peter A., 4,404,797, Cl. 60-39.281.
Sargent, Raymond F.; and Newman, Paul, 4,405,134, Cl. 277-3.000.
Romaine, John W. Cold compress. 4,404,820, Cl. 62-530.000.
Roman, Walter C., to BancOhio National Bank. Air separation apparatus and system. 4,405,451, Cl. 209-136.000.
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Rossiter, Val J. Liquid cell for spectroscopic analysis. 4,405,235, Cl. 356-246.000.
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Ruegsegger, Donald R. Fusible links. 4,405,914, Cl. 337-152.000.

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Horsman, John; and Ryden, James W., 4,405,147, Cl. 280-443.000.

S&C Electric Company: *See—*
Dizon, Edmund S.; and Moninski, Joseph P., Jr., 4,405,844, Cl. 200-50.00A.

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Bergman, Hans I.; and Nyman, Bjorn D., 4,405,145, Cl. 280-432.000.

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Severinsson, Lars M.; Beijbom, Peter; and Martensson, Anders K., 4,405,037, Cl. 188-196.00D.

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Hall, Eldon C.; Seward, Harold H.; Sabo, Joseph D.; De Marco, Vincent R.; and Prisant, Millard B., 4,405,985, Cl. 364-423.000.

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Brown, Richard E.; Loev, Bernard; and St. Georgiev, Vassil, 4,405,633, Cl. 424-272.000.

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D'Alelio, Gaetano F., deceased; and Waitkus, Phillip A., 4,405,519, Cl. 548-423.000.
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Sakurai, Kenjiro: *See—*
Mitsuhashi, Yoshinobu; Shimada, Junichi; Sakurai, Kenjiro; and Nakamura, Yukinobu, 4,405,236, Cl. 356-350.000.

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Sandberg, Glenn A.; and Lindee, Scott A., to Formax, Inc. Movable grid stacker for a food slicing machine. 4,405,186, Cl. 414-21.000.

Sanders Associates, Inc.: *See—*
Schwartz, Jacob, 4,405,010, Cl. 165-4.000.

Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,404,699, Cl. 8-149.100.
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Cardinaux, Francois; Huguenin, Rene; and Pless, Janos, 4,405,607, Cl. 424-177.000.
Wald, Roland, 4,405,524, Cl. 260-372.000.

Sandstrom, Kenneth A.: *See—*
Hardison, Leslie C.; and Sandstrom, Kenneth A., 4,404,857, Cl. 73-827.000.

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Kinzer, Jay; and Clingman, John W., 4,405,456, Cl. 210-195.400.

Sano, Eiichi; and Nunokawa, Kazuo, to Tokyo Kogaku Kikai Kabushiki Kaisha. Working position locating means for ophthalmologic apparatus. 4,405,215, Cl. 351-208.000.

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Mizuno, Megumi; Ishikawa, Shigeru; and Kubo, Eiki, 4,404,877, Cl. 81-57.370.

Saravalle, Adone C.: *See—*
Masi, Paolo; Monopoli, Angela; Saravalle, Adone C.; and Zio, Cesare, 4,405,627, Cl. 424-263.000.

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Miller, Harry C.; and Evans, Walter R., 4,404,823, Cl. 70-333.00A.

Sargent, Raymond F.; and Newman, Paul, to Rolls-Royce Limited. Non-contacting gas seal for relatively rotating parts. 4,405,134, Cl. 277-3.000.

Sargent, Roger N., to Dow Chemical Company, The. Ion selective composition. 4,405,485, Cl. 252-180.000.

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Neubauer, Jeffrey A.; and Sarni, Vincent A., 4,404,717, Cl. 28-107.000.

Sartori, Guido; and Savage, David W., to Exxon Research and Engineering Co. Non-sterically hindered-sterically hindered amine co-promoted acid gas scrubbing solution and process for using same. 4,405,577, Cl. 423-223.000.

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Ishikawa, Masayuki; Sugimoto, Akiko; Eguchi, Yukuo; Sasaki, Fujinori; Ebisawa, Hisashi; Moriguchi, Soyao; and Gotoh, Katsuhiko, 4,405,623, Cl. 424-251.000.

Sasaki, Gen; Taguchi, Minoru; Kanzaki, Koichi; and Furukawa, Akihiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of fabricating an I^2L element and a linear transistor on one chip. 4,404,738, Cl. 29-577.00C.

Sasaki, Masayuki: *See—*
Atsumi, Shin-Ichi; Sasaki, Masayuki; and Kitamura, Ikuo, 4,405,648, Cl. 426-19.000.
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Sasaki, Nobuo, to Fujitsu Limited. Method of producing semiconductor devices. 4,404,733, Cl. 29-571.000.

Sasaki, Takashi: *See—*
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Sato, Kenzi, to Tokyo Shibaura Denki Kabushiki Kaisha. Synchronizing signal detector circuit. 4,405,945, Cl. 358-154.000.

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Saunders, William T., to National Steel Corporation. Metal container edge trimming method and apparatus. 4,404,836, Cl. 72-332.000.

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Bolen, Ralph A., 4,405,099, Cl. 244-1.00R.

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Scales, John T., to National Research Development Corporation. Dispensing apparatus and method. 4,405,249, Cl. 401-182.000.

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Tivelius, Bertil G., 4,405,363, Cl. 75-49.000.

Scartazzini, Riccardo; and Bickel, Hans, to Ciba-Geigy Corporation. Process for preparing cephalosporin ethers. 4,405,778, Cl. 544-16.000.

Scharf, Daniel J.: *See*—
Chao, Li-Chung; and Scharf, Daniel J., 4,405,732, Cl. 524-83.000.

Schauer, Alois: *See*—
Baur, Guenter; Greubel, Waldemar; Krueger, Hans; and Schauer, Alois, 4,405,210, Cl. 350-345.000.

Schedel, Michael: *See*—
Kinast, Gunther; Schedel, Michael; and Koebernick, Wolfgang, 4,405,714, Cl. 435-84.000.

Schegolkov, Evgeny I.: *See*—
Sheiko, Anatoly A.; Voloschenko, Mikhail V.; Latenko, Vladimir P.; Kartashevsky, Gennady R.; Schegolkov, Evgeny I.; Zlatkis, Anatoly D.; Osokin, Viktor G.; Polyakov, Lev V.; Zaitsev, Valentin V.; and Trunov, Mikhail B., 4,405,367, Cl. 75-124.000.

Scheider, Bernd: *See*—
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John, Peter; Artes, Reinhold; Frey, Volker; and Scherer, Matthias, 4,405,804, Cl. 556-476.000.

Schering Corporation: *See*—
Blythin, David; and Green, Michael J., 4,405,810, Cl. 562-495.000.
Loshaek, Samuel; and Shen, Chah M., 4,405,773, Cl. 526-317.000.

Schets, Theresia F. M.: *See*—
Raudenbusch, Werner T.; Barnhoorn, Adrianus J. M.; Kooijmans, Petrus G.; Sederel, Willem L.; Van Steenis, Adrianus M. C.; and Schets, Theresia F. M., 4,405,662, Cl. 427-386.000.

Scheufeld, Heinz; and Lossa, Ulrich, to Palitex Project-Company GmbH. Thread brake. 4,405,094, Cl. 242-149.000.

Scheurenbrand, Dieter; and Kleinschmit, Einhard, to Daimler-Benz Aktiengesellschaft. Motor vehicle fuel tank with heat responsive closure means. 4,404,983, Cl. 137-74.000.

Scheuss, Karlheinz: *See*—
Muller, Hanns P.; Wagner, Kuno; Mummenhoff, Peter; Wallpott, Gottfried; and Scheuss, Karlheinz, 4,405,751, Cl. 524-720.000.

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Zinn, Michael; Bauch, Tamil D.; and Schiff, Morton, 4,404,962, Cl. 126-450.000.

Schiller, August; and Wolfer, Dietrich, to Wacker-Chemie GmbH. Flame-retardant polysiloxane elastomers. 4,405,425, Cl. 204-159.130.

Schirmer, Ulrich; Rohr, Wolfgang; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Aralkylaniline derivatives, and herbicides which contain these compounds. 4,405,358, Cl. 71-98.000.

Schlauer, Johann; Fischer, Herbert; and Kriebel, Manfred, to Metallgesellschaft Aktiengesellschaft. Process of decreasing the sulfur content of exhaust gases obtained during the recovery of sulfur. 4,405,593, Cl. 423-574.00R.

Schlegel, Udo: *See*—
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Schmidt, Harold N.: *See*—
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Albrecht, Gunter; Sickinger, Albert; and Schmuhl, Hans-Jurgen, 4,405,284, Cl. 415-174.000.

Schnettler, Richard A.; Dage, Richard C.; and Grisar, Johann M., to Merrell Dow Pharmaceuticals Inc. 4-Aroylimidazol-2-ones and their use as pharmaceuticals. 4,405,635, Cl. 424-273.00R.

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Dage, Richard C.; Palopoli, Frank P.; Schnettler, Richard A.; and Grisar, J. Martin, 4,405,628, Cl. 424-263.000.

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Scholl, Charles H.: *See*—
Wydro, Jan J.; Scholl, Charles H.; and Coker, William R., 4,405,063, Cl. 222-146.0HE.

Schrenker, Helge, to Hewlett-Packard GmbH. Thermal regulator for liquid chromatographs. 4,404,845, Cl. 73-61.10C.

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Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,405,763, Cl. 525-438.000.

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Flower, David I.; and Schuler, Michael, 4,405,044, Cl. 206-44.120.

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Schultz, Roland P.; and Schultz, Steven P., to LPS Industries, Inc. Tray attachment for a chair. 4,405,046, Cl. 206-557.000.

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Schwartz, Erich: *See*—
Oppenlaender, Knut; Schwartz, Erich; Barthold, Klaus; and Slotman, Wilhelmus, 4,405,494, Cl. 252-392.000.

Schwartz, Jacob, to Sanders Associates, Inc. Sensible heat storage unit. 4,405,010, Cl. 165-4.000.

Schwartz, William B., to Akzona Incorporated. Electrical socket with discreet impedance element attached thereto. 4,405,188, Cl. 339-17.0CF.

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Koerdt, Reinhold; Schoening, Josef; and Schwiers, Hans-Georg, 4,405,055, Cl. 220-215.000.

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Dixon, David; and Krupicka, William A., 4,404,825, Cl. 70-368.000.

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Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, The: *See*—
Potter, Keith E., 4,405,926, Cl. 343-123.000.

SED Systems Inc.: *See*—
Wood, Hugh C.; and Okkerse, Simon W. J. H., 4,404,860, Cl. 73-861.780.

Sederel, Willem L.: *See*—
Raudenbusch, Werner T.; Barnhoorn, Adrianus J. M.; Kooijmans, Petrus G.; Sederel, Willem L.; Van Steenis, Adrianus M. C.; and Schets, Theresia F. M., 4,405,662, Cl. 427-386.000.

Sedziol, Roland S.: *See*—
Waits, Kym H.; and Sedziol, Roland S., 4,404,965, Cl. 128-46.000.

Seelen-Kruijssen, Josepha M. E.: *See*—
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,405,763, Cl. 525-438.000.

Seemuth, Paul D., to Ethyl Corporation. Diesel fuel composition. 4,405,333, Cl. 44-53.000.

Seemuth, Paul D., to Ethyl Corporation. Diesel fuel composition. 4,405,334, Cl. 44-53.000.

Seemuth, Paul D., to Ethyl Corporation. Diesel fuel composition. 4,405,335, Cl. 44-53.000.

Seibert, Karl, to Akzona Incorporated. Consistency regulator for cosmetic and pharmaceutical preparations. 4,405,641, Cl. 424-305.000.

Seif, Rudolf: *See*—
Pfeifer, Alfred; Seif, Rudolf; and Holdt, Dietmar, 4,405,431, Cl. 204-202.000.

Seiko Kagaku Kogyo Co., Ltd.: *See*—
Yoshioka, Shigehiko; Yamada, Hideto; and Asakura, Akira, 4,405,408, Cl. 162-158.000.

Seilly, Alec H., to Lucas Industries Limited. Fuel system for internal combustion engines. 4,404,943, Cl. 123-458.000.

Seino, Michael J.: *See*—
Palma, James D.; and Seino, Michael J., 4,405,912, Cl. 335-260.000.

Sekine, Yoichi: *See*—
Soga, Mamoru; Shimotsuma, Wataru; Kishimoto, Yoshio; and Sekine, Yoichi, 4,405,370, Cl. 106-20.000.

Selder, Harald, to Escher Wyss GmbH. Method for fractionating fiber stock obtained from waste paper and apparatus for the performance of the aforesaid method. 4,405,450, Cl. 209-3.000.

Semi, Hidetoshi: *See*—
Oida, Yoshio; Sasaki, Masayuki; and Semi, Hidetoshi, 4,405,904, Cl. 331-87.000.

Sena, Ted: *See*—
Crews, Harold R.; Carter, James H., II; and Sena, Ted, 4,405,719, Cl. 436-10.000.

Septier, Louis; and Demange, Michel, to Societe Francaise d'Electrometallurgie Sofrem. Method and apparatus for rapidly solidifying and cooling melted products based on metal oxides by continuous casting. 4,405,545, Cl. 264-144.000.

Serafin, Frank G.; Previte, Robert W.; Greening, Nathan R.; Kantro, David L.; and Tang, Fulvio J., to W. R. Grace & Co. Gypsum-free cement compositions. 4,405,372, Cl. 106-90.000.

Serber, Stephen L., to Honeywell Inc. Burner ignition and flame monitoring system. 4,405,299, Cl. 431-78.000.

Serbin, David J.: *See*—
Gutierrez, Richard; Kay, Edward L.; and Serbin, David J., 4,405,532, Cl. 260-816.00R.

Settlemire, David J.: *See*—
Ide, John D.; Settlemire, David J.; and Novo, Mario C., 4,406,019, Cl. 455-245.000.

Seufert, Walter: *See*—
Loeffler, Hans-Peter; Seufert, Walter; and Adolphi, Heinrich, 4,405,614, Cl. 424-215.000.

Severinsson, Lars M.; Beijbom, Peter; and Martensson, Anders K., to SAB Industri AB. Rail vehicle slack adjuster. 4,405,037, Cl. 188-196.00D.

Seward, Harold H.: *See*—
Hall, Eldon C.; Seward, Harold H.; Sabo, Joseph D.; De Marco, Vincent R.; and Prisant, Millard B., 4,405,985, Cl. 364-423.000.

Sgarz, Hugo: *See*—
Dilmaghani, Hommayoun; Sgarz, Hugo; and Schulz, Hartmut, 4,405,105, Cl. 244-213.000.

Shah, Pravinchandra K.: *See*—
Antlfinger, George J.; and Shah, Pravinchandra K., 4,405,325, Cl. 604-370.000.

Shamir, Adi: *See*—
Rivest, Ronald L.; Shamir, Adi; and Adleman, Leonard M., 4,405,829, Cl. 178-22.100.

Shapiro, Eugene: *See*—
Mravic, Brian; and Shapiro, Eugene, 4,405,386, Cl. 148-11.50A.

Sharp Kabushiki Kaisha: *See*—
Funada, Fumiaki; Takamatsu, Toshiaki; Yutaka, Ishii; and Wada, Tomio, 4,405,209, Cl. 350-341.000.
Hijikigawa, Masaya, 4,405,958, Cl. 360-113.000.
Shirai, Yoshihiro, 4,405,208, Cl. 350-341.000.
Yasuda, Mitsuo; Minami, Katsuji; Itokawa, Jiro; Aoto, Yoshiyuki; Hatakeyama, Yasuyuki; and Sakaida, Shinya, 4,405,219, Cl. 353-37.000.

Sheiko, Anatoly A.; Voloschenko, Mikhail V.; Latenko, Vladimir P.; Kartashevsky, Gennady R.; Schegolkov, Evgeny I.; Zlatkis, Anatoly D.; Osokin, Viktor G.; Polyakov, Lev V.; Zaitsev, Valentin V.; and Trunov, Mikhail B., to Institut Problem Litya Akademii Nauk Ukrainskoi SSR; and Otdelnoe Konstruktorskoe Bjuro Besshtangovykh Nassosov. Corrosion-resistant cast iron. 4,405,367, Cl. 75-124.000.

Sheinkop, Isac M., to Owens-Corning Fiberglas Corporation. Method for controlling a glass melting furnace. 4,405,351, Cl. 65-29.000.

Sheldon, Gary L., to Washington State University Research Foundation, Inc. Apparatus for transfer of metallic materials by electric discharge. 4,405,851, Cl. 219-76.130.

Shell Oil Company: *See*—
Brownscombe, Thomas F., 4,405,727, Cl. 523-205.000.
Gwyn, John E., 4,405,440, Cl. 208-48.00Q.
Hansen, David R., 4,405,680, Cl. 428-285.000.
Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,405,763, Cl. 525-438.000.
Raudenbusch, Werner T.; Barnhoorn, Adrianus J. M.; Kooijmans, Petrus G.; Sederel, Willem L.; Van Steenis, Adrianus M. C.; and Schets, Theresia F. M., 4,405,662, Cl. 427-386.000.
Tsang, Wen-Ghih; and Slaugh, Lynn H., 4,405,499, Cl. 252-432.000.
Van Dongen, Robert H.; and Newsome, John R., 4,405,441, Cl. 208-61.000.
Wong, Pui K.; Willis, Carl L.; and Brownscombe, Thomas F., 4,405,772, Cl. 526-308.000.

Shemyakin, Evgeny I.; and Kulakov, Gennady I. Deformograph. 4,405,231, Cl. 356-34.000.

Shen, Chah M.: *See*—
Loshaek, Samuel; and Shen, Chah M., 4,405,773, Cl. 526-317.000.

Sheppard, John E.: *See*—
Casey, Martin J.; and Sheppard, John E., 4,405,406, Cl. 156-643.000.

Sherman, William P.; Clark, Floyd R.; and Will, Lothar K., to Thomas Industries Inc. Fireplace heat extractor. 4,404,955, Cl. 126-121.000.

Sherritt Gordon Mines Limited: *See*—
Van der Meulen, Jack; and Weir, Donald R., 4,405,570, Cl. 423-43.000.
Weir, Donald R.; and Genik-Sas-Berezowsky, Roman M., 4,405,566, Cl. 423-15.000.

Shibata, Tatsuya: *See*—
Kuroda, Toshimasa; Ishii, Seiji; and Shibata, Tatsuya, 4,405,686, Cl. 428-374.000.

Shibata, Toshihiro: *See*—
Kubota, Naohiro; Shibata, Toshihiro; Sugibuchi, Kazuo; and Nakahara, Yutaka, 4,405,736, Cl. 524-102.000.

Shienfeld, Michael: *See*—
Levintov, Chaim; and Shienfeld, Michael, 4,405,074, Cl. 228-41.000.

Shigemura, Yutaka: *See*—
Kimura, Hiroshi; Hisajima, Masahiko; Shigemura, Yutaka; Yada, Isao; Irie, Yoichiro; and Morimoto, Kiyoshi, 4,405,226, Cl. 355-14.00D.

Shima, Yasuhusa: *See*—
Kosaka, Hideki; Mimata, Tsutomu; Shimizu, Tsuyoshi; Yamamoto, Hideharu; Itoh, Kaoru; and Shima, Yasuhusa, 4,405,242, Cl. 368-82.000.

Shimada, Junichi: *See*—
Mitsuhashi, Yoshinobu; Shimada, Junichi; Sakurai, Kenjiro; and Nakamura, Yukinobu, 4,405,236, Cl. 356-350.000.

Shimada, Takeo: *See*—
Miwa, Yukimasa; Shimada, Takeo; Hayashi, Shigekazu; Ukita, Michito; Nakagawa, Hideaki; and Matsuura, Mitsuyuki, 4,405,774, Cl. 526-348.200.

Shimai, Hideo, to Yoshida Kogyo, K.K. Apparatus for forming a space section in a pair of continuous slide fastener stringers. 4,404,722, Cl. 29-33.200.

Shimizu, Isamu; Ogawa, Kyosuke; and Inoue, Eiichi, to Canon Kabushiki Kaisha. Process for producing photoconductive member. 4,405,656, Cl. 427-39.000.

Shimizu, Tsuyoshi: *See*—
Kosaka, Hideki; Mimata, Tsutomu; Shimizu, Tsuyoshi; Yamamoto, Hideharu; Itoh, Kaoru; and Shima, Yasuhusa, 4,405,242, Cl. 368-82.000.

Shimotsuma, Wataru: *See*—
Soga, Mamoru; Shimotsuma, Wataru; Kishimoto, Yoshio; and Sekine, Yoichi, 4,405,370, Cl. 106-20.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Takagishi, Yasushi; Doi, Yoshio; Ohsuga, Kiichiro; Hoshi, Noboru; and Shionogi & Co., Ltd., 4,405,597, Cl. 424-35.000.

Shin, Masaaki: *See*—
Ozawa, Hiroshi; Shin, Masaaki; Fuziwara, Akio; Nakamura, Mitsuyoshi; Otsuka, Ichiro; and Sugazaki, Kazuo, 4,405,671, Cl. 428-65.000.

Shindo, Akio: *See*—
Honjo, Kuniaki; and Shindo, Akio, 4,405,685, Cl. 428-368.000.

Shinoda, Yoshio; and Kuno, Akira, to Nippon Soken, Inc. Remote control switch apparatus for automobiles. 4,405,924, Cl. 340-825.720.

Shioda, Katashi: *See*—
Ando, Masao; Hirota, Tetsuya; and Shioda, Katashi, 4,405,455, Cl. 210-191.000.

Shionogi & Co., Ltd.: *See*—
Takagishi, Yasushi; Doi, Yoshio; Ohsuga, Kiichiro; Hoshi, Noboru; and Shionogi & Co., Ltd., 4,405,597, Cl. 424-35.000.

Shirai, Kazunari; and Tanaka, Izumi, to Fujitsu Limited. Semiconductor memory drive. 4,405,995, Cl. 365-174.000.

Shirai, Shigeru; Kanbe, Junichiro; and Ohno, Shigeru, to Canon Kabushiki Kaisha. Electrophotographic image-forming member with ladder-type silicon resin layer. 4,405,702, Cl. 430-60.000.

Shirai, Yoshihiro, to Sharp Kabushiki Kaisha. Liquid crystal display devices with polyimide-siloxane copolymer resin alignment film. 4,405,208, Cl. 350-341.000.

Shiraishi, Masahiko: *See*—
Sasaki, Takesada; Endo, Hiroshi; Zama, Yoshimasa; Shiraishi, Masahiko; Miura, Yosinari; and Yamaguchi, Masayuki, 4,404,992, Cl. 138-140.000.

Shirato, Yoshiaki: *See*—
Komatsu, Toshiyuki; Fukaya, Masaki; Uzawa, Shunichi; Yoshioka, Seishiro; and Shirato, Yoshiaki, 4,405,915, Cl. 338-15.000.

Shoji, Robert M.; Chudy, John S.; and Eberly, Carlyle J., to Discovision Associates. Tracking system for optical record medium. 4,406,000, Cl. 369-44.000.

Shook, David W., to Insulating Breaking Clamp, Inc. Breaking and insulating clamp for electrical conductors. 4,405,828, Cl. 174-138.00R.

Short, James N.: *See*—
Capshew, Charles E.; Short, James N.; Welch, M. Bruce; and Dietz, Richard E., 4,405,769, Cl. 526-119.000.

Showa Electric Wire & Cable Co., Ltd.: *See*—
Morita, Minoru; Hosokawa, Etsuo; and Arahara, Kohzoh, 4,405,687, Cl. 428-383.000.

Shrode, James W.: *See*—
Fritz, Thomas A.; and Shrode, James W., 4,404,871, Cl. 76-25.00A.

Shroot, Braham; Maignan, Jean; and Lang, Gerard, to Groupement d'Interet Economic dit: Centre International de Recherches Dermatologiques C.I.R.D. Composition for treatment of psoriasis containing 10-substituted 1,8-dihydroxy-9-anthrones. 4,405,615, Cl. 424-232.000.

Shuey, John R.: *See*—
Eaby, Daniel G.; and Shuey, John R., 4,405,192, Cl. 339-91.00R.

Shull, Steven W., to Vivitar Corporation. Pistol grip. 4,405,223, Cl. 354-293.000.

Shultz, William E. Method and apparatus for injecting viscous materials. 4,405,035, Cl. 184-1.00D.

Shyan Shen, John C.: *See*—
Blumentritt, Bruce F.; and Shyan Shen, John C., 4,405,684, Cl. 428-336.000.

Sickinger, Albert: *See*—
Albrecht, Gunter; Sickinger, Albert; and Schmuhl, Hans-Jurgen, 4,405,284, Cl. 415-174.000.

Siddens, Jack K.; and Raghu, Sivaraman, to American Cyanamid Company. Method for the preparation of difluoromethoxyaromatic compounds. 4,405,529, Cl. 260-465.00F.

Siebenhofer, Gottfried: *See*—
Sigott, Siegfried; Suessenbeck, Heinrich; Zitz, Alfred; and Siebenhofer, Gottfried, 4,404,893, Cl. 91-405.000.

Siegel, Lawrence; Polanek, Edward L.; Miller, Anthony J.; and Woodman, Alan L., to Stern Electronics, Inc. Coin-operated phonograph. 4,405,984, Cl. 364-410.000.

Sieja, Norman F., to Allied Corporation. Engine speed limiting circuit. 4,404,940, Cl. 123-335.000.

Siemens Aktiengesellschaft: *See*—
Baur, Guenter; Greubel, Waldemar; Krueger, Hans; and Schauer, Alois, 4,405,210, Cl. 350-345.000.
Bierhenke, Hartwig; Birkle, Siegfried; and Rubner, Roland, 4,405,707, Cl. 430-281.000.
Eckel, Max-Ferdinand, 4,405,508, Cl. 252-518.000.
Heimen, Jochen, 4,404,730, Cl. 29-569.00L.
Jaegle, Bruno, 4,405,848, Cl. 200-243.000.
Mueller, Gerhard; and Puritscher, Ernst, 4,404,867, Cl. 74-665.0GA.
Vorbach, Gunther; and Boehmer, Georg, 4,405,957, Cl. 360-99.000.

Sigma-Tau Industrie Farmaceutiche Riunite S.p.A: *See*—
Cavazza, Claudio; Carloni, Massimo; and Ramacci, Maria T., 4,405,638, Cl. 424-275.000.

Sigott, Siegfried; Suessenbeck, Heinrich; Zitz, Alfred; and Siebenhofer, Gottfried, to Vereinigte Osterreichische Eisen- und Stahlwerke - Alpine Montan Aktiengesellschaft. Hydraulic mine prop. 4,404,893, Cl. 91-405.000.

Sikorski, James A.; and Hoobler, Mary A., to Monsanto Company. Ester derivatives of N-arylsulfinyl-N-phosphonomethylglycinates as herbicides. 4,405,356, Cl. 71-87.000.

Simeth, Claus; Liebert, Oskar; and Theilacker, Klaus, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Verso printing unit in the delivery of a sheet-fed rotary printing press. 4,404,905, Cl. 101-183.000.

Simeth, Claus, to M.A.N.-Roland Druckmaschinen Aktiengsellschaft. Arrangement for supplying ink to the printing plate of a printing press. 4,404,908, Cl. 101-349.000.

Simmons, Nathaniel; Magnusson, Stig; Puccini, Sergio E.; McLaughlin, Donald W.; and Stelt, David J., to GTE Automatic Electric Labs Inc. Dual rail time control unit for a T-S-T-digital switching system. 4,406,005, Cl. 370-63.000.

Simon, Gerard; and Soldat, Andre, to Rhone-Poulenc Specialites Chimiques. Dismutation/redistribution of halogenosilanes into silane. 4,405,590, Cl. 423-347.000.

Simone, Andre A., to Lummus Company, The. Removal of quinoline insolubles from coal derived fractions. 4,405,439, Cl. 208-45.000.

Simpson, John F., Jr.: *See*—
Fenton, Edward A., Jr.; and Simpson, John F., Jr., 4,405,050, Cl. 209-668.000.

Simpson, Lewis H. Portable desk-work bench. 4,404,915, Cl. 108-43.000.

Simpson Strong-Tie Company, Inc.: *See*—
Gilb, Tyrell T., 4,404,781, Cl. 52-295.000.

Sindermann, Paul, to Diehl GmbH & Co. Chaff cartridge for aircraft defense. 4,404,912, Cl. 102-505.000.

Singer Company, The: *See*—
Dicke, William C., 4,405,004, Cl. 144-87.000.
Mecklenborg, Richard A., 4,405,941, Cl. 358-104.000.

Singer, Malcolm S., to Chevron Research Company. N-Alkyl or alkoxy-N'-substituted hydrocarbyl urea. 4,405,355, Cl. 71-86.000.

Singh, Vijay P., to Photon Power, Inc. Method of making a CdS/Cu_xS photovoltaic cell. 4,404,734, Cl. 29-572.000.

Sisbarro, Frederick P., to Carter-Wallace, Inc. Production of a post-foaming gel and system therefor. 4,405,489, Cl. 252-315.400.

Sisley, James R.; and Hickman, Robert O. Figure-eight, dual-lumen catheter and method of using. 4,405,313, Cl. 604-43.000.

Sisti, Giorgio; Trestianu, Sorin; and Riva, Ermete, to Carlo Erba Strumentazione S.p.A. Method and equipment for volumetrically controlled and reproducible introduction of small amounts of liquid samples into chromatographic analysis systems. 4,405,344, Cl. 55-67.000.

Sitt, Rudiger: *See*—
Kabbe, Hans-Joachim; Klauke, Erich; Krause, Hans P.; Mardin, Mithat; and Sitt, Rudiger, 4,405,644, Cl. 424-322.000.

Sjogreen, Carl-Axel E.: *See*—
Manson, Mans O.; Sjogreen, Carl-Axel E.; and Bergvall, Goran A., 4,405,471, Cl. 252-34.000.

Skaletz, Detlef H., to Hoechst Aktiengesellschaft. 4,4'-Diphenyl etherdialdehyde-bis-dimethylacetal. 4,405,816, Cl. 568-592.000.

Skimin, Carol W., to Harshaw Chemical Company, The. Blush-free acid zinc electroplating baths and process. 4,405,413, Cl. 204-55.00R.

Skis Rossignol S.A.: *See*—
Piegay, Yves, 4,405,149, Cl. 280-602.000.

Skischuhfabrik Dynafit Gesellschaft m.b.H.: *See*—
Kopp, Ernst, 4,404,758, Cl. 36-121.000.

Skrycki, Robert R., to Ex-Cell-O Corporation. Engine gasket assembly. 4,405,138, Cl. 277-235.00B.

Slakmon, Gilbert. Apparatus for detecting faulty sectors and for allocating replacement sectors in a magnetic disc memory. 4,405,952, Cl. 360-49.000.

Slant Drilling Systems Ltd.: *See*—
Will, Brian C., 4,405,022, Cl. 175-85.000.

Slaugh, Lynn H.: *See*—
Tsang, Wen-Ghih; and Slaugh, Lynn H., 4,405,499, Cl. 252-432.000.

Sloan, Benjamin J., to Texas Instruments Incorporated. NPM Anti-saturation clamp for NPN logic gate transistor. 4,405,934, Cl. 357-15.000.

Slotman, Wilhelmus: *See*—
Oppenlaender, Knut; Schwartz, Erich; Barthold, Klaus; and Slotman, Wilhelmus, 4,405,494, Cl. 252-392.000.

Sly, Thomas L.: *See*—
Gerst, Carl W.; Paciorek, Leonard J.; and Sly, Thomas L., 4,405,895, Cl. 324-83.00D.

Smale, Terence C.: *See*—
Dickinson nee Berryman, Kay H.; Smale, Terence C.; and Southgate, Robert, 4,405,637, Cl. 424-274.000.

Smeeton, Roy: *See*—
Ragg, Pudens L.; Martin, Graham E.; and Smeeton, Roy, 4,405,407, Cl. 162-146.000.

Smigel, Irwin E. Toothpaste for natural teeth as well as composite filling material. 4,405,599, Cl. 424-53.000.

Smith, Arthur R.: *See*—
Johnson, Bertram; and Smith, Arthur R., 4,404,821, Cl. 66-139.000.

Smith, Harry: *See*—
Buckle, Derek R.; and Smith, Harry, 4,405,620, Cl. 424-250.000.

Smith, Henry M.: *See*—
Harrah, Larry A.; Mead, Keith E.; and Smith, Henry M., 4,405,487, Cl. 252-194.000.

Smith International, Inc.: *See*—
Best, Michael J. A., 4,405,016, Cl. 166-337.000.

Smith, Joel D.; and Johnson, Joseph M., to Cummins Engine Company, Inc. Stable fuel burner for preheating intake air of internal combustion engine. 4,404,931, Cl. 123-179.00H.

Smith Kline & French Laboratories Limited: *See*—
Durant, Graham J.; and Ganellin, Charon R., 4,405,621, Cl. 424-250.000.
Roantree, Michael L.; and Young, Rodney C., 4,405,624, Cl. 424-256.000.

Smith, Peter B. Oily water separator. 4,405,459, Cl. 210-521.000.

Smith, Richard K. Portable recreational marker buoy. 4,405,303, Cl. 441-16.000.

Smith, William V., to Lectrolarm Custom Systems, Inc. Heat alarm indicator. 4,404,923, Cl. 116-214.000.

SmithKline Beckman Corporation: *See*—
Gaitanopoulos, Dimitri; and Weinstock, Joseph, 4,405,787, Cl. 546-112.000.

Smolanoff, Joel, to Rohm and Haas Company. Arthropod repellent compositions and methods. 4,405,630, Cl. 424-267.000.

SMS Schloemann-Siemag Aktiengesellschaft: *See*—
Hild, Berthold; Braun, Martin; and Munker, Max, 4,404,831, Cl. 72-148.000.

Snellman, Donald L.: *See*—
Perrault, Eric P., 4,405,225, Cl. 355-14.00R.

Snyder, Clair W., Jr.: *See*—
Douty, George H.; Ritchie, Leon T.; and Snyder, Clair W., Jr., 4,405,189, Cl. 339-17.00C.

Snyder, Glenn M., to Litton Industrial Products, Inc. Cylindrical grinding machine. 4,404,772, Cl. 51-105.00R.

Societe d'Etudes de Machines Thermiques S.E.M.T.: *See*—
Curtil, Remi, 4,404,805, Cl. 60-606.000.

Societe d'Etudes Scientifiques et Industrielles de l'Ile-de France: *See*—
Perrot, Jacques; and Thominet, Michel, 4,405,636, Cl. 424-274.000.

Societe d'Optique, Precision Electronique & Mecanique: *See*—
Saint-Sevin, Michel; Blot, Michel; and Moirez, Jacques, 4,405,204, Cl. 350-174.000.

Societe Francaise d'Electrometallurgie Sofrem: *See*—
Septier, Louis; and Demange, Michel, 4,405,545, Cl. 264-144.000.

Societe Franco-Belge des Laminoirs et Trefileries d'Anvers "Lamitreff": *See*—
Cloostermans-Huwaert, Leo, 4,405,385, Cl. 148-11.50A.

Societe Internationale de Revetements de sol S.A. - S.I.R.S.: *See*—
Beaussier, Michel; Lesch, Henry; and Evon, Emile, 4,405,665, Cl. 428-17.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.": *See—*
Surdi, Jean M., 4,405,285, Cl. 416-220.00R.
Societe Nationale Industrielle Aerospatiale: *See—*
Devienne, Jules H. P., 4,404,910, Cl. 102-200.000.
Societe Tecal: *See—*
Monvoisin, Jacques, 4,404,904, Cl. 101-126.000.
Soga, Mamoru; Shimotsuma, Wataru; Kishimoto, Yoshio; and Sekine, Yoichi, to Matsushita Electric Industrial Co., Ltd. Magnetic ink refining method. 4,405,370, Cl. 106-20.000.
Soldat, Andre: *See—*
Simon, Gerard; and Soldat, Andre, 4,405,590, Cl. 423-347.000.
Solomon, David E.: *See—*
Kool, Lawrence B.; Nolen, Robert L.; and Solomon, David E., 4,405,373, Cl. 106-198.000.
Solomon, Frank, to Diamond Shamrock Corporation. Strengthening of carbon black-teflon-containing electrode. 4,405,544, Cl. 264-127.000.
Sommermeyer, Uwe: *See—*
Schulte, Herbert; Brinkmann, Hans; and Sommermeyer, Uwe, 4,405,539, Cl. 264-77.000.
Sondermeyer, Jack C., to Peavey Electronics Corp. Circuit for distorting an audio signal. 4,405,832, Cl. 179-1.00D.
Soneda, Mitsuo, to Sony Corporation. Filter circuit having a charge transfer device. 4,405,908, Cl. 333-165.000.
Sonoda, Masakazu: *See—*
Kaimai, Hiroyuki; Sonoda, Masakazu; Komatsu, Masaaki; Sakai, Atsuo; and Kamai, Toshimitsu, 4,405,955, Cl. 360-10.300.
Sony Corporation: *See—*
Guisinger, Barrett E., 4,405,954, Cl. 360-65.000.
Haruta, Masao, 4,405,962, Cl. 360-96.600.
Kaimai, Hiroyuki; Sonoda, Masakazu; Komatsu, Masaaki; Sakai, Atsuo; and Kamai, Toshimitsu, 4,405,955, Cl. 360-10.300.
Ohsawa, Mitsuo, 4,405,971, Cl. 361-401.000.
Soneda, Mitsuo, 4,405,908, Cl. 333-165.000.
Sony Eveready Inc.: *See—*
Nagaura, Tooru, 4,405,698, Cl. 429-219.000.
Sos, Jozsef: *See—*
Angyan, Sandor; Racz, Istvan; Radvanyi, Erzsebet; Kovats, Ferenc; Detre, Tamas; and Sos, Jozsef, 4,405,353, Cl. 11-3.000.
Sosinsky, Emanuel: *See—*
Aron, Mitchell; and Sosinsky, Emanuel, 4,405,939, Cl. 358-65.000.
Southgate, Robert: *See—*
Dickinson nee Berryman, Kay H.; Smale, Terence C.; and Southgate, Robert, 4,405,637, Cl. 424-274.000.
Soya, Masahiro: *See—*
Sugiyama, Shigeo; Soya, Masahiro; and Nagashima, Tugio, 4,405,001, Cl. 141-220.000.
Spadafora, Paul F., to Nabisco Brands, Inc. Compressed yeast product and process. 4,405,650, Cl. 426-62.000.
Spaderna, Dieter W.: *See—*
Reese, Edmund A.; Spaderna, Dieter W.; and Flannagan, Stephen T., 4,406,013, Cl. 377-29.000.
Spake, Ned B.: *See—*
Rodriguez, Larry A.; Padilla, Antonio A.; Ashworth, Robert A.; and Spake, Ned B., 4,405,332, Cl. 44-51.000.
Spalti, Alfred, to LGZ Landis & Gyr Zug AG. Measuring processes and apparatus for determining tariff values for energy consumers. 4,405,987, Cl. 364-483.000.
Spector, George: *See—*
Watson, Woodroe; and Spector, George, 4,405,003, Cl. 144-35.00R.
Speier, Klaus: *See—*
Disselbeck, Dieter; and Speier, Klaus, 4,405,460, Cl. 210-640.000.
Spelber, Leonard G., to Wastemate Corporation. Waste disposer coupling. 4,405,159, Cl. 285-38.000.
Spencer, Elbert M.: *See—*
Wolniak, Stanley C.; Spencer, Elbert M.; and Brown, Ronald L., 4,405,843, Cl. 200-44.000.
Spengler, Ernst M., to Stanztechnik GmbH R & S. Method and apparatus for manufacturing three-dimensional work pieces. 4,405,537, Cl. 264-45.400.
Sperry Corporation: *See—*
Casey, Martin J.; and Sheppard, John E., 4,405,406, Cl. 156-643.000.
Young, Peter L., 4,405,658, Cl. 427-63.000.
Spicer, Barry K., to Technicolor, Inc. Extended play cassette. 4,405,098, Cl. 242-200.000.
Spiros, Dennis J., to Nestier Corporation. Shelf support bracket. 4,405,052, Cl. 211-49.00D.
Sportoletti, Giancarlo; and Baglioni, Alessandro, to Italfarmaco S.p.A. Treatment of acute pulmonary edema with arginine esters. 4,405,643, Cl. 424-311.000.
Spratte, Hans-Hermann, to Krohne Messtechnik GmbH & Co. KG. Light gate with controlled optical couplers. 4,405,858, Cl. 250-221.000.
Squier, Joann H., to Mobil Oil Corporation. Film laminate food wrap and food pouch therefrom. 4,405,666, Cl. 428-35.000.
Staerzl, Richard E., to Brunswick Corporation. Regulator for a generator energized battery. 4,405,892, Cl. 322-89.000.
Stahl, Ted A. Thermoplastic labeling and method of making same. 4,405,401, Cl. 156-248.000.
Stainless Medical Products, Inc.: *See—*
Whetstine, Donald L., 4,405,142, Cl. 280-242.0WC.
Standard Oil Company, The: *See—*
Koch, Paul E.; Bond, Thomas J.; and Adams, Richard C., 4,405,547, Cl. 264-171.000.
Wu, Mu-Yen M.; and Ball, Lawrence E., 4,405,777, Cl. 528-323.000.
Standard Oil Company (Indiana): *See—*
Bertolacini, Ralph J.; Hirschberg, Eugene H.; and Modica, Frank S., 4,405,443, Cl. 208-113.000.
Fields, Ellis K., 4,405,523, Cl. 260-369.000.
Klotz, Marvin R., 4,405,502, Cl. 252-455.00R.
Klotz, Marvin R., 4,405,504, Cl. 423-458.000.
Stech, Eric N.; Montgomery, Mark S.; and Bates, J. Frederick, 4,405,809, Cl. 562-487.000.
Stanley, Robert A. Kitchen calculator. 4,405,991, Cl. 364-715.000.
Stanztechnik GmbH R & S: *See—*
Spengler, Ernst M., 4,405,537, Cl. 264-45.400.
Stapp, Paul R., to Phillips Petroleum Company. Uranium value leaching with ammonium carbonate and/or bicarbonate plus nitrate oxidant and optionally oxidation-catalytic metal compounds. 4,405,567, Cl. 423-17.000.
Stark, Heinz: *See—*
Konig, Heribert; and Stark, Heinz, 4,406,008, Cl. 373-102.000.
Stasiunas, Carl, to National Distillers and Chemical Corporation. Air-liquid valves for off-the-road vehicle tires. 4,404,985, Cl. 137-234.500.
Stauter, John C.: *See—*
Baldwin, Roger A.; Stauter, John C.; and Terrell, Donald L., 4,405,464, Cl. 210-717.000.
Stead, George E.; and Young, Lewis B., to Mobil Oil Corporation. Production of meta-isopropylphenolic products. 4,405,818, Cl. 568-781.000.
Stech, Eric N.; Montgomery, Mark S.; and Bates, J. Frederick, to Standard Oil Company (Indiana). Process for the manufacture of aromatic polycarboxylic acids having delta Y values below ten. 4,405,809, Cl. 562-487.000.
Stechmeyer, Frank W.: *See—*
Fenton, Donald M.; Delaney, Dennis D.; and Stechmeyer, Frank W., 4,405,825, Cl. 585-13.000.
Steel Heddle Manufacturing Co.: *See—*
Bowen, James B.; and Kramer, Charles F., 4,404,995, Cl. 139-92.000.
Root, Stephen J.; and Kramer, Charles F., 4,404,994, Cl. 139-91.000.
Steel, James S. Fireplace furnace. 4,404,954, Cl. 126-121.000.
Stefani, Giancarlo: *See—*
Neri, Amleto; Capitanio, Lorenzo; and Stefani, Giancarlo, 4,405,505, Cl. 252-461.000.
Stefanovic, Victor R.: *See—*
Bhagwat, Pradeep M.; and Stefanovic, Victor R., 4,405,977, Cl. 363-124.000.
Steffes, Helmut, to ITT Industries, Inc. Brake unit with a hydraulic boosting device. 4,404,803, Cl. 60-547.100.
Stein, Eric D., to Nestier Corporation. Security box having sliding closure. 4,405,057, Cl. 220-346.000.
Stein Industrie: *See—*
Perot, Francois; Pouderoux, Jacqueline; and Diez, Jacques, 4,404,928, Cl. 122-32.000.
Steinberger, Helmut: *See—*
Maas, Joachim; Steinberger, Helmut; and Moretto, Hans-Heinrich, 4,405,490, Cl. 252-358.000.
Steinke, Dale F.: *See—*
Jordan, James L.; Huntsinger, James E.; Steinke, Dale F.; and Williams, David W., 4,405,997, Cl. 366-111.000.
Stelt, David J.: *See—*
Simmons, Nathaniel; Magnusson, Stig; Puccini, Sergio E.; McLaughlin, Donald W.; and Stelt, David J., 4,406,005, Cl. 370-63.000.
Stempfhuber, Lorenz: *See—*
Knabel, Walter; Klubitschko, Gerd; Stempfhuber, Lorenz; and D'Antonio, Nicholas F., 4,405,151, Cl. 280-612.000.
Stendel, Wilhelm: *See—*
Fuchs, Rainer; Klauke, Erich; Hammann, Ingeborg; Homeyer, Bernhard; Behrenz, Wolfgang; Stendel, Wilhelm; Lantzsch, Reinhard; and Marhold, Albrecht, 4,405,639, Cl. 424-278.000.
Stenz, Paul; and Wilmes, Manfred, to C. A. Weidmuller K.G. Method of making electrical contacts. 4,404,744, Cl. 29-883.000.
Stephen, Robert L.; Kablitz, Carl; Hanover, Barry K.; Jacobsen, Stephen C.; and Harrow, Jeffrey J., to University of Utah Research Foundation. Subcutaneous peritoneal injection catheter. 4,405,305, Cl. 604-49.000.
Sterling Drug, Inc.: *See—*
Barba, Robert L., 4,405,047, Cl. 206-570.000.
Margetts, George; Andrews, Roderic S.; and Legros, Jean, 4,405,800, Cl. 549-419.000.
Munzenmaier, Wolfgang; Eggensperger, Heinz; Ehlers, Helmut H.; Beilfuss, Wolfgang; Bucklers, Lothar; and Harke, Hans-Peter, 4,405,795, Cl. 549-417.000.
Stern Electronics, Inc.: *See—*
Siegel, Lawrence; Polanek, Edward L.; Miller, Anthony J.; and Woodman, Alan L., 4,405,984, Cl. 364-410.000.
Stern, Gerhard: *See—*
Greinecker, Herbert; and Stern, Gerhard, 4,405,744, Cl. 524-423.000.
Stevens, David B., to Excalibur Automobile Corporation. Bobsled. 4,405,140, Cl. 280-16.000.
Stewart, Lawrence L., Jr., to Philip Morris Inc. Low delivery cigarette. 4,404,976, Cl. 131-339.000.
Stewart, Robert D.; and Gamble, Robert L., to Foster Wheeler Energy Corporation. Fluidized bed heat exchanger utilizing induced diffusion and circulation. 4,404,755, Cl. 34-57.00A.
Stewart, Roger G., to RCA Corporation. Precharge with power conservation. 4,405,996, Cl. 365-203.000.

Stewart, Royann L.: *See*—
Bloss, Karl H.; and Stewart, Royann L., 4,405,352, Cl. 65-99.400.
Stockman, Richard F., to Air Preheater Company, Inc., The. Element basket. 4,405,011, Cl. 165-10.000.
Stockton, Thomas R., to Ford Motor Company. Variable displacement hydraulic pump and controls therefor. 4,405,288, Cl. 417-220.000.
Stockum, Bernt I. Connection between two elements. 4,405,253, Cl. 403-231.000.
Stogryn, Eugene L.; Savage, David W.; and Sartori, Guido, to Exxon Research and Engineering Co. Process for selective removal of H_2S from mixtures containing H_2S and CO_2 with tertiary amino azabicyclic alcohols. 4,405,580, Cl. 423-226.000.
Stogryn, Eugene L.; Savage, David W.; and Sartori, Guido, to Exxon Research and Engineering Co. Process for selective removal of H_2S from mixtures containing H_2S and CO_2 using diaminoether solutions. 4,405,582, Cl. 423-228.000.
Stogryn, Eugene L.; Savage, David W.; and Sartori, Guido, to Exxon Research and Engineering Co. Process for selective removal of H_2S from mixtures containing H_2S and CO_2 using di-severely sterically hindered secondary aminoethers. 4,405,583, Cl. 423-228.000.
Stogryn, Eugene L.; and Sartori, Guido, to Exxon Research and Engineering Co. Severely sterically hindered tertiary amino compounds. 4,405,811, Cl. 564-506.000.
Stogryn, Eugene L.: *See*—
Sartori, Guido; Savage, David W.; and Stogryn, Eugene L., 4,405,585, Cl. 423-228.000.
Savage, David W.; Sartori, Guido; and Stogryn, Eugene L., 4,405,581, Cl. 423-226.000.
Stoken, Donald R. Threading device. 4,405,267, Cl. 408-101.000.
Stone, Robert A.: *See*—
Carlson, Raymond G.; and Stone, Robert A., 4,405,101, Cl. 244-17.270.
Stoody, William R. Self-cleaning, isolated product, aerosol spray atomizing valve. 4,405,064, Cl. 222-148.000.
Storer, Richard E.: *See*—
Hartshorn, Frank; Murphy, Brian J. M.; and Storer, Richard E., 4,404,701, Cl. 12-127.000.
Strangman, Thomas E., to United Technologies Corporation. Method for producing columnar grain ceramic thermal barrier coatings. 4,405,659, Cl. 427-248.100.
Strauss, Paul: *See*—
Hockenbrock, Richard L.; and Strauss, Paul, 4,405,949, Cl. 358-237.000.
Stromberg, Gary D.: *See*—
Cochran, Gary L.; Dawson, James E.; and Stromberg, Gary D., 4,405,280, Cl. 414-685.000.
Stuck, Earl N.; Pigney, Keith D.; and Gifford, Howard, to Teledyne Industries, Inc. Metallic particle generation device. 4,405,296, Cl. 425-6.000.
Stuckey, Joan. Therapeutic exercise device. 4,405,129, Cl. 272-130.000.
Studer, Philip A., to United States of America, National Aeronautics and Space Administration. Actively suspended counter-rotating machine. 4,405,286, Cl. 417-1.000.
Stuhlman, Frank A. Apparatus for collecting solar energy. 4,404,961, Cl. 126-432.000.
Stump, Theodore M.: *See*—
Hall, Jay D.; Stump, Theodore M.; and Thode, Charles W., 4,406,004, Cl. 370-15.000.
Stumpf, William S.: *See*—
Ball, Douglas C.; Stumpf, William S.; and Ludwig, Gary R., 4,404,776, Cl. 52-29.000.
Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co., KG: *See*—
Hauser, Kurt, 4,405,039, Cl. 192-58.00B.
Suessenbeck, Heinrich: *See*—
Sigott, Siegfried; Suessenbeck, Heinrich; Zitz, Alfred; and Siebenhofer, Gottfried, 4,404,893, Cl. 91-405.000.
Sugahara, Mituko, Yoshiyuki Sugahara, heirs: *See*—
Sugahara, Yujiro, deceased; Usui, Koichi; Ogawa, Masahide; Sato, Teiji; Mizoguchi, Yasuo; and Kojima, Seiji, 4,405,371, Cl. 106-21.000.
Sugahara, Yujiro, deceased (by Sugahara, Mituko, Yoshiyuki Sugahara, heirs); Usui, Koichi; Ogawa, Masahide; Sato, Teiji; Mizoguchi, Yasuo; and Kojima, Seiji, to Mizusawa Kagaku Kogyo Kabushiki Kaisha. Novel clay mineral color developer for pressure sensitive recording paper and process for producing same. 4,405,371, Cl. 106-21.000.
Sugano, Osamu, to Ricoh Company, Ltd. Thermal head device. 4,405,929, Cl. 346-76.0PH.
Sugawara, Kiyoshi: *See*—
Takeyama, Kokichi; Sugawara, Kiyoshi; and Fukagawa, Yasuyuki, 4,405,123, Cl. 271-22.000.
Sugazaki, Kazuo: *See*—
Ozawa, Hiroshi; Shin, Masaaki; Fuziwara, Akio; Nakamura, Mitsuyoshi; Otsuka, Ichiro; and Sugazaki, Kazuo, 4,405,671, Cl. 428-65.000.
Sugibuchi, Kazuo: *See*—
Hirai, Bunji; Kubota, Naohiro; and Sugibuchi, Kazuo, 4,405,737, Cl. 524-102.000.
Kubota, Naohiro; Shibata, Toshihiro; Sugibuchi, Kazuo; and Nakahara, Yutaka, 4,405,736, Cl. 524-102.000.
Sugimori, Shigeru; Kojima, Tetsuhiko; and Tsuji, Masakazu, to Chisso Corporation. Liquid-crystalline halogenobenzene derivatives. 4,405,488, Cl. 252-299.630.
Sugimoto, Akiko: *See*—
Ishikawa, Masayuki; Sugimoto, Akiko; Eguchi, Yukuo; Sasaki, Fujinori; Ebisawa, Hisashi; Moriguchi, Soyao; and Gotoh, Katsuhiko, 4,405,623, Cl. 424-251.000.
Sugimoto, Mutsumi, to Katsuyama Kinzoku Kogyo Kabushiki Kaisha. Safety-belt buckle or slide-unlocking type. 4,404,715, Cl. 24-230.00A.
Sugimoto, Ryuji: *See*—
Tateishi, Hideki; Kamei, Tsuneaki; Abe, Katsuo; Kobayashi, Shigeru; Aiuchi, Susumu; Nakatsukasa, Masashi; Takahashi, Nobuyuki; and Sugimoto, Ryuji, 4,405,435, Cl. 204-298.000.
Sugiyama, Katsuhiko: *See*—
Ohsawa, Katsuyuki; Sugiyama, Katsuhiko; and Idota, Yoshinori, 4,404,859, Cl. 73-861.180.
Sugiyama, Shigeo; Soya, Masahiro; and Nagashima, Tugio, to Tokico Ltd. Overflow preventing valve apparatus. 4,405,001, Cl. 141-220.000.
Sullivan, William C., to Rockwell International Corporation. Tool for installing an element on a shaft. 4,404,725, Cl. 29-252.000.
Sulpetro Minerals Limited: *See*—
Dienstbach, Ulrich, 4,405,569, Cl. 423-27.000.
Sulzer Brothers Limited: *See*—
Julich, Werner; and Muller, Gunter, 4,404,993, Cl. 139-66.00R.
Zweymuller, Karl, 4,404,693, Cl. 3-1.913.
Sumita, Norio: *See*—
Fujii, Tetsuya; Oguchi, Yukio; Sumita, Norio; and Goto, Isamu, 4,405,295, Cl. 419-28.000.
Sumitomo Chemical Company, Limited: *See*—
Fujioka, Akira; Sakiyama, Kazuo; Takigawa, Akio; and Yoshida, Motoaki, 4,405,679, Cl. 428-216.000.
Nakata, Tiaki; Kawazoe, Noriyuki; and Takenaka, Toshio, 4,405,750, Cl. 524-717.000.
Sun Tech. Inc.: *See*—
Hsu, Chao-Yang, 4,405,496, Cl. 252-429.00R.
Sunley, John T. Veterinarian salve. 4,405,604, Cl. 424-165.000.
Sunpower, Inc.: *See*—
Beale, William T., 4,404,802, Cl. 60-520.000.
Surdi, Jean M., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.". Device to lock the blades of a turboblower and to fasten the front cowl of a turbojet engine. 4,405,285, Cl. 416-220.00R.
Sutcliffe, Gordon R.: *See*—
Hobbs, John F.; and Sutcliffe, Gordon R., 4,405,392, Cl. 149-109.600.
Suthers, Mark S., to Northern Telecom Limited. Surface acoustic wave (saw) devices having series-connected inter-digital transducers. 4,405,874, Cl. 310-313.00B.
Sutton, Leroy A.: *See*—
Woods, Jonathan L.; and Sutton, Leroy A., 4,405,964, Cl. 361-18.000.
Suturin, Serafim N.: *See*—
Belsky, Valentin I.; Suturin, Serafim N.; Orlov, Gennady I.; Dolgov, Anatoly V.; Goncharov, Boris K.; Antonov, Vladimir I.; and Naryshkin, Jury A., 4,405,118, Cl. 266-227.000.
Suzaki, Masayuki, to Ricoh Company, Ltd. Hammer device for printer. 4,405,246, Cl. 400-144.200.
Suzuki, Mikio: *See*—
Yamazaki, Masafumi; and Suzuki, Mikio, 4,404,944, Cl. 123-458.000.
Suzuki, Mitsuo: *See*—
Matsuoka, Shigeru; Tokunaga, Takeshi; Yonekura, Seiji; Yamauchi, Kogi; and Suzuki, Mitsuo, 4,405,923, Cl. 340-825.560.
Suzuki, Yoshihiro: *See*—
Oishi, Kiyohiko; Suzuki, Yoshihiro; Kobashi, Kiyoshi; Matsumoto, Shinichi; Yoshida, Takashi; and Kogiso, Takeshi, 4,404,795, Cl. 60-274.000.
Svejkovsky, Ulrich: *See*—
Janz, Joachim; and Svejkovsky, Ulrich, 4,404,709, Cl. 16-111.00R.
Svenang, Jan T., to Tex Innovation AB. Packaging machine. 4,404,788, Cl. 53-512.000.
Swanson, Wayne A. Vapor/air control system. 4,404,947, Cl. 123-527.000.
Swavely, Donald F., to Polymer Corporation, The. Anti-static hose assemblies. 4,405,969, Cl. 361-215.000.
Sweeney, William M.: *See*—
Jenkins, Robert H., Jr.; and Sweeney, William M., 4,405,338, Cl. 44-78.000.
Sweeny, Henry D., to Swenco Limited. Heel filler and assembly for boots. 4,404,757, Cl. 36-107.000.
Swenco Limited: *See*—
Sweeny, Henry D., 4,404,757, Cl. 36-107.000.
Swenson, C. Henning: *See*—
Overstreet, Scott M.; and Swenson, C. Henning, 4,405,889, Cl. 320-1.000.
Overstreet, Scott M.; and Swenson, C. Henning, 4,405,975, Cl. 363-49.000.
Swindal, James L.; and Grantham, Daniel H., to United Technologies Corporation. Silicon-glass-silicon capacitive pressure transducer. 4,405,970, Cl. 361-283.000.
Sybertz, Ferdinand: *See*—
Sybertz, Hans; Sybertz, Ferdinand; and Schmidt, Arnold, 4,405,092, Cl. 241-294.000.
Sybertz, Hans; Sybertz, Ferdinand; and Schmidt, Arnold, to Hombak Maschinenfabrik GmbH U. Co. KG. Cutting device. 4,405,092, Cl. 241-294.000.

Sykes, Richard B.; and Wells, Jerry S., to E. R. Squibb & Sons, Inc. Process for preparing 1-carba-2-penem-3-carboxylic acid. 4,405,716, Cl. 435-119.000.
Syntex (U.S.A.) Inc.: *See*—
Kluge, Arthur F., 4,405,622, Cl. 424-250.000.
Tabb, David L.: *See*—
Rapkin, Myron C.; and Tabb, David L., 4,405,718, Cl. 436-8.000.
Tachibana, Keiichi: *See*—
Hoshino, Kazuo; Tanaka, Teruo; and Tachibana, Keiichi, 4,405,390, Cl. 148-37.000.
Tack, Carl E., to TransDyne, Inc. Rail fastener with gauge adjustment. 4,405,081, Cl. 238-282.000.
Tacke, Peter: *See*—
Freitag, Dieter; Reinking, Klaus; and Tacke, Peter, 4,405,554, Cl. 264-300.000.
Tada, Yasuo: *See*—
Fujimoto, Takanori; and Tada, Yasuo, 4,404,952, Cl. 123-602.000.
Tadokoro, Tomoo; Iwaki, Masato; and Okimoto, Haruo, to Toyo Kogyo Co., Ltd. Internal combustion engine having a turbo-supercharger and a catalytic exhaust gas purifying device. 4,404,804, Cl. 60-602.000.
Taguchi, Minoru: *See*—
Kanzaki, Koichi; and Taguchi, Minoru, 4,404,737, Cl. 29-577.00C.
Sasaki, Gen; Taguchi, Minoru; Kanzaki, Koichi; and Furukawa, Akihiko, 4,404,738, Cl. 29-577.00C.
Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Signal processing circuit. 4,405,901, Cl. 330-261.000.
Tahara, Iwao: *See*—
Aihara, Toshiharu; Tahara, Iwao; Matsuo, Yushin; Takahashi, Naoki; Wakabayashi, Takuo, deceased; and Wakabayashi, Shigemasa, executor, 4,405,241, Cl. 368-63.000.
Taiyo Yuden Co., Ltd.: *See*—
Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, 4,405,472, Cl. 252-62.3BT.
Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, 4,405,473, Cl. 252-62.3BT.
Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, 4,405,474, Cl. 252-62.3BT.
Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, 4,405,475, Cl. 252-62.3BT.
Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, 4,405,476, Cl. 252-62.3BT.
Murase, Kiyoshi; Yamaoka, Nobutatsu; and Onigata, Kazuji, 4,405,477, Cl. 252-62.3BT.
Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, 4,405,478, Cl. 252-62.3BT.
Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, 4,405,479, Cl. 252-62.3BT.
Murase, Kiyoshi; Yamaoka, Nobutatsu; and Onigata, Kazuji, 4,405,480, Cl. 252-62.3BT.
Tajiri, Koji; and Arimatu, Toshiharu, to Teijin Limited. Apparatus for manufacturing a bulky textured yarn. 4,404,718, Cl. 28-220.000.
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas cleaning device for internal combustion engine. 4,404,798, Cl. 60-296.000.
Takagishi, Yasushi; Doi, Yoshio; Ohsuga, Kiichiro; Hoshi, Noboru; and Shionogi & Co., Ltd., to Shin-Etsu Chemical Co., Ltd. Medicament capsules for rectal application. 4,405,597, Cl. 424-35.000.
Takahashi, Eiji: *See*—
Horii, Juichi; Nakajima, Shuichi; and Takahashi, Eiji, 4,404,902, Cl. 101-122.000.
Takahashi, Hisashi: *See*—
Otoguro, Yasuo; Hashimoto, Katukuni; Takahashi, Hisashi; and Fujita, Toshio, 4,405,369, Cl. 75-126.00C.
Takahashi, Kozo, to Radio Research Laboratories Ministry of Posts & Telecommunications. Method for diversity reception and apparatus therefor. 4,406,017, Cl. 455-137.000.
Takahashi, Kusuhiko: *See*—
Misawa, Masatoshi; Takahashi, Kusuhiko; Okuda, Kinnosuke; Matsuura, Kiyoshi; Takehara, Hisao; and Ishikawa, Keiichiro, 4,405,419, Cl. 204-96.000.
Takahashi, Masaaki: *See*—
Kobayashi, Yoshiro; Kumadaki, Itsumaro; Takahashi, Masaaki; and Yamauchi, Takashi, 4,405,824, Cl. 570-144.000.
Takahashi, Naoki: *See*—
Aihara, Toshiharu; Tahara, Iwao; Matsuo, Yushin; Takahashi, Naoki; Wakabayashi, Takuo, deceased; and Wakabayashi, Shigemasa, executor, 4,405,241, Cl. 368-63.000.
Takahashi, Nobuyuki: *See*—
Tateishi, Hideki; Kamei, Tsuneaki; Abe, Katsuo; Kobayashi, Shigeru; Aiuchi, Susumu; Nakatsukasa, Masashi; Takahashi, Nobuyuki; and Sugimoto, Ryuji, 4,405,435, Cl. 204-298.000.
Takahashi, Yonosuke; Wada, Minoru; and Hasegawa, Eiichi, to Fuji Photo Film Co., Ltd. Optical information recording medium. 4,405,706, Cl. 430-271.000.
Takamatsu, Toshiaki: *See*—
Funada, Fumiaki; Takamatsu, Toshiaki; Yutaka, Ishii; and Wada, Tomio, 4,405,209, Cl. 350-341.000.
Takanashi, Kazuko: *See*—
Hasui, Hiroshi; Furihata, Toshikazu; Takanashi, Kazuko; and Ohmori, Masahiko, 4,405,807, Cl. 560-75.000.
Takano, Suwaji: *See*—
Enokimoto, Akito; Tsuchiya, Toshio; Masuda, Tatsuo; and Takano, Suwaji, 4,405,027, Cl. 180-56.000.
Takasaki, Yukio: *See*—
Baji, Toru; Koike, Norio; Tsukada, Toshihisa; Takemoto, Iwao; Yamamoto, Hideaki; and Takasaki, Yukio, 4,405,935, Cl. 357-31.000.
Takasugi, Hisashi: *See*—
Takaya, Takao; Inoue, Yoshikazu; Murata, Masayoshi; and Takasugi, Hisashi, 4,405,617, Cl. 424-246.000.
Takaya, Takao; Inoue, Yoshikazu; Murata, Masayoshi; and Takasugi, Hisashi, to Fujisawa Pharmaceutical Co., Ltd. 3-(Propynyltetrazol)-thiomethyl-3-cephems. 4,405,617, Cl. 424-246.000.
Takayama, Takeshi: *See*—
Watarai, Shu; Ishii, Kazuo; and Takayama, Takeshi, 4,405,704, Cl. 430-74.000.
Takeda Chemical Industries, Ltd.: *See*—
Fujita, Shoichi; Kodama, Katsuhisa; and Yuge, Kiyohiro, 4,405,682, Cl. 428-317.700.
Takehara, Hisao: *See*—
Misawa, Masatoshi; Takahashi, Kusuhiko; Okuda, Kinnosuke; Matsuura, Kiyoshi; Takehara, Hisao; and Ishikawa, Keiichiro, 4,405,419, Cl. 204-96.000.
Takemoto, Iwao: *See*—
Baji, Toru; Koike, Norio; Tsukada, Toshihisa; Takemoto, Iwao; Yamamoto, Hideaki; and Takasaki, Yukio, 4,405,935, Cl. 357-31.000.
Takemura, Reiji, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for the production of sodium chlorate. 4,405,418, Cl. 204-95.000.
Takenaka, Toshio: *See*—
Nakata, Tiaki; Kawazoe, Noriyuki; and Takenaka, Toshio, 4,405,750, Cl. 524-717.000.
Takenoshita, Mitsuaki: *See*—
Nakamura, Ichiro; Takenoshita, Mitsuaki; Ichiryu, Ken; Akasaka, Yoshimichi; and Watanabe, Haruo, 4,404,892, Cl. 91-396.000.
Takeuchi, Higehumi: *See*—
Omori, Takashi; Koguchi, Kenji; Yamagishi, Masahiko; and Takeuchi, Higehumi, 4,405,951, Cl. 358-256.000.
Takeuchi, Yukihisa: *See*—
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,404,798, Cl. 60-296.000.
Takeyama, Kokichi; Sugawara, Kiyoshi; and Fukagawa, Yasuyuki, to Fuji Xerox Co., Ltd. Automatic paper sheet feeding device for copying machine. 4,405,123, Cl. 271-22.000.
Takigawa, Akio: *See*—
Fujioka, Akira; Sakiyama, Kazuo; Takigawa, Akio; and Yoshida, Motoaki, 4,405,679, Cl. 428-216.000.
Talafuse, Larry J., to FMC Corporation. Safety valve manifold system. 4,405,014, Cl. 166-72.000.
Talbert, Lisa M. Exhibit of a decorative art work. 4,405,664, Cl. 428-14.000.
Tamahashi, Kunihiro: *See*—
Onuma, Shigeharu; Tamahashi, Kunihiro; Hosoya, Akira; Kakuta, Atsushi; Mori, Yasuki; and Morishita, Hirosada, 4,405,703, Cl. 430-69.000.
Tamura, Masaru: *See*—
Hasegawa, Hiroshi; Negita, Moriyasu; Kamiya, Yoshiaki; Tamura, Masaru; Tamura, Masaru; and Kinoshita, Yuji, 4,405,911, Cl. 335-202.000.
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Tamura, Takeo; Hara, Hiroshi; and Kido, Takayoshi, to Nissan Motor Company, Limited. Drive circuit for a wiper device. 4,405,887, Cl. 318-443.000.
Tanaka, Izumi: *See*—
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Tanaka, Shinichi: *See*—
Etoh, Kuniomi; Nampei, Masaru; and Tanaka, Shinichi, 4,405,705, Cl. 430-270.000.
Tanaka, Teruaki, to Daido Tokushuko Kabushiki Kaisha. Rod shaped metal rolling apparatus and method. 4,404,834, Cl. 72-221.000.
Tanaka, Teruo: *See*—
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Tanaka, Toshikazu: *See*—
Iwama, Atsuaki; Maikuma, Yoshimata; Okamoto, Masayoshi; Tanaka, Toshikazu; and Oikawa, Yuji, 4,404,848, Cl. 73-146.000.
Iwama, Atsuaki; Maikuma, Yoshimata; Okamoto, Masayoshi; Tanaka, Toshikazu; and Oikawa, Yuji, 4,404,849, Cl. 73-146.000.
Tanaka, Yasuo: *See*—
Ataka, Saburo; Imamura, Yoshinori; Tanaka, Yasuo; Matsubara, Hirokazu; and Maruyama, Eiichi, 4,405,879, Cl. 313-386.000.
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Serafin, Frank G.; Previte, Robert W.; Greening, Nathan R.; Kantro, David L.; and Tang, Fulvio J., 4,405,372, Cl. 106-90.000.
Tanita Corporation: *See*—
Yanagita, Shuichi; Miyoshi, Tsutomu; and Miyane, Masashi, 4,405,025, Cl. 177-210.0FP.
Taoka Chemical Company, Ltd.: *See*—
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Tarrant Manufacturing Company: *See*—
Taylor, Bruce W., 4,405,089, Cl. 239-656.000.

Tate & Lyle Public Limited Company: *See—*
Lee, Cheang K., 4,405,654, Cl. 426-658.000.

Tate, Ralph, Jr.: *See—*
Paddock, Stephen W.; and Tate, Ralph, Jr., 4,404,813, Cl. 62-127.000.

Tatebe, Yoshikazu; Egami, Masafumi; and Miyawaki, Toshimitsu, to Mitsubishi Jukogyo Kabushiki Kaisha. Breather device for overhead valve engines. 4,404,936, Cl. 123-196.00R.

Tateishi, Hideki; Kamei, Tsuneaki; Abe, Katsuo; Kobayashi, Shigeru; Aiuchi, Susumu; Nakatsukasa, Masashi; Takahashi, Nobuyuki; and Sugimoto, Ryuji, to Hitachi, Ltd.; and Anelva Corporation. Apparatus for performing continuous treatment in vacuum. 4,405,435, Cl. 204-298.000.

Tatsumi, Tosiyuki: *See—*
Murase, Yasushi; Kanegae, Tosiyuki; Mitsuzawa, Hideaki; and Tatsumi, Tosiyuki, 4,404,771, Cl. 49-425.000.

Taylor, Alan N. Needle assembly and method for fabricating same. 4,405,307, Cl. 604-165.000.

Taylor, Alistair W.; Fikart, Josef; and Thompson, David, to AEL Microtel Ltd. Frequency deviation testing and adjusting system for frequency modulated oscillators. 4,405,897, Cl. 324-782.000.

Taylor, Bruce W., to Tarrant Manufacturing Company. Multiple conveyor. 4,405,089, Cl. 239-656.000.

Taylor, Henry F., to United States of America, Navy. Extended fiber optic sensor using birefringent fibers. 4,405,198, Cl. 350-96.290.

Taylor, Max F. Drawing table and easel conversion. 4,404,914, Cl. 108-9.000.

Taylor, Robert M., to United States of America, Navy. Variable wing position supersonic biplane. 4,405,102, Cl. 244-45.00R.

TBS International, Inc.: *See—*
Cave, Ellis K.; and Hazelwood, Neil, 4,405,833, Cl. 179-1.0MN.

Technar Incorporated: *See—*
Bell, Lon E., 4,404,949, Cl. 123-557.000.

Technicolor, Inc.: *See—*
Spicer, Barry K., 4,405,098, Cl. 242-200.000.

Technology Center: *See—*
Masuda, Yoshio; Miyazaki, Takeaki; Yamada, Osamu; and Hiramoto, Akira, 4,405,866, Cl. 290-53.000.

Tecumseh Products Company: *See—*
Kuczenski, Steven R., 4,404,933, Cl. 123-187.50R.

Teed, Richard K., to Riegel Textile Corporation. Process for manufacturing elastic leg disposable diapers. 4,405,397, Cl. 156-164.000.

Teige, Wolfgang: *See—*
Fuchs, Otto; Kroh, Adolf; and Teige, Wolfgang, 4,405,734, Cl. 524-90.000.

Teijin Limited: *See—*
Kuroda, Toshimasa; Ishii, Seiji; and Shibata, Tatsuya, 4,405,686, Cl. 428-374.000.
Tajiri, Koji; and Arimatu, Toshiharu, 4,404,718, Cl. 28-220.000.

Tekula, Endre: *See—*
Vadasdi, Karoly; Bartha, Laszlo; Millner, Tivadar; Tekula, Endre; and Kiss, Andras, 4,405,571, Cl. 423-53.000.

Teldix GmbH: *See—*
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Telease, Inc.: *See—*
Block, Robert S.; and Martin, John R., 4,405,942, Cl. 358-119.000.

Teledyne Industries, Inc.: *See—*
Stuck, Earl N.; Pigney, Keith D.; and Gifford, Howard, 4,405,296, Cl. 425-6.000.

Ternehall, Runo R. O., to Ab Volvo. Device for troque transmission between a drive shaft, e.g. an engine crankshaft, and an attachment unit such as a hydrodynamic retarder. 4,405,038, Cl. 192-4.00B.

Terrell, Donald L.: *See—*
Baldwin, Roger A.; Stauter, John C.; and Terrell, Donald L., 4,405,464, Cl. 210-717.000.

Terrell Machine Company, The: *See—*
Niederer, Kurt W., 4,404,719, Cl. 28-297.000.

Tetra Pak Developpement SA: *See—*
Petersen-Hoj, Peter, 4,405,400, Cl. 156-244.110.

Tew, Claude E.; and Ellis, Fred E., to Texas Instruments Incorporated. Heterodyne laser hanging system. 4,405,230, Cl. 356-5.000.

Tex Innovation AB: *See—*
Svenang, Jan T., 4,404,788, Cl. 53-512.000.

Texaco Inc.: *See—*
Elliott, Lloyd E., Jr.; and Hudson, John L., 4,405,033, Cl. 181-120.000.
Jenkins, Robert H., Jr.; and Sweeney, William M., 4,405,338, Cl. 44-78.000.
McCoy, David R.; McEntire, Edward E.; and Gipson, Robert M., 4,405,015, Cl. 166-267.000.

Texas Instruments Incorporated: *See—*
Sloan, Benjamin J., 4,405,934, Cl. 357-15.000.
Tew, Claude E.; and Ellis, Fred E., 4,405,230, Cl. 356-5.000.
Wall, Frederick G.; and Kwan, Stephen C., 4,405,918, Cl. 340-365.00C.

Textoris, Melvin A.: *See—*
McCracken, Richard W.; Textoris, Melvin A.; and Williams, Philip J., 4,404,785, Cl. 52-290.000.

Th. Goldschmidt AG: *See—*
Nickel, Friedhelm; Koerner, Gotz; Schmidt, Gunter; and Rott, Hans, 4,405,328, Cl. 8-128.00A.

Thalenfeld, David R., to Trion Industries, Inc. Merchandise hook. 4,405,051, Cl. 211-57.100.

Thaler, Warren A.: *See—*
Sartori, Guido; and Thaler, Warren A., 4,405,578, Cl. 423-223.000.
Sartori, Guido; and Thaler, Warren A., 4,405,579, Cl. 423-223.000.
Sartori, Guido; and Thaler, Warren A., 4,405,586, Cl. 423-233.000.

Thalmann, Claude, to Polytronic AG. Target member simulating an object to be fired on. 4,405,132, Cl. 273-348.100.

Theilacker, Klaus: *See—*
Simeth, Claus; Liebert, Oskar; and Theilacker, Klaus, 4,404,905, Cl. 101-183.000.

Thermal Associates, Inc.: *See—*
Kiley, Richard F.; and Larson, Ralph I., Jr., 4,404,739, Cl. 29-588.000.

Theurer, Josef, to Franz Plasser Bahnbauma-Schinen-Industriegesellschaft mbH. Tamping tool assembly. 4,404,913, Cl. 104-12.000.

Thiel, Charles G., to Riker Laboratories, Inc. Heparin web compositions. 4,405,612, Cl. 424-183.000.

Thim, Lars: *See—*
Moody, Alister J.; Thim, Lars; and Jorgensen, Karin D., 4,405,608, Cl. 424-177.000.

Thiokol Corporation: *See—*
Bell, Frank H.; and Peterson, John A., 4,404,911, Cl. 102-221.000.

Thode, Charles W.: *See—*
Hall, Jay D.; Stump, Theodore M.; and Thode, Charles W., 4,406,004, Cl. 370-15.000.

Thoma, Klaus D. Car window defroster. 4,404,705, Cl. 15-313.000.

Thomas Industries Inc.: *See—*
Sherman, William P.; Clark, Floyd R.; and Will, Lothar K., 4,404,955, Cl. 126-121.000.

Thomas, Jerry D.: *See—*
Griffith, Cecil B.; Thomas, Jerry D.; Demianczuk, Dionisyj W.; Abraham, John K.; and Franklin, Joseph E., 4,405,380, Cl. 148-2.000.

Thomas, Johnny M., II; and Mommer, Richard P., to Uniscope, Inc. Elimination of odors from waste material. 4,405,354, Cl. 71-21.000.

Thomas, Richard C., to Upjohn Company, The. Process for preparing spectinomycin analogs: N-demethylation of spectinomycin or its analogs and realkylation of the intermediates. 4,405,797, Cl. 549-361.000.

Thomas, Stephen E. Method and apparatus for generating electrical energy from the rotation of a wheel. 4,405,872, Cl. 310-75.00R.

Thominet, Michel: *See—*
Perrot, Jacques; and Thominet, Michel, 4,405,636, Cl. 424-274.000.

Thompson, David: *See—*
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Thompson, David J.: *See—*
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Cornet, Jean; Lehureau, Jean-Claude; and Magna, Henriette, 4,405,994, Cl. 365-126.000.
Resneau, Jean C.; Doyen, Jean; and Ribier, Robert, 4,404,745, Cl. 29-841.000.

Thor Power Tool Company: *See—*
Dudek, Edmund C., 4,404,799, Cl. 60-370.000.

Thornton, Arthur W.: *See—*
Nyquist, John D.; Kwasniewski, Gary K.; Thornton, Arthur W.; Vest, Paul E.; and Ducklo, Kenneth E., 4,405,492, Cl. 252-370.000.

Thorogood, Peter B., to Burroughs Wellcome Co. Imidazole derivatives for treating myocardial infarction. 4,405,634, Cl. 424-273.00R.

Thulman, Robert D.; and Erickson, Alve J. Stove for burning combustible solid fuels. 4,404,953, Cl. 126-77.000.

Thumm, Helmut: *See—*
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Tick, Paul A., to Corning Glass Works. Mercury thallium fluorophosphate glasses. 4,405,724, Cl. 501-44.000.

Tick, Paul A.: *See—*
Araujo, Roger J.; Borrelli, Nicholas F.; Tick, Paul A.; and Trotter, Donald M., 4,405,672, Cl. 428-68.000.

Tillotson, John G. Method for forming a layer of blown cellular urethane on a carpet backing. 4,405,393, Cl. 156-78.000.

Timlin, Gary M.: *See—*
Johnson, Irvin D.; Timlin, Gary M.; and Yuill, Robert D., 4,404,843, Cl. 73-49.200.

Titus, John S., to Possis Medical, Inc. Method and apparatus for monitoring and displaying heart rate and blood pressure product information. 4,404,974, Cl. 128-670.000.

Tivelius, Bertil G., to Scandinavian Lancers Aktiebolag. Method for refining of steel melts. 4,405,363, Cl. 75-49.000.

TMC Corporation: *See—*
Nitschko, Theodor, 4,405,152, Cl. 280-625.000.

Tobey, James F., Jr.: *See—*
Jeffreys, George A.; Tobey, James F., Jr.; and Price, Jean L., 4,405,649, Cl. 426-59.000.

Tobias, Michael A.; and Lynch, Conrad L., to Mobil Oil Corporation. Thermosettable polyester resin compositions containing caprolactone. 4,405,764, Cl. 525-443.000.

Toho Asechiren Kabushiki-kaisha: *See—*
Saitoh, Tatsuo; and Hasebe, Tsutomu, 4,405,274, Cl. 411-249.000.

Tokarz, Richard D. Coolant monitoring apparatus for nuclear reactors. 4,405,559, Cl. 376-247.000.

Tokico Ltd.: *See—*
Sugiyama, Shigeo; Soya, Masahiro; and Nagashima, Tugio, 4,405,001, Cl. 141-220.000.
Tokosh, Richard: *See—*
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Tokunaga, Takeshi: *See—*
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Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
Sano, Eiichi; and Nunokawa, Kazuo, 4,405,215, Cl. 351-208.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Kanzaki, Koichi; and Taguchi, Minoru, 4,404,737, Cl. 29-577.00C.
Koshino, Yutaka; Ajima, Takashi; Ohshima, Jiro; and Abe, Masahiro, 4,404,736, Cl. 29-576.00W.
Nitta, Tsuneo; and Kasuya, Hideki, 4,405,838, Cl. 179-1.0SD.
Ohba, Hiroshi; and Horino, Shigeo, 4,404,723, Cl. 29-33.520.
Oida, Yoshio; Sasaki, Masayuki; and Semi, Hidetoshi, 4,405,904, Cl. 331-87.000.
Sasaki, Gen; Taguchi, Minoru; Kanzaki, Koichi; and Furukawa, Akihiko, 4,404,738, Cl. 29-577.00C.
Sato, Kenzi, 4,405,945, Cl. 358-154.000.
Taguchi, Shinichiro; Nagao, Nobuya; and Ogihara, Yutaka, 4,405,901, Cl. 330-261.000.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Izawa, Fumio, 4,405,093, Cl. 242-55.19R.
Tomita, Masahiro: *See—*
Takagi, Shigeru; Takeuchi, Yukihisa; Kamiya, Shigeru; Tomita, Masahiro; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,404,798, Cl. 60-296.000.
Tomoe Special Machine Co., Ltd.: *See—*
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Toms River Chemical Corporation: *See—*
Fitzpatrick, Joseph W.; and Schmidt, Harold N., 4,405,785, Cl. 546-30.000.
Tooley, Jack R., to Acrow Limited. Scaffolding. 4,405,254, Cl. 403-246.000.
Totem, Inc.: *See—*
Mclaughlin, Thomas M.; McLeod, William D.; Madsen, Nels H.; and Peyton, Ronald G., 4,405,128, Cl. 272-117.000.
Toth, Kalman A. Magnetic toy. 4,404,766, Cl. 46-239.000.
Toyo Boseki Kabushiki Kaisha t/a Toyobo Co., Ltd.: *See—*
Etoh, Kuniomi; Nampei, Masaru; and Tanaka, Shinichi, 4,405,705, Cl. 430-270.000.
Toyo Kogyo Co., Ltd.: *See—*
Tadokoro, Tomoo; Iwaki, Masato; and Okimoto, Haruo, 4,404,804, Cl. 60-602.000.
Toyo Soda Manufacturing Co., Ltd.: *See—*
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
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Oishi, Kiyohiko; Suzuki, Yoshihiro; Kobashi, Kiyoshi; Matsumoto, Shinichi; Yoshida, Takashi; and Kogiso, Takeshi, 4,404,795, Cl. 60-274.000.
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Tyuuman, Tutomu, 4,405,160, Cl. 285-39.000.
Trager, John E., to Procon International Inc. Process for vapor-liquid contacting and fractional distillation. 4,405,449, Cl. 208-350.000.
Trammell, Joel H., to Chicago Bridge & Iron Company. Pressure seated closure for containment drain. 4,404,988, Cl. 137-565.000.
TransDyne, Inc.: *See—*
Tack, Carl E., 4,405,081, Cl. 238-282.000.
Travaglini, Michael A.: *See—*
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Trementozzi, Quiriano A.: *See—*
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Tri-Dynamics Dental Co., Inc.: *See—*
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Trion Industries, Inc.: *See—*
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Trommen, Hartmut: *See—*
Rother, Bruno; and Trommen, Hartmut, 4,405,398, Cl. 156-242.000.
Trotter, Donald M.: *See—*
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Truax, Bruce E.: *See—*
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Trudtzschler GmbH & Co. KG: *See—*
Kluttermann, Jurgen, 4,404,711, Cl. 19-106.00R.
Trunov, Mikhail B.: *See—*
Sheiko, Anatoly A.; Voloschenko, Mikhail V.; Latenko, Vladimir P.; Kartashevsky, Gennady R.; Schegolkov, Evgeny I.; Zlatkis, Anatoly D.; Osokin, Viktor G.; Polyakov, Lev V.; Zaitsev, Valentin V.; and Trunov, Mikhail B., 4,405,367, Cl. 75-124.000.
Trybulski, Eugene J.: *See—*
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Tsai, Teh-Chung: *See—*
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Tsai, Tepin; and Tsai, Teh-Chung. Method of constructing underpass across railway and highway without affecting normal traffic thereof. 4,405,260, Cl. 405-184.000.
Tsang, Wen-Ghih; and Slaugh, Lynn H., to Shell Oil Company. Zeolite-ruthenium-borane catalyst composition. 4,405,499, Cl. 252-432.000.
Tschida, Eraine J., Sr. Tube dispensing device. 4,405,062, Cl. 222-102.000.
Tschudy, Donald B.; and Lorson, Emmett D., to Hoover Company, The. Cleaner with dirt cup. 4,405,346, Cl. 55-357.000.
Tsien, Grace: *See—*
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Tsubokura, Takeki: *See—*
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Tsuchiya, Toshio: *See—*
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Tsujitsugu, Yoshiyuki: *See—*
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Tsukada, Toshihisa: *See—*
Baji, Toru; Koike, Norio; Tsukada, Toshihisa; Takemoto, Iwao; Yamamoto, Hideaki; and Takasaki, Yukio, 4,405,935, Cl. 357-31.000.
Tsukada, Tsutomu; and Ukai, Katsumi, to Anelva Corporation. Spectral monitoring device for both plasma etching and sputtering. 4,405,989, Cl. 364-525.000.
Tucker, George W. Method and apparatus for salvaging large pipe elbows. 4,405,384, Cl. 148-9.600.
Tufts, Wesley M.: *See—*
Heinze, Walter O.; Tufts, Wesley M.; and White, Jeffrey F., 4,404,696, Cl. 4-420.000.
Tuin, Hermanus N., to U.S. Philips Corporation. Method and arrangement for internally coating a tube by reactive deposition from a gas mixture activated by a plasma. 4,405,655, Cl. 427-38.000.
Tults, Juri; and French, Michael P., to RCA Corporation. Dual search mode type tuning system. 4,405,947, Cl. 358-193.100.
Turbak, Albin F.; and Hartmann, Peter J., to International Telephone and Telegraph Corporation. Zinc-free preparation of rayon fibers. 4,405,549, Cl. 264-188.000.
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Agriculture: *See*—
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Mansell, Dennis N., 4,405,232, Cl. 356-121.000.
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Hartshorn, Frank; Murphy, Brian J. M.; and Storer, Richard E., 4,404,701, Cl. 12-127.000.
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Komatsu, Toshiyuki; Fukaya, Masaki; Uzawa, Shunichi; Yoshioka, Seishiro; and Shirato, Yoshiaki, 4,405,915, Cl. 338-15.000.
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Van den Sype, Jaak S., to Union Carbide Corporation. Method and apparatus for drawing wire. 4,404,827, Cl. 72-41.000.
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van Lierop, Dirk F. W., to U.S. Philips Corporation. Electrical plug. 4,405,194, Cl. 339-147.00P.
van Oorschot, Gosewinus F., to Atlas Copco Aktiebolag. Device for separating liquid from liquid-containing compressed gas. 4,405,345, Cl. 55-184.000.
van Pelt, Pieter; and Wijdenes, Jacob, to U.S. Philips Corporation. Method of applying a resist pattern on a substrate, and resist material mixture. 4,405,708, Cl. 430-281.000.
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Kohno, Tsutomu, 4,405,095, Cl. 242-179.000.
Villa-Real, Antony-Euclid C. Automatic two-component medication time-interval reminder cap and container. 4,405,045, Cl. 206-534.000.
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Voges, Karl-Friedrich; Haacke, Claus; and Heise, Peter, to Intermedicat GmbH. Coupling for medical apparatus tubes. 4,405,163, Cl. 285-305.000.
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W. Braun Co.: *See—*
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Wade, Mark W., to Nemec, James. Arched support structure with cover. 4,404,980, Cl. 135-102.000.
Wade, Wallace R., to Ford Motor Company. Removal of particulates from diesel engine exhaust gas. 4,404,796, Cl. 60-274.000.
Wagner, Hans, to G. D. Searle & Co. 8-Substituted 7-phenyl-1,2,4,-triazolo[4,3-c]/[2,3-c]pyrimidines-5-amines and amides. 4,405,780, Cl. 544-263.000.
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Wakeem, Dale. Method and apparatus for reducing tires. 4,405,090, Cl. 241-3.000.
Wald, Roland, to Sandoz Ltd. Anthraquinone dyes and method of use. 4,405,524, Cl. 260-372.000.
Wald, William, to McDermott, Lewis J., III. One piece binder-carpet construction. 4,405,668, Cl. 428-40.000.
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Wardell, Myron H., Jr., to RCA Corporation. Television display system handling and adjustment apparatus. 4,405,950, Cl. 358-248.000.
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Washington State University Research Foundation, Inc.: *See—*
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Weinecke, Michael H.: *See*—
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Clayman, John M.; and Weiner, Norman, 4,404,702, Cl. 12-146.00S.
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Weir, Donald R.; and Genik-Sas-Berezowsky, Roman M., to Sherritt Gordon Mines Limited. Removal of uranium from sulphate solutions containing molybdenum. 4,405,566, Cl. 423-15.000.
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Rothlisberger, Rudi; and Noser, Friedrich, 4,405,645, Cl. 424-326.000.
Wells, Charles H., to Envirotech Corporation. Process for cleaning undeslimed coal. 4,405,453, Cl. 209-172.500.
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Wells, Jerry S.: *See*—
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Welschof, Hans-Heinrich; and Beier, Rudolf, to Lohr & Bromkamp GmbH. Wheel hub assembly. 4,405,032, Cl. 180-259.000.
Welter, Thomas N. H., to Goodyear Tire & Rubber Company, The. Pneumatic safety tire. 4,405,007, Cl. 152-353.00R.
Wentzell, J. Michael, to United Technologies Corporation. Method for separating particulate materials. 4,405,452, Cl. 209-172.000.
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Wermelinger, Hans, to Contraves AG. Stepping mechanism for an encoding rotary switch. 4,405,842, Cl. 200-17.00R.
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Case, Kirt L., 4,405,317, Cl. 604-90.000.
Westby, Roger L. Rock trap for a combine. 4,404,975, Cl. 130-27.0JT.
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Banks, Edward L.; Truax, Bruce E.; and Watkins, Laurence S., 4,405,701, Cl. 430-5.000.
Western Electric Company, Inc.: *See*—
Bohannon, William D., Jr., 4,404,720, Cl. 29-33.00E.
Mock, George E., 4,404,882, Cl. 83-869.000.
Westinghouse Electric Corp.: *See*—
Brooker, Lenon G.; and Mungin, Halbert, 4,405,690, Cl. 428-503.000.
Holtzman, Barry L., 4,405,963, Cl. 361-16.000.
Mangus, James D.; and Cooper, Martin H., 4,405,558, Cl. 376-233.000.
Woolfson, Martin G.; and Romanski, John G., 4,405,940, Cl. 358-93.000.
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Whalen, Bernard F.; and Roberts, Clifford J., to Yetter Manufacturing Co. Closing wheel mounting for a planter. 4,404,918, Cl. 111-85.000.
Whetstine, Donald L., to Stainless Medical Products, Inc. Knock down wheel chair. 4,405,142, Cl. 280-242.0WC.
Whipp & Bourme (1975) Limited: *See*—
Morton, John S., 4,405,847, Cl. 200-144.00R.
Whirlpool Corporation: *See*—
Paddock, Stephen W.; and Tate, Ralph, Jr., 4,404,813, Cl. 62-127.000.
White, Jeffrey F.: *See*—
Heinze, Walter O.; Tufts, Wesley M.; and White, Jeffrey F., 4,404,696, Cl. 4-420.000.
White, Stephen A., to Lucas Industries plc. Control circuits. 4,405,968, Cl. 361-195.000.
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Jost, John W.; Lieffers, William C.; and Whitescarver, Olin D., 4,405,463, Cl. 210-712.000.
Whitney & Company, Inc.: *See*—
Saidla, Glen W., 4,405,538, Cl. 264-45.500.
Whitney, Douglas S. G.; and Martin, John K., III. Injector with ratchet drive and reproducing system. 4,405,318, Cl. 604-155.000.
Wiart, Albert C., to Jeumont Schneider Corporation. Adapter for intermediary circuit of a static converter assembly. 4,405,888, Cl. 318-803.000.
Wick, Manfred: *See*—
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Kim, Snyg N., 4,404,865, Cl. 74-471.0XY.
Wiegand, Karl-Wolfram, to Dimter GmbH Maschinenfabrik. Apparatus for unstacking planks. 4,405,276, Cl. 414-119.000.
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Wiezer, Hartmut; Pfahler, Gerhard; and Korbanka, Helmut, to Hoechst Aktiengesellschaft. Substituted diazaspirodecanes, their preparation and their use as stabilizers for organic polymers, and the polymers thus stabilized. 4,405,735, Cl. 524-95.000.
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Wiley, Richard H. 6-(Carbo-t-butoxy)-3-mercapto-4-acetamino-1,2,4-triazin-5-ones. 4,405,779, Cl. 544-182.000.
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Will, Brian C., to Slant Drilling Systems Ltd. Tubular handling system for oil drilling rigs. 4,405,022, Cl. 175-85.000.
Will, Lothar K.: *See*—
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Wm. Wrigley Jr. Company: *See*—
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Williams, David J.; Meredith, Gerald R.; and Olin, George R., to Xerox Corporation. Composite quasi-crystalline material. 4,405,733, Cl. 524-87.000.
Williams, David W.: *See*—
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Williams, James M., Jr.: *See*—
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Williams, Michael R., to FMC Corporation. Large-diameter multi-passage swivel joint for high pressure service. 4,405,162, Cl. 285-95.000.
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Williams, Virgil R.; and Williams, James M., Jr. Suspended modular floor assembly. 4,404,782, Cl. 52-475.000.
Williamson, Dennis F. Braking control. 4,405,886, Cl. 318-376.000.
Willis, Carl L.: *See*—
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Wills, Angela B.: *See*—
Wills, David V.; and Wills, Angela B., 4,404,764, Cl. 40-124.100.
Wills, David V.; and Wills, Angela B., to Priester, Handy C., a part interest. Message medium having corresponding optical and tactile messages. 4,404,764, Cl. 40-124.100.
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Wilson, Donald R.: *See*—
Hall, Henry K.; and Wilson, Donald R., 4,405,798, Cl. 549-363.000.
Windmoller & Holscher: *See*—
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Wine, Charles M., to RCA Corporation. Servo system for a videodisc player carriage assembly. 4,406,002, Cl. 369-220.000.
Winter, Albert J., to Modern Inventions (Proprietary) Limited. Handle. 4,404,708, Cl. 16-110.00R.
Winterholler, Johann: *See*—
Kobler, Ingo; and Winterholler, Johann, 4,404,907, Cl. 101-228.000.
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Kooymans, Petrus G.; Wintraecken, Johannes J. M. H.; Raudenbusch, Werner T.; Seelen-Kruijssen, Josepha M. E.; and Schreurs, Gerardus C. M., 4,405,763, Cl. 525-438.000.
Wirth, John L. Shutterless optical system for viewing motion pictures. 4,405,218, Cl. 352-108.000.

Withers, David L. Bi-string dental floss holder. 4,404,978, Cl. 132-91.000.
Witt, Donald R., to Phillips Petroleum Company. Aging of chromium-containing gel at high pH. 4,405,501, Cl. 252-452.000.
Wittren, Richard A., to Deere & Company. Steering system and compensating valve. 4,405,030, Cl. 180-153.000.
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Wolf, Horst; and Guttler, Hermann, to Zinser Textilmaschinen GmbH. Spinning machine. 4,404,791, Cl. 57-80.000.
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Wollar, Burnell J., to Phillips Plastics Corporation. Two-piece fastener with front shoulder. 4,405,272, Cl. 411-41.000.
Wolniak, Stanley C.; Spencer, Elbert M.; and Brown, Ronald L., to Eastern Company, The. Anti-static switch lock. 4,405,843, Cl. 200-44.000.
Wong, Pui K.; Willis, Carl L.; and Brownscombe, Thomas F., to Shell Oil Company. Butene-1-vinylcyclohexene copolymer. 4,405,772, Cl. 526-308.000.
Wood, Dennis E., to Rando Machine Corporation. Apparatus for feeding fibers to carding machines and the like. 4,404,710, Cl. 19-105.000.
Wood, Hugh C.; and Okkerse, Simon W. J. H., to SED Systems Inc. Flow rate sensor. 4,404,860, Cl. 73-861.780.
Woodall, Leigh C., Jr.; Hayes, John T.; and Currier, Robert G., to Collins & Aikman Corporation. Paint roller. 4,404,703, Cl. 15-230.110.
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Woodcock, Maurice L., to Monsanto Company. Processes for severing hollow fiber membranes. 4,405,536, Cl. 264-25.000.
Woodman, Alan L.: *See*—
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Woods, Jonathan L.; and Sutton, Leroy A., to Zenith Radio Corporation. Over voltage circuit for a switching regulator power supply. 4,405,964, Cl. 361-18.000.
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Woolfson, Martin G.; and Romanski, John G., to Westinghouse Electric Corp. Apparatus and method for preprocessing video frame signals. 4,405,940, Cl. 358-93.000.
Wormsbacher, Wilfried: *See*—
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Woutat, Wilson A. Leash with remote latch release. 4,404,927, Cl. 119-114.000.
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Wright, Anthony R., to W & A Bates Limited. Reinforced structures. 4,405,395, Cl. 156-117.000.
Wu, Kuoeng F. Adjustable looseleaf binder. 4,405,250, Cl. 402-13.000.
Wu, Mu-Yen M.; and Ball, Lawrence E., to Standard Oil Company. Preparation of a polyamide from lactam, ammonium salt of unsaturated acid and unsaturated nitrile. 4,405,777, Cl. 528-323.000.
Wuerzer, Bruno: *See*—
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Wunderlich, Klaus; Schlegel, Udo; and Ricke, Heinz, to Olympia Werke AG. Advancing device in electrically driven typewriters and similar machines. 4,405,248, Cl. 400-550.000.
Wurtman, Richard J., to Massachusetts Institute of Technology. Process for increasing glycine levels in the brain and spinal cord. 4,405,629, Cl. 424-267.000.
Wurzburg, Henry, to Motorola, Inc. High pass filter and method of making same. 4,405,899, Cl. 330-107.000.
Wyder AG.: *See*—
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Marshall, Sidney W., 4,405,956, Cl. 360-78.000.
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Yale, Ramon L., to GTE Products Corporation. Terbium activated yttrium gadolinium oxysulfide X-ray phosphor and screen containing the same. 4,405,691, Cl. 428-690.000.
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Yamada, Tetsuo: *See*—
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Yamada, Yasuyuki; Tsuji, Nobuo; Okita, Tsutomu; and Mukunoki, Yasuo, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,405,481, Cl. 252-62.540.
Yamagishi, Frederick G., to Hughes Aircraft Company. Moisture-protected alkali halide infrared windows. 4,405,692, Cl. 428-696.000.
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Yamamoto, Hideaki: *See*—
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Yamane, Yukio; Yoshiyuki, Kazuhiko; and Endo, Toshiaki, to Nissan Motor Company, Limited. Window structure of a vehicle body. 4,405,174, Cl. 296-201.000.
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Murase, Kiyoshi; Yamaoka, Nobutatsu; and Fujimoto, Masayuki, 4,405,473, Cl. 252-62.3BT.
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Yamashita, Hiroyuki, to Y K Trading Kabushiki Kaisha. Apparatus for finishing surfaces. 4,405,177, Cl. 299-41.000.
Yamauchi, Kogi: *See*—
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Yamauchi, Teruo; Ohyama, Yoshishige; Kuroiwa, Hiroshi; Fujieda, Mamoru; and Kirisawa, Tadashi, to Hitachi, Ltd. Air flow rate measuring device incorporating hot wire type air flow meter. 4,404,846, Cl. 73-118.000.
Yamazaki, Masafumi; and Suzuki, Mikio, to Nissan Motor Co., Ltd. Fuel supply system for an injection-type internal combustion engine. 4,404,944, Cl. 123-458.000.
Yanagawa, Hitoshi: *See*—
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Yanagita, Shuichi; Miyoshi, Tsutomu; and Miyane, Masashi, to Tanita Corporation. Electronic weighing apparatus of induction type. 4,405,025, Cl. 177-210.0FP.
Yang, Ling; Medico, Russell R.; and Baugh, Wesley A., to International Rectifier Corporation. Methods of producing spherical lithium aluminate particles. 4,405,595, Cl. 423-600.000.
Yanmar Diesel Engine Co., Ltd.: *See*—
Mori, Mitsuyoshi, 4,405,337, Cl. 44-56.000.
Yasuda, Mitsuo; Minami, Katsuji; Itokawa, Jiro; Aoto, Yoshiyuki; Hatakeyama, Yasuyuki; and Sakaida, Shinya, to Sharp Kabushiki Kaisha. Optical image synthesis method and apparatus. 4,405,219, Cl. 353-37.000.
Yeda Research & Development Co., Ltd.: *See*—
Jagur, Joseph, 4,405,771, Cl. 528-266.000.
Yetter Manufacturing Co.: *See*—
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Yoshida, Fumio; Miki, Yukio; and Egawa, Takeshi, to Minolta Camera Kabushiki Kaisha. Camera motor drive mechanisms. 4,405,221, Cl. 354-173.000.
Yoshida Kogyo, K.K.: *See*—
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Yoshioka, Shigehiko; Yamada, Hideto; and Asakura, Akira, to Seiko Kagaku Kogyo Co., Ltd. Cellulose processing agents and paper processed therewith. 4,405,408, Cl. 162-158.000.
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Young, A. Steven; and Mason, Gorby C., to Young, A. Steven, a part interest. Wellhead security apparatus. 4,405,161, Cl. 285-80.000.
Young, Chung I.; and Barber, Loren L., Jr., to Minnesota Mining and Manufacturing Company. Catalyst system containing a fluorinated acid and a polyvalent tin compound. 4,405,497, Cl. 252-431.00R.
Young, James W.: *See*—
Makos, Ronald A.; and Young, James W., 4,405,275, Cl. 414-28.000.
Young, Lewis B.: *See*—
Stead, George E.; and Young, Lewis B., 4,405,818, Cl. 568-781.000.
Young, Peter L., to Sperry Corporation. Method of producing positive slope step changes on vacuum deposited layers. 4,405,658, Cl. 427-63.000.
Young, Rodney C.: *See*—
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Yu, Kin C.; and Kachemov, Angelo D., to Honeywell Information Systems Inc. Communication multiplexer having an apparatus for establishing a single line priority. 4,405,981, Cl. 364-200.000.
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Yuill, Robert D.: *See*—
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Zabel, Jack H.: *See*—
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Zachariadis, Robert G., to Mobil Oil Corporation. Method for collecting and generating composite trace signals with improved signal to noise ratios. 4,405,999, Cl. 367-23.000.
Zacharias, Ernst, to Matth. Hohner AG. Stringed instrument with keyboard, of the clavichord type. 4,404,884, Cl. 84-258.000.
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Zandona, Oliver J., to Ashland Oil, Inc. Method and means for charging foamed residual oils in contact with fluid solid particulate material. 4,405,444, Cl. 208-113.000.
Zanker, Dieter S. Firewood splitter. 4,405,005, Cl. 144-193.00C.
Zankl, Frank, to Kearney & Trecker Corporation. Machine tool operable as both a chucking type lathe and as a machining center. 4,404,727, Cl. 29-568.000.
Zardi, Umberto; and Comandini, Ettore, to Ammonia Casale S.A. Axial-radial reactor for heterogeneous synthesis. 4,405,562, Cl. 422-148.000.
Zebo, Timothy J., to Bell Telephone Laboratories, Incorporated. Echo canceler far end energy discriminator. 4,405,840, Cl. 179-170.200.
Zechlin, Richard; and Henderson, Robert M., to Colt Industries Operating Corp. Ignition control box assembly for internal combustion engine. 4,404,951, Cl. 123-595.000.
Zeger, Andrew E.: *See*—
Abrams, Burton S.; and Zeger, Andrew E., 4,406,016, Cl. 455-19.000.
Zeiringer, Rudolf: *See*—
Krempl, Peter; Zeiringer, Rudolf; and Claassen, Peter, 4,404,854, Cl. 73-730.000.
Zell, Reinhard: *See*—
Grass, Hansjorg; and Zell, Reinhard, 4,405,417, Cl. 204-73.00R.
Zemelman, Valery B.; and Kleiner, Fredric, to General Foods Corporation. Gasified ice process and product. 4,404,807, Cl. 62-1.000.
Zenith Radio Corporation: *See*—
Eilers, Carl G.; and Fockens, Pieter, 4,405,944, Cl. 358-144.000.
Hockenbrock, Richard L.; and Strauss, Paul, 4,405,949, Cl. 358-237.000.
Woods, Jonathan L.; and Sutton, Leroy A., 4,405,964, Cl. 361-18.000.
Zepp, Charles M.: *See*—
Locatell, Louis, Jr.; Zepp, Charles M.; and Cieciuch, Ronald F., 4,405,788, Cl. 546-165.000.
Zinkel, Duane F.; and Arimoto, Kunio, to United States of America, Agriculture. Preparation of esters of resin acids, resins, rosins, and derivatives thereof. 4,405,514, Cl. 260-102.000.
Zinn, Michael; Bauch, Tamil D.; and Schiff, Morton, to Raybend Associates. Large format film glazed solar collector. 4,404,962, Cl. 126-450.000.
Zinser Textilmaschinen GmbH: *See*—
Wolf, Horst; and Guttler, Hermann, 4,404,791, Cl. 57-80.000.
Zinsmeyer, Thomas M., to Carrier Corporation. Method and apparatus for controlling the operation of a centrifugal compressor in a refrigeration system. 4,404,812, Cl. 62-84.000.
Zio, Cesare: *See*—
Masi, Paolo; Monopoli, Angela; Saravalle, Adone C.; and Zio, Cesare, 4,405,627, Cl. 424-263.000.
Ziolko, Eric F.: *See*—
Weiss, David L.; Ziolko, Eric F.; and Williams, Tim A., 4,406,010, Cl. 375-32.000.
Zitz, Alfred: *See*—
Sigott, Siegfried; Suessenbeck, Heinrich; Zitz, Alfred; and Siebenhofer, Gottfried, 4,404,893, Cl. 91-405.000.
Zlatkis, Anatoly D.: *See*—
Sheiko, Anatoly A.; Voloschenko, Mikhail V.; Latenko, Vladimir P.; Kartashevsky, Gennady R.; Schegolkov, Evgeny I.; Zlatkis, Anatoly D.; Osokin, Viktor G.; Polyakov, Lev V.; Zaitsev, Valentin V.; and Trunov, Mikhail B., 4,405,367, Cl. 75-124.000.
Zunker, Reinhard: *See*—
Fuchs, Otto; Hunger, Klaus; Weber, Dieter; and Zunker, Reinhard, 4,405,793, Cl. 548-131.000.
Zweymuller, Karl, to Sulzer Brothers Limited. Shank for a hip joint prosthesis. 4,404,693, Cl. 3-1.913.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF SEPTEMBER, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bayliss, John P., to Girling Limited. Anti-skid vehicle braking system. Re. 31,387, Cl. 303-115.000.

Brauer, Melvin; Case, Barton C.; and Kroplinski, Thaddeus F., to CasChem, Inc. Non-wicking polyurethane casting systems. Re. 31,389, Cl. 210-321.300.

Buschor, Josef J.: *See*—
Schmidt, Dieter K.; and Buschor, Josef J., Re. 31,385, Cl. 73-37.000.

CasChem, Inc.: *See*—
Brauer, Melvin; Case, Barton C.; and Kroplinski, Thaddeus F., Re. 31,389, Cl. 210-321.300.

Case, Barton C.: *See*—
Brauer, Melvin; Case, Barton C.; and Kroplinski, Thaddeus F., Re. 31,389, Cl. 210-321.300.

Davis, William F.; Russell, Ronald W.; Frederiksen, Thomas M.; and Long, Ernest L., to Motorola, Inc. Voltage and current regulator with automatic switchover. Re. 31,391, Cl. 361-154.000.

Frederiksen, Thomas M.: *See*—
Davis, William F.; Russell, Ronald W.; Frederiksen, Thomas M.; and Long, Ernest L., Re. 31,391, Cl. 361-154.000.

General Signal Corporation: *See*—
McEathron, Eugene D., Re. 31,386, Cl. 303-35.000.

Girling Limited: *See*—
Bayliss, John P., Re. 31,387, Cl. 303-115.000.

Harris-Hub Company, Inc.: *See*—
Mis, Frank J., Re. 31,384, Cl. 5-202.000.

Hellier, Stephen J.; and Passoni, Anselmo G., to SAES Getters, S.p.A. Air-bakeable water-proof getter device and method of manufacturing. Re. 31,388, Cl. 417-48.000.

Kroplinski, Thaddeus F.: *See*—
Brauer, Melvin; Case, Barton C.; and Kroplinski, Thaddeus F., Re. 31,389, Cl. 210-321.300.

Long, Ernest L.: *See*—
Davis, William F.; Russell, Ronald W.; Frederiksen, Thomas M.; and Long, Ernest L., Re. 31,391, Cl. 361-154.000.

McDaniel, Max P.; and Welch, Melvin B., to Phillips Petroleum Company. Treatment of silica. Re. 31,390, Cl. 252-428.000.

McEathron, Eugene D., to General Signal Corporation. Fluid brake control system. Re. 31,386, Cl. 303-35.000.

Mis, Frank J., to Harris-Hub Company, Inc. Bed frame assembly. Re. 31,384, Cl. 5-202.000.

Motorola, Inc.: *See*—
Davis, William F.; Russell, Ronald W.; Frederiksen, Thomas M.; and Long, Ernest L., Re. 31,391, Cl. 361-154.000.

New Century Beverage Company: *See*—
Schmidt, Dieter K.; and Buschor, Josef J., Re. 31,385, Cl. 73-37.000.

Passoni, Anselmo G.: *See*—
Hellier, Stephen J.; and Passoni, Anselmo G., Re. 31,388, Cl. 417-48.000.

Phillips Petroleum Company: *See*—
McDaniel, Max P.; and Welch, Melvin B., Re. 31,390, Cl. 252-428.000.

Russell, Ronald W.: *See*—
Davis, William F.; Russell, Ronald W.; Frederiksen, Thomas M.; and Long, Ernest L., Re. 31,391, Cl. 361-154.000.

SAES Getters, S.p.A.: *See*—
Hellier, Stephen J.; and Passoni, Anselmo G., Re. 31,388, Cl. 417-48.000.

Schmidt, Dieter K.; and Buschor, Josef J., to New Century Beverage Company. Machine for testing bottles. Re. 31,385, Cl. 73-37.000.

Welch, Melvin B.: *See*—
McDaniel, Max P.; and Welch, Melvin B., Re. 31,390, Cl. 252-428.000.

LIST OF DESIGN PATENTEES

Abe, Takeshi: *See*—
Takahashi, Akira; Seki, Yasusuke; and Abe, Takeshi, 270,638, Cl. D14-80.000.

Alie, Enrique; Bishop, Donald R.; and Ryan, James M., to Polaroid Corporation. Photographic camera or similar article. 270,643, 9-20-83, Cl. D16-1.000.

American Hospital Supply Corporation: *See*—
Gallagher, Abigail H.; and Trudeau, Robert P., 270,596, Cl. D7-40.000.

American Telecommunications Corporation: *See*—
Bloem, Richard E., Sr., 270,635, Cl. D14-64.000.

Babson Bros. Co.: *See*—
Swanson, Harold V., 270,607, Cl. D7-368.000.

Barrett, James. Throwing ax. 270,654, 9-20-83, Cl. D22-1.000.

Benjamin & Medwin, Inc.: *See*—
Miller, David W., 270,598, Cl. D7-43.000.
Miller, David W., 270,600, Cl. D7-44.000.

Berlic, France. Stepstool. 270,590, 9-20-83, Cl. D6-32.000.

Binford, Robert O.: *See*—
McCrary, David N.; and Binford, Robert O., 270,606, Cl. D7-334.000.

Bird, Frank E., Jr. Chair. 270,589, 9-20-83, Cl. D6-30.000.

Bishop, Donald R.: *See*—
Alie, Enrique; Bishop, Donald R.; and Ryan, James M., 270,643, Cl. D16-1.000.

Bloem, Richard E., Sr., to American Telecommunications Corporation. Cordless telephone handset. 270,635, 9-20-83, Cl. D14-64.000.

Bobrovniczky, Bert, to Noma Canada Ltd. Right angled plug for electric cord. 270,628, 9-20-83, Cl. D13-28.000.

Caron, Jean P. Vehicle towing hitch. 270,626, 9-20-83, Cl. D12-162.000.

Cascone, Ernesto; and Cascone, Vincent. Combined door and frame structure. 270,665, 9-20-83, Cl. D25-48.000.

Cascone, Ernesto; and Cascone, Vincent. Door frame member. 270,666, 9-20-83, Cl. D25-74.000.

Cascone, Ernesto; and Cascone, Vincent. Door frame member. 270,667, 9-20-83, Cl. D25-75.000.

Cascone, Vincent: *See*—
Cascone, Ernesto; and Cascone, Vincent, 270,665, Cl. D25-48.000.
Cascone, Ernesto; and Cascone, Vincent, 270,666, Cl. D25-74.000.
Cascone, Ernesto; and Cascone, Vincent, 270,667, Cl. D25-75.000.

Cassai, Gino H.: *See*—
Cassai, Henry J.; and Cassai, Gino H., 270,669, Cl. D28-7.000.

Cassai, Henry J.; and Cassai, Gino H. Cosmetic applicator with universal joint. 270,669, 9-20-83, Cl. D28-7.000.

Check, Mathias M.; and Goodby, Elia L. Hand scoop for grass and leaves. 270,611, 9-20-83, Cl. D8-9.000.

Claman, Mike T., to Lewittes Furniture Enterprises, Inc. Chair frame. 270,594, 9-20-83, Cl. D6-191.000.

Clivio, Franco; and Raffler, Dieter, to GARDENA Kress & Kastner GmbH. Sprayer. 270,657, 9-20-83, Cl. D23-37.000.

Collins, Walter W., to Jenkins Metal Corporation. Combination knife and utility tool with pivotal blade cover. 270,655, 9-20-83, Cl. D22-1.000.

Conti, Rino, to Dart Industries, Inc. Butter dish cover or the like. 270,597, 9-20-83, Cl. D7-40.000.

Conti, Rino, to Dart Industries Inc. Butter tray or the like. 270,605, 9-20-83, Cl. D7-84.000.

Cox, John A., to Liqui-Box Corporation. Jug. 270,616, 9-20-83, Cl. D9-378.000.

Creske, E. J. Waste receptacle. 270,677, 9-20-83, Cl. D34-8.000.

Culver Electronic Sales, Inc.: *See*—
Ungar, Leon B., 270,634, Cl. D14-36.000.

Dart Industries, Inc.: *See*—
Conti, Rino, 270,597, Cl. D7-40.000.
Conti, Rino, 270,605, Cl. D7-84.000.
Fritz, Ann K., 270,602, Cl. D7-319.000.

Davies, Evan: *See*—
Marmon, John; and Davies, Evan, 270,659, Cl. D23-69.000.

Desgrippes, Joel, to L'Oreal. Bottle. 270,614, 9-20-83, Cl. D9-317.000.

Dethmers Manufacturing Company: *See*—
Hollander, Ernest C., 270,640, Cl. D15-7.000.
Hollander, Ernest C., 270,641, Cl. D15-7.000.

Drew, Douglas, to Noma Canada Ltd. Multiple outlet strip. 270,629, 9-20-83, Cl. D13-30.000.
DuBrucq, Virginia. Adjustable table. 270,592, 9-20-83, Cl. D6-178.000.
Eastman Kodak Company: *See—*
Weiss, Richard K.; and Olson, Richard J., 270,645, Cl. D16-21.000.
Eldon Industries, Inc.: *See—*
Evenson, Mel, 270,649, Cl. D19-69.000.
Emerson Electric Co.: *See—*
Skowronski, Roman L.; and Szekeres, John M., 270,617, Cl. D9-415.000.
Erato, Vincent A. A. J., to Milton Bradley International, Inc. Game board. 270,650, 9-20-83, Cl. D21-31.000.
Erdmann, Lois M. Animal tag. 270,673, 9-20-83, Cl. D30-43.000.
Erdmann, Lois M. Animal leash. 270,674, 9-20-83, Cl. D30-39.000.
Ethical Products, Inc.: *See—*
Zelinger, Alan, 270,672, Cl. D30-16.000.
Evenson, Mel, to Eldon Industries, Inc. Tape dispenser. 270,649, 9-20-83, Cl. D19-69.000.
Fisher, Denys. Drawing template. 270,647, 9-20-83, Cl. D19-39.000.
Foreman, Thomas V., Sr. Easel for attaching to a telephone to support a book or the like. 270,636, 9-20-83, Cl. D14-65.000.
Fritz, Ann K., to Dart Industries Inc. Pitcher or the like. 270,602, 9-20-83, Cl. D7-319.000.
Frost, Malcolm L.: *See—*
Tatnall, William A.; and Frost, Malcolm L., 270,586, Cl. D3-32.000.
Fukushima, Hisao; and Tarao, Masaharu, to Oki Electric Industry Co., Ltd. Dialing pad. 270,637, 9-20-83, Cl. D14-66.000.
Fulster, Chris. Duck decoy stabilizer for use in stormy weather. 270,656, 9-20-83, Cl. D22-18.000.
Gallagher, Abigail H.; and Trudeau, Robert P., to American Hospital Supply Corporation. Dish cover lid. 270,596, 9-20-83, Cl. D7-40.000.
GARDENA Kress & Kastner GmbH: *See—*
Clivio, Franco; and Raffler, Dieter, 270,657, Cl. D23-37.000.
Gershman, Arthur P. Cookie cutter. 270,599, 9-20-83, Cl. D7-43.000.
Goodby, Elia L.: *See—*
Check, Mathias M.; and Goodby, Elia L., 270,611, Cl. D8-9.000.
Goodin, John W.; and Sharbaugh, David A., to USAC Electronics Industry Co., Ltd. Computer keyboard. 270,639, 9-20-83, Cl. D14-100.000.
Goto, Akio; Ichikawa, Kuniharu; and Kuribayashi, Keiji, to Matsushita Electric Works, Ltd. Hair iron. 270,670, 9-20-83, Cl. D28-35.000.
Grayscale Labs, Inc.: *See—*
Kinney, William C., 270,644, Cl. D16-14.000.
Greenberg, Harold J.; and Greenberg, Irma S. Infant teething toy. 270,664, 9-20-83, Cl. D24-45.000.
Greenberg, Irma S.: *See—*
Greenberg, Harold J.; and Greenberg, Irma S., 270,664, Cl. D24-45.000.
Haggard, Merry: *See—*
Haggard, Robert E., 270,609, Cl. D8-01.000.
Haggard, Robert E., to Haggard, Merry. Tree guard. 270,609, 9-20-83, Cl. D8-01.000.
Hamano, Hirokazu: *See—*
Kurata, Hideaki; Hamano, Hirokazu; and Shindo, Hiroshi, 270,632, Cl. D14-1.000.
Shindo, Hiroshi; Kurata, Hideaki; and Hamano, Hirokazu, 270,633, Cl. D14-1.000.
Hardy, Gregory J. Article display card. 270,622, 9-20-83, Cl. D9-457.000.
Harper, Walter F., Jr.; and Winecoff, Thomas W. Table. 270,591, 9-20-83, Cl. D6-146.000.
Henkels, Walter. Combined LCD-clock and holder for a ball point pen. 270,623, 9-20-83, Cl. D10-2.000.
Hiltenbrand, Richard E., to Pittway Corporation. Unipolar chamber for ionization smoke detector. 270,625, 9-20-83, Cl. D10-121.000.
Hitachi, Ltd.: *See—*
Takahashi, Akira; Seki, Yasusuke; and Abe, Takeshi, 270,638, Cl. D14-80.000.
Hollander, Ernest C., to Dethmers Manufacturing Company. Liquid manure pump. 270,640, 9-20-83, Cl. D15-7.000.
Hollander, Ernest C., to Dethmers Manufacturing Company. Liquid manure pump. 270,641, 9-20-83, Cl. D15-7.000.
Houle, Raymond T.: *See—*
Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Reed, Stewart D.; Redwine, Michael A.; and Kilborn, Fredrick A., 270,658, Cl. D23-55.000.
Houlihan, John T., to Timex Corporation. Digital fever thermometer. 270,624, 9-20-83, Cl. D10-57.000.
Ichikawa, Kuniharu: *See—*
Goto, Akio; Ichikawa, Kuniharu; and Kuribayashi, Keiji, 270,670, Cl. D28-35.000.
International Business Machines Corporation: *See—*
Wiebe, Walter W., 270,663, Cl. D24-17.000.
Jenkins Metal Corporation: *See—*
Collins, Walter W., 270,655, Cl. D22-1.000.
Kemple, Samuel B., to LJM Enterprises, Inc. Surgical instrument table. 270,588, 9-20-83, Cl. D6-27.000.
Kilborn, Fredrick A.: *See—*
Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Reed, Stewart D.; Redwine, Michael A.; and Kilborn, Fredrick A., 270,658, Cl. D23-55.000.
Kinard, Olis R., Jr. Trunk gripping clamp for tree climbing. 270,610, 9-20-83, Cl. D8-4.000.
Kinney, William C., to Grayscale Labs, Inc. Microfilm viewer. 270,644, 9-20-83, Cl. D16-14.000.
Kraft, John H.: *See—*
Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Reed, Stewart D.; Redwine, Michael A.; and Kilborn, Fredrick A., 270,658, Cl. D23-55.000.
Kurata, Hideaki; Hamano, Hirokazu; and Shindo, Hiroshi, to Pioneer Electronic Corporation. Video disc player. 270,632, 9-20-83, Cl. D14-1.000.
Kurata, Hideaki: *See—*
Shindo, Hiroshi; Kurata, Hideaki; and Hamano, Hirokazu, 270,633, Cl. D14-1.000.
Kuribayashi, Keiji: *See—*
Goto, Akio; Ichikawa, Kuniharu; and Kuribayashi, Keiji, 270,670, Cl. D28-35.000.
Lee, Bruce N. Coffee table. 270,593, 9-20-83, Cl. D6-177.000.
Lewittes Furniture Enterprises, Inc.: *See—*
Claman, Mike T., 270,594, Cl. D6-191.000.
Liqui-Box Corporation: *See—*
Cox, John A., 270,616, Cl. D9-378.000.
LJM Enterprises, Inc.: *See—*
Kemple, Samuel B., 270,588, Cl. D6-27.000.
L'Oreal: *See—*
Desgrippes, Joel, 270,614, Cl. D9-317.000.
M. & S. Shillman, Inc.: *See—*
Shillman, Irving, 270,618, Cl. D9-415.000.
Marmon, John; and Davies, Evan. Water saver for a toilet flush system. 270,659, 9-20-83, Cl. D23-69.000.
Matsushita Electric Works, Ltd.: *See—*
Goto, Akio; Ichikawa, Kuniharu; and Kuribayashi, Keiji, 270,670, Cl. D28-35.000.
Yamamoto, Shinji, 270,671, Cl. D28-38.000.
Mayo, Gene L. Combined holder and dispenser for rolls of tape. 270,648, 9-20-83, Cl. D19-67.000.
McCrary, David N.; and Binford, Robert O. Barbeque grill. 270,606, 9-20-83, Cl. D7-334.000.
McGlade, Sheamus J. Wine bucket. 270,603, 9-20-83, Cl. D7-70.000.
Miller, David W., to Benjamin & Medwin, Inc. Food mold. 270,598, 9-20-83, Cl. D7-43.000.
Miller, David W., to Benjamin & Medwin, Inc. Food mold. 270,600, 9-20-83, Cl. D7-44.000.
Miller, James E. Camel figure playground climber. 270,653, 9-20-83, Cl. D21-245.000.
Milton Bradley International, Inc.: *See—*
Erato, Vincent A. A. J., 270,650, Cl. D21-31.000.
Morgan, Paul W., to Partlow Corporation. Wire stripping measuring guide. 270,613, 9-20-83, Cl. D8-58.000.
Moskin, Jeffrey M.; and Wertz, Keith J. Video game control unit or the like. 270,630, 9-20-83, Cl. D13-38.000.
Moskin, Jeffrey M.; and Wertz, Keith J. Video game control grip or the like. 270,631, 9-20-83, Cl. D13-38.000.
Nestier Corporation: *See—*
Stein, Eric D., 270,678, Cl. D34-40.000.
Noma Canada Ltd.: *See—*
Bobrovniczky, Bert, 270,628, Cl. D13-28.000.
Drew, Douglas, 270,629, Cl. D13-30.000.
O'Connell, Timothy A. Child's rocking horse. 270,587, 9-20-83, Cl. D6-11.000.
Ogden, Joyce E. Overall side panels. 270,584, 9-20-83, Cl. D2-29.000.
Oki Electric Industry Co., Ltd.: *See—*
Fukushima, Hisao; and Tarao, Masaharu, 270,637, Cl. D14-66.000.
Olson, Richard J.: *See—*
Weiss, Richard K.; and Olson, Richard J., 270,645, Cl. D16-21.000.
Ort, Sterling L. Frame member for a solar collector. 270,660, 9-20-83, Cl. D23-127.000.
Owens, Phillip J., to West Company, The. Pouring attachment for containers or the like. 270,620, 9-20-83, Cl. D9-447.000.
Parker, Bruce H., to Turn-Key Container Systems, Inc. Receptacle. 270,675, 9-20-83, Cl. D34-5.000.
Partlow Corporation: *See—*
Morgan, Paul W., 270,613, Cl. D8-58.000.
Pease Company: *See—*
Shaffer, B. Jeremiah; and Russell, William T., 270,668, Cl. D25-72.000.
Pease, Patrick F. Garbage container. 270,676, 9-20-83, Cl. D34-7.000.
Pettengill, Julian K. Evaporative cooler. 270,661, 9-20-83, Cl. D23-139.000.
Pioneer Electronic Corporation: *See—*
Kurata, Hideaki; Hamano, Hirokazu; and Shindo, Hiroshi, 270,632, Cl. D14-1.000.
Shindo, Hiroshi; Kurata, Hideaki; and Hamano, Hirokazu, 270,633, Cl. D14-1.000.
Pittway Corporation: *See—*
Hiltenbrand, Richard E., 270,625, Cl. D10-121.000.
Polaroid Corporation: *See—*
Alie, Enrique; Bishop, Donald R.; and Ryan, James M., 270,643, Cl. D16-1.000.
Polistil S.p.A.: *See—*
Sala, Ennio, 270,621, Cl. D9-456.000.
Price, Edwin A. Cutting board. 270,601, 9-20-83, Cl. D7-46.000.
Raffler, Dieter: *See—*
Clivio, Franco; and Raffler, Dieter, 270,657, Cl. D23-37.000.
Redwine, Michael A.: *See—*
Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Reed, Stewart D.; Redwine, Michael A.; and Kilborn, Fredrick A., 270,658, Cl. D23-55.000.

LIST OF DESIGN PATENTEES

Reed, Stewart D.: *See—*
Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Reed, Stewart D.; Redwine, Michael A.; and Kilborn, Fredrick A., 270,658, Cl. D23-55.000.

Rescue Services, Inc.: *See—*
Tatnall, William A.; and Frost, Malcolm L., 270,586, Cl. D3-32.000.

Russell, William T.: *See—*
Shaffer, B. Jeremiah; and Russell, William T., 270,668, Cl. D25-72.000.

Ryan, James M.: *See—*
Alie, Enrique; Bishop, Donald R.; and Ryan, James M., 270,643, Cl. D16-1.000.

Sakata, Keiji, to Sharp Corporation. Electronic calculator. 270,646, 9-20-83, Cl. D18-7.000.

Sala, Ennio, to Polistil S.p.A. Packaging form. 270,621, 9-20-83, Cl. D9-456.000.

Scotto, Arthur. Fan. 270,662, 9-20-83, Cl. D23-155.000.

Seki, Yasusuke: *See—*
Takahashi, Akira; Seki, Yasusuke; and Abe, Takeshi, 270,638, Cl. D14-80.000.

Shaffer, B. Jeremiah; and Russell, William T., to Pease Company. Decorative composite glass panel. 270,668, 9-20-83, Cl. D25-72.000.

Sharbaugh, David A.: *See—*
Goodin, John W.; and Sharbaugh, David A., 270,639, Cl. D14-100.000.

Sharp Corporation: *See—*
Sakata, Keiji, 270,646, Cl. D18-7.000.

Shillman, Irving, to M. & S. Shillman, Inc. Packaging container. 270,618, 9-20-83, Cl. D9-415.000.

Shindo, Hiroshi; Kurata, Hideaki; and Hamano, Hirokazu, to Pioneer Electronic Corporation. Video disc player. 270,633, 9-20-83, Cl. D14-1.000.

Shindo, Hiroshi: *See—*
Kurata, Hideaki; Hamano, Hirokazu; and Shindo, Hiroshi, 270,632, Cl. D14-1.000.

Silchor: *See—*
Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Reed, Stewart D.; Redwine, Michael A.; and Kilborn, Fredrick A., 270,658, Cl. D23-55.000.

Sills, Arthur A.; Kraft, John H.; Houle, Raymond T.; Reed, Stewart D.; Redwine, Michael A.; and Kilborn, Fredrick A., to Silchor. Bathtub. 270,658, 9-20-83, Cl. D23-55.000.

Skowronski, Roman L.; and Szekeres, John M., to Emerson Electric Co. Packaging container. 270,617, 9-20-83, Cl. D9-415.000.

Spanek, Denis C.: *See—*
Spanek, George; and Spanek, Denis C., 270,608, Cl. D7-409.000.

Spanek, George; and Spanek, Denis C. Game hen roasting rack. 270,608, 9-20-83, Cl. D7-409.000.

Stein, Eric D., to Nestier Corporation. Carrying tray. 270,678, 9-20-83, Cl. D34-40.000.

Storlie, John W. Combined shovel and lift attachment. 270,612, 9-20-83, Cl. D8-10.000.

Stuart, Bruce W. Buckle for strapping parcel or the like. 270,615, 9-20-83, Cl. D8-383.000.

Sutcliffe Engineering Holdings Limited: *See—*
Yates, Victor H., 270,595, Cl. D6-197.000.

Swanson, Harold V., to Babson Bros. Co. Milker. 270,607, 9-20-83, Cl. D7-368.000.

Szekeres, John M.: *See—*
Skowronski, Roman L.; and Szekeres, John M., 270,617, Cl. D9-415.000.

Takahashi, Akira; Seki, Yasusuke; and Abe, Takeshi, to Hitachi, Ltd. Television receiver. 270,638, 9-20-83, Cl. D14-80.000.

Tarao, Masaharu: *See—*
Fukushima, Hisao; and Tarao, Masaharu, 270,637, Cl. D14-66.000.

Tatnall, William A.; and Frost, Malcolm L., to Rescue Services, Inc. Emergency pack. 270,586, 9-20-83, Cl. D3-32.000.

Timex Corporation: *See—*
Houlihan, John T., 270,624, Cl. D10-57.000.

Trudeau, Robert P.: *See—*
Gallagher, Abigail H.; and Trudeau, Robert P., 270,596, Cl. D7-40.000.

Turn-Key Container Systems, Inc.: *See—*
Parker, Bruce H., 270,675, Cl. D34-5.000.

Ungar, Leon B., to Culver Electronic Sales, Inc. Headphones. 270,634, 9-20-83, Cl. D14-36.000.

USAC Electronics Industry Co., Ltd.: *See—*
Goodin, John W.; and Sharbaugh, David A., 270,639, Cl. D14-100.000.

Viio, Matti. Hunting vest. 270,585, 9-20-83, Cl. D2-184.000.

Watts, W. David. Abrasive blasting wheel pin. 270,642, 9-20-83, Cl. D15-126.000.

Weiss, Richard K.; and Olson, Richard J., to Eastman Kodak Company. Slide projector or similar article. 270,645, 9-20-83, Cl. D16-21.000.

Wertz, Keith J.: *See—*
Moskin, Jeffrey M.; and Wertz, Keith J., 270,630, Cl. D13-38.000.
Moskin, Jeffrey M.; and Wertz, Keith J., 270,631, Cl. D13-38.000.

West Company, The: *See—*
Owens, Phillip J., 270,620, Cl. D9-447.000.

Wiebe, Walter W., to International Business Machines Corporation. Electrocardiograph. 270,663, 9-20-83, Cl. D24-17.000.

Wilkerson, Cynthia B. Stuffed clown doll. 270,651, 9-20-83, Cl. D21-173.000.

Williams, David R. Wind deflector for truck trailers or the like. 270,627, 9-20-83, Cl. D12-181.000.

Winecoff, Thomas W.: *See—*
Harper, Walter F., Jr.; and Winecoff, Thomas W., 270,591, Cl. D6-146.000.

Winston, Edith. Exercise belt. 270,652, 9-20-83, Cl. D21-196.000.

Yamamoto, Shinji, to Matsushita Electric Works, Ltd. Case for a hair roller set. 270,671, 9-20-83, Cl. D28-38.000.

Yates, Victor H., to Sutcliffe Engineering Holdings Limited. Seat for use with a bench. 270,595, 9-20-83, Cl. D6-197.000.

Zauft, Donald A. Portable cooler. 270,604, 9-20-83, Cl. D7-77.000.

Zelinger, Alan, to Ethical Products, Inc. Pet food tray. 270,672, 9-20-83, Cl. D30-16.000.

Zimmer, Raymond. Combined container and lid. 270,619, 9-20-83, Cl. D9-424.000.

LIST OF PLANT PATENTEES

Blair, Robert, to Conard-Pyle Company, The. *Potentilla fruticosa* — Blink variety. 5,106, 9-20-83, Cl. 54.000.

Conard-Pyle Company, The: *See—*
Blair, Robert, 5,106, Cl. 54.000.
Meilland, Marie L., 5,105, Cl. 1.000.

Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 5,108, 9-20-83, Cl. 79.000.

Duffett, William E.: *See—*
Meek, Jack M., deceased; Meek, Saundra J., executrix; and Duffett, William E., 5,107, Cl. 74.000.

Meek, Jack M., deceased; by Meek, Saundra J., executrix; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 5,107, 9-20-83, Cl. 74.000.

Meek, Saundra J., executrix: *See—*
Meek, Jack M., deceased; Meek, Saundra J., executrix; and Duffett, William E., 5,107, Cl. 74.000.

Meilland, Marie L., to Conard-Pyle Company, The. Rose plant — Meidomonac variety. 5,105, 9-20-83, Cl. 1.000.

Yoder Brothers, Inc.: *See—*
Duffett, William E., 5,108, Cl. 79.000.
Meek, Jack M., deceased; Meek, Saundra J., executrix; and Duffett, William E., 5,107, Cl. 74.000.

CLASSIFICATION OF PATENTS

ISSUED SEPTEMBER 20, 1983

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

94	4,404,687
207	4,404,688
247	4,404,689
420	4,404,690

CLASS 3

1.911	4,404,691
1.912	4,404,692
1.913	4,404,693
13	4,404,694

CLASS 4

253	4,404,695
420	4,404,696
492	4,404,697

CLASS 5

202	Re.31,384
507	4,404,698

CLASS 8

94.11	4,405,327
128 A	4,405,328
149.1	4,404,699
527	4,405,329
639	4,405,330

CLASS 11

3	4,405,353

CLASS 12

12	4,404,700
127	4,404,701
146 S	4,404,702

CLASS 15

230.11	4,404,703
257 R	4,404,704
313	4,404,705
344	4,404,706

CLASS 16

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110 R	4,404,708
111 R	4,404,709

CLASS 19

105	4,404,710
106 R	4,404,711

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129 R	4,404,712
217 R	4,404,713
230 A	4,404,715
230 AL	4,404,714

CLASS 27

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CLASS 28

107	4,404,717
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33.2	4,404,722
33.52	4,404,723
116 AD	4,404,724
252	4,404,725
432.2	4,404,726
568	4,404,727
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569 L	4,404,730
571	4,404,731
	4,404,732
	4,404,733
572	4,404,734
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577 C	4,404,737
	4,404,738
588	4,404,739
606	4,404,740
721	4,404,741
798	4,404,742
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857	4,404,743
883	4,404,744

CLASS 30

124	4,404,746
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161	4,404,748
164.9	4,404,749

CLASS 33

1 B	4,404,750
180 R	4,404,751
347	4,404,752
451	4,404,753

CLASS 34

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57 A	4,404,755
65	4,404,756

CLASS 36

107	4,404,757
121	4,404,758
129	4,404,759

CLASS 37

142 R	4,404,760
191 A	4,404,761
219	4,404,762
250	4,404,763

CLASS 40

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CLASS 42

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CLASS 44

1 D	4,405,331
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53	4,405,333
	4,405,334
	4,405,335
56	4,405,336
	4,405,337
78	4,405,338

CLASS 46

239	4,404,766

CLASS 47

67	4,404,767

CLASS 48

62 R	4,405,339
86 R	4,405,340

CLASS 49

5	4,404,768
58	4,404,769
235	4,404,770
425	4,404,771

CLASS 51

105 R	4,404,772
218 A	4,404,773
298	4,405,341
325	4,404,774

CLASS 52

12	4,404,775
29	4,404,776
60	4,404,777
101	4,404,778
126.2	4,404,779
126.7	4,404,780
290	4,404,785
295	4,404,781
475	4,404,782
518	4,404,783
534	4,404,784
659	4,404,786

CLASS 53

502	4,404,787
512	4,404,788

CLASS 54

80	4,404,789

CLASS 55

6	4,405,342
28	4,405,343
67	4,405,344
184	4,405,345
357	4,405,346
387	4,405,347

CLASS 57

12	4,404,790
80	4,404,791
401	4,404,792

CLASS 60

39.07	4,404,793
39.161	4,404,794
39.281	4,404,797
274	4,404,795
	4,404,796
296	4,404,798
370	4,404,799
	4,404,800
496	4,404,801
520	4,404,802
547.1	4,404,803
602	4,404,804
606	4,404,805
737	4,404,806

CLASS 62

1	4,404,807
6	4,404,808
49	4,404,809
73	4,404,810
84	4,404,811
	4,404,812
127	4,404,813
171	4,404,814
180	4,404,815
259.3	4,405,348
282	4,404,816
320	4,404,817
384	4,404,818
514 R	4,404,819
530	4,404,820
532	4,405,349

CLASS 65

27	4,405,350
29	4,405,351
99.4	4,405,352

CLASS 66

139	4,404,821

CLASS 70

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333 A	4,404,823
364 A	4,404,824
368	4,404,825
416	4,404,826

CLASS 71

21	4,405,354
86	4,405,355
87	4,405,356
88	4,405,357
98	4,405,358
103	4,405,359
117	4,405,360
121	4,405,361

CLASS 72

41	4,404,827
42	4,404,828
84	4,404,829
128	4,404,830
148	4,404,831
209	4,404,832
216	4,404,833
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325	4,404,835
332	4,404,836
349	4,404,837
457	4,404,838

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37	Re.31,385
40.5 R	4,404,842
49.2	4,404,843
	4,404,844
61.1 C	4,404,845
118	4,404,846
119 A	4,404,847
146	4,404,848
	4,404,849
161	4,404,850
460	4,404,851
599	4,404,852
622	4,404,853
730	4,404,854
747	4,404,855
765	4,404,856
827	4,404,857
861.02	4,404,858
861.18	4,404,859
861.78	4,404,860
861.83	4,404,861
864.16	4,404,862

CLASS 74

89.2	4,404,863
197	4,404,864
471 XY	4,404,865
546	4,404,866
665 GA	4,404,867
665 GE	4,404,868
740	4,404,869
829	4,404,870

CLASS 75

24	4,405,362
49	4,405,363
52	4,405,364
60	4,405,365
93 E	4,405,366
124	4,405,367
	4,405,368
126 C	4,405,369

CLASS 76

25 A	4,404,871
	4,404,872
82	4,404,873

CLASS 81

53.2	4,404,875
57.18	4,404,876
57.37	4,404,877
438	4,404,874

CLASS 82

2.5	4,404,878

CLASS 83

22	4,404,879
42	4,404,880
167	4,404,881
869	4,404,882

CLASS 84

1.03	4,404,883
258	4,404,884
329	4,404,885
471 R	4,404,886

CLASS 89

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26	4,404,888
36 A	4,404,889
41 E	4,404,890

CLASS 91

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396	4,404,892
405	4,404,893
461	4,404,894
488	4,404,895
491	4,404,896
506	4,404,897

CLASS 99

331	4,404,898
332	4,404,899

CLASS 101

40	4,404,900
93.02	4,404,901
122	4,404,902
123	4,404,903
126	4,404,904
183	4,404,905
211	4,404,906
228	4,404,907
349	4,404,908
350	4,404,909

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221	4,404,911
505	4,404,912

CLASS 104

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CLASS 106

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21	4,405,371
90	4,405,372
100	4,405,374
198	4,405,373
277	4,405,375
300	4,405,376

CLASS 108

9	4,404,914
43	4,404,915

CLASS 109

67	4,404,916

CLASS 111

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85	4,404,918

CLASS 112

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121.15	4,404,920
291	4,404,921

CLASS 116

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270	4,404,924

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641	4,404,926

CLASS 119

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190 BD	4,404,934
193 P	4,404,935
196 R	4,404,936
198 F	4,404,937
256	4,404,938
333	4,404,939
335	4,404,940
339	4,404,941
352	4,404,942
458	4,404,943
	4,404,944
478	4,404,945
486	4,404,946
527	4,404,947
546	4,404,948
557	4,404,949
572	4,404,950
595	4,404,951
602	4,404,952

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121	4,404,954
	4,404,955
293	4,404,956
419	4,404,957
426	4,404,958
429	4,404,959
432	4,404,960
	4,404,961
450	4,404,962

CLASS 127

46.2	4,405,377
55	4,405,378

CLASS 128

4	4,404,963
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46	4,404,965
69	4,404,966
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79	4,404,968
201.23	4,404,969
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419 PG	4,404,972
654	4,404,973
670	4,404,974

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CLASS 131

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CLASS 132

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91	4,404,978

CLASS 134

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166 C	4,404,979

CLASS 135

102	4,404,980

CLASS 137

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68 R	4,404,982
74	4,404,983
88	4,404,984
234.5	4,404,985
355.17	4,404,986
556	4,404,987
565	4,404,988
596.18	4,404,989
601	4,404,990
636.1	4,404,991

CLASS 138

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91	4,404,994
92	4,404,995
194	4,404,996
291 R	4,404,997
384 B	4,404,998
391	4,404,999

CLASS 141

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220	4,405,001

CLASS 144

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87	4,405,004
193 C	4,405,005

CLASS 148

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9.5	4,405,383
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11.5 R	4,405,387
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37	4,405,389
	4,405,390
403	4,405,391

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353 R	4,405,007

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155	4,405,396
164	4,405,397
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243	4,405,399
244.11	4,405,400
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273.7	4,405,402
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633	4,405,405
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CLASS 162

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CLASS 165

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CLASS 166

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CLASS 172

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CLASS 173

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CLASS 174

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138 R 4,405,828

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CLASS 177

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210 FP 4,405,025

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CLASS 179

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1 GB 4,405,834
1 GS 4,405,835
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1 MN 4,405,833
1 P 4,405,831
1 SD 4,405,838
84 C 4,405,839
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462 4,405,506
466 B 4,405,507
518 4,405,508
522 A 4,405,509
522 R 4,405,510
547 4,405,511
628 4,405,512
700 4,405,513

CLASS 254

29 A 4,405,114
106 4,405,115
122 4,405,116

CLASS 260

102 4,405,514
239 R 4,405,515
239.3 B 4,405,516
239.3 T 4,405,517
245.7 4,405,518
365 4,405,522
369 4,405,523
372 4,405,524
397.1 4,405,525
400 4,405,526
453 PH 4,405,527
465 F 4,405,528
4,405,529
465.5 R 4,405,530
501.12 4,405,531
816 R 4,405,532

CLASS 261

111 4,405,533

CLASS 264

3 C 4,405,534
11 4,405,535
25 4,405,536
45.4 4,405,537
45.5 4,405,538
77 4,405,539
106 4,405,540
107 4,405,541
109 4,405,542
123 4,405,543
127 4,405,544
144 4,405,545
159 4,405,546
171 4,405,547
176 F 4,405,548
188 4,405,549
216 4,405,550
245 4,405,551
272.19 4,405,553
300 4,405,554
315 4,405,555
513 4,405,556
515 4,405,557

CLASS 266

66 4,405,117
227 4,405,118

CLASS 267

64.22 4,405,119

CLASS 269

71 4,405,120

CLASS 270

58 4,405,121

CLASS 271

8 A 4,405,122
22 4,405,123
135 4,405,124
195 4,405,125
279 4,405,126

CLASS 272

62 4,405,127
117 4,405,128
130 4,405,129

CLASS 273

25 4,405,130
153 S 4,405,131
348.1 4,405,132
419 4,405,133

CLASS 277

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11 4,405,135
12 4,405,136
153 4,405,137
235 B 4,405,138

CLASS 280

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16 4,405,140
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432 4,405,145
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443 4,405,147
491 E 4,405,148
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603 4,405,150
612 4,405,151
625 4,405,152
629 4,405,153
686 4,405,154
802 4,405,155

CLASS 281

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CLASS 283

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CLASS 285

7 4,405,158
38 4,405,159
39 4,405,160
80 4,405,161
95 4,405,162
305 4,405,163

CLASS 290

53 4,405,866

CLASS 292

169.21 4,405,164
258 4,405,165
305 4,405,166

CLASS 294

70 4,405,167
103 R 4,405,168

CLASS 296

3 4,405,169
10 4,405,170
19 4,405,171
20 4,405,172
146 4,405,173
201 4,405,174
4,405,175

CLASS 299

17 4,405,176
41 4,405,177
81 4,405,178

CLASS 301

2.5 4,405,179
111 4,405,180

CLASS 303

9 4,405,181
23 R 4,405,182
35 Re.31,386
115 Re.31,387
119 4,405,183

CLASS 307

64 4,405,867
296 A 4,405,868
405 4,405,869
446 4,405,870
594 4,405,871

CLASS 308

2 A 4,405,184
6 C 4,405,185

CLASS 310

75 R 4,405,872
156 4,405,873
313 B 4,405,874
344 4,405,875

CLASS 313

30 4,405,876
318 4,405,877
346 R 4,405,878
386 4,405,879
467 4,405,880
480 4,405,881

CLASS 315

118 4,405,882

CLASS 318

6 4,405,883
85 4,405,884
254 4,405,885
376 4,405,886
443 4,405,887
803 4,405,888

CLASS 320

1 4,405,889
2 4,405,890
15 4,405,891

CLASS 322

89 4,405,892

CLASS 323

271 4,405,893
340 4,405,894

CLASS 324

83 D 4,405,895
208 4,405,896
782 4,405,897

CLASS 328

72 4,405,898

CLASS 330

107 4,405,899
151 4,405,900
261 4,405,901
271 4,405,902
284 4,405,903

CLASS 331

87 4,405,904
94.1 4,405,905
116 FE 4,405,906

CLASS 333

24.1 4,405,907
165 4,405,908
198 4,405,909

CLASS 335

202 4,405,911
210 4,405,910
260 4,405,912

CLASS 336

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CLASS 337

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CLASS 338

15 4,405,915

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99 R 4,405,193
147 P 4,405,194
252 R 4,405,195
273 F 4,405,196

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825.56 4,405,923
825.72 4,405,924

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5 PD 4,405,925
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854 4,405,927
912 4,405,928

CLASS 346

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107 R 4,405,930
139 R 4,405,931

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96.29 4,405,198
168 4,405,203
174 4,405,204
255 4,405,205
318 4,405,206
320 4,405,207
341 4,405,208
4,405,209
345 4,405,210
349 4,405,211
589 4,405,202

CLASS 351

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59 4,405,213
88 4,405,214

208 4,405,215
237 4,405,216

CLASS 352

84 4,405,217
108 4,405,218

CLASS 353

37 4,405,219

CLASS 354

25 4,405,220
173 4,405,221
238 4,405,222
293 4,405,223

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14 R 4,405,225
27 4,405,227
75 4,405,228
77 4,405,229

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34 4,405,231
121 4,405,232
237 4,405,233
239 4,405,234
246 4,405,235
301 4,405,237
350 4,405,236
401 4,405,238

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15 4,405,934
31 4,405,935

CLASS 358

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40 4,405,937
44 4,405,938
65 4,405,939
93 4,405,940
104 4,405,941
119 4,405,942
133 4,405,943
144 4,405,944
154 4,405,945
192.1 4,405,946
193.1 4,405,947
198 4,405,948
237 4,405,949
248 4,405,950
256 4,405,951

CLASS 360

10.3 4,405,955
49 4,405,952
65 4,405,953
4,405,954
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96.6 4,405,962
99 4,405,957
113 4,405,958
119 4,405,959
125 4,405,960
129 4,405,961

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18 4,405,964
43 4,405,965
80 4,405,966
124 4,405,967
154 Re.31,391
195 4,405,968
215 4,405,969
283 4,405,970
401 4,405,971
417 4,405,972

CLASS 362

34 4,405,973
362 4,405,974

CLASS 363

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72 4,405,976
124 4,405,977

CLASS 364

200 4,405,978
4,405,979
4,405,980
4,405,981
4,405,982
4,405,983
410 4,405,984
423 4,405,985
434 4,405,986
483 4,405,987
502 4,405,988
525 4,405,989
703 4,405,990
715 4,405,991
748 4,405,992

CLASS 365

108 4,405,993
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174 4,405,995
203 4,405,996

CLASS 366

89 4,405,239
101 4,405,240
111 4,405,997
264 4,405,998

CLASS 367

23 4,405,999

CLASS 368

63 4,405,241
82 4,405,242

CLASS 369

44 4,406,000
88 4,406,001
220 4,406,002

CLASS 370

3 4,406,003
15 4,406,004
63 4,406,005
85 4,406,007
119 4,406,006

CLASS 373

102 4,406,008

CLASS 374

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CLASS 375

18 4,406,009
32 4,406,010

CLASS 376

233 4,405,558
247 4,405,559
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414 4,406,012

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050 4,406,015

CLASS 400

66 4,405,244
144.2 4,405,245
4,405,246
196.1 4,405,247
550 4,405,248

CLASS 401

182 4,405,249

CLASS 402

13 4,405,250

CLASS 403

9 4,405,251
11 4,405,252
231 4,405,253
246 4,405,254
402 4,405,255
408 4,405,256

CLASS 405

19 4,405,257
60 4,405,258
62 4,405,259
184 4,405,260
221 4,405,262
224 4,405,263
227 4,405,261
270 4,405,264

CLASS 406

109 4,405,265

CLASS 408

56 4,405,266
101 4,405,267
182 4,405,268
211 4,405,269

CLASS 409

244 4,405,270

CLASS 410

53 4,405,271

CLASS 411

41 4,405,272
43 4,405,273
249 4,405,274

CLASS 414

21 4,405,186
28 4,405,275
119 4,405,276
222 4,405,277
411 4,405,278
558 4,405,279
685 4,405,280
722 4,405,281
724 4,405,282

CLASS 415

14 4,405,283
174 4,405,284

CLASS 416

220 R 4,405,285

CLASS 417

1 4,405,286
48 Re.31,388
216 4,405,287
220 4,405,288
250 4,405,289
282 4,405,290
393 4,405,291
403 4,405,292
482 4,405,293
488 4,405,294

CLASS 419

28 4,405,295

CLASS 422

102 4,405,560
145 4,405,561
148 4,405,562
169 4,405,563
197 4,405,564
4,405,565

CLASS 423

15 4,405,566
17 4,405,567
21.1 4,405,568
27 4,405,569
43 4,405,570
53 4,405,571
54 4,405,572
150 4,405,573
157 4,405,574
167 4,405,575
181 4,405,576
223 4,405,577
4,405,578
4,405,579
226 4,405,580
4,405,581
228 4,405,582
4,405,583
4,405,584
4,405,585
233 4,405,586
235 4,405,587
340 4,405,588
344 4,405,589
347 4,405,590
4,405,591
421 4,405,592
458 4,405,504
574 R 4,405,593
579 4,405,594
600 4,405,595

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35 4,405,597
45 4,405,598
53 4,405,599
57 4,405,600
95 4,405,601
4,405,602
101 4,405,603
165 4,405,604
173 4,405,605
177 4,405,606
4,405,607
4,405,608
4,405,609
180 4,405,610
4,405,611
183 4,405,612
195 4,405,613
215 4,405,614
232 4,405,615
244 4,405,616
246 4,405,617
4,405,618
249 4,405,619
250 4,405,620
4,405,621
4,405,622
251 4,405,623
256 4,405,624
258 4,405,625
4,405,626
263 4,405,552
4,405,627
4,405,628
267 4,405,629
4,405,630
4,405,631
270 4,405,632
272 4,405,633
273 R 4,405,634
4,405,635
274 4,405,636
4,405,637
275 4,405,638
278 4,405,639
305 4,405,640
4,405,641
309 4,405,642
311 4,405,643
321 4,405,743
322 4,405,644
326 4,405,645

CLASS 425

6 4,405,296
72 S 4,405,297
308 4,405,298

CLASS 426

3 4,405,646
4 4,405,647
19 4,405,648
59 4,405,649
62 4,405,650
241 4,405,651
494 4,405,652
643 4,405,653
658 4,405,654

CLASS 427

38 4,405,655
39 4,405,656
54.1 4,405,657
63 4,405,658
248.1 4,405,659
4,405,660
356 4,405,661
386 4,405,662
428 4,405,663

CLASS 428

14 4,405,664
17 4,405,665
35 4,405,666
4,405,667
40 4,405,668
61 4,405,669
64 4,405,670
65 4,405,671
68 4,405,672
80 4,405,673
96 4,405,674
156 4,405,675
164 4,405,676
172 4,405,677
215 4,405,678
216 4,405,679
285 4,405,680
309.9 4,405,681
317.7 4,405,682
323 4,405,683
336 4,405,684
368 4,405,685
374 4,405,686
383 4,405,687
398 4,405,688
467 4,405,689
503 4,405,690
690 4,405,691
696 4,405,692

CLASS 429

101 4,405,693
4,405,694
103 4,405,695
104 4,405,696
161 4,405,697
219 4,405,698
224 4,405,699
248 4,405,700

CLASS 430

5 4,405,701
60 4,405,702
69 4,405,703
74 4,405,704
270 4,405,705
271 4,405,706
281 4,405,707
4,405,708
307 4,405,709
311 4,405,710

CLASS 431

78 4,405,299

CLASS 432

2 4,405,300
124 4,405,301

CLASS 433

30 4,405,302

CLASS 435

4 4,405,711
5 4,405,712
78 4,405,713
84 4,405,714
105 4,405,715
119 4,405,716
140 4,405,717

CLASS 436

8 4,405,718
10 4,405,719
86 4,405,720
128 4,405,721

CLASS 441

16 4,405,303

CLASS 455

19 4,406,016
137 4,406,017
164 4,406,018
245 4,406,019
327 4,406,020

CLASS 493

476 4,405,304

CLASS 494

1 4,405,079

CLASS 501

15 4,405,722
36 4,405,723
44 4,405,724

CLASS 521

112 4,405,725

CLASS 523

144 4,405,726
205 4,405,727
336 4,405,728
466 4,405,729

CLASS 524

35 4,405,730
47 4,405,731
83 4,405,732
87 4,405,733
90 4,405,734
95 4,405,735
100 4,405,749
102 4,405,736
4,405,737
116 4,405,738
117 4,405,739
287 4,405,740
299 4,405,741
315 4,405,742
423 4,405,744
429 4,405,745
501 4,405,746
503 4,405,747
504 4,405,748
717 4,405,750
720 4,405,751
847 4,405,752

CLASS 525

88 4,405,753
102 4,405,754
138 4,405,755
237 4,405,756
326.9 4,405,757
329.8 4,405,758
356 4,405,759
383 4,405,760
404 4,405,761
410 4,405,762
438 4,405,763
443 4,405,764
506 4,405,765
507 4,405,766
537 4,405,767

CLASS 526

96 4,405,768
119 4,405,769
259 4,405,770
308 4,405,772
317 4,405,773
348.2 4,405,774
351 4,405,775

CLASS 528

266 4,405,771
323 4,405,777
364 4,405,776

CLASS 544

16 4,405,778
21 4,405,782
182 4,405,779
263 4,405,780
264 4,405,781
267 4,405,783
352 4,405,784

CLASS 546

30 4,405,785
66 4,405,786
112 4,405,787
165 4,405,788
176 4,405,789
304 4,405,790
316 4,405,791
348 4,405,792

CLASS 548

131 4,405,793
229 4,405,794
423 4,405,519
4,405,520
4,405,521

CLASS 549

220 4,405,796
361 4,405,797
363 4,405,798
369 4,405,799
417 4,405,795
419 4,405,800

CLASS 556

402 4,405,802
410 4,405,803
422 4,405,801
476 4,405,804

CLASS 560

21 4,405,805
43 4,405,806
75 4,405,807
247 4,405,808

CLASS 562

487 4,405,809
495 4,405,810

CLASS 564

400 4,405,812
415 4,405,813
506 4,405,811

CLASS 568

462 4,405,814
487 4,405,815
592 4,405,816
701 4,405,817
781 4,405,818
801 4,405,823
814 4,405,819
840 4,405,820
862 4,405,821
899 4,405,822

CLASS 570

144 4,405,824

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13 4,405,825

CLASS 604

20 4,405,311
29 4,405,312
43 4,405,313
49 4,405,305
51 4,405,314
80 4,405,315
86 4,405,316
87 4,405,306
90 4,405,317
155 4,405,318
165 4,405,307
175 4,405,319
4,405,320
200 4,405,308
212 4,405,321
232 4,405,322
285 4,405,323
317 4,405,309
370 4,405,325
376 4,405,324
383 4,405,310
385 4,405,326

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	184	270,585
D3—	32	270,586
D6—	11	270,587
	27	270,588
	30	270,589
	32	270,590
	146	270,591
	177	270,593
	178	270,592
	191	270,594
	197	270,595
D7—	40	270,596
		270,597
	43	270,598
		270,599
	44	270,600
	46	270,601
	70	270,603
	77	270,604
	84	270,605
	319	270,602
	334	270,606
	368	270,607
	409	270,608
D8—	4	270,610
	9	270,611
	01	270,609
	10	270,612
	58	270,613
	383	270,615
D9—	317	270,614
	378	270,616
	415	270,617
		270,618
	424	270,619
	447	270,620
	456	270,621
	457	270,622
D10—	2	270,623
	57	270,624
	121	270,625
D12—	162	270,626
	181	270,627
D13—	28	270,628
	30	270,629
	38	270,630
		270,631
D14—	1	270,632
		270,633
	36	270,634
	64	270,635
	65	270,636
	66	270,637
	80	270,638
	100	270,639
D15—	7	270,640
		270,641
	126	270,642
D16—	1	270,643
	14	270,644
	21	270,645
D18—	7	270,646
D19—	39	270,647
	67	270,648
	69	270,649
D21—	31	270,650
	173	270,651
	196	270,652
	245	270,653
D22—	1	270,654
		270,655
	18	270,656
D23—	37	270,657
	55	270,658
	69	270,659
	127	270,660
	139	270,661
	155	270,662
D24—	17	270,663
	45	270,664
D25—	48	270,665
	72	270,668
	74	270,666
	75	270,667
D28—	7	270,669
	35	270,670
	38	270,671
D30—	16	270,672
	39	270,674
	43	270,673
D34—	5	270,675
	7	270,676
	8	270,677
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	4,405,406		4,404,863		4,405,942		4,405,393		4,405,773		4,404,862
	4,405,659		4,404,886		4,405,954		4,405,674		4,405,780		4,405,528
	4,406,005		4,404,887		4,405,993	16 :	4,404,979		4,405,836		4,405,563
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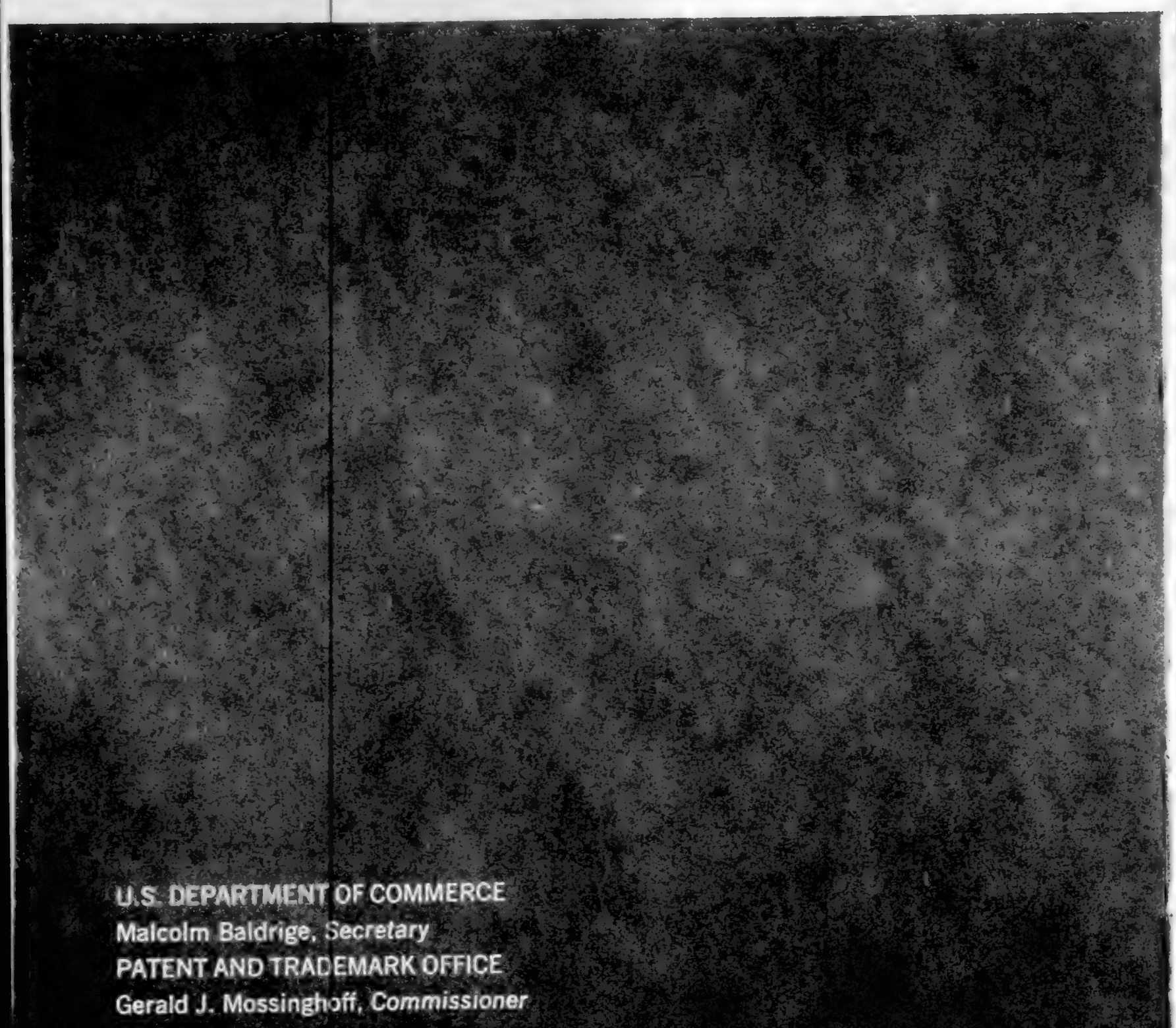
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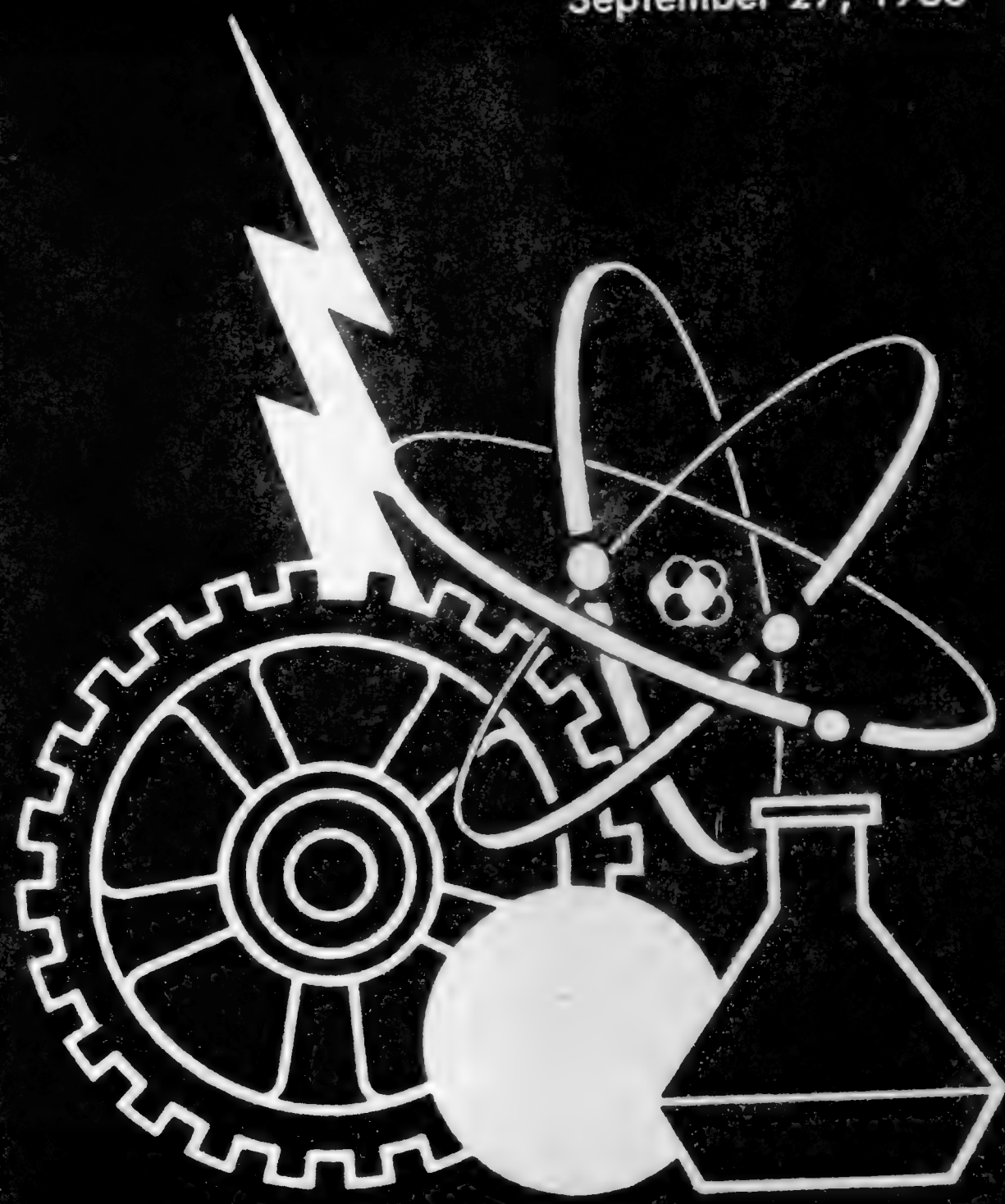
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
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Dec. 3, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,231,519, Re. S.N. 503,119, Filed June 10, 1983, Cl. 239/102, FLUIDIC OSCILLATOR WITH RESONANT INERTANCE AND DYNAMIC COMPLIANCE CIRCUIT, Peter Bauer, Owner of Record: *Inventor,* Attorney or Agent: Franklin Griffin, Jr., Ex. Gp.: 313

4,275,103, Re. S.N. 501,871, Filed June 7, 1983, Cl. 428/148, ELECTROGRAPHIC RECORDING MEDIUM WITH CONDUCTIVE LAYER CONTAINING METAL OXIDE SEMICONDUCTOR, Shigeru Tsubusaki, et al., Owner of Record: *Matsushita Electric Industrial Co. Ltd., Osaha, Japan,* Attorney or Agent: Allan M. Lowe, Ex. Gp.: 164

4,293,337, Re. S.N. 487,630, Filed Apr. 22, 1983, Cl. 75/232, SILVER, CADMIUM OXIDE, LITHIUM CARBONATE CONTACT MATERIAL AND METHOD OF MAKING THE MATERIAL, Frank S. Brugner, Jr., Owner of Record: *Square D. Co., Park Ridge, Ill.,* Attorney or Agent: Richard T. Guttman, Ex. Gp.: 223

4,315,766, Re. S.N. 506,316, Filed June 21, 1983, Cl. 71/088, 4H-3,1-BENZOXAZINE DERIVATIVES, Gerhard Hamprecht, et al., Owner of Record: *BASF Aktiengesellschaft, Ludwigshafen, Germany,* Attorney or Agent: Herbert B. Keil, Ex. Gp.: 126

4,331,378, Re. S.N. 481,259, Filed Apr. 1, 1983, Cl. 350/96.20, REINFORCED OPTICAL FIBER CABLE WITH GLASS OR SILICA CORE, Martval J. Hartig, Owner of Record: *Mitsubishi Rayon Co., Ltd., Tokyo, Japan,* Attorney or Agent: Granville, M. Braumbaugh, et al., Ex. Gp.: 254

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,425,779, Reexam. No. 90/000,427, Requested: July 29, 1983, Cl. 401/190, PRESSURIZED MARKING INSTRUMENT, Paul C. Fisher, et al., Owner of Record: *Fisher Pens Co., Boulder City, Nev.,* Attorney or Agent: None, Ex. Gp.: 330, Requester: Bic Corp., Milford, Conn.

4,013,413, Reexam. No. 90/000,437, Requested: Aug. 24, 1983, Cl. 436/53, APPARATUS AND METHOD FOR RAPID ANALYSES OF PLURALITY OF SAMPLES, Kent K. Stewart, et al., Owner of Record: *The United States of America as Represented by the Secretary of Agriculture, Washington, D.C.,* Attorney or Agent: M. Howard Silverstein, Ex. Gp.: 170, Requester: David J. Oldenkamp, Los Angeles, Calif.

4,221,488, Reexam. No. 90/000,425, Requested: July 22, 1983, Cl. 366/343, SEPARABLE BLADE AGITATOR AND METHOD AND MEANS FOR ASSEMBLY, Erwin J. Nunlist, et al., Owner of Record: *Pfaudler Co., Inc., Rochester, N.Y.,* Attorney or Agent: Theodore B. Rossel, Ex. Gp.: 240, Requester: Sammuel B. Smith, New York, N.Y.

4,305,866, Reexam. No. 90/000,435, Requested: Aug. 22, 1983, Cl. 260/927, POLYOLEFINS STABILIZED WITH DIPHOSPHITES, James F. York, et al., Owner of Record: *Borg-Warner Corp., Chicago, Ill.,* Attorney or Agent: Joseph Shekleton, Ex. Gp.: 120, Requester: Owner

4,369,797, Reexam. No. 90/000,433, Requested: Aug. 12, 1983, Cl. 131/109, FEED MECHANISM FOR TOBACCO CUTTING MACHINES, Warren A. Brackman, et al., Owner of Record: *Rothmans of Pall Mall Canada Ltd., Don Mills, Canada,* Attorney or Agent: Sim & McBurney, Ex. Gp.: 330, Requester: Peter K. Kontler, Stamford, Conn.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on

selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF THE AIR FORCE

SN 6-399,567. TUBULAR SINGLET DELTA OXYGEN GENERATOR.
SN 6-439,493. ACOUSTICALLY TUNED OPTICAL FILTER SYSTEM.
SN 6-505,166. MACHINING A COOLED CYLINDRICAL OPTIC TO COMPENSATE FOR PRESSURE DISTORTION.
SN 6-511,060. VOID DETECTION AND COMPOSITION MEASUREMENTS IN COMPOSITE WIRES.
SN 6-511,689. FIRE CONTROL APPARATUS FOR A LASER WEAPON
6-511,591. MULTIBEAM LENS ANTENNAS.
SN 6-511,697. RADIO FREQUENCY LENS ANTENNA.

DEPARTMENT OF THE ARMY

SN 6-445,405. GROUND CONTACT AREA MEASUREMENT DEVICE.
SN 6-484,326. PHASE SCANNED MICROSTRIP ARRAY ANTENNA.
SN 6-490,266. SELF-REGULATING AIR DRIVEN POWER SUPPLY.
SN 6-492,120. FLUIDIC ABSOLUTE-TO-DIFFERENTIAL PRESSURE CONVERTER.
SN 6-517,607. STRIPLINE TRANSFORMER ADAPTED FOR INEXPENSIVE CONSTRUCTION.
SN 6-519,154. THREE DIODE BALANCED MIXER.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-481,934. CELL MATRIX RECEPTOR SYSTEM AND USE IN CANCER DIAGNOSIS AND MANAGEMENT.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by certified mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Advantage Publications, Inc., Evergreen, Col., Reg. No. 1,187,586, for the mark "FINANCIAL ADVANTAGE", Canc. No. 13,594.

Seymart Importing Co., Inc., Rockville Centre, N.Y., Reg. No. 903,502, for the mark "CROWN EMPIRE", Canc. No. 13,739.

Americana Submarine, Inc., Bolingbrook, Ill., Reg. No. 1,096,193, for the mark "AMERICANA AE SUBMARINE AND DESIGN", Canc. No. 13,768.

Harbor Service Stations, Inc., by change of name from Westway Petroleum Co., Portland, Or., Reg. No. 820,499, for the mark "COST GUARD", Canc. No. 13,776.

Fenton Manufacturing Corp., Gardena, Calif., Reg. No. 1,099,905, for the mark "SCRAMBLER", Canc. No. 13,795.

ERMA S. BROWN,
Deputy Clerk of the Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

Status of PTO Services

The following is an update of the status of PTO services as of September 2, 1983:

Service Item	FY 1983 Performance Goal	Actual	Comment
Filing Receipts:			
Patents	22	23	
Trademarks	30	52	Reduced by 9 days in August.
Patent Copies:			
Window Coupons	5	79% within 5 days	
Mail Coupons	29	100% within 22 days	
Letter Orders	34	98% within 15 days	
Certified Copies:			
Trademark Registrations	30	22	
Applications-As-Filed	20	92% within 10 days	
File-Wrapper/Contents	N/A	100% within 20 days	
Walk-up Certification	1	99% within 1 day	
Trademark Search Library:			
Filing Drawings	21	21	Reduced 15 days in August.
Filing Reg. Certificates	3	1	Reduced 10 days in August.
Assignments:			
Patents	25	17	Reduced by 5 days in August.
Trademarks	25	17	
Avg. Days from Issue Fee Payment to Issue Date	90-100	94	
Patent Official Gazette:			
In Bookstore	Issue Date	On Schedule	
Mailed	Issue Date	Avg. 1 day late	
Patent Grants Mailed	Issue Date	On Schedule	
Patent Copies Available	Issue Date	99%	
Trademark Official Gazette:			
In Bookstore	Issue Date	On Schedule	
Mailed	Issue Date	On Schedule	
Trademark Regs. Mailed	Issue Date	On Schedule	

Sept. 2, 1983.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Sept. 27, 1983

Re. 30,198	4,370,479	4,384,529	4,391,813
4,179,549	4,371,107	4,384,534	4,391,884
4,197,247	4,373,750	4,384,933	4,392,025
4,260,661	4,374,279	4,384,973	4,392,374
4,262,979	4,374,681	4,385,384	4,392,411
4,269,923	4,374,860	4,385,446	4,392,626
4,298,941	4,376,450	4,385,461	4,392,659
4,313,543	4,377,152	4,386,429	4,392,867
4,314,251	4,377,334	4,386,566	4,393,072
4,326,503	4,378,589	4,386,701	4,393,569
4,326,570	4,378,994	4,387,193	4,393,624
4,327,807	4,379,054	4,387,727	4,394,176
4,330,384	4,379,229	4,388,232	4,394,835
4,343,755	4,379,843	4,388,465	4,395,167
4,344,064	4,381,917	4,388,871	4,395,222
4,345,764	4,382,604	4,389,187	4,395,446
4,348,580	4,382,622	4,389,719	4,395,681
4,355,037	4,382,930	4,390,445	4,395,776
4,362,942	4,383,235	4,390,546	4,396,035
4,363,758	4,383,819	4,390,589	4,396,231
4,366,451	4,383,843	4,390,844	4,396,473
4,369,328	4,384,194	4,391,555	

Disclaimers

3,672,947.—*Paul Luscher* and *Ben A. Hudson,* Shelby and *Billie W. Childers,* Forest City, N.C. METHOD FOR TEXTURIZING YARNS. Patent dated June 27, 1972. Disclaimer filed Aug. 17, 1982, by the assignee, *PPG Industries, Inc.*

Hereby enters this disclaimer to all claims of said patent.

3,873,641.—*Dieter Margotte,* Krefeld; *Karl-Heinz Ott,* Leverkusen; *Hermann Schirmer,* Krefeld; *Guntner Kampf,* Krefeld-Bockum; *Gunter Peilstocker,* Krefeld-Bockum; *Hugo Vernaleken,* Krefeld-Bockum, Germany. MOULDING COMPOSITIONS CONTAINING A MIXTURE OF A THERMOPLASTIC AROMATIC POLYCARBONATE, A BUTADIENE POLYMER AND A COPOLYMER BASED ON ETHYLENICALLY UNSATURATED MONOMERS. Patent dated Mar. 25, 1975. Disclaimer filed May 17, 1983, by the assignee, *Bayer Aktiengesellschaft.*

Hereby enters this disclaimer to all claims of said patent.

3,902,889.—*Leonard E. Malin,* Pittsburgh, Pa. ELECTRIC ARC MELTING FURNACE. Patent dated Sept. 2, 1975. Disclaimer filed Sept. 18, 1978, by the assignee, *United States Steel Corp.*

Hereby enters this disclaimer to claims 21, 22, 24, 28, 29, 31, 32, 33, 34, 35 and 38 of said patent.

4,225,590.—*Geoffrey M. H. Waites; William C. L. Ford; Riaz A. Khan;* and *Haydn F. Jones,* Berkshire, England. MALE FERTILITY-INHIBITING COMPOSITIONS OF 6-CHLORODEOXY-SACCHARIDES. Patent dated Sept. 30, 1980. Disclaimer filed Nov. 19, 1981, by the assignee, *Tate & Lyle, Ltd.*

Hereby enters this disclaimer to claim 8 of said patent.

4,351,740.—*David Joshi,* Piscataway, N.J. and *Richard Klingaman,* Houston, Tex. BOTTLED PARTICULATE DETERGENT. Patent dated Sept. 28, 1982. Disclaimer filed July 25, 1983, by the assignee, *Colgate-Palmolive Co.*

Hereby enters this disclaimer to claim 20 of said patent.

4,365,816.—*Norman E. Johnson,* Barrington and *Daniel F. Vasconcellos,* East Greenwich, R.I. SELF-DAMPING BELLOWS SEAL ASSEMBLY. Patent dated Dec. 28, 1982. Disclaimer filed May 18, 1983, by the assignee, *EG&G Sealol, Inc.*

Hereby enters this disclaimer to claims 2, 3 and 14 of said patent.

Disclaimers and Dedications

3,837,820.—*Ira Kukin,* West Orange, N.J. COMBUSTION CONTROL BY ADDITIVES INTRODUCED IN BOTH HOT AND COLD ZONES. Patent dated Sept. 24, 1974. Disclaimer and Dedication filed, Mar. 10, 1983, by the assignee, *Economics Laboratory, Inc.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

4,009,605.—*Alfred E. Kober,* Hopatcong, N.J. METHOD FOR DETERMINING T250 TEMPERATURE. Patent dated Mar. 1, 1977. Disclaimer and Dedication filed Mar. 10, 1983, by the assignee, *Economics Laboratory, Inc.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

4,070,162.—*Alfred E. Kober,* Hopatcong and *Ira Kukin,* West Orange, N.J. METHOD OF AGGLOMERATING PARTICLES IN GAS STREAM. Patent dated Jan. 24, 1978. Disclaimer and Dedication filed Mar. 10, 1983, by the assignee, *Economics Laboratory, Inc.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

4,113,447.—*Robert P. Bennett,* Bridgewater and *Alfred E. Kober,* Hopatcong, N.J. METHOD OF CONDITIONING FLUE GAS. Patent dated Sept. 12, 1978. Disclaimer and Dedication filed Mar. 10, 1983, by the assignee, *Economics Laboratory, Inc.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,243,822 to 3,248,737, inclusive

Plant Patents ..... Numbers 2,616 to 2,627 inclusive

REEXAMINATIONS

SEPTEMBER 27, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,337,331 (121st)

CORROSION RESISTANT STEEL ALLOY

Lars G. F. Ljungberg, Sandviken, Sweden, assignor to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden

Reexamination Request No. 90/000,150, Jan. 28, 1982.

Reexamination Certificate for Patent No. 3,337,331, issued Aug. 22, 1967, Ser. No. 428,207, Jan. 26, 1965.

Claims priority, application Sweden, Jan. 29, 1964, 1,059/64

Int. Cl.[3] C22C *38/40, 38/44*

U.S. Cl. 148—37

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–12** is confirmed.

1. Steel alloy having a high resistance against corrosion including stress corrosion and pitting corrosion, a high strength and good machining and welding properties, characterized in, that the alloy besides iron with usual impurities consists essentially of up to 0.15% carbon, 15–22% chromium, 3–8% nickel, 1–2.8% silicon, 0–2.5% manganese, altogether not more than 1.5% of a carbide former selected from the group consisting of niobium, tantalum and titanium and furthermore 2–4% molybdenum, the contents of the alloy elements being determined by the formula

$$23.0 > Cr + 3Si + Mo + 10Ti + 4Nb + 2Ta - Ni - 0.5Mn - 20C - 10N > 18.0$$

in which the chemical symbols stand for the quantities of the elements in percents and being so balanced in relation to each other that the steel contains 40–95% by volume of ferrite, the rest being austenite.

B1 3,436,777 (122nd)

DIVER'S JACKET AND BUOYANCY CONTROL DEVICE

Alden T. Greenwood, R.R. 1, Box 56, Mason, N.H. 03048

Reexamination Request No. 90/000,143, Jan. 26, 1982.

Reexamination Certificate for Patent No. 3,436,777, issued Apr. 8, 1969, Ser. No. 648,053, Jun. 22, 1967.

Int. Cl.[3] B63C *11/18, 9/16, 9/18*

U.S. Cl. 405—186

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **6–8** is confirmed.

Claims **1–5** are determined to be patentable as amended:

1. In a diver's jacket and buoyancy control device *for scuba diving:*

(a) a jacket made to be worn by a diver and dimensioned to extend substantially [between] *from above* the diver's shoulders [and] *to* the waist, *said jacket having arm-holes formed therein and terminating in edges;*

(*b*) *closure means disposed adjacent said edges whereby said edges may be joined to fit said jacket about the diver's torso;*

(*c*) [(b)] at least one inflatable bladder built into the jacket to form a unitary structure therewith;

(*d*) [(c)] a tank of compressed diver's breathing supply gas removably carried by the jacket and having a *a plurality of outlets,* a delivery hose coupled *to one of said outlets* [thereto] and extending therefrom, and a tube leading from the [tank for connection] *other of said outlets to provide said breathing supply gas continuously* to a diver's mouthpiece;

(*e*) [(d)] and a combined fill and dump control value connected to the hose and the bladder, the value having a filling portion operable to convey the compressed gas to the bladder to inflate and regulate the physical size of the bladder and having a dumping portion operable to exhaust the gas from the bladder to deflate the bladder, the valve being provided with manually-actuated means under direct control of the diver for selectively operating the filling and dumping portions of the valve.

B1 4,294,764 (123rd)

N-(OPTIONALLY SUBSTITUTED 1,3-DIOXOLAN- OR DIOXAN-2-YLMETHYL)-N-ALKYL, ALKENYL, OR ALKYNYL-2,2-DICHLOROACETAMIDES

Jay K. Rinehart, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Reexamination Request No. 90/000,191, Apr. 21, 1982.

Reexamination Certificate for Patent No. 4,294,764, issued Oct. 13, 1981, Ser. No. 106,434, Dec. 26, 1979.

Int. Cl.[3] C07D *317/12, 319/04*

U.S. Cl. 549—373

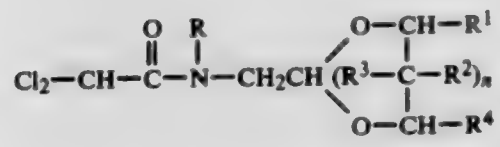
AS A RESULT OF REEXAMINATION IT HAS BEEN DETERMINED THAT:

The patentability of claim **1** is confirmed.

Claim **2** is determined to be patentable as amended:

New claim **3** is added and determined to be patentable.

1. A compound represented by the formula:



wherein:

R is ethyl, propyl, 1-methylethyl, 2-propenyl, 2-butenyl, 2-methyl-2-propenyl, 2-propynyl, or 1,1-dimethyl-2-propynyl;

R^1, R^2, R^3, and R^4 are independently hydrogen or methyl; and

n is 0 or 1.

REISSUES

SEPTEMBER 27, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,392
ARRANGEMENTS FOR ELECTRONICALLY DETERMINING AND ADJUSTING THE IGNITION TIME OF AN INTERNAL COMBUSTION ENGINE

Günter Schirmer, Leinfelden; Edwin Fauser, Sersheim, and Leo Steinke, Hegnach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

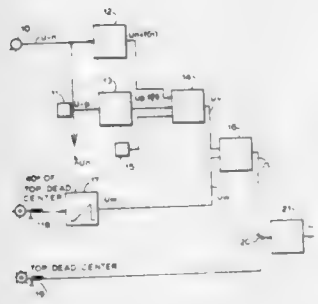
Original No. 3,756,212, dated Sep. 4, 1973, Ser. No. 125,476, Mar. 18, 1971. Continuation of Ser. No. 822,691, Aug. 8, 1977, abandoned. Application for reissue Aug. 10, 1978, Ser. No. 932,453

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1970, 2013703

Int. Cl.³ F02P *5/00*

U.S. Cl. 123—612

13 Claims



1. An ignition arrangement for internal combustion engines, comprising in combination first means for generating a first variable electrical signal absolutely indicative of crankshaft position; second means for generating as a function of at least one engine operating variable a second variable electrical signal indicative of a crankshaft position at which an ignition spark is to be produced; comparator means for comparing said first and second signals and for generating an ignition signal when the crankshaft position indicated by said first signal corresponds to the crankshaft position indicated by said second signal; and igniting means for producing an ignition spark in response to generation of said ignition signal.

Re. 31,393
STAR-WHEEL INDEXING SYSTEM FOR AUTOMATIC FILLING MACHINES

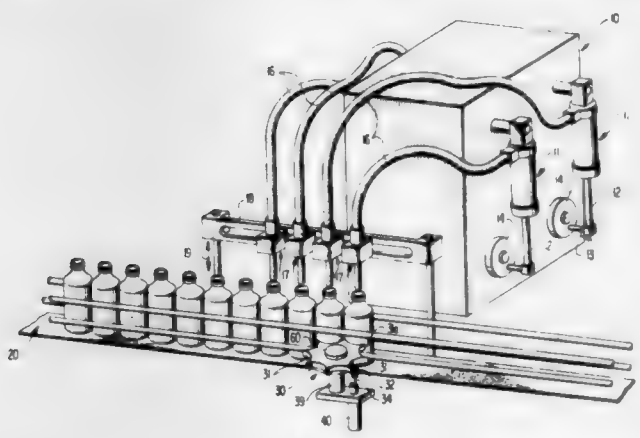
Sidney Rosen, Baltimore, Md., assignor to National Instrument Company, Inc., Baltimore, Md.

Original No. 4,083,389, dated Apr. 11, 1978, Ser. No. 708,635, Jul. 26, 1976. Application for reissue Nov. 8, 1978, Ser. No. 958,665

Int. Cl.³ B65B *43/56*

U.S. Cl. 141—179

26 Claims



1. An indexing system for indexing *a predetermined number of* containers on a conveyor, characterized by a freely rotatable, container-driven star-wheel means driven directly by successive containers engaging said star-wheel means while moved along on said conveyor, means for inhibiting the free rotation of the star-wheel means with the star-wheel means in a predetermined position including at least one pin-like member provided directly on said star-wheel means and projecting therefrom generally in the axial direction and stop means with a stop member normally projecting into the path of said pin-like member, and control means operatively connected with said stop means and operable to momentarily disengage the stop member from said pin-like member so as to release free rotation of the freely rotatable star-wheel means driven by the containers until the stop member again stops the star-wheel means by engaging with the next pin-like member projecting into its path.

Re. 31,394
FLEXIBLE DAMPED BEARING ASSEMBLY

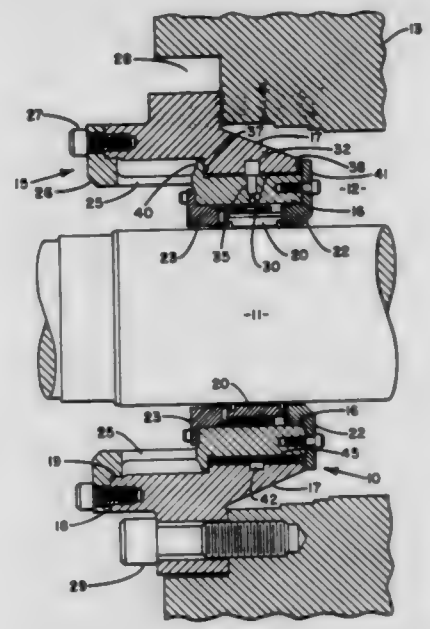
Keith L. Streifert, Duanesburg, N.Y., assignor to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Original No. 4,025,130, dated May 24, 1977, Ser. No. 619,323, Oct. 3, 1975. Application for reissue Sep. 4, 1980, Ser. No. 184,433

Int. Cl.³ F16C *35/08*

U.S. Cl. 384—99

2 Claims



6. In a flexible damped bearing, for rotatably supporting a shaft, of a type wherein the bearing is mounted within a movable member that is suspended from a stationary frame upon a series of flexure springs and having a cavity containing a fluid film located between the movable member and the stationary frame for damping the bearing reaction, and seals for maintaining the fluid film within the cavity, the improvement comprising:

the stationary frame includes

an outer housing defining a first bolting surface axially forward of the movable member,

a bolting ring defining a second bolting surface axially forward of the movable member and contiguous to and separable from the first bolting surface, and

securing means extending through the first and second bolting surfaces to releasably connect the bolting ring to the outer housing;

the flexure springs are connected to the bolting ring and to the movable member; and

said seals are located outside of the damping cavity and are positioned in respect to the movable member to prevent the seals from being compressed by the movable member as said member moves in compliance with the shaft whereby the seals are precluded from interacting with the fluid film to contribute unwanted damping to the system.

Re. 31,395

ALUMINUM POLISHING COMPOSITIONS

Terence R. Rooney, Bromsgrove, England, assignor to Albright & Wilson Ltd., Warley, England

Original No. 4,116,699, dated Oct. 26, 1978, Ser. No. 733,508, Oct. 18, 1976. Continuation of Ser. No. 134,758, Mar. 28, 1980, abandoned. Application for reissue Oct. 19, 1981, Ser. No. 312,482

Claims priority, application United Kingdom, Oct. 20, 1975, 42902/75

Int. Cl.³ C09K *13/06*

U.S. Cl. 106—3 **13 Claims**

1. An aluminum polishing solution consisting essentially of

(a) phosphoric and sulphuric acid in a relative proportion of from 1.5 to 1:1.5, measured as [40 percent P_2O_5] phosphoric acid *having a specific gravity of 1.75* and 98 percent sulphuric acid and together constituting at least 90 percent of the total composition;

(b) nitric acid in a proportion by weight of from 1.2 to 4.2 percent as 100 percent nitric acid;

(c) dissolved copper in a concentration of from 0.01 to 0.2 percent by weight;

(d) dissolved aluminum in a concentration of between zero and saturation;

(e) from 0.05 percent to 0.7 percent by weight of an organic etch inhibitor which is a bath soluble organic compound having an aromatic ring selected from the group consisting of benzene, naphthalene, benzoquinone, pyridine, pyrazine, and melamine rings and at least 2 hetero atoms selected from the group constituting nitrogen oxygen and sulphur atoms conjugated with said aromatic ring; and

(f) the balance substantially of water.

13. An aluminum polishing solution consisting essentially of

(a) phosphoric and sulphuric acid in a relative proportion of from 1:2 to 3:1, measured as phosphoric acid having a specific gravity of 1.75 and 98 percent sulphuric acid and together constituting at least 90 percent of the total composition;

(b) nitric acid in a proportion by weight of from 1.2 to 4.2 percent as 100 percent nitric acid;

(c) dissolved copper in a concentration of from 0.01 to 0.2 percent by weight;

(d) dissolved aluminum in a concentration of between zero and saturation;

(e) from 0.05 percent to 0.7 percent by weight of benztriazole;

(f) the balance substantially water.

Re. 31,396

A-21978 ANTIBIOTICS AND PROCESS FOR THEIR PRODUCTION

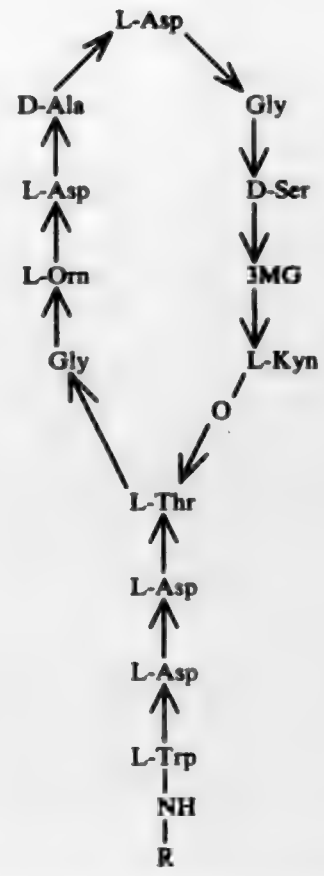
Robert L. Hamill, Greenwood, and Marvin M. Hoehn, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Original No. 4,208,403, dated Jun. 17, 1980, Ser. No. 951,695, Oct. 16, 1978. Application for reissue Jul. 19, 1982, Ser. No. 399,655

Int. Cl.³ C12D *9/14*; C07C *103/52*; A61K *37/00*

U.S. Cl. 260—112.5 R **11 Claims**

11. The A-21978C antibiotic complex, which is produced by submerged aerobic cultivation of Streptomyces roseosporus NRRL 11379 or an A-21978C-producing mutant thereof; and which comprises factors C_0, C_1, C_2, C_3, C_4 and C_5, which have the following structural formula:



wherein 3MG represents L-threo-3-methylglutamic acid, and R represents a specific fatty acid moiety as follows: 8-methyldecanoyl (C_1), 10-methylundecanoyl (C_2), 10-methyldodecanoyl (C_3), C_{10}-alkanoyl (C_0), C_{12}-alkanoyl (C_4), and [C_{13}-alkanoyl] *C_{12}-alkanoyl* (C_5).

Re. 31,397

ORAL COMPOSITIONS

Maria Rodon, Raleigh, N.C., assignor to Beecham Inc., Clifton, N.J.

Original No. 4,183,916, dated Jan. 15, 1980, Ser. No. 892,276, Mar. 31, 1978. Application for reissue Nov. 9, 1981, Ser. No. 223,312

Int. Cl.³ A61K *7/16, 7/22*

U.S. Cl. 424—54 **14 Claims**

[1. An oral composition useful for controlling dental plaque and gingivitis and for preventing caries which comprises from 0.1% to about 1.0% w/w or w/v of a cationic antimicrobial agent otherwise tending to stain teeth, and useful for controlling dental plaque and gingivitis and for preventing caries selected from the group consisting of a bisbiguanide or quaternary ammonium compound and from 0.01% to 10.0% w/w or w/v of malic acid effective to inhibit said teeth staining, in combination with a pharmaceutically acceptable carrier.]

Re. 31,398

ELECTRONIC AUDIO SIGNALLING DEVICE FOR TELEPHONES

Terry D. Bush, and Dennis J. Denen, both of Columbus, Ohio, assignors to Floyd Bell Associates, Inc., Columbus, Ohio

Original No. 4,214,131, dated Jul. 22, 1980, Ser. No. 970,633, Dec. 18, 1978. Continuation-in-part of Ser. No. 843,456, Oct. 19, 1977, Pat. No. 4,157,459. Application for reissue Jun. 22, 1981, Ser. No. 276,204

Int. Cl.³ H04M *1/00*

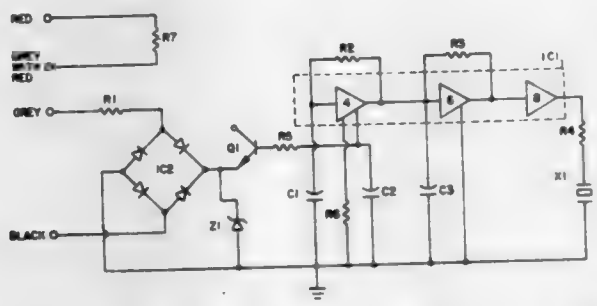
U.S. Cl. 179—84 T **21 Claims**

10. A signalling device for telephones or the like comprising:

a set of leads adapted to be connected to a telephone line for receiving signalling voltage therefrom;

a square wave oscillator audio-signalling circuit connected to said leads and including a square wave driving network with

oscillator frequency controlling components connected to a buffer driving network including a driven audio signal device; a rectifying and voltage-limiting network connected between said leads and said oscillator circuit for receiving, rectifying and limiting the voltage supplied by the telephone line to a selected range and applying the resulting output voltage to the oscillator circuit, said rectifying and voltage limiting network including a full wave bridge rectifier which effects full wave rectification of the incoming signal voltage, a voltage dropping element connected with the bridge rectifier to serve as a current limiting element to protect the rectifier, a voltage clamping element connected to the output of the rectifier and



cooperating with said voltage dropping element for suppressing the application of voltages other than said proper signalling voltages to the oscillator circuit; and a disabling network connected between said leads and the oscillator circuit for disabling the oscillator circuit except when proper signalling voltage is supplied through said leads so as to prevent undesired audio outputs in the telephone to which it is applied when voltages other than proper signalling voltages are present at said leads, said disabling network including signal-attenuating components for preventing application of voltages to the oscillator circuit unless they are in the selected range of proper signalling voltages.

Re. 31,399

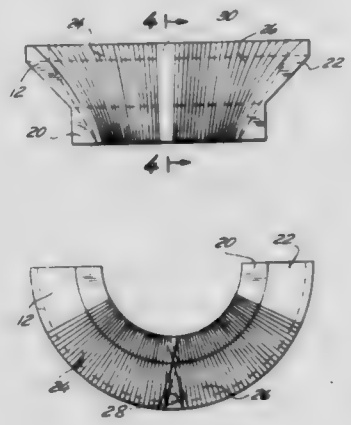
VERTICAL COIL FOR A DEFLECTION YOKE

Bernard Chasens, El Paso, Tex., assignor to General Instrument Corp., Clifton, N.J.

Original No. 4,003,012, dated Jan. 11, 1977, Ser. No. 620,944, Oct. 9, 1975. Application for reissue Sep. 20, 1982, Ser. No. 420,012

Int. Cl.³ H01H *1/00, 5/00*

U.S. Cl. 335—213 **8 Claims**



1. A deflection yoke coil of the type for use with a tri-gun in-line cathode ray tube, said yoke coil comprising a core and a winding formed of continuous wire turns, said winding comprising first and second sections and [one or] more *than one* crossover turn[s] connecting said sections, said sections being spaced from each other along said core with said crossover turns extending therebetween on the outer surface of said core, said sections defining an area on the inner surface of said core extending from the interior to the exterior edge of said core which is substantially devoid of crossover turns.

PLANT PATENTS

GRANTED SEPTEMBER 27, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,109
ROSE PLANT
Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208
Filed May 4, 1981, Ser. No. 259,937
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by buds and flowers of contrasting red and yellow color, the buds and flowers resembling Over the Rainbow (miniature — U.S. Plant Pat. No. 3,472) in size and shape; and further characterized by a plant which is vigorous and compact, easy to propagate from cuttings or by budding, with an abundance of disease resistant small semi-glossy to glossy foliage and an abundance of flowers borne singly or several to the stem in loose clusters.

5,110
ROSE PLANT
Ralph S. Moore, Visalia, Calif., assignor to Sequoia Nursery, Visalia, Calif.
Filed Jan. 25, 1982, Ser. No. 342,119
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit, substantially as illustrated and described, characterized by buds and flowers similar in form to Over the Rainbow (miniature — U.S. Plant Pat. No. 3,472) but slightly larger in size, the color being a blend of red, coral and yellow, the upper side of petals being deeper color than lower side, giving the flower a bi-color effect and (a) the open petals becoming quilled (pointed as in a Hybrid Cactus type Dahlia); (b) each petal having a narrow gold (or yellow) margin, and further characterized by a vigorous, compact plant, usually broader than tall, the said plant being easy to propagate from softwood cuttings, with an abundance of small semi-glossy to matt foliage, the flowers being born singly or several to the stem in loose spray or cluster.

5,111
ROSE PLANT
Ralph S. Moore, Visalia, Calif., assignor to Sequoia Nursery, Visalia, Calif.
Filed Jan. 29, 1982, Ser. No. 344,032
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—8 1 Claim

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers which are essentially white, the bud being pointed in the early opening stage, resembling in form Jet Trail (miniature — U.S. Plant Pat. No. 2,683), with the full open flower being rather flat with many (40 or more) petals ranging from long (outer petals) to quite short (inner petals); and further characterized by a plant of compact, vigorous, upright shape, with main stems and shoots of average thorniness, the said plant being easy to propagate from softwood cuttings; with an abundance of small semi-glossy to glossy foliage, the flowers being born usually several to the stem in clusters.

5,112
INTERSPECIFIC ROOTSTOCK TREE 4-G-816
Chris F. Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351
Filed Apr. 29, 1982, Ser. No. 373,252
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—38 1 Claim

1. A new and distinct variety of interspecific (plum-peach) rootstock tree substantially as illustrated and described; the variety being particularly characterized by its ability to reproduce by cuttings planted directly in the field, and—when used as a rootstock for peaches and nectarines—creates dwarfism and, with substantial uniformity, reduces the size of the scion tree to approximately thirty-five percent of the normal height of the same scion tree budded on Nemaguard rootstock; and further characterized by being well anchored, producing few root and trunk suckers, and influences the fruit of the scion tree to attain, in comparison to budding on Nemaguard rootstock, earlier maturity by two to three days, approximately one-eighth larger size, and an increase of one to one-and-one-half percent in soluble solids.

PATENTS

GRANTED SEP. 27, 1983

ERRATA

For CLASS	See PATENT NO.
361–019	4,406,073
098–002	4,406,214
062–324	4,406,306
428–577	4,406,411
441–030	4,406,631
521–069	4,406,816

PATENTS

GRANTED SEPTEMBER 27, 1983

GENERAL AND MECHANICAL

4,406,021

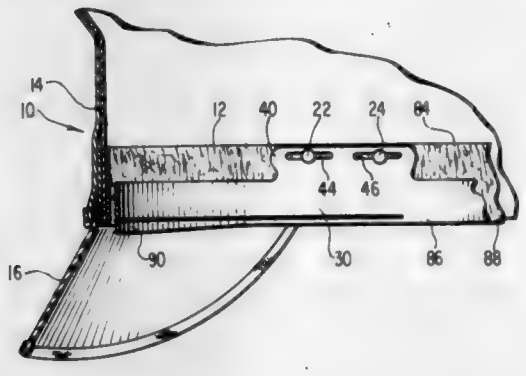
UNIFORM CAP WITH ADJUSTABLE SWEATBAND

Bernard Bloom, C/O Midway Cap. Co., 2301 W. St. Paul Ave., Chicago, Ill. 60647

Continuation-in-part of Ser. No. 236,294, Feb. 19, 1981, abandoned. This application Feb. 10, 1982, Ser. No. 347,488

Int. Cl.³ A42B *5/00*

U.S. Cl. 2—181 **13 Claims**



1. In a uniform cap having a continuous frame extending about the cap, an improved size adjustment means for use with fixed size frames of various widths, said means being adjustable to provide an inner diameter of variable size comprising:

an adjustable sweatband having opposite ends;

means for connecting the opposite ends of said sweatband to form a continuous band around the inner surface of said frame, said connecting means being adjustable to provide an inner diameter of variable size; and

a pair of guide means secured to the inner surface of said frame on opposite sides thereof for slidably suspending said adjustable sweatband therefrom, said guide means being reversible to accommodate frames having different widths such that the sweatband when suspended from said guide means has a lower edge aligned with the lower edge of each of said frames of differing widths.

4,406,022

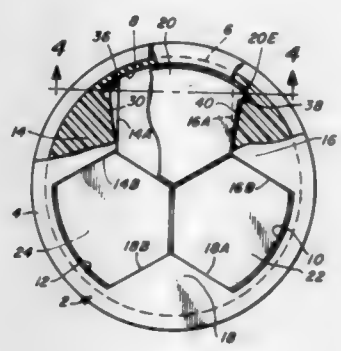
PROSTHETIC VALVE MEANS FOR CARDIOVASCULAR SURGERY

Henry R. Roy, Torrington, Conn., assignor to Kathryn Roy, Torrington, Conn.

Filed Nov. 16, 1981, Ser. No. 321,988

Int. Cl.³ A61F *1/22*

U.S. Cl. 3—1.5 **3 Claims**



1. Improved prosthetic valve means for use in cardiovascular surgery including a retainer ring and leaflet members supported in the retainer ring for hinging movement to simulate movement of heart flap members in opening and closing a passageway through the retainer ring for flow of blood,

characterized in that each of the leaflet members includes an arcuate portion occurring in spaced relation to adjacent portions of the retainer ring, hinging studs located at opposite extremities of each of the arcuate portions, seating edges extending inwardly from respective hinging studs in substantially parallel relationship and inner extremities of the leaflet members formed with converging edges which intersect respective seating edges of the leaflets, and said valve means further characterized in that the inner peripheral surface of the retainer ring is constructed with circumferentially spaced apart lobes, each of which has inwardly projecting sides which intersect one another, and each of the lobe sides being recessed to form a hinging aperture defined by vertically and horizontally disposed stop edges which intersect one another substantially at right angles, said stop edges being constructed and arranged to receive the said seating edges thereagainst, each of the hinging apertures being formed at points closely adjacent to points of intersection of the stop edges with hinging stud sockets and each of the said leaflets being formed with medial lines of bending along which the leaflets are expanded to locate the said hinging studs in respective hinging stud sockets and to provide for only hinging studs and seating edges being engageable with the retainer ring.

4,406,023

STEMMED FEMORAL COMPONENT FOR THE HUMAN HIP

William H. Harris, 665 Concord Ave., Belmont, Mass. 02178

Filed Apr. 19, 1982, Ser. No. 369,510

Int. Cl.³ A61F *1/04*

U.S. Cl. 3—1.912 **13 Claims**



1. A femoral component for hip prostheses for the human hip comprising:

an elongated femoral stem adapted to be inserted into a medullary canal of a femur bone of a human being, said femoral stem having a metaphyseal portion adapted to be placed in a medullary area of the femur and a diaphyseal portion adapted to extend to an isthmus of the medullary canal of the femur, the metaphyseal portion of the stem having lateral, medial, anterior and posterior surfaces;

porous means disposed on the lateral, posterior and anterior surfaces of said metaphyseal portion of said stem for permitting bony ingrowth from the proximal end of the femur into said stem, the medial surface of the metaphyseal portion of the stem and all external surfaces of the diaphyseal portion of the stem being smooth so as to prevent bony ingrowth from the femur to said stem in the diaphyseal portion and on the medial surface of the metaphyseal portion of said stem; and

a collar disposed on the proximal end of said stem adjacent said metaphyseal portion thereof and extending transversely of the direction of elongation of said stem beyond the medial surface but not beyond the lateral, posterior and anterior surfaces for enabling a direct osteotomy to be

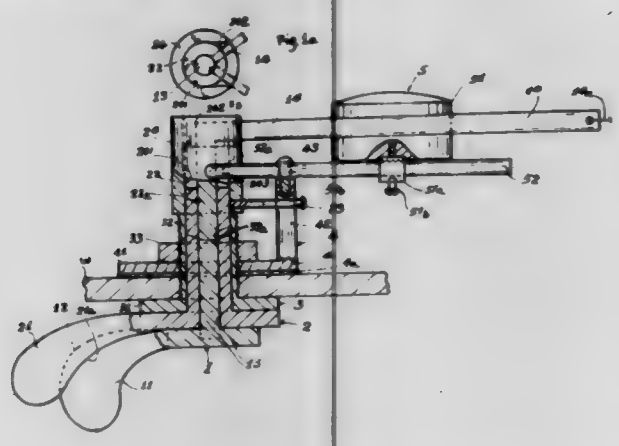
performed on the lateral, anterior and posterior surfaces of the metaphyseal portion of the stem.

4,406,024

FLUSHING CONTROLLER FOR TOILET

Huan-Juei Chiu, and Ming-Sheng Chiu, both of 10-4 Fl., No. 62, Chang Chun Rd., Taipei, Taiwan

Filed Apr. 5, 1982, Ser. No. 365,833
Int. Cl.³ F03D 1/14
U.S. Cl. 4—324 **7 Claims**



1. A flushing controller for toilet comprising:
a variable flushing actuator extending a spindle to connect a lever to pull the toilet flush valve;
a pre-set flushing actuator formed with a central hollow hole to freely insert said spindle of said variable flushing actuator;
a fixing bush extending a bolt which is formed with a central hollow hole to freely insert said spindle of said pre-set flushing actuator and fixing both said actuators on a wall of the toilet tank by a nut;
a pivotting means fixed on the tank wall, and
a float-actuated control lever which is pivotedly fixed onto said pivotting means and is adjustably fixed with a float on its lower portion to biasedly force a hook portion, formed on its upper portion to engage with a recess on said spindle of said pre-set flushing actuator.

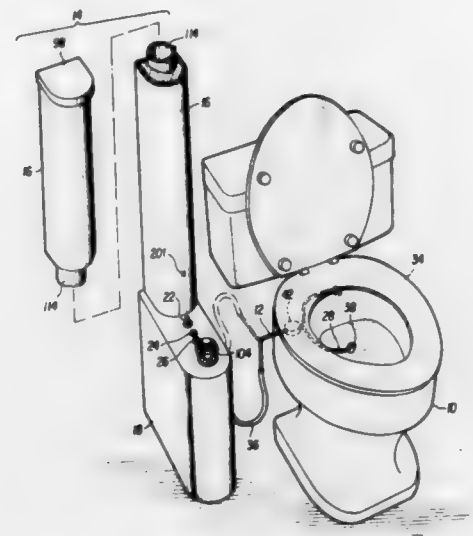
4,406,025

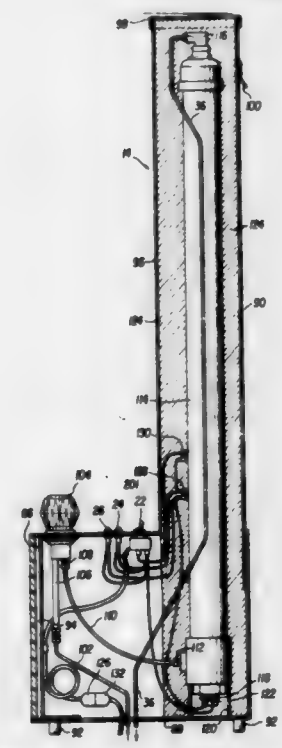
BIDET APPARATUS FOR USE IN CONNECTION WITH A CONVENTIONAL FLUSH TOILET

Lewis F. Huck, and James J. Huck, both of 15127 Kimberley Lane, Houston, Tex. 77079

Filed Nov. 6, 1980, Ser. No. 204,518
Int. Cl.³ A61H 35/00; A47K 3/22
U.S. Cl. 4—443 **4 Claims**

1. A bidet apparatus for use in connection with a conventional flush toilet having a seat with a central opening therein, comprising:
(a) a rigid bidet tube having a bent handle portion at one end thereof, an arcuate spray arm portion and attached spray nozzle at the opposite end thereof, and an intermediate straight portion between said handle portion and said arcuate spray arm; and,
(b) a supporting means, attachable to the underside of the toilet seat, for supporting the intermediate straight portion of said bidet tube in a manner permitting said spray arm to be pivoted independently about a first axis common with the axis of said intermediate straight portion, and about a second axis which is perpendicular to said first axis and passes through said supporting means, so that said spray arm portion can be pivoted about said axes from a storage position beneath the rear part of the toilet seat to a use position below the opening in the toilet seat, and said supporting means
(i) is arranged with an outer ring fixedly attached to the underside of the toilet seat, and
(ii) has an inner cylindrical disc with a flange portion on one end thereof and a lateral bore for rotatably receiving the intermediate straight portion of the the bidet arm, said disc being rotatably received within the outer





ring in a manner such that the flange portion of said disc is retained between said outer ring and the underside of the toilet seat.

4,406,026

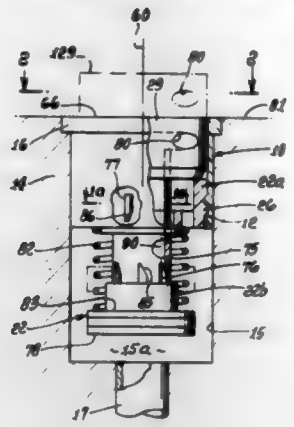
POOL OR SPA SWEEP JET HEAD ATTACHMENTS

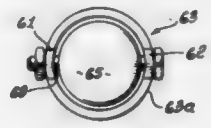
Wayne D. Steimle, 2085 Vista Ave., Arcadia, Calif. 91006

Filed Sep. 7, 1982, Ser. No. 415,149
Int. Cl.³ E04H 3/16, 3/18
U.S. Cl. 4—492 **18 Claims**

1. In combination with a pool jet head receptacle attachable to pool wall structure, the receptacle having a bore, an open top, an open bottom, and an internal thread, the improvement comprising
(a) an attachment in the form of a body having a tubular wall receivable downwardly into said receptacle, said wall spaced inwardly from said receptacle bore,
(b) external threading on an annular return bend surface defined by the body outwardly of said wall to rotatably attach to the receptacle thread,
(c) a head on the body to close the receptacle open top; said

head engaging the top of the receptacle to limit said body downward reception into the receptacle,





(d) and manipulable means on the top of the head, including spaced shoulders adapted to be engaged by a rotary tool operable to unscrew the body from the receptacle.

4,406,027

ARTICULATED FRAMEWORK FOR BED, RELAXATION SEAT OR ARMCHAIR

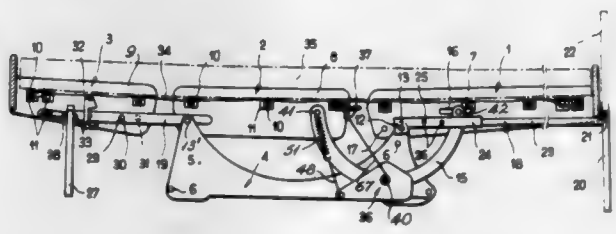
Maurice Bourda, Geneva, Switzerland, assignor to Etablissement Conceptex, Switzerland

Filed Aug. 28, 1979, Ser. No. 70,497

Claims priority, application Switzerland, Aug. 30, 1978, 9142783; Aug. 30, 1978, 9145789

Int. Cl.³ A47C *19/04, 17/16;* A61G *7/00*

U.S. Cl. 5—17 **9 Claims**



1. An articulated framework for a bed, relaxation seat, or armchair and comprising:

three parts mounted on a support, said three parts forming respectively a back-rest, seat, and knee-rest, at least one of said three parts pivotal about an articulation axis;

adjustment means adapted for adjustment of said articulation axis of at least one of said knee-rest and said back-rest relative to said seat to modify said framework lengthwise, whereby mattresses of different lengths may be accommodated by said framework; and

blocking means for locking said back-rest in position relative to said articulation axis.

4,406,028

METHOD OF DETECTING THE RELEASE OF DYE FROM LAUNDRY DURING A WASHING OPERATION IN A WASHING MACHINE AND IMPLEMENTATION OF SAID METHOD

Jean-Pierre Hazan, Sucy-en-Brie; Michel Steers, Chennevieres-sur-Marne, and Jean Caron, Evreux, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

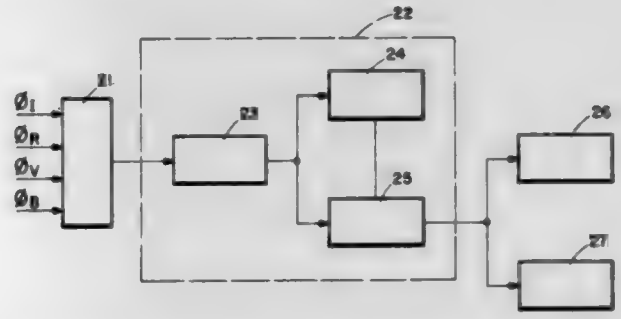
Filed Jun. 18, 1981, Ser. No. 274,935

Claims priority, application France, Jun. 18, 1980, 80 13536

Int. Cl.³ D06F *35/00*

U.S. Cl. 8—158 **17 Claims**

1. A method of detecting the release of one or more dyes from laundry in an automatic washing machine during a washing operation which comprises, during said washing operation, passing a luminous flux comprising light in the visible and the infrared part of the spectrum through a certain volume of the washing water where said luminous flux is subject to absorption and diffusion, simultaneously and separately measuring the luminous flux in the visible region and in the infrared region after absorption and diffusion thereof, the visible region including one or a plurality of absorption bands for said dyes, subsequently determining the ratios between the measurement results obtained in the visible region and a combination of measurement results obtained in both the visible and the infrared region, the last-mentioned combination being only affected to a small extent by the release of dye, and detecting the release of dye by the detection of variations of at least one of said ratios as a function of time.



5. A device for detecting the release of dye from laundry in an automatic washing machine comprising, a source of light which emits light in the visible and infrared region of the spectrum, a light transparent receptacle which communicates with the washing tub and is exposed to said light, first and second detectors, one of which is sensitive to infrared and the other to the visible part of the spectrum, said detectors being arranged near said receptacle opposite one wall thereof, means for measuring the signals supplied by the detectors and for calculating at least one ratio of measurement results obtained in the visible part of the spectrum over a combination of measurement results obtained in the visible and the infrared part of the spectrum, and means for detecting variations of said ratios as a function of time.

4,406,029

MACHINE FOR REMOVING BURRS FROM SHEET METAL OR THE LIKE

Udo Kunz, Lörrach-Haningen, Fed. Rep. of Germany, assignor to Kunz Maschinen - und Apparatebau GmbH, Lörrach-Haningen, Fed. Rep. of Germany

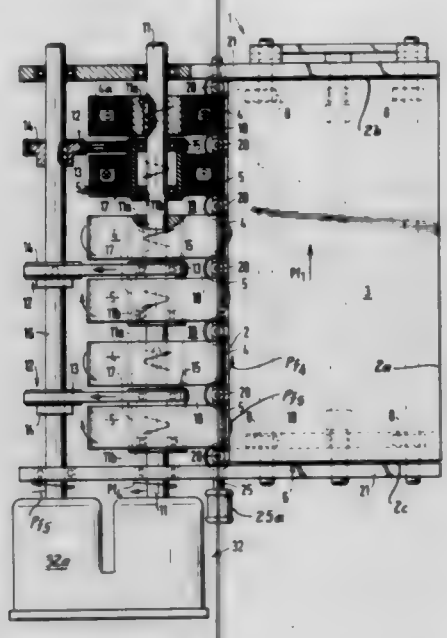
Filed Aug. 19, 1981, Ser. No. 294,160

Int. Cl.³ A46B *13/02*

U.S. Cl. 15—77 **65 Claims**

1. A machine for removing defects from workpieces comprising:

(a) a pair of tools for the removal of defects from a workpiece;



(b) a common shaft for said tools defining a predetermined axis, said tools being mounted on said shaft and being rotatable about said axis; and

(c) means for rotating said tools in opposite directions.

4,406,030

PIPELINE SPHERES

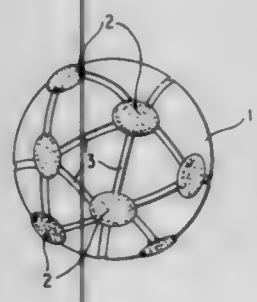
Douglas J. Platts, Creswell, England, assignor to General Descaling Company Limited, Nottinghamshire, England

Filed Oct. 30, 1981, Ser. No. 316,909

Claims priority, application United Kingdom, Oct. 31, 1980, 8035067

Int. Cl.³ B08B 9/04

U.S. Cl. 15—104.06 R 4 Claims



1. A spherical pig the surface of which comprises discrete areas of abrasive material, said discrete areas being interconnected by channels formed in the said surface, said channels permitting passage of liquid between said pig and a pipe in which said pig is moving.

4,406,031

CLEANING MEMBER FOR CLEANING THE INTERIOR OF HEAT EXCHANGER TUBES

Klaus Eimer, Ratingen; Felix Kraker, Duisburg; Hans W. Schildmann, Heiligenhaus; Günther Schmitz, Moers, and Hans Sonnenschein, Essen, all of Fed. Rep. of Germany, assignors to Taprogge Gesellschaft mbH, Düsseldorf, Fed. Rep. of Germany

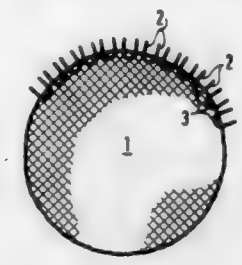
Filed Jun. 9, 1981, Ser. No. 271,824

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1980, 3021698

Int. Cl.³ B08B 9/04

U.S. Cl. 15—104.06 R 4 Claims

1. Cleaning member for cleaning the interior of heat exchanger tubes by circulating through the tubes under pressure of liquid in the tubes, comprising a spherical homogeneous element formed of uncoated sponge rubber being directly exposed to the liquid in the tubes for absorbing the liquid and having a cross section adapted to suit the diameter of the heat exchanger tube, and abrasive elements connected to said sponge rubber element, said abrasive elements being in the



form of non-metallic bristles each having a bristle shaft freely extending beyond the surface of the sponge rubber element, and a bristle base directly molded into the sponge rubber of said sponge rubber element anchoring said bristles.

4,406,032

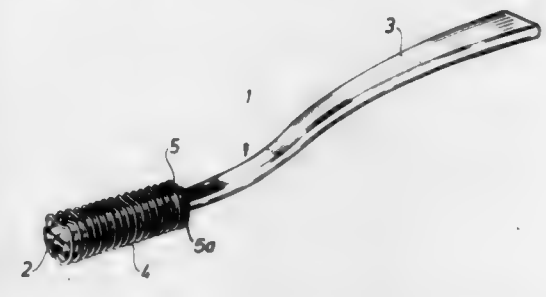
TOOTHBRUSH

Marcus Diamant, Kungsgatan 1, S-302 45 Halmstad, Sweden

Filed Mar. 18, 1981, Ser. No. 245,064

Int. Cl.³ A46B 9/04

U.S. Cl. 15—167 R 16 Claims



1. A toothbrush comprising a handle and a brushing head carried by said handle;

said brushing head including a plurality of brushing filaments spaced apart in the longitudinal direction of the handle, each filament extending substantially across the entire width of the handle, each brushing filament being formed of elastically resilient material;

said brushing filaments defining a brushing surface shaped like part of a helical spring; the turns of the helical spring simulant sections of said brushing head having surface irregularities to increase brushing efficiency;

each of the filament turns being fixed to the sides of the handle and encircle (go on both sides of) the handle.

4,406,033

FASTENER FOR ATTACHMENT OF A CONTINUOUS ARTICLE TO A SUPPORT

Lisa E. Chisholm, Oak Park, and Richard F. Daubert, Tinley Park, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

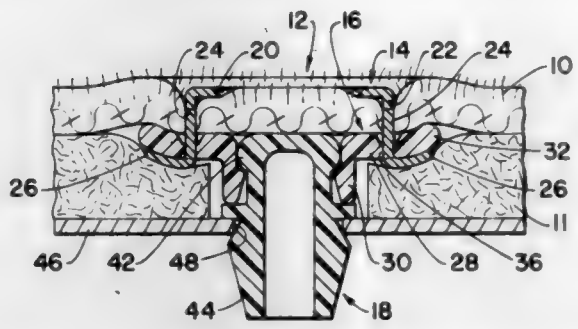
Filed Jul. 23, 1981, Ser. No. 286,145

Int. Cl.³ A47G 27/04

U.S. Cl. 16—4 12 Claims

1. A multi-part fastener adapted to releasably attach carpet-like and panel-like members to a support, said multi-part fastener comprising a plurality of fastening elements including at least first and second fastener elements, said first fastener element includes an annular coupler having a top portion and a plurality of rigid projections extending from the outer edge of one side of said top portion, said top portion having means integrally associated with the outer edge thereof for limiting snagging-type of engagement of objects that contact there-

with, said second fastener element having fastening means extending from one side thereof for attachment to a support and a generally annular and radially extending flange with a non-constant outer diameter, whereby rotation of said first and second fastener elements relative to the carpet-like member is



inhibited and said fastener fastening means is engageable with said support to releasably attach said carpet-like member thereto, said rigid projections of said coupler adapted to penetrate the carpet-like member and the radially extending flange of said second fastener and be folded under said flange to lock the carpet-like member between said first and second elements.

4,406,034

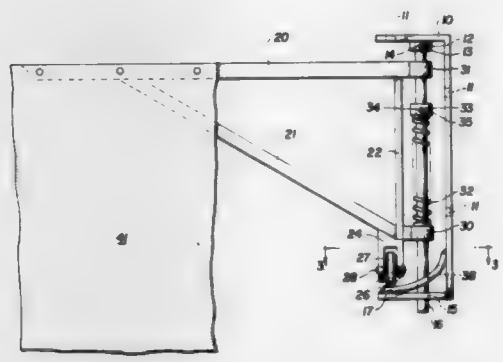
SELF-CLOSING DOOR HINGE

Elmer A. Lindemann, Ft. Wright, Ky., assignor to Superior Door Corporation, Cincinnati, Ohio

Filed Jul. 21, 1981, Ser. No. 285,853

Int. Cl.³ E05F 1/14

U.S. Cl. 16—284 **3 Claims**



1. A self-closing door hinge in combination with a curtain door mounted within a door jam comprising, a channel section affixed to said door jam, a mounting rod mounted within said channel section, an arm rotatable on said mounting rod to which the curtain door is secured, a spring surrounding a selected portion of said mounting rod a roller secured to said arm, an oval curved sheet member affixed to said channel which forms a right-hand helix intersecting a lefthand helix on which said roller rides, and a collar adjustably mounted on said mounting rod to secure said spring in a selected compressed position to provide spring action to supplement the gravity closing of the door.

4,406,035

HINGE ASSEMBLY STRIP

Karl-Ernst Schmale, Lüdenscheid, Fed. Rep. of Germany, assignor to Schmale GmbH & Co. KG, Lüdenscheid, Fed. Rep. of Germany

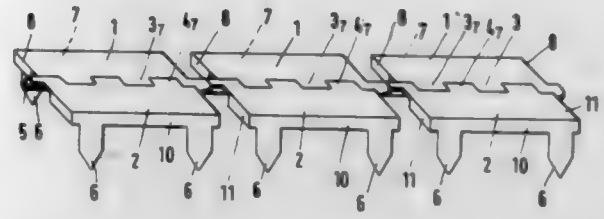
Filed Jan. 22, 1980, Ser. No. 114,315

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1979, 2936603

Int. Cl.³ E05D 5/06

U.S. Cl. 16—384 **13 Claims**

1. In a longitudinally extending hinge assembly strip of indeterminate length formed of a series of hinges connected to one another; each hinge including first and second hinge plates pivotally coupled along adjoining longitudinal edges by a hinge joint including a longitudinally extending hinge pin; the improvement wherein each said hinge plate has at least one free edge and a bent rim extending along said free edge and having a plane substantially perpendicular to the hinge plate,



further wherein each hinge plate has at least one drive-in point being coplanar with said plane of said bent rim and further wherein said hinge pin is of indeterminate length and connects consecutive hinges to one another.

4,406,036

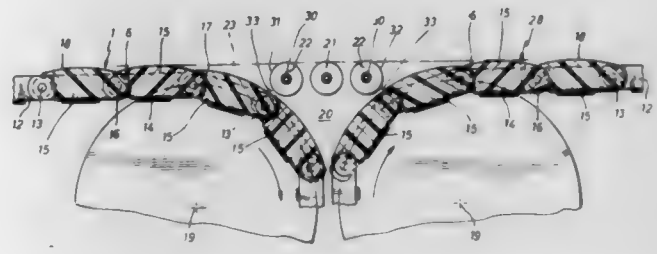
APPARATUS FOR CONVEYING ANIMALS TO BE STUNNED

Johan W. Nijhuis, Winterswijk, Netherlands, assignor to Machinefabriek G. J. Nijhuis B.V., Netherlands

Continuation-in-part of Ser. No. 148,033, May 8, 1980, abandoned, and Ser. No. 299,541, Sep. 4, 1981, which is a continuation-in-part of Ser. No. 202,322, Oct. 30, 1980, abandoned, which is a continuation of Ser. No. 905,371, May 12, 1978, abandoned. This application May 28, 1982, Ser. No. 383,284

Int. Cl.³ A22B 1/00, 3/06

U.S. Cl. 17—1 A **8 Claims**



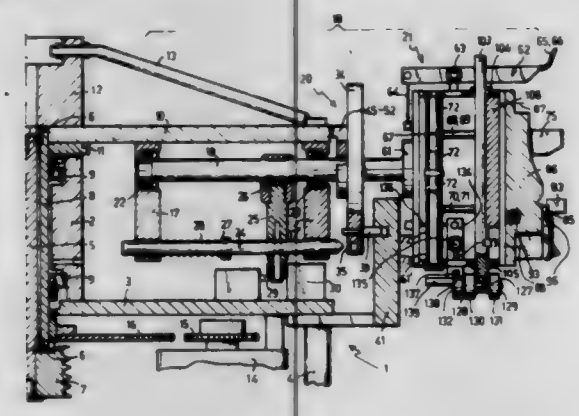
1. An apparatus for stunning animals to be slaughtered, comprising:

at least one animal conveyor, said conveyor including two endless conveyor means, said conveyor means comprising a plurality of chain links, said conveyor means being positioned to form a substantially V-shaped passageway therebetween, each one of said conveyor means consisting of endless chains of chain links which are hinged together, provided with a plurality of plates, each plate being associated with a chain link, each plate having an operating surface, said plates being contiguous with respect to each other at the location of the operating surface to minimize gaps between the plates, said plates having a dimension in the direction of conveyance which corresponds with the length of a chain link, said plates being operable to hinge about each other at their adjacent edges by means of curved edge portions, said curved edge portions being concentric with the associated hinge shaft of the chain links, the curved edge portions of adjacent plates being in correspondence with each other to minimize the formation of gaps between adjacent plates as the plates revolve around a reversing wheel in order to avoid the entrainment of an animal's hide and hair in the conveyor means.

4,406,037
DEVICE FOR CUTTING SLAUGHTERED POULTRY IN SEPARATE PIECES

Jacobus E. Hazenbroek, Numansdorp, Netherlands, assignor to Systemate B.V., Numandorp, Netherlands

Filed Jan. 22, 1981, Ser. No. 227,515
Claims priority, application Netherlands, Jan. 23, 1980, 8000424
Int. Cl.³ A22C *21/00*
U.S. Cl. 17—11 14 Claims



1. An apparatus for cutting slaughtered poultry into separate pieces, comprising,

a frame,

a plurality of cutting stations which are spaced apart,

a holding means for holding a bird, said holding means being supported on the frame and being movable in a machine direction to carry a bird successively through said cutting stations, said holding means being rotatable to change the orientation of a bird thereon with respect to the machine direction,

drive means for moving the holding means in said machine direction to carry the holding means through said cutting stations,

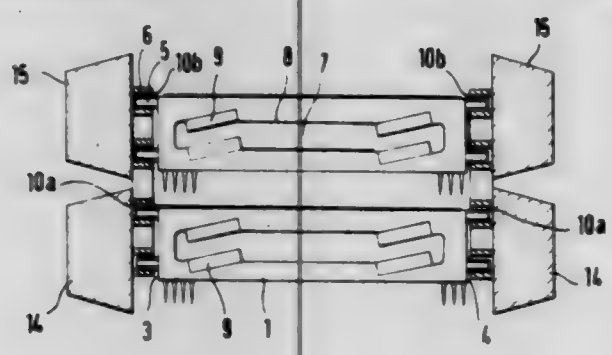
reorientation means operable while the holding means is located between successive cutting stations for unblocking the holding means to permit rotation thereof, rotating the holding means to a different orientation, and blocking the holding means to retain it at said different orientation relative to the machine direction,

each of said cutting stations having a driven knife positioned in the path of a bird on said holding means.

4,406,038
STRETCH HEAD

Josef Egerer, Schwabach, Fed. Rep. of Germany, assignor to Staedtler & Uhl, Schwabach, Fed. Rep. of Germany

Filed Jul. 24, 1981, Ser. No. 286,442
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028376
Int. Cl.³ D01G *19/10*
U.S. Cl. 19—129 R 9 Claims

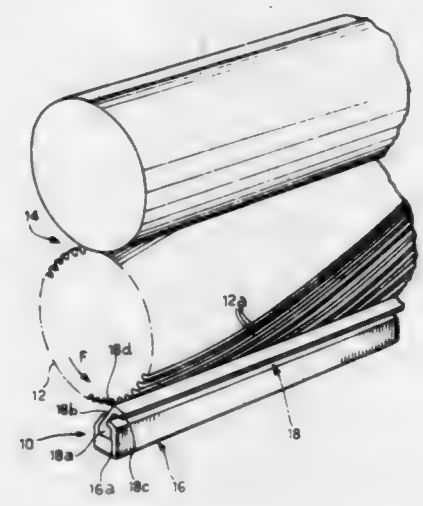


1. A stretch head for a stretching mechanism comprising a plurality of needle rods each having a plurality of needles, first guide means for guiding said needle rods along a generally planar working path, second guide means for guiding said needle rods along a return path, said working path being generally parallel to and vertically spaced from said return path, linear motor means operable to move said needle rods along said planar working path along material to be warped and along said return path, screw means disposed on the ends of said planar working path and rotatable about axes generally perpendicular to said planar working path, said needle rods having means defining recesses, said screw means having threads which engage said recesses for moving said needle rods vertically between said planar working path and said return path.

4,406,039
DEVICE FOR CLEANING THE ROLLS OF DRAFT ROLLING MILLS OF TEXTILE MACHINES

Hans R. Hotz, Via Per Stabio, CH-6853 Ligornetto, Switzerland

Filed Aug. 3, 1981, Ser. No. 289,648
Claims priority, application Italy, Aug. 4, 1980, 53458/80[U]
Int. Cl.³ G03G *15/00*; D01H *5/60*
U.S. Cl. 19—262 3 Claims



1. Device for cleaning the rolls of draft rolling mills of textile machines, including a support bar arranged parallel to the axis of the roll, and a resiliently-deformable cleaning fillet carried by the support bar, said fillet having a longitudinally extending angled lip in pressure contact with the circumferential surface of the roll, wherein the improvement consists in said cleaning fillet having a longitudinal stiffening reinforcement in correspondence with the zone adjacent the contact lip and composed of a longitudinally extending reinforcing rib formed integrally with the cleaning fillet and extending parallel to the longitudinally extending contact lip.

4,406,040
ILLUMINATION DEVICES

Robert P. Cannone, P.O. Box 3717, Soldotna, Ak. 99669

Filed Nov. 27, 1978, Ser. No. 963,749
Int. Cl.³ A44B *21/00*
U.S. Cl. 24—3 J 2 Claims



1. A flashlight holding implement constructed so as to per-

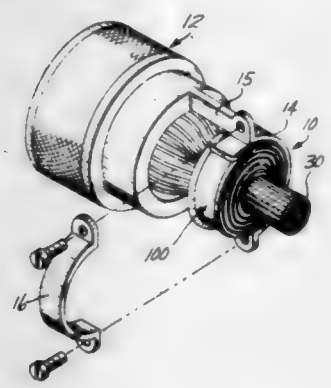
mit the attachment of a flashlight to a hat brim and allow the angular adjustment of the flashlight comprised of; a clip constructed of a resilient material, said clip having an elongated top portion and a reverse-bend and a bottom portion extending back to a length of the top portion and separated from said top portion at such distance as to permit the resiliency of the construction material to firmly clasp a hat brim between the slot formed by the top and bottom portions of the clip, said clip also comprised of two tabs extending beyond the reverse-bend of the clip and positioned perpendicular to the plane of said top portion, said tabs each containing an aperature positioned such that a single straight rod may be connected to each aperature with the axis of the rod parallel to the length of said reverse-bend, one of said tabs comprised of equally spaced ridges extending radially from the center of the aperature and protruding inward toward the other tab, the other of said tabs comprised of a slot to allow one end of said rod to be inserted therein, attached to said clip is an elongated plate comprised of said rod near the front end of said plate, said rod having an axis perpendicular to a main axis of the plate which is perpendicular to the planar portion of said plate and said rod having rod ends extending sufficiently beyond the plate to permit the plate to be held to previously said clip by inserting the rod ends into previously said aperatures, said plate also comprised of an expandable strap with which to fasten a flashlight, said expandable strap fixed to plate by gluing, riveting, or other means, said plate also comprised of a mating tab which co-operates with the previously said ridged tab on the clip, said mating tab positioned over the appropriate protruding rod end of said rod and comprised of ridges extending radially from the center of the appropriately protruding rod end and protruding outwardly from said plate, said plate fixed to said clip by inserting said rod ends into said aperatures and with the ridged tab on said plate mating with the ridged tab on said clip, said mating tabs forming an interlocking mechanism which permits the angular adjustment of said plate by rotating about the rod axis, such rotation permitted by the resiliency of the construction material.

4,406,041

ANTI-TELESCOPING CABLE CLAMP ASSEMBLY FOR WIRE BUNDLES

Alfonso DeAnda, Kent, and Leon R. Harris, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 7, 1981, Ser. No. 261,351
Int. Cl.³ F16G *11/04*
U.S. Cl. 24—115 R **3 Claims**



1. An anti-telescoping cable clamp assembly for a wire bundle comprising in combination:

clamp means including generally opposing first and second loop clamp portions for surrounding and supporting said wire bundle;

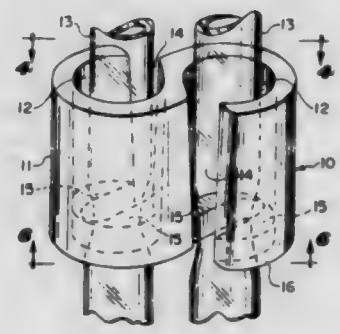
filler means disposed between said clamp means and said wire bundle, said filler means including a coiled strip of resilient material having a flat bottom portion concentrically wound about said wire bundle in a stack, said strip of resilient material having side gussets forming a track for preventing lateral telescoping of said stack along the length of said wire bundle.

4,406,042

TUBING CLIP

Charles J. McPhee, Huntington Beach, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Apr. 13, 1981, Ser. No. 253,343
Int. Cl.³ F16G *11/00*
U.S. Cl. 24—130 **9 Claims**



1. A tubing clip for securing a loop of flexible tubing, said clip comprising

a body member forming a pair of substantially parallel channels, each of said channels extending the length of said tubing clip, through which the flexible tubing can be passed, and

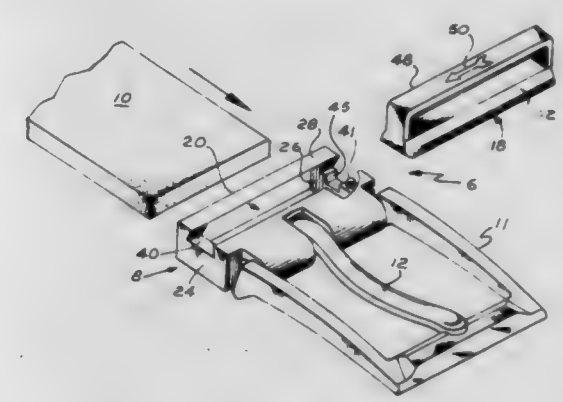
means for narrowing said channels formed at one end of each of sand channels, the opening through said narrowing means defining two substantially parallel sidewalls which narrow the channel sufficiently to prevent the tubing from slipping through the channel unaided while permitting the flow passage of the tubing to remain open and permitting said tubing to be manually slipped through said channel without binding.

4,406,043

BELT BUCKLE CONSTRUCTION

Harvey W. Friedman, Longmeadow, Mass., assignor to Buxton, Inc., Agawam, Mass.

Filed Oct. 12, 1982, Ser. No. 433,708
Int. Cl.³ A44B *11/10*
U.S. Cl. 24—171 **6 Claims**



1. Belt buckle construction comprising a frame and a keeper pivotably interconnected, the keeper including a rearwardly opening chamber adapted to receive therein the inner terminal end of a belt strap, a transversely extending slot opening through said chamber to expose a portion of the upper surface of said belt strap disposed in said chamber, a belt clamping member adapted to be slidably fitted transversely into said slot, and including a projecting portion on the inner surface thereof for clamping engagement with the exposed portion of the belt strap to lock one end of the strap and buckle together.

4,406,044

LOCK FOR SAFETY BELTS

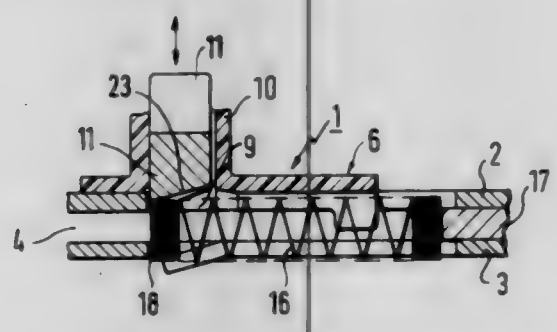
Franz Wier, Schwäbisch-Gmünd, Fed. Rep. of Germany, assignor to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Feb. 3, 1981, Ser. No. 231,010

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1980, 3004159

Int. Cl.³ A44B *11/25*

U.S. Cl. 24—230 AL 8 Claims



1. Lock for a safety belt comprising a belt lock having a metallic support with two spaced plates defining an insertion path, an insertion tab attached to a belt for insertion in the insertion path of the metallic support, a latch with a detent edge movable transversely to the direction of insertion of the tab to detent the insertion tab, a pressure organ mounted on the metallic support movable by hand against the force of a spring to move the latch transversely out of the detent position, and ejector formed by a spring element disposed in the insertion path ahead of the tab, and when the tab is detented by the latch, is braced resiliently against the detented insertion tab, said spring element, after the pressure organ has moved the latch out of the detent position, pushing the insertion tab out of the insertion path and following the insertion tab as it moves out from the insertion path, with the spring extending in the path beneath the latch to hold the latch in a position outside the inertion path, and wherein the spring element extends at its free spring end beyond the insertion path of the insertion tab and holds the latch in a position in which it is safely removed from the insertion path.

4,406,045

WARNING REFLECTOR

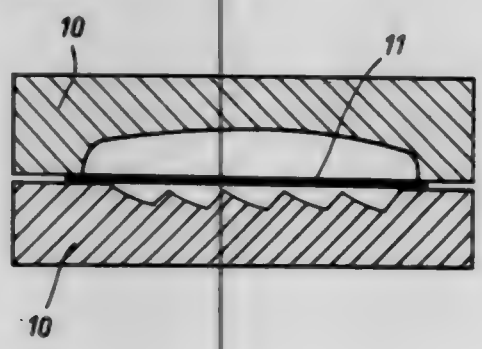
Kurt Schwab, Innsbruck, Austria, assignor to D. Swarovski & Co., Wattens, Austria

Division of Ser. No. 964,268, Nov. 27, 1978, Pat. No. 4,252,409. This application Jul. 3, 1980, Ser. No. 165,896

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1977, 2753029

Int. Cl.³ B22D *11/126*

U.S. Cl. 29—527.2 5 Claims



1. An injection molding method for the manufacture of a warning reflector from a metal sheet having a surface coated with transparent plastic, comprising the steps of introducing such sheet into a forming mold and injecting additional transparent plastic at an elevated temperature into said mold against the plastic coated surface of said metal sheet for forming said metal sheet relative to a surface of said mold and for fusing such additional plastic with the transparent plastic coating of said metal sheet.

4,406,046

PROCESS FOR THE PRODUCTION OF A SODIUM-FILLED VALVE

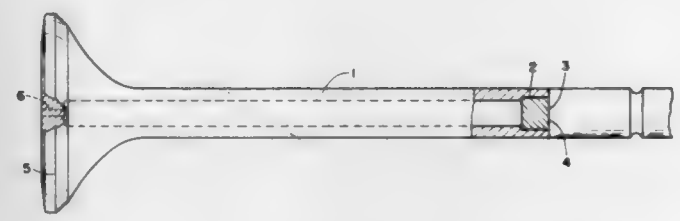
Peter Adam, Dachau; Horst Meyer-Spradow, Adelebsen, and Lothar Reisinger, Dachau, all of Fed. Rep. of Germany, assignors to MTU Motoren- und Turbinen-Union Munchen, GmbH, Fed. Rep. of Germany

Filed Sep. 4, 1980, Ser. No. 184,110

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1979, 2936355

Int. Cl.³ B23P *15/00*; F01L *3/14*

U.S. Cl. 29—156.7 C 2 Claims



1. In a process for the production of a sodium-filled valve having a hollow valve stem, including introducing the sodium into the hollow valve stem through a filling bore of relatively large diameter in the valve stem end of the sodium-filled valve and then sealing said bore; the improvement comprising: evacuating the hollow space of said valve stem through a small cross-sectioned passageway through the head of the sodium-filled valve, at an opposite end from the valve stem end, subsequent to the sealing of said filling bore; positioning said valve during a sealing of said passageway so as to locate the sodium remote from said passageway; and thereafter sealing said passageway through electron beam welding vacuum-tightly in a vacuum by conveying the electron beam about said small cross-sectional passageway thereby causing the small cross-sectional passageway to melt together without the electron beam impinging on the sodium, and said step of sealing said bore including the step of welding the bore by a welding process in a separate step prior to said steps of evacuating and electron beam welding.

4,406,047

INSTRUMENT AND PROCEDURE FOR REPLACING NUCLEAR REACTOR JET PUMP HOLDDOWN BEAMS

Donald M. Jeffers, Plainfield, and Vincent Kokal, New Lenox, both of Ill., assignors to Commonwealth Edison Co., Chicago, Ill.

Filed Jan. 14, 1981, Ser. No. 224,949

Int. Cl.³ B23P *19/00*; B65D *51/00*

U.S. Cl. 29—426.5 10 Claims

9. A method of removing jet pump holddown beams in a nuclear reactor, the beam having two opposed protruding members and a beam bolt transverse thereto, the bolt being engaged by an open-ended keeper, the method comprising the following steps:

retracting the beam bolt to loosen it;

rotating the beam approximately 90° about the beam bolt; advancing the beam bolt to raise the beam;

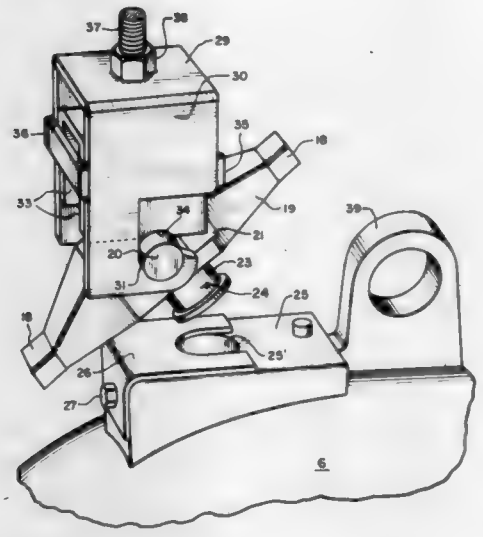
positioning a tool for replacing jet pump holddown beams in a nuclear reactor to engage the beam, said tool comprising:

an outer frame defining two spaced outer plates, each outer plate having an outer jaw defined therein;

an inner frame movably disposed within the outer frame, the inner frame defining two inner plates, each inner plate having an inner jaw defined therein, each of the inner jaws reciprocal to the outer jaw to form a pair of

opposed jaws sized and positioned to receive and hold a respective one of the two protruding members of the beam such that the beam is suspended between the pairs of jaws; and

means for remotely positioning the jaws selectively to hold and release the protruding members of the beam from the tool;



adjusting the jaws to engage the two opposed protruding members with the tool;

pivoting the beam substantially about the protruding members such that the beam bolt disengages the keeper; and

lifting the beam away from the keeper.

4,406,048

METHOD OF ASSEMBLING LADDER CONSTRUCTION

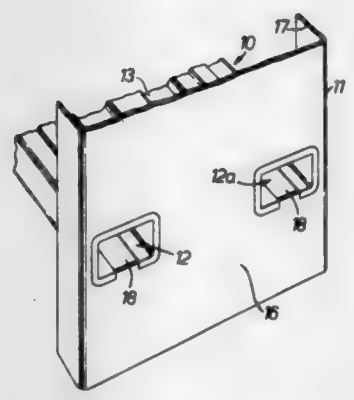
William Bailey, P.O. Box 73, Acacia Ridge, 4110 Queensland, Australia

Filed Apr. 3, 1980, Ser. No. 136,767

Claims priority, application Australia, May 4, 1979, PD8319

Int. Cl.³ B23P *11/00*

U.S. Cl. 29—432.1 **8 Claims**



1. A method of assembling a ladder, said ladder including a plurality of metal steps and a pair of opposing metal stiles, each said step having opposite end portions of hollow sectional form and each stile having a substantially unperforated web; said method comprising the steps of forcing the hollow end portions of at least one step simultaneously through each of said stile webs to simultaneously punch apertures therein and cause said end portions to pass through said stile webs and protrude beyond said stile webs and thereafter simultaneously securing the protruding end portions of at least one of said steps to said stiles whereby each step is joined to each stile.

4,406,049

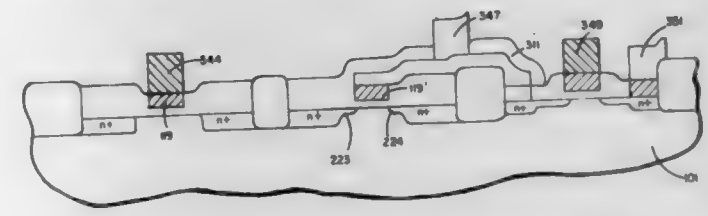
VERY HIGH DENSITY CELLS COMPRISING A ROM AND METHOD OF MANUFACTURING SAME

Matthias L. Tam, Monterey Park, and Frank Z. Custode, Norco, both of Calif., assignors to Rockwell International Corporation, Anaheim, Calif.

Division of Ser. No. 215,485, Dec. 11, 1980. This application Jul. 12, 1982, Ser. No. 397,647

Int. Cl.³ H01L *21/22, 21/265*

U.S. Cl. 29—571 **1 Claim**



1. A process for manufacturing high density VLSI circuits comprising control FETs, and ROM cells which are FETs for "1" logic state or incomplete FETs for "0" logic state to determine the ROM programming comprising the steps of:

forming a gate oxide layer on p type substrate;

using a drain, source, contact mask to open the drain source contact areas for the control FETs;

depositing a first layer of n+ doped polysilicon over the gate oxide layer on the substrate;

depositing silicon nitride over the polysilicon;

using an active area mask to define active areas for the diffusion bit lines of the ROM cells, control FETs, and ROM FETs 1 and 0;

removing the silicon nitride and polysilicon not defined by said mask which is the silicon nitride and polysilicon not covering the active areas and diffused lines;

field implanting the areas exposed by said removal of the silicon nitride and polysilicon with p type dopant channel stops for improved isolation of the active areas;

growing field oxide in the field implanted channel stop areas;

using a diffusion bit line mask to remove silicon nitride and polysilicon from the diffusion bit lines for ROM cells 1 and 0;

doping the diffusion bit lines with n+ dopant;

growing cross-over oxide over the diffused bit lines;

using a first polysilicon mask to remove silicon nitride and polysilicon except under the mask;

using a ROM code program mask to cover all 0 ROM cells;

implanting drains and sources of the ROM cells 1 and of the control FETs with n+ dopant;

growing cross-over oxide over the implanted drain and source areas;

using a poly to poly contact mask to open such contacts in the cross-over oxide;

depositing a second layer of n+ doped polysilicon over the so-formed substrate which contacts the first polysilicon layer through said openings;

depositing silicon nitride over the second polysilicon;

using a second poly interconnect mask to define a second poly pattern;

etching the nitride and polysilicon where not protected by said last mentioned mask;

using a metal to poly contact mask to remove silicon nitride from the non-contact areas, thereby exposing underlying polysilicon;

oxidizing all polysilicon to form isolation oxide over the polysilicon;

removing silicon nitride from the contact areas;

depositing metal completely across the so-formed substrate;

using a metal mask to define the metal interconnect pattern; and

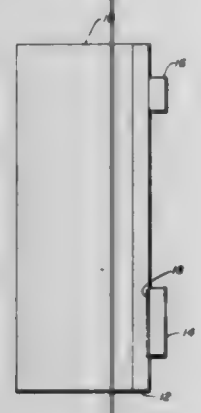
sintering the so-formed wafer to provide said circuit with self-aligned devices.

4,406,050

METHOD FOR FABRICATING LEAD HALIDE SENSITIZED INFRARED PHOTODIODES

Tak-Kin Chu, Bethesda, and Alan C. Bouley, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 17, 1982, Ser. No. 358,940
Int. Cl.³ H01L *21/203, 21/285, 27/14*
U.S. Cl. 29—572 6 Claims



1. In a process for preparing an infrared sensitive photodiode comprising the steps of

(1) forming by vacuum deposition an epitaxial layer of a semiconductor alloy material selected from the group consisting of PbS, PbSe, PbTe, PbS_xSe_{1-x}, PbS_xTe_{1-x}, $PbSe_xTe_{1-x}$, $Pb_ySn_{1-y}S$, $Pb_ySn_{1-y}Se$, $Pb_ySn_{1-y}Te$, $Pb_ySn_{1-y}S_xSe_{1-x}$, $Pb_ySn_{1-y}S_xTe_{1-x}$, $Pb_ySn_{1-y}Se_xTe_{1-x}$, $Pb_zCd_{1-z}S$, $Pb_zCd_{1-z}Se$, $Pb_zCd_{1-z}Te$, $Pb_zCd_{1-z}S_xSe_{1-x}$, $Pb_zCd_{1-z}S_xTe_{1-x}$, and $Pb_zCd_{1-z}Se_xTe_{1-x}$, wherein $0<x<1$, $0<y<1$, and $0<z<1$, to cover at least a portion of the surface of a substrate composed of an infrared transparent single crystal material selected from the group consisting of

(a) alkali halides and

(b) alkaline earth halides;

(2) vacuum depositing Pb metal onto a portion of the epitaxial layer of semiconductor alloy material to form a non-Ohmic Pb metal contact; and

(3) forming an Ohmic contact on another portion of the epitaxial layer of semiconductor material;

the improvement comprising:

after step (1) but prior to step (2), forming a layer of a lead halide selected from the group consisting of $PbCl_2$, $PbBr_2$, PbF_2, and mixtures thereof on the epitaxial layer of semiconductor material by exposing the epitaxial layer to vapor of the lead halide in air for at least 6 hours wherein the lead halide vapor is produced by heating the lead halide at a temperature of from about 175° C. to about 225° C.

4,406,051

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

Hisakazu Iizuka, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Yokohama, Japan

Filed Sep. 8, 1980, Ser. No. 184,883
Claims priority, application Japan, Sep. 11, 1979, 54/115681
Int. Cl.³ H01L *29/04, 27/02*
U.S. Cl. 29—576 B 20 Claims

1. A method for manufacturing a semiconductor device comprising:

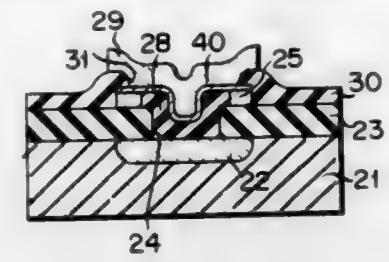
(a) forming a semiconductor region in a major surface of a semiconductor body;

(b) forming a first insulating film on the major surface of said semiconductor body;

(c) forming a contact hole in said first insulating film, exposing a part of said semiconductor region;

(d) covering said contact hole with a polycrystalline silicon layer having a portion in said contact hole which contacts said part of said semiconductor region and having a portion extending on said insulating film around said contact hole; and

(e) ion implantation of at least one element selected from the



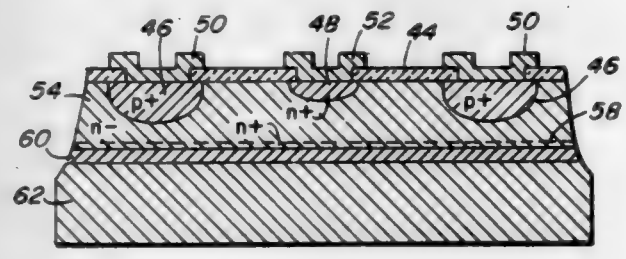
group consisting of oxygen and nitrogen in part of said polycrystalline silicon layer, said part including the portion in contact with said semiconductor region to convert said part into a resistive element.

4,406,052

NON-EPITAXIAL STATIC INDUCTION TRANSISTOR PROCESSING

Adrian I. Cogan, Waltham, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 12, 1981, Ser. No. 320,241
Int. Cl.³ H01L *27/04;* H01C *7/14*
U.S. Cl. 29—576 B 2 Claims



1. A method for fabricating a non-epitaxial static induction transistor, said method comprising the steps of:

fabricating a gate-source structure on a high resistivity silicon semiconductor wafer of one conductivity type having substantially uniform thickness;

covering said gate-source structure with a thick support layer;

etching the surface of said wafer opposite said support layer until the thickness of said wafer is decreased to approximately 30 microns;

implanting said etched surface with ions of said one conductivity type, said implantation providing a shallow high concentration layer;

depositing a metal drain electrode on said implanted surface;

electroplating a thick metal layer over said metal drain electrode; and

removing said thick support layer from said gate-source structure.

4,406,053

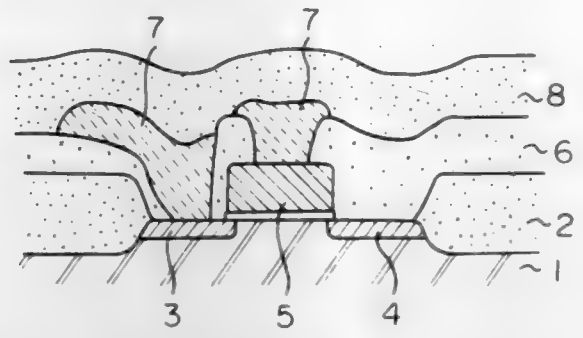
PROCESS FOR MANUFACTURING A SEMICONDUCTOR DEVICE HAVING A NON-POROUS PASSIVATION LAYER

Kanetake Takasaki, Tokyo, and Yoshimi Shioya, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 31, 1981, Ser. No. 289,296
Claims priority, application Japan, Jul. 31, 1980, 55-105910
Int. Cl.³ H01L *21/56*
U.S. Cl. 29—588 9 Claims

1. A process for manufacturing a semiconductor device having a non-porous passivation layer formed as an insulator on metallization layers by plasma chemical vapor deposition, comprising the step of annealing the passivation layer which is deposited on the surface of said semiconductor device and

which covers the metallization layers fabricated thereon, by irradiating a laser beam on the passivation layer so as to densify



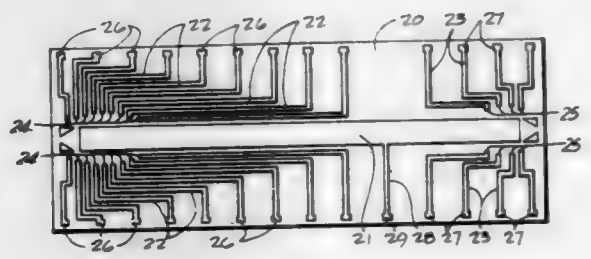
the passivation layer, and scanning said laser beam across the surface of the passivation layer.

4,406,054

METHOD OF MOUNTING AND PACKAGING ELONGATE SILICON DEVICES ON A CERAMIC BASE

Jacques R. St. Louis, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Division of Ser. No. 123,997, Feb. 25, 1980, abandoned. This application Nov. 27, 1981, Ser. No. 325,373
Claims priority, application Canada, Jan. 9, 1980, 343318
Int. Cl.[3] H01L *21/58*
U.S. Cl. 29—588 3 Claims



1. A method of mounting an elongate silicon device on a ceramic base, comprising:

forming a silicon substrate;

defining an elongate mounting position on a surface of said silicon substrate;

forming a conductor pattern on said surface of said silicon substrate, said pattern comprising a plurality of conductors, each conductor including a contact area at one end adjacent to said mounting position and a contact pad adjacent to an edge of the silicon substrate;

mounting said silicon substrate on said ceramic base, said base including a plurality of terminals and a plurality of contact pads, a pad associated with each terminal;

mounting said elongate silicon device on said silicon substrate at said mounting position, said device including a plurality of contact pads;

electrically connecting a contact area on each conductor to a related contact pad on said silicon device and a contact pad on each conductor to a related contact pad on said ceramic base; and

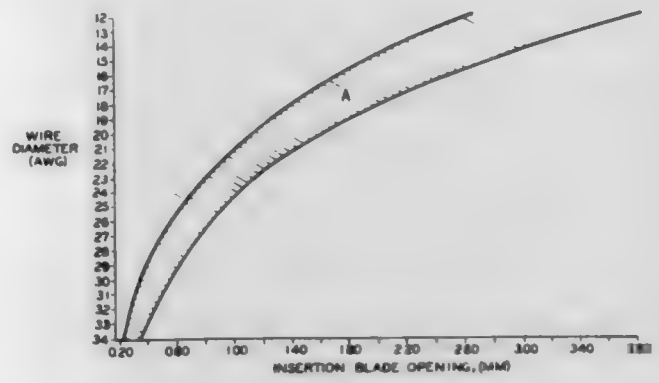
applying a cover to said base to enclose said silicon device and said silicon substrate.

4,406,055

POWER INSERTABLE POLYAMIDE-IMIDE COATED MAGNET WIRE

Hollis S. Saunders; Richard V. Carmer, and Lionel J. Payette, all of Fort Wayne, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

Division of Ser. No. 312,582, Oct. 19, 1981. This application Oct. 12, 1982, Ser. No. 433,758
Int. Cl.[3] B05D *5/12*
U.S. Cl. 29—596 6 Claims



1. A method of coating an electrically insulated magnet wire having an outer coating of polyamide-imide insulation comprising applying an aliphatic hydrocarbon solvent solution of hydrogenated triglyceride and paraffin wax onto the polyamide-imide insulation in such amounts as to enable the resultant coated wire to be power inserted into coil slots in its locking wire size range without damage, and drying the coated wire.

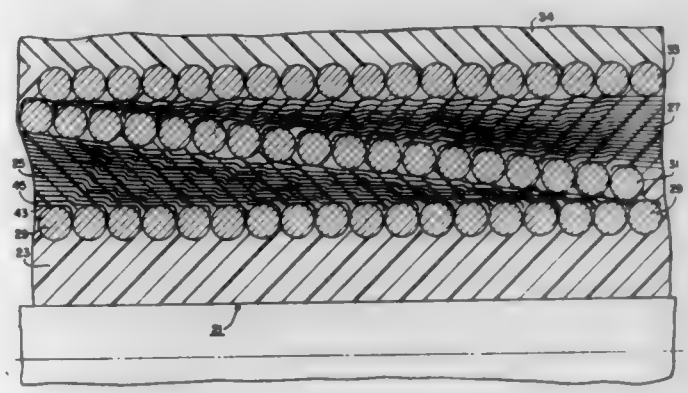
3. In the process of power inserting prewound lubricated magnet wire into coil slots with substantially no evidence of wire damage in subsequent surge failure testing, the improvement comprising power inserting magnet wire having an outer layer of polyamide-imide insulation coated with an external lubricant mixture of paraffin wax and hydrogenated triglyceride.

4,406,056

METHOD OF MAKING A CELLULOSE-FREE TRANSFORMER COIL

Richard D. Buckley, Watkinsville; Edward L. Boyd, and Betty J. Palmer, both of Athens, all of Ga., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 2, 1981, Ser. No. 308,315
Int. Cl.[3] H01F *41/06*
U.S. Cl. 29—605 4 Claims



1. A method for making a non-cellulose insulated transformer coil comprising the steps of:

(a) providing a winding mandrel for repeated rotation past an uncured resin applicator and a resin curing station;

(b) applying a number of first layers of resin spirally onto a mandrel;

(c) coiling a number of turns of a conductor helically onto and over the layers of resin forming a tubular winding;

(d) applying a layer of resin onto each turn of said conductor and onto the layer of resin covering the immediately preceding turns of each winding, the application of each resinous layer extending from the end of the winding where the winding turns commence without covering the resinous layers ahead of and onto which the turns are being coiled so as to provide a wedge-shaped body of insulating resin;
(e) jelling each layer of resin as the mandrel rotates by the resin curing station;
(f) coiling a number of turns of the conductor helically onto and over the layers of jelled resin applied at step (d) in the reverse direction of that coiled at step (c);
(g) applying a layer of resin onto each turn of said conductor at step (f) while applying another layer of resin over resinous layers on prior wound turns at step (f) to form a body of insulating resin;
(h) jelling each layer of resin applied at step (g) as the mandrel rotates by the curing station; and
(i) coiling a number of turns of the conductor helically onto and over the layers of jelled resin applied at step (g) in a direction similar to that of step (c).

4,406,057

METHOD OF MAKING LEAD-ACID BATTERY ELEMENT STACK

Thomas L. Oswald, Roseville, and David L. Lund, Minneapolis, both of Minn., assignors to GNB Batteries Inc., Mendota Heights, Minn.

Filed Mar. 20, 1981, Ser. No. 245,795
Int. Cl.³ H01M *10/04*
U.S. Cl. 29—623.4 **9 Claims**



1. A method of assembling an element stack of a lead-acid battery comprising:
(a) providing a strip of separator material having predetermined dimensions, and providing pasted positive and negative electrode plates of predetermined dimensions;
(b) placing said separator material in position to receive said electrode plates;
(c) placing a first set of electrode plates of like polarity at predetermined locations on said separator material;
(d) positively attaching said first set of electrode plates to said separator material;
(e) folding said separator material with said attached electrode plates in accordion fashion along and adjacent the edges of said plates to form planar areas on said separator material occupied by said attached plates, and unoccupied folds on the opposite side of said separator material; and
(f) loosely inserting a second set of electrode plates of opposite polarity to said first plate set in said unoccupied folds to complete said element stack.

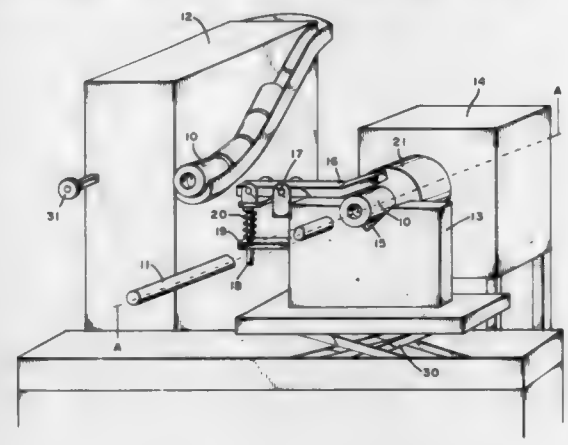
4,406,058

CONDUIT COUPLING HOLDING APPARATUS

Charles Dixon, Osceola, Ark., assignor to Southwire Company, Carrollton, Ga.

Filed Dec. 24, 1980, Ser. No. 219,632
Int. Cl.³ B23Q *7/10*
U.S. Cl. 29—809 **7 Claims**

1. An apparatus for attaching an internally spiral threaded conduit coupling to an externally spiral threaded length of conduit having a predetermined longitudinal axis comprising:
(a) conduit coupling supply means;
(b) conduit coupling transporter means having a v-shaped coupling receiving slot therein and moveably mounted to receive a conduit coupling from said coupling supply means and accurately transport said coupling to a predetermined location concentric with said axis;
(c) means for moving said transporter vertically and laterally;
(d) clamp arm means pivotally connected to said transporter;
(e) push rod means with a compressed spring therearound, pivotally connected to the non-clamping end of said clamp arm at the upper end of said push rod and with the lower end of said push rod passing through rod guide means rigidly secured to said transporter; and



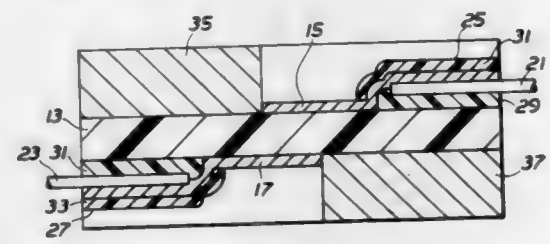
(f) coupling rotation means mounted at said predetermined location and having a longitudinal axis coincident with the predetermined longitudinal axis of said conduit;
further provided that said conduit coupling supply means further comprises a rotatable fixed centered cam for reducing securement pressure of said clamp arm in a controlled manner by forcing said push rod and the non-clamping end of said clamp arm downward as said means for moving said transporter moves said transporter upward with said push rod in vertical alignment with said cam thereby providing for reception of a coupling.

4,406,059

METHOD FOR MAKING A PIEZOELECTRIC TRANSDUCER

William R. Scott, Doylestown; Philip Bloomfield, Bala Cynwyd, both of Pa.; William T. Weist, Cherry Hill, N.J., and Karen M. McMahon, Southampton, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 118,043, Feb. 4, 1980. This application Apr. 22, 1981, Ser. No. 256,330
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—857 **2 Claims**



1. A method of producing a piezoelectric transducer having a flexible thin film polymer substrate comprising in sequence the steps of:
contiguously attaching masks to both sides of the substrate, the masks each having bifurcated members aligned in opposite directions to form overlapping exposed surfaces of the substrate between the members;
bonding wires with an epoxy cement respectively between each wire and an exposed surface of the substrate;
coating a continuous, electrically conductive material onto

the exposed wires adjacent to the cement and onto the remaining exposed surfaces of the substrate; and

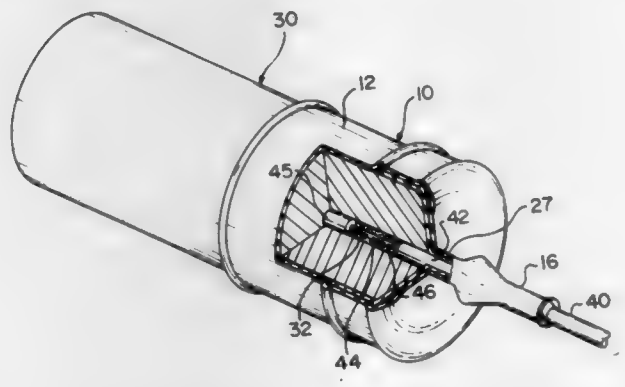
removing said masks, thereby forming between the overlapping coated surfaces an active transducer region.

4,406,060

ANODE COVER ASSEMBLY HAVING INTERNAL SUPPORT MEMBER

Ernest L. Beinhaur, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 10, 1981, Ser. No. 291,586
Int. Cl.³ H01R *43/00*; B23P *19/02*
U.S. Cl. 29—855 **3 Claims**



1. A cover assembly for covering an axial juncture between a cable and a cylindrical member of substantially larger diameter than said cable, comprises:

a hollow support member having a tubular section profiled on the inside to fit closely around said cable and a sleeve section profiled on the inside to fit closely around said cylindrical member,

a stretched resilient boot on the outside of said support member, said boot having a tubular section profiled to fit resiliently around said cable and a sleeve section profiled to fit resiliently around said cylindrical member, said tubular section of said boot being supported in a rolled condition on said tubular section of said support member, said sleeve section of said boot being supported in a rolled condition on said sleeve section of said support member,

whereby, said support member may be assembled onto the juncture between a cable and a cylindrical member, said tubular section of said boot may be unrolled from the support member onto the cable and the sleeve section may be unrolled from the support member onto the cylindrical member.

3. A method of assembling a cover assembly to an axial juncture between a cable and a cylindrical member of substantially larger diameter than said cable comprising the steps of:

a. providing a hollow support member having a tubular section profiled to fit closely around said cable and a sleeve section profiled to fit closely around said cylindrical member;

b. positioning a resilient boot onto said support member in a stretched condition, said boot having a tubular section which is rolled onto the tubular section of said support member and a sleeve section which is rolled onto the sleeve section of said support member;

c. positioning said support member onto the juncture between the cable and the cylindrical member;

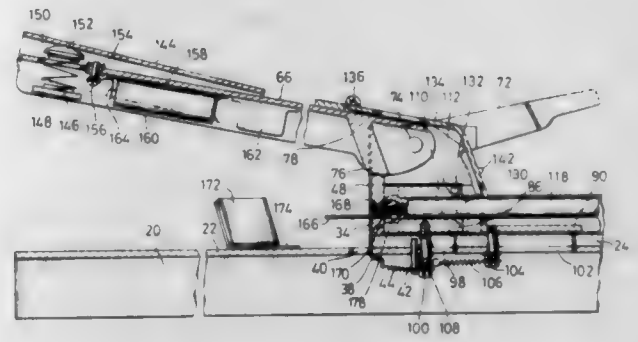
d. unrolling the tubular section of the boot from the support member onto the cable and unrolling the sleeve section of the boot from the support member onto the cylindrical member.

4,406,061

METHOD AND APPARATUS FOR FASTENING A CONNECTION TERMINAL TO ONE END OF AN INSULATED WIRE

Takashi Moriyama, 20303, Uozaki-nishimachi, Higashinada-ku, Kobe 658, Japan

Filed Apr. 6, 1981, Ser. No. 251,371
Claims priority, application Japan, Nov. 11, 1980, 55-158404
Int. Cl.³ H01R *43/04*; B23P *19/00*
U.S. Cl. 29—867 **12 Claims**



1. A method of fastening a connection terminal to the forward end of a coated wire, the terminal having a tubular cylindrical part and the wire having an insulating coating over a core wire, the hole in said tubular cylindrical part having substantially the same diameter as said core wire, comprising the steps of

tightly clamping the connection terminal;

positioning the forward end of the coated wire substantially in alignment with an open end of the cylindrical part of said connection terminal;

gripping said coated wire and advancing said coated wire toward said connection terminal to force the forward end of said core wire into the cylindrical part of said connection terminal while the forward end of said coating simultaneously engages the cylindrical part and is pushed back by the cylindrical part and bulged out and thereby exposing the forward end of the core wire;

crimping said cylindrical part of the connection terminal onto said exposed end of said core wire;

releasing said connection terminal;

releasing said grip on said coated wire to such an extent that said coated wire can be retracted;

retracting said coated wire while simultaneously engaging the bulged out coating; and

pushing the coating over said cylindrical part.

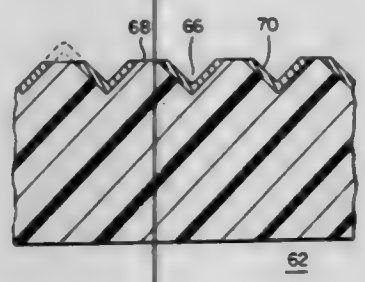
2. Apparatus for attaching a connection terminal to one end of a coated wire, the terminal having a tubular cylindrical part and the coated wire having an insulating coating over a core wire, the hole in the cylindrical part having substantially the same diameter as said core wire, comprising support means, die means on said support means for gripping and crimping said cylindrical part of said connection terminal, insert means slidable on said support means for gripping said coated wire and thrusting an end portion of said coated wire in the direction which is toward said cylindrical part of the connection terminal and thereby inserting said core wire into said cylindrical part, a lever connected to said die means and pivotable to a first location for effecting said gripping and crimping of said cylindrical part, return means on said support means connected to said lever and engagable with said coated wire for moving said coated wire in the direction which is opposite said first mentioned direction when said lever is pivoted to a second location.

4,405,062

METHOD OF FORMING A MULTICHANNEL CONNECTOR

John N. Navarro, Pasadena, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

Division of Ser. No. 90,936, Nov. 5, 1979, abandoned. This application Sep. 1, 1981, Ser. No. 298,429
Int. Cl.³ H01R 43/04
U.S. Cl. 29—881 14 Claims



1. A method of forming a multichannel connector for use in joining the conductors of at least two pairs of conductors, comprising the steps of:

forming a plurality of elongate channels within a surface of an insulative base member;

forming as part of said channels a pair of conductor receiving portions at opposite ends of each channel;

applying a conductive layer to the surface of said base member and within said channels and within said conductor receiving portions; and

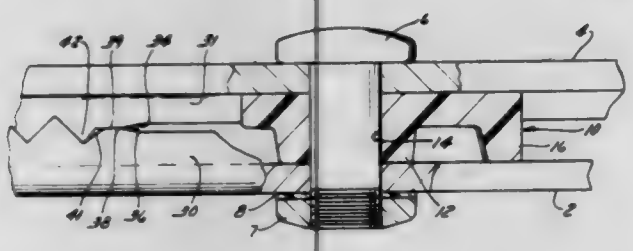
selectively removing the conductive layer from portions of the base member surface between said channels and said conductor receiving portions.

4,406,063

PINKING SHEARS

Allen J. Zaitz, Wausau, Wis., assignor to Oy Fiskars AB, Helsinki, Finland

Filed Dec. 14, 1981, Ser. No. 330,155
Int. Cl.³ B26B 13/10
U.S. Cl. 30—230 10 Claims



1. A pinking shears having a pair of blades pivotally connected together by a bolt means, said blades having cooperative teeth formed along their leading edges, said blades having handles at their ends opposite said teeth, a non-metallic spacer and pressure producing ridge member located between the blades, said member having an apertured spacer portion through which said bolt means extends and which serves to provide rough blade separation, said member also having a pressure producing ridge located at the handle side of said bolt means and for bearing against said blades to produce cutting pressure between the teeth of said blades.

4,406,064

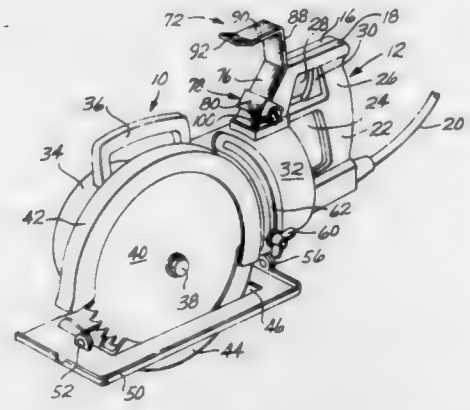
GRAVITY STABILIZED PORTABLE POWER TOOL HANGER

Duke W. Goss, 2560 116th Ave. NE., Bellevue, Wash. 98004

Filed Jun. 15, 1981, Ser. No. 273,756
Int. Cl.³ B27B 9/00
U.S. Cl. 30—296 A 5 Claims

1. A hanger for use with a portable power tool of a type comprising a housing including detachable housing parts having cooperating screw fastener openings for receiving removable screw means which engage and hold together the housing parts, a handle, finger operated control means adjacent the handle, a first housing surface portion located adjacent the screw fastener openings, and a second housing surface portion spaced from the screw fastener openings and said first housing surface portion, said screw fastener openings, said first housing surface portion and said second housing surface portion all being offset to one side of the tool handle and the center of gravity of the tool, said hanger comprising:

a hook portion adapted to be hooked over a support member, a mounting portion comprising a brace member



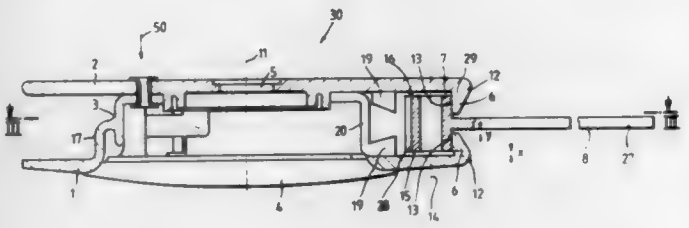
adapted to fit against the first housing surface portion on the tool, and connector means intermediate the ends of the mounting portion including screw fastener receiving openings which are alignable with the screw fastener openings in the housing parts, so that a screw fastener means used for securing the two housing parts together can also be used for connecting the hanger to the power tool, with said mounting portion including brace parts positioned to extend along said first housing surface portion in opposite directions from the location of the screw fastener receiving openings, to contact the first housing surface portion and brace against rotation of the hanger about the screw fastener means relative to the power tool.

4,406,065

CUTTING HEAD FOR A FREE-CUTTING DEVICE

Gisbert Köhler, Waiblingen, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Feb. 9, 1982, Ser. No. 347,253
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1981, 3105003
Int. Cl.³ A01D 55/22
U.S. Cl. 30—347 28 Claims



1. A rotatable cutting head, comprising:

a main body which includes two discs spaced axially from, and rigidly connected with, each other;

at least two blade-like cutting tools pivotally mounted between and approximately parallel to said discs; said cutting tools, during rotation of said cutting head and as a result of the centrifugal force which arises, aligning themselves radially outwardly and projecting beyond the radially outer peripheral edges of said discs;

for each cutting tool, a pivot pin respectively rigidly connected therewith, said pivot pin projecting beyond both

sides of the cutting plane of the associated cutting tool; and

bearing seats arranged in pairs, each bearing seat of a pair being located axially across from one another on those sides of each of said discs which face one another, said bearing seats being open approximately in the direction facing the axis of rotation of said cutting head; each pair of said bearing seats partially surrounding the projecting portions of an associated pivot pin, so that each pivot pin is held between said discs by a pair of bearing seats, and is held approximately parallel to said axis of rotation of said cutting head.

4,406,066

POWER SAW

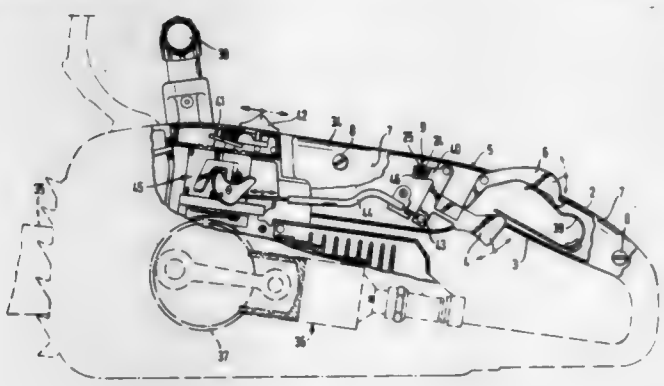
Gerd Itzrodt, Stuttgart, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Sep. 3, 1981, Ser. No. 298,957

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1980, 3033604

Int. Cl.³ B27B *17/00*

U.S. Cl. 30—382 **12 Claims**



1. A power saw, including a housing and a handle mounted thereto, said power saw including:

a throttle lever pivotally mounted to said handle;

a throttle lever locking device operatively associated and connectible with said throttle lever; and

a throttle-knob movable for starting, said throttle-knob being mounted to said handle in such a way as to be movable in a two-phase operating sequence including at least one first additional movement, and only then to be movable in a separate second blocking movement, into the region of the path along which said throttle lever pivots, in order to lock said throttle lever safely in a partially open throttle position, said throttle-knob itself thus carrying out two sequential movements separate from each other and also independent of the movement of said throttle lever locking device.

4,406,067

CENTERFINDING MACHINE

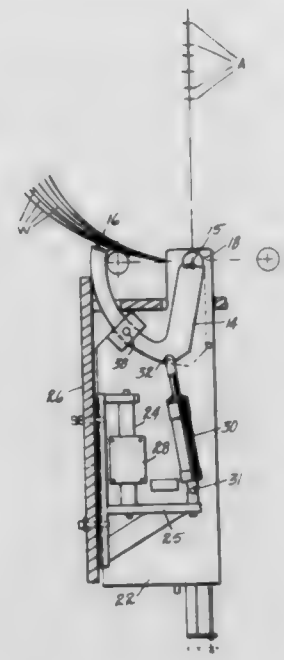
Otmar Ulbing, Fairport, N.Y., assignor to USM Corporation, Farmington, Conn.

Filed Sep. 29, 1982, Ser. No. 427,160

Int. Cl.³ G01B *5/25*

U.S. Cl. 33—172 D **7 Claims**

1. A gage for determining the center location of circular workpieces comprising a support plate, a gage member disposed radially of the workpiece and pivoted on said plate, said gage member having a primary probe engageable with the workpiece periphery along a radial plane, a secondary probe on the member engageable with the periphery at a location spaced from the primary probe by swinging of the member about the contact point of the primary probe, the pivot axis being coaxial with the contact point of the primary probe, and a gage surface associated with the member and which assumes an angular disposition relative to said plane depending on the extent of swinging movement of the member required to engage both probes, said angular disposition of the surface being



indicative of the distance between the periphery and the center of the workpiece.

4,406,068

PROBE TRACING METHOD AND MEANS FOR COORDINATE MEASURING MACHINE

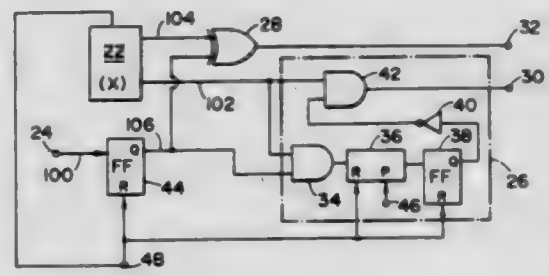
Yutaka Tomita, and Akiro Shibagaki, both of Kanagawa, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1981, Ser. No. 269,888

Claims priority, application Japan, Jun. 25, 1980, 55-86155; Jun. 25, 1980, 55-86157

Int. Cl.³ G01B *7/03*

U.S. Cl. 33—174 L **4 Claims**



2. A coordinate measuring machine including a trace control device outputting trace control signals including at least a two-dimensional speed signal and at least a two-dimensional direction signal, a probe tracing means including a motor for moving the probe along every axis in response to the trace control signals and a means for varying the speed and direction signals as said probe approaches said object to be measured, said probe tracing means for the coordinate measuring machine comprising:

a return stroke speed command circuit outputting substantially the same speed signal for a return stroke speed signal as the speed signal at the time when the probe makes contact with the object to be measured;

an inverting circuit which inverts the direction signal at the time of the contact by the probe; and

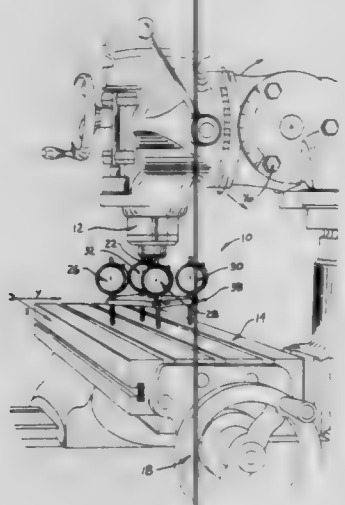
a return stroke trigger circuit for applying a return stroke trigger signal to said return stroke speed command circuit when said probe contacts said object to be measured;

whereby the probe returns back along substantially the same route as a proceeding contact stroke right after contact with the object to be measured.

4,406,069
PERPENDICULARITY INDICATOR FOR MACHINE TOOL AND METHOD OF OPERATION

Michael H. Clement, 4797 Myrtle Dr., Concord, Calif. 94521

Filed Feb. 9, 1981, Ser. No. 232,679
Int. Cl.³ B27G 23/00; G01B 3/22
U.S. Cl. 33—185 R 15 Claims



1. A device for determining perpendicularity between the axis of rotation of a chuck assembly and a work surface in a machine tool, comprising

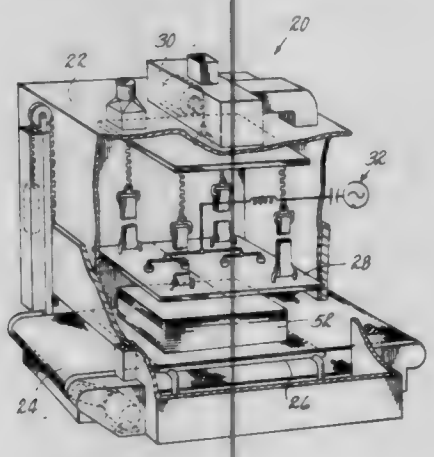
an elongated shaft for mounting in the chuck assembly in axially fixed, rotatable relation, a platform attached to the shaft, the platform being generally perpendicular to the shaft and the axis of rotation of the chuck assembly when the shaft is mounted in the chuck assembly, and

a plurality of at least three adjustable proximity indicators mounted on the platform in spaced apart relation about the shaft, each of the proximity indicators including a movable proximity detecting element arranged for engagement with the work surface when the shaft is mounted in the chuck assembly.

4,406,070
DIELECTRIC CONDITIONING

Mark D. Preston, Meeting House Hill Rd., Mason, N.H. 03048

Filed Oct. 13, 1981, Ser. No. 310,736
Int. Cl.³ F26B 3/34, 23/08
U.S. Cl. 34—1 9 Claims

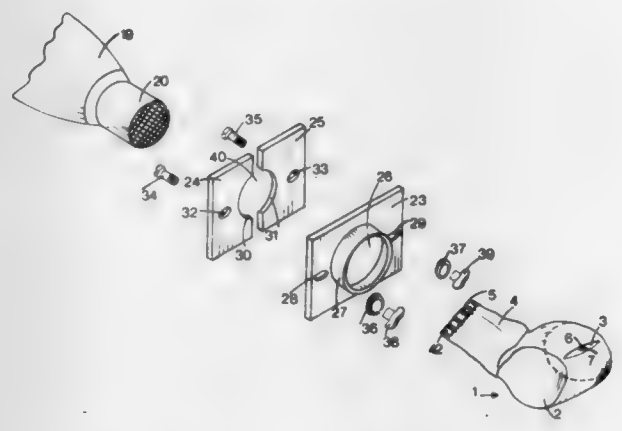


1. A controller for a dielectric batch treating apparatus having a radio frequency energy source and means for coupling the source to a moist dielectric drying load comprising means for incrementally reducing the coupling between the source and the load until the boiling point of water is reached and for thereafter incrementally increasing the coupling to maintain a pre-determined power level to the load, means for individually and separately counting the adjustments in each direction and means for interrupting the operating cycle of the apparatus in response to reaching a pre-determined combination of increasing and decreasing adjustments.

4,406,071
PORTABLE GARMENT DRYER

Robert H. Buchanan, 102 - 2445 Cornwall St., Vancouver, British Columbia, Canada V6K 1B9

Filed Dec. 21, 1981, Ser. No. 332,378
Int. Cl.³ F26B 19/00
U.S. Cl. 34—91 8 Claims



1. A foldable device for drying garments, such as womens' pantyhose, for use with a conventional hand-held dryer having an air outlet nozzle, comprising:

(a) a main large, hollow flexible receiving bag made of fabric material,

(b) a flexible air intake sleeve made of fabric material connected to one side of the receiving bag for supplying hot air thereto,

(c) the other end of the sleeve having retaining means for adjustably closing that end of the sleeve about the nozzle of a hair dryer,

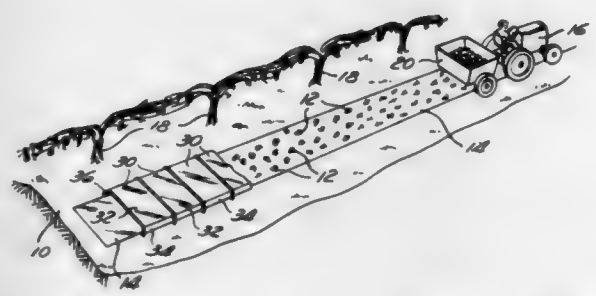
(d) a large garment receiving opening extending transversely across substantially the entire width of the bag and disposed toward the other side of the bag which is away from the connection of the air intake sleeve, the opening being sufficiently large for receiving the garment to be dried,

(e) closure means associated with the garment receiving opening for partially restricting the size of the opening to confine the garment inside the receiving bag during the drying operation and for simultaneously permitting the expelling of humid air from the receiving bag.

4,406,072
COMMERCIAL FRUIT DRYING SYSTEM

Jan E. van Iterson, 7432 N. Fowler Ave., Clovis, Calif. 93612

Filed Feb. 12, 1981, Ser. No. 234,017
Int. Cl.³ F26B 3/28
U.S. Cl. 34—93 7 Claims



1. A fruit drying system for commercially solar drying fresh fruit disposed upon an elongate sheet positioned within a growing field comprising:

plural hoods, formed having a top panel and a pair of end panels extending outwardly on one side of said panel, each of said plural hoods adapted to be abutted to and adjacent one of said plural hoods in a side by side orientation and be

positioned upon said elongate sheet with said pair of end panels supporting said top panel of each of said plural hoods at an elevation spaced above said elongate sheet to cover said fresh fruit and define a drying chamber which said fresh fruit is disposed, said top panel of each of said plural hoods formed of a substantially transparent material which permits solar radiation to pass therethrough and heat the air within said drying chamber to a temperature sufficient to effectuate a drying of said fresh fruit;

vent means formed on each of said pair of end panels of said plural hoods for generating conventional air flow within said drying chamber in a direction generally perpendicular to the length of said elongate sheet; and

means for interlocking said plural hood in said side by side orientation to form a hood assembly along the length of said elongate sheet which isolates said fresh fruit from environmental moisture during the drying of said fresh fruit;

said interlocking means comprising a locking rib extending along the length of said top panel adjacent the side portion of each of said hoods; and

a channel member adapted to matingly receive an adjacent one of said locking ribs when said plural hoods are abutted in said side by side orientation.

4,406,073

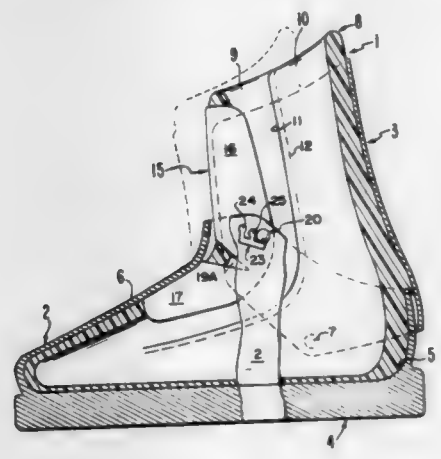
SPORT SHOE WITH A DYNAMIC TONGUE ASSEMBLY

Richard G. Spademan, 54 Lakeside Terrace, Incline Village, Nev. 89450

Continuation-in-part of Ser. No. 109,611, Jan. 4, 1980, and a continuation-in-part of Ser. No. 104,283, Dec. 17, 1979, and a continuation-in-part of Ser. No. 104,282, Dec. 17, 1979, and a continuation-in-part of Ser. No. 50,436, Jun. 20, 1979. This application Feb. 23, 1981, Ser. No. 237,348

Int. Cl.³ A43B *5/04, 23/26*

U.S. Cl. 36—119 **44 Claims**



1. A sport shoe comprising:

a movable tongue assembly for engaging a lower extremity; and

means limiting the movement of a first portion of said tongue assembly so that a predetermined motion of the lower extremity correspondingly moves a second portion of the tongue assembly towards the lower extremity for momentarily tightening the fit of said shoe in response to said motion of said lower extremity.

4,406,074

HANGER CLIP FOR LEAFLETS AND THE LIKE

Claris G. Gallimore, 220 Lake Ave., Lake Villa, Ill. 60046

Filed Jan. 16, 1978, Ser. No. 869,473

Int. Cl.³ G09F *3/18*

U.S. Cl. 40—10 R **2 Claims**

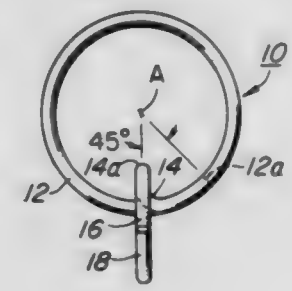
1. In combination

a price rail in the form of a C-shaped channel member having a vertical web portion horizontal flanges and upper and lower reentrant vertical lips on the outer ends of said flanges, and

a hanger clip for holding a plurality of paper leaflets or the like, said leaflets having aligned apertures therein, comprising

a single length of resilient wire having one end portion thereof formed into a partially overlapping single turn loop,

a first intermediate portion of said wire lying immediately adjacent said one end portion and extending in a substantially radial direction toward the axis of said loop.



a second intermediate portion of said wire lying adjacent said first intermediate portion and lying in a plane including the axis of said loop, and when said clip is oriented with said loop lying in a vertical plane said second intermediate portion slopes downwardly away from said loop, and

the other end portion of said wire being upturned to retain said leaflets on said intermediate portion when said intermediate portion extends through said apertures.

said loop being disposed in said channel with the lower one of said lips positioned between the overlapping portions of said one end portion,

whereby leaflets may be hung on said second intermediate portion without obscuring the face of said price rail.

4,406,075

MARKING-PLATES

Walther Jaffe, Box 30001, 400 43 Goteborg, Sweden

Filed Sep. 4, 1981, Ser. No. 299,505

Claims priority, application Sweden, Mar. 5, 1981, 81565

Int. Cl.³ G09F *3/18;* B32B *1/04*

U.S. Cl. 40—16.4 **1 Claim**



1. A marking-plate of metal of the type comprising a profiled bar having two opposed bent edges separated by a mid-part, each said bent edge defining a channel opening upon said mid-part, a row of strip-parts of uniform width having marginal edge portions slideably held within said channels, each said strip-parts bearing a symbol, characterized in that a plurality of mounting holes are defined on the mid-part of the profiled bar parallel to said channels such that each said hole has a length, and said holes are spaced apart by said length equal to the uniform width of the said strip-parts and that the profiled bar has at each end of said row of strip-parts a free fastening hole immediately outside the row of the said strip-parts, and including fastening means secured through each said free fastening hole to retain said strip-parts therebetween.

4,406,076

CARD INDEX FOR FIXING TO A VERTICAL WALL OR FOR PLACING ON A BASE

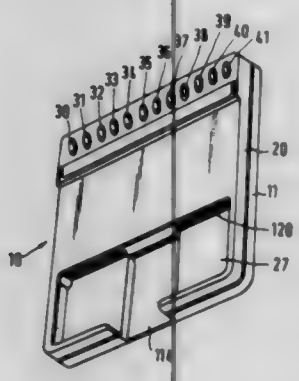
Hans Haim, Herne, Switzerland, assignor to Confon AG, Switzerland

Filed Feb. 11, 1981, Ser. No. 233,408

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1981, 3102158

Int. Cl.³ B42F *17/00, 13/00*

U.S. Cl. 40—389 15 Claims



8. A card index for mounting on a vertical surface comprising:

a box-like base having a base plate adapted to be mounted on a vertical surface, said base having upper and lower portions, said upper portion of said base provided with a plurality of elastic tongues, each said elastic tongue having an upper free end with a selection key mounted thereon and having a retaining cam, each of said retaining cams having a tapered distal portion;

a cover adapted to overlie said upper portion of said base to define a receptacle and having a plurality of counter holding members within said receptacle with each counter holding member opposed to one of said retaining cams, said counter holding members having recesses to receive said distal portions of said cams, said cover having openings therethrough with said selection keys protruding through said openings for operation thereof, and

a plurality of index cards between said base and said cover, each said card having an upwardly extending tab aligned with one of said cams, no two tabs being aligned with the same cam, each said tab having a hole for receiving the tapered distal portion of the cam aligned therewith,

whereby with said card index mounted on a vertical surface each index card is retained in the upper portion of said base by the clamping of its tab between its aligned cam and a counter holding member on said cover and may be released by the depression of the selection key on the elastic tongue common to its cam to unclamp the tab and allow the card to fall by gravity to said lower portion of said base.

4,406,077

CHANGEABLE EXHIBITOR

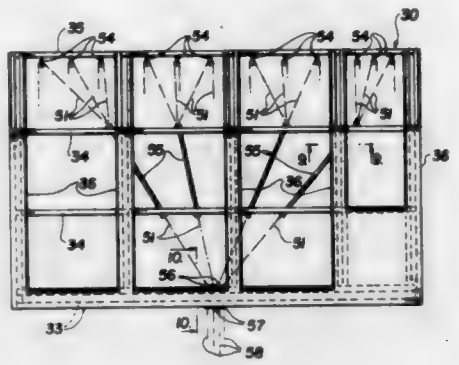
John E. Moon, Greenville, S.C., assignor to Gem Signs, Inc., Greenville, S.C.

Filed Jun. 14, 1982, Ser. No. 388,116

Int. Cl.³ G09F *11/30*

U.S. Cl. 40—509 15 Claims

1. A changeable indicia display device comprising a support, plural substantially vertical indicia plate trays on the support and having their upper ends pivotally attached to the support, the trays being arranged in shingled relationship so that substantially the lower half of each tray covers and conceals the upper half of the tray immediately below it when the trays are vertically disposed, substantially vertical parallel indicia plate guideways on the trays, indicia plates movably engaged in the guideways and being gravity biased downwardly therein, there being one indicia plate in each guideway of each tray of a size whereby each indicia plate has a vertical length equaling approximately one-half the length of its guideway, positive stop means on each tray near its upper and lower ends to limit upward and downward movement of the indicia plates, a flexible suspension element connected to each indicia plate of each tray to raise the indicia plate in its guideway, the indicia plates of the shingled trays lying in parallel vertical columns and the trays being disposed on the support in plural side-by-side groups, guide means for the suspension elements of the



indicia plates in each column on the support near the top of each column, and additional guide means on the support below the first-named guide means for the suspension elements of the first-named guide means of the columns of indicia plates of each group of trays, whereby selected indicia plates of selected columns in the tray groups can be elevated to form indicia characters on the trays of said groups.

4,406,078

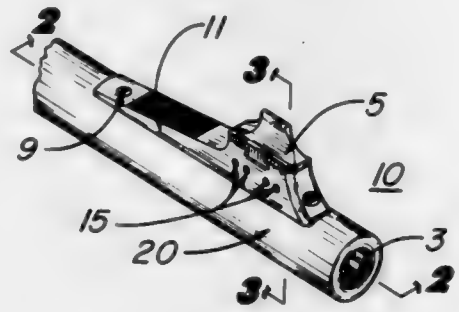
SIGHT RIB FOR FIREARM LEVELING

John H. De Blieck, 4707 Rose Hill, Boise, Id. 83705

Filed May 6, 1981, Ser. No. 260,890

Int. Cl.³ F41G *1/02*

U.S. Cl. 42—1 S 6 Claims



1. An improved sight rib for a firearm having a barrel provided with one or more top opening vents communicating with the bore of the barrel, wherein the improvement comprises:

a sight rib housing;

one or more upwardly extending apertures defined by said housing, each of said apertures in fluid communication with one or more of said vents of said barrel, said apertures operable to vent gases from the bore of said barrel to reduce the recoil of the firearm; and

means for attaching said sight rib to the barrel of the firearm.

4,406,079

MAGAZINE FOR CASELESS PROPELLANT CHARGES

Franz Buechel, Ruggell, and Edwin Kindle, Triesen, both of Liechtenstein, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Jun. 2, 1981, Ser. No. 269,707

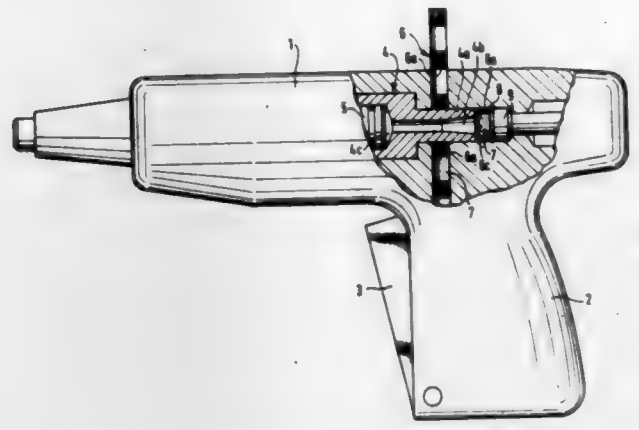
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1980, 3021186

Int. Cl.³ F41C *25/00;* F42B *39/08;* B25C *1/14*

U.S. Cl. 42—49 R 7 Claims

1. Magazine for caseless propellant charges comprising an

elongated strip-shaped member, said member having cut-outs there-through spaced apart in the elongated direction thereof and each said cut-out arranged to receive a caseless propellant charge, a caseless charge holder located in each of said cut-outs, and means connecting said holder to said strip-shaped member for affording a separation of said holder from said strip-shaped member when a predetermined separating force is applied to said holder.

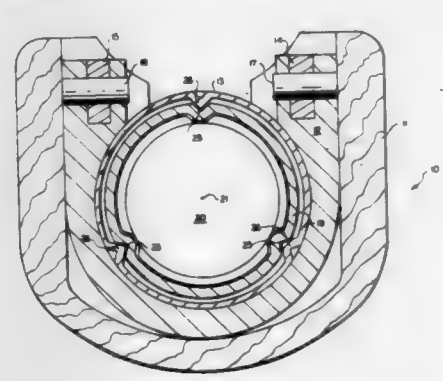


4,406,080

ANTI-TWIST FOREARM MOUNTING SYSTEM

Joseph A. Badali, Ogden, Utah, assignor to Browning Arms Company, Morgan, Utah

Filed Jul. 20, 1981, Ser. No. 284,734
Int. Cl.³ F41C *25/08*
U.S. Cl. 42—75 A 10 Claims



9. A cartridge storage and retrieval assembly for pump shotguns comprising:

a magazine tube;

a forearm mounted to reciprocate along said tube, thereby actuating mechanism which moves a shell from a chamber and replaces said removed shell with another shell retrieved from said magazine; and

coupling means connecting said forearm with said magazine tube in free sliding arrangement longitudinally with respect to the axis of said magazine tube, said coupling means being adapted substantially to prevent said forearm from rotating with respect to said magazine tube to a greater extent at one end than at its other end.

4,406,081

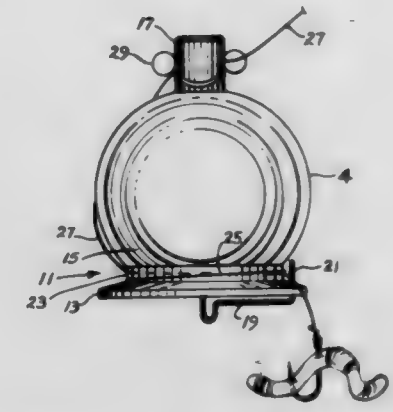
FISHING BOBBER WITH LINE RELEASE

Donald R. Garner, 760 Carla St., Livermore, Calif. 94550

Filed Jul. 21, 1981, Ser. No. 285,294
Int. Cl.³ A01K *93/00*
U.S. Cl. 43—43.11 1 Claim

1. A line release bobber comprising,

a fishing line spool having a trough between opposed rims, one rim formed by an annular flange and an opposite rim formed by a base region of a buoyant bobber having a well at a line connection region opposite the base region, the well having a central passage through which a pin extends, the pin having a stub connected at one end with a stub dimension loosely fitting in the well and having an upturned hook at the opposite end, the upturned hook capable of spanning the spool trough, said stub having an angular slot for a fishing line, a bone shaped resilient retainer for closing the slot to connect the fishing line, thereby applying upward tension on the pin to retain line in the trough in the presence of upward tension and to release line from the trough in the absence of upward tension.

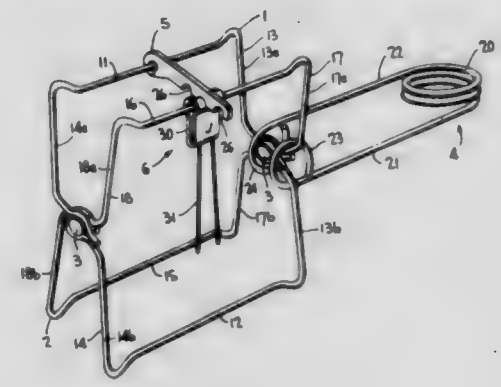


4,406,082

TRIGGER MECHANISM FOR ROTATING FRAME ANIMAL TRAPS

William E. Askins, Lititz, and John P. Trauger, Willow ST, both of Pa., assignors to Woodstream Corporation, Lititz, Pa.

Filed May 15, 1981, Ser. No. 264,072
Int. Cl.³ A01M *23/26*
U.S. Cl. 43—92 12 Claims



8. For use with an animal trap of the type wherein first and second frame members are spring-biased to a closed position and are maintained in a set position by means of a latch member pivotally secured to said first frame and releaseably engaging said second frame, said trap being releasable from its set position by a trigger mechanism rotatably secured to said second frame, an improved trigger mechanism comprising:

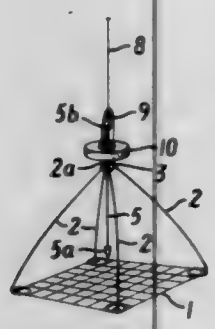
a plate having opposite longitudinally-spaced ends contoured to circumscribe said second frame member and having a pair of through-holes defined therein to define a transversely-extending center line of said plate, and a further member comprising a two-pronged trigger arm in the form of a bent wire with each prong extending through a respective one of said pair of through-holes, said plate being folded along said transversely-extending center line such that the folded plate rotatably engages said second frame member between said contoured ends and such that said bent wire is engaged by the folded plate.

4,406,083

CRAB CATCHER

Walter R. Hart, 33 Fifth Ave., Port Washington, N.Y. 11050

Filed Oct. 30, 1981, Ser. No. 316,669
Int. Cl.[3] A01K *69/10*
U.S. Cl. 43—105 9 Claims



1. A crab catcher comprising a first ring having a cross-bar, at least three arms pivoted on said first ring with upper ends extending above said first ring and longer lower ends extending down from said first ring, mesh means secured at its periphery to the lower ends of said arms, a second ring disposed above said first ring and engageable with upper ends of said arms to retain said upper ends inwardly and thereby spread lower ends of said arms outwardly to spread said mesh means, bait holding means pivoted on said cross-bar of said first ring and extending downwardly therefrom to position bait above said mesh means, means for producing a signal upon movement of said bait holding means in any direction about its pivot by a crab on said mesh means, and means operable to pull said second ring off of said upper ends of said arms and to pull upwardly on said arms to draw said mesh means as a bag around said crab.

4,406,084

TOY CAR WITH RUBBER BAND MOTOR

Bruce M. D'Andrade, Whitehouse Station, N.J., assignor to Arco Industries Ltd., Hong Kong, Hong Kong

Filed Apr. 19, 1982, Ser. No. 369,892
Int. Cl.[3] A63H *17/00*
U.S. Cl. 46—208 10 Claims



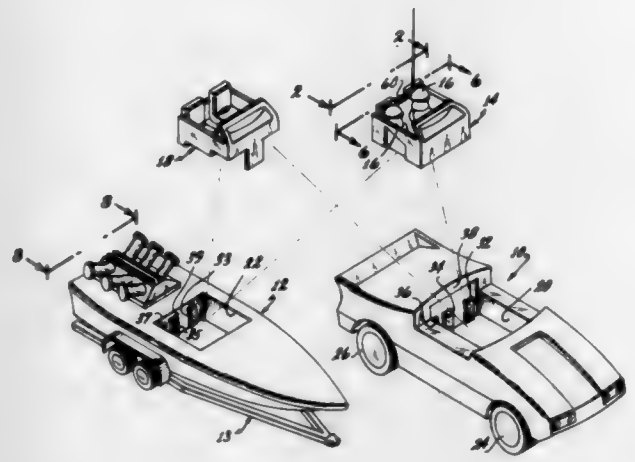
1. A toy automobile comprising in combination, a body, an axle supporting a pair of freely rotatable wheels adjacent one end of said body and a second axle having a pair of wheels fixed thereto and connected to the opposite end of said body to drive the same, the improvement comprising motor means to drive said second axle and including, an elongated elastic member connected at one end to fixed means adjacent one end of said body and the opposite end being connected to a winding mechanism comprising; an elongated rack supported within said body for longitudinal reciprocating movement in opposite directions relative to said body and winding mechanism, a gear train mounted within a supporting frame in said body and including a drive gear fixedly connected to said second axle and a driven gear in the train connected to a short drive shaft mounted axially in said supporting frame and parallel to said rack and having means on one end connected to said opposite end of said elastic member, a throwout gear operable relative to said rack and mounted for engagement and disengagement with said drive gear, and transfer gear freely rotatable on said second axle and meshing with said driven gear, and a clutch mounted between said drive gear and transfer gear and having engageable ratchet teeth thereon operable when said rack is pulled outwardly to engage each other and drive said drive shaft to wind said elastic member and when said rack is pushed into said body said throwout gear is moved by said rack to disengage said drive gear, while said drive shaft remains stationary to retain said elastic member against unwinding.

4,406,085

MODULAR RADIO CONTROL FOR USE WITH MULTIPLE TOY VEHICLES

Tony Rhodes, Torrance, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 21, 1981, Ser. No. 332,709
Int. Cl.[3] A63H *30/04*
U.S. Cl. 46—254 8 Claims



1. A toy vehicle set comprising:

a first toy vehicle including a body having an open cavity formed therein where the cavity opening is in the upper surface of the vehicle body;

electrically operated control means mounted within the body for controlling the motion of the first vehicle in response to a control signal;

a first set of electrical contacts mounted within the cavity, and means for electrically connecting the first set of contacts to the control means;

a modular radio control unit including a body shaped to removably plug into the cavity to secure the control unit to the vehicle body without the need to disassemble the vehicle body, and having an antenna which projects from the control unit body, whereby the antenna extends above the upper surface of the vehicle body when the control unit is plugged into the cavity;

a control circuit mounted within the control unit, including a radio receiver coupled to the antenna and responsive to signals from a remotely controlled radio transmitter and a drive circuit responsive to the radio receiver to provide the control signal at an output terminal to operate the control means;

a second set of electrical contacts mounted to the control unit and positioned so that the second set of contacts is caused to mate with the first set of contacts when the control unit is plugged into the cavity;

means for electrically connecting the second set of contacts to the output terminal of the drive circuit;

means for removably mounting a power source within the control unit body; and

means within the control unit body for connecting the power source to provide power to the control circuit, whereby when the control unit is placed within the cavity the control signal from the drive circuit is provided to the control means through the first and second sets of contacts so that the motion of the first vehicle may be remotely controlled in response to signals from the radio transmitter.

4,406,086

WHEAT AND METHOD OF PRODUCING THE SAME

Charles F. Hayward, Hutchinson, Kans., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Mar. 15, 1982, Ser. No. 358,307
Int. Cl.³ A01H 1/02
U.S. Cl. 47—58 2 Claims

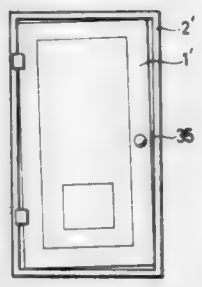
1. A method of producing wheat seeds, comprising:
(a) crossing plants grown from seeds of Thorne and Clarkan;
(b) developing a pure line from the seeds produced in step "a", and crossing plants from such line with plants grown from seeds of Etoile de Choisy;
(c) developing a pure line from the seeds from a semi-dwarf mutant produced in step "b", and crossing plants from such line with plants grown from seeds of CI 13390;
(d) developing a pure line from the seeds produced in step "c" and crossing plants from such line with plants grown from seeds of Coker 68-15;
(e) and developing a pure line from the seeds produced in step "d" and harvesting the seed resulting from said line.

4,406,087

ASEISMATIC DEVICE FOR DOORS

Hiroshi Asaka, No. 32-7-305, Komyodai 1-chome, Izumi-shi, Osaka, and Michio Nakagawa, 7-1-2512, Takahama-cho, Ashiya-shi, Hyogo-ken, both of Japan

Filed Aug. 19, 1982, Ser. No. 409,536
Claims priority, application Japan, Aug. 19, 1981, 56-123332[U]
Int. Cl.³ E06B 7/00
U.S. Cl. 49—70 1 Claim



1. An aseismatic device for a door comprising a main portion 3 and a roller-bearing plate 16, wherein said main portion 3 includes a plate 5 capable of being attached to one upper corner of one side of said door, which is to be closed and locked, said plate 5 being provided with a longitudinally rotatable roller 9 in such a manner that it projects somewhat upwardly and with a laterally rotatable roller 12 in such a manner that it projects somewhat laterally; and wherein said roller-bearing plate 16 is capable of being attached to one corner portion of a door frame corresponding to said main portion 3, and has a pair of planes 17 and 18 for bearing said rollers 9 and 12;
said main portion 3 and said roller-bearing plate 16 being arranged in such a manner that said rollers 9 and 12 are normally not in contact with said bearing planes 17 and 18.

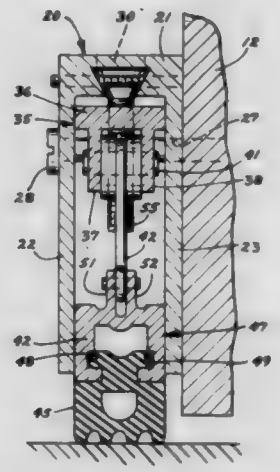
4,406,088

DOOR BOTTOM SEALING APPARATUS

Fred P. Berndt, Jr., 1575 Edgewater Ave., Arden Hills, Minn. 55112

Filed Nov. 9, 1981, Ser. No. 319,231
Int. Cl.³ E06B 7/20
U.S. Cl. 49—309 5 Claims

1. A door bottom weather sealing structure having in combination
a housing member,
a suspension member adjustably disposed within said housing member,
a sealing member co-extensive with said suspension member,
means operatively connecting said suspension member and said sealing member,
said sealing member being offset normally longitudinally of said suspension member by said means and having an end portion thereof projecting outwardly of said housing member,
means carried by said housing member adjustably positioning said suspension member within said housing member vertically thereof,



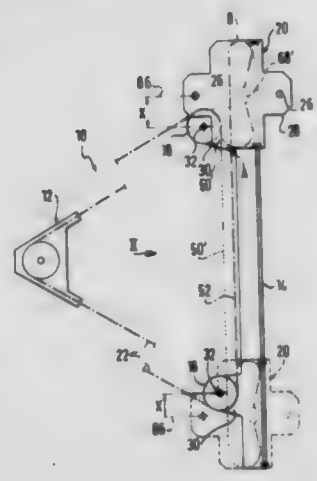
said housing member having an open bottom V-groove formed on the inner side of the top wall thereof,
said last mentioned means comprising screws having their respective heads disposed within said groove, and
said screws adjusting the position of said suspension member relative to said top wall of said housing.

4,406,089

CABLE WINDOW DRIVING MECHANISM FOR MOTOR VEHICLES

Wilhelm Koch, Ebelsbach, and Gerhard Schust, Weidhausen, both of Fed. Rep. of Germany, assignors to Brose Fahrzeugteile GmbH & Co. Kommanditgesellschaft, Coburg, Fed. Rep. of Germany

Filed Apr. 28, 1982, Ser. No. 372,794
Claims priority, application Fed. Rep. of Germany, May 8, 1981, 3118311
Int. Cl.³ E05F 11/48
U.S. Cl. 49—352 22 Claims



1. A vehicle window driving assembly comprising: guide rail means extending in a generally longitudinal direction; a driven member adapted to have a window mounted thereon engaging said guide rail means for guided movement therealong in said longitudinal direction between a first and a second terminal position; cable means attached to said driven member for driving said driven member along said guide rail means between said first and said second terminal positions; cable drive means for actuating said cable means; first deflection means proximate said first terminal position and second deflection

means proximate said second terminal position; said cable means extending from a first runoff position on said driven member over said first deflection means to said cable drive means and from a second runoff position on said driven member over said second deflection means to said cable drive means; said first and said second runoff positions being located on opposite sides of said driven member taken in said longitudinal direction with said first runoff position being on a side of said driven member toward said second deflection means and with said second runoff position being on a side of said driven member toward said first deflection means when said driven member is located midway between said first and second terminal positions.

4,406,090

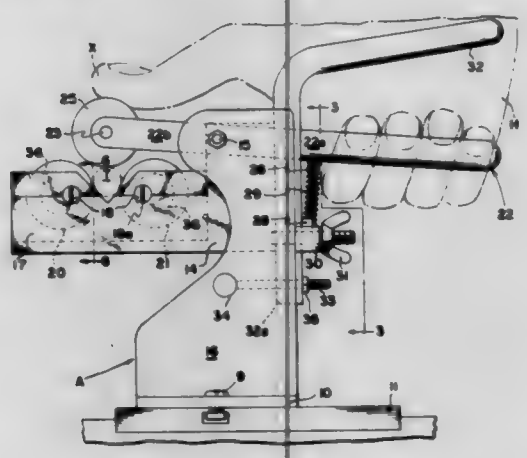
METHODS AND APPARATUS FOR GRINDING SPIRAL TOOL CUTTING EDGES HAVING NON-CIRCUMFERENTIALLY RELIEVED EDGES

Richard F. Schlan, 10944 Elms Rd., Birch Run, Mich. 48415, and William G. Rexius, 270 Kratz Pl., Hemlock, Mich. 48626

Filed Jun. 12, 1981, Ser. No. 273,243

Int. Cl.³ B24B *3/00*

U.S. Cl. 51—95 R **7 Claims**



1. In a grinder attachment for assisting a tool grinder to grind a spiral tool cutting edge having a non-circumferentially relieved land surface; the attachment being mounted on a tool table slide mounted for movement linearly to the vicinity of a grinding wheel peripheral edge surface and there being a guide finger fixed at the wheel edge surface which is engageable with the cutting edge just behind the portion of the edge being ground to guide the rotary and linear travel of the tool being ground relative to the grinding wheel; said attachment including a base supported on the table slide so that the attachment moves in a linear path with said table slide to the grinding wheel; a non-driven centerless support on said base on which a tool is supported with its axis generally parallel to the table slide; a lever member pivoted to swing about an axis on the centerless support and mounting a freely rotatable roller movable in a path with swinging of the lever to engage the shank of a tool resting on said support; the lever member having a handle on the opposite side of the axis from the roller; and a grip on said attachment separate from but adjacent said lever handle in juxtaposted position with it so that it can be gripped with the same hand which holds said lever to "feel" and gauge the force with which the roller is frictionally held down on the tool shank while the thumb of the hand rotates the roller to feed the edge in a spiral path as the attachment moves forward on the table to grind the spiral edge.

4,406,091

APPARATUS FOR GRINDING THE EDGES OF GLASS SHEETS

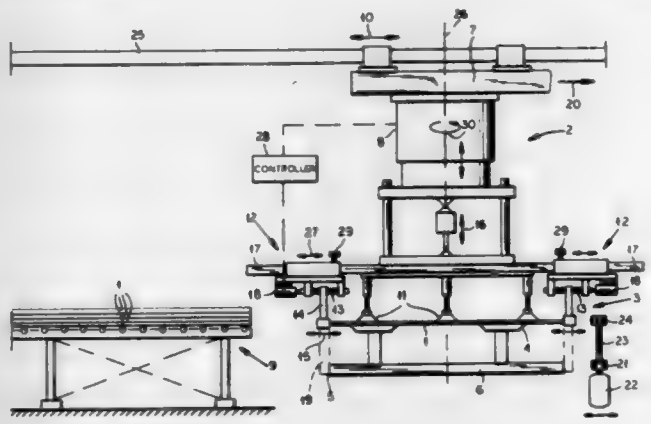
Rudolf Eckardt, and Hans-Cristoph Neuendorf, both of Wesel, Fed. Rep. of Germany, assignors to Flachglass Aktiengesellschaft, Gelsenkirchen, Fed. Rep. of Germany

Filed Sep. 18, 1981, Ser. No. 303,610

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1980, 3035660

Int. Cl.³ B24B *9/10*

U.S. Cl. 51—101 R **7 Claims**



1. Apparatus for grinding the edges of glass sheets, said apparatus comprising:

means for supporting a stack of such sheets at a supply station;

a table adjacent said supply station and dimensioned to support one of said sheets with its sheet edge overhanging said table;

a transport carriage displaceable between said supply station and said table;

lift means including lifters on said carriage for picking up a sheet in said supply station, transporting the picked-up sheet to above said table, and for depositing the picked-up sheet on said table;

positioning means including horizontally displaceable pushers on said carriage engageable with the sheet edge of a sheet on said table for horizontally displacing the sheet on said table into a predetermined position relative to said template edge;

a template underneath said table having a template edge of the shape to be imparted to a sheet on said table; and

grinder means displaceable around said table in contact with said template edge for grinding the sheet edge of a sheet on said table in accordance with said template edge.

4,406,092

SURFACE CLEANING MACHINE

Charles W. Lake, Tuttle, and Herb Weber, Yukon, both of Okla., assignors to Hughes Tool Company, Houston, Tex.

Continuation of Ser. No. 39,234, May 15, 1979, abandoned. This application Jun. 24, 1981, Ser. No. 276,736

Claims priority, application United Kingdom, May 19, 1978, 20720/78

Int. Cl.³ B24C *3/06*

U.S. Cl. 51—425 **43 Claims**

1. A surface cleaning machine of the kind in which abrasive grit is projected at high velocity against a surface to be cleaned, the machine comprising:

(i) an enclosure with an opening therein

(ii) sealing means disposed around the opening so as to contact the surface to be cleaned and so as substantially to retain abrasive grit and removed dirt within the enclosure

(iii) a projecting device for projecting abrasive grit at high velocity along an incident path through the opening to a zone of the surface to be cleaned

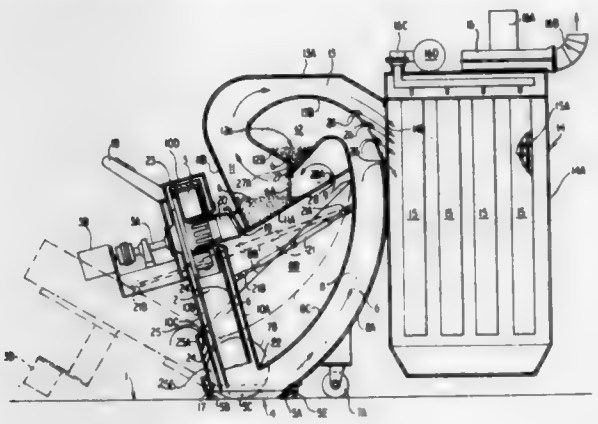
(iv) a reclaim channel through which passes abrasive grit and dirt from the cleaned surface zone

(v) an air inlet near the said opening for providing an air flow through the reclaim channel

(vi) a main receiving container to receive abrasive grit from the reclaim channel for return of the abrasive grit to the projecting device

(vii) an additional receiving container to receive abrasive grit from the reclaim channel, the additional receiving container having an outlet of adjustably variable size

(viii) an opening means for removal of air from the air flow and for directing removed air to a dirt collector, which



opening means is disposed upstream of the abrasive grit received in the additional receiving container

(ix) the main receiving container is disposed in such a position in relation to the said outlet that abrasive grit passes in the form of a moving curtain from the additional receiving container to the main receiving container

(x) an air inlet for flow of air into the main receiving container, which air inlet is so disposed that air passes through the moving curtain of abrasive grit to remove dirt therefrom.

4,406,093

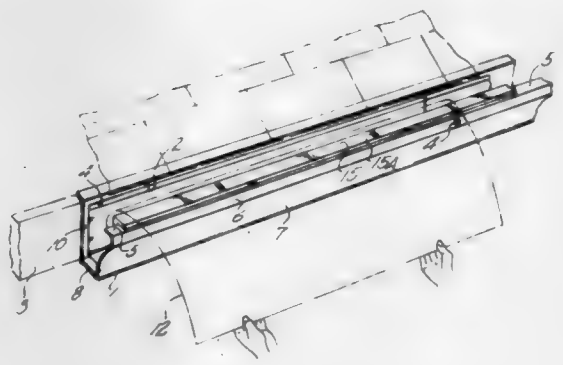
LINER FOR EAVE MOUNTED GUTTERS

W. Travis Good, 839 SE. 32nd, Hillsboro, Oreg. 97123, and Dick J. Monjay, 1818 Main St., Forest Grove, Oreg. 97116

Filed Mar. 30, 1981, Ser. No. 248,948

Int. Cl.³ E04D *13/00*

U.S. Cl. 52—11 **4 Claims**



1. A liner of extruded construction for eave mounted gutters having a lip formed thereon, said liner comprising,

a bifurcated clip structure adapted for biased engagement with the surfaces of the gutter lip, and

a pliable liner integral with said bifurcated clip structure for supported placement within the gutter so as to overlie internal wall surfaces of the gutter, said liner having a free edge for grasping whereby said plible liner may be positioned outwardly of the gutter and inverted for discharge of gutter collected debris.

4,406,094

APPARATUS FOR ANCHORING SELF-SUPPORTING, TALL STRUCTURES

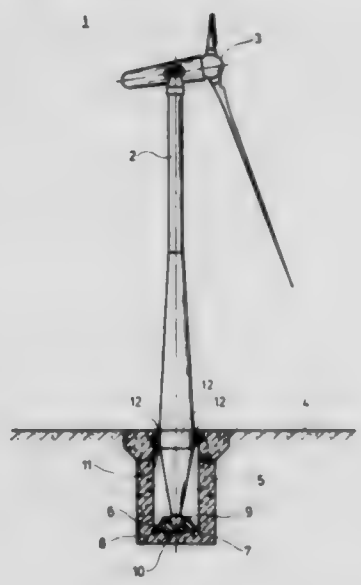
Joachim Hempel; Leonhard Christoph, both of Hamburg, and Wolfram Schöne, Buxtehude, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Feb. 10, 1981, Ser. No. 233,061

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007442

Int. Cl.³ E04H *12/00*

U.S. Cl. 52—40 **6 Claims**



1. An apparatus for anchoring a foot of a tall structure in the ground, said tall structure being subject to dynamic forces loading the tall structure with horizontally effective load components and with vertically downwardly effective load components, comprising a substantially rigid foundation, said foundation having side wall means and bottom wall means forming an opening for receiving said foot, said foundation side wall means forming a ring gap around said foot, said foundation bottom wall means being spaced from said foot to form a further gap, said apparatus further comprising elastic ring bearing means (11, 11') operatively interposed in said ring gap between sides of said foot and said foundation side wall means substantially near an upper edge of said foundation side wall means, said elastic ring bearing means comprising at least one elastic ring bearing element having a spring damper characteristic for holding said foot substantially against said horizontal load components and for damping vibrations of the tall structure, and pivot bearing means (10, 10') operatively interposed in said further gap between the bottom wall means of the foundation and said foot for taking up substantially only said vertically downwardly effective load components, said pivot bearing means being located at a given vertical spacing from said ring bearing means.

4,406,095

ATTIC INSULATION VENT

Raymond F. Slavik, Albertville, Minn., assignor to Minnesota Diversified Products, Inc., New Brighton, Minn.

Filed Aug. 13, 1981, Ser. No. 292,638

Int. Cl.³ E04B *7/18*

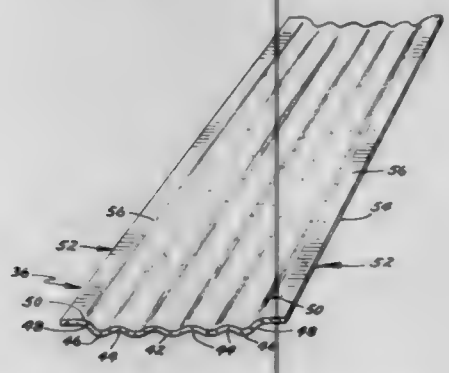
U.S. Cl. 52—95 **2 Claims**

1. An attic insulation vent for use in a house having an enclosed room partially defined by an outer wall, a horizontal upper wall plate, and spaced-apart attic floor joists supported above the wall plate, a room ceiling depending from the joists, parallel inclined roof rafters, spaced from each other by a predetermined distance, supported above the wall plate and extending beyond the outer wall, roof sheathing fastened on upper edges of the rafters, and insulating material covering the ceiling to a substantial depth, the insulation vent providing an air passage free of insulating material between a pair of adja-

cent roof rafters and along the underside of the roof sheathing from outside of the wall sheathing to well above the depth of the insulating material; the insulation vent being made of semi-rigid, semi-resilient, foamed, closed cell polymer; the vent including:

a rectangular channel base generally defining a plane, having two sides lying in the plane and a plurality of longitudinal ribs extending out of said plane;

a pair of walls integral with the channel base and extending divergingly upward and outward from the channel base sides at an acute angle to the plane of the base;



a flange integral with each wall and extending outward in a plane generally parallel to the plane of the base, having anupper surface for contacting roof sheathing and a side face for frictionally contacting a roof rafter; and

the transverse distance between said vent flanges side faces being nominally greater than the predetermined distance between said roof rafters, said vent being sufficiently deformable to position said vent flange side faces at said predetermined distance when said vent is installed between said roof rafters and against said roof sheathing, and the vent, when so installed, being sufficiently rigid to hold itself in said installed position.

4,406,096

ARTICULAR POLE ASSEMBLY CAPABLE OF WINDING

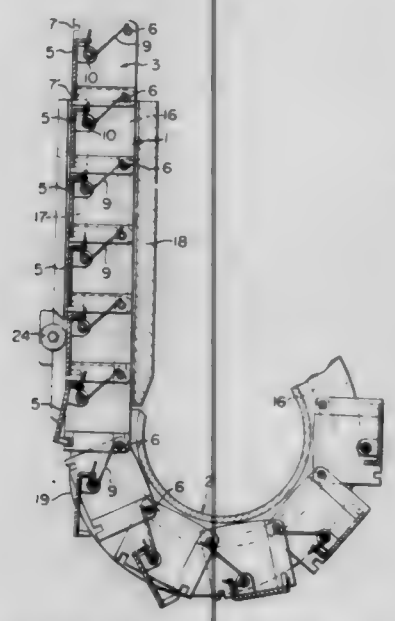
Keinosuke Matsutani, 14-7, Katori 2-Chome, Ichikawa-shi, Chiba, 272-01, Japan

Filed Mar. 13, 1981, Ser. No. 243,383

Claims priority, application Japan, Apr. 30, 1980, 55-56354

Int. Cl.³ E04H *12/18*

U.S. Cl. 52—108 **11 Claims**



1. An articular pole assembly comprising:

an articular pole which is composed of a continuous series of unit block members connected to one another, the unit block members each having a pair of side plates and a connecting plate pivotally mounted therebetween, the side plates being connected to the corresponding side plates of the adjacent unit block member by a pin, the connecting plate having bent projections releaseably engaged with notches in said side plates and in the side plates of the adjacent unit block member and a spring urging the bent projections of the connecting plate to push towards the notches of the side plates; and

a take-up casing having a desired shape for the take-up of the pole in a curved state, the take-up casing having cam portions co-acting with said bent portions for disengaging the bent projections from the notches against the resilient action of the spring so as to make the unit block member rotatable about the pins, whereby the unit block members can be accommodated in a curved state in the casing.

4,406,097

TELESCOPIC MECHANISM

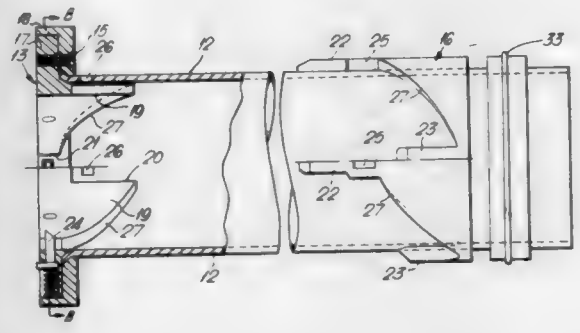
Spencer D. Meston, Bristol, England, assignor to British Aerospace Public Limited Company, London, England

Filed Feb. 25, 1981, Ser. No. 237,946

Claims priority, application United Kingdom, Feb. 28, 1980, 8006751

Int. Cl.³ B66C *23/04*

U.S. Cl. 52—118 **7 Claims**

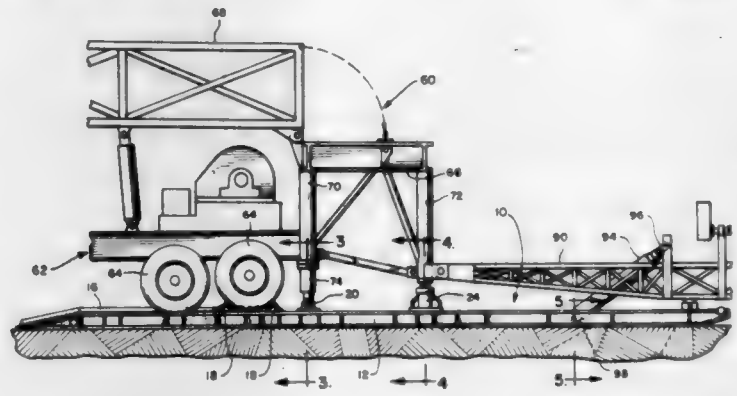


1. A multi-member telescopic boom arrangement of members nested one within another and adapted for ensuring sequential erection of the members from a stowed condition commencing with an innermost member and progressing outwardly, which arrangement includes an outermost member for anchorage to a base, an innermost member forming the remote end of the extended and extending boom, one or more intermediate members lying, when stowed, between the innermost and outermost members, latch members provided on a forward region of the outermost member and the or each intermediate member and biased inwardly, recess means provided on rearward regions of the innermost member and the or each intermediate member, into which the latch means on the respective next outer member may latch to lock the respective innermost or intermediate member in an extended position, aperture means provided on forward regions of the or each intermediate member and through which the latch means on the respective next outer member may protrude to lock the respective intermediate member in a stowed position, camming surface means provided on the rearward regions of the next but one outermost member and each member inner thereto, said camming surface means being adapted to disengage the protruding latch means on the next but one outer member from the aperture means of the next outer member when the member to which it is attached moves to an extended position, the arrangement being such that in the stowed condition the latch means on each member protrudes through the aperture means of the respective next inner member to lock it in its stowed position, but that on displacement of an inner member to an extended position, the camming surface means provided thereon disengages the latch means of the next but one outer member from the aperture of the next outer member to release the next outer member for movement, and the latch means of the next outer member latches in the recess means of the inner member to lock the inner member and the next outer member together.

4,406,098
DRILLING RAMP

Pete E. Deaver, Midland; Jerry K. Lingafelter, Wichita Falls, both of Tex., and Odis F. Hamill, Durant, Okla., assignors to Walker-Neer Manufacturing Co., Inc., Wichita Falls, Tex.

Filed Dec. 11, 1981, Ser. No. 329,703
Int. Cl.³ B66C *23/36*; E01F *11/00*
U.S. Cl. 52—119 17 Claims



1. A drilling ramp for a mobile drilling rig of the type having a wheeled vehicle and a mast substructure mounted on the vehicle, wherein said substructure comprises four legs, two of which support respective power jacks, and two of which support respective leg locating members, said ramp comprising:

a foundation structure adapted to support the drilling rig;

guide means, mounted on the foundation structure, for guiding the wheeled vehicle to a selected position and orientation on the foundation structure;

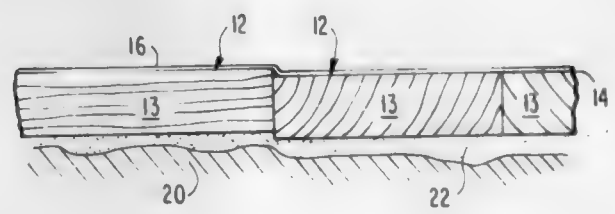
two jack locating members, each mounted to the foundation structure in a respective predetermined position such that, when the wheeled vehicle is in the selected position on the foundation structure, each of the jack locating members is situated under a respective one of the two jacks to locate and hold the respective jack in position with respect to the foundation structure;

two adjustable support structures, each mounted to the foundation structure in a respective predetermined position such that, when the wheeled vehicle is in the selected position on the foundation structure, each of the support structures is situated under a respective one of the two leg locating members to locate and hold the respective leg in position with respect to the foundation structure.

4,406,099
UNITIZED FLOOR PANEL AND METHOD OF LAYING THE SAME

Lawrence G. Barrett, 3223 Downing Dr., Lynchburg, Va. 24503

Filed Jun. 18, 1980, Ser. No. 160,509
Int. Cl.³ E04F *13/08*
U.S. Cl. 52—127.3 19 Claims



1. A unitized floor panel comprising:

(a) at least one row comprising a plurality of unattached wooden tiles assembled in generally abutting relation, each of said wooden tiles comprising a plurality of slats assembled in a unitary block, said tiles being pre-sanded and including an upper surface coated with a finishing composition;

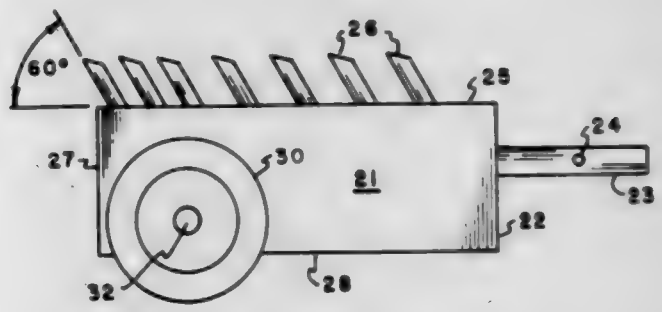
(b) a layer of pressure-sensitive adhesive covering a portion of the upper surface of said tiles; and

(c) a flexible carrier and protective sheet covering said adhesive and said tiles, said protective sheet being substantially co-extensive with said tiles, the adhesive bond formed between said sheet and said adhesive being stronger than the adhesive bond formed between said adhesive and said tiles, whereby said sheet is stripped from said tiles, both said sheet and said adhesive are removed therefrom, said cover comprising means for pulling the upper surfaces of all of said tiles into substantial alignment when said tiles are placed on an irregular surface.

4,406,100
PORTABLE EARTH ANCHOR

Kenneth C. Keesee, Smoot, and James A. Ruckman, Lewisburg, both of W. Va., assignors to Westvaco Corporation, New York, N.Y.

Filed Jun. 1, 1981, Ser. No. 268,774
Int. Cl.³ E02D *5/74*
U.S. Cl. 52—155 3 Claims

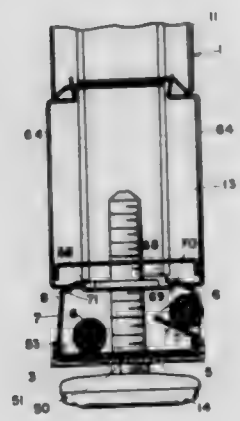


1. A portable earth anchor comprising reinforced concrete body means, having top, bottom, front, rear and side surfaces, draft attachment means projecting from said body means front surface for moving and positioning said body means, ground penetrating spike means projecting from the top surface of said body means and wheel carriage means projecting coaxially from respective sides of said body means wherein the axis of said carriage means is disposed between said top and bottom body surfaces and more proximately of said bottom surface whereby said carriage means is positioned out of contact with a ground support surface when said anchor means is inverted for ground penetration of said spike means.

4,406,101
PARTITION WIREWAY WITH FLEXIBLE SIDES

Charles Heidmann, Strasbourg, France, assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Sep. 16, 1980, Ser. No. 187,834
Int. Cl.³ E04B *5/48*; H02G *3/26*
U.S. Cl. 52—220 2 Claims



1. In a partition having a raised base with depending spaced apart feet supporting said partition, the improvement of a raceway for communication cables and the like, comprising:

a U-shaped channel connected with said partition, and extending along and beneath said partiton base; said U-

shaped channel having a rigid web for supporting the cables thereon, and a pair of upstanding flanges; said flanges extending upwardly from opposite sides of said web, and having free, upper edges positioned adjacent to a bottom surface of said partition base to define opposite sides of said raceway and substantially enclose the same; at least one of said flanges being resiliently flexible, with sufficient stiffness to normally maintain the U-shape of said channel and thereby retain and conceal the cables therein, and sufficient flexibility to permit localized, manual, elastic deformation along said one flange free edge for inserting and withdrawing the cables from said raceway;

said channel is connected with said partition by means for suspending said channel from said panel base;

said suspending means is connected with said channel web along the longitudinal centerline thereof;

said other one of said channel flanges is resiliently flexible for inserting and withdrawing the cables from both sides of said partition; and

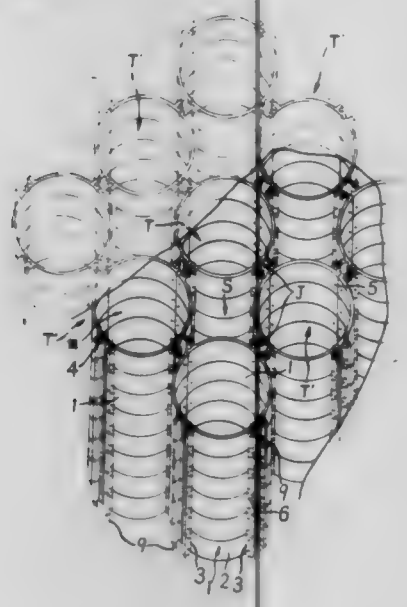
said channel comprises first and second, elongate, rigid, U-shaped supports, which are shaped to fit into one another to form said rigid web, and a sheet of resiliently flexible material having a center portion thereof sandwiched between said first and second supports with side edge portions extending from inbetween the edges of said supports to form said flanges.

4,406,102

PRECAST CONCRETE SILO COMPLEX AND A METHOD OF CONSTRUCTING IT

Kunio Kato, Yokohama, and Yoshihide Tamura, Chiba, both of Japan, assignors to Taisei Kensetsu Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 9, 1980, Ser. No. 214,689
Claims priority, application Japan, Dec. 13, 1979, 54-161918
Int. Cl.³ E04C *3/20*
U.S. Cl. 52—224 **11 Claims**



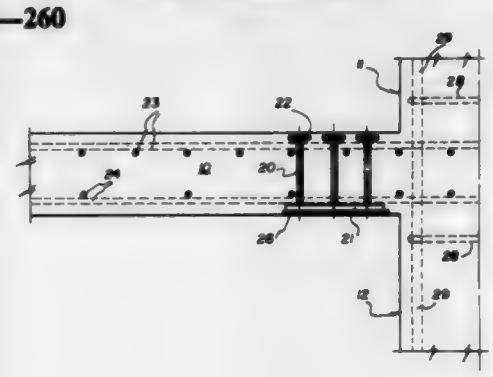
1. A precast concrete member for use in constructing a concrete silo complex having a plurality of side-by-side silos, said member having a quarter-cylindrical configuration for being arranged in end-to-end fashion to form a cylinder unit, said member further having radially outwardly projecting coupling elements integral therewith and extending the full height of said member, one of said coupling elements being disposed adjacent each end of said member and said member having an end portion extending from each of said coupling elements to the corresponding end thereof, said coupling element having an outer end surface adapted to face a like outer end surface of a coupling element on a member in a cylinder unit in an adjacent silo, whereby said coupling element and the end portion adjacent thereto, with the corresponding coupling element and end portion on the adjacent member in the cylinder unit and the coupling elements on the members of the cylinder unit of an adjacent silo, form a box-like space for receiving concrete, said coupling elements having means for receiving tie means extending across said box-like space between two adjacent coupling elements, and said marginal end portions having means for receiving tie means extending across said box-like space between the end portion and the end portion of the member in the adjacent silo.

4,406,103

SHEAR REINFORCEMENT FOR CONCRETE FLAT SLABS

Amin Ghali, 3911 Vincent Dr., N. W., and Walter Dilger, 592 Dalmeny Hill, N. W., both of Calgary, Alberta, Canada

Continuation of Ser. No. 16,323, Feb. 27, 1979, abandoned. This application Apr. 28, 1981, Ser. No. 258,327
Claims priority, application Canada, Feb. 28, 1978, 298109
Int. Cl.³ E04B *1/00*
U.S. Cl. 52—260 **9 Claims**



1. In the reinforcement of a column supported concrete slab having upper and lower surfaces and said slab including portions extending outwardly and transversely from said columns supporting said slab, and in the area of said slab immediately adjacent said columns including a plurality of unconnected reinforcement members arranged in a pre-determined pattern and in embedded within that portion of said slab extending outwardly from said columns and laterally spaced from and adjacent to that portion of said slab directly overlying said columns, each of said reinforcement members comprising:

a. support means,

b. a plurality of substantially vertically arranged elongate reinforcement elements having at least one projecting end,

c. said elements fixedly attached in spaced horizontal relation to said support means, and

d. mechanical anchoring means provided for each reinforcement element, at least adjacent said projecting end thereof, for anchoring said reinforcement elements in the concrete slab adjacent at least one surface thereof.

4,406,104

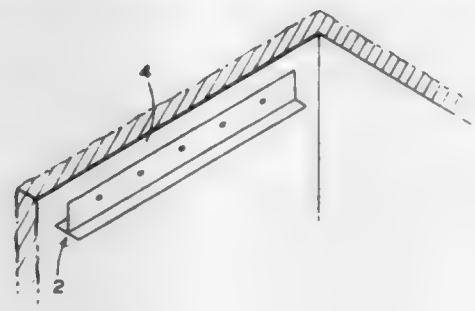
SUSPENDED CEILING WALL ANGLE

Martin J. Beck, Boxford, and George F. W. Boesel, Canton, both of Mass., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Mar. 20, 1981, Ser. No. 246,069
Int. Cl.³ E04B *1/00*
U.S. Cl. 52—283 **1 Claim**

1. The combination of a wall and a runner means, the wall being a vertical planer surface and the runner means being composed of a vertical web which has disposed at the lower edge thereof two horizontal flanges, one extending out each side of the vertical web, said runner means being positioned adjacent the vertical wall with the vertical web of the runner means being placed parallel to the vertical wall and the horizontal flanges being placed perpendicular to the vertical wall, one edge of one of the horizontal flanges engaging the wall and that horizontal flange spacing the vertical web from the wall the width of the horizontal flange, the improvement comprising:

(a) providing the vertical web with a plurality of spaced apertures,
(b) providing a spacer means with a large dimension, a small dimension, and an effective length equal to the width of a horizontal flange,
(c) positioning a spacer means per aperture with the small dimension part of the spacer means inserted in the aperture and the large dimension part of the spacer means not being able to be inserted in the aperture, said spacer means



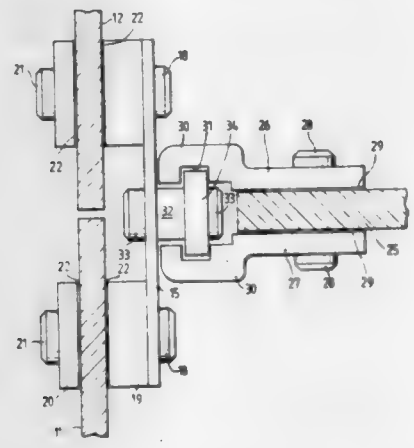
extending from the vertical web to the wall its effective length,
(d) the effective length of the spacer means being the length of the portion of the spacing means having the large dimension, and
(e) fastening means passing through the vertical web and firmly affixing the runner means to the vertical wall so that the runner means is rigidly held in position and the horizontal flanges of the runner means are kept in a position perpendicular to the vertical wall.

4,406,105

STRUCTURAL GLASS ASSEMBLIES

John B. Colvin, Lancashire, England, assignor to Pilkington Brothers Limited, St. Helens, England

Filed Aug. 12, 1980, Ser. No. 177,472
Claims priority, application United Kingdom, Aug. 17, 1979, 7928807
Int. Cl.³ E04B *1/38*
U.S. Cl. 52—285 **8 Claims**



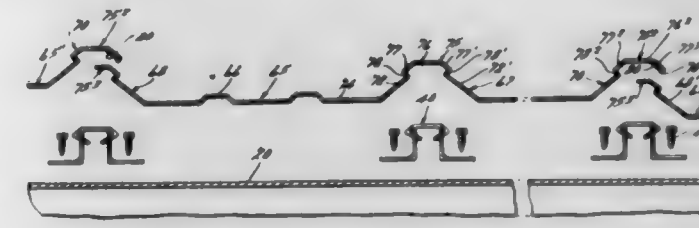
1. A suspended glass assembly in which two coplanar glass plates are joined together by a plate member partially overlying an edge region of each glass plate on one side only of the glass plates and extending parallel to the glass plates and forming a connection between them, the parallel plate member being spaced by spacer means from said one side of the glass plates and secured to the edge regions of the glass plates, the spacer means being disposed relative to the edges of the glass plates so as to provide gaps between the parallel faces of the edge regions of the glass plates and the plate member, the plate member being attached to a stabilizing means for stabilizing the glass plates in a direction perpendicular to the plane of the glass plates, the stabilizing means and the gaps between the parallel faces of the edge regions of the glass plates and the plate members together permitting the edge regions of the glass plates to flex substantially freely relative to the plate member when the glass plates are subjected to wind load.

4,406,106

CONCEALED FASTENER PANEL CONSTRUCTION AND METHOD OF INSTALLATION

Kenneth N. Dinges, 5609 S. 84th E. Ave., Tulsa, Okla. 74145

Continuation-i part of Ser. No. 27,289, Apr. 5, 1979, Pat. No. 4,285,182. This application Apr. 13, 1981, Ser. No. 253,534
Int. Cl.² E04B *1/40*; E04D *3/361*
U.S. Cl. 52—478 **9 Claims**



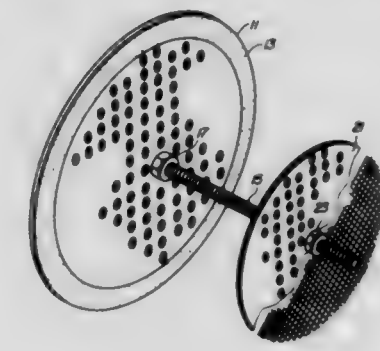
1. A sheet metal building panel having latchable holding portions on its under surface defined by a longitudinally extending upstanding embossed rib of a generally mushroom-shaped cross section and which includes laterally angularly, outwardly and downwardly divergent wall portions and integral continuation wall portions formed as inward and downward continuations of said divergent wall portions, said continuation wall portions being frictionally overfittable upon and adapted to interlatch with subjacent holding clips secured to a structural element of a building, characterized by a relatively short end portion of said rib which is of a reduced height, the continuation wall portions being upwardly and inwardly deformed in said end portion of reduced height.

4,406,107

METHOD AND APPARATUS TO REPAIR HOLES IN WALLS

Richard Schoonbeck, 9051 E. Kenyon Dr., Tucson, Ariz. 85710

Filed Jun. 29, 1981, Ser. No. 278,758
Int. Cl.³ E04G *23/02*
U.S. Cl. 52—514 **11 Claims**

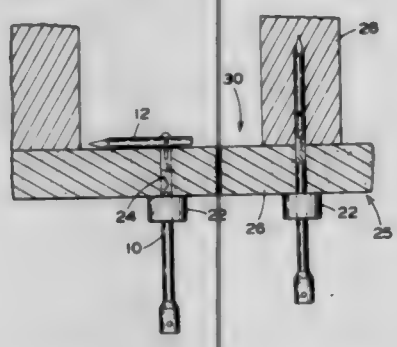


1. Apparatus to repair holes in walls comprising a flexible perforated plate adapted to be inserted through the hole in the wall and to attach to the inside surface of the wall proximate the hole; a threaded screw attached transversely to the flexible perforated plate; and a perforated resilient plate attached to said transverse threaded screw by means of at least one nut threaded on said screw and operably connected to said perforated resilient plate, said perforated resilient plate situated spacially in the hole of the wall whereby the hole in the wall is filled with plaster to the thickness of the wall with the plaster completely surrounding and penetrating the perforated resilient plate which serves to retard shrinkage of the plaster from the hole in the wall and to enhance resistance to chipping of the plaster.

4,406,108
METHOD FOR INSTALLING A SUSPENDED CEILING

Martin J. Beck, Boxford, and George F. W. Boesel, Canton, both of Mass., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Mar. 20, 1981, Ser. No. 245,980
Int. Cl.³ G09F 7/18
U.S. Cl. 52—741 2 Claims



1. A method of installing a suspended ceiling using a pivoting nail structure, said nail structure having a body portion with an enlarged head containing an aperture, said head fastened to one end of said body, the body of said nail being in the form of a short section and a long section, both sections being pivoted to each other adjacent the other end of the body, a collar slidably positioned on the body of the nail and movable from a first position wherein the two sections of the body cannot be pivoted and the two body sections are in axial alignment, said collar means being slidably positioned to a second position wherein the two body sections will pivot relative to each other so that the short body section can be disposed at a 90° angular relationship to the long body section, the steps comprising:

(a) positioning the collar means in said first position over the point where the two sections are pivoted to keep the two sections of the nail in axial alignment,

(b) driving the nail into a ceiling to a point beyond the pivot point of the nail until the pivot point has passed beyond the lower surface of the ceiling and the collar is pushed by the surface of the ceiling to the second position and the collar is held against the surface of the ceiling, said ceiling now holding the two sections of the nail in axial alignment,

(c) should the nail now not be passing through solid ceiling material, but has passed into a hollow area in the ceiling, then pushing the nail into the hollow area beyond the ceiling until the short section of the nail is free from the ceiling and will pivot with regard to the long section of the nail and be disposed at a 90° angular relationship to the long section,

(d) pulling on the nail in the direction to withdraw the nail from the ceiling whereby the short section of the nail will encounter the back of the ceiling and prevent the withdrawal of the nail, and

(e) suspending a portion of a ceiling from the aperture in the enlarged head of the nail.

4,406,109
AUTOMATIC CORD HANKING MACHINE

John D. Butler, New Berlin, Wis., assignor to Artos Engineering Company, New Berlin, Wis.

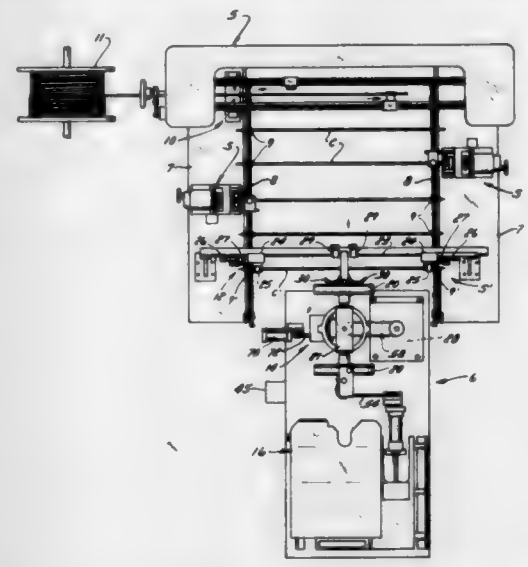
Filed Aug. 31, 1981, Ser. No. 297,830
Int. Cl.³ B65B 63/04
U.S. Cl. 53—116 11 Claims

1. A hanking machine whereby a cord can be wound into a coil around which a wire tie can be applied to form the cord into a hank, said hanking machine being of the type comprising a turntable rotatable about a turntable axis and having a pair of coiling posts projecting from it in one axial direction that are substantially parallel to said axis and are spaced to opposite sides thereof, and drive means for rotating said turntable, said hanking machine being characterized by:

A. turntable orienting means for establishing said turntable in a coiling position wherein its rotational axis and its coiling posts are substantially contained in a fixed vertical plane;

B. a pair of carriages, each having a cord clamp that can be closed to grip a cord and opened to release the cord;

C. guide means defining a path normal to said plane and confining said carriages to movement along said path, one at each side of said plane, between an initial position of each carriage in which it is spaced a substantial distance from said plane and a release position nearer said plane, said path being so located that a cord gripped by the cord



clamps of the carriages is between the coiling posts when said turntable is in its said coiling position;

D. biasing means yieldingly urging each carriage to its initial position;

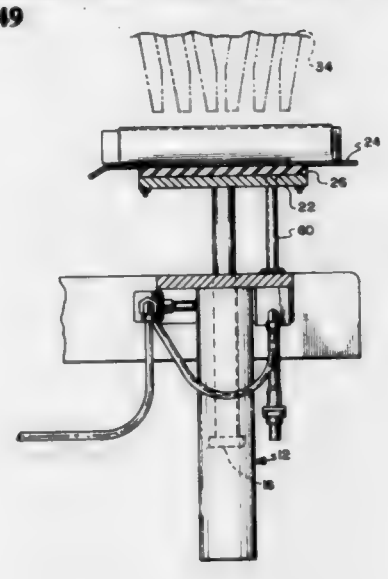
E. release means for each carriage arranged to effect opening of the chord clamp of the carriage when the carriage arrives at its release position; and

F. sequencing means for closing the cord clamps of the carriages when the carriages are in their initial positions and thereafter initiating rotation of the turntable.

4,406,110
POWER CYLINDER HAVING EXTERNAL STROKE ADJUSTMENT MECHANISM

Robert W. McGill, Munroe Falls, Ohio, assignor to A-T-O Inc. (now Figgie International), Ohio

Filed Oct. 1, 1980, Ser. No. 189,707
Int. Cl.³ F15B 15/22; B65B 5/6, 21/14
U.S. Cl. 53—249 6 Claims



1. A mechanism for varying the stroke of an air driven, power cylinder having a piston and a piston rod, and comprising a load means attached to said piston rod for movement thereby, a control rod on said load means positioned externally of said power cylinder but parallel to said piston rod.

a control valve means connected to said cylinder to control air exhaust therefrom on the extension stoke of said piston,

a cushion valve means operably connected to said control valve means and said control rod for air exhaust flow therethrough but for shut off of such flow as said piston approaches the end of its extension stroke, said cushion valve means including a member carried by said control rod, said control rod forming a rigid movable unit with said piston rod, and

said cushion valve means also including a valve block means secured in fixed relation to said power cylinder, and said member carried by said control rod is a seal means that is adjustable longitudinally on said control rod and is movable into engagement with said valve block means by extension power stroke movement of said piston to reduce the speed of exhaust of air from said power cylinder and the speed of the stroke of the power cylinder.

4,406,111

QUICK RELEASE SUBASSEMBLY FOR SHIFTING GRID CASE PACKER

John L. Raudat, North Madison, Conn., assignor to Standard-Knapp, Inc., Portland, Conn.

Filed Aug. 31, 1981, Ser. No. 298,061
Int. Cl.³ B65B *57/10, 21/16*
U.S. Cl. 53—497 **20 Claims**



1. In a shifting grid style packer of the type wherein columns of articles are received from an infeed conveyor between side-by-side longitudinally extending lane guides for the deposit of groups of articles downwardly into upwardly open packing cases, the improvement comprising a fixed frame having longitudinally extending ways oriented parallel to the lane guides, a grid assembly movably mounted on said ways and itself defining cross slide means oriented transversely to said ways, a shifting grid frame on said cross slide means and including riding strips to support the articles when said grid frame is in one position and to allow the articles to drop downwardly in a second position, means for shifting said grid frame transversely between said two positions, funnel means supported by said cross slide means and defining passageways for the articles moving downwardly into the case, said funnel means including parallel rails provided vertically below said fixed lane guides, said funnel means further including cross members adjacent the ends of said rails, and means for releasably securing said cross members to said cross slide means to facilitate removal of said funnel means without necessity for removal of said grid frame.

4,406,112

PRESSURE AIR MANIFOLD AND OUTLETS SYSTEM FOR GRAIN HEADER OR HARVESTER CUTTING PLATFORMS

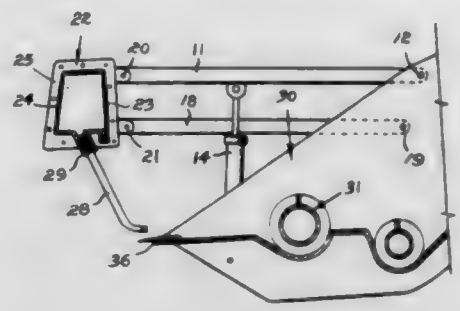
Donald G. Brooks, 92 Northstead St., Scarborough, Western Australia, Australia 6019

Filed Nov. 30, 1981, Ser. No. 325,887
Claims priority, application Australia, Mar. 3, 1981, PE7820
Int. Cl.³ A01D *57/22*
U.S. Cl. 56—12.9 **10 Claims**

1. Improved pressure air manifold and outlets system for grain header or harvester cutting platform having a frame, a cutter bar assembly and a feed auger, comprising

a manifold extending across and above the cutting platform, mounting means mounting the manifold to the frame,

a plurality of outlet tubes depending from said manifold, each said outlet tube terminating in outlet means at its end above said cutter bar assembly and adjacent to the front edge thereof, each said outlet tube being directed to discharge in a generally rearward and lateral direction, and



a blower, drive means coupled to the blower, and conduit means coupling said blower to said manifold

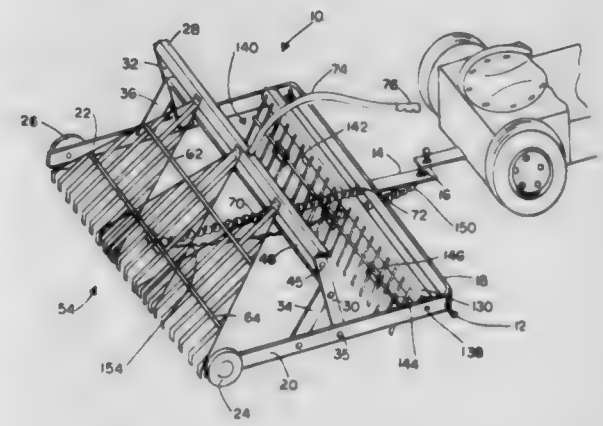
and outlet means for providing a continuous curtain of air substantially across the cutting platform.

4,406,113

MOBILE LAWN RAKE ATTACHMENT

Harvey L. Mullins, 9610 La Jolla Dr., Olivette, Mo. 63132

Continuation-in-part of Ser. No. 156,395, Jun. 4, 1980, Pat. No. 4,312,095. This application Nov. 2, 1981, Ser. No. 317,173
The portion of the term of this patent subsequent to Jan. 26, 1999, has been disclaimed.
Int. Cl.³ A01D *7/00*
U.S. Cl. 56—400.16 **7 Claims**



1. A detachable lawn rake device advantageous for use with conventional riding mowers and other similar towing vehicles for gathering and removing lawn clippings, accumulated leaves and other associated lawn debris, said device comprising a wheel frame assembly including a cross frame member having means thereon for coupling to a conventional towing vehicle and side frame members extending rearwardly therefrom, said wheel frame assembly including supporting wheel members mounted on the outside portion of each of said side frame members for rotation thereon, a first tine carrying cross-bar member positioned between the rearwardly extending side frame members of said wheel frame assembly, means for pivotally connecting said first tine carrying cross-bar member to said side frame members, a first movable rake tine assembly mounted to said first pivotal tine carrying cross-bar member for rotational movement therewith between a ground engaging rake position and an elevated dumping position angularly related thereto, a second tine carrying cross-bar member disposed above said wheel frame assembly in spaced apart relationship with said first tine carrying cross-bar member and supported thereat between a pair of spaced opposed support members rigidly attached to said wheel frame assembly and extending upwardly therefrom, means for pivotally connecting said second tine carrying cross-bar member to said pair of spaced opposed support members, a second movable rake tine assembly mounted to said second pivotal tine carrying cross-

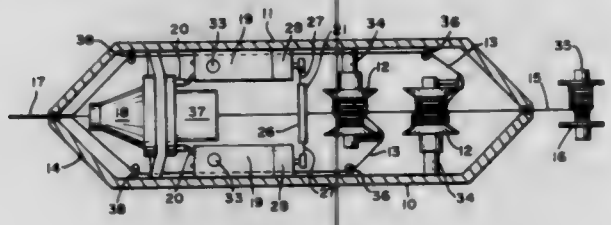
bar member for rotational movement therewith between a ground engaging raking position and an elevated dumping position angularly related thereto, said second rake tine assembly including three substantially similar tine sections positioned adjacent to each other and having the center section thereof disposed aft of the two remaining end tine sections located on each side thereof in an overlapping trailing position relative thereto, said center tine section being adaptable to overlap said end tine sections at each end portion thereof, each of said three tine sections including means for separately rigidly attaching said tine sections to said second pivotal tine carrying cross-bar member, first biasing means for constantly urging said first rake tine assembly downwardly into its operative raking position, second biasing means for constantly urging said second rake tine assembly downwardly into its operative raking position, and readily accessible means manually operable from the seat of the towing vehicle for pivotally raising and lowering said first and second rake tine assemblies with respect to a raking surface.

4,406,114

CORE WIRE COATING STRANDER

Jerry W. Lanier, and O. Leon Thomas, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Oct. 26, 1981, Ser. No. 314,897
Int. Cl.³ D07B *7/12*
U.S. Cl. 57—7 **10 Claims**



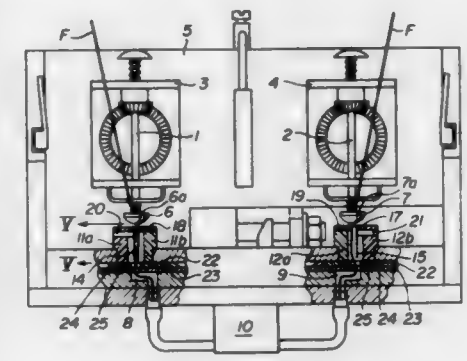
1. A core wire coating strander comprising:
(a) a frame having an upstream end and a downstream end;
(b) means for supporting a core wire spool upstream of said downstream end;
(c) means for supporting one or more outer wire bobbins upstream of said downstream end;
(d) means for guiding core wire from said core wire spool toward said downstream end;
(e) means for guiding outer wire from said outer wire bobbin toward said downstream end;
(f) storage means located upstream of said downstream end for storing coating material;
(g) applicator means located near said downstream end and having a central chamber through which said core wire travels for extruding a discrete layer of said coating material to the surface of said core wire;
(h) transfer means for moving said coating material from said storage means to said applicator means; and
(i) winding means located near said downstream end for helically winding said outer wire over said core wire immediately after said discrete layer is applied;
further provided that no apparatus contacts said coated core wire between application of said discrete layer and winding of said outer wire onto said coated core wire thereby avoiding removal, contamination or premature deformation of said discrete layer.

4,406,115

METHOD OF AND MEANS FOR UNRAVELING A PORTION OF TEXTILE YARN

Guy Negaty-Hindi, Onex, Switzerland; Carlos Pujol, Barcelona, Spain, and Erwin Zurcher, Le Lignon, Switzerland, assignors to Fomento de Inversiones Industriales S.A., Barcelona, Spain

Filed Nov. 10, 1981, Ser. No. 320,098
Claims priority, application Switzerland, Nov. 24, 1980, 8646/80
Int. Cl.³ D01H *15/00*
U.S. Cl. 57—22 **22 Claims**



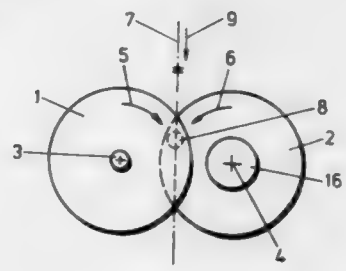
1. A method of unraveling a portion of a yarn of textile fibers, comprising the steps of:
(a) gripping a yarn portion to be unraveled at a location spaced from a free end thereof to engage fibers present at said location;
(b) closely juxtaposing a vibratile member with said yarn portion;
(c) exciting said vibratile member to impart transverse oscillations to said yarn portion for loosening the fibers thereof and spreading them apart; and
(d) stroking the fibers of said yarn portion with a longitudinal flow of gas passing therealong toward said free end with resulting removal from said yarn portion of fibers not engaged at said location.

4,406,116

YARN FALSE TWISTING APPARATUS HAVING FRICTION DISCS

Roland Maier, Radevormwald, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed Jun. 12, 1981, Ser. No. 273,218
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1980, 3034770; Feb. 11, 1981, 3104788
Int. Cl.³ D02G *1/08;* D01H *7/92*
U.S. Cl. 57—340 **15 Claims**



1. A yarn false twisting apparatus comprising
a frame,
a pair of twist imparting members, with each member including a yarn engaging friction surface, at least one of said members comprising a relatively thin and flexible, circular disc, and with said one flexible disc including reinforcing means for resisting undesired deflection thereof in both the radial and lateral directions, said reinforcing means including a distinct annular ring disposed adjacent the circular periphery of said disc,

a pressure applying member mounted to said frame,

means rotatably mounting said twist imparting members to said frame and such that portions of the respective yarn engaging friction surfaces are disposed in opposing, face to face relationship and define a twisting zone therebetween, and with said pressure applying member being positioned radially within said annular ring and so as to locally bias said one flexible disc toward the other twist imparting member only at said twisting zone, and

drive means for operatively rotating each of said twist imparting members about their respective axes, and whereby a yarn may be continuously moved through said twisting zone while having twist imparted thereto by frictional contact between the yarn and the respective opposed friction surfaces resulting from the force exerted by said pressure applying member,

whereby the reinforcing means of said one flexible disc acts to substantially alleviate undesired deformations and the non-stable rotation of such disc.

4,406,117

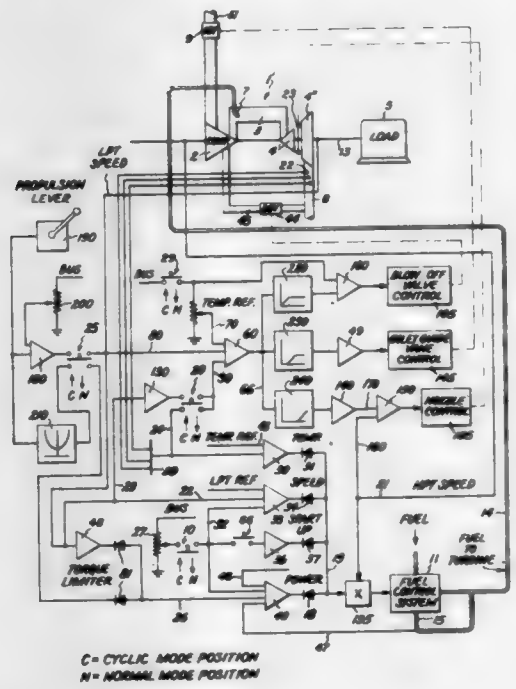
CYCLIC LOAD DUTY CONTROL FOR GAS TURBINE

William I. Rowen, Schenectady; Thomas E. Ekstrom, Scotia, and Donald L. Rexford, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 88,633, Oct. 26, 1979, Pat. No. 4,299,088. This application Mar. 23, 1981, Ser. No. 246,689

Int. Cl.³ F02C *9/48*

U.S. Cl. 60—39.27 **11 Claims**



1. In a control system for a two-shaft gas turbine including a compressor shaft and a load shaft, said compressor and load shafts being independently rotatable, and having a chamber which receives air and fuel for combustion, the combination comprising:

means for selecting one of first and second modes of operation of said gas turbine;

a plurality of closed-loop fuel control means, each responsive to a different respective operating parameter of the gas turbine and each arranged to supply a respective fuel control signal;

gating means responsive to the lowest fuel control signal of said plurality of closed-loop fuel control mens for controlling fuel flow to the combustion chamber;

air control means responsive to a certain operating parameter in said first mode of operation and another operating parameter in said second mode of operation for supplying an air flow control signal; and

means responsive to said air flow control signal for controlling the air flow to said combustion chamber to maintain an operating parameter of said gas turbine substantially constant.

4,406,118

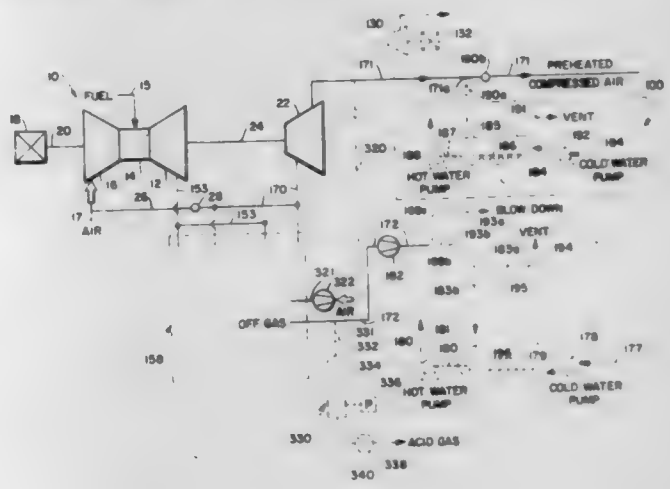
SYSTEM FOR TREATING AND RECOVERING ENERGY FROM EXHAUST GASES

Harald F. Funk, 68 Elm St., Murray Hill, N.J. 07974

Continuation-in-part of Ser. No. 205,348, Nov. 10, 1980, which is a continuation-in-part of Ser. No. 962,103, Nov. 17, 1978, Pat. No. 4,265,088, which is a continuation-in-part of Ser. No. 674,219, Apr. 6, 1976, Pat. No. 4,126,000, which is a continuation-in-part of Ser. No. 565,045, Apr. 4, 1975, Pat. No. 3,970,524, which is a continuation-in-part of Ser. No. 486,562, Jul. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 252,610, May 12, 1972, abandoned. This application Sep. 1, 1981, Ser. No. 298,364

Int. Cl.³ F02C *3/04*; F01K *23/08*

U.S. Cl. 60—39.183 **24 Claims**



1. A process of treating hot gas for increasing the thermal efficiency of a gas turbine power producing system motivated thereby comprising the steps of:

(a) expanding a hot gas containing environmentally harmful components through a first gas turbine means to produce shaft work;

(b) passing the first turbine means exhaust gas through a heat exchange zone in direct heat exchange relationship with a relatively high heat capacitance solid material to concurrently cool said gas and heat said solid material;

(c) separating the harmful, less volatile components of said cooled gas from the more volatile components;

(d) discharging the more volatile components of the cooled gas;

(e) recovering at least a portion of the thermal energy of said exhaust gas by passing a first heat transfer fluid other than said exhaust gas in direct heat exchange relationship with said heated solid material to concurrently cool said solid material and heat said first fluid, whereby said heated first heat transfer fluid is gaseous; and

(f) expanding said gaseous first heat transfer fluid through a second gas turbine means to produce shaft work.

4,406,119

CARBON-PARTICLE DECONTAMINATING SYSTEM

Sigeru Kamiya, Chiryu; Masaei Nozawa, Kariya; Nobutoshi Hayashi, Nishio, and Seiji Morino, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Sep. 15, 1981, Ser. No. 302,393

Claims priority, application Japan, Nov. 21, 1980, 55-164812

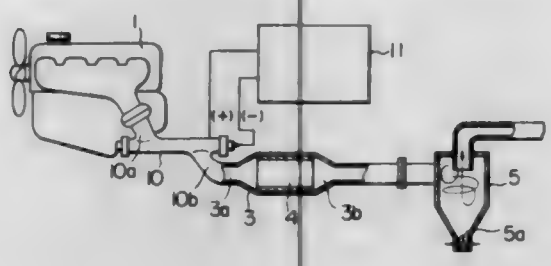
Int. Cl.³ F01N *3/02*

U.S. Cl. 60—275 **5 Claims**

1. A carbon-particle decontaminating system characterized by comprising

a filter cake which is heat-resistive and is disposed in an exhaust system of an internal combustion engine,

an inertia type particle trapper or separator which is disposed at the downstream of said filter cake, and



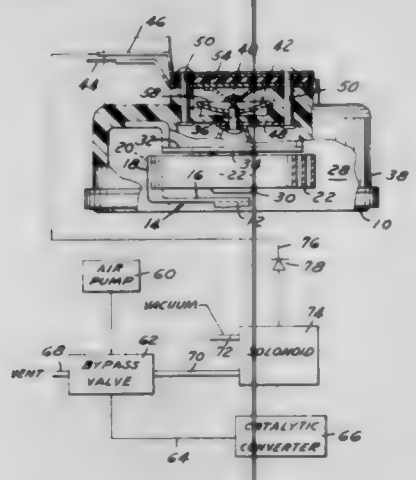
an electric heating means which is disposed in a dust particle trap chamber in said inertia type particle trapper or separator for burning the particles trapped therein.

4,406,120

CATALYST OVER TEMPERATURE PROTECTOR

David C. Irish, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 6, 1981, Ser. No. 280,761
Int. Cl.³ F01N 3/22
U.S. Cl. 60—284 5 Claims



1. A system for controlling the operation of an exhaust gas conversion device for use with an engine having a carburetor having a temperature responsive choke valve operably movable from a closed to open positions in response to the attainment of ambient temperatures above a predetermined level, electrically activated heater means operably associated with the choke valve when operable effecting opening of the choke valve at an ambient temperature level lower than the predetermined level, an ambient temperature responsive bimetallic on-off switch means operable at the lower temperature level to connect a source of electrical energy to the heater means to activate the same, the engine including an engine driven air pump providing a source of air, the system including electrically actuated control means for controlling the operation of the gas conversion device, the control means including means operable upon activation of the heater means to connect the source of air to the gas conversion device.

4,406,121

ROTARY FLUID DEVICE

John H. Pelto, 292 Jones St., Mt. Clemens, Mich. 48043

Filed Aug. 20, 1979, Ser. No. 67,728
Int. Cl.³ F16H 41/04
U.S. Cl. 60—330 5 Claims

1. A rotary fluid device comprising:

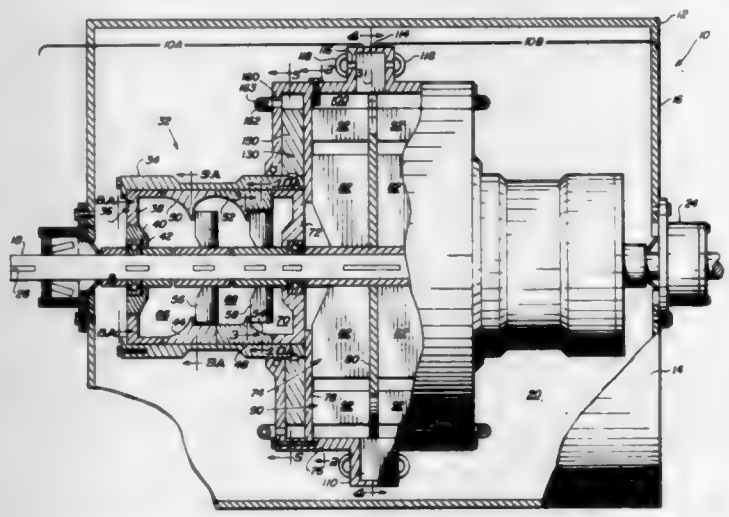
(a) a housing defining a chamber adapted to receive a working fluid;

(b) an axially extending shaft having opposite ends and extending through said housing adapted to be connected to a prime mover at one end and adapted to be connected to perform work at the other end;

(c) a first pressure stage having a stator and a rotor, said rotor being connected for rotation with said shaft, said first stage having an inlet for communicating fluid from said housing chamber and an outlet for discharging fluid pumped through said first pressure stage;

(d) a second stage in fluid communication with the outlet from said first stage, said second stage including radially extending blades secured to said shaft and discharging the fluid radially into a peripheral plenum chamber;

(e) exhaust means rotative with said shaft and including exhaust nozzle means having an inlet communicating with said plenum chamber and an outlet for discharging work-



ing fluid from said plenum chamber into said housing chamber;

(f) fluid motor means including:

(i) a casing rotative with said shaft;

(ii) a second rotor rotative in said casing and secured to said stator; and

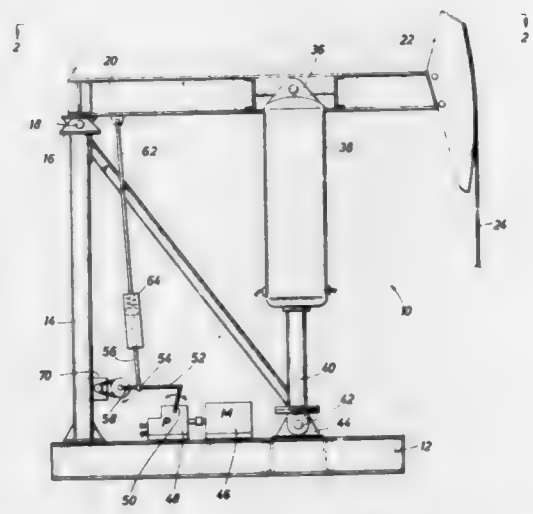
(iii) valve means interposed between said motor and plenum for selectively admitting a second portion of the fluid from said plenum into said casing to rotate said second rotor and said stator in a rotative direction opposite the direction of rotation of said shaft and a discharge means in said casing for directing the fluid from the casing into the housing for rotating the casing in a rotative direction opposite the direction of rotation of said rotor.

4,406,122

HYDRAULIC OIL WELL PUMPING APPARATUS

Thomas F. McDuffie, 11926 Taylorcrest, Houston, Tex. 77024

Filed Nov. 4, 1980, Ser. No. 203,983
Int. Cl.³ F15B 21/02
U.S. Cl. 60—368 8 Claims



1. An apparatus for use in operating a walking beam oil well pumping mechanism which connects to the downhole pump

by means of sucker rods and which sucker rods impart a weight to the walking beam, the weight to be offset by a counterbalance force, and wherein the walking beam rotates about a pivot, comprising:

(a) a generally upstanding, closed tank having a piston rod extending therefrom, the tank and piston rod being installed as a unit beneath the walking beam to force the walking beam upwardly and to impart a force thereto serving as a counterbalance force against the weight of sucker rods on the walking beam;

(b) an air inflatable portion in said tank which adjustably varies the pressure within the tank to vary the counterbalance force acting on the walking beam;

(c) a pneumatically urged first piston affixed to an end of said piston rod sealingly received in an upstanding, cylindrical sleeve concentrically located about said piston rod, said first piston having an upper face exposed to air pressure levels maintained in said closed tank; and

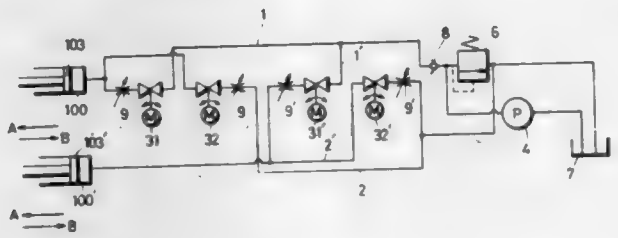
(d) a hydraulically operated second piston affixed to said piston rod sealingly received in a cylinder housing mounted in said closed tank below said cylindrical sleeve, said piston rod extending through said cylinder housing, and said second piston moveable in two directions to reciprocate the piston rod and thereby impart a pumping stroke to the walking beam.

4,406,123

HYDRAULICALLY-ACTUATED CONTROL DEVICE FOR OPERATION UNIT IN TREATMENT CHAIR AND THE LIKE

Takahiro Matsui, Uji, and Akifumi Tachibana, Kyoto, both of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Feb. 18, 1981, Ser. No. 235,651
Claims priority, application Japan, Feb. 19, 1980, 55-20155
Int. Cl.³ B60T *13/20*
U.S. Cl. 60—459 **4 Claims**



1. A control device for hydraulically actuated operation unit for a treatment chair provided in an interlocking relation with the hydraulic piston, said device being characterized in that it comprises:

first and second control valves which are respectively slow in closing and opening and respectively disposed in oil feed and discharge passages leading to a hydraulic cylinder having a hydraulic piston therein, said first and second valves being slow in closing and opening by rotating an electric motor;

a control means for controlling selective closing and opening of said two control valves and operation of a hydraulic pump disposed in said oil feed passages.

4,406,124

HERMETICALLY SEALED TRANSMISSION SYSTEM FOR A FREE PISTON STIRLING ENGINE

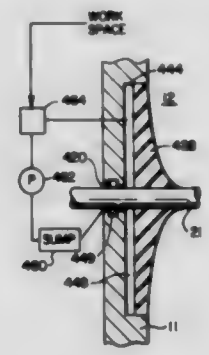
Bruce J. Chagnot, Athens, Ohio, assignor to Sunpower, Inc., Athens, Ohio

Filed Feb. 3, 1982, Ser. No. 345,313
Int. Cl.³ F02G *1/00*
U.S. Cl. 60—520 **2 Claims**

1. I a free piston Stirling cycle engine provided with a housing that defines a gas-containing chamber variably partitioned by a displacer and a linearly reciprocative power piston, said power piston being accessible from a position outside said gas-containing chamber through a passageway formed in said housing, that improvement which comprises:

(a) a drive shaft extending through said passageway and mounted for rotationally reciprocative movement around its longitudinal axis;

(b) means located within the housing for transmitting mechanical energy between said power piston and said drive shaft;



(c) a torsionally flexible seal mounted within said gas-containing chamber in surrounding relation to said drive shaft and secured along its peripheral edges to said housing to form a gas-tight barrier between said drive shaft and said housing; and

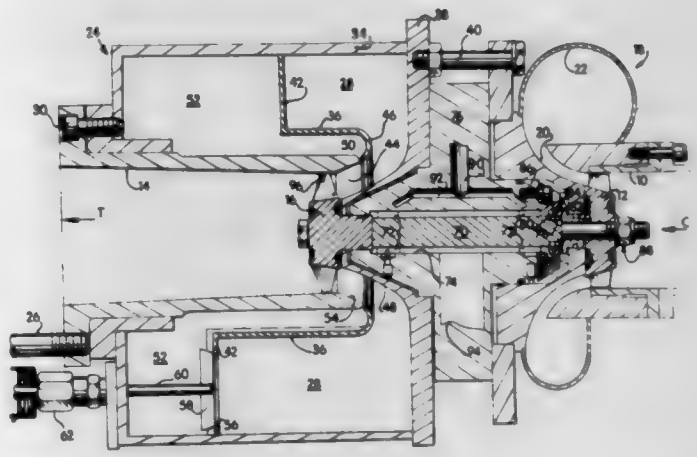
(d) a layer of lubricating fluid trapped between said housing and said torsionally flexible seal.

4,406,125

VARIABLE FLOW RATE TURBOCHARGER

Christian J. Rahnke, Orchard Lake, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 10, 1981, Ser. No. 291,712
Int. Cl.³ F02D *23/00*
U.S. Cl. 60—602 **13 Claims**



1. An axial flow supercharger for compressing air inducted by an engine comprising:

a rotor shaft;

a turbine rotor secured to the shaft having blades extending radially therefrom, through which the engine exhaust gas flows and drives the turbine;

a compressor rotor secured to the shaft having compressor blades extending radially therefrom through which air flows and is compressed;

a compressor casing for carrying air through the compressor rotor to the engine;

an exhaust gas casing surrounding the turbine rotor forming a high pressure gas volute having a first passage directed tangentially with respect to the axis of the turbine rotor, a second passage directed circumferentially about the turbine rotor and a turbine inlet duct through which exhaust gas is carried from the second passage to the turbine rotor,

whereby the exhaust gas entering the turbine rotor has velocity in the tangential and axial directions;

a control duct directed parallel to the axis of the turbine rotor for carrying a portion of the exhaust gas flow from the high pressure gas volute to the turbine duct, having an orifice for directing exhaust gas from the control duct into the exhaust gas stream that passes through the turbine rotor; and

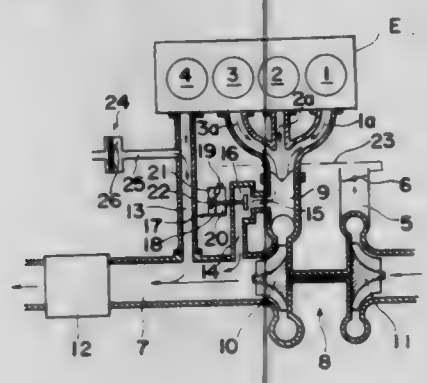
valve means for opening the flow of exhaust gas from the high pressure gas volute to the control duct when the pressure at the compressor outlet decreases and for closing said flow when the pressure at the compressor outlet increases.

4,406,126

SECONDARY AIR SUPPLY SYSTEM FOR AUTOMOBILE ENGINE HAVING SUPERCHAGER

Tsunetoshi Yokokura, Hiroshima, and Tsuyoshi Tsuchida, Iwakuni, both of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Jan. 18, 1982, Ser. No. 340,336
Claims priority, application Japan, Jan. 26, 1981, 56-10598
Int. Cl.³ F02B *37/00*; F01N *5/04, 3/30*
U.S. Cl. 60—605 **4 Claims**



1. A secondary air supply system for an internal combustion engine having a supercharger comprising a turbine chamber having a turbine therein and a compressor chamber having a compressor therein, said turbine being operatively coupled to the compressor for rotation together therewith in one direction, said secondary air supply system comprising, in combination:

a plurality of engine cylinders having their fuel intake ports communicated to the compressor chamber, and also having their respective exhaust ports;

a first exhaust duct means having one end fluid-connected to some of the exhaust ports of the respective engine cylinders and the other end communicated to an inlet port of the turbine chamber;

an exhaust pipe having one end communicated to an outlet port of the turbine chamber and the other end communicated to the atmosphere;

an exhaust gas purifying device disposed on the exhaust pipe for substantially purifying exhaust gases emitted from all of the engine cylinders;

a second exhaust duct means having one end communicated to the remaining exhaust ports of the respective engine cylinders and the other end communicated to a portion of the exhaust pipe upstream of the exhaust gas purifying device with respect to the direction of flow of the exhaust gases towards the atmosphere; and

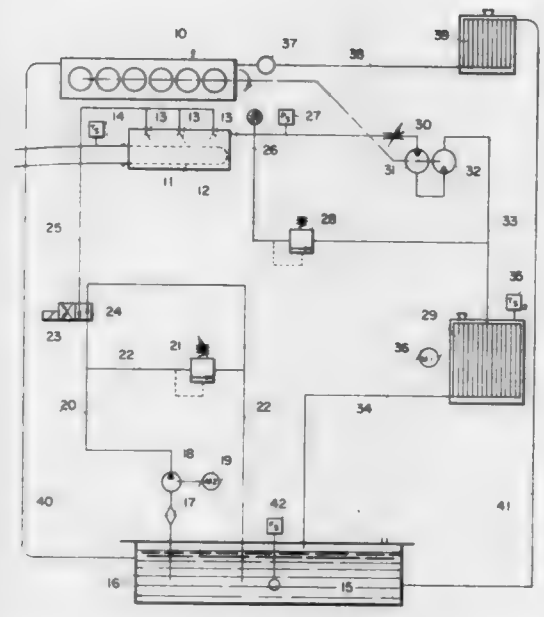
a secondary air supply means for supplying a secondary air into the second exhaust duct means in response to the pulsating flow of exhaust gases emitted from said remaining exhaust ports.

4,406,127

INTERNAL COMBUSTION ENGINE WITH STEAM POWER ASSIST

Rodney D. Dunn, 15011 Crosswood Rd., La Mirada, Calif. 90638

Filed Jan. 11, 1982, Ser. No. 338,438
Int. Cl.³ F01K *23/10*
U.S. Cl. 60—618 **7 Claims**



1. An improved internal combustion engine of the type having a plurality of cylinders containing pistons connected to a crankshaft for the combustion of an air/fuel mixture, said engine having an exhaust manifold and a radiator wherein the improvement comprises:

a closed chamber surrounding the exhaust manifold;

means for injecting water on the outer surface of the exhaust manifold in an amount insufficient to lower the manifold temperature below the boiling point of water at the pressure in the closed chamber so that steam is generated within the closed chamber;

at least one steam cylinder and piston connected by a steam line to the chamber to convert the steam generated in the chamber to power; and

condenser means connected to the steam cylinder to condense the steam after it has been exhausted from the steam cylinder.

4,406,128

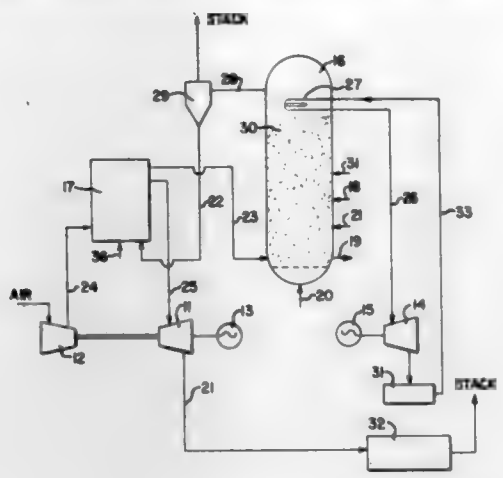
COMBINED CYCLE POWER PLANT WITH CIRCULATING FLUIDIZED BED HEAT TRANSFER

John P. Fanaritis, and James S. Davis, both of Warren, Pa., assignors to Struthers-Wells Corporation, Warren, Pa.

Filed Nov. 13, 1981, Ser. No. 320,878
Int. Cl.³ F01K *23/06*
U.S. Cl. 60—655 **4 Claims**

1. In a combined cycle power plant comprising a gas turbine portion including a compressor section and a turbine section, a steam utilizing portion, and a fluidized bed combustor for combustion of carbonaceous sulfur-bearing fuel particles at nearly atmospheric pressure in a bed of fluidized particles, steam generating means utilizing heat from the combustor and air heating means utilizing heat from the combustor, the improved air heating means comprising a chamber external of the combustor having tubes therein connected at one end with the combustor to receive said fluidized particles therefrom and at the other end with the combustor to return said fluidized particles thereto, a first duct connecting said chamber with the compressor section of the gas turbine to convey clean com-

pressed air therefrom around the tubes in the chamber, and a second duct connecting the chamber with the turbine section



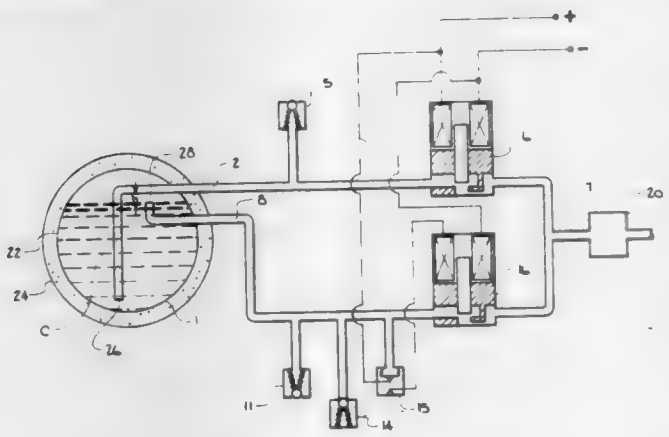
of the gas turbine portion to convey that air heated by contact with those tubes to that turbine.

4,406,129

SATURATED CRYOGENIC FUEL SYSTEM

Gary L. Mills, Boulder, Colo., assignor to Beech Aircraft Corporation, Wichita, Kans.

Filed Dec. 11, 1981, Ser. No. 329,670
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—7 **10 Claims**



1. A cryogenic fuel system for internal combustion engines utilizing both the liquid and vapor of a saturated liquid fuel comprising:

an insulated storage tank having inner and outer walls;

a vapor tube passing through the walls of the tank with its open end positioned approximate the top of the tank above the liquid level;

a liquid entry and exit tube passing through the walls of the tank with a portion of the tube at or above the open end of the vapor tube, the liquid tube extending downwardly to the bottom portion of the tank to its open end;

an air-fuel mixer chamber supplied by the combined flow of the vapor tube and liquid tube;

a first pressure-actuated valve means positioned in the vapor tube having an open or closed position which opens the vapor tube to the mixer chamber when the tank pressure exceeds a predetermined elevated pressure; and

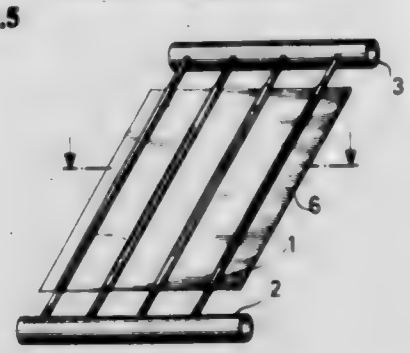
a second pressure-actuated valve means in the liquid tube having an open and closed position which opens the liquid tube to the mixer chamber.

4,406,130

COLD SURFACE FOR CRYOGENIC PUMPS

Johann Hemmerich, Julich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Julich GmbH, Julich, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 238,673
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008126
Int. Cl.³ B01D *8/00*
U.S. Cl. 62—55.5 **5 Claims**



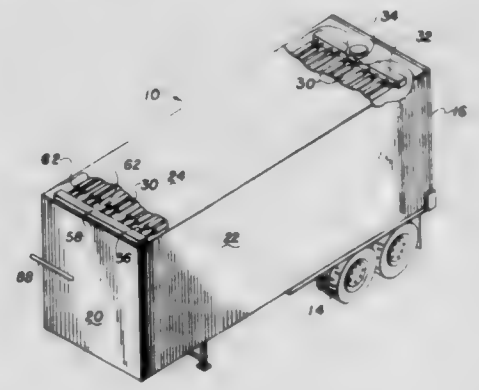
1. Cold surface for cryogenic pumps comprising a double wall structure acted upon by a liquid refrigeration medium, such as liquid helium, said double wall including a series of thin-walled, narrow, tubes interconnected through distributor conducts and collector conduits for said liquid refrigeration medium and arranged in parallel; and thin, axially parallel metal lamellas having good heat conductivity being attached to said tubes, wherein the tube diameter is in the range of between about 3 mm and 8 mm, the tube spacing is between about 15 mm and 50 mm, the tube wall thickness is in the range of about 0.1 mm to 0.5 mm, and the lamella thickness is between about 0.05 mm to 0.5 mm for effecting a minimization of the overall mass of the surface and for effecting temperature differentials within the lamella of the surface filled or passed by the liquid refrigeration medium remain, at maximum occurring heat load, below 0.1° K.

4,406,131

REFRIGERATED PRODUCE TRANSPORT

George E. Weasel, Jr., Tem-Cole, Inc., Hwy. 65, McClure, Ohio 43534

Filed Sep. 28, 1981, Ser. No. 305,952
Int. Cl.³ F25D *17/02*
U.S. Cl. 62—64 **12 Claims**



1. The process involving:

a. produce in

b. an enclosed air-tight body having a front and side walls, a top and a floor,

c. a door opening with doors on said enclosed body for loading cargo therein,

d. means on said body for transporting said body from one location to another, and

e. insulations in the walls, top, floor, and doors of said body;

wherein the improved method comprises:

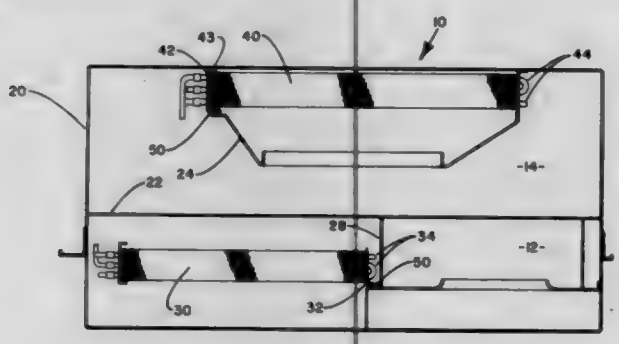
f. closing the door opening and with the opening closed and the body an air-tight unit,
g. pumping chilled water at a temperature of not higher than about 37° F. into a sprinkler unit attached to the top of the body in volumes not less than 500 gallons per minute,
h. sprinkling water from the sprinkler unit onto the produce simultaneously with
i. filling nitrogen bottles within the body with liquid nitrogen while venting the nitrogen bottles to expansion tubes located within the sprinkler unit, so that
j. the vented nitrogen aids in chilling the water sprinkled from said sprinkler unit, and also
k. exhausting the gas from exhaust conduits located along the floor of the trailer underneath the produce, thus
l. purging the atmosphere within the produce with the exhausted nitrogen gas.

4,406,132

METHOD FOR ASSEMBLING AN AIR CONDITIONING UNIT INCLUDING A TUBE SHEET ISOLATOR

Theodore S. Bolton, Liverpool, and Richard D. Lang, Chittenango, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Division of Ser. No. 151,039, May 19, 1980, Pat. No. 4,306,615.
This application Aug. 3, 1981, Ser. No. 289,341
Int. Cl.³ F28F *9/22*
U.S. Cl. 62—77 **3 Claims**



1. A method of assembling an air conditioning unit which comprises the steps of:

forming a subassembly by fastening at least one end of a heat exchanger having a tube sheet to the base pan of the unit;

constructing a component assembly to be secured to the subassembly, said component assembly including means for directing air relative to the heat exchanger;

attaching a tube sheet isolator to either the subassembly or the component assembly, said isolator having a body portion from which it is attached and two leg portions extending therefrom forming a tube sheet retaining slot therebetween; and

sliding the component assembly into position relative to the subassembly, the tube sheet of the heat exchanger being engaged within the tube sheet retaining slot of the isolator to secure the component assembly to the subassembly.

4,406,133

CONTROL AND METHOD FOR DEFROSTING A HEAT PUMP OUTDOOR HEAT EXCHANGER

James F. Saunders, Onalaska, and Robert E. Krocker, Stoddard, both of Wis., assignors to The Trane Company, La Crosse, Wis.

Division of Ser. No. 123,308, Feb. 21, 1980, Pat. No. 4,338,790.
This application Feb. 25, 1982, Ser. No. 352,414
Int. Cl.³ F25D *21/02*
U.S. Cl. 62—80 **14 Claims**

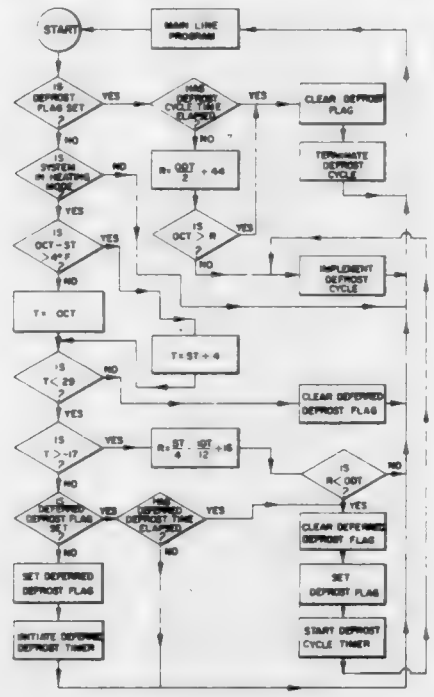
1. In an air source heat pump for temperature conditioning a comfort zone, including an outdoor heat exchanger, an indoor heat exchanger, a compressor connected to a reversing valve by a refrigerant suction line, and means for moving air through the outdoor and indoor heat exchangers in heat transfer relation therewith, a control for desfrosting the outdoor heat exchanger to melt ice and frost accumulated thereon during operation of the heat pump in a heating mode, said control comprising

(a) means for sensing a condition indicative of the relative water vapor content of the outdoor ambient air;

(b) means for sensing frost and ice accumulation on the outdoor heat exchanger;

(c) a sensor for sensing the temperature in the comfort zone; and

(d) control means, responsive to said condition sensing



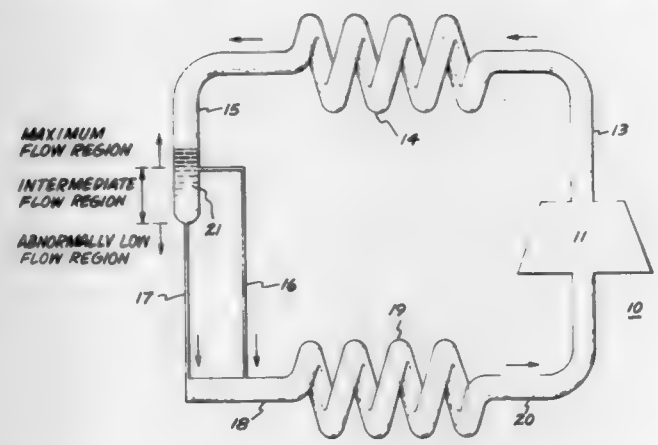
means, to said means for sensing frost and ice accumulation, and to the comfort zone temperature sensor, and operative to initiate: (i) a deferred defrost cycle wherein defrost of the outdoor heat exchanger begins after a fixed time interval has elapsed, if said condition sensing means indicates that the water vapor content of the outdoor air is relatively low; and (ii) an immediate defrost cycle when frost and ice have accumulated on the outdoor heat exchanger sufficiently to degrade heat transfer efficiencey to an optimum permissible limit, determined as a function of the comfort zone temperature.

4,406,134

TWO CAPILLARY VAPOR COMPRESSION CYCLE DEVICE

Himanshu B. Vakil, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 23, 1981, Ser. No. 323,851
Int. Cl.³ F25B *1/00*
U.S. Cl. 62—114 **10 Claims**



1. A method for modulating the working fluid flowrate in a vapor compression cycle device which comprises compressing

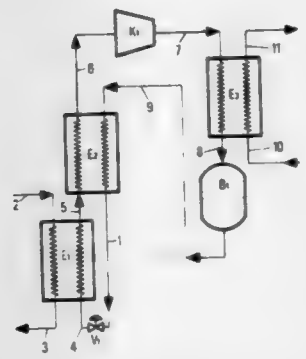
a working fluid vapor in a compressor, condensing working fluid vapor in a condensing heat exchanger, passing a portion of the working fluid from said condenser heat exchanger through a first expansion device positioned so as to pass working fluid from the lower most portion of the output of said condensing heat exchanger or its termination, passing a portion of the working fluid from said condensing heat exchanger through a second expansion device positioned so as to pass working fluid from a region of the condensing heat exchanger output which is upstream or higher than the inlet to said first expansion device, passing working fluid from said expansion devices to an evaporating heat exchanger, or to an evaporating heat exchanger and associated inlet tube of said compressor, evaporating the working fluid in the evaporative heat exchanger, and finally compressing the working fluid vapor for recirculation.

4,406,135

HEATING AND THERMAL CONDITIONING PROCESS MAKING USE OF A COMPRESSION HEAT PUMP OPERATING WITH A MIXED WORKING FLUID

Alexandre Rojey, Garches, and Claude Ramet, Paris, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jan. 15, 1982, Ser. No. 339,565
Claims priority, application France, Jan. 15, 1981, 81 00847
Int. Cl.³ F25B *00/00*
U.S. Cl. 62—114 **12 Claims**



1. A heating and thermal conditioning process wherein a compression heat pump is operated with a mixed working fluid under such conditions that the mixture of constituents forming the mixed working fluid does not form any azeotrope, comprising the steps of:

(a) compressing the mixed working fluid in vapor phase,

(b) contacting in heat exchange relationship the compressed mixed fluid issued from step (a) with a relatively cold external fluid, and maintaining said contact up to the substantially complete condensation of said mixed fluid,

(c) contacting in heat exchange relationship, the substantially completely condensed mixed fluid issued from said (b) with a cooling fluid as defined in step (f) hereinafter, so as to further cool said mixed fluid,

(d) expanding the cooled mixed fluid issued from step (c),

(e) contacting the expanded mixed fluid issued from step (d), in heat exchange relationship, with an external fluid constituting a heat source, the conditions of the contact providing for the partial vaporization of said expanded mixed fluid,

(f) contacting said partially vaporized mixed fluid issued from step (e), in heat exchange relationship, with the substantially completely liquified mixed fluid fed to step (c), said partially vaporized mixed fluid forming the cooling fluid of said step (c), with the contact conditions providing for the completion of the vaporization initiated in step (e), and

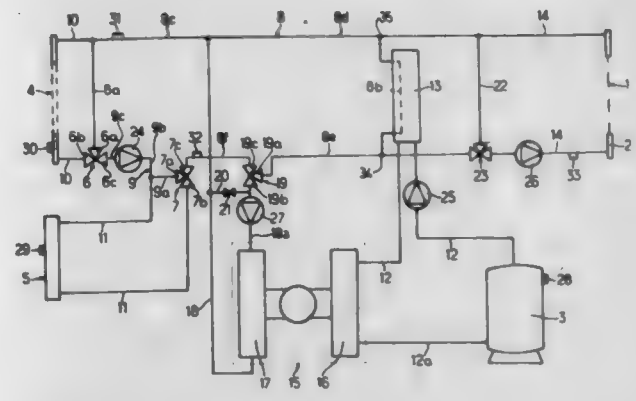
(g) feeding back to step (a) the vaporized mixed fluid issued from step (f), the process operating under such conditions that the temperature range at which the external fluid provides heat to step (e) is narrower than the temperature range at which the external fluid is heated in step (b).

4,406,136

HEATING INSTALLATION NOTABLY FOR SPACE HEATING AND FOR SANITARY HOT WATER PRODUCTION

Andre A. Picchiottino, 7 Chemin des Maraichers, 73100 Tresserve, France

Filed Jun. 3, 1981, Ser. No. 270,080
Claims priority, application France, Jun. 4, 1980, 80 12461
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.6 **15 Claims**



1. A heating installation for space heating and for the production of sanitary hot water comprising

a heat source,

a means for storing heat,

a heat diffusion system,

a tank for sanitary water,

a selectively operable auxiliary heat source thermally associated with said sanitary water and

a pipe forming a loop in which a fluid may flow in one direction, said loop comprising

a first portion across the ends of which a first bypass is connected for permitting said fluid to be thermally associated with said heat source including means for selectively circulating said fluid either in said first portion or in said first bypass,

a second portion located in the direction of flow of the fluid in said loop downstream of said first portion and across the ends of which a second bypass is connected for permitting the fluid to be thermally associated with said means for storing heat including means for selectively circulating said fluid either in said second portion or in said second bypass,

a third portion located between said first and second portions downstream of said second portion and thermally associated with the sanitary water of said sanitary water tank for exchanging heat between the fluid circulating in said third portion and the sanitary water,

a third bypass connected across the ends of said third portion and thermally associated with said heat diffusion system,

whereby heat transfers may selectively be performed:

a. with the fluid circulating in said third portion from said heat source or said storage means to the sanitary water in said sanitary water tank,

b. with the fluid from said heat source or said storage means to said heat diffusion system, or

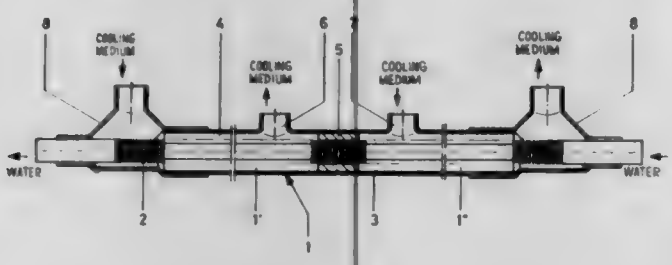
d. with the fluid circulating in said third portion from the sanitary water in said sanitary water tank as heated by said auxiliary heat source to said heat diffusion system,

according to demand and as conditions permit.

4,406,137
HEAT-TRANSMITTING DEVICE FOR HEAT PUMPS

Hans Demuth, Voehringen; Peter Kropp, Nersingen, and Karl Noll, Illerrieden, all of Fed. Rep. of Germany, assignors to Wieland-Werke AG, Ulm, Fed. Rep. of Germany

Filed Sep. 10, 1981, Ser. No. 300,858
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1980, 3034965
Int. Cl.³ F25B *27/02*
U.S. Cl. 62—238.6 16 Claims



1. A heat transmitting apparatus, comprising an elongate tubular shell; an elongate core tube adapted to have a medium flow therethrough and extending through said shell lengthwise thereof, a closed space being defined between the interior surface of said shell and the exterior surface of said core tube; a fill member which is disposed in and divides said space into separate first and second portions which are located on opposite sides of said fill member; means defining first, second, third and fourth openings through said shell, said first and third openings communicating with said first portion of said space and said second and fourth openings communicating with said second portion of said space, said first and second openings being adjacent said fill member and said third and fourth openings being spaced from said fill member; and a throttle device, an evaporator and a compressor which are connected in series with each other between said third and fourth openings in said shell, said compressor including a heat transmitter which communicates with said first and second openings in said shell.

4,406,138
LOAD MANAGEMENT CONTROL AIR CONDITIONING SYSTEM

Lorne W. Nelson, South Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 18, 1981, Ser. No. 322,494
Int. Cl.³ F28D *5/00*
U.S. Cl. 62—305 10 Claims

1. An air-conditioning system comprising a condenser section including a first condenser coil and a condenser fan,

an evaporator section including a first evaporator coil and an evaporator fan,

compressor means interconnecting said first condenser coil to said first evaporator coil

a second condenser section including a second condenser coil arrange in a path of air flow from said condenser fan,

a fluid storage tank located below said second condenser coil,

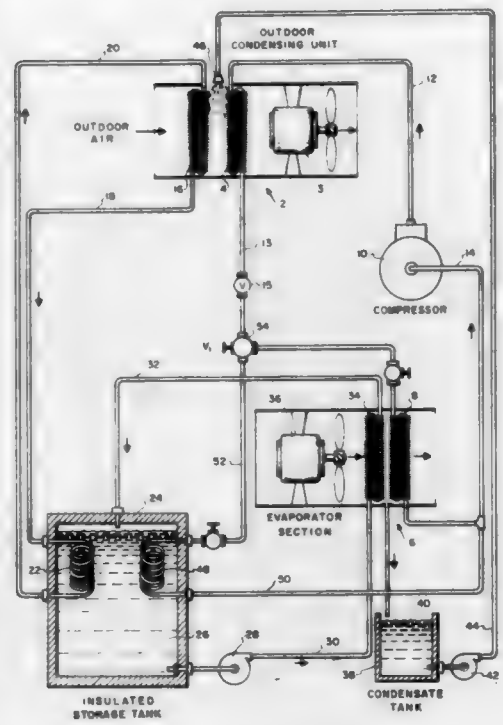
a heat exchanger in said tank,

refrigerant lines interconnecting said heat exchanger in series with said second condenser coil,

a refrigerant medium in said refrigerant lines having a boiling point at a wet bulb temperature of the ambient air surrounding said second condenser coil,

a water spray means for directing a water spray on said second condenser coil to cool said second condenser coil to said wet bulb temperature,

a second evaporator coil in said evaporator section arranged in a path of air from said evaporator fan and

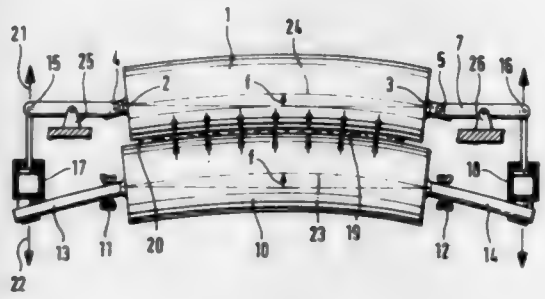


means for selectively propelling a fluid from said storage tank through said second evaporator coil.

4,406,139
ROLLER ARRANGEMENT FOR DEWATERING FABRICS

Theo Schiffers, Aachen, Fed. Rep. of Germany, assignor to H. Krantz GmbH & Co., Aachen, Fed. Rep. of Germany

Filed May 14, 1982, Ser. No. 378,066
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122568; Jun. 6, 1981, 3122569
Int. Cl.³ D06B *15/02;* B30B *3/04*
U.S. Cl. 68—258 4 Claims

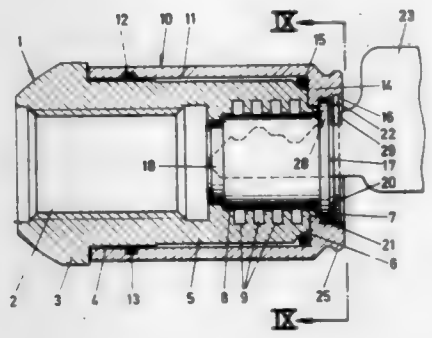


1. A roller arrangement for dewatering Foulard or like fabrics comprising a spaced pair of fixed bearings, a first roller having a shaft mounted in said bearings, the ends of said shaft projecting laterally beyond said bearings, a second roller movable toward and away from said first roller, said second roller including an axle, a fixed fulcrum member spaced from each end of said axle of said second roller, a lever pivotally mounted to each said fulcrum centrally of the ends of said lever to thus define inner and outer lever arms to opposite sides of said fulcrum, each of said outer lever arms overlying a respective projecting end portion of said shaft of said first roller, means connecting the ends of said axle to a respective inner lever arm and an expansion means at each side of said rollers interposed between and reacting against each said outer lever arm and a respective projecting portion of said shaft of said first roller, whereby extension of said expansion means shifts said second roller toward said first roller and causes said rollers to assume conforming curvatures.

4,406,140
ANTI-THEFT DEVICE FOR AUTOMOBILE WHEELS

Heinz Wolter, Kürten, Fed. Rep. of Germany, assignor to DOM-Sicherheitstechnik GmbH & Co. KG, Brühl, Fed. Rep. of Germany

Filed May 4, 1981, Ser. No. 260,640
Claims priority, application Fed. Rep. of Germany, May 8, 1980, 3017630
Int. Cl.³ E05B *11/00, 35/14, 65/00;* F16B *41/00*
U.S. Cl. 70—231 12 Claims



1. In a device for preventing theft of automobile wheels having a barrel which extends over a polygonal head of a threaded wheel fastener part, within which barrel there is arranged a lock cylinder plug, the tumblers of which projecting beyond a cylindrical surface of the lock cylinder plug and in an anti-theft position entering into annular grooves formed in an inner wall of the polygonal head, can be brought by a key into a position in which the tumblers are retracted from the annular grooves, the improvement wherein

said tumblers are seated in the lock cylinder plug,

said barrel is formed with a bearing opening,

key means are provided for positioning said tumblers into said position in which the tumblers are retracted from the annular grooves by insertion into a key slot of said lock cylinder plug,

said lock cylinder plug is formed with a collar which is rotatably mounted in the bearing opening of said barrel,

a ring substantially closes said bearing opening and forms a shoulder connected to said barrel and disposed in front of and overlapping said collar of said lock cylinder plug, said ring is formed with a radial recess,

said key means is formed with a projection which lies in a plane of the key slot when the key is inserted therein, said projection is at most as large as said recess in width and radially outermost extent,

said projection is disposed behind said shoulder constituting means for pulling out the ring and the barrel connected thereto from the wheel fastener part by pulling said key means after said key means is inserted into said key slot, passed through said recess with the key slot in a basic position aligned with said recess and turned out of said basic position, and

at least one O-ring is disposed on an inner wall of said barrel between and acting against said barrel and said wheel fastener part.

4,406,141
STRAIGHTENING APPARATUS FOR STEEL PIPES AND THE LIKE

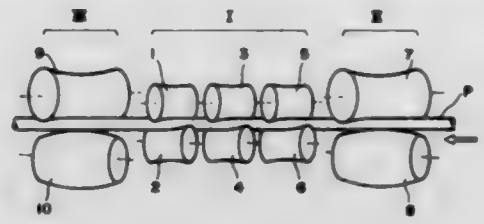
Masachika Numano, Yokosuka, and Shinji Akita, Yokohama, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 11, 1981, Ser. No. 291,954
Claims priority, application Japan, Aug. 21, 1980, 55-117442[U]
Int. Cl.³ B21D *3/04*
U.S. Cl. 72—98 6 Claims

1. A straightening apparatus for steel pipes or the like comprising:

a first straightener including a plurality of pairs of upper and lower concave rolls;

a second straightener including a pair of a concave roll and a convex roll arranged one upon the other and at one of the entry and exit sides of said first straightener;

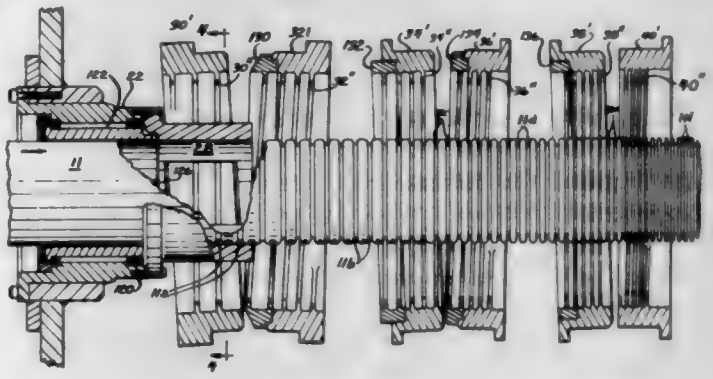


a means attached to one roll of each roll pair of said first and second straighteners for moving these rolls vertically, independently of one another, whereby when one of said first and second straighteners is pressing on a steel pipe, pressure by the other is released, thus straightening the steel pipe in its entire length.

4,406,142
ANNULAR CORRUGATOR

Donald G. Kelstrom, Elmhurst; John D. Williams, West Chicago, and Lester H. Woodrich, Elgin, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Aug. 31, 1981, Ser. No. 297,907
Int. Cl.³ B21D *15/06*
U.S. Cl. 72—98 12 Claims



1. An apparatus for annularly corrugating metal tubing comprising:

(a) a first annular die ring adapted to encompass the tubing, said first die ring including a helical internal ridge portion having a tapered entrance portion and an inner diameter greater than the outer diameter of the tubing and extending circumferentially at a predetermined internal diameter for at least 360° around the interior wall of said first die and adapted to indentably bear on the exterior of said tubing in a substantially radial direction;

(b) at least a second annular die ring adapted to encompass said tubing downstream of said first die ring, said second die ring including a tapered entrance portion and a helical internal ridge which extends circumferentially for at least 360° at a predetermined internal diameter and which has an internal diameter which is greater than the outer diameter of the tubing which it is adapted to engage, the helical internal ridge in said second die ring having a smaller thread pitch than said first die ring;

(c) means for incurring relative rotation between said tubing and said die rings whereby to axially displace said tubing continually through said dies while simultaneously forming annular corrugations therein;

(d) means for synchronizing the rotation of said die rings so that they rotate at the same angular speed; and

(e) a non-rotatable guide means fixedly positioned on said apparatus so as to extend within said first annular die ring but not within said second die ring, said guide means having an inner cylindrical wall which supports said tubing within said first die ring for a continuous circumferen-

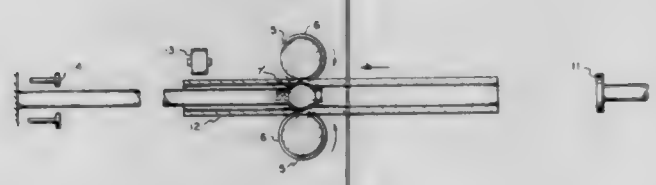
tial distance of at least 180° and which is apertured to permit the helical internal ridge portion of said die ring to pass through it to engage said tubing, said inner cylindrical wall having a sufficiently small radial clearance relative to said tubing that it will be engaged by said tubing so as to prevent the collapse of said tubing as said tubing tends to assume a non-cylindrical shape when deformed by said die ring.

4,406,143

RETURN PASS PRACTICE FOR THE HIGH MILL OF A SEAMLESS-PIPE MILL

Edward J. Patula, Monroeville, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 23, 1981, Ser. No. 333,836
Int. Cl.³ B21B *17/10*
U.S. Cl. 72—209 **2 Claims**



1. In the production of seamless tubing, wherein a shell is transferred to a plug rolling mill and said shell is rolled through work-rolls in a first plug-rolling pass consisting of pushing the shell over a plug attached to a supported mandrel bar, said plug lying within a roll groove of the work rolls, the entry side of said plug being tapered in a direction counter to the travel of said shell, whereby the entirety of said shell is drawn over the plug by the rolling friction of the roll groove, thereafter repeating the rolling operation for at least one additional pass on said shell, the improvement for significantly decreasing the time required for completion of said additional pass, which comprises,

(a) subsequent to said first pass, reversing the rotation of said work-rolls, rotating the shell about 90° around its longitudinal axis, and

(b) pushing the shell back through said reverse-rotating work-rolls to effect the additional pass over the same plug, said plug being connected to the mandrel so as to transmit the tension force on the plug to the mandrel, the exit side of said plug being provided with a taper in a direction counter to the reverse travel of said shell, whereby said shell is drawn over said plug by said work-rolls to perform said additional pass.

4,406,144

ROLLING MILL STAND HAVING AXIALLY ADJUSTABLE INTERMEDIATE ROLLS

Harry L. F. Bond, Hathersage, Near Sheffield, and Robert W. Gronbech, Sheffield, both of England, assignors to Davy-Loewy Limited, Sheffield Yorkshire, England

Filed Sep. 2, 1981, Ser. No. 298,880
Claims priority, application United Kingdom, Sep. 3, 1980, 8028386
Int. Cl.³ B21B *31/18*
U.S. Cl. 72—238 **3 Claims**

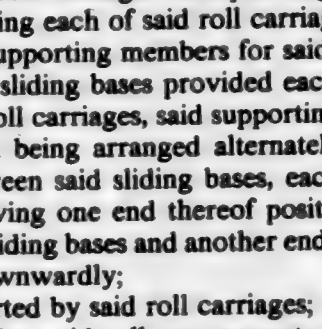
1. A rolling mill stand having a roll stack comprising:

(a) first and second work rolls;

(b) first and second back-up rolls for supporting said first and second work rolls respectively;

(c) first and second intermediate rolls located between and in contact with one of said back-up rolls and said work roll supported by said one back-up roll, said first intermediate roll engaging said one back-up roll and said second intermediate roll, and said second intermediate roll engaging said first intermediate roll and said work roll; and

(d) said intermediate rolls being independently axially adjustable relative to the other said rolls of said stack such that one end of each intermediate roll can be aligned approximately with an edge of a strip being worked.



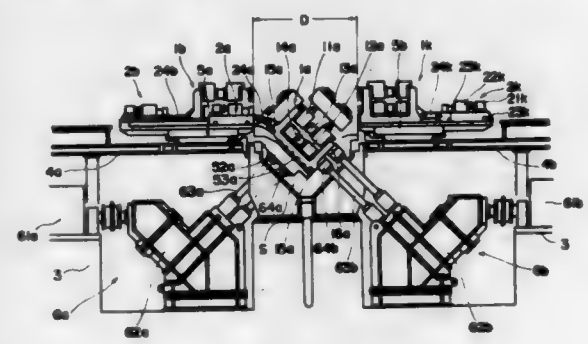
3. A rolling mill stand according to claim 1, in which said intermediate rolls are arranged between the upper work roll and the upper back-up roll and are arranged to be withdrawn together with said work rolls at roll change.

4,406,145

ROLL CHANGING APPARATUS FOR ROLLING MILLS

Shinji Akita, Yokohama, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 20, 1981, Ser. No. 312,941
Claims priority, application Japan, Oct. 21, 1980, 55-146259
Int. Cl.³ B21B *31/08*
U.S. Cl. 72—239 **4 Claims**



1. A roll changing apparatus for rolling mills comprising:

a pair of sliding bases carrying rails, said bases being arranged on base blocks to oppose each other and to be movable parallel to each other;

a plurality of roll carriages arranged on each of said sliding bases to be parallel to one another in a direction perpendicular to the direction of sliding of each said sliding base, each of said roll carriages incorporating a set of rolls;

means for moving each of said roll carriages;

a plurality of supporting members for said roll carriages on each of said sliding bases provided each for every other one of said roll carriages, said supporting members carrying rails and being arranged alternately within a space formed between said sliding bases, each of said support members having one end thereof positioned adjacent to one of said sliding bases and another end thereof obliquely extended downwardly;

roll sets supported by said roll carriages; and

means for driving said roll sets supported by said roll carriages on said supporting members through detachable coupling means;

said means for moving each of said roll carriages including link means for adapting each said roll carriage for elevation and depression,

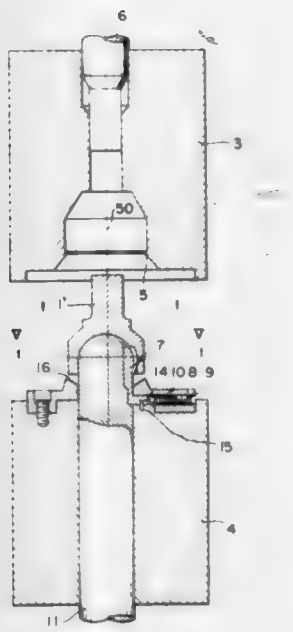
whereby a rolling mill shaped like an X is formed by the roll sets supported by said roll carriages on said supporting members within said space, and said sliding bases are moved parallel to each other and in the opposite directions with respect to said supporting members a distance of one roll carriage so as to align said rails on said supporting members selectively with said rails on said sliding bases.

4,406,146

FORGING DIE FOR A PART WITH INTERNAL, TAPERED GROOVES

Hisao Suzuki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Oct. 1, 1981, Ser. No. 309,702
Int. Cl.³ B21D *45/00*
U.S. Cl. 72—353 7 Claims



1. A forging die for forming a forged workpiece from a blank, said forged workpiece having concave, tapered internal grooves, said forging die comprising:

(a) a first die having a shaped member adapted for contact with the blank to forge the same, a cylindrical projection being provided around an inner surface of the shaped member to form the outer shape of the blank into a given shape;

(b) a second die having a central bore therethrough and aligned with said first die along a common stamping axis, said first and second dies being movable along the stamping axis toward one another for compressing the shaped member of said first die against the outer surface of the blank;

(c) a plurality of liner-grooving dies having outer surfaces of tapered, convex shape for forming tapered, concave internal grooves within the blank during forging of the blank to form the forged workpiece;

(d) means for biasing said liner-grooving dies radially toward the stamping axis thereby releasing said forged workpiece from said second die;

(e) a locking pin mounted in the central bore of said second die and movable therein along said stamping axis, said locking pin having a contact portion movable in contact with said line-grooving dies for inhibiting motion of said liner-grooving dies toward the stamping axis during forging of the workpiece, said contact portion movable out of contact with said liner-grooving dies after forming the forged workpiece for permitting said biasing means to release said forged workpiece; and

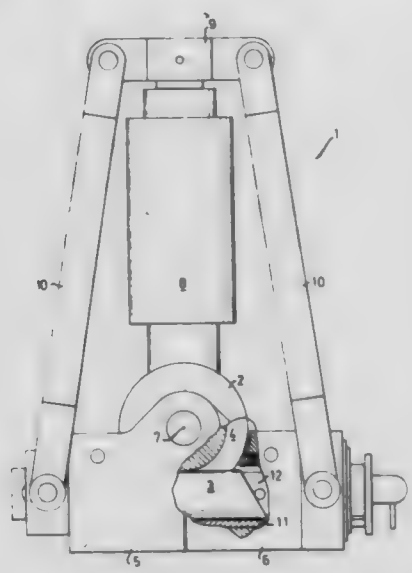
(f) means for securing said liner-grooving dies to said second die, said securing means preventing motion of said liner-grooving dies relative to said second die along said stamping axis, but permitting motion of said liner-grooving dies toward said stamping axis.

4,406,147

PIPE-BENDING APPARATUS

Gunnar H. Lagher, Fjälkinge, Sweden, assignor to A.O. Arkitektkontor AB, Stockholm, Sweden, a part interest

Filed Sep. 17, 1981, Ser. No. 303,026
Claims priority, application Sweden, Sep. 23, 1980, 8006647
Int. Cl.³ B21D *9/05*
U.S. Cl. 72—383 5 Claims



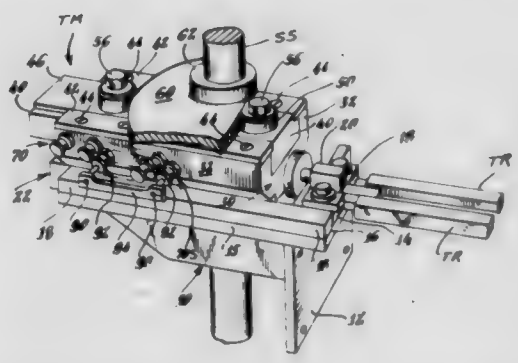
1. In apparatus for bending pipe, with a fixed forming member serving as an abutment and two forming members pivotable in relation to the fixed forming member and intended for engagement with the pipe, each of the latter forming members being provided with a mandrel means having a movably arranged end piece at one end thereof, said mandrel means with their end pieces being adapted for insertion in the pipe from opposing directions with the end pieces meeting each other, at the start of bending, to support the pipe from its interior during bending, said end pieces being adapted to remain against each other during the initial bending phase while the respective mandrel means is swung a distance, and then to be swung together with the respective mandrel means; the improvement comprising means displacing each end piece outwardly during the initial bending phase and away from the bending center, to expand the pipe.

4,406,148

MULTI-STATION TRANSFER PRESS HAVING TRANSFER SLIDE SAFETY RELEASE MEANS

David W. Knight, Stratford, Conn., assignor to The U.S. Baird Corporation, Stratford, Conn.

Filed Mar. 23, 1981, Ser. No. 246,729
Int. Cl.³ B21D *43/05*
U.S. Cl. 72—405 18 Claims



1. A multi-station metal forming press comprising: a press frame; means forming a plurality of work stations arranged to support dies; a plurality of punch-like tools operatively disposed relative to said dies; means for operating said tools in a predetermined manner relative to said dies to perform work on workpieces disposed at said stations; means for transferring a

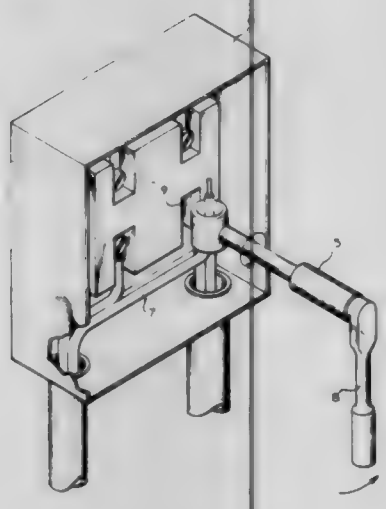
plurality of workpieces sequentially in a predetermined manner to each station; power means for driving said transfer means along a horizontal path; and means on the transfer means linearly responsive throughout the horizontal path of its travel to overloads caused by jams occurring anywhere in the press for operationally disconnecting the power means from said transfer means to permit said transfer means to stop to avoid damage to the components of the press while said power means continues to operate.

4,406,149

CABLE-BENDING TOOL

Dean E. Johnson, Great Falls, Mont., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 1, 1981, Ser. No. 259,744
Int. Cl.[3] B21D *7/00*
U.S. Cl. 72—458 8 Claims



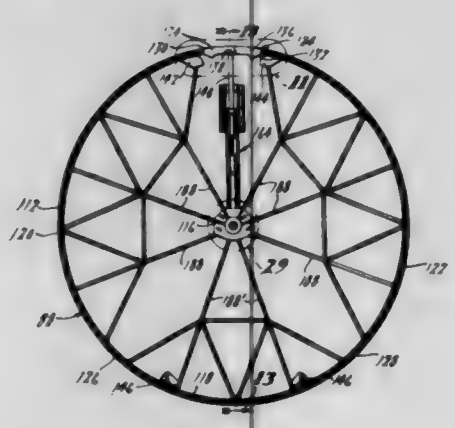
1. A cable-bending tool comprising:
a torsion arm comprising a first rod having a first end and a second end;
cable-engaging means at the first end of the torsion arm, the cable-engaging means comprising a cylindrical sleeve affixed perpendicularly to the first rod; and
means for attaching a lever arm in the form of a second rod to the second end of the torsion arm.

4,406,150

APPARATUS AND PROCESS FOR IMPROVED MANUFACTURE OF SHELLS FOR TUNNEL TUBES

Joseph J. Schneider, Kanata, Canada, and Robert A. Kaucic, Newark, Del., assignors to AMCA International Corporation, Hanover, N.H.

Filed Apr. 23, 1981, Ser. No. 256,728
Int. Cl.[3] B21J *13/02*
U.S. Cl. 72—478 4 Claims



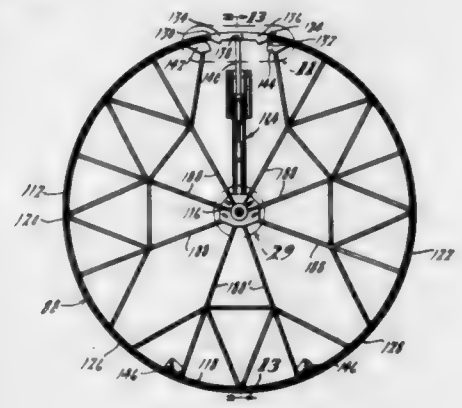
3. A collapsible fixture for the fabrication of shells for tunnel modules, said fixture being generally cylindrical in shape and comprising:
a centrally located axial extending core,
a plurality of collapsible wheel-like support members arranged along the axial length of the fixture,
a plurality of external members connecting said support members arranged along the axial length of the fixture,
a plurality of external members connecting said support members together along the length of said fixture, means for collapsing said fixture substantially, and
adjusting means for slightly decreasing the diameter of the fixture by collapsing it less than said first means.

4,406,151

COLLAPSIBLE FIXTURE FOR MANUFACTURE OF TUNNEL TUBES

Ole F. Simonsen, Ottawa; Wining A. Lee, Kanata, and Hung K. P. Chan, Ottawa, all of Canada, assignors to AMCA International Corporation, Hanover, N.H.

Filed Apr. 23, 1981, Ser. No. 256,729
Int. Cl.[3] B21J *13/02*
U.S. Cl. 72—478 8 Claims



1. A collapsible fixture for the fabrication of shells for tunnel modules, said fixture being generally cylindrical in shape, having a centrally located axially extending core, and comprising:
a plurality of wheel-like suppport members arranged along the axial length of the fixture, at least one of said support members having radially extending members,
a plurality of members connecting said support members together along the length of said fixture,
each of said support members having a foldable linkage portion and hinge means defining a portion of the periphery of said support member,
a truss member positioned along the axial length of the fixture and attached to said foldable linkage portion of each support member, and
hydraulic cylinder members disposed between said truss member and said core of said fixture.

4,406,152

METHOD AND APPARATUS FOR CALIBRATING A RAILROAD TANK CAR

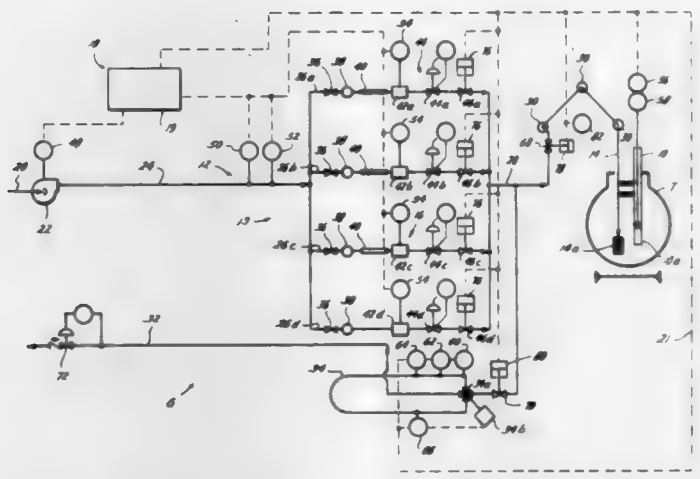
Rodney L. Palmer, Houston, Tex., and John T. Ostgaard, Los Angeles, Calif., assignors to Richmond Tank Car Company, Houston, Tex.

Filed Apr. 27, 1981, Ser. No. 257,998
Int. Cl.[3] G01F *25/00, 17/00*
U.S. Cl. 73—1 H 4 Claims

1. A method for calibrating a railroad tank car, comprising the steps of:
continuously adding liquid into the tank car to be calibrated;
measuring by instruments the amount of liquid as it is being continuously added to the tank car;
continuously measuring by instruments the depth of liquid in the tank car as it is continuously added;
obtaining a measure of the volume of liquid in the tank car at

pre-determined depths and correlating such obtained measure with the measured depth of liquid in the railroad tank car;

calibrating said instruments used to measure the amount of liquid added prior to adding liquid to the tank to find an adjustment factor;



using said adjustment factor to correct the volume measurements obtained;

continuously measuring the temperature and pressure of the liquid added to the tank car; and

using the temperature and pressure measurements to correct the volume measurements obtained.

4,406,153

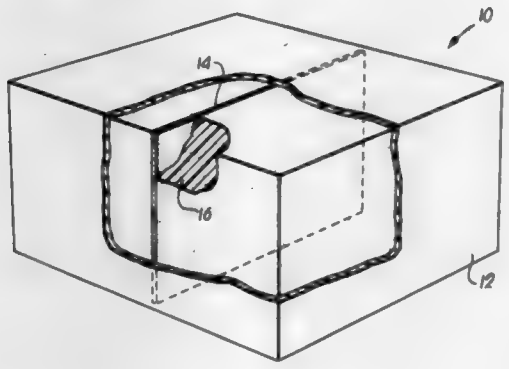
ULTRASONIC BEAM CHARACTERIZATION DEVICE

Jonathan Ophir; Nabil F. Maklad, and Paul M. Jaeger, all of Houston, Tex., assignors to Acoustic Standards Corporation, Houston, Tex.

Continuation-in-part of Ser. No. 36,016, May 4, 1979, Pat. No. 4,286,455. This application Aug. 27, 1981, Ser. No. 296,856

Int. Cl.³ G01N *37/00*

U.S. Cl. 73—1 DV **15 Claims**



1. An ultrasonic beam characterization device for characterizing an ultrasonic beam directed along an axis of radiation, said device comprising:

a substantially air-tight enclosure; and

means within said enclosure for profiling and imaging said ultrasonic beam when the latter is directed therethrough, said means comprising an elongated, thin element formed of material having substantially uniform acoustic scattering properties with a plurality of acoustic scattering sites throughout the physical structure thereof, said element being oriented substantially along or parallel to said axis of radiation, and a filler material disposed about said element, said element having a different back scatter coefficient than said filler material.

4,406,154

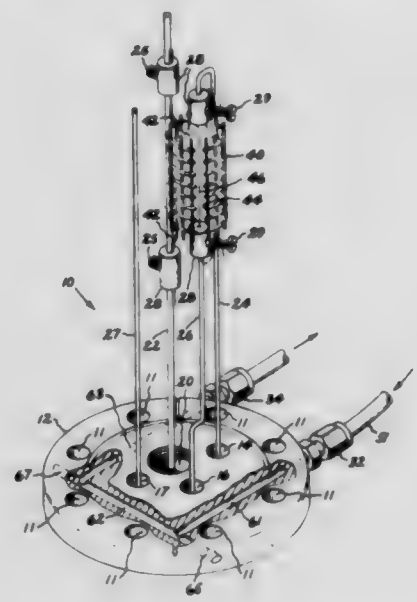
LOW LEVEL ALKALI METAL DETECTION IN COMBUSTION GAS STREAMS

Andrew S. Zarchy, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 22, 1982, Ser. No. 350,939

Int. Cl.³ G01N *27/62*

U.S. Cl. 73—23 **10 Claims**



1. A device for detecting the presence of one or more alkali metals present in trace amounts in a flowing hot gas, comprising:

a metaliferrous filament having a work function of at least 5.3 electron volts;

an electrically conductive ion collector disposed at a substantially constant distance from said filament so as to define an ionization collection region therebetween, said collector having a plurality of apertures therein for the passage of said gases;

means for applying a high voltage, direct current potential difference between said collector and said filament, whereby alkali metal ions formed at said filament are urged toward said collector where neutralization of said ions occurs, resulting in current through said collector;

a heat resistant support flange having insulated electrical feed-through support rods disposed therethrough for supporting said collector and said filament, said feed-through insulation, at least for said collector support rod, comprising ceramic material; and

means for cooling said ceramic material.

4,406,155

MEASURING APPARATUS FOR THE DETERMINATION OF THE PARTICULATES CONTENT OF EXHAUST GASES

Walter Krachler, Hart b.St. Peter, and Bruno Schachner, Graz, both of Austria, assignors to Hans List, Graz, Austria

Filed Aug. 27, 1981, Ser. No. 296,834

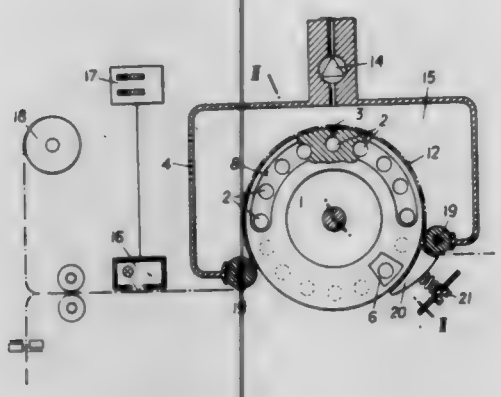
Claims priority, application Austria, Sep. 11, 1980, 4584/80

Int. Cl.³ G01N *1/22*

U.S. Cl. 73—28 **36 Claims**

1. Measuring apparatus for the determination of the particulates content of exhaust gases, comprising a sampling device and an exhaust gas supply line connected thereto, with said sampling device effecting during the passage of the exhaust gases the depositing of particulates onto gas-permeable filter material, and an evaluating arrangement by means of which the light reflection of the filter material which has been blackened with particulates is correlated with the particulates content of the exhaust gases, wherein said sampling device comprises a regulating system for maintaining a constant differential in the exhaust gas pressure before and after the gas has passed said sampling device; a first control system by which a

predetermined sample volume per time unit is metered to the filter material; and a second control system for maintaining, at least approximately constant relative to time, the total cross section available for the exhaust-gas flow through the measuring apparatus; and wherein the sampling and depositing of



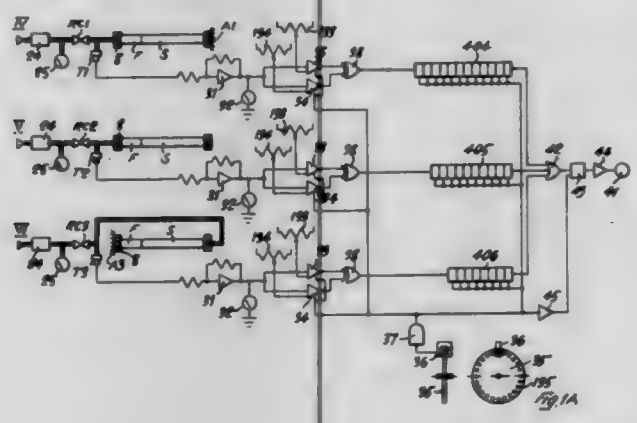
particulates and also the evaluation ensues at least quasi-continually in short consecutive intervals at such rate that the characteristics of dynamic changes in the particulates content of the exhaust gas can be determined with unambiguous results.

4,406,156

METHOD AND DEVICE FOR THE INSPECTION OF VENTILATED CIGARETTES

Giovanni Pezzi, Bologna, Italy, assignor to CIR S.p.A. Divisione SASIB, Bologna, Italy

Filed Jan. 22, 1981, Ser. No. 228,882
Claims priority, application Italy, Jan. 29, 1980, 12428 A/80
Int. Cl.³ G01N *15/08*
U.S. Cl. 73—38 **13 Claims**



1. Method for the elecropneumatic inspection of the longitudinal and/or transversal permeability of ventilated cigarettes comprising the steps of

subjecting each cigarette, in any order of succession, to at least three of four tests, said four tests consisting of

(1) closing one end of said cigarette, applying pneumatic pressure at the other end, and then measuring the magnitude of the pressure reached in the cigarette after a fixed period of time to determine a first pneumatic inlet resistance,

(2) leaving open the end of the cigarette closed in test (1), applying pneumatic pressure to the other end and measuring the magnitude of the pressure reached in the cigarette after the same period of time as was used in test (1) to determine a second pneumatic inlet resistance,

(3) closing the end of the cigarette to which pressure was applied in tests (1) and (2), applying pressure to the other end of the cigarette and measuring the value of the pressure reached in the cigarette after the same period of time as used in tests (1) and (2) to determine a third pneumatic inlet resistance, and

(4) repeating step (3), except that the end which was closed in test (3) is left open to determine a fourth pneumatic inlet resistance;

converting said pneumatic resistances into electric signals; and

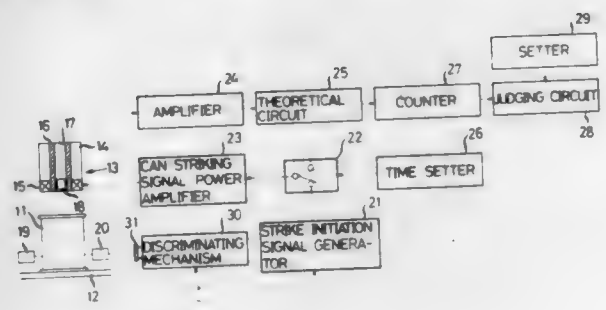
determining from said electric signals the longitudinal and-/or transversal permeability of the cigarette on the basis of four-terminal network theory, the pneumatic resistance of the cigarette being composed of an equivalent transversal resistance, derived from two equivalent longitudinal resistances in series with each other.

4,406,157

FEEDBACK METHOD AND APPARATUS FOR TESTING THE INTERNAL PRESSURE OF A SEALED CONTAINER

Nagao Miyahara, Kiyose, and Sadaaki Kikuchi, Kasukabe, both of Japan, assignors to Nikka Densoku Ltd. and Hokkai Can Co., Ltd., both of Tokyo, Japan

Filed Jun. 26, 1981, Ser. No. 277,601
Claims priority, application Japan, Jun. 27, 1980, 55-87541
Int. Cl.³ G01M *3/24*; G01L *11/00*
U.S. Cl. 73—52 **3 Claims**



1. An apparatus for testing the internal pressure of a sealed container comprising:

container striking means for striking a wall of the sealed container with an electromagnetic pulse to cause same to vibrate and produce vibratory sound;

an electroacoustic transducer means for converting the vibratory sound produced by the wall of the sealed container into an electric signal;

a judging circuit for judging the internal pressure of the sealed container based on the frequency of the electric signal supplied from the electroacoustic transducer;

a strike initiation signal generator producing a strike initiation signal for striking the wall of the sealed container;

a theoretical circuit for producing as its output a signal obtained by adjusting the phase of the electric signal produced by the electroacoustic transducer;

a switch for supplying the output of the theoretical circuit in place of the output of the strike initiation signal generator to the container striking means prior to disappearance of the vibration of the wall of the sealed container following generation of the strike initiation signal; and

an amplifier amplifying the output of the switch and supplying same to the container striking means.

4,406,158

APPARATUS AND METHOD FOR TEMPERATURE CORRECTION OF LIQUID CHROMATOGRAPHY

Robert W. Allington, Lincoln, Nebr., assignor to Isco, Inc., Lincoln, Nebr.

Filed Sep. 9, 1981, Ser. No. 300,602
Int. Cl.³ G01N *31/08*
U.S. Cl. 73—61.1 C **37 Claims**

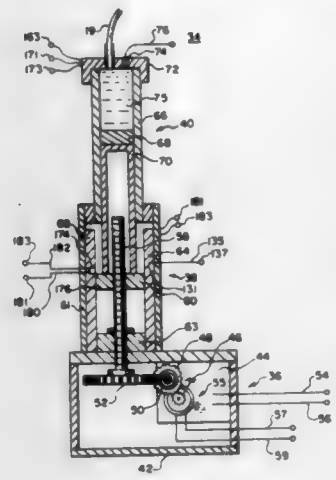
1. A method of compensating for changes in temperature during the operation of a microscale chromatograph comprising the steps of:

forcing fluid from a pumping system having a chamber into a chromatographic means by changing the size of the chamber;

measuring changes in temperature;

adjusting the rate of change of the size of the chamber to maintain a predetermined rate of flow by correcting for errors caused by changes in temperature;

the step of changing the size of the chamber including the step of driving the piston of a pump at a controlled rate; and



the step of adjusting the rate of change including the steps of calculating the change necessary in the rate of change of the size of the chamber, and altering the rate of change of the piston to provide for such change.

4,406,159

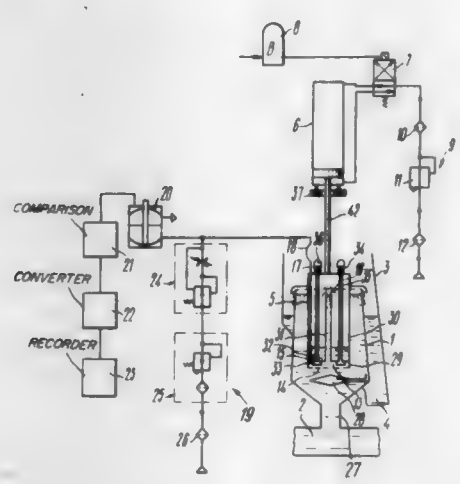
APPARATUS FOR TESTING AND RECORDING THE FREENESS OF PULP

Nisson M. Yanishevsky, Kiev, U.S.S.R., assignor to Ukrainskoe Nauchnoproizvodstvennoe Obiedinenie Tsell Juloznobumazhnoi Promyshlennosti (Ukrnpobumprom), Kiev, U.S.S.R.

Filed Sep. 9, 1981, Ser. No. 300,483

Int. Cl.³ G01N *15/00*

U.S. Cl. 73—63 **4 Claims**



1. An apparatus for testing and recording the freeness of pulp, comprising:

a constant level flow receptacle containing the pulp to be tested and adapted to be mounted on the pulp line,

an immersion type freeness tester comprising a first impermeable peripheral wall having an overflow edge and a bottom screen portion both defining a filtration chamber and a second impermeable peripheral wall and a bottom portion together with said first impermeable peripheral wall defining a measurement chamber communicating with the atmosphere and over the overflow edge with said filtration chamber, the overflow edge being separated from said bottom screen portion on the vertical by a distance (h) determined by equation

$$h=H-K(S/S_1),$$

where

H is the depth to which said bottom screen portion is immersed into the pulp flowing through said constant level from receptacle;

S is an area of said bottom screen portion;

S_1 is a cross-sectional area of the filtration chamber at the overflow edge;

K is a proportionality factor equal to 0.15 to 2;

means for periodically immersing said freeness tester to a fixed depth into the pulp flowing through said constant level flow receptacle and then withdrawing it from the pulp;

a sensing element placed inside said measurement chamber for determining the level of the liquid passed through said bottom screen portion during the immersion of said freeness tester into the pulp and transferred over the overflow edge into said measurement chamber;

means for discharging the liquid from said measurement chamber after each determination of the level thereof.

4,406,160

METHOD OF INSPECTING A RESIST LAYER ON A GRAVURE PRINTING PLATE, AND DEVICE FOR PRACTICING SAME

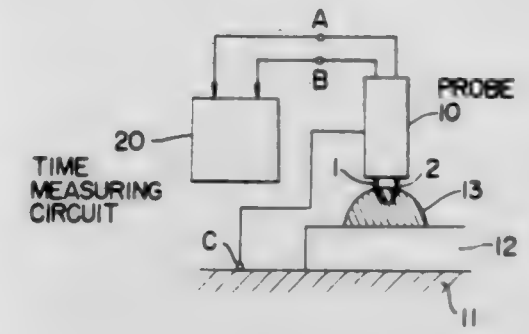
Satoru Horiguchi, Saitama, and Shinichi Amemiya, Tokyo, both of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,816

Claims priority, application Japan, Aug. 2, 1979, 54-98845; Jan. 24, 1980, 55-6343

Int. Cl.³ G01N *33/22, 33/44*

U.S. Cl. 73—73 **3 Claims**



1. A method of inspecting a resist layer on a gravure printing plate, comprising:

dropping an electrically conductive inspecting liquid onto a region of the resist layer on the gravure printing plate to be inspected, a pair of detecting pieces being immersed in said liquid dropped on the resist layer, said detecting pieces and the liquid forming an electrically conductive circuit;

bringing a third detecting piece into contact with a material of the gravure printing plate to form an electrical circuit;

allowing the liquid to permeate the resist layer to form a short circuit between the liquid and the material; and

inspecting the resist layer by utilizing a period of time required for forming the short circuit.

4,406,161

MEASUREMENT OF AIR MASS FLOW INTO AN INTERNAL COMBUSTION ENGINE

Alan W. Locke, Solihull, and Peter Fitzpatrick, Redditch, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Mar. 15, 1982, Ser. No. 358,110

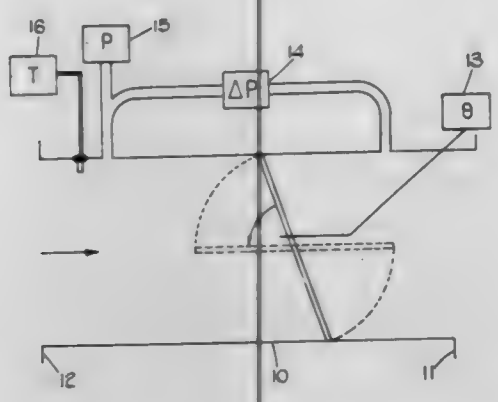
Claims priority, application United Kingdom, Apr. 1, 1981, 8110180

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—118 **3 Claims**

1. An air mass flow measurement system into an internal combustion engine comprising an air intake throttle position transducer and futher transducers sensitive to ambient air

pressure, ambient air temperature and the pressure down-



stream of the throttle and a calculating circuit connected to said transducers and arranged to execute the calculation

$$\dot{M} = K\sqrt{\frac{P \cdot \Delta P}{T}}$$

where

$\dot{M}$ is the air mass flow

K is an orifice coefficient of discharge

P is the ambient air pressure

T is the ambient air temperature and

ΔP is the pressure drop through the throttle,

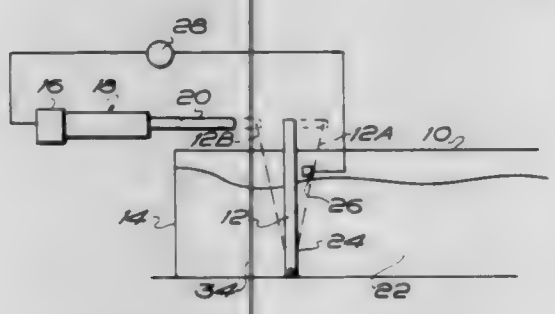
said calculating circuit including a digital memory containing empirically determined data representing the value of K for each combination of a plurality of different values of the throttle position and a plurality of different values of one or a combination of P,ΔP and T.

4,406,162

APPARATUS FOR CREATING WAVES IN A BODY OF LIQUID

William B. Hark, Reading, England, assignor to Seasom Controls Limited, London, England

Filed Jul. 2, 1981, Ser. No. 280,027
Int. Cl.³ G01M *10/00*
U.S. Cl. 73—148 **28 Claims**



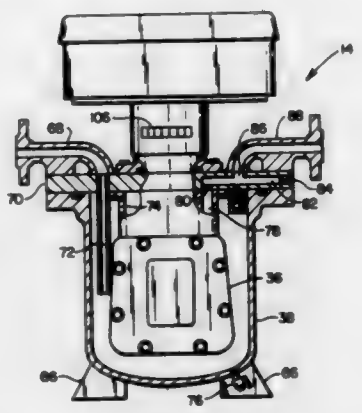
1. Apparatus for creating surface waves in a body of liquid comprising a liquid displacer, means for moving the liquid displacer back and forth to create the waves in the body of liquid, and means for sensing the level of the body of liquid for producing a signal representative of the level of the liquid in the region of the displacer and for controlling the means for moving the liquid displacer in dependence upon said signal so as to compensate for a variation in liquid level resulting from reflected waves in the region of the displacer.

4,406,163

POSITIVE DISPLACEMENT VOLUMETRIC COMPRESSIBLE FLUID METER

Joseph P. Lofink, 979 Lake Shore Dr., Hebron, Ohio 43205

Filed Jan. 18, 1982, Ser. No. 340,288
Int. Cl.³ G01F *15/10*
U.S. Cl. 73—274 **12 Claims**



1. In the combination of a source of gas at a pressure not substantially less than about 30 psia in fluid communication with a power generating unit and a means for measuring accurately the volumetric flow rate of said gas when said flow rate is as low as 0.2 ft^3/hr,

a high pressure container including a plate which forms the top surface of said container, said plate including three openings leading into said container,

said measuring means being mounted within said container and in fluid tight relationship with the underside of said plate

the first said opening being in fluid communication with the source of gas,

the second said opening being of a size to restrict the flow of gas from said container to not substantially greater than 150 ft^3/hr when the pressure of said gas at said first opening is 30 psia,

the third opening being asscoiated with said measuring means and configured to allow the transmission of data from said measuring means to a signal means external of said container without substantial leakage of said gas from said container,

said measuring means including an inlet, a flow path leading from said inlet to a positive displacement measuring means and subsequently to an outlet, said inlet being located within said container to minimize the possible entrance of foreign material into said measuring means inlet.

4,406,164

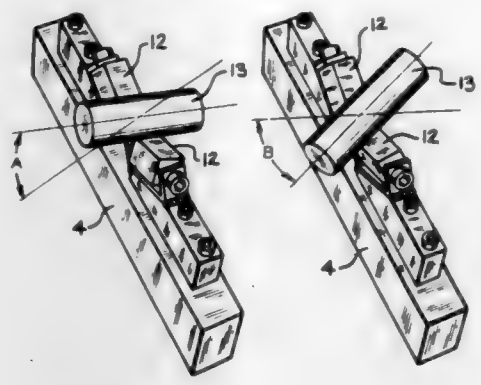
HARD BEARING, 2-PLANE, HORIZONTAL DYNAMIC BALANCER

Gordon E. Hines, and Jack H. Kerlin, both of Ann Arbor, Mich., assignors to Hines Industries, Inc., Ann Arbor, Mich.

Filed Apr. 13, 1981, Ser. No. 253,288
Int. Cl.³ G01M *1/04*
U.S. Cl. 73—476 **12 Claims**

1. A balancing machine for horizontally supporting a workpiece comprising: a machine bed; a first vertical stanchion mounted on said machine bed; a second vertical stanchion spaced from said first vertical stanchion and moveably mounted on said machine bed for variably positioning said second vertical stanchion in a predetermined location on said machine bed with respect to said first vertical stanchion; a first bearing assembly operatively fixed to said first vertical stanchion and a second bearing assembly operatively fixed to said second vertical stanchion, said first and second bearing assemblies each respectively including first and second bearing blocks rotatably mounted on first and second axes, said first axis of each bearing assembly angularly positioned with respect to said second axis of each bearing assembly for generally forming a V-shape, each of said bearing blocks having a planar

bearing surface for contacting the workpiece, said planar bearing surfaces being generally parallel with said respective axes supporting said bearing blocks, whereby said bearing blocks independently rotate upon said axes to maintain optimum



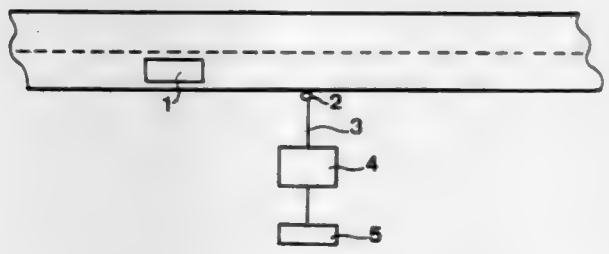
surface contact with the workpiece irrespective of vertical and horizontal misalignment of the workpiece between said first bearing assembly and said second bearing assembly; and means for rotating the workpiece as the workpiece is supported by said bearing blocks.

4,406,165

METHOD AND APPARATUS FOR MEASURING THE SPEED OF VEHICLES

Henri E. Coussineux, 2 Avenue Van Dyck, 75008 Paris, France

Filed Jan. 12, 1982, Ser. No. 338,874
Claims priority, application France, Jan. 13, 1981, 81 00436
Int. Cl.³ G01P *3/50*
U.S. Cl. 73—488 **8 Claims**



1. An apparatus for measuring the speed of a vehicle, including

vibration sensor for forming an analog signal,

analog-digital converter for receiving said analog signal and for forming a digital signal respresentative of the vibration frequency,

comparing means for receiving said analog signal and a reference signal and for forming a first loading signal when said analog signal becomes equal to said reference signal by increasing and a second loading signal when said analog signal becomes equal to said reference signal by decreasing,

first memory means for receiving said digital signal from said converter and for storing the value of said signal when said first memory receives said first loading signal,

second memory means for receiving said digital signal from said converter and for storing the value of said signal when said second memory receives said second loading signal,

computing means for receiving data stored in first and second memory means and for forming the ratio of the difference and the sum of said data, and

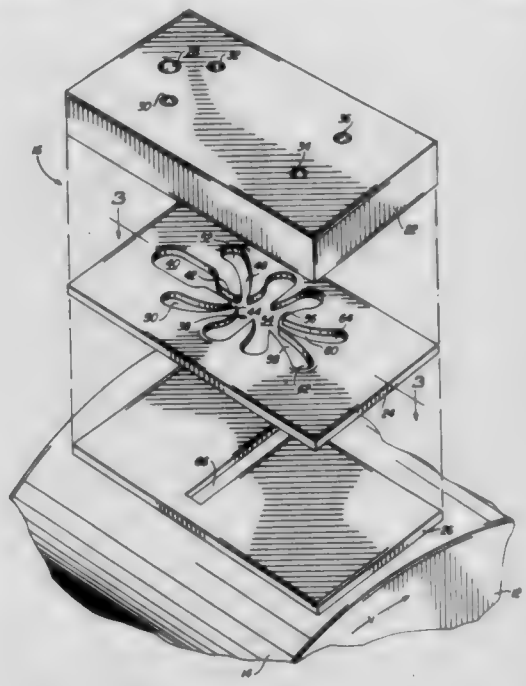
means for displaying an information representative of said ratio.

4,406,166

ANALOG FLUIDIC SPEED SENSOR

John T. Itamoto, Scottsdale, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Nov. 27, 1981, Ser. No. 325,168
Int. Cl.³ G01P *3/26*
U.S. Cl. 73—502 **30 Claims**



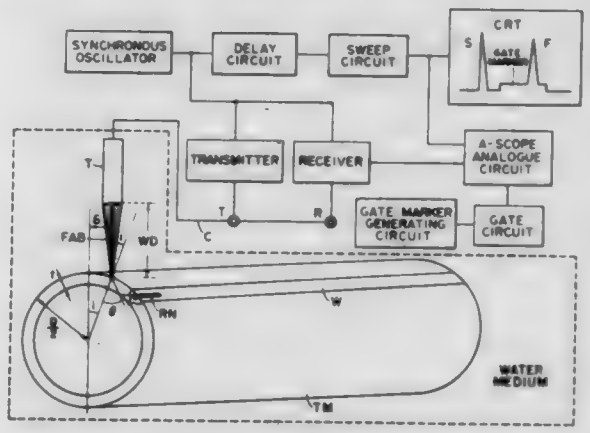
1. An analog fluidic speed sensor comprising a moving member the velocity of which is to be sensed, said moving member defining a surface, a fluidic speed sensor apparatus having a housing disposed proximate to said surface, said housing defining an interaction region entirely therewithin and an aperature opening outwardly on said housing toward said surface, said aperture communicating with said interaction region to allow entry therein of a laminar fluid boundary layer forming adjacent said surface, said speed sensor including wall means for inhibiting the movement toward said aperture of a turbulent fluid boundary layer forming adjacent to said surface.

4,406,167

ULTRASONIC FLAW-DETECTION METHOD FOR AUSTENITIC ALLOY STEEL LONGITUDINALLY WELDED PIPE AND TUBING

Taro Maeda, Osaka, Japan, assignor to Nisshin Steel Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1981, Ser. No. 250,948
Claims priority, application Japan, Apr. 10, 1980, 55-46220
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—622 **4 Claims**



1. An ultrasonic flaw-detection method for austentic alloy steel longitudinally welded pipe or tubing, in which method a

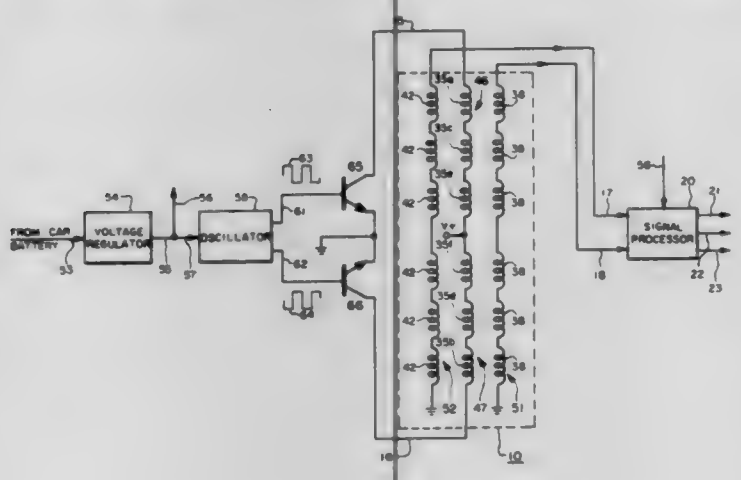
shear wave angle beam is employed utilizing an incidence angle larger than the critical angle, making the refraction angle of longitudinal waves larger than 90 degrees, further comprising applying the shear angle beam using a focusing transducer made of lead niobate ceramic.

4,406,168

SYSTEM FOR MEASURING TORQUE AND/OR SPEED OF ROTATING SHAFT

Edwin J. Meixner, Mt. Prospect, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 30, 1982, Ser. No. 363,744
Int. Cl.³ G01L *3/10*
U.S. Cl. 73—862.36 **5 Claims**



1. A detecting system for providing an information signal regarding a predetermined characteristic of a rotatable shaft, comprising:

a transducer encompassing the rotatable shaft and including a magnetic core having a series of N poles, where N is an even number equal to at least four, every other one of the poles having wound thereon only a respective one of N/2 coils which are included in a first primary winding, while each of the intervening N/2 poles has wound thereon only a respective one of N/2 coils included in a second primary winding;

means for alternately supplying direct current pulses to said first and second primary windings to provide a-c excitation for producing an alternating magnetic field, adjacent to and within the shaft, which is a function of and is modified by the predetermined shaft characteristic;

and a secondary circuit, included in said transducer and having pick-up coils wound on at least one magnetic core and which produce signals in response to the modified magnetic field, for developing an information signal regarding the predetermined shaft characteristic.

4,406,169

METHOD OF AND SYSTEM FOR MONITORING BEARING CONDITIONS

Kazuo Ikeuchi; Tsuguaki Koga; Tomoaki Inoue, and Katsumi Oyabu, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 29, 1981, Ser. No. 258,593
Claims priority, application Japan, May 2, 1980, 55-57866
Int. Cl.³ G01L *5/00*
U.S. Cl. 73—862.54 **26 Claims**

1. A method of monitoring the conditions of a journal bearing having a bearing surface supporting a rotatable shaft through an oil film, comprising the steps of:

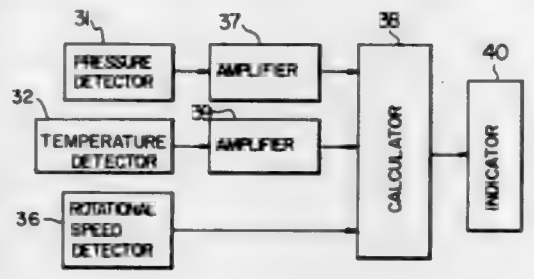
measuring the speed of rotation of the shaft;

measuring the pressure of the oil film by measuring the pressure of the oil film in a plurality of positions on the bearing surface;

calculated the load on the journal bearing based on the measured values of the rotational speed of the shaft and the pressure of the oil film; and

judging the condition of relative inclination between the shaft and the bearing surface based on the measured values of the pressure of the oil film, said bearing load calculating step calculating the load on said journal bearing based on the condition of relative inclination between the shaft and the bearing surface and the measured value of the rotational speed of the shaft.

10. A system for monitoring the conditions of a journal bearing having a bearing surface supporting a rotatable shaft through an oil film, comprising rotational speed detecting means for detecting the speed of rotation of said shaft to produce a signal indicative of the detected speed of rotation, pressure detecting means for detecting the pressure of the oil film to produce a signal indicative of the detected pressure, a



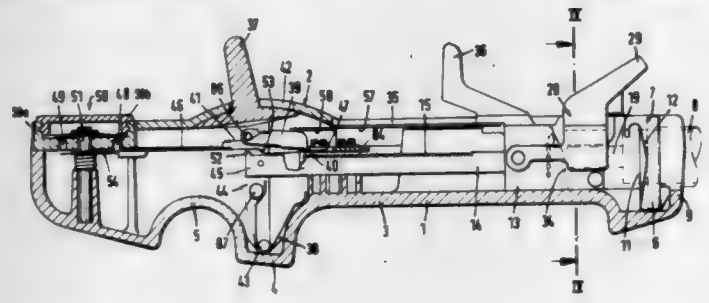
bearing load calculating unit for calculating the load on said journal bearing based on the signals from said rotational speed detecting means and said pressure detecting means, said pressure detecting means detecting the pressure of the oil film in a plurality of positions on said bearing surface to produce signals respectively indicative of the pressures, and a judging unit operative to judge the condition of relative inclination between said shaft and said bearing surface based on the signals from said pressure detecting means to produce a signal indicative of the condition of relative inclination, said bearing load calculating unit calculating the load on said journal bearing based on the signals from said rotational speed detecting means and said judging unit.

4,406,170

REPEATING PIPETTING DEVICE

Günther Kühn, Hamburg, Fed. Rep. of Germany, assignor to Eppendorf Gerätebau Netheler & Hinz GmbH, Hamburg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 162,528, Jun. 24, 1980, abandoned. This application Feb. 19, 1982, Ser. No. 350,402
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1979, 2926691
Int. Cl.³ B01L *3/02*
U.S. Cl. 73—864.16 **11 Claims**



1. A repeating pipetting device arranged to discharge repeated selected amounts of a liquid from a syringe, comprising

an elongated housing having a forward end and a rearward end with a flange holder located at the forward end for receiving and holding the flange of a syringe,

a sliding block mounted in said housing and slidable in said housing in the elongated direction thereof and arranged to be coupled to the plunger of the syringe held by said flange holder,

a rack located in said housing and extending in the elongated direction thereof and secured to said sliding block and

formed with a series of teeth extending along one surface thereof,

an operating lever pivotally mounted in said housing on an axis extending transversely of the elongated direction of said housing, said lever extending partly inside and partly outside said housing, said lever being pivotally displaceable between a starting position and an ending position for a constant step length,

a pawl pivoted to said lever inside said housing and arranged to engage said teeth on said rack as said operating lever moves between the starting and ending positions, and movable by said operating lever to advance said rack toward said flange holder, said pawl being pivotally engageable and disengageable from said teeth,

a tongue-like slide cover mounted in said housing and slidable in the elongated direction of said housing, said cover is positioned between said pawl and said rack and overlies said rack for at least a part of the length thereof, wherein said cover has one end portion nearer to said flange holder and engagement of said pawl with said rack occurs when said pawl passes said one end portion, and

adjusting means for adjusting the slidable position of said cover along the elongated direction of said housing for selecting the amount to be dispensed from said syringe.

4,406,171

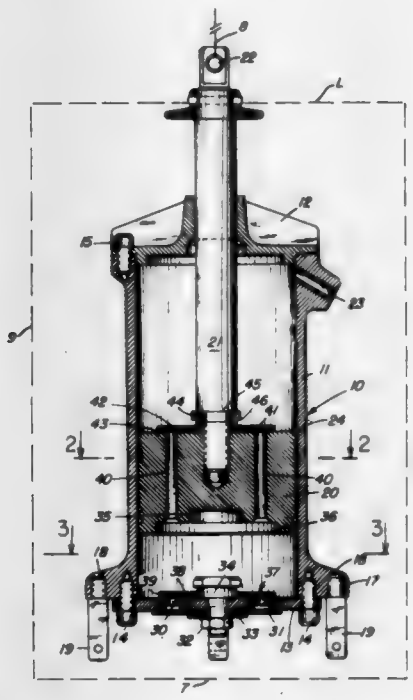
LIQUID SAMPLING DEVICE

Hubert J. Ueberschaer, Hartsdale, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 68,995, Aug. 23, 1979, abandoned. This application Jul. 24, 1981, Ser. No. 286,481

Int. Cl.³ G01N *1/10*

U.S. Cl. 73—864.62 **8 Claims**



1. A liquid sampling device which comprises:

(i) a cylinder having a top end and a bottom end, and a liquid outlet adjacent the top end,

(ii) a massive weighted piston slidably disposed within the cylinder and normally at rest at said bottom end of the cylinder,

(iii) a piston rod fixed to the piston and extending beyond the top end of the cylinder,

(iv) at least one inlet port for the liquid to be sampled at the bottom end of the cylinder,

(v) first valve means comprising a first plate which is vertically movable from a lower sealing position covering the inlet port and an upper flow position which permits liquid flow into the cylinder through the inlet port,

(vi) at least one liquid by-pass port in the piston, and

(vii) second valve means comprising a second plate which is vertically movable from a lower sealing position covering the by-pass port to an upper flow position which permits liquid flow through the by-pass port in an upward direction.

4,406,172

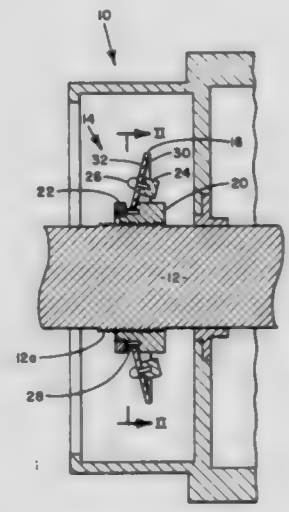
OVERSPEED TRIP MECHANISM AND METHOD OF ASSEMBLING

Eugene L. Huesgen, Jeannette, and George P. Walsh, Pittsburgh, both of Pa., assignors to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Filed Sep. 21, 1981, Ser. No. 304,424

Int. Cl.³ G05G *15/06*; G01P *3/16*; F16B *3/00*

U.S. Cl. 74—3 **3 Claims**



1. An overspeed trip assembly comprising:

a Belleville spring consisting of an annular, dished member having a first, normally concave side and a second, normally convex side;

a plurality of weights secured to said first side at equal angular spacings;

a pair of diametrically located grooves formed in the inner circumferential edge of said Belleville spring;

support sleeve means having a first threaded portion for attachment to a rotatable shaft, a generally radially extending portion, a pair of diametrically spaced openings axially extending into said generally radially extending portion, and a second threaded portion axially spaced from said diametrically spaced openings;

a pair of pins adapted to be received in said pair of diametrically spaced openings and in said pair of diametrically located grooves for preventing relative rotational movement between said Belleville spring and said support sleeve means; and

retaining means having a threaded portion for engaging said second threaded portion to secure said pair of pins in said pair of diametrically spaced openings and to limit axial movement of said Belleville spring to that necessary to permit flexure of said Belleville spring to an overcenter position due to centrifugal force when the rotational speed of said assembly exceeds a preset value and to permit a return of said Belleville spring to an unstressed position.

4,406,173

CONTROL DEVICE FOR RECIPROCATING MEMBER

Georges Lagain, 46, rue de la Ronce, Ville-d'Avray, France 92410

Filed Dec. 19, 1980, Ser. No. 218,301

Claims priority, application France, Jan. 3, 1980, 80 00076

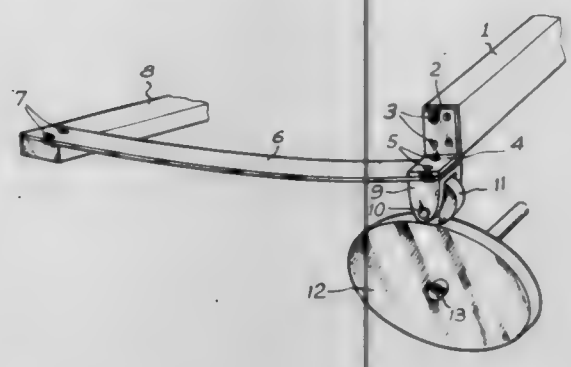
Int. Cl.³ F16H *25/08*

U.S. Cl. 74—54 **2 Claims**

1. In a control device for a reciprocating member:

a spring plate, one end of which is integral with said member and the other end of which is fixed;

a rotatable cam positioned to support said spring plate under pressure;
means for rotating said cam;
bearing means connected to the movable end of said spring plate and supporting a shaft;



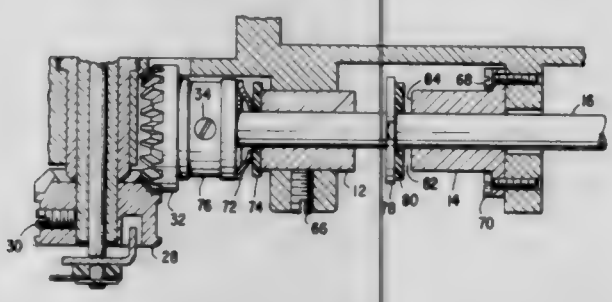
a cam follower rotatably carried by said shaft and having a surface resting on the periphery of said cam; and
an L-iron, one branch of which is fixed to the movable end of said spring plate and the other branch of which is fixed to said reciprocating member, said L-iron providing a degree of elasticity between its branches.

4,406,174

NOISE REDUCING ARRANGEMENT FOR GEARS

Jan Szostak, Lincroft, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Feb. 17, 1981, Ser. No. 235,350
Int. Cl.³ F16H *55/20*; D05B *57/14*
U.S. Cl. 74—409 **7 Claims**



1. In a sewing machine including a vertical axis looptaker and a drive train for rotating the looptaker, the said drive train comprising a pair of meshing bevel gears, a shaft on which one of the gears is affixed, an axially adjustable bushing wherein said shaft is rotatable and slidable, a compressed resilient member between said one gear and the axially adjustable bushing for biasing the said one gear and said shaft axially in the direction of the other gear to load the gears in accordance with the position of the axially adjustable bushing, a fixed bushing wherein said shaft is rotatable, and a member affixed to said shaft between the bushings in a position for limiting repetitive axial deflections of the resilient member caused by operation of the drive train to amplitudes within the elastic limit of the resilient member.

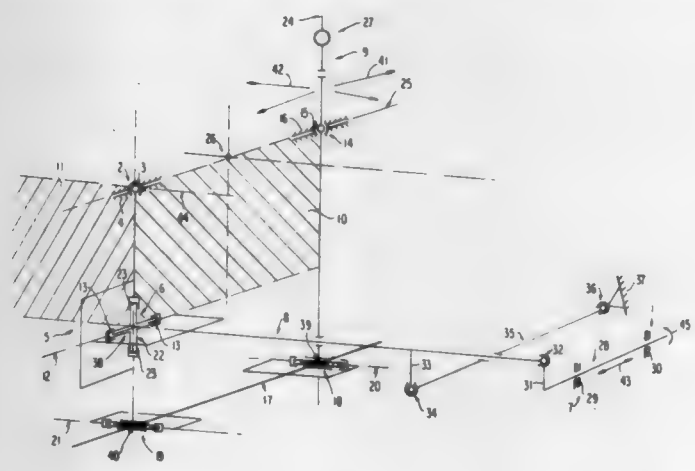
4,406,175

REMOTE CONTROL DEVICE FOR A CHANGE-SPEED GEAR ARRANGEMENT OF A MOTOR VEHICLE

Herbert Puchta, Remshalden, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,878
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1980, 3014067
Int. Cl.³ G05G *9/16*; B62D *33/06*
U.S. Cl. 74—473 R **11 Claims**

1. A remote control device for a speed-change transmission of a motor vehicle, the control device comprising a gear shift lever means adapted to execute shifting movements in a gear selection plane and a gear shifting plane extending substantially at a right angle to the gear selection plane, a gear shift rod means connected to a gear shifting device of the transmission, a joint carrier means, first joint means for articulatingly connecting the joint carrier means with a vehicle part, the first joint means including a joint center immovable with respect to the shifting movements, and a universal joint means for connecting the joint carrier means with the gear shift rod means, said joint carrier means is adapted to be actuated in pivotal movements about the immovable joint center by the gear shift lever means, a second joint means is provided for pivotably mounting the gear shift lever means to a vehicle part, the



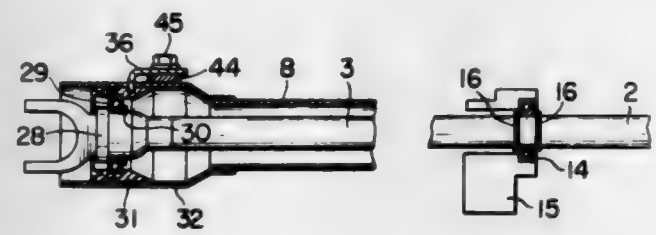
second joint means includes a joint center immovable with respect to the shifting movements and offset with respect to the joint center of the first joint means, a freely swingable connecting linkage means is interposed between the gear shift lever means and the joint carrier means, a third joint means is provided for connecting a first end of the linkage means with the gear shift lever means, a fourth joint means is provided for connecting a second end of the linkage means with the joint carrier means, and the third and fourth joint means are arranged so as to have the same pivoting direction with respect to the associated immovable joint centers in a direction of the shifting plane and respectively a degree of pivotal movement along a pivot axis lying one of within and parallel to the shifting plane.

4,406,176

STEERING SHAFT SUPPORT DEVICE

Akio Numazawa, Nagoya; Taketo Matoba, and Makoto Kida, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 44,191, May 31, 1979, Pat. No. 4,277,984.
This application Oct. 17, 1980, Ser. No. 198,064
Claims priority, application Japan, Feb. 26, 1979, 54-20778; Feb. 26, 1979, 54-20779
Int. Cl.³ B62D *1/18*; F16C *35/067*
U.S. Cl. 74—492 **3 Claims**



1. A steering shaft support comprising:
a steering shaft accommodated within a column tube,
a one-piece annular support member disposed in said column tube and fixed on said steering shaft through a bearing, and

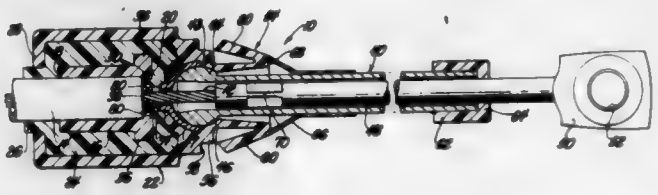
a holding device fixed to the outer surface of said column tube and having a portion thereof extending through an elongated slot of a predetermined axial length in said column tube, said portion fixedly engaging said support member in position within said column tube.

4,406,177

REMOTE CONTROL ASSEMBLY (VIBRATION DAMPENING)

William G. Bennett, Troy, and Arthur L. Spease, Livonia, both of Mich., assignors to Teleflex Incorporated, Limerick, Pa.

Division of Ser. No. 162,172, Jun. 23, 1980, Pat. No. 4,348,348.
This application Jan. 29, 1982, Ser. No. 343,888
Int. Cl.³ F16C *1/10*
U.S. Cl. 74—501 P **9 Claims**



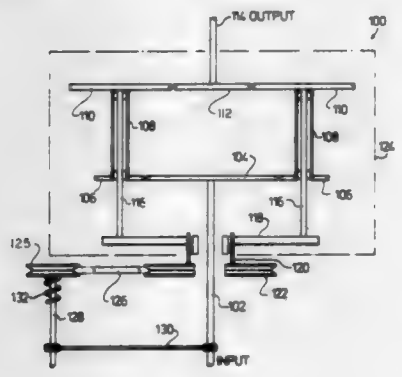
1. A motion transmitting remote control assembly (10) of the type for transmitting motion in a curved path by a flexible motion transmitting core element, said assembly (10) comprising; a flexible motion transmitting core element (12), guide means for movably supporting said core element (12) and having an end (20), said core element (12) extending from the end (20) of said guide means, support means (22) for supporting said guide means on a support structure, and resilient vibration dampening means (24) disposed between said support means (22) and said guide means for providing noise and vibration isolation therebetween, said guide means including a flexible conduit (14) having an end portion and an end fitting (16) having a first end (18) and being disposed about said end portion of said conduit (14), said conduit (14) extending from said first end (18) of said end fitting (16), said end fitting (16) being disposed within said vibration dampening means (24), said end fitting (16) and said end portion of said conduit (14) adjacent said first end (18) of said end fitting (16) being disposed within said vibration dampening means (24), said support means (22) surrounding and in mechanical interlocking engagement with said vibration dampening means (24) and being completely isolated from said end fitting (16) by said vibration dampening means (24).

4,406,178

POWER TRANSMISSION

Frans P. Gillade, 196 Bradley Ave., Welland, Ontario, Canada

Filed Mar. 9, 1981, Ser. No. 241,558
Claims priority, application United Kingdom, Mar. 10, 1980, 8007974
Int. Cl.³ F16H *37/00*
U.S. Cl. 74—689 **3 Claims**



1. An infinitely-variable bi-directional power transmission, comprising:

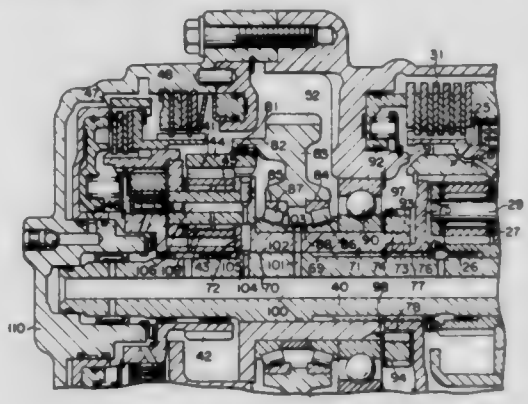
a power input shaft,
a gear wheel fixedly mounted on said input shaft for rotation therewith,
a power output shaft,
a planetary gear set comprising a sun gear fixedly mounted on said output shaft for rotation therewith and pair of planetary gears meshing with said sun gear,
first and second axle shafts, one member of said pair of planetary gears being rotatably mounted on each of said axle shafts,
means establishing torque delivery between said gear wheel and said planetary gears,
a first variable ratio pulley fixedly mounted on a second shaft for rotation therewith,
means establishing driven communication between said input shaft and said second shaft whereby said second shaft is driven by said input shaft,
a second variable ratio pulley rotatably mounted with respect to said input shaft,
endless belt means mounted about said first and second variable ratio pulleys whereby rotation of said second shaft by said input shaft also causes rotation of said second pulley, and
means fixedly connecting said first and second axle shafts with said second pulley whereby rotation of said second pulley causes said axle shafts to each follow a circular path.

4,406,179

APPARATUS FOR PRELOADING AN ANTIFRICTION BEARING IN AN AUTOMATIC TRANSMISSION

Akio Numazawa, Nagoya; Seitoku Kubo, Toyota; Koujiro Kuramochi, Okazaki, and Tatsuo Kyushima, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 30, 1980, Ser. No. 221,306
Claims priority, application Japan, May 9, 1980, 55-60568
Int. Cl.³ F16H *37/00*
U.S. Cl. 74—740 **5 Claims**



1. In a transmission for automobiles including; a housing containing planetary gear units respectively having at least three revolving elements, such as ring gears, sun gears and a carrier; an input shaft connected to one of said revolving elements of said planetary gear units, and an output means connected to another one of the three revolving elements of said planetary gear units and rotatably supported on said input shaft through the medium of a first antifriction bearing means including an inner race, an outer race and a roller; the improvements comprising;

a face of said input shaft substantially normal to the axis thereof, one of the inner and outer races of said first antifriction bearing means being adapted to engage said face of said input shaft;
a second antifriction bearing means disposed between said input shaft and said housing so as to support said input shaft rotatably and consisting of an inner race, an outer race and a roller; and
a pressure means screwed with the end of said input shaft,

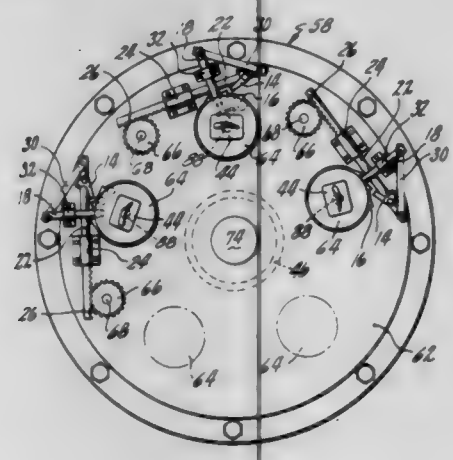
said pressure means being adapted to apply pressure to said first antifriction bearing means via the inner race of said second antifriction bearing means.

4,406,180

INDEXING APPARATUS FOR ELECTRON BEAM DRILLING

John R. Naumec, Willimantic, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 21, 1980, Ser. No. 208,914
Int. Cl.[3] B23Q *17/00*
U.S. Cl. 74—822 8 Claims



1. Apparatus for indexing workpieces comprised of a plurality of assemblies mounted on a translatable and rotatable housing, each assembly comprising:

(a) a disk rotatably mounted on the housing, for holding a workpiece;

(b) means for rotating the disk to a multiplicity of selected rotational positions with respect to the housing, mounted on the housing;

(c) means for locking the disk, to precisely locate the disk in said selected positions, attached to the housing; and

(d) a movable single driving member mounted on the housing and connected to and actuating both the said means for rotating and the said means for locking, the member configured to cause the locking means and rotating means to be alternately engaged with the disk, to permit rotation from a first position to a second position followed by locking at the second position, and like motion to additional positions;

the apparatus further comprising a single main drive element connected to the plurality of single driving members for the transmission of simultaneous motion thereto.

4,406,181

AUTOMATIC TRANSMISSION CONTROL SYSTEM WITH HOLDDOWN DEVICE

Seitoku Kubo, Toyota; Koujiro Kuramochi, Okazaki, and Tatsuo Kyushima, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Nov. 25, 1980, Ser. No. 210,225
Claims priority, application Japan, Mar. 27, 1980, 55-39538
Int. Cl.[3] B60K *41/10, 41/06*
U.S. Cl. 74—869 4 Claims

1. For use with an automatic transmission for an automotive vehicle, comprising a gear transmission mechanism comprising a plurality of hydraulic fluid pressure actuated friction engaging mechanisms, and wherein a selective supply of actuating hydraulic fluid pressure to said friction engaging mechanisms selectively provides a plurality of speed stages from said gear transmission mechanism including an overdrive speed stage and a directly coupled speed stage which is the next speed stage below said overdrive speed stage;

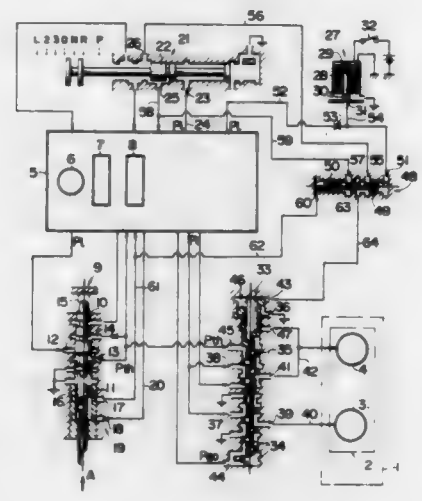
a hydraulic fluid pressure control system, comprising:

(a) a manually operated selector valve which is manually selectable between a plurality of speed ranges including a "D" range, and at least one forward speed range which is not said "D" range, and which produces a forward pressure when any forward speed range is selected thereon, and a lower range pressure when any forward speed range except said "D" range is selected thereon;

(b) a means for producing a kickdown pressure, which produces a kickdown pressure when and only when the value of a quantity representative of engine load is above a predetermined value;

(c) an electrically operated hydraulic fluid pressure control device, which, according to a selective supply of actuating electrical energy thereto, selectively produces a holddown pressure; and which is controlled in accordance with operating conditions of the vehicle;

(d) a direct/overdrive shift valve, comprising a sole override port; which, when no overriding hydraulic fluid pressure is supplied to said override port, controls the supply of hydraulic fluid pressure to at least one of said friction engaging mechanisms so as selectively to engage either said overdrive speed stage or said directly coupled speed stage of said gear transmission mechanism according to a balance relationship between a



throttle pressure which is related to a quantity representative of engine load and a governor pressure which is related to vehicle road speed; and which, when overriding hydraulic fluid pressure is supplied to said override port, controls supply of hydraulic fluid pressure to said at least one friction engaging mechanism so as to definitely not engage said overdrive speed stage of said gear transmission mechanism, irrespective of said balance relationship between said throttle pressure and said governor pressure; and

(e) a downshift fluid pressure selector valve, which has a single valve bore having four inputs ports adapted to be supplied with said forward pressure, said lower range pressure, said kickdown pressure and said holdown pressure, respectively, as input pressure signals, and one output port connected to said override port of said direct/overdrive shift valve, a single valve element slidably mounted in said valve bore, and a single bias spring, said output port delivering a substantial output pressure when either said lower range pressure is present or said kickdown pressure is present or said holddown pressure is absent.

4,406,182

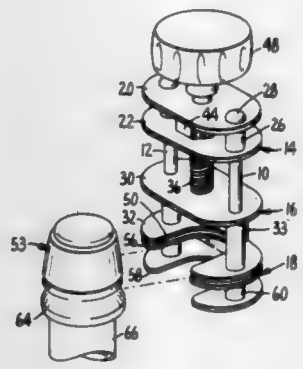
CHAMPAGNE CORK REMOVER

Howard J. Antone, 12284 Adine Ct., Glen Ellen, Calif. 954422

Continuation of Ser. No. 291,382, Aug. 10, 1981, abandoned.
This application Feb. 24, 1983, Ser. No. 469,413
Int. Cl.[3] B67B *7/06*
U.S. Cl. 81—3.38 R 2 Claims

1. A champagne cork remover comprising a pair of spaced, parallel shafts having upper and lower ends, first, second and

third frames positioned on the shafts, the first frame being fixedly secured to the shafts adjacent the upper ends thereof, the second frame being movably mounted on the shafts, the third frame being fixedly secured to the shafts adjacent the lower ends thereof, actuating means for moving the second frame comprising a screw shaft having a threaded connection with the first frame and a two-way follower connection with



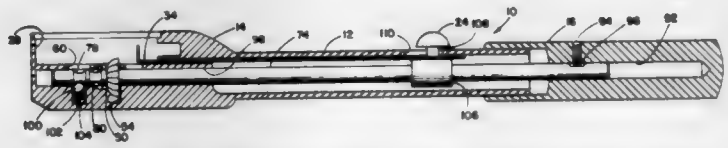
the second frame and a handle secured to said screw shaft, said second frame comprising a generally planar plate recessed to receive the stem of a champagne cork and adapted to engage the underside of the head of the cork and remove the cork upon upward movement of said second frame relative to said third frame, said third frame comprising a plate recessed to receive the neck of a champagne bottle and adapted to engage the bottle above a laterally enlarged portion of said neck.

4,406,183

FAST ACTING RATCHET WRENCH

Jerry W. Wix, 125 Airport Rd., Portand, Tenn. 37148

Filed Jul. 31, 1981, Ser. No. 289,048
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.29 **13 Claims**



1. In a ratchet wrench having an elongate handle, a head on one end of the handle, a drive wheel rotatably mounted in the head with a stud extending from the center thereof for insertion into wrench sockets, and a rod having a center axis and extending through the center of the handle into the head and adjacently to the drive wheel; the improvement comprising:

a beveled drive gear rotatably mounted on the rod for continuously engaging the drive wheel and for sliding axially along the rod;

retainer means for continuously securing and retaining said drive gear in a substantially stationary position relative to the drive wheel to prevent said drive gear from jumping out of engagement with the drive wheel;

beveled gear teeth formed on the drive wheel disposed circumferentially about the center of the wheel and being positioned to continuously engage and mesh with said drive gear;

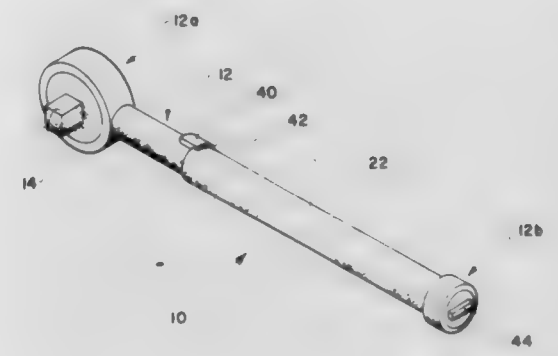
interlock means for selectively locking said gear to the rod to selectively switch said drive gear from a free-wheeling mode to a drive mode for selectively rotatably driving the drive gear on an axis of rotation that is coaxial with the rod, said drive gear being operable in said drive mode to rotate in unison with said rod to drive said teeth on said drive wheel and rotate the drive wheel and the stud, said drive gear being operable in said free wheeling mode to rotate freely on said rod in response to rotation of the drive wheel, whereby the drive wheel and stud may be selectively rotated by switching the drive gear into the drive mode and rotating the rod about at center axis; and means for selectively rotating the rod.

4,406,184

RATCHET HANDLE WITH MULTI-MODE TURNING CAPABILITY

Euliss C. Cockman, Jr., Rte. 1, Box 104-B, Carthage, N.C. 28327

Filed Aug. 4, 1981, Ser. No. 289,918
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.29 **5 Claims**



1. A wrench type ratchet handle designed for both oscillator and rotary actuation, comprising: an elongated handle assembly having upper and lower ends with a head disposed on the upper end of said handle assembly and rotatively mounted for rotation about a first axis that extends generally normal to said handle assembly; said handle assembly including an elongated rotary drive member rotatively mounted within said handle assembly and including upper and lower ends; head drive means operatively interconnected between the upper end of said rotary drive member and said head for driving said head in response to said rotary drive member being rotated about its axis or oscillated about said first axis of said head; said handle assembly further including an intermediate handle housing disposed exteriorly about said rotary drive member and including an integral upper rigid head housing for housing said head drive means; a rotary actuator rotatively journaled about said intermediate handle housing and axially movable relative to said intermediate handle housing between locked and unlocked positions; locking means operatively interconnected between said rotary actuator and said intermediate handle housing for locking the two together when said rotary actuator assumes said locked position such that the two are constrained to move together and in unison and for providing an unlocked relationship in said unlocked position such that said rotary actuator may be rotated about said intermediate handle housing independently of said intermediate housing; reversible ratchet means disposed about the lower end of said handle assembly opposite said head and operatively associated with said rotary actuator for being driven either clockwise or counterclockwise by said rotary actuator while providing rotary ratchet movement in an opposite direction; and rotary drive member drive means operatively and directly interconnected between the lower end of said rotary drive member and said reversible ratchet means for driving or ratcheting said rotary drive member in response to the rotation of said rotary actuator when said rotary actuator assumes said unlocked position, said rotary drive member drive means further preventing said rotary drive member from rotating in one direction while allowing ratchet movement in the opposite direction when said rotary actuator assumes said locked position.

4,406,185

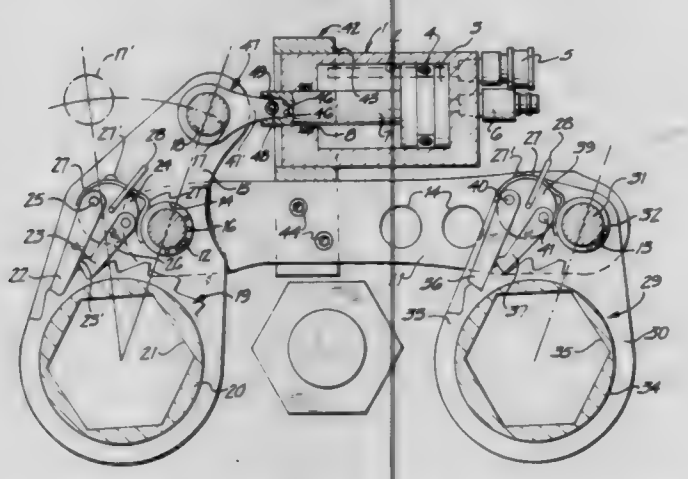
UNIVERSALLY USABLE HYDRAULIC WRENCH FOR SIMULTANEOUSLY TIGHTENING OR LOOSENING TWO THREADED CONNECTORS

John K. Junkers, 7 Arrow Head La., Saddle River, N.J. 07458

Continuation-in-part of Ser. No. 265,234, May 19, 1981, Pat. No. 4,387,611. This application Oct. 28, 1981, Ser. No. 315,998
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—57.39 **8 Claims**

1. A hydraulic wrench for simultaneously tightening and

loosening two threaded connectors comprising a unit including cylinder-and-piston means having a cylinder and a piston reciprocatable in said cylinder between an active stroke and a return stroke, said unit comprising further connecting means including a pair of transversely spaced elongated side plates releasably attached to and projecting from said cylinder; lever means provided in the region of one end thereof with means for engaging a polygonal member of a first threaded connector to be turned during the active stroke of said piston; first mounting means for releasably mounting said lever means intermediate its ends on said connecting means for tilting movement about a first pivot axis with the other end of said lever means operatively connected to said piston; elongated link means provided in the region of one end with means for engaging a polygonal member of a second threaded connector, a portion of said lever means and the other end of said link means being located between said pair of side plates; second mounting means for releasably mounting the other end of said link means on said connecting means for tilting movement about a second pivot axis parallel to and transversely spaced from said first pivot axis; and means on said connecting means and cooperating with said second mounting means for changing the distance



between said first and said second pivot axes, said distance changing means comprising a plurality of transversely aligned bores in said side plates respectively spaced in the direction of the elongation of said side plate from each other, and said second mounting means comprising a pin extending through a bore at said other end of said link means and to opposite sides of the latter into selected ones of said transversely aligned bores in said side plates, whereby when said means on said lever means is engaged with the polygonal member of the first threaded connector and said means on said link means is engaged with the polygonal member of the second threaded connector, said lever means will be tilted during the active stroke of the piston about the axis of said first threaded connector shifting thereby said cylinder and connecting means substantially in the direction of said active stroke to tilt said link means about the axis of the second threaded connector so that the polygonal member of the first and the second threaded connector will be simultaneously turned, and whereby due to the releasable connection of said lever means and said link means with said connecting means differently constructed lever means and link means may be connected to said unit so that the latter may be used for different wrench applications.

4,406,186

DUAL ACTION RATCHET WRENCH

Stephen A. Gummow, 1501 Hawthorne Ave., Minneapolis, Minn. 55403

Filed May 29, 1981, Ser. No. 268,577
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—60 **11 Claims**

1. A wrench comprising:

a wrench body having a top and a bottom;

a shank extending downwardly from the bottom of the wrench body for rotatably driving removably attached tools about a first axis;

a handle having a first end for gripping by a user and a second end for transmitting force from the handle to the wrench body; and

a pivot pin extending between and connecting the wrench body and the second end of the handle, the pivot pin being aligned along a second axis which is spaced from and parallel to the first axis; wherein the pivot pin extends through and is slidable within a cylindrical opening in one of the wrench body and second end of the handle to permit sliding movement of said one containing the cylindrical opening along the second axis, and wherein the pivot pin is rotatable with respect to the cylindrical opening, so that the wrench body and the second end of the handle are relatively positionable along the second axis in



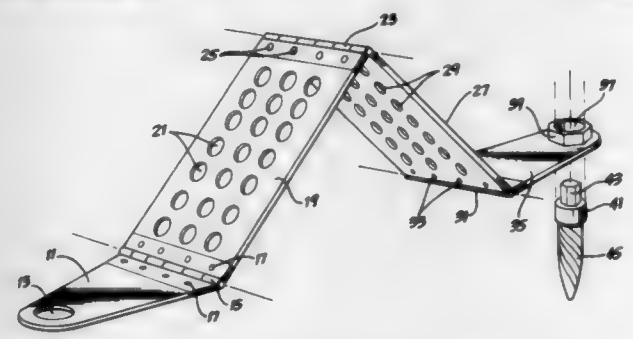
a first engaged force transmitting relationship and a second spaced apart force transmitting relationship; wherein in the first engaged force transmitting relationship the wrench body and the second end are positioned so that at least a portion of the second end of the handle is below a plane which is perpendicular to the first and second axes and is defined by the top of the wrench body, with a surface of the second end engaging a mating surface of the wrench body in a fixed force transmitting relationship; and wherein the pivot pin is of sufficient length so that in the second force transmitting relationship a bottom surface of the second end of the handle is elevated above and spaced apart from the plane defined by the top of the wrench body so that the second end of the handle is freely rotatable about the second axis while the pivot pin and the second end of the handle are freely rotatable in a full circle about the first axis.

4,406,187

ANCHORING MECHANISM FOR MOTOR DRIVEN WRENCH

Thomas D. Osborne, Jr., Chino, Calif., assignor to Frank A. Klaus, Brea, Calif.

Filed Jan. 12, 1981, Ser. No. 224,002
Int. Cl.³ B25B *13/48*
U.S. Cl. 81—180 R **3 Claims**



1. An anchoring attachment for a counter-rotating coaxial

wrench having an inner socket and an outer socket, comprising:

a base member having means for fastening to a base of fixed reference;

an extension member hingedly attached to said base member about a first hinge axis whereby said extension member may be rotated with respect to said base member about the hinge axis;

an elevating member hingedly attached to said extension member about a second hinge axis parallel to said first hinge axis whereby said elevating member may be rotated with respect to said extension member about said second hinge axis; and

a wrench connecting member hingedly attached to said elevating member about a third hinge axis parallel to said first hinge axis and said second hinge axis, said wrench connecting member having a receptacle therein to receive in rotary engagement therewith a tool, said receptacle having a collar therearound fixedly attached to said wrench connecting member and constructed and adapted to engage the outer socket of a coaxial counter-rotating wrench with the inner socket of the wrench engaging a tool to be rotated in said receptacle of said wrench connecting member whereby by fastening said base member to a base of fixed reference, the outer socket of the counter-rotating wrench is prevented from rotating in response to the reaction torque produced by the rotation of the tool in the inner socket and said extension member, said elevating member and said tool member allow a coaxial counter-rotating wrench and the rotating tool therein to be positioned both horizontally and vertically in a desired location.

4,406,188

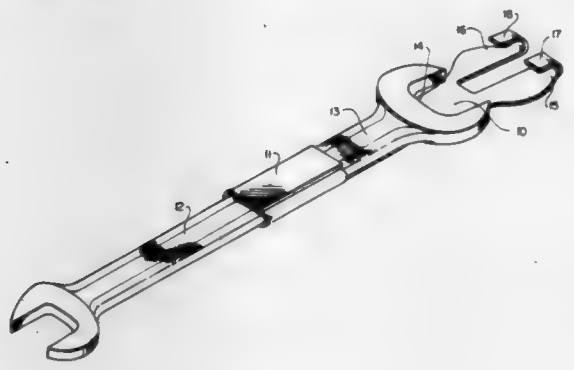
NUT-HOLDER ATTACHMENT FOR OPEN-END WRENCH

Blaine N. Mills, 2020 Todd Way, Taylorsville, Utah 84119

Filed Nov. 19, 1981, Ser. No. 322,750

Int. Cl.³ B25B *23/10*

U.S. Cl. 81—180 D **8 Claims**



1. A nut-holding attachment for an open-end wrench comprising:

an elongated, narrow, rigid strip having a length substantially less than the wrench to which the attachment unit is intended to attach;

a cuff at one terminus of the rigid strip, said cuff comprising wrap-around members sized to envelop a portion of the shank of a wrench to which the attachment unit is intended to attach, said cuff adapted to serve as a guide to enable the attachment to be slid to and fro along the shank of the wrench;

a nut-holding yoke at the opposite terminus of the strip from said cuff, said yoke comprising a pair of curved fingers, said fingers having a slot therebetween and curved near their ends to enable said fingers to encompass the end of the wrench, said slot having a width slightly less than that of a nut typically held by the jaws of said wrench.

4,406,189

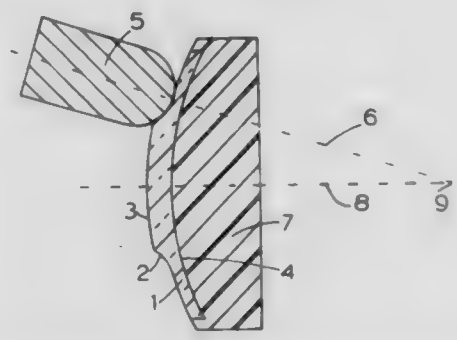
METHOD OF MAKING LENSES WITH A LENTICULAR CUT

Charles W. Neefe, 2701 Rebecca St., Big Spring, Tex. 79720

Continuation-in-part of Ser. No. 162,517, Jun. 24, 1980, abandoned, which is a continuation-in-part of Ser. No. 91,733, Nov. 6, 1979, abandoned, which is a continuation-in-part of Ser. No. 972,526, Dec. 22, 1978, Pat. No. 4,202,848, which is a continuation-in-part of Ser. No. 874,934, Feb. 3, 1978, Pat. No. 4,150,073, which is a continuation-in-part of Ser. No. 793,388, May 25, 1977, abandoned. This application May 11, 1981, Ser. No. 262,034

Int. Cl.³ B23B *1/00*

U.S. Cl. 82—1 C **1 Claim**



1. A method of making lenticular negative refractive power contact lenses having identical edge thickness and contours regardless of the central lens refractive power by the steps of providing a negative power lens having polished optical surfaces present on the concave and convex surface, cutting a second non-optical convex curve on the periphery of the convex optical surface, by rotating the minus refractive power lens around its optical axis on a contact lens turning lathe, moving the cutting tool toward the optical axis to a preselected distance from the optical axis, thereby cutting a second convex curve on the peripheral edge of the lens, the second convex curve having a radius of from 0.01 millimeter to 0.30 millimeter longer than the concave curve present on the lens.

4,406,190

BAR STOCK FEED APPARATUS FOR A MACHINE TOOL

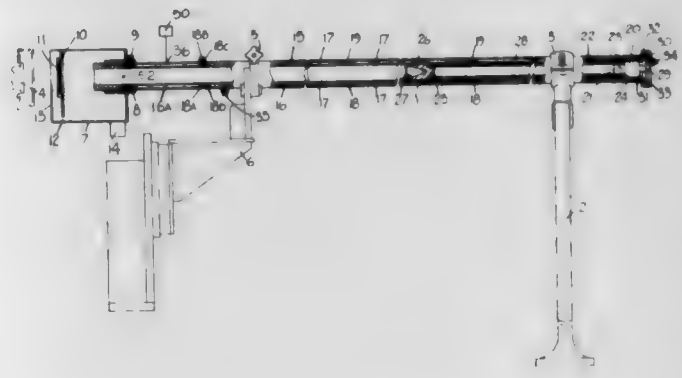
Peter A. Mason, Kenilworth, England, assignor to White-BSA Tools Limited, Birmingham, England

Filed May 13, 1981, Ser. No. 263,311

Claims priority, application United Kingdom, May 16, 1980, 8016233

Int. Cl.³ B65H *5/16*

U.S. Cl. 82—2.5 **15 Claims**



1. A bar stock feed apparatus comprising:

(a) a bar stock support tube mounted on support means, said tube defining a space for containing bar stock;

(b) a workpiece carrier deposited at one end of the support tube to receive bar stock;

(c) fluid pressure actuated feed means which when actuated urge the bar stock along the support tube toward the workpiece carrier;

(d) a conduit for introducing hydraulic fluid into the support tube at a location forwardly of the feed means in the direction of bar feed; and

(e) a hydraulic fluid supply system comprising a pump and driving means therefore, and also comprising control means which alternately either permit hydraulic fluid to actuate said fluid pressure actuated feed means, or permit hydraulic fluid to flow into said conduit and hence into said support tube forwardly of said feed means.

4,406,191

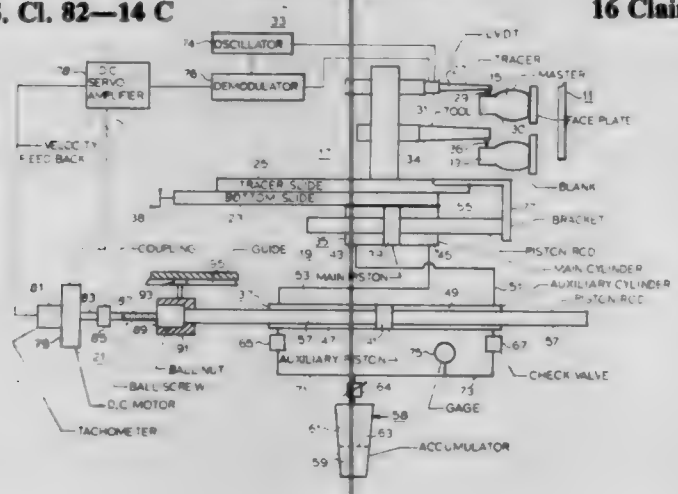
WORK SHAPING

Harry J. Armitage, 1546 Cavitt Rd., Monroeville, Pa. 15146

Filed May 18, 1981, Ser. No. 264,804

Int. Cl.³ B23B *3/28*

U.S. Cl. 82—14 C **16 Claims**



1. Apparatus for forming from at least one blank a part having the shape determined by a master, including means for supporting said blank, means for supporting said master, the axes along which said blank and master are supported being generally parallel, means, connected to said blank-supporting means and to said master-supporting means, for rotating said blank in synchronism with said master, a carriage, means moving said carriage generally parallel to the axes of said blank and master, a tracer, a cutting tool, means mounting said tracer on said carriage in engagement with the contour of said master so that it follows the said contour, as said master rotates, generally transversely to the axes of said master, means mounting said cutting tool on said carriage in cutting engagement with said blank so that it cuts a contour in said blank as said blank rotates, solely electromechanical means, connected to said tracer, for converting the said following movement of said tracer into rotary movement, a closed-loop fluid system including a piston movable in one direction or the opposite direction as the pressure of said fluid on said piston changes, means, responsive to said converting means, connected to said closed-loop fluid system, for actuating said piston to move in accordance with the following movement of said tracer, said actuating means being free of any valve means operable responsive to the following movement of said tracer to control the flow of fluid from a reservoir to said fluid system and means, connected to said piston, for moving said tracer and tool in accordance with the movement of said piston so that said tool cuts a contour corresponding to said tracer in said blank.

6. Apparatus for forming from at least one blank a part having a shape determined by the contour of a master, said apparatus including a tracer to engage the contour of said master in contour following relationship, a cutting tool to engage said blank in shaping relationship, means, connected to said tracer for actuating said tracer to follow the contour of a master with which said tracer is engaged as aforesaid, means connected to said cutting tool for actuating said cutting tool to shape a blank with which said cutting tool is engaged as aforesaid, said means for actuating including a closed-loop fluid system, a piston within said system, movable in accordance with displacement of fluid in said system on opposite faces of said piston, means, connected to said tracer, for displacing the fluid on opposite sides of said piston in accordance with the movement of said tracer in following said contour, said displacing means being free of any valve means operable responsive to the movement of said tracer for controlling the flow of fluid from a reservoir through said fluid system and means connected to said piston, for moving said tracer and cutting tool in accordance with the following movement of said tracer, whereby the cutting tool forms said part with the contour of said master.

4,406,192

APPARATUS FOR MACHINING A PLANAR SIDE FACE OF A PISTON RING

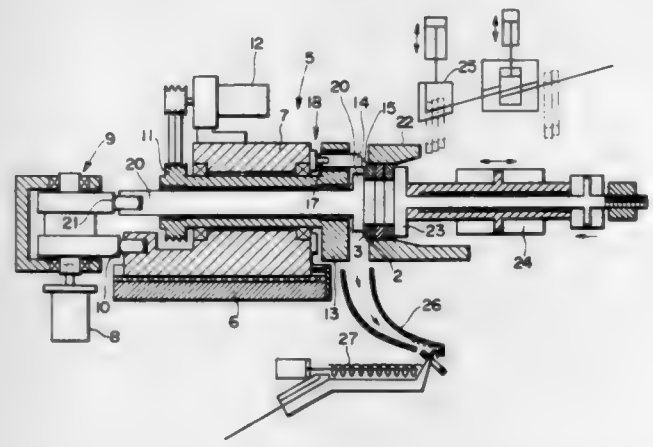
Masahiko Wada, Kashiwazaki, Japan, assignor to Kabushiki Kaisha Riken, Tokyo, Japan

Filed May 1, 1981, Ser. No. 259,471

Claims priority, application Japan, May 2, 1980, 55-61068

Int. Cl.³ B23B *19/00*

U.S. Cl. 82—19 **4 Claims**



1. Apparatus for machining a shoulder on the planar side face of a split piston ring comprising a base, a headstock slidably mounted on the base, a main shaft rotatably supported in said headstock, a cutting tool holder mounted on the main shaft for axial movement relative to the shaft and having a cutting tool at one end, a first cam means for reciprocating said headstock on the base in the axial direction of the shaft, a second cam means for axially reciprocating said cutting tool holder upon rotation of the shaft, a piston ring holder located opposite the cutting tool, and means for holding piston rings in the ring holder so that the axis of the rings is aligned with the axis of the shaft and a planar side face of the rings is exposed to the tool, means for feeding piston rings into and for discharging machined piston rings from the ring holder, wherein said first cam means advances the headstock, shaft, and cutting tool to a position adjacent the piston ring to be machined and withdraws them after machining and the second cam means moves the cutting tool in an axial direction between a cutting position and a non-cutting position during rotation of the shaft to form a shoulder on at least a portion of the exposed planar side face of a piston ring in the ring holder.

4,406,193

APPARATUS FOR URGING WORKPIECES AGAINST CHUCKS

Yoshihide Sugino, Chigasaki, and Hiroshi Shoji, Fujisawa, both of Japan, assignors to Yamatake Honeywell Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1981, Ser. No. 292,302

Claims priority, application Japan, May 15, 1981, 56-72924

Int. Cl.³ B23B *13/00, 15/00*

U.S. Cl. 82—34 R **4 Claims**

1. An apparatus for urging a workpiece against a chuck comprising:

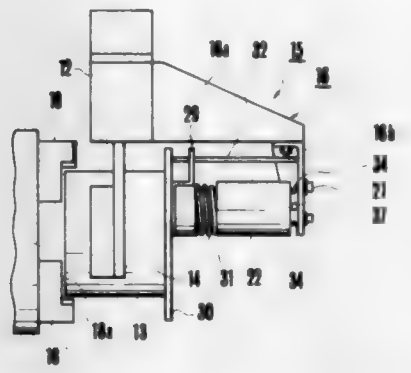
a stationary bracket including a holding plate facing said chuck and provided with tapered openings;

a plurality of holding rods extending through said tapered

openings, said holding rods being provided with tapered portions, the diameters thereof increasing with increasing distances from said chuck;

a fluid pressure cylinder supported by said holding rods and having a piston rod;

a workpiece press member pivotally mounted on an operating end of said piston rod;



spring members interposed between said fluid pressure cylinder and said bracket for separating said fluid pressure cylinder away from said bracket; and

a ball interposed between said holding plate and a rear end of said fluid pressure cylinder at the center of said plurality of holding rods for permitting swinging motion of said fluid pressure cylinder when the workpiece is urged by the press member.

4,406,194

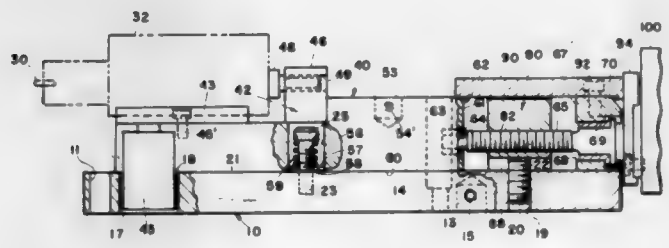
TOOL HOLDER

Richard C. Gersch, Traverse City, Mich., assignor to Subco, Inc., Traverse City, Mich.

Filed Dec. 17, 1980, Ser. No. 217,520

Int. Cl.³ B23B *29/10*

U.S. Cl. 82—36 R **3 Claims**



1. A tool support comprising:

base means for attachment to a machine for performing machining operations on a workpiece;

a machine tool holder including means for pivotally mounting said holder to said base means, said holder having means located on one side of said pivot mounting means for holding a machine tool, said holder defining an elongated slot on an opposite side of said pivot mounting means, said elongated slot being radially aligned with said pivot mounting means;

a cam slidably received within said elongated slot for reciprocal movement toward and away from said pivot mounting means, said cam including an elongated camming surface angularly offset from radial alignment with said pivot mounting means, said camming surface being defined by an elongated recess formed in said cam, said cam including a threaded aperture radially aligned with said pivot mounting means;

a pin member supported by said base and engaging said camming surface, said pin member comprising a stationary projection extending from said base into said recess; and

means for reciprocably moving said cam within said slot, said means for reciprocably moving said cam including a lead screw threaded through said threaded aperture in said cam, said holder including means for rotatably supporting said lead screw, said means for reciprocably moving said cam further including a motor having a drive shaft and means for coupling said drive shaft to said lead screw, whereby said camming surface engages said pin to shift said cam tangentially with respect to said pivot mounting means to pivot said machine tool holder about said pivot mounting means.

4,406,195

QUICK-RELEASE TOOL ASSEMBLY

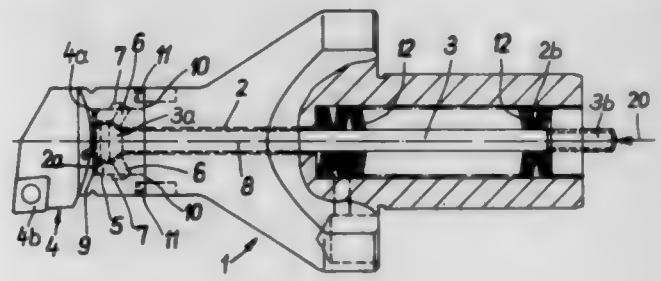
Heinrich Krüger, Essen, and Hans Tack, Velbert, both of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Feb. 25, 1981, Ser. No. 237,903

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007440

Int. Cl.³ B23B *29/00, 29/03*

U.S. Cl. 82—36 B **8 Claims**



1. A quick release tool assembly comprising

(a) a basic tool holder having a front end, a rear end, a longitudinal axis and an axially projecting receiving stub at said front end;

(b) a tool head having an inner wall defining an outwardly open cavity and a depression provided in said inner wall and bounded by a bottom forming part of said inner wall; said tool head being mountable on, and removable from said basic tool holder by insertion of said receiving stub in and removal from said cavity;

(c) a plurality of locking pins slidably held in passages of said receiving stub in a distribution about said axis; each said locking pin having an outer end in alignment with said depression when said tool head is in a mounted state on said basic tool holder and an inner end being closer to said axis than said outer end; each said locking pin extending obliquely rearwardly with respect to said longitudinal axis whereby said inner end of said locking pin being closer to said front end of said basic tool holder than said outer end;

(d) spring means in engagement with each said locking pin for urging each said locking pin to slide towards said axis;

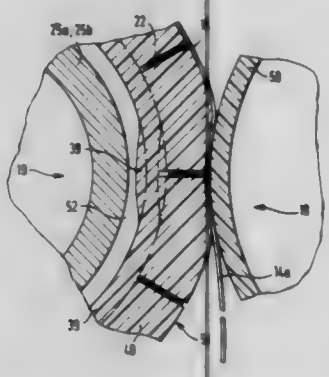
(e) a locking bar longitudinally slidably held in an axial channel of said basic tool holder substantially in alignment with said axis; said locking bar having a head portion situated at said front end of said basic tool holder; said head portion having a substantially conical surface tapering toward said rear end of said basic tool holder; said conical surface being in engagement with the inner end of each said locking pin; said locking bar having first and second axial positions; in said second axial position said locking bar being shifted towards said rear end relative to said first axial position; in said first axial position of said locking bar said locking pins being withdrawn from said bottom of said depression and in said second axial position of said locking bar said conical surface presses each locking pin into clamping engagement with said bottom of said depression, whereby a force derived from said clamping engagement urges said tool head on said receiving stub axially towards said rear end of said basic tool holder; and

(f) displacing means for moving said locking bar into said second axial position.

4,406,196
DEVICE FOR CUTTING CONTINUOUS THREADS, AND NOTABLY GLASS THREADS

Giordano Roncato, Aix les Bains; Jean Berlioz, and Louis Roy, both of Chambery, all of France, assignors to Vetrotex Saint Gobain, Chamberg, France

Filed May 5, 1981, Ser. No. 260,673
Claims priority, application France, May 9, 1980, 80 10376
Int. Cl.[3] D01G *1/04*
U.S. Cl. 83—117 14 Claims



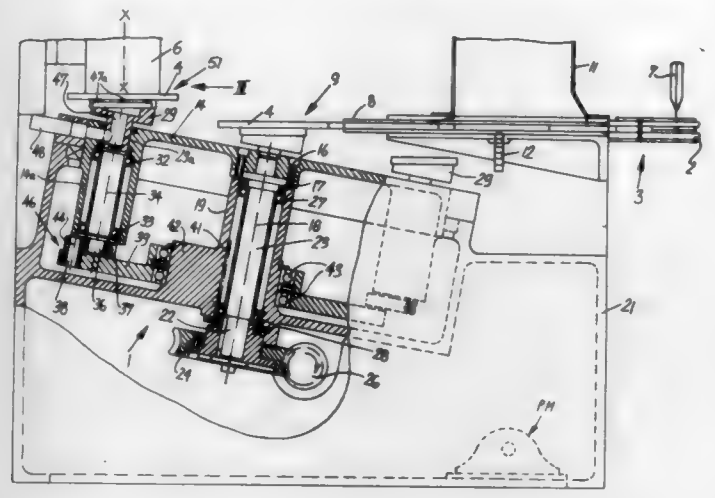
1. A cutting device for cutting threads into sections of predetermined length with said device having a bearing member in the form of a rotatable smooth faced drum and a blade bearing drum rotatable about an axis parallel to the axis of rotation of the smooth faced drum and having radially outwardly extending cutting blades positioned on the outer periphery thereof and having centrifugal force responsive members positioned between circumferential adjacent blades adapted to press a thread into contact with said smooth faced drum, characterized in that said blades are connected to said blade bearing drum only at their ends whereby the bases of the blades opposite their cutting edges are free, in that said centrifugal force responsive members comprise fins connected to a deformable ring positioned beneath the bases of the blades with the center of the ring being concentric with the axis of rotation of the blade bearing drum, and in that the outer periphery of said fins are adapted to be moved radially outwardly of the blade bearing drum under the influence of centrifugal force and are adapted to be moved radially inwardly of the outer periphery of said blades against said centrifugal force by contact with said smooth faced drum.

4,406,197
METHOD AND APPARATUS FOR TRANSPORTING ROD-SHAPED ARTICLES

Dietrich Bardenhagen, Hamburg; Nikolaus Häusler, Oststeinbek; Helmut Niemann, Hamburg; Heinz Greve, Hamburg, and Karl-Heinz Schlüter, Hamburg, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Filed May 28, 1981, Ser. No. 267,921
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1980, 3030949
Int. Cl.[3] B26D *7/06*; A24C *5/28*
U.S. Cl. 83—152 24 Claims

1. Apparatus for transferring rod-shaped articles which constitute or form part of smokers' products from a first station to and beyond a second station, comprising first conveyor means arranged to feed rod-shaped articles lengthwise to the first station; second conveyor means arranged to transport rod-shaped articles sideways and away from the second station; and transfer conveyor means including means for transporting successive groups of articles from the first to the second station and for delivering successive articles of a group at said second station to said second conveyor means, said transporting means comprising rotary carrier means and a plurality of equiangular platforms rotatably mounted on said carrier means, each of said platforms having a plurality of article receiving means sufficient in number to accept a full group of articles at said first station, and means for rotating said carrier

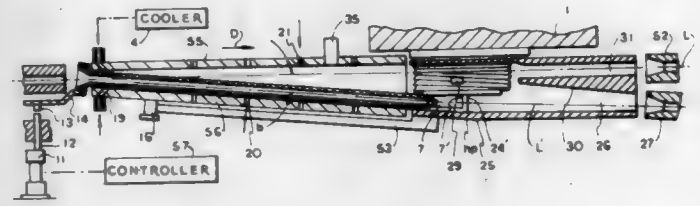


means so as to advance said platforms along an endless path extending past said first and second stations.

4,406,198
DRUM-TYPE WIRE SHEAR

Gerhard Pechau; Ronald Schwartz, and Rudi Jacob, all of Magdeburg, German Democratic Rep., assignors to Veb Schwermaschinenbau-Kombinat "Ernst Thälmann" Magdeburg, Magdeburg, German Democratic Rep.

Filed May 21, 1981, Ser. No. 266,100
Int. Cl.[3] B23D *25/12*
U.S. Cl. 83—170 10 Claims



1. A wire shear comprising:

a pair of vertically superposed cutter drums defining a nip and having at least one cutter blade, said drums being rotatable about respective parallel axes defining a plane and formed with entrainment grooves;

a swingable elongated guide tube having a downstream end closely juxtaposed with and directed into said nip and an upstream end;

pivot means at said upstream end for vertical and horizontal transverse displacement of said downstream end relative to said upstream end;

means for feeding a wire moving at high speed into said upstream end in an upstream-to-downstream transport direction;

an upstream guide upstream of said plane, engageable with said downstream end, and extending into said nip substantially to said plane;

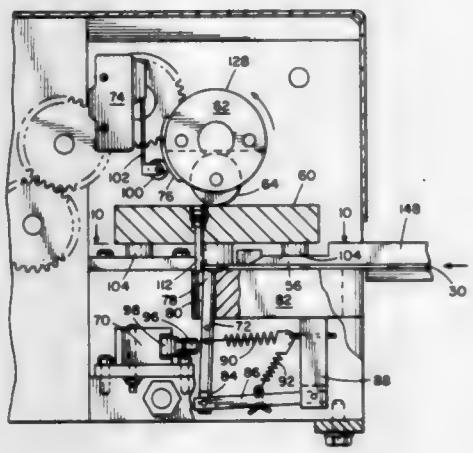
a downstream guide downstream of said plane, aligned with said upstream guide, and having a floor plate extending upstream substantially to said plane and a guide wall extending upstream past said plane and past said downstream end; and

means for raising said upstream guide and thereby raising said downstream end and said wire at said downstream end to press the wire into the groove of the upper cutter drum, the downstream end being freely horizontally and transversely displaceable when raised by the upstream guide so that when thus raised the wire and downstream end are horizontally entrained by the rotating cutter drums.

4,406,199
APPARATUS FOR MAKING COLLARS HAVING AN INTEGRAL NOTCHER

Rudolph A. Rom, Woodridge, Ill., assignor to The Lockformer Company, Lisle, Ill.

Filed Mar. 16, 1981, Ser. No. 243,812
Int. Cl.[3] B26D *5/28*
U.S. Cl. 83—212 15 Claims



1. In an apparatus for forming a circular collar from a generally rectangular sheet of metal, said apparatus including a means for notching one edge of said sheet and a motor which drives said apparatus, the improvement in means for notching said sheet comprising:

(a) a stationary die and a reciprocatory ram including a punch which cooperates with said die to stamp a notch in one edge of the sheet;

(b) means for aligning said sheet relative to said die and punch so that the area of the sheet to be notched is disposed between said die and punch, said aligning means comprising an edge guide and means disposed in the path of the sheet for abutting the leading edge of said sheet, said abutting means stopping said sheet such that the area of the sheet to be notched is disposed between said die and punch, said abutting means including a stop movable between a forward position and a rearward position, and a first spring connected to said stop for urging the latter to said forward position, the leading edge of the sheet abutting said stop to cause the latter to move from the forward position to the rearward position, and means mounted to said ram for displacing said abutting means from the path of said sheet upon operation of the reciprocatory ram; and

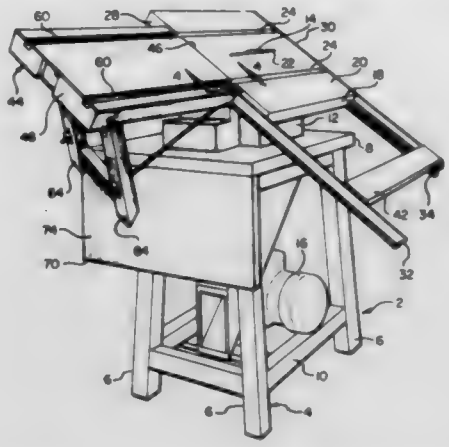
(c) means responsive to movement of said stop for automatically operating said punch when a sheet to be notched has been positioned for stamping by said aligning means.

4,406,200
TABLE EXTENSION FOR TABLE SAWS

William S. Kerr, 513½ N. Spaulding Ave., Los Angeles, Calif. 90036

Filed Jul. 8, 1981, Ser. No. 283,750
Int. Cl.[3] B23D *47/02*; B23Q *1/04*
U.S. Cl. 83—473 8 Claims

1. In a table saw having an upstanding support, a table tiltable on said support, a top surface on said table, said table having a new blade slot and opposed work feed-in and work discharge ends that are perpendicular to said slot, a table extension projecting from one of said ends in the path of movement of the work and having a top surface that is coplanar with the top surface of the table and remains so as to the table is tilted, releasable clamping means securing said table and extension together, reinforcing structure secured to said extension adjacent to the end thereof that is distal to said table, said structure projecting from the underside of said extension toward said support and having anti-friction means, and a bearing plate on

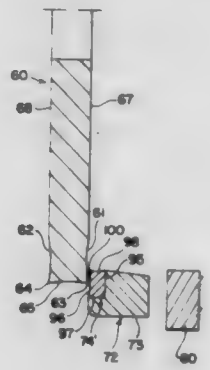


said support and engaging said anti-friction means in the various tilted positions of said table and extensions.

4,406,201
FABRIC CUTTING

Thomas E. Barnes, Bloomington, Ind., and Clifford A. Landsness, Akron, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Aug. 24, 1981, Ser. No. 295,357
Int. Cl.[3] B26D *1/18, 1/20*
U.S. Cl. 83—487 3 Claims

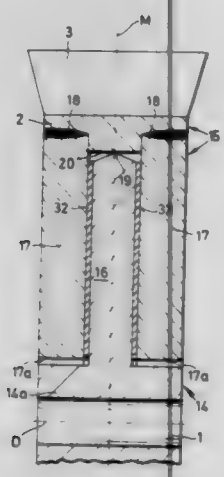


3. An apparatus for the cutting of elastomeric fabric material comprising a support frame, guide means on said support frame, carriage means mounted for movement on said guide means, power operated means operatively connected to said carriage means for reciprocating said carriage means on said guide means, cutter support means mounted on said carriage means for movement therewith, said cutter support means having a shaft journaled thereon for rotation, a circular cutter means mounted on said shaft for rotation therewith, said cutter means having a pair of spaced substantially parallel side surfaces at least one of said side surfac 3 has a concave groove around the outermost portion thereof, the outer peripheral surface of said circular cutter between the respective side surfaces has a concave groove to define a pair of circular edges, wherein the juncture of said concave groove of said outer peripheral surface and at least one of said side surfaces having said concave groove around the outermost periphery thereof defines a circular cutting edge, a guide bar secured to the lower portion of said support frame and extending transversely thereacross operative to guide fabric to be cut thereover, anvil means connected to said cutter support means for movement therewith, said anvil having a cutter insert cooperative with said circular cutter means for cutting elastomeric material, said cutter insert having an upper surface and a forwardly disposed surface, said upper and forwardly disposed surfaces of said insert each having a concave groove, whereby the juncture of said grooves on said insert defines a linear cutting edge that is cooperative with said circular cutting edge to provide a shearing action on fabric therebetween.

4,406,202
ROTATABLE ARTICLE, SUCH AS A TOOL, PROVIDED WITH MEANS FOR DAMPING VIBRATION

Ernst Salje, Schulheide 4, Bendestorf, Fed. Rep. of Germany (D2106), and Ulrich Bartsch, Braunschweig, Fed. Rep. of Germany, assignors to Ernst Salje, Bundestorf, Fed. Rep. of Germany

Division of Ser. No. 3,786, Jan. 15, 1979, Pat. No. 4,285,260.
This application May 13, 1981, Ser. No. 263,175
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1978, 2801811
Int. Cl.³ B27B *33/08*; B23B *61/02*
U.S. Cl. 83—835 **4 Claims**



1. A vibration-damped, disc-like rotatable tool having two radial faces, a central axis of rotation, a rotary drive means for driving the tool about said axis of rotation, a central plane extending radially from the axis, and a work region in the peripheral region of the tool adapted to interact with another article comprising:

a first member comprised of two like annular disc members extending substantially parallel to said central plane of the tool spaced equidistantly therefrom to form an annulus therebetween and securely connected at their outer peripheries to the work region, the inner peripheries of said disc members being spaced from the rotary drive means;

a second disc-like annular member extending radially within said annulus in spaced relation to the adjacent walls of said discs of said first outer member and having a central radial plane coincident with said central plane of the tool and connected at its inner periphery to said rotary drive means to be driven about the axis of rotation thereby; and

a damping layer of visco-elastic material in said annulus on each side of said second disc-like member solely connecting said first and second annular disc members together so that said damping layers solely transmit therethrough the torque from said rotary drive means and said second member to said first member and shear stresses occur in said damping layers.

4,406,203
AUTOMATIC PERFORMANCE DEVICE UTILIZING DATA HAVING VARIOUS WORD LENGTHS

Eisaku Okamoto, and Kohtaro Mizuno, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka, Japan

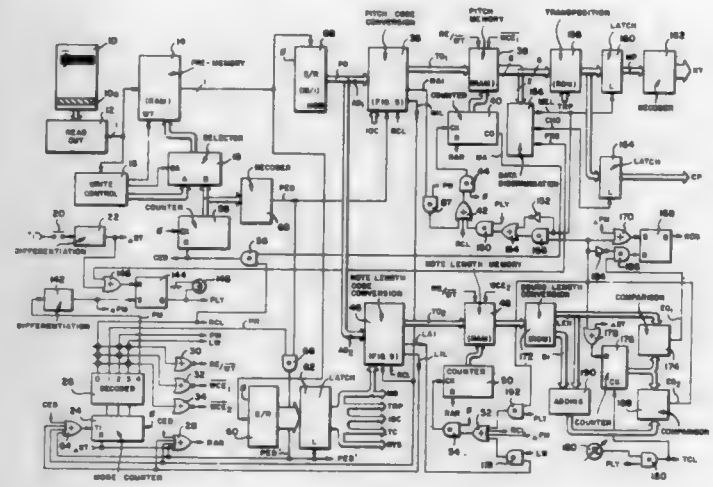
Filed Nov. 5, 1981, Ser. No. 318,333
Claims priority, application Japan, Dec. 9, 1980, 55-173659
Int. Cl.³ G10C *3/28*; G10F *5/00*; G10G *3/04*; G10H *7/00*
U.S. Cl. 84—1.03 **8 Claims**

1. An automatic musical performance device comprising:

storing means for storing first musical note data represented by digital words whose word lengths are different in accordance with frequency in use of each note in a music to be performed;

read out means for reading out said first musical note data from said storing means;

conversion means for converting said first musical note data to second musical note data, said second musical note data being represented by digital words whose word lengths are independent of said frequency in use of each note; and

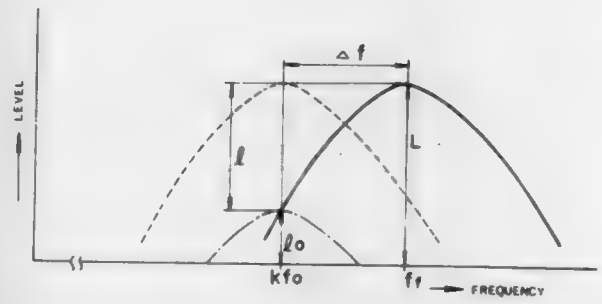


producing means for producing at least one of a musical tone signal and a key designating signal in accordance with said second musical note data fed from said conversion means, said key designating signal being a signal which designates a key to be depressed in a keyboard.

4,406,204
ELECTRONIC MUSICAL INSTRUMENT OF FIXED FORMANT SYNTHESIS TYPE

Mitsumi Katoh, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 25, 1981, Ser. No. 296,217
Claims priority, application Japan, Sep. 5, 1980, 55-123150
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.19 **19 Claims**



1. An electronic musical instrument having note selection means for selecting one among a plurality of notes and a tone signal generation means for generating by frequency modulation a tone signal containing harmonic components corresponding to the note selected by said note selection means, said tone generation means being of the fixed formant, frequency modulation type and having formant synthesizing means for synthesizing formants included in said tone signal, comprising:

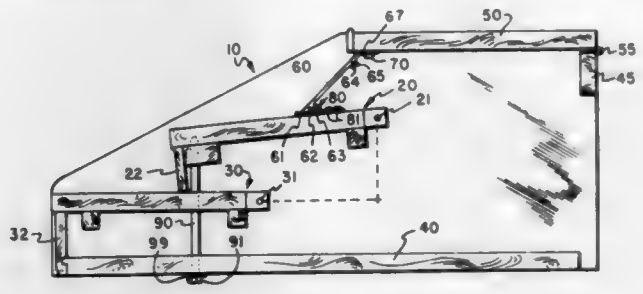
frequency modulation means for frequency-modulating a carrier of a second frequency by a modulating wave corresponding to the fundamental frequency of said selected note, thereby to form a certain formant having said second frequency as its center frequency, said second frequency being the frequency of that harmonic component of said selected note which is closest to a first frequency which is the center frequency of a predetermined fixed formant, and

level correction means for correcting the level of said certain formant in response response to the difference between said first frequency and said second frequency.

4,406,205
MUSICAL INSTRUMENT LID SAFETY LOCK

Steven C. Paray, Hoopeston, Ill., assignor to CBS Inc., New York, N.Y.

Filed Jan. 4, 1982, Ser. No. 336,748
Int. Cl.³ G10C *3/02*
U.S. Cl. 84—183 6 Claims



1. For use in conjunction with a musical keyboard instrument that includes a housing having a bottom panel; at least one keyboard assembly pivotally mounted to said housing; a lid pivotally mounted to a rear portion of said housing and being pivotable upward to expose the interior of said musical instrument; and a first bracket mounted on the underside of said lid and extending angularly downwardly from said lid toward said keyboard assembly, said first bracket having a flange extending substantially orthogonally therefrom toward said keyboard assembly; an improved combination for providing safe locking of said lid to prevent immediate access to the interior of said musical instrument, comprising, in combination:

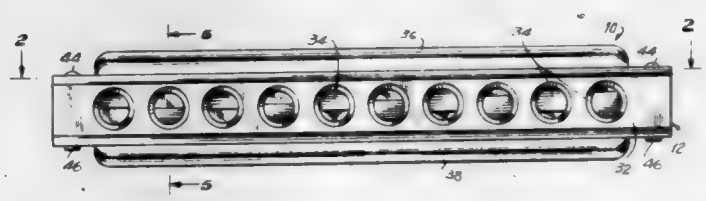
a second bracket mounted on said keyboard assembly and extending angularly toward said first bracket, said second bracket being positioned and oriented to engage and hold the flange of said first bracket when said keyboard assembly is in its lowermost pivot position and to be disengagable from said flange when said keyboard assembly is pivoted upwardly and said lid is lifted; and

an elongated removable fastener extending through the bottom panel of said musical instrument and being adapted to engage said keyboard assembly and said bottom panel so as to secure said keyboard assembly in its lowermost pivot position.

4,406,206
HARMONICA

Cham-Ber Huang, 257 Benson Ave., Elmont, N.Y. 11003

Filed Jan. 14, 1981, Ser. No. 224,861
Int. Cl.³ G10D *7/12*
U.S. Cl. 84—377 18 Claims



1. A single row harmonica including:

a body, said body having a plurality of chambers, said chambers being arranged at a first and a second level of said body, said chambers being spaced apart one from the other at each said level, the chambers at said first level being out of registry with the chambers at said second level, each chamber having an opening at, and extending away from a first common surface of said body, said opening at said first common surface substantially spanning the distance between said levels, said body including a first surface at said first level and a second surface at said second level, said first common surface being a portion of said body between said first and second body surfaces, said chambers being formed into said body, extending inwardly from said first and second surfaces,

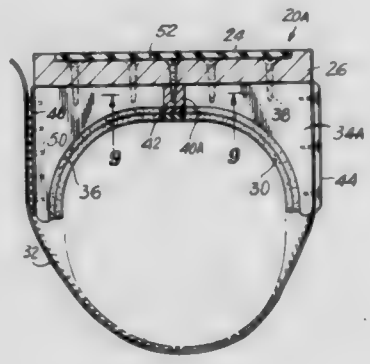
at least one said chamber extending inwardly from one of said first and second body surfaces by a distance which is at least half of the distance between said first and second body surfaces,

means located at said first and said second levels for producing a sound when air flows through any said chamber and said associated chamber opening, the means for producing sound for each said chamber being only at the level of the associated chamber.

4,406,207
PERCUSSION PRACTICE PAD

John J. Criscione, 1377 W. 6th St., Brooklyn, N.Y. 11204

Filed Dec. 4, 1981, Ser. No. 327,404
Int. Cl.³ G10D *13/02*
U.S. Cl. 84—411 P 11 Claims



1. A percussion practice device comprising:

a base having at least one dimension wider than the width of the thigh of the intended user;

a layer of sound-muting material having rebounding properties carried by the top of said base;

supporting means fixed to the bottom of said base for spacing said base apart from said user by a predetermined spacing, said supporting means comprising a first wall member disposed normally to said base and adapted to extend transverse of said thigh, the bottom edge of said first wall member having an arcuate surface conforming to the curvature of said thigh, the ends of said arcuate surface adapted to extend down the sides of said thigh, said supporting means further comprising at least one additional wall member disposed normally to said base and having a bottom edge shaped to conform to the portion of said thigh which it is adapted to contact; and

strap means coupled to the vertical edges of said first wall member for securing said device to the thigh of said user, said strap means including means for varying the degree of tightness in securing said device to said user.

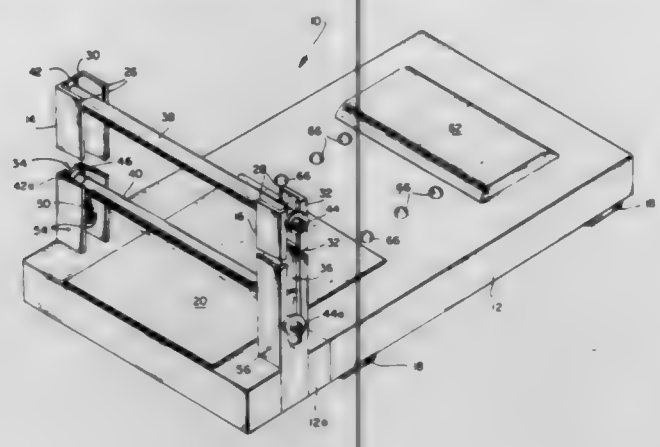
4,406,208
MUSIC TEACHING AID

Ralph Nazer, 1450 Palisade Ave., Ft. Lee, N.J. 07024

Filed Jan. 25, 1982, Ser. No. 342,173
Int. Cl.³ G09B *15/00*
U.S. Cl. 84—453 12 Claims

1. A music teaching aid for developing a student's understanding of the pulsations of time characteristic of music comprising platform means for receiving a downwardly directed impact force during rhythmic movement of the student's foot, indicating means supported above said platform means, said indicating means providing a secondary impact surface during

an upwardly directed movement of the student's foot thereby delimiting the amplitude of foot displacement whereby the



student can coordinate said oscillatory movement with basic musical time divisions.

4,406,209

PROJECTILE-FIRING WEAPONS

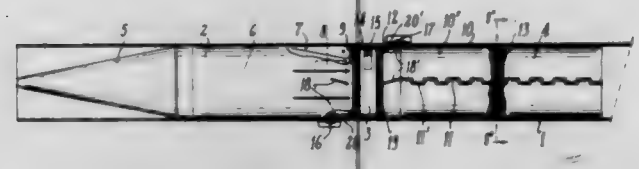
Francois Arene, Paris; Bernard Castagner, Esbly, and Jean-Serge Peyroux, Paris, all of France, assignors to Societe d'Etudes, de Realisations et d'Applications Techniques (S.E.R.A.T), France

Filed Oct. 3, 1980, Ser. No. 193,598

Claims priority, application France, Nov. 22, 1979, 79 28780

Int. Cl.³ F41F *3/02*

U.S. Cl. 89—1.701 **14 Claims**



1. A projectile firing weapon comprising a firing tube containing a projectile, a propellant charge for said projectile, and a container for said propellant charge, said container comprising a flexible cylindrical bag, said bag having a central portion containing said propellant charge and at least one end portion having a concertina configuration formed by first folding said end portion of the bag lengthwise to form a flat strip and then transversely folding the flat strip back upon itself in a zig-zag fashion, whereby upon ignition of said propellant charge, the zig-zag sections of the bag unfold one after another and only the section adjacent the propellant charge is subject to maximum pressure.

4,406,210

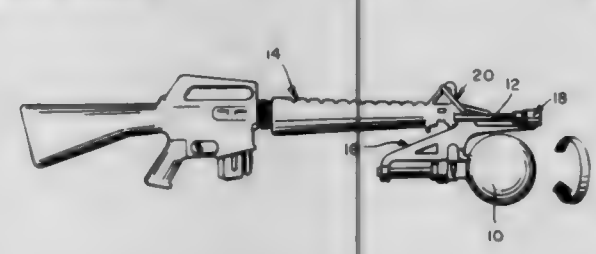
JET-PROPELLED MISSILE WITH SINGLE PROPELLANT-EXPLOSIVE

Alan C. Baker, Huntington Beach, Calif., and John E. Roach, Jr., Alexandria, Va., assignors to Brunswick Corporation, Skokie, Ill.

Filed Feb. 17, 1981, Ser. No. 235,014

Int. Cl.³ F41F *3/04*; F42B *13/30*

U.S. Cl. 89—1.808 **16 Claims**



11. A jet-propelled missile, comprising: a housing, an exhaust nozzle on said housing, a pressure chamber within said housing in communication with said exhaust nozzle, a singular homogeneous mass comprised of a single propellant-explosive compound within said housing and having a burn surface exposed in said pressure chamber, and impact fuze means on said housing remote from said burn surface for detonating said single propellant-explosive compound on impact of said missile.

4,406,211

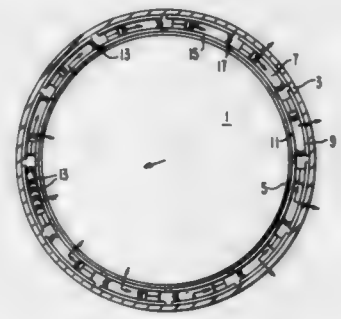
ANNULAR SHOCK ABSORBING SYSTEM FOR A MISSILE LAUNCHER

William F. Andersen, San Jose, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 28, 1981, Ser. No. 287,611

Int. Cl.³ F41F *3/04*

U.S. Cl. 89—1.816 **2 Claims**



1. An annular shock absorbing system for a missile launcher comprising a plurality of arcuate shock pads circumferentially disposed around said missile launcher;

each shock pad comprising an arcuate outer sheet, an arcuate inner sheet, and a plurality of chevron shaped struts disposed between said sheets in a spaced relationship; and

means for joining said inner arcuate sheet into a continuously acting, generally circular sheet, whereby lateral missile movement within said shock absorbing system will be resisted by shear, tensile and compressive forces generated in said shock absorbing system by the lateral missile movement.

4,406,212

HYDRAULIC APPARATUS

Laurence A. Prince, Cottingham near Hull, and Kevin M. Twigger, Hull, both of England, assignors to British Aerospace Public Limited Company, London, England

Filed Jun. 17, 1980, Ser. No. 160,365

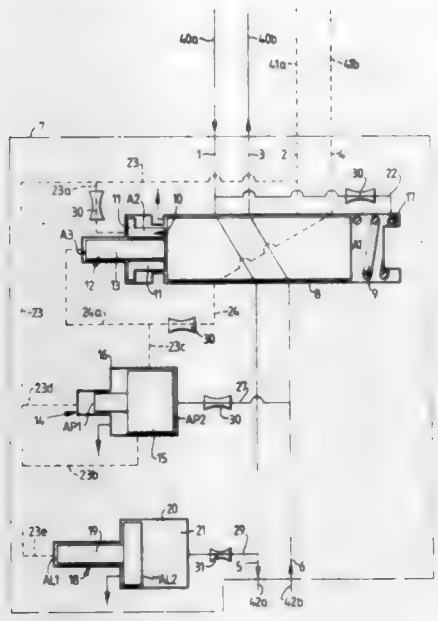
Claims priority, application United Kingdom, Jun. 19, 1979, 7921263

Int. Cl.³ F15B *13/042, 11/16*

U.S. Cl. 91—28 **10 Claims**

1. Hydraulic apparatus including first supply and supply return ducts for connection to a first hydraulic supply assembly, second supply and supply return ducts for connection to a second hydraulic supply assembly, delivery and delivery return ducts for connection to an actuator assembly, multi-position valve means which, in a first position, isolates the second supply and supply return ducts and connects the first supply and supply return ducts to the delivery and delivery return ducts, in a second position includes both the first and second supply and supply return ducts from the delivery and delivery return ducts, and in a third position isolates the first supply and supply return ducts and connects the second supply and supply return ducts to the delivery and delivery return ducts, selecting means for selecting the first position in response to normal pressures within the first supply and supply return ducts and the delivery and delivery return ducts, for selecting the second position from the first position in response to abnormally low pressures within either of the first supply and supply return ducts or the delivery and delivery return ducts, and for selecting the third position from the second position in response to the attainment of a temporary test pressure in the delivery and

delivery return ducts, pressurising means for attempting to attain said temporary test pressure when the second position is



selected, and means for ensuring that if the temporary test pressure is not attained, the second position remains selected.

4,406,213

MECHANICALLY CONTROLLED BRAKE POWER BOOSTER

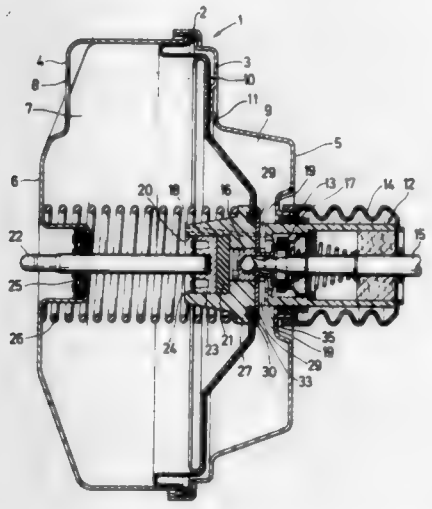
Lucas H. Haar, Niddatal, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 13, 1981, Ser. No. 253,432

Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019558

Int. Cl.³ F15B *9/10*; F01B *19/00*; F16J *3/02*

U.S. Cl. 91—376 R **31 Claims**



1. A mechanically controlled brake power booster comprising:

a booster casing;

a booster piston disposed in and axially movable in said booster casing, said booster piston dividing said booster casing into a vacuum chamber and a working chamber;

a control casing extending radially into and sealed relative to said booster casing, said control casing including therein a valve device to control the pressure in said working chamber and a radially extending channel extending from said valve device to said working chamber to connect said working chamber to a selected one of said vacuum chamber and atmosphere as controlled by said valve device, said valve device including a control piston actuated mechanically by an actuating rod; and

at lease one holding member radially inserted into said channel and secured therein, said holding member having a first portion extending radially from said control casing to hold said booster axially against an annular collar provided on said control casing.

4,406,214

BYPASS PASSAGEWAY CONSTRUCTION FOR A VEHICLE AIR CONDITIONER SYSTEM

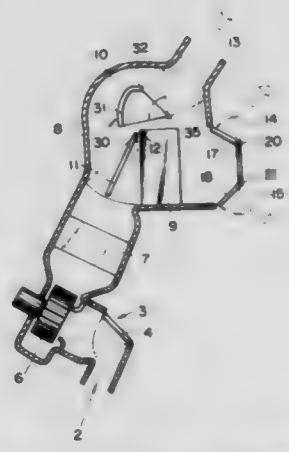
Yukio Sakurai, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 4, 1980, Ser. No. 203,848

Claims priority, application Japan, Nov. 6, 1979, 54-154356[U]

Int. Cl.³ B60H *1/24*

U.S. Cl. 98—2.08 **2 Claims**



1. An air mixing apparatus for air distribution comprising:

an air distribution housing (**8**) having an air inlet, at least one heater/defroster air outlet (**14** or **15**) and a ventilation air outlet (**13**), the interior of said housing being formed into a hot air passage leading from said air inlet to said heater/defroster air outlet, a curved cold air passage (**10**) leading from said air inlet to said ventilation air outlet, and a rejoining air passage connecting a downstream end portion of said hot air passage and a downstream end portion of said cold air passage,

heating means (**9**) disposed in said hot air passage for heating air flowing therethrough,

an air mixing door (**11**) disposed in said housing (**8**), said air mixing door pivoting from one extreme door position in which all air from said air inlet is directed into said hot air passage, to the other extreme door position in which all air from said air inlet is directed into said cold air passage, to intermediate door positions in which air from said air inlet is directed into both said cold air and said hot air passages in varying proportions,

at least one heater/defroster air outlet door (**17** or **18**) for opening and closing said at last one heater/defroster air outlet,

a ventilation air outlet door (**30**) for opening and closing said ventilation air outlet, said ventilation air outlet door including a curved portion (**31**) having a curved cross-sectional shape when viewed along an axis parallel to the pivot axis of said door (**30**), said curved portion being convex on one side and being concave on the other side, said ventilation air outlet door also including a downstream deflecting portion (**32**), said ventilation air outlet door pivoting about an axis from an open position in which said door (**30**) is spaced from and opens said ventilation air outlet (**13**) and a closed position in which said door (**30**) closes said ventilation air outlet with its convex side, said ventilation air outlet door, when in its open position, causing the cold air within said cold air passage (**10**) to flow on both said concave and convex sides of said door (**30**), said deflecting portion (**32**) causing the cold air flowing on said concave side of said door (**30**) to be deflected towards said rejoining air passage, said ventilation air outlet door, when in its closed position, causing the cold air within said cold air passage (**10**) to flow only on

the concave side of said door (30), said deflecting portion (32) causing the cold air flowing on said concave side of said door (30) to be deflected towards said rejoining air passage, and

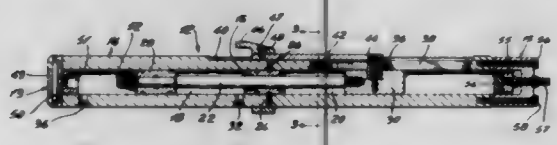
control means for adjusting the positions of said air mixing door (11), said heater/defroster air outlet door (17 or 18), and said ventilation air outlet door (30).

4,406,215

DRIVE CYLINDER

Ernest Lacasse, 24, Place Vieux-Moulin, St. Romuald, Quebec, Canada

Filed Mar. 26, 1981, Ser. No. 247,858
Int. Cl.³ F01B *11/02, 7/00*
U.S. Cl. 92—85 R **3 Claims**



1. A drive cylinder comprising; an elongated rigid element having an external wall and a continuous internal chamber closed at both ends; a guide fixedly contained within said chamber and dividing said chamber into two compartments; a rod running in said guide and adapted to move longitudinally in said chamber, the opposite ends of said rod being accommodated respectively in said compartments; a piston fitted to one end of the rod in one compartment; a head fitted to the other end of the rod in the other compartment; inlet and outlet ports in the first compartment for supplying fluid to and discharging fluid from the interior thereof for displacement of the piston therein; said rigid element having, in the second compartment, a longitudinal aperture, the opposite ends of the rigid element including within said chamber, pads serving as damping stops for the piston and the head; a drive finger, secured to said head on the rod, extending externally of said rigid element, through said aperture, in such a manner that displacement of said piston produces longitudinal displacement of said drive finger externally of said rigid element, said displacement of the drive finger being parallel with the displacement of said piston; and a slide fixedly attached to said drive finger and supported on the exterior wall of said rigid element, whereby loads, other than those exerted along the axis of said displacement of said drive finger, are exerted on said wall.

4,406,216

VENTILATOR DEVICE AND MOUNTING ARRANGEMENT THEREFOR

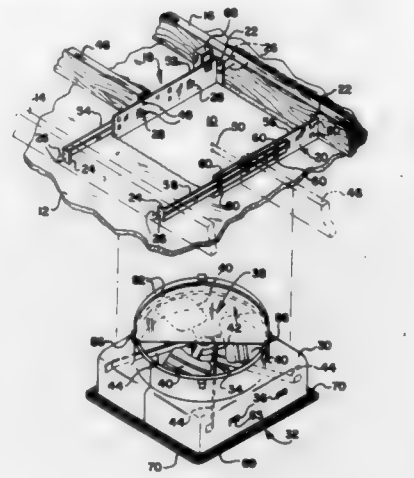
William M. Hott, Dayton, and John W. Hundley, New Lebanon, both of Ohio, assignors to Philips Industries, Inc., Dayton, Ohio

Filed May 8, 1981, Ser. No. 261,829
Int. Cl.³ F24F *7/013*
U.S. Cl. 98—116 **23 Claims**

1. A ceiling ventilation device, mountable in an opening in a ceiling between a pair of ceiling joists, comprising:

a pair of mounting brackets, each such bracket including means at each end thereof for attachment to a ceiling joist, and further including a pair of spring biased upwardly extending mounting tangs spaced along said bracket,

a housing defining an air intake opening and an air outlet opening and further defining, on each of two opposing sides thereof, a pair of downwardly facing tang receiving recesses spaced for alighment with and engagement by said tangs, in response to the upward movement of said housing into the space between said brackets such that the upper ends of said tangs engage the interior surfaces of said recesses aligned therewith, and



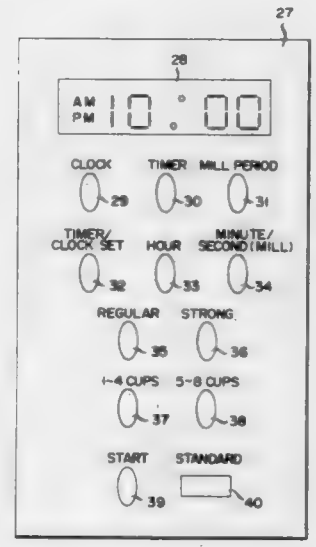
a fan assembly, including a propeller assembly and a motor connected thereto, mounted in said housing.

4,406,217

COFFEE MAKER

Hiroyuki Oota, Iwakura, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 28, 1981, Ser. No. 335,288
Claims priority, application Japan, Dec. 27, 1980, 55/185764; Dec. 29, 1980, 55/187392
Int. Cl.³ A47J *31/42*
U.S. Cl. 99—280 **12 Claims**



1. A coffee maker comprising:

a mill mechanism for milling coffee beans contained in a case into coffee powder;

a drip mechanism for pouring hot water to the case and extracting coffee from the coffee powder, said drip mechanism including a heater for heating water;

means for setting an operation period of time of said mill mechanism in the form of digital data;

means for driving said mill mechanism in accordance with the operation period of time set in said setting means;

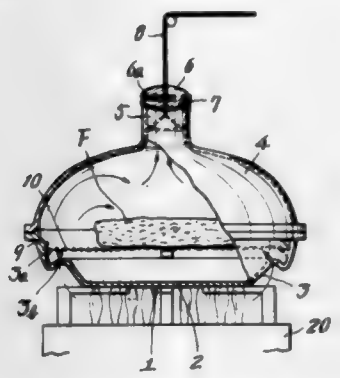
means for storing drip sequence data of said drip mechanism; and

means for controlling the activation of said heater in response to the drip sequence data stored in said storing means.

4,406,218
COOKING UTENSIL

Koichi Hatakeyama, Tokyo, Japan, assignor to Jusco Kabushiki Kaisha, Osaka, Japan

Filed Apr. 8, 1982, Ser. No. 366,675
Claims priority, application Japan, May 29, 1981, 56-82392
Int. Cl.³ A47J *36/38*
U.S. Cl. 99—401 7 Claims

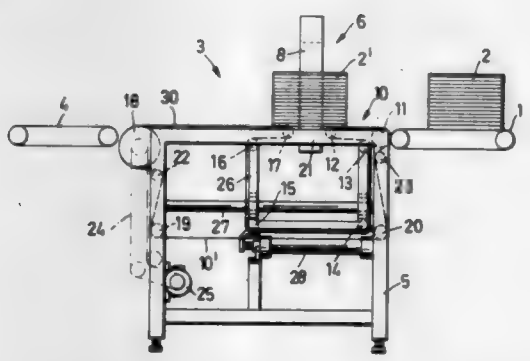


1. A pan-type cooking utensil comprising a pan-shaped main body having hot air inlets, a dome-shaped cover detachably fitted on said main body covering said hot air inlets and having an exhaust member integrally and upwardly extending from said cover in the center of the cover, said exhaust member being open at the upper and lower ends, a lid pivotably secured to said exhaust member for opening and closing the exhaust member and having an elongated opening and a rope extending through said opening with the lower end secured to said exhaust member and the upper end connected to a lift mechanism for lowering and raising said cover onto and from said main body.

4,406,219
PARCEL TYING-UP MACHINE

Gerd Mosca, Gestüt Winterhauch, D-6935 Waldbrunn-Scholl-brunn, Fed. Rep. of Germany

PCT No. PCT/EP80/00084, § 371 Date Apr. 15, 1981, § 102(e) Date Apr. 15, 1981, PCT Pub. No. WO81/00548, PCT Pub. Date Mar. 5, 1981
PCT Filed Aug. 28, 1980, Ser. No. 253,528
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2935028
Int. Cl.³ B65B *13/04*
U.S. Cl. 100—7 7 Claims

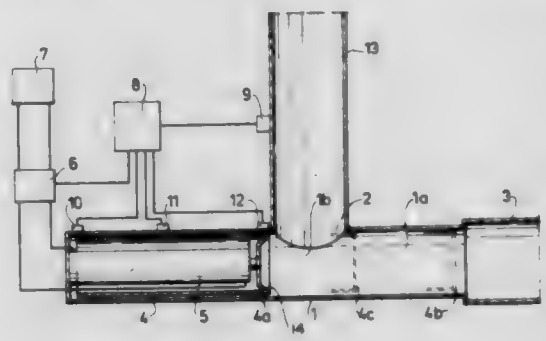


1. A parcel tying-up machine, comprising an input conveyor belt for the parcels to be tied up; an output conveyor belt for the tied-up parcels; and a parcel tying-up device positioned between the input conveyor belt and the output conveyor belt, said parcel tying-up device including a frame, a tying-up unit arranged on said frame for forward and backward motion to said output conveyor belt in the direction of transport of the parcels and to said input conveyor belt in the backward direction, said tying-up unit comprising a frame means, a guide apparatus located above said frame means and operative for placing a tie means round a parcel, a conveyor system placed on said frame means and providing a conveyor path for the parcels, a pull-off and threading-in unit positioned below said conveyor path and operative for starting a loop over the parcel, a tie joiner positioned in a tying-up plane for joining together loop ends of the tie means, drive means connected to said frame and operative for driving the tying-up unit in said forward and backward motion, and guide means for guiding said tying-up unit in said forward and backward motion, said conveyor system being operative for taking over a parcel from said input conveyor belt and for handing the parcel, after the latter has been tied up in said tying-up unit, onto said output conveyor belt after said tying-up unit has been moved in said transport direction, said conveyor system including at least one endless conveyor belt trained in line with said input conveyor belt, an inlet roller supported in said frame, a first direction-changing roller supported at the tying-up unit in front of the tying-up plane, at least one intermediate direction-changing roller supported on the tying-up unit, a second direction-changing roller supported on the tying-up unit after the tying-up plane, a run-off roller supported on said frame and at least one guide-back roller supported on said frame under said tying-up unit, said endless conveyor belt being trained over said inlet roller, over said first direction-changing roller, then downwards round said tie-joiner, over said intermediate direction-changing roller, then upwards over said second direction-changing roller and then over said run-off roller in said forward motion, said endless conveyor belt being trained back in the idle run off over said guide-back roller towards said inlet roller in said backward motion, said endless conveyor belt being driven with a speed equal to the speeds of said input conveyor belt and said output conveyor belt, said drive means being adapted to drive said tying-up unit in said forward motion with a speed equal to the speeds of said input conveyor belt and said output conveyor belt.

4,406,220
REFUSE HANDLING SYSTEM

Hans Bergman, Johanneshov, Sweden, assignor to Termic Instrument AB, Huddinge, Sweden

Filed Apr. 15, 1981, Ser. No. 254,255
Claims priority, application Sweden, Apr. 28, 1980, 8003186
Int. Cl.³ B30B *15/16*
U.S. Cl. 100—49 7 Claims



1. A refuse handling system comprising a straight elongate tubular chamber having a substantially uniform cross-section over its entire length and one open end and including a refuse-compression section located closest to said open end and a refuse-infeed section located on the opposite side of said refuse-compression section relative to said open end; a refuse-infeed opening in a wall of said chamber to said refuse-infeed section; a refuse-conveying pipe having one end connected to said open end of said chamber and an opposite end connected to refuse receiving station which is remotely located relative to said chamber, the cross-sectional area of said refuse-conveying pipe being substantially larger than the cross-sectional area of said chamber; ram means axially movable within said chamber and having a cross-sectional shape and area coinciding with those of said chamber and a ram face facing said open end of said chamber; ram drive means for reciprocatingly moving said ram means within said chamber; position detecting means for detecting the position of said ram face within said chamber; and control means responsive to said position detecting means for actuating said ram drive means to drive said ram means through an operation sequence consisting of a number of short reciprocating ram strokes between a fully withdrawn ram

position, in which said ram face is located on the opposite side of said refuse-infeed opening relative to said open end, and an intermediate ram position. in which said ram face is located just beyond said refuse-infeed section as seen from said fully withdrawn ram position, and a subsequent final ram stroke to a fully extended ram position, in which said ram face is located well within said refuse-compression section at a substantial distance from said refuse-infeed opening and adjacent said open end of said chamber.

4,406,221

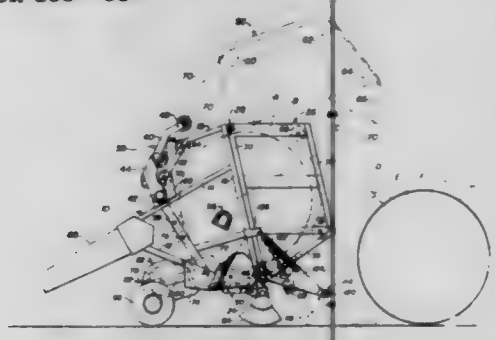
BALE RETAINER FOR ROLL BALING MACHINE

Charles A. Parrish; John H. Fretmuth, both of New Holland; Willis R. Campbell, Ephrata; Anthony F. Diederich, Jr., Terre Hill, and James T. Clevenger, Jr., Lancaster, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Feb. 12, 1982, Ser. No. 348,485

Int. Cl.³ B30B *5/06*

U.S. Cl. 100—88 **11 Claims**



1. A roll baling machine comprising:

(a) a base frame;

(b) bale forming means supported on said base frame for forming a roll bale of crop material;

(c) bale retainer means mounted on said base frame for momentarily holding a roll bale upward in said base frame during its discharge from said base frame;

(d) said bale retainer means being movable between an inoperative position during bale formation and an operative position during discharge of a roll bale from said base frame;

(e) a rear frame pivotally connected to said base frame for movement between a lower position during bale formation and an upper position to permit discharge of a roll bale from the machine;

(f) said bale retainer means being engaged with said rear frame in order to hold said bale retainer means in said inoperative position when said rear frame is in said lower position; and

(g) said bale retainer means being disengaged from said rear frame in order to permit said bale retainer means to move to said operative position when said rear frame is in said upper position.

2. The roll baling machine of claim 1, wherein said bale retainer means is pivotally connected to said base frame for movement between said inoperative and operative positions.

4,406,222

PRINTING MECHANISM FOR PRINTING BAR CODES ON PRESSURE-SENSITIVE LABELS ADHERING TO A CARRIER TAPE

Günter Holland-Letz, and Gerhard Nagel, both of Hirschhorn/N., Fed. Rep. of Germany, assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

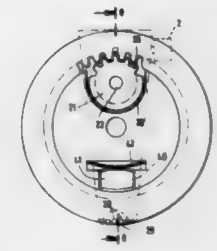
Filed Aug. 4, 1981, Ser. No. 290,057

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1980, 3030105; Apr. 30, 1981, 3117231

Int. Cl.³ B41L *47/46*

U.S. Cl. 101—92 **13 Claims**

1. A printing mechanism for printing bar codes on pressure-sensitive labels adhering to a carrier tape comprising a print wheel including a plurality of type rings rotatable relatively to each other about a common axis and a pressure roller for pressing the carrier tape with the pressure-sensitive label adhered thereto against the print wheel, wherein the type rings have a circular cylindrical peripheral surface at which bar code types of resilient material are formed, an inking means is in contact with the bar code types to be printed and the pressure roller is rotatable about an axis which is parallel to the axis of the type rings and consists of non-resilient material, a recess having a predetermined width disposed in the print wheel, a



spring comb disposed in the recess where the spring comb has a plurality of spring prongs, a plurality of pressure members respectively disposed between said plurality of spring prongs and said plurality of type rings, the length of said spring comb in a relaxed condition thereof is greater than the predetermined width of the recess so that, when the comb is disposed in the recess, a slight curvature is introduced into the comb whereby each spring prong exerts on its associated type ring a force directed against the pressure roller.

4,406,223

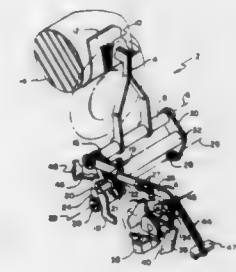
PRINT HAMMER RELEASE MECHANISM

Charles M. Curley, Danbury, Conn., assignor to SCM Corporation, New York, N.Y.

Filed Oct. 14, 1981, Ser. No. 311,226

Int. Cl.³ B41J *9/127*

U.S. Cl. 101—93.48 **2 Claims**



1. A print hammer mechanism for use in a typewriter or similar machine having a removable print element and a print hammer operable to impact the print element for printing, the improvement comprising:

a first shaft supporting the print hammer for pivotable movement between a first position and an impact print position for printing operations;

a second shaft;

means pivotably connecting said first shaft to said second shaft for moving the print hammer relative to the print element about said second shaft;

a linkage directly connected to said first shaft for pivoting said first shaft relative to said second shaft for moving the print hammer from said first position to a second position spaced from the print element;

a manual control knob connected to said linkage for moving said linkage to pivot said first shaft relative to said second shaft; and

a spring operably connected to said control knob for biasing said control knob in a first orientation for locating the print hammer in said first position and for biasing said control knob in a second orientation for locating the print hammer in said second position for facilitating removing and insertion of the print element relative to the typewriter.

4,406,224

INK THROUGH AND DOCTOR BLADE ASSEMBLY FOR PRINTING MACHINES

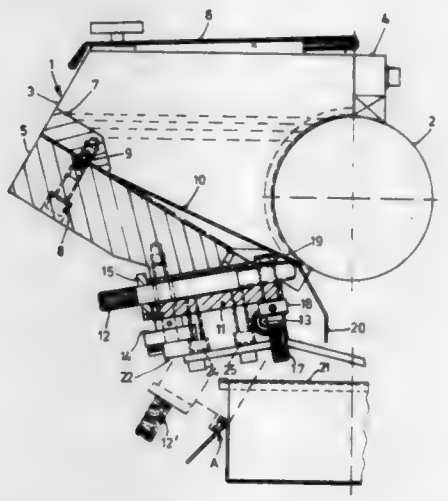
Josef Hajek, Friedberg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,635

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024557

Int. Cl.³ B41F *1/46*

U.S. Cl. 101—363 **6 Claims**



1. Inking trough and doctor blade assembly to supply ink to a printing machine and selectively permit drainage of ink therefrom having

an ink duct roller (2, 102);

a cross rail (5, 105) extending parallel to the ink duct roller and spaced therefrom and having a downwardly inclined support surface defining a stationary ink trough;

a doctor blade (10, 110) mounted to engage the duct roller below the center thereof;

means (3, 4, 104) retaining ink in the space above the doctor blade and between the cross rail and the ink duct roller;

and ink zone adjustment screws (12, 112) secured to the cross rail and bearing against the doctor blade and placing the blade in stressed condition;

comprising

means (7, 8; 107, 108) for clamping a first end portion of the doctor blade to the cross rail (5);

a movable holding rail (11, 111) extending parallel to the cross rail.

the ink adjustment screws (12, 112) being retained in the holding rail and engaging the doctor blade (10, 110) at a second other end portion;

the ink zone adjustment screws being located for positioning the second end portion of the doctor blade at a stress angle of about 20° when the doctor blade is in operative position relative to the ink duct roller (2, 102) with respect to an unstressed position of the doctor blade along the support surface of the cross rail;

selectively engageable movable attachment means (14, 114) for selectively connecting and positioning the holding rail to the cross rail in selected predetermined position,

said attachment means permitting, selectively, movement of the holding rail between an engaged position in which the adjustment screws (12, 112) are oriented with respect to the doctor blade (10, 110) to adjust the nip or gap between the other second end portion of the blade and the duct roller, and disengaged position in which the doctor blade is released from tensioning stress placed thereon by the adjustment screws, and in which the doctor blade is moved away from the duct roller to permit ink to drain out into the resulting gap between the second end portion of the doctor blade and the duct roller, said ink trough remaining stationary during movement of the holding rail;

an ink receiving trough (21) positioned beneath the ink duct roller and located to receive ink draining from the gap between the second end portion of the doctor blade, and the circumference of the ink duct roller;

and wherein the clamping means (7, 107) clamping said first end portion of the doctor blade in position on the cross rail are located to leave a gap of about at least 1 cm width between the end of the doctor blade and the closest surface of the duct roller (2, 102) when the doctor blade is in unstressed, untensioned condition to permit draining of ink from the ink trough through said gap.

4,406,225

IGNITION FUSE FOR SPIN-STABILIZED PROJECTILES

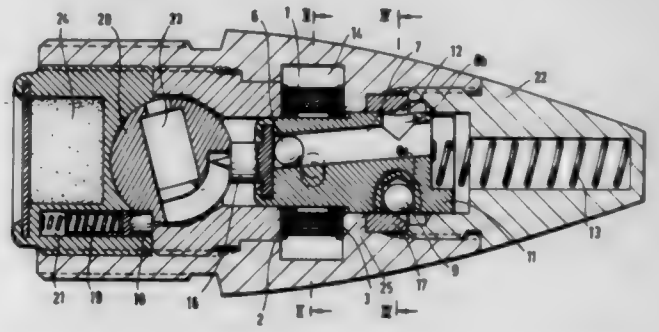
Günter Backstein, Meerbusch; Joachim Fiebrich, Duesseldorf, and Hans W. Unger, Krefeld, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 1, 1981, Ser. No. 279,309

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1980, 3024966; Oct. 4, 1980, 3037669

Int. Cl.³ F42C *15/26*

U.S. Cl. 102—235 **14 Claims**



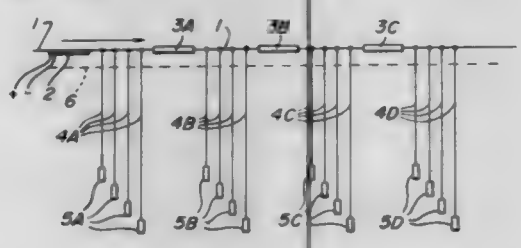
1. An improved ignition fuse arrangement for a pyrotechnic ignition charge of a spin-stabilized projectile which is mounted in a rotor, which is adapted to be rotatably displaced from a safety position, in which said rotor is held by actuating means in a safety position, to an armed position, in which said actuating means releases said rotor, said actuating means including safety means which are driven by the spin and inertial forces of the projectile against the action of biasing means opposing such drive, which biasing means maintain said rotor in its safety position, and including ball support surfaces which are inclined with respect to the longitudinal axis of the projectile, the improvement comprising

wherein said safety means of said actuating means (11, 13, 16) include at least two release balls (6, 9), a first ball support member (11) having first bores (8*a*, 8*b*); and a second bore (7), and a first release spring (13) biasing said first ball support member (11) towards said rotor (20), whereby one (9) of said release balls (9) is disposed in said bore (8*a*) when the actuating means (11, 13, 16) is in the safety position as well as when said actuating means (11, 13, 16) is in its active armed position, and whereby a further one (6) of said release balls is retained in said second bore (7) of said first ball support member (11) when said actuating means (11, 13, 16) is in its safety position, said first bore (8*b*) and second bore (7) being in communication with each other, said first bore (8) receiving said further release ball (6) when said actuating means (11, 13, 16) is in its active armed position, and wherein said safety means include a further safety mechanism (18, 19, 21) which is operatively mounted in the rear part of said ignition fuse arrangement (22) and is adapted to engage said rotor (20) to prevent its rotation when the rotor (20) is in its safety position.

4,406,226
NON-ELECTRIC DELAY BLASTING METHOD

Alan L. Davitt, Brownsburg, and James R. Simon, Lachute, both of Canada, assignors to CXA Ltd./CXA Ltee, North York, Canada

Filed May 29, 1981, Ser. No. 268,404
Claims priority, application Canada, Dec. 9, 1980, 366417
Int. Cl.³ F42B *3/00*
U.S. Cl. 102—311 **2 Claims**

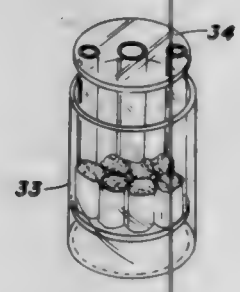


1. A non-electric delay blasting assembly which comprises a length of first explosive connecting cord having detonating relays interconnected in series therealong at spaced intervals, said relays all having the same delay period, at least one length of second explosive connecting cord attached in initiating contact with the said first explosive connecting cord in the spaces between the said detonating relays, each of the said second explosive connecting cords having attached thereto in initiating relationship a non-electric delay detonator, all of the said delay detonators having the same delay period, the delay period of the said detonating relays being shorter than the delay period of the said non-electric delay detonators.

4,406,227
SYSTEM FOR MULTISTAGE, AERIAL DISSEMINATION AND RAPID DISPERSION OF PRESELECTED SUBSTANCES

Charles W. Beeker, Baltimore; Arthur P. Dean, Glen Arm, and William G. Rouse, Aberdeen, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 9, 1981, Ser. No. 252,632
Int. Cl.³ F42B *11/00*
U.S. Cl. 102—505 **18 Claims**



1. A rocket deception system for aerial dissemination of a plurality of separate batches of at least one prepackaged material in highly dispersed condition and for producing a plurality of separate chaff clouds each comprised of material for protecting airborne objects from radar tracking devices, said system comprising:

a rocket engine for propelling said rocket system;

a carrier fixedly attached to said rocket engine having an open framework structure extending between oppositely disposed forward and aft end members;

a succession of longitudinally disposed frangible canisters carried in said open framework between said forward and aft end members in which to respectively package a selected substance or material which includes,

a tubular inner casing defining an inner chamber, an outer casing surrounding said inner casing, said outer casing and said inner casing cooperating to define an outer chamber therebetween within which to package a selected material;

means for protectively shielding each of said canisters from explosive forces generated during explosive shattering of another canister, which includes;

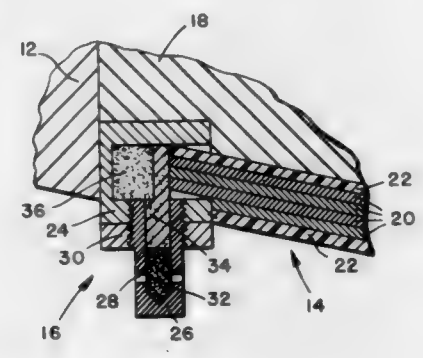
a plurality of explosion-resistant partitions secured on said carrier and operatively deployed between and separating successive canisters from one another; and

means for explosively shattering said canisters in periodic sequence and forcefully propelling the material packaged therein radially outward from said carrier and disseminating the material in highly dispersed condition to form a plurality of separately spaced apart clouds.

4,406,228
DEVICE FOR BURNING PYROTECHNIC MIXTURES IN A VERY LOW PRESSURE ENVIRONMENT

Woodrow Boettcher, San Jose; Emanuel Goldman, San Mateo, and John A. Gallaghan, Ben Lomond, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 22, 1969, Ser. No. 821,163
Int. Cl.³ F42B *11/24*
U.S. Cl. 102—513 **9 Claims**



1. A pyrotechnic missile comprising:

a body;

a pyrotechnic sheet disposed on said body;

said pyrotechnic sheet including:

a binder,

a compound selected from the group consisting of cesium dichromate and barium chromate,

cesium nitrate,

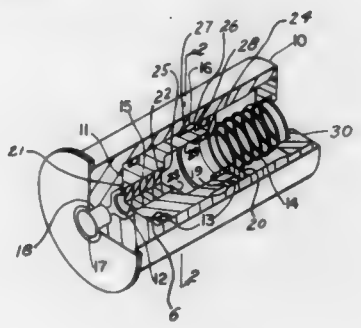
boron, and

a metal fuel selected from the group consisting of aluminum, magnesium, berrilium, and lithium.

4,406,229
DELAY CARTRIDGE WITH TEMPERATURE PROGRAMMED FLASH CHAMBER

Michael L. Greene, Oxon Hill, and Frank J. Valenta, LaPlata, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 16, 1981, Ser. No. 244,380
Int. Cl.³ F42B *5/20*
U.S. Cl. 102—530 **9 Claims**



1. A temperature compensated pyrotechnic delay cartridge system comprising:

a casing that consists of a container with one open end and one end closed by a percussion primer means;

a delay plug means positioned in the open end of the casing and is axially movable within the casing; with associated means to restrain the delay plug within the casing and,

a flash chamber of variable volume formed in the casing;

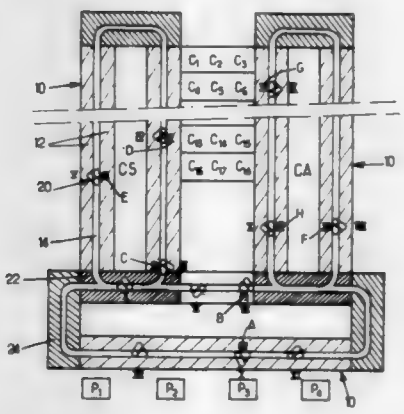
a pyrotechnic delay column secured axially within the delay plug means; a percussion primer means secured axially within the closed end of the casing, with spring means positioned contiguous to the delay plug that functions to bias the delay plug within the chamber toward said closed end of the casing and wherein the delay plug is fitted with automatic means to constrain said delay plug means to inhibit axial movement of the plug within the casing at lower ambient temperatures to maintain the flash chamber volume at a minimum after ignition and said automatic means releasing said delay plug means after ignition to allow axial movement of the plug within the casing at elevated ambient temperatures to increase the flash chamber volume.

4,406,230

AUTOMATIC CONVEYOR SYSTEM

Jean E. Villemaud, 7, rue de la Font Pinot, 87008 Limoges Cedex, France

Filed Aug. 8, 1980, Ser. No. 176,296
Int. Cl.³ B60M *7/00*; B65G *37/00*
U.S. Cl. 104—88 **11 Claims**



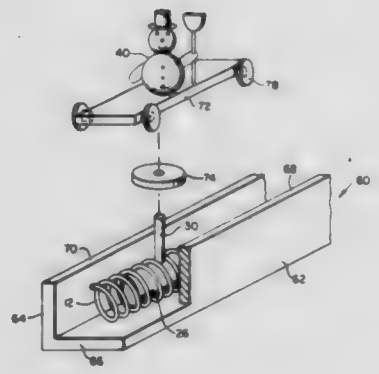
1. An improved, automatic conveyor system applied to a horizontal network of conveyors on which carriages move which are equipped with programming mechanisms for controlling the operations of loading, unloading, ascent, and descent of the loads and changes in direction of the carriages, comprising a mechanical conveyor and a post, the functions of said post under load are detected automatically by mechanical detecting mechanisms mounted on a level with said post, then transmitted instantaneously by mechanical transmission elements to a stationary unit mounted on the path of the carriages which is capable of acting on the programming mechanisms of the first carriage passing by said device, so that said carriage controls all said operations necessary for servicing at said post, the carriage is provided with a car which receives a load from a loading platform such that the car moves in a horizontal plane and the loading platform (74) or unloading (76) is brought to the level of the car by a stationary mounted lift drawn by the power unit of the conveyor, said lift comprises a pinion (84) meshing with a rack (86) carried by the conveyor which drives in different directions two engaging devices (94, 96; 90, 92) mounted in parallel, the outlet pinions (96, 92) of which drive in rotation, in one direction or the other, a rope (80) wheel (82) from which is suspended the car (62) depending upon whether one or the other of said outlet pinions is engaged, the car then moving towards the top or bottom, or else moving at the same horizontal level when both outlet pinions are disengaged.

4,406,231

MOTION PRODUCING MECHANISM

Daniel Crimaldi, 2002 Reservoir Rd., Reading, Pa. 19604

Continuation-in-part of Ser. No. 66,238, Aug. 13, 1979, Pat. No. 4,269,122. This application May 21, 1981, Ser. No. 265,702
Int. Cl.³ B61B *10/04*; A63H *11/00*
U.S. Cl. 104—172 BT **22 Claims**



1. An apparatus for moving an item along a predetermined path, comprising:

hollow holding means extending along said predetermined path, said holding means including an opening which also extends along said predetermined path;

helically threaded means provided inside said hollow holding means, said helically threaded means having a predetermined spacing between each of its threads;

drive means for meshing with the spacing between each of the threads of said helically threaded means to move said helically threaded means relative to said hollow holding means along said predetermined path;

mounting means coupled to said helically threaded means including means extending through the opening in said hollow holding means for mounting said item on said helically threaded means; and

a carrier mounted on said mounting means for supporting said item,

wherein the hollow holding means includes two substantially parallel upward extending portions on each side of the opening, and wherein each of said upward extending portions has a top surface which is substantially flat so that the bottom of said carrier will be supported by said flat top surfaces with the majority of the weight of the carrier and the item attached to said carrier being supported by said top surfaces.

4,406,232

AUTOMATIC GUIDANCE MECHANISM STEERING CLUTCH

Mark E. Fasse, Lexington, and Herbert C. Gleasmann, Omaha, both of Nebr., assignors to Pathfinder Systems, Inc., Lexington, Nebr.

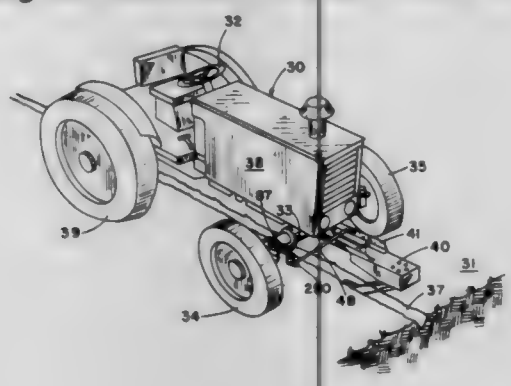
Continuation-in-part of Ser. No. 39,224, Mar. 21, 1977, abandoned. This application Mar. 23, 1981, Ser. No. 246,203
Int. Cl.³ B61K *5/02*; B61F *9/00*; B62D *5/06*; F61D *7/02*
U.S. Cl. 104—244.1 **6 Claims**

1. In an automatic steering mechanism for a prime mover of a type having a mechanical linkage means connected between a conventional steering mechanism and an automatic steering unit said mechanical linkage means being for transmitting displacement feedback force from the conventional steering mechanism to the automatic steering unit, an oversteering displacement absorber including clutch means for selectively disengaging said mechanical linkage from said automatic steering unit, said clutch means including means for automatically disengaging said mechanical linkage means from said automatic steering unit at a preselected value of said feedback force and said clutch means further comprising:

(a) a shaft;

(b) clutch block means operably mounted on said shaft;

(c) clutch plate means operably mounted on said shaft and selectively rotatable with respect to said clutch block;
(d) engagement means for selectively engaging and disengaging said clutch block with said clutch plate;



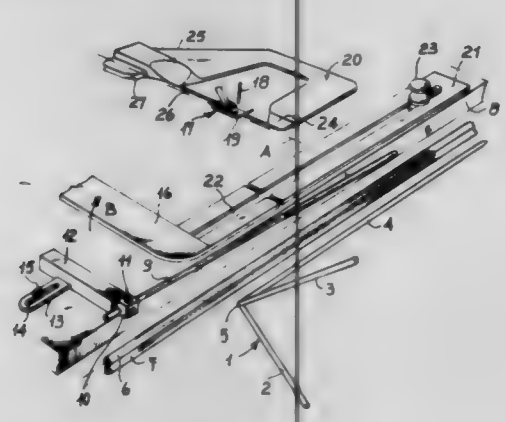
(e) first displacement transfer means operably connected to said clutch block means;
(f) second displacement transfer means operably connected to said clutch plate means.

4,406,233

APPARATUS FOR CONVERTING WEB MATERIAL INTO TUBULAR FORM

Luigi Pisani, Cilavegna, Italy, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Dec. 20, 1982, Ser. No. 450,939
Claims priority, application Italy, Apr. 6, 1982, 20605 A/82
Int. Cl.³ D05B *23/00*
U.S. Cl. 112—63 **6 Claims**



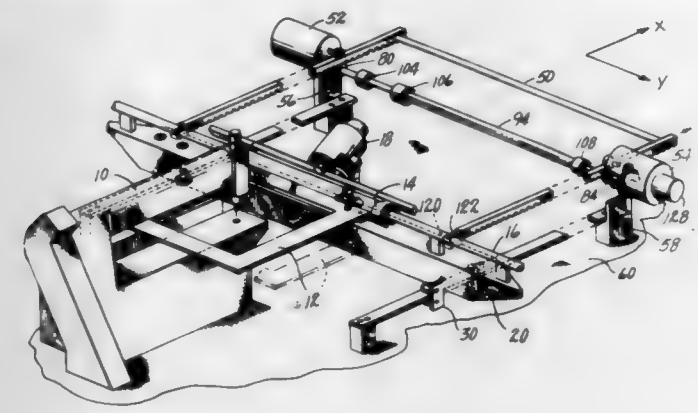
1. An apparatus for converting web material drawn from a supply roll into tubular form in a sewing unit of the type having a folding triangle and a table with a sewing machine mounted thereon which includes a stitch forming needle and presserfoot defining the sewing zone and line of sewing, said apparatus comprising:
(a) a pair of feed rollers attached to one side of the table for receiving and advancing the material folded by the folding triangle;
(b) a tentering device mounted for flexing movement on the table in spaced and parallel ralation to the line of sewing for receiving the folded fabric thereon from said feed rollers;
(c) take-up means spaced from and operatively connected to said feed rollers for receiving the sewn fabric from the sewing zone; and
(d) means mounted on the table adjacent said tentering device for releasing the tension buildup in the fabric extending between said feed rollers and take-up means and for effective displacement of the folded fabric in the direction of the line of sewing.

4,406,234

POSITIONING APPARATUS

Herbert Johnson, and Richard M. Elliott, both of Beverly, Mass., assignors to USM Corporation, Farmington, Conn.

Filed May 22, 1981, Ser. No. 266,143
Int. Cl.³ D05B *21/00*
U.S. Cl. 112—121.12 **21 Claims**



1. Apparatus for positioning a workpiece relative to a reciprocating sewing needle, said positioning apparatus comprising:
a frame mounted for movement at a predefined height above a pair of guides;
a pair of gear racks connected to said frame and extending in the direction of movement of said frame;
means, associated with each respective gear rack, for engageably driving said respective gear rack, so as to thereby provide a dual drive to the frame through said respective gear racks
means for defining an axis of motion on said frame, said axis of motion being transverse to the direction of motion of said frame; and
a carriage mounted for movement along said axis of motion, said carriage including means for carrying the workpiece to be positioned relative to said sewing needle.

15. A process of aligning a positioning apparatus for positioning a workpiece relative to a reciprocating needle having a frame mounted for movement relative to a pair of guides and a carriage mounted for movement on said frame, said frame being driven by a pair of gear racks having pinion gears associated therewith, the pinion gears having an adjustable coupling therebetween, said process comprising the steps of:
establishing a straight line reference perpendicular to at least one of said pair of guides;
affixing a sensing device to the carriage;
moving the carriage along the frame and sensing the deviation of the direction of movement of the carriage relative to the straight line reference; and
independently rotating one of the pinion gears associated with one of the gear racks so as to move the associated gear rack in such a manner as to correct any sensed deviation.

4,406,235

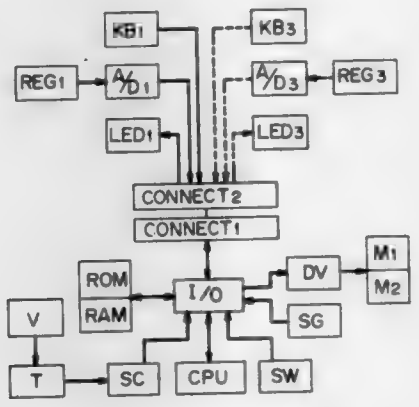
ELECTRONIC SEWING MACHINE

Yasukata Eguchi, Kunitachi, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Sep. 23, 1981, Ser. No. 304,973
Claims priority, application Japan, Oct. 2, 1980, 55-139703[U]
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **5 Claims**

1. A sewing machine having a housing, stitch forming instrumentalities disposed in said housing and including a needle vertically and laterally reciprocated to penetrate a fabric to be sewn and a fabric feeding device for transporting the fabric relative to the needle, and electronic memory for storing stitch control data selectively and sequentially reading out said data to control the stitch forming instrumentalities, the sewing machine comprising a plurality of interchangeable control

panels, said housing being formed with an opening, said control panels being attachably-removable and selectively mounted on said housing to cover up said opening, each of said control panels including a number of operating elements having at least pattern selecting switches, signal producing means operative in response to a selective manipulation of said operating elements to produce electric signals, and indicating means operative in response to said electric signals to electrically indicate a selected pattern, said control panels being partly and electrically differently specified from each other in accordance



with selected patterns; and electronic control means mounted in said housing and electrically connected to the selected control panel and operative to control the stitch forming instrumentalities in accordance with the signals received from the selected control panel; said electronic control means including changeover switch means positioned in said housing and switched over to a predetermined position corresponding to a selected control panel and adapted to set said electronic means in a condition to respond to the signals from said selected control panel.

4,406,236

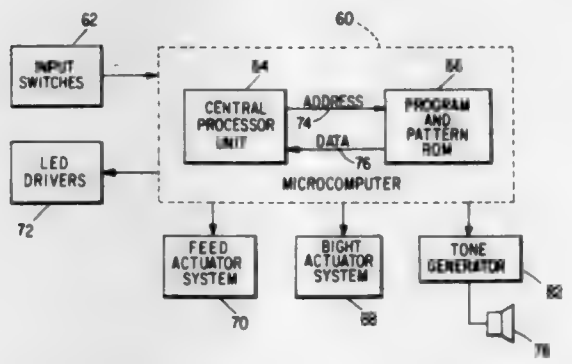
NEEDLE SHIFT WARNING ARRANGEMENT IN AN ELECTRONICALLY CONTROLLED SEWING MACHINE

Robert J. Socha, Edison, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Dec. 17, 1982, Ser. No. 450,591

Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 E **3 Claims**



1. In an electronically controlled sewing machine arranged to sew extended bight width patterns by changing the bight data applied to the bight actuator circuit of said sewing machine while the sewing machine needle is in engagement with work material;

means for recognizing that data which is applied to the bight actuator circuit while the needle is in engagement with work material is to be changed; and

warning means responsive to such recognition by said recognizing means for providing an indication to the operator of said sewing machine.

4,406,237

SUTURING INSTRUMENT FOR SURGICAL OPERATION

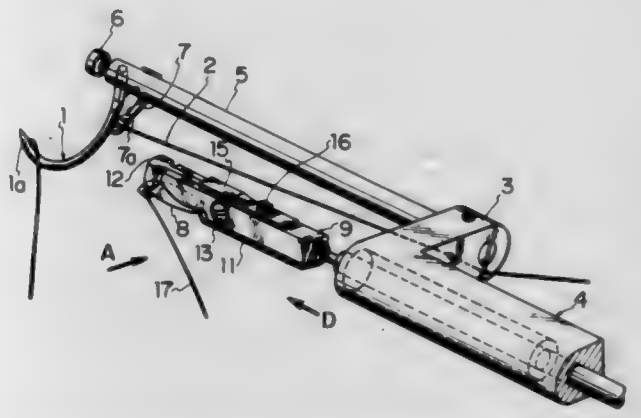
Yasukata Eguchi, Kunitachi, and Reishi Nomoto, Tsukui, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed May 13, 1981, Ser. No. 263,467

Claims priority, application Japan, May 23, 1980, 55-70262[U]

Int. Cl.³ D05B *1/00*

U.S. Cl. 112—169 **12 Claims**



1. A suturing instrument for surgical operation, comprising a curved needle for carrying a needle thread; a shuttle for carrying a shuttle thread; stationary supporting means for supporting said needle in stationary position with respect thereto; and holder means for holding said shuttle and mounted on said supporting means, said holder means being manually movable relative to said supporting means towards and away from said curved needle so that said shuttle held by the holder means cooperates with said curved needle to form lock stitches in a wound to be sewn up, said holder means including a box-shaped hollow frame accommodating said shuttle, a detaining element having a pawl for detaining said shuttle in said frame and an elongated shank turnably mounted on said frame, and a spring acting on said shank as to press said pawl against said shuttle.

4,406,238

SEWING MACHINE WITH CYCLIC PATTERN STITCHING DEVICE

Michio Hisatake, Fujino, and Yasuro Sano, Hachioji, both of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed May 4, 1981, Ser. No. 260,287

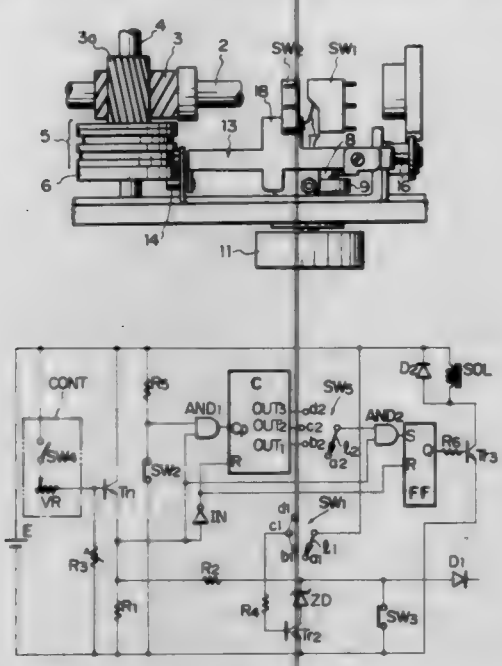
Claims priority, application Japan, May 23, 1980, 55-70264[U]

Int. Cl.³ D05B *69/18, 3/02*

U.S. Cl. 112—277 **4 Claims**

1. A sewing machine, comprising a group of pattern cams arranged to cooperate with a needle to produce a pattern per cycle rotation thereof; a user-operated pattern selecting device arranged to be manipulated for selecting said pattern cams to control a lateral swinging movement of the needle; a machine stopping device; pattern cycle selecting means operated to select one of pattern cycles to automatically stop the sewing machine after a selected pattern has been formed up in a selected pattern cycle, said pattern cycle selecting means including a pattern cycle selecting cam, a follower cooperating with said pattern cycle selecting cam, and a transmission element connected to said follower and arranged to be swingable and linearly displaceable; means for detecting a termination of a pattern cycle and producing an electrical signal each time it detects the termination of the pattern cycle; counter means responding to a predetermined number of the electrical signals of said pattern cycle detecting means to produce a pulse signal; machine stopping means responding to the pulse signal of said

counter means to operate said machine stopping device to stop the sewing machine; and a switch operated by the linear displacement of said transmission element to vary an operation speed of the sewing machine.



4,406,239

SAILBOATS, ESPECIALLY CATAMARANS

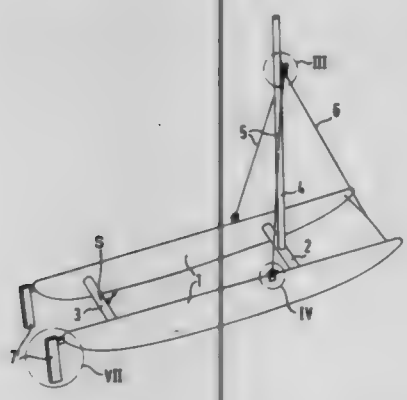
Klaus Enzmann, Am Kirchenhölzl 5, D-8032 Gräfelfing, Fed. Rep. of Germany

Continuation of Ser. No. 83,717, Oct. 11, 1979, abandoned. This application Feb. 24, 1982, Ser. No. 351,690

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1978, 2844766; Oct. 13, 1978, 2844767; Feb. 26, 1979, 2907518

Int. Cl.³ B63B *35/38, 3/16, 15/02;* B63H *25/06*

U.S. Cl. 114—39 **28 Claims**



1. In a catamaran having a mast a main sail sheet and a pair of spaced hulls and means joining said hulls together, a head stay and shrouds for maintaining said mast vertical, improvement in the means joining said hulls together comprising,

fore and aft cross beams, each cross beam having, the same wedge-shaped profile, the wedge-shaped profile having a thinnest edge and a thicker back, the thinnest edge of the wedge shape of the fore cross beam being essentially forwardly directed, the thinnest edge of the wedge of the aft cross beam being essentially aftwardly directed by rotating the aft cross beam by 180° as compared to the fore cross beam,

means forming correspondingly shaped fore and aft sockets in said hulls for receiving the respective ends of said cross beams,

said mast being centrally stepped aftwardly on the thicker back of said forward cross beam so that said forward cross beam will receive a downward compression force bracing the fore cross beam in the fore sockets,

said main sail sheet being connected to the aft cross beam so that said aft cross beam will receive upward tension forces, bracing additionally the cross beam in the aft sockets,

whereby a balanced distribution of the forces engaging on the catamaran is achieved without load peaks.

4,406,240

KICKING STRAP FOR SAILING-BOATS

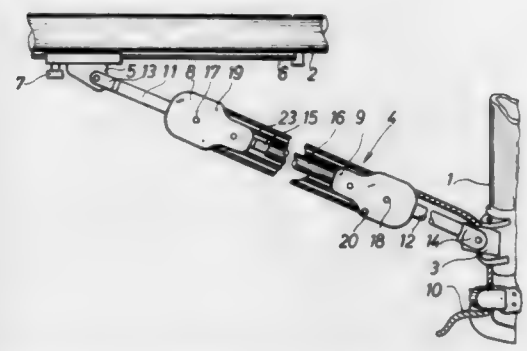
Helge B. Andersen, 28 Mosevangen, Kalundborg DK-4400, Denmark

Filed Apr. 10, 1981, Ser. No. 253,527

Claims priority, application Denmark, Aug. 10, 1979, 3356/79

Int. Cl.³ B63H *9/10*

U.S. Cl. 114—99 **13 Claims**



1. A kicking strap for sailing boats having booms and masts comprising a tackle having a first upper and second lower block, each having at least one sheave and the two being interconnected by a rope passed over said sheaves, said first upper block being hinged to a boom by an upper mounting bar and a boom fitting and said second lower block being hinged at a mast-foot by a lower mounting bar and a fitting;

an inner pipe interconnecting said upper and lower blocks;

an outer pipe telescopically containing said inner pipe, said inner pipe being slidable relative to said outer pipe in the longitudinal direction;

spring means located within and guided by said pipes and connected between said blocks and constantly urging against the shortening of the length between said blocks, whereby the length between said blocks is adjustable by means of said rope passed over said sheaves.

4,406,241

DEVICE FOR ABSORBING FRICTION BETWEEN SHIP'S HULLS AND THE QUAY WALLS

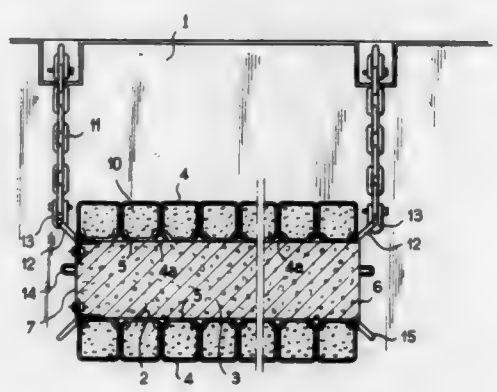
Robert Comte, Cite Jardin, Toga, 20200 Bastia, France

PCT No. PCT/FR81/00096, § 371 Date Mar. 3, 1982, § 102(e) Date Mar. 3, 1982, PCT Pub. No. W082/00670, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 7, 1981, Ser. No. 355,541

Int. Cl.³ B63B *59/02*

U.S. Cl. 114—220 **13 Claims**



1. A device for absorbing friction between ships and quay walls, comprising a series of worn pneumatic tires disposed

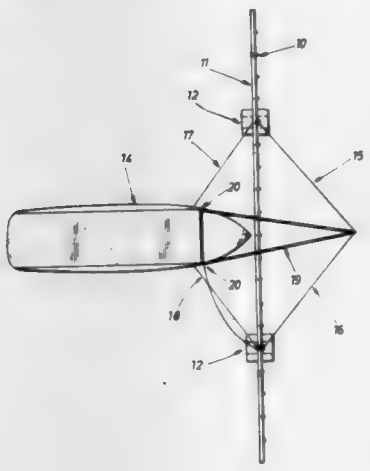
against one another on an elongate body intended to be positioned substantially horizontally with respect to the quay wall, characterized in that the elongate body consists of a metal cylindrical tube filled with concrete lightened by low density fillers, the worn pneumatic tires are filled with a low density elastic material, the parts of the tires adjacent to the metal tube are closed off in a substantially water-tight manner by flexible sleeves in contact with the metal tube, and in that the tube is closed off at its ends by plates which project with respect to the outer surface of the tube, these projections holding the assembly of tires pressed against one another.

4,406,242

OCEANOGRAPHIC SENSOR SYSTEM

Colin G. Weeks, 2014 Fernspray La., Houston, Tex. 77084

Filed Mar. 11, 1981, Ser. No. 242,449
Int. Cl.³ B63B *21/56*
U.S. Cl. 114—242 **5 Claims**



1. A hydrographic swath surveying system comprising:
(a) an A-frame attached and projecting over the bow of a vessel;
(b) a boom;
(c) two or more catamarans for rotatably mounting the boom for rotation about an axis vertical to the boom;
(d) two or more Kevlar lines extending from the apex of the A-frame to tow points on the boom above the point where the catamarans are attached;
(e) two or more nylon lines attached at one end to the tow points of the boom and on the other end to the side of the vessel such that the Kevlar and nylon lines act in conjunction to pull the boom along the vessels path; and
(f) one or more transducers mounted on the boom so as to rotate about an axis parallel to the water surface.

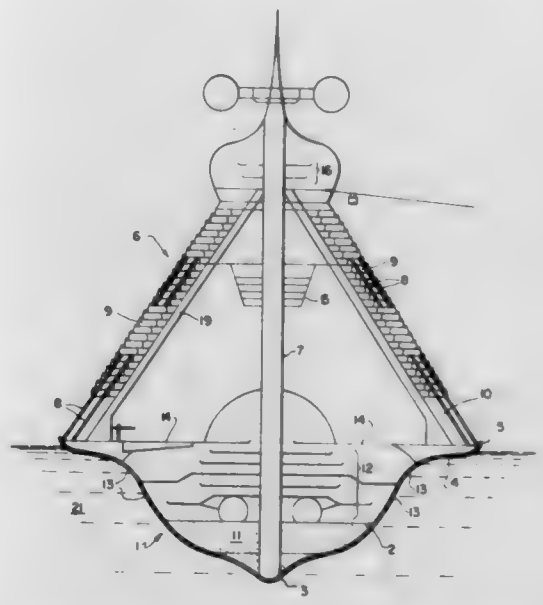
4,406,243

WATERBORNE STRUCTURE

Chung U. Kim, Seoul, Rep. of Korea, assignor to Chul Ho Kim, Seoul, Rep. of Korea

Filed Jul. 17, 1980, Ser. No. 169,785
Claims priority, application Rep. of Korea, Jan. 16, 1980, 145/1980
Int. Cl.³ B63B *39/00*
U.S. Cl. 114—264 **1 Claim**

1. A waterborne building structure comprising:
a floatable bottom portion generally formed as a hemisphere having a downwardly protruded portion at is lowest end and a disk-shaped upper portion of horizontal form with gradually widening width and vertical supporting walls exposed to the water surface at its uppermost side;
pillars centrally extending from said lowest end vertically to a height above said bottom portion approximately equal to the diameter of said upper portion;
cables extending from an upper portion of said pillars extending in a radial form to said supporting walls;
prefabricated rooms affixed to said cables arranged in circular form having ventilation spaces between said rooms;
first joint-use spaces with windows adjacent said rooms;



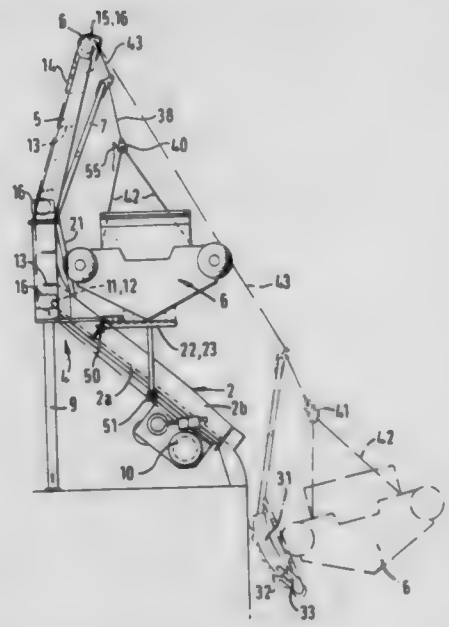
second joint-use spaces in said floatable bottom portion having windows in contact with the water; and
third joint-use spaces arranged in the uppermost portion of said structure.

4,406,244

LAUNCHING AND RECOVERY APPARATUS

Alexander B. Buchan, 61, Warsash Rd., Warsash, Hants., and Andrew R. Kingswood, 12 Penhurst Rd., Bedhampton, Hants., both of England

Filed Jun. 1, 1981, Ser. No. 269,362
Int. Cl.³ B63B *23/02*
U.S. Cl. 114—368 **8 Claims**



1. A launching and recovery apparatus for a lifeboat rescue launch fitted to a vessel, comprising:
a launching and recovery cradle having an upwardly convergent symmetrical frame, said frame having an apex, a single fall wire connected to said apex, and a releasable boat support so that the rescue launch can hang from said cradle during launching and recovery while said cradle is held in a stable attitude by said fall wire;
first and second trackways extending inwardly and upwardly from the deck of the vessel for supporting and guiding the rescue launch and said cradle during its travel between a fully hoisted position and a partly lowered position;

first and second roller assemblies at opposite ends of the base of said cradle which, during travel of the rescue launch and said cradle between the fully hoisted position and the partly lowered position, run on respective ones of said trackways; and

means including a sheave located above said cradle symmetrically between said trackways for taking up or paying out said fall wire to affect raising or lowering of said cradle.

4,406,245

DEVICE FOR EPITAXIAL DEPOSITING LAYERS FROM A LIQUID PHASE

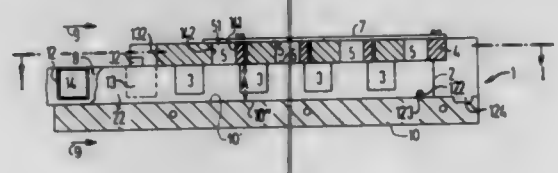
Jochen Heinen, Haar, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 2, 1981, Ser. No. 298,594

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036643

Int. Cl.³ H01L *21/208*

U.S. Cl. 118—404 **13 Claims**



1. A device for simultaneously producing a plurality of substrate disks each having a plurality of different semiconductor layers by epitaxially depositing each layer from a different liquid phase as each substrate disk is moved sequentially through different melts containing said liquid phases, said device comprising a housing, a first unit and a second unit, said second unit being disposed on a surface of the first unit for relative sliding movement therebetween along one direction, said first unit containing a number of depositing chambers spaced along the one direction of said relative sliding movement, said second unit having a number of melting crucibles for homogenizing each initial melt spaced along said one direction, said number of depositing chambers being equal to the number of crucibles and also being equal to at least a number of layers to be deposited on each substrate disk, said crucibles and depositing chambers each being spaced apart a length at least as large as the maximum length of the individual crucibles and the depositing chambers as measured along said one direction, said first and second units being moveable so that the crucibles containing the homogenized initial melt move from a position out of communication with the chambers to a position in communication with their respective chambers for transferring the melt from the individual crucibles into the corresponding depositing chambers, said device including means for supporting a plurality of substrate disks with at least two rows of disks of at least two disks which rows extend transverse to the one direction, said means including at least two sliding tongues having recesses disposed on at least one surface and spaced along the length of the tongues, said first unit having means forming a group of aligned slots for each tongue, each of said tongues being slidably received in a group of aligned slots for movement in said one direction so that each row of recesses can be moved to present the substrate disks supported therein in contact with melts in the depositing chambers to sequentially coat said substrate disks with each layer.

4,406,246

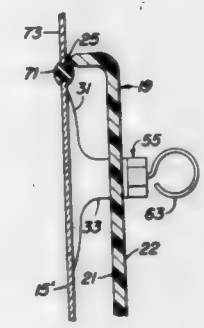
PROTECTIVE MASK

Ronald A. DeMeyer, Silvis, Ill.; Vernon T. Wilson, Bettendorf, Iowa; Nabil T. Subh, Davenport, Iowa, and James E. Ballard, Eldridge, Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 14, 1981, Ser. No. 263,449

Int. Cl.³ B05C *11/00*

U.S. Cl. 118—505 **1 Claim**



1. An apparatus for protecting a cab window of vehicle during painting of said vehicle comprised of:

(a) a housing having a back wall and enclosing side walls, said side walls having a beveled leading edge contour to conform to the surface contour of said cab window molding such that said housing can be placed around and enclose said windows and molding, said leading edge of said sidewalls to be in close adjacent alignment with said molding;

(b) a plurality of second members, each member defining a generally cylindrically shaped interior chamber open at a first end and having an end wall at a second end, said end wall having a hole therein, said second member being threaded on its outer surface at said first end;

(c) a glazier suction cup having a base form of a convexed side of said suction cup, said base encasing a portion of said second member including said end wall, said suction cup having a hole aligned to said hole in said second member, said remaining portions of said second member extending through said housing, such that said base abuts the forward face of said back wall, said cup being exposed forward of said housing;

(d) a cap screw threadably mounted to said second member enclosing said chamber opening, said cap screw having a first and second hole therein, said cap screw mounted to said second member such that a portion of said back wall of said housing is sandwiched between said base of said suction cup and said cap screw;

(e) means for selective blocking to form an air-tight seal and unblocking said hole in said end wall of said second member including; an elongated member extending through a second hole in said cap screw into said chamber, a spring placed around a portion of said elongated member within said chamber biased at one end by said top of said cap screw and at the other end by an elastomer stop member fixably mounted to the chamber enclosed end of such elongated member, said stop member shaped to sealably close said hole in said end wall of said second member.

4,406,247

ADHESIVE DISPENSING SYSTEM

Richard C. Baughman, Geneseo, and Stephen J. Flamini, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 30, 1982, Ser. No. 403,755

Int. Cl.³ B05C *21/00*

U.S. Cl. 118—684 **9 Claims**

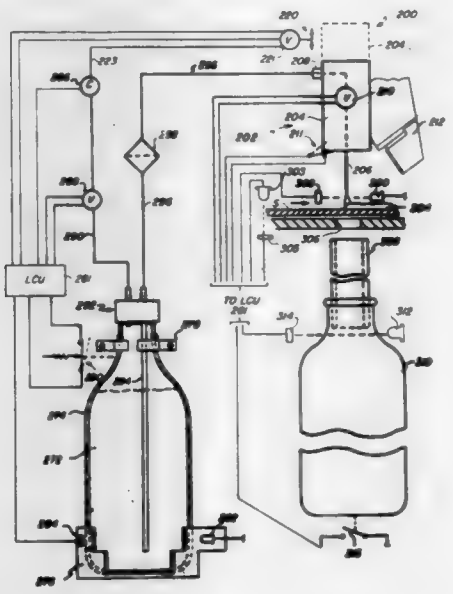
1. An adhesive dispensing apparatus comprising:

an adhesive applicator having a nozzle through which adhesive can be dispensed;

a container for holding a supply of adhesive;

means for pressurizing an upper portion of the container;

means providing a fluid passage from a lower portion of the container to the adhesive applicator;
valve means for controlling the flow of adhesive from the container to the nozzle of the applicator;
means for sensing the presence of adhesive in the container at a level above the lower end of the fluid passage in the container;
means for detecting the flow of adhesive from the nozzle; and



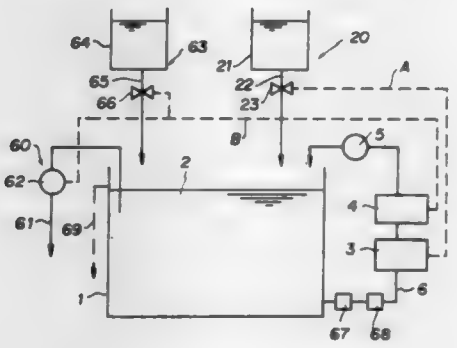
control means coupled to the valve means, the sensing means and the detecting means (1) for opening the valve means to dispense adhesive through the applicator only when the sensing means senses the presence of adhesive in the container and (2) for stopping the dispensing apparatus if the detecting means does not detect the flow of adhesive from the nozzle while the valve means is opened.

4,406,248

APPARATUS FOR CONTROLLING ELECTROLESS PLATING BATH

Ken Araki, Ibaragi; Hiromitsu Sakai, Kawanishi, and Yutaka Sugiura, Kobe, all of Japan, assignors to C. Uyemura & Co., Ltd., Osaka, Japan

Division of Ser. No. 204,046, Nov. 4, 1980, abandoned. This application Feb. 26, 1982, Ser. No. 352,549
Claims priority, application Japan, Nov. 14, 1979, 54-147215; Dec. 22, 1979, 54-167333; Dec. 22, 1979, 54-167334
The portion of the term of this patent subsequent to Sep. 27, 2000, has been disclaimed.
Int. Cl.³ B05D *1/40, 3/12*
U.S. Cl. 118—690 **4 Claims**



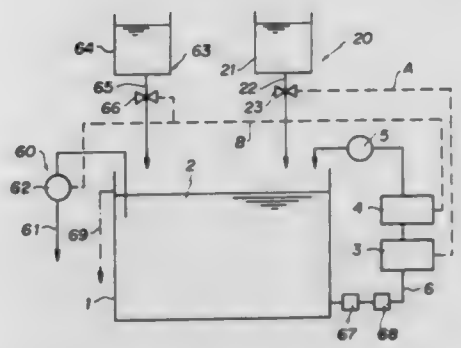
1. An apparatus for controlling the content of an electroless plating bath such that the bath is capable of being used for an extended period of time without being remade, the bath consisting of consumable ingredients including a metal ion and a reducing agent and unconsumable ingredients including a complexing agent, the metal ion being reduced to a metal by the reducing agent, whereby reaction by-products including decomposition products of the reducing agent are produced, said apparatus comprising in combination:
a mechanism for supplementing a first replenishing composition to said bath including;
means for automatically measuring the concentration of at least one consumable ingredient in the solution of said electroless plating bath,
concentration detecting means for generating a first signal when the measured value has been reduced to a predetermined concentration, and
means for automatically adding the first replenishing composition consisting essentially of consumable ingredients to said electroless plating bath upon receipt of said first signal, and
a mechanism for discharging a predetermined volume of said electroless plating bath solution and supplementing said bath with a second replenishing composition including;
means for measuring at least one physical property of the electroless plating bath including the electrical conductivity and the refractive index to determine the degree of aging of the bath,
means for detecting the degree of aging of said bath which generates a second signal when said measured value has reached a predetermined value of said at least one physical property,
means for discharging a predetermined volume of said plating solution upon receipt of said second signal, and
means for adding to said electroless plating bath said second replenishing composition containing unconsumable ingredients therein in an amount essentially corresponding to the amound discharged.

4,406,249

APPARATUS FOR CONTROLLING ELECTROLESS PLATING BATH

Ken Araki, Ibaragi; Hiromitsu Sakai, Kawanishi, and Yutaka Sugiura, Kobe, all of Japan, assignors to C. Uyemura & Co., Ltd., Osaka, Japan

Division of Ser. No. 204,046, Nov. 4, 1980, Pat. No. 4,353,933. This application Feb. 26, 1982, Ser. No. 352,550
Claims priority, application Japan, Nov. 4, 1980, 55-204046
Int. Cl.³ B05D *1/40, 3/12*
U.S. Cl. 118—690 **4 Claims**



1. An apparatus for controlling the content of an electroless plating bath such that the bath is capable of being used for an extended period of time without being remade, the bath consisting of consumable ingredients including a metal ion and a reducing agent and unconsumable ingredients including a complexing agent, the metal ion being reduced to a metal by the reducing agent, whereby reaction by-products including decomposition products of the reducing agent are produced, said apparatus comprising in combination:
a mechanism for supplementing a first replenishing composition to said bath including;
means for automatically measuring the concentration of at least one consumable ingredient in the solution of said electroless plating bath,
concentration detecting means for generating a first signal

when the measured value has been reduced to a predetermined concentration, and

means for automatically adding the first replenishing composition consisting essentially of consumable ingredients to said electroless plating bath upon receipt of said first signal, and

a mechanism for discharging a predetermined volume of said electroless plating bath solution and supplementing said bath with a second replenishing composition including;

means for measuring the specific gravity of the electroless plating bath to determine the degree of aging of the bath,

means for detecting the degree of aging of said bath which generates a second signal when said measured value has reached a predetermined value of said specific gravity,

means for discharging a predetermined volume of said plating solution upon receipt of said second signal, and

means for adding to said electroless plating bath said second replenishing composition containing unconsumable ingredients therein in an amount essentially corresponding to the amount discharged.

4,406,250

APPARATUS FOR CONTROLLING ELECTROLESS PLATING BATH

Ken Araki, Ibaragi; Hiromitsu Sakai, Kawanishi, and Yutaka Sugiura, Kobe, all of Japan, assignors to C. Uyemura & Co., Ltd., Osaka, Japan

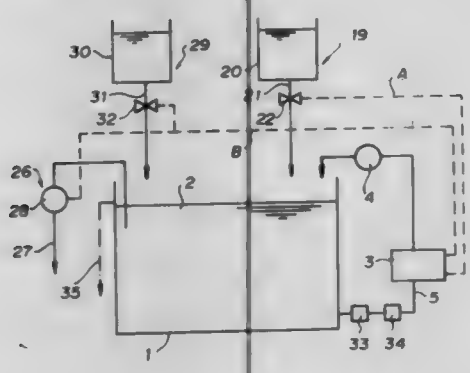
Division of Ser. No. 204,084, Nov. 4, 1980, Pat. No. 4,350,717. This application Mar. 29, 1982, Ser. No. 363,115

Claims priority, application Japan, Dec. 29, 1979, 54-172961

The portion of the term of this patent subsequent to Sep. 27, 2000, has been disclaimed.

Int. Cl.³ C23C *3/02*

U.S. Cl. 118—690 **10 Claims**



1. An apparatus for controlling an electroless plating bath capable of using the bath for an extended period of time without remake, the apparatus comprising:

(a) a consumable ingredients supplementing mechanism for supplementing a first replenishing composition including:

a concentration measuring means for automatically measuring a concentration value corresponding to the concentration of one consumable ingredient in the electroless plating bath,

a concentration detecting means for generating a first signal when the measured concentration value has reached a predetermined concentration value, and

a first replenishing means fior automatically adding the first replenishing composition consisting essentially of consumable ingredients to the electroless plating bath upon receipt of the first signal; and

(b) a nonconsumable ingredients supplementing mechanism for discharging a predetermined volume of the electroless plating solution and supplementing a second replenishing composition including:

a consumption measuring means for measuring a consumption value corresponding to the consumed amount of at least one consumable ingredient of the electroless plating bath to determine the degree of aging of the bath,

an aging degree detecting means for generating a second signal when the consumption value has reached a predetermined consumption value;

a discharge means for discharging a predetermined volume of the plating solution upon receipt of the second signal, and

a second replenishing means for adding to the electroless plating bath the second replenishing composition containing nonconsumable ingredients in an amount essentially corresponding to the amount lost by the discharging.

4,406,251

DEVICE FOR FEEDING SHEETS TO PACKAGING MACHINES

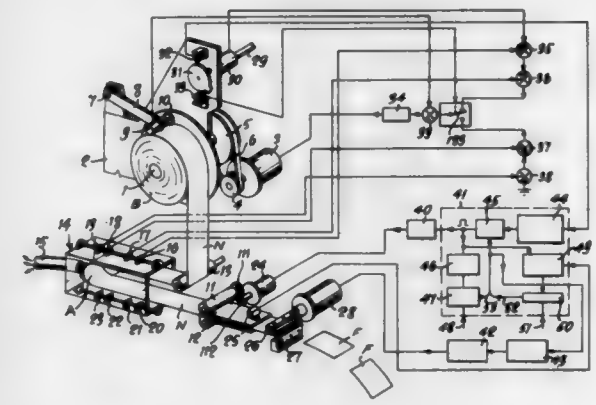
Bruno Neri, and Renato Manservisi, both of Bologna, Italy, assignors to Sasib S.p.A., Bologna, Italy

Filed Apr. 7, 1981, Ser. No. 251,737

Claims priority, application Italy, Apr. 9, 1980, 12506 A/80

Int. Cl.³ B05C *1/02, 13/00*

U.S. Cl. 118—704 **24 Claims**



1. A device for feeding sheets of wrapping material cut from a roll formed of wrapping material web to a cyclically operating packaging machine which is subject to periods of interruption, said device comprising;

a transversal cutter for cutting single sheets of wrapping material from the web;

at least one intermittent feeding group for feeding the web to said cutter;

an independent electric stepping motor for driving said at least one feeding group;

a programmable electronic control circuit for controlling said stepping motor to drive said at least one feeding group in accordance with a predetermined sequence of motions in synchronism with the cyclical operation of the packaging machine;

an independent variable-speed electric motor for driving the roll to unreel the web;

a web buffer storage means disposed between the roll and said at least one feeding group for creating a variable length loop in the web as it is unreeled from the roll; and

a control circuit for controlling said variable-speed motor, said control circuit including

a first means for producing a first control signal which is fed to said variable-speed motor for controlling the speed thereof to maintain the length of said loop between a first and a second length,

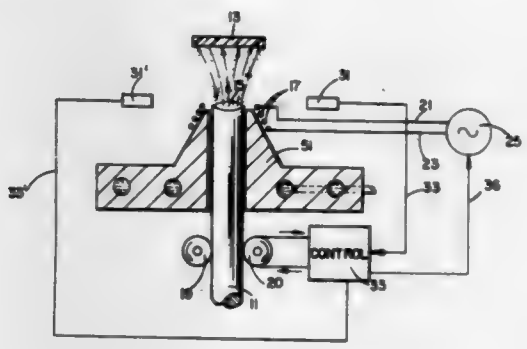
a second means for producing a second control signal which is fed to said variable-speed motor for controlling the speed thereof to maintain the length of said loop between a third and a fourth length, and

switch means for coupling said first control signal to said variable speed motor when the packaging machine is cyclically operating and for coupling said second control signal to said variable speed motor when the cyclical operation of the packaging machine is interrupted.

4,406,252
INDUCTIVE HEATING ARRANGEMENT FOR EVAPORATING THIN FILM ALLOY ONTO A SUBSTRATE

Addison B. Jones, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 29, 1980, Ser. No. 220,398
Int. Cl.[3] C23C *13/12*
U.S. Cl. 118—724 1 Claim

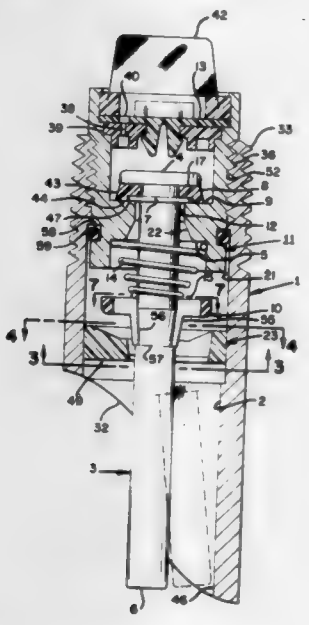


1. A thin film source of alloy wire for providing a deposited thin film coating on a substrate having the same composition as the alloy comprising, in combination:
a source of alloy wire;
means for advancing wire from said source at a controlled rate;
induction means for vaporizing said wire; and,
a water sleeve surrounding said wire at least partly within said coil.

4,406,253
ANIMAL BITE VALVE

Frank W. Atchley; Donald W. Vorbeck, and Ronald L. Wurz, all of Napa, Calif., assignors to Atco Manufacturing Co. Inc., Napa, Calif.

Filed Nov. 16, 1981, Ser. No. 322,073
The portion of the term of this patent subsequent to Jul. 13, 1999, has been disclaimed.
Int. Cl.[3] A01K *7/06*
U.S. Cl. 119—72.5 6 Claims



1. An animal bite valve comprising:
a. a housing formed with an opening therethrough;
b. non-flexible fulcrum means mounted within said housing;
c. an elongated valve lever mounted in said housing having an inner end and a distal end, and having an inflexible flange positioned for tilting registration with said non-flexible fulcrum means;
d. valve seat means mounted in said housing and including a spring stop downstream of said seat means;
e. a flexible cup seal member mounted on said lever for tilting movement therewith and for sealing and unsealing engagement with said valve seat means;
f. spring retainer means mounted on said lever downstream of said valve seat means;
g. biasing means mounted on said valve lever between said spring stop and said spring retainer means biasing said inflexible flange on said valve lever into engagement with said non-flexible fulcrum means;
h. said non-flexible fulcrum means and said valve seat means both consist of a single annular land;
i. said spring retainer means includes an annular disc surrounding said lever and extending radially therefrom so as to intercept and deflect fluid toward said inner walls of said housing and a central opening for registering receipt upon said lever;
j. said non-flexible fulcrum means and said valve seat means includes an insert dimensioned for receipt within said housing and is formed with an opening for receiving said valve lever therethrough and is formed to provide said annular land;
k. said valve lever downstream of said flange is formed with a substantially constant cross section and is formed with an annular chanel and shoulder for retaining said spring retainer;
l. said valve lever is formed with an annular groove adjacent its upstream end;
m. said cup seal member is formed with a base retained by the side walls of said groove; and
n. said housing is formed with thin walls having a generally constant diameter central bore.

4,406,254
METHOD FOR LEAN OPERATION OF SPARK-IGNITED GASOLINE-FUELED RECIPROCATING ENGINE

Stephen J. Harris, Troy, and Bruce D. Peters, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 10, 1982, Ser. No. 347,519
Int. Cl.[3] F02B *75/12, 77/00*
U.S. Cl. 123—1 A 5 Claims

1. A method of operating a spark-ignited, gasoline-fueled, reciprocating internal combustion engine, said method comprising
mixing air or other suitable oxygen-containing gas with a fuel consisting essentially of gasoline mixed with at least about 1% by volume of a dialkyl peroxide such that there is an excess of oxygen with respect to the fuel for purposes of combustion, and
spark igniting the mixture in the combustion chambers of the engine to propel the power strokes thereof, said peroxide containing fuel burning reliably in the lean fuel-oxygen combustion mixture over prolonged engine operation to provide relatively high efficiency usage of the gasoline and relatively low NO_x emissions.

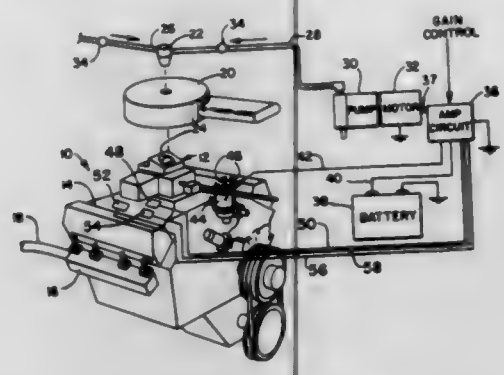
4,406,255
FUEL DETONATION-RESPONSIVE FLUID INJECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Toronta P. Goodman, Summit Point, W. Va., assignor to The Goodman System Company, Inc., New York, N.Y.

Filed Jul. 15, 1981, Ser. No. 283,455
Int. Cl.[3] F02M *25/02*
U.S. Cl. 123—25 J 21 Claims

1. A system for injecting fluid into a cylinder of an internal combustion engine, said fluid injecting system comprising first means for introducing air to a supply of said fluid for injecting said fluid into said cylinder at a rate proportional to the flow of said air, second means for supplying air to said first means, control means for controlling the operation of said second

means, sensing means for sensing detonation of fuel in said engine, said control means being in a responsive relation to said



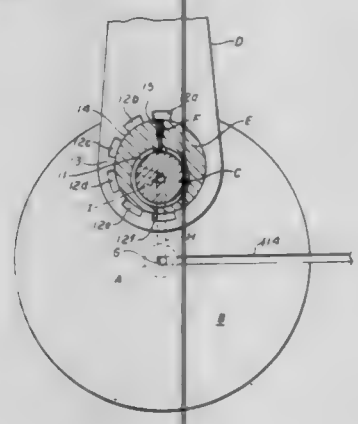
sensing means for controlling the operation of said second means in response to fuel detonation.

4,406,256

AUTOMATIC COMPRESSION ADJUSTING MECHANISM FOR INTERNAL COMBUSTION ENGINES

James W. Akkerman, Houston, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 22, 1981, Ser. No. 266,688
Int. Cl.³ F02B *75/04*
U.S. Cl. 123—78 E **20 Claims**



1. The combination with an internal combustion engine having at least one cylinder including a piston and firing chamber, an intake duct into which air is throttled to control engine power level, a connecting rod and a crank pin, of the improvement comprising an eccentric sleeve interposed between said rod and pin, an oil circuit for lubrication, latching means carried by said sleeve and rod, and means reflective of pressures in said oil circuit operatively connected to said latching means for shifting the same into latching relationship with said rod.

4,406,257

CAM ROLLER FOLLOWER

Frank E. Keske, Chillicothe, and Alexander Goloff, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

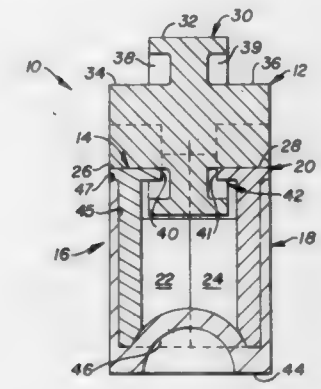
Continuation of Ser. No. 83,505, Mar. 19, 1979, abandoned. This application Jun. 18, 1981, Ser. No. 274,980
Int. Cl.³ F01L *1/16*
U.S. Cl. 123—90.48 **4 Claims**

1. In a roller follower (10) having a roller (12) rotatably mounted on a pair of bearing surfaces (26,28) which are mounted on a body structure (16), the improvement comprising:

said body structure (16) including an outer structure (18) and an inner structure (20) at least partially disposed within said outer structure (18);

said bearing surfaces (26,28) being on said inner structure (20) and being generally open in a direction away from said body structure (16);

said roller (12) having a generally central cylinder (30) having a roller surface (32) and a pair of ends (34,36) of lesser diameter than said roller surface (32) extending from said cylinder (30) into contact with said bearing surfaces (26,28) wherein the sum of the lengths of said cylinder (30) and both of said ends (34,36) is greater than



the length of said roller (12), said roller surface (32) overhangs a portion of each of said ends (34,36) and defines a pair of annular channels (38,39) in said cylinder (30) opening towards said ends (34,36); and

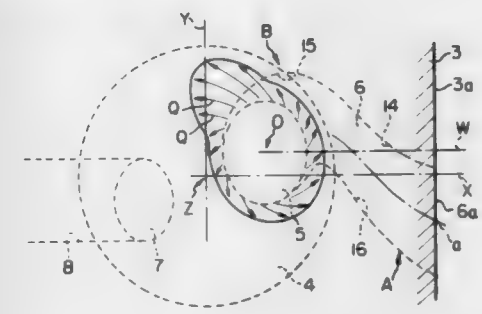
means (42) for maintaining said ends (34,36) in contact with said bearing surfaces (26,28) when said inner structure (20) is disposed at least partially within said outer structure (18) wherein said maintaining means (42) extends into at least one of said annular channels (38,39).

4,406,258

HELICALLY-SHAPED INTAKE PORT OF AN INTERNAL COMBUSTION ENGINE

Setsuro Sekiya; Katsuhiko Motosugi, and Hiroshi Takahashi, all of Toyota, Japan, assignors to Toyota Jidosha K.K., Toyota, Japan

Continuation of Ser. No. 44,406, Jun. 1, 1979, abandoned. This application Sep. 22, 1981, Ser. No. 304,597
Claims priority, application Japan, Sep. 19, 1978, 53-127516
Int. Cl.³ F01L *3/00*
U.S. Cl. 123—188 M **13 Claims**



1. A spark-ignition internal combustion engine having a cylinder and a cylinder head which forms a helically-shaped intake port therein and has a substantially vertically extending flat outer side wall, said helically-shaped intake port comprising: a helical portion comprising an open outlet end; an intake valve comprising a head and being arranged at said outlet end, said helical portion being defined by an upper wall and a peripheral side wall which extends circumferentially about an axis of said intake valve; and an elongated inlet passage portion tangentially connected to said helical portion and comprising an open inlet end formed on the outer side wall of the cylinder head, said inlet passage portion being defined by an upper wall, a bottom wall, a first side wall arranged at a position near the axis of said intake valve, and a second side wall arranged at a position remote from the axis of said intake valve and con-

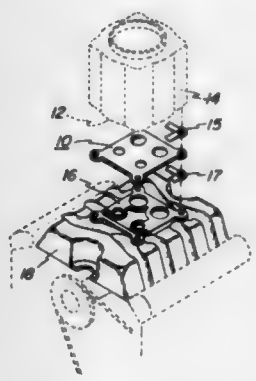
nected to the peripheral side wall of said helical portion, said first side wall comprising an upper portion inclined toward said second side wall, such that the width of said inlet passage portion above the lower edge of the inclined wall portion at any point along said inlet passage portion is narrower than the width of said inlet passage portion below said inclined wall at said point, said inclined wall portion increasing in width in the flow direction until it comprises the entire first side wall at a junction of said inlet passage portion with said helically-shaped intake port, such that the inlet passage portion has a trapezoidal shape at said junction, wherein said inlet passage portion is so arranged that a longitudinal centerline thereof obliquely intersects, at a location between said cylinder and said flat outer side wall of said cylinder head, with a first plane passing through a center of the valve head of said intake valve and extending perpendicular to the outer side wall of the cylinder head, the inlet end of said inlet passage portion being arranged at a position remote from said plane so that said inlet open end does not include said plane, wherein the cylinder has an axis and said inlet passage portion and said intake valve are so arranged that a second plane passing through the axis of the cylinder and extending perpendicular to the outer side wall of the cylinder head is located between the intersection of the centerline of said inlet passage portion with said flat outer side wall of said cylinder head and the center of the valve head of said intake valve, and wherein said helically-shaped intake port further comprises a valve guide projecting into said helical portion from the upper wall of said helical portion and having a circumferential wall, an upper half of the inclined wall portion of said first side wall downstream of said junction being tangentially connected to the circumferential wall of said valve guide, and a lower half of the inclined wall portion of said first side wall downstream of said junction being connected to the peripheral side wall of said helical portion.

4,406,259

ADAPTER PLATE FOR THE CONVERSION OF A 4-BARREL CARBURETOR TO A 2-BARREL CONFIGURATION

Richard C. Van Etten, R.D. 1, Beaver Dams, N.Y. 14812

Continuation of Ser. No. 92,370, Nov. 9, 1981, abandoned. This application Mar. 1, 1982, Ser. No. 353,322
Int. Cl.³ F02B 77/00
U.S. Cl. 123—198 R **7 Claims**



1. An adapter plate for converting a 4-barrel carburetor having two primary barrels and two secondary barrels to a carburetor configuration having two primary barrels without modifying the carburetor, including the mechanical linkage thereof, or the intake manifold of an internal combustion engine to which it is affixed, the adapter plate having two opposed major surfaces which are the top and bottom surfaces thereof;

walls defining four spaced apertures extending entirely through the plate in the outer peripheral region thereof for accepting mounting means for assembly of the plate to the 4-barrel carburetor and the intake manifold;

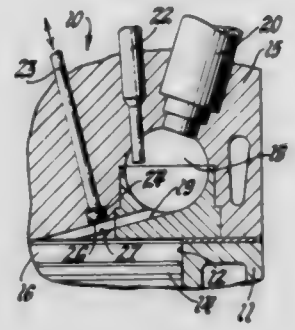
walls defining two spaced apertures extending entirely through the plate and so aligned that the center of each aperture is substantially coincidental with the longitudinal axis of a respective one of the primary barrels of the carburetor, and two spaced depressed regions formed in the top surface of the plate and projecting beyond the bottom surface of the plate, each spaced depressed region having a center substantially coincidental with the longitudinal axis of a respective one of the two secondary barrels of the carburetor, and blocking the passageway from that barrel to a corresponding aperture in the intake aperture to negate normal operation of the secondary barrel by an internal combustion engine when attached thereto, the configuration of each spaced depressed region providing clearance for rotation of the respective secondary throttle valve of the associated secondary barrel.

4,406,260

VALVED PRECHAMBER DIESEL ENGINE AND METHODS OF OPERATING

Harvey A. Burley, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 8, 1982, Ser. No. 346,877
Int. Cl.³ F02M 25/06
U.S. Cl. 123—25C **2 Claims**



1. The method of providing internal exhaust gas dilution in the cylinder charge of an indirect injection compression ignition internal combustion engine having a variable volume main combustion chamber connected by a throat to a fixed volume prechamber into which fuel is injected for burning to develop power and having a valve operable to close or open the throat to permit or prevent communication between the prechamber and the main combustion chamber, said method comprising the steps of

a. contracting the main combustion chamber to compress a charge of air in the cylinder, and maintaining the valve open while injecting a charge of fuel into the prechamber for ignition and burning in the compressed air charge and expanding the main chamber to develop power,

b. closing the valve during the expansion step to retain a portion of the burned charge in the prechamber,

c. maintaining the valve closed while forcing the remainder of the burned charge from the main combustion chamber by contraction thereof and admitting a fresh air charge to the main combustion chamber during expansion thereof,

d. contracting the main combustion chamber and opening the valve to compress the fresh charge and force a portion thereof into the prechamber for mixing with the retained portion of the previous burned charge to form a dilute charge,

e. injecting a charge of fuel into the prechamber for ignition and burning in the dilute charge and mixing with the fresh charge in the main chamber for completion of combustion, and expanding the combustion chamber to develop power,

f. thereafter cyclically repeating steps (b) through (e)

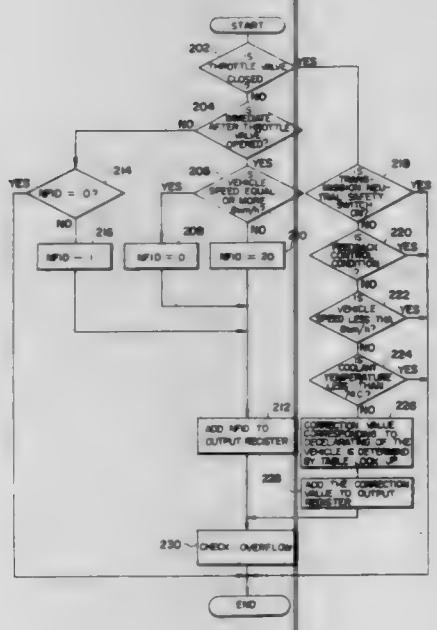
whereby the formation of nitrogen oxides in the combustion gases is minimized by lower combustion temperatures resulting from the diluting effect of the exhaust gases retained in the prechamber after each expansion step.

4,406,261

INTAKE AIR FLOW RATE CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE OF AN AUTOMOTIVE VEHICLE

Kenji Ikeura, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanag..wa, Japan

Filed May 21, 1980, Ser. No. 152,094
Claims priority, application Japan, May 25, 1979, 54-64840
Int. Cl.[3] F02D 11/10
U.S. Cl. 123—339 14 Claims



1. An intake air flow rate control system for an internal combustion engine, in which either feedback control or open loop control for controlling auxiliary air flow rate is selectively carried out corresponding to an engine driving condition, said system including an auxiliary air flow rate control valve means with an actuator being operative in response to a control signal applied thereto,

wherein said system comprising:

an engine coolant temperature sensor for detecting engine coolant temperature and producing an engine coolant temperature signal indicative of the detected engine coolant temperature;

a throttle angle sensor responsive to a throttle valve angular position smaller than a predetermined open angle for producing a throttle angle signal;

a first means for determining a control value in open loop control based on the engine coolant temperature signal and for providing to said control signal a duty cycle indicative of said control value for controlling the ratio of energized and deenergized periods of said actuator, said control signal being provided a particular duty cycle as an initial value;

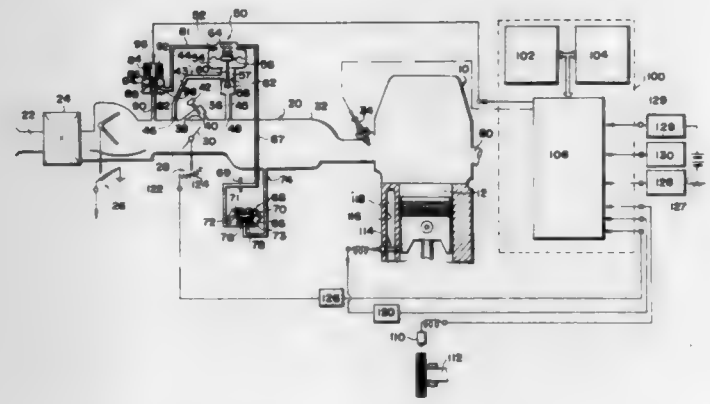
a second means, responsive to said throttle angle signal, for correcting said control value in response to variation of the throttle valve angular position, said second means correcting said control value for increasing said duty cycle of said control signal at a given rate responsive to an opening of said throttle valve exceeding said predetermined open angle and for thereafter gradually decreasing said increased duty cycle of said control signal at a given rate and a given timing until the duty cycle returns to its initial value.

4,406,262

ENGINE IDLING SPEED CONTROL SYSTEM AND METHOD FOR AN INTERNAL COMBUSTION ENGINE

Kenji Ikeura, Yokosuka, Japan, assignor to Nissan Motor Company, Ltd., Kanagawa, Japan

Continuation of Ser. No. 141,978, Apr. 21, 1980, abandoned.
This application Feb. 5, 1982, Ser. No. 346,377
Claims priority, application Japan, Apr. 24, 1979, 54-49660; May 29, 1979, 54-65662; May 29, 1979, 54-65664
Int. Cl.[3] F02D 1/04; G06F 7/70
U.S. Cl. 123—339 52 Claims



1. An engine idling speed control system for an internal combustion engine, which system includes a primary and auxiliary air induction system, an idle air control valve incorporated in said auxiliary air induction system, said idle air control value being associated with an electromagnetically operable actuator which controls opening and closing of said idle air control valve, which system comprises:

a first sensor for determining engine temperature and in response producing a first sensor signal;

a second sensor for determining revolution speed of the engine and in response producing a second sensor signal;

first means for determining a reference engine speed based on the value of said first sensor signal, said reference engine speed being maintained (1) at a first constant value when the determined engine temperature is lower than a first predetermined value, (2) at a second constant value when the engine temperature is in a normal engine temperature range which is defined by a second predetermined value, higher than said first predetermined value and a third predetermined value, higher than said second predetermined value, and (3) at a third constant value while the engine is in an overheated condition in which the engine temperature is higher than a predetermined fourth value, higher than said third predetermined value, said reference engine speed being varied linearly from said first constant value to said second constant value when the engine temperature is in a range between said first and second predetermined values and said reference engine speed is varied linearly from said second constant value to said third constant value when said engine temperature is in a range between said third and fourth predetermined values;

second means responsive to the second sensor signal and said first means for determining a difference between the determined engine speed and said reference engine speed and for determining a closed loop control value based on the determined difference, said second means producing a pulse signal having a duty cycle representative of the determined closed loop control value, said duty cycle defining the ratio of the opening and closing periods of said idle air control valve in order to control the engine speed to reduce the difference between the determined engine speed and the reference engine speed, and

means for feeding said pulse signal to said actuator.

4,406,263
FUEL INJECTION PUMP

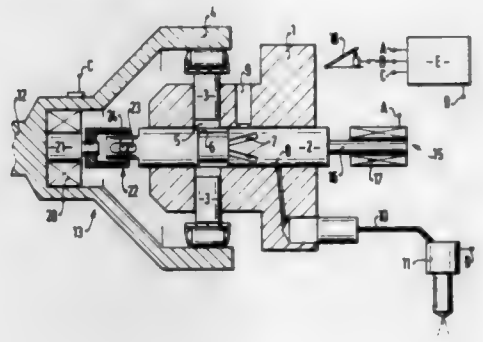
Jean Leblanc, Lyon, and Jean Pigeroulet, Villeurbanne, both of France, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 12, 1981, Ser. No. 243,101

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1980, 3010839

Int. Cl.³ F02M *37/04*

U.S. Cl. 123—357 **3 Claims**



1. In a fuel injection pump for internal combustion engines including a distributor having a jacket face, a coupling, a pump drive shaft to drive said distributor through said coupling, said distributor having control grooves provided in said jacket face, and an injection quantity regulator means arranged to transmit axial displacement of said distributor to control fuel quantity, said coupling including distributor rotating means for rotating said distributor relative to said drive shaft, the improvement wherein said injection quantity regulator means includes an electric servomotor, and the distributor rotating means includes a rotary magnet having a core and a coil, connecting means connecting said core with the distributor, and said coil being carried on the drive shaft, said connecting means including a coupler element disposed between the core and the distributor, said coupler element comprising a cup having an axially extending wall, an end of the distributor being received in said cup and coupled thereto by a pin and slot connection permitting axial displacement of the distributor by said servomotor, an electronic control device connected to said electric servomotor and said distributor rotating means, said electronic control device including a computer to which engine characteristics are supplied as input, whereby said computer triggers said electric servomotor to effect said axial displacement of the distributor and said distributor rotating means to effect rotation of the distributor relative to said drive shaft.

4,406,264
GOVERNOR FOR ENGINES

Dorian F. Mowbray, Burnham, England, assignor to Lucas Industries Limited, Birmingham, England

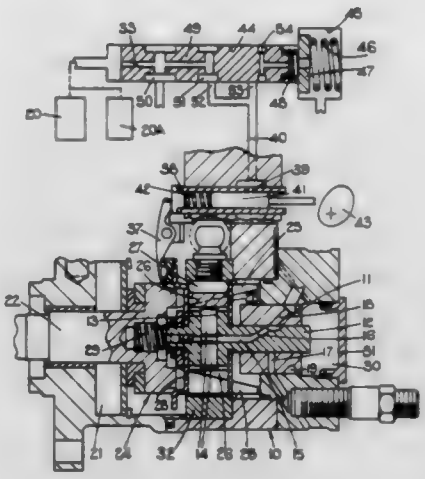
Filed Jul. 2, 1981, Ser. No. 280,123

Claims priority, application United Kingdom, Jul. 26, 1980, 8024539

Int. Cl.³ F02D *7/00, 1/12*

U.S. Cl. 123—387 **7 Claims**

1. A two speed governor for use with a fuel injection pumping apparatus for supplying fuel to an internal combustion engine comprising a source of fuel under pressure, means for controlling said pressure so that it varies in accordance with the speed at which in use the associated engine is driven, first and second variable orifices connected in series and through which fluid can flow from said source, manually operable means for controlling the degree of restriction offered by said second orifice, piston means responsive to the pressure of said source and acting to close said first orifice when the speed of the associated engine increases to its maximum value, and a third variable orifice connected in parallel with at least said second orifice, said piston means acting to close said third orifice when the speed of the associated engine is above its



idling speed, the fuel flow through said orifices acting to control the amount of fuel supplied by the apparatus.

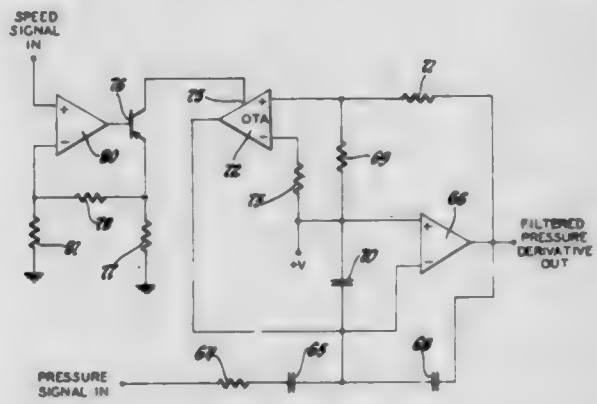
4,406,265
PEAK COMBUSTION PRESSURE CONTROLLED SPARK TIMING CONTROL SYSTEM WITH ENGINE SPEED DEPENDENT FILTER

Herman F. Brandt, Birmingham; Wayne A. Daniel, Sterling Heights, and Anthony A. Sperling, Grosse Pointe Park, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 26, 1982, Ser. No. 362,402

Int. Cl.³ F02P *5/10*

U.S. Cl. 123—425 **2 Claims**



1. A combustion control system for an internal combustion engine having a rotating crankshaft, said system being of the type in which the occurrence, relative to crankshaft rotational position, of peak combustion pressure is sensed and a combustion controlling parameter adjusted in response thereto, the system comprising, in combination:

means effective to sense combustion pressure and generate a signal in response thereto, said signal being subject to engine generated noise;

means effective to sense the rotation of the crankshaft and generate a signal indicative of the rotational speed thereof;

signal processing apparatus effective to derive a smoothed time derivative of the combustion pressure signal, said apparatus including time derivative elements with an associated first time constant, noise reducing time integrating elements with an associated second time constant and additional elements responsive to the crankshaft speed signal to vary both the first and second time constants inversely with crankshaft rotational speed, whereby signal to noise ratio is optimized; and

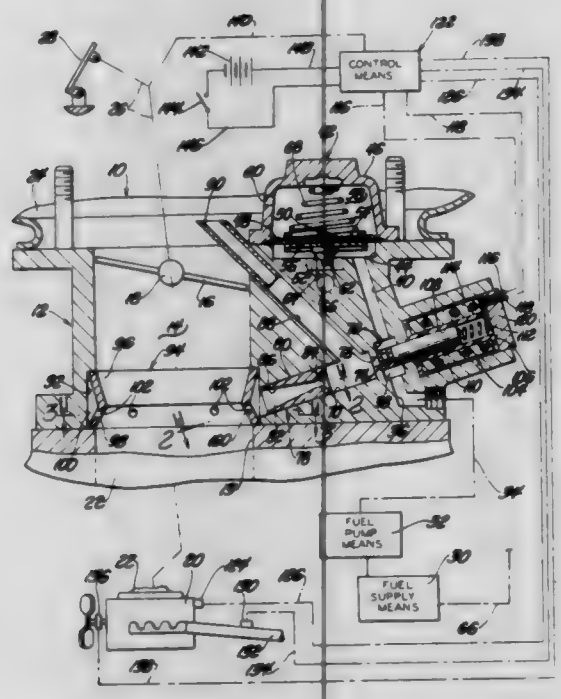
means effective to sense the zero crossing of the smoothed time derivative of the combustion pressure signal to identify the occurrence of peak combustion pressure.

4,406,266

FUEL METERING AND DISCHARGING APPARATUS FOR A COMBUSTION ENGINE

Norbert W. Kiesling, Mt. Clemens, Mich., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed Aug. 28, 1981, Ser. No. 297,164
Int. Cl.³ F02B 33/00
U.S. Cl. 123—438 17 Claims



1. Fuel metering apparatus for supplying metered rates of fuel flow to a combustion engine, comprising body means, induction passage means formed through said body means for supplying motive fluid to said engine, throttle valve means situated in said induction passage means for variably controlling the rate of flow of air through said induction passage means, fuel-air mixture discharge means situated in said induction passage means downstream of said throttle valve means, air passage means communicating between a source of air and said fuel-air mixture discharge means, and fuel metering means for metering liquid fuel under superatmospheric pressure in response to engine demands and indicia of engine operation, said liquid fuel when metered by said fuel metering means being discharged into said air passage means at an area thereof downstream of said source of air and upstream of said fuel-air mixture discharge means, said fuel-air mixture discharge means comprising a plurality of discharge ports, at least one of said plurality of discharge ports being in general axial alignment with said air passage means leading to said fuel-air mixture discharge means.

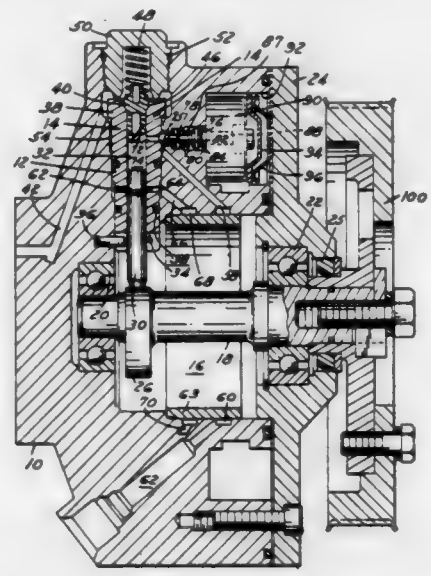
4,406,267

ELECTROMAGNETICALLY CONTROLLED FUEL INJECTION PUMP SPILL PORT VALVE ASSEMBLY

Rameshwar P. Sharma, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 2, 1981, Ser. No. 298,570
Int. Cl.³ F02M 59/00
U.S. Cl. 123—458 1 Claim

1. A fuel injection pump of the spill port type having a housing having a central cavity therein receiving a rotatable engine driven camshaft, a stationary pump plunger barrel projecting radially from the camshaft through the housing and having a bore containing a plunger at one end movable therein, and an outlet at the opposite end closed by a spring closed fuel delivery valve openable at a predetermined fuel pressure level, the plunger and valve defining a fuel chamber therebetween, cam means on the camshaft engagable with the plunger to move the plunger axially along its bore through a fuel pumping stroke, the barrel having a fuel inlet-spill port opening through the wall of the barrel into the fuel chamber and constituting a valve seat, a source of supply fuel under a low pressure connected to the inlet-spill port, and an electromagnetically controlled spill port control valve movably mounted with respect to the spill port valve seat in a lateral bore connected to the spill port and selectively openable and closable to control the buildup and duration of pressure in the fuel chamber upon movement of the plunger through its pumping stroke, the spill port valve being self-aligning with respect to the valve seat, the spill port valve including a ball universally seatable on the valve seat, a stem type actuator fixed to the ball for movement together, a solenoid having an armature engagable with the actuator, and spring means biasing the ball and actuator and



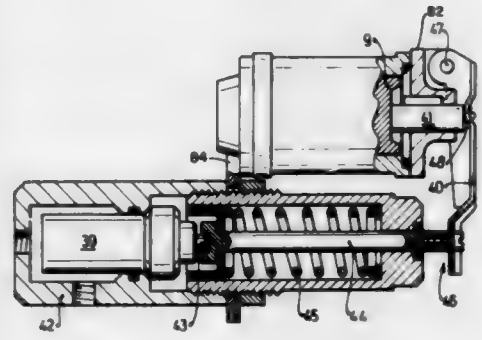
armature to an inoperative position away from the ball valve seat, the actuator being axially movable in the side bore and tiltable therein and having an enlarged mushroom-like land portion on the end opposite the ball valve constituting guide means engagable with the side bore wall, the enlarged land portion having a spherical surface engagable with the solenoid armature, the spherical surface constituting a radius from the center of the ball valve to permit slight misalignment of the centerlines of the armature and actuator without imposing side forces on the ball valve upon energization of the solenoid.

4,406,268

FUEL INJECTION PUMP

Franz Eheim, Stuttgart; Karl Konrath, Ludwigsburg; Manfred Schwarz, Gerlingen, and Otmar Weiss, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 90,219, Nov. 1, 1979, Pat. No. 4,318,382, which is a continuation of Ser. No. 832,703, Sep. 12, 1977, abandoned. This application Sep. 10, 1981, Ser. No. 300,714
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1976, 2641445
Int. Cl.³ F02D 1/16
U.S. Cl. 123—502 6 Claims



1. In a fuel injection pump for an internal combustion engine including: a housing; at least one pump piston in said housing; a cam drive arranged in the housing to produce the fuel feeding stroke of the at least one pump piston; means producing a

return force; and an adjustable piston connected to the return force producing means and to the cam drive, said cam drive including a rotatable part, with said cam drive being rotatable relative to the direction of rotation of the rotatable part for adjusting the timing of the beginning of the fuel injection by means of the adjustable piston which is acted upon by an rpm-dependent pressure against the return force of the return force producing means, the improvement comprising a control unit mounted to said housing for directly engaging the adjustable piston, said control unit comprising:

an adjustable stop member direction engageable with the adjustable piston;

an adjusting member comprising a lever connected to the adjustable stop member;

a mounting structure to which the adjustable stop member and the adjusting member are mounted, said mounting structure being mounted to said housing;

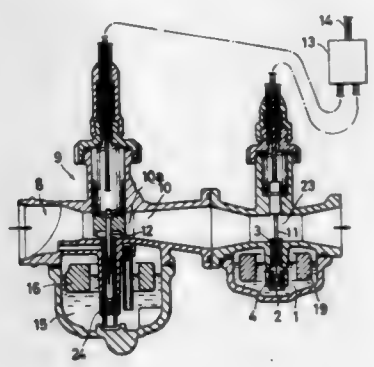
an extensible temperature sensitive device connected to the adjusting member lever, whereby from engine starting to engine warm-up, the temperature sensitive device varies the position of the adjusting member lever and consequently the adjustable stop member and adjustable piston in a direction to retard the beginning point of injection; and

a return spring connected to said temperature sensitive device, the return spring being mounted to bias the extensible temperature sensitive device into an inactive condition during which the adjustable stop member and the adjustable piston are moved in a direction to advance the beginning point of injection.

4,406,269
APPARATUS FOR LIQUID SUPPLY IN INTERNAL COMBUSTION ENGINE

Urataro Asaka, Kamifukuoka; Akira Suzuki, Niiza, and Kiyoshi Kimura, Kiyose, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1981, Ser. No. 228,695
Claims priority, application Japan, Jan. 29, 1980, 55-8254
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—549 **7 Claims**



1. An apparatus for supplying a liquid in an internal combustion engine, said engine having an intake passage, said apparatus comprising:

a liquid chamber containing a liquid having a level, said chamber having an inlet supply opening and an interior,

a float in said chamber,

a float valve connected to said float and arranged to open and close said inlet supply opening depending on said level,

a delivery passage which is open at one end to said intake passage and at its opposite end to said interior of said liquid chamber below said level,

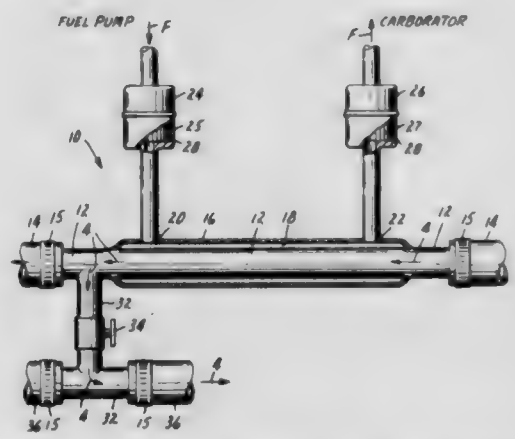
a restricted metering jet portion in said delivery passage having an upstream end lying in or protruding through the plane of said opposite end for metering liquid passing therethrough from said liquid chamber, said restricted metering jet portion being made of ceramics, and

means for electrically heating said restricted metering jet portion, said means for heating including a battery of said engine, a key switch of said engine, an electric heater in said restricted metering jet portion, and means for electrically interconnecting said battery, key switch, and electric heater.

4,406,270
FUEL EXPANDER

William B. Simonson, Sr., 4226½ 1st Ave., Hibbing, Minn. 55746

Filed Mar. 12, 1981, Ser. No. 241,430
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **3 Claims**



1. A fuel expander to provide greater fuel economy for a vehicle using a liquid cooled internal combustion engine, comprising:

(a) an elongated tubelike member inserted into a heater hose of the vehicle by cutting and clamping each cut end of the hose to opposite ends of said member, to allow for engine coolant normally going from the engine to the heater coils in the passenger compartment to be passed through the elongated tubelike member;

(b) an elongated envelope encircling said elongated tubelike member and sealed to the outer surface near each end of said tubelike member to define a fuel heating chamber encircling said elongated member;

(c) said envelope including first and second tubes projecting from said envelope, said tubes located near opposite ends of said envelope and open to said fuel heating chamber;

(d) a first housing defining a first expansion chamber and connected to said first tube to provide fuel communication from the fuel pump on the engine, through said first housing, through said first tube, through said envelope, through said second tube to the carburetor on the engine, said first expansion chamber allowing fuel in the fuel heating chamber of said envelope to expand into said first expansion chamber;

(e) a second housing defining a second expansion chamber and connected to said second tube to provide fuel communication from said fuel heating chamber through said second tube, through said second expansion chamber to the carburetor of the engine, said second expansion chamber allowing fuel in the fuel heating chamber of said envelope to expand into said expansion chamber;

(f) a bypass pipe connected to said elongated tubelike member and to a second heater hose of the vehicle; and

(g) a bypass valve in said bypass pipe to selectively allow coolant to be passed through the elongated member, through the bypass pipe and valve and back to the engine without going through heater coils in the passenger compartment.

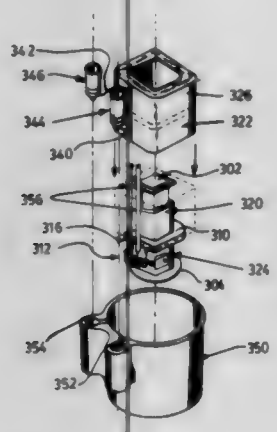
4,406,271
CAPACITOR DISCHARGE IGNITION SYSTEM AND METHOD OF MANUFACTURE THEREOF

Ronald J. Wolf, Zanesville, Ind., assignor to Wabash, Inc., Wabash, Ind.

Division of Ser. No. 171,705, Jul. 24, 1980, Pat. No. 4,333,442, which is a continuation-in-part of Ser. No. 105,234, Dec. 19, 1979, abandoned. This application Nov. 16, 1981, Ser. No. 321,476

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—599 **10 Claims**



1. In a capacitor discharge ignition system for use with and positioned adjacent a rotating magnetic field in synchronism with the operation of an engine engine, a capacitor discharge ignition sub-assembly for mounting on a ferromagnetic core, the capacitor discharge ignition subassembly comprising:

an auxiliary coil;

an ignition transformer including a primary coil and secondary coils;

a coil support member, said auxiliary coil and said primary and second coils being concentrically disposed on said coil support member;

a housing for receiving and enclosing said auxiliary coil, said ignition coil and said circuitry means; and

a printed circuit card having disposed thereon said electrical circuitry means, said printed circuit card having a central aperture arranged to interfit with a portion of said coil support member,

said coil support member being a generally upstanding elongated member, said auxiliary coil being disposed about a first portion of said coil support member, said ignition coil being disposed about a second portion of said coil support member adjoining said first portion, and said printed circuit card being disposed on said coil support member adjacent said second portion of said coil support member and said ignition coil, said coil support member comprising a third portion extending from said second portion, said third portion interfitting with said central aperture of said printed circuit card, said first, second and third portions being generally aligned along a central axis of said coil support member, said printed circuit card including said electrical circuitry means being disposed on one side thereof, said printed circuit card being disposed on said third portion with said one side of said printed circuit card facing toward said first and second portions.

4,406,272
MAGNETIC SENSOR FOR DISTRIBUTORLESS IGNITION SYSTEM AND POSITION SENSING

Ronald J. Kiess, Decatur, and Gary R. Nichols, Woodburn, both of Ind., assignors to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 105,697, Dec. 20, 1979, abandoned. This application Jan. 9, 1981, Ser. No. 223,778

Int. Cl.³ G08B *21/00*; F02P *3/06, 3/02, 1/00*

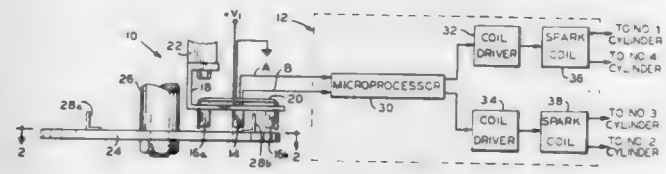
U.S. Cl. 123—617 **27 Claims**

1. Apparatus for indicating the relative position between first and second parts that are movable relative one another comprising:

magnetic means having north and south poles for providing a magnetic field flux path between said north and south poles;

sensor means for sensing the magnetic flux in said path and providing a signal corresponding to the sensed magnetic flux;

mounting means for mounting said magnetic means and sensor means in spaced relation substantially along a line that is substantially transverse to the direction of instantaneous relative movement between a point on said first part and a point on said second part to form first and second open regions along said line between said magnetic means and said sensor means, each of said regions being defined



in the transverse direction by said magnetic means north or south poles and said sensor means, whereby said magnetic flux path has substantially its maximum flux concentration in said first and second regions;

said mounting means for mounting said magnetic means and said sensor means in fixed relation to the first of said parts;

shunt means being carried by the second of said parts and having first and second transversely spaced shunting members movable in said direction of relative movement through said first and second regions respectively for shunting the flux in said path in each of said first and second regions, whereby when said first member shunts the flux in said first region said sensor means will produce a first signal level change and when said second member shunts the flux in said second region said sensor means will produce a second signal level change.

4,406,273
IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

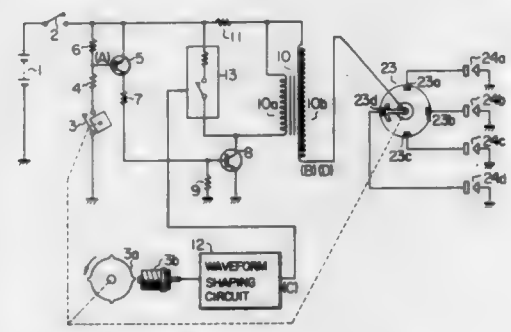
Toru Yoshinaga, Okazaki; Toshihiko Igashira, Toyokawa; Kouichi Mori, Okazaki; Hisasi Kawai, Toyohashi, and Seiji Morino, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

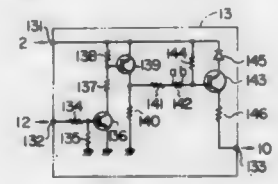
Filed May 21, 1981, Ser. No. 266,043

Claims priority, application Japan, May 29, 1980, 55-72275

Int. Cl.³ F02P *9/00*

U.S. Cl. 123—625 **4 Claims**





1. An ignition system for an internal combustion engine

having an output shaft rotated by the combustion of combustible mixture ignited by a spark, said ignition system comprising:

a power supply source;

an ignition coil having primary and secondary windings, said primary winding being connected to said power supply source and said secondary winding generating a spark voltage when said primary winding is deenergized;

a spark plug connected to said secondary winding to be supplied with said spark voltage to thereby ignite the combustible mixture of said internal combustion engine;

first switching means connected in series with said primary winding for energizing and deenergizing said primary winding by said power supply source in response to the conduction and nonconduction thereof, respectively;

second switching means connected in parallel with said primary winding for preventing said secondary winding from generating said spark voltage in response to the conduction thereof; and

control means connected to said second switching means for switching said second switching means from nonconduction to conduction at a selected instant in time after the generation of said spark voltage,

said second switching means including:

a first series circuit comprising a first resistor, a capacitor and a second resistor, said series circuit being connected across said power supply source for forming a charging circuit for said capacitor;

a first transistor having a base separatively connected to said control means and an emitter-collector path connected in parallel with said first resistor and said capacitor;

a second transistor having a base connected to a juncture of said first resistor and said capacitor and having a collector-emitter path;

a second series circuit comprising a third resistor, said collector-emitter path of said second transistor and a diode, said second series circuit being connected across said primary winding, whereby the reverse emf generated in said primary winding is substantially shorted through said second series circuit when said collector-emitter path is conductive, an emitter of said first transistor being connected to a cathode of said diode for forming a discharge circuit for said capacitor, whereby a discharge of said capacitor begins when said emitter-collector path of said first transistor becomes conductive.

4,406,274

SOUND ARRESTER OF CIRCULAR BLADE

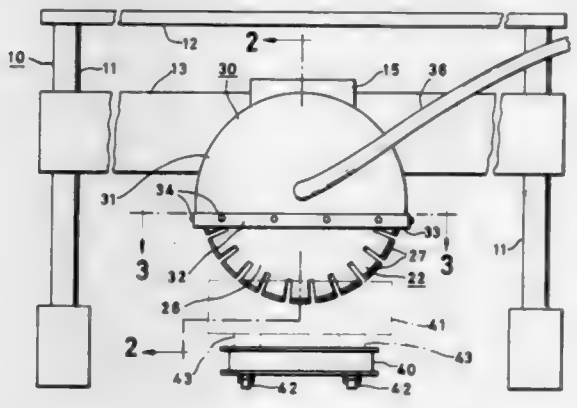
Shingo Ogyu, 2–6–13, Yahei, Kawaguchi, Saitama, Japan

Filed May 28, 1981, Ser. No. 268,146

Claims priority, application Japan, Jun. 3, 1980, 55-73691

Int. Cl.³ B28D *1/04*

U.S. Cl. 125—13 R **3 Claims**



1. A sound arrester, for a circular cutting blade which is rotatable about an axis disposed substantially horizontally, comprising:

a cover for covering approximately the upper half portion of said cutting blade;

liquid reservoir tank means, operatively disposed in connection with the lower end of said cover, for housing a mass of liquid, said liquid reservoir tank means having laterally spaced, upstanding sidewalls, longitudinally spaced, upstanding end walls connected to said sidewalls along their respective upwardly extending edge portions, and a bottom wall interconnecting the lower ends of said sidewalls and said end walls, an elongated slot being defined within said bottom wall for passage therethrough of the lower portion of said cutting blade, said sidewalls, said end walls, and said slotted bottom wall of said liquid reservoir tank means thereby defining an annular, endless loop flow path for said mass of liquid within said liquid reservoir tank means which peripherally surrounds said cutting blade; and

means for continuously supplying said liquid into said endless loop flow path of said liquid reservoir tank means from only one side of said liquid reservoir tank means relative to said circular cutting blade,

said sidewalls of said liquid reservoir tank means each being disposed away from the plane of said circular cutting blade by means of a distance at least equal to a several-fold multiple of the thickness of said circular cutting blade so as to define said liquid reservoir tank means which is elongated in the transverse direction of said cover and therefore elongatedly extending in the direction of said circular cutting blade axis, said liquid reservoir tank means thereby housing a massive body of said liquid of substantial transverse lateral width within said endless loop flow path circuit peripherally surrounding said circular cutting blade which transversely stabilizes said circular cutting blade by dissipating vibrations generated within said lower portion of said cutting blade and thereby preventing the transmission of said vibrations to said upper portion of said cutting blade, and wherein further, said transversely massive body of said liquid within said liquid reservoir tank means endless loop flow path circuit peripherally surrounding said circular cutting blade also reduces the noise normally heard by personnel within the vicinity of said circular cutting blade by dissipating the sound waves generated by means of said upper portion of said circular cutting blade within said cover and thereby preventing the transmission of said sound waves out of said cover and into the ambient atmosphere.

4,406,275

APPARATUS FOR DRESSING AND PROFILING GRINDING WHEELS

Reinhard Janutta, Heide, and Wolfgang Eggert, Glinde, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 245,985, Mar. 20, 1981, which is a continuation of Ser. No. 62,296, Jul. 31, 1979, abandoned. This application Jul. 1, 1982, Ser. No. 394,469

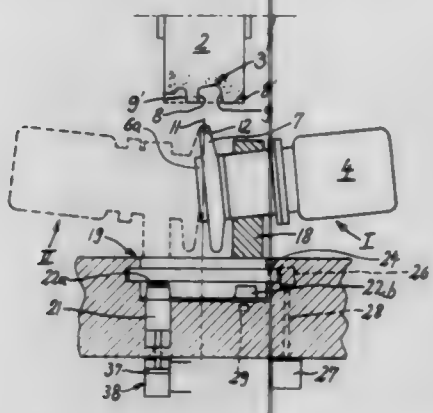
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1978, 2833625

Int. Cl.³ B24B *53/06*

U.S. Cl. 125—11 CD **10 Claims**

1. An arrangement for multi-stage treatment of profiled working surfaces of grinding wheels or the like, comprising a rotary dressing tool having a treating surface with a profile deviating from the profile of the working surface of the grinding wheel and contacting such working surface during the treatment of the latter; means for mounting said dressing tool for angular displacement through an angle greatly exceeding 90 degrees relative to said grinding wheel about a pivot axis which intersects said treating surface to thereby enable said tool to treat different portions of the profiled working surfaces of grinding wheels of the type wherein at least one first portion of the working surface is accessible to the treating surface only prior to and at least one second portion of the same working

surface is accessible to the treating surface only after angular displacement of the dressing tool through an angle exceeding



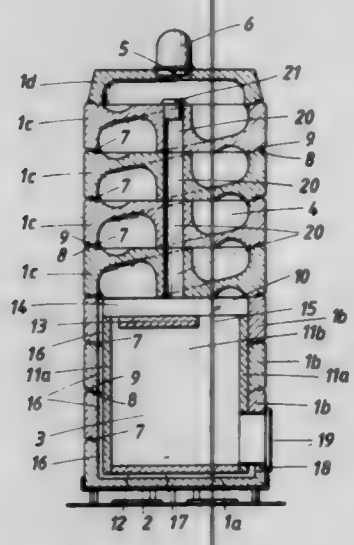
90 degrees; and means for displacing said dressing tool about said axis between only two positions.

4,406,276

STOVE

Theo Haas, Rheintalgasse 55, A-4470 Enns, Austria

Filed Mar. 4, 1982, Ser. No. 354,763
Int. Cl.³ F24C *15/28*
U.S. Cl. 126—83 **6 Claims**



1. In a stove comprising

a base frame,

a ceramic shell, which encloses a firing chamber and a helical flue gas passage above said firing chamber and is composed of superimposed blocks, each of which has the same cross-sectional shape as the corresponding height portion of the stove, adjacent ones of said blocks being formed at confronting end faces with complementary, axially offset centering portions, said blocks comprising a bottom block consisting of a bottom tub supported by said base frame, a top block consisting of a cover having a smoke outlet communicating with said flue gas passage, and intermediate blocks comprising at least one set of blocks which are substantially identical in shape, and

a refractory insert structure contained in said shell and defining said firing chamber,

the improvement residing in that

each of said blocks is formed in an end face that faces another of said blocks with an annular groove, which is covered by said other block,

refractory sealing cords are disposed in respective ones of said grooves and seal the joints between adjacent ones of said blocks,

said refractory insert structure surrounds said firing chamber and extends only over part of the height of said shell, and

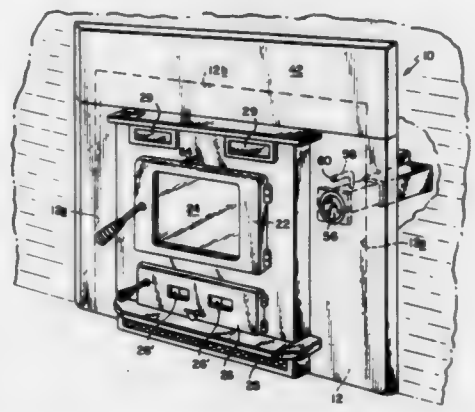
said blocks comprise a set of blocks which are disposed above said insert structure and each of which has a core portion and defines around said core portion at least one convolution of said helical flue gas passage.

4,406,277

FIREPLACE STOVE INSERT

Richard A. Russo, Abington, Mass., assignor to Russo Manufacturing Corp., Randolph, Mass.

Filed Sep. 16, 1981, Ser. No. 302,501
Int. Cl.³ F24B *7/00*; F24C *15/30*
U.S. Cl. 126—123 **4 Claims**



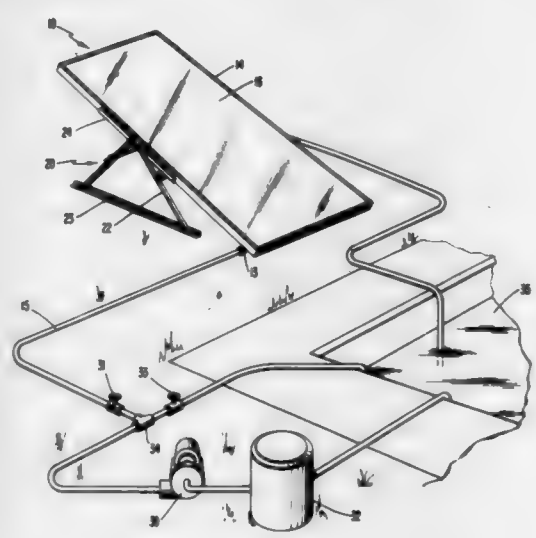
1. A stove insert for a fireplace opening, comprising in combination: a stove housing interiorly subdivided by a grate assembly into an upper combustion chamber and a lower ash pit, with access doors in the front of said housing leading to said combustion chamber and ash pit, the access door leading to said ash pit having adjustable means for admitting air into said housing; a flue connection for conveying combustion gases from said combustion chamber to the fireplace flue; a faceplate through which the front portion of said stove housing protrudes, said faceplate being adapted to extend upwardly from the fireplace hearth and to overlap the side and top edges of the fireplace opening; an auxiliary air supply conduit leading from an inlet opening in said faceplate to an outlet opening in said flue connection; and a barometric damper positioned in said auxiliary air supply conduit, said damper being accessible from the front side of said faceplate.

4,406,278

HEAT EXCHANGE ASSEMBLY FOR SWIMMING POOL

John Demmer, RD 2, Kingsley, Pa. 18826

Filed Mar. 31, 1981, Ser. No. 249,551
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—416 **16 Claims**



1. A heat exchange assembly for heating the water of a swimming pool, said assembly comprising:

(a) a solar heat collector panel means mounted on a portable support means,

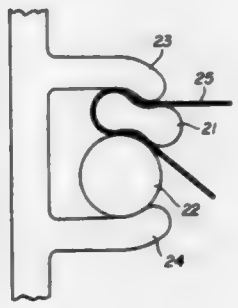
(b) said support means including a panel carrier section and a base section,
(c) said panel means including a rigid frame portion, an upper planar surface portion, a bottom planar surface portion and a planar, continuous tubular coil formed by a single, continuous tube member disposed between the upper and bottom surface portions,
(d) the upper planar surface portion including a sheet of solar ray penetrating material and the bottom surface portion including a sheet of rigid backing material,
(e) the rigid frame portion extends around the entire periphery of the panel means to define the outer profile of the panel means,
(f) the rigid frame portion includes channel means for receiving the outer edges of the upper sheet of solar ray penetrating material and the bottom, rigid backing sheet with the tubular coil disposed therebetween to fix the sheet of solar ray penetrating material, the tubular coil and the bottom surface portion into a unitary structural configuration,
(g) the panel carrier section including means contacting the rigid frame portion and being pivotally connected to the base section to tiltably support the panel means between opposed angles of inclination,
(h) said unitary panel means has a size and shape to be manipulated by one person from one angle of inclination to another angle of inclination.

4,406,279

SUNRAY CAPTOR

Benjamin Kohli, Bex, Switzerland, assignor to Ener-Nat SA, Switzerland

Continuation-in-part of Ser. No. 809, Jan. 4, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,714
Claims priority, application Switzerland, Jan. 10, 1978, 210/78
Int. Cl.³ F24J 3/02
U.S. Cl. 126—450 **7 Claims**



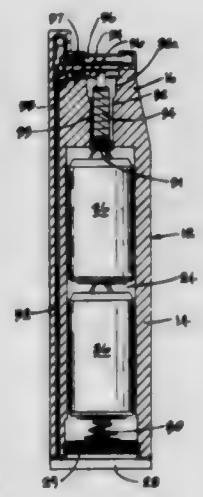
1. Apparatus for stretching at least one sheet of synthetic material transparent to sun rays across a rigid frame for use in a sunray captor wherein said rigid frame comprises at least one upstanding substantially planar rigid frame base member, said apparatus comprising at least one lateral U-shaped groove extending perpendicularly from the plane of said rigid frame base member, said U-shaped groove including a pair of lateral arms including free end portions defining an opening therebetween and a central portion comprising said rigid frame base member, the free end portion of said lateral arms converging towards each other so as to define a waist portion of said U-shaped groove, and first and second rigid rod members disposed within said U-shaped groove and dimensioned so as to be lockable within said waist portion of said U-shaped groove, said first rigid rod member including a pair of concave symmetrical surfaces on opposing portions thereof defining a waist portion of said first rigid rod member, and said second rigid rod member being substantially cylindrical and including a convex exterior surface whereby said sheet of synthetic material may be locked tightly in position within said U-shaped groove by passing it at least partially around one of said first and second rigid rod members and then between said first and second rigid rod members so that said sheet of material may be fixed in position between the convex exterior surface of said second rigid rod member and one of the concave grooves defining the waist portion of said first rigid rod member, and between said one of said first and second rigid rod members and one of said converging free ends of said lateral arms of said U-shaped groove.

4,406,280

LARYNGOSCOPE INCLUDING A DISPOSABLE BLADE AND ITS METHOD OF USE

Michael S. Upsher, 2957 Adeline Dr., Burlingame, Calif. 94010

Filed Oct. 16, 1981, Ser. No. 311,990
Int. Cl.³ A61B 1/06
U.S. Cl. 128—11 **37 Claims**



1. A laryngoscope comprising:
(a) a handle including an elongated hand gripping portion and a blade connecting head portion;
(b) a disposable blade separate from said handle and including a handle connecting segment and an elongated tongue holding segment connected with and extending out from said handle connecting segment;
(c) means carried partially by said handle and partially by said blade for producing a beam of light in a predetermined direction relative to the tongue holding segment of said blade when said blade is connected with said handle in a specific way, said beam producing means including a light source and power supply; and
(d) first and second cooperating means respectively forming parts of the head portion of said handle and the handle connecting segment of said blade for disengagably connecting said disposable blade to said handle in said specific way for the first time so as to cause said beam to be produced and so as to damage a component of said disposable blade sufficient to discourage its use a second time without preventing it from being used in the proper way the first time, said first and second cooperating means disengagably connecting said blade to said handle in said specific way for the first time so as to place said power supply in electrical circuit with said light source in order to produce said beam, said first and second cooperating means including a readily severable, electrically conductive member forming part of the electrical circuit between said power supply and said light source and means for severing a substantial part of said electrically conductive member as said blade is disengagably connected to said handle in said specific way for the first time.

4,406,281

FLUID IMPERMEABLE COVER FOR OPERATING ROOM TOURNIQUET

Vance M. Hubbard, Euless, and Welton K. Brunson, Bedford, both of Tex., assignors to Tecnol, Inc., Ft. Worth, Tex.

Filed Apr. 14, 1981, Ser. No. 254,193
Int. Cl.[3] A61B *19/00*
U.S. Cl. 128—132 R 12 Claims



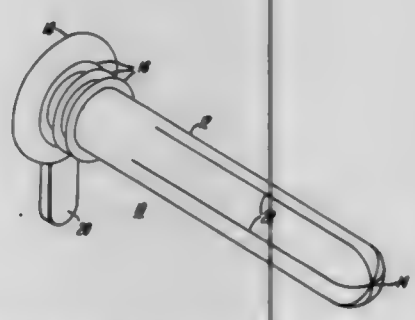
10. A method of shielding a hospital tourniquet comprising:
positioning a thin liquid impervious sheet around the limb of a patient more than one complete revolution;
disposing a tourniquet over the sheet adjacent one edge thereof around the limb of the patient to leave one edge of the sheet uncovered, the tourniquet having a width less than one half the width of the sheet; and
folding the free edge portion of the sheet over the tourniquet and covering the outer portion of the tourniquet to protect the inner and outer surfaces of the tourniquet from moisture and contamination, while preventing the skin of the patient from being pinched by the tourniquet.

4,406,282

EARPLUG FOR AN UNDERWATER DIVER

Bruce W. Parker, 1720 Cinderella Ave., and George L. LeVan, Suite 1200, 500 E. Robinson St., both of Norman, Okla. 73069

Filed Feb. 20, 1981, Ser. No. 236,532
Int. Cl.[3] A61F *11/00*
U.S. Cl. 128—151 11 Claims



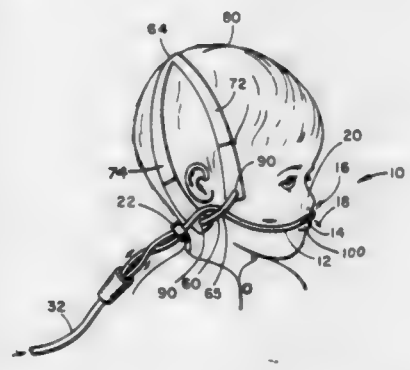
1. An earplug for the protection of an underwater diver, comprising:
a tubular vessel having a closed inner end, an outer end, and a wall member of freely flexible material having uniform thickness, said vessel being adapted for removable insertion into the auditory meatus; and
means connected to said vessel in proximity to said outer end for providing a seal between said vessel and the interior surface of the auditory meatus when said vessel is inserted therein;
said wall member having a first portion lying in proximity to the inner surface of the auditory meatus and a second portion connected to said inner end and folded back so as to be positioned parallel to and radially inward of said first portion such that the interface between said first and second portions is continuously movable over an extended length of said wall member to permit said first portion, said second portion, and said inner end to function as a freely rolling diaphragm in response to changes in the depth of said diver, whereby the volume of the auditory meatus between said sealing means and the tympanic membrane changes from a first volume to a second smaller volume to permit pressure equalization across the tympanic membrane.

4,406,283

OXYGEN CANNULAE FOR CONTINUOUS ADMINISTRATION OF OXYGEN, AND ITS ASSOCIATED MOUNTING STRUCTURE AND METHOD FOR MOUNTING SAME ONTO THE HEAD OF A PATIENT

Phillip Bir, R.R. 5 Box 78, LaGrange, Ind. 46761

Filed Feb. 4, 1982, Ser. No. 345,784
Int. Cl.[3] A61M *15/08*
U.S. Cl. 128—207.18 10 Claims



1. A looped oxygen cannula for distributing oxygen for inhalation: comprising a dual branched flexible tubular loop with each branch being hollow and forming an oxygen supply line one independent of the other and adapted to loop over the face and upper lip of the person intended to receive oxygen and conforming to the facial outline of the patient receiving such oxygen, said loop terminating at the rear of the person's head with both ends of the loop passing through a common opening, a choke member providing said opening for the loop ends and adapted to pass along the loop ends to adjust the size of the loop to conform with the outline of the person, oxygen supply means for providing an inflow of oxygen through each of the branches of said loop which are independently fed a continuous stream of oxygen in each such branch, said branches meeting in a frontal portion at the vicinity of the upper lip of the person and at the frontal area of the face, such frontal portion including a plurality of openings in the direct vicinity of the nose of the person and distributed both circumferentially and along the length of the cannula to provide at least some streams of oxygen directed toward the nasal passages of the person for direct inhalation, said oxygen supply means being disposed at the rear of the persons's head, support members disposed one at each of the opposite side faces of the person and operatively connected to respective branches to hold them in operative position, mounting means operatively secured to the head by conforming generally with the outline of the head to secure said mounting means to the skull of the user, said mounting means including support means adapted to extend downwardly along each respective side of the head and terminating approximately below the ear and at respective sides of the ear, the support members being connected to the support means at the respective sides of the head to support the branches, whereby the oxygen cannula is supported vertically in its operative position.

4,406,284

ULTRASONIC HANDPIECE DESIGN

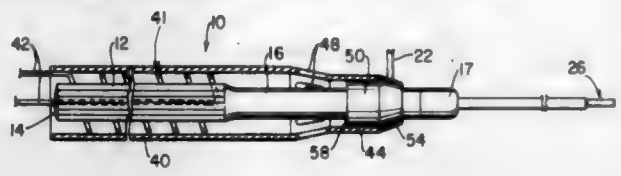
Anton Banko, Bronx, N.Y., assignor to Surgical Design Corp., Long Island, N.Y.

Filed Mar. 20, 1981, Ser. No. 245,667
Int. Cl.[3] A61B *17/32*
U.S. Cl. 128—303 R 8 Claims

1. An ultrasonic instrument comprising:

means for converting electrical energy into longitudinal vibratory motion,

workpiece means having one end coupled to said converting means and receiving the longitudinal vibratory motion of said converting means so that said workpiece also vibrates longitudinally, said workpiece means having a free work producing end spaced from said coupled end,



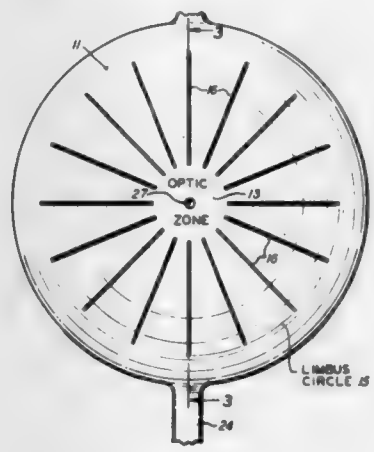
a housing within which said converting means is located and from which the free work producing end of said workpiece means extends, and support means of a low coefficient of friction non-elastic material engaging said housing and said workpiece means to permit vibratory longitudinal sliding motion of said workpiece means relative to said housing.

4,406,285

MANUAL RADIAL AND CHORDAL KERATOTOMETRY APPARATUS

Richard A. Villasenor, 14935 Rinaldi St., Mission Hills, Calif. 91345, and Leonard L. Krasnow, Worchester, Mass., assignors to Richard A. Villaseñor, Mission Hills, Calif.

Filed Jan. 23, 1981, Ser. No. 227,709
Int. Cl.³ A61F *17/32*
U.S. Cl. 128—305 **6 Claims**



1. Apparatus for guiding a surgical knife blade in keratotometry refractive eye surgery comprising a template adapted to fit an eye, a semi-spherical template body, fixation means on the template to secure the template with respect to the eye, a central optic zone on the template body, a visible locator index in the optic zone visible from outside the template, said body having an obverse surface concentric with the inner surface of the cornea and a reverse surface concentric with the outer surface of the cornea, and knife blade guide slits through the body.

4,406,286

FAST RECHARGE OUTPUT CIRCUIT

Marc T. Stein, Tempe, Ariz., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 9, 1981, Ser. No. 252,538
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **18 Claims**

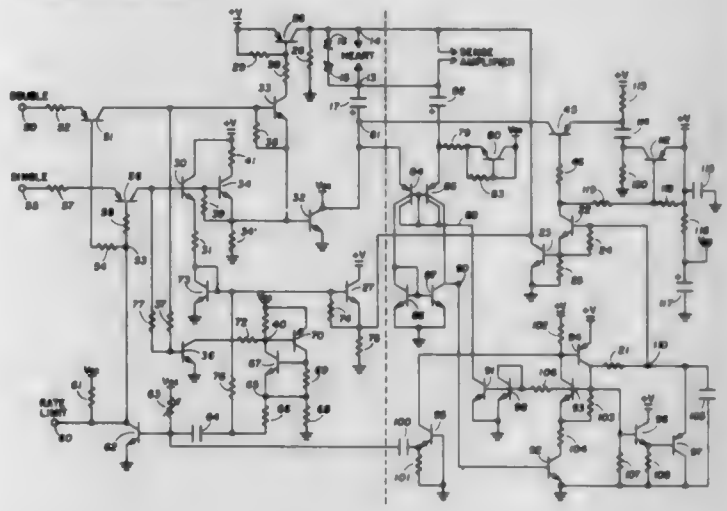
1. A body implantable stimulator of the type having power source means, pulse generator means for producing body stimulation signals and output means adapted for connection to the body for the delivery of said stimulation signals thereto comprising:

means for storing stimulation energy connected to said output means;

discharge circuit means for periodically discharging said stimulation energy storing means into said output means for providing said stimulation signals; and

recharge circuit means for recharging said stimulation energy storing means from said power source means to a predetermined level further comprising:

(1) means for storing reference energy connected to said output means;



(2) differential circuit means coupled to said stimulation energy storing means and said reference energy storing means for developing a difference signal dependent upon the difference in energy therebetween; and

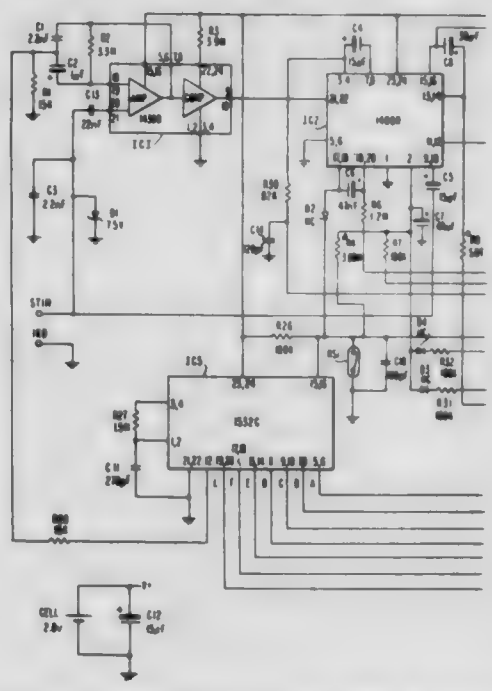
(3) recharge current source means responsive to said difference signal for providing a recharge current to said stimulation energy storing means until the energy levels of said stimulation energy storing means and said reference level energy storing means are substantially equivalent, whereby said stimulation energy storing means is recharged to said reference level regardless of the energy discharged by said discharge circuit means.

4,406,287

VARIABLE LENGTH SCANNING BURST TACHYCARDIA CONTROL PACER

Tibor A. Nappholz, Drummoyne; Stephen J. Swift, Hornsby, both of Australia, and Alan J. Camm, London, England, assignors to Telectronics Pty. Ltd., Lane Cove, Australia

Filed Jul. 17, 1981, Ser. No. 284,348
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **70 Claims**



1. A tachycardia control pacer comprising means for con-

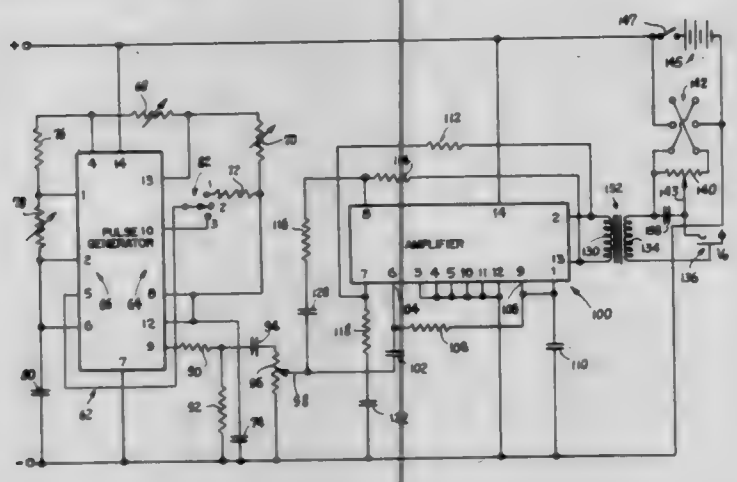
firming tachycardia, means responsive to each operation of said confirming means for generating a burst of heart stimulating pulses at a constant rate, and means for controlling scanning of heart stimulating pulse bursts with respect to both their numbers of pulses and their rates.

4,406,288

BLADDER CONTROL DEVICE AND METHOD

Elwood R. Horwinski, Cheshire, and Edward P. McGuire, Branford, both of Conn., assignors to Hugh P. Cash, Cheshire, Conn., by said Elwood R. Horwinski

Filed Apr. 6, 1981, Ser. No. 251,324
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—422 **20 Claims**



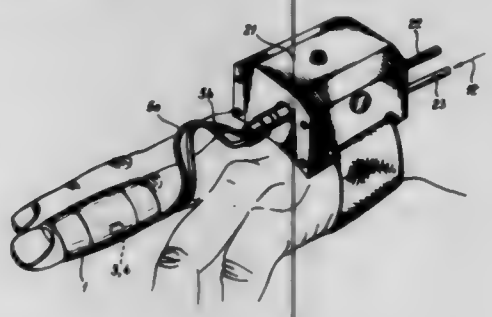
1. The method of conditioning the pelvic floor musculature of a living being, to inhibit bladder contractility so as to prevent involuntary urinary loss, comprising the steps of providing a pair of electrodes in contact with tissue associated with the floor musculature, applying a direct current bias potential difference to said electrodes, adjusting said direct current bias potential difference to a value below a predetermined threshold valuation as determined by the electrode orientation in the tissue, and simultaneously applying a repeated intermittent potential to said electrodes to cause resultant voltage values which are above said threshold valuation.

4,406,289

DEVICE FOR THE INDIRECT, NON-INVASIVE AND CONTINUOUS MEASUREMENT OF BLOOD PRESSURE

Karel H. Wesseling, Bunnik, and Wilhelmus H. Klawer, Nieuwegein, both of Netherlands, assignors to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk, The Hague, Netherlands

Filed Sep. 10, 1981, Ser. No. 300,745
Claims priority, application Netherlands, Sep. 12, 1980, 8005145
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—670 **10 Claims**



1. An apparatus for continuously measuring blood pressure in a non-invasive manner, comprising:

a pressurizable cuff adapted to be wrapped about a human extremity such as a finger;

a light source and light detector, both being provided at the inner side of said pressure cuff for developing an electrical signal indicative of an amount of blood in said extremity;

a control valve for controlling the pressure of fluid within the cuff; and

an electronic circuit for controlling the control valve in response to the electrical signal so as to control the fluid pressure in the cuff to substantially follow the blood pressure within the extremity so that the arterial volume is maintained to a predetermined value, the fluid pressure providing an indication of the blood pressure, the control valve comprising:

a valve chamber;

a fluid inlet nozzle for admitting fluid from a fluid source into the chamber;

a fluid exhaust nozzle for exhausting fluid from the chamber;

an output port for transmitting a pressure in the chamber to the pressure cuff; and

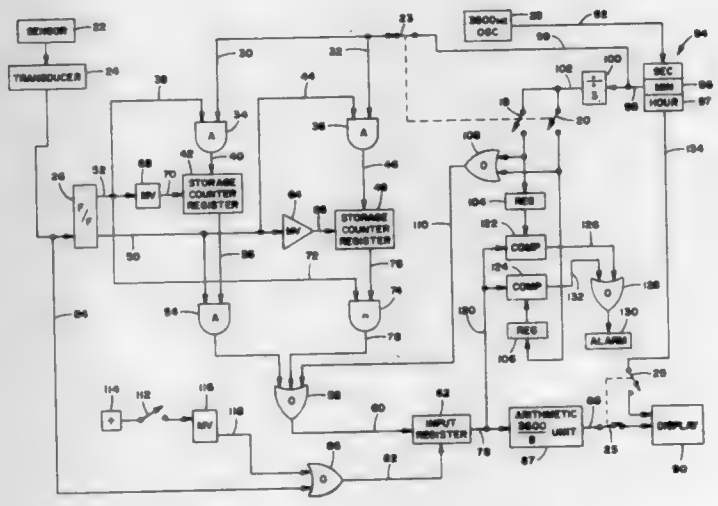
a single flapper member alternatively movable between a first position wherein it closes the fluid inlet nozzle while allowing the fluid exhaust nozzle to be open and a second position wherein it closes the exhaust nozzle while allowing the inlet nozzle to be open, there being a flow of fluid into the chamber through the inlet nozzle and a flow of fluid out of the chamber through the exhaust nozzle when the flapper member is at any position other than the first or second position.

4,406,290

WRIST-TYPE PULSE MONITOR

John H. Walbeoffe-Wilson, Colston House, Buckfastleigh, South Devon County; Julian D. Lynn-Evans, 5 St. John's St., Chichester, West Sussex, and Patrick D. Wright, 7 Priors Ct. St. John's Rd., Woking, Surrey, all of England

Continuation of Ser. No. 42,046, May 24, 1979. This application Feb. 17, 1981, Ser. No. 234,740
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—689 **14 Claims**



11. A heart pulse monitor for the human body comprising:

a. a device for engagement with a part of said human body,

b. a sensor in said device for detecting a heartbeat in a region of said part of said human body engaged by said device where a heartbeat is expected to normally occur,

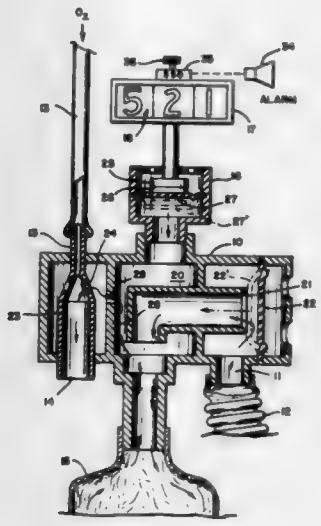
c. a transducer coupled to said sensor for converting each detected heartbeat to an electrical signal,
d. a source of electrical pulses of predetermined frequency,
e. means coupled to said transducer and said pulse source for receiving all of said pulses occurring between successive heartbeats and converting said pulses occurring only between each two successive heartbeats to a heartbeat rate, and
f. display means coupled to said converting means for displaying said heartbeat rate.

4,406,291

EXHALATION MONITORING APPARATUS

Dennis W. Schwesinger, 22708 Rodax St., Canoga Park, Calif. 91304

Filed Apr. 7, 1980, Ser. No. 138,071
Int. Cl.³ A61B 5/08
U.S. Cl. 128—728 2 Claims



1. An exhalation monitoring apparatus including, in combination:
(a) a manifold having a central chamber and an inlet opening for receiving exhaled gas from a patient;
(b) a flaccid bag connected to said chamber for collecting exhaled gas without appreciably affecting the pressure in said chamber;
(c) a pressure responsive valve means positioned between said inlet opening and said central chamber responsive to a chamber pressure below ambient pressure to close;
(d) a venturi in said chamber having an inlet port for connection to a source of driving gas outside said manifold, an outlet port for venting driving gas outside said manifold and an induction port at the throat of the venturi communicating with said chamber for drawing in exhaled gas received through said inlet opening;
(e) a partition in said chamber between said venturi and the interior chamber portion in communication with the flaccid bag, said partition having a fixed orifice through which exhaled air is passed to the venturi so that the flow rate of said exhaled air passing into the induction port of said venturi is held substantially constant by said orifice; and
(f) pressure responsive means including an electrical switch means, timer and digital display, said electrical switch means closing to start the timer in response to the pressure in said chamber changing from a negative value to ambient pressure as a result of exhaled gas being received into said chamber, and responsive to the pressure in said chamber changing back to a negative value as a result of all of said exhaled gas having been exhausted from said chamber by said venturi to terminate operation of said timer, said timer providing a signal defining the length of time the pressure switch means is closed to thereby define the volume of exhaled gas, said digital display being responsive to said signal to indicate said volume in volumetric units.

4,406,292

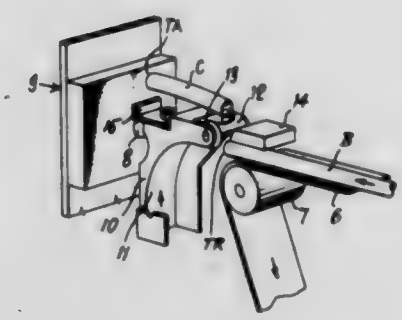
Patent Not Issued For This Number

4,406,293

ROD-BREAKING DEVICE

Paolo Maldina, Bologna, Italy, assignor to Sasib S.p.A., Bologna, Italy

Filed Jul. 2, 1981, Ser. No. 280,081
Claims priority, application Italy, Jul. 11, 1980, 12594 A/80
Int. Cl.³ A24C 5/28
U.S. Cl. 131—84 R 3 Claims



1. A rod-breaking device for a continuous-rod cigarette-making machine, comprising a deflecting guide (10) adapted to be moved across the normal straight path of a cigarette rod (B) issuing from a rod-forming mechanism of said machine and entering the inlet (8) of a rod-processing unit, in which the movement of said deflecting guide (10) in a first direction, into an active position causes movement of a portion of said deflecting guide from below to above the normal straight path of the rod, such movement of said portion serving to break the rod by cooperating with an edge of a fixed abutment (14) arranged above the normal straight path of the rod (B), the deflecting guide including a deflecting surface that is located such that when the deflecting guide (10) stops in the active position the rod is deflected out of the said normal straight path by the

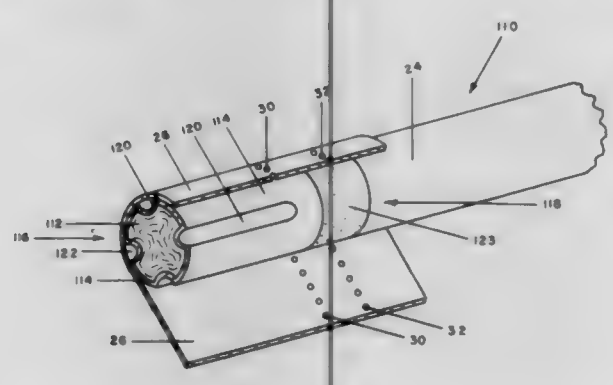
deflecting surface, while movement of the said deflecting guide (10) in the opposite second direction, into an inactive position, serves to break the rod and to bring the said deflecting guide (10) to a position outside of the normal straight path of said rod, characterized by the fact that a transverse blade (15) is operatively associated with the said deflecting guide (10), said blade (15) being movable across the normal straight path of the cigarette rod (B) close to the inlet (8) of the processing unit, in such a manner that during the movement of the deflecting guide (10) in the said first direction, the said blade (15) moves concurrently with the said deflecting guide (10) and cuts with a clean cut the tail portion of the cigarette and rod entering the inlet (8) of the processing unit, thus eliminating a segment of rod delimited downstream by the said cut effected by the blade (15) and upstream by the break effected by the cooperation of the deflecting guide (10) with the fixed abutment (14).

4,406,294

CIGARETTE FILTER

Charles G. Lamb, Anchorage, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Feb. 16, 1982, Ser. No. 349,103
Int. Cl.³ A24D 3/04
U.S. Cl. 131—336 **10 Claims**



1. A filter for a cigarette comprising:
a porous filter rod of generally cylindrical configuration;
an air permeable wrapper extending longitudinally along said filter rod from one end thereof to the other end and circumscribing said rod leaving flow-through opposed end of said filter rod;
said wrapper being formed with at least one groove embedded into said filter rod, said at least one groove being open at one end of said filter rod and extending therefrom in a generally longitudinally direction of said filter rod for a distance less than the length of said filter rod;
means for rendering the embedded wall of said at least one groove defined by said wrapper material impermeable to air and smoke, at least a portion of said wrapper outside of said at least one groove remaining permeable to air; and
tipping material extending longitudinally of and circumscribing said wrapped filter rod, said tipping material being air permeable permitting ventilating air flow therethrough into said at least one groove, and also permitting ventilating air flow therethrough into said filter rod through said permeable portion of said wrapper to comingle with and dilute smoke flowing through said filter rod from one end to the other end of said filter rod.

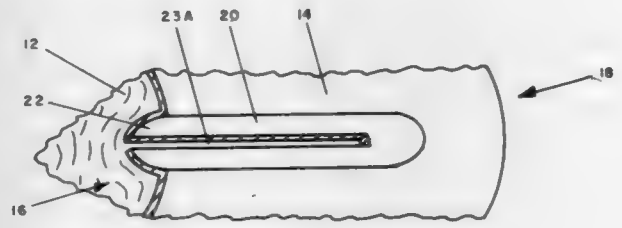
4,406,295

CIGARETTE FILTER

Robert A. Sanford, Prospect, and Andrew McMurtrie, Louisville, both of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Feb. 16, 1982, Ser. No. 349,232
Int. Cl.³ A24D 3/04
U.S. Cl. 131—336 **24 Claims**

1. A filter for a cigarette comprising:
a porous filter rod of generally cylindrical configuration;
an air impermeable wrapper extending longitudinally along said filter rod from one end thereof to the other end and circumscribing said rod leaving flow-through opposed ends of said filter rod;
said wrapper being formed with at least one groove embedded into said filter rod, said at least one groove being open at one end of said filter rod and extending therefrom in a generally longitudinally direction of said filter rod for a distance less than the length of said filter rod;



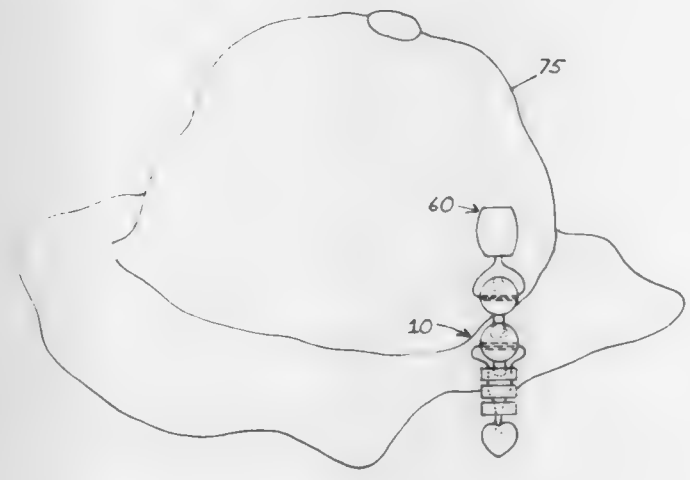
air permeable means formed through the wall of said at least one groove defined by the embedded portions of said wrapper over substantially the entire length of said groove, the rest of the peripherial surface of said wrapper outside of said at least one groove being air impermeable; and
tipping material extending longitudinally and circumscribing said wrapped filter rod, said tipping material being air permeable in a zone thereof overlaying said at least one groove.

4,406,296

JEWELRY SYSTEM

Howard Wexler, 300 E. 40 St., New York, N.Y. 10016, and Joseph Spano, Bronx, N.Y., assignors to Howard Wexler, New York, N.Y.

Filed Jan. 15, 1982, Ser. No. 339,824
Int. Cl.³ A44C 7/00
U.S. Cl. 132—148 **13 Claims**



1. A swivel bead jewelry construction comprising:
(a) a bead body of resilient material having
(i) a protruding male connector comprising a neck terminating in a plug,
(ii) a female connector opposite the male connector and comprising a cavity opening into said body having a minimum-cross-section-portion spaced from the inner end thereof,
the dimensions of the plug and cavity being chosen so that the plug can be forced past the minimum-cross-section-portion of a cavity of a similarly shaped female connector and a similarly

shaped male connector could be forced past the minimum-cross-section-portion of the cavity,

(iii) an opening therethrough, the opening being oriented substantially perpendicular to the axis of the male and female connectors,

(b) a ring whose central opening is larger than the maximum cross-sectional area of the plug, and

(c) a string passing through the opening in the bead body and the ring and being attached to the ring,

the length of the string being predetermined so that when the bead body is rotated about the string extending therethrough so that the male connector approaches the ring, tension must be exerted on the string to enable the plug to slip over the body of the ring into the central opening thereof.

13. A swivel bead construction comprising: a first body having a protruding male connector, a female connector comprising a cavity opening into said body having a minimum-cross-section-portion spaced from the inner end thereof, the dimensions of the plug and cavity being chosen so that the plug can be forced past the minimum-cross-section-portion of a cavity of a similarly shaped female connector and a similarly shaped male connector could be forced past the minimum-cross-section-portion of the cavity and an opening through the bead body, a second body having attached thereto a patch of hook and loop fastener material, and a string, wherein the string passes through the opening in the first body so that the first body is strung on the string and the ends of the string are attached to the second body.

4,406,297

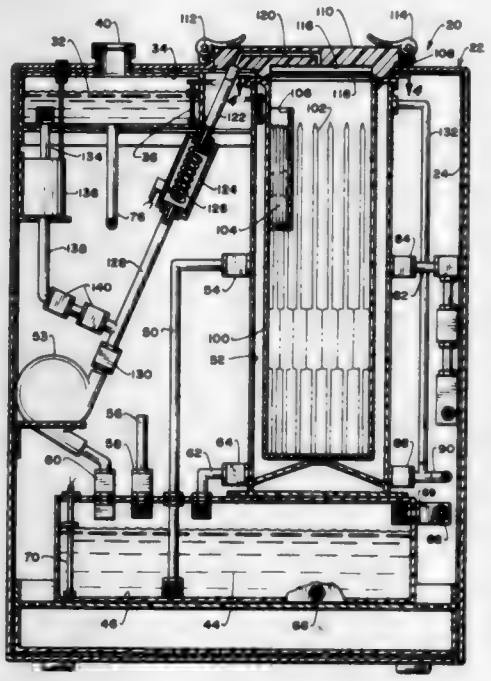
PIPET WASHER

John R. Walton, 2558 Seahorse Ave., Ventura, Calif. 93001

Filed Nov. 23, 1981, Ser. No. 323,761

Int. Cl.³ B08B *3/04, 9/00*

U.S. Cl. 134—102 **11 Claims**



1. A pipet washer and dryer comprising:

a container assembly adapted to contain a quantity of pipets to be washed;

an acid storage tank for containing a volume of liquid acid solution, said acid storage tank being capable of conducting said acid solution into said container assembly and from said container back into said acid storage tank;

a first source of rinsing solution connected to said container assembly, said first source to supply said rinsing solution into said container substantially filling said container assembly and then to be drained from said container assembly; and

a second source of rinsing solution connected to said container assembly, said second source of rinsing solution to function as a final rinse into said container assembly and is to then be drained therefrom.

4,406,298

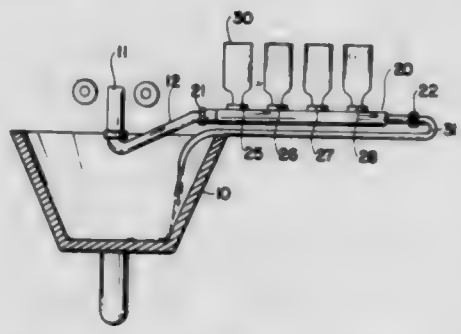
APPARATUS FOR CLEANING DYE BOTTLES OR SIMILAR ARTICLES

Jack Martin, 434 Rahway Ave., Woodbridge, N.J. 07095

Filed Dec. 14, 1981, Ser. No. 330,214

Int. Cl.³ B08B *9/08*

U.S. Cl. 134—167 R **10 Claims**



1. Apparatus for cleaning bottles comprising:

an elongated tubular member having an inlet opening at one end adapted to be connected to a fluid source, and having outlet means for discharging fluid, said tubular member having a plurality of apertures in a surface with said apertures arranged in groups and spaced apart at predetermined intervals;

a plurality of coupling members each associated with and surrounding a separate group of apertures with an opening of each of said coupling members associated with a separate group of apertures, and means located about each opening of each coupling member for accomodating a separate bottle, whereby when each coupling member is accomodating a bottle, fluid at said inlet enters each bottle via said group of apertures to clean the same with said fluid discharged via said outlet means

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4,406,299

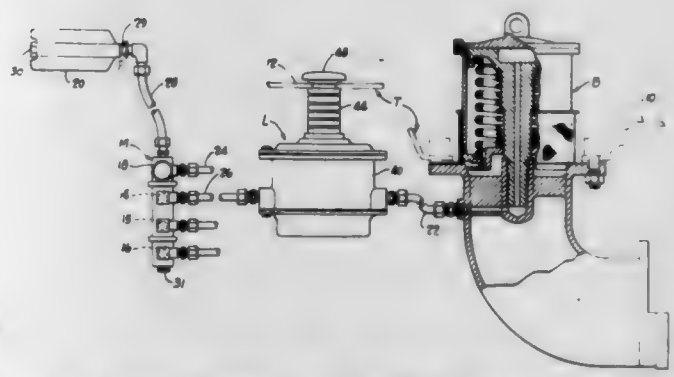
LIQUID LEVEL VALVE

Joseph H. DeFrees, Warren, Pa., assignor to Barbara Baldwin DeFrees, Warren, Pa.

Division of Ser. No. 1,002, Jan. 4, 1979, Pat. No. 4,316,484. This application Apr. 20, 1981, Ser. No. 255,864

Int. Cl.³ F16K *17/40, 31/143, 31/145*

U.S. Cl. 137—71 **4 Claims**



1. A liquid storage tank liquid lading loading system comprising, an emergency loading valve held open by an associated source of auxiliary pressurized air, a liquid level valve disposed in the interior of the tank and connected to said emergency valve and actuated in responsive to increased tank interior air pressure to discharge the auxiliary pressurized air and close the emergency valve, a distributor valve connected to the liquid level valve to distribute the auxiliary pressurized air thereto, and a master control valve connected to the distributor valve and connected to the associated source of pressurized air to control the flow of such pressurized air in the distributor

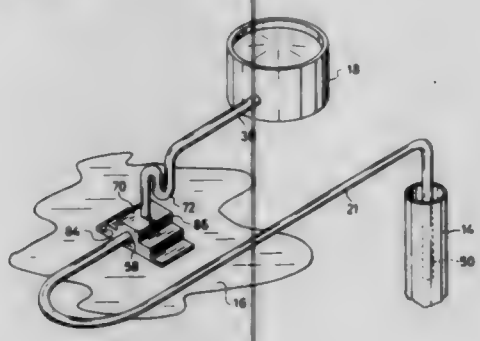
valve, said master control valve being spring-loaded to closed position whereby only manual actuation thereof maintains the same in open position.

4,406,300

ROOF SIPHON DRAIN

Edwin H. Wilson, 605 Dutch Valley Rd., Knoxville, Tenn. 37918

Filed Jan. 19, 1981, Ser. No. 226,440
Int. Cl.[3] F04F *10/00*
U.S. Cl. 137—132 4 Claims



1. Apparatus for siphoning liquid which accumulates in a ponding area located at a first level to a second level lower than said first level in a drain means comprising:

a first liquid conduit having a receiving end and a discharge end, said receiving end of said first liquid conduit terminating at a valve unit and said discharge end terminating in said drain at said second level located a selected distance below said receiving end;

a second liquid conduit having an upper end terminating at a receiving tank and a lower end terminating at said valve unit;

a reservoir for accumulating a selected volume of liquid at least sufficient to completely fill said first liquid conduit, said reservoir being located at a level above said discharge end of said first liquid conduit, and being pivotally mounted and balanced such that when said selected volume of liquid has accumulated, said reservoir will pivot and dump said selected volume of liquid;

said receiving tank located below said reservoir, and said receiving tank being connected to said upper end of said second liquid conduit with a liquid tight connection so that said selected volume of liquid will flow through said second liquid conduit; and

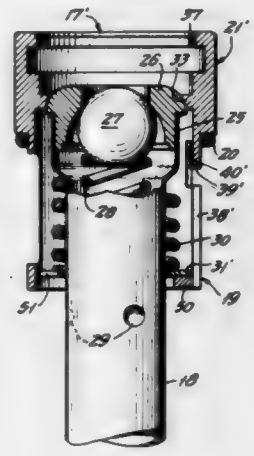
said valve unit located in said accumulated liquid in said ponding area and having a liquid tight connection with said receiving and of said first liquid conduit and said lower end of said second liquid conduit, said valve unit having a first operating position for providing a first liquid path between said accumulated liquid in said ponding area to said receiving end of said first liquid conduit, and said valve unit being suitable for switching to a second operating position when said selected volume of liquid is dumped from said reservoir to said receiving tank such that said first liquid path is closed and a second liquid path is provided between said lower end of said second liquid conduit and said receiving end of said first liquid conduit such that said dumped liquid flowing through said second liquid conduit completely fills said first liquid conduit to initiate a siphoning action between said receiving end and said discharge end of said first liquid conduit, said valve unit switching back to said first operating position after said siphoning action is initiated to move liquid accumulated in said ponding area through said first liquid conduit to said drain means.

4,406,301

KEG-TAPPING STRUCTURE

Vincent J. Cerrato, Pomona, N.Y., assignor to Vending Components, Inc., Hackensack, N.J.

Continuation-in-part of Ser. No. 251,955, Apr. 7, 1981, Pat. No. 4,363,336. This application Jul. 8, 1981, Ser. No. 281,557
The portion of the term of this patent subsequent to Dec. 14, 1999, has been disclaimed.
Int. Cl.[3] F16K *35/00*
U.S. Cl. 137—212 7 Claims



1. As an article of manufacture, a valve and downtube subassembly adapted for removable connection of a tapping unit to a keg, wherein the keg has a cylindrical annular neck with a bore having near its upper end a circumferential groove adapted to removably receive a retaining ring and with a seal-seating radially inward neck flange near the lower end of the bore, the valve and downtube subassembly being removably receivable in said neck with the downtube projecting through and downwardly of said flange;

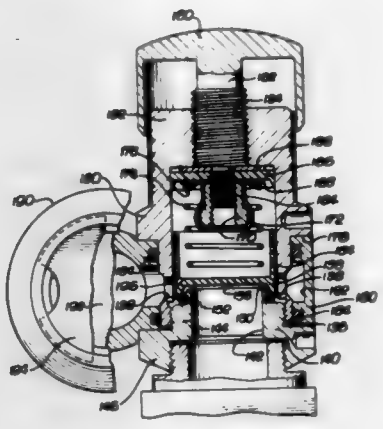
said valve and downtube subassembly comprising an annular housing having a radially inward valve-seat flange, said housing including an upper annular portion insertably receivable in said bore and adapted for seal-seated support by said neck flange when retained at its upper end by a retaining ring seated in said groove, said housing further integrally including a lower annular portion extending below said neck flange, the valve of said subassembly comprising an annular seat in lower abutment with the upper end of said tube and in upper abutment with said valve-seat flange, a compression spring within said annular housing and reacting between the lower end of said housing and the upper end of said tube to compressionally load said annular seat between said upper and lower abutments; and

one or more integral radially inward lugs on said neck flange, said lower annular portion having one or more longitudinal slots engageable with said lugs on tube insertion through said neck, each slot terminating in an angular bayonet offset and in a further longitudinally upward offset, whereby subassembly insertion involves a first lug-keyed longitudinally downward displacement followed by angular rotation through the bayonet offset and ending with a second lug-keyed longitudinally downward displacement, so that independent of any retention of said subassembly via a retaining ring in said groove, the longitudinally limited extent of lug engagement in the further slotted-offset relation will assure against removal or expulsion of said subassembly, in the absence of a deliberate bayonet-dislocating angular displacement.

4,406,302
POP-OFF GAS EVACUATOR VALVE FOR ANESTHESIA MACHINE

Russell Olesen, Huntington, N.Y., assignor to Puritan-Bennett Corporation, Kansas City, Mo.

Filed May 26, 1981, Ser. No. 267,348
Int. Cl.³ F16K *17/06*
U.S. Cl. 137—514.5 6 Claims



1. A pop-off valve for use in a gas anesthesia machine, said valve comprising:

a valve housing having a lower end and a closed upper end;

a valve seat located in said lower end and being connectable to a breathing system from which excess pressure is to be relieved;

a valve poppet sized to slide freely in said body and having a cylindrical shape with a closed lower end wall and a peripheral wall about said end presenting a frustoconical surface to said valve seat;

a compression spring for biasing said valve poppet onto said valve seat;

means for adjusting the spring-biasing force applied to said valve poppet;

a plurality of openings in said housing close to said valve seat, to provide a fluid path for gas after said valve poppet is lifted from said valve seat; and

fluid communication means for connecting said plurality of openings with an output line;

whereby the shape of said poppet provides an improved valve characteristic and effectively eliminates valve vibration, and wherein said valve poppet includes at least one vent-hole extending through its sidewall, to provide a controlled dampening effect on rapid movements of said valve poppet, thereby further moving a resonance condition away from a normal operating region.

4,406,303
GATE VALVE WITH POSITION INDICATOR

James E. Kilmoyer, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Aug. 4, 1981, Ser. No. 289,932
Int. Cl.³ F16K *37/00*
U.S. Cl. 137—554 3 Claims

1. A valve for subsea applications, said valve having a valve body defining a valve chamber and having inlet and outlet flow passages in fluid communication with the valve chamber, a valve element within said valve chamber and being movable between open and closed positions thereof for controlling the flow of fluid through said flow passages;

means for imparting movement to said valve element between said open and closed positions;

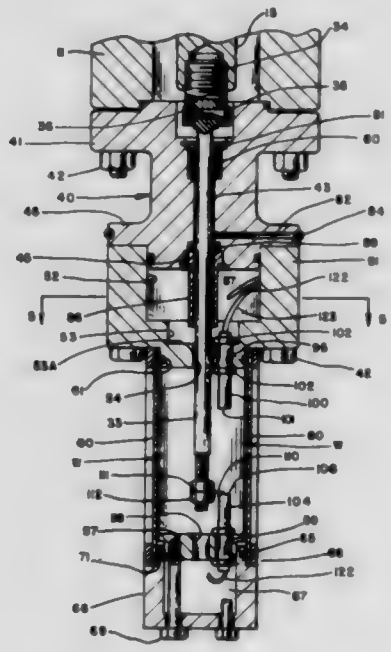
a valve position indicator housing attached to said valve body, said housing being filled with a transparent oil or other electrically non-conductive, non-corrosive liquid;

an extension member secured to said valve element and extending from said valve element into said indicator housing, said extension member being movable within said indicator housing between a first position wherein said valve element closes said valve and a second position wherein said valve element opens said valve;

means for sealing off said indicator housing from fluid communication with said valve chamber;

a diaphragm means comprising a diaphragm installed in the wall of said indicator housing in a position exposed to the fluid within said indicator housing and the fluid pressure external of said housing to thereby avoid pressure differentials across said housing, said diaphragm means being responsive to the movement of said valve element extension member inwardly and outwardly of said indicator housing to accommodate volume changes induced in said indicator housing by said extension member;

circuit means for transmitting valve position signals to signal receiving apparatus when said valve element is in said closed and open positions, said circuit means comprising a first electrical impedance element fixed in said indicator housing at a location adjacent said extension member corresponding to a first extremity of movement of said valve element and extension member when said valve element closes said valve, and a second electrical impedance element fixed in said indicator housing at a location adjacent said extension member and corresponding to the second extremity of movement of said valve element and extension member when said valve element opens said valve, with the spacing between said first and second electrical impedance elements corresponding substantially to the extent of travel of said extension member between said first and second positions;



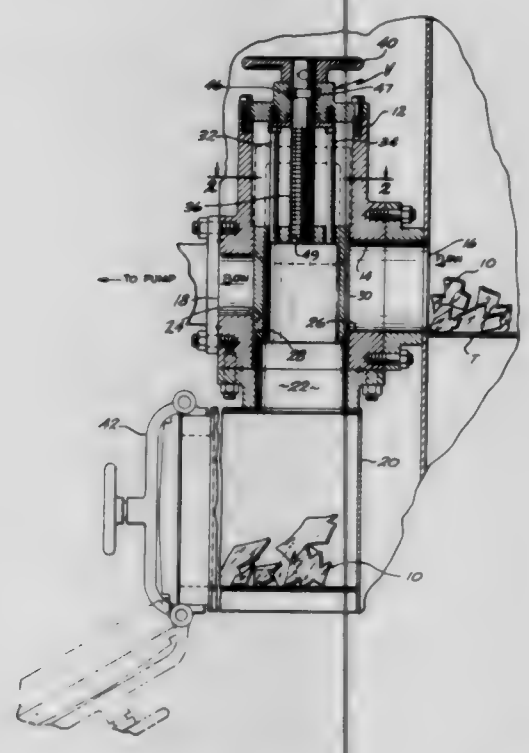
a metallic appendage affixed to said extension member and disposed along the path between said first and second electrical impedance elements whereby movement of said valve element to the open or closed positions causes said appendage to move in contact or in proximity to one of said electrical impedance elements as to affect the electrical impedance thereof;

said circuit means being responsive to impedance changes induced in said first and second impedance elements by proximity to or in contact with said appendage on said extension member when in said first and second positions for producing electrical output signals indicating when said valve element is in the closed and open positions.

4,406,304
PISTON TYPE VALVE

Michael Vamvakas, 2739 Country Club Blvd., Rocky River, Ohio 44116, assignor to Michael Vamvakas, Rocky River, Ohio

Filed Aug. 6, 1981, Ser. No. 290,430
Int. Cl.[3] B01D *21/02*
U.S. Cl. 137—544 10 Claims

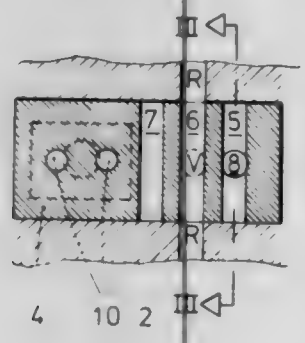


1. A piston type valve comprising, a valve body having a horizontally disposed fluid flow passageway with an inlet at one end of the passageway and an outlet at the other end of the passageway with said outlet being in horizontal alignment with said inlet, a valve piston operatively mounted in said body for selective vertical movement to and away from said inlet and outlet to selectively close and open the passageway and control fluid flow therethrough, a debris holding tank disposed on said valve body below said passageway and in fluid flow communication therewith, and means disposed in said passageway at the outlet thereof for intercepting debris in the fluid flow and deflecting it into the tank.

4,406,305
CONTROL VALVE

Rudolf Brunner, Baldham, Fed. Rep. of Germany, assignor to Heilmeier & Weinlein, Munich, Fed. Rep. of Germany

Filed Jan. 5, 1981, Ser. No. 222,701
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1980, 3000592
Int. Cl.[3] F15B *13/08*
U.S. Cl. 137—596 6 Claims

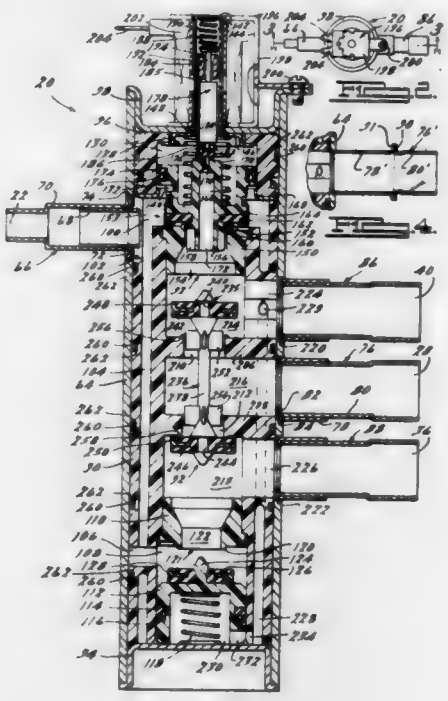


1. Control valve of a control valve assembly having a neutral position and two control positions and consisting of at least two interconnected substantially identical control valves, each valve with a housing traversed by a slide bore and a piston slide moveable in the bore from a neutral position longitudinally into two opposed control positions, and restrained from rotation, each housing with a pump connection (P) and at least one consumer connection (V) off-set thereto in the longitudinal direction of the bore, and with two return flow connections (R) opening into the slide bore to cooperate with the consumer connection and off-set from one another in the circumferential direction, the return flow connections belonging to a return flow duct traversing the housing, and with a flow path in the piston slide with which in one control position the consumer connection is connected to the return flow duct, characterized in that the piston slide (4, 12, 14, 15, 26) the flow path in the piston (5, 8; 17; 20; 36) is combined with additional piston slide passages (6, 7; 16; 18; 21; 37, 35) arranged so that both in the neutral position and also in each control position (A, B) the piston slide provides a through-flow connection between the return flow connections (R) within the slide bore (3; 25).

4,406,306
HEAT PUMP SWITCHOVER VALVE

Lawrence A. Kolze, Bensenville, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 19, 1982, Ser. No. 359,731
Int. Cl.[3] F16K *31/122*
U.S. Cl. 62—324.6 14 Claims



1. A heat pump switchover valve comprising: body means defining,

(i) an inlet port,

(ii) first and second reversing valve ports, and

(iii) a suction port;

first valve means operative to selectively interconnect said inlet port and said first reversing valve port for fluid communication therebetween;

actuator means operatively engaging said first valve means to establish said fluid communication in response to a control signal;

second valve means operative to selectively interconnect said inlet port and said second reversing valve port as a function of sensed fluid pressure differential between said inlet port and said first reversing valve port; and

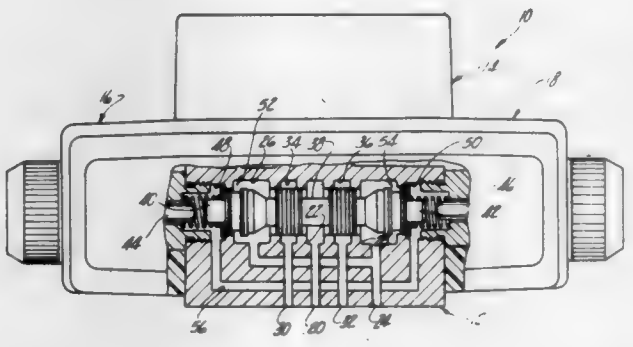
third valve means operative to selectively, alternately interconnect said suction port with said first and second reversing valve ports as a function of sensed fluid pressure differential between said suction port and said first and second reversing valve ports.

4,406,307

DIRECTIONAL VALVE WITH SPOOL TRANSFER LOOP

Ronald L. Loup, Clarkston; Curtis H. Day, Manchester, and Rainer Teichert, Plymouth, all of Mich., assignors to Double A Products Company, Manchester, Mich.

Filed Mar. 31, 1981, Ser. No. 249,348
Int. Cl.³ F15B *13/044*
U.S. Cl. 137—625.65 **10 Claims**



1. A solenoid operated directional valve having a valve body provided with passageways for directing flow of hydraulic fluid, a spool mounted for movement in the valve body and movable to selected positions for controlling flow of hydraulic fluid through the passageways, oppositely acting solenoids arranged to actuate the spool in one direction or the other, cushioning chambers in the valve body adjacent to each solenoid for containing hydraulic fluid and into which the ends of said spool can enter, the ends of said spool defining attenuation elements for displacing fluid in the chambers to cushion the movement of the spool, said valve body having a transfer loop providing communication between said chambers for restricting displacement of the fluid from one chamber to the other in response to movement of the attenuation elements, characterized in that said attenuation elements have pump means responsive to movement of said spool for transferring hydraulic fluid from said passageways into said cushioning chambers and their interconnecting transfer loop when the attenuation elements enter the cushioning chambers and for transferring gaseous fluids from said cushioning chambers and their interconnecting transfer loop into said passageways when the attenuation elements move out of the cushioning chambers, each said pump means comprising a pumping chamber constructed and arranged cooperatively with respect to the valve body such that over a limited extent of the spool travel the pumping chamber is blocked from simultaneous communication with both the corresponding cushioning chamber and the corresponding passageway.

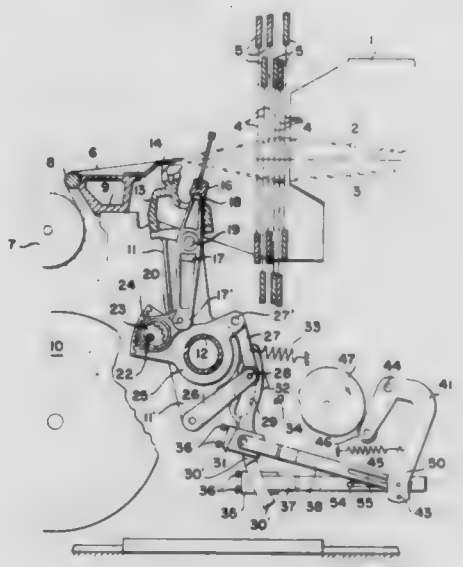
4,406,308

DEVICE FOR CHANGING THE REED BEATING POSITION IN LOOMS FOR TERRY FABRICS

Luciano Corain, Vicenza, Italy, assignor to Nuovo Pignone S.p.A., Florence, Italy

Filed Oct. 31, 1980, Ser. No. 202,713
Claims priority, application Italy, Nov. 26, 1979, 27544 A/79
Int. Cl.³ D03D *39/22*
U.S. Cl. 139—27 **3 Claims**

1. A device for changing the reed beating position from a "closed" position to an "open" position and vice versa in a loom for terry fabric, comprising a reed hinged to the loom sley and provided with followers cooperating with corresponding cams on a cam shaft engaged, by means of a gear rigid therewith, with a toothed sector rotated by a vertical rocker arm hinged to a fixed part of the loom and operated in its turn by a control cam by way of a control lever which, maintained by a spring resiliently in contact with the profile of said control cam, acts on the shank of said vertical rocker arm by means of a bar, wherein the feet of the followers rigid with the reed are respectively connected by connecting rods to corresponding cams keyed on to said cam shaft, which is rotatably supported by said loom sley in proximity to the rotational axle of said sley, and said toothed sector is supported by a member mounted idly on said rotational axle of the sley and hinged to the lower end of said sley by two arms hinged together, the common joint of which is inserted and guided in an aperture in the form of a circular arc provided in said vertical



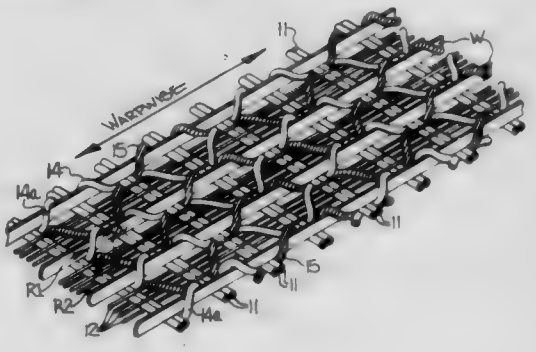
rocker arm, which is hinged to a fixed part of the loom at the lower end of said aperture and is kept resting by a spring on a fixed shoulder of the loom, in which condition the reed is in its said "closed" position, means also being provided for varying said "open" position of the reed, and thus the height of the terry, without having to halt the loom.

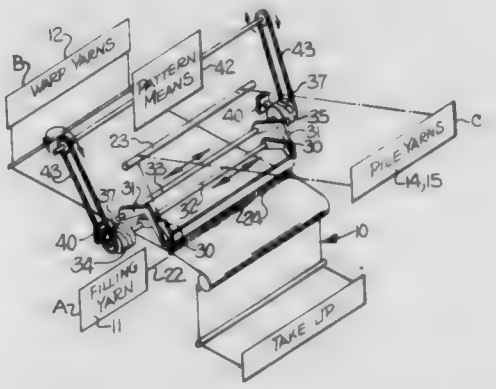
4,406,309

METHOD AND APPARATUS FOR FORMING A WOVEN PILE FABRIC

Paul A. Czelusniak, Jr., Eden, N.C., assignor to Fieldcrest Mills, Inc., Eden, N.C.

Continuation-in-part of Ser. No. 272,505, Jun. 11, 1981. This application Oct. 5, 1981, Ser. No. 308,402
Int. Cl.³ D03D *27/06, 39/20*
U.S. Cl. 139—402 **13 Claims**





1. A method for forming a woven pile fabric having warp-

wise extending rows of pile tufts formed from two sets of pile yarns with the tufts formed of the two sets being arranged in a predetermined alternating sequence in each row warpwise of the fabric comprising forming a base fabric by interweaving ground warp and weft yarns while at times forming pile tufts in each row from one set of pile yarns and alternatively and at other times forming pile tufts in each row from the other set of pile yarns while floating weftwise over and across ground warp yarns extending between the warpwise extending rows of pile tufts that set of pile yarns that is not then forming pile tufts.

8. In a loom for weaving pile fabrics having warpwise extending rows of pile tufts formed from two sets of pile yarns with the tufts formed of the two sets being arranged in a predetermined alternating sequence in each row warpwise of the fabric and said loom having means for weaving a base fabric of ground warp and weft yarns, said loom also having a plurality of warpwise extending pile wires spaced weftwise of and overlying the base fabric, and a pair of sets of movable pile yarn guides arranged in weftwise rows for guiding respective sets of pile yarns to the fell of the base fabric being woven, the combination therewith of

pattern controlled means for selectively shogging weftwise said sets of pile yarn guides over and across said pile wires and into the base fabric being woven for forming pile loops from the respective pile yarns over and across the pile wires, and said pattern controlled means being operable, whenever the pile yarn guides in either one of said sets are being shogged over pile wires, to alternatively shog weftwise the pile yarn guides of the other set over and across only those portions of the base fabric located between the pile wires so as to form floats of the respective pile yarns over said portions of the base fabric which extend between the pile loops.

4,406,310

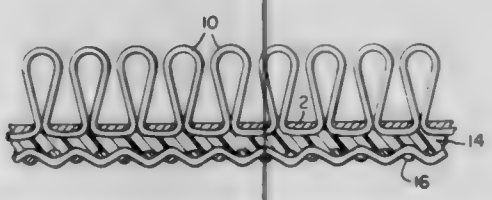
SECONDARY CARPET BACKING FABRICS

Arthur M. Reader, 7939 Shallowmeade La., Chattanooga, Tenn. 37421, and Robert D. Evans, 44 Tubbs Springs Dr., Weston, Conn. 06880

Filed Mar. 12, 1980, Ser. No. 129,629

Int. Cl.³ D03D *15/00*

U.S. Cl. 139—420 R **22 Claims**



1. A secondary carpet backing fabric woven from man-made fiber warp and weft yarns, said warp yarns being ribbon yarns, and at least every fourth weft yarn having a random intermingled array of loops and filaments, weft yarns not having a random intermingled array of loops and filaments being ribbon yarns.

4,406,311

WEFT GUIDING COMB FOR A JET LOOM

Karel Vystrcil, Brno; Vladimir Vasicek, Moravsky Krumlov, and Vladimir Kuda, Blazovice, all of Czechoslovakia, assignors to ZVS Vyzkumnevyvojovy ustav konecernova ucelova organizace, Brno, Czechoslovakia

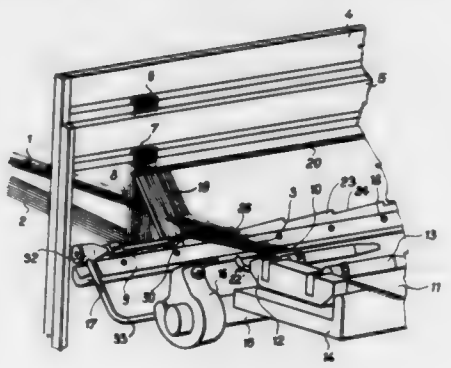
Filed May 26, 1981, Ser. No. 266,657

Claims priority, application Czechoslovakia, Jun. 5, 1980, 3961-80

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 **7 Claims**

1. In a jet loom having a mechanism for the insertion of weft threads into the loom shed by a stream of fluid weft-carrying medium, said loom having a slay, a reed created by flat dents mounted on the slay to beat up the inserted weft to the fabric, and a weft guiding comb arranged on the slay, the improvement wherein the comb comprises a relay body located under the lower warp threads of the shed at the reed, the wall of the relay body which abuts the lower warp threads of the shed creating one part of the weft guiding comb wall, said one part of the comb wall being provided with saw-toothed projections the back surfaces of which are engaged by the warp threads of the shed in at least the moment of weft insertion, in faces of the saw-toothed projections, transverse to the direction of weft insertion, there being the mouths of relay nozzles pointing in





the direction of weft insertion, the other part of the weft guiding comb wall being created by backs of the dents of the reed, the dents being provided with nose extensions above the wall of the relay body which is provided with saw-toothed projections, the length of the nose extensions corresponding to the width of the back surface of the saw-toothed projections of the relay body, in at least a part of the length of the weft guiding comb the distance between the backs of the nose extensions of the dents of the reed and the back surface of the saw-toothed projection of the relay body decreases in a direction toward the binding point of the woven fabric.

4,406,312

APPARATUS FOR SELECTING A NUMBER OF WEFT THREADS AT WEAVING MACHINES

Gerhard Egbers; El S. El Helw, both of Reutlingen, and Helmut Weinsdörfer, Pliezhausen, all of Fed. Rep. of Germany, assignors to Aktiengesellschaft Adolf Saurer, Arbon, Switzerland

PCT No. PCT/CH80/00115, § 371 Date May 26, 1981, § 102(e) Date May 26, 1981, PCT Pub. No. WO81/01017, PCT Pub. Date Apr. 16, 1981

PCT Filed Sep. 29, 1980, Ser. No. 269,033

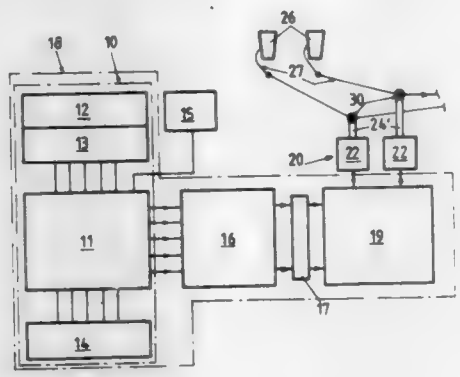
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1979, 2940202

Int. Cl.³ D03D *47/38*

U.S. Cl. 139—453 **6 Claims**

1. In a weaving machine, especially a shuttleless loom comprising a selection device for programmed selection of weft threads from a plurality of weft threads, each of which selected weft thread is to be inserted into a weaving shed by means of an insertion device, at least one weft thread carrier, said selection device comprising a program control device and a posi-

tioning device controllable by said program control device for displacing said at least one weft thread carrier which carries a related weft thread to a position where the momentarily selected weft thread is in an active position serving for the weft insertion and the other weft threads are in passive positions from which they cannot be inserted into the weaving shed, said program control device being constructed so as to produce electric program control signals, said positioning device comprising at least one electromagnet controllable by program



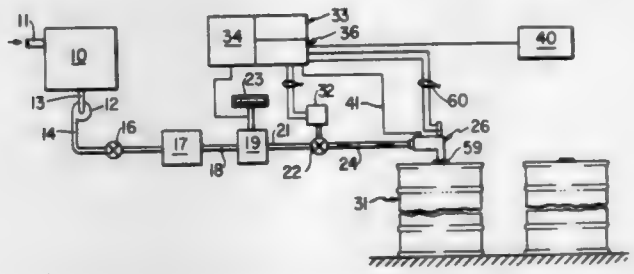
control signals received from the program control device, said at least one electromagnet controlling the positioning of the weft thread carrier and serving to transfer the related weft thread thereof from the passive position to the active position and vice versa, said program control device comprising a microcomputer containing a read-only memory, a pattern memory, and a microprocessor, an output electronic circuit for supplying the program control signals to said at least one electromagnet, and said microprocessor controlling said output electronic circuit.

4,406,313

METHOD AND APPARATUS FOR FILLING DISCRETE DRUMS WITH A LIQUID

Charles R. Bennett, and Peter Guarner, both of Miami, Fla., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 25, 1981, Ser. No. 305,435
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—1 **18 Claims**



7. Method for rapidly transferring a predetermined amount of liquid into a drum **31**, from a source **10** holding said liquid, which method includes the steps of;

initiating a flow of the liquid from said source **10** through a signal actuated main flow valve **22** and thence to a liquid dispensing nozzle **26** having an adjustable discharge port **74** positioned in communication with said drum **31**,

monitoring the volumetric flow of said liquid which passes a point intermediate said source **10** and said dispensing nozzle **26**, to establish a signal when said predetermined amount of liquid has flowed past said point,

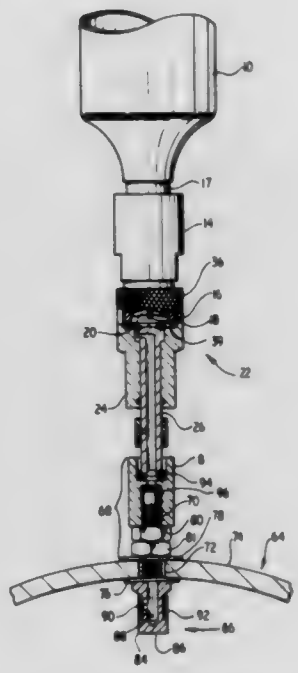
and impressing said signal on said signal actuated main flow valve **22** to actuate the latter into closed position and thereby to interrupt liquid flow therethrough when said predetermined amount of liquid has flowed into said drum **31**.

4,406,314

VALVE ACTUATORS

Rodney Gomersall, The Bungalow, 82, Banks Rd., Slaithwaite, Nr. Huddersfield, West Yorkshire, England

Filed Mar. 2, 1981, Ser. No. 239,857
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—4 **15 Claims**



13. A method of injecting a pressurized fluid into a container comprising securing and sealing a valve actuator to an outlet valve having a projecting operating needle on a pressure vessel; said valve actuator comprising a coupling, a bore extending through said coupling, means at one end of said bore for releasably securing said valve actuator to said outlet valve, an elongated piston arranged to slide within said bore in said coupling, sealing means between said bore and said piston to prevent flow of fluid therebetween, and a passageway extending through said piston; and pressing the piston of the actuator into contact with an inlet valve of the container so that the piston moves relatively to the coupling body and engages the operating needle causing the outlet valve to open; whereby said pressurized fluid issues from the pressure vessel through the passageway in said piston and to the inlet valve of the container so that the pressurized fluid is injected through the inlet valve into the container.

4,406,315

PENCIL SHARPENER

Todd Brickhouse, Copiague, N.Y., assignor to Collier Bros., Copiague, N.Y.

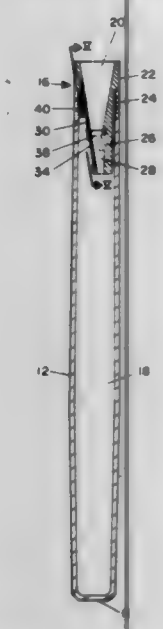
Filed Feb. 20, 1981, Ser. No. 237,091
Int. Cl.³ B43L *23/08*
U.S. Cl. 145—3.31 **17 Claims**

1. A pencil sharpener comprising:

an elongated, substantially cylindrical tube having an open end and a closed end;

a pencil sharpening tool arranged to be connected to said open tube end, said tool having a generally cylindrical configuration having a first outer end and a second inner end for being received in said tube, said outer end having a conical recess formed therein for receiving a pencil end, said tool including a first cylindrical end portion adjacent said outer end and having a diameter greater than the inside diameter of said open end, a second, intermediate cylindrical portion having a smaller diameter and arranged to be received in and engaged by said open end, and a third portion adjacent said second inner end in the form of a partial cylinder having a smaller diameter than the inside diameter of said open end, said third portion for being received into said tube and having an end recess intersecting the end portion of said conical recess, said

partial cylinder having a planar surface, parallel to the wall of said conical recess, intersecting said conical recess and forming a longitudinal slot therein, said planar surface extending into said intermediate portion to form a partial cylindrical recess therein, said tool having a blade



mounted on said planar surface and having a cutting edge extending into said conical recess through said slot, said blade being tapered in width to fit within said partial cylindrical recess in said intermediate portion;

and a cap fitting over said tube and said tool to close the conical recess therein.

4,406,316

WHEEL AND LOW AIR PRESSURE TIRE COMBINATION

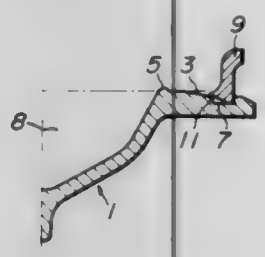
Satoru Okamoto, Kodaira, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of Ser. No. 149,592, May 13, 1980, abandoned. This application Dec. 22, 1981, Ser. No. 333,359

Claims priority, application Japan, Jun. 16, 1979, 54-75164

Int. Cl.³ B60C *15/00, 5/00, 11/00*

U.S. Cl. 152—209 R **4 Claims**



1. In combination, a wheel having a rim portion and a low air pressure tire having a tread portion of extremely high rigidity and having substantially undeformable bead portions seated on said rim portion; said wheel rim portion including a pair of bead seats and a disc portion made integral with said rim portion; a ridge arranged at the inside of each of said bead seats and having a side surface substantially perpendicular to said bead seat, a fixed flange formed at the outside of one of said bead seats, an annular groove formed at the other seat, an annular depression located between said ridges and having a depth which is larger than the height of said fixed flange and a width which is wider than the total sum of the widths of the beads of said tire, a flange ring engaged with said annular groove and provided along at its periphery with a slit, and wherein the bead seat adjacent to said annular groove is gradually reduced in diameter toward the outside of the bead seat.

4,406,317

PNEUMATIC TIRE OF VEHICLE, WIRE CORE FOR USE THEREIN AND APPARATUS FOR PRODUCING SAID WIRE CORE

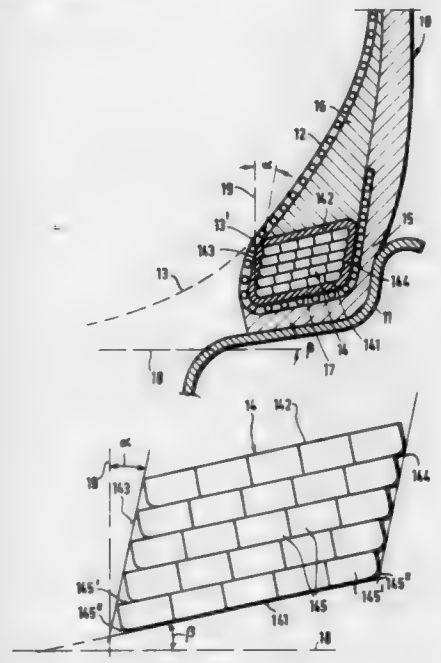
Hans Merten, Königswinter, Fed. Rep. of Germany, assignor to Otto Kuhlmann GmbH & Co., Hemer-Westig, Fed. Rep. of Germany

Filed Dec. 3, 1981, Ser. No. 327,108

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1980, 3047669; Dec. 18, 1980, 3047783

Int. Cl.³ B60C *15/04*

U.S. Cl. 152—362 R **4 Claims**



1. A wire core for a vehicle pneumatic tire of the type having a tire bead mountable in a rim, said wire core being situated within said bead and being at least partially enclosed by a carcass, said wire core having a generally parallelogram shaped cross-section and comprising:

a plurality of wire layers overlaying one another with intimate contact therebetween,

the cross-section of the wires in each of said layers being generally rectangular with unrounded edges, except that:

the wires forming the most inner and/or most outer side of said core have one or two of their edges substantially rounded, said rounding being sufficient to reduce stress concentrations imparted by a corner of said core on the enclosing carcass, the other edges of said innermost and-/or outermost wires not being rounded.

4,406,318

DRAPERY ASSEMBLY INCLUDING INSULATED DRAPERY LINER

Gwendolyn Cukierski, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jul. 8, 1982, Ser. No. 396,291

Int. Cl.³ A47H *1/00*

U.S. Cl. 160—126 **6 Claims**

1. A drapery assembly for covering a framed wall opening, comprising

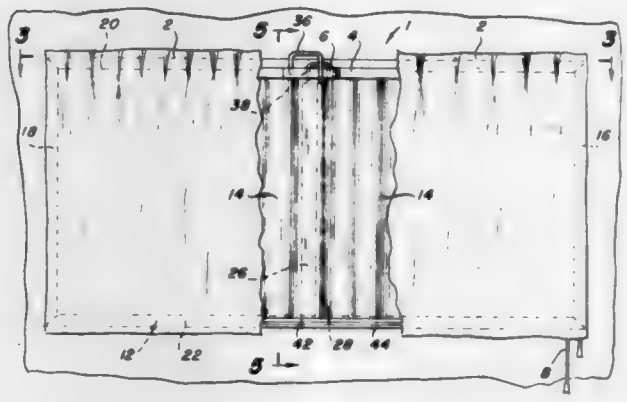
(a) a horizontal traverse rod assembly adapted for mounting adjacent the horizontal upper portion of the opening frame, said traverse rod assembly including a pair of master slides, and means for displacing said master slides between adjacent and separated positions relative to each other, respectively;

(b) a horizontal track member adapted for connection with the upper horizontal portion of the opening frame and extending the length thereof;

(c) a pair of vertically arranged center support members connected at their upper ends for sliding movement longitudinally of said track members, said supports being displaceable between closed positions adjacent the center portion of said

track member, and open positions adjacent the ends of said track member, respectively;

(d) a pair of coplanar liner panels extending parallel with and adjacent said horizontal track member, the adjacent side edges of said liner panels being connected with said center support members, respectively, and the remote side edges of said panels being connected with the side portions of the opening frame, respectively;



(e) means connecting said center support members with said master slides, respectively; and

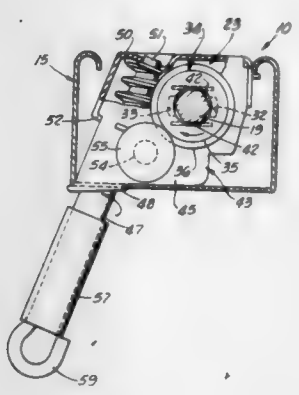
(f) releasable means locking together said center support members when in the closed position, whereby when said releasable means are in the released condition and when drapery panels are mounted on said traverse rod, movement of said master slides to effect opening and closing of the drapery panels effects simultaneous opening and closing of said liner panels.

4,406,319

VENETIAN BLIND DRIVE CONTROL

Claude M. McNiel, Mission Viejo, and Louis G. Valle, Huntington Beach, both of Calif., assignors to Beatrice Foods Co., Denver, Colo.

Filed Nov. 17, 1980, Ser. No. 207,408
Int. Cl.³ E06B *9/307*
U.S. Cl. 160—177 **10 Claims**



1. A venetian blind drive mechanism for using rotative power to adjust the blind slat tilt angle, comprising:

a shaft;

first gear means freely received on the shaft;

releasable spring means resiliently interconnecting the first gear means to said shaft such that the first gear means and spring means rotate with the shaft;

second gear means turned by said input rotative power and meshed with said first gear means; and

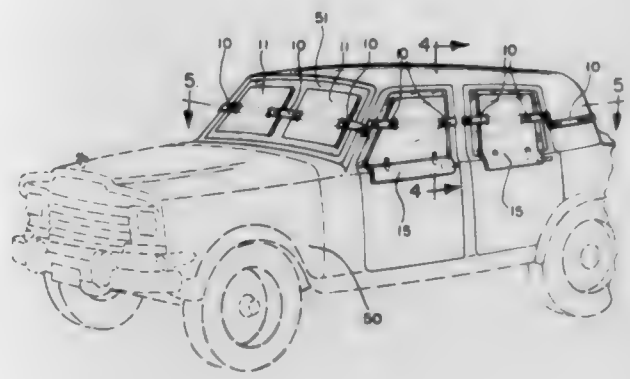
means carried by said shaft for stopping rotation of said shaft beyond a predetermined point and producing back pressure on said shaft sufficient to release said spring means from interconnection with said shaft when the shaft is rotated past the predetermined point.

4,406,320

PROTECTING COVER FOR AUTOMOBILE WINDOWS

Richard Bingham, 2549 W. Eastwood, Chicago, Ill. 60625

Filed Jun. 24, 1980, Ser. No. 162,526
Int. Cl.³ A47H *3/00*
U.S. Cl. 160—368 S **1 Claim**



1. A cover for side door windows of automobiles comprising a cover of sheet material resistant to snow, water and ice of size and shape to overlie the portion of the glass to be protected and a band for holding the cover adapted to be horizontally disposed outside of the automobile over the area to be protected and having its ends extending between the door and door frame on both sides of the door with portions of the band on both sides pinched between the door and door frame when the door is closed and with the ends of the band fastened in the interior of the automobile whereby when said door is locked, the ends of said band are protected against unwanted tampering, the cover having openings therethrough and the band being threaded through said openings to permit the cover to slide along the band whereby after the ends of the band have been fastened inside the automobile and the automobile doors have been closed said cover may be accurately adjusted to overlie the portion of the window to be protected without reliance on the location of the ends of the band inside the automobile, the cover further having downwardly extending fingers of relatively rigid material attached to its inside surface above the bottom edge thereof, the fingers being adapted to be inserted into the space at the window sill between the outside window surface and the opposed inside surface of the window housing, the portion of said cover below the attachment points of the fingers constituting a depending skirt disposed outside of said door and covering and protecting the space at the window sill between the outside window surface and the opposed inside surface of the window housing.

4,406,321

ELECTROMAGNETIC STIRRER FOR USE IN A CONTINUOUS STEEL CASTING APPARATUS

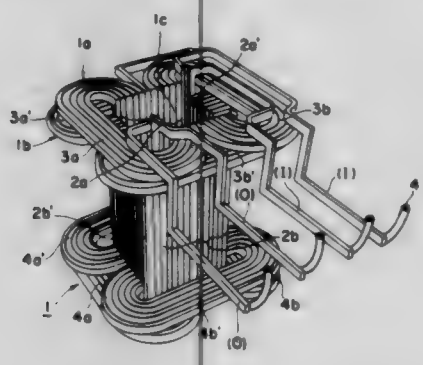
Koichi Fujiwara, Takarazuka; Takeo Shiozawa, Kakogawa; Katsumi Miki, Hyogo; Masahiko Uchimura, Kobe; Kazunori Miyajima, Kakogawa, and Yasuo Tonouchi, Matsusaka, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Apr. 1, 1981, Ser. No. 250,037
Claims priority, application Japan, Apr. 1, 1980, 55-43293
Int. Cl.³ B22D *11/10, 11/00*
U.S. Cl. 164—504 **2 Claims**

1. An electromagnetic stirrer for use on a continuous steel casting apparatus, comprising:

a coil assembly which further comprises a pair of exciting coils each formed by folding into a cage form a hollow conductor interiorly defining a cooling water passage, each of said pair of exciting coils of cage form having first a pair of opposingly spaced vertical side portions each comprising a plurality of parallel upright coil portions, a second pair of upper horizontal turn portions comprising a plurality of horizontal coil portions connecting upper ends of said upright coil portions in said opposing side

portions and turned in parallel relation with each other and in the form of earflaps around the opposite sides of a casting mold or a continuously cast strand, and a third pair of lower horizontal turn portions comprising a plurality of horizontal coil portions connecting lower ends of said upright coil portions in said opposing side portions and turned in parallel relation with each other and in the form of earflaps around the opposite sides of the casting mold or the continuously cast strand, wherein said coils of cage form are disposed one in the other with the respective



upper and lower horizontal turn portions in overlapping relation and with the vertical side portions of the two coils disposed perpendicular to each other to form four upright sides of the coil assembly;

an iron core mounted around said upright side portions and between said upper and lower horizontal turn portions of said coils of cage form; and

means for applying a dual-phase alternate current with a phase differential of approximately $\pi/2$ in electrical angle to each of said coils of cage form.

4,406,322

HEATING AND/OR COOLING SYSTEM

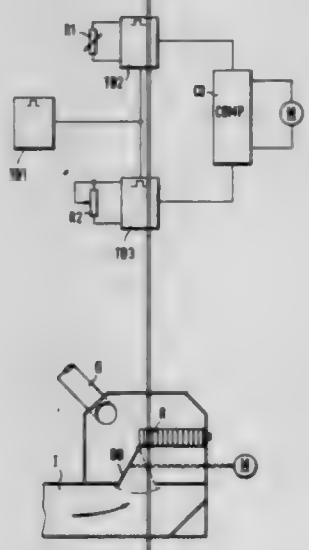
Guglielmo Rossi, Linkenheim; Ursula Eysholdt, Hockenheim, and Gerd Müller, Büschfeld, all of Fed. Rep. of Germany, assignors to Ranco Incorporated, Dublin, Ohio

Filed May 19, 1980, Ser. No. 150,920

Claims priority, application Fed. Rep. of Germany, May 22, 1979, 2920717

Int. Cl.³ F25B *29/00*; B60H *3/00*

U.S. Cl. 165—14 **9 Claims**



1. A heating and/or cooling system, wherein two heat-transmitting media are blended by means of a motor-actuated blending member in such a manner that the temperature of the blended medium is brought to an adjustable setpoint, the setpoint and actual temperature value comparison being performed by a circuit arrangement for producing comparison pulses resulting from comparison of the pulse lengths of pulses corresponding respectively with the setpoint and the actual temperatue value, and the blending member motor being controlled pulsewise in both directions by the comparison pulses, characterized in that the circuit arrangement comprises a first pulse generator which generates pulses of constant width commencing respectively after production of a comparison pulse and is connected to a second and third pulse generator, the second pulse generator generating pulses having a width proportional to the actual temperature value and the third pulse generator generating pulses having a width proportional to the temperature setpoint, and a comparator for comparing the widths of the setpoint and actual temperature pulses and producing the comparison pulses.

4,406,323

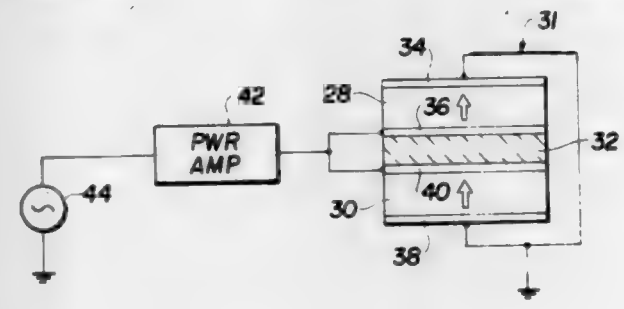
PIEZOELECTRIC HEAT EXCHANGER

Seymour Edelman, 9115 Glenridge Rd., Silver Spring, Md. 20910

Filed Jan. 25, 1982, Ser. No. 342,476

Int. Cl.³ F28F *13/02, 13/12*

U.S. Cl. 165—84 **15 Claims**



1. A heat exchanger, comprising in combination:

means providing at least two fluid conductive channels and including a heat conductive partition between said channels,

said partition consisting of a bimorph configuration of at least two layers of piezoelectric material mutually arranged so that one of said layers expands while the other of said layers contracts upon being electrically energized, whereupon said partition flexes in a predetermined direction within said channels in order to push the sub-laminar layer of fluid adjacent to the partition away into a turbulent stream flowing in said channels while drawing other fluid into contact with the partition and thus increase the efficiency of heat transmission between said channels; and

means coupled to said bimorph configuration for energizing said at least two layers.

4,406,324

BOTTOM LOCK PIPE SEAL ASSEMBLY

John L. Baugh, Huntsville, and James W. Montgomery, Houston, both of Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed May 28, 1981, Ser. No. 267,726

Int. Cl.³ E21B *23/00*

U.S. Cl. 166—125 **6 Claims**

1. A bottom lock pipe seal assembly comprising:

a. a first latch mechanism selectively operable for releasably latching said seal assembly to a pipe string generally circumscribed by said seal assembly for manipulating said seal assembly within a well conduit;

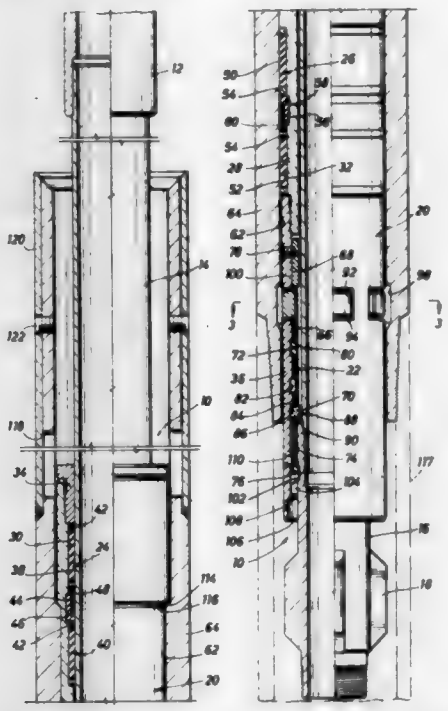
b. second latch mechanism selectively operable for releasably anchoring said seal assembly to such conduit;

c. detent mechanism operable to maintain said seal assembly in a first configuration, in which said first latch mechanism is in anchoring configuration, and in a second configuration in which said second latch mechanism is in anchoring configuration, the operation of said first and second latch mechanisms being interconnected so that when one of said latch mechanisms is in configuration to so anchor the seal assembly the other of said latch mechanisms is released

from anchoring said seal assembly and at all times one or the other of said latch mechanisms is in anchoring configuration;

d. seal means carried by said seal assembly for sealingly engaging an exterior seating surface included in said pipe string, and for sealingly engaging an interior seating surface included in said conduit; and

e. second detent mechanism for limiting longitudinal movement of said seal assembly along said well conduit;



f. whereby said seal assembly can be positioned within said conduit to effect operation of said second detent mechanism while said seal assembly is anchored on said pipe string, said seal assembly can thereafter be anchored to said well conduit by longitudinal movement of said pipe string, said pipe string is permitted at least limited longitudinal movement with said seal assembly anchored to said well conduit and sealing said well conduit to said pipe string, and said seal assembly can be released from anchoring to said well conduit and may be anchored to said pipe string by longitudinal movement of said pipe string.

4,406,325

SELECTIVE NO-GO APPARATUS

Michael L. Bowyer, Aberdeen, Scotland, assignor to Baker International Corporation, Orange, Calif.

Filed Oct. 2, 1981, Ser. No. 307,909
Int. Cl.³ E21B *23/02*
U.S. Cl. 166—214 **7 Claims**

1. A no-go apparatus for positioning a tool at a desired location within an associated nipple in a tubular conduit in a subterranean well by preventing downward movement past the desired location, comprising; an annular landing nipple within the tubing string having a pair of vertically adjacent annular grooves formed on the inside cylindrical surface of said nipple; an annular mandrel, connectable to a work string for insertion in the tubing string; means on said mandrel for attaching the tool to be positioned; radially shiftable latch means on said mandrel resiliently urged into an expanded position in engagement with said annular grooves said latch means being axially shiftable relative to said mandrel, annular recess means on the periphery of said mandrel for receiving the latch means in a radially retracted position, said latch means being normally maintained in radially retracted position within said annular recess means by the inside bore surfaces of the tubing string and said nipple to permit movement of said mandrel and said latch means relative to said tubular string; a downwardly facing external shoulder on said mandrel spaced above said annular recess means, said shoulder being abutable with said latch means when said latch means is radially expanded; an annular surface on the periphery of said mandrel between said annular recess means and said downwardly facing shoulder, said latch means being positioned between said annular surface and at least one of said annular grooves when axially shifted into abutment with said downwardly facing shoulder; said latch means defining a pair of vertically adjacent



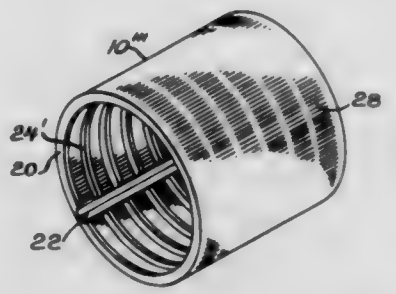
radial projections contoured to simultaneously enter said annular grooves to oppose further downward displacement of said mandrel.

4,406,326

PLASTIC WELL SCREEN AND METHOD OF FORMING SAME

Walter R. Wagner, Minneapolis, Minn., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 17, 1981, Ser. No. 331,844
Int. Cl.³ E21B *43/10*
U.S. Cl. 166—227 **6 Claims**



1. A method of forming a cylindrical plastic well screen having V-shaped slots comprising the steps of integrally molding a quantity of thermoplastic material into the form of a sheet having a continuous peripheral edge portion and a large plurality of closely spaced elongated slot-like openings inwardly of the peripheral edge portion which have a uniform width and a generally V-shaped cross-section; forming the molded sheet into a cylindrical shape so that the slot cross-section increases in the direction of flow and bonding the longitudinal edges of the sheet to each other.

4,406,327

CHEMICALLY-AIDED GAS CAP DRIVE

Walter B. Fair, Slidell, La., and Edwin A. Richardson, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 4, 1982, Ser. No. 354,874
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—300 **7 Claims**

1. A process for treating a subterranean oil reservoir which contains oil in a location between the top of the reservoir and the uppermost opening into a well encountering the reservoir, comprising:

injecting into the reservoir fluid which comprises or contains an aqueous solution of nitrogen-gas-generating reactants with those reactants arranged to generate a significant amount of nitrogen gas and heat at the reservoir temperature;

said injected fluid having a composition arranged to be, or to become, predominantly gaseous within the reservoir at the temperature to which the reservoir is heated by the nitrogen-gas-generating reaction; and

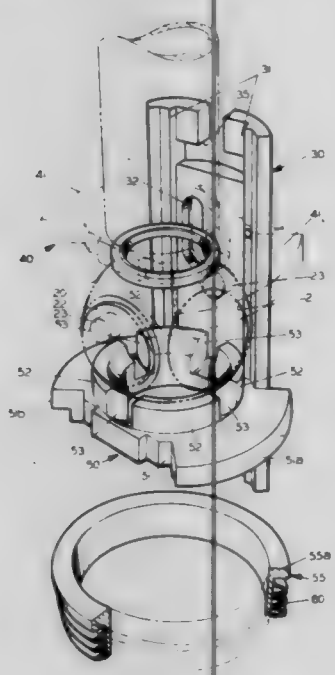
keeping the injected fluid substantially static within the reservoir for a time sufficient for the generation of a significant amount of nitrogen gas and a migration of at least a significant proportion of gas to a location within the reservoir above said uppermost opening into the well.

4,406,328

APPARATUS FOR LOCKING A BALL VALVE ELEMENT IN ONE POSITION

Robert T. Brooks, Kingwood, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Aug. 7, 1981, Ser. No. 291,002
Int. Cl.³ E21B *34/14*
U.S. Cl. 166—332 **4 Claims**



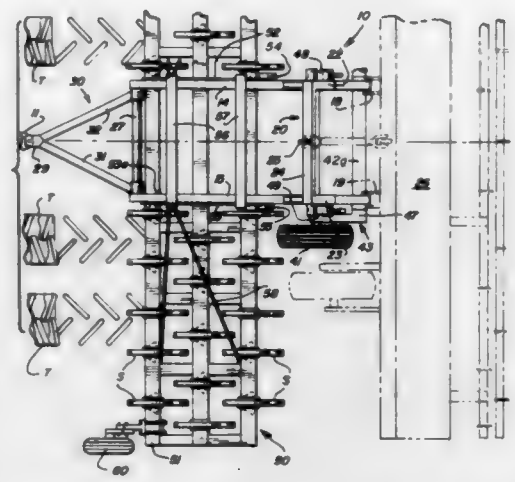
1. A ball valve assembly for use in a subterranean well comprising: a spherical ball defining a cylindrical fluid passage therethrough; an annular seal sealingly cooperable with the spherical surface of said ball; a pair of diametrically opposed flat surfaces on said ball respectively parallel to the axis of said cylindrical fluid passage; each said flat surface having a cylindrical periphery defining the rotational axis of the ball; a pair of opposed coaxial ball rotating pins respectively mounted on said flat surfaces in offset relationship to the center of said ball; sleeve segment means respectively surrounding at least the flat surface portions of said ball and axially movable relative to said ball; said sleeve segments respectively defining vertical guides respectively receiving said cylindrical peripheries of said flat surface; a pair of camways respectively defined in the inner surfaces of said sleeve segment means and respectively receiving said ball rotating pins therein, whereby axial movement of said sleeve segment means shifts said ball 90° from an open position wherein said ball fluid passage is aligned with the bore of said annular seal to a closed position wherein said ball fluid passage is transverse to the bore of said annular seal; an inwardly extending shoulder formed on the edge of each ball flat surface parallel to the axes of said ball rotating pins; and a pair of opposed inwardly projecting abutments respectively engageable with said shoulders in the open position of said ball to stop said ball in said open position.

4,406,329

AGRICULTURAL TOOL CART FOR MINIMUM TILLAGE AND SEED PLANTING

Brune G. Schlueter, Rt. #49, Ogden, Ill. 61859

Filed Aug. 11, 1980, Ser. No. 176,970
Int. Cl.³ A01B *25/00, 37/00*
U.S. Cl. 172—310 **8 Claims**



1. A tractor-pulled agricultural tool cart for accomplishing minimum tillage and grain crop planting in a single pass through a field, comprising:

a cart frame having two spaced apart side beams, means at the rear of each beam to receive a lower hitch point of a seed planter;

an upright arch brace connecting said beams adjacent said lower hitch point receiving means and means providing an upper hitch point receiving means at the center of the arch;

a lifting assembly on the cart for raising the cart and a three-point hitch equipped seed planter implement when attached to said hitch point receiving means, said assembly having a pair of wheels on an axle, a movable support for said axle including arms movably connected to said beams adjacent said lower hitch points and power means for moving said arms about said connection to lower said wheels relative to said beams and to elevate the beams relative to ground; and

a tillage tool mounting assembly including elongate tool mounting bars braced to each other and secured to a pair of upright mounting plates spaced to embrace said cart beams, means mounting said plates to the cart beams for carrying the tool mounting assembly on the cart, said bars carrying outboard gauge wheels to level the tillage tool assembly relative to ground during tilling operations,

said cart being capable of elevation to raise such tillage tool mounting assembly and said seed planter together for transport upon the cart wheels.

4,406,330

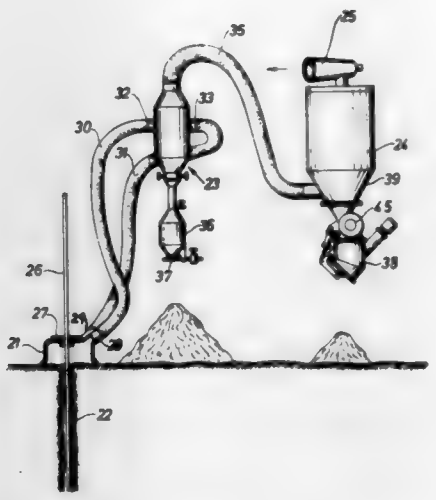
METHOD OF BINDING DUST

Goran H. Jysky, Nyköping, Sweden, assignor to Atlas Copco AB, Stockholm, Sweden

Continuation-in-part of Ser. No. 178,414, Aug. 15, 1980, Pat. No. 4,316,514. This application Oct. 28, 1981, Ser. No. 316,024
Claims priority, application Sweden, Aug. 22, 1979, 7907026
The portion of the term of this patent subsequent to Feb. 23, 1999, has been disclaimed.
Int. Cl.³ E21C *7/02;* B01D *45/12, 46/48*
U.S. Cl. 175—66 **6 Claims**

1. In a method of collecting and binding dust created when drilling rock, by collecting the dust laden air that flows out of the borehole being drilled and conveying the dust to a separating means and feeding the separated dust to a mixing chamber to which a liquid binder is applied, the improvement comprising the steps of; conveying dust laden air from said borehole through a coarse dust separator to separate coarse dust from

fine dust, feeding fine dust to the mixing chamber in batches of given size, and supplying said liquid binder to the mixing chamber in amounts related to the size of the batches of fine



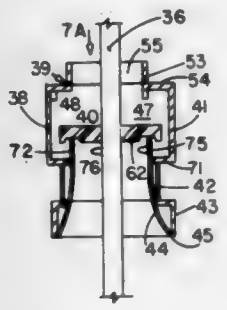
dust, mixing the fine dust and liquid by stirring while a further batch of fine dust is collected in the separating means, and discharging the resultant mixture before the next batch of fine dust is fed to the mixing chamber.

4,406,331

PIPE WIPER

Norman P. Bentley, Wheeler, Tex., assignor to Charlies Rental, Wheeler, Tex.

Filed Jan. 20, 1982, Ser. No. 340,968
Int. Cl.³ E21B *33/08*
U.S. Cl. 175—84 **2 Claims**



1. A pipe wiper apparatus comprising a rigid cylindrical shell, a removable rigid cap, and a resilient annular ring,

the shell comprising a rigid upper cylindrical bowl wall, a rigid shell below and of lesser diameter than the bowl wall, and a rigid rim below said shell, a rigid internal guide firmly attached to the bottom edge of the rim and projecting to a narrower circular upper edge said upper edge projecting into a bowl chamber, within said bowl wall,

said ring having an outer circular edge, an imperforate flat smooth bottom face, and a central cylindrical hole,

said bottom face spaced apart from a top face by the thickness of said ring,

said ring extending from said hole to radially of said upper edge and centrally of said bowl wall, a upwardly open annular pocket formed between said upper edge and said bowl wall, and open said bowl chamber,

said cap comprising a flat rigid plate surounding an opening above said bowl chamber, releasable connecting means between said bowl and said cap,

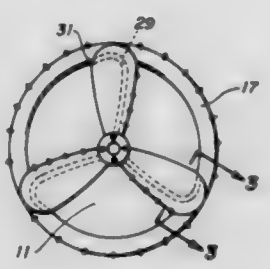
and said upper edge spaced vertically apart from said cap by a distance greater than the thickness of said ring.

4,406,332

ROTARY EARTH BORING TOOL

Newton B. Dismukes, 2952 Buttonwood Dr., Carrollton, Tex. 75006

Continuation-in-part of Ser. No. 948,081, Oct. 2, 1978. This application Nov. 17, 1980, Ser. No. 207,798
Int. Cl.³ E21B *4/00*
U.S. Cl. 175—107 **14 Claims**



1. A rotary drilling tool comprising in combination:

a. a hollow shaft;

b. a marine screw propeller comprising a plurality of propeller blades affixed to said shaft in a manner such that rotation of said propeller generates thrust along the axis of said shaft;

c. drilling bit means fixed to the forward end of said shaft, said bit means having an external diameter at least as great as the diamet - of said propeller;

d. fluid discharge nozzle means positioned on at least one blade of said propeller in a manner such that discharge of fluid therefrom will exert a force in a direction tending to cause said propeller to rotate;

e. fluid passage means carried by said at least one propeller blade adapted to conduct fluid from the interior of said hollow shaft to said discharge nozzle;

f. conduit means for conducting fluid to said rotary drilling tool; and

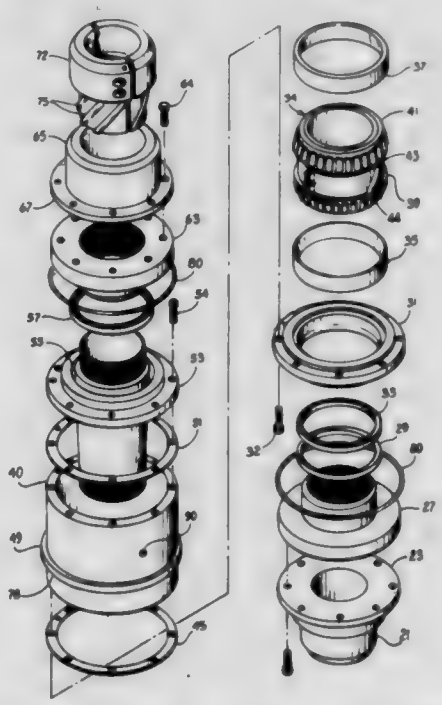
g. bearing means connecting said hollow shaft and said conduit to permit relative rotation therebetween.

4,406,333

ROTATING HEAD FOR ROTARY DRILLING RIGS

Johnie R. Adams, P.O. Box 6202, Ft. Smith, Ark. 72906

Filed Oct. 13, 1981, Ser. No. 310,386
Int. Cl.³ E21B *33/068*
U.S. Cl. 175—209 **17 Claims**



1. An improved rotating head for rotary drilling rigs in which a rotatable Kelly tool of polygonal cross-section extends from the draw works through a turntable into the well pipe and

is connected to the top of the drill pipe, said rotating head comprising,

a housing adapted to be secured in sealing non-rotating relation to a well pipe,

an antifriction bearing having an internal race with opening diameter greater than the external diameter of said drill pipe mounted in said housing,

means for sealing lubricating grease in the space around said bearing within said housing,

a rotatable tube with an internal diameter greater than the external dimension of drill pipe coaxial with the internal opening of said bearing and mounted to rotate with the inner race thereof,

an elastomeric grommet member with an opening therethrough fixedly secured to the top of said tube,

and a slide bushing with an internal opening adapted to slidably engage a Kelly tool and an external configuration producing a disengagable gripping action with the opening in said grommet member.

4,406,334

DRILLING TOOL

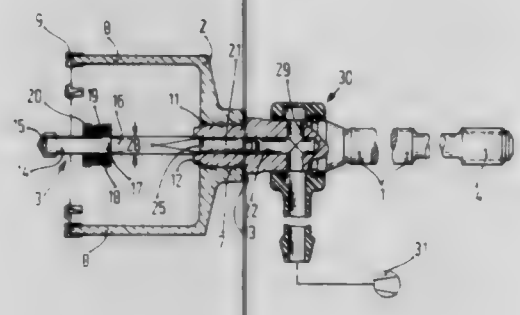
Otto Baumann, Leinfelden-Echterdingen; Hans-Peter Dohse, Grafenau; Wilbert Reibetanz, Leinfelden, and Karl Wanner, Leinfelden-Echterdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 4, 1981, Ser. No. 299,773

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1980, 3041315; Feb. 13, 1981, 3105268

Int. Cl.³ E21B *12/00*

U.S. Cl. 175—315 **14 Claims**



1. A drilling tool, comprising a driven shaft member having an axis; a crown drilling member having an annular wall detachably mounted on said shaft member, and a plurality of cutting edges on said annular wall; a center drilling member detachably mounted on said shaft member in the interior of said crown drilling member and having a further cutting edge; means for limiting a drilling depth of the tool when said center drilling member is mounted on said shaft member;

said annular wall of said crown drilling member being hollow and cylindrical and having a front end on which said plurality of cutting edges are provided;

said limiting means including axial abutment means provided on said center drilling member;

said center drilling member defining a drilling portion provided with said further cutting edge, and a supporting portion connected with said drilling portion and having a different cross-section so that a shoulder constituting said axial abutment means is formed between said portions; and supporting portion of said center drilling member being parallelopiped-shaped and having a cross-section which exceeds that of said drilling portion.

4,406,335

SPECIAL CIRCULATION SUB

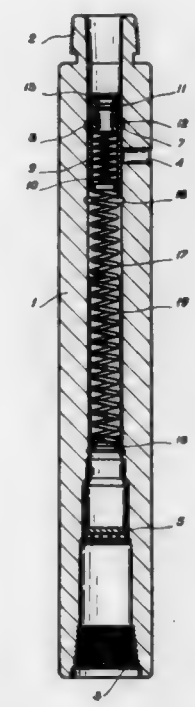
Nick Koot, Vlaskamp 104, The Hague, Netherlands

Filed Oct. 20, 1981, Ser. No. 313,116

Claims priority, application Netherlands, Oct. 30, 1980, 8005960

Int. Cl.³ E21B *17/00, 21/10, 34/10*

U.S. Cl. 175—317 **6 Claims**



1. A circulated sub comprising,

(a) an outer barrel disposed between a drill string and a drill bit having a passage going therethrough along a longitudinal axis of said barrel, a plurality of circulation ports within said barrel;

(b) said passage adapted to receive a first sleeve along the longitudinal axis of said barrel

(c) an inner second sleeve displacable along a longitudinal axis of said first sleeve, said inner first sleeve having a groove on its outer surface to receive a plurality of engaging members, said engaging members adapted to cooperate through an opening in said first sleeve with grooves on the inside surface of said barrel, a first spring means interposed between said inner first sleeve and said second sleeve in such manner that the axis of said spring means is coaxial to the longitudinal axis of said barrel; whereby during an operation of said sub said ports are closed by means of said first sleeve.

4,406,336

DRILLING BIT

John K. Olsen, 4494 Trout Dr. Southeast; William R. McGinnis, 5801 Bahama Shores Dr. South, and Barbara H. Olsen, 4494 Trout Dr. Southwest, all of St. Petersburg, Fla. 33705

Filed Feb. 9, 1981, Ser. No. 232,958

Int. Cl.³ E21B *10/62*

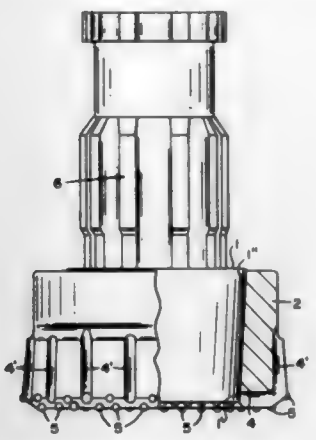
U.S. Cl. 175—410 **5 Claims**

1. In a bit adapted for drilling through rock or other hard materials having an upper portion appropriate in size and configuration for being operated and manipulated in a drilling operation and having linear openings therein through which air and/or liquid may be blown to blast away dust, clippings and cuttings accumulated during the drilling, the improvement comprising:

(1) a lower core section having a smooth annular exterior surface; and

(2) an annular shell having its interior surface smooth and of a shape and size adapted to fit tightly onto the smooth exterior annular surface of said core section, said shell

being separable by downward movement from said lower core section and having openings in the bottom and lower



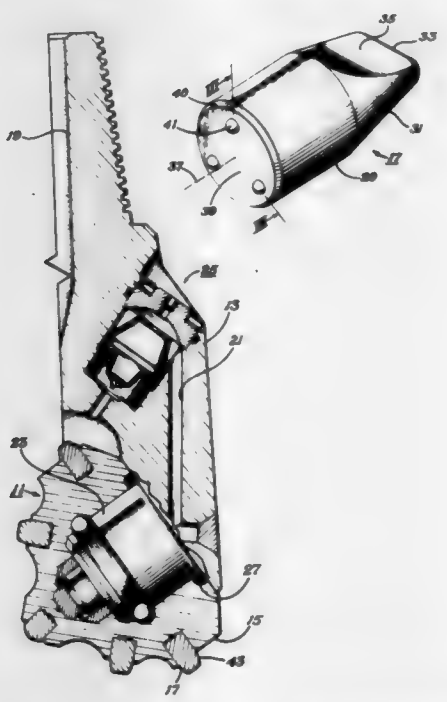
side section thereof into which openings compacts of hard material of appropriate size are tightly fitted.

4,406,337

INSERT WITH LOCKING PROJECTION

Herbert C. Dill, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Mar. 31, 1981, Ser. No. 249,583
Int. Cl.³ E21B *10/16, 10/52*
U.S. Cl. 175—410 **4 Claims**



1. A method of mounting an earth disintegrating insert in a hole with a bottom in the supporting structure of an earth boring bit, comprising in combination:

providing the insert with a protuberance on the bottom of the insert;

pressing the insert into the hole and the protuberance into the bottom of the hole at a force sufficient to deform the bottom of the hole and create a depression that receives the protuberance.

4,406,338

WEIGHT CART

Glenn G. Dunbar, 2608 Overbrook, Toledo, Ohio 43614

Filed Feb. 5, 1982, Ser. No. 346,137
Int. Cl.³ G01G *19/52, 19/00;* **G01L** *25/00*
U.S. Cl. 177—50 **12 Claims**

1. A cart for transporting scale testing weight comprising:

a support member;

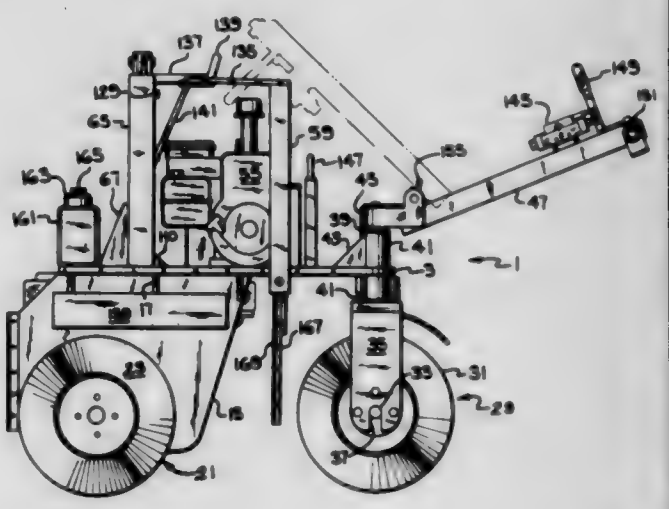
two plates connected to said support member, said plates positioned adjacent the sides of said support member, said plates extending from said support member in a direction substantially perpendicular to said support member;

an opening defined in said support member;

a wheel assembly rotatably connected to each of said plates, said wheel assembly moveably supporting said plates;

a driven wheel pivotally connected to said support member, said driven wheel being spaced apart from said plates, said driven wheel moveably supporting one end of said support member;

a drive means operatively connected to said driven wheel, said drive means controlling the rotation of said driven wheel;



a control handle operatively connected to said driven wheel and said drive means, said handle controlling the pivotal movement of said driven wheel with respect to said support member and the rotation of said driven wheel by said drive means; and

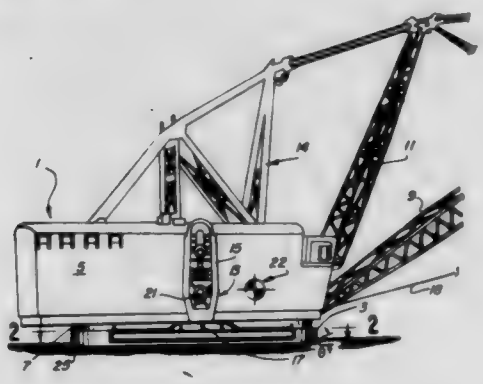
a lifting means positioned on said support member, said lifting means including at least one lifting hook that extends through said opening in said support member, said lifting hook being positioned for engaging said lifting scale testing weights.

4,406,339

OVERSIZED TUB FOR A WALKING DRAGLINE

Kieran O. Spencer, Palos Heights, Ill., assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Aug. 31, 1981, Ser. No. 298,203
Int. Cl.³ B62D *57/02*
U.S. Cl. 180—8 C **7 Claims**



1. In a walking dragline machine comprising a main body, opposed terrain-engageable walking means for lifting and translation of said body across a terrain, a tub underlying, supporting, and being movable with said main body including a flat terrain-engaging bottom surface, and means for inclining said tub at a preselected angle to the terrain in effecting walking of the machine across the terrain, the improvement wherein said tub includes a peripheral radial extension having a surface extending angularly upwardly from said bottom tub surface, the angle defined between said extension surface and said bottom tub surface being substantially equal to said prese-

lected angle whereby said extension surface facially engages the underlying terrain as the tub is translated by said walking mechanism.

4,406,340

MOTOR REDUCER WITH BRAKING MEANS

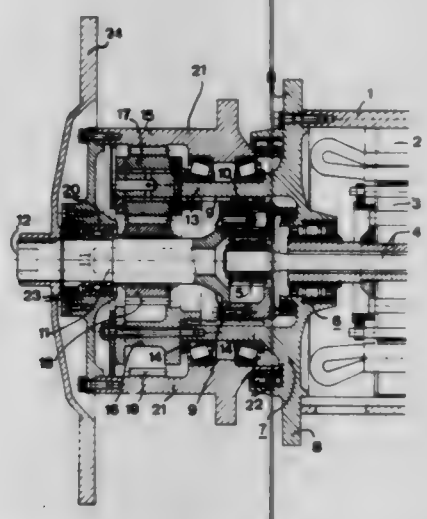
Jean Gennaux, Acoz, Belgium, assignor to Ateliers de Constructions Electriques de Charleroi (ACEC), Brussels, Belgium

Filed Jun. 17, 1981, Ser. No. 274,652

Claims priority, application European Pat. Off., Jun. 17, 1980, 80200569.4

Int. Cl.³ B60K *17/14*

U.S. Cl. 180—65 F **12 Claims**



1. An apparatus, comprising:

an intermediate structural mechanical element;

a wheel hub rotatably mounted to and coaxially of said element;

an electric motor mounted coaxially of said element, said motor including a rotary output shaft;

a speed reduction mechanism mounted in and coaxially of said element, said speed reduction mechanism comprising

a shaft rotatably mounted within and coaxially of said element and having an end extending out of said element;

a first reduction gear means connected coaxially between said motor output shaft and said speed reduction mechanism shaft for rotating said mechanism shaft in response to rotation of said motor shaft at a speed of rotation less than the speed of rotation of said motor shaft; and

a second reduction gear means connected coaxially between said mechanism shaft and said hub for rotating said hub in response to rotation of said mechanism shaft at a speed of rotation lower than the speed of rotation of said mechanism shaft; and

a brake disk mounted on and coaxially of said end extending out of said element, said mechanism shaft rotating at a speed of rotation less than the speed of rotation of said motor shaft.

4,406,341

POWER-ASSISTED STEERING DEVICE

Patrice Bertin, Paris, France, assignor to Valeo, Paris, France

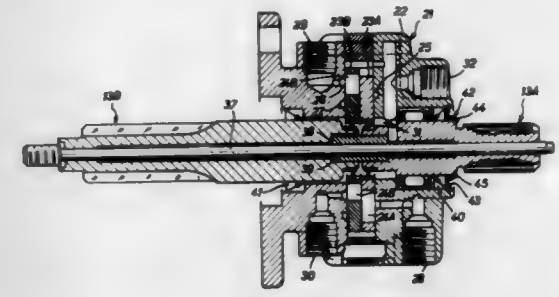
Filed Mar. 2, 1982, Ser. No. 353,899

Claims priority, application France, Mar. 18, 1981, 81 05397

Int. Cl.³ B62D *5/08*

U.S. Cl. 180—148 **12 Claims**

1. A power-assisted steering device for a vehicle, comprising control means operable to act on steering means, said control means having a rotatable transmission element comprising an input shaft and an output shaft which are coaxial and are located one adjacent the other, which are coupled elastically by a torsion bar, and which are capable of a limited relative angular displacement under the action of the control means and in opposition to an elastic restoring action of the torsion bar; power-assistance means responsive to relative angular displacement of said input shaft and said output shaft to act on said steering means in the same sense as the control means, said power-assistance means comprising a hydraulic unit, an actuator operable to act on the steering means, and a hydraulic distributor located between the hydraulic unit and the actuator, said hydraulic distributor comprising a fixed housing and at least one rotor rotationally fast with one of said input shaft and said output shaft; a sealing gasket between each of said



input and output shafts and the housing of the distributor; and a stop means disposed between the input shaft and the housing, which stop means acts axially to prevent the input shaft from separating from the output shaft if the torsion bar should break, said stop means comprising a washer which maintains said sealing gasket between the input shaft and the housing in position on the housing, said washer having a prolongation which projects towards the input shaft and which is axially adjacent a stop bearing on the input shaft.

4,406,342

ELECTRICALLY PROPELLED TWO-WHEELED VEHICLE

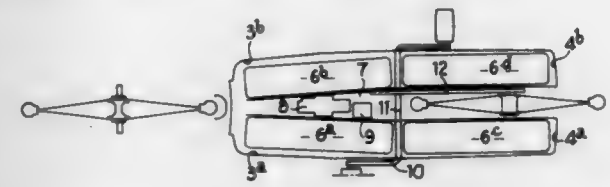
Bernard Lacroix, Montbeliard, France, assignor to Cycles Peugeot, Valentigney, France

Filed Sep. 30, 1981, Ser. No. 307,265

Claims priority, application France, Oct. 15, 1980, 80 22011

Int. Cl.³ B62M *7/08*; B62D *61/02*

U.S. Cl. 180—220 **11 Claims**



2. In an electrically propelled vehicle comprising a front wheel, a rear wheel, a frame, electric accumulator batteries and a saddle carried by said frame, a motor connected to said batteries so as to be supplied with current from said batteries, and transmission means between the motor and the driving wheel; the improvement wherein said batteries comprise two batteries which are disposed in a center part of the vehicle substantially symmetrically on each side of a longitudinal median plane of the vehicle and define therebetween a space for receiving various accessories and two batteries disposed in a rear part of the vehicle on each side of said rear wheel.

4,406,343

ENGINE MOUNTING STRUCTURE FOR AN AUTOMOBILE BODY

Hayathugu Harasaki, Hiroshima, Japan, assignor to Toyo Kogyo Co. Ltd., Hiroshima, Japan

Filed Jun. 9, 1981, Ser. No. 272,069

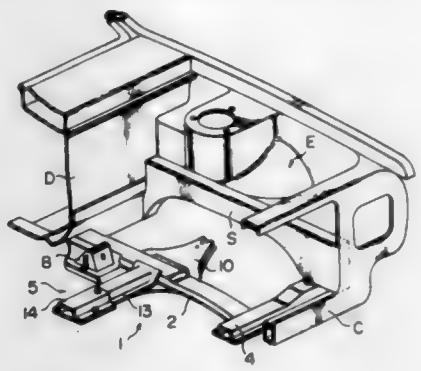
Claims priority, application Japan, Jun. 13, 1980, 55-80617

Int. Cl.³ B60K *5/10*

U.S. Cl. 180—297 **14 Claims**

1. An automobile body including a front body section formed with an engine compartment, sub-frame means pro-

vided in a lower portion of the engine compartment for mounting an engine, said sub-frame means comprising a plurality of longitudinally extending side members and a plurality of transversely extending cross-members, at least one of said side members being of a closed cross-section having an upper wall, a pair of side walls and a bottom wall, said bottom wall of the



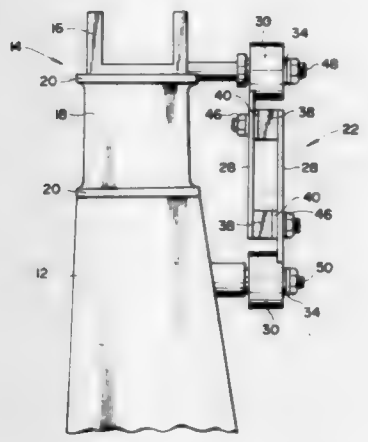
side member being formed with at least one transversely inward extension, an engine mounting bracket having connecting flanges connected respectively with one of said side walls and said extension, one of said cross-members having one end secured to said extension and the other end secured to the other of the side members.

4,406,344

METHOD AND APPARATUS FOR REDUCING ENGINE VIBRATION INDUCED VEHICLE CABIN NOISE AND/OR RESONANCE

Masao Fukushima, Fuchu, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Feb. 24, 1981, Ser. No. 237,621
Claims priority, application Japan, Feb. 29, 1980, 55-25972
Int. Cl.³ B60K *9/00*
U.S. Cl. 180—300 **9 Claims**



8. In a vehicle having an engine and a chassis,

suspension means having a predetermined effective spring modulus for suspending said engine on said chassis;

means for increasing said effective spring modulus when said engine vibrates with a frequency lower than a first predetermined frequency;

means for reducing said spring modulus to a predetermined low level when said engine vibrates at a frequency equal to or greater than said predetermined frequency; and

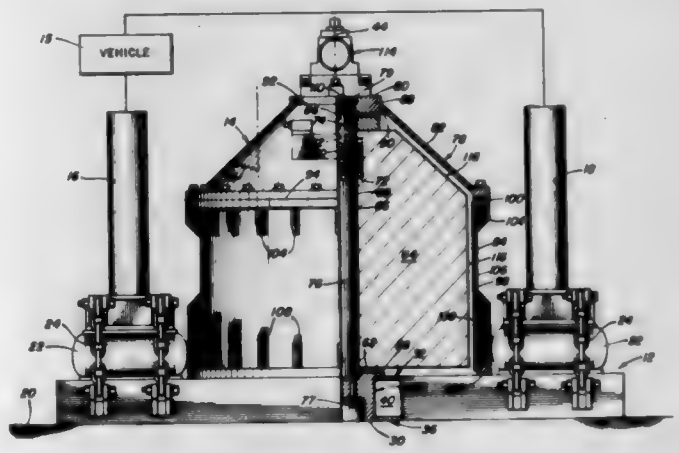
means for maintaining said spring modulus at said predetermined low level until said engine vibrates with a frequency equal to or greater than a second predetermined frequency.

4,406,345

SEISMIC TRANSDUCER BASEPLATE AND HOUSING ASSEMBLY

Delbert W. Fair, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

PCT No. PCT/US79/00590, § 371 Date Apr. 8, 1981, § 102(e) Date Feb. 23, 1981, PCT Pub. No. WO81/00458, PCT Pub. Date Feb. 19, 1981
PCT Filed Aug. 8, 1979, Ser. No. 270,534
Int. Cl.³ G01V *1/047, 1/133*
U.S. Cl. 181—119 **21 Claims**



1. A transducer apparatus for inducing waves in an elastic medium, comprising: a baseplate means for engaging a surface of the elastic medium; a reaction mass having a cylinder bore extending therethrough; a double-rod-end piston, disposed in said bore so that said reaction mass is driven in reciprocation relative to said piston, a first rod end of said piston being rigidly connected to said baseplate means; and housing means for rigidly connecting a second rod end of said piston to said baseplate means, said housing means including a frusto-conical section having a smaller diameter end rigidly connected to said second rod end and a larger diameter end rigidly connected to said baseplate means.

4,406,346

STETHOSCOPE WITH ONE-HANDED HEADSET OPERATION

Janson M. Pope, Jr., Palmdale, Calif., assignor to Marvin A. Clark, Palmdale, Calif., a part interest

Filed Apr. 12, 1982, Ser. No. 367,383
Int. Cl.³ A61B *7/02*
U.S. Cl. 181—131 **8 Claims**

1. A stethoscope assembly wherein the headset may be mounted on the ears using only one hand, comprising:

means including a pickup element for sensing pressure changes such as the heart beat at an artery or the like;

first and second ear pieces for application to the ears of a user;

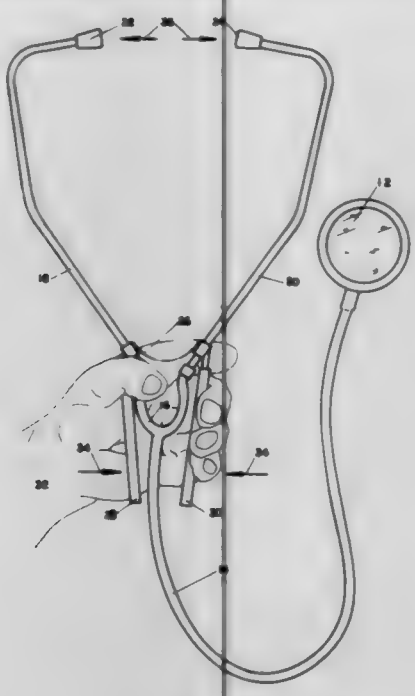
first and second tubular members of substantial stiffness pivotally mounted to one another, and each said tubular members having one of said ear pieces affixed to one end thereof;

means for mechanically biasing said ear pieces toward one another;

flexible tubular means for coupling said pickup element to the other end of each of said tubular members; and

said stethoscope assembly including means having significant rigidity, mechanically integral with each of said tubular members, and extending in the direction away from said ear pieces beyond said pivot point, for separat-

ing said ear pieces against the force of said biasing means with only one hand, to mount the stethoscope on the ears



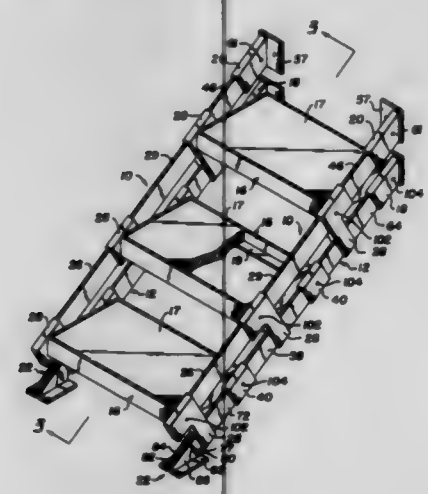
of the user or to remove the stethoscope from the ears of the user with only one hand.

4,406,347

MODULAR STAIRCASE ASSEMBLY

Nicholas M. Stathopoulos, 3968 Marine Ave., Powell River, British Columbia, Canada

Filed Apr. 10, 1981, Ser. No. 252,741
Claims priority, application Canada, Mar. 30, 1981, 374167
Int. Cl.³ E06C *1/38, 7/08, 9/00*
U.S. Cl. 182—1 **11 Claims**



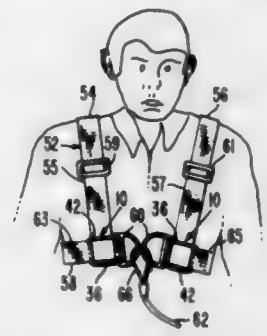
1. A modular staircase assembly, comprising:
(a) a plurality of upper stringer members;
(b) a plurality of lower stringer members;
(c) means for coupling said upper and lower stringer members in parallel spaced apart positions such that one of said upper and lower members is slidable with respect to the other;
(d) means for connecting a first end of said upper and lower stringer members to a second end of adjacent respective upper and lower stringer members such that the connected members are longitudinally aligned;
(e) a tread support pivotally couplable to said upper and lower stringer members;
(f) a mounting pad assembly couplable to one of said first and second ends of said upper and lower stringer members for mounting to a wall portion; and
(g) a foot pad assembly couplable to the other of said first and second ends of said upper and lower stringer members for mounting on a floor portion.

4,406,348

CLIP FOR SAFETY HARNESSES

Stanley Switlik, II, 110 W. Welling Ave., Pennington, N.J. 08534

Filed Dec. 9, 1981, Ser. No. 328,560
Int. Cl.³ A62B *35/00*
U.S. Cl. 182—3 **9 Claims**



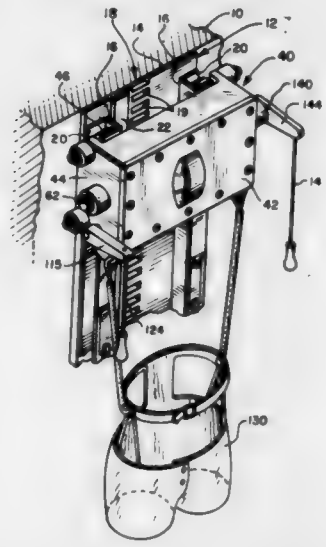
1. In a harness including first and second straps to be interengaged at one end with said one end of one of the straps connected to a buckle element, the improvement comrising a clip of U-shape having legs each of which includes a pair of spaced leg elements embracing the other strap, each leg additionally including a connecting element joining the leg elements and engaging the buckle element.

4,406,349

ESCAPE APPARATUS

Andrew Vilchek, 12612 Pawnee Rd., Palos Park, Ill. 60464

Filed May 19, 1981, Ser. No. 265,203
Int. Cl.³ A62B *1/02*
U.S. Cl. 182—7 **8 Claims**



1. A self-braking descent apparatus comprising:
a vertically oriented gear track mounted on a structure;
a carriage;
a gear wheel having a plurality of gear teeth adapted to positively engage and interlock with the gear track;
means for mounting the gear wheel on the carriage such that the gear wheel is rotatable with respect to the carriage;
means for guiding the carriage along the gear track while maintaining a positive engagement between the gear wheel and the gear track such that the gear wheel is caused to rotate with respect to the carriage as the carriage moves along the gear track;
means for positively securing at least one person to the carriage; and
means for automatically braking the rotation of the gear wheel to control the downward velocity of the carriage automatically so as to protect a person supported by the

securing means from injury due to excessive downward velocity, said braking means comprising:

a brake;

a vertically oriented cam track mounted on the structure near the gear track, said cam track defining a plurality of spaced cam surfaces; and

means, responsive to the cam track, for periodically and automatically increasing the braking action of the brake as the carriage descends such that the brake is applied as the carriage passes each of the successive cam surfaces, thereby automatically limiting the downward velocity of the carriage to velocities less than a predetermined value.

4,406,350

SAFETY DEVICE FOR LADDERS

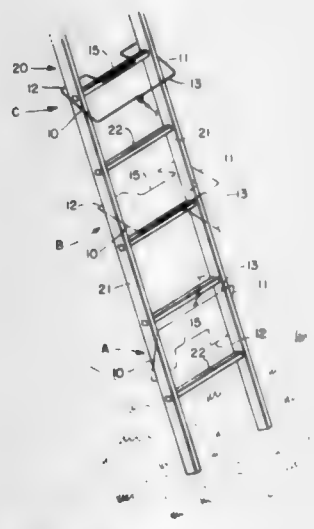
Samuel D. Smith, "Jamada", Newton of Pitcairns, Dunning, Perthshire, England

Filed May 28, 1982, Ser. No. 383,228

Claims priority, application United Kingdom, May 29, 1981, 8116447

Int. Cl.³ E06C *7/18*; A62B *1/16*

U.S. Cl. 182—8 **7 Claims**



1. A device for supporting a person on a ladder comprising a frame adapted to extend around said ladder with sufficient clearance to move relative to said ladder, at least a portion of said frame extending at an angle relative to the remaining frame portion, said angularly extending portion extending inwardly towards said ladder and having a length less than the distance between the stays of said ladder, and means on said frame at a position opposite that of said angularly-extending portion for connecting to a belt, or the like, on said person, so that movement of said person downwardly on said ladder causes said angularly-extending portion to move between said stays and engage a rung on said ladder to prevent further downward movement.

4,406,351

EMERGENCY ESCAPE SYSTEM FOR USE IN MULTISTORIED BUILDINGS

Charles E. Littlejohn, 525 Forestdale Dr., N.E., Atlanta, Ga. 30342, and Henry D. Cook, 608 Channing Dr., N.W., Atlanta, Ga. 30308

Filed Feb. 13, 1981, Ser. No. 234,826

Int. Cl.³ A62B *1/02*

U.S. Cl. 182—47 **3 Claims**

1. An emergency escape system for use on multistoried buildings to proffer a means of exit for persons entrapped by fire or other disasters, such system comprised of, as articles of manufacture

an escape module of special configuration suspended by a flexible high tensile strength structural member, hereinafter a cable

a pulley assembly supported on the roof above said module and accommodating said support cable to direct same to any suitable mechanism to raise and lower said module and to further provide positive stopping of such module at any selected elevation

a structural framework having a sloped support harness and elongated rigid vertical member to which the support cable is attached, such support harness being covered with solid sheathing to deflect falling debris; such framework being covered on the sides and back with a perforated sheathing to admit fresh breathing air while simultaneously providing a closure wall; such framework accommodating a floor chamber of two separated surfaces with the upper surface for escapee support, both surfaces being covered with a heat shielding material as a heat barrier; such framework further accommodating sliding door tracks for mounting a plurality of doors fitted with rollers or slides to operate within the tracks; such framework also accommodating support structure for attaching building guide wheels, yaw stabilizing poles, support cable guides, and guy line attachments; such framework further adapted to support a fluid hose connection; such framework being further comprised of certain hollow structural members accommodating the flow of fire extinguishing fluid and supporting fluid spray nozzles



a fluid dispensing system comprised of a connection for a fluid supply hose, a pressure reducing valve, manual fluid control valves, and plumbing lines to direct fluid under a controlled pressure to a plurality of fluid spray nozzles

a plurality of fluid spray nozzles inset within the frontal members of the structural framework to protect said nozzles from damage, such nozzles being set to provide a fluid spray onto the guide wheels for cooling and on flames and combustion products emitting from the building facade

a floor chamber, aforesaid, accommodating fluid spray nozzles set to provide a cooling fluid spray on the under side of the floor standing surface

a plurality of aforesaid sliding doors covered on their exterior with a suitable heat shielding material as fire barriers, such doors accommodating simultaneous shielding from heat emitting from building fires and ingress when open and full frontal heat shielding and enclosure when closed

a plurality of support cable guides to direct said cable from the pulley safely over the escape module and to the hoisting mechanism

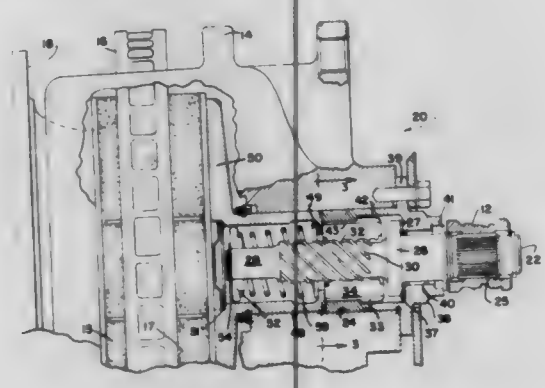
a plurality of elongated yaw stabilizing poles so attached to sense the building facade and to control the rotation of said escape module about the axis of the support cable

a plurality of audio and visual communicating systems for signalling between escapees and rescue attendants.

4,406,352
DISC BRAKE ACTUATOR

James P. Scott, Fort Wayne, Ind.; Charles H. Lantz, Rochester, and David D. Sheill, Farmington Hills, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Dec. 1, 1980, Ser. No. 212,000
Int. Cl.[3] F16D *55/224*
U.S. Cl. 188—72.8 2 Claims

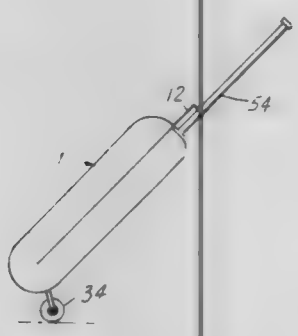


1. A disc brake actuator comprising a housing having a bore therethrough, torque applying means, a power screw having a first end connected for rotation by said torque applying means, a second end having external threads and a radially extending flange intermediate said first and second ends for axially fixing the power screw, an actuator nut having internal threads engaging said external threads on said power screw and a plurality of axially extending splines on an external surface thereof, a plurality of axially extending splines internally of said bore and engaging said external splines of said actuator nut to prevent said nut from rotating relative to said housing, a piston movable in a brake applying direction in said bore by said actuator nut, an aperture at one end of said piston, said second end of said shaft extending through said aperture to the interior of said piston, a bushing supporting said second end of said shaft internally of said piston, means fixing said bushing against axial movememt toward said second end of said shaft, and a spring seated at one end against said bushing and at the other end against said piston, whereby rotation of said power screw in one direction translates said actuator nut and said piston in a brake applying direction and said spring biases said piston and said actuator nut axially away from said bushing to a rest position when torque is not applied to said power screw.

4,406,353
WHEELED GARMENT BAG

Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94133

Filed Feb. 7, 1983, Ser. No. 464,384
Int. Cl.[3] A45C *5/14, 13/04, 13/10*
U.S. Cl. 190—18 A 9 Claims

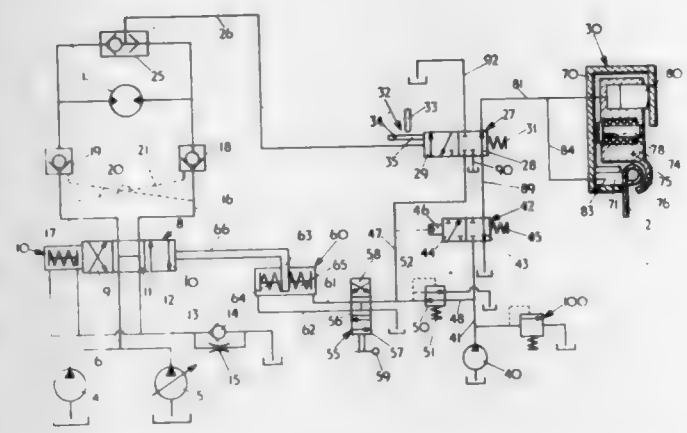


1. A wheeled article of luggage comprising:
an elongated garment carry-on bag adapted to be folded on itself along a transverse fold line,
a frame secured to said bag for stiffening at least a portion of said bag,
a pair of ground wheels,
a pair of wheel supporting members secured at one end to said frame and extending through a wall of said bag and rotatably supporting said ground wheels at their opposite ends,
means for securing together the folded portions of said bag when the latter is folded along said fold line with said ground wheels positioned outwardly of said bag, and
means for securing together the folded portions when said bag is folded in the opposite direction with said wheels positioned between said folded portions.

4,406,354
BRAKE EQUIPMENT FOR UNDERGROUND MINING MACHINES

Roger Barsted, Burton-on-Trent, England, assignor to Coal Industry (Patents) Ltd., London, England

Filed Jul. 21, 1981, Ser. No. 285,691
Claims priority, application United Kingdom, Aug. 15, 1980, 8026658
Int. Cl.[3] B61H *7/12;* B60K *41/20;* E21C *29/20*
U.S. Cl. 192—3 N 3 Claims

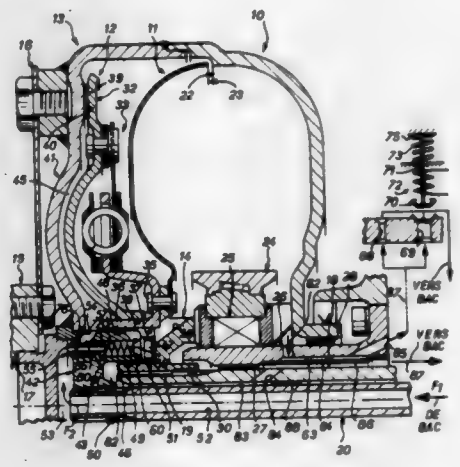


1. Brake equipment for an underground mining machine which in operation traverses to and fro adjacent to a stationary track extending along a longwall face and which includes a hydraulic haulage drive motor, comprising control means arrangeable to sense the operational condition of the haulage drive motor, and a brake securable to the machine, in use, the brake being adapted to engage the stationary track in the "brake applied" mode to retard movement of the machine in at least one direction of machine traverse, the control means being adapted to cause the brake to be applied when the control means senses other than normal haulage condition of the haulage drive motor, the control means comprising a machine traversing control valve, a flow control valve for controlling supply of pressure fluid to the hydraulic haulage drive motor such that when the flow control valve is in a neutral machine operating mode, the pressure fluid supply is exhausted from the haulage drive motor, and an activator device which in use is activated into a machine traversing mode by operation of the flow control valve into a machine traversing mode and which, in use, is adapted to move the flow control valve into a neutral machine non-traversing mode when the machine traversing control valve is moved into a neutral machine non-traversing mode, the activator device being resiliently biassed towards a neutral machine non-traversing mode, the control means further comprises a shuttle valve arrangeable to sense the pressure of the fluid supply to the haulage drive motor, the shuttle valve being adapted to feed the pressure of the fluid supply to the haulage drive motor to a pilot operated valve adapted to control the supply of pressure fluid to the brake.

4,406,355
TRANSMISSION WITH HYDRAULIC COUPLING MEMBER AND LOCKING CLUTCH

Jean Bionaz, Fontenay-sous-Bois, France, assignor to Valeo, Paris, France

Filed Jan. 13, 1981, Ser. No. 224,840
Claims priority, application France, Jan. 25, 1980, 80 01598
Int. Cl.[3] F16D 47/06
U.S. Cl. 192—3.3 3 Claims



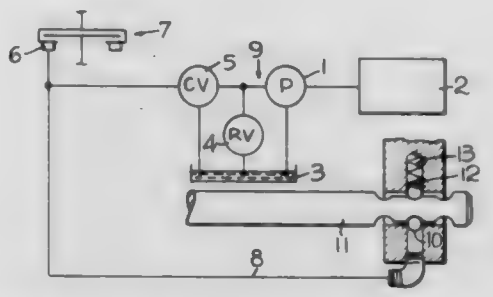
1. A fluid transmission comprising an input element adapted to be fixed for rotation with a first shaft and an output element adapted to be fixed for rotation with a second shaft, a hydraulic coupling including an impeller member fixed for rotation with said input element and a turbine member fixed for rotation with said output element; a lock-up clutch comprising an axially movable coupling element fixed for rotation with a selected one of said input element and said output element and adapted to be coupled for rotation with the nonselected element by frictional engagement means, fluid circuit means comprising an inlet conduit for supplying fluid under pressure and an outlet conduit for returning fluid to a collecting tank, a distributor valve element disposed in said transmission and having a bore permanently communicating with said hydraulic coupling, said distributor valve element controlling fluid flow through a fluid control passage communicating with a clutch control chamber operable to control the engagement and disengagement of said lock-up clutch, means biasing said distributor valve element to a rest position in which said distributor valve element closes off said fluid control passage and prevents clutch disengagement, said distributor valve element having an operative position for opening said control passage and bringing said input conduit into communication with said control chamber and thereby disengaging said clutch; passage means connected to said outlet conduit, externally controlled valve means in said passage means for varying the effective cross section thereof, said distributor valve element bringing said control passage into communication with said outlet conduit when said distributor valve element is in its rest position for returning fluid from said control chamber to said storage chamber.

4,406,356
HYDRAULIC DETENT LOCK FOR TRANSMISSION

George T. Prince, West Allis, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jan. 2, 1981, Ser. No. 222,036
Int. Cl.[3] B60K 41/22; G16D 25/10
U.S. Cl. 192—3.57 10 Claims

1. A vehicle transmission having a detent for locking a shift mechanism comprising; a hydraulic transmission system operating a clutch having a hydraulic actuator including, a hydraulic clutch, a control valve for selectively controlling flow of hydraulic fluid to said hydraulic actuator for engaging and disengaging said hydraulic clutch, a mechanical transmission including a transmission shifting mechanism including a shift rail reciprocally mounted in said transmission, means on said shift rail defining detent grooves, a hydraulic detent for selectively retaining said shift rail in selected stop positions including, a detent element selectively positioned in said detent grooves, a hydraulic pressurizing chamber formed in said hydraulic detent reciprocally supporting said detent element for receiving pressurized fluid, a hydraulic conduit connected

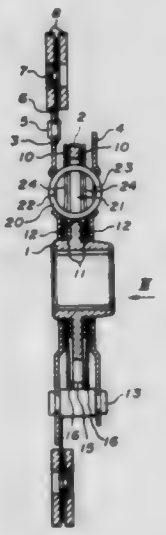


to said hydraulic clutch in said hydraulic transmission system and said hydraulic detent for biasing said detent element in selected of said detent grooves responsive to the force of pressurized fluid from said hydraulic transmission system for locking said shifting rail in its selected shift position.

4,406,357
DAMPER DISK

Tamio Nagano, Hirakata, and Yoshio Nishimura, Neyagawa, both of Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Jan. 30, 1981, Ser. No. 229,943
Claims priority, application Japan, Feb. 6, 1980, 55-13981
Int. Cl.[3] F16D 3/14, 3/66
U.S. Cl. 192—106.2 5 Claims

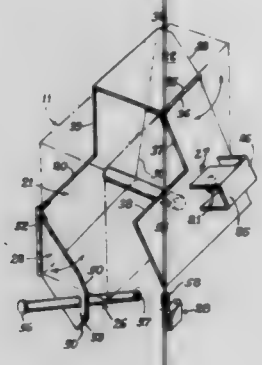


1. A damper disk comprising a radial flange formed on an outer periphery of a hub splined to an output shaft; a pair of side plates disposed at both sides of the flange; openings formed in the flange and the side plates, said openings registering in the axial direction of the disk; torsion springs disposed in the openings; a stop pin connecting the radially outer portions of the side plates; a sub-plate disposed between the flange and at least one of the side plates; first and second notches formed in the flange and the sub-plate, respectively, through which said pin extends to form first and second spaces disposed respectively therebetween in the rotating direction, the second notch in the sub-plate being shorter than the first notch in the flange; first means frictionally coupling the flange with the sub-plate by a first friction force, and second means frictionally coupling the sub-plate with said one side plate by a second friction force which is weaker than said first friction force.

4,406,358
COIN PROTECTOR FOR COIN OPERATED WASHER DRYER

Miles D. Zahradnik, 420 E. Sixth St., Momence, Ill. 60954

Filed Oct. 28, 1981, Ser. No. 315,636
Int. Cl.[3] G07F 9/06; E05B 65/00
U.S. Cl. 194—1 A 3 Claims

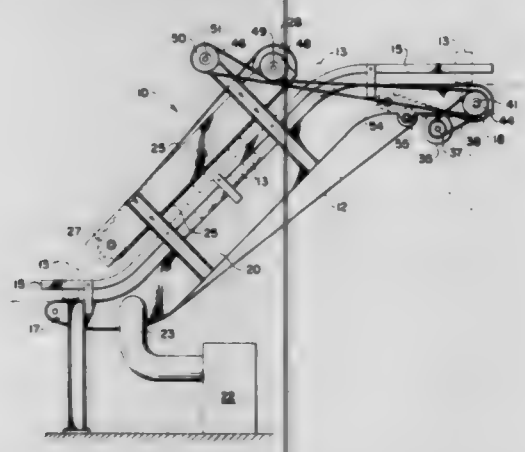


1. A security guard for an automatic coin operated washing machine or dryer having a coin receptor unit, comprising: a first sidewall member and a top wall member integrally formed to fit over one side and the top of the coin receptor unit; a second sidewall member operationally positioned parallel to the first sidewall member in its mounted position over the receptor unit and having hinged connection with the top wall member; a front wall member having hinged connection with said first sidewall member and presenting a free end portion extending past the second sidewall member when in operating position; a first bolt means fixed at one end to the first sidewall member and operationally positioned laterally through the receptor unit and an opening formed in the second sidewall member to protrude therebeyond; said first bolt means having an opening therethrough near its outer end; and a second bolt means removably mountable through an opening in the said front wall member so as to parallel said second sidewall member in its operating position and adapted to extend through said opening in said first bolt means; whereby said two bolt means are intersectingly interlocked exteriorly of the second sidewall member, and locking means engageable with said second bolt means for securing the two bolt means in interlocked relation whereby to prevent unauthorized removal of the guard from the receptor unit.

4,406,359
METHOD AND APPARATUS FOR MASS TRANSIT OF CYLINDRICAL ARTICLES BETWEEN DIFFERING ELEVATIONS

Rodger E. Cole, Golden, and Richard H. Vander Meer, Arvada, both of Colo., assignors to Goldco Engineering, Inc., Golden, Colo.

Filed Jan. 22, 1981, Ser. No. 227,300
Int. Cl.[3] B65G 15/14, 17/46
U.S. Cl. 198—626 7 Claims



1. Apparatus for transporting a plurality of similarly oriented substantially identical articles closed at at least one end between differing levels, the apparatus comprising:

a first plenum having a perforated, curved upper surface;

a second plenum vertically spaced from the first plenum and having a perforated, curved upper surface;

means for providing a low pressure volume, the low pressure means communicating with the interiors of the first and second plenums by means of a direct communication between one of the plenums and the low pressure means and a duct connecting the plenum communicating with the low pressure means to the other plenum;

at least one movable foraminous belt adapted to be supported by and moved over the upper surfaces of the first and second plenums and extending substantially linearly between the upper surfaces of the first and second plenums in an inclined configuration, the belt section adapted to be supported by and move over the upper surface of the first and second plenums; and

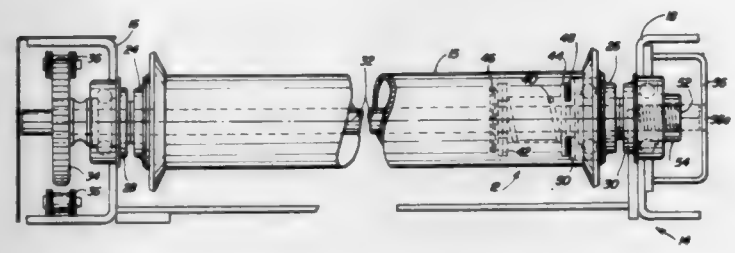
spaced belt means positioned parallel to and adjacent to only the linear inclined section of the foraminous belt extending between but spaced from the upper surfaces of the first and second plenums, the spaced belt means being adapted to move at a linear velocity substantially identical to the coresponding, parallel inclined section of the movable belt;

whereby the foraminous movable belt will be held in contact with the perforated curved surfaces of the first and second plenums, and articles carried on such belt will be secured to the belt by means of the low pressure contained in the plenums thereby permitting transition of articles from a level attitude to an inclined attitude for transport between the spaced, parallel belt sections.

4,406,360
ACCUMULATING CONVEYER

Jason T. Smith, Hinsdale; Thomas A. Church, Woodridge, and Theodore Johnson, Wheaton, all of Ill., assignors to Conveyersmith, Inc., LaGrange, Ill.

Filed Dec. 22, 1980, Ser. No. 219,422
Int. Cl.[3] B65G 13/071
U.S. Cl. 198—781 29 Claims



1. A drive mechanism for a conveyer, said drive mechanism comprising:

a drive shaft;

power means coupled to said drive shaft for causing said drive shaft to rotate;

a friction pad having first and second frictional sides and being rotatably and slidably mounted on said drive shaft;

a driving disc slidably mounted on said drive shaft so as to be adjustable in an axial direction, said driving disc also being mounted on said drive shaft so as to rotate conjointly with said drive shaft, and said driving disc being positioned so that one surface of said driving disc is in contact with the first frictional side of said friction pad;

a roller tube for engaging loads;

a roller disc mechanically coupled to said roller tube so as to rotate conjointly with said roller tube, said roller disc being positioned so that one surface of said roller disc is in contact with the second frictional side of said friction pad;

bias means for urging said driving disc against the first frictional side of said friction pad and the second frictional side of said friction pad against said roller disc, whereby when said roller tube engages a resistance that is less than a predetermined value the friction between said friction

pad and said driving disc and said roller disc causes said roller tube to rotate with said drive shaft.

4,406,361

CONNECTION CONVEYOR DEVICE FOR CONVEYING MATERIAL

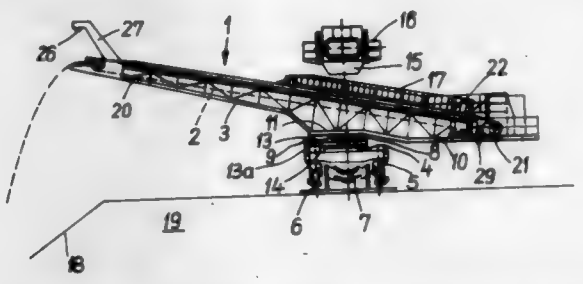
Herbert Königs, Rheinberg, and Heinz Weber, Krefeld-Traar, both of Fed. Rep. of Germany, assignors to Fried, Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Jun. 23, 1981, Ser. No. 276,783

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024180

Int. Cl.³ B65G *21/10, 41/00*

U.S. Cl. 198—863 **5 Claims**



1. A connection conveyor device for conveying material to a stacker, said device comprising:

an undercarriage;

a bridge having a material receiving end and a material discharge end;

a conveyor belt system provided on said bridge for effecting said conveying;

supporting means interposed between said undercarriage and said bridge for displaceably supporting said bridge on said undercarriage at any location of said bridge extending approximately from the center of gravity thereof to said receiving end thereof, and for securing said bridge against tilting, when in the center of gravity position, said connection conveyor device being adapted to be selectively coupled and uncoupled from said stacker, and a connection element for connecting said bridge to said undercarriage, when said bridge is in a discharge position, to secure said bridge against tilting, said connection element being arranged between the support location of said bridge and said discharge end of said bridge.

4,406,362

LENS CARRYING CASE

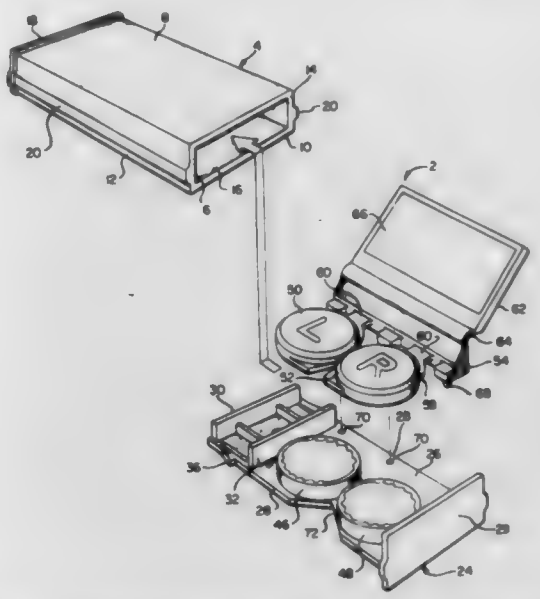
Michael D. Thomas, and Francis E. Ryder, both of Arab, Ala., assignors to Ryder International Corporation, Arab, Ala.

Filed Oct. 6, 1980, Ser. No. 193,902

Int. Cl.³ A45C *11/04*

U.S. Cl. 206—5.1 **5 Claims**

1. A lens case comprising an outer case member having a cavity, a drawer having a pair of contact lens open top wells in side-by-side relation, each said well having an upper rim, a hingedly connected cap for each well engagable over the rim of the associated well to provide a closed sealed position and removable to open said well, cooperating means on the drawer and on said case member for slidable movement of said drawer from a closed position in which the wells with the caps are disposed within said cavity to an open position in which said caps and wells are outside of said cavity, said outer case member having a top wall, and means interposed between said caps and said top wall for imposing pressure on said caps to force said caps into sealing engagement with the upper rim of the wells when the drawer is in said closed position said means comprising a retainer member mounted to said drawer by a hinge connection, such that said retainer member may be pivoted to a position overlying said well caps and may be received within said case member when the drawer is in the closed position, said retainer member being engaged by said



top wall of the casing to force the caps into sealing engagement with the upper rim of the wells.

4,406,363

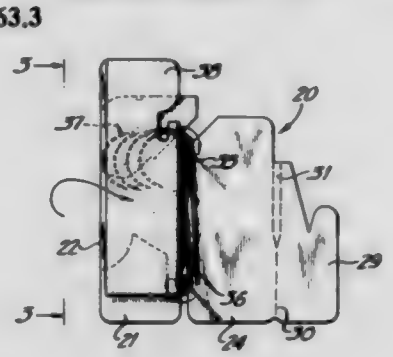
FOLDER RETAINER FOR MULTISTRAND SURGICAL SUTURES

Jorge L. Aday, New Brunswick, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Sep. 24, 1982, Ser. No. 422,986

Int. Cl.³ A61L *15/00*

U.S. Cl. 206—63.3 **12 Claims**



1. A folded retainer for a plurality of surgical sutures, said sutures being disposed in said retainer in a coiled or similar configuration having a plurality of return bend sections with one-half of said bend sections being disposed in opposed relationship to the other half of said bend sections, comprising:

first and second suture retaining panels foldably connected along one major edge thereof,

a third suture retaining panel foldably connected along one minor edge of said first suture retaining panel;

a foam member covering substantially the entire surface of one side of said first and third suture retaining panels;

a fourth locking panel foldably connected along the other major edge of the second suture retaining panel;

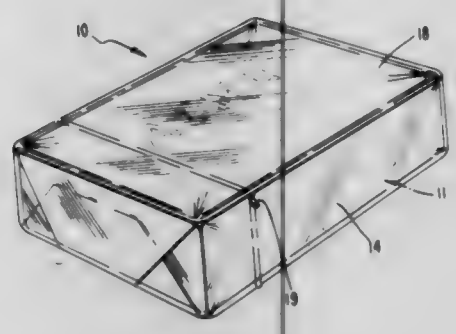
said retainer, when folded with said third suture retaining panel with the form thereon folded on to the first suture retaining panel with the foam surfaces in face-to-face relationship, said foam member covers one-half of the return bends of said surgical sutures and with said fourth locking panel folded over said first suture retaining panel to lock therewith.

4,406,364

WRAPPED COMBINATION OF SOAP AND RECEPTACLE FOR THE SOAP

Wilhelm B. Bronander, Jr., Upper Montclair, N.J., assignor to Scandia Packaging Machinery Company, Clifton, N.J.

Filed Sep. 3, 1981, Ser. No. 299,242
Int. Cl.[3] A47K 5/03, 5/08; B65D 65/16
U.S. Cl. 206—77.1 8 Claims



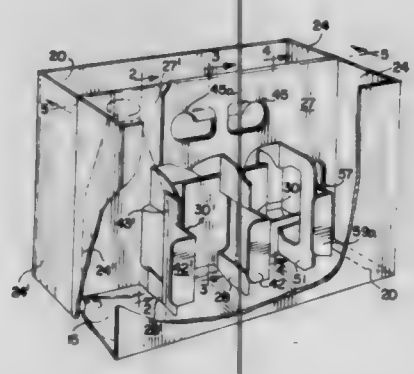
1. A wrapped soap package combination comprising:
(a) a rectangularly shaped rigid plastic container having a bottom, opposite ends, opposite sides and an open top;
(b) a single cake of soap readily releasably received in the container; and
(c) a sheet of disposable overwrap material tightly and removably wrapped around the container and soap cake with a sealed tuck and fold structure on opposed sides of the container,
(d) said overwrap including a tear strip to facilitate removal of the overwrap material from the wrapped soap package combination,
(e) said overwrap material being in an amount and wrapped in a manner effective to hold the soap cake in assembled relation with the container for storing, shipping and marketing of the soap.
(f) the container having a structural configuration effective for holding the soap after the wrapped package is opened and including an opening for facilitating drainage and soap removal,
(g) the structural configuration of the container having an amount of stiffness effective to provide a solid backing against which the overwrap material has been tucked, folded and sealed to form said sealed tuck and fold structure during the wrapping operation and to further provide support for the soap during use of the soap after the wrapped package is opened and the overwrap material is disposed of.

4,406,365

BASKET TYPE BOTTLE CARRIER

Francis V. Kulig, Morris, Ill., assignor to Federal Paper Board Co., Inc., Montvale, N.J.

Filed Sep. 14, 1981, Ser. No. 301,470
Int. Cl.[3] B65D 6/16, 5/48
U.S. Cl. 206—188 10 Claims



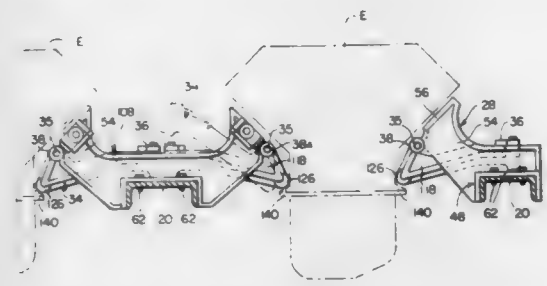
1. A multi-cell article carrier for bottles, or the like, which is formed from a single blank of foldable sheet material and which includes, when erected, a bottom wall, side and end walls upstanding from the bottom wall, said end walls being connected on vertical hinge lines to said sidewalls, a multi-panel, longitudinal partition and handle forming structure upstanding from the bottom wall and having a partition forming portion and a handle forming portion which multi-panel structure is hingedly connected at opposite ends to the end walls on vertical hinge lines at the center of said end walls and divides the carrier into twin compartments, and double panel cross partitions extending in longitudinally spaced relation at opposite sides of said partition forming portion of said multi-panel structure which double panel cross partitions divide each of said compartments into a multiplicity of upwardly opening cells, said cross partitions being hingedly connected to certain of the panel members in the multi-panel longitudinal partition and handle forming structure and being secured in cross partition forming relation to oppositely disposed sidewalls, the two panels forming each of said double panel cross partitions being integrally hinged about a vertical hinge connection, said vertical hinge connection of some of said two panels extending along a vertical hinge line which is disposed on the outer side of the vertical center line of the associated double panel cross partition with portions of said side panels adjacent the hinge line being folded upon each other in face to face relation, said vertical hinge connection of others of said double panels extending along a vertical hinge line which is disposed on the inner side of the vertical centerline of the associated double panel cross partition with portions of said other panels adjacent the hinge line being also folded upon each other in face to face relation.

4,406,366

V-SHAPED ENGINE TRANSLATION RACK

David J. Forshee, 350 Lakes Edge Dr., Oxford, Mich. 48051

Filed Aug. 11, 1981, Ser. No. 291,992
Int. Cl.[3] B65D 85/68
U.S. Cl. 206—319 28 Claims



1. In a material handling rack for translating a plurality of articles having at least in part a generally V-shaped cross-sectional configuration, such for example as but not limited to automobile engines, wherein said rack is provided with a frame having a plurality of substantially parallel, longitudinally spaced apart transverse rails disposed in a relatively elevated horizontal plane for support of said articles thereon, said rails defining open spaces therebetween for admission of said articles thereinto, characterized by the improvement comprising
plastic article support members in longitudinally [illegible]ed sets removably secured to said transverse rails in oppositely facing relationship across each said open space, said article support members having elements thereof complementary to angulated outer surfaces of said generally V-shaped part(s) of said articles to provide angulated rest surfaces supporting said article thereon therebetween, manually operable plastic detent lever means hingedly secured to and adjacent the distal ends of said article support members for pivoting engagement with and disengagement from detent-engaging surfaces of said articles to secure them in and release them for removal from said rack frame,
said detent lever means releasably engaging said articles at

detent-engaging elements projecting laterally from said articles in a plane below said angulated rest surfaces.

4,406,367

PACKAGE FOR ELECTRICAL AND/OR ELECTRONIC COMPONENTS

Jan Bouwknegt, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 17, 1981, Ser. No. 293,755

Claims priority, application Netherlands, Sep. 8, 1980, 8005052

Int. Cl.³ B65D *73/02*

U.S. Cl. 206—329 **1 Claim**



1. A package for electrical and/or electronic components, comprising a strip-shaped carrier formed with apertures which are uniformly spaced along the carrier and which serve to accommodate the components, and with at least one row of feed perforations, wherein for holding the components in the apertures, said carrier is provided on one side with two tapes, each of which extends longitudinally of the strip-shaped carrier and has an adhesive layer on the side which faces the carrier, each of which covers a portion of each aperture adjacent a respective one of two opposite sides of the aperture so that an intermediate portion of the aperture is free of the tape.

4,406,368

DRAWING TOOL ORGANIZER

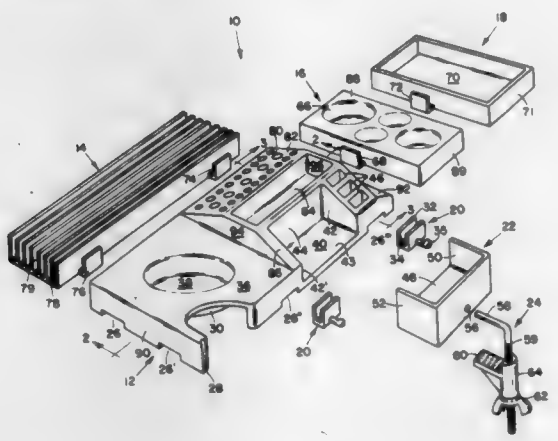
Glenn P. Hermes, 295 E. River, New Braunfels, Tex. 78130

Continuation-in-part of Ser. No. 85,026, Oct. 15, 1979, Pat. No. Des. 264,225. This application Dec. 7, 1981, Ser. No. 328,425

The portion of the term of this patent subsequent to May 4, 1996, has been disclaimed.

Int. Cl.³ A45C *11/34*; B65D *85/28, 69/00, 6/04*

U.S. Cl. 206—371 **4 Claims**



1. A drawing tool organizer comprising:

an organizer unit comprising an elevated wall member defining a substantially rectangular polygon, a first substantially flat top surface joining said elevated wall member at one edge and two sides of said substantially rectangular polygon, a second top surface having opposed slanting surfaces joining said elevated wall member at two sides of said substantially rectangular polygon and a slanting surface joining said elevated wall member at the opposite edge of said substantially rectangular polygon from the edge at which said first top surface joins said elevated wall member;

a vertically extending wall member joining said first and second top surfaces;

a plurality of cavities formed in said second top surface adapted to hold a variety of drawing tools;

a clamping cavity formed in said second top surface having vertical wall members defining said clamping cavity extending downward from one of said two opposed slanting surfaces and contoured to circumscribe the base of a drafting tool pencil sharpener having a table clamp attached thereto;

a circular cavity formed in said first top surface having a downwardly extending circular wall defining said circular cavity wherein said circular wall is adapted to fit within the center of a drafting tape roll;

an opening formed in said elevated wall adjacent said circular cavity adapted to allow access to said drafting tape roll;

cutting means mounted adjacent said opening adapted to permit cutting of said drafting tape;

a template holder unit adapted for holding a plurality of drafting templates in an upright position;

at least one hook unit adapted for hanging drafting tools therefrom;

a tray unit comprising an elevated wall member defining a substantially rectangularly shaped polygonal cavity;

a bottle unit comprising an elevated wall member defining a substantially rectangular polygon, and a substantially flat top surface having a plurality of cavities formed therein adapted to circumscribe drafting solution bottles;

multiple unit connecting means for releasably securing said organizer unit, said template holder unit, said at least one hook unit, said tray unit, and said bottle unit comprising a plurality of notches formed in the lower edge of said elevated wall member of said organizer unit and adapted to mate with L-shaped connecting members attached to said template unit, said tray unit, and said bottle unit, and adapted to mate with a U-shaped connecting member attached to said at least one hook unit; and

auxiliary clamping means for securing said organizer unit to a drafting table comprising a three-sided polygon having three elevated wall members and a base member adapted to mate with said clamping cavity, an aperture formed in one wall member thereof, and a clamp comprising an L-shaped latch member wherein one leg of said latch member is adapted to fit through said aperture and the other leg of which is threaded and wherein a table gripping member is slidably positioned over said threaded leg and held in position by a nut carried by said threaded leg;

whereby said organizer unit, said template holder unit, said at least one hook unit, said tray unit, and said bottle unit may be joined together by disposing said notches on said organizer unit in said L-shaped connecting members and said U-shaped connecting members and securing said organizer unit to a flat surface.

4,406,369

TAPE CASSETTE HOLDER

Robert S. Wallace, Los Angeles, and Arlington R. Robbins, La Mesa, both of Calif., assignors to Unique Designs, a general partnership, Los Angeles, Calif.

Filed Jul. 21, 1980, Ser. No. 170,831

Int. Cl.³ B65D *85/67*

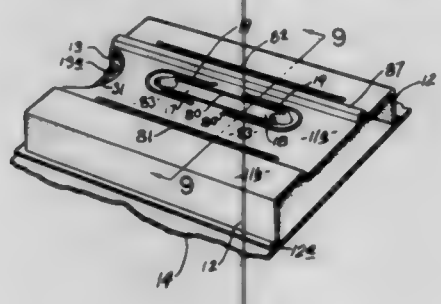
U.S. Cl. 206—387 **22 Claims**

1. Apparatus for receiving a tape cassette and for blocking a tape winding reel therein against rotation, the reel forming an opening exposed through the wall of the cassette case, comprising

(a) a sleeve having a top wall and opposite elongated side walls, the sleeve having an open end to receive insertion of the cassette case relatively into the sleeve interior below said top wall,

(b) the top wall having a flexible portion and slitting in said wall adjacent said flexible portion,

(c) a projection carried by said flexible portion and extending downwardly into said sleeve interior, said projection having at least one cam surface to be engageable with the cassette case in response to said case insertion, whereby the projection is deflected upwardly by the case as accommodated by flexing of said portion and the projection rides on the case and ultimately is urged by said flexible portion into the reel opening to block rotation of the reel,



(d) said side walls having integral flanges projecting freely generally parallel to a plane defined by said top wall, for flange attachment to a backer sheet, while accommodating flexing of said top wall toward and away from the sleeve interior,

(e) said slitting in said top wall including at least one slit that is linearly elongated along major extent of the top wall and everywhere located at a substantial spacing from said projection, whereby major extent of said top wall is weakened and made flexible for movement with said projection toward and away from the sleeve interior.

4,406,370

ADDITIVE CONTAINERS FOR METAL CASTING

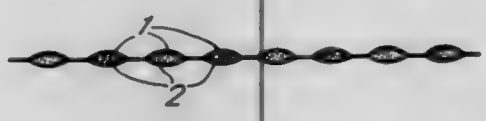
Gary T. Gaisser, and Daniel P. Gregan, both of Brunswick, Ohio, assignors to Foseco International Limited, Birmingham, England

Filed Mar. 16, 1981, Ser. No. 244,156

Claims priority, application United Kingdom, Mar. 29, 1980, 8010701

Int. Cl.[3] **B65D** *83/00, 85/00, 75/42;* **B22D** *7/12, 27/00*

U.S. Cl. 206—484 **6 Claims**



1. A sealed container, for providing a particulate, metal-casting flux in a vessel in which a metal is being cast, said container having walls comprising an inner layer of plastics material heat-sealed to seal the container and, secured to the inner layer, an outer layer of aluminium-containing foil and said container containing a particulate, metal-casting flux.

4,406,371

SELF-CONTAINED PAD OF PLASTIC BAGS

Hercules Membrino, 280 Paoli State Rd., Malvern, Pa. 19355

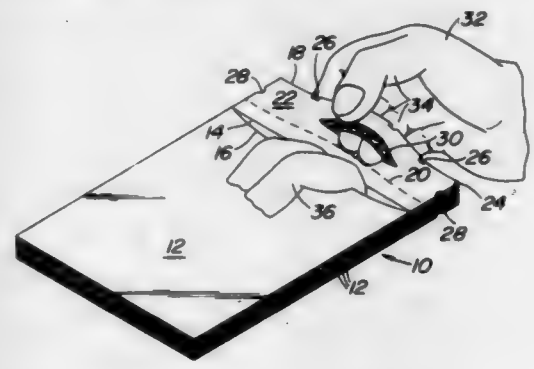
Continuation-in-part of Ser. No. 143,318, Apr. 24, 1980, Pat. No. 4,305,503. This application Nov. 9, 1981, Ser. No. 319,639

The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.

Int. Cl.[3] **B65D** *85/62, 30/00*

U.S. Cl. 206—554 **5 Claims**

1. A plastic bag pad comprising a plurality of plastic pockets, each pocket having a front wall and a rear wall, both said walls being integrally connected to each other except at their upper edges, the upper edges of said front and rear walls being free with the upper edge of said rear wall extending beyond the upper edge of said front wall, whereby the upper edge of said front wall forms a lip and whereby the portion of said rear wall extending beyond the upper edge of said front wall constitutes an extension, a score line extending from one side to the other side of said extension in spaced parallel relation to both the upper edge of said front wall and the upper edge of said rear wall to form a line of severance between said edges, the extensions of all the pockets in the pad being bound to each other above said score line by connecting means to form a base portion for said pad, said base portion having a free upper edge corresponding to the free upper edges of the individual pockets



in the pad, at least a portion of said connecting means comprising side connections at opposite sides of said base portion, said base portion including grasping means whereby individual pockets may be separated from the pad to form an individual bag by supporting said pad at said grasping means while pulling said lip forwardly from said pad to break said score line, said lip and the edge formed by said broken score line forming a mouth for the bag, and said side connections having sufficient strength to avoid being broken during breaking of said score line and to thereby form anchor means to provide a counterforce to the forward pulling force on said lip whereby they aid in opening of the bag during exertion of said pulling force.

4,406,372

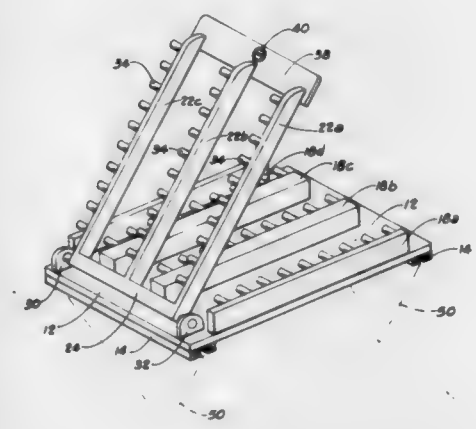
DISPLAY TRAY

Thomas L. Bell, 7300 NW. 23rd St., Suite 405, Bethany, Okla. 73008

Filed May 5, 1982, Ser. No. 375,193

Int. Cl.[3] **B65D** *1/34;* **A47F** *7/024*

U.S. Cl. 206—566 **10 Claims**



1. A display tray for mercantile items having a circuitous ring portion, comprising:

base means;

plural first bar means affixed in spaced parallel disposition on said base means;

first means disposed along n—1 of said first bar means for retaining a plurality of mercantile items;

at least one second bar means hingedly affixed to said base means and movable into display position between adjacent ones of said plural first bar means; and

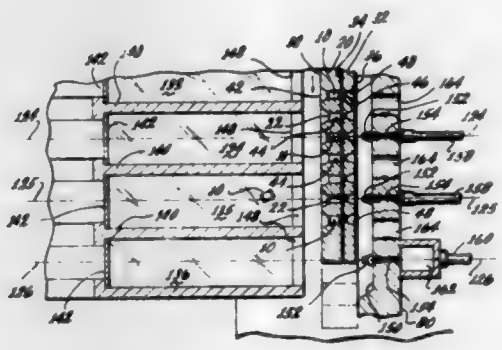
second means disposed along each of said at least one second bar means for retaining a plurality of mercantile items.

4,406,373

MEANS AND METHOD FOR TESTING AND SORTING MINIATURE ELECTRONIC UNITS

Denver Braden, Carlsbad, Calif., assignor to Palomar Systems & Machines, Inc., Escondido, Calif.

Filed Aug. 3, 1981, Ser. No. 289,320
Int. Cl.³ B07C *5/344*
U.S. Cl. 209—574 **34 Claims**



2. The method of testing and sorting miniature electronic units, comprising:

(a) arranging said units in a bank of rows and files and advancing the bank past a first testing station and past subsequent sorting station each successively aligned with each file of said bank,

(b) electrically testing according to values said units at said first testing station and classifying them in a plurality of ranges of values, and

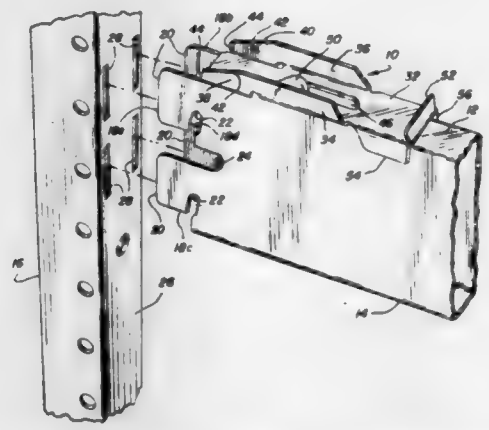
(c) at each subsequent sorting station collecting units belonging in one of said ranges of values.

4,406,374

LOCKING DEVICE FOR DISPLAY RACK

Harry M. Yedor, Northbrook, Ill., assignor to Myco, Inc., Des Plaines, Ill.

Filed Aug. 12, 1981, Ser. No. 265,776
Int. Cl.³ A47F *5/00*
U.S. Cl. 211—192 **6 Claims**



1. A locking device for use with a rack assembly of the type having a vertical member including one wall in which there is formed a vertically extending elongate slot and a horizontal member including a horizontally extending upper surface and a hook portion depending therefrom, said hook portion being receivable within said slot for providing a horizontally secure engagement between said vertical and horizontal member upon relative downward movement of said hook portion within said slot, whereupon an opening is left at the upper portion of said slot above said received hook portion, said locking device comprising:

bracket means disposed in horizontal sliding relation on said horizontal member upon surface, said bracket means including a locking member transversely dimensioned for receipt in said slot and comprising a horizontally extending surface inclining in an upwardly direction away from said vertical member to a height above said horizontal member upper surface greater than the vertical dimension of said slot opening, said locking member being slidable to a position within said slot opening wherein said inclined surface is brought into abutting engagement with the upper surface of said slot for inhibiting relative vertical movement between said vertical and horizontal members; and

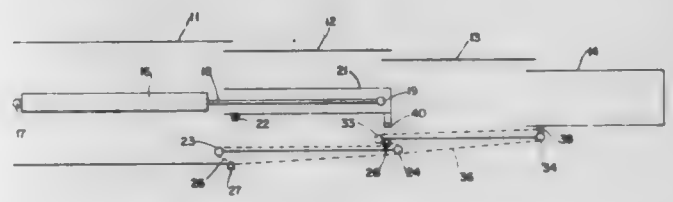
means for locking said bracket means in said engaged position.

4,406,375

TELESCOPIC BOOM CONSTRUCTION

John L. Hockensmith, Chambersburg, Pa., assignor to JLG Industries Inc., McConnellsburg, Pa.

Filed Jul. 2, 1980, Ser. No. 165,627
Int. Cl.³ B66C *23/04*
U.S. Cl. 212—268 **14 Claims**



1. A multi-section telescopic lifting boom includes a base section and movable sections, a motor for extending and retracting the boom movable sections, a cylinder box pivotally connected adjacent its inner end to a boom section adjacent the base section and having the motor connected to said cylinder box, means for moving one said movable section between a first position in which it is at least partially telescoped over said cylinder box and a second position in which the inner end thereof is beyond the outer end of the cylinder box, meeting portions on the outer end of said cylinder box and the inner end of of said one section, and guide surface means on at least one of the meeting portions for guiding said cylinder box into said one movable section; said cylinder box and said one section each having a top plate in substantially parallel, adjacent relationship when said one section is in said first position, pusher means on the inner end of said top plate of said one section, and said guide means comprising inclined striker means on the outer end of said cylinder box extending into the path of said pusher means upon movement of said one section to said first position.

4,406,376

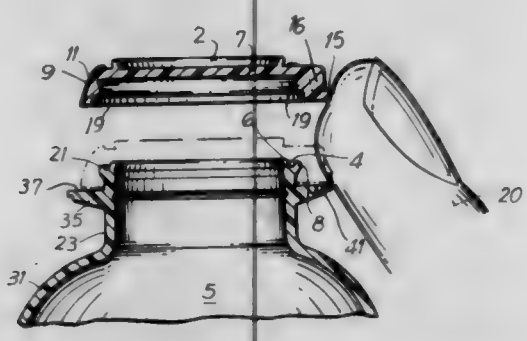
REVERSIBLE CHILD RESISTANT CLOSURE

Walter G. Berghahn, Scotch Plains, N.J., assignor to Bristol-Myers Company, New York, N.Y.

Filed Apr. 12, 1982, Ser. No. 367,699
Int. Cl.³ B65D *55/02*
U.S. Cl. 215—224 **6 Claims**

1. A reversible child resistant snap-on closure; said closure being adapted to serve as a child resistant closure when applied to a container in a first upright position while being adapted for ready removal by an adult from a container when applied to said container in a second inverted position, said closure being a low profile flexible snap-on closure for a container having a neck, said closure having a roof, a skirt and a lower marginal surface having an internal diameter of substantially uniform size; said skirt being provided on the internal surface thereof

with means for engaging a portion of the neck of said container; said snap-on closure being provided with a tab extending outwardly from said lower marginal surface and having a lower surface which is in substantially the same plane as the lower marginal surface of said closure; said skirt being tapered downwardly and outwardly from said closure roof to the outer circumference of said lower marginal surface, the shortness of said skirt and its taper being such as to make it difficult for a



child to get its teeth on it when the closure is in position on a bottle in the child resistant position; said closure also being provided with an annular ridge extending upwardly from the top of said closure roof, said annular ridge being slanted downwardly and outwardly when said closure is held in its inverted position, said annular ridge being adapted to be compressed inwardly when applied to a container so that it will engage the inner wall of the neck of said container in a snap-fit relationship.

4,406,377

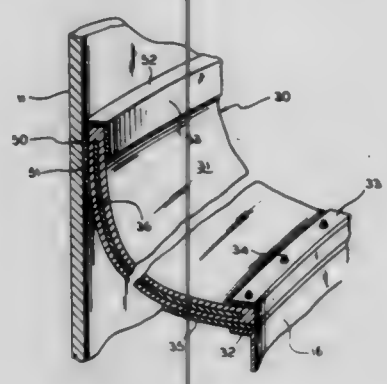
LOW FRICTION SEAL FOR A FLOATING ROOF

Robert A. Bruening, 1541 Chippewa Dr., Naperville, Ill. 60540

Continuation of Ser. No. 183,624, Sep. 2, 1980, which is a continuation-in-part of Ser. No. 53,947, Jul. 2, 1979, abandoned. This application Jun. 4, 1982, Ser. No. 384,863

Int. Cl.³ B65D *87/20*

U.S. Cl. 220—222 **12 Claims**



1. An elongated elastomeric composite strip with laterally spaced side edges, impermeable to petroleum vapor and useful as a seal in a floating roof tank,

said elastomeric strip having a layer of polymeric fabric carried thereon along at least one side edge adapted to contact a floating roof tank side wall, with the layer having a substantially lower coefficient of friction than the material otherwise comprising the surface of the elastomeric strip thereby providing a slick face adapted to at all times freely slidably contact a surface with which it has contact with little or no sticking; and

said layer of polymeric fabric is provided by a plurality of separate pieces, with a gap between adjacent pieces, so as to accommodate stretching of said elastomeric strip.

4,406,378

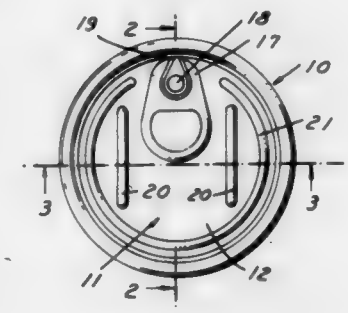
METALLIC CONVENIENCE CLOSURE

Edgar H. Zysset, Sylvania, Ohio, assignor to Automated Container Corporation, Orlando, Fla.

Filed Jul. 6, 1981, Ser. No. 280,577

Int. Cl.³ B65D *17/34, 17/46*

U.S. Cl. 220—273 **6 Claims**



1. A metallic convenience closure for a cylindrical container comprising

a panel,

an endless severing line formed in the central panel and defining a central removable portion and a peripheral fixed portion,

means forming a part of the fixed portion for attaching a closure to the end of a container to close said end,

a manually graspable pull-tab attached to the removable portion upon lifting of the tab into position adjacent the score line for severing the score line, and

stiffening means on the removable portion extending generally parallel to the direction of pull of the pull-tab substantially from one edge of the removable portion to the other adjacent the score line such that said stiffening means will resist the tendency of the removable portion to bend transversely of the pull direction.

4,406,379

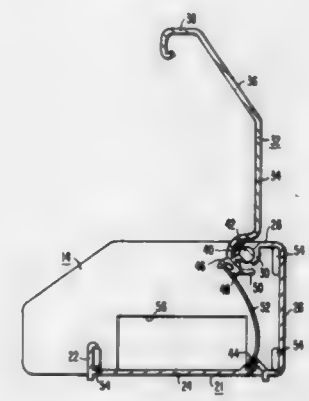
CABLE MANAGER

William C. Anderson, Grand Rapids, and Raoul J. P. Schoumaker, Wyoming, both of Mich., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 11, 1982, Ser. No. 387,639

Int. Cl.³ B65D *43/24*

U.S. Cl. 220—335 **11 Claims**



1. A cable manager for concealing and controlling electrical and telephone cables in an office environment, said cable manager comprising:

an elongated base member including a bottom wall, a rear wall and a first front wall substantially shorter than said rear wall, said rear wall terminating in a C-shaped socket extending inwardly and overlying said bottom wall;

an elongated top closure member having hinge means at one end thereof and stop means on each side of said hinge means, said hinge means constructed and arranged to be contained within said C-shaped socket on said base portion for rotational movement therein, said elongated top

closure extending beyond said first front wall and including a downwardly extending second front wall that terminates in a spaced relationship with said first front wall when said top closure member is in a closed position; and

spring means interconnecting said base wall and said top closure, said spring means constructed and arranged to releasably retain said top closure in either a closed or open position.

4,406,380

COLLAPSIBLE CARTON

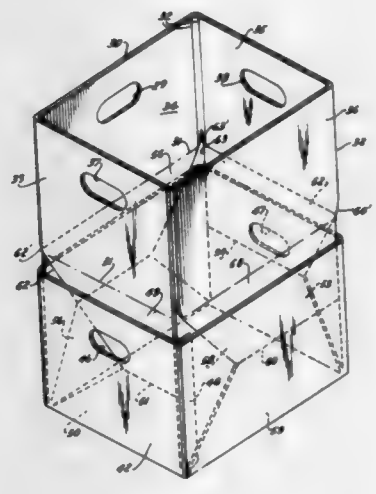
Richard E. Paige, New York, N.Y., assignor to The Paige Company Containers, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 137,655, Apr. 7, 1980, Pat. No. 4,325,493. This application Feb. 1, 1982, Ser. No. 344,454

The portion of the term of this patent subsequent to Apr. 20, 1999, has been disclaimed.

Int. Cl.³ B65D *5/02, 5/36, 5/56*

U.S. Cl. 220—416 **7 Claims**



1. A carton comprising inner and outer snugly nestable tubular shells, each shell including a series of side wall panels hingedly connected together along their side edges, said shells being telescopically adjustable into and out of a set-up relationship in which the overlying side wall panels define a set of double-walled carton sides, a plurality of foldable strips hingedly interconnecting adjacent bottom edges of said overlying side wall panels, said strips being unfolded and parallel to their respective side wall panels when said inner shell is pulled out of said outer shell to its maximum extent and said strips being folded and extending transverse to said side wall panels when said shells are telescoped into the set-up relationship as to define the carton floor, the side edges of adjacent side wall panels of said inner shell being severed from each other at their lower ends so as to permit the lower end of said inner shell to constrict as the inner shell is telescoped into the outer shell, the severance having a length to width ratio of at least 2:1, and the length of the severance being related to the height of the inner shell by a ratio of at least 1:6.

4,406,381

STYLUS DISPENSING APPARATUS AND METHOD

David W. Fairbanks, Monmouth Junction, N.J., assignor to RCA Corporation, New York, N.Y.

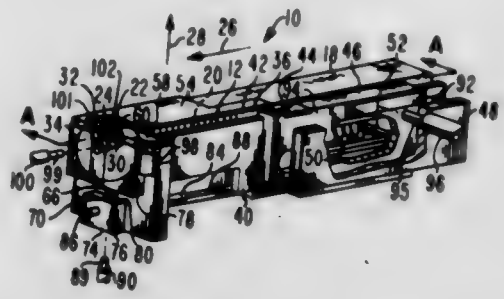
Filed Jun. 30, 1981, Ser. No. 279,187

Int. Cl.³ B65H *1/24*

U.S. Cl. 221—1 **11 Claims**

7. In a method of individually dispensing a plurality of styli juxtaposed in a row lying along a first path within a guide slot having a dispensing section thereof terminating at a reference surface of a housing, said row of styli being pushed forward along said first path by an arm shaped to slide within said guide slot whereby the lead stylus in said row is held against said reference surface, wherein a dispensing member supported by said housing adjacent a side of said dispensing section slides along a second path parallel to said reference surface and contacts and removes said lead stylus from said row of styli, the improvement in said method comprising the steps of:

moving said reference surface along said first path toward said arm in a manner whereby said arm, along with said



row of styli, is pushed backward a predetermined distance along said first path to a holdback position, and

holding said arm stationary at said holdback position while said dispensing member removes said lead stylus from said row of styli.

4,406,382

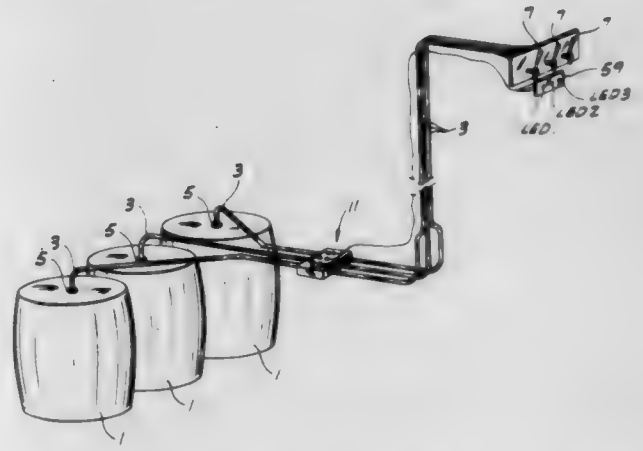
EMPTY BEVERAGE CONTAINER SIGNALING SYSTEM

Allen R. Roth, High Ridge, Mo., assignor to Multiplex Company, Inc., St. Louis, Mo.

Filed Jan. 15, 1981, Ser. No. 225,512

Int. Cl.³ B67D *5/08*

U.S. Cl. 222—64 **5 Claims**



1. A system for signaling emptying of any one of a plurality of beverage containers of a beverage dispensing system wherein beverage is dispensed from the containers through delivery lines each connected at one end to a container and each having a dispensing valve at its other end, beverage in each container being under pressure for delivery when a respective one of the valves is opened, beverage flowing directly from each container through the respective delivery line and out through the respective dispensing valve when the latter is opened, said delivery lines being relatively long and the valves being adjacent one another at a location relatively remote from the containers, said signaling system being adapted to signal the emptying of any one of the containers to an attendant operating the respective dispensing valve without any signal system components in the containers, before any substantial amount of gas enters the delivery line from the empty container, said signaling system comprising:

a body of electrically nonconductive material having a plurality of passages therethrough, one for each container, the body having means at each end of each passage for connecting each passage in a respective delivery line for flow of beverage through the passage;

a pair of electrically conductive probes extending through the body to each passage, the inner end of each probe being exposed to beverage in the passage to constitute an

electrode, the electrodes being spaced one from the other longitudinally in the passage for contact with beverage within the passage;

a plurality of signals, one for each container, located adjacent the dispensing valves for signaling an attendant operating a dispensing valve while he is operating the valve that the respective container has been emptied so that he may shut off the dispensing valve before any substantial amount of gas enters the respective delivery line from the respective container,

sensing circuit means for determining whether beverage bridges the two electrodes in each passage; and

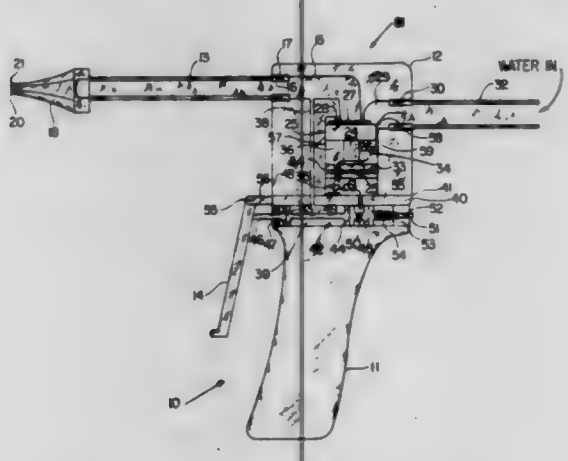
means responsive to the sensing circuit means for actuating each of said signals upon non-bridging of the two electrodes by beverage in the respective passage to signal the attendant operating the dispensing valve of the emptying of the respective container before any substantial amount of gas enters the respective delivery line from that container.

4,406,383

HIGH PRESSURE WATER GUN

Gordon Duncan, 1505 Park Blvd., West Sacramento, Calif. 95691

Filed Jul. 24, 1981, Ser. No. 286,595
Int. Cl.³ F16K *31/143*
U.S. Cl. 222—495 **10 Claims**



1. A water gun for delivering water under high pressure comprising:

a grip;

a main body portion having an upper inner piston chamber separated by a lower inner piston chamber coupled to said grip;

a water inlet leading into said upper chamber;

a water outlet leading out of said upper chamber;

a piston having an upper land interconnected by a shaft to a lower land slidably mounted in said upper chamber, said upper land having a valve seat adapted to close off said water outlet when said piston is in its upper position, said lower land sealingly engaging the inner wall of said upper chamber and said upper land being in non-sealing engagement with the inner wall of said upper chamber so that fluid flow from said inlet can enter said gun above said upper land and flow between said upper land and the inner wall of said upper chamber;

a port extending through said lower land;

said upper chamber being separated from said lower chamber by a wall having a port therein fluidly interconnecting said lower chamber with said upper chamber;

a port extending through said main body portion fluidly interconnecting said outlet with said lower chamber; and

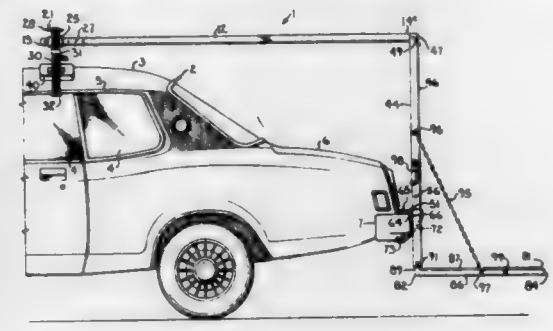
a valve slidably mounted in said lower chamber having a plurality of spaced valve lands sealingly engaging the inner wall of said lower chamber, at least two of said valve lands being disposed in said lower chamber on both sides of said port in said wall when said gun is in its operative position whereby fluid entering said lower chamber from said upper chamber flows between said valve lands said at least two of said valve lands and is sealed off from the remaining portion of said inner chamber.

4,406,384

DETACHABLE LOAD CARRIER FOR A VEHICLE

Lawrence F. Schantz, 500 W. Navajo, Lake Quivira, Kans. 66106

Continuation-in-part of Ser. No. 184,927, Sep. 8, 1980, abandoned. This application Jul. 1, 1981, Ser. No. 279,424
Int. Cl.³ B60R *9/00*
U.S. Cl. 224—42.07 **15 Claims**



1. A detachable load carrier for a vehicle, which comprises:

(a) a longitudinal member positioned over and substantially lengthwise of said vehicle, said longitudinal member having a first and a second end portion;

(b) an upright structure depending from said longitudinal member at an end of said vehicle, said upright structure having an upper end attached to said longitudinal member second end portion and a lower end below the level of a bumper of said vehicle;

(c) a platform extending horizontally outwardly from said upright structure and said vehicle, said platform being attached to said upright structure lower end and adapted for receiving a load thereon;

(d) first connector means for attaching said longitudinal member first end portion to a roof of said vehicle and resisting a portion of a force exerted on said carrier by said load; and

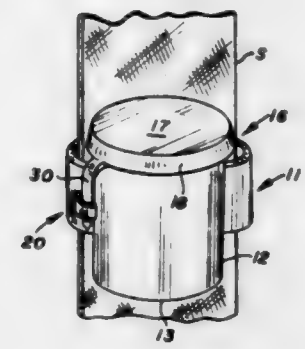
(e) second connector means for attaching said upright structure to said bumper of said vehicle.

4,406,385

FILM CARRIER

George Pribyl, Bloomington, Minn., assignor to Pribyl & Associates, Inc., Bloomington, Minn.

Filed Aug. 7, 1981, Ser. No. 290,947
Int. Cl.³ A45F *5/00*
U.S. Cl. 224—252 **4 Claims**



1. A carrier for film cartridges and the like, said carrier including:

a. a longitudinally extending housing having a closed end and an open end;

b. a cover member arranged to be received about the open end of said housing;

c. flexible means for attaching said cover to said housing

whereby said cover may be removed from said housing to provide access thereto;

d. clip means associated with carrier for retaining the same upon a mounting strap or the like;

e. said clip means including a backing plate secured to said housing and extending transversely the longitudinal dimension of said housing and a pair or flexible and resilient arm members arranged respectively on the ends of said backing plate and directed inwardly thereof to provide a clamping arrangement between said backing plate and said arm members.

4,406,386

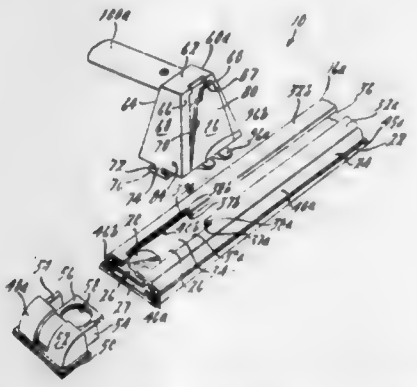
ARTICLE CARRIER AND A BRACKET THEREFOR

William Rasor, Marysville, and Gary M. Cronce, Port Huron, both of Mich., assignors to Masco Corporation, Taylor, Mich.

Filed Apr. 6, 1981, Ser. No. 251,514

Int. Cl.³ B60R *9/04*

U.S. Cl. 224—321 **5 Claims**



1. An article carrier for mounting on a substantially flat exterior surface of a motor vehicle, said article carrier comprising:

a pair of longitudinal slats extending longitudinally along said surface, said slats being fastened to said surface in a parallel spaced apart relationship, each of said slats comprising a longitudinal base, a pair of longitudinal webs extending orthogonally from the edges of said base, and a pair of longitudinal ribs, each rib extending inwardly from the edge of one of said webs, one of the webs of each of said slats having a linear series of spaced apart detent apertures;

a bracket disposed along each of said slats and slidable therealong;

fastening means for each bracket selectively engageable with said one web at any preselected one of said detent apertures, said fastening means prohibiting movement of said bracket along said slat when said fastening means is engaged with said web;

locking means securing said fastening means in engagement with said web; and

a rail disposed transversely between said slats and fastened at each end to one of said brackets;

and further wherein said bracket has an aperture therein, and wherein said fastening means comprises a clamping member having a claw, said clamping member being pivotally fastened to said bracket; and further wherein as said clamping member pivots, said claw is inserted into one of said detent apertures and said clamping member is inserted into aperture in said frame.

4,406,387

ARTICLE CARRIER

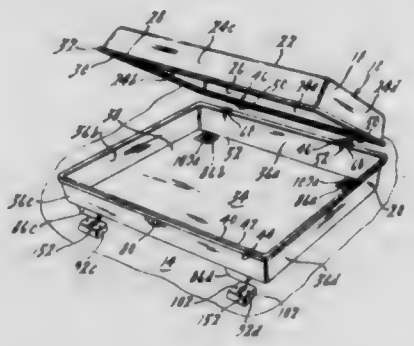
William Rasor, Marysville, Mich., assignor to Masco Corporation, Taylor, Mich.

Filed Mar. 30, 1981, Ser. No. 248,679

Int. Cl.³ B60R *9/04*

U.S. Cl. 224—328 **18 Claims**

1. An article carrier for mounting to an exterior surface of a motor vehicle, said article carrier comprising a pair of hollow shells each having an inside, an outside and an open end, one of said shells being capable of being selectively nested partly inside of the other of said shells, said article carrier further comprising a first fastening means fastening said other shell to said surface and a second fastening means removably fastening said shells together in a configuration with said open ends adjacent to each other wherein said shells define therebetween an enclosed article carrying compartment; and further wherein said first fastening means comprises female fastening means fastened to said surface, a dial disposed within said other shell and having a bore therethrough, a shoulder in said dial adja-



cent to said bore, a pin passing through said bore, an enlargement affixed to said pin and disposed adjacent to said shoulder and limiting the reciprocal movement of said pin within said bore, male fastening means affixed to said pin near one end of said pin and selectively engageable with said female means by rotation of said pin about its longitudinal axis, and selectively engageable interlocking means preventing relative rotation between said pin and said dial whereby said male fastening means and said female fastening means are fastened together and are unfastened by selective engagement of said interlocking means and rotation of said dial.

4,406,388

METHOD OF CONVEYING STRIP MATERIALS

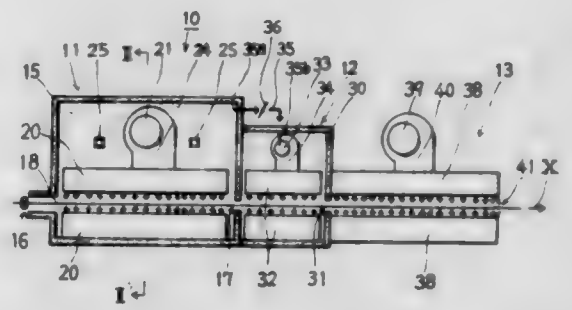
Ono Takashi, and Suda Tsuyoshi, both of Nagoya, Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Japan

Filed Mar. 19, 1982, Ser. No. 360,100

Claims priority, application Japan, Apr. 2, 1981, 56-49788; Apr. 3, 1981, 56-50985

Int. Cl.³ B65H *25/06, 17/32*

U.S. Cl. 226—7 **6 Claims**



1. A method for conveying strip materials while floating the strip by blowing jets of gases against the strip from a pair of chambers vertically separated from each other with a strip-conveyance passage disposed therebetween, including the steps of:

a. adjusting the width of blowoff of gas from the lower one of said chambers in accordance with the particular width of the strip to be conveyed; and

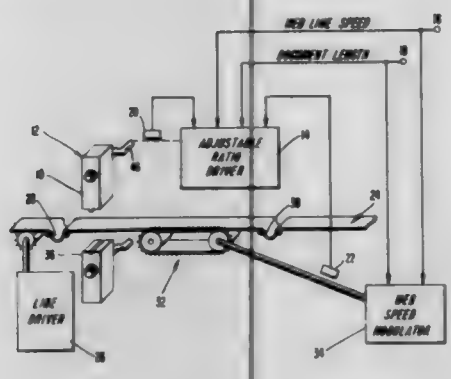
b. controlling the rate of supply of gas to said lower chamber so that the speed of gas blown against the strip with said adjusted blowoff width is set at such a value as allows the strip to be floated in a steady manner.

4,406,389

HIGH SPEED WEB PROCESSING UNIT ADJUSTABLE TO VARIABLE LENGTH DOCUMENTS

William H. Mowry, Jr., Ionia, and Michael J. Poccia, Rochester, both of N.Y., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 11, 1981, Ser. No. 272,585
Int. Cl.[3] B65H *23/18*
U.S. Cl. 226—29 12 Claims



1. In a web processing unit, which adjusts to variable document lengths, a web is moved by a line driver into and out of the processing unit at a constant rate of speed, the web processing unit having a processing tool, said processing unit comprising:

a coupler linkage connected to said processing tool such that the tool impacts the web while moving parallel to said web;

an adjustable ratio driver, connected to said coupler linkage to drive the tool at one impact per document using as inputs the webs constant line speed and the document length and to provide close running register control by adjusting the phase of the driver shaft;

web accummulators, located on either side of said processing tool, to allow the web to travel at said constant line speed outside of said web accummulators, while the speed between the accummulators varies cyclicly;

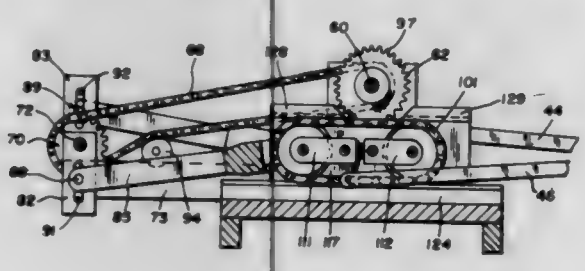
a web speed modulator to drive the web, in the area between said web accummulators, in such a manner that the speed of the web is matched to the tool impact speed when the tool impacts the web and then varied such that the overall web speed between said web accummulators equals the speed with which the web is driven into and out of said web processing unit.

4,406,390

CONTINUOUS MOTION, CONSTANT VELOCITY WEB FEEDING APPARATUS

Joel A. Hamilton, 101 Hardenburgh Ave., Demarest, N.J. 07627

Filed Oct. 9, 1981, Ser. No. 310,601
Int. Cl.[3] B65H *17/34;* F16H *37/16*
U.S. Cl. 226—112 38 Claims



1. Apparatus for providing continuous motion and constant velocity to a traveling web of material such as film, said apparatus including:

(a) a frame;

(b) a pair of gripper means adapted to alternately grip the web, each gripper means carried by a reciprocated member supported by said frame;

(c) means to move each reciprocated member and associated gripper means so as to advance the traveling web;

(d) motor means carried by said frame and providing sufficient power to actuate the apparatus for advancing said web;

(e) a first shaft carried by said frame and rotated by said motor means through a connecting means, said shaft carrying and rotating at least two sprockets fixed thereto;

(f) at least two roller chains each assembled in an endless manner and carried in an oblong path on a pair of disk-like support means, each of said disk-like support means secured to a reciprocably movable frame and means to maintain said endless roller chain assemblies in a taut condition so that each of said roller chain assemblies is driven by one of the rotating sprockets carried on the first shaft;

(g) a second shaft carried by said frame and having a pair of crank arms secured to said second shaft, these crank arms secured and disposed at one hundred eighty degrees from each other with each crank arm adapted to move a Pitman arm connected to the crank arm at one end of the Pitman arm, said Pitman arm being connected at its other end to a reciprocably movable frame carrying at least one roller chain;

(h) a pair of drag links each operatively connected to one of said roller chain assemblies with this connection traveling in the oblong path, the operatively connected drag links being out-of-phase with each other one hundred eighty degrees;

(i) means for connecting said drag links to the reciprocated members so that each member is reciprocated by said drag links in a relationship that is one hundred eighty degrees out-of phase with each other, and

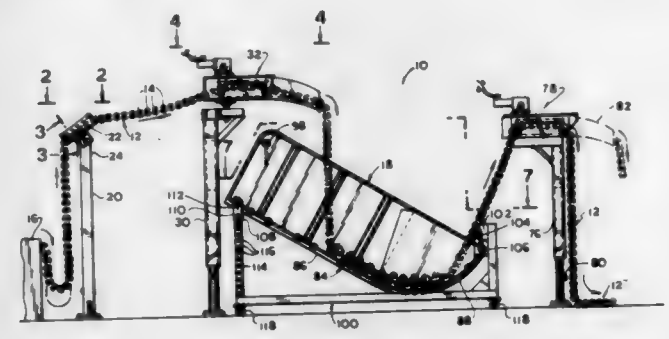
(j) means for activating each of the grippers so as to grasp the travelling web only during a forward movement of each of said reciprocated members, the drag link connection as it traverses the oblong path and as carried by the movable frame providing an overlap of the grasp provided by the grippers during forward movement of the travelling web.

4,406,391

SYSTEM FOR ACCUMULATING AND HANDLING STRIPS OF POCKETED SPRINGS

Albert R. St. Clair, 952 Guys Ct., Lilburn, Ga. 30247

Filed Apr. 16, 1982, Ser. No. 369,321
Int. Cl.[3] B65H *17/42, 17/50*
U.S. Cl. 226—118 20 Claims



1. An assembly for handling a strip of pocketed spring coils, comprising:

an accumulator bin, said bin including side walls and a bottom surface adjoining said side walls, said bottom surface including a substantially flat surface and an adjoining arcuate surface at one end thereof;

supporting means supporting said accumulator bin such that said flat bottom surface is oriented at an incline with respect to a horizontal plane, whereby material introduced to said flat bottom surface will be urged by gravity towards said adjoining arcuate surface;

feed means for feeding a strip of pocketed coils onto said flat bottom surface of said accumulator bin; and

means for oscillating said feed means such that a strip of pocketed coils may be fed substantially evenly upon said flat bottom surface with respect to said adjoining side walls.

4,406,392

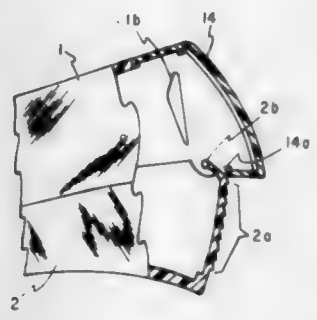
SURGICAL STAPLING INSTRUMENT

Jay E. Campbell, Upper Black Eddy; Richard H. Reichmann, Churchville, both of Pa., and Lehmann K. Li, Fairfield, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 153,228, May 27, 1980, abandoned. This application Sep. 26, 1980, Ser. No. 191,654

Int. Cl.³ A61B *17/04*

U.S. Cl. 227—19 **4 Claims**



1. A surgical stapling instrument comprising a handle; a trigger pivotally attached and compressible into said handle, the forward portion of said handle containing:

a track;

a leaf spring contained on the terminal end of said track, a portion of said leaf spring extending beyond said track;

a plurality of staples loaded and staple advancing means carried on said track;

a track cover mounted on said track;

an anvil surface mounted, and a first bias means movably mounted on the cover, the said anvil surface terminating in a perpendicular flange;

the proximal staple, from said plurality of staples, adjacent said anvil surface, and separated from said flange by the underside of said staple being biased by said leaf spring;

a guide block mounted on said cover adjacent said anvil surface; and

a forming blade and a second bias means movably mounted on said guide block, the front end of said trigger engaging said forming blade such that on compressing said trigger into said handle, said forming blade pushes said staple downward, said staple displaces said leaf spring, said leaf spring moves back to its initial position and said staple forms on said flange; and on releasing said trigger and advancing said instrument said formed staple is separated from said flange, said second bias means returns said trigger and said forming blade to their initial positions, and said first bias means activates said staple advancing means to place the forwardmost staple adjacent said anvil surface.

4,406,393

METHOD OF MAKING FILAMENTARY REINFORCED METALLIC STRUCTURES

Leonard A. Ascani, Jr., Palos Verdes Estates, and Billy A. Burroughs, Los Angeles, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 23, 1981, Ser. No. 246,490

Int. Cl.³ B23K *31/02*

U.S. Cl. 228—157 **12 Claims**

1. A method of making a metallic structure from a plurality of workpieces comprising:

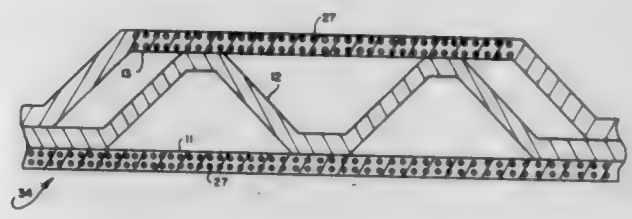
provising at least one die, said at least one die having a surface which is complementary to the shape of the structure;

providing a plurality of metal blank workpieces having two opposed principal surfaces, at least one of said workpieces being a composite workpiece having a multi-number of sheets, said at least one composite workpiece comprising two cover sheets and at least one inner sheet, at least a portion of said at least one inner sheet being a reinforced portion, said reinforced portion being of metal matrix material reinforced with filamentary material, said at least one inner sheet sandwiched between said cover sheets, said cover sheets extending beyond the periphery of said reinforced portion such that a margin around said reinforced portion is defined, said cover sheets having superplastic characteristics;

treating said workpieces at selected areas to prevent bonding at those areas;

positioning said workpieces in a stack, contacting at their principal surfaces with a composite workpiece being an outer workpiece;

enclosing a chamber by positioning said stack of workpieces relative to said at least one die;



heating said stack to within a temperature range sufficient to produce diffusion bonding of said workpieces at preselected untreated areas under coordinated temperature-pressure-time duration conditions;

applying compressive pressure to said stack sufficient for diffusion bonding of said workpieces;

maintaining said pressure and said heating for a time duration sufficient to produce diffusion bonding of said workpieces at said preselected areas and to consolidate said outer composite workpiece into a unitary workpiece comprising an interior reinforced portion and a peripheral monolithic portion, said peripheral monolithic portion being at said margin area, said interior reinforced portion including the reinforced portion of said at least one inner sheet of said outer composite workpiece; and

applying a pressure loading across the principal surfaces of said outer composite workpiece to induce tensile stress therein and cause at least a part of said peripheral monolithic portion to superplastically form into said chamber and against said surface of said at least one die.

4,406,394

METHOD OF FRICTION BAND MANUFACTURE

Terry E. Nels, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

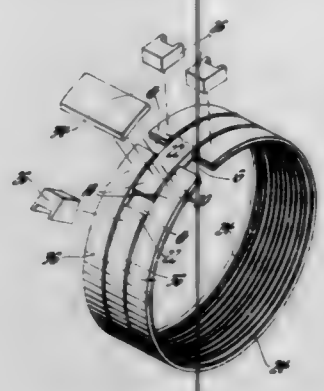
Filed Nov. 28, 1980, Ser. No. 210,779

Int. Cl.³ B23K *31/00*; **B23P** *15/18*

U.S. Cl. 228—170 **2 Claims**

1. A method of making a double wrap band comprising the steps of: forming a plurality of hoops each having a gap therein, from a constant width base material; aligning three hoops coaxially with the gaps in the outer hoops being angularly displaced from the gap of the central hoop; welding

adjacent hoops at a location between the gaps of respective hoops to form a unitary double wrap cylindrical band; and



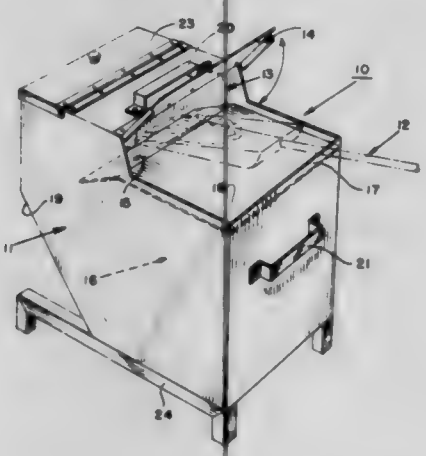
attaching an operating lug to each hoop adjacent the gap at the respective free end of each hoop.

4,406,395

ASH RECEPTACLE

Tommy D. Scoggins, Graham, N.C., assignor to Scoggins Mfg., Inc., Graham, N.C.

Filed Mar. 18, 1982, Ser. No. 359,564
Int. Cl.[3] B65D *91/00*
U.S. Cl. 232—43.1 10 Claims



1. An ash receptacle comprising: a housing, said housing having a slanted rear wall member, an inlet means, said inlet means located in said housing, said inlet means opposite said rear wall, an outlet means, said outlet means separate from said inlet means and located in said housing, a baffle member, said baffle member positioned in said housing above said slanted rear wall below said inlet means.

4,406,396

METHOD AND APPARATUS FOR REGULATING FLUE DRAFT

Millard A. Habegger, 5280 Sun Dial Pl., Boulder, Colo. 80301

Filed Mar. 24, 1980, Ser. No. 133,037
Int. Cl.[3] G05D *23/12*
U.S. Cl. 236—1 G 25 Claims

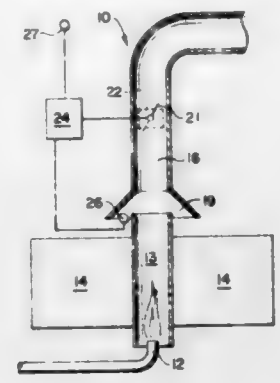
1. In a heating device including a combustion zone, a flue to collect combustion products from the combustion zone, and a vent to the surrounding atmosphere defined at a location between the combustion zone and the flue,

the improvement comprising;

means positioned at the vent adjacent to but spaced from the flue to sense air flow through the vent;

a damper positioned in the flue downstream of the vent; and

means to position the flue damper in response to the air flow sensing means to maintain a predetermined substantially fixed flow of air through the vent and into the flue during combustion in the combustion zone;



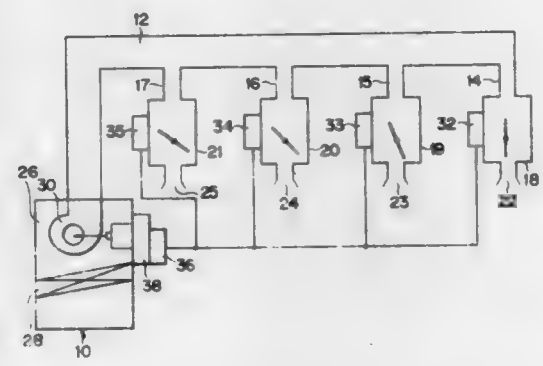
whereby airflow from outside the heating device into the flue through the vent may be maintained at desired low but positive rates under differing conditions.

4,406,397

CENTRAL AIR CONDITIONING EQUIPMENT

Keiji Kamata, Yamato; Hikoshiro Suzuki, and Yutaka Fukushi, both of Sagamihara, all of Japan, assignors to Topre Corporation, Tokyo, Japan

Filed Dec. 31, 1981, Ser. No. 336,162
Claims priority, application Japan, May 25, 1981, 56-78995
Int. Cl.[3] F24F *7/00;* F25B *29/00*
U.S. Cl. 236—1 B 7 Claims



1. Central air-conditioning equipment which performs air-conditioning for a plurality of rooms, comprising:

an air-conditioner which includes a heat exchanger and a blower for blowing air, the heat of which is exchanged in said heat exchanger;

a duct which distributes the air blown from said blower to said room;

a plurality of terminal air quantity control units which are installed in order to communicate with the rooms, respectively, and which control the quantities of the air which are distributed to the rooms through said duct, each of said terminals air quantity control unit including a main body through which the air passes, an air quantity sensor which detects a flow rate of the air which passes through said main body, a damper which is disposed in said main body and which is movable between a first position where the main body is open to a maximum state, and a second position where the main body is completely closed, a drive mechanism which drives said damper, a setter which is disposed in a corresponding room and which sets the quantity of the air which is distributed to the corresponding room, and a unit controller which controls said drive mechanism in order to match the quantity of the air which actually passes to the quantity of air which is set based on the air quantity detected by said air quantity sensor and the air quantity set at said setter; and

an air quantity control device, attached to said air conditioner, which controls said blower to reduce the blown air

quantity when none of the dampers of the terminal air quantity control units are in the first position until at least one of said dampers reach said first position and then, controls the blower to increase the air flow in the terminal air quantity control unit in which said damper has reached the first position, when the air quantity detected by the air quantity sensor is less than the air quantity set by the setter, and which controls said blower to maintain the blown air quantity when the air quantity detected by said air quantity sensor is equal to the air quantity set by said setter.

4,406,398

FLUID TEMPERATURE BLENDING CONTROL

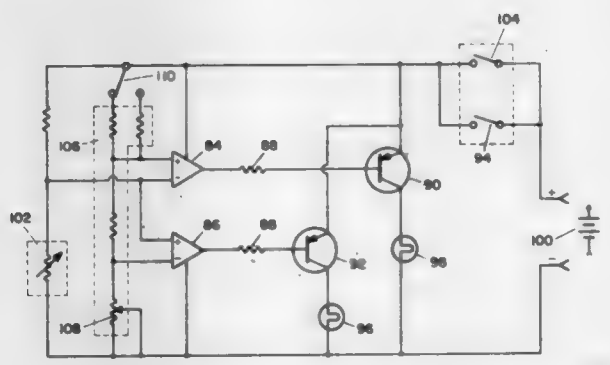
Jean K. Perkins, P.O. Box 111869, Anchorage, Ak. 99511

Filed Dec. 21, 1981, Ser. No. 333,281

The portion of the term of this patent subsequent to Dec. 30, 1997, has been disclaimed.

Int. Cl.³ G05D *23/00, 11/00*

U.S. Cl. 236—12.15 **12 Claims**



1. A plumbing fixture device comprising; an apparatus of fluid valves having fluid control valve handles to control and combine fluids of varied temperatures, a valve body enclosure to include fluid inlet means and mixing chamber with a fluid outspout for emitting a blended fluid discharge, a signal indicating means as an integral part of said fixture which determines and communicates the corrective control needed to achieve a preselected fluid temperature range, said signal indicating means comprising an electronic signal converting voltage comparator circuit whose source of operating electrical current is obtained through a electrical fluid release switch that is mechanically linked to and controlled by adjustment of a fluid control valve handle, a resistive sensor device to sample fluid discharge temperature, a plurality of display indicators, said voltage comparator circuit providing a condition of signal output which is dependent upon sensed fluid discharge temperature and presence of electrical current derived by conductive contact closure of said electrical fluid release switch.

4,406,399

METHOD OF CONTROLLING AN ENAMELLING OVEN

Katsuhisa Furuta, Tokyo; Takeshi Hirai, Kanagawa, and Yoshinori Nakamura, Kawasaki, all of Japan, assignors to Showa Electric Wire & Cable Co., Ltd., Kawasaki, Japan

Filed Jul. 21, 1981, Ser. No. 400,476

Claims priority, application Japan, Jul. 28, 1981, 56-117987

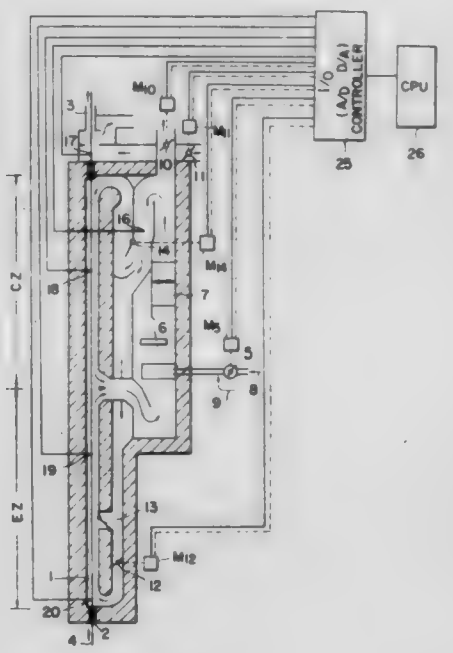
Int. Cl.³ F23N *1/00;* **F27D** *19/00*

U.S. Cl. 236—15 BC **15 Claims**

1. A method of controlling an enamelling oven in which a plurality of measured variables such as temperatures:

$$Y = \begin{matrix} Y1 \\ \cdot \\ \cdot \\ \cdot \\ Ym \end{matrix}$$

including a plurality of controlled variables:



$$Y1 \cdot \cdot \cdot Yl$$

are variable by any one of a plurality of manipulation variables such as the degrees of opening of dampers:

$$U = \begin{matrix} U1 \\ \cdot \\ \cdot \\ \cdot \\ Un \end{matrix}$$

where l, n, and m are positive integers equal to or greater than 2 with $m \geqq l$, said method comprising the step of controlling said controlled variables to reach reference values therefor:

$$YR = \begin{matrix} YR1 \\ \cdot \\ \cdot \\ \cdot \\ YRl \end{matrix}$$

by effecting integrating action on each of variable factors:

$$U'c = \begin{matrix} U'c1 \\ \cdot \\ \cdot \\ \cdot \\ U'cn \end{matrix}$$

which are derived from:

$$\begin{matrix} C11 \ldots C1l & Y1 - YR1 \\ \cdot \quad \cdot & \cdot \quad \cdot \\ \cdot \quad \cdot & \cdot \quad \cdot \\ \cdot \quad \cdot & \cdot \quad \cdot \\ Cn1 \ldots Cnl & Yl - YRl \end{matrix}$$

where said matrix:

$$C = \begin{matrix} C11 \dots C1l \\ \cdot \quad\quad \cdot \\ \cdot \quad\quad \cdot \\ Cn1 \dots Cnl \end{matrix}$$

is predetermined so that said controlled enamelling oven behaves in an optimum manner, to produce outputs

$$Uc = \begin{matrix} Uc1 \\ \cdot \\ \cdot \\ \cdot \\ Ucn \end{matrix}$$

which serve as the manipulation variables, respectively; outputs:

$$UF = \begin{matrix} UF1 \\ \cdot \\ \cdot \\ \cdot \\ UFn \end{matrix}$$

which are obtained by effecting feedback action on said plurality of measured variables being added to said manipulation variables, said integrating action being stopped when at least sum of said outputs Uc-said outputs UF which are supplied to said manipulation variables exceeds a predetermined range.

4,406,400

DIAPHRAGM OPERATED PRESSURE REGULATOR

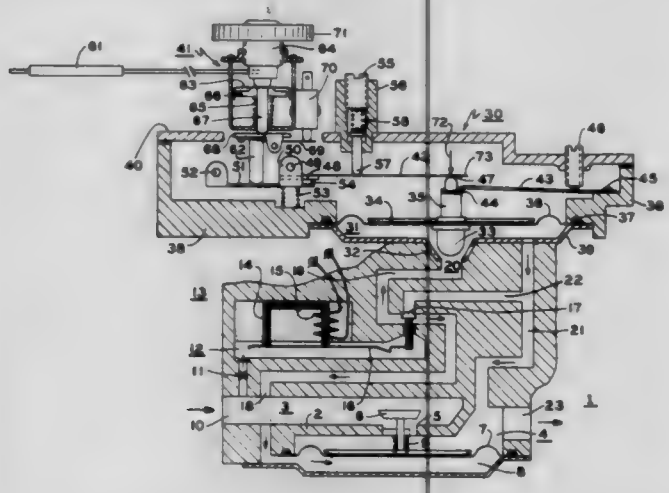
Hendrikus Berkhof, Emmen, Netherlands, assignor to Honeywell Inc., Minneaplis, Minn.

Filed Sep. 23, 1981, Ser. No. 304,749

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1980, 3035925

Int. Cl.³ G05D *27/00*

U.S. Cl. 236—80 F **4 Claims**



1. A diaphram operated pressure regulator, in particular for controlling the servo control pressure for a gas control apparatus, comprising a housing enclosing a valve, a diaphram carrying a closure member for the valve, a first adjusting spring biasing the closure member in the closing direction and determining the maximum outlet pressure of the regulator, a second adjusting spring biasing the closure member in the closing direction and determining the minimum outlet pressure of the regulator, a cover for said housing, a first adjusting screw carried by said cover for adjusting said second adjusting spring, means for adjusting the first adjusting spring including an externally exchangeable auxiliary spring guided in a threaded hole in said cover closed by a second adjusting screw, and a transmission lever by which the force of a thermomechanical transducer acts upon the first adjusting spring, the adjusting screws for the two adjusting springs as well as the transmission lever being located outside the line of alignment of the valve and closure member, the transmission lever borne tiltably with its one end around a stationary axis and carrying adjacent its free end a support for a tilting bearing, an intermediate lever being rotatably borne in said tilting bearing and carrying said first adjusting spring, the intermediate lever with its end facing the second adjusting screw for the first adjusting spring abutting against an abutment of the transmission lever, the transmission lever being biased by a spring which, with its one side, engages the housing and which operates opposite the force of a control value.

4,406,401

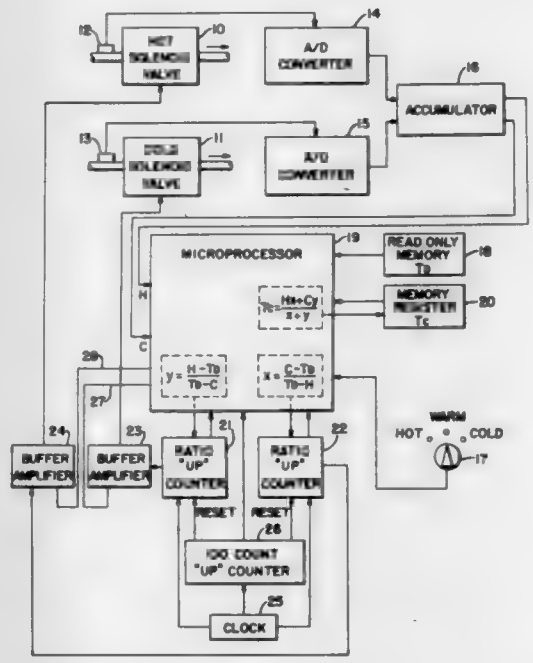
WATER TEMPERATURE CONTROL SYSTEM FOR A WASHING MACHINE

Ronald L. Nettro, Fern Creek, Ky., assignor to General Electric Company, Louisville, Ky.

Continuation of Ser. No. 108,628, Dec. 3, 1979, abandoned. This application Jun. 8, 1981, Ser. No. 271,326

Int. Cl.³ G05D *23/00;* D06F *33/00*

U.S. Cl. 236—12.12 **4 Claims**



1. A water temperature control system for a washing machine comprising:

(a) hot and cold incoming water valve means including means for independently controlling the on/off condition of said hot and cold incoming water valve means, respectively, to supply fill water to the washing machine tub;

(b) means for independently sensing the temperatures of incoming hot and cold water, respectively;

(c) user-operated means for establishing a desired temperature, T_D, for the fill water;

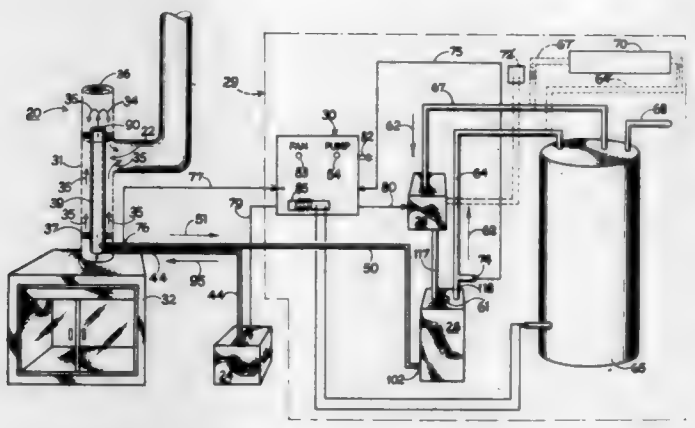
(d) microprocessor means for generating water valve control instructions, said control instructions initially directing that both of said valve means be turned on at the beginning of a fill cycle and subsequently directing that either one of said water valve means be repetitively cycled on and off in response to only the sensed incoming water temperatures and the temperature established by said user-operated means so as to cause the actual fill water temperature to be substantially equal to the desired fill water temperature; and

(e) means connected to said microprocessor means and responsive to said valve control instructions to actuate said water valve means in accordance with said instructions to achieve the desired fill water temperature.

4,406,402
FLUE HEAT RECOVERY SYSTEM

Joseph Henriques, 32 Hidden Brook Dr., Brookfield, Conn. 06804

Filed Apr. 28, 1981, Ser. No. 258,437
Int. Cl.[3] F24D *3/08*
U.S. Cl. 237—19 20 Claims



1. A flue heat recovery system for use with a heating device (32) generating exhaust gases from combustion of a fuel, the exhaust gases exiting through a flue (31) comprising:

(A) an exhaust gas to air heat exchanger (22) having means for mounting within the flue of the heating device, the exhaust gas to air heat exchanger comprising;

(1) a cylindrical shell (42) with two caps (87,88) one at either end of the shell, the cylindrical shell further having an air inlet port (46) and an air outlet (48) port formed therethrough,

(2) an exhaust gas conduit having openings (90, 91) formed through each cap of the heat exchanger so as to allow exhaust gas from the heating device to pass through the interior of the heat exchanger in a non-mixing relationship with the air circulating in the heat exchanger,

(3) an air inlet tube (92) connected to the air inlet port (46), the air inlet tube extending within the cylindrical shell along substantially the majority of the length of the cylindrical shell so as to force the incoming air to circulate throughout the majority of the length of the heat exchanger before exiting from the air outlet port (48),

(4) a plurality of thermally conductive radial ribs (96) attached to the periphery of the cylindrical shell, and

(5) a screen (39) having a cylindrical shape attached to the outer periphery of the radial ribs, the screen having a length substantially equal to that of the cylindrical shell so as to define an air space between itself and the cylindrical shell and thereby promote heat transfer from the exhaust gases to the air within the heat exchanger;

(B) a fan, (24) interconnected to the air inlet port of the exhaust gas to air heat exchanger for forcing air through the heat exchanger so as to exit out of the air outlet port;

(C) a hot air to water heat exchanger (26) interconnected to the outlet port of the exhaust gas to air heat exchanger, having a water inlet pipe (117) and a hot water outlet pipe (118) for passing water therebetween so as to have heat transfer from the hot air entering the hot air to water heat exchanger from the exhaust gas to air heat exchanger;

(D) a water circulator (28), interconnected to the water inlet pipe of the hot air to water heat exchanger, for forcing water through the hot air to water heat exchanger;

(E) means for connecting the hot water outlet pipe of the hot air to water heat exchanger to a device to be heated by the hot water from this heat exchanger and for circulator water back to the water circulator;

(F) first temperature sensing means for sensing the temperature of the water exiting from the hot air to water heat exchanger;

(G) second temperature sensing means for sensing the air temperature in the vicinity of the exhaust gas to air heat exchanger;

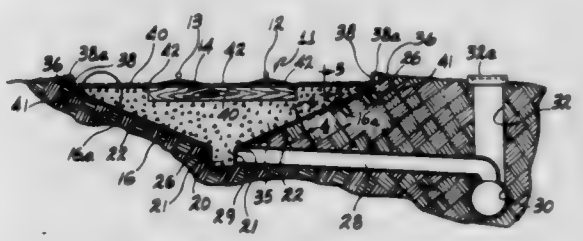
(H) third temperature sensing means for sensing the ambient temperature of a region to be heated by the hot water from the hot air to water heat exchanger; and

(I) means, connected to the fan, water circulator, and first, second and third temperature sensing means for logically combining the sensed temperatures from said first, second and third temperature sensing means so as to control energization and de-energization of the fan and water circulator.

4,406,403
METHOD OF PROVIDING A CONTAINMENT RESERVOIR

Robert W. Luebke, Hudson, Ohio, assignor to True Temper Corporation, Cleveland, Ohio

Division of Ser. No. 5,699, Jan. 23, 1979, Pat. No. 4,296,884.
This application Jun. 15, 1981, Ser. No. 273,733
Int. Cl.[3] E01B *1/00;* E01F *5/00*
U.S. Cl. 238—2 8 Claims



1. A method of lining an earthen containment space having sloping defining walls with a flexible liquid impervious liner generally following the contour of the containment space to define a reservoir for collecting liquid therein, comprising, providing liner stock in flexible strip form having a layer of pervious fabric material having on at least one of its sides an attached layer of liquid impervious material, such as rubber, laying a plurality of strips of the liner material with the impervious layer facing outwardly of the reservoir space and with the liner strips overlapping, adhesively securing the overlapped junctures of the liner strips together so as to restrict escape of liquid from said containment space, and extending said liner material upwardly to the level of the adjoining surface and horizontally outwardly therefrom, with the liner generally conforming to said sloping walls of the earthen containment space, and including providing a drain area within the confines of the reservoir at the lowermost level of the reservoir and toward which the sloping walls extend, for collecting liquid therein.

4,406,404
DIESEL FUEL INJECTION NOZZLE

Ippei Horino; Yuzo Tsumura, and Masatoshi Iwata, all of Oyama, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 4, 1981, Ser. No. 270,635
Claims priority, application Japan, Jun. 12, 1980, 55-78341
Int. Cl.[3] F02M *61/04*
U.S. Cl. 239—91 8 Claims

1. A fuel injection nozzle for the delivery of fuel, premixed with air under pressure, to the combustion chamber of a diesel engine cylinder, comprising:

(a) a nozzle body;

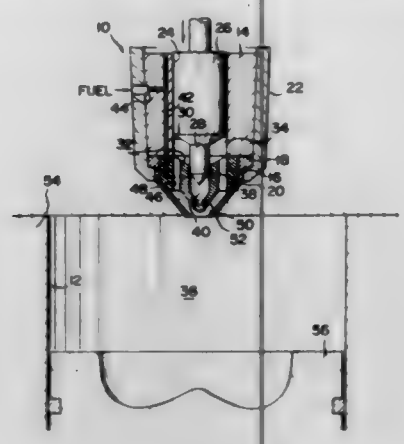
(b) a plunger reciprocably mounted in the nozzle body and defining in combination therewith an air chamber for receiving compressed air from the combustion chamber of a diesel engine cylinder;

(c) a valve member formed integrally with and reciprocable simultaneously with the plunger in the nozzle body, the valve member and nozzle body defining in combination a fuel chamber for receiving fuel to be injected;

(d) means defining a premixing chamber open to the combustion chamber of the diesel engine cylinder;

(e) there being passages communicating the air chamber and

the fuel chamber with the premixing chamber, so that the fuel from the fuel chamber is injected into the combustion



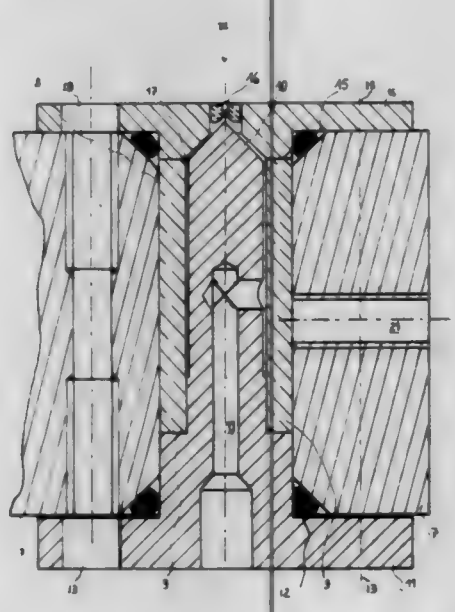
chamber after being premixed in the premixing chamber with the compressed air from the air chamber.

4,406,405

DEVICE FOR THE EJECTION OF DROPLETS AS REQUIRED

Gerard Marichy, Sainte Foy-Les-Lyon, France, assignor to Bertin & Cie, Plaisir, France

Filed Aug. 10, 1981, Ser. No. 291,835
Claims priority, application France, Aug. 8, 1980, 80 17516
Int. Cl.³ B05B *3/14*
U.S. Cl. 239—102 **3 Claims**



1. An ink or other liquid jet apparatus of the kind designed for projecting droplets from a nozzle upon controlled constriction of a radially-squeezable liquid-filled thin-annular clearance communicating with said nozzle and formed between an inner generally cylindrical wall of a tubular piezoelectric or like pressure transducer and an outer generally cylindrical surface of a core housed therein, said surface being radially spaced inwardly of said wall to define said clearance,

wherein the improvement comprises

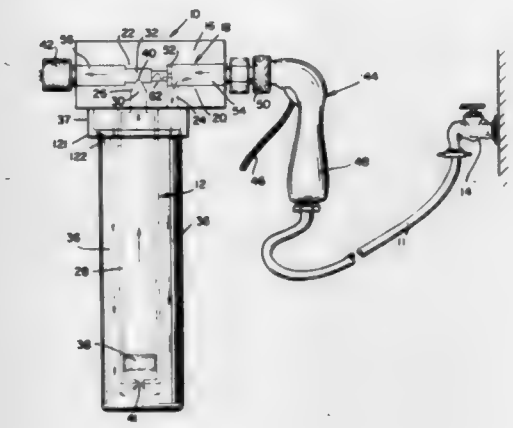
hooping means extending all around said tubular transducer to engage positively the outer surface thereof for restricting the same against outward deformation while leaving unrestricted inward deformation thereof, whereby the deformation capacity of said tubular transducer is focused inwardly and devoted to thickness variation of said thin-annular clearance.

4,406,406

LIQUID METERING AND DISPENSING APPARATUS

Philip B. Knapp, 40 Reyam Rd., Lynbrook, N.Y. 11563

Filed Mar. 13, 1981, Ser. No. 243,377
Int. Cl.³ B05B *7/32*
U.S. Cl. 239—313 **9 Claims**



1. Apparatus for diluting and feeding liquid concentrate for treatment of plants, for use with a source of water under pressure and liquid discharge means, said apparatus comprising a dispenser member and a disposable cartridge removably mounted on said dispenser member,

said disposable cartridge including a rigid outer wall, a volume-reducing chamber formed in part by a pressure-sensitive member and containing a selected supply of liquid concentrate, and a rigid nozzle portion at one end of said rigid outer wall and communicating with the contained liquid concentrate,

said dispenser member comprising a metering head, and a hollow casing removably mounted on said metering head,

said metering head having a water inlet opening adapted to be connected to said source of water, a water outlet opening adapted to be connected to said liquid discharge means, and a water conduit interconnecting said water inlet and outlet openings and comprising a through bore having a high pressure end communicating with said inlet opening, a low pressure end communicating with said outlet opening, and a mixing chamber between said low pressure end and high pressure end,

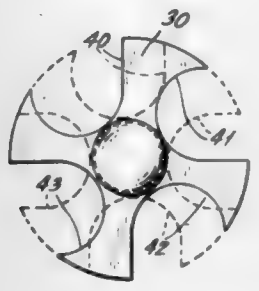
said metering head also having a first auxiliary fluid conduit communicating with the high pressure end of said through bore and with the interior of said hollow casing, a second auxiliary fluid conduit communicating with said mixing chamber, and means for mounting said disposable cartridge on said metering head by insertion of said rigid nozzle portion into said second auxiliary fluid conduit to a mounted position in which said disposable cartridge is suspended within said hollow casing and said outlet aperture communicates with said mixing chamber, whereby water under pressure supplied by said water source flows in a first path through said water conduit and through the mixing chamber thereof to said water outlet opening, and in a second path to the interior of said hollow casing, thereby filling said hollow casing and engaging the pressure-sensitive member of said disposable cartridge to feed the contained liquid concentrate therein through said outlet aperture into said mixing chamber,

said outlet aperture in said rigid nozzle being precisely dimensioned with a diameter sufficiently small to dispense liquid concentrate to mix with the stream of water flowing in said first path through said mixing chamber in a precise pre-selected micro-dispensing amount of parts of concentrate per million parts of water, regardless of variations in the pressure of the water supplied by said water source.

4,406,407
HIGH FLOW LOW ENERGY SOLID CONE SPRAY NOZZLE

George F. Aprea, Dedham, and Werner P. Pohle, Lynn, both of Mass., assignors to Wm. Steinen Mfg. Co., Parsippnay, N.J.

Filed Nov. 17, 1981, Ser. No. 322,169
Int. Cl.³ B05B *1/34*
U.S. Cl. 239—487 12 Claims



1. A center vane for a straight-through pipe solid cone nozzle in which a single geometry produces a uniform spray distribution in a solid cone regardless of differences in fluid pressure, volumetric flow of fluid and pipe diameter; said center vane comprising a cylindrical body which is rotationally symmetric about a central axis and has spaced, parallel input and output faces which are perpendicular to said axis; said center vane having a circular outer periphery which has a diameter substantially equal to the internal diameter of said straight-through pipe; said vane having one of three or four symmetrically disposed slots extending into its said outer periphery; each of said symmetrically disposed slots having generally identical U-shaped configurations which have spaced, flat, parallel walls extending from said vane periphery to respective rounded bottoms; said spaced, flat, parallel walls spaced from one another by a cutter dimension equal to about one-third said vane diameter; the walls of each of said slots being symmetrically displaced from one another around said central axis of said vane; each of said slots being disposed at an angle to said vane axis, thereby to tend to twirl fluid around said vane axis; each of said slots having a smaller area at said input face and thereby the upstream face of said vane than at said output face and thereby the downstream face of said vane; the spaced walls of each of said slots having identical heights only in one respective plane perpendicular to respective ones of said slots; each of said one planes intersecting said vane axis at a distance B from said input face wherein the distance B equals the product of one-half the slot width of any of said slots and the cotangent of said angle between said slots and said vane axis.

4,406,408
WATER MOTOR FOR AN IRRIGATION SYSTEM

Gail Cornelius, 19060 N.W. Dorena, Portland, Oreg. 97229

Filed Jun. 4, 1981, Ser. No. 270,349
Int. Cl.³ A01G *25/02*; B05B *3/06*
U.S. Cl. 239—721 11 Claims

1. A water motor comprising:

a housing defining a first passage with first and second ports, said housing adapted to connect with a source of water;

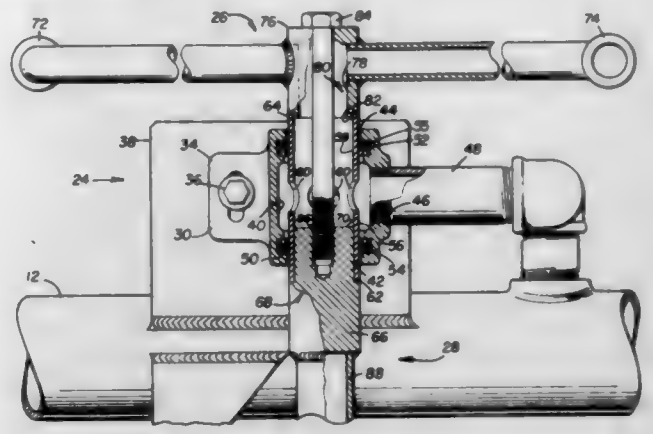
a replaceable sleeve defining a second passage, said sleeve disposed in said first passage and having at least one aperture providing communication between said first passage and said second passage, said sleeve having a first end located substantially adjacent said first port and a second end located substantially adjacent said second port, which second end communicates with said second passage;

a shaft;

means for fitting said shaft to said first end;

water jet means for dispensing water to cause said shaft to revolve;

means for fitting said water jet means to said second end so that said water jet means communicates with said second passage; and

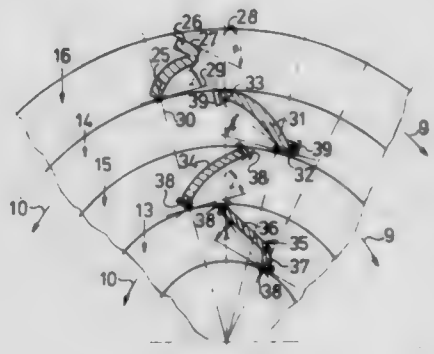


means for removably securing said water jet means to said shaft.

4,406,409
DISINTEGRATOR AND METHOD FOR THE OPERATION THEREOF

Joachim Durek, Martin-Butzer-Weg 4, 6720 Speyer, Fed. Rep. of Germany

Filed Sep. 14, 1981, Ser. No. 302,025
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1980, 3034849
Int. Cl.³ B02C *13/28*
U.S. Cl. 241—5 13 Claims



1. A distinegrator for pulverizing inorganic substances of predominately crystalline structure, deep-frozen organic substances, and corresponding mixtures of substances, said disintegrator having two rotors each driven in a direction opposite to the other, each said rotor carrying at least two rows of scoops engaging alternately with one another, said rows arranged concentrically in the form of rings with adjacent rings rotating in opposite directions, means for introducing the substance into said rotors adjacent the centers thereof for flow from the inside, through the rows of scoops, to the radial outside of said rotors, each of said scoops having a radially inner end and a radially outer end and a first surface facing in the direction of rotation of said rotor on which said scoop is positioned, said first surface is inclined relative to a radius extending, through said inner end away from the radius in the direction of rotation to the radially outer end thereof, characterized in that the first surfaces of the scoops (**25**, **31**, **34** and **35**) are of a concave curved design substantially like radial turbine blades, an axially elongated common fixed axis extending transversely of said rotors, a first hollow shaft rotatably mounted on said common fixed axis and extending outwardly from one side of said rotors, a second hollow shaft rotatably mounted on said common fixed axis and extending outwardly from the other side of said rotors, said first hollow shaft arranged to rotate in the opposite direction to said second hollow shaft, one of said rotors secured to said first hollow shaft for rotation therewith and the other said rotor secured to said second hollow shaft for rota-

tion therewith so that said rotors rotate in opposite directions about said common fixed axis.

4,406,410

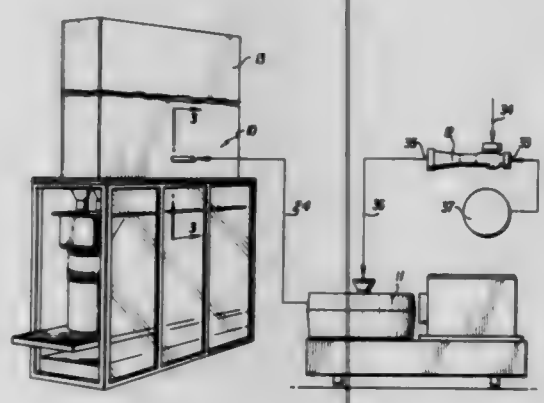
METHOD AND APPARATUS FOR ADDING AND MIXING SECOND COHESIVE POWDERS IN A FLUIDIZED BED BLENDER

Richard I. Larson; Henry C. Brassfield, and John T. Adomitis, all of Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 120,229, Feb. 11, 1980, abandoned. This application Feb. 8, 1982, Ser. No. 346,874

Int. Cl.³ B02C *19/12*

U.S. Cl. 241—5 **11 Claims**



1. A method for blending a mixture of UO_2 and a second powdered ingredient having hydrophobic, hydrophilic or hygroscopic properties comprising:

(a) introducing powdered UO_2 ingredient into a pressure-tight vessel;

(b) establishing a fluidized bed of said powdered UO_2 ingredient in said pressure-tight vessel; and

(c) uniformly dispersing said second powdered ingredient in said fluidized bed by introducing said second powdered ingredient under pressure into said vessel by impingement of said second powdered ingredient against a deflection plate disposed within said fluidized bed, wherein said second powdered ingredient is a material selected from the group consisting of hydrophobic, hydrophilic and hygroscopic powders.

4,406,411

RECLAMATION AND REJUVENATION OF PLASTIC AND METAL FROM METALLIZED PLASTIC

Richard L. Gall, Dexter; Richard T. Anklin, Tecumseh, and William B. Mende, Clinton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 73,768, Sep. 10, 1979, abandoned, and Ser. No. 968,943, Dec. 13, 1978, abandoned, said Ser. No. 73,768, is a continuation-in-part of Ser. No. 968,943,. This application Apr. 30, 1980, Ser. No. 145,274

Int. Cl.³ B02C *21/00*

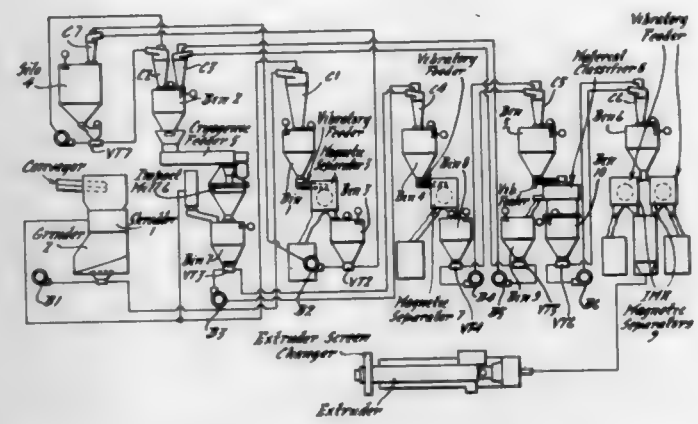
U.S. Cl. 428—577 **56 Claims**

1. A method of reclamation of plating grade plastic from metallized plastic wherein the plastic has a tenaciously adherent coating of essentially nonferrous metal comprising a layer that is magnetically susceptable, which method comprises:

(a) exposing pieces of said metallized plastic to a cryogenic temperature to embrittle same;

(b) impacting the cooled pieces in a rotary impact mill to form a plastic and metal dispersion;

(c) withdrawing from said dispersion an amount of said metal to provide a reusable plastic by effecting particle size separation, comprising segregating an intermediate product that will pass through a 12-20 mesh screen, and by exposing said intermediate product to a high intensity electromagnetic separation; and



(d) filtering out residual impurities from the nonmagnetic fraction of step (c) by passing same through an extruder with continuous screen changer.

4,406,412

JAW CRUSHER FOR BULKY WASTE AND LIKE MATTER

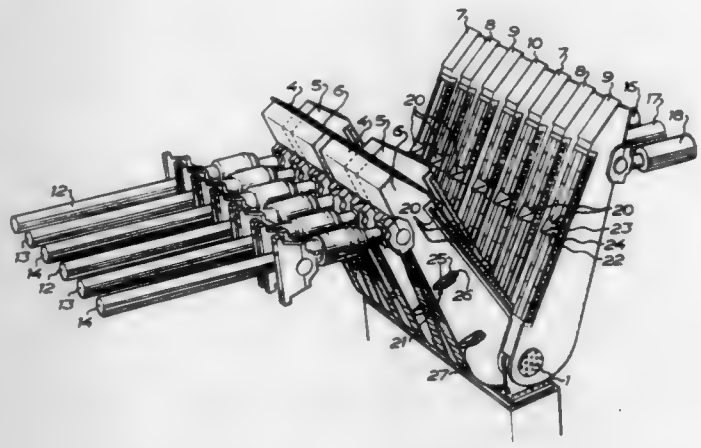
Sven A. Alexandersson, Risskov, Denmark, assignor to Bruun & Sorensen A/S, Arhus, Denmark

Filed Nov. 2, 1981, Ser. No. 317,313

Claims priority, application Sweden, Nov. 13, 1980, 8007985

Int. Cl.³ B02C *1/06*

U.S. Cl. 241—36 **6 Claims**

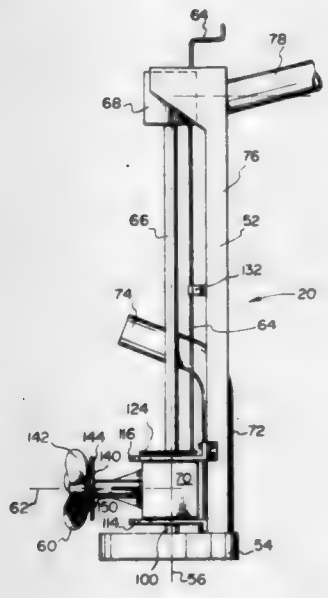


1. Jaw crusher for bulky waste and like matter, comprising two groups of jaws adapted to be movable towards and away from each other, the jaws within each group being spaced at intervals corresponding to the width of the jaws of the opposite group so that the jaws of one group as they move towards the other group travel at least partly into the interspace between the jaws of the opposite group, driving units operatively connected to at least one group of jaws to move them towards the opposite group, means to move at least one of the jaws of at least one respective group relative to the remaining jaws of the same group, said driving units comprising individually actuable driving units for individually operating each jaw of said at least one group of jaws, sensing means for sensing power exerted by said driving units, a programmable central unit operatively connected to said sensing means to be actuated thereby in response to a predetermined resistance to a jaw to actuate the driving unit of at least one adjacent jaw to change the relative position of the jaws in said group and produce a counter-directed movement of the jaws resulting in maximum breaking power.

4,406,413
APPARATUS FOR HANDLING SLURRY AND MANURE PUMP

Michel Houle, Wickham, Canada, assignor to J. Houle & Fils Inc., Quebec, Canada

Filed Jul. 15, 1980, Ser. No. 168,360
Claims priority, application Canada, Jul. 4, 1980, 355426
Int. Cl.³ B02C *23/36*
U.S. Cl. 241—46.04 25 Claims

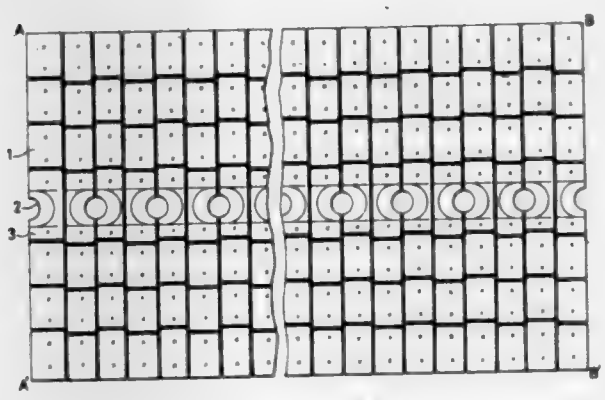


1. Apparatus for handling slurry comprising in combination a support assembly having a lower end adapted to extend into a body of slurry, a suitable centrifugal pump of conventional design secured to the lower end of said support assembly and having an impeller rotatable around an impeller axis, a mixing propeller mounted at the lower end of said support assembly in the vicinity of the pump, the axis of rotation of said mixing propeller extending generally horizontally, said mixing propeller being controllable pivotably in a generally horizontal plane around a generally vertical axis, said apparatus also comprising driving means for rotating said impeller and said propeller at sufficiently high speeds for mixing and pumping said slurry and mixing control means for changing the orientation of said axis of rotation of said mixing propeller in said horizontal plane, the mixing propeller constructed to direct the slurry away from the inlet of the pump, and the mixing propeller being positioned, relative to the pump, to draw in slurry from the vicinity of the pump inlet, and then direct the slurry away from the pump.

4,406,414
LINERS FOR USE IN A ROD MILL

Hiyotaro Segawa, 6-23,, Otemachi, Noshiro, Akita-ken, Japan

Filed Oct. 7, 1980, Ser. No. 194,867
Claims priority, application Japan, Oct. 9, 1979, 54-131084
Int. Cl.³ B02C *11/22*
U.S. Cl. 241—183 8 Claims

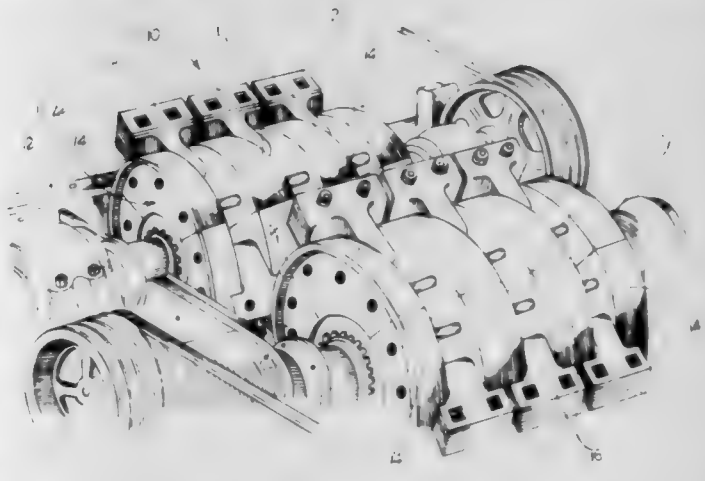


1. A liner assembly for a rod mill comprising, a cylindrical base having an axial length and an inner circumferential surface, and a plurality of lifters circumferentially spaced and projecting radially inwardly of said circumferential surface, each of said lifters being interrupted adjacent an axial center of said axial length to form a gap of a selected length substantially less than said axial length, whereby rods rolling in said liner assembly tend to wear uniformly and tend to cause uniform wearing of said liner assembly along said axial length, said liner assembly comprising a plurality of first liner members each carrying a segment of at least one lifter and a plurality of second liner members in the central vicinity of said cylindrical base along said axial length with pairs of said second liner members defining openings through said cylindrical base, each of said second liner members carrying a spaced pair of lifter segments positioned on opposite sides of respective openings through said cylindrical base.

4,406,415
ROTOR ASSEMBLY FOR HAMMERMILLS

Jack B. Greer, Box 247, Siler City, N.C. 27344

Filed Jul. 6, 1981, Ser. No. 280,561
Int. Cl.³ B02C *13/04, 13/20*
U.S. Cl. 241—194 5 Claims



1. In a hammermill of the type for grinding clay and shale wherein a plurality of circular rotor discs are mounted in spaced arrangement on a common drive shaft, and hammers are swingably mounted between adjacent discs on suspension pins extending through a plurality of said rotor discs, the improvement comprising:

(a) a plurality of protective shoes for protecting the side surface of said circular rotor discs from wear as a result of the swinging movement of said hammers, each of said shoes being formed from a wear-resistant material and having a generally arcuate, U-shaped channel for receiving a portion of the periphery of one of said rotor discs;

(b) said arcuate, U-shaped channel having a cap portion and a pair of opposed sidewalls, each of said sidewalls having a plurality of apertures extending therethrough, the apertures in each sidewall being aligned with respective apertures in the opposed sidewall;

(c) said suspension pins being of a length sufficient to extend through said apertures on all of said rotor discs, through protective shoes and hammers, and including means for releasably securing said pins therethrough;

(d) said plurality of rotor discs comprising a plurality of inside rotor discs positioned between a pair of opposed end discs, said inside discs having a portion of each sidewall machined out, and each end disc having a portion of the interior wall thereof machined out to receive said protective shoes such that the outer surface of the side walls of said shoe forms a continuous plane with the corresponding wall of each of said discs;

(e) said plurality of protective shoes including at least a pair of said shoes being designed for use on said end discs; said shoes for said end discs having a flange depending out-

wardly from said cap portion in a direction perpendicular to said side walls and away from said inside discs;

whereby said protective shoes are positioned around the entire periphery of said discs to protect the surfaces thereof from hammer and grinding material wear.

4,406,416

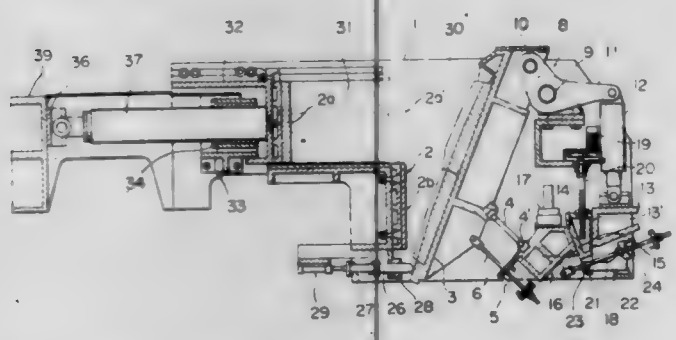
JAW CRUSHER

Isao Tateishi, 9-2 Funabashi 1-chome, Setagaya-ku, Tokyo, Japan

Continuation of Ser. No. 116,996, Jan. 30, 1980, abandoned. This application Dec. 7, 1981, Ser. No. 328,381

Int. Cl.³ B02C *1/04*

U.S. Cl. 241—269 **4 Claims**



1. A jaw crusher having arranged between two machine frames a substantially vertical stationary jaw, a movable jaw oppositely and obliquely arranged to said stationary jaw and a crushing chamber defined by said stationary jaw, said movable jaw and said machine frames, into which chamber stones or rocks of large mass are charged wherein they are crushed under pressure to smaller pieces by means of the motion of said movable jaw and are then discharged through a discharge port of the crushing chamber, characterized in that said movable jaw is at its lower portion pivotably supporting by a swingable supporting rod and at its upper portion driven by a lever mechanism pivotable about a pivot means on one of the machine frames, said lever mechanism including first and second arms which move about said pivot means in fixed relationship to one another with the first arm being pivotably connected to the upper portion of the movable jaw and the other second arm being pivotably connected to a reciprocating power means, the discharge port of the crushing chamber being provided with a grid and means for advancing and withdrawing it to follow the movement of lower portion of said movable jaw, whereby the reciprocation of the hydraulic power means causes the lever mechanism to impart reciprocating motion to the movable jaw as defined by arcuate movement of both the supporting rod and the first arm of the lever mechanism.

4,406,417

MILL LINER FOR DRY AUTOGENOUS MILLS

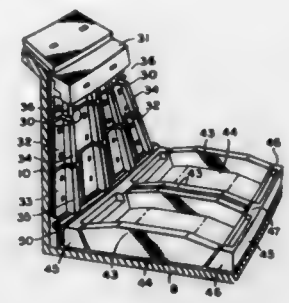
Colin D. Jardine, Newfoundland, Canada; Sooi Chong, Cleveland, Ohio; Rodney H. Coles, and Stephen Hebb, both of Newfoundland, Canada, assignors to The Hanna Mining Company, Cleveland, Ohio

Division of Ser. No. 182,417, Feb. 27, 1980, Pat. No. 4,323,199. This application Dec. 21, 1981, Ser. No. 332,611

Int. Cl.³ B02C *17/22*

U.S. Cl. 241—284 **12 Claims**

1. In a dry autogenous mill construction including a shell and opposite ends with central feed and discharge openings therein through which material is fed into the mill and subsequently discharged therefrom, said shell and ends being lined, the improvement comprising a plurality of shell liner members covering said mill shell, each of said shell liner members consisting of middle sections and two separate end sections at opposite ends of said middle sections, said end sections being twice as wide as said middle sections, there being twice as many middle sections as there are end sections at each end of said middle sections, said middle sections including longitudinally extending lifter bars formed as an integral part thereof at each side thereof, and each of said end sections including lifter bar extensions on the sides thereof of the same thickness and spacing as the outermost lifter bars on each pair of center



sections, and another lifter bar extension on each of said end sections intermediate the sides of said end sections equivalent in width to two of said lifter bars on said middle sections providing a continuation of the adjacent lifter bars on each pair of middle sections.

4,406,418

DRIVE ROLLER

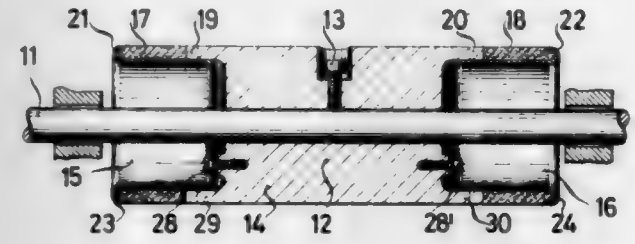
Hans Raasch, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Mönchen-Gladbach, Fed. Rep. of Germany

Filed Apr. 16, 1981, Ser. No. 254,645

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1980, 3015207

Int. Cl.³ B65H *54/46*

U.S. Cl. 242—18 DD **4 Claims**



1. Drive roller for winding a textile spool, comprising a drive-roller-body having a middle part and two separate side parts, and two removable, separable, annular drive linings with high friction properties, said side parts being in the form of pot-shaped, drawn sheetmetal parts being extended to said middle part and including a rolled edge integral with each side part, each edge being in contact with one of said drive linings for clamping one of said drive linings to each end of said drive-roller-body, and each of said drive linings having a portion with a shape being matched to the shape of portions of at least said middle part of said drive-roller-body.

4,406,419

METHOD AND APPARATUS FOR WINDING FLEXIBLE MATERIAL

Frank W. Kotzur, Mahopac, N.Y., assignor to Windings, Inc., Goldens Bridge, N.Y.

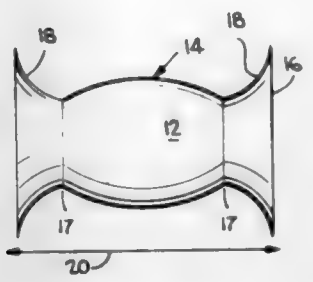
Filed May 8, 1981, Ser. No. 261,882

Int. Cl.³ B65H *54/10*

U.S. Cl. 242—18 R **12 Claims**

1. A machine for winding flexible material into a wind comprising a mandrel, means to rotate said mandrel about the longitudinal axis thereof, a traverse guide, means to reciprocate said traverse guide substantially parallel to the longitudinal axis of the mandrel at a distance Gd from the mandrel center line axis, one complete reciprocation of said traverse guide defining a stroke thereof, the gain or advance of the wind being defined as the change in the radian frequency of said

traverse guide with respect to the radian frequency of rotation of said mandrel, said mandrel having a portion of decreasing



diameter at each end portion thereof, and outwardly flared endforms, the walls of said endforms being curved and determined by the following equation:

$$ym = -\frac{A}{\left[1+\left(\frac{Gd\,(1+G)}{Dm}\right)^2-\left(\frac{1+G}{2}\right)^2\right]^{\frac{1}{2}}}$$

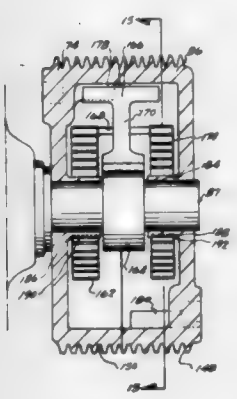
wherein A equals the traverse guide stroke, Gd equals the traverse guide distance from the mandrel center line axis, G equals the gain or advance of the wind, Dm equals the wind diameter, and ym equals the wind width.

4,406,420

SLIDING DOOR ACTUATING MECHANISM

James J. Villano, Toledo, Ohio, assignor to Allied Corporation, Morristown, N.J.

Division of Ser. No. 99,111, Nov. 29, 1979, Pat. No. 4,337,596.
This application Jun. 5, 1981, Ser. No. 270,713
Int. Cl.³ B65H *75/00*
U.S. Cl. 242—54 R **7 Claims**



1. A system for winding a linear material and for maintaining tension on said material including a rotatable drive means, means for winding connected to said driver means for rotating said winding means in a first direction to take up said material and in a second direction to let out said material, and including means connected to said driver means and to said winding means for forcing said winding means in said first direction beyond the position of said driver means when the driver means is not being rotated to wind said linear material;

said means for forcing storing energy from said driver means in response to said driver means rotating in said first direction, and returning a part of said stored energy to force the winding means in said first direction beyond the position of the driver means when said driver means is not being rotated to wind said linear material;

said forcing means being a spring means attached at one end to said driver means and at its other end to said winding means, tension of said spring means being increased in response to said driver means rotating in said first direction;

said spring means being a wound spring, wound in said first direction, and rotation of said driver in said first direction winds said spring;

said driver means including means for engaging said winding means to drive said winding means in said first direction and for releasing said winding means in response to said spring means forcing said winding means beyond the position of said driver means when said driver means is not being rotated to wind said linear material; and

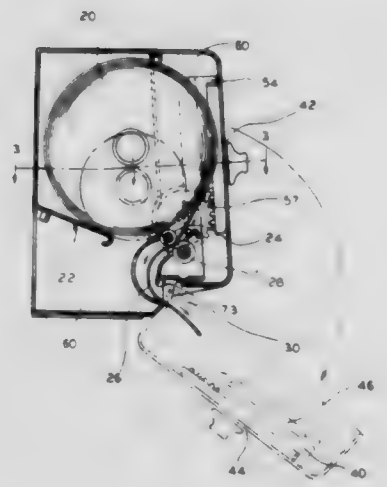
second winding means mounted for rotational movement on said driver means, for winding and unwinding a second linear material and for maintaining tension on said material, including a second forcing means connected to said second winding means for forcing said second winding means in a second direction beyond the position of said driver means subsequent to said driver means being rotated in said second direction.

4,406,421

PAPER TOWEL DISPENSER WITH RACK AND GEAR DRIVE

Arthur N. Schultz; James A. Diring, and Donald G. Krueger, all of Green Bay, Wis., assignors to Alwin Manufacturing Company, Inc., Green Bay, Wis.

Filed Nov. 12, 1981, Ser. No. 320,243
Int. Cl.³ B65H *19/00, 17/26*
U.S. Cl. 242—55.53 **6 Claims**



1. In a dispenser for dispensing a web from a roll of paper, said dispenser including a housing and a housing cover connected thereto to swing open and afford access to the housing interior and said housing including a dispensing outlet and means for supporting a paper roll within that housing and including a feed roller for withdrawing and dispensing a length of web from the roll, the improvement comprising drive means for rotating said feed roller, said drive means including actuator means, means for supporting said actuator means on said cover of said housing to afford reciprocating movement of said actuator means, with said actuator means having a part projecting forwardly thereof through an opening in the front of the cover for access, and first means on said actuator means cooperating with second means connected to said feed roller to cause rotation of said feed roller on actuation of said actuator means, said first and second means being in engagement when said cover is closed and said means disengaging to enable opening of said cover.

4,406,422

SPOOL ASSEMBLY

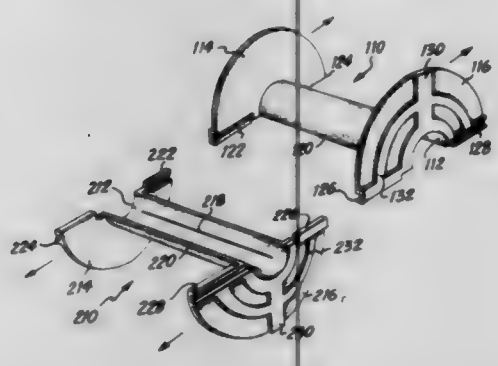
Michael R. Philips, Pomona, N.Y., assignor to Jonathan Temple & Co., Inc., Hackensack, N.J.

Filed Aug. 27, 1981, Ser. No. 296,901
Int. Cl.³ B65H *75/14*
U.S. Cl. 242—118.4 **13 Claims**

1. A spool comprising:

a first flange having a central aperture therein;

a second flange having a central aperture therein;
a segmented hub rigidly secured to said first and second flange;
said hub having an internal passage which is continuous from said first to said second flanges and is aligned with the apertures in said flanges;
each of said flanges comprising two separate inter-fitting portions; and



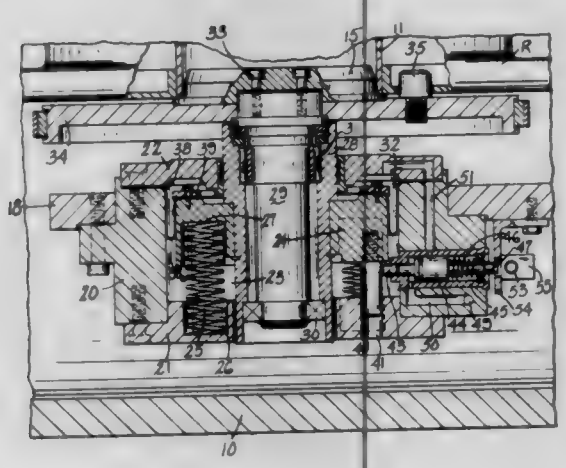
said hub having a segment connected to an inter-fitting portion of each flange;
each portion of said flange having a radial slot adapted to receive a radial projection from the other portion of the flange whereby said flange portions are interlockable but separable.

4,406,423

REEL SUPPORT SYSTEM

Stephen W. Saller, Hamden, Conn., assignor to Wire Machinery Corporation of America, New Haven, Conn.

Filed Apr. 28, 1980, Ser. No. 144,333
Int. Cl.³ D07B *7/06*
U.S. Cl. 242—129.51 **4 Claims**



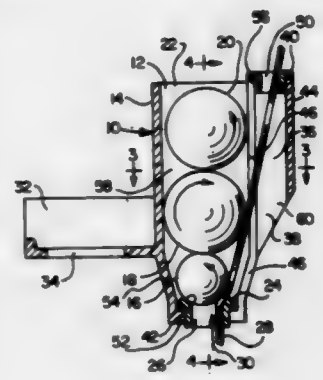
1. A system for rotatably supporting a reel on spaced apart pintles including a cradle having spaced apart walls, means defining a cylinder attached to at least one of said walls, said cylinder having an internal wall, a piston having a head in said cylinder and having clearance with said internal wall, an annular diaphragm overlying said piston head and said cylinder defining means and providing a seal over the clearance therebetween said diaphragm folding into the clearance between said piston and said cylinder wall, said piston having walls defining a control bore and a peripheral wall, a pintle rotatably carried in said piston bore, a plurality of springs disposed between the walls defining said bore and said peripheral wall and biasing said piston toward an extended position to cause said pintle to engage a reel, a fluid passage defined in said cylinder defining means to the head of said piston, fluid operated means mounted in said cylinder defining means and extending radially inwardly of the defined cylinder to a position to block said piston from retraction, said fluid operated means blocking said fluid passage in an extended position but being responsive to application of fluid pressure to said fluid passage to retract and permit fluid pressure to be applied to said piston head.

4,406,424

QUICK THREADING BALL TENSION CONTROL

Edward J. McBride, P.O. Box 44, Long Pond, Pa. 18334

Filed Aug. 11, 1982, Ser. No. 407,000
Int. Cl.³ B65H *59/22*
U.S. Cl. 242—152.1 **15 Claims**



1. A yarn tensioning device of the type including one or more stacked balls comprising
a housing,
said housing having a sidewall defining a ball chamber of predetermined length,
the ball chamber terminating downwardly in a bottom hardened insert upon which the lowermost of said balls rests for yarn tensioning purposes, the bottom insert defining an opening therethrough for passage of the yarn;
a contiguous threading chamber affixed to the ball chamber and being positioned adjacent thereto, the threading chamber having a sidewall defining a yarn passage channel,
the threading chamber being provided with a top opening for passage of the yarn therethrough; and
an aperture in the said housing sidewall, the aperture extending at least part of the distance between the ball chamber top and the bottom insert to permit yarn to pass therethrough,
the ball chamber communicating with the yarn passage channel through the said aperture.

4,406,425

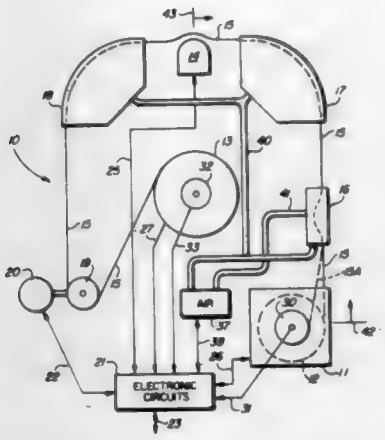
METHOD AND APPARATUS FOR REGULATING WEBS TRANSPORTED IN A REEL-TO-REEL WEB HANDLER

Joseph G. Bullock, and William J. Rueger, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1981, Ser. No. 332,261
Int. Cl.³ G11B *15/06, 15/58, 23/12*
U.S. Cl. 242—183 **15 Claims**

1. A reel-to-reel web handler having tension control means tending to maintain a uniform tension in a web extending a transportable between two reels, means to change the speed of web transport between reels which may introduce perturbations in said tension, a work station disposed between said two reels for performing work on said web;
the improvement including in combination:
bight forming means disposed between said work station and one of said reels for receiving said web to form a bight therein and bight regulation means in said bight forming means for maintaining a relatively constant bight during tape stoppage and motions irrespective of modest tension changes for controlling the length of web between said work station and said one reel to be relatively constant length;

said bight forming means having an air evacuated chamber including a pair of spaced and facing sidewalls having a spacing substantially equal to width of said web whereby as said web enters said chamber a substantial air sealing relationship is established; and



said bight regulating means being in said chamber and including an elongated slot in one of said sidewalls and having an upper shoulder extending in the direction of web motion and crosswise of the bight of tape for allowing air to flow past said tape through said slot into said chamber such that the bight of said tape in said chamber tends to stabilize adjacent said upper shoulder.

4,406,426

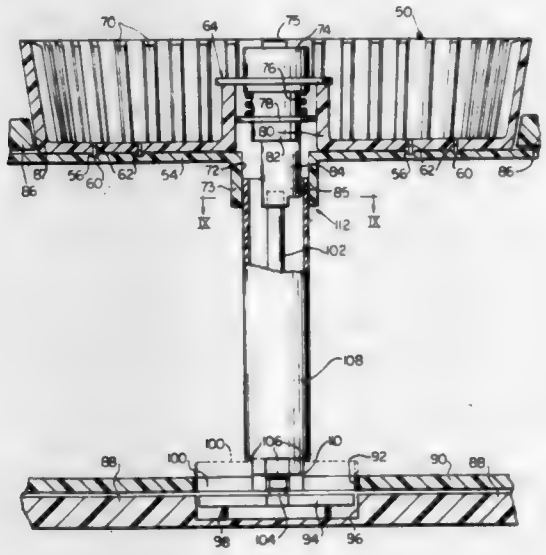
SECRECY-CODED CASSETTE

Richard Crandall, 150 W. Huron, Chicago, Ill. 60610

Filed Jun. 16, 1981, Ser. No. 274,155

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—197 **12 Claims**



1. A cassette and key comprising:

a wall including a surface and a recess in said surface;

a spring-loaded locking member mounted in said recess and biased to extend beyond said surface;

a rotatably mounted bottom disc including an opening therethrough for receiving said locking member to prevent rotation of said bottom disc;

a rotatably mounted top disc including an aperture therethrough;

rod means for carrying a record medium including an axially movable first shaft having top and bottom ends, said top end received in said aperture and including first latch means, said bottom end including an unlocking member for entering said opening and engaging said locking member;

lock control means for unlocking said bottom disc to enable rotation of said discs and said rod means, said lock control means including a gear wheel to be rotatably driven, a second shaft including second latch means for releasably engaging said first latch means, and shaft control means for selectively axially moving said shafts, when latched, downwardly to unlock said bottom disc and upwardly to permit the bias of said locking member to lock said bottom disc; and

code means including first code elements on said top disc arranged in a first predetermined code pattern and second code elements on said gear wheel arranged in a second code predetermined pattern for engaging said first code elements and only permitting latching of said shafts when said first and second code patterns are the same.

4,406,427

CLUTCH MECHANISM FOR USE IN FISHING REELS

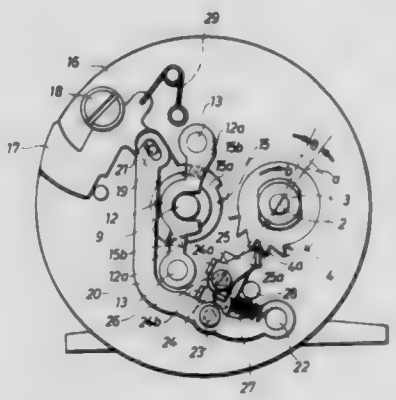
Hideo Murakami, Fuchu, Japan, assignor to Ryobi Limited, Hiroshima, Japan

Filed Dec. 23, 1980, Ser. No. 219,486

Claims priority, application Japan, Dec. 28, 1979, 54-182983[U]

Int. Cl.³ A01K *89/02*

U.S. Cl. 242—218 **4 Claims**



1. A clutch mechanism for a fishing reel comprising:

a pinion;

a cover member;

means for mounting said pinion so as to be selectively reciprocated in an orthogonal direction relative to said cover member;

a spool for retaining a fishing line;

a spool shaft;

means for rotatably mounting said spool and said spool shaft relative to said cover member;

a clutch cam;

an axis;

means for rotatably mounting said clutch cam on said axis about said pinion;

a clutch bar;

means for reciprocatably mounting said clutch bar in a direction parallel to said pinion;

a push button;

means for pivotally mounting said push button relative to said cover member;

means for operatively connecting said push button to said clutch cam for imparting rotary motion thereto;

a kick lever having a first end;

means for pivotally mounting said first end of said kick lever relative to said cover member;

a pin being operatively mounted on said push button;

a slot being positioned in a second end of said kick lever;

a slot being positioned in said clutch cam;

said pin of said push button being operatively mounted within said slot of said kick lever and said slot of said clutch cam to rotate said kick lever and said clutch cam when said push button is rotated;

a ratchet wheel;

an axis for rotatably mounting said ratchet wheel relative to said cover member;

a slider;

a pivot pin operatively mounted on said kick lever;
means for mounting said slider on said pivot pin;
a lug;
means for affixing said lug to said slider;
a kick pawl;
means for pivotally mounting said kick pawl on said slider at a predetermined angle and said kick pawl being operatively pivotally mounted to selectively engage said ratchet wheel;
spring means for normally biasing said kick pawl into engagement with said lug;
a guide rod;
means for securing said guide rod to said cover;
said slider being rotatable about said pivot pin while being in engagement with the periphery of said guide rod;
said kick pawl being selectively engageable with said ratchet wheel at a position slightly displaced from a line interconnecting said axis of said ratchet wheel and a center of rotation of said kick pawl when said push button is actuated and said clutch cam disengages said pinion from said spool shaft and said kick pawl being subsequently disengaged from said ratchet wheel by a subsequent slight rotation of said ratchet wheel.

4,406,428

CAMOUFLAGED AIRCRAFT

Carlisle K. Ferris, 50 Moraine Rd., Morris Plains, N.J. 07950

Filed May 22, 1980, Ser. No. 152,300
Int. Cl.³ B64F *5/00*
U.S. Cl. 244—1 R **4 Claims**



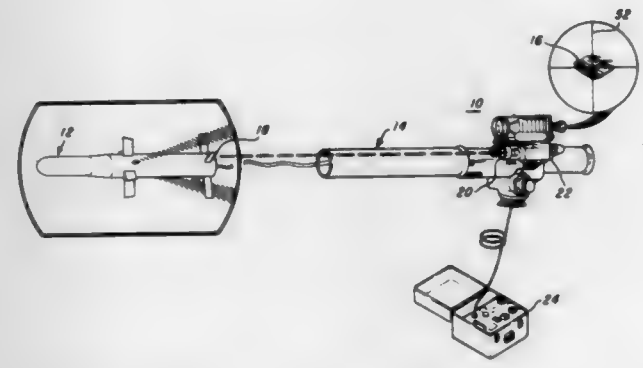
1. The method of producing a camouflaged and deceptive perception distorted aircraft in which said aircraft fuselage has a bottom contour differing from the top contour comprising:
(a) drawing to scale in side elevation and top plan views at least that portion of an aircraft having the real cockpit thereon
(b) drawing a scaled series of outlined sections taken at spaced intervals along said real cockpit canopy side elevation and top plan views
(c) making a series of parallel development drawings of said real cockpit canopy taken at about 45° from the base of said real cockpit canopy drawing and about 45° from the tangent line at the top of said real cockpit canopy drawing for each of said series of outlined sections
(d) projecting said series of parallel development drawings onto the bottom of said aircraft at an angle of about 45° and marking off said outline of said real cockpit canopy on the bottom of said aircraft
(e) transferring said scaled down information of said outlined sections two said aircraft fuselage bottom by scaling up said information and outlining said scaled up information on the bottom of said aircraft fuselage, and
(f) filling in the said outline on said fuselage bottom to simulate the real cockpit canopy on said aircraft fuselage bottom.

4,406,429

MISSILE DETECTING AND TRACKING UNIT

John B. Allen, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 13, 1978, Ser. No. 896,087
Int. Cl.³ F41G *7/20*
U.S. Cl. 244—3.11 **11 Claims**



1. A system for detecting, tracking and guiding a missile to a target comprising a forward looking infrared receiver including a detector array, a scanner for scanning infrared energy emanating from a field of view across the infrared detector array to produce electrical signals representative of a scene in the field of view, means for viewing the visible image of the scene, said means for viewing including a reticle for boresighting the target in the scene and reticle means for producing a signal indicative of the location of the boresight in the field of view,
processing means for processing said electrical signals comprising a multiplexer for multiplexing said electrical signal representative of the infrared energy emanating from the field of view, missile detecting means connected to said multiplexer for determining missile location in the field of view, circuit means connected to said missile detecting means and said reticle means for producing a signal representative of missile location relative to the location of the boresight in the field of view, and means connected to the circuit means for computing guidance correction signals to guide the missile to boresight and eventually to the target.

4,406,430

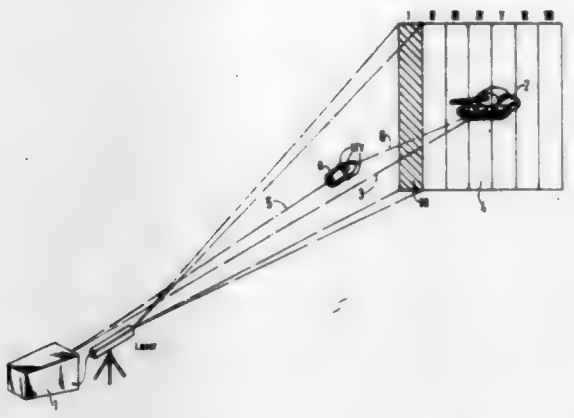
OPTICAL REMOTE CONTROL ARRANGEMENT FOR A PROJECTILE

Rudolf Krammer; Dietmar Stützle, both of Lauf, and Harald Wich, Schwaig, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Dec. 18, 1980, Ser. No. 217,814
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2951941
Int. Cl.³ F41G *7/26*
U.S. Cl. 244—3.13 **19 Claims**

1. In an optical remote control arrangement for a projectile; including sighting means for the sighting of a target along a sighting line so as to provide for the guidance of the projectile from a firing base to said target; at least one light source at the firing base emitting a lamellar-shaped light beam; deflecting means traversed by said light beam to cause said light beam to periodically pass over a region containing said sighting line; a demodulator on the projectile; at least one detector acting upon said demodulator, said light beam being directionally-dependently modulatable and detectable by said detector, said detector generating control signals acting on control devices on said projectile so as to influence the trajectory of said projectile; the improvement comprising: a modulator sequentially generating pulse sequences of different pulse frequencies

within a control period, said light source being connected ahead of said modulator, said modulator controlling said deflecting means and exciting said light source for the emission of a pulse frequency-modulated beam, through the demodulator



in the projectile across said detector, consisting of a frequency measuring arrangement; a programmable storage circuit, and a decoder connected therewith and associated with said control devices.

4,406,431

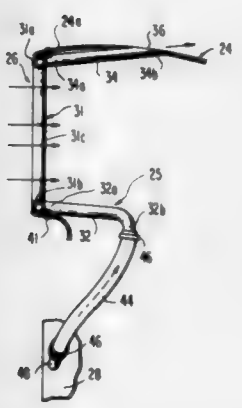
AIR SCOOP LIP WARMER DE-ICING SYSTEM

Lawrence K. Heuberger, Reno, Nev., assignor to Omac, Inc., Reno, Nev.

Filed Nov. 23, 1981, Ser. No. 324,312

Int. Cl.³ B64D *33/02, 15/02;* F02C *7/045*

U.S. Cl. 244—53 B **2 Claims**



1. An improved air scoop lip warmer de-icing system for an aircraft having at least one internal combustion engine mounted thereon for powering of said aircraft and having an elongated air scoop mounted thereto with a forwardly open end facing the air stream passing over the aircraft for operatively feeding air to the engine from the air scoop to effect a combustible mixture with engine fuel, and wherein said engine includes an exhaust pipe system for exhausting hot exhaust gases, said system comprising:

a tubular metal loop configured to the open end of said air scoop, mounted to the interior of said air scoop adjacent said open end at the edge thereof, said tubular metal loop comprising a complete loop of relatively small diameter metal tubing,

an inlet tube integral with said loop, extending away from said open end of said air scoop and within said air scoop,

a hose clamped at one end to said inlet tube and at the other end to said exhaust pipe of said engine,

an outlet tube integral with said loop at a point within said loop remote from said inlet tube, said outlet tube extending away from the open end of said air scoop and projecting through said air scoop wall rearwardly of the air scoop opening with said outlet tube open to the aircraft exterior on the surface of the elongate air scoop remote from the open end thereof, such that the exhaust gases bled from said exhaust pipe feeds to the loop through said inlet tube, divides at the intersection of said inlet tube and said loop, transverses portions of said loop as a split flow and joined at the connection of said outlet tube of said loop for common exhaust to the aircraft exterior.

4,406,432

RETRACTABLE LANDING GEAR FOR JUMBO AIRCRAFT

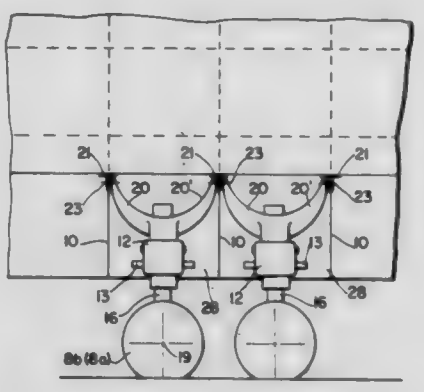
Claudius Dornier, Jr., Gustav-Werner-Weg; Heinz Günter, Gaggstrasse 11, both of 7990 Friedrichshafen 1; Hubert Krojer, Hebelstrasse 3, 7775 Bermatingen, and Johannes Spintzyk, Rebhalde 4/2, 7990 Friedrichshafen 24, all of Fed. Rep. of Germany

Filed Apr. 10, 1980, Ser. No. 138,994

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1979, 2924741

Int. Cl.³ B64C *25/12*

U.S. Cl. 244—102 R **1 Claim**



1. In a retractable landing gear for jumbo aircraft, in particular of the high-wing monoplane design, with a number of landing gear units which are individually steerable and are retractable into wells within the aircraft fuselage,

the improvement comprising:

(a) means mounting at least three landing gear unit means (**8**) in each of two or more rows (A, B) along the aircraft fuselage (**3**), the area (X) of the aircraft extending from a location in front of the center of gravity (SP in FIG. **2***a*) of the aircraft to a location behind the center of gravity;

(b) main frames (**10**) belonging to the airframe of the fuselage (**3**) are distributed in an equidistant grid-like pattern in the area of the landing gear, said frames determining the shape and strength of the fuselage and absorbing the forces;

(c) the main frames (**10**) are designed without interference with respect to each other and spaces between every two main frames (**10**) form seating wells (**28**) for one landing gear unit (**8**) each, said main frames being free of breaks and cut-outs;

(d) a yoke-member (**12**) with fork-like support arms (**20, 20'**) is associated to each landing gear unit (**8**) for the purpose of a pivoting retraction motion,

(e) the main frames (**10**) support pivot bearings (**21, 23**) for the yoke members (**12**), the arms (**20, 20'**) of each yoke member (**12**) acting on adjoining main frames (**10**),

(f) the pivot axles (**23**) of all yoke members (**12**) of the landing gear units (**8**) arranged in one row (A or B) are mounted parallel to the longitudinal aircraft axis and flush with each other, and

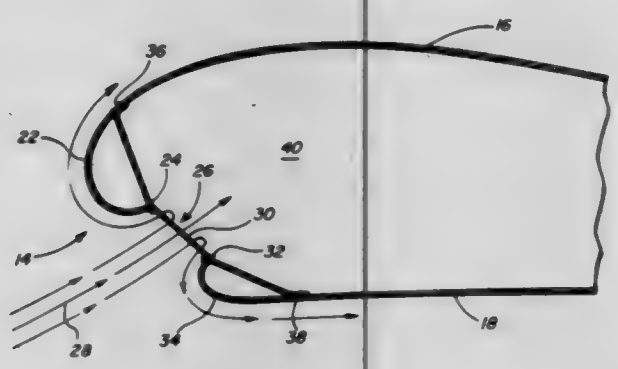
(g) all landing gear units (**8**) comprise the same construction components and the same dimensions.

4,406,433

LEADING EDGE INLET FOR RAM AIR PRESSURIZED AIRFOIL

Robert L. Radkey, Long Beach, and Bart D. Hibbs, Altadena, both of Calif., assignors to Aerovironment, Inc., Pasadena, Calif.

Filed Dec. 18, 1980, Ser. No. 217,794
Int. Cl.[3] B64D *17/02*
U.S. Cl. 244—145 2 Claims



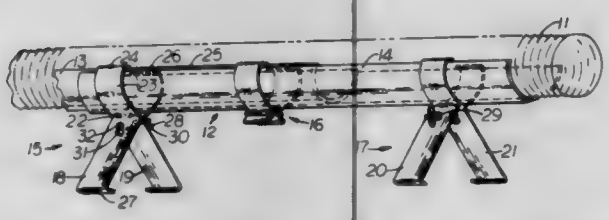
1. In an aerial device including a flexible canopy having spaced upper and lower surface members interconnected along leading and trailing edge portions, said leading edge portion being formed with an air scoop opening through which an inflow of air is received to inflate the canopy to an airfoil shape during forward glide, the improvement residing in means for reducing drag resulting from airflow separation externally of said upper and lower surface members of the canopy adjacent to the leading edge portion, comprising means interconnected between the surface members in rearward adjacency to the leading edge portion for baffling said inflow of air through the air scoop opening, said leading edge portion including curved lip sections respectively connected to the surface members of the inflated canopy and forming a smooth transition surface between the surface members and the air scoop opening, said baffling means including a perforated curtain traversing the air scoop opening to separate an external dynamic airflow region from an internal static pressure region, the perforated curtain being secured to the curved lip sections at the air scoop opening from which the lip sections extend forwardly and at the surface members of the canopy.

4,406,434

RECREATIONAL VEHICLE DRAIN SUPPORT

Raymond C. Schneckloth, Rte. 2, Clinton, Iowa 52732

Filed Sep. 28, 1981, Ser. No. 306,328
Int. Cl.[3] A47G *29/00*
U.S. Cl. 248—83 3 Claims



1. A support for a flexible drain hose comprising: a trough having a plurality of successive overlapping sections opening upwardly to define for receiving said hose an elongated cavity, each of said sections having respective opposite upper edges above respective opposite sides, said sections at each overlapping position having an inner end portion and an overlapping outer end portion and said upper edges of each of said inner end portions extending somewhat beyond said upper edges of said respective outer end portions,

a plurality of pairs of supporting members, each member of each of said pairs having an upper clamping portion, a lower leg portion, and a bend at a substantial angle between said portions,

elastic interconnecting means for each of said pairs for interconnecting said respective bends such that said legs diverge from said respective bends in a downward direction and said clamping portions diverge over said respective legs in an upward direction, said bends of each of said pairs being spaced apart somewhat below a lower longitudinal central line of said trough,

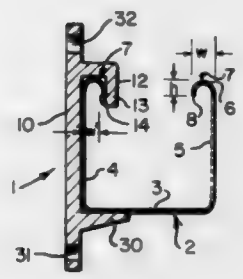
each of said clamping portions having an inwardly turned upper end, said inwardly turned upper ends of said clamping portions of any of said pairs of supporting members at any of said overlapping positions extending over respective adjacent upper edges of both said inner and outer end portions of said respective joined sections but contacting said upper edges of only said inner portions of said respective sections, and each of said clamping portions having a side portion contacting said side of said outer portion adjacent thereto to clamp said respective sections of said trough together.

4,406,435

WALL MOUNT BRACKET FOR A VENETIAN BLIND HEADRAIL

Richard N. Anderson, Owensboro, Ky., assignor to Hunter Douglas, Inc., Totowa, N.J.

Filed May 29, 1981, Ser. No. 268,646
Int. Cl.[3] A47M *1/10*
U.S. Cl. 248—261 10 Claims



1. A wall mount bracket for a venetian blind headrail adapted to support a venetian blind assembly where the headrail has at least one upstanding flange having an inturned rim at its upper free end, said bracket comprising in combination:

(a) a vertical extending wall engaging member adapted to be affixed to a wall, and

(b) a downwardly opening retaining groove in an upper portion of the wall engaging member including an inwardly extending lip supporting the inturned rim of the flange, with said lip being horizontally spaced from a line projected vertically upwardly from a lower portion of the wall engaging member to form an opening therebetween, the width of which is greater than the height of the inturned rim of the rear flange taken between the end of the rim and the upper free end of the flange and less than the width of the inturned rim taken at its widest point between its outside surfaces, whereby the weight of the headrail and venetian blind assembly will be supported by said lip and whereby the center of gravity of the headrail and venetian blind assembly will tend to rotate the headrail to press the flange against the lower portion of the wall engaging member whereby said rim is maintained on said lip.

4,406,436

HOLDING ELEMENT FOR MOUNTING BEARING PIECES

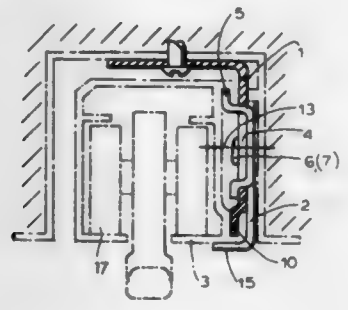
Johannes Benthin, Bremerhaven, Fed. Rep. of Germany, assignor to Suntec Sonnenschutztechnik GmbH, Bremerhaven, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,406

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 3003227

Int. Cl.³ A47H *1/14*

U.S. Cl. 248—262 10 Claims



1. A holding element for mounting a bearing piece which has at least two recesses and supports a curtain and the like, the holding element comprising a holding member arranged to hold a bearing piece; a mounting member arranged to mount the bearing piece on a support; a plug connection connecting said holding member and said mounting member and having an axis of rotation; and means for connecting said holding member and said mounting member with the bearing piece, said connecting means including at least two projections of which one projection is arranged on said holding member and engageable in one of the recesses of the bearing piece, whereas the other of said projections is arranged on said mounting member diametrically opposite to said one projection and engageable in the other of the recesses of the bearing piece.

4,406,437

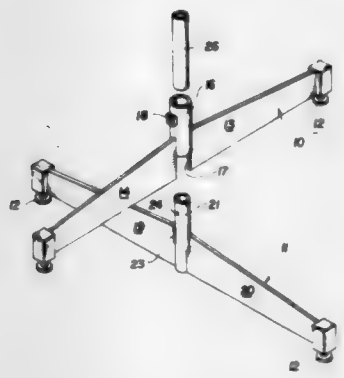
KNOCK-DOWN SUPPORT BASE FOR MERCHANDISE DISPLAY RACK

Clem B. Wright, South Fulton, Tenn., assignor to Waymatic, Inc., Fulton, Ky.

Filed Jan. 29, 1982, Ser. No. 343,746

Int. Cl.³ F16M *11/20*

U.S. Cl. 248—529 7 Claims



1. A knock-down support base for a rack or the like comprising a pair of separable crossing elongated support base sections, a first upright axis sleeve rigidly secured to one of said base sections at its center, a second upright axis sleeve rigidly secured to the other support base section at its center and adapted to engage telescopically within the first sleeve, an upright axis pole engaging telescopically within the bore of the second sleeve, and a single clamping set screw means on the first sleeve in registration with an aperture of the second sleeve and engaging said pole within the second sleeve to force the pole and second sleeve solidly against the far side of the first sleeve to solidify the support base.

4,406,438

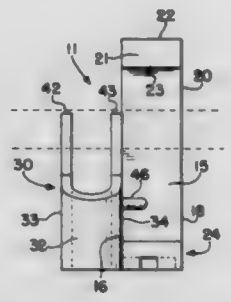
CABLE ROUTINE CLIP

George J. Bury, Lake Villa, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 7, 1981, Ser. No. 327,847

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—544 13 Claims



1. A cable mounting device, particularly adapted to position television type cable in close proximity to the siding on a building, comprising at least one base member, said base member having a longitudinal axis and a pair of side margins, tongue means extending in the direction of the longitudinal axis from one end of the said base and being adapted to be driven behind a piece of siding to secure the device to the building, means at the other end of said base adapted to be engaged and driven by a tool in the direction of the extension of said tongue, a substantially U-shaped guide having a longitudinal axis, a pair of sidewalls, and a bight portion, said longitudinal axis of said U-shaped guide being generally parallel to said sidewalls, each of said sidewalls having at least a distal edge, an edge integrally formed with said bight portion, and an end edge, each of said sidewalls generally reducing in height from each respective end edge thereby forming with said bight portion a U-shaped guide which reduces in depth from said end edges, a distal edge of one of said sidewalls attached to one of said side margins of said base with the end edge of said one of said sidewalls proximate said one end of said base to thereby orient said longitudinal axis of said U-shaped guide relative to the longitudinal axis of said base, guide means associated with each said end edge for positioning and retaining a cable transverse to the longitudinal axis of said base, whereby a cable to be positioned and retained in one of two substantially perpendicular positions relative to the building is first engaged in either the guide means or the U-shaped guide of the device and then device is attached to the building by driving the tongue means behind a piece of siding by a tool engaging said means at the other end of said base.

4,406,439

POURED CONCRETE FORMING SYSTEM FOR SPA POOLS

Max J. Garter, 2147 7th St., Grand Rapids, Mich. 49504

Filed May 6, 1981, Ser. No. 260,587

Int. Cl.³ B29C *11/00*

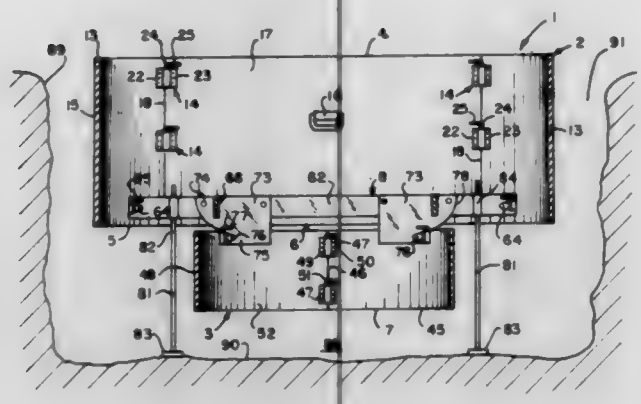
U.S. Cl. 249—64 29 Claims

1. A form for making poured concrete spa pools and the like, comprising:

first and second form members, each having a closed perimeter with a preselected configuration, and an exterior surface adapted to mold concrete thereabout; said second form member being shaped to fit within the perimeter of said first form member; each of said form members having a collapsible construction, comprising a plurality of form panels with means for detachably interconnecting said form panels to retain the same in said preselected configuration during pouring of the concrete, and to permit stripping said form panels after the concrete has at least partially cured;

means surrounding said first and second form members for forming concrete between said form members and said forming means; and

means for suspending said second form member directly below said first form member, whereby wet concrete is



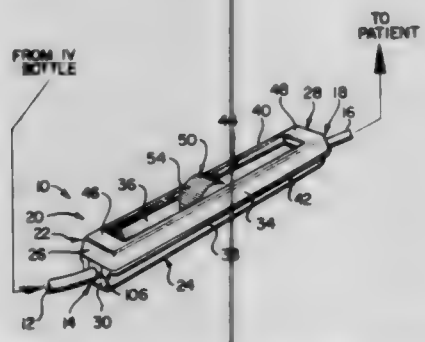
poured between said forming means and said entire form to create a monolithic spa pool construction.

4,406,440

FLOW REGULATING DEVICE

Lee K. Kulle, Mundelien; John M. Hess, Streamwood, both of Ill., and James W. Scott, Mario, Iowa, assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation of Ser. No. 133,677, Mar. 25, 1980, abandoned.
This application Sep. 15, 1981, Ser. No. 302,573
Int. Cl.[3] F16L *55/14*
U.S. Cl. 251—6 5 Claims



1. A roller clamp for regulating the rate of fluid flow from a supply source to a desired delivery point through plastic tubing comprising:

an elongated, box-like body having a base portion with an internal compression surface, a top portion with an elongated, open passageway, elongated side walls, and end walls;

a centrally disposed passageway in said end walls defined by a fluid inlet means at one end wall for receiving the plastic tubing from said supply source, and a fluid outlet at the opposite end wall for receiving the plastic tubing leading to the delivery point;

a length of conduit fabricated from silicone rubber having a lumen for the passage of fluid through the body from the inlet to the outlet, said conduit being disposed and captured within the body in stretched condition between said inlet and said outlet means so as not to be affected by external stretching and tugging forces;

a roller having a circumferential outer surface and centrally disposed axle hubs;

a track within the body for capturing said roller for longitudinal movement within said body, said compression surface having an angular variance to the track to provide a variable distance between the outer surface of the roller in contact with the conduit and the base;

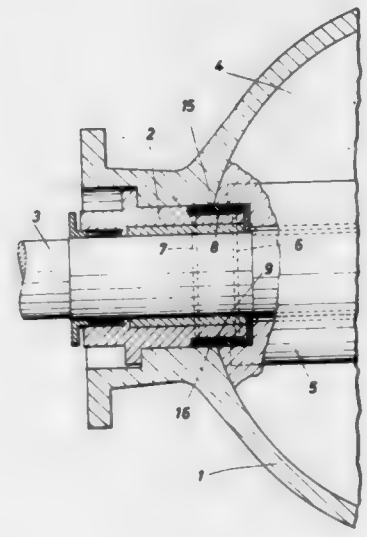
whereby the fluid flow may be varied by application of a manual force to the roller, thereby altering the diameter of the lumen from fully open to completely closed as defined by the area between the roller and compression surface.

4,406,441

BUTTERFLY VALVE

Norbert Lukesch, Linz, and Josef Kapeller, Neufelden, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Dec. 14, 1981, Ser. No. 330,717
Claims priority, application Austria, Jan. 14, 1981, 109/81
Int. Cl.[3] F16K *31/44*
U.S. Cl. 251—214 5 Claims



1. In a butterfly valve comprising

a valve body defining an interior cavity, which constitutes a flow passage,

two axially aligned bearing bushings fitted in said valve body on opposite sides thereof and protruding into said cavity, each of said bearing bushings having an outside peripheral surface formed with a first peripheral groove, which faces said valve body, with a second peripheral groove, which is axially spaced apart from said first peripheral groove and extends in said cavity, and with two diametrically opposite axial grooves connecting said peripheral grooves,

a valve shaft extending through said cavity and rotatably mounted in said bearing bushings,

a valve disk disposed in said cavity and movable into and out of a closed position in which said valve disk registers with said axial grooves, said valve disk having a hub which is non-rotatably mounted on said valve shaft and surrounds each of said bearing bushing inside said cavity,

first annular sealing means contained in said first peripheral groove and in sealing contact with said valve body,

second annular sealing means contained in said second peripheral groove and in sealing contact with said hub, and

two axial sealing strips contained in respective ones of said axial grooves and in sealing contact with said hub and arranged to be in sealing contact with edge portions of said valve disk when said valve disk is in said closed position,

the improvement residing in that

said second annular sealing means comprise a radially inner sealing ring and a radially outer sealing ring, which protrudes from said second peripheral groove and consists of a strip of a lubricating solid plastic material, which strip is narrower than said second peripheral groove and laterally movable relative thereto and has free ends which abut each other and form a joint that is oblique to the peripheral direction of the bushing.

4,406,442

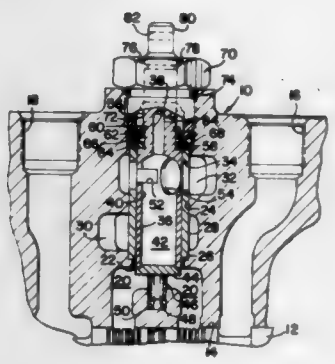
ROTARY VALVE

Leonard A. Bettin, Lyons; Imre Galos, Downers Grove, and Donald J. Dufour, Hinsdale, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Continuation of Ser. No. 295,274, Aug. 24, 1981, which is a division of Ser. No. 114,190, Jan. 22, 1980, abandoned. This application Nov. 6, 1981, Ser. No. 319,008

Int. Cl.³ F16K *3/26*

U.S. Cl. 251—310 **4 Claims**



1. A rotary valve for precise metering of fluid flow comprising:

a valve body having a first supply chamber and a supply port;

a bore intersecting said chamber and port;

a sleeve pressed into said bore;

a cross bore in said sleeve communicating with said chamber;

a hollow rotary valve spool rotatable in said sleeve;

said spool having metering notches capable of selective registry with said cross bore;

a shoulder formed on said spool substantially level with the outer end of said sleeve;

a first thrust washer engaging said shoulder and overlying said sleeve;

a cap connected to said valve body and having an inner annular collar;

a second thrust washer engaging said collar;

a thrust bearing positioned between said washers; and

the combined thickness of said bearing and said washers being slightly less than the distance from the top of said sleeve to the bottom of said collar whereby pressure in said hollow spool will lift said bottom washer off said sleeve to minimize the frictional resistance to rotation of said first washer relative to said sleeve.

4,406,443

APPARATUS FOR DISTRIBUTING GAS-LADEN REFINING POWDERED-PARTICLES INTO MOLTEN METAL

Takashi Moriyama, Tokyo, Japan, assignor to Denka Engineering Kabushiki Kaisha, Tokyo, Japan

Filed May 5, 1982, Ser. No. 375,146

Claims priority, application Japan, Jul. 30, 1981, 56-120087

Int. Cl.³ C21C *5/32*

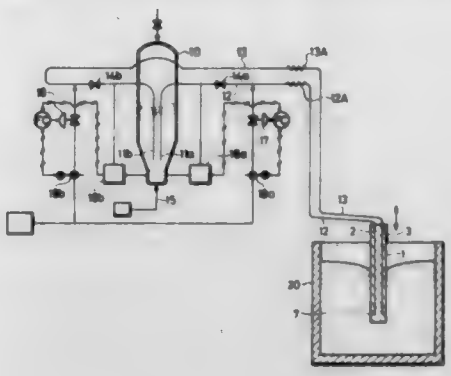
U.S. Cl. 266—225 **7 Claims**

1. An apparatus for distributing gas-laden refining powdered-particles under pressure into molten metal contained in a ladle, comprising:

a plurality of feed pipes;

a multinozzle lance connected to said plurality of feed pipes, said multinozzle lance including a lance body, a plurality of introduction tubes mounted in said lance body and being connected to the plurality of feed pipes, respectively, and a plurality of nozzles mounted in said lance body communicating with said plurality of introduction tubes respectively for injecting the gas-laden refining powdered-particles into said molten metal in said ladle, and

means for independently controlling injection rates of the powdered-particles and the gas into each of said plurality of feed pipes to independently control said rates injected



into each of said respective introduction tubes and said nozzles.

4,406,444

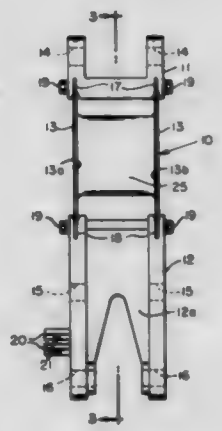
BRAKE HANGER FOR RAILWAY BRAKES

Thomas M. Bogenschutz, Clayton, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Jun. 19, 1981, Ser. No. 275,188

Int. Cl.³ F16F *3/10*

U.S. Cl. 267—30 **4 Claims**



1. A brake hanger adapted to be journaled at its upper end on a journal pin secured to a railway truck frame and having first and second journals near its lower end adapted to pivotally journal a first element secured to a brake cylinder and a second element operably attached to a brake shoe for bearing against the tread of a wheel of the truck, wherein an improved hanger bracket permitting lateral flexibility comprises;

(a) upper and lower spaced substantially rigid U-shaped lug means adapted at their ends to pivot on the journal pin secured to the truck and on a pin connected to a brake rod respectively at opposite ends of the bracket.

(b) a pair of laterally spaced leaf springs longitudinally connecting opposite sides respectively of the upper and lower U-shaped lug means,

(c) the upper U-shaped lug means having laterally disposed slots, flared at their outer ends in the lower sides thereof for receiving upper ends of the leaf springs respectively,

(d) the lower U-shaped lug means having laterally disposed slots, flared at their outer ends, in the upper sides thereof for receiving lower ends of the leaf springs respectively,

(e) means in each of the U-shaped brackets for securely clamping upper and lower ends respectively of the laterally spaced leaf springs,

(f) the lower U-shaped lug means being adapted at an intermediate point for journalling a brake head and having a rigid supporting web connecting the sides thereof and extending longitudinally throughout substantially the full length of the lower lug means, and

(g) the leaf springs being interconnected by a web of resilient

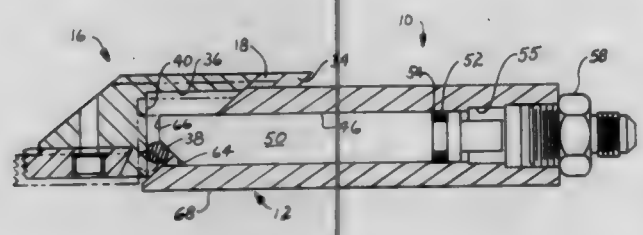
material extending longitudinally between the springs and bonded thereto for damping harmonic vibrations of the hanger bracket, that may be generated by lateral movements of a railway truck from which the hanger may be journalled.

4,406,445

HYDRAULIC TOE CLAMP

Lawrence H. Seidel, Mentor, Ohio, assignor to Jergens, Inc., Cleveland, Ohio

Filed Dec. 3, 1981, Ser. No. 327,217
Int. Cl.³ B23Q *3/08*
U.S. Cl. 269—32 **3 Claims**



1. A toe clamp comprising a generally horizontal body member having a working end, a declining central slideway extending from an upper relatively rearward portion of said working end to a lower relatively forward portion of said working end, a toe member on said working end and having a central portion slidably keyed to said slideway for movement over said working end downwardly and forwardly in an advancing direction and upwardly and rearwardly in a retracting direction, said movements each having both horizontal and vertical components, spring means between said members and urging said toe member in said retracting direction, said toe member further having first and second sideward portions each on its own side of said central portion and each defining its own piston-receiving recess in said toe member, pin means extending across each of said piston-receiving recesses from side to side thereof, said body member having first and second sideward portions corresponding to said first and second sideward portions of said toe member and each defining its own hydraulic piston bore opening into a corresponding one of said piston-receiving recesses of the toe member, a horizontally movable hydraulic piston in each of said piston bores and extending into one of said recesses, a downwardly and rearwardly inclined face at the forward end of each of said hydraulic pistons, each said face bearing in overriding relationship on an upper side of said pin means within the corresponding piston-receiving recess to urge both sideward portions of said toe member to advance in a balanced manner downwardly and forwardly against the bias of said spring means and to cause the horizontal movement of said pistons to tend to overtake said horizontal component of said downward and forward movement when said hydraulic pistons are advanced by hydraulic pressure, and to urge said hydraulic pistons to retract as said toe member retracts under the bias of said spring means when said hydraulic pressure is relieved, the vertical clearance between the tops of said piston-receiving recesses and said pistons in the retracted position of said pistons and said toe member being sufficient to accommodate said vertical component of said downward and forward movement as said hydraulic pistons advance to fully extended position.

4,406,446

MODEL AIRCRAFT COVERING TOOL

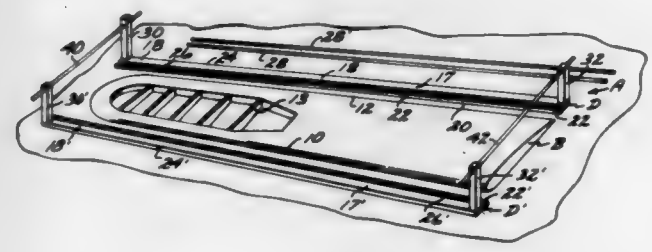
Eldon J. Lind, 2912 Walker Lee Dr., Los Alamitos, Calif. 90720

Filed May 4, 1981, Ser. No. 260,371
Int. Cl.³ B25B *1/00*
U.S. Cl. 269—152 **1 Claim**

1. A tool comprising a plurality of elongate components which when marketed or not in use may be disposed side by side in parallel relationship to occupy a minimum of space, said tool when assembled capable of removably supporting a rectangular end section of a sheet of pliable material from a roll thereof in a taut condition to cover the upper surface of a wing of a model airplane when said wing is supported at an elevated position, and wing having leading and trailing edges, said tool including:

a. first and second rigid strips of greater lengths than said wing disposed outwardly from said leading and trailing edges and substantially parallel to one another, said first and second rigid strips having flat upper surfaces in which longitudinal grooves are defined and over which said end section extends;

b. first and second pairs of uprights that extends upwardly from said upper surfaces of said first and second strips, adjacent said ends thereof, said first and second pair of uprights having axially aligned transverse openings therein;



c. means for removably securing said first and second pairs of uprights to said first and second strips;

d. first and second rods that removably engage said first and second pairs of openings to permit said first and second pairs of uprights and strips to be raised and lowered as a unit relative to said wing; and

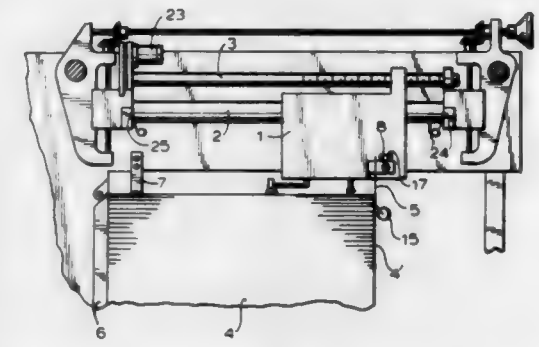
e. first and second dowels of slightly smaller transverse cross section than that of said grooves that press transverse parts of said end section of said sheet material downwardly into said grooves to frictionally engage the latter, with said end section of said sheet material between said first and second strips overlying said top surface and being held in a taut condition by gravity due to the weight of said tool, with said end section of said sheet material when so disposed capable of being adhered to said top surface after which said end section is severed from said roll.

4,406,447

DEVICE FOR POSITIONING A SHEET SEPARATOR

Frank Fichte, Taucha, and Wolfgang Paul, Leipzig, both of German Democratic Rep., assignors to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Continuation-in-part of Ser. No. 290,791, Aug. 6, 1981. This application Aug. 25, 1981, Ser. No. 296,223
Claims priority, application German Democratic Rep., Aug. 6, 1980, 223123
Int. Cl.³ B65H *3/08*
U.S. Cl. 271—31 **9 Claims**



1. A device for positioning a sheet separator arranged in an apparatus for feeding sheets from a stack, comprising means for selectively driving the sheet separator above said stack in

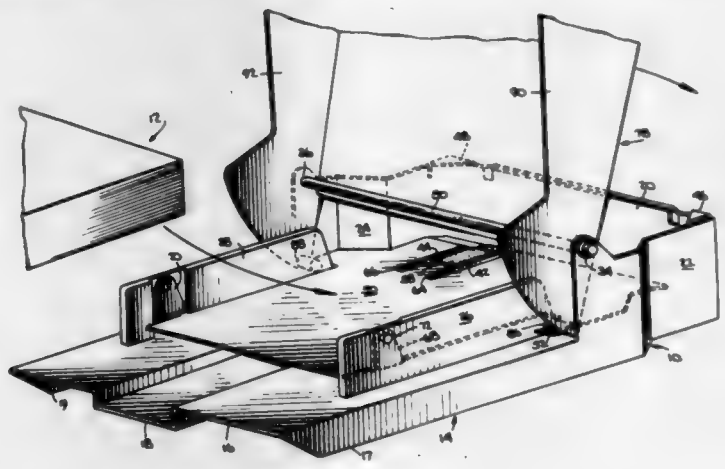
two opposite directions; and feeler means mounted on said sheet separator to detect the position of the sheet separator relative to a rear edge of a new stack introduced during the stack exchange; and switching means controlled by said feeler means and cooperating with said driving means to impart a movement to said sheet separator in one of the two directions until the latter is in alignment with the rear edge of the stack.

4,406,448

PAPER CASSETTE

Walter J. Kulpa, Norwalk, and Leo Wologodzew, Huntington, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 24, 1981, Ser. No. 286,486
Int. Cl.³ B65H *1/12*
U.S. Cl. 271—160 **4 Claims**



1. A paper cassette for feeding different lengths of cut paper sheets seriatim to a machine operatively associated with said cassette, comprising:

a chute-like base having a bottom panel, a front wall projecting upwardly from the bottom panel, and a pair of sidewalls contiguous with said front wall and extending only along a portion of said bottom panel, said bottom panel including at least one pair of ramp-like ribs in the forward section thereof;

an upwardly biased paper elevating plate pivotably secured at its rearward section to said base, said plate having a pair of detents situated in the forward section thereof adjacent said sidewalls and at least one last-sheet retaining pad in the forward section thereof flanked by a pair of slots; and

a cassette cover pivotably secured to said sidewalls of said base, said cover having a pair of inwardly projecting camming fingers integral therewith one on each side of the forward section thereof, wherein when said cover is raised to the open position said detents engage said fingers and depress said elevating plate so that said ribs project through said slots to thereby defeat the function of the last-sheet retaining pad, whereby said cover is held in said open position and said elevating plate is maintained in a depressed position ready for paper loading.

4,406,449

APPARATUS FOR DEPOSITING SHEETS IN A STACK

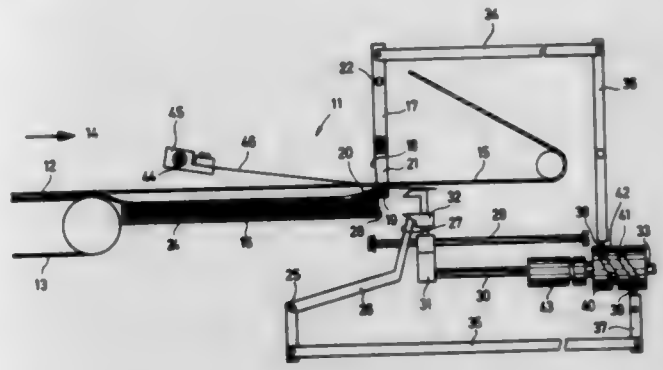
Hermann Buck, Hülben, Fed. Rep. of Germany, assignor to Bielomatik Leuze GmbH & Co., Neuffen, Fed. Rep. of Germany

Filed May 21, 1981, Ser. No. 265,915
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023533
Int. Cl.³ B65H *29/34, 31/26*
U.S. Cl. 271—189 **23 Claims**

1. In an apparatus for depositing conveyed sheets in a stack at a stacking location, advancing sheets being stopped by means engaging the forward edges of the sheets, the improvement comprising:

substantially horizontally reciprocating means for withdrawing completed stacks of aligned sheets from the stacking location;

the stop means including an upwardly inclined guide surface for the forward edges of the sheets, in order to separate subsequently conveyed sheets from completed stacks; and,



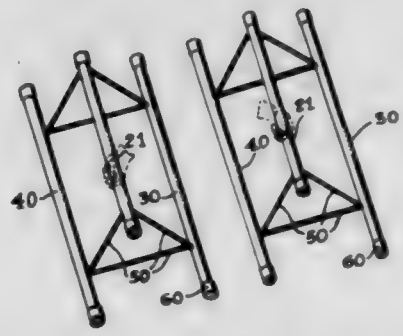
hold down means operatively associated with the stop means for limiting upward movement of the forward edges of the sheets as the forward edges abut the stop means.

4,406,450

MINI PARALLEL BARS

Kent R. Regan, 1738 Oak St., Lake Oswego, Oreg. 97034

Filed May 28, 1982, Ser. No. 382,896
Int. Cl.³ A63B *3/00*
U.S. Cl. 272—63 **6 Claims**



1. A gymnastic practice and exercise apparatus comprising:

a pair of individual bar members which when used together form a low profile, variable width parallel bar exercise device; wherein, each individual bar member comprises:

two parallel elongated tubular base members connected to one another by at least a pair of connecting rods, and

a tubular hand rail element having a length substantially less than the length of said base member, and connected to each of said base members by at least a pair of connecting rods, wherein, all of the said connecting rods have the same length, and join the base members and the hand rail element into the form of an elongated triangle.

4,406,451

COLLAPSIBLE BIDIRECTIONAL JOGGING APPARATUS

Salvatore Gaetano, 130-16 115th St., South Ozone Park, N.Y. 11420

Continuation-in-part of Ser. No. 972,669, Dec. 26, 1978, Pat. No. 4,274,625. This application Jun. 22, 1981, Ser. No. 275,812
Int. Cl.³ A63B *23/06*
U.S. Cl. 272—69 **4 Claims**

1. A non-motorized, bidirectional jogging apparatus, comprising:

an elongated base member;

a roller assembly formed onto said base member;

level adjustment means coupled to said base member for adjusting said angular incline of said base member relative to a support surface for providing a simulated downhill

jogging resistance when facing one end of the base member and for providing a simulated uphill jogging resistance when facing the other end of the base member,

a collapsible frame extends upwardly from said base member said frame comprising four upright posts each approximately the length of said base member and hinged at their lower ends to the respective front and rear corners of said base member, side rails each respectively pivotally coupled to and interconnecting a corresponding front and rear upright post, a handlebar interconnecting the two rear upright posts, and grasping rods axially extending from the front upright posts, said front upright posts not



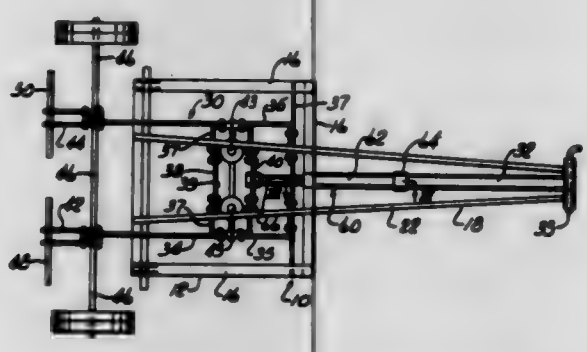
being interconnected to each other, whereby a user can enter onto the roller assembly between the front posts and can still jog facing towards the front as well as toward the rear of the apparatus by just turning around, and wherein said side rails are each formed in two sections, and further comprising coupling means on each side rail for releasably connecting the two sections of that side rail when said upright posts are in their upstanding position, and in the collapsed condition said upright posts longitudinally lying onto said base member with the sections of the side rails adjacent thereto, so as to form a unitary collapsed assembly.

4,406,452

WEIGHT LIFTING EXERCISE DEVICE

Paul S. Lapcevic, R.D. #1, Scenery Hill, Pa. 15360

Filed Dec. 24, 1981, Ser. No. 334,129
Int. Cl.³ A63B *13/00*
U.S. Cl. 272—123 **5 Claims**



1. A weight lifting exercise device comprising:

a main support frame including upright members interconnected with cross-members;

elongated exercise beam means pivotably supported at one end thereof by said main support frame for vertical movement about the pivot point; and

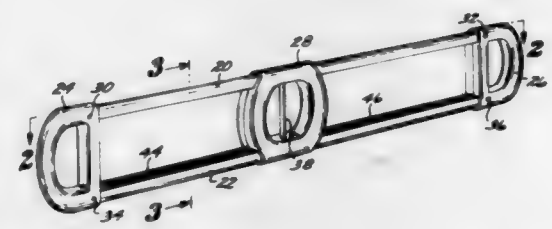
weight support means supported by said exercise beam means for both rectilinear and longitudinally axial rotational movements with respect to said exercise beam means during vertical movement of said exercise beam means, and for detachably securing a plurality of weight members, and for being grasped to urge vertical movement to said exercise beam means and rectilinear and rotational movements to the weight support means.

4,406,453

PORTABLE EXERCISER

Victor A. Herzfeld, 9250 Brookshire Ave., #204, Downey, Calif. 90240

Filed Nov. 10, 1980, Ser. No. 205,267
Int. Cl.³ A63B *21/02*
U.S. Cl. 272—137 **4 Claims**



1. A portable exerciser comprising: a frame having a first end and a second end remote from each other; an end hand-hold rigidly formed on said first end of said frame; a middle hand-hold slidably mounted on an intermediate portion of said frame; a first pair of springs mounted on said frame between said end hand-hold and middle hand-hold and bearing against both said hand-holds; a second pair of springs mounted on said frame and bearing against said middle hand-hold and said second end portion of said frame, wherein said frame includes a pair of parallel tubular members, each having a portion extending through said middle hand-holds, said first pair of springs guided by said tubular members between said end hand-hold and said middle hand-hold and said second pair of springs guided by said tubular members between said middle hand-hold and said second end; and said first and second pair of springs each slidably secured to said tubular members so as to leave a space open between them on said portion of said tubular members within said middle hand-hold and resilient shock means positioned to receive impacts of said hand-hold when moved during use mounted on said spaces on said tubular members.

4,406,454

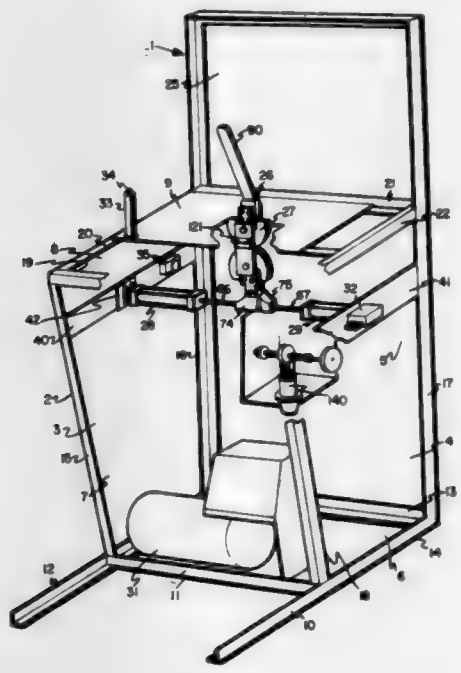
ARM WRESTLING APPARATUS

Jonlee R. Dean, Danville, Ind. (Frances Dean, administratrix), assignor to Frances, Executrix Dean, Danville, Ind.

Filed Dec. 21, 1981, Ser. No. 332,407
Int. Cl.³ A63B *21/00*
U.S. Cl. 273—1 GC **2 Claims**

2. An arm wrestling apparatus comprising an upward extending handle having an upper end adapted to be grasped in the hand of a person and adapted to move through an arc of a circle and having a lower end adapted to be coupled to a gear assembly; first and second cylinder support means adapted to support the head ends of a pair of opposing pneumatic cylinders; first and second opposing pneumatic cylinders each comprising a hollow tubular member having a sealed head end pivotably coupled to a first or second cylinder support means and a sealed rod end, a piston slidably mounted within the said hollow tubular member for reciprocating lengthwise movement within the said tubular member, a piston rod having an internal end coupled to said piston and an external end that extends through a said sealed rod end of a said tubular member and is adapted to be coupled to a rod pivot means, a first pneumatic hose connecter means adapted to receive pressurized air into a said head end, and a second pneumatic hose connector means adapted to receive pressurized air into a said rod end; rod pivot means coupled to the said external ends of

the said piston rods; a gear support means; gear means coupled to the said gear support means and to the said handle and to the said rod pivot means; pneumatic cylinder gear locking means comprising a hollow tubular member having a seated head end having provided therein a pneumatic hose connector means adapted to receive pressurized air into the said head end, a piston slidably mounted within the said hollow tubular member and adapted for reciprocating lengthwise movement within the said tubular member, a piston rod connected at one end of the said piston and adapted at the other end to engage and lock the aforesaid gear means and spring means adapted to retract the said rod and unlock the said gear means; air compressor means adapted to supply pressurized air to the said first and second opposing pneumatic cylinders and to the said pneumatic cylinder gear locking means; regulator means adapted to regulate the pressure of the aforesaid pressurized air; a plurality of air hose means adapted to carry pressurized air from the said compressor means to the said head ends and the said rod ends of the said first and second opposing pneumatic cylinders and the aforesaid pneumatic cylinder gear locking means; a plurality of valve means adapted for selectively opening and closing air hose means of the said plurality of air hose means; flow control means adapted to control the direction of flow of air in the said plurality of air hose means; display means adapted to be illuminated by electric lights and adapted to



indicate the results of a cycle of use of the said arm wrestling apparatus; a plurality of electric light means adapted to illuminate the aforesaid display means and adapted to selectively indicate the results of a cycle of use of the said arm wrestling apparatus and adapted to be thereafter extinguished; a plurality of solenoid means adapted to control and change the state of the aforesaid plurality of valve means; a plurality of limit switch means adapted to be operated by moving the aforesaid upper end of the aforesaid handle through an arc of a circle and adapted to control a flow of electrical current to a plurality of relay switch means; a plurality of relay switch means adapted to be controlled by the said plurality of limit switch means and adapted to selectively control a flow of electrical current in a plurality of electrical conductor means; timer means adapted to measure the duration of an interval of time commencing with the closing a master switch means and adapted to interrupt after a prescribed period of time a flow of electrical current to the aforesaid plurality of solenoid means, the aforesaid plurality of electric light means, the aforesaid plurality of limit switch means, and the aforesaid plurality of relay switch means; a master switch means adapted to control a flow of electrical current to the said timer means; a start switch means adapted to be operated by a user of the arm wrestling apparatus and adapted to selectively control a flow of electrical current to the aforesaid plurality of solenoid means; and electrical conductor means adapted to interconnect the said plurality of electric light means, the said plurality of solenoid means, the said plurality of limit switch means, the said plurality of relay switch means, the said air compressor means, the said timer means, the said master switch means, and the said start switch means, and adapted to be connected to a power source.

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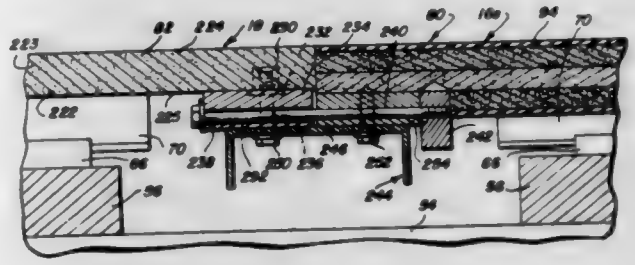
SECTIONALIZED BOWLING LANE AND METHOD OF ASSEMBLY THEREOF

Foster W. Berry, and Robert Torresen, both of Muskegon, Mich., assignors to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 35,277, May 1, 1979, abandoned, which is a continuation-in-part of Ser. No. 966,394, Dec. 4, 1979, abandoned. This application Dec. 24, 1981, Ser. No. 334,400

Int. Cl.[3] **A63D** *1/04, 1/08*

U.S. Cl. 273—51 **28 Claims**



1. A bowling lane, comprising:

(a) support means; and

(b) a plurality of individual longitudinally extending panels supported on said support means in end-to-end relation, each said panel having an upper, substantially flat, horizontal bowling surface at substantially the level of the bowling surfaces of the remaining panels, at least one of said panels being a symmetrical multi-layer laminate comprising (1) a core layer having upper and lower surfaces, and (2) a pair of panels of a highly impact-resistent and abrasion-resistant plastic laminate, each said panel being secured to a respective one of said upper and lower core layer surfaces, one said plastic laminate panel defining said bowling surface, said core layer comprising a shock absorbing phenol-formaldehyde resin-bonded particle board material having a density of between about 62 and 87 lb/ft^3 and of a thickness such that said core layer has hardness, tensile strength and stiffness characteristics sufficient to substantially uniformly distribute stress imparted by a bowling ball lofted onto said bowling surface from said one plastic laminate panel to said support means over an area sufficiently large to prevent permanent deformation of said one plastic laminate panel.

4,406,456

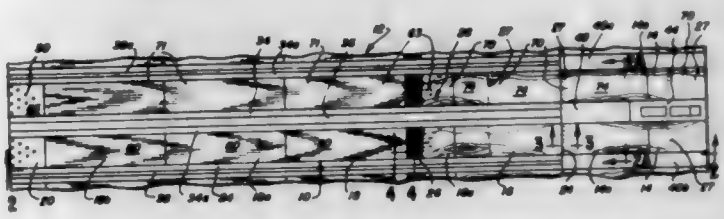
METHOD OF RESURFACING A BOWLING LANE AND PRODUCT OF SAID METHOD

Foster W. Berry; Robert Torresen, both of Muskegon, and David M. Boruta, Grand Haven, all of Mich., assignors to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 35,266, May 1, 1979, abandoned, which is a continuation-in-part of Ser. No. 966,380, Dec. 4, 1978, abandoned. This application Feb. 18, 1982, Ser. No. 350,003

Int. Cl.[3] **A63D** *1/04, 1/08*

U.S. Cl. 273—51 **21 Claims**



1. A method of resurfacing the bowling surface of a worn bowling lane, comprising the steps of:

(a) smoothing said worn surface to a substantially uniform level;

(b) securing directly to said smoothed surface on an underlayment panel having a substantially flat, horizontal upper surface, said underlayment panel being of a phenolformaldehyde resin-bonded particle board material having a density of between about 62 and 87 lb/ft^3; and

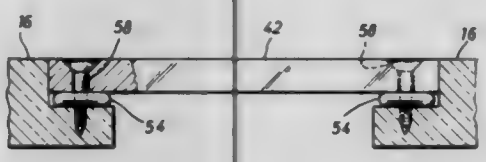
(c) securing directly to said underlayment panel upper surface a panel of a decorative, highly impact- and abrasion-resistant synthetic plastic laminate having a substantially flat, horizontal bowling surface, said underlayment panel being of a thickness and of a material selected to have hardness, tensile strength and stiffness characteristics sufficiently high to substantially uniformly distribute stress imparted by a bowling ball lofted onto said laminate panel bowling surface from said laminate panel to said wooden lane over an area sufficiently large to prevent permanent deformation of said laminate panel.

4,406,457

METHOD OF AND APPARATUS FOR MOUNTING PLAYFIELD WINDOW

Algimantis J. Gabrius, Carol Stream, and John W. Buras, Chicago, both of Ill., assignors to D. Gottlieb & Co., Northlake, Ill.

Filed Jul. 31, 1981, Ser. No. 288,924
Int. Cl.^{3} A63D *3/02*; B23P *19/00*
U.S. Cl. 273—121 A **8 Claims**



1. A method of mounting a window in a pinball playfield so that the window is flush with the playfield, comprising the steps of:

(a) forming an opening in the playfield to receive the window;

(b) establishing a ledge around the periphery of the opening on the underside of the playfield;

(c) placing a compressible material at selected locations on the ledge; and

(d) securing the window to the ledge with adjustable fasteners while compressing the compressible material until the window and the playfield lie in substantially the same plane.

7. A pinball game having a playfield with a window mounted in an opening therein, comprising:

(a) a playfield having an opening formed therein;

(b) a ledge around the periphery of the opening on the underside of the playfield;

(c) a compressible material which is disposed at selected locations on the ledge;

(d) a window inserted into the hole in the playfield; and

(e) adjustable fasteners securing the window to the ledge with the compressible material compressed until the window and the playfield lie in substantially the same plane.

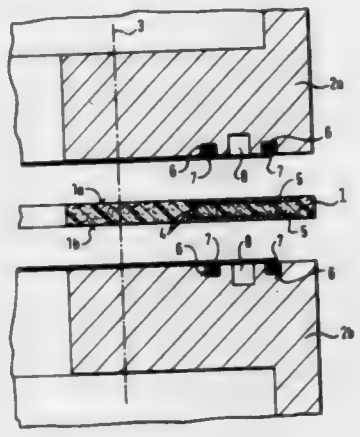
4,406,458

FLANGE SEAL

Eduard A. Maier, Munich, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft, Göttingen, Fed. Rep. of Germany

Filed Nov. 6, 1981, Ser. No. 318,770
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1980, 3042097
Int. Cl.^{3} F16J *15/40, 15/46*; F16L *17/00*
U.S. Cl. 277—3 **7 Claims**

1. A flange seal having a self-contained sealing frame interposed between two flanges to be connected in a pressure-tight manner, said sealing frame having oppositely disposed groove means, each of said oppositely disposed groove means provided with a metal sealing element, further characterized in that said sealing frame is made of an electrically insulating material and each of said flanges are provided with a sealing face arranged to engage said metal sealing elements, each of



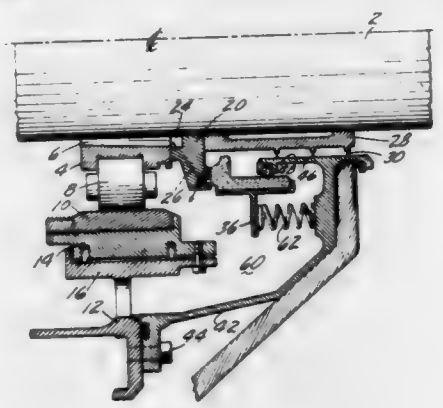
said sealing faces being further provided with groove means arranged to receive O-rings and said O-rings arranged to engage opposite faces of said metal sealing elements, and an annular channel provided in the sealing face of each of said flanges between said groove means in said flanges in order to form an intermediate vacuum space between O-rings placed in said groove means in said flanges.

4,406,459

OIL WEEPAGE RETURN FOR CARBON SEAL PLATES

Joseph Davis, Vernon, and Donald D. Sidat, Willimantic, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 18, 1982, Ser. No. 390,002
Int. Cl.^{3} F16J *15/16, 15/42*
U.S. Cl. 277—25 **5 Claims**



1. A carbon seal for a shaft bearing including:

a seal plate for the shaft having a radial sealing surface and rotating with the shaft;

a cooperating carbon seal element having a cooperating radial sealing surface, said surfaces being in interfacial contact, said plate and element being shaped to form a notch at the inner edges of the sealing surfaces; and

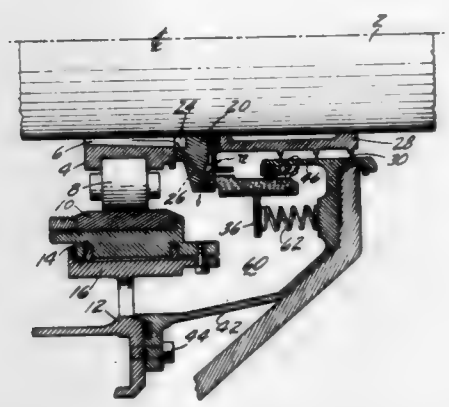
a passage through said plate from said notch at a point inward of the inner edges of the sealing surfaces to the outer periphery of the plate for pumping oil by centrifugal force from the space inward of the sealing surfaces.

4,406,460

ANTI-WEEPAGE VALVE FOR ROTATING SEALS

Richard M. Slayton, South Windsor, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 1, 1982, Ser. No. 438,146
Int. Cl.[3] F16J 15/16, 15/42
U.S. Cl. 277—25 6 Claims



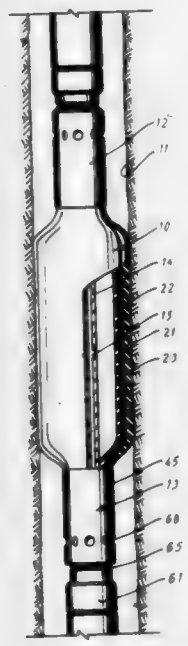
1. For a rotating seal including a rotating shaft, a circular shaped seal element fixedly secured to said shaft for being rotated therewith having a radial face, a stationary fixed element having a complimentary radial face being in engagement therewith, an oil passage for leading lubricating oil to said face, a self-actuating valve element extending radially from said shaft to overlie a portion of said radial face on said rotating seal element and overlie an annular groove formed in said radial face of said rotating seal element and being normally spaced therefrom, and means on said self-actuating valve element to position said valve element to bear against said radial face of said rotating seal element upon reaching a predetermined rotational speed.

4,406,461

INFLATABLE WELL PACKER APPARATUS REINFORCED WITH TIRE CORDING

Howard L. McGill, Lufkin, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Mar. 12, 1982, Ser. No. 357,485
Int. Cl.[3] F16J 15/46
U.S. Cl. 277—34.6 12 Claims



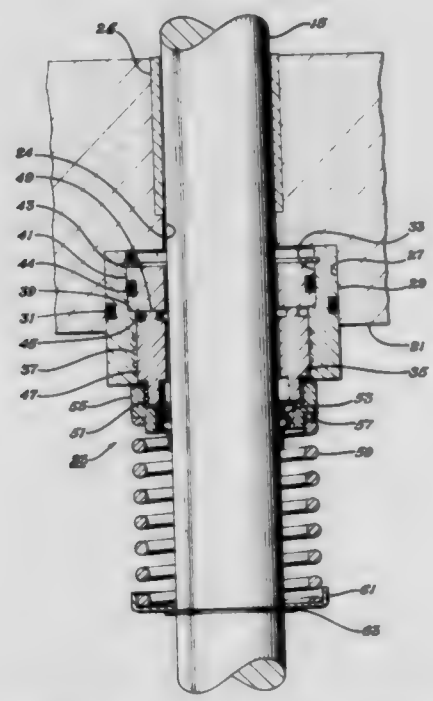
1. An inflatable packer element comprising: a unitary, generally tubular elastic body having inner and outer elastomer members and a reinforcing sheath therebetween, said sheath including a plurality of layers of tire cord fabric each having coparallel tensile strength members, said layers being bonded to one another and to said members and being arranged on a bias such that the strength members of adjacent layers extend in alternating helical directions with respect to the longitudinal axis of said body, said layers being dimensioned such that end portions thereof extend beyond the ends of said elastomer members to enable said end portions to be connected to associated end fittings.

4,406,462

SELF-ALIGNING MECHANICAL FACE SEAL

Raymond L. Witten, Tulsa, Okla., assignor to Hughes Tool Company, Houston, Tex.

Filed Sep. 11, 1981, Ser. No. 301,162
Int. Cl.[3] F16J 15/34, 15/54; H02K 5/10
U.S. Cl. 277—93 SD 3 Claims



2. In a submersible pump of the type having an electrical motor with a shaft extending through wall structure of a seal section to rotate a pump, an improved seal means for sealing the shaft, comprising in combination:

an annular stationary seal member rigidly carried by the wall structure;

a tubular rotating seal member having an annular face, an outer cylindrical wall, and an inner diameter through which the shaft extends that is larger than the diameter of the shaft;

spring means for coupling the rotating seal member to the shaft for rotation therewith and for urging the face of the rotating seal member into the face of the stationary seal member; and

a guide member rigidly carried by the wall structure and having an inner cylindrical wall for rotatably and slidably receiving the outer wall of the rotating seal member; one of the walls having a plurality of spaced-apart, parallel grooves formed perpendicular to the axis of the shaft for preventing leakage should leakage past the faces occur.

4,406,463

LOW-FRICTION SEAL

Hans-Dieter Fabrowsky, Neuhausen, Fed. Rep. of Germany, assignor to Herbert Hanchen KG, Ruit, Fed. Rep. of Germany

Filed May 21, 1981, Ser. No. 266,008
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1980, 3026877
Int. Cl.[3] F16J 15/44
U.S. Cl. 277—53 16 Claims

1. A self-centering low-friction seal for shafts and the like, comprising:

a. said seal including a ring support and a ring having front, rear and a pair of opposed generally parallel side surfaces;

b. means on said front surface for sealing around a shaft;

c. said ring support including groove means having generally parallel opposed side surfaces and a rear surface disposed there between;

d. said seal ring being positioned within said groove means;

e. spacer means between each of said groove side surfaces



and said ring side surfaces and having means for permitting fluid flow between said ring side surfaces and said groove means; and,

f. means for applying and maintaining fluid pressure against said ring rear surface and said ring front surface to co-axially center said ring around said shaft.

4,406,464

FACE SEAL ARRANGEMENT FOR SEALING A ROTATABLE TUBULAR MEMBER

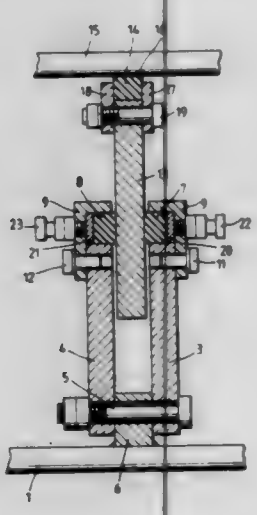
Konrad Schymura, Oberursel, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 15, 1982, Ser. No. 418,333

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1982, 3226866

Int. Cl.³ F16J *15/38*

U.S. Cl. 277—65 **5 Claims**



1. An apparatus for sealing a rotatable tubular member in a stationary housing, which surrounds the end of the tubular member, comprising a gripping device, which is secured to the outside peripheral surface of the rotatable tubular member and rotates with the tubular member, and a sealing element, which is radially movably disposed in the gripping device and rotates with the latter and is in sealing relation to the housing, said gripping device comprising at least two spaced apart rings, which are secured to the outside peripheral surface of the rotatable tubular member, a resilient sealing and restraining element secured to the inside of each ring near the outside diameter of the latter, each of which protrudes beyond the surface of its respective ring, a sealing washer disposed between said resilient sealing and restraining elements and gripped thereby, said sealing washer being radially and tangentially displaceable relative to said restraining elements, said sealing washer having a circular outer rim in sealing relation to and self-centering in said housing and defining only a small clearance therebetween.

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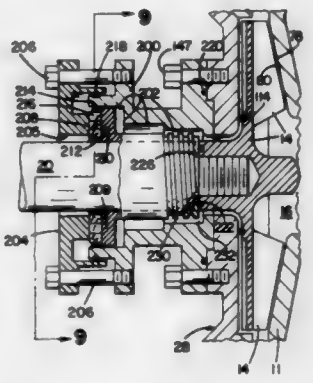
CENTRIFUGAL PUMP

Robert E. Rockwood, Windham, and Richard P. Antkowiak, Hampstead, both of N.H., assignors to A. W. Chesterton Company, Stoneham, Mass.

Division of Ser. No. 408,043, Aug. 13, 1982. This application Sep. 20, 1982, Ser. No. 419,992

Int. Cl.³ F16J *15/34*

U.S. Cl. 277—96.1 **8 Claims**



1. Packing seal means for sealing about a rotating shaft comprising in combination a seal gland having a central opening for mounting about a shaft, said seal gland adapted for axially adjustable connection to a stationary member through which said shaft extends, and a rotary member adapted for mounting on and rotation with said shaft, said seal gland and said rotary member having opposed, facing, radially extending sealing walls adapted for relative rotation and characterized in that one of said sealing walls has a flange extending axially toward the other said wall and spaced from the position of said shaft extending through said walls, whereby rope packing may be secured between said walls and between said flange and the position of said shaft for sealing said relative rotatable walls, and whereby pressure between said packing and said walls being sealed may be directly adjusted by adjustment of said seal gland.

4,406,466

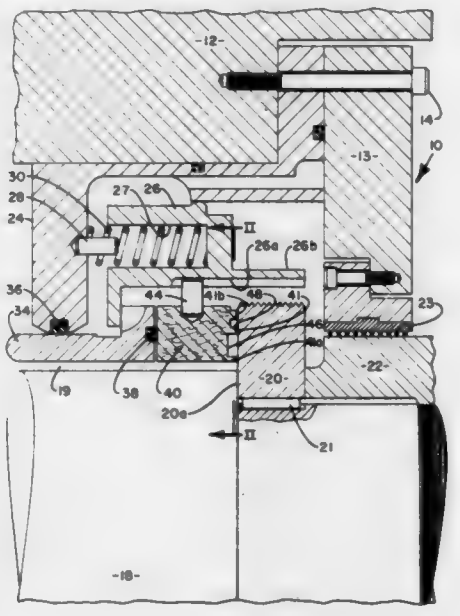
GAS LIFT BEARING AND OIL SEAL

Carl H. Geary, Jr., Greensburg, Pa., assignor to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Filed Nov. 29, 1982, Ser. No. 445,121

Int. Cl.³ F16J *15/34*

U.S. Cl. 277—96.1 **8 Claims**



1. In an annular ring having an inner surface, an outer surface, a first end face and a second end face, the improvement comprising:

an annular recess in said first end face intermediate said inner

and outer surfaces and dividing said first end face into an inner and outer portion with said outer portion of said first end face being relieved with respect to said inner portion of said first end face;

a plurality of circumferentially spaced chambers formed in said inner portion of said first end face intermediate said inner surface and said annular recess; and

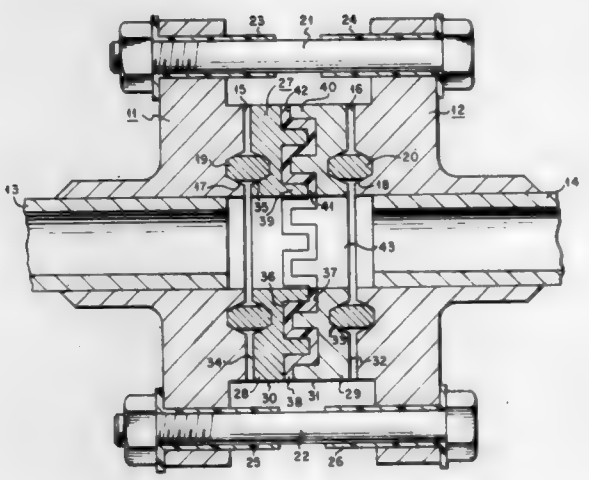
a plurality of circumferentially spaced radially extending recesses in said inner portion of said first end face forming continuous cavities with each of said corresponding chambers.

4,406,467

HIGH PRESSURE ELECTRICAL ISOLATION FLANGE GASKET

Edward D. Burger, Plano, and Gary A. Kohn, Dallas, both of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 6, 1982, Ser. No. 446,836
Int. Cl.³ F16J *15/12*
U.S. Cl. 277—105 **6 Claims**



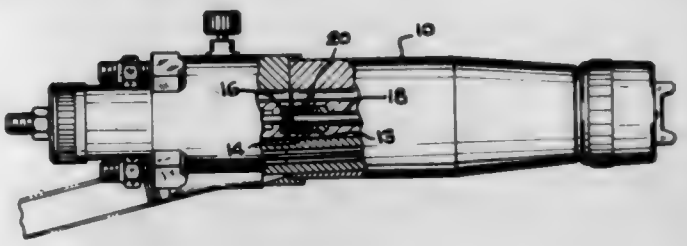
1. An electrical isolation flange gasket for high pressure use between two bored, bolt-type flange halves whose inner surfaces are grooved for use with a metallic seal ring, said gasket comprising first and second outer metal layers having substantial thickness; each of said metal layers having a perimeter surface, an aperature extending therethrough, an outer face surface and an inner face surface; said aperature adapted to allow fluid flow between the bored portions of each of said flange halves when the flange halves are properly aligned and installed; said outer face surface of each of said metal layers being adapted to face an inner surface of one of said flange halves and being grooved and adapted for use with a metallic seal ring; said inner face surface of each of said metal layers facing each other and having at least one ridge located between said aperature and said perimeter, said ridges located around said aperature; said metal layers being sufficiently thick throughout to withstand without significant yielding the stresses created when said gasket is installed between said flange halves and the flange halves are bolted together and torqued to specification; an inner layer of an electrical insulating material between said two outer metal layers and the crests of each of said ridges and the other metal layer, said electrical insulating material separating said metal layers from electrical contact with each other, and said metal ridges and said electrical insulating material being sufficiently strong to withstand a pressure of 2500 p.s.i. inside said aperature with atmospheric pressure exerted on said perimeter surface of each of said metal layers when said gasket is mounted between said bolt-type flange halves and said bolt-type flange halves are torqued to specification.

4,406,468

SEAL ASSEMBLY

James Gimple, Oregon, and Richard Weinstein, Toledo, both of Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio

Filed Apr. 14, 1982, Ser. No. 368,302
Int. Cl.³ F16J *15/12, 15/24*
U.S. Cl. 277—115 **12 Claims**



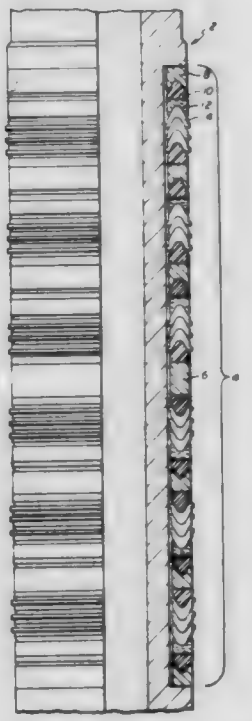
1. A seal for sealing the periphery of a cylindrical object, comprising a packing member, having opposed first and second ends, surrounding such cylindrical object, said packing member constructed of a cold flowable material, a stop member surrounding such cylindrical object, said stop member defining a recess, said recess having a tapered surface positioned in contact with said first end of said packing member, said first end of said packing material being positioned within said recess of said stop member, said first end of said packing member engaging said tapered surface of said stop member and forming a generally line contact, whereby a high sealing pressure is created opposite such line contact between said cylindrical object and said first end of said packing member, said packing member and said stop member defining an unrestrained flow cavity adjacent said object, and spring means positioned adjacent said packing member for urging said packing member toward said flow cavity, wherein said packing member advances into such flow cavity during use and wear of said packing member.

4,406,469

PLASTICALLY DEFORMABLE CONDUIT SEAL FOR SUBTERRANEAN WELLS

James H. Allison, Houston, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Sep. 21, 1981, Ser. No. 304,423
Int. Cl.³ F16J *15/18*
U.S. Cl. 277—123 **19 Claims**



1. A self-energizing seal system consisting only of a plurality of plastically deformable nonelastomeric annular elements to form a seal between first and second concentric tubular con-

duits in a subterranean well when subjected to axial loads and fluctuating temperatures, said annular elements further comprising at least two adjacent primary sealing elements, each annular sealing element comprising a homogenous member of polytetrafluoroethylene having a chevron-shaped cross section with oppositely facing spaced apart convex and concave mating surfaces and an annular sealing surface extending between oppositely facing mating surfaces on each circumferential end thereof, said sealing surface having two annular sections, the first annular section adjacent said concave mating face having a greater diameter than the second section adjacent said convex surface thereby defining a lip section having a thickness less than the thickness of said annular sealing element on the outer periphery thereof, with the concave surface of a first annular sealing member contacting the complementary convex surface of the second annular sealing element to form a relatively frictionless interface along said convex surface and said second section; and a plastically deformable annular back up member having a greater resistance to extrusion than said annular sealing elements, and having a convex surface in contact with the complementary concave surface of said second annular sealing element with pressure forces acting on said annular sealing elements to induce radial expansion thereof, with axial extrusion of said second annular sealing element between said annular back up member and said concentric tubular conduits being inhibited by said annular back up member whereby sealing integrity is established along said lip section.

4,406,470

CHUCK DEVICE FOR DENTAL HANDPIECE

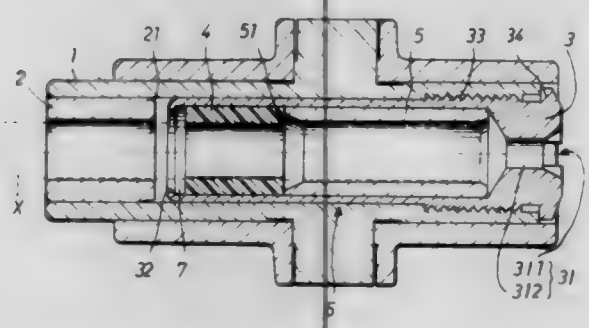
Kenzo Kataoka, Ugi; Hiroo Watanabe, and Haruo Ogawa, both of Kyoto, all of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Continuation of Ser. No. 89,563, Oct. 29, 1979, abandoned. This application Nov. 9, 1981, Ser. No. 319,722

Claims priority, application Japan, Oct. 27, 1978, 53-148419

Int. Cl.³ B23B *31/08*

U.S. Cl. 279—1 SG **6 Claims**



1. A detachable cartridge chuck for a dental handpiece of the type including an air rotor having a cylindrical opening provided axially thereof and a front cutting tool collar of wear resisting material or wear resisting cemented carbide alloy housed in one end of said cylindrical opening, said cartridge chuck comprising:

a cylindrical chuck case for insertion into said cylindrical opening in said rotor and which is threadably coupled to said air rotor by threadably engaging with a threaded portion of such cylindrical opening;

a rear cutting tool collar provided in said case adjacent said end of said case which is threadably coupled to said air rotor;

a resilient chuck body provided in said case adjacent said rear cutting tool collar and between said front and rear collars when said case is threadably coupled to said air rotor;

a chamfer formed in an end of said rear collar which is in contact with said chuck body;

a means for retaining said chuck body in said case provided at an end of said case which is adjacent an end of said chuck body; and

a tool engagement means provided in said end of said case which is threadably coupled to said air rotor whereby said chuck cartridge may be easily removed and replaced utilizing a tool to engage and disengage said threadably coupling.

4,406,471

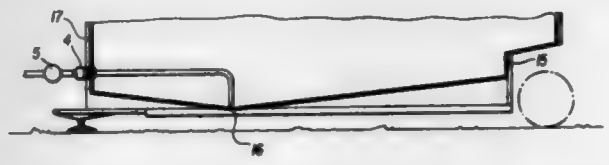
MOBILE FLUID STORAGE TANK

William G. Holloway, Box 1092 2130 S. I-35W, Burleson, Tex. 76028

Filed Sep. 1, 1981, Ser. No. 298,490

Int. Cl.³ B60P *3/22*

U.S. Cl. 280—5 C **6 Claims**



1. A mobile fluid storage tank having a floor structure that enables fluid to be completely emptied regardless of the pitch of its underlying ground wherein said floor comprises a reverse floor plan wherein two converging pitched portions meet at a common low point that is located approximately in a 3 to 1 ratio along its length for the full width of said tank.

4,406,472

STEERING SYSTEM FOR VEHICLES

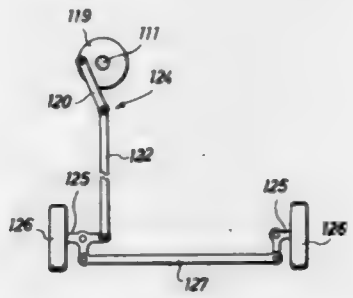
Yoshimi Furukawa, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1981, Ser. No. 266,454

Claims priority, application Japan, May 29, 1980, 55-71778

Int. Cl.³ B62D *7/00*

U.S. Cl. 280—91 **11 Claims**



1. A steering system for a vehicle through which both front and rear wheels of said vehicle are steered by operation of a steering wheel such that said rear wheels are steered in the same steering directions as said front wheels when the turning angles of said steering wheel are relatively small, and in the opposite directions to the steering directions of said front wheels when the turning angles of said steering wheel are relatively large, with the rear wheel steering angle in the latter case including substantially zero, comprising:

a crank mechanism comprising:

an input member rotatable by the rotating operation of said steering wheel;

a movement-transmitting member connected to said input member and having a substantially perpendicular length with respect to said input member;

a crank rod pivotably connected at one end thereof to an outer end portion of said movement-transmitting member substantially perpendicularly spaced from said input member; and

an output member connected to the other end of said crank rod and linearly movable; and

said crank mechanism being arranged in a steering force

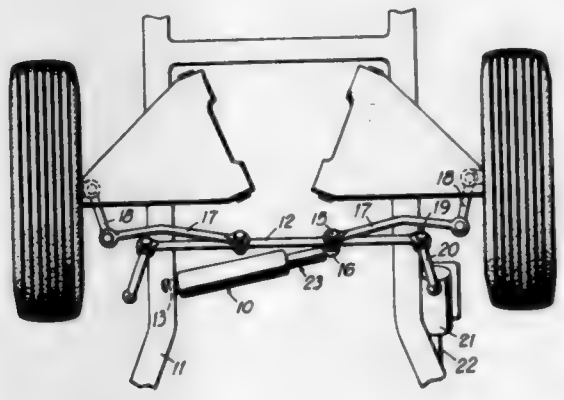
transmission route between said steering wheel and said rear wheels.

4,406,473

SAFETY STABILIZER FOR VEHICLE STEERING LINKAGE

Tilman L. Sexton, Atlanta, Ga., assignor to Sexton Enterprises, Inc., Atlanta, Ga.

Filed Dec. 7, 1981, Ser. No. 327,952
Int. Cl.³ B62D *7/08*
U.S. Cl. 280—94 **11 Claims**



1. A stabilizer for a vehicle steering linkage constructed and arranged for connection between a fixed point on the vehicle and a moving element of the steering linkage, said stabilizer comprising a fluid filled cylinder including a first attaching element on one end portion thereof, a piston having fluid restrictor through-ports within said fluid filled cylinder and including a piston rod projecting from within said fluid filled cylinder beyond the other end of said fluid filled cylinder, a snubber cylinder telescoped over said fluid filled cylinder and being fixed to said piston rod and having a second attaching element thereon, said snubber cylinder having opposing end walls, fixed concentric elements on the inner surface of the snubber cylinder substantially at the longitudinal center thereof and on the exterior of the fluid filled cylinder adjacent said other end thereof, a pair of opposing coaxial equal strength coil springs within said snubber cylinder and having corresponding ends bearing on said end walls of the snubber cylinder, and movable-thrust elements in the snubber cylinder on opposite sides of the fixed concentric elements, the other corresponding ends of the coil springs bearing on said thrust elements, whereby axial displacement of said fluid filled cylinder relative to the snubber cylinder in either direction due to external forces enables one coil spring to automatically return the stabilizer to a positive centered position after dissipation or removal of an external force while the opposing coil spring remains inactive.

4,406,474

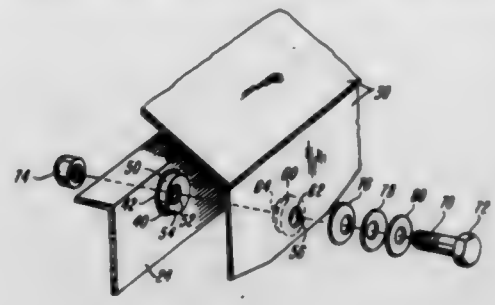
VEHICLE FENDER ATTACHMENT AND SUPPORT STRUCTURE

Heino W. Scharf, Knoxville, Tenn., assignor to Dempster Systems Inc., Knoxville, Tenn.

Filed May 18, 1981, Ser. No. 264,339
Int. Cl.³ B62D *25/16*
U.S. Cl. 280—154 **7 Claims**

2. In a vehicle provided with a frame and a wheel member in supporting relationship to the frame and having a fender covering the wheel member, the combination comprising:

bracket means attached to the frame adjacent the fender, attachment means attaching the bracket means to the fender, the attachment means including a plurality of thrust washer members positioned between the fender and the bracket means, the thrust washers having arcuate surfaces in mutual engagement, the attachment means including means freely joining together the bracket means and the fender and the thrust washers for relative movement therebetween, and means urging the bracket means and the fender one toward the other, the fender and the



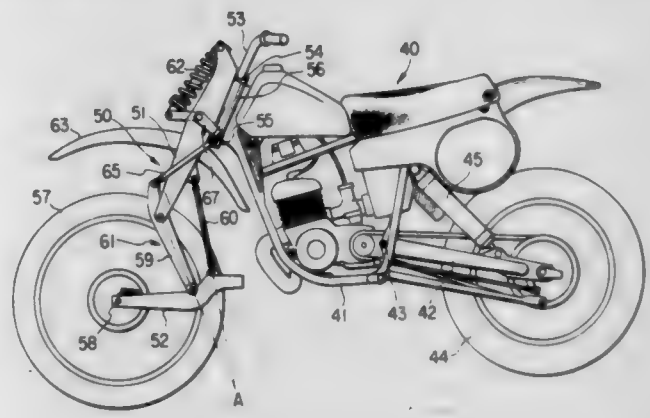
bracket means thus being relatively movable as the vehicle travels over uneven terrain.

4,406,475

FRONT WHEEL SUSPENSION SYSTEM FOR MOTORCYCLES

Shinichi Miyakoshi, Fujimi, and Tokio Isono, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 12, 1981, Ser. No. 243,052
Claims priority, application Japan, Mar. 17, 1980, 55-33752; Mar. 21, 1980, 55-37758[U]; Apr. 10, 1980, 55-48423[U]; Nov. 17, 1980, 55-161615; Nov. 17, 1980, 55-164420[U]
Int. Cl.³ B62K *25/04*
U.S. Cl. 280—277 **32 Claims**



1. A front wheel suspension system for motorcycles wherein at least one first link mechanism forming a quadrilateral on the side is formed by connecting an upper fork laterally pivotally connected to a vehicle body and a lower fork supporting a front wheel with each other through a front arm and a rear arm and wherein movement following the irregularities of a road surface of the front wheel with a deformation of the first link mechanism is absorbed and cushioned by at least one front shock absorber, wherein:

only one said front shock absorber is provided;

said shock absorber is disposed adjacent an upper part of a front surface of said upper fork;

said first link mechanism and said shock absorber are connected with each other through at least one rod; and

one arm of said front and rear arms includes a tip pivotally connected to the lower end of said rod, said tip being disposed on an extension of said one arm extending substantially beyond a pivotal connection between said one arm and said upper fork.

4,406,476

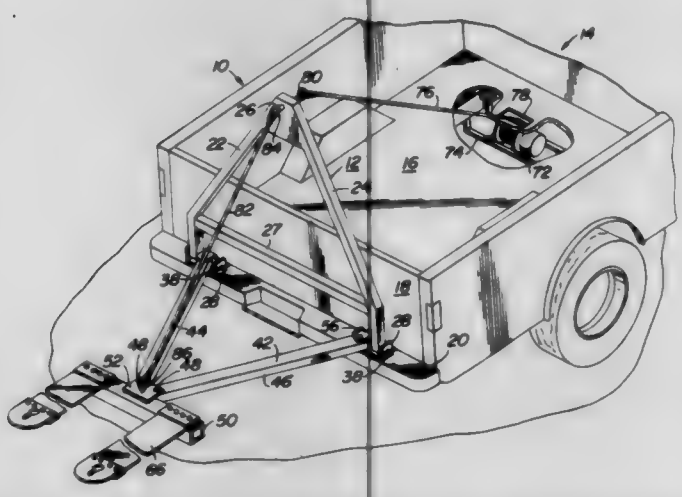
VEHICLE LIFTING AND TOWING APPARATUS

Daniel B. Brandschain, 1029 Thrush La., Huntingdon Valley, Pa. 19006

Filed Jul. 6, 1981, Ser. No. 281,020
Int. Cl.³ B60P *3/12*
U.S. Cl. 280—402 **2 Claims**

1. Vehicle lifting and towing apparatus comprising first

generally vertical frame means, second generally horizontal frame means, a bumper secured to the rear of the towing vehicle, a pair of spaced brackets coupled to said bumper, said first and second frame means having respective portions thereof pivotably mounted in said brackets whereby said first and second frame means are pivotably coupled to the rear of the towing vehicle, and vehicle frame-engaging means coupled to the frame of the towing vehicle and to said bumper, said brackets being operatively interconnected with said vehicle frame-



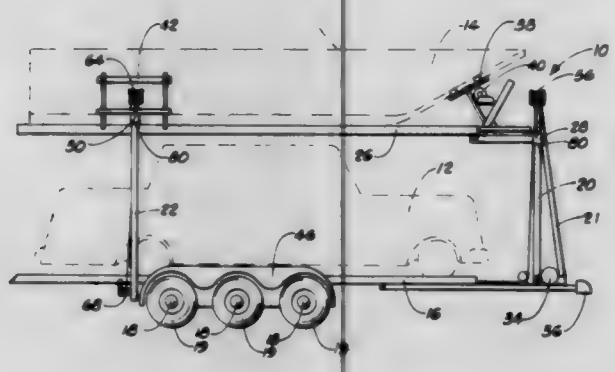
engaging means to secure said lifting and towing apparatus to said frame, cable means coupled to the vehicle and to a distal end of said first frame means for supporting said frame means, cable means interconnecting said first and second frame means, winch means operatively coupled to said first and second frame means for lifting said second frame means and a vehicle to be towed, and means coupled to a distal portion of said second frame means for securing said second frame means to a vehicle to be towed.

4,406,477

COMBINATION BOAT AND AUTOMOBILE TRAILER

Lowell R. McDonald, P.O. Box 57, Kechi, Kans. 67067

Filed Nov. 19, 1981, Ser. No. 322,936
Int. Cl.[3] B60P *3/08*
U.S. Cl. 280—414.1 4 Claims



1. A double load trailer for hauling both an automobile, a boat or the like behind a towing vehicle, the trailer comprising:

a first horizontal frame mounted on a wheeled axle and adapted for releasable attachment to the towing vehicle;

a first vertical post mounted on the front of the first frame;

second and third vertical posts mounted on the opposite sides of the rear of the first frame;

a second horizontal frame disposed above the first frame, the second frame having a first sleeve attached to the front of the second frame and a second and third sleeve attached to the opposite sides of the rear of the second frame, the sleeves slidably received around the posts;

a power winch mounted on the front of the first frame and having a main cable received around a main pulley and attached to the first post, the main pulley suspended between the front and rear of the first frame;

a first post cable having one end attached to the first sleeve and received around a first post pulley mounted on top of the first post, the first post cable received around a first frame pulley attached to the front of the first frame, the first post cable also received around a first idle pulley attached to the rear of the first frame with the other end of the first post cable attached to the main pulley;

a second post cable having one end attached to the second sleeve and received around a second post pulley mounted on top of the second post, the second post cable received around a second frame pulley attached to one side of the rear of the first frame, the second post cable received around a second idle pulley attached to the rear of the first frame with the other end of the second post cable attached to the main pulley; and

a third post cable having one end attached to the third sleeve and received around a third post pulley mounted on top of the third post, the third post cable received around a third frame pulley attached to the other side of the rear of the first frame, the third post cable received around a third idle pulley attached to the rear of the first frame with the other end of the third post cable attached to the main pulley.

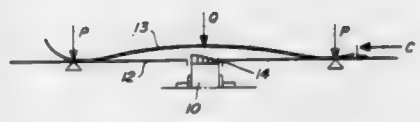
4,406,478

PROCESS AND APPARATUS FOR FORMING A PROFILED TREAD SURFACE ON A SKI

Adolf Staufer, Ried im Innkreis, Austria, assignor to Fischer Gesellschaft m.b.H., Ried im Innkreis, Austria

Continuation of Ser. No. 36,807, May 7, 1979, Pat. No. 4,268,059. This application Apr. 9, 1981, Ser. No. 252,828
Claims priority, application Austria, Jul. 20, 1978, 5280/78; Nov. 30, 1978, 8556/78
Int. Cl.[3] A63C *7/06*
U.S. Cl. 280—604 3 Claims



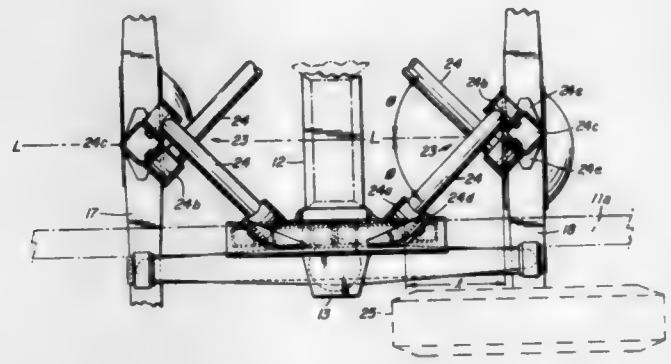


1. A ski having a profiled tread surface, comprising individual step ramps, which are sawtooth-shaped in longitudinal section and in a transverse section rise in a gentle curve to a maximum height and then gently decline, said step ramps defining successive rows of recesses, the recesses of adjacent rows being staggered by one-half the width of each recess, and the rows of recesses overlapping each other so that the deeper end of each recess bridges adjacent recesses of an adjacent row of recesses so that T-shaped lines of intersection are formed by the recesses.

4,406,479
VEHICLE SUSPENSION INCORPORATING CROSS-OVER LINKS

Wallace G. Chalmers, 2 Gloucester St., Ste. 214, Toronto, Ontario, Canada M4Y 1L5

Filed Sep. 29, 1981, Ser. No. 306,832
Claims priority, application Canada, Sep. 2, 1981, 385072
Int. Cl.[3] B60G 5/00
U.S. Cl. 280—678 13 Claims

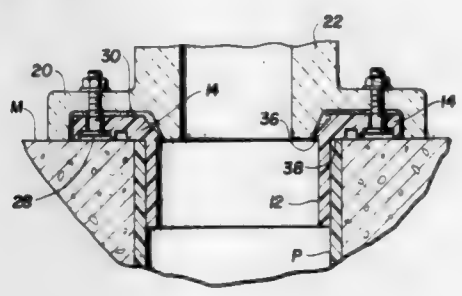


1. An axle suspension system for load carrying vehicles including a load carrying chassis defining a central longitudinal axis, axle means positioned transversely across said chassis and adapted to carry wheels at the outer ends thereof, resilient means between said axle means and the chassis for transmitting vertical loadings therebetween, torque rod means flexibly connected between said axle means and said chassis for resisting transverse and longitudinal loads imposed upon said axle means; said torque rod means including a first pair of rods disposed generally below the level of the axle means and a second pair of rods above such level and wherein the rods of one of said pairs are arranged in splayed outwardly angled relation with respect to said longitudinal axis of the chassis with each of said outwardly angled rods having an outer end flexibly connected to said chassis and an inner end flexibly connected to said axle, characterized in that said outwardly angled rods cross one another between their respective inner and outer ends so that the inner end of each rod is on a side of a vertical plane lying in said longitudinal axis opposite to that of its outer end with said outwardly angled rods being arranged to avoid interference with one another during vertical travel of said axle means relative to said chassis.

4,406,480
WATER CLOSET COUPLING

Lewis B. Izzi, Shelby, N.C., assignor to Plastic Oddities, Inc., Shelby, N.C.

Filed May 11, 1981, Ser. No. 262,741
Int. Cl.[3] F16L 47/02
U.S. Cl. 285—12 1 Claim

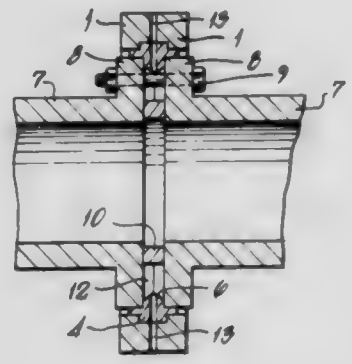


1. The combination with a building surface having a waste drain opening and a plastic waste drain pipe of smaller diameter mounted therein and cut off flush with the surface; of a one piece plastic solvent weldable couping for connecting a water closet having a drain opening to the waste drain pipe; said coupling comprising a threadless cylindrical collar of a diameter for sealing engagement with the inner or outer circumference of said waste drain pipe so as to be welded thereto; a peripheral, outwardly extending flange formed integrally with an end of said collar and lying flat against said building surface and the end of said waste drain pipe when disposed outside the collar, and an inwardly extending shoulder formed integrally with the collar for abutting the end of a drain pipe when disposed inside the collar; a seal between said flange and the sides of said water closet drain opening; elongated arcuate openings in said flange for receiving fasteners for connecting it to said water closet; and separate apertures in said flange for connecting it with fasteners to said building surface.

4,406,481
SEALING CLAMPS

Michael Summerell, Barry, Wales, assignor to SIBEX (Construction) Limited, Manchester, England

Filed Nov. 13, 1980, Ser. No. 206,679
Claims priority, application United Kingdom, Nov. 15, 1979, 7939518
Int. Cl.[3] F16L 55/10
U.S. Cl. 285—15 12 Claims



1. A clamp assembly adapted to seal leaks from the gap between a pair of mis-aligned flanges, said assembly comprising:

a ring adapted to be positioned about a pair of confronting pipe flanges, the ring having an inner diameter larger than the outer surface of the flanges;

means for tightening the ring about the flanges;

a circumferential, inwardly facing groove in an inner surface of said ring, together with:

an insert for said groove formed from a pressure deformable material, the insert having a outwardly-directed face which is received in the groove in the ring and an inwardly-directed face with a substantially symmetrical taper to self-center the insert in the annular gap between the flanges;

the ring having at least one preformed drill hole passing therethrough radially inwardly along or closely adjacent the center line of said groove whereby, when the ring is tightened in use, the insert centers itself and then extrudes outwardly from the ring and contacts the outer diameter of the confronting pipe flanges and the gap between the confronting flanges, thereby sealingly engaging the opposed margins of an annular gap defined between said confronting flanges.

4,406,482
ARTICULATED PIPE LINE

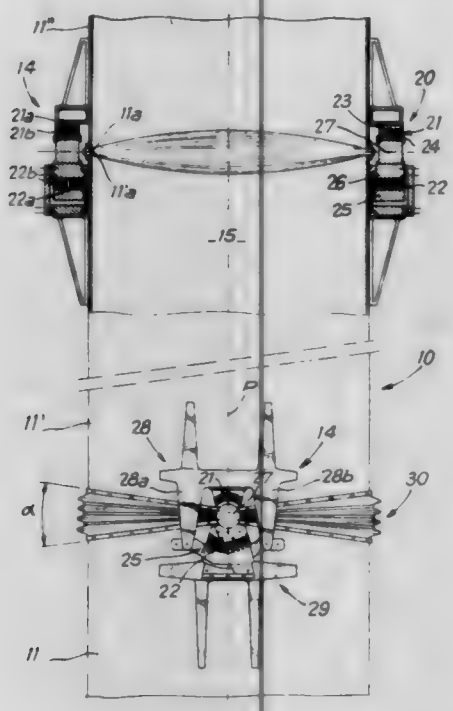
Jean-Claude Clebant, Carbon-Blanc, France, assignor to Societe Europeenne De Propulsion, Puteaux, France

Filed Jan. 21, 1981, Ser. No. 226,555
Claims priority, application France, Jan. 24, 1980, 80 01535
Int. Cl.[3] F16L 27/00
U.S. Cl. 285—114 9 Claims

1. Articulated pipe line of large diameter comprising:

rigid sections jointed together by articulation allowing a limited angular movement between adjacent sections, the axes of two successive articulations having different directions, and a sealing device ensuring a tight separation

between the inside and the outside of the pipe line at the level of the articulation wherein each articulation comprises a flexible joint device with two diametrically opposite cylindrical bearings, including elements constituted by the stacking up of alternated layers of an elastic material and of a rigid material, and allowing a rotation about an axis which is perpendicular to the axis of the pipe sections



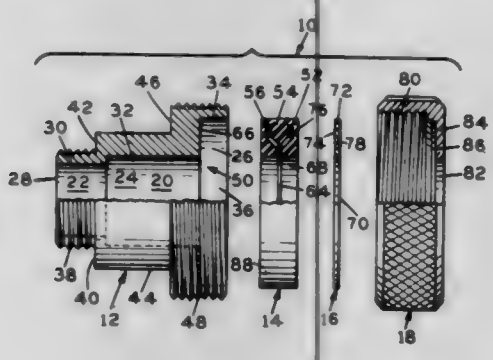
situated on either sides of the articulation; and the sealing and flexible joint devices for each articulation are placed on the outside of a passage situated in prolongation of the internal passages of the two pipe sections joined by the said articulation, so as to retain throughout the pipe line a free passage section which is at least equal to that of each pipe section.

4,406,483

UNIVERSAL CONNECTOR

Perry M. Perlman, 106 Palen Rd., Hopewell Junction, N.Y. 12533

Continuation-in-part of Ser. No. 182,762, Aug. 29, 1980, abandoned. This application Apr. 20, 1982, Ser. No. 370,053
Int. Cl.³ F16L *5/00, 19/08*
U.S. Cl. 285—161 **12 Claims**



1. A universal connector for an elongated member comprising

(a) a body section including a central bore defining a receiving socket of right cylindrical configuration,

(b) at least one gripping means of generally right, cylindrical, peripheral configuration comprising at least one pair of opposed star locking washers embedded and completely enveloped in deformable resilient rubbery material, said star locking washers having annular flanges and teeth extending radially inwardly from said flanges, said star locking washers being positioned relative to one another such that the teeth of one star locking washer touch the teeth of the other star locking washer and the annular flanges are spaced apart, said enveloped teeth of said star locking washers generally defining a central bore of said gripping means having a diameter in an uncompressed state greater than the diameter of the elongated member adapted to be secured by the universal connector,

(c) said gripping means having parallel flat end surfaces, being right cylindrical in shape and being received within the receiving socket,

(d) said elongated member being received through said receiving socket and said central bore, and

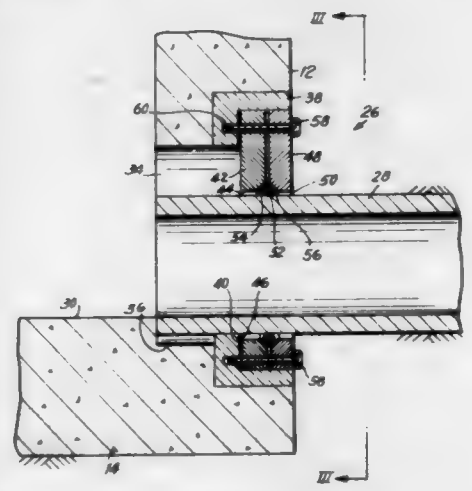
(e) force transmitting means including a flat abutment surface being adapted to transmit compressive forces to the flat end portions of said gripping means to thereby cause the teeth of said star locking washers and said enveloping deformable material to distort together into a gripping and sealing relation with the elongated member.

4,406,484

MANHOLE FLUID LINE ATTACHMENT APPARATUS

James L. Ramer, Rte. 1, Box 382, Whitestown, Ind. 46075

Filed Mar. 5, 1981, Ser. No. 240,724
Int. Cl.³ F16L *55/00*
U.S. Cl. 285—178 **7 Claims**



1. Apparatus for attaching a fluid line to a structure having a bottom comprising:

a. a mounting ring in said structure, said mounting ring having an abutment surface thereon;

b. at least one ring having an aperture eccentrically disposed therein, said aperture having a diameter large enough to permit passage of a fluid line therethrough, said aperture being disposed to secure a fluid line in a position where a lowest point on an inside surface of the fluid line is substantially aligned with the bottom of the structure whereby ponding in said structure is substantially avoided;

c. first means for sealing said at least one ring to said abutment surface; and

d. second means for sealing said at least one ring to a fluid line passing through said aperture whereby a substantially fluid-tight attachment of the fluid line to said structure is achieved.

4,406,485

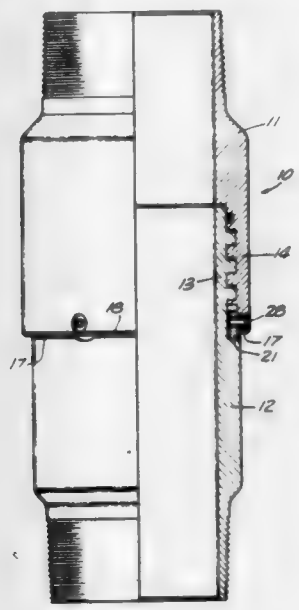
TUBULAR CONNECTOR

Ben F. Giebeler, San Bernardino, Calif., assignor to Arrowhead Continental, San Bernardino, Calif.

Filed Apr. 27, 1981, Ser. No. 258,022
Int. Cl.³ F16L *37/00, 55/00, 21/00*
U.S. Cl. 285—391 **6 Claims**

1. In a tubular connector, the combination of: an outer tubular member having a terminal shoulder and having a radially extending internally threaded opening adjacent said terminal

shoulder, an inner tubular member having a portion telescopically received within said outer tubular member and having an external annular shoulder, said members having means cooperating to resist axial separation of said members, a recess on the inside of said outer tubular member coaxial with said internally threaded opening and having an end surface, a lock element having an externally threaded portion received from the inside of said outer tubular member into said internally threaded radial opening, said lock element having a flange positioned in said recess and adapted to contact said end surface, said flange



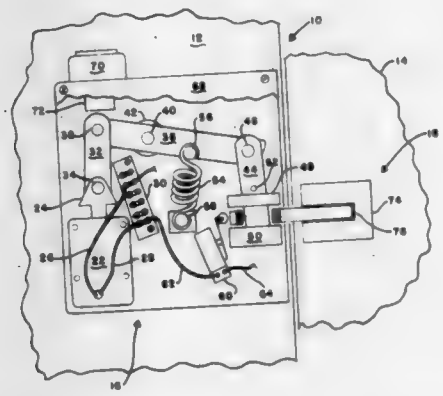
having a periphery interrupted by a portion which is substantially flush with said annular shoulder when said lock element is turned on said threads for predetermined angular travel to separate said flange from said end surface of said recess, a detent in said external annular shoulder on the inner member receiving another portion of said flange to prevent relative turning movement of said tubular members, and means on said lock element accessible from the outside of said outer tubular member for turning said lock element in said internally threaded opening.

4,406,486

LOCK MECHANISM

David R. White, 1129 Monroe S.E., Albuquerque, N. Mex. 87108

Filed May 26, 1981, Ser. No. 267,173
Int. Cl.[3] E05C *1/06*
U.S. Cl. 292—144 2 Claims



1. A locking system for securing two gate members together in a closed position that includes a locking mechanism mounted on one gate member and a latch bolt means mounted on the other gate member in a position to be engaged by said locking mechanism and lock the two gate members together when said two gate members are in a closed position, said locking mechanism comprising:

a base plate mounted to the one gate member for supporting components of said locking mechanism;

a pair of spaced-apart latch members mounted on said base plate in a position to receive said latch bolt means therebetween, said pair of spaced-apart latch members and said latch bolt means each having openings therein which are aligned when the gate members are in a closed position;

a linkage means pivotally mounted on said base plate;

a latch pin pivotally mounted to one end of said linkage means and positioned such that in an unlocked position of said locking mechanism one end of said latch pin enters only the opening in the upper one of said pair of spaced-apart latch members, and in a locked position of the locking mechanism the latch pin passes through the openings in the spaced-apart latch members and the latch bolt;

spring means connected between said linkage means and said base plate for normally biasing said linkage means and latch pin to a locking position;

solenoid means mounted on said base plate, said solenoid being electrically connected to a source of electrical power and mechanically connected to the other end of said linkage means for overriding the action of said spring means and moving the linkage means and thelatch pin to an unlocked position when actuated;

switch means electrically connected between said solenoid and power source and mounted on said back plate in a position to be actuated to an open circuit condition by said latch bolt means when the latch bolt means is in a locked position;

said linkage means including a first link pivotally mounted to the base plate and pivotally attached at one end thereof to the latch bolt means, a second link pivotally attached at one end to the other end of said first link and the other end of said second link is pivotally attached to said solenoid means;

a cover means removably mounted to said base plate for covering said locking mechanism, and

a mechanical lockout means mounted on said cover means in a position for engaging said linkage means and holding it is an unlocked position, thereby providing a method of disabling the locking mechanism in case of a power failure.

4,406,487

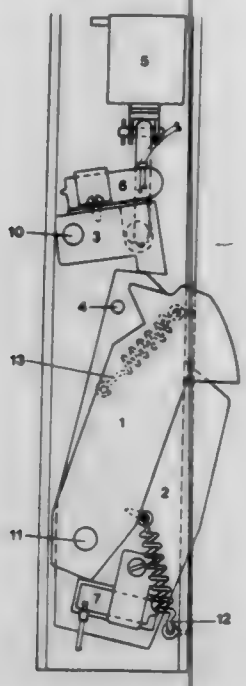
LOOKING DEVICE FOR VERTICAL SLIDING GATES AND SIMILAR

Karl-Emil Stendal, Västeras, Sweden, assignor to Stendals Elektriska AB, Sweden

PCT No. PCT/SE79/00249, § 371 Date Aug. 8, 1980, § 102(e) Date Aug. 8, 1980, PCT Pub. No. WO80/01186, PCT Pub. Date Jun. 12, 1980
PCT Filed Dec. 11, 1979, Ser. No. 198,947
Claims priority, application Sweden, Dec. 11, 1978, 7812688
Int. Cl.[3] E05B *47/00*
U.S. Cl. 292—201 6 Claims

1. A locking device for vertically moving sliding gates, comprising a gate mounted in a gate frame, said frame having a lock mechanism including a movable locking bar for locking engagement with the gate, said locking bar being journalled on a bearing for rotating movement between a locking and an unloading position, a pawl for selectively blocking said locking bar in the locking position, a cam member adapted to detect whether the gate is open or closed and also adapted to engage

said pawl for detaining the pawl from blocking the locking bar when the gate is open, the pawl being controlled by an electro-



magnet for selectively setting the pawl to the blocking or releasing position.

4,406,488

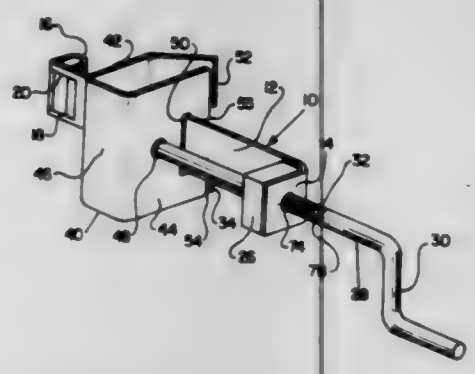
QUICK RELEASE DOOR LOCK

Rudolph T. Polselli, 213 Craft Ridge Ave., and Luigi Polselli, 230 Parkway Blvd., both of Broomall, Pa. 19008

Filed Jan. 6, 1982, Ser. No. 337,429

Int. Cl.³ E05C *19/18*

U.S. Cl. 292—293 **9 Claims**



1. A portable, quick release lock for a swinging door comprising

an elongate, thin, planar, unitary body providing a slide path intermediate its ends,

one end being bent from the plane of the body through approximately ninety degrees to define an integral flange, the flange being provided with a threaded opening,

the other end being bent from the plane of the body to define an integral tongue, the tongue and the flange extending in opposite directions from the plane of the body;

an integral slide movable along the body between its ends,

the slide comprising a pressure face adapted to contact the door and a bearing face spaced from the pressure face; and

an operating bolt longitudinally and rotatively movable within the threaded opening, the bolt being adjusted to move the slide along the body toward and away from the door,

the operating bolt being of unitary construction and comprising a crank, a threaded securing section and an unthreaded adjusting section,

the adjusting section terminating in a pressure end, the pressure end being adapted to bear against the pressure face of the slide to press the slide against the door when the securing section is engaged within the threaded opening.

4,406,489

MOTOR VEHICLE FRONT PART MADE OF PLASTICS

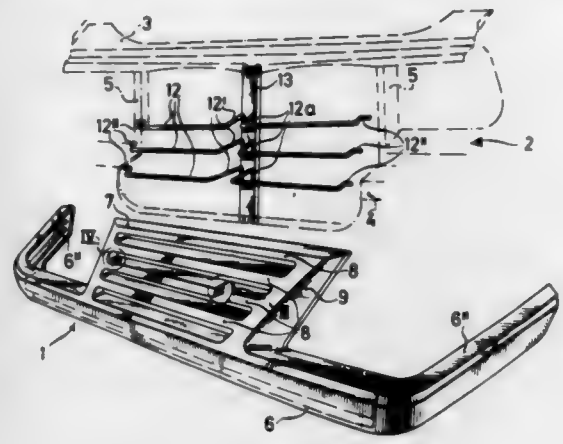
Hans-Gerhard Trabert, Rüsselsheim, Fed. Rep. of Germany, assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 16, 1981, Ser. No. 283,831

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1980, 8019864

Int. Cl.³ B62D *25/08, 39/00*

U.S. Cl. 293—115 **6 Claims**



1. In an automotive vehicle having front support structure, an exposed plastic front part including a radiator grille having a plurality of vertically spaced, horizontally extending front portions and integral rearwardly extending side portions at the opposite ends of the front portions and an attachment means for attaching said radiator grille to said vehicle support structure, said attachment means including a plurality of vertically spaced resilient wire yokes carried by said front support structure of said vehicle, said wire yokes including generally horizontally extending front portions and rearwardly extending portions at their opposite ends which terminate in free ends, said front and said portions of said radiator grille having means defining arresting cavities for snap fittingly receiving said front and rearwardly extending portions of said wire yokes and attaching said radiator grille to said resilient wire yokes.

4,406,490

LICENSE PLATE HOLDER

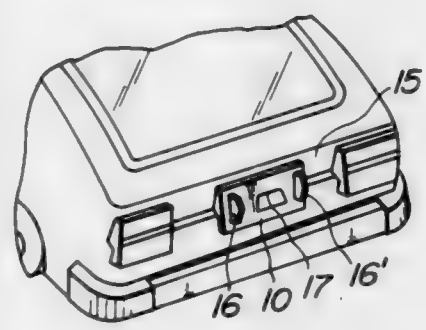
Hiromasa Torii, Koganei, and Takeshi Watanabe, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 9, 1980, Ser. No. 185,475

Claims priority, application Japan, Sep. 11, 1979, 54-116347

Int. Cl.³ B62D *63/04*

U.S. Cl. 296—1 C **4 Claims**



1. A license plate holder for mounting the license body on a rear body panel of a vehicle, comprising a plate holder member having a flat first surface portion to which the license plate is secured and a pair of flat second surface portions which are

contiguous with the first surface portion and on which illuminating lamps for the license plate are respectively mounted, and means to mount the plate holder member directly on the rear body panel, wherein the plate holder member includes an upper edge which contacts the rear panel, said mounting means including projections formed on the rear side of the plate holder member and replaceable spacers positioned between the projections and the rear panel, whereby the angle of the license plate can be adjusted with respect to a horizontal plane by selecting the thickness of the spacers.

4,406,491

MOUNTING OF AIRFOIL MEMBERS ON LAND VEHICLES

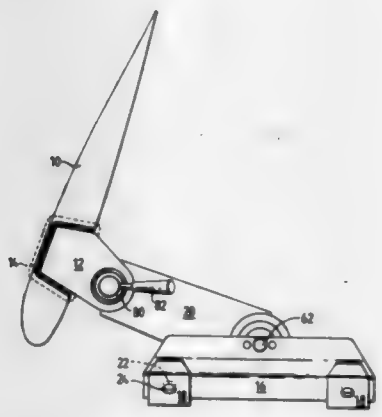
Paul Forster, 93 Petersham Rd., Richmond, Surrey, England

Filed Sep. 28, 1981, Ser. No. 306,478

Claims priority, application United Kingdom, May 11, 1981, 8114366

Int. Cl.³ B62D *37/02*

U.S. Cl. 296—1 S **10 Claims**



1. A mounting means for an airfoil member, which member acts selectively either as an airfoil or an air deflector depending upon its adjustment relative to the horizontal, said mounting means including: a pair of support means for holding the respective ends of said airfoil member; a pair of pivot means associated with each respective support means to enable said airfoil member to be rotated about a longitudinal horizontal axis when mounted on a vehicle between a position in which it acts as an airfoil and positions in which it acts as an air deflector; a pair of releasable clamping means associated with respective pivot means, which clamping means when clamped hold the airfoil member in any desired position against the pressure of the air; manually operable means associated with the clamping means on one side only, to enable both pairs of clamping means to be released quickly; and a pair of securing means to enable respective support means to be secured to opposite sides of the roof of said vehicle, whereby said airfoil member can be set to a desired position from only one side of the said vehicle.

4,406,492

FLOOR MAT

Joseph M. Cackowski, 15 Ledge Terrace, Old Bridge, N.J. 08857

Filed Nov. 20, 1981, Ser. No. 323,237

Int. Cl.³ B60N *3/04*

U.S. Cl. 296—1 F **7 Claims**

1. A floor mat, for use in the cab of a vehicle which has a firewall and a level floor, comprising:

a first portion for overlying a firewall; and

a second portion, contiguous with said first portion, for overlying a floor; wherein

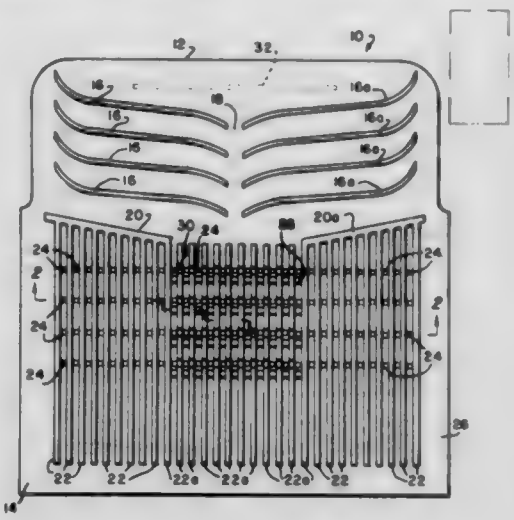
said first and second portions have center areas flanked by substantially parallel sides;

said first portion has means cooperative with gravity for inducing flow of particulate matter, such as grit, dirt, and the like, to said center area thereof;

at least one of said first and second portions has means cooperative with gravity for inducing flow of particulate material therealong substantially in parallel with said sides thereof;

said parallel-flow inducing means comprises a multiplicity of spaced apart ribs;

said at least one portion has a multiplicity of throughgoing apertures formed therein; and



said apertures intervene between said multiplicity of ribs; and further including

means bridging between said ribs for supporting said ribs against lateral deformation.

4,406,493

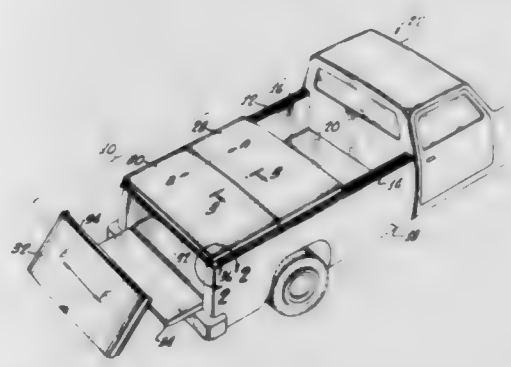
PANEL LATCHING AND LOCKING APPARATUS FOR MODULAR PICKUP TRUCK BED COVER SYSTEMS

Leonard N. Albrecht, and Bert C. Taylor, Jr., both of Westminster, Calif., assignors to TRAXystems, Westminster, Calif.

Filed Sep. 21, 1981, Ser. No. 303,906

Int. Cl.³ B60J *7/02*

U.S. Cl. 296—100 **9 Claims**



1. In a modular cover system for the bed of a pickup truck or the like, in which the cover system includes a plurality of transverse panels having a width spanning said bed and a pair of longitudinal panel mounting members, one member being mounted along each side of said bed in panel side edge retaining relationship, the panels including compressable transverse panel seals between each adjacent pair of panels when the panels are received by the panel mounting members in a predetermined arrangement to cover the bed, panel interconnecting and locking apparatus which comprises:

latching means for releasably latching together each adjacent pair of panels as said panels are being installed in said mounting members and for assuring a predetermined minimum compression of said panel seals therebetween,

said latching means including a rigid first latch member fixed to a transverse end of a first one of each said adjacent pair of received panels and a rigid second latch member fixed to an adjacent transverse end of a second one of each of said adjacent pair of received panels, said first and second latch members being engageable and disengageable, as the panels

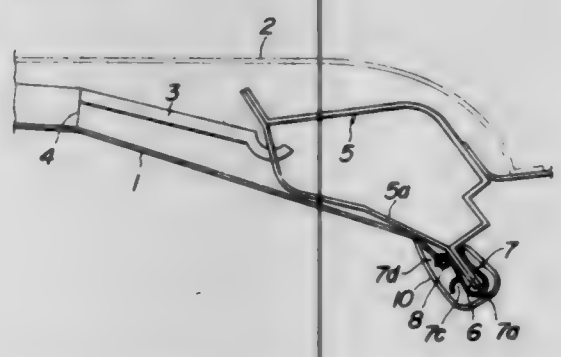
are received by, and removed from, said mounting members by pivoting a rearward panel of each of said adjacent pairs of panels relative to a forward panel thereof, said predetermined minimum seal compression being caused when said rearward panel is pivoted into a longitudinally aligned relationship with said forward panel.

4,406,494

HEAD LINING MOUNTING STRUCTURE

Yukio Uemura, Yokohama, and Masayoshi Horike, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 26, 1981, Ser. No. 266,784
Claims priority, application Japan, Jun. 4, 1980, 55-77731[U]
Int. Cl.³ B62D *25/06*
U.S. Cl. 296—214 **6 Claims**



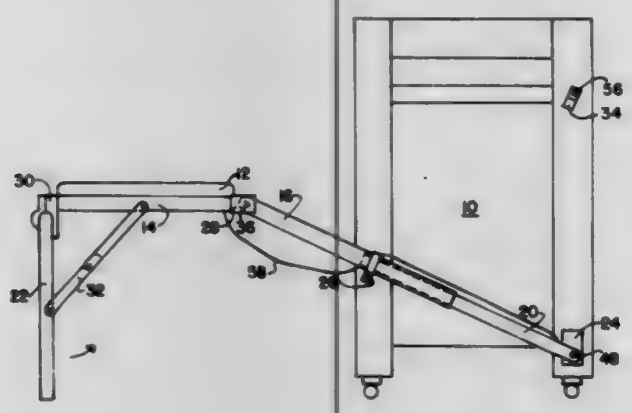
1. A headlining mounting structure for anchoring each end of a headlining to a vehicle structural member such as a roof rail, said headlining mounting structure comprising anchoring means having a notch formed in a lateral end of said headlining to expose thereat a part of a first wire enclosed by a loop of the end of the headlining, and two hooks arranged side by side in a transverse direction of the vehicle on said vehicle structural member to engage said part of said wire exposed in said notch of the headlining.

4,406,495

FOLDABLE BENCH ASSEMBLY

Clifton E. Turner, Rte. 1, Box 140, Clear Spring, Md. 21722

Filed Mar. 16, 1981, Ser. No. 244,425
Int. Cl.³ A47B *39/00*
U.S. Cl. 297—135 **12 Claims**



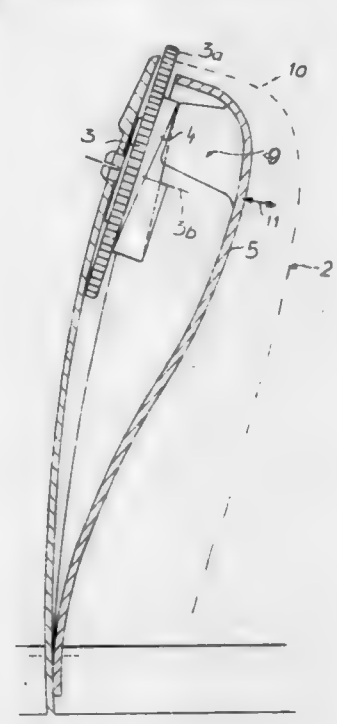
1. A bench assembly which is attachable to the side of a structure and which can be folded up to be alongside said structure, said bench assembly comprising:
a bench including a seat platform,
legs, said legs being rotatably attached to said platform such that the legs can be folded under the seat platform,
tubing, a first end of said tubing being attached to said seat platform,
first means for pivotally attaching the second end of said tubing to said structure, and
second means attached to said structure for supporting said tubing,
said tubing being rotatable about said first means to enable the seat platform to move from a first position in which it acts as a seat for a person to a second folded storage position closely adjacent to the structure, said assembly providing a position for the seat platform parallel to a side of the structure when the tubing is in said second storage position,
said tubing being comprised of at least a first and a second tube, said tubes being telescopable and rotatable with respect to each other,
the seat platform being rotatable around an axis which begins at the point of attachment of said tubing to said seat platform and is in the same plane as the centerline of said tubing.

4,406,496

BACKREST FOR CHAIRS

Fritz Drabert, Marienstrasse 7, D-4950 Minden, and Ulrich H. von Waldegge, Goebenstrasse 51, 4950 Minden (BRR), both of Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,629
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1980, 3014255
Int. Cl.³ A47C *3/00*
U.S. Cl. 297—284 **7 Claims**

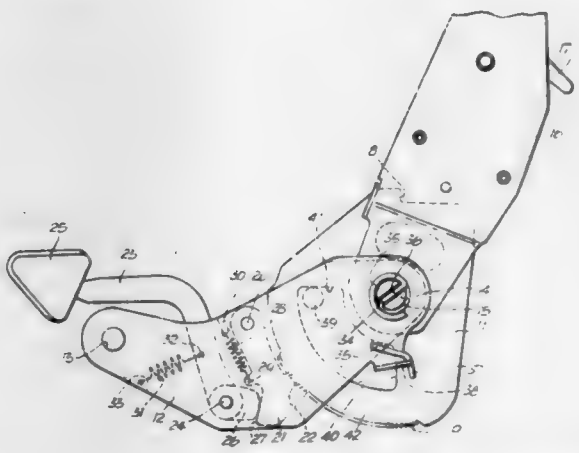


1. A backrest for seats or chairs, comprising:
a frame member;
a resilient pressure pad positioned in front of said frame member for juxtaposition with the back of a person using the seat or chair;
adjustment means operatively associated with said frame member and said pressure pad for varying the position of said pressure pad relative to said frame member, said adjustment means comprising a stationary but rotatable element having an axis of rotation and a screw-like inclined cam surface extending around said axis, said cam surface being operatively associated with said frame member and said pressure pad whereby rotation of said element moves said pressure pad toward or away from said frame member.

4,406,497
APPARATUS FOR SECURING A VARIABLE POSITION FITTING ELEMENT, PARTICULARLY A FITTING ELEMENT FOR VEHICLE SEATS

Bernd Klüting, Radevormwald, Fed. Rep. of Germany, assignor to Keiper Automobiltechnik GmbH & Co. KG, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 241,854
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009640
Int. Cl.³ A47C *1/026*
U.S. Cl. 297—366 **9 Claims**



1. An apparatus for setting a fitting element which is adjustable relative to a support element to various positions, particularly for vehicle seats comprising:

a locking device which is self-arresting under a load from a return force which tends to move the fitting element into an end position of its range of adjustment and which has at least two locking elements that engage each other by teeth in order to prevent movement of the fitting element,

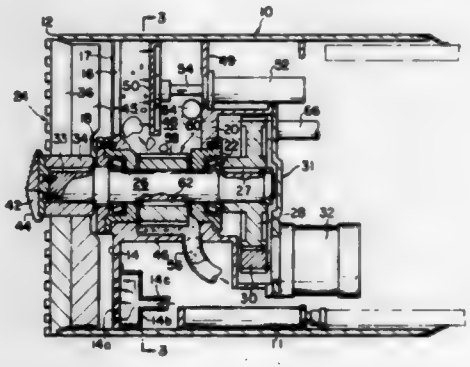
one of the locking elements being a detent disc positioned on the fitting element, and

said other of the locking elements being a detent member movably guided on the support element and also being movable forcibly only into a locking position against a reset force by an activating member.

4,406,498
SHIELD TUNNELING METHOD AND MACHINE THEREFOR

Toshio Akesaka, Yokohama, Japan, assignor to Kabushiki Kaisha Iseki Kaihatsu Koki, Japan

Filed Jun. 9, 1981, Ser. No. 272,059
Claims priority, application Japan, Jun. 30, 1980, 55-87816; Oct. 29, 1980, 55-150829
Int. Cl.³ E21D *9/08*
U.S. Cl. 299—11 **12 Claims**



1. A tunneling method characterized by;

introducing muck from tunnel face into a shielded zone;

pressing said muck, by thrusting said shielded zone forwardly, at a pressure of a predetermined level higher than an active earth pressure in the face ground but lower than a passive earth pressure, so as to balance muck pressure with earth pressure in the face ground; and

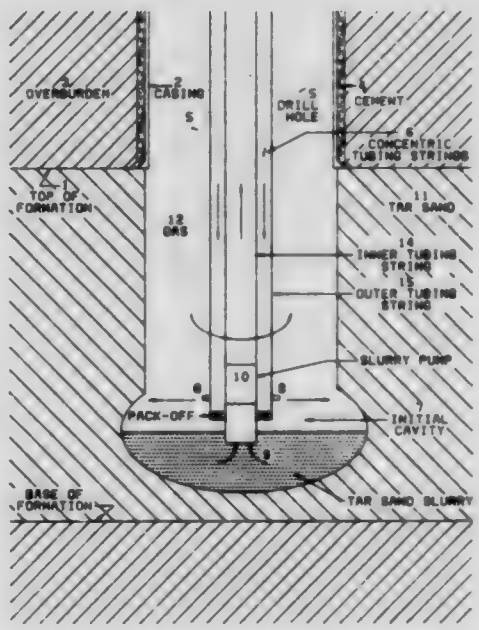
using a liquid as a means for resisting the underground water and pressurizing said liquid to a level balancing the underground water pressure to prevent movement of said underground water;

whereby the tunnel face is maintained stable while the tunneling operation is proceeded, and said muck is discharged out of said shielded zone when said muck pressure is raised over said predetermined level.

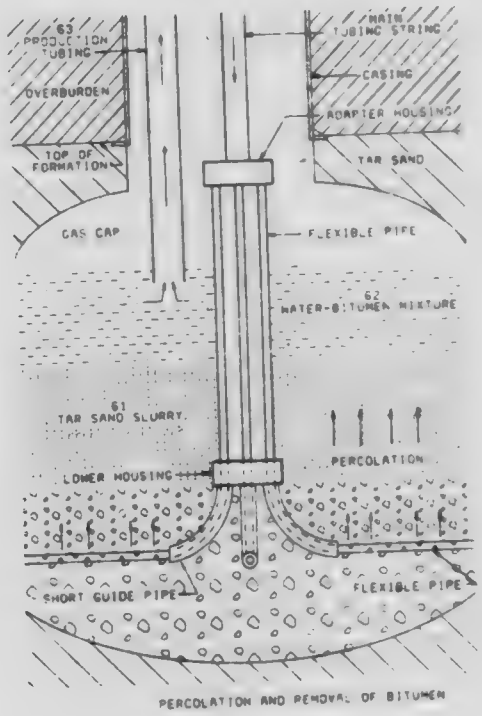
4,406,499
METHOD OF IN SITU BITUMEN RECOVERY BY PERCOLATION

Erdal Yildirim, Tulsa, Okla., assignor to Cities Service Company, Tulsa, Okla.

Filed Nov. 20, 1981, Ser. No. 323,344
Int. Cl.³ E21B *43/24, 43/38;* E21C *37/12, 41/10*
U.S. Cl. 299—17 **8 Claims**



VOID SPACE CREATION FROM INITIAL CAVITY



PERCOLATION AND REMOVAL OF BITUMEN

1. An in-situ method for producing a crude heavy hydrocarbon material from an underground carbonaceous formation, comprising the serial steps of:

(a) drilling a borehole,

(b) creating a void space at or near the bottom of the borehole, by a cutting means and a removing means,

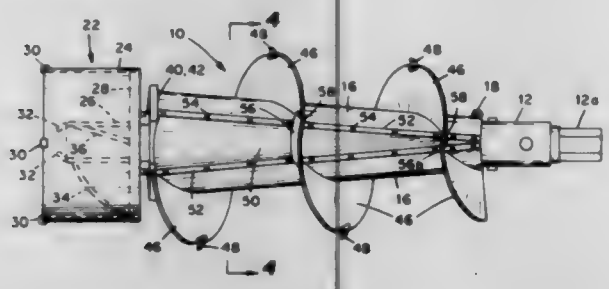
(c) maintaining the integrity of the formation to avoid collapse of the formation,
(d) enlarging the void space in both the horizontal and vertical directions, thereby enlarging the void space in the approximate shape of a cylinder to obtain a processing chamber,
(e) continuing the cutting action of step (d) with the cutting means being traversed upwardly and rotationally, thus fracturing (cutting) the underground carbonaceous formation, to the upper limits of the formation,
(f) forming a slurry filling at least a portion of the fractured space in the formation,
(g) inserting a pipe system comprising a bundle of spring-loaded guide tubes into the slurry, the bundle being retained in a closed position by an end cap, with each guide tube enclosing a smaller diameter flexible tube, the flexible tubes being connected to a source of liquid processing material,
(h) lowering the guide tube bundle to the bottom (floor) of the slurry,
(i) releasing the end cap, thus allowing the distal ends of the guide tubes to move outwardly in a generally horizontal direction normal to the axis of the bundle, thus inserting the guide tubes in the slurry,
(j) introducing processing material through the inner flexible tubes, with the processing material contacting and separating, at least partially, the heavy hydrocarbon material from the remainder of the carbonaceous material, forming lighter and heavier phases in the mixture, and
(k) removing the lighter phase which contains the heavy hydrocarbon material.

4,406,500

CUTTING ASSEMBLY INCLUDING EXPANDING WALL SEGMENTS OF AUGER

Martin B. Treuhaft, and Michael S. Oser, both of San Antonio, Tex., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Jun. 25, 1981, Ser. No. 277,436
Int. Cl.³ E21B *7/28*
U.S. Cl. 299—80 **6 Claims**



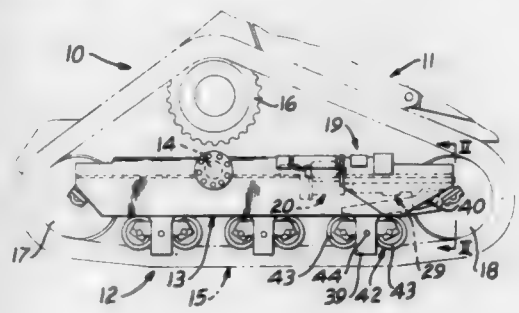
1. A cutting assembly comprising:
a support shaft;
a cutting head carried at one end of said shaft;
a plurality of wall segments pivotally connected at one end thereof to said support shaft at points spaced equidistant from said cutting head and each extending from its point of connection with said support shaft to a point adjacent said cutting head, said wall segments being disposed around said support shaft in side by side relation and each being curved to conform with the periphery thereof, said wall segments being swingable between (1) a first position wherein they lie adjacent said support shaft, and (2) a second position wherein their free ends are spaced radially outward from said support shaft;
a plurality of shields respectively extending between and connected to confronting side edges of said wall segments, said shields and said wall segments together forming a continuous wall around said support shaft;
a plurality of vanes respectively mounted on the outer surfaces of said wall segments and projecting radially outward therefrom, said vanes together forming a substantially continuous helical wall extending around the tube-shaped shell formed by said wall segments when the latter are in said first position thereof, said vanes projecting radially outward beyond the outer perimeter of said cutting head when said wall segments are in said second position thereof;
a plurality of cutters respectively mounted on the outer edges of said vanes; and
means for moving said wall segments between said first and second positions thereof.

4,406,501

RECOIL SYSTEM WITH GUIDED SLIDE ASSEMBLY FOR TRACK-TYPE VEHICLES

Jon C. Christensen, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 29, 1982, Ser. No. 361,698
Int. Cl.³ B62D *55/10, 55/16, 55/30*
U.S. Cl. 305—10 **14 Claims**



1. In a track-type vehicle (10) having a track roller frame (13), a track idler (18) mounted forwardly on said track roller frame (13), and a recoil system (19) interconnected between said track roller frame (13) and said track idler (18), said recoil system (19) including a slider assembly (29) having a pair of elongated slide means (30) for slidably mounting said slider assembly (29) for fore and aft movements on said track roller frame (13), said slide means (30) being laterally spaced on either side of said track idler (18), the improvement comprising:
each of said slide means (30) including an elongated flange (35) and an elongated wear insert (34) mounted and providing bearing surfaces between said track roller frame (13) and said flange (35) and wherein said slider assembly (29) further includes a pair of brackets (41), disposed on either side and rotatably mounting said track idler (18) therebetween, each extending downward from a respective one of said flanges (35).

4,406,502

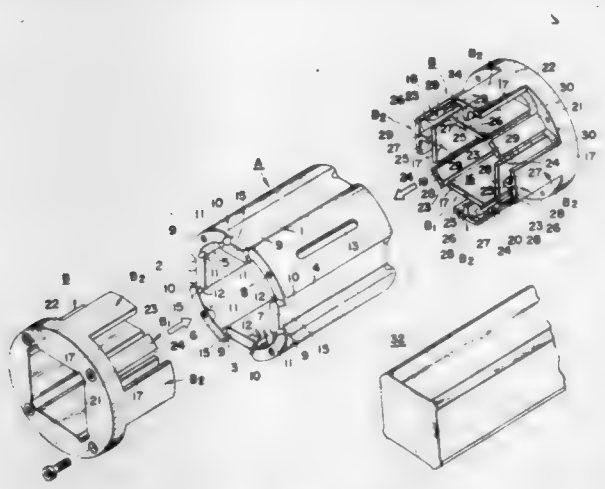
UNLIMITED SLIDING BALL BEARING SPLINE ASSEMBLY

Hiroshi Teramachi, 2-34-8, Higashi-Tamagawa, Setagaya-Ku, Tokyo, Japan

Filed Jul. 29, 1982, Ser. No. 403,035
Claims priority, application Japan, Aug. 6, 1981, 56-123545
Int. Cl.³ F16C *29/06*
U.S. Cl. 308—6 C **6 Claims**

1. A ball bearing spline assembly comprising:
a cylindrical outer sleeve having outer peripheral grooves for guiding no-load carrying balls and inner peripheral grooves for guiding load carrying balls formed longitudinally in outer and inner walls of said outer sleeve, respectively, so that said outer peripheral grooves and said inner peripheral grooves are alternated with each other in the circumferential direction of said outer sleeve, each of said inner and outer peripheral grooves being provided with ball rolling surfaces at both sides, respectively,
a pair of cage halves, each cage half including outer guide members each of which has an inwardly projecting partition wall at a position corresponding to the longitudinal center line of the associated outer peripheral groove of the

outer sleeve, ball rolling surfaces for guiding the no-load carrying balls formed at both sides of each of said partition walls, respectively, each of said ball rolling surfaces cooperating with the adjacent one of said ball rolling surfaces formed in each of said outer peripheral grooves of the outer sleeve, and inner guide members provided with slit grooves for guiding the load carrying balls at position coincident with said ball rolling surfaces formed in said inner grooves of said outer sleeve, respectively, and said outer and inner guide members projecting longitudinally



from a base portion of said cage half with a predetermined space therebetween, said pair of cage halves being connected together in an end abutting relation to constitute a cage unit; and

a spline shaft slideably inserted in a bore defined by said inner guide members of the cage unit and having a plurality of longitudinal protrusions adapted to be received, respectively, in a corresponding number of recesses space defined by each rows of balls held within said slit grooves of said cage unit.

4,406,503

DEVICE FOR SUPPLYING AN OIL-AIR MIXTURE TO BEARING LOCATIONS

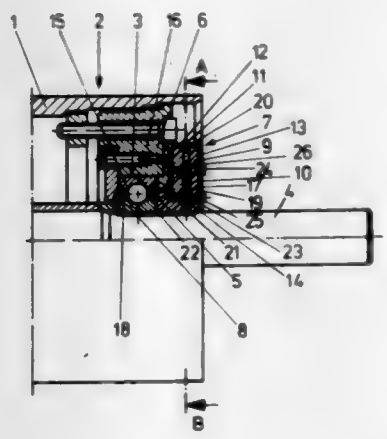
Horst G. Schrecke, Dittelbrunn, and Hermann Glöckner, Schweinfurt, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Division of Ser. No. 126,438, Mar. 3, 1980, Pat. No. 4,324,442. This application Nov. 16, 1981, Ser. No. 321,716

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1979, 7906703

Int. Cl.³ F16C *33/66*

U.S. Cl. 308—187 **3 Claims**



1. A bearing assembly comprising a shaft, a rolling bearing having an inner ring mounted on said shaft, said shaft having grooves extending under said inner ring and beyond each end thereof, said bearing having an outer ring, rotatable means mounted on said upper ring for relative rotation with respect to said shaft, an annular oil reservoir surrounding said shaft and positioned at one side of said bearing, said reservoir comprising a container enlosing an absorbent and retentive material, said bearing rings defining spaced apart races, means defining an annular space at the radial outer periphery of said container and communicating with the space between said inner and outer rings, whereby a current of air is generated to flow to the radial outer periphery of said container upon rotation of the rolling bearing, and substantially radially extending passages in said container communicating between said annular outer space and said grooves in said shaft.

4,406,504

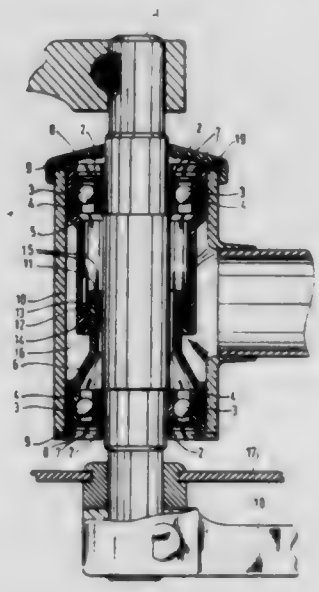
DEVICE FOR FASTENING AN AXLE WITH ROLLING BEARINGS IN CYLINDRICAL TUBING

Hendrikus P. Coenen, Zutphen, and Cornelis Van Wageningen, Dieren, both of Netherlands, assignors to Gazelle Rijwielfabriek B.V., Dieren, Netherlands

Filed Dec. 17, 1981, Ser. No. 332,097

Int. Cl.³ F16C *35/06*

U.S. Cl. 308—192 **12 Claims**



1. A device for fastening an axle with rolling bearings in a cylindrical tubing comprising: two annular sleeves having inward extensions for locking up outer races of the rolling bearings and having hook-like fastening members for relatively fixing the sleeves in place relative to the cylindrical tubing; an outward shoulder positioned at the ends of said annular sleeves remote from the fastening members; said sleeves being constructed from elastically resilient material and having an inner groove at the ends provided with said shoulders for fitting the outer races of the bearings and the other ends being provided with said hook-like fastening members; said annular sleeves being fitted one around the other and the outer sleeve being provided with longitudinal slots at said end containing said hook-like fastening member;

wherein the hook-like fastening members are formed by an outer shoulder on the inner sleeve and an inner shoulder on the outer sleeve, said inner and outer shoulders being directed towards said other ends and at least one of the sleeves includes a conical surface for forming a leading rim at the insertion of one sleeve into the other.

4,406,505

GROUNDING CLIP FOR ELECTRICAL FIXTURES

Radosav Avramovich, Libertyville, Ill., assignor to Daniel Woodhead, Inc., Northbrook, Ill.

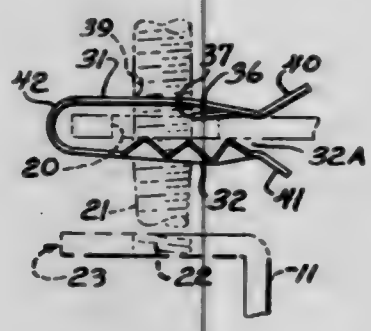
Filed Feb. 18, 1981, Ser. No. 235,657

Int. Cl.³ H01R *3/04*

U.S. Cl. 339—14 R **15 Claims**

1. A grounding clip for use with an electrical fixture having a mounting yoke by which the fixture is secured to a grounded mounting box with mounting screws extending through a slot in the mounting yoke and into a threaded opening in a

grounded mounting box, said grounding clip comprising: a U-shaped element of spring steel having first and second side members, spaced apart to form a mouth for receiving and exerting pressure against said mounting yoke and said second member adapted to be interposed between said yoke and said box and having an aperture for the free passage of said mounting screw therethrough, and said first member having a screw-receiving means including an opening and a spring tongue, said opening located in alignment above said aperture in second member; said spring tongue extending inwardly into said opening toward said second side member of said clip, said tongue being formed integrally with said first side member and in diverging relation therewith and having a screw engaging edge cooperating with an opposing edge of said opening to receive and establish electrical communication with said screw, said spring tongue adapted for aligning and maintaining said clip about the mounting yoke as said clip is positioned on said mounting yoke and said spring tongue is received in said slot; said second member defining teeth for biting into said yoke and scraping any oxide therefrom as said mounting screw is turned into said threaded opening of said box.

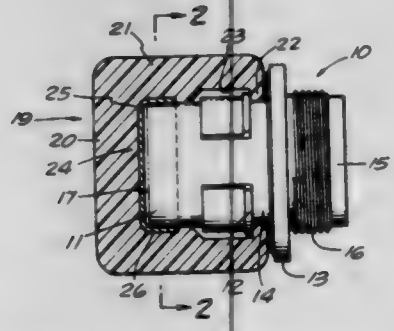


4,406,506

SHIELDED COVER FOR A QUICK-RELEASE ELECTRICAL CONNECTOR

Kenneth B. Baldwin, Newbury Park, Calif., assignor to Automation Industries, Inc., Greenwich, Conn.

Filed Aug. 3, 1981, Ser. No. 289,396
Int. Cl.[3] H01R *13/44, 13/503*
U.S. Cl. 339—36 3 Claims



1. A shielded cover for a connector part having a hollow substantially cylindrical open-ended hub with at least one radially protruding keying member on the hub peripheral surface and an enlarged flange spaced from said keying member a predetermined amount, comprising:

a cap having an open end, an imperforate end wall and a unitarily related cylindrical sidewall;

the sidewall edge margin defining the cap open end having a continuous radially inwardly directed flange forming an open space which is dimensionally less than the cross-section dimension of the hub taken through the keying member, a groove in the inner surface of the cap cylindrical sidewall of total diameter greater than the hub cross-section dimension taken through the keying member; and

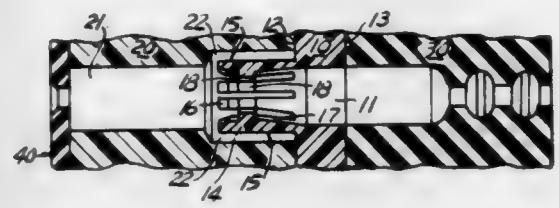
metal liner means affixed to the cap end wall and having a portion extending partway along the cap sidewall, said liner being so dimensioned as to be contactingly related to the connector part hub when said cover is in place thereon.

4,406,507

ELECTRICAL CONNECTOR INSERT

Raymond J. Eifler, West Bloomfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 30, 1981, Ser. No. 279,271
Int. Cl.[3] H01R *13/42*
U.S. Cl. 339—59 R 4 Claims



1. In combination with an electrical connector insert of the type having a body of insulation material having a plurality of passages therethrough from a front face to a rear face and a respective electrical contacts therein which are insertable from the rear, the improvement wherein:

each of said contacts include an annular groove having forwardly and rearwardly facing shoulders perpendicular to the axis of its respective passage; and

a plurality of tubular contact retention towers integral with the body and coaxial with the respective passages therein, each of said towers comprised of a plurality of spaced apart axially extending fingers, each finger having an internal annular shoulder on the inside thereof having forwardly and rearwardly facing shoulders perpendicular to the axis of its respective passage, the surfaces on opposite sides of each shoulder tapered radially outwardly and tapering away from the surface of a contact inserted into a passage, each tower being resiliently and radially expandable to permit a respective contact to pass into the tower upon insertion of the contact into a respective passage from the rear of the body, said tower contracting when the shoulders in the tower enter the annular groove in the contact, the walls of the groove engaging the shoulders on the inside of said fingers to limit forward and rearward movement of the contact in the passage, each of said passages and said tapered surfaces on both sides of said shoulders adapted to receive an appropriate tool from the rear or the front of said passage to radially expand the towers and release a contact within said passage, whereby the contact being released from either the front or rear of the passage by an appropriate tool may be removed from the body.

4,406,508

DUAL-IN-LINE PACKAGE ASSEMBLY

Amir-Akbar Sadigh-Behzadi, Van Nuys, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

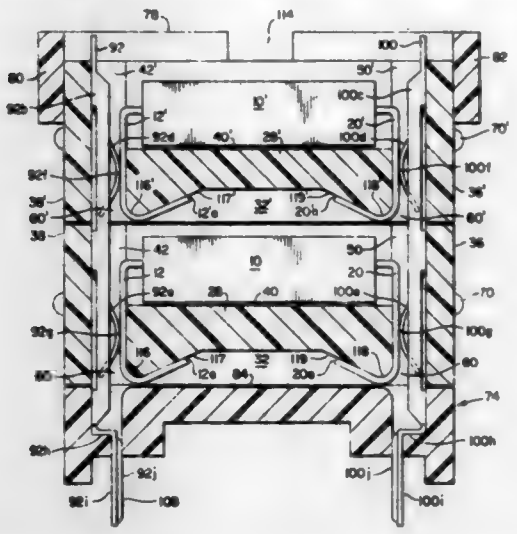
Filed Jul. 2, 1981, Ser. No. 279,943
Int. Cl.[3] H01R *23/68*
U.S. Cl. 339—75 M 9 Claims

1. An electronic package assembly, comprising:

(a) a base having a support surface and a plurality of contacts supported thereon in preselected mutual spacing, each said contact defining first and second resilient contact portions successively distal from said support surface; and

(b) first and second electronic package carriers stackably received by said base and respectively registrable with said first and second contact resilient portions, each such carrier and said base defining cooperative surfaces for polarized receipt of said first and second package carriers by said base, each such carrier having connection-effecting means for boundingly jointly receiving the leads of a

package carried thereby and said base contacts, and for individually biasing said contact resilient portions registered therewith into engagement with said package leads interiorly of said carriers.

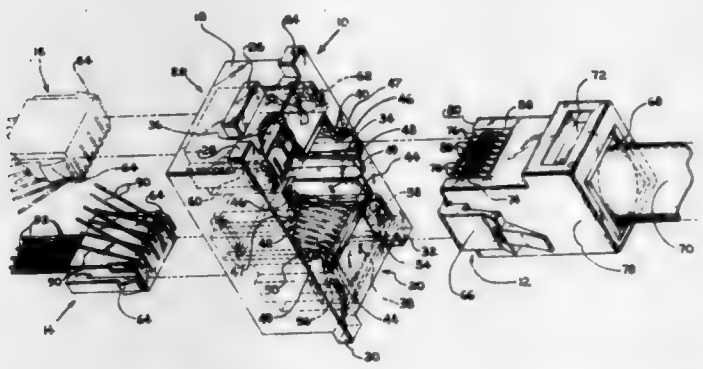


4,406,509

JACK AND PLUG ELECTRICAL ASSEMBLY

Paul R. Jagen, Mechanicsburg, Pa., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Nov. 25, 1981, Ser. No. 325,024
Int. Cl.[3] H01R *11/20*
U.S. Cl. 339—91 R 4 Claims



1. A quick connect multiconnection electrical assembly employing a jack and complementary plug wherein the jack comprises:

(a) a dielectric housing having a front and back portion,

(b) a central cavity within the housing defined by two sidewalls and extending from the front to the back portion of the housing,

(c) a pair of guiderails in each sidewall accommodating the plug inserted into the front of the housing,

(d) an upper cavity within the housing defined by two sidewalls, a front wall and a ceiling, said upper cavity accommodating an upper jack insert,

(e) a lower cavity within the housing defined by two sidewalls, a front wall and a floor, said lower cavity accommodating a lower jack insert,

(f) said upper and lower jack inserts having a dielectric structure of a size and shape complementary to the upper and lower cavities, respectively, and multiple internal channels each one accommodating a single spring wire conductor, each conductor exiting from an end of the structure and bent back over a top of the structure so that the conductors extend towards the central cavity to form terminal ends when the inserts are inserted into the upper and lower cavities from the back of the jack; and the plug comprises:

(a) a dielectric housing with a cord input end for receiving an end portion of a cord containing multiple insulated wires, internal surfaces of the plug housing defining a cavity enclosing the end portion of the multiple insulated wires,

(b) means for securing the cord within the plug housing,

(c) a conductor contact end opposite said cord-input end, the contact end having an upper and lower end, each containing multiple conductor receiving troughs formed in a portion of the cavity, each trough accommodating one of the insulated wires,

(d) a plurality of terminal-receiving openings, each one communicating with a trough and the exterior of the plug, and

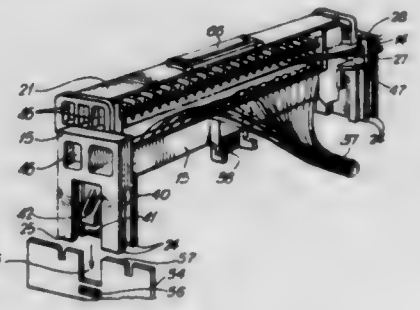
(e) a conductive insulation piercing terminal positioned within each terminal receiving opening with its first contact portion engaging the conductive wire by piercing the insulation of the insulated wire in the trough and a second contact portion facing the exterior of the plug and being available to electrically contact a spring wire conductor from the jack insert.

4,406,510

RETAINER FOR A CONNECTOR IN CROSS-CONNECT APPARATUS FOR TELECOMMUNICATIONS

George Debortoli, and Brian T. Osborne, both of Ontario, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 21, 1981, Ser. No. 294,836
Int. Cl.[3] H01R *13/58*
U.S. Cl. 339—103 M 17 Claims



1. A retainer for a connector in cross-connect apparatus for telecommunications systems, said retainer comprising:

a main body portion having a back wall, a front wall and ends;

a lid hingedly attached to a top edge of said back wall;

said front wall being of a reduced height relative to said back wall;

two pairs of spaced apart parallel legs on each end, said legs extending below said main body portion, each pair of legs defining a slot, the slots at an end co-planar;

a latch member positioned between the pairs of legs, at each end, said latch member including a projection at a lower end, projecting into said plane of said slots, and a guide positioned above said projection and projecting across said plane.

4,406,511

FLAT CABLE CONNECTOR STRAIN RELIEF

Earl J. Hayes, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

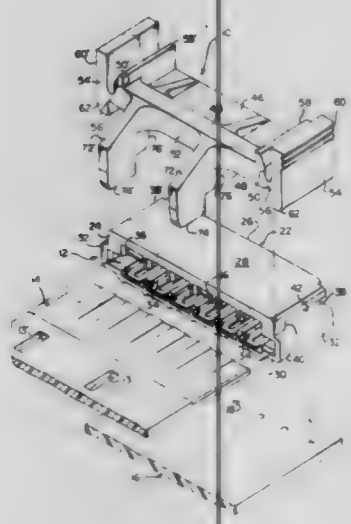
Filed Jul. 29, 1981, Ser. No. 287,951
Int. Cl.[3] H01R *13/58*
U.S. Cl. 339—103 M 10 Claims

1. A multi-contact electrical connector and strain relief for flat multi-conductor cable, said connector comprising an insulating housing having a cable-receiving face and a rearward face, upper and lower sidewalls and endwalls extending between said faces, a cable-receiving trough extending into said housing from said cable-receiving face, a plurality of contact terminals mounted in said trough, said terminals being arranged in a row extending between said endwalls so that the side-by-side conductors in said flat cable are contacted by said

terminals when said cable is inserted into said trough, said connector and said strain relief being characterized in that said strain relief comprises:

a rigid body portion which is disposed against said upper sidewall, said body portion having ends which are adjacent to said endwalls and a forward edge adjacent to said cable-receiving face;

latching arms disposed against said endwalls, said latching arms having latching portions, said latching portions being in engagement with latching shoulders on said endwalls;



flexible neck portions connecting said latching arms to said ends of said body portion, said neck portions permitting outward movement of said latching portions from said endwalls, so that said latching portions can be disengaged from said latching shoulders and said strain relief can thereby be separated from said connector; and

at least two cable-retaining ears extending laterally from said forward edge of said body portion, said cable-retaining ears having free end portions which are received in openings in said cable whereby,

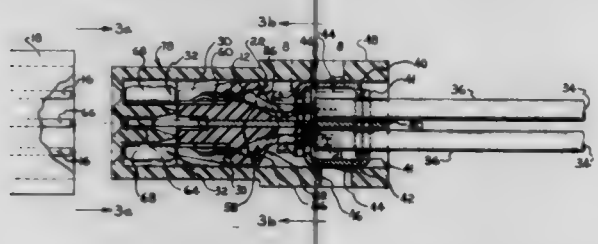
removal of said cable from said trough is prevented.

4,406,512

TRIPLE ROW COAX CABLE CONNECTOR

Mark S. Schell, Palatine, Ill., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 24, 1981, Ser. No. 286,557
Int. Cl.³ H01R *17/04*
U.S. Cl. 339—177 R **8 Claims**



1. An electrical connector for coax cable having repeating units of a jacket surrounding a central signal conductor and at least one drain wire exterior to said jacket, said connector comprising

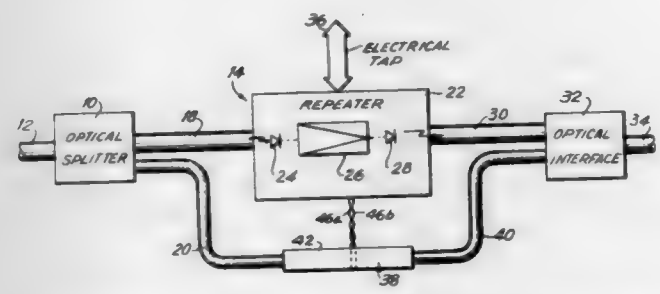
a metal ground plate having first and second ends and a middle portion insert molded to a dielectric member containing an entrance and exit end, said ends separated by adjacent multiple channels each having a diminishing cross sectional area beginning from said entrance end, each said jacket being retained within a channel as each signal conductor is pushed through a channel to contact an electrical terminal exterior to the exit end.

4,406,513

OPTICAL REPEATER SYSTEM HAVING AN AUTOMATIC OPTICAL BY-PASS

Howard A. Raphael, Palo Alto, Calif., assignor to Cermetek, Inc., Sunnyvale, Calif.

Filed Mar. 11, 1981, Ser. No. 242,549
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.16 **11 Claims**



9. Apparatus for transmitting an optical information signal from an optical input to an optical output, comprising:

a first path connected between said optical input and said optical output and including repeater means for electrically amplifying said optical information signal and for supplying said amplified optical information signal to said optical output; and

a second optical path connected between said optical input and said optical output and including gate means responsive to said first path for optically transmitting said optical information signal to said optical output only when said first path is inoperative during one of failure of said repeater means and power failure to said repeater means, in which said gate means includes an input fiber optic cable supplied with said optical information signal from said optical input and having a first optical end face, an output fiber optic cable supplied with said optical information signal from said input fiber optic cable and having a second optical end face in opposing relation to said first optical end face and separated therefrom, and window means disposed between said first and second optical end faces for one of transmitting and attenuating said optical information signal supplied from said input fiber optic cable to said output fiber optic cable, said window means including a liquid crystal window adapted to be selectively activated for optically attenuating said optical information signal supplied from said input fiber optic cable.

4,406,514

SINGLE FIBER CONNECTOR FOR PLUGGABLE CARD OR MODULE OPTICAL INTERCONNECTIONS

Clarence G. Hillegonds, Palm Bay; William C. Stankos, Melbourne, both of Fla.; Peter G. File, Roanoke, Va., and Luther P. Mills, Melbourne, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Mar. 26, 1980, Ser. No. 134,225
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.21 **21 Claims**

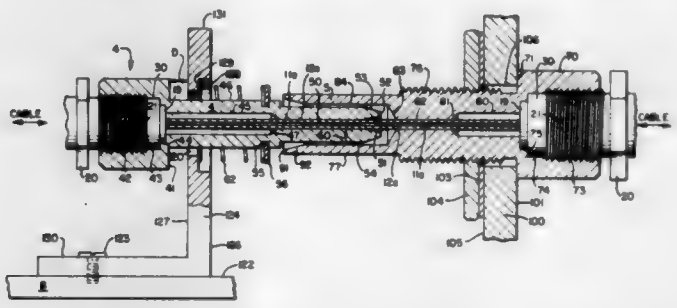
1. An optical fiber connector assembly, adapted for use with an optical module unit that is retained by a connector arrangement mounted on a module unit support structure, for joining a first optical fiber associated with said optical module unit in abutting end-to-end relationship with a second optical fiber associated with said module unit support structure comprising:

a first optical fiber connector subassembly adapted to be mounted on one of said optical module unit and said module unit support structure so as to possess an amount of play relative to said one of said optical module unit and said module unit support structure and thereby to an axis

along which said first and second optical fibers are to be joined together, said first subassembly retaining therein said first optical fiber; and

a second optical fiber connector subassembly adapted to be mounted on the other of said optical module unit and said module unit support structure, said second subassembly retaining therein said second optical fiber; and wherein

said first and second optical fiber connector subassemblies



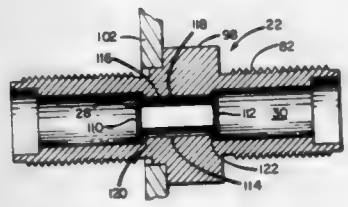
are positioned on said one and said other of said unit and structure so that as said optical module unit is joined to said module unit support structure, said first subassembly is permitted to undergo displacement relative to its mounting on said one of said optical module unit and said module unit support structure and thereby to said axis, whereby said first and second subassemblies are caused to be connected together and urge said first and second optical fibers into abutting end-to-end relationship.

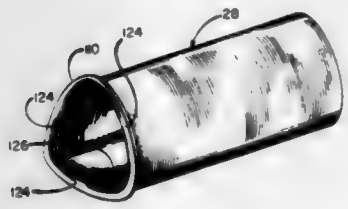
4,406,515

FIBER OPTIC CONNECTOR

Harold A. Roberts, North Attleboro, Mass., assignor to Augat Inc., Mansfield, Mass.

Filed Jul. 14, 1981, Ser. No. 283,288
Int. Cl.³ G02B 7/26
U.S. Cl. 350—96.21 **15 Claims**





1. Apparatus for joining optical fibers so as to effect coaxial alignment of the ends of a pair of opposed optical fibers comprising:

generally cylindrical ferrules for housing respective fibers along the central axis thereof;

an interconnect housing having a central bore and annular shoulder projecting into said bore so as to define a bore of decreased diameter;

a thin-walled sleeve mounted through the annulus defined by said shoulder, said sleeve having dimensions which permit said sleeve to float within said decreased diameter bore, each end of said sleeve being outwardly flared and adapted to coact with a respective end of said shoulder to retain said sleeve in said housing while permitting limited axial movement of said sleeve in said housing; and,

means coupled to said housing for positioning said ferrules in said sleeve such that the faces thereof are in opposition in said sleeve.

4,406,516

MONOMODE FIBERGUIDE TELECOMMUNICATION SYSTEM UTILIZING SOLITON PULSES

Akira Hasegawa, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 27, 1981, Ser. No. 257,861
Int. Cl.³ G02B 5/14
U.S. Cl. 350—96.29 **5 Claims**

5. A fiberguide telecommunication system comprising

(a) a laser source of pulsed electromagnetic radiation, the pulses having a peak power, a center wavelength λ, and a pulse width $2t_o$,

(b) a monomode fiberguide link of length L, the fiberguide comprising silica and having a core of effective cross section S, zero first-order chromatic dispersion at wavelength λ_c in the anomalous dispersion regime of the fiberguide, and loss at wavelength λ to result in a decrease of the amplitude of the pulse by $1/e$ in a distance γ^{-1}, and

(c) means for coupling at least a part of the pulsed electromagnetic energy into the core of the fiberguide, characterized in that

(d) the fiberguide is selected to have zero first-order chromatic dispersion wavelength λ_c near or equal to 1.55 μm,

(e) the peak power P of the pulsed electromagnetic radiation coupled into the fiber is adjusted to be between about $\frac{1}{4}$ and about 9/4 times a balanced peak power P_o,

(f) the link length L is selected to be at least approximately as large as a soliton formation length L_o,

(g) the fiber is selected to have a loss at λ such that the distance γ^{-1} is at least approximately as large as L_o, and

(h) the carrier wavelength λ is selected to be close to λ_c, but at least as large as $\lambda_c+\Delta\lambda_{min}$,

where $P_o(W) \sim S(\mu m^2)\,\lambda(\mu m)[\lambda-\lambda_c](\mu m)/2t_o^2(ps)$,

$$L_o(\text{km}) \sim 5.3\cdot 10^{-3}\lambda(\mu m)S(\mu m^2)/P(W),$$

$$\Delta\lambda_{min} \sim 3.3\cdot 10^{-3}\,\frac{\lambda^2(\mu m^2)}{2t_\infty(ps)} \text{ and also}$$

$$\Delta\lambda_{min}(\mu m)\ 1.9\cdot 10^{-2}\,[\lambda(\mu m)-1]/2t_\infty(ps),$$

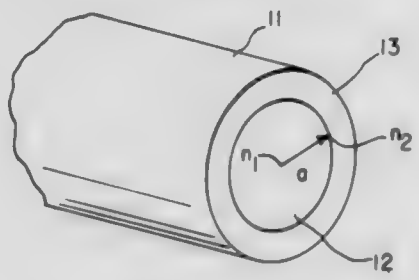
where $2t_\infty$ is the width of the pulse after transmission through the fiber link.

4,406,517

OPTICAL WAVEGUIDE HAVING OPTIMAL INDEX PROFILE FOR MULTICOMPONENT NONLINEAR GLASS

Robert Olshansky, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 183, Jan. 2, 1979, abandoned. This application Jul. 23, 1980, Ser. No. 171,657
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.31 **5 Claims**



1. A gradient index optical waveguide comprising:

a core having a radius a formed from silicate compounds with at least two dopants;

the refractive index of said core being n_1 at the radius $r=0$ and n_2 at the radius $r=a$, the concentrations of each compound being a function of the radial distance from the center of the core substantially as:

$$C_i(r) = C_i^{\circ} + [(1-\xi_i)(r/a)^{\alpha} + \xi_i(r/a)^{2\alpha}]C_i^{1},$$

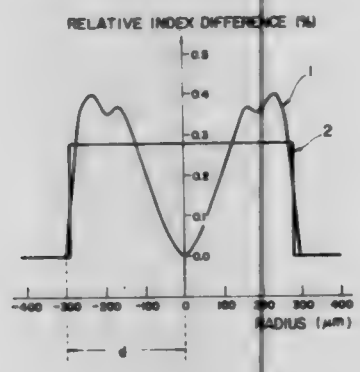
where $C_i(r)$ denotes the concentration of the ith dopant as a function of radial distance, C_i° denotes the concentration at $r=0$ of the ith dopant, C_i^{1} denotes the difference in concentration of the ith dopant between $r=a$ and $r=0$, α is the selected index profile, ξ_i are variable parameters relating the concentration of the ith dopant to radial distance r, said parameters minimizing the factor $\delta(\lambda)$ by which the index of refraction profile differs from the profile produced where there is a linear relationship between index of refraction and said concentrations.

4,406,518

SINGLE-MODE-TRANSMISSION OPTICAL FIBER AND A METHOD OF MANUFACTURING THE SAME

Hiroyoshi Matsumura, Saitama; Toshio Katsuyama, Hachiouji, and Tsuneo Suganuma, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 20, 1981, Ser. No. 236,509
Claims priority, application Japan, Feb. 29, 1980, 55-24049
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.31 5 Claims



2. A single-mode optical fiber comprising:
a cladding which has a constant refractive index n_2, and
a core of a radius a which is surrounded by said cladding and the refractive index distribution of which is greater than said refractive index n_2 and has in the radial direction r an arbitrary index distribution n(r) expressed by $n^2(r)=n_1^2\{1-2\Delta_o f(r)\}$ (where $0 \leqq f(r) \leqq 1$), the radius a of said core being:

$$a < \frac{2.405\lambda}{2\pi Y n_2 \sqrt{2\Delta}}$$

X and Y being solutions of simultaneous equations of:

$$\frac{\partial J_o}{\partial X} = 0, \frac{\partial J_o}{\partial Y} = 0$$

of a function which is expressed as follows, by letting n_1 denote a maximum refractive index of said core and λ denote a transmission light wavelength thereof, so that the relative index difference thereof is denoted by

$$\Delta = \frac{n_1^2 - n_2^2}{2n_2^2} = \frac{n_1^2}{n_2^2}\Delta_o$$

and that a normalized frequency is denoted by

$$V = \frac{2\pi}{\lambda} a n_2 \sqrt{2\Delta} :$$

-continued

$$J_o = \int_0^{\infty} \frac{1}{X^2G^2(YV)} \exp\left\{-\frac{\left(\frac{r}{a}\right)^2}{X^2G^2(YV)}\right\} \left[1 - f(r) - \left(\frac{Y}{X}\right)^2\{1 - g(r)\}\right]^2 r\,dr \text{ where}$$

$$g(r) = \begin{cases} 0 & 0 \leqq r < Xa \\ 1 & Xa \leqq r \end{cases} \text{ and}$$

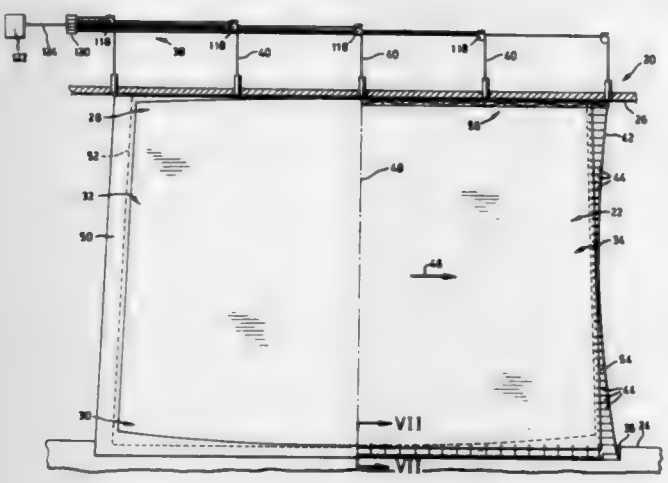
$$G(V) = \frac{1}{\sqrt{2}}(0.65 + 1.62\,V^{-1.5} + 2.88\,V^{-6}).$$

4,406,519

PROJECTION SCREEN ASSEMBLY

William C. Shaw, Streetsville, Canada, assignor to Imax Systems Corporation, Toronto, Canada

Filed Feb. 4, 1982, Ser. No. 345,840
Int. Cl.³ G03B 21/56
U.S. Cl. 350—117 10 Claims



1. A stowable projection screen assembly comprising:
a screen of flexible sheet material capable of adopting an extended configuration in which a surface of the screen is exposed for receiving a projected image, and a collapsed configuration in which the screen can be stowed, the screen having upper and lower margins and lateral side margins;
means for anchoring said lower margin of the screen;
lifting means adapted to be mounted in an overhead position above said anchoring means and to be releasably coupled to said upper margin of the screen, said lifting means being operable to raise the screen into said extended configuration and to tension the screen in a generally vertical direction; and,
lateral tensioning means comprising respective elongate tensioning elements each substantially co-extensive with and spaced from one of said lateral side margins of the screens, and a plurality of lateral tensioning members spaced along said lateral screen margins and extending between the screen and said elongate elements, said lateral tensioning members along each screen side margin being of progressively decreasing length in directions extending inwardly from said upper and lower margins of the screen so that the elongate tensioning elements each adopt the general shape of a catenary curve when the screen is extended, said elongate tensioning elements and lateral tensioning members being arranged so that tensioning of the screen in the vertical direction by said lifting means

will cause a consequent increase in tension in said elongate elements tending to flatten said catenary curves and tension the screen in opposed lateral directions.

4,406,520

BEAM SPLITTER OPTICAL SYSTEM OF SIGNAL PICKUP DEVICE

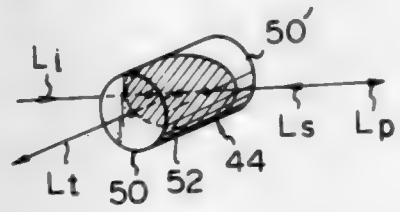
Katsuharu Sato, Tokorozawa, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

Filed Aug. 13, 1981, Ser. No. 292,714

Claims priority, application Japan, Aug. 14, 1980, 55-115605; Oct. 30, 1980, 55-156097; Oct. 31, 1980, 55-157157; Oct. 31, 1980, 55-157159

Int. Cl.³ G02B *27/10, 3/06, 5/30*

U.S. Cl. 350—173 **11 Claims**



1. An optical system for use in a signal pickup device, comprising a beam splitter prism having a predetermined path of light therethrough and comprising two component segments respectively having flat base surfaces held in contact with each other and forming therebetween a junction plane at a predetermined angle of 45 degrees to said path of light, said junction plane constituting one of a light polarization plane and a semi-reflective mirror plane and each of the component segments having an outwardly curved surface portion and in which said beam splitter is cylindrical in shape and has a circular cross section and in which each of said component segments has a center axis normal to said cross section and is truncated to have an elliptical end face inclined at said predetermined angle with respect to said center axis, the base surface of each of the component segments being constituted by said elliptical end face.

4,406,521

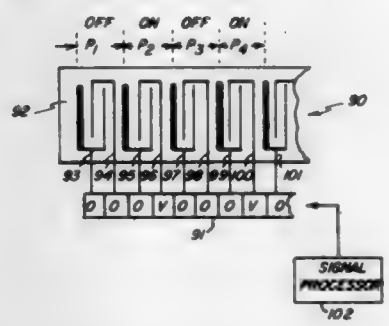
LIGHT VALVE IMAGING APPARATUS HAVING IMPROVED ADDRESSING ELECTRODE STRUCTURE

Jose M. Mir, Rochester, and Jerry R. Varner, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 29, 1981, Ser. No. 230,099

Int. Cl.³ G02F *1/03*

U.S. Cl. 350—392 **2 Claims**



1. In electronic imaging apparatus of the type having: (1) a light valve array including: (a) an electro-optic modulator comprising a panel of electro-optic material which is activatable between birefringent and isotropic states in response to the application and removal of an electric field, (b) electrode means defining a plurality of discrete, separately-addressable pixel regions and adapted to selectively apply an electric field across such pixel regions and (c) first and second crossed polarizers sandwiching said modulator, (2) means for directing light through said array and (3) control means for addressing the electrodes of such pixel regions in accordance with an image to be reproduced, the improvement wherein each of said pixel regions comprises a plurality of linear electrodes extending in a regularly spaced relation transversely across said panel, in a manner defining at least three intra-region gaps respectively between pairs of said plurality of electrodes, and wherein the intra-pixel electrodes of each pixel region have a width in the range of from about 25 microns to about 75 microns and wherein the boundary electrodes between pixel regions have a width greater than the width of the intra-pixel electrodes.

4,406,522

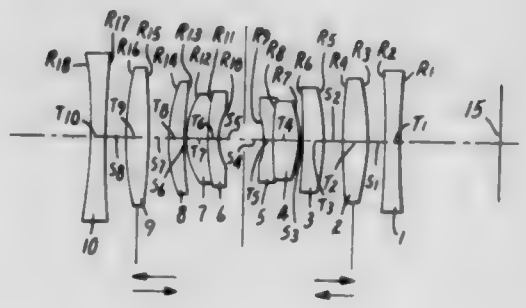
VARIABLE MAGNIFICATION LENS

Lawrence H. Conrad, N. Syracuse, N.Y., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 183,315, Sep. 2, 1980, abandoned. This application Apr. 1, 1981, Ser. No. 249,986

Int. Cl.³ G02B *9/64, 15/16*

U.S. Cl. 350—425 **3 Claims**



1. A variable magnification lens comprising a first lens component having a plurality of spherical lens elements including a negative lens element as the first element and a positive lens element as the second element, and a second lens component having a plurality of spherical lens elements, the penultimate lens element being a positive lens and the last element being a negative lens element, said negative lens elements and said positive lens elements being identical, means coupling said positive lens elements for simultaneous limited opposed movement to maintain spatial symmetry of the positive lens elements in relationship to said negative lens elements and to afford a magnification change of 1.7X in the lens, and an aperture stop being fixed between said lens components, said negative lens elements being fixed in relationship to said aperture stop.

4,406,523

COMPACT WIDE-ANGLE ZOOM LENS

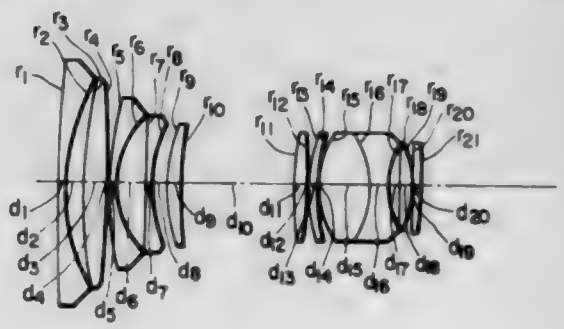
Sigetada Sato, and Sadao Okudaira, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 13, 1982, Ser. No. 339,242

Claims priority, application Japan, Jan. 14, 1981, 56-4433

Int. Cl.³ G02B *15/14*

U.S. Cl. 350—426 **3 Claims**



1. A high performance compact wide zoom angle lens, composed, in order from the object side, of a divergent front

lens group and a convergent rear lens group, wherein said front and rear lens groups are moved mechanically to thereby vary the overall focal length, said front lens group being composed, in order from the object side, of a first lens including a negative meniscus lens convex to the object, a second lens including a positive biconvex lens, a third lens including a negative meniscus lens convex to the object, a fourth lens including a negative lens and a fifth lens including a positive lens, and said rear lens group being composed of a sixth lens including a positive lens, a seventh lens including a positive meniscus lens convex to the object, an eighth lens including a biconvex positive lens, a ninth lens including a biconcave negative lens, a tenth lens including a positive lens and an eleventh lens including a positive lens, said ninth lens being cemented to said eighth lens, said wide angle zoom lens as a whole including eleven lens elements grouped into ten lens components and satisfying the following conditions:

$$1.1F_S < |f_a| < 1.5F_S \quad (1)$$

$$0.7F_S < L < 1.1F_S \quad (2)$$

$$2.3 < f_{3,4}/|f_a| < 2.9 \quad (3)$$

$$0.8 < f_{5,6}/f_a < 1.4 \quad (4)$$

$$1.64 < n_4 \quad (5)$$

$$5.5 < f_{8,9}/|f_a| < 10.0 \quad (6)$$

$$1.4 < f_{11,12}/f_b < 2.2 \quad (7)$$

$$0.6 < |f_{17}|/f_b < 0.95 \quad (8)$$

where

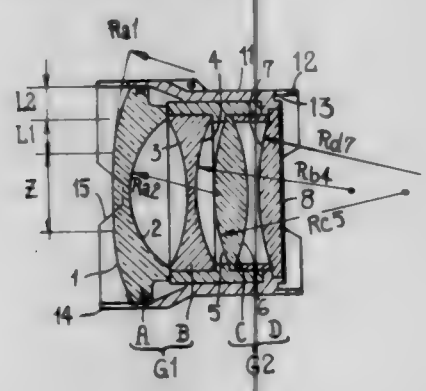
F_S is the minimum focal length of the overall lens system;
f_a is the focal length of the front lens group;
L is the air gap between the front and rear lens group at the minimum focal length of the overall focal length;
$f_{3,4}$ is the focal length of the second lens;
$f_{5,6}$ is the focal length of the third lens;
n_4 is the refractive index of the fourth lens at d-line;
$f_{8,9}$ is the focal length from the image-side surface of the fourth lens to the object-side surface of the fifth lens;
$f_{11,12}$ is the focal length of the sixth lens;
f_{17} is the focal length of the image-side surface of the ninth lens; and
f_b is the focal length of the rear lens group.

4,406,524

AFOCAL OPTICAL DEVICE

Eric Campiche, 8, Chemin des Villas, 1093 La Conversion, Vaud, Switzerland

Filed Aug. 5, 1980, Ser. No. 175,682
Claims priority, application Switzerland, Aug. 14, 1979, 7421/79
Int. Cl.³ G02B *3/00, 15/02*
U.S. Cl. 350—453 **4 Claims**



1. Removable afocal optical device for a picture taking objective which can be used in the air as well as in water and comprising a frontal divergent group (G1) and a convergent rear group (G2) each formed of two lenses (A,B,C,D), the radius of curvature (Rd8) of the rear face of the rear lens (D) of the rear group (G2) and the radius of curvature (Ra1) of the front face of the front lens (A) of the front group (G1) being finite and having the same sign; these two radii of curvature (Ra1; Rd8) being related by the following relation:

$$(0.8)\times(n_v/n_e)\times|(F2/F1)|\times Ra1 < Rd8 < (1.25)\times(n'_v/n_e)\times|(F2/F1)|\times Ra1$$

in which:

n_v is the refractive index of the material of the front lens A
n'_v is the refractive index of the material of the rear lens D
n_e is the refractive index of water
F1 is the focal length of the front diverging group G1
F2 is the focal length of the rear group G2

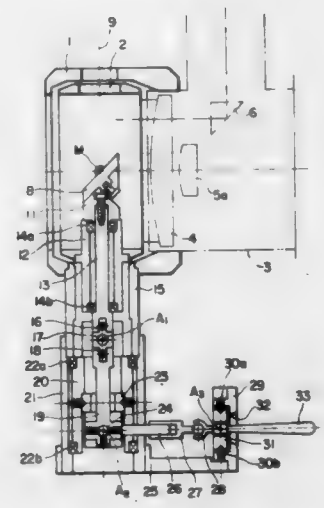
whereby the object field of the assembly comprising the objective with said device attached is greater than that of the objective along and said assembly can be used either in the air or underwater without modifying its focussing.

4,406,525

LIGHT BEAM SCANNING DEVICE

Kiyoshi Itoh, Fukuoka, and Tetuo Kamoshita, Toda, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1980, Ser. No. 205,024
Claims priority, application Japan, Nov. 19, 1979, 54-149782
Int. Cl.³ G05D *25/00*
U.S. Cl. 350—486 **6 Claims**



1. A light beam scanning device comprising:
a movable mirror positioned on an optical axis of an objective lens in an operating microscope;
a mirror holder attached to said movable mirror for holding said movable mirror, said mirror holder being rotatable around a vertical and a horizontal axis passing through a center of said movable mirror, said mirror holder being smaller than said objective lens and being dimensioned so that light rays passing through said objective lens and forming an effective field of vision of said microscope pass outside an outer perimeter of said mirror holder;
an outer cylinder having one end disposed adjacent to said mirror holder;
a pivot frame fixedly secured to said outer cylinder in such a manner as to be rotatable around said horizontal axis passing through said center of said movable mirror;
a pivot holder holding said pivot frame; and
means for rotating said mirror holder around said horizontal and vertical axis so as to rotate said mirror and reflect an incident light beam in a desired direction.

4,406,526
FOCUSING OF OPTICAL VIEWING APPARATUS

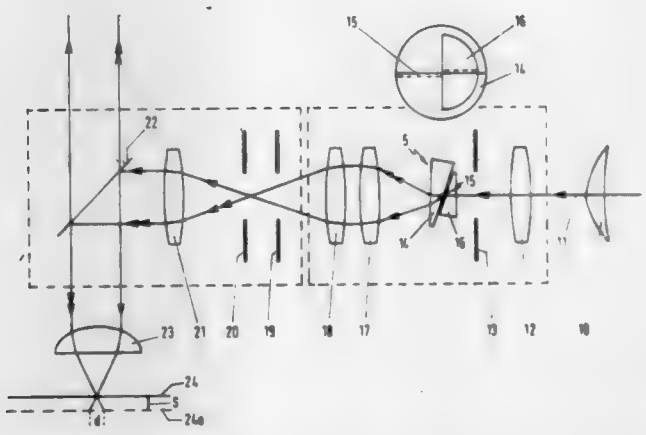
Francis H. Smith, York, England, assignor to Vickers Limited, England

Filed May 11, 1981, Ser. No. 262,696

Claims priority, application United Kingdom, May 19, 1980, 8016517

Int. Cl.³ G02B *21/06*

U.S. Cl. 350—524 **8 Claims**



1. An optical imaging apparatus comprising an objective lens capable of being focussed upon a reflective viewed surface, a field-illuminating plane located at a long conjugate of said objective lens, means for producing at least two light beams which diverge mutually at a acute angle in a given plane from different localised regions of said field illuminating plane, at least one fiducial line provided at said field illuminating plane and extending transversely of the plane of divergence of said light beams, and means for adjusting the relative distance between said objective lens and said reflective surface in order to render the images of said fiducial line formed by the objective lens uniquely co-linear at a short conjugate of the objective lens in the vicinity of said reflective surface.

4,406,527
METAL FRAME FOR EYEGLASSES

Kurt Schönhut, Kolomanstrasse 41, D-7070 Schwäbisch Gmünd-Wetzgau, Fed. Rep. of Germany

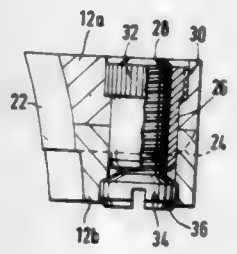
Continuation of Ser. No. 944,671, Sep. 22, 1978, Pat. No. 4,277,151. This application Mar. 18, 1981, Ser. No. 244,937

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1977, 2749796

The portion of the term of this patent subsequent to Jul. 7, 1998, has been disclaimed.

Int. Cl.³ G02C *1/08, 5/22*

U.S. Cl. 351—153 **9 Claims**



1. A metal frame for eyeglasses comprising:
- a pair of rims, each of which is configured to surround and support an eyeglass lens;
- a pair of temple side arms;
- a pair of locking bars, each of which has a bore extending therethrough and is secured to
- one of said temple side arms and one of said rims, said locking bar and said rim to which it is secured being separated by a separation slot so as to divide said rim and said bar into first and second rim segments and first and second locking bar segments respectively, said second locking bar segment having an abutment adjacent to an end thereof distal from said first locking bar segment;
- a metal jacket having an internally threaded bore which is, in turn, received in at least said bore of said locking bar encompassed by said first locking bar segment thereof and which is coupled to said first locking bar segment to prevent movement thereof, relative to said first locking bar segment, towards said second locking bar segment; and
- a locking bar screw having a head portion and a threaded shaft, the former of which is in abutting arrangement with said abutment of said second locking bar segment and the latter of which is inserted through said distal end of said second locking bar segment so as to be in threaded engagement with said bore of said jacket and so as to thereby detachably secure said first and second locking bar segments together.

4,406,528
MOTION PICTURE APPARATUS

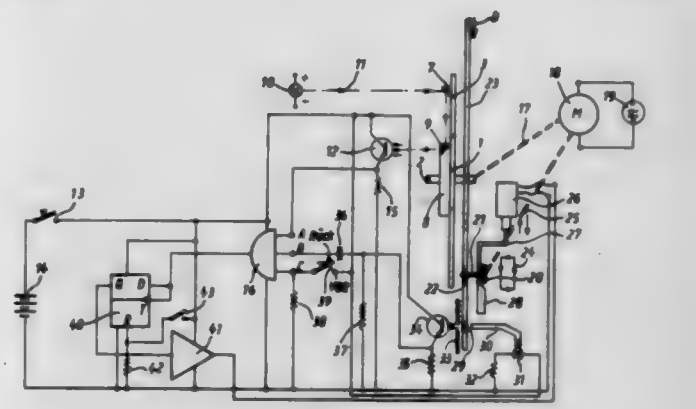
Horst Rossbach, Eichenau, Fed. Rep. of Germany, assignor to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,168

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1980, 3031305

Int. Cl.³ G03B *21/38*

U.S. Cl. 352—169 **21 Claims**



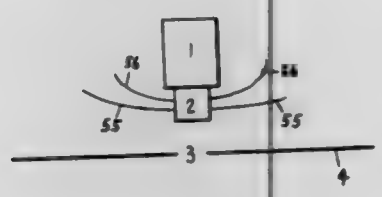
1. Motion picture apparatus comprising
- an electric drive device;
- a rotary disc shutter actuated by the electric drive device;
- a shutter sector forming part of the rotary shutter;
- a claw mechanism controlled by the electric drive device and providing for transport of a film;
- an electromagnet to provide for stopping the film in position;
- a solenoid plunger associated with the electromagnet and suitable for disengaging the claw transport mechanism after a frame transport phase;
- a position signal generator providing a shutter position signal depending on the position of the shutter sector;
- a marking signal generator for generating a signal depending on the position of a marking on the film;
- a source of control voltage;
- a first switch closed during advancing motion of the film and open during reverse motion of the film;
- a cycled memory stage having a reset input connected to said source of control voltage via a second switch; and
- an AND-gate having an output and three inputs, said output being connected to the electromagnet via said cycled memory stage, a first input being connected to the position signal generator, a second input being connected to the marking signal generator, and a third input being connected via said first switch to said source of control voltage for providing full potential to the third input of the AND-gate while the first switch is in closed position.

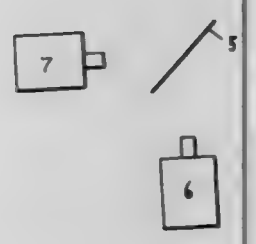
4,406,529

TRAVELLING-MATTE PROCESSES

Dennis R. Anthony, 3116 Kelton Ave., Los Angeles, Calif. 90034

Filed Jan. 15, 1982, Ser. No. 339,489
Int. Cl.[3] G03B *21/26*
U.S. Cl. 353—30 3 Claims





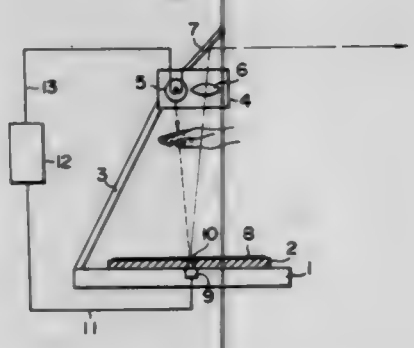
1. A method of inserting the image of a subject into the image of a separately photographed background to create a composite image, which method comprises placing an illuminated film of the subject behind a reflective countermatte of the said subject and projecting the background image onto the front of the countermatte.

4,406,530

REFLECTING TYPE OVERHEAD PROJECTOR WITH AUTOMATICALLY VARIABLE SAFETY ILLUMINATION

Takanori Hasegawa, Hachioji, and Susumu Oshio, Tokyo, both of Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Apr. 23, 1982, Ser. No. 371,282
Claims priority, application Japan, May 12, 1981, 56-70991
Int. Cl.[3] G03B *21/06*
U.S. Cl. 353—66 7 Claims



1. A reflecting type overhead projector, for projecting an image of an at least partly transparent original upon a screen, comprising:

a reflecting table for placing said original thereupon;

a light source lamp for projecting light rays towards said reflecting table, for illuminating said original when it is thus placed upon said reflecting table;

a projection lens for projecting an image of said original, when it is thus placed upon said reflecting table and illuminated by said light source lamp, upon said screen;

a photosensitive element in the vicinity of said reflecting table for responding to the intensity of light rays which said photosensitive element receives from said light source lamp;

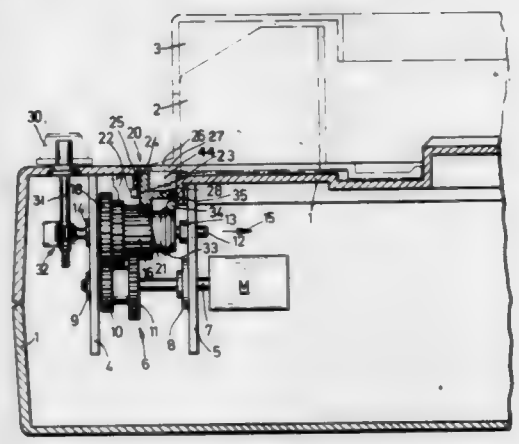
and a control circuit which receives a signal from said photosensitive element, and which controls the intensity of the light emitted by said light source lamp; and which, when said light source lamp is being supplied with full power so as to light it more brightly, and then the intensity of light radiation received by said photosensitive element drops substantially, supplies part power to said light source lamp so as to light it less brightly; and, when said light source lamp is being supplied with part power so as to light it less brightly, and then the intensity of light radiation received by said photosensitive element rises substantially, supplies full power to said light source lamp so as to light it more brightly.

4,406,531

DRIVE FOR A CIRCULAR MAGAZINE OF A SLIDE PROJECTOR

Leopold Karl, Würzburg; Manfred Bätz, Eibelstadt; Herbert Wundling, Ochsenfurt, and Ralph Weiss, Marktbreit, all of Fed. Rep. of Germany, assignors to Kindermann & Co. GmbH, Ochsenfurt am Main, Fed. Rep. of Germany

Filed Aug. 28, 1981, Ser. No. 297,327
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1980, 3033726
Int. Cl.[3] G03B *23/04*
U.S. Cl. 353—117 9 Claims



1. A drive system for a circular magazine of a slide projector comprising:

a drive ring rotatably mounted on the housing of the projector;

an electrical drive motor;

a variable gear means coupling said motor to said drive ring for stepwise rotation of said drive ring in uniform, discrete steps having a desired circumferential length;

means for coupling said drive ring to said circular magazine; and

means connected to said variable gear means for selectively varying said circumferential length.

4,406,532

WIDE ANGLE COLOR PHOTOGRAPHY METHOD AND SYSTEM

Eric M. Howlett, 16 Berwick Rd., Newton Centre, Mass. 02159

Filed Mar. 25, 1980, Ser. No. 133,796
Int. Cl.[3] G03B *35/08;* G02B *17/06*
U.S. Cl. 354—114 22 Claims

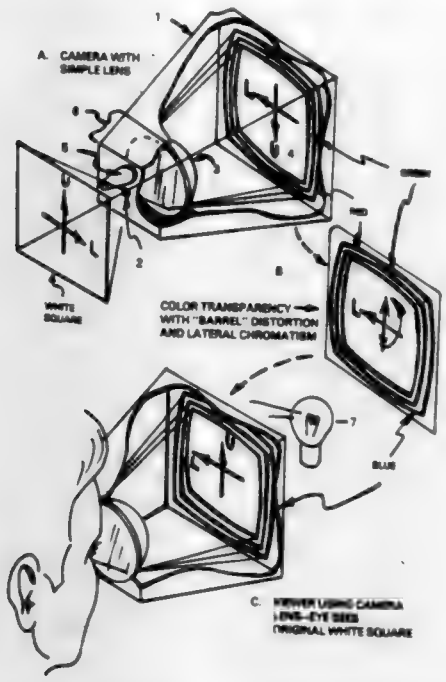
5. A color imaging system, comprising:

(a) first means, including a plurality of lens elements, for forming a first image of a scene in object space, such scene viewed from a given location, while introducing a predetermind chromatic difference in lateral magnification;

(b) a heterochromatic light recording medium for storing the first image so formed; and

(c) second means, for forming a second image from the

stored image, while introducing a chromatic difference in lateral magnification that is opposite to the predetermined



chromatic difference in lateral magnification introduced by the first means.

4,406,533

FLASH PHOTOGRAPH SYSTEM

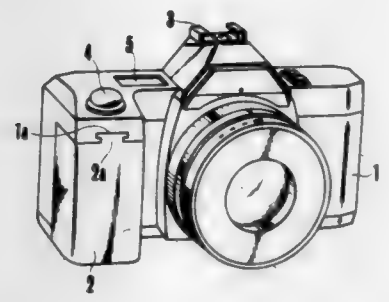
Hiroshi Yamamoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1981, Ser. No. 310,872

Claims priority, application Japan, Oct. 14, 1980, 55-143454

Int. Cl.³ G03B *15/05, 17/02*

U.S. Cl. 354—145 **7 Claims**



1. A camera usable with a flash device, comprising:

(a) an accessory shoe part for flash photography arranged to permit the shoe part of said flash device to be attached thereto and detached therefrom; and

(b) a holding part for stowing said flash device, said holding part being arranged to have the shoe part of the flash device attachable thereto and detachable therefrom, said flash device being thus arranged to be stowable in one unified body with the camera when attached to said holding part.

4,406,534

ARRANGEMENT FOR TRANSFERRING PHOTOSENSITIVE MATERIAL FROM CASSETTES INTO A HANDLING MACHINE

Wolfgang Viehrig, Munich, and Willy Engels, Leverkusen, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

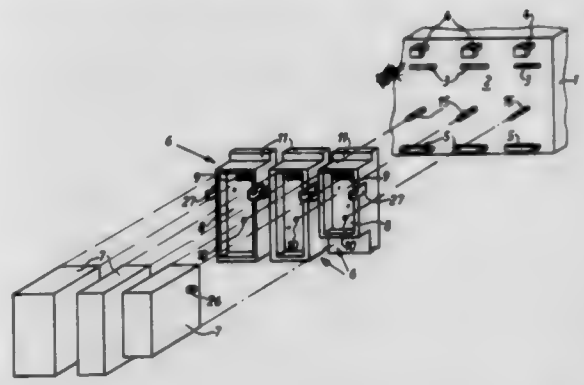
Filed Aug. 26, 1981, Ser. No. 296,521

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1980, 3034085

Int. Cl.³ G03D *13/00*

U.S. Cl. 354—310 **11 Claims**

1. In an arrangement for transferring photosensitive materials from cassettes of various types having different external configuration into the interior of a handling machine for the photosensitive materials, a combination comprising an external wall of the machine having at least one inlet slot for the passage of the photosensitive materials therethrough; a plurality of support members exchangeably juxtaposable in a light-impermeable manner with a region of said external wall surrounding said inlet slot and each having an opening registering



with said inlet slot in the juxtaposed position and a light-sealing portion compatible with one of the cassette types and preventing ambient light from reaching said opening when in contact with the respective cassette, and each including means for holding the respective cassette in contact with said sealing portion thereof; and means for mounting the respective support member at said region of said external wall.

4,406,535

DEVELOPMENT APPARATUS

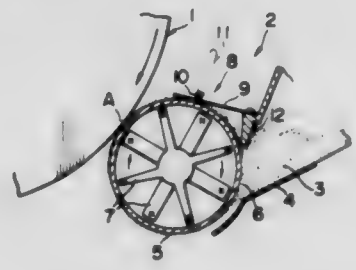
Koji Sakamoto, Tokyo, and Nobuyuki Yanagawa, Chigasaki, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Oct. 28, 1981, Ser. No. 315,734

Claims priority, application Japan, Nov. 1, 1980, 55-154046; Feb. 20, 1981, 56-22923[U]

Int. Cl.³ G03G *15/00, 15/08*

U.S. Cl. 355—3 DD **20 Claims**

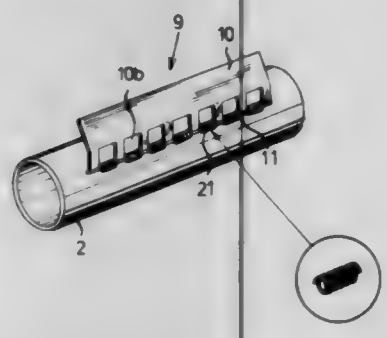


1. In a development apparatus for developing a latent electrostatic image formed on a latent electrostatic image bearing member to a visible image, having a developer transportation means for transporting a developer to the latent electrostatic image for developing the same to a visible image, and a developer layer thickness regulating means for regulating the thickness of a developer layer on said developer transportation means, the improvement wherein said developer layer thickness regulation means comprises a pressure application member for applying pressure to the developer layer on said developer transportation means by the magnetic force exerted on said pressure application member towards said developer transportation means, said pressure application member being supported so as to be movable in the direction substantially normal to the surface of said developer transportation means.

4,406,536
DEVELOPING DEVICE

Kohji Suzuki, Yokohama; Toshio Kaneko; Hajime Oyama, both of Tokyo, and Shigekazu Enoki, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Feb. 3, 1982, Ser. No. 345,543
Claims priority, application Japan, Feb. 4, 1981, 56-14407; Feb. 4, 1981, 56-14408; Feb. 4, 1981, 56-14409; Feb. 4, 1981, 56-15434; Feb. 4, 1981, 56-15435; Feb. 4, 1981, 56-15436
Int. Cl.[3] G03G *15/00, 15/08*
U.S. Cl. 355—3 DD
27 Claims



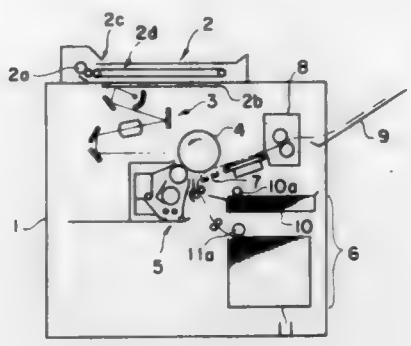
1. In a magnetic brush type developing device comprising:
developing agent holding means rotatably supported and spaced apart a small distance from a latent image carrier;
means for feeding a one-component system developing agent to said developing agent holding means;
means for regulating the thickness of a layer of the developing agent fed to said developing agent holding means;
magnetic field generating means mounted on said developing agent holding means for carrying out developing by bringing the regulated layer of the developing agent into face-to-face relation to the latent image carrier; and
scraper means provided with a magnetic member for scraping the developing agent off the developing agent holding means after completion of developing and before a fresh supply of developing agent is fed to the developing agent holding means; the improvement comprising:
nonmagnetic plate formed with a plurality of stays of the comb-shape mounted on said scraper means on a side thereof juxtaposed against said developing agent holding means, said plurality of stays having attached to the forward end thereof a magnetic wire arranged to be located in a magnetic field formed by a magnet located in said developing agent holding means.

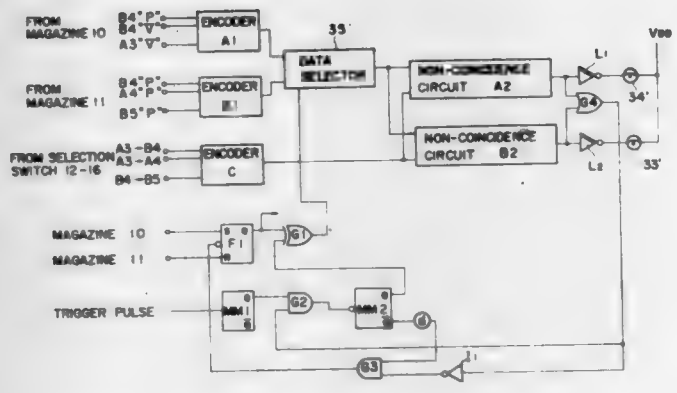
4,406,537
REPRODUCTION SYSTEM WITH A VARIABLE MAGNIFYING FUNCTION

Goro Mori, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Mar. 30, 1981, Ser. No. 249,063
Claims priority, application Japan, Apr. 7, 1980, 55-46585[U]
Int. Cl.[3] G03G *15/14, 15/22*
U.S. Cl. 355—14 SH
17 Claims

1. A system for determining and indicating when the selected size and orientation of copy papers to be used in a copying machine are not proper, comprising:
storing means for storing a quantity of copy papers;
selection means for selecting a desired size and orientation of copy papers needed to be used;
comparing means for comparing the size and orientation of said stored copy papers with the size and orientation selected by said selection means;
a size indicator means for indicating any lack of correspondence between the size of said stored copy papers and the size selected by said selection means; and
an orientation indicator means for indicating any lack of correspondence between the orientation of said stored



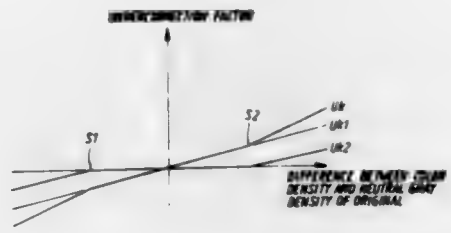


copy papers and the orientation selected by said selection means.

4,406,538
METHOD AND ARRANGEMENT FOR AUTOMATIC EXPOSURE CONTROL IN COLOR COPIERS

Rudolf Bühler, Munich, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 22, 1981, Ser. No. 333,469
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048729
Int. Cl.[3] G03B *27/73*
U.S. Cl. 355—37
38 Claims



1. An exposure control method for color copying, particularly for use in automatic exposure control of photographic color copiers, comprising the steps of:
(a) determining the average color density of a predetermined color of an original to be copied;
(b) determining the average neutral gray density of said original;
(c) establishing the deviation of said color density from said neutral gray density; and
(d) controlling the exposure of said original in said predetermined color during copying in dependence upon said

deviation using a correction factor from a graph of correction factor versus deviation having at least one change in slope.

4,406,539

APPARATUS FOR AUTHENTIC REPRODUCTION OF ORIGINAL BASE DOCUMENT

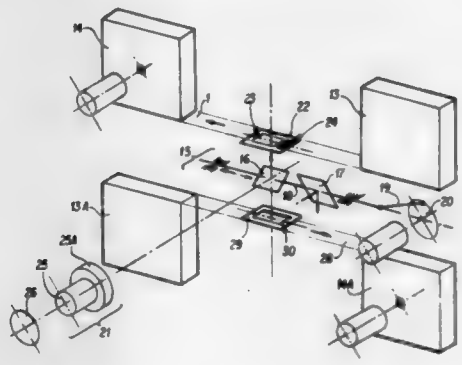
Jean P. Chamoux, 67, rue de Miromesnil, 75008 Paris, France

Filed Mar. 10, 1981, Ser. No. 248,801

Claims priority, application France, Apr. 2, 1980, 80 07450

Int. Cl.³ G03B *27/54*

U.S. Cl. 355—43 **10 Claims**



1. Apparatus for making authenticatable reproductions of original documents, said apparatus consisting of a compact unit able to be installed in ambient light, and comprising a source of white light, a source of black light operating continuously, a light tight film advance mechanism with feed and take-up magazines, and a single optical system serving to take at least one picture under white light, and a picture under black light, all on a same light-sensitive support or film, so as to obtain on said support a conventional microimage that will assure legibility and use of the information contained in the original document being micrographed, and an authenticating microimage showing every detail of the original document through specific fluorescent radiation processes.

4,406,540

APPARATUS FOR USE IN FLAMELESS ATOMIC ABSORPTION SPECTROSCOPY

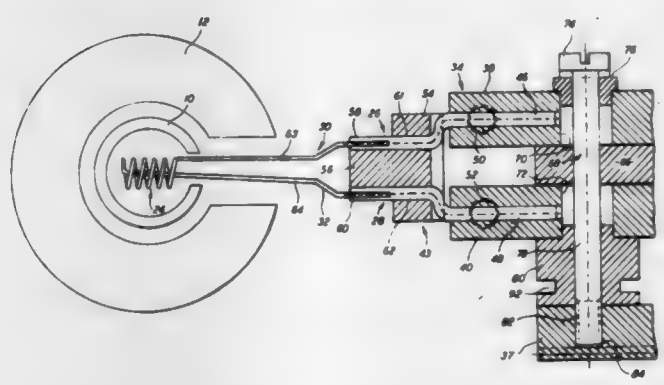
Klaus Grossman, Owingen; Rolf Tamm, Salem, and Toma Tomoff, Uberlingen, all of Fed. Rep. of Germany, assignors to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed Mar. 3, 1981, Ser. No. 239,934

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009794

Int. Cl.³ G01N *1/00, 21/74*

U.S. Cl. 356—36 **7 Claims**



1. Apparatus useful for introducing a sample into a graphite tube in flameless atomic absorption spectroscopy, said apparatus comprising:

an electrically conducting sample carrier, said carrier being insertable into said graphite tube and having electrical connections; said carrier being connected to two electrically conducting legs, said legs extending side-by-side and being retained, with electrical insulation, on a slide, said slide being in a guide member substantially parallel to said legs; said legs passing through and being retained in an insulating member, said member being a ceramic body;

rack and pinion means, said rack extending substantially parallel to said guide member, for transporting said slide, said means being driven by a servomotor;

a pair of parallel contact bars on said slide, said contact bars being connected to current supply connectors, said legs being clamped to said contact bars by clamping screws; and

means for controllably heating said carrier by passing an electrical current therethrough whereby sample material on said carrier can be dried and thermally decomposes outside said graphite tube.

4,406,541

ASSEMBLY USEFUL WITH AN ATOMIC SPECTROMETER

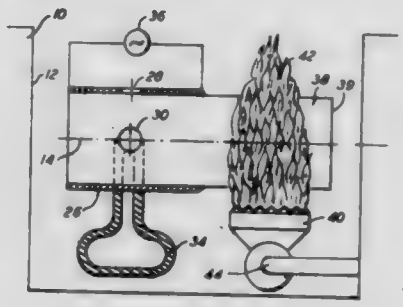
Toma Tomoff, Uberlingen; Rolf Tamm, Salem; Bernhard Huber, Uberlingen, all of Fed. Rep. of Germany, and Alan Walsh, Brighton, Australia, assignors to The Perkin-Elmer Corp., Norwalk, Conn. and Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed Dec. 11, 1980, Ser. No. 217,265

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1979, 2950105

Int. Cl.³ G01N *21/72, 21/74*

U.S. Cl. 356—312 **2 Claims**



1. An assembly for use in an atomic absorption spectrometer having a chamber through which passes a measuring beam and in which an atomization means is disposed, said assembly comprising:

at least two atomization means fixedly installed in said chamber;

said atomization means includes a graphite tube, said tube being disposed in the path of said measuring beam, and having a sample opening for introducing a sample to be atomized, said opening connecting to a means for generating volatile hydrides of a consituent of said sample, said hydrides so generated being passed into said tube through said opening connection by a protective gas flow whereby said graphite tube is operable as a hydride measuring cuvette; said tube also including a continuous slot in a vertical plane, said slot being proximate one end of said graphite tube and extending over a part of the length thereof, said opening for introducing said sample and said connection for said hydrides being provided in the non-slotted part of said graphite tube;

a burner positioned such that the flame therof extends into said slot whereby said measuring beam passes therethrough; and

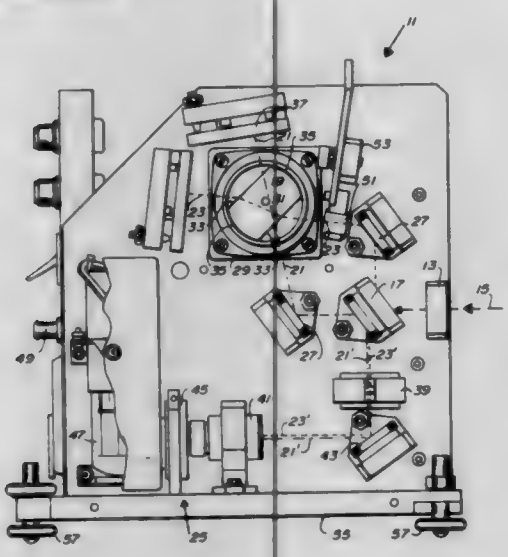
means for passing a heating current through said non-slotted part of said graphite tube.

4,406,542

RAPID SCANNING AUTOCORRELATION DETECTOR

Richard D. Boggy, Milpitas; Richard H. Johnson, Cupertino; John M. Eggleston, Stanford, and Carl W. Schulthess, Mission Viejo, all of Calif., assignors to Spectra-Physics, Inc., San Jose, Calif.

Filed Jul. 31, 1981, Ser. No. 288,859
Int. Cl.[3] G01B 9/02
U.S. Cl. 356—345 20 Claims



1. A method of producing autocorrelation traces of laser pulses of short duration, said method comprising,

splitting an input beam of pulsed laser light into first and second separate beams,

positioning a rotatable refractive, light transmissive block in the paths of the first and second separate beams, so that the beams enter the block through one face and exit through the opposite face,

rotating the block to change the angle at which the beams pass through the block to thereby change the travel time of the beams,

detecting the difference in travel time between the first and second beams by a nonlinear crystal which transmits an output whose intensity varies in response to the amount of overlap of the pulses from the first and second separate beams, and

measuring the intensity of the output of the nonlinear crystal for use in display on an oscilloscope.

4,406,543

HIGH CONTRAST FLATNESS INTERFEROMETER

Michael H. Nemiroff, Del Mar, Calif., and Chris C. Bowman, Pittsburgh, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 69,739, Aug. 27, 1979, abandoned. This application Jul. 17, 1981, Ser. No. 284,366
Int. Cl.[3] G01B 11/14, 11/30
U.S. Cl. 356—359 6 Claims

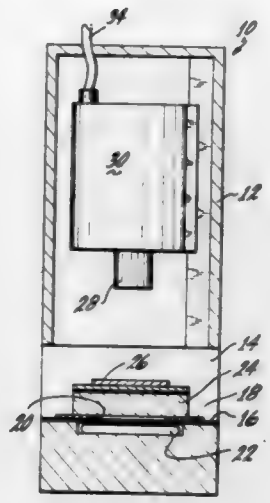
1. An optical interferometer for indicating the flatness of a highly transmissive and relatively unflat test surface having a reflectivity of only 0.05–0.15, said interferometer comprising:

a monochromatic light source;

a single optical flat having a relatively flat reference surface;

means for directing light from said light source through said reference surface and then through said test surface when said surfaces contact each other except for slight spaces that occur due to the unflatness of said test surface to produce an interference pattern;

said reference surface having a reflectivity for said light within the range of 0.30–0.95 to thereby produce said interference pattern with a contrast ratio of at least 2.0, a first order of transmission through said test surface and



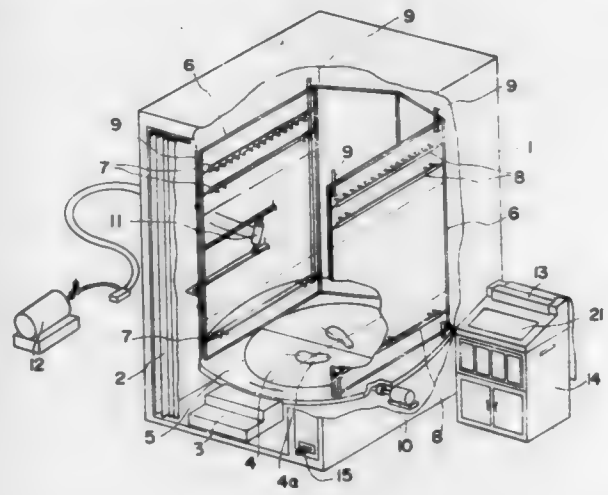
reference surface of at least 0.05, and a nearly constant fringe half-width ratio of at least 0.2.

4,406,544

METHOD AND APPARATUS FOR MEASURING HUMAN BODY OR THE LIKE

Munekazu Takada, Uji, and Toshio Esaki, Amagasaki, both of Japan, assignors to Unitika, Ltd., Japan

Filed Feb. 17, 1981, Ser. No. 234,781
Claims priority, application Japan, Feb. 19, 1980, 55-19924
Int. Cl.[3] G01B 11/24; G02B 27/17
U.S. Cl. 356—376 16 Claims



1. A method of measuring the size of the whole or a specified portion of a human body or like body comprising:

positioning the body in a still posture between at least one elongate light projecting means for simultaneously projecting parallel rays and at least one elongate light receiving means opposed to the light projecting means, said light projecting means and light receiving means having a length greater than the width of the body;

rotating the light projecting means and the light receiving means around the body through a specified overall angle but alternately at a high speed through a smaller angle and at a lower speed through a negligible angle,

translationally reciprocating the light projecting means and the light receiving means in a direction parallel to the axis of said rotation of these optical means in a manner such that the optical means are moved one way while they are rotating at said lower speed;

detecting an actual-size silhouette pattern of the body by intermittently causing the light receiving means to receive rays from the light projecting means while these optical

means are translationally moved one way during each lower speed rotation thereof; and

analyzing the actual-size silhouette pattern as data by a computer.

4,406,545

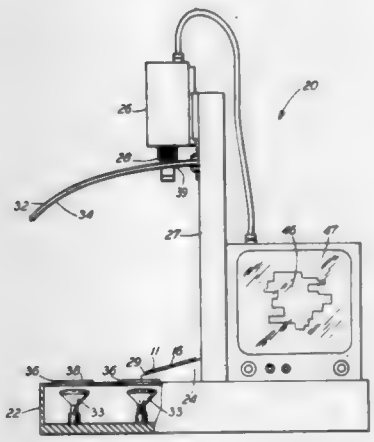
METHODS OF AND APPARATUS FOR MEASURING SURFACE AREAS

Liber J. Montone, Reading, and Joseph E. Yokitis, Sinking Spring, both of Pa., assignors to Western Electric Company, Inc., New York, N.Y.

Filed May 7, 1981, Ser. No. 261,399

Int. Cl.³ G01B *11/28*; G01N *21/47, 21/55*

U.S. Cl. 356—380 **11 Claims**



1. A method of identifying a first surface area having a light absorbency different from that of adjacent, second surface areas which comprises:

illuminating each incremental area of said first surface area and adjacent surface areas with diffuse light incident through a predetermined sectorial angle;

and

opto-electronically scanning said surface areas, whereby said first surface area becomes distinguished from adjacent surface areas by the difference of light absorbency, and shadow effects due to any waviness of said surface areas are minimized by substantially uniform light dispersion within said sectorial angle.

4,406,546

PHOTOELECTRIC DETECTING DEVICE

Akiyoshi Suzuki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 31, 1980, Ser. No. 173,889

Claims priority, application Japan, Aug. 6, 1979, 54-100039

Int. Cl.³ G01B *11/00*

U.S. Cl. 356—400 **3 Claims**

1. A photoelectric detecting apparatus for reading a pattern on a first sheet-like object and a pattern on a second sheet-like object, comprising:

a light source projecting a polarized light beam therefrom;

a scanning optical system for scanning the light beam on said first sheet-like object;

an imaging system for forming the image of said first sheet-like object on said second sheet-like object with the scanning light beam;

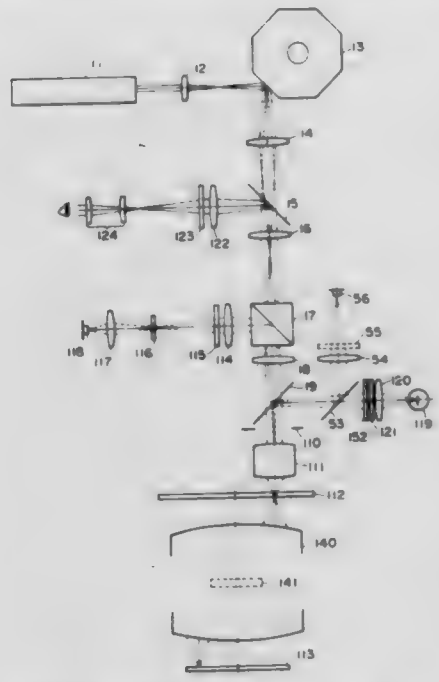
means disposed between said first sheet-like object and said second sheet-like object for varying the polarized condition of the scanning beam;

first photoelectric means for receiving and detecting the reflected light from one of said sheet-like objects;

second photoelectric means for receiving and detecting the reflected light from the other of said sheet-like objects;

a polarization beam splitter disposed between said light source and first sheet-like object for directing said scanning light to said first sheet-like object and for directing the light reflected from said second sheet-like object to said first photoelectric means;

a beam splitter disposed between said light source and said first sheet-like object for directing said scanning light to said first sheet-like object and for directing the light reflected therefrom to said second photoelectric means; and



polarization means disposed between said first sheet-like object and said second photoelectric means, for directing only the light from the first sheet-like object to said second photoelectric means.

4,406,547

APPARATUS FOR EFFECTING AUTOMATIC ANALYSIS

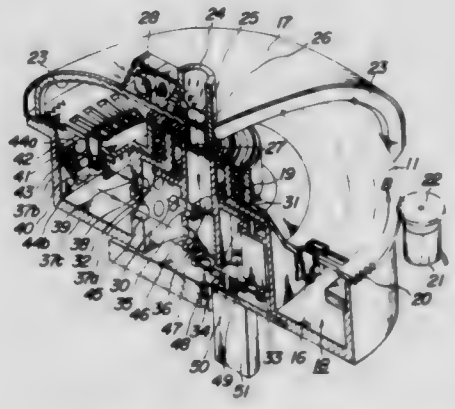
Takayuki Aihara, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Aug. 6, 1980, Ser. No. 175,440

Claims priority, application Japan, Aug. 7, 1979, 54-99841; Aug. 7, 1979, 54-99842; Aug. 7, 1979, 54-99843

Int. Cl.³ G01N *21/25*

U.S. Cl. 356—414 **21 Claims**



1. An apparatus for effecting automatic analysis of test liquids contained in respective cuvettes comprising:

a cuvette turntable for supporting a number of cuvettes along a circle, said cuvettes being rotatable about a center axis of the circle;

means for rotating intermittently the cuvette turntable about said center axis at a given repetition rate;

a fixed light source arranged to project a measuring light beam along the center axis;

a rotatable first optical member rotatable about said center axis for deflecting radially with respect to the cuvette turntable the measuring light beam toward the cuvettes held in the cuvette turntable;

a plurality of second optical members arranged at a plurality

of positions outside the cuvette travelling circle for receiving the measuring light beam transmitted through the cuvettes and deflecting the light beam toward the center axis;

a third optical member arranged at the center axis integrally with the first optical member for deflecting the measuring light beam along the center axis;

a single light detector arranged on the center axis to receive the light beam deflected by the third optical member; and

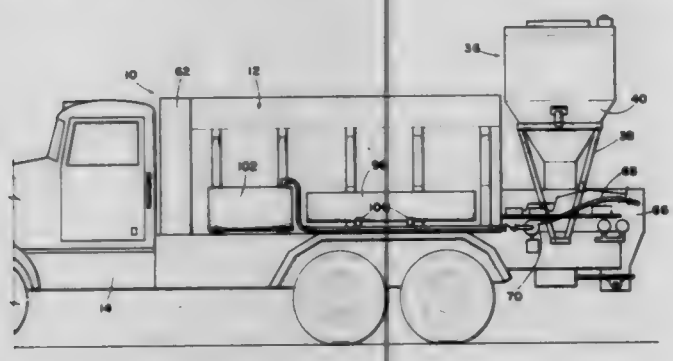
means for rotating the first and third optical members about the center axis at a higher rate than that of the cuvette turntable whereby, while the cuvette turntable is stopped, the cuvettes situated at the positions corresponding to the second optical members are successively scanned by rotating the first and third optical members.

4,406,548

MOBILE CONCRETE MIXING APPARATUS

Paul M. Haws, 3144 S. 57th W. Ave., Tulsa, Okla. 74107

Filed Apr. 2, 1982, Ser. No. 364,199
Int. Cl.³ B28C *5/34, 7/06, 7/12*
U.S. Cl. 366—8 **1 Claim**



1. A method of producing concrete comprising the steps of initially premixing a quantity of sand and rock to provide a substantially homogeneous moisture content and temperature for the mixture, delivering a preselected quantity of the sand and rock mixture to a source of dry cement, discharging a preselected quantity of the dry cement onto the sand and rock mixture in accordance with a selected ratio therebetween, applying water to the cement and sand and rock mixture for a prewetting thereof, subsequently directing the prewetted cement and sand and rock mixture into a receiving chamber, moving the mixture from the receiving chamber into a first mixing chamber, forcing the mixture from the first mixture chamber into a conveying chamber by the movement of subsequent quantities of the mixture, forcing the mixture into at least one more mixing chamber by the movement of said subsequent quantities of the mixture, and discharging the mixture for its intended use.

4,406,549

ELECTRONIC TIMEPIECE WITH ALARM AND VOICE ANNOUNCEMENT FUNCTION

Naoki Takahashi, Futsuse, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1981, Ser. No. 244,777
Claims priority, application Japan, Mar. 18, 1980, 55-33381
Int. Cl.³ G04B *21/08*
U.S. Cl. 368—63 **2 Claims**

1. An electronic timepiece with an alarm function and voice announcement function, comprising:

time count means for counting reference signals to obtain time-data;

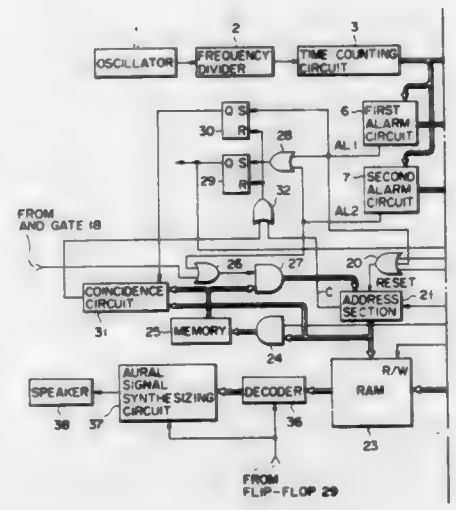
alarm time storing means coupled to said time count means for storing a plurality of alarm time data and for outputting first and second alarm coincidence signals when a coincidence occurs between the stored alarm time data and the time data obtained by said time count means; and

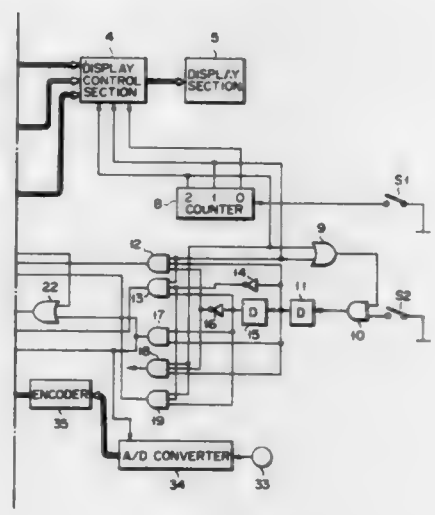
voice producing means coupled to said alarm time storing means and responsive to said first and second alarm coincidence signals for producing a voice announcement which is initially stored, said voice producing means comprising:

voice converting means for converting externally applied voice sounds to voice codes;

voice code storing means coupled to said voice converting means for sequentially storing the voice codes corresponding to a given voice announcement in response to address designation signals;

voice signal outputting means coupled to said voice code storing means and to said alarm time storing means for





reading out voice codes from said voice code storing means responsive to the outputting of an alarm coincidence signal to produce a voice announcement;

final address storing means for storing a final address of the voice codes corresponding to said given voice announcement which are read out from said voice code storing means when an alarm coincidence signal is outputted; and

address control means for effecting an address designation with respect to said voice code storing means corresponding to the address following said final address stored in said final address storing means for enabling outputting of said voice codes.

4,406,550

TEMPERATURE MONITORING AND UTILIZATION SYSTEM

Michael J. Gray, Phoenix, Ariz., assignor to Lane S. Garrett, Scottsdale, Ariz.

Filed Jan. 26, 1981, Ser. No. 228,798
Int. Cl.³ G01K *3/02, 7/14*
U.S. Cl. 374—110 **7 Claims**

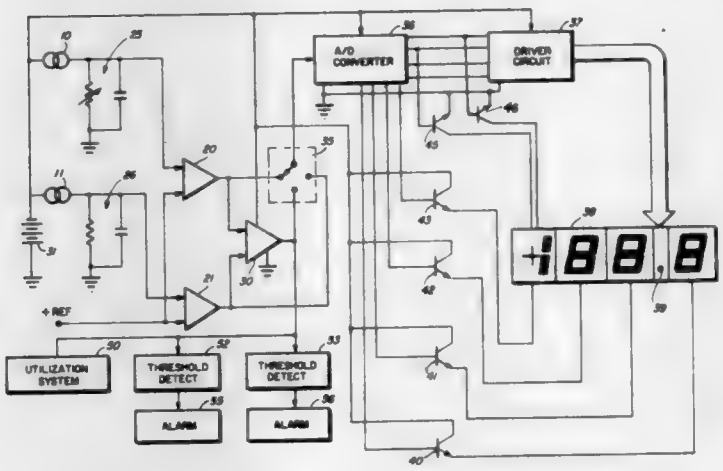
1. A system for monitoring relatively low temperatures,

such as ambient temperatures of the type commonly found in buildings and solar heating systems, at a plurality of points and utilizing the temperature data thus monitored including in combination:

a first temperature sensor means, at least a portion of which is located in a first zone, the temperature of which is to be monitored, for producing a first signal on an output terminal thereof representative of the temperature being monitored in said first zone;

a second temperature sensor means, at least a portion of which is located in a second zone, the temperature of which is to be monitored, for producing a second signal on an output terminal thereof representative of the temperature being monitored in said second zone;

a comparison amplifier means having first and second input terminals connected respectively to the output terminals of said first and second temperature sensor means and having an output terminal, said comparison amplifier means producing an output signal on the output terminal thereof representative of the difference in the temperatures sensed by said first and second temperature sensor means, wherein the output of said comparison amplifier means further has a positive value when said first temperature sensor means is sensing a higher temperature than said second temperature sensor means and has a negative value when said first temperature sensor means is sensing



a lower temperature than said second temperature sensor means;

switch means having an output terminal and at least first, second, and third input terminals, said first input terminal of said switch means coupled to the output terminal of said first temperature sensor means, the second input terminal of said switch means coupled to the output terminal of said second temperature sensor means, and the third input terminal of said switch means coupled to the output terminal of said comparison amplifier means, said switch means having selection means for selectively coupling one of said first, second, or third input terminals with the output terminal of said switch means for producing a signal on the output terminal of said switch means corresponding to the signal appearing on the one of the first, second, or third input terminals coupled thereto by said selection means;

first utilization means having an input terminal coupled with the output terminal of said switch means for producing display of the temperature being monitored as selected by said selection means of said switch means; and

second utilization means having an input terminal coupled with the output terminal of said comparison amplifier means and operated thereby to produce different results when the output of said comparison amplifier means has a positive value and when the output of said comparison amplifier means has a negative value.

4,406,551

ELECTRIC NUMBERING MACHINE

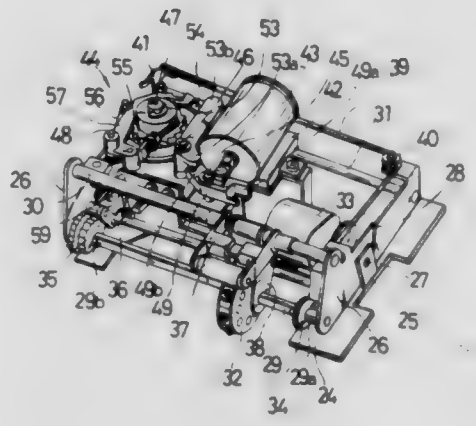
Osamu Maezawa; Yusuke Saitho, and Koichi Tominaga, all of Tokyo, Japan, assignors to Kabushiki Kaisha Gakushu Kenkyusha (Gakken Co., Ltd.), Tokyo, Japan

Filed Sep. 21, 1981, Ser. No. 304,188

Claims priority, application Japan, Dec. 8, 1980, 55-176591[U]; Dec. 8, 1980, 55-176592[U]

Int. Cl.³ B41J *1/24*

U.S. Cl. 400—163.2 **5 Claims**



1. In an electric hand numbering machine, including:

a pulse motor;

a pair of support plates;

a driven shaft operatively connected with said pulse motor so as to be rotated thereby, said driven shaft being carried by said pair of support plates;

a figure wheel fitted to said driven shaft and rotating integrally with said driven shaft upon rotation thereof are said pulse motor;

a drum;

means operatively cooperating with said drum for rotating said drum;

means operatively cooperating with said drum for sliding said figure wheel along said driven shaft, to a print position when printing and to an original position after printing, by rotation of said drum in opposite directions, respectively;

means for rocking said pair of support plates, said rocking means including actuating means and a connecting mechanism operably interconnecting said actuating means with said support plates so as to rock said support plates and said driven shaft carried thereby, and to in turn rock said figure wheel fitted to said driven shaft against a surface of a sheet to effect printing;

electric control circuit means for controlling an operation of said means for sliding said figure wheel and an operation of said means for rocking said pair of support plates; and

an ink roller device operatively cooperating with said figure wheel,

the improvements wherein:

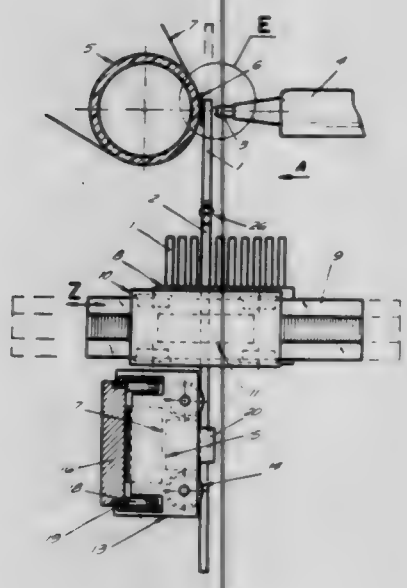
said means for rocking said support plates is provided with means operatively cooperating with said driven shaft and said support plates for minutely rotating said figure wheel in accordance with the rocking angle of said support plates so as to maintain parallelism between the surface of a printing figure of said figure wheel and said surface of said sheet to be printed; and

said pulse motor is fixed to one of said pair of support plates such that a driving shaft of said pulse motor is disposed substantially coaxially with the axis of rocking movement of said pair of support plates.

4,406,552
PRINTING DEVICE

Peter G. Chervendinev; Ventzislav G. Yankulov, and Toma T. Ostromski, all of Sofia, Bulgaria, assignors to CUV "Progress", Sofia, Bulgaria

Continuation-in-part of Ser. No. 936,598, Aug. 24, 1978, abandoned. This application Feb. 4, 1981, Ser. No. 231,413
Claims priority, application Bulgaria, Aug. 25, 1977, 37 228
Int. Cl.³ B41J *1/16*
U.S. Cl. 400—172 6 Claims

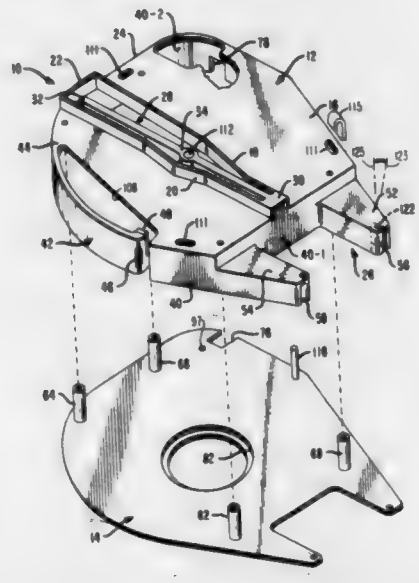


1. A serial character printer, comprising in combination: at least two substantially flat printing cards having different sets of characters and signs thereon arranged in rows and columns, means for storing said printing cards including at least one cartridge for holding cards in stacked flat parallel condition, the cartridge having an opening at the bottom thereof, the cartridge having an opening at the top thereof to permit the insertion of cards into the cartridge and the withdrawal of cards through the opening in the top of the cartridge, means for the step-wise driving and positioning of a selected card in a lateral direction parallel to a line being printed and means for the step-wise driving and positioning of said selected card vertically perpendicular to said lateral direction in a plane parallel to the planes of said printing cards in the cartridge, said last named means including a card positioning manipulator having card clamping and aligning means on the top thereof which interfits with the bottom of a selected printing card, means for driving the manipulator upon command to place the manipulator with its top beneath the selected card in the cartridge and in alignment with the opening in the bottom of the cartridge, means for thereafter raising the manipulator through the opening in the bottom of the cartridge and then through the cartridge and out through the opening in the top of the cartridge to carry with it said selected printing card during successive printing operations and the respective positioning of the card at the printing station, means for lowering the manipulator to return the selected printing card into said cartridge through the opening in the top of the cartridge when the selected printing card is to be replaced by another printing card which is present in said cartridge, or when the printing operation is stopped, the means for driving the positioning manipulator laterally being a step-wise driven carriage upon which the manipulator is mounted, and the means for positioning the manipulator vertically being a step-wise driven driving means on said carriage, and comprising means for controlling said storage means and said positioning manipulator in cooperation with the respective step-wise driving means during the printing operation.

4,406,553
DISPOSABLE, SNAP-IN-TYPE RIBBON CASSETTE HAVING A RESILIENT RIBBON SPOOL MOUNTING ARM

Rickard P. Nally, and Elbert H. Vandenham, both of Waterloo, Canada, assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 21, 1981, Ser. No. 333,147
Int. Cl.³ B41J *33/14*
U.S. Cl. 400—208 11 Claims



1. A cassette for storing a ribbon comprising:
a top portion and a bottom portion;
said top portion comprising:
a front area having a print station area thereat and a rear area;
a first resilient arm having one end extending from said front area and also having a free end extending towards said rear area;
a ribbon supply reel having a rim and being rotatably secured to said resilient arm between its ends to enable said ribbon in being unwound from said reel to pass around said free end; and
ribbon guide means to enable said ribbon to be guided from said free end to said print station area;
a take up reel;
said bottom portion having means for rotatably mounting said take up reel thereon so as to receive the ribbon from said print station area;
said top portion having a second resilient arm extending therefrom and having a free end to engage the rim of said supply reel to provide a drag thereon;
said take up reel having means enabling said take up reel to be rotated to thereby unwind said ribbon from said supply reel to provide a fresh supply of ribbon to said print station area.

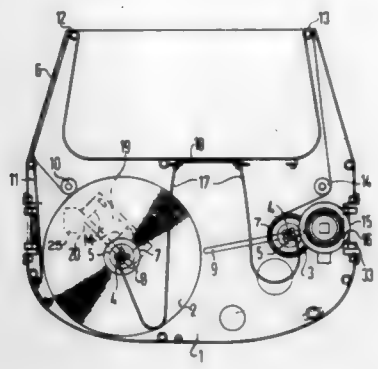
4,406,554
END OF RIBBON INDICATOR FOR A TYPEWRITER RIBBON CASSETTE

Karl-Heinz Dreinhoff, Berlin, and Hermann Wambach, Unterhaching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 20, 1981, Ser. No. 323,414
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1980, 3045461
Int. Cl.³ B41J *35/36*
U.S. Cl. 400—249 12 Claims

1. A typewriter ribbon cartridge assembly comprising a housing having a feed spool containing section and a take-up spool containing section, at least one said section having a guide slot for receiving a hub of a corresponding spool, biasing means for passing said hub along said guide slot toward one end thereof, a control edge at said one end of said guide slot leading to an enlarged opening formed in said housing, guide

pilot means formed on said hub for slidably disposing said hub in said guide slot and pivoting said hub into said enlarged



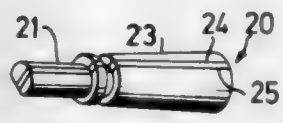
opening under the force of said biasing means, and a monitoring means for signalling when said hub is pivoted into said enlarged opening.

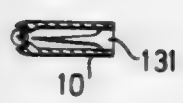
4,406,555

NIB REPLACEABLE WRITING INSTRUMENT

Kuo L. Tsai, Taipei, Taiwan, assignor to Cathay Pen Corporation, Taipei, Taiwan, a part interest

Filed May 6, 1981, Ser. No. 260,923
Int. Cl.³ B43K *7/10, 27/00*
U.S. Cl. 401—216 **3 Claims**





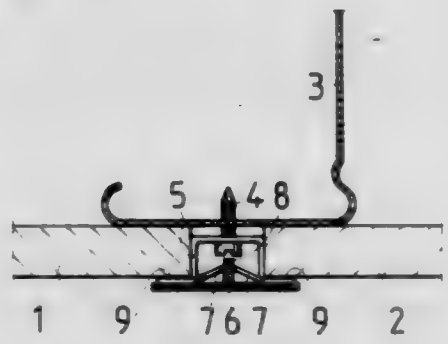
1. A replaceable nib writing instrument comprising a pen casing having a central opening at its otherwise closed front end, a pen-nib holding means connected at the front of said casing, a pen nib having writing point in the form of a ball point at its utmost front end, said pen nib using an ink solution and being firmly held inside of said holding means by a portion thereof, an ink storage means positioned at the rear of said casing, an ink guiding means connected between said pen nib and ink storage means to convey the ink from said ink storage means to the pen nib, said ink guiding means including a capillary member and an ink guiding core, said capillary member having a relatively smaller diameter portion at the front and a relatively larger diameter portion at the rear, said relatively larger diameter portion of said capillary member being frictionally held within the inner surface of the front of said casing, and the rear of the relatively smaller diameter portion of said capillary member being further tightly mounted at the central opening of the closed front end of said casing, the remainder of said relatively smaller diameter portion being extended through said central opening at the front end of said casing and projected out of the same, and having at least one longitudinal capillary groove extending the entire length of the outer surface of said capillary member for transferring ink from said longitudinal capillary groove of said capillary member to said pen nib, said capillary member and said ink guiding core being mounted in face-to-face abutment, the abutting face of said capillary member being provided with at least one capillary groove which communicates with said longitudinal capillary groove, and which is surrounded and enclosed within the housing of said pen-nib holding means and makes no substantial contact with the inner surface of said pen-nib holding means, whereby said pen-nib holdng means and its nib may be interchanged with a similar pen-nib holding means having a nib of the same type, said ink guiding core including a front end having a greatly reduced slim portion and a minor portion of the rear end mounted at the end of said pen nib so that a sufficient amount of ink is stored within said pen nib to effect a continuous capillary action for the writing point, the reduced slim point of said ink guiding core making no contact with said writing point.

4,406,556

MEANS FOR FIXING BOARDS ON A BASE

Erik H. Stahlberg, Helsinki, Finland, assignor to Rakenneasennus E. Stahlberg KY, Helsinki, Finland

Filed Oct. 28, 1980, Ser. No. 201,490
Int. Cl.³ F16B *11/00;* F16D *1/00*
U.S. Cl. 403—23 **4 Claims**



1. An improved fastening means for attaching boards to a base, e.g. on a wall or ceiling, comprising: a U-shaped fixing piece with the legs terminating in spaced parallel lugs, said fixing piece being attached to the base and disposed between the edges of the boards and with the lugs in engagement with the exposed face of said boards; a T-shaped profile strip having a rigid plastically deformable middle leg, said strip being adapted to cover a joint formed between the boards, wherein the U-shaped fixing piece is provided with oppositely positioned elastically deformable spaced spike members formed as contiguous extensions of said lugs and directed obliquely towards the base plane of the fixing piece; said spiked members being spaced to permit said middle leg of the profiled strip to be received therein so that the spikes bite into the profiled strip for locking engagement therewith and with the undersurface of the T engaging the top surface of said lugs, and into the U channel of the fixing piece to resist withdrawal of the profiled strip from said U channel.

4,406,557

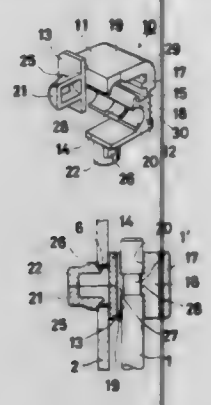
LINK ROD CONNECTOR

Yoshikazu Suzuki, Hiroshima; Takuo Yuda, Yokohama, and Daiji Nakama, Chigasaki, all of Japan, assignors to Yushin Co., Ltd., Tokyo and Nifco Inc., Yokohama, both of, Japan

Filed Sep. 29, 1981, Ser. No. 306,683
Claims priority, application Japan, Oct. 2, 1980, 55-141462[U]
Int. Cl.³ F16B *9/00;* F16C *11/00;* F16D *1/12*
U.S. Cl. 403—71 **6 Claims**

1. A link rod connector for connecting a link rod to link arms and formed integrally of plastic; and comprising a pair of body sections; a resilient hinge connecting the tops of said body sections for permissive hinging movement thereof between an open separated position and a closed position with the body sections in juxtaposition, and the body sections in closed juxtaposition providing rod retainer means securing the rod against axial extraction thereof with permissive rotation thereof about its axis, and a pair of semicylindrical leg portions, one at the bottom of each of the body sections, such that the body sec-

tions in closed juxtaposition present the leg portions as a cylindrical member which is inserted through a hole in the link arm



and maintained against extraction while permitting rotation thereof relative to the link arm.

4,406,558

GUDGEON PIN

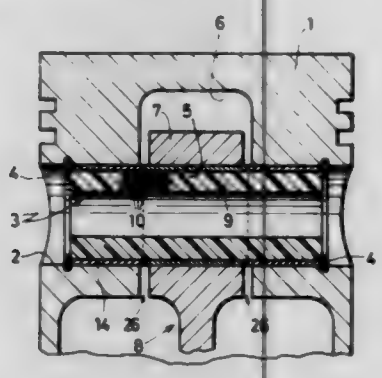
Richard Kochendorfer, Silberwaldstrasse 1, 7000 Stuttgart 75, and Helmut Krauss, Stuifenstrasse 8, 7252 Weil der Stadt 5, both of Fed. Rep. of Germany

Filed Dec. 16, 1980, Ser. No. 216,979

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952117

Int. Cl.³ G05G *1/00*; F16D *1/00, 1/12*; F16J *1/38*

U.S. Cl. 403—151 **19 Claims**



1. Apparatus for connecting a reciprocating piston of an internal combustion engine to a connecting rod, comprising

(a) a generally cylindrical member (9) having a longitudinal axis, said member being formed of composite material and including a plurality of concentric layers of reinforcing fibers, the fibers of successive layers extending in different directions; and

(b) generally tubular segmented sliding bearing means (14) arranged concentrically about the external surface of said cylindrical member, said sliding bearing means including a plurality of discreet metallic tubular segments (15, 16, 17) arranged in contiguous end-to-end relation, thereby to accomodate deformations in said bearing means in the region of support between the piston and the connecting rod during operation of the internal combustion engine.

4,406,559

REMOVABLE TOOL HANDLE AND SOCKET THEREFOR

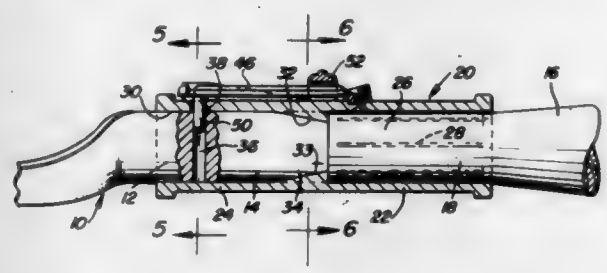
John A. Geertsema, P.O. Box 1014, Ceres, Calif. 95307, and Alvin H. Lichty, Modesto, Calif., assignors to John A. Geertsema, Ceres, Calif.

Filed Sep. 10, 1981, Ser. No. 300,816

Int. Cl.³ B25G *3/00*; F16B *1/00*; F16D *1/06*

U.S. Cl. 403—287 **8 Claims**

1. An adapter sleeve to be carried by the tool head end of a tool handle and including a first end for support from the head end of a handle, the other end of said sleeve defining an outwardly opening socket, a tool head including a shank projecting outwardly therefrom and having a free end, said free end being removably and snugly telescoped into said socket, said other sleeve end including a generally radial bore therein opening into said socket, said free end having a generally radial bore therein registered and aligned with the first mentioned bore, an elongated spring arm having base and free ends, said base end being anchored relative to the outer surface of said sleeve at a point thereon spaced longitudinally of said sleeve from the first mentioned bore toward said first sleeve end with said spring arm extending longitudinally of said sleeve, said



free spring arm end including a lateral pin portion projecting inwardly through the first mentioned bore and into the second mentioned bore, said spring arm and the portions of said sleeve along which said arm extends including coacting cam surface means and reciprocal slide means supported therefrom operable to selectively displace said free spring arm end outwardly from said sleeve responsive to shifting of said slide means in one direction for withdrawing said pin portion outwardly of at least the second mentioned bore, said cam surface means being supported from said sleeve and said slide being slidably mounted on said arm for guided reciprocal shifting therealong.

4,406,560

PIPE CONNECTOR

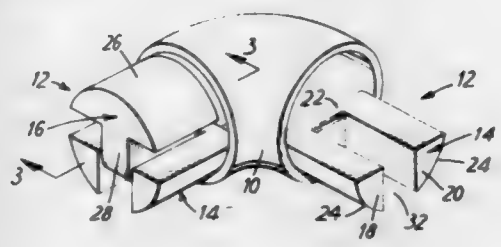
David J. Pickering, Reading, England, assignor to Kee Klamps Limited, Berkshire, England

Filed Feb. 27, 1981, Ser. No. 239,109

Claims priority, application United Kingdom, Feb. 27, 1980, 8006677

Int. Cl.³ F16B *7/00, 12/36, 13/00*

U.S. Cl. 403—297 **5 Claims**

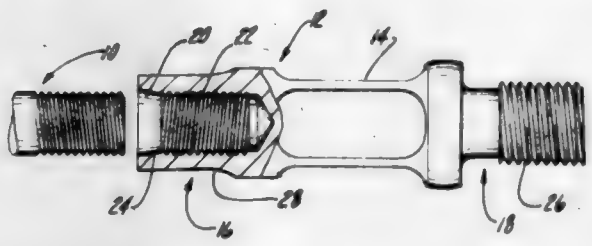


1. A pipe connector for connection to a pipe having a plain end, said pipe connector comprising a body having a profile matching that of the pipe, a pair of jaws extending outwardly from the body for insertion within the end of the pipe, and respective oppositely directed pipe clamping surfaces on said jaws for engaging the interior of the pipe, one of the jaws being a bifurcate jaw fixed relative to said body and having two longitudinal jaw portions connected by a transverse web, the other of the jaws being mounted for pivotal movement with respect to said fixed jaw and having a locating flange therein slidably received between the two arms of said fixed bifurcate jaw for being guided therebetween during pivoting, said locating flange having a notch in which said web is engaged for forming the pivotal mounting of said other jaw, and actuating means connected between said body and said pivoted jaw for positively pivoting said pivoted jaw away from the fixed jaw to urge the pipe clamping surfaces of said jaws to a position to grip the inner wall surface of a pipe end positioned over the jaws.

4,406,561
SUCKER ROD ASSEMBLY

Peter D. Ewing, Milford, Mich., assignor to NSS Industries, Plymouth, Mich.

Filed Sep. 2, 1981, Ser. No. 298,565
Int. Cl.³ B25G 3/00; F16B 7/18; F16D 1/00; F16L 15/00
U.S. Cl. 403—343 2 Claims

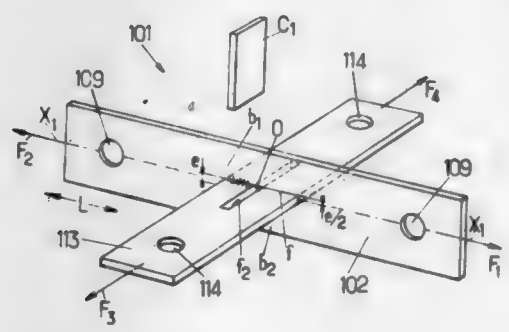


1. A sucker rod assembly comprising:
a rod with threads on one end with an unthreaded adjoining portion of uniform diameter,
a rod-end fitting comprising a unitary metal body including a tool receiving shank, a first connector portion at one end of said shank and a second connector portion at the other end of said shank,
said first connector portion comprising a cylindrical socket having a threaded portion adjacent the bottom of said socket and an unthreaded portion adjacent the outer end of said socket,
said threaded end of said rod being threadedly engaged with the threaded portion of said socket,
the threads on the end of said rod having a major diameter greater than the diameter of said adjoining portion of said rod and terminating adjacent the inner end of said unthreaded portion of said socket disposed in uninterrupted surface engagement with the surface of the unthreaded adjoining portion of said rod,
whereby said rod and rod-end fitting are mechanically interlocked and the uninterrupted surface engagement seals the threads inside said socket.

4,406,562
ASSEMBLY NODE FOR A SPATIAL STRUCTURE AND SPATIAL STRUCTURE EQUIPPED WITH SUCH A NODE

Cesarino Nasi, Pierrefitte-sur-Seine, France, assignor to Etablissements Ernest Pantz Paris, Paris, France

Filed Jan. 22, 1981, Ser. No. 227,348
Claims priority, application France, Jan. 23, 1980, 80 01419
Int. Cl.³ F16B 1/00
U.S. Cl. 403—347 17 Claims

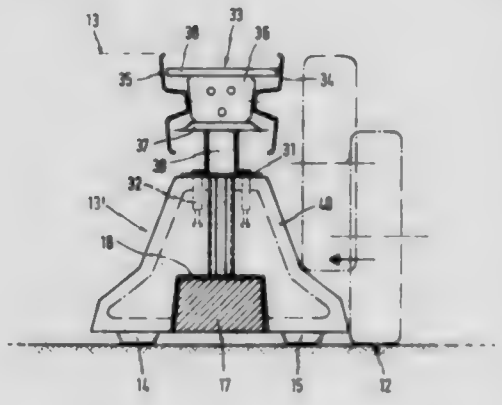


1. An assembly node for a spatial structure comprising:
at least one flat first element having a slit situated substantially in the middle of the width of said first element and being oriented in the longitudinal direction; and
at least one flat second element engaged in said slit and passing therethrough, said first and second elements of the node being joined together along the edges of said slit, wherein
said slit is provided in said first element so that the transmission of forces on each side of the center of the node, in the longitudinal direction of said first element, is ensured by continuity of the material of said first element, said slit passing through the point of convergence of the difference forces exerted on the node, the width of said slit being transversely oriented to the direction of transmission of forces, said second element passing through said slit and including means defining holes for allowing bars to be fixed thereto, the axis of said bars being situated in the plane of said second flat element on each side of said first flat element when fixed to respective ones of said holes.

4,406,563
PROTECTIVE BARRIER PROVIDED WITH AT LEAST ONE LONGITUDINAL SIDE BAR

Hermann H. Urlberger, Gutwerkstrabe 45, Aschaffenburg, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 249,333
Int. Cl.³ E01F 13/00
U.S. Cl. 404—6 12 Claims



10. A prefabricated road barrier section adapted for end-abutting interconnection to a plurality of similar sections for assembly on a roadway and for carrying elevated and elongated deflection steel plates, comprising
(a) a base member having vertical ends and having a cross-section shape formed by the joining together of four plane shapes, comprising:
(1) a first and lower shape having steep-sided walls symmetrically to the vertical;
(2) a second and intermediate triangular shape having walls symmetrically aligned at an angle of approximately 45° relative to the horizontal;
(3) a third and upper triangular shape having steep-sided walls symmetrically aligned at an angle exceeding 45° relative to the horizontal; and
(4) a fourth shape being parallel to the roadway;
(b) at least one spacer interconnected between opposite walls of said base member;
(c) a pillar adapted for connection to at least said fourth shape, said pillar carrying at least one steel barrier plate at a position elevated above said base member.

4,406,564
BREAKWATER

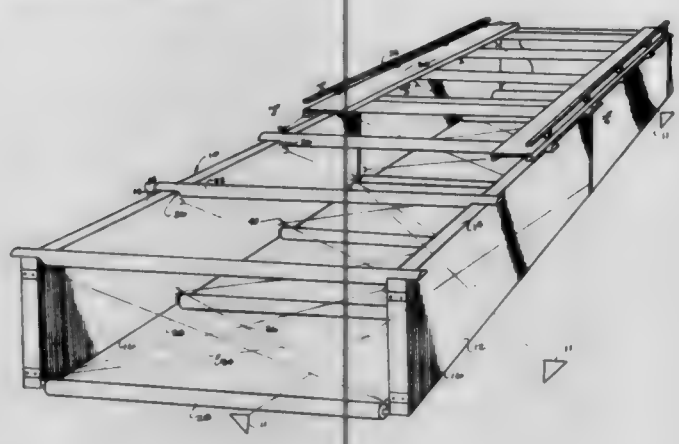
Raymond A. Hanson, P.O. Box 7400, Spokane, Wash. 99207

Filed Aug. 3, 1981, Ser. No. 289,136
Int. Cl.³ E02B 3/06; B63B 35/34
U.S. Cl. 405—26 12 Claims

1. A transportable buoyant breakwater, comprising:
a pair of vertical, parallel prestressed concrete walls spaced transversely apart from one another;
said walls having a top horizontal edge and a bottom horizontal edge;
horizontal longitudinal floatation cells formed within each wall;
buoyant means within each cell for providing the walls with a density slightly less than that of sea water wherein said walls float in a substantially submerged condition with the top horizontal edge at or slightly above the water surface;

upper transverse elongated rigid members connected between the walls adjacent to their top horizontal edges;

lower transverse elongated rigid members operatively connected between the walls and adjacent to their bottom horizontal edges;



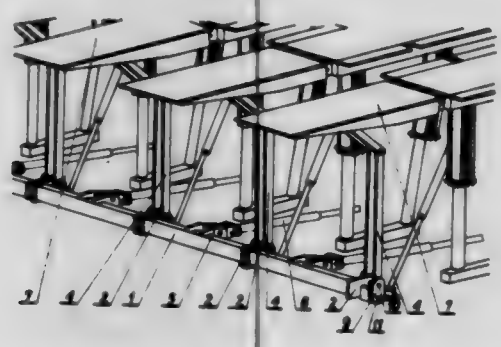
rigging means operatively connected between the pairs of walls for providing tension to hold the walls securely against the upper and lower elongated members.

4,406,565

SLIDABLE FILLING DAM

Wincenty Pretor, Gliwice; Wojciech Skoczynski, Katowice; Edward Janik, Gliwice; Henryk Zych, Tarnowskie Gory, and Ryszard Serwotka, Zabrze, all of Poland, assignors to Centrum Konstrukcyjnotechnologiczne Maszyn Gorniczych, Gliwice, Poland

Filed Apr. 29, 1981, Ser. No. 258,703
Claims priority, application Poland, Jun. 19, 1980, 225130
Int. Cl.³ E02D *15/00*
U.S. Cl. 405—258 **1 Claim**



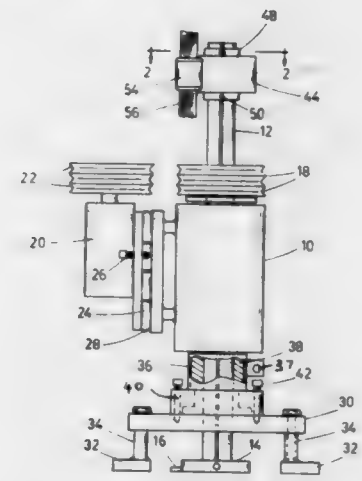
1. A slidable filling dam apparatus for mining longwall headings adapted for filling post-mining void regions, said apparatus being mounted on a mine lining apparatus and being movable together with the said lining, said dam apparatus comprising a plurality of vertical support beams comprising vertical beam segments with angularly disposed levers attached to the top thereof, which levers are articulated at one end to a horizontal roof-bar and at the other end to a corresponding vertical beam segment, said vertical beams being provided on their lower ends with a footing device, consisting of two parallel plates connected with each other by a stub wall, a horizontal floor beam connected to the footing of two adjacent linings adjacent the mine floor and secured by means of mounting brackets which have vertical recesses therebetween to allow mounting thereof with said footing, there being with every footing a pair of connected floor beams, a cross bolt connecting a pair of said vertical beams and two of said brackets with said parallel plates of each footing, a second bolt also connecting said parallel plates of each footing, each said floor beam is further provided near its central part with another mounting bracket connected in turn with a hydraulic ram means for shifting of said floor beams together with said mine lining apparatus and said vertical beams and said floor beams having attached thereto a pair of aprons, formed of semi-rigid material, thereby providing a tight wall, beyond which filling materials are packed in the void regions of exploited coal.

4,406,566

LINE BORING MACHINE

Wolfgang Bauer, 19 Pine Ct., Dowling, Ontario, Canada

Filed Feb. 6, 1981, Ser. No. 232,300
Claims priority, application Canada, Feb. 6, 1980, 345147
Int. Cl.³ B23B *5/00, 41/00*
U.S. Cl. 408—129 **9 Claims**



1. Dismountable machining apparatus for the precision machining of a workpiece, said apparatus being dismountable and removable, for operation at a variety of different work site locations, said apparatus comprising:

base means having at least one foot member releasably attachable at a location for the desired machining operation, and further having a holder portion, said holder portion including a central opening having a predetermined central axis and further having attachment means;

drive housing means, having connecting means releasably interengageable with said attachment means, and defining a through opening in registration with said central opening of said holder portion, whereby said drive housing means may be assembled and disassembled from said base member at a work site;

drive sleeve means in said drive housing means rotatably mounted therein by suitable bearing means, and incorporating a central bore through said sleeve means;

drive transmission means operatively connected to said drive sleeve means, and adapted to be coupled to a suitable power source, for driving said drive sleeve means;

auxiliary drive means, operatively connected to said drive sleeve means, and driven in unison therewith;

a machining bar member slidably received within said drive sleeve means, and driveably interengageable within said sleeve means, whereby said machining bar member may be rotatably driven by said drive sleeve means, and may be axially slid therein, and being releasable therefrom for shipping to and from a work site;

feed housing means an a feed sleeve member mounted in said feed housing means and supported by suitable bearing means for rotation therein, said feed sleeve member defining a central bore adapted to receive said machining bar member therein, and fastening means for fixing said machining bar member therein whereby said feed sleeve member rotates therewith in unison;

a feed connecting member extending to one side of said feed housing means;

feed screw means operatively connected with said feed connecting member and a feed screw advancing mechanism connected to said feed screw means, and means coupled to said auxiliary drive means whereby said feed screw means may cause axial lengthwise movement of said feed housing means and thus of said machining bar member within said feed sleeve member, and,

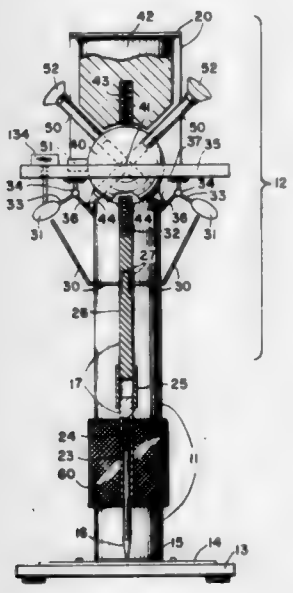
tool bit mounting means adapted to receive a suitable tool bit and releasably fastenable at one end of said machining bar member.

4,406,567

APPARATUS FOR ENGRAVING INDICIA ON SMALL OBJECTS

Philip L. Samis, 1 Place Ville Marie, Ste. 1521, Montreal, Quebec, Canada H3B 2B5

Filed Sep. 22, 1980, Ser. No. 189,022
Int. Cl.³ B23Q *35/10*; B43L *13/10*
U.S. Cl. 409—92 **23 Claims**



1. Apparatus for engraving a planar workpiece carried by a workpiece support, in which scribing means engraves a miniature representation in a frustro-spherical plane of a two-dimensional pattern in response to two-dimensional planar movement of a stylus following said pattern, the combination comprising:

(a) means forming a pivotal support above said stylus, said support being freely rotatable in response to stylus movement;

(b) means telescopingly connecting said stylus to said pivotal support so said support rotates in response to two-dimensional stylus movement about said pattern;

(c) said scribing means fixed to said pivotal support above said stylus but below the center of rotation of said pivotal support, extending downwardly from said support and rotatably movable unitarily therewith in response to two-dimensional stylus movement about said pattern;

(d) said means telescopingly connecting said stylus to said pivotal support including means for moving said workpiece, carried by said workpiece support, and said scribing means into and out of contact with one another independently of two-dimensional stylus movement over said pattern while said stylus maintains contact with said pattern, by rotating said workpiece support about a second pivot displaced from said center of rotation of said pivotal support.

4,406,568

PRECISION TOOL

William C. Rogers, Azle, and William E. Davis, Jr., Itasca, both of Tex., assignors to General Dynamics Corporation, Fort Worth, Tex.

Filed Jul. 2, 1981, Ser. No. 279,640
Int. Cl.³ B23C *1/20*; B27C *5/10*
U.S. Cl. 409—182 **13 Claims**

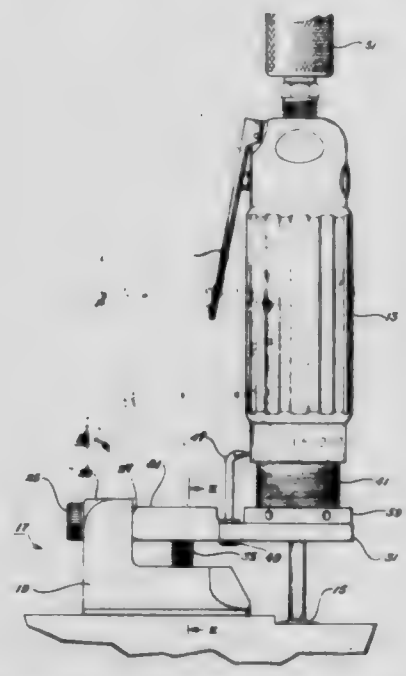
1. A device for full depth hand routing of a structure, such as an aircraft wing, comprising:

a. a foot block having a bottom and a top;

b. an attachment block having a cantilevered holder; said cantilevered holder having a threaded aperture for receiving a tool motor housing barrel;

c. adjusting means for connecting said attachment block with said foot block and for aligning a plane of a router tool with the plane of the bottom of said foot block;

d. a routing tool carried on a shaft that is powered by a motor within a housing; said housing having a substantially cylindrical barrel adjacent its bottom end with a threaded male protrusion threadedly engaging said



threaded aperture of said cantilevered holder and having an adjacent head depth indicator scale about the substantially cylindrical barrel such that an indication is disposed adjacent an indicator; and

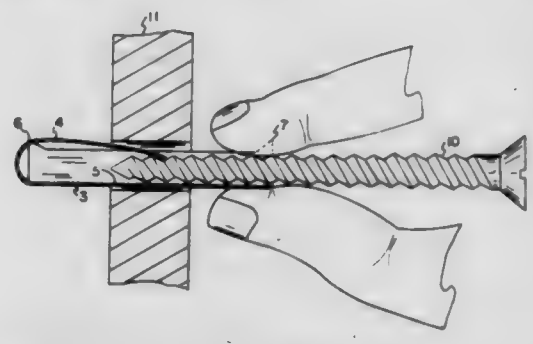
e. an indicator carried by said attachment block and upstanding substantially perpendicular therefrom with an upper end adjacent said head depth indicator scale to facilitate a reference point for accurately obtaining a variety of depths of said tool.

4,406,569

TOGGLE NUT

Henry E. Askew, 1249 S. 50th St., Birmingham, Ala. 35222

Filed Dec. 29, 1980, Ser. No. 220,986
Int. Cl.³ F16B *13/04*
U.S. Cl. 411—346 **4 Claims**



1. A toggle bolt assembly comprising:

an elongated rectangular U-shaped channel having a base and a pair of oppositely positioned side walls, said base having a centrally located opening, and at least one of said side walls having a raised pointed region;

a single leaf spring extending from an end of said base and an end of said spring being sprung back over the base to provide a spring bias adjacent to and toward said opening in said base;

an elongated screw having a tapered threaded end, said screw being threadably engaged between said end of said spring and an edge of said opening; and

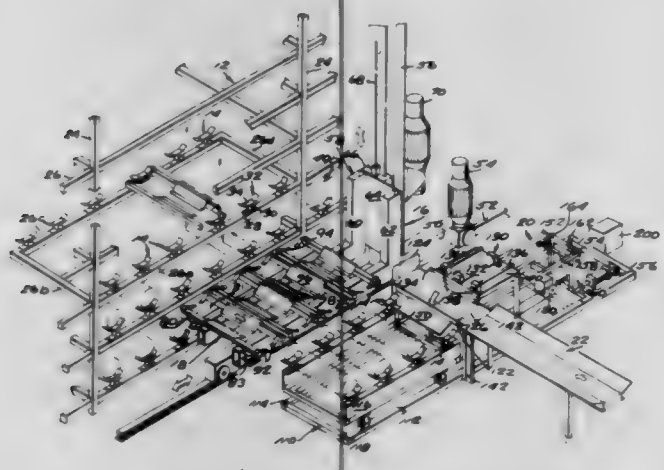
the end of said spring and the edge of said opening providing the sole threaded receiver for said screw.

4,406,570

MATERIALS HANDLING SYSTEM

L. Scot Duncan, North Field; Richard W. Germuska, Brunswick; Stephen L. Kral, Garfield Heights; Robert R. Lasecki, Eastlake, and Michael W. Riley, Strongsville, all of Ohio, assignors to Burlington Industries, Inc., Greenboro, N.C.

Filed Sep. 30, 1980, Ser. No. 192,549
Int. Cl.³ B65G *1/04*
U.S. Cl. 414—282 **4 Claims**



1. A storage system for handling, storing and retrieving articles including a plurality of storage bins, transport means for moving the articles to and from the storage bins and control means for controlling the operation of said transport means wherein the storage bins are formed from at least front and rear skeletal frame members and sets of support members, each set comprised at least of front and rear support members, respectively, mounted to said front and rear frame members, each of said support members including a vertically extending supporting spine having one end mounted to a respective frame member and a support element connected to the other end of said spine and extending generally transverse to said spine, said transport means includes transfer means for transferring the articles between said bins and said transport means further including at least one horizontally and vertically movable carriage assembly having at least two spaced apart horizontal arms each having a plurality of inwardly extending support fingers for engaging said materials, said support fingers being spaced apart along said arms so that they interdigitate with at least said front and rear support members when said articles are moved to and from said storage bins.

4,406,571

AMPOULE CRUSHER MECHANISM

Steven L. Ross, Chagrin Falls, Ohio, assignor to General Signal Corporation, Stamford, Conn.

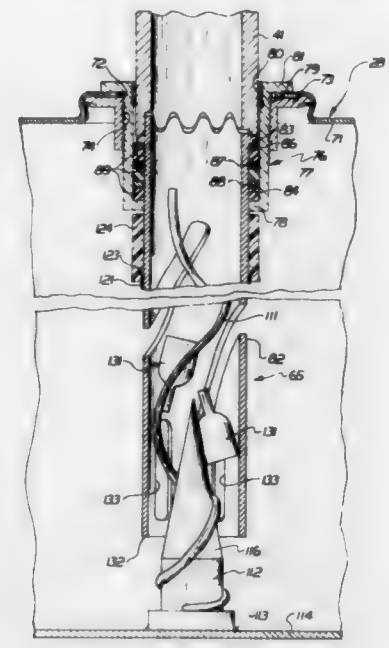
Filed Mar. 27, 1981, Ser. No. 248,196
Int. Cl.³ B02C *7/00*
U.S. Cl. 414—412 **5 Claims**

1. A mechanism for crushing frangible elements comprising:

a rotatably driven, vertically oriented, tubular member, the elements to be crushed being received into the tubular member;

a cone-shaped member fixed in position relative to the rotatably driven tubular member, the cone-shaped member having its apex portion coaxially positioned within the lower end of the vertically oriented tubular member in non-contiguous relationship with it, the apex portion of the cone-shaped member and the adjacent portion of the tubular member defining an annular aperture at an end of a tapered cross section ringlike channel, the channel being defined by the apex portion and the adjacent inner wall portion of the tubular member, the width of the channel decreasing in a vertically downward direction from the apex area of the cone-shaped member toward its base; and

a helix member fixed in position relative to said cone-shaped member and coaxially positioned within the tubular member, at least a portion of the helix member being received



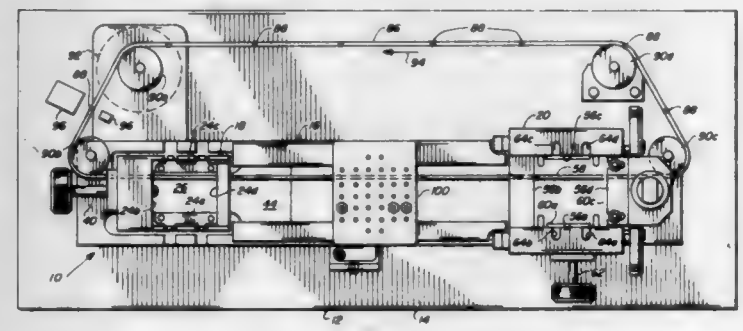
within said channel, rotation of the tubular member relative to the helix and cone-shaped members driving said frangible elements into said tapered channel, the elements being crushed in the tapered channel by the members just prior to exiting of the crushed elements from the tube via the aperture.

4,406,572

TRANSFER SYSTEM

DeWayne E. Karcher, Glendale, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jun. 29, 1981, Ser. No. 278,254
Int. Cl.³ B65G *57/30, 59/06;* B65H *31/08*
U.S. Cl. 414—404 **1 Claim**



1. A transfer system comprising:

a transferor magazine and a transferee magazine, each of said magazines having substantially planar walls defining a prismatic interior space having a substantially rectangular cross-section and open top and bottom faces, the walls of each of said magazines having a plurality of spring catches mounted at each end proximate the open top and bottom faces thereof, each of said catches having a first and a second condition, said spring catches defining a fixture storage space within each magazine, said spring catches in their first condition retaining fixtures within the fixture storage space and permitting fixtures to be inserted into the fixture storage space, and, in their second condition, permitting fixtures positioned in the storage space to move out of the fixture storage space;

a transferor base having a fixture transferor station;

a transferor magazine removably mounted substantially vertically on said transferor base, said transferor base having means for placing the spring catches proximate the bottom face of the transferor magazine in their second

condition so that fixtures in the storage space thereof descend into the transferor station;

a transferee base having a transferee station, a transferee magazine removably mounted substantially vertically on the transferee base, the spring catches proximate the bottom face of the transferee station being in their first condition, four loading fingers pivotally mounted on said transferee base, actuator means when activated for rotating said loading fingers to cause a fixture in the transferee station of the transferee base to be lifted past the spring catches of the transferee magazine mounted thereon and into the storage space of the transferee magazine, said spring catches retaining each of said fixtures so loaded into the transferee magazine in the fixture storage space thereof;

transport means including an endless chain cable provided with driving pins for positively moving each fixture from the transferor station to the transferee station; and

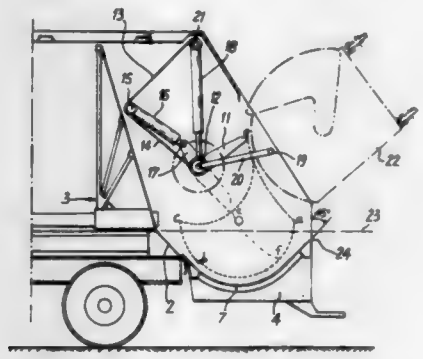
means for activating the actuator means when a fixture is positioned in the transferee station by the transport means.

4,406,573

DEVICE FOR LOADING AND COMPACTING RUBBISH IN A FIXED OR MOBILE RECEPTACLE

Marcel Colin, 19 rue de l'Eglise, 17140 Marsilly, France

Filed May 20, 1981, Ser. No. 265,892
Claims priority, application France, May 30, 1980, 80 12113
Int. Cl.³ B65F *3/14*; B30B *7/02*
U.S. Cl. 414—525 R **5 Claims**



1. Device for loading and compacting rubbish and garbage in a fixed or mobile receptacle or compartment having a receiving hopper, comprising:

a sweeping component in association with the receiving hopper, said hopper including a loading opening;

a billfold panel means for covering said loading opening and including

(a) a first panel upon which said sweeping component is mounted and pivots;

(b) a second panel; and

(c) a transverse spindle about which said first and second panels are pivotably articulated;

said billfold panel means being suspended from the top of the receptacle,

said first and second panels acting to close said receptacle above said loading opening when said panels are disposed in a substantially planar orientation relative to one another, wherein sad sweeping component sweeps rubbish and garbage in said hopper into said receptacle, and

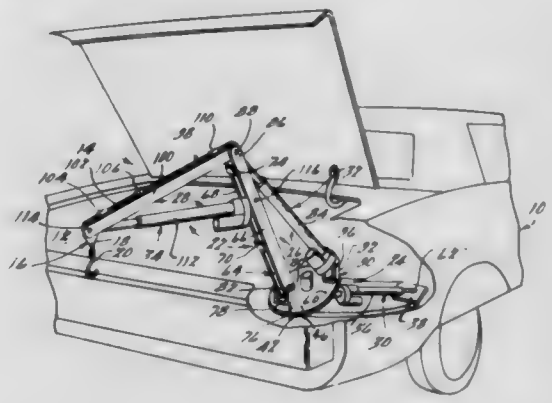
said first and second panels acting to compress the rubbish and garbage thus swept into said receptacle when said panels are disposed in a folded position, about said spindle, relative to one another.

4,406,574

VEHICLE ASSIST FOR DISABLED

Sidney L. Riley, 2043 Cummings, Berkley, Mich. 48072

Continuation of Ser. No. 928,904, Jul. 28, 1978, abandoned. This application Dec. 2, 1980, Ser. No. 212,116
Int. Cl.³ B66C *1/68, 23/06*
U.S. Cl. 414—543 **1 Claim**



1. A device for assisting a disabled person in the lifting and loading of objects between a trunk of an automobile and a point of use wherein the trunk is defined in part by a sheet metal floor, and which automobile has a chassis member in part underlying and spaced below the sheet metal floor, said device including a mounting plate assembly adapted to be positioned in the trunk above the sheet metal floor and juxtaposed to the underlying chassis member, means for directly affixing said mounting plate assembly to the underlying chassis member comprising substantially rigid spacer members adapted to extend through the sheet metal floor of the trunk and between said plate assembly and the underlying chassis member for vertically supporting said mounting plate assembly upon the underlying chassis member, bolt means extending from the upper side of said plate assembly through said spacer members and adapted to be engaged with the underlying chassis member for retaining said spacer members in supporting relationship between said mounting plate assembly and the underlying chassis member, said mounting plate assembly having affixed thereto an upstanding shaft extending upwardly and within the trunk, a turntable journaled upon said shaft, first power means interposed between said turntable and said mounting plate assembly for rotating said turntable about said shaft, an object engaging member, a supporting member for supporting said object engaging member for movement relative to said turntable, second power means operatively interconnected between said turntable and said supporting member for moving said object engaging member in a generally vertical direction relative to said turntable, and third power means operatively connected between said turntable and said supporting member for moving said object engaging member in a generally horizontal direction, said first, second and third power means being capable, when actuated, of moving said object engaging member into a storage position within the trunk wherein the suppporting member is totally confined within the trunk and for moving said object engaging member to an extended position wherein an object may be moved between the trunk and a location outside of the automobile.

4,406,575

QUICK-MOUNT SIDE SHIFTER FOR USE ON A FORKLIFT TRUCK

Dennis W. Gaibler, Gresham, Oreg., assignor to Cascade Corporation, Portland, Oreg.

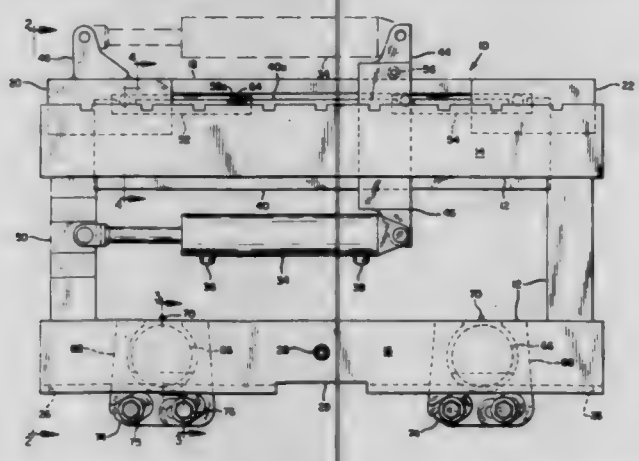
Filed Oct. 2, 1981, Ser. No. 307,886
Int. Cl.³ B66F *9/14*
U.S. Cl. 414—667 **10 Claims**

1. A side shifter, adapted for quick mounting upon the front of a vertically-movable lift truck carriage of the type having a transverse mounting member for load-handling attachments adjacent the top of the carriage, for mounting a load-handling

attachment upon the carriage with the side shifter interposed structurally between the carriage and the attachment so that the attachment is transversely movable with respect to the carriage, and side shifter comprising:

(a) forwardly-facing mounting means for mounting a load-handling attachment thereon;

(b) rearwardly-facing mounting means interconnected with said forwardly-facing mounting means for detachably fixedly engaging said transverse mounting member of said carriage so as to prevent transverse movement between said rearwardly-facing mounting means and said transverse mounting member of said carriage, and for vertically supporting said forwardly-facing mounting means while permitting relative transverse motion between said



forwardly-facing mounting means and said rearwardly-facing mounting means;

(c) a fluid ram interconnecting said forwardly-facing mounting means with said rearwardly-facing mounting means for selectively moving said forwardly-facing mounting means transversely with respect to said rearwardly-facing mounting means; and

(d) fluid ram mounting means on said forwardly-facing mounting means and said rearwardly-facing mounting means respectively for enabling said fluid ram to be interconnected therebetween in either of two alternative, vertically-spaced positions located respectively above and below said transverse mounting member of said lift truck carriage.

4,406,576

INDUSTRIAL ROBOT WITH A SAFEGUARD MECHANISM

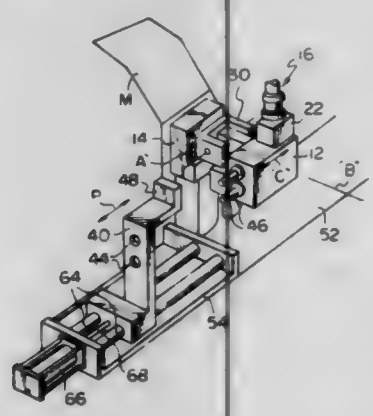
Hajimu Inaba, Hino; Masao Kita, Kawachinagano; Shinsuke Sakakibara, Kunitachi, and Ryo Nihei, Musashino, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,283

Claims priority, application Japan, Aug. 5, 1980, 55-106729

Int. Cl.³ B66C *3/00*

U.S. Cl. 414—735 **2 Claims**



1. A safeguard mechanism for preventing occurrence of any uncontrolled movement of an industrial robot having a stationary part and a movable part when said industrial robot is mounted on a different stationary member and is used in association with a machine or machines, said safeguard mechanism comprising:

mechanical engagement means for providing a disengageable mechanical lock between said movable part of said industrial robot and either said stationary part of said industrial robot or said different stationary member,

said mechanical engagement means comprising a first rigid projecting means provided for said movable part of said industrial robot, and a second rigid member provided for said different stationary member, said second rigid member being formed with receipt hole means engageable with said first rigid projecting means,

and

means for moving said second rigid member until said receipt hole means of said second rigid member is engaged with said first rigid projecting means of said movable part of said industrial robot.

4,406,577

MULTI-STAGE HYDRAULIC MACHINE AND A METHOD OF OPERATING SAME

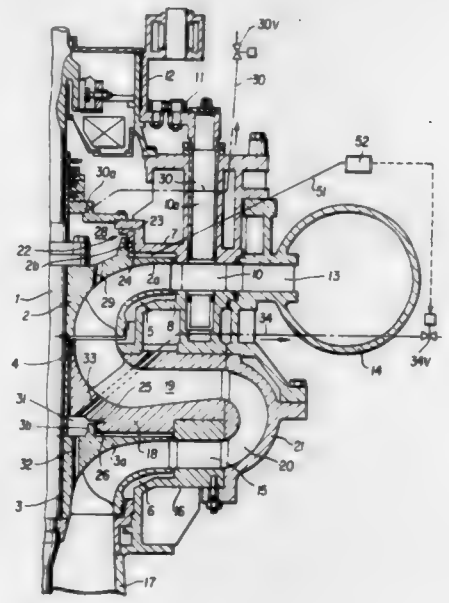
Kentaro Ichikawa, Chigasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 22, 1980, Ser. No. 199,628

Claims priority, application Japan, Oct. 29, 1979, 54/139518; May 30, 1980, 55-72470

Int. Cl.³ F04D *9/00*; F03B *3/10*

U.S. Cl. 415—1 **4 Claims**



1. A method for operating a multi-stage hydraulic machine including;

a plurality of runners;

a plurality of runner housings for housing each of said plurality of runners, respectively;

each of said runner housings being connected to a runner housing of the next stage thereof through a return path; and

movable guide vanes positioned outside of said runner housing of a highest pressure stage, comprising the steps of:

completely closing said guide vanes;

feeding air into each of said runner housings until the water level is lowered by such an amount that a runner of a lowest pressure stage is out of contact with the water;

starting rotation of said runners in air;

exhausting the air in said runner housing of the highest pressure stage so as to introduce water into said runner housing of the highest pressure stage through said return path;

detecting the volume of the air remaining in said runner housing of the highest pressure stage; and

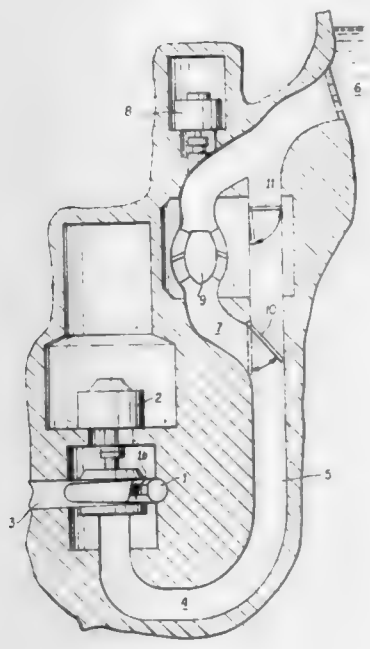
exhausting the air in each of the remaining runner housings when the detected volume of the air remaining reaches predetermined value.

4,406,578

METHOD FOR OPERATING PUMPS

Sachio Tsunoda, and Katsunori Shirasu, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 29, 1980, Ser. No. 221,332
Claims priority, application Japan, Dec. 28, 1979, 54-173291
Int. Cl.³ F03B 3/10
U.S. Cl. 415—1 5 Claims



1. A method for operating pumps in a pumping-up power plant having a single speed reversible pump turbine and a booster pump, said booster pump being provided in a branch pipe which is in parallel with a portion of a draft tunnel between said pump turbine and a lower reservoir; comprising the steps of:

initiating the closing of a first inlet valve at the discharge side of said pump turbine;

disconnecting said pump turbine and said booster pump simultaneously from an outer electric power system to which said pump turbine and said booster pump are connected, after a degree of opening of said first inlet valve is reduced to a predetermined value; and

closing said first inlet valve completely.

4,406,579

AIRFLOW CONVERTER

James Gilson, Rte. 6, Box 236 Tennessee Dr., Seymour, Tenn. 37865

Filed May 11, 1981, Ser. No. 262,041
Int. Cl.³ F03D 3/04
U.S. Cl. 415—2 R 7 Claims

1. An apparatus for converting wind energy into rotational motion comprising:

a housing having a lower aperture and an upper aperture;

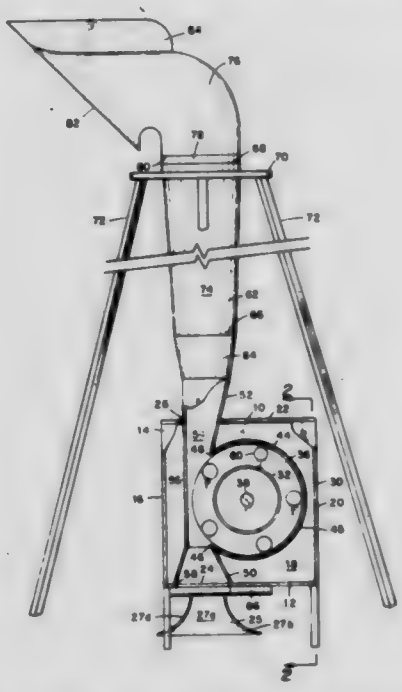
a wheel mounted for rotation within said housing and having a generally horizontal axis of rotation;

about five cylindrical foil members mounted on and adjacent to the perimeter of said wheel at equal angular spacing of about 72° for rotation therewith;

a semi-cylindrical cowl member for partially enclosing said cylindrical foil members and being mounted within said housing in a concentric relationship with said wheel and being dimensioned to be slightly greater in diameter than a circle defined by the outermost points of said cylindrical foil members;

a cylindrical hub mounted concentrically on said wheel and being spaced radially inwardly of said foil members at a selected distance so that said hub and said cowl define a semi-annular air passageway disposed concentrically about the center of said wheel through which said foil members travel when said wheel rotates, said cylindrical hub isolating the semi-annular air passageway from space within the interior of the hub;

plenum structure cooperating with said cowl member and said hub to define a plenum extending from said lower aperture to said upper aperture and being disposed so that said cylindrical foil members are disposed within said plenum as said foil members are traveling in a generally upward direction as they rotate on said wheel;



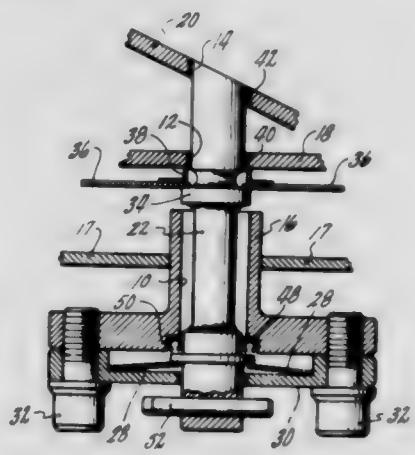
an elongated tube member extending upwardly and outwardly from said upper aperture to an exhaust end, said tube member and exhaust end being configured so that wind impinging thereon causes air flow upwardly into the lower aperture, through the said plenum, through said upper aperture, through said tube member and out said exhaust end, whereby the rising air in said plenum lifts the cylindrical air foils disposed in the plenum to rotate said wheel and cause semi-circular air flow within said annular air passageway.

4,406,580

INSPECTION HOLE PLUG FOR GAS TURBINE ENGINE

Walter J. Baran, Jr., South Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 23, 1981, Ser. No. 286,131
Int. Cl.³ F01D 25/00
U.S. Cl. 415—118 6 Claims



1. A removable plug for sealing an access hole for accepting an instrument for viewing the components of the turbine section of a gas turbine engine formed in at least three concentric casings in which pressurized fluid of different temperature flow through said turbine section of said gas turbine engine comprising a cylindrical elongated body extending into said

access hole and engaging said casings and extending externally of said engine and free floating in said access hole, a cap supported to the outer of said casings mounted in proximity to said cylindrical elongated body and defining retaining means, resilient means in said cap supported in said retaining means and bearing against said plug to load said plug in an axial direction and being allowed to realign itself relative to said casings upon said casings being distorted due to temperature and pressure variation to which said casings are being subjected.

4,406,581

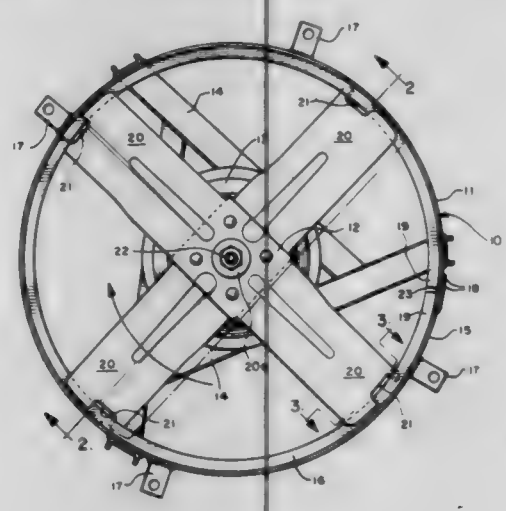
SHROUDED FAN ASSEMBLY

Neil E. Robb, Jackson, and Thomas G. Gorman, Hanover, both of Mich., assignors to Hayes-Albion Corp., Jackson, Mich.

Filed Dec. 30, 1980, Ser. No. 221,431

Int. Cl.³ F04D *25/16*

U.S. Cl. 415—172 A **17 Claims**



1. An improved shrouded fan assembly comprising:
a fan shroud;
an annular ring mounted to the fan shroud; and
a fan blade assembly encircled by the fan shroud, the fan blade assembly having a plurality of fan blades, each having a respective blade tip; and
means for forming a labyrinthian seal between the fan blade assembly and the ring only in the region of at least one of the blade tips and not between the blade tips, said means comprising an edge portion of said at least one of the blade tips shaped and positioned to overlap the ring and thereby to form a labyrinth seal therewith, the fan blade assembly being spaced from the annular ring in the region between the blade tips by an amount sufficient to preclude a labyrinthian seal between the fan blade assembly and the ring in the region between the blade tips.

4,406,582

SUBMERSIBLE PUMP DISCHARGE HEAD

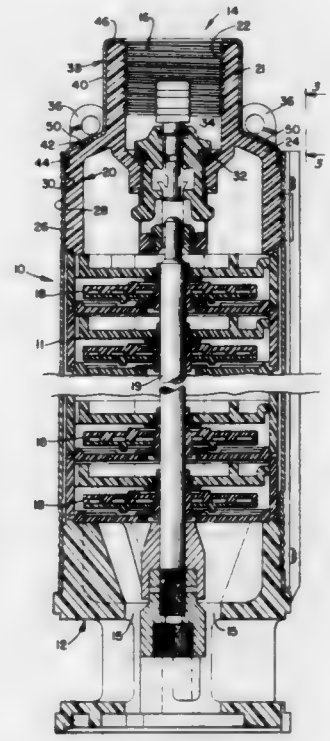
Nyle D. LaGrange, Bettendorf, Iowa, assignor to Marley-Wylain Company, Mission, Kans.

Filed May 19, 1981, Ser. No. 265,056

Int. Cl.³ F04D *29/42*

U.S. Cl. 415—214 **2 Claims**

1. A removable discharge head for coupling a submersible pump casing to a fluid delivery line comprising:
a neck portion having a generally cylindrical, threaded inner surface adapted for threadably receiving said fluid delivery line and defining a centered axis;
an annular shoulder extending radially outwardly from said neck portion, said shoulder including an apertured lug operably coupled thereto;
a generally cylindrical skirt axially depending from said shoulder and including means for detachable coupling of said skirt with said casing,
said neck portion, shoulder and skirt each including an outer surface having respective diameters; and
an outer shell having an inner surface with a portion complemental to said neck portion, said shell inner surface portion having a diameter smaller than the diameter of said neck outer surface, whereby said neck is tightly received within said shell in a force fit, thereby protecting said neck portion, and supporting said neck portion against radially outwardly directed forces generated when said delivery line is received by said threaded inner surface,
said shell inner surface including additional portions complemental to said shoulder and skirt outer surfaces, said additional portions having a diameter smaller than the respective diameters of said shoulder and skirt outer surfaces,



whereby said shoulder and skirt are received within said shell in a force fit,
said shell further including structure defining a slot for receiving said lug therethrough, and said lug including a body having a top portion and bottom portion being of a lesser width than the width of said slot, and a pair of opposed detents spaced apart from said shoulder and extending outwardly from said body, the cross section of said lug at said detents being of a greater width than said slot, said shell being interposed between and retained by said shoulder and said detents.

4,406,583

CENTRIFUGAL PUMP WITH DOUBLE VOLUTE CASING

Karl-Heinz Becker, Worms; Peter Milla, Beindersheim; Peter Hergt, Ludwigshafen, and Heinz-Dieter Hellmann, Grünstadt, all of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Jan. 14, 1981, Ser. No. 225,007

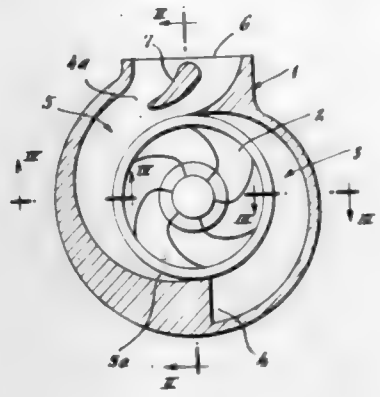
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1980, 3001868

Int. Cl.³ F01D *25/24*; F04D *1/00, 29/40*

U.S. Cl. 415—219 C **15 Claims**

1. A centrifugal pump comprising a casing which is provided with a pair of volutes having starts and ends, each of said volutes extending along an arc of maximally 180 degrees, and

said volutes being arranged so as to be free of overlap with one another, the outer diameter of said casing approximating or



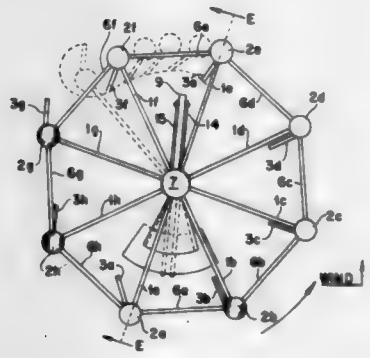
equalling the outer diameter of one of said volutes in the region of the end of said one volute.

4,406,584

VERTICAL AXIS WINDMILL WITH MULTISTAGE FEATHERING OF BLADES AND SAFETY STORM CONTROL

William J. Stepp, 4241 Park Ave., Lake Station, Ind. 46405

Filed Aug. 7, 1980, Ser. No. 166,125
Int. Cl.³ F03D 7/06
U.S. Cl. 416—41 9 Claims



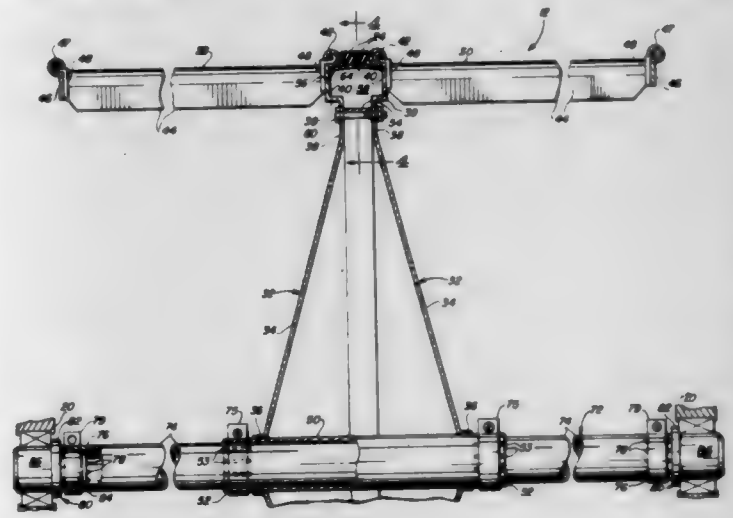
1. In a windmill of the vertical axis type, having a plurality of circumferentially and radially outward spaced, rotatable and diametrically paired power blades vertically parallel to the axis of the windmill and horizontally pivotal between top and bottom congruently located radial arms which are affixed to a hollow axis shaft which is rotatably mounted on a thrust bearing and held erect by thrust bearing equipped cross trusses at the top of the centermast, said trusses attached to anchoring guy wires or cables, the components refered to constituting the main assembly characterized by a feathered blade side and a power angle side augmented by upwind and downwind torque pressure arcs in which the wind pressures the blades across the wind current in opposite directions respectively in the windmill rotation circle, said direction of rotation is arbitrary depending upon the construction design, the wind pressure feathering the blades in a direction of rotation opposite to the direction of rotation of the windmill assembly, wherein a cam assembly is mounted on and around the centermast below and above the top and the bottom radial arm assemblies respectively, said cam assemblies connected one to the other by a rigid directional wind vane or rudder enabling the cam assemblies to function in unision, each functionally identical and having horizontal cam follower wheels which are propelled around a generally circular track which by interruption in its circular continuity a lateral motion is given to the cam follower wheels which transmit said motion by linkages to motion-direction transfer disks to operate levers which lock and release the blades to partially feather in multistage increments, sequentially restrained by a bladestop on each of three short inwardly directed radial arms or prongs emanating from the end of the long radial arms approximately 45 degrees apart, the feathering rotation is clockwise in a windmill constructed to rotate in a counter-clockwise direction, said partial feathering repositioning the blades in increments for the most optimum resistance to the wind before final feathering and return of the blade upwind, said repositioning of the blade by the wind occurs when the programed release is initiated by the cam follower action through the aforementioned linkage to the bladestop mechanisms of the windmill, wherein internal control and means are provided for effecting total automatism in operation including mass release of the blades when storm winds exceed a predetermined velocity threatening the structures, emergency release of individual blades as a result of blade locking malfunction, retardation of vane feathering speed in direct proportion to the prevailing wind velocity obviating the use of shock absorbers by using an individual blade braking system regulated by the varying wind velocities, augmented by or substituted therefor, an inertial weight system whereby sudden feathering is sufficiently moderated, and included in the factors promoting automitism there is a torque conversion means whereby rotation of the windmill to the relative low rpm for which this windmill is designed is maintained and regulated to a predetermined rpm by a wind pressure sensor to open or close multiple energizing electric circuits to the field coils of generators being turned by the windmill, said circuits increasing or decreasing the fields of flux to serve as a restraining as well as the electric generating force keeping the rotation to a relative low speed, the work load being thus automatically regulated accordingly, there also being means to manually operate the automatic storm release innovations to stop the rotation of the windmill for any purpose in any wind velocity.

4,406,585

IMPELLER ASSEMBLY FOR A BLOWER MECHANISM

Adam D. Goettl, Phoenix, Ariz., assignor to Goettl Enterprises, Phoenix, Ariz.

Filed Jun. 19, 1981, Ser. No. 275,317
Int. Cl.³ F04D 29/28
U.S. Cl. 416—60 22 Claims



1. An impeller assembly for use in a blower structure of the type having a bearing mounted centrally in each of the axially aligned inlet openings thereof, said impeller assembly comprising:

(a) a pair of blower wheels each having at least one end plate, each of the end plates having a centrally disposed hole and an endless axially offset peripheral ring;

(b) a hub sleeve mounted in the center holes of the end plates of said pair of blower wheels for interconnection thereof in an axially aligned juxtaposed relationship with the axially offset peripheral rings of the end plates of said pair of blower wheels comparatively defining an endless annular groove;

(c) an endless pulley band formed of a metallic strip in the endless annular groove defined by the axially offset peripheral rings of the end plates of said pair of blower wheels, said pulley band having its opposite side edges in

bearing engagement with the peripheral rings of the end plates of said pair of blower wheels to fixedly hold said pulley band therebetween; and

(d) axle shaft means in said hub sleeve for rotation with said pair of blower wheels, said axle shaft means having its opposite ends disposed for rotatable journalling in the bearings of the blower structure.

4,406,586

DEVICE TO CONVERT THE ENERGY OF A FLUID IN MOTION

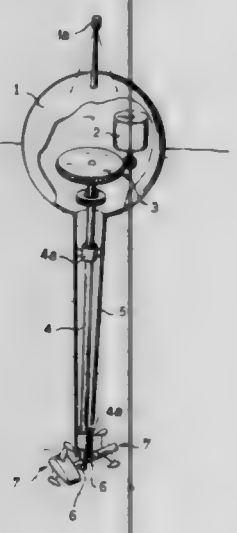
Olivier de la Roche Kerandraon, 18 rue de Gravelle, 75012 Paris; Pierre Guillaume, 30 rue Boissière, 75116 Paris, and Daniel Paroldi, 24 rue Pierre Larousse, 75014 Paris, all of France

PCT No. PCT/FR80/00048, § 371 Date Nov. 13, 1980, § 102(e) Date Nov. 13, 1980, PCT Pub. No. WO80/02181, PCT Pub. Date Oct. 16, 1980

PCT Filed Mar. 28, 1980, Ser. No. 224,513

Int. Cl.³ F03B *13/12*

U.S. Cl. 416—85 **11 Claims**



1. A device to convert wave energy into mechanical energy, comprising a floating structure of a height in the water such that the upper portion of the structure is subject to wave action and the lower portion is disposed in still water, whereby the water adjacent the upper portion of the structure has vertical motion alternately in opposite directions relative to the water adjacent the lower portion of the structure, a vertical rotatable shaft carried by the structure, a plurality of axles extending radially outwardly from the shaft, panels mounted for vertical swinging movement on the shaft about axes spaced from the center of thrust of vertically moving fluid on the panels, said panels being disposed in a fluid, said fluid and said panels having relative vertical movement in alternately opposite directions as a result of said wave action, and ballast and/or float means carried by said panels to maintain said panels horizontal in the absence of said relative vertical movement, said ballast and/or float means conferring on said panels a planing wing action upon said relative vertical movement thereby to rotate said shaft in the same direction regardless of the direction of said relative vertical movement.

4,406,587

VIBRATION ACTUATED LIQUID PUMP

John C. Perry, 3170 Falcon Dr., Carlsbad, Calif. 92008

Filed Apr. 9, 1981, Ser. No. 252,383

Int. Cl.³ F04B *37/00*

U.S. Cl. 417—211 **3 Claims**

1. A positive displacement pump for pumping liquids comprising:

an elongated body forming a first liquid inlet end and a second liquid exit end, said body further defining a cylindrical bore therethrough,

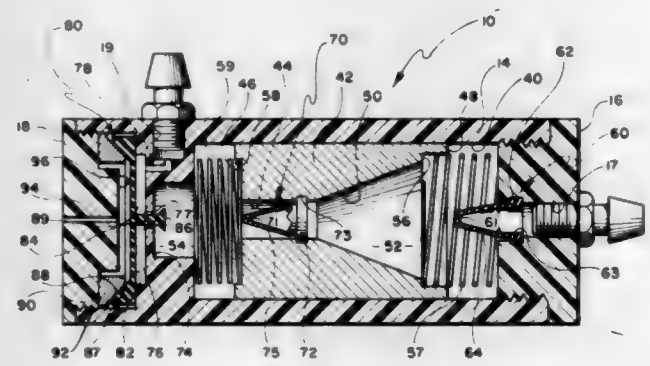
a free stroking piston having a first pumping end and a second suction end slidably contained within said cylindrical bore, said piston forming a passageway therethrough, said piston, when positioned approximately halfway within said cylindrical bore, defines a first liquid inlet chamber formed between said second suction end of said piston, an inner wall of said cylindrical bore formed by said body and said first inlet end, a second liquid reservoir chamber is formed between said first pumping end of said piston, said inner wall of said cylindrical bore and said second liquid exit end, said first liquid inlet chamber and said second liquid reservoir chamber varying in volume as said piston moves axially within said cylindrical bore,

a first spring means adjacent said first pumping end of said piston, a second spring means adjacent said second suction end of said piston to amplify the oscillation of said piston axially to and fro within said cylindrical bore,

a source of liquid directed to said first liquid inlet end,

a first one-way valve secured to said body in liquid communication with said first liquid inlet end,

a second one-way valve secured to said piston in liquid communication with said passageway formed by said piston, said second valve is closed when said piston moves within said cylindrical bore toward said second liquid exit end thereby forcing any liquid within said second liquid reservoir chamber out of said exit end, said first one-way valve communicating with said first liquid inlet end opens substantially simultaneously as said piston moves toward said liquid exit end drawing liquid through said first liquid inlet end from said source of liquid substantially filling said first liquid inlet chamber, as said piston reverses direction at the end of its



stroke, said one-way valve in communication with said first liquid inlet end being closed and the valve in communication with said piston is opened thus transferring liquid into said reservoir chamber, thereby completing one cycle of said pump,

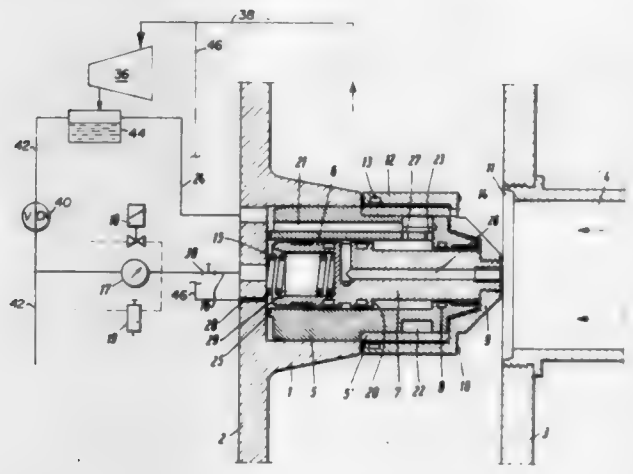
a liquid regulating means integral with said second liquid exit end of said elongated body, said liquid regulating means includes a resilient diaphragm actuated valve to control liquid flow through a valve seat formed in said second liquid exit end of said body, said resilient diaphragm is rigidized by circumferential enlargement of the diameter of the diaphragm by a diaphragm enlargement means, said diaphragm enlargement means is a non-resilient ring, said ring forming an angled male conically shaped surface slidably engaged with a complementary female conically shaped surface formed by said diaphragm whereby, movement of said non-resilient male conically shaped surface of said ring toward said female conically shaped surface of said diaphragm thereby stretches the diaphragm to effectuate precise control of said valve relative to its valve seat formed in said second liquid exit end of said body, and

vibration means having a primary function other than providing a source of vibration for said pump, said vibration means is positioned substantially adjacent said elongated body, vibratory motion, upon operation of said vibration means, being oriented substantially parallel with an axis of said body to move said free stroking piston axially to and fro within said body to pump liquid therethrough from said liquid source.

4,406,588
COMPRESSOR SUCTION REGULATOR

Rudolf Hofmann, c/o Isartaler Schraubenkompressoren GmbH, Wallensteinstrasse 20, 8192 Geretsried 2, Fed. Rep. of Germany

Filed Nov. 3, 1980, Ser. No. 203,396
Int. Cl.³ F04B *49/08*
U.S. Cl. 417—281 **5 Claims**



1. In an oil injection screw compressor having a suction duct, an outlet and an oil reservoir connected with the outlet and pressurized by the compressor discharge, a suction regulator comprising:

a cylinder having a closed end and an open end directed toward said compressor suction duct;

a piston slidably disposed in said cylinder for movement between a retracted open position spaced from said compressor suction duct to an extended position, said piston having a closure element adapted to seat in and close said suction duct in the extended position of the piston;

biasing means interposed between said piston and cylinder to urge said piston toward the extended position;

means for retracting said piston and closure element to open said suction duct when said compressor is operating; and

means to vent the air pressure in said oil reservoir through said piston and cylinder into said suction duct when said suction duct is closed to prevent oil in said reservoir from being forced through said compressor into said suction duct.

4,406,589
COMPRESSOR

Masayuki Tsuchida; Toshio Inoue, both of Yokohama; Yoich Mizutani, Isehara, and Toshitsugu Suzuki, Tokyo, all of Japan, assignors to Tokico Ltd., Kanagawa and Hitachi, Ltd., Tokyo, both of, Japan

Filed Feb. 23, 1981, Ser. No. 237,314
Claims priority, application Japan, Feb. 29, 1980, 55-25949
Int. Cl.³ F04B *49/00*
U.S. Cl. 417—295 **13 Claims**

1. A compressor comprising:

a main compressor body for compressing air;

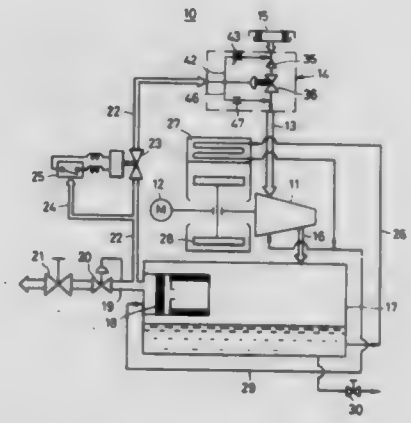
an unloader valve device comprising a suction port, an ejection port, and a supply port, said ejection port being coupled to a suction side of said main compressor body;

a bleeding pipe provided between an ejection side of said main compressor body and said supply port of said unloader valve device; and

a controlling valve mechanism provided inside said bleeding pipe, for detecting fluid pressure at the ejection side of said main compressor body and opening when the detected fluid pressure reaches a predetermined fluid pressure, said controlling valve mechanism opening when said main compressor body stops operating,

said unloader valve device comprising a check valve provided between said suction port and said ejection port, a main valve provided between said ejection port and said supply port, a bleeding passage provided between and supply port and said suction port, and a relief passage provided between said ejection port and said main valve,

said check valve opening and automatically adjusting supply of air to said main compressor body during a loaded operation mode of said compressor, and closing during a no-load operation mode of said compressor and when said main compressor body stops operating,



said main valve means opening due to air released through said bleeding pipe when said controlling valve mechanism opens, and operating to close said check valve,

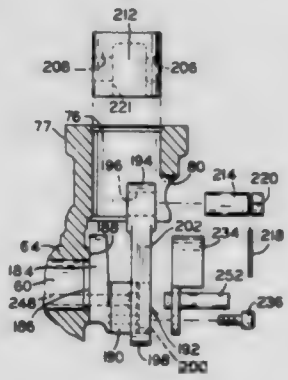
said bleeding passage releasing air supplied from said bleeding pipe to said check valve through said suction port,

said relief passage releasing air supplied from said bleeding pipe to the suction side of said main compressor body when said main valve opens, to maintain a certain pressure at the suction side of said main compressor body when said check valve means is closed.

4,406,590
HERMETIC COMPRESSOR

Donald L. Kessler, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Jun. 11, 1980, Ser. No. 158,574
Int. Cl.³ F04B *35/04, 39/14;* F16J *1/00*
U.S. Cl. 417—360 **10 Claims**



1. A compressor comprising:

a crankcase having a cylinder therein, said cylinder including a sidewall,

a crankshaft rotatably received in said crankcase,

said cylinder sidewall including a slot therethrough, being open in a direction generally facing said crankshaft,

a piston slidably received in said cylinder,

a connecting rod comprising a first closed loop end received over a journal portion of said crankshaft and a second closed loop end, said slot being dimensioned to receive the second closed loop end of said connecting rod, said connecting rod second end being in register with said slot when said connecting rod and crankshaft are substantially in their bottom dead center positions, whereby said connecting rod second end can be inserted into said cylinder

through said slot at the same time said first end is slid over one end of said crankshaft, and

a cylindrical wrist pin journaled in said second closed loop end and journaled in aligned openings in said piston, said wrist pin being completely encircled by said openings and said second closed loop end,

said wrist pin being in register with said slot when said connecting rod and crankshaft are substantially in their bottom dead center positions whereby said wrist pin can be inserted through said cylinder sidewall into said piston.

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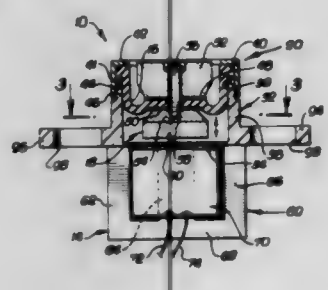
ELECTROMAGNETIC FLUID PUMP

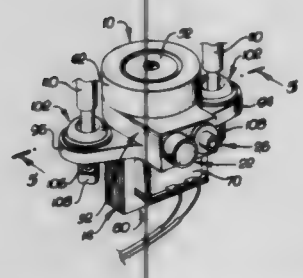
Anthony Louis, 437 Grinnell Dr., Burbank, Calif. 91501

Filed Jan. 19, 1981, Ser. No. 225,962

Int. Cl.³ F04B *43/04*

U.S. Cl. 417—363 **36 Claims**





1. An electromagnetic fluid pump, comprising:

an electromagnet motor unit having an electromagnet with an E-shaped core and a coil fitting around a center leg of said core to be energized by a source of alternating current; and

a pumping unit to be driven by said electromagnet motor unit, and comprising:

a cup-shaped plastic pump casing having an end wall disposed against said electromagnet, a side wall, an opening in its end opposite said end wall, and inlet and outlet ports opening into the interior of said casing,

one-way valves permitting inlet and outlet fluid flows through said inlet and outlet ports, respectively,

a flexible diaphragm secured to said casing over said opening at one end of the pump and cooperating with said casing to define a pumping chamber,

at least one weight of a magnetizable material carried by said diaphragm,

and a permanet magnet secured to said diaphragm to be reciprocated by said electromagnet from across said pumping chamber when the latter is energized, thereby alternating to attract and repel said permanent magnet to reciprocate said diaphragm in and out with respect to said pumping chamber to pump fluid through said chamber.

4,406,592

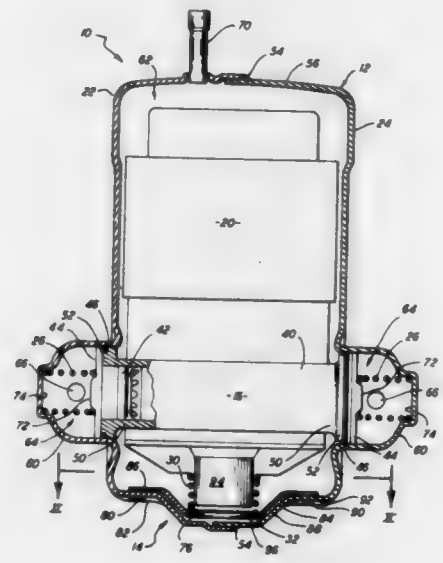
MOTOR-COMPRESSOR UNIT AND A METHOD OF ASSEMBLING MOTOR-COMPRESSOR UNITS

Tadek M. Kropiwnicki, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 26, 1981, Ser. No. 247,659

Int. Cl.³ F04B *17/00, 35/00;* F16M *7/00*

U.S. Cl. 417—363 **2 Claims**



1. A motor-compressor unit comprising:

a compressor including a cylinder block having a plurality of cylinders defined therein, said cylinders having cylinder flanges extending radially outwardly from the axis of said cylinder block;

a motor connected to the compressor in vertical alignment therewith;

a shell enclosing the compressor and the motor having first and second sections joined together along a seam defining a vertical plane, a first ear defined by the first section of said shell and a second ear defined by the second section of said shell, both said first and second ears comprising a cylindrical portion of complimentary shape to said cylinder flanges and extending radially outward of the vertical axis of said shell, said cylinder flanges extending into corresponding ears of said shell sections to form a corresponding plurality of plenums in said shell;

a mounting plate engaging and being supported by the first and second sections of said shell on both sides of the vertical seam defined by said shell;

first resilient means disposed between said mounting plate and the bottom of the cylinder block of the compressor, resiliently supporting the compressor within said shell along the axis of said shell, said first resilient means extending on both sides of the vertical plane defined by the seam of said shell;

second resilient means disposed between each of said ears of said shell and the corresponding cylinder flange of the cylinder block disposed therein, exerting force along the axis of said cylinders to absorb lateral movement of the cylinder block within said shell; and

the bottom of said first and second shell sections each being provided with a curved raised head, and said mounting plate being provided with complementary beads adjacent the outer portions thereof which closely overlap the beads on the shell sections, said beads cooperating to allow movement of the mounting plate relative to the shell sections along the longitudinal axes of the beads but inhibit movement of the mounting plate along the transverse axes of the beads.

4,406,593

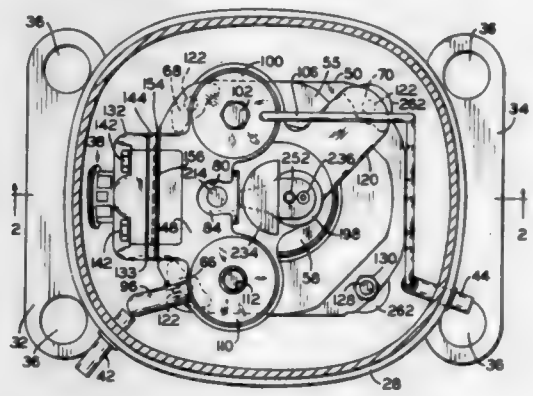
MOUNTING SPUD ARRANGEMENT FOR A HERMETIC COMPRESSOR

Donald L. Kessler, Tecumseh, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Division of Ser. No. 158,574, Jun. 11, 1980. This application Jul. 6, 1982, Ser. No. 395,457

Int. Cl.³ F04B *35/04;* F16M *13/00*

U.S. Cl. 417—363 9 Claims



1. A hermetic motor compressor unit comprising:

an outer housing,

a stator disposed within the outer housing and including a central opening therein, said stator including an upper surface, a lower surface and sides defining a peripheral surface,

an electrical field winding disposed on said stator,

a crankcase supported on the upper surface of said stator and including a cylinder,

a crankshaft rotatably mounted in said crankcase and including a rotor secured thereto, said rotor being disposed in the central opening of said stator and rotatable about an axis extending through said opening,

a piston slidably received in said cylinder and connected to said crankshaft,

at least three elongated connecting elements extending upwardly through said stator and distributed around the stator central opening near the peripheral surface of said stator and secured to said crankcase, said connecting elements including heads protruding beyond the lower surface of said stator, said heads each including a central axis,

at least three upwardly extending coil springs secured to said outer housing,

a mounting spud secured to each of said connecting element heads and in abutment with the lower surface of said stator, said spud comprising a downwardly extending retainer finger having an axis and being disposed axially in a respective said coil spring and retained therein, said spud further comprising a socket in which the head of the respective connecting element is received the socket having an axis coaxial with the axis of the respective head, said finger axes being disposed radially outward of the respective socket axes relative to the axis of the rotor.

4,406,594

COMPRESSOR OIL PUMP

Stephen A. Smaby, La Crescent, Minn., and Arthur L. Butterworth, La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Jun. 1, 1981, Ser. No. 269,304

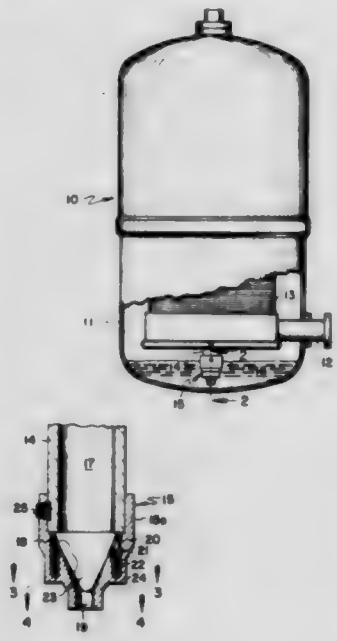
Int. Cl.³ F04B *39/02;* F03B *3/12;* F01M *9/00*

U.S. Cl. 417—368 9 Claims

1. In a machine having a hollow rotatably driven vertical shaft, an oil pump adapted to being attached to the lower end of the shaft and rotated thereby while extending into a reservoir of oil, said oil pump comprising

a pick-up tube having a small diameter inlet opening at one end which is immersed in oil and a relatively larger diameter opening at the other end which is adapted to connect to the hollow shaft, and having an internal surface which tapers radially outward between the two ends, said internal surface when rotated by the vertical shaft acting to centrifugally pump oil upward through the hollow bore of the shaft; and

an annular contaminant collection groove disposed circumferentially around the interior surface of the pick-up tube



adjacent its larger end, forming a pocket in the wall of said tube which is in fluid communication with the interior thereof, and thereby adapted to collect and retain any contaminant particles which may be contained in the oil flowing up the interior of the pick-up tube as it rotates, said particles being retained in the pocket when the shaft stops rotating.

4,406,595

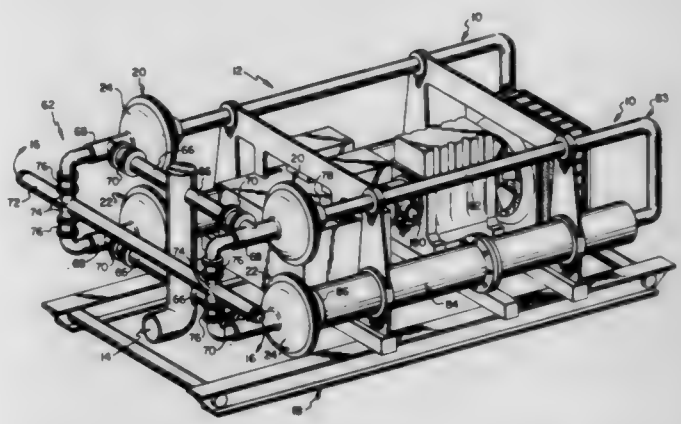
FREE PISTON PUMP

William C. Robertson, P.O. Box 338, Stroud, Okla. 74079; Robert H. Robertson, 2640 Heatherwood Dr., Dallas, Tex. 75228, and Ray E. Forpahl, 708 N. Walnut, Harper, Kans. 67058

Filed Jul. 15, 1981, Ser. No. 283,747

Int. Cl.³ F04B *43/06*

U.S. Cl. 417—383 8 Claims



1. An apparatus for pumping material from an inlet source to an outlet source comprising:

first and second structures each defining a pumping chamber, each of said structures having a first port for passage of material into the pumping chamber and a second port for passage of pumping fluid into the pumping chamber;

first and second flexible diaphragms secured within said first and second structures, respectively and dividing each of the pumping chambers into first and second compart-

ments, the first and second ports entering the first and second compartments, respectively;

first and second inlet check valve means for permitting flow of material only into the first compartments of said first and second structures, respectively from the inlet source;

first and second outlet check valve means for permitting flow of material only from the first compartment of each of said first and second structures, respectively, to the outlet source;

a cylinder having a first end in fluid communication with the second port of said first structure and the opposite end of said cylinder being in fluid communication with the second port of said second structure;

a piston assembly for positioning within said cylinder for reciprocation therein, the piston assembly including an elongate piston shaft and first and second piston head assemblies at each end of said piston shaft, said cylinder further having a sleeve assembly for slidable sealing contact with said piston shaft, said cylinder and piston assembly defining a first pumping chamber between the sleeve assembly and the first piston head assembly and a second pumping chamber between the sleeve assembly and second piston head assembly, a first intermediate chamber being formed by the second compartment of said first structure, said cylinder and the first piston head assembly for containing pumping fluid, a second intermediate chamber being formed by the second compartment of said second structure, said cylinder and the second piston head assembly for containing pumping fluid;

pumping means for pressurizing the pumping fluid;

toggle valve means for alternate directing of the pressurized pumping fluid between said first and second pumping chambers for alternate pressurization of said first and second pumping chambers to reciprocate said piston assembly within said cylinder, the reciprocation inducing alternate pressurization and evacuation of the first and second intermediate chambers to flex the diaphragms in said structures to pump material from the inlet source to the first compartments and to the outlet source;

pilot valve means for controlling the position of said toggle valve means; and

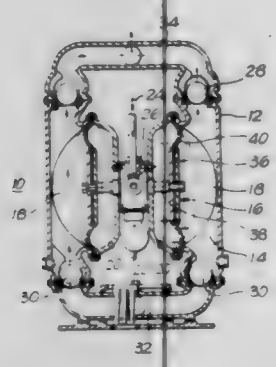
sensor means for sensing the position of said first and second piston heads to divert a portion of of the pressurized pumping fluid in the pressurized one of said first and second pumping chambers to said pilot valve means for activation thereof.

4,406,596

COMPRESSED AIR DRIVEN DOUBLE DIAPHRAGM PUMP

Dirk Budde, Donatusstrasse 37, 4052 Korschenbroich 1, Fed. Rep. of Germany

Filed Jul. 27, 1981, Ser. No. 287,324
Int. Cl.³ F04B *43/06*
U.S. Cl. 417—393 **6 Claims**



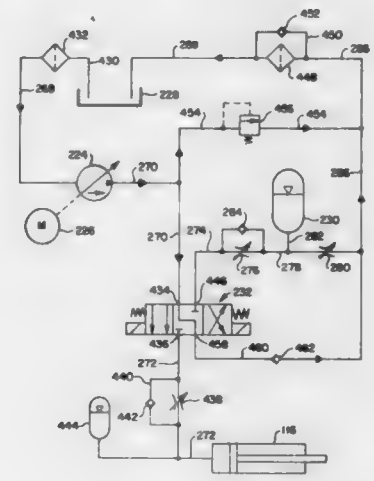
1. Compressed air driven double diaphragm pump (10) consisting of a pump housing (12) having two housing chambers (14) disposed side by side in a spaced-apart relationship, each having a diaphragm assembly (16) and being divided by the latter into a pumping chamber (18) and an air chamber (20), the air chambers (20) of the two housing chambers (14) being aligned with one another and having between them a compressed air control means (22) which feeds compressed air to the two air chambers (20) and alternately vents the air chambers, the pumping chambers (18) communicating through valve means (28, 30) with a suction (32) and a discharge (34) through wich the material being pumped is aspirated into and forced out of the pumping chamber (18) on the basis of the diaphragm movement produced by the compressed air, the compressed air control means (22) having a main control valve piston (52) for the changing of the air chamber connecting paths, characterized in that the main control valve piston (52) is driven through a pneumatically operating pilot control system having a pilot control valve piston (70), the pilot control valve piston (70) being operated in turn by the movement of the diaphragm means (26), the main control valve piston (52) passing through a center position in which the air chambers (20) are separated from the working air in the one case and the atmospheric air in the other, in the center position of the main control valve piston (52), the two air chambers (20) being connected to one another.

4,406,597

METHOD FOR PUMPING A LIQUID FROM A WELL AND APPARATUS FOR USE THEREIN

George E. Stanton, Orient, Ohio, assignor to Nujack Oil Pump Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 156,780, Jun. 5, 1980, Pat. No. 4,346,620. This application Oct. 27, 1980, Ser. No. 200,899
Int. Cl.³ F04B *47/04, 47/14*
U.S. Cl. 417—399 **32 Claims**



1. Well pumping apparatus comprising:

a sucker rod pumping string;

a frame;

a first carriage slideably mounted to reciprocate in a vertical plane on the front of said frame;

a second carriage slideably mounted on the back of said frame to reciprocate in cooperation with said first carriage;

rotatable means attached to said frame;

flexible means strung over said rotatable means and connecting said first and second carriages;

a counterweight mounted on the second carriage;

a piston-cylinder combination mounted on the frame for raising said first carriage;

a reservoir for hydraulic fluid;

a fluid pump mounted on the frame in fluid communication with the cylinder for pumping hydraulic fluid from said reservoir to said cylinder to raise the piston and carriage during the ascending phase of a pumping cycle;

a fluid discharge line serving to discharge the fluid from the cylinder during the descending phase of said pumping cycle and connected in fluid communication with said cylinder and said reservoir;

first and second restriction valves connected in series in said

discharge line with said first valve allowing greater flow than said second valve;

a fluid tight accumulation tank connected in fluid communication with said discharge line intermediate said two valves;

a by-pass line extending around said first valve;

a check valve mounted in said by-pass line to allow a back pressure buildup in the discharge line intermediate said first and second valves to be applied to said discharge line between said cylinder and said first valve whereby the volume of hydraulic discharge from the cylinder is decreased near the bottom of said descending phase of said cycle to thereby absorb the shock of said pumping string as it nears the bottom and begins said ascending phase of said pumping cycle.

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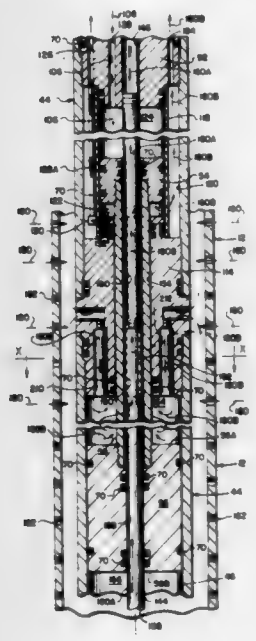
LONG STROKE, DOUBLE ACTING PUMP

John R. Walling, P.O. Box 16266, Fort Worth, Tex. 76133

Continuation-in-part of Ser. No. 170,610, Jul. 21, 1980, Pat. No. 4,336,415. This application Oct. 14, 1980, Ser. No. 196,837

Int. Cl.³ F04B *47/08*

U.S. Cl. 417—404 **3 Claims**



1. A pump for producing formation fluid from a well comprising:

an elongated pump housing having an axially extending bore;

means partitioning the bore, thereby defining a power cylinder and a production cylinder, said partitioning means having an axially extending through passage leading from the power cylinder to the production cylinder;

a guide rod extending axially through the production cylinder, the through passage in the partitioning means, and through the power cylinder, said guide rod having an axially extending bore connected at its lower end in fluid communication with the lower pump chamber, thereby defining a passage for conveying formation fluid produced from the lower pump chamber;

a tubular ram having a bore, said guide rod being received in slidable, sealing engagement within said ram bore, and said ram extending through the partitioning means passage in slidable, sealing engagement with said partitioning means;

an annular power piston secured to one end of said ram and disposed in slidable, sealing engagement with the bore of the power cylinder, thereby dividing the power cylinder into upper and lower power chambers;

an annular production piston secured to the opposite end of said ram and disposed in slidable, sealing engagement with the bore of the production cylinder, thereby dividing the production cylinder into upper and lower pump chambers; and,

means connected in fluid communication with the upper and lower power chambers of the power cylinder for alternately pressurizing and relieving the upper and lower power chambers.

4,406,599

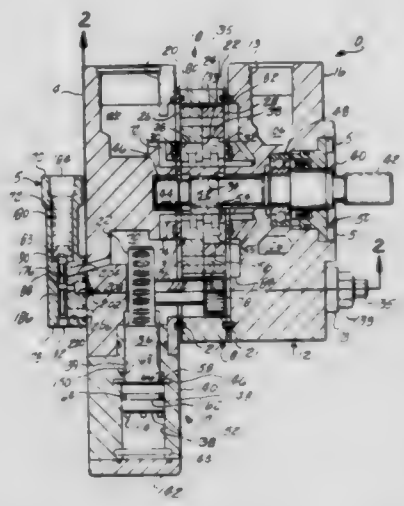
VARIABLE DISPLACEMENT VANE PUMP WITH VANES CONTACTING RELATIVELY ROTATABLE RINGS

Robert W. Stephan, Northville, Mich., assignor to Vickers, Incorporated, Troy, Mich.

Filed Oct. 31, 1980, Ser. No. 202,502

Int. Cl.³ F04C *2/00, 15/04*

U.S. Cl. 418—22 **11 Claims**



1. A variable displacement vane pump comprising

a casing having an inlet and an outlet,

a cavity formed in said casing between said inlet and said outlet

a pair of rings having oval-shaped inner contours and rotatably mounted in said cavity in side-by-side relationship,

said rings being adapted for relative rotation to each other between a first position wherein said inner contours are in register and a moved position wherein said inner contours are out-of-register,

a rotor mounted in said cavity for rotation within said rings and having a plurality of circumferentially spaced recesses,

a pair of vanes movably mounted in abutting relationship in each of said recesses and adapted for slidable contact with said inner contours of the rings,

means operatively connected to said rings for effecting said relative rotation comprising

gear segments formed on said rings,

a pair of pinion members rotatably mounted in said casing in operative engagement with said gear segments,

a rack member having linear rack gears in operative engagement with said pinion members,

and said rack member being movable substantially radially of said rings.

4,406,600

SCROLL-TYPE FLUID DISPLACEMENT APPARATUS WITH ROTATION PREVENTION/THRUST BEARING MEANS FOR ORBITING SCROLL MEMBER

Kiyoshi Terauchi, Isesaki, and Seiichi Sakamoto, Gunma, both of Japan, assignors to Sanden Corporation, Gunma, Japan

Filed Mar. 31, 1981, Ser. No. 249,656

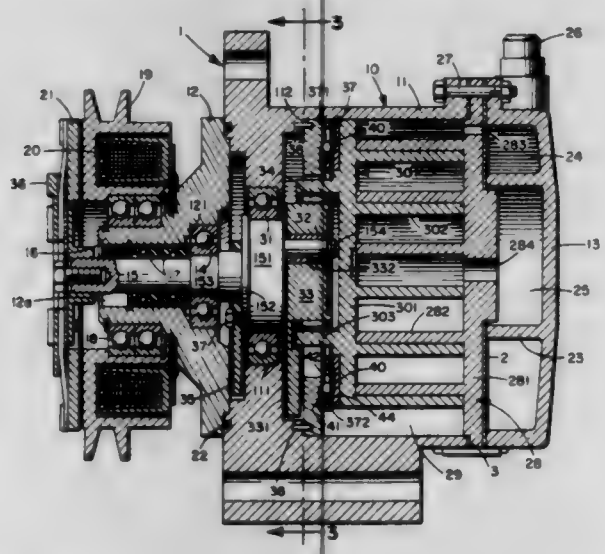
Claims priority, application Japan, Apr. 5, 1980, 55-44072

Int. Cl.³ F01C *1/02, 17/00, 21/02;* F16D *3/04*

U.S. Cl. 418—55 **23 Claims**

1. In a scroll-type fluid displacement apparatus including a housing having a fluid inlet port and a fluid outlet port, a fixed scroll fixedly disposed relative to said housing and having end surface from which first wrap extends into the interior of said

housing, an orbiting scroll having an end plate from which second wrap extends, and said first and second wraps interfitting at an angular offset to make a plurality of line contacts to define at least one pair of sealed off fluid pockets, a drive mechanism connected to said orbiting scroll for transmitting orbital motion to said orbiting scroll, and rotation preventing means for preventing rotation of said orbiting scroll during the orbital motion of said orbiting scroll, whereby said fluid pockets change volume by the orbital motion of said orbiting scroll, the improvement comprising said rotation preventing means comprising a fixed ring disposed within said housing spaced from and opposed to said end plate and a sliding ring which is



slidably connected to said fixed ring by keys and keyways for permitting motion in a first direction of a diameter and slidably connected to said end plate by keys and keyways for permitting motion in a second direction of a diameter perpendicular to said first direction, and said sliding ring having formed in it a plurality of pockets which penetrate axially and are circumferentially spaced, and said pockets retaining bearing elements for transmitting axial thrust load from said orbiting scroll to said fixed ring, said bearing elements being sized relative to said sliding ring, keys and keyways so that the axial thrust load is transmitted solely by said bearing elements, and the rotation of said orbiting scroll is prevented by said keys and keyways.

4,406,601

ROTARY POSITIVE DISPLACEMENT MACHINE

Joseph L. Towner, Corning, N.Y., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jan. 2, 1981, Ser. No. 222,050
Int. Cl.³ F01C *1/18*; F04C *18/18*
U.S. Cl. 418—191 **5 Claims**

1. A rotary, positive displacement machine adapted to handle a working fluid, comprising:

a casing structure having two intersecting bores and end walls;

a first rotor mounted for rotation in one said bore; and

a second rotor mounted for rotation in the other said bore; wherein

each rotor has a hub and at least one lobe;

each lobe is integral with a respective hub and projects generally radially outward therefrom, defining an outermost radial surface of the rotor;

each hub has formed therein at least one groove; defining an innermost radial surface of the rotor, to receive, interengagingly therein, one of said lobes;

said hubs are configured so as to rotate in substantially sealing relation to each other during at least a portion of each rotation;

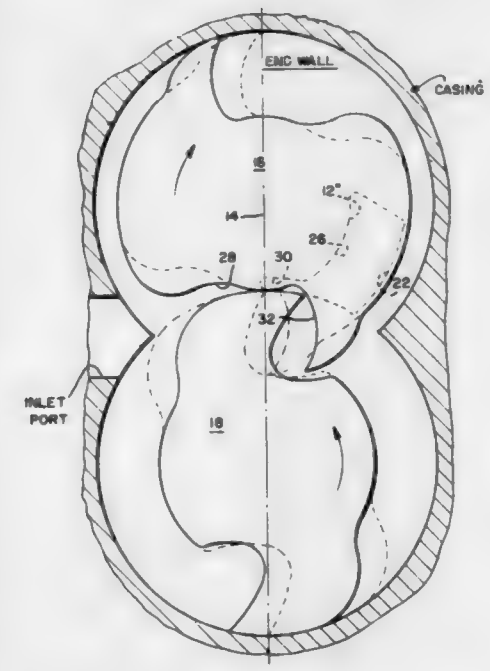
said casing structure has a first port for the passage therethrough of the working fluid at a given pressure, and a second port for the passage therethrough of the working fluid at higher pressure than said given pressure;

at least a portion of said second port is located in an end wall of the bore containing said first rotor, and has a radially innermost edge, a radially outermost edge, and an arcuate edge joining said innermost and outermost edges;

said hub of the first rotor and its groove therein comprise means for cyclically covering and uncovering said second port so as to control the flow of the higher-pressure working fluid through said second port;

said rotors are adapted to displace the working fluid inside said bores;

said machine has a built-in compression ratio, when operating as a fluid compressor, such that the working fluid is compressed internally within the machine before passing through said second port, and a built-in expansion ratio, when operating as a fluid expander, such that the working



fluid expands internally within the machine before passing through said first port;

said outermost radial surface of said second rotor, during rotation of the latter, and said arcuate edge of said port, describe a first, substantially common, radial arc;

said radially innermost edge of said second port has a major portion thereof which, with rotor rotation, comes into substantially axial alignment with said groove in said first rotor, and has a minor portion thereof which is constantly occluded by said first rotor;

said first and second rotors are mounted for rotation on parallel axes on a common plane; and

said end wall portion of said second port is traversed by said common plane.

4,406,602

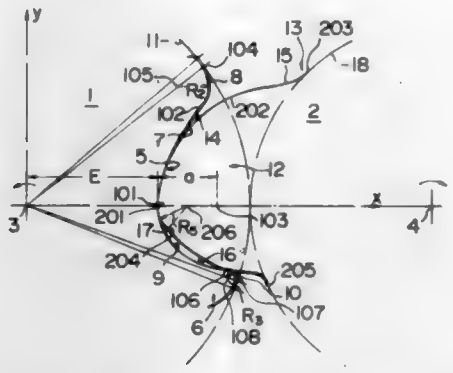
SCREW ROTOR WITH SPECIFIC TOOTH PROFILE

Katsuhiko Kasuya, Shimoinayoshi; Mitsuru Fujiwara, Dejimamura; Tetsuzo Matsunaga; Masaya Imai, both of Sakuramura, and Yasuo Takahashi, Ayase, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 1, 1981, Ser. No. 326,358
Claims priority, application Japan, Dec. 3, 1980, 55-169574
Int. Cl.³ F04C *18/16*
U.S. Cl. 418—201 **7 Claims**

1. In a screw rotor suitable for use with a screw compressor including a female rotor member and a male rotor member rotatable about two parallel shafts respectively while meshing with each other, the improvement which resides in that a forward face flank of the female rotor member is composed of a first flank of a forward face formed by a parabola focused on an inside of a pitch circle of the female rotor member, and a second flank of the forward face formed by a circular arc of a radius R_2, centered at the pitch circle, and a backward face flank of the female rotor member is composed of a first flank of the backward face generated by a circular arc on a side of a tooth top of the male rotor member which has a radius R_5 and

centered on an axis connecting the centers of rotor shaft together, and a second flank of the backward face formed by a circular arc of a radius R_3 centered within the pitch circle,



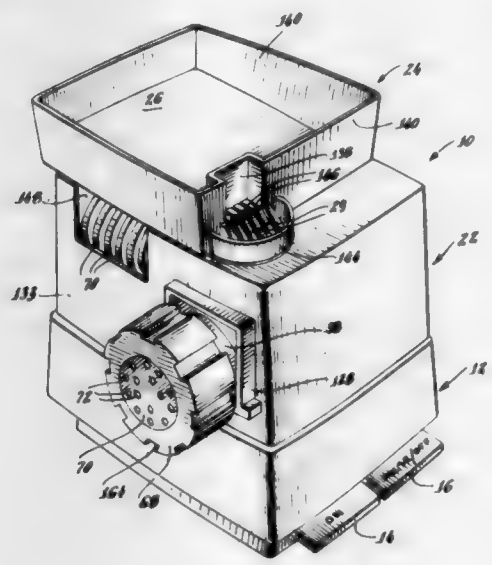
wherein the male rotor member has projections essentially formed by a generating action of the forward face flank of the female rotor member and the second flank of the backward face of the backward face flank thereof.

4,406,603

PASTA EXTRUDER APPARATUS FOR ATTACHMENT TO A FOOD PROCESSOR OR SIMILAR APPLIANCE

James E. Williams, Stamford, Conn., assignor to Cuisinarts Research & Development, Inc., Greenwich, Conn.

Filed Apr. 16, 1982, Ser. No. 368,979
Int. Cl.[3] B29F *3/01;* A21C *3/04*
U.S. Cl. 425—191 23 Claims



1. Pasta extruder apparatus adapted to be mounted as an attachment to the base of a food processor containing a motor drive and a vertical tool shaft rotated by the motor drive, said base having first actuator means for preventing operation of the motor drive unless said first actuator means is actuated, said pasta extruder apparatus comprising:

a housing containing an extruder feedscrew mounted in a barrel for rotation about the axis of the feedscrew for forcing pasta mixture downstream in the barrel toward the downstream end of the barrel with extrusion die means mountable on the downstream end of the barrel through which the pasta mixture is extruded for forming the desired articles of food,

said housing being mountable in operating position upon the base of a food processor,

said housing containing a speed-reducing torque-increasing gear mechanism, a coupling connected to the input gear of said gear mechanism with the output of said gear mechanism being coupled to said feedscrew for turning said feedscrew in said barrel,

said coupling being engaged in driven relationship with the tool drive shaft when the housing is mounted on said base for causing the rotation of said tool drive shaft to drive said coupling for transmitting greatly increased torque through said gear mechanism to said feedscrew for turning said feedscrew,

said housing containing second actuator means which becomes aligned with said first actuator means when the housing is properly mounted on the base,

said housing having a socket communicating with the upstream end of said barrel, said socket having an upright axis,

a tray removably mountable on said housing, said tray being adapted to hold a pasta mixture in feedable relationship with a feedtube insertable down into said socket with the axis of said feedtube being aligned with the axis of said socket for allowing said tray to be rotated relative to the housing about the axis of said socket,

said socket having fastening means engageable with said feedtube in locking relationship for locking the tray onto the housing when said tray is turned into a predetermined position about said axis of said socket, and

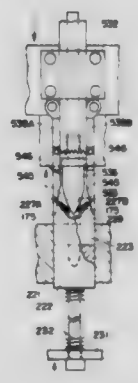
said tray having third actuator means thereon engageable with said second actuator means for causing said second actuator means to actuate said first actuator means for enabling the motor drive to operate only after said housing has been properly mounted on said base and said feedtube has been inserted into said socket and said tray turned into said predetermined position.

4,406,604

APPARATUS FOR ORIENTING TERMINAL BLADES ATTACHED TO A WIRE FOR PRODUCING AN ELECTRICAL CORD THEREFROM

Hideo Imai, Kyoto, Japan, assignor to Kawasaki Electric Wire Co., Ltd., Kanagawa, Japan

Filed Jun. 16, 1981, Ser. No. 274,225
Claims priority, application Japan, Dec. 11, 1978, 53-153314
Int. Cl.[3] B29D *31/00*
U.S. Cl. 425—126 R 9 Claims



1. An apparatus for rotating the terminal blades of at least one structure comprising a pair of terminal blades attached to a wire cord, said terminal blades being aligned in a first plane, said apparatus comprising:

(a) support means for supporting said terminal blades, said support means including a recess means having contact surfaces wherein said terminal blades contact said recess means on said contact surfaces;

(b) at least one blade rotating means having a projection means extending therefrom for rotating said blades with respect to said support means, said rotating means including leg means, said projection means and said leg means being positioned with respect to each other to form a clamping space therebetween for clamping said terminal blades therein subsequent to the rotation of said blades;

(c) means for relatively moving said recess means and said blade rotating means towards each other such that said projection means is moved between said terminal blades and contacts one edge of each of said terminal blades and opposing edges of said terminal blades contact said contact surfaces of said recess means thereby causing each

of said terminal blades to rotate between said projection means and said recess means such that said pair of terminal blades are aligned and positioned in parallel planes perpendicular to said first plane; and

(d) at least one wire cord holding means spaced from said blade rotating means for engaging said wire cord and holding said wire cord.

4,406,605

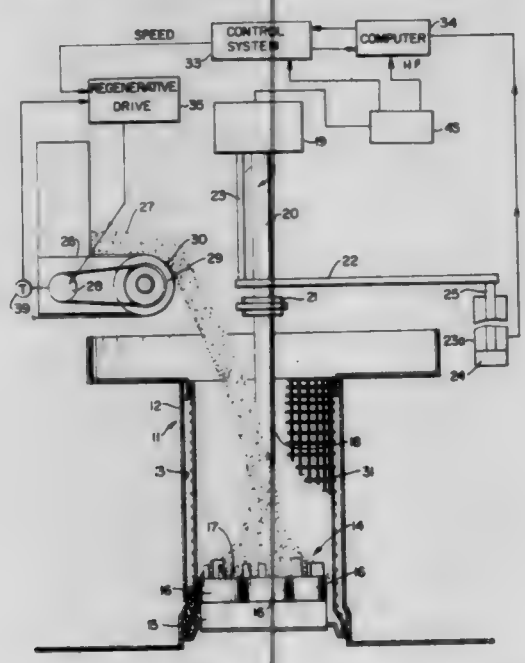
APPARATUS FOR FORMING CONCRETE PIPE OF UNIFORM DENSITY INCLUDING CONTROL MEANS TO VARY FEED RATE OF CONCRETE/AGGREGATE AS FUNCTION OF PACKERHEAD TORQUE

George E. Hand, Williamstown, N.J., assignor to Kerr Concrete Pipe Company, Folsom, N.J.

Continuation-in-part of Ser. No. 39,316, May 16, 1979, Pat. No. 4,336,013. This application Sep. 17, 1980, Ser. No. 188,032

Int. Cl.[3] B28B *3/18, 21/24*

U.S. Cl. 425—145 24 Claims



1. An apparatus for forming concrete pipe of uniform density comprising:

(a) means for forming concrete into the form of said pipe comprising a mold having an inner wall, a packing head for packing concrete against said inner wall, a shaft centrally mounted on said packing head, a packing head motor for revolving said packing head through the mold and means for raising said packing head only at a fixed rate and for lowering said packing head in at least one pass;

(b) means for feeding concrete to said forming means;

(c) a feed motor for driving said concrete feeding means;

(d) means for sensing and measuring the components of the actual power being used by said packing head motor said power being a function of torque generated in said packing head;

(e) means for selecting a desired power;

(f) means for comparing said actual power to said desired power; and

(g) means for controlling the speed of said feed motor responsive to said means for comparing.

4,406,606

APPARATUS FOR PRODUCING SOIL BUILDING BLOCKS

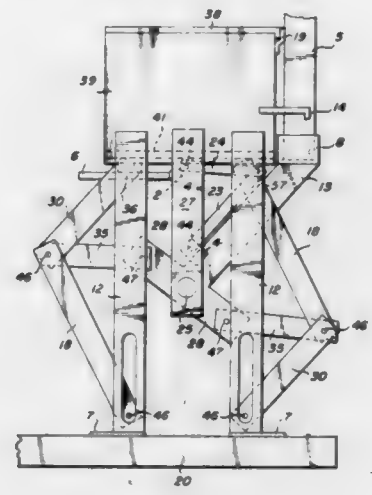
Harry C. Sangree, 58 Vine Ave., Craigville, Mass. 02636

Filed Jun. 1, 1981, Ser. No. 268,809

Int. Cl.[3] B30B *5/02*

U.S. Cl. 425—351 2 Claims

1. A hand powered block-making apparatus comprising a box for loading a soil-cement mixture therein, partially slotted supports for the box, a cover to hold the soil-cement mixture in the box during compression, a sliding plate which compresses the soil-cement mixture in the box and which also elevates a compressed block of said mixture out of the box, said plate being raised to compress the soil-cement mixture by toggle linkages on all supports, said toggle linkages comprising upper and ower links, the upper links being connected to the sliding plate and the lower links being slidably retained in the slots of the supports, said toggle linkages also being connected to toggle connecting bars joined to pivot wings, said pivot wings being connected to a pivot bar supported off the box and connected to a lever which is actuated by a handle on one side of the apparatus whereby downward swinging of the handle causes the pivot bar to extend the toggle links and compress



the soil-cement mixture between the cover and the sliding plate and which also locks an ejector linkage, said linkage comprising an upper link connected to the sliding plate and a bottom link connected to the lever wherein subsequent upward swinging of the handle causes the lever to raise the ejector linkage and the extended toggle links in the slots of the supports, thereby ejecting the compressed soil-cement block, and an eccentric spring loaded cam positioned on the pivot support bar adjacent to the lower link of the ejector linkage, which through rotation of said cam unlocks the ejector linkage causing the sliding plate with connected toggle linkages to fall by gravity to its initial position.

4,406,607

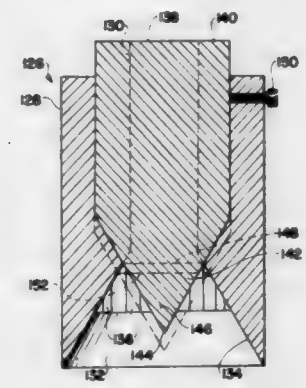
TUBE SHAPING DEVICE

Martin M. Wildmoser, Staten Island, N.Y., assignor to John Mueller, Northvale, N.J., a part interest

Filed Mar. 29, 1982, Ser. No. 363,051

Int. Cl.[3] B29D *23/00*

U.S. Cl. 425—392 7 Claims



1. A tube shaping device comprising a body having an opening at one end and a bore extending through said body in communication with said opening and a shaping member arranged within said opening extending outwardly and having a base arranged such that the circumferential edge of said base is bound by a portion of said body forming said opening, said

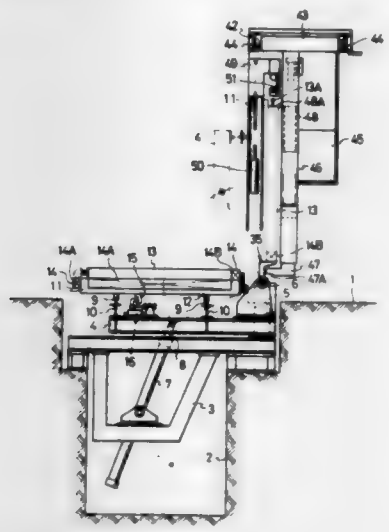
shaping member adapted for sliding fit within said bore between a plurality of positions such that the effective diameter of said base varies whereby said shaping member is adapted to be received within a tube end until said tube end lies substantially within a plane containing said base of said shaping member such that the shape of said tube end is conformed to the circumferential shape of said base.

4,406,608

RELEASING APPARATUS

Takao Kataishi, and Iwazou Seo, both of Tokyo, Japan, assignors to Misawa Home Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1981, Ser. No. 313,131
Claims priority, application Japan, Apr. 14, 1981, 56-55799
Int. Cl.³ B28B *7/08, 7/10*
U.S. Cl. 425—436 RM **10 Claims**



1. A releasing apparatus comprising:
a base frame;
a shuttering bed on which to mold a molding and an associated columnar member along an edge of the molding and removable therewith from said shuttering base;
an erectable frame supported by said base frame for erecting and laying down said shuttering bed between a shuttering bed carry-in position and a shuttering bed upright position; and
molding receiving means provided on said base frame for (1) receiving only a molding together with said removable columnar member from said shuttering bed supported by the erectable frame in its erected state, and (2) taking over support of said molding and removable columnar member from the erectable frame, to permit the erectable frame to be laid down;
said molding receiving means each including a bracket erected on the base frame, a slidable member slidably coupled to said bracket, a receiving member affixed to said slidable member and supporting at the top surface thereof against only the removable columnar member and molding, and a driving mechanism connected to said receiving member for vertically moving same.

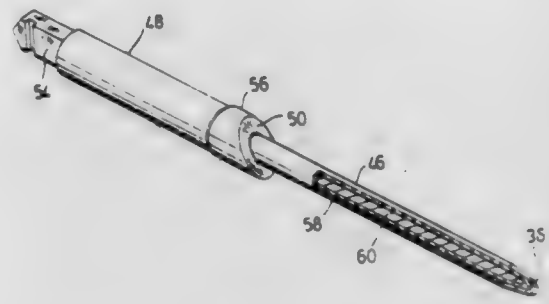
4,406,609

VALVE PIN AND METHOD OF MANUFACTURE

Jobst U. Gellert, 7A Prince St., Glen Williams, Canada

Filed Jul. 20, 1981, Ser. No. 285,274
Claims priority, application Canada, Jul. 15, 1981, 381790
Int. Cl.³ B29F *1/03*
U.S. Cl. 425—566 **3 Claims**

1. In an injection molding valve gated flow control mechanism wherein a hot runner passage for conveying plastic melt extends from a molding machine to a gate leading to a cavity in a mold, an elongated valve pin having a driven end and a tip end is actuated to reciprocate between an open position and a closed position in which the tip end of the valve pin is seated in the gate, and a portion of the valve pin near the tip end extends from an enlarged driven end portion into the hot runner passage, the improvement wherein at least the portion of the valve pin near the tip end has a combination of a high strength and durable steel outer casing portion over a highly



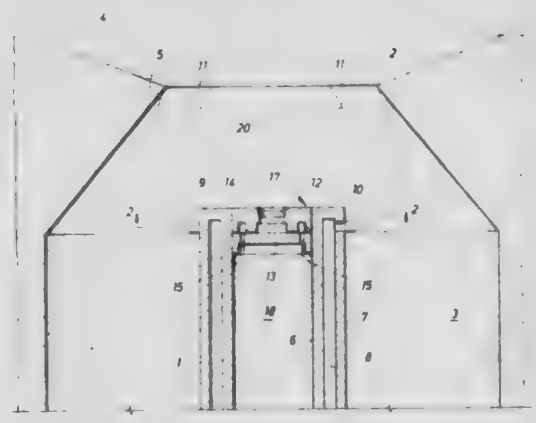
conductive copper inner core portion, whereby the combination provides sufficient strength and durability to withstand operating forces and is sufficiently conductive to provide adequate heat for proper closing of the valve gate through substantially frozen melt.

4,406,610

PROCESS AND BURNER FOR THE PARTIAL COMBUSTION OF A LIQUID OR GASEOUS FUEL

Pius E. M. Duijvestijn, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 755,413, Dec. 29, 1976, abandoned. This application Sep. 5, 1978, Ser. No. 939,719
Claims priority, application Netherlands, Dec. 30, 1975, 7515165
Int. Cl.³ F23J *7/00*
U.S. Cl. 431—4 **7 Claims**



1. In a process for the partial combustion of a liquid or gaseous fuel in a reactor lined with refractory material, wherein said fuel is introduced into the reactor via a burner gun of a burner as a hollow diverging jet, and an oxygen-containing gas is introduced into the reactor as a jacket around the burner gun, the improvement comprising introducing steam into the reactor through the burner gun as a central rotating and diverging steam jet interior to said fuel jet, the steam jet rotating about an axis coincident with the axis of the burner.

4,406,611

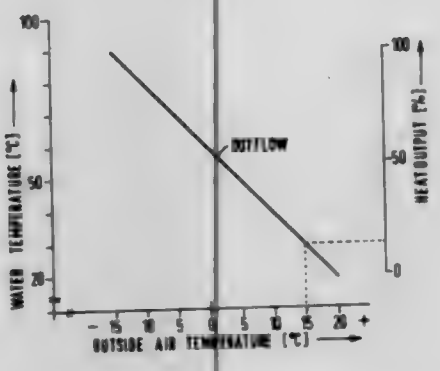
METHOD FOR OPERATING A GASIFICATION BURNER/HEATING BOILER INSTALLATION

Alfred Michel, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,458
Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019622
Int. Cl.³ F23N *5/24*
U.S. Cl. 431—12 **8 Claims**

1. In a method for operating a gasification burner/heating

boiler installation, said installation comprising a fire box in which a burner for gasifying fuel oil is arranged, and wherein, in said burner, fuel oil fed to said burner by a fuel oil feeding means is gasified and combusted with air fed to said burner by an air feeding means, the improvement comprising determining the required burner output from the ambient air temperature; controlling mass flows of the fuel oil and air to the burner as a function of the burner output; and controlling deviations from the stoichiometric ratio between fuel oil and air by means of a lambda-probe arranged in the exhaust gas stream of said boiler.

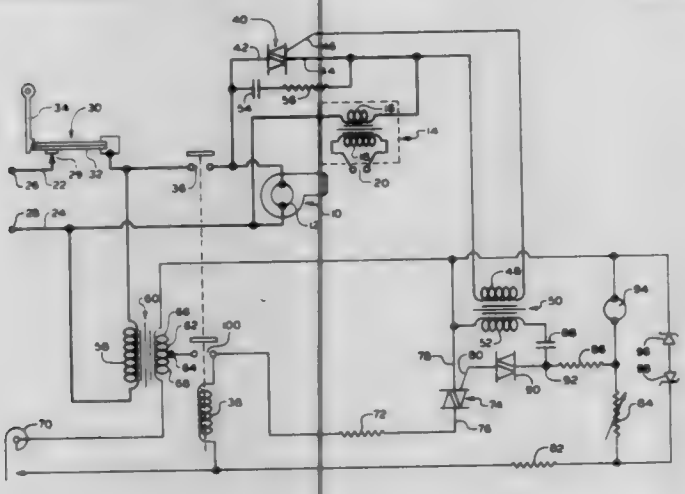


4,406,612

OIL BURNER PRIMARY CONTROL FOR INTERRUPTED IGNITION SYSTEM

Donald E. Donnelly, Edwardsville, Ill., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Oct. 22, 1981, Ser. No. 313,739
Int. Cl.[3] F23N *5/00, 5/08*
U.S. Cl. 431—71 1 Claim



1. In an electrically operated control system for controlling operation of a fuel burner and an ignition device,

a triac;

gating circuit means for causing said triac to be conductive in the absence of a burner flame and non-conductive in the presence thereof;

a relay having a winding connected in series with said triac and effective, when energized, for connecting the fuel burner across a power source to initiate flow of fuel;

circuit means, effective when said gating circuit means is operative to effect conduction of said triac, for energizing the ignition device;

circuit means for establishing a timed trial ignition period including a safety switch resistance heater connected in series with said triac;

hold-in circuit means, independent of said triac, for maintaining said relay winding energizing as long as there is a call for heat;

said gating circuit means including a photoconductive cell normally having high electrical resistance in said absence of a burner flame and low electrical resistance in said presence of a burner flame, a capacitor connected in parallel with said cell so as to charge when said cell exhibits said high electrical resistance, a voltage breakdown device connected in circuit with said capacitor and said triac and rendered conductive, when said capacitor attains a sufficient charge, so as to cause said triac to become conductive, and regulating circuit means connected in circuit with said cell and effective, in the event that said cell abnormally exhibits said low electrical resistance in said absence of a burner flame and is increasing in resistance, for maintaining an adequate voltage across said cell to effect continued conduction of said triac, once said triac becomes conductive, until the resistance of said cell decreases sufficiently in response to said presence of a burner flame to effect non-conduction of said triac, or until said heater is heated sufficiently to effect termination of said timed trial ignition period;

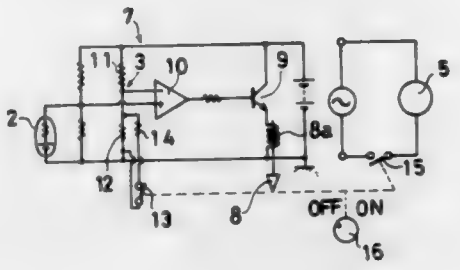
said regulating circuit means providing the sole means for ensuring said continued conduction of said triac and comprising a first resistor connected in series with said cell, two zener diodes connected in series with each other and in opposed polarity, said series-connected zener diodes being connected in parallel with said series-connected cell and first resistor, and a second resistor connected in series with both said series-connected zener diodes and said series-connected cell and first resistor.

4,406,613

SAFETY APPARATUS FOR ROOM HEATING DEVICE

Susumu Naito, and Toshifumi Yamana, both of Nagoya, Japan, assignors to Rinnai Kabushiki Kaisha, Aichi, Japan

Filed Aug. 14, 1981, Ser. No. 292,936
Int. Cl.[3] F23N *5/00*
U.S. Cl. 431—76 4 Claims



1. A safety apparatus for a room heating device having a burner, means for supplying gas to said burner, cut-off means for cutting off said means for supplying upon receiving a cut-off signal, a room air circulation fan, detecting means for detecting incomplete combustion of said burner and for producing an output upon detection of incomplete combustion, setting means for setting a predetermined operation level, comparator means coupled to said cut-off means, said detecting means, and said setting means for comparing the output of said detecting means and said setting means and for generating said cut-off signal when the output of said detecting means is at said predetermined operation level thereby cutting off the gas to the burner, characterized in that said setting means comprises means for changing the predetermined operation level in accordance with operation or non-operation of the room air circulation fan.

4,406,614

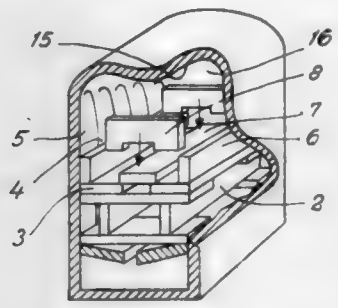
BOILER LINER FOR OIL- OR GAS-FIRED BOILERS AS WELL AS PROCEDURE FOR THE MOUNTING OF SAME

Arne Pedersen, Enghavevej 10, Soro, Denmark

Filed Feb. 11, 1981, Ser. No. 233,392
Int. Cl.[3] F23M *9/06*
U.S. Cl. 431—171 6 Claims

1. A boiler liner for vertically oriented oil or gas fired central heating boilers, comprising an assembly of plates of heat insulating material arranged in the combustion chamber of the boiler between the burner and the exhaust flue and at least part

of the inner heat exchange surfaces of the walls of the boiler to provide flow channels between some of said plates and said inner heat exchange surfaces and confine and direct the flow of combustion gases through said channels, said assembly of plates comprising support means supported on the walls of the combustion chamber to support said assembly of plates above said burner, and flow channel forming plates supported on said



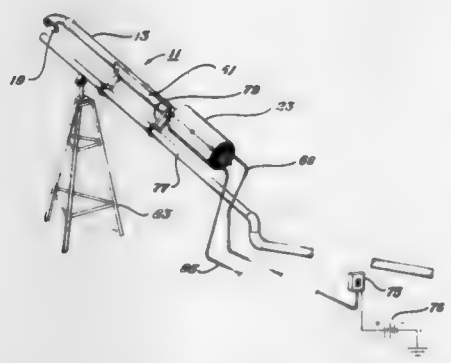
support means in spaced relationship with respect to each other and in contacting engagement with said inner surfaces of said walls at spaced locations, said flow channels comprising the spaces between said locations, and transverse retaining plates extending between said flow channel forming plates to retain said flow channel forming plates in said contacting engagement.

4,406,615

IGNITER FOR A GAS DISCHARGE PIPE

Romeo E. Guerra, Richardson, and Robert H. Nelson, Plano, both of Tex., assignors to Nova Patents of North America, Inc., Dallas, Tex.

Filed Jul. 20, 1981, Ser. No. 284,548
Int. Cl.³ F23Q *9/00*
U.S. Cl. 431—278 **2 Claims**



1. An igniter for a gas discharge pipe, comprising:

a tubular housing having a downstream end and an upstream end;

a fuel line extending in the housing and spaced therefrom, having one end adapted to be connected to a source of gaseous fuel and the other terminating in a nozzle at the downstream end of the housing;

port means located in the fuel line near the downstream end of the housing adjacent the nozzle for mixing air with the fuel to create a combustible air/fuel mixture;

said housing extending past said port means in an upstream direction;

seal means between the downstream end of the housing and the downstream end of the nozzle for requiring air entering the port means to be drawn from the upstream end of the housing; and

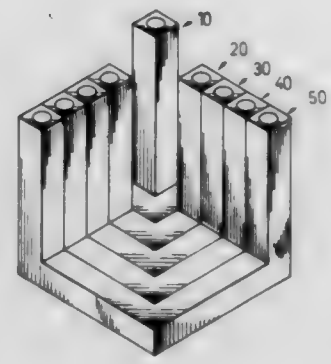
electrical spark means for creating an electrical spark in the nozzle to ignite the air/fuel mixture.

4,406,616

SET OF MODULAR ELEMENTS PARTICULARLY USEFUL FOR ASSEMBLING CANDELABRA

Jacob Greenvourcel, Yona Salk St. 6, Holon, Israel

Filed Apr. 3, 1981, Ser. No. 250,836
Int. Cl.³ F23D *3/16*
U.S. Cl. 431—295 **10 Claims**



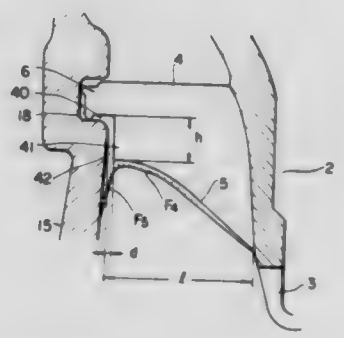
1. A set of modular elements adapted to be assembled together according to various configurations, characterized in that said set includes a plurality of modular elements each having two parallel arms joined together at one end by a bridging section bent out of the plane of the arms to enable the bridging section of the respective modular element to stably rest in a horizontal position on a horizontal surface and to support the two arms in spaced, parallel, vertical positions; said bridging sections all being complementarily bent, and having different lengths which are whole-integer multiples of the outer transverse dimension of the two arms, to permit a plurality of said modular elements to be horizontally nested together at their bridging sections according to various configurations.

4,406,617

PRE-MIXING TYPE BURNER

Yasuo Hirozawa, Iwakuni, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP80/00034, § 371 Date Nov. 6, 1980, § 102(e) Date Nov. 6, 1980, PCT Pub. No. WO80/01945, PCT Pub. Date Sep. 18, 1980
PCT Filed Feb. 28, 1980, Ser. No. 212,706
Claims priority, application Japan, Mar. 7, 1979, 54-25522
Int. Cl.³ F23D *15/00*
U.S. Cl. 431—351 **6 Claims**

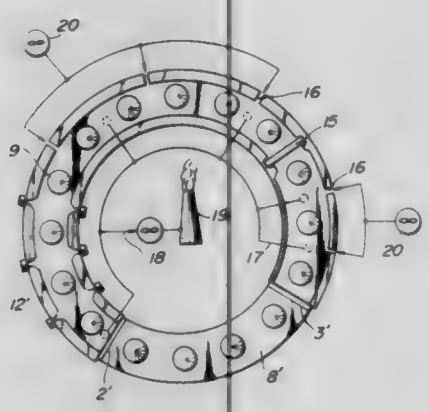


1. A pre-mixing type burner having a flame port section with a multiplicity of slit-like flame ports, said flame ports being arranged in juxtaposed relationship with each other and at right angles to the wall of a combustion chamber, the ends of said flame ports adjacent to said combustion chamber wall being covered, characterized by a projection extending along said combustion chamber wall and projecting into said combustion chamber from the portion of the flame port surface of said flame port section adjacent to said combustion chamber wall in such a manner as to define a gap with said combustion chamber wall, the portion of said flame port section defining said flame ports except said gap having such a thickness that, for a flame port load, an attached flame is formed.

4,406,618
METHOD OF OPERATING CONTINUOUS HEAT TREATMENT FURNACE FOR METAL STRIP COILS

Kimio Maeyama, Ashiya, Japan, assignor to Kawasaki Steel Corporation, Kobe, Japan

Filed Dec. 17, 1981, Ser. No. 331,838
Claims priority, application Japan, Dec. 19, 1980, 55-180021; Dec. 24, 1980, 55-181925
Int. Cl.³ F27B *9/04, 9/16, 5/04*
U.S. Cl. 432—23 **5 Claims**

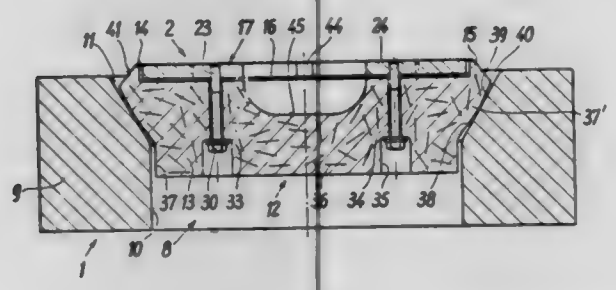


1. In a method of operating a continuous heat treatment furnace, which furnace is divided by an intermediate door into heating, soaking and cooling zones, said method including steps of enclosing metal coils, which have been wound after being rolled, in muffles, and supplying the muffles with an atmosphere gas containing hydrogen gas, and feeding the muffles into and through the furnace so as to subject said coils to heating, soaking and cooling, the improvement which comprises heating at least part of said heating and soaking zones by direct firing-heating with a fluid fuel with excess air, burning in the furnace with the aid of said excess air combustible gas leaked from the muffles into the furnace, supplying an amount of air into said cooling zone so as to dilute combustible gas leaked from the muffles into said cooling zone and render it incombustible, and exhausting thereafter the incombustible gas out of the furnace.

4,406,619
SEALING LID MEANS FOR COKE OVEN CHAMBER

Hans Oldengott, Bockumer Heide 18, 4713 Bockum-Hövel, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 248,681
Int. Cl.³ F27D *1/18*; C10B *25/22, 31/00*; F23M *7/00*
U.S. Cl. 432—250 **14 Claims**



1. A coke oven of the type comprising brickwork and a plurality of filling shafts terminating at the oven roof through the brickwork, said filling shafts being used for loading and unloading purposes as desired, each said filling shaft having a refractory terminal structure and being provided with a closing means in the form of a removable lid, each said lid being adapted for being hoisted away from the oven roof during loading and unloading, each lid having a construction comprising:

a lid body substantially in the form of a ceramic plate adapted to rest on an opening of the filling shaft terminal structure, said lid body having a recess formed by a circumferential ridge;

a plate-like metal insert provided in said recess in the lid body for facilitating hoisting of the lid during loading and unloading, said plate-like insert having a diameter substantially smaller than a diameter of a said filling shaft;

support means provided on the metal insert in the form of a plurality of radial extensions from a periphery of said plate-like insert, said radial extensions being embedded in the ceramic lid body, to prevent the plate-like metal insert from falling through the filling shaft;

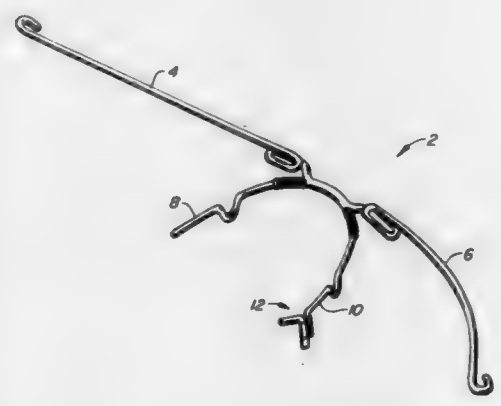
heat-insulating means disposed between the lid body and the metal insert, so as to prevent heat transfer from the lid body to said metal insert;

fastening means provided to fasten said metal insert and said lid body with said heat-insulating means substantially sandwiched there between.

4,406,620
FACEBOW SWIVEL

George Kaprelian, Sunnyvale; Joseph Monfredo, and Melvin Meyerson, both of San Diego, all of Calif., assignors to Johnson and Johnson, Brunswick, N.J.

Filed Oct. 12, 1982, Ser. No. 433,768
Int. Cl.³ A61C *7/00*
U.S. Cl. 433—5 **11 Claims**



8. A unilateral facebow of the type including outer bows and inner bows, the facebow comprising:

the non-force inner bow having an L-shaped bent distal end;

a swivel mounted to the distal end of the non-force inner bow, the swivel comprising:

a pivot mount including parallel inner and outer tubes joined along their parallel outer surfaces, said inner tube adapted for receipt of said bent distal end;

an L-shaped swivel member having first and second legs, said second leg of said swivel member pivotally housed within said outer tube; and

means for retaining said second leg within said outer tube; and

means for securing said inner tube to said bent distal end of said one inner bow.

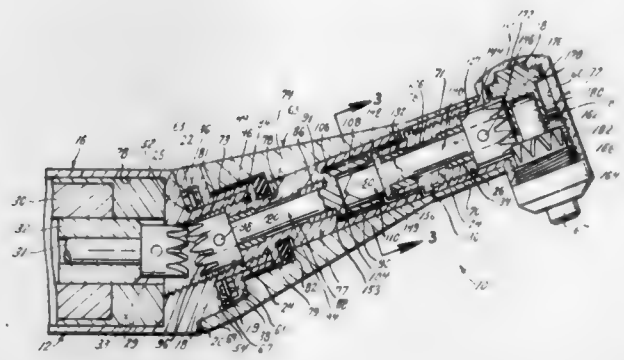
4,406,621
COUPLING ENSEMBLE FOR DENTAL HANDPIECE

Ronald L. Bailey, St. Charles, Mo., assignor to Young Dental Manufacturing Company, Inc., St. Louis, Mo.

Filed May 4, 1981, Ser. No. 259,987
Int. Cl.³ A61C *1/08*
U.S. Cl. 433—126 **7 Claims**

1. In a dental handpiece: a trunk section, a shoulder sleeve angularly extending from the trunk section; a power drive comprising a first drive shaft rotatably mounted in the trunk section; a second shaft rotatably mounted in the shoulder sleeve, and extending angularly out from the first drive shaft, a first angular coupling drive means having an element on each of said first and second shafts, the elements being interengaged to connect the two shafts for driving of the second shaft by the

first; a head having a third shaft rotatably mounted therein, and a fourth driven shaft rotatably mounted in the head at an angle to the third shaft; second angular coupling drive means in the head having an element on each of said third and fourth shafts, the elements being interengaged to connect the third shaft to the fourth shaft for driving the fourth shaft by the third; the head having releasable connecting means with the sleeve by which the head is mounted on the sleeve by axial thrusting movement, with the second and third shafts in juxtaposition, and release coupling means between said second and third



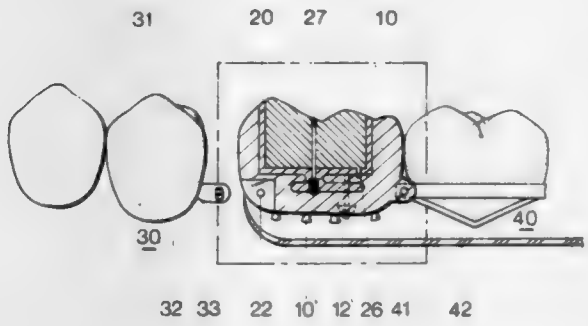
shafts respectively having first and second hand elements which have axially disposed interengaging elongated edges which are engageable and disengageable upon mounting and separation of the head by axial movements, for drivingly connecting and disconnecting the second and third shafts, the first and second driving means aforesaid being fixed axially on their respective shafts, means to restrain axial movement of the second shaft, and means to restrain axial movement of the third shaft upon connecting and disconnecting of the release coupling means.

4,406,622

REMOVABLE ATTACHMENT FOR PARTIAL DENTURE

Han S. Yoon, c/o H. S. Yoon's Dental Clinic, Rm. No. 202, #156, Insa-dong, Chongro-ku, Seoul 110, Rep. of Korea

Filed Jun. 28, 1982, Ser. No. 392,808
Claims priority, application Rep. of Korea, Jan. 8, 1982, 87/82
Int. Cl.[3] A61C *12/22*
U.S. Cl. 433—172 **12 Claims**



1. In an improved removable attachment for a partial denture comprising a slider member having a sliding portion and a lock rod and a body member including a slot for receiving said slider member, a limiting rod for limiting the sliding motion of said slider member within certain bounds and at least one notch for receiving a protruder formed on the crown of the adjacent tooth, said improvement comprising:

an individual movable member moving individually in said slider member;

at least one fixed pin integrally formed with said individual movable member;

at least one slot formed on the bottom portion to protrude a head portion of said fixed pin therethrough;

a spring mounted to said fixed pin to spring-load said individual movable member when said individual movable member is moving within said certain bounds; and

said head portion of said fixed pin dimensioned to mutual act with said spring and said fixed pin,

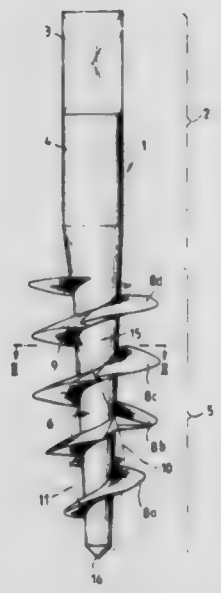
wherein a force, generated when the exposed surface of said individual movable member is occluded with that of the corresponding opposite tooth, causes the binding force and retaining force between said slider member and body member to ensure the lock position of said slider member in said body member.

4,406,623

SCREW-TYPE BONE IMPLANT FOR RECEIVING A DENTAL PROSTHESIS

Hans L. Grafelmann, Parkstrasse 105, D-2800 Bremen 1, Fed. Rep. of Germany, and Dino Garbaccio, Via Marconi 7, Biella (Vercelli), Italy

Filed Dec. 11, 1981, Ser. No. 329,814
Claims priority, application Italy, Jan. 9, 1981, 19199 A/81; Mar. 23, 1981, 21181/81[U]
Int. Cl.[3] A61C *8/00*
U.S. Cl. 433—174 **11 Claims**



1. An improved screw-type bone implant of the type having a shaft, which has at its one extremity a head for receiving a dental prosthesis, which ends freely at its other extremity, and which has a threaded helix between the two extremities, wherein the improvement comprises:

the length of the shaft being longer by at least the axial length of the head than the height of the jawbone into which the implant is to be effected, when viewed in the direction of the implantation;

there being V-shaped cutouts in the threads of the threaded helix, at distances along the arc of the helix of an aliquant part of about 360 degrees, the cutouts extending from the circumference of the helix in a generally radial direction, each cutout having a tip which lies at the shaft surface;

each cutout having two sides each forming contact surfaces which are substantially positioned in the longitudinal direction of the shaft, the contact surface with the greater distance from the free end of the shaft provided with at least one sharp edge which protrudes into the cutout; and

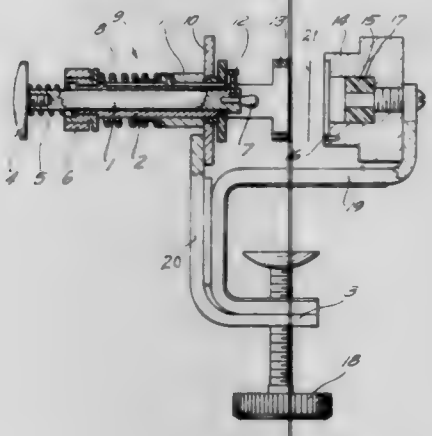
the external diameter of the threaded helix when considered from the free end of the shaft in an axial direction increasing from a small initial value to a large final value.

4,406,624

APPARATUS FOR PRODUCING TEMPORARY DENTAL CROWNS

Theo S. Chervenelekov, Sofia, Bulgaria, assignor to DSO "pharmachim", Sofia, Bulgaria

Filed Aug. 31, 1981, Ser. No. 297,579
Int. Cl.[3] A61C 3/00
U.S. Cl. 433—156 2 Claims



1. A device for the production of temporary dental crowns, comprising a male die having the substantial shape of the tooth to be restored, means for mounting the male die, a female die aligned with the male die and comprising an elastic ring, a holder for the elastic ring, means for holding a piece of plastic foil from which the temporary crown is to be formed between the male and female die, comprising an annular seat on the holder surrounding the path of relative movement of the male and female dies, said seat receiving the outer edge of the piece of plastic foil, and means for advancing the male and female dies relatively toward each other along a path whereby the plastic foil is thrust into the elastic ring and about the male die to form the temporary crown, an annular means on the means for mounting the male die, said annular means being coaxial of the path of relative travel of the male and female dies and fitting into the annular seat on the holder for the elastic ring whereby to grip the edge of the plastic foil between it and the said seat, the female die being fixedly mounted and the male die and the annular means receivable in the seat on the holder for the female die being mounted on plungers which reciprocate toward and away from the female die, and means for first moving the plunger which mounts the annular member toward the female die and for thereafter moving the male die toward the female die.

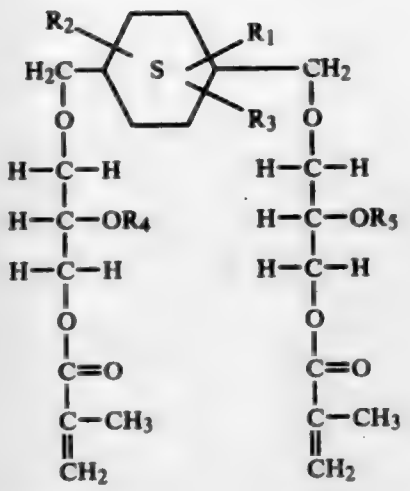
4,406,625

ADDUCTS OF 1,4-BIS[(3-METHACROYL-2-HYDROXYPROPOXY)METHYL]CYCLOHEXANE AND DERIVATIVES THEREOF WITH ISOCYANATES

Jan A. Orlowski, Altadena; David V. Butler, West Covina, and Patrick D. Kidd, San Dimas, all of Calif., assignors to Scientific Pharmaceuticals, Inc., Duarte, Calif.

Division of Ser. No. 187,407, Sep. 15, 1980, Pat. No. 4,362,888. This application Jul. 6, 1982, Ser. No. 395,260
Int. Cl.[3] C08L 47/00; C08F 36/20
U.S. Cl. 433—228 22 Claims

1. A polymer of a monomer which is a dimethylacrylate of the following chemical structures



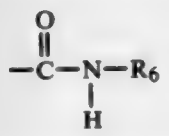
where



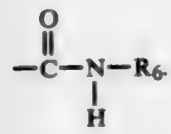
is a saturated, 6 membered, monocyclic, hydrocarbyl ring system;

R_1, R_2, and R_3 are the same or different and are hydrogen or alkyl, or alkoxy groups having 1 to 12 carbon atoms; and

R_4 and R_5 are the same or different and are hydrogen or groups of the formula



where R_6 is an aliphatic, aromatic or cycloaliphatic group having 1 to 14 carbon atoms, provided that at least one of the groups R_4 and R_5 is a group of the formula:

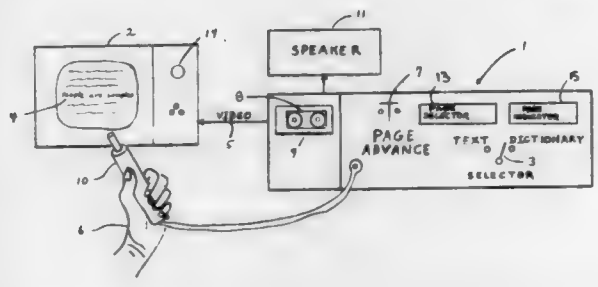


4,406,626

ELECTRONIC TEACHING AID

Weston A. Anderson, 763 La Para Ave., Palo Alto, Calif. 94306, and Gerald M. Fisher, 1491 Greenwood Ave., Palo Alto, Calif. 94301

Continuation of Ser. No. 62,286, Jul. 31, 1979, abandoned. This application Mar. 29, 1982, Ser. No. 362,666
Int. Cl.[3] G09B 5/06; G06K 9/00
U.S. Cl. 434—169 20 Claims



1. A visual and auditory display system including means for selecting a passage of text, means responsive to binary electrical signals for displaying said passage of text, means for select-

ing and designating one word of said passage of text, and means responsive to said selecting and designating means for providing a synthesized audible sounding of said selected and designated one word.

4,406,627

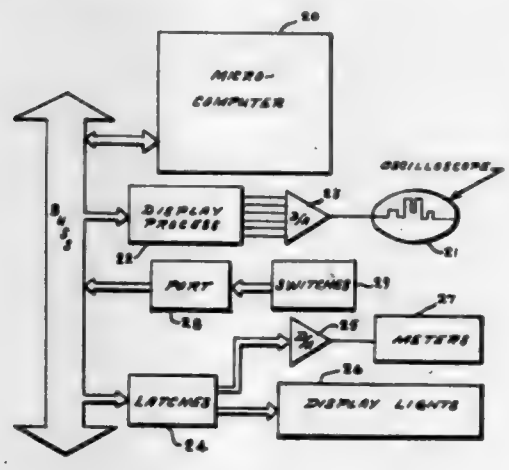
WAVEFORM SIMULATOR FOR AN ELECTRONIC SYSTEM MAINTENANCE TRAINER

Michael F. Winthrop, Sterling, Va., and Buddy L. Holmes, Ocean Springs, Miss., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 132,454, Mar. 21, 1980, abandoned. This application Oct. 6, 1982, Ser. No. 433,171

Int. Cl.[3] G09B *23/00*

U.S. Cl. 434—219 13 Claims



1. In a maintenance trainer for an electronic system said trainer having a training station including a facsimile of the electronic system's external meter displays and test functions, system error selecting means and trainer operated system error correction functions, the improvement residing in waveform generating means for electronically simulating internal functions of said electronic system, said waveform generating means comprising,

(a) digital computer means,

(b) a clock circuit, P0 (c) a programmable waveform generator receiving digital input from said computer means, operating on said clock circuit via said computer means and providing an analog output to training station displays, said programmable waveform generator comprising,

memory means,

a data loading circuit receiving digital data from said computer means and loading said memory means, said data loading circuit comprising

data port latch means receiving waveform data and control data from said computer means,

a function and address control circuit comprising

latch strobe gate means controlling said data port latch means in response to control data from said computer means,

a program control decoder receiving control data from said computer means through said data port latch means,

load gate means controlling said memory address latch means and said memory address counter means in response to said clock circuit and the output of said program control decoder,

pulse stretching means connected between said latch strobe gate means and said load gate means, and

write gate means responsive to said clock circuit and said program control decoder and controlling said memory address counter means,

memory address latch means responsive to said function and address control circuit, said data port latch means providing control data to said function and address control circuit and waveform data to said memory address latch means and said memory means,

memory address counter means receiving waveform data from said memory address latch means and providing address to said memory means in response to said clock circuit and said function and address control circuit,

memory mapped address means adapted to enable said data port latch means, said function and address control circuit, said memory address latch means and said memory address counter means in response to control data from said computer, and

a digital analog converter receiving digital data from said memory means and providing analog signals therefrom; and,

(d) an input/output circuit interfacing said computer means, said programmable waveform generator and said training station displays, error selecting means and test functions,

said input/output circuit functioning as a special purpose memory mapped input/output controller and comprising

data select circuit means integrally interconnectable with the external displays, meters and test functions of said training station,

a data out port receiving system data and providing waveform data to external meters and displays and control data to said data select circuit means,

a data in port receiving data from said data select circuit means and providing an input to said computer means, and

device select means adapted to enable said data select circuit means, said data out port and said data in port in response to control data from said computer.

4,406,628

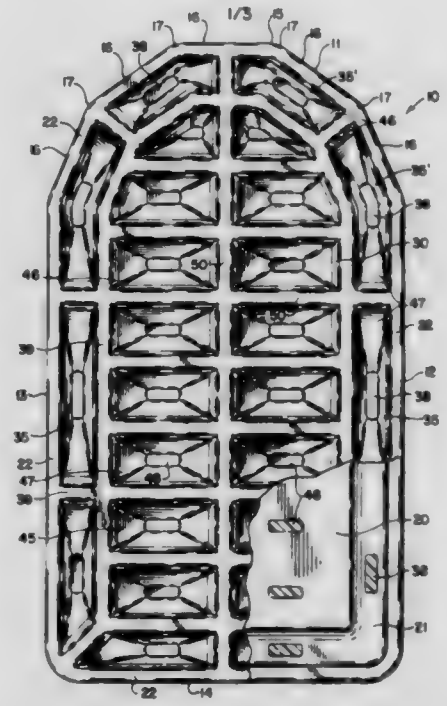
TRAINING DEVICE FOR SWIMMERS

Thomas P. Rademacher, Medina, Ohio, assignor to McNeil Corporation, Akron, Ohio

Filed Jun. 3, 1981, Ser. No. 269,989

Int. Cl.[3] A63B *31/00*

U.S. Cl. 434—254 9 Claims



1. A device for supplementing the buoyancy of a swimmer when grasped by a swimmer's hands comprising, a generally elongate rectangular member of relatively lesser thickness, one side of said member being generally planar, the other side of said member having a plurality of spaced depressions having a portion of the walls thereof extending a substantial portion of the thickness of said member for providing substantial structural rigidity, some of said depressions having a portion thereof attached to said one side of said member for enhancing the

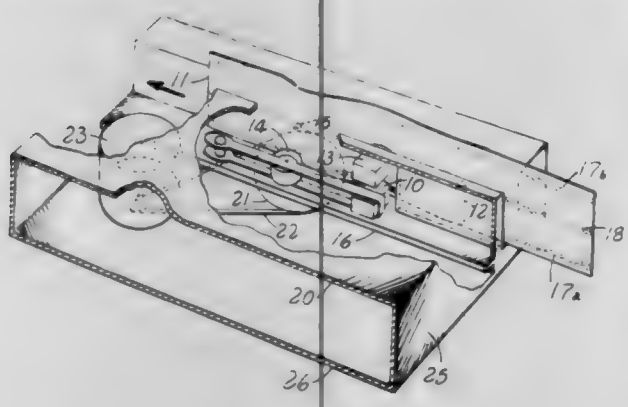
strength and rigidity of said member and some of said depressions being positioned proximate the periphery of said member, said one side of said member having a slot positioned in reverse proximity to and attached to said depressions being positioned proximate the periphery of said member, thereby facilitating gripping by a swimmer's hands.

4,406,629

CARDS FOR SPELLING READOUT

Richard S. Yeh, South Pasadena, Calif., assignor to JRT Associates, South Pasadena, Calif.

Filed Apr. 5, 1982, Ser. No. 365,235
Int. Cl.³ G09B *5/04*; G11B *25/04*
U.S. Cl. 434—311 **2 Claims**



1. An analogue serial input/output device for use in combination with a flexible card comprising a wide magnetic tape of card size and a flexible sheet of card materials, having laminated over the back surface of said wide magnetic tape not coated with magnetically susceptible materials, thereby secured together at least at the edges of said card by means of adhesive tapes, the flexible card being locally bent during the processes of pronunciation reproduction and spelling readout through an electronic display system, said device comprising:

a. a planar board for one of the longitudinal boundaries of said card to slide along while said flexible card is perpendicularly situated with respect to said board and transported;

b. a lever movable in an imaginary plane parallel to said board, so as to clamp or release said card in order to place said lever on the portions recorded with the spelling display codes or pronunciations, and located on one, or both, of the longitudinal edge(s) of said flexible card;

c. an electromagnetic transducer head primarily used for readout display and mounted on said lever such that the tangential plane imagined at the center of the curved front surface of said head is perpendicular to said board;

d. another electromagnetic transducer head used for pronunciation reproduction mounted above said board of said device at a distance equal to the lateral distance between said two kinds of recording portions on said flexible card in such a manner that both tangential planes imagined at the centers of the curved front surfaces of said heads coincide and remain perpendicular to said board when said device is operative;

e. a rubber roller rotatably mounted on said lever in the direction perpendicular to said board and disposed on the outgoing side for a card in relation to said head;

f. a drive roller rotatably mounted on said board perpendicularly and disposed in such a manner that said flexible card is locally bent over the surface of said drive roller to increase an arc of frictional engagement and to propel said flexible card when said drive roller is connected to a power transmitting means, and said flexible card is clamped instantaneously between said drive roller and said rubber roller, comprising the pair of drive roller located at outgoing side for a card;

g. guide means for said device comprising said planar board, a pole mounted perpendicularly on said board and a hook located on said pole at a distance from said board equal to or slightly larger than the width of said flexible card, said pole located preferably at a symmetrically opposite position from that of the drive roller with respect to the body of said heads in order to have said flexible card put at proper place and locally bent over the curved front surface of said heads which are disposed slightly crossing the imaginary plane drawn asymptotically from the incoming side for a card in such a manner to include the contact line of said pair of drive rollers, when said lever is in clamping position and said card is transported;

h. a card feeder comprising said pair of drive rollers, said power transmitting means and said guide means, said card feeder operative to have the central areas of said heads make a sliding contact with the card portions allocated for recording spelling display codes and pronunciations; said power transmitting means comprising a direct current motor, a pulley fixed coaxially on the shaft of said motor, a flywheel, a rubber belt, and a metal shaft fixed at one end to the center of said flywheel and utilized as the body of said drive roller, said flywheel being engraved on the rim whereby coupled with said pulley by said rubber belt to transmit rotational motion to said drive roller;

i. a power supply, a speaker, a microphone, ear-phone and electronic circuitories necessary in position and connected to said transducer heads in order to have analogue spelling display codes serially recorded on and to regenerated the and spellings or characters from said flexible cards by means of interfacing said device with a character generator besides having pronunciations recorded on and reproducing from the sound track of said flexible cards.

4,406,630

FISHING BOAT FOR USE WITH ELECTRICALLY POWERED FISHING MOTORS

Garfield A. Wood, Jr., Monroe, La., assignor to Woodstream Corporation, Lititz, Pa.

Filed Apr. 15, 1981, Ser. No. 254,512
Int. Cl.³ B63H *21/26*
U.S. Cl. 440—6 **7 Claims**



1. A fishing boat for use with a pair of electrically powered fishing motors comprising:

a boat hull having double end bottom running surfaces and a bottom pod extending below said running surfaces between the bow and the stern of the hull along the center line of the hull,

said pod being shaped to receive an electrical power source for the motors and having a longitudinal dimension greater than the transverse dimension of said pod and each of said dimensions being less than the corresponding dimensions of said boat hull,

said boat hull having a first well molded into the bottom thereof between the bow and the adjacent end of said pod along the center line of the hull, said boat hull having a second well molded into the bottom thereof between the stern and the other end of said pod along the center line of the hull,

means for removably mounting an electrically powered fishing motor in each of said first and second wells in the bottom of said boat hull,

an electrically powered fishing motor mounted in each of said wells in said boat hull,

means for electrically connecting said electrically powered

fishing motors for joint and selective operation thereof, and

means for mechanically connecting said electrically powered fishing motors for controlling the direction of movement of the fishing boat,

said means for mechanically connecting said electrically powered fishing motors comprises an endless cable extending around the periphery of the hull and mechanically connected to each of the electrically powered fishing motors so that by turning one fishing motor in one direction with respect to the center line of the hull, the other fishing motor will be caused to turn simultaneously toward the opposite side of the center line of the hull.

4,406,631

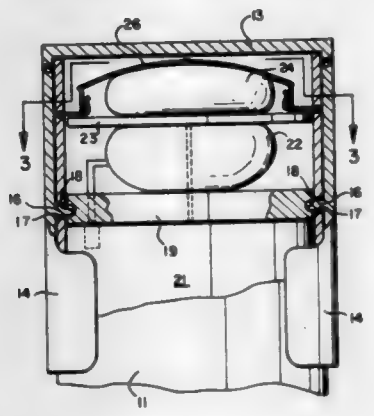
FLOTATION DEVICE

John R. Dale, Pennsburg, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 5, 1981, Ser. No. 308,309

Int. Cl.³ B63B *21/52*

U.S. Cl. 441—30 **13 Claims**



1. A buoy launchable in air from an elevated platform comprising, in combination:

suspension means deployable below the surface of a body of water;

flotation means deployable at the surface of the water for supporting said suspension means at a selected depth, said flotation means including an expandable envelope containing a first foaming reactant, a flexible envelope communicating with said expandable envelope containing a second foaming reactant, first plate means releasably secured to said suspension means for compressing said flexible envelope and causing said reactants to mix and foam in said expandable envelope; and

windflap means, responsive to the dynamic air pressure produced upon launching of said buoy, operatively connected to said suspension means and said flotation means for releasing said first plate means and initiating foaming of said flotation means.

6. A flotation device for extending a flexible antenna therein, comprising, in combination:

an inelastic flexible envelope containing a first foaming reactant;

an elastic envelope formed to connect the ends of the antenna at opposite surfaces and communicating with said flexible envelope, said elastic envelope containing a second foaming reactant forming an expanded rigid foam therein when mixed with said first reactant; and

a rupturable diaphragm secured between said envelopes for preventing mixing of said reactants until a predetermined pressure of said first reactant.

4,406,632

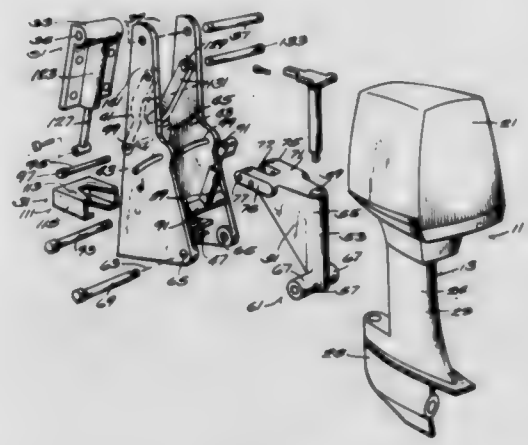
OUTBOARD MOTOR WITH DUAL TRIM AND TILT AXES

Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jul. 9, 1980, Ser. No. 167,337

Int. Cl.³ B63H *21/26*

U.S. Cl. 440—61 **23 Claims**



1. An outboard motor comprising transom bracket means adapted to be fixed to the transom of a boat, a unitary stern bracket having an upper end and including first mounting means located below said upper end at a first distance and second mounting means located below said upper end at a second distance greater than said first distance, tilt means pivotally connecting said transom bracket means and said upper end of said stern bracket for swinging movement about an upper horizontal axis of said stern bracket relative to said transom bracket means, a swivel bracket having a generally upright leg including opposite ends, pivot means directly pivotally connecting said swivel bracket adjacent one of said ends of said upright leg and one of said first and second mounting means for affording swinging movement of said swivel bracket relative to said stern bracket about a lower horizontal axis spaced below said upper horizontal axis, means connected to said swivel bracket adjacent the other of said ends of said upright leg and to said other of said first and second mounting means for adjustably locating said swivel bracket relative to said stern bracket about said pivot means, a propulsion unit supporting a propeller, and means connected to said upright leg of said swivel bracket and to said propulsion unit for pivotally connecting said propulsion unit to said swivel bracket about a generally vertical axis.

4,406,633

POWER TAKE-OFF GEARING FOR ASSEMBLY AT A MARINE VESSEL DRIVE OR PROPULSION SYSTEM

Robert Hamm, Nürensdorf, Switzerland, assignor to Maag Gear-Wheel & Machine Company Limited, Zurich, Switzerland

Filed May 4, 1981, Ser. No. 260,335

Claims priority, application Switzerland, May 23, 1980, 4050/80

Int. Cl.³ B63H *23/06*

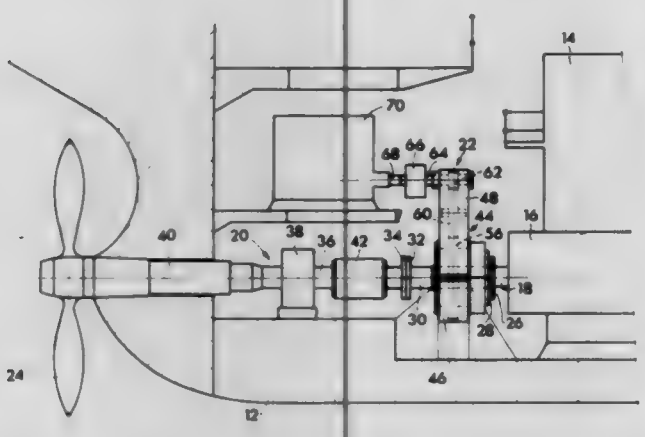
U.S. Cl. 440—75 **6 Claims**

1. In a power take-off gearing for installation at a drive of a vessel having a foundation, wherein a propeller shaft is flanged to a power take-off shaft of a drive arrangement and a large gear of the power take-off gearing is arranged coaxially with respect to the propeller shaft and is driven by such propeller shaft, the large gear being arranged within a housing which is supported as a self-contained unit at the foundation of the vessel, the improvement which comprises:

the housing of the power take-off gearing being structured to be supported at the foundation of the vessel independent of the propeller shaft;

the large gear of the power take-off gearing possessing a hollow hub and being mounted in said housing;

a moveable clutch for connecting the hollow hub of the large gear with the propeller shaft;
said moveable clutch containing a clutch sleeve and a clutch ring;
said clutch sleeve being arranged about the propeller shaft with radial play and partially within the hollow hub;



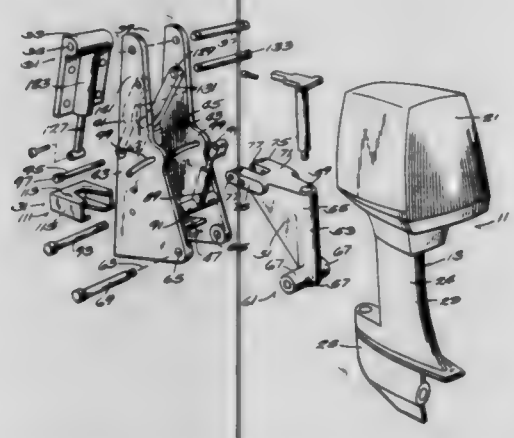
said clutch ring being secured at a flange of the propeller shaft;
the smallest internal diameter of the clutch sleeve being larger than the external diameter of the flange of the propeller shaft; and
the clutch ring being divided in a plane extending in axial direction of the clutch ring.

4,406,634

OUTBOARD MOTOR WITH STEERING ARM LOCATED AFT OF TRANSOM AND BELOW TILT AXIS

Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 167,337, Jul. 9, 1980. This application Sep. 22, 1980, Ser. No. 189,143
Int. Cl.³ B63H *21/26*
U.S. Cl. 440—61 **16 Claims**



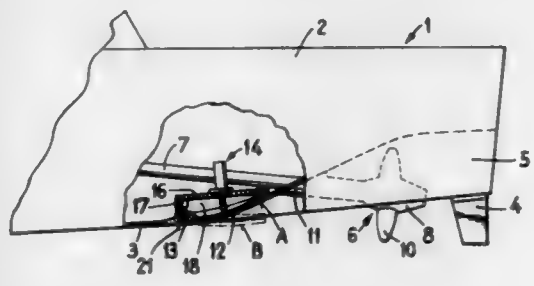
1. And outboard motor comprising transom bracket means adapted to be fixed to a boat transom, a propulsion unit supporting a thrust producing element, means connecting said propulsion unit to said transom bracket means so as to provide for vertical swinging of said propulsion unit relative to said transom bracket means rearwardly of the transom, and for pivotal steering movement of said propulsion unit relative to said transom bracket means about an axis transverse to the horizontal, said connecting means including a stern bracket pivotally connected to said transom bracket means about a first horizontal axis, and a unitary swivel bracket pivotally connected to said stern bracket about a second horizontal axis such that said second horizontal axis passes through said swivel bracket and through said stern bracket and such that said swivel bracket only pivots relative to said stern bracket about said second axis, and said swivel bracket being pivotally connected to said propulsion unit about said steering axis such that said propulsion unit only pivots relative to said swivel bracket about said steering axis, and a steering arm connected to said propulsion unit and extending forwardly therefrom below said first horizontal axis and having a forward end terminating rearwardly of the transom.

4,406,635

MARINE VESSEL WITH AT LEAST ONE PROPELLER

Wolfgang Wührer, Ravensburg, Fed. Rep. of Germany, assignor to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Mar. 15, 1982, Ser. No. 358,006
Claims priority, application Switzerland, Apr. 22, 1981, 2627/81
Int. Cl.³ B63H *5/06*; B63B *1/22*
U.S. Cl. 440—69 **7 Claims**



7. A marine vessel comprising:
vessel hull having a vessel floor portions;
a tunnel provided at the vessel floor portion of said vessel hull;
at least one propeller located at least partially within said tunnel;
said tunnel having a shape which merges with a surface of the vessel floor portion;
a transition region formed between the surface of the vessel floor portion and said tunnel;
a retractable and extendable control plate arranged at said transition region between the surface of the vessel floor portion and said tunnel;
means for pivotably mounting said control plate at the vessel hull;
drive means for selectively operating said retractable and extendable control plate;
an elastically deformable cover plate arranged at the transition region between the vessel floor portion and the control plate;
said cover plate covering a gap between the vessel floor portion and the control plate;
said cover plate extending along flow lines of the water both in the retracted position and the extended position of the control plate;
said control plate having a front edge;
mounting means for connecting said front edge of said control plate with the vessel hull;
said mounting means being movable in the direction of travel of the marine vessel and essentially stationary in vertical direction of the marine vessel;
said mounting means comprising bearing block means equipped with elastically deformable arm means and with which there is connected the front edge of the control plate; and
each of said bearing block means being structured such that the deformation of the arm means increases in the direction of the retracted position of the control plate.

4,406,636
SINGLE-POINT MOORING SYSTEMS

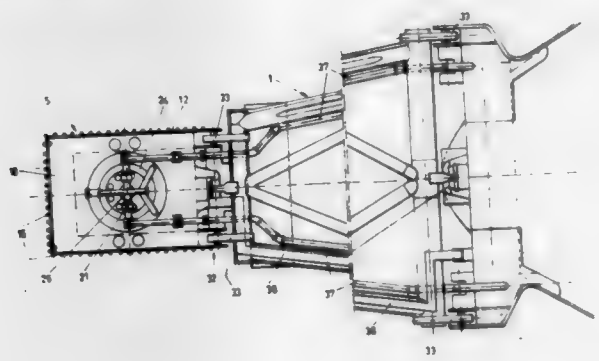
Willem J. Van Heijst, 34 Rue de Fauceguy, Annemasse, France, and Urias G. Nooteboom, Laan van Meerdervoort 30f, The Hague, Netherlands

Continuation of Ser. No. 92,931, Nov. 9, 1979, abandoned. This application Nov. 3, 1981, Ser. No. 317,868

Claims priority, application United Kingdom, Nov. 14, 1978, 44435/78

Int. Cl.³ B63B *21/52*

U.S. Cl. 441—5 15 Claims



1. A permanent single-point mooring arrangement for a floating unit which comprises a buoy (5) anchored to the seabed (7) with anchor points (8) and catenary shaped anchor lines (6), which are connected to a central shaft (9) located in the buoy (5) around which the buoy—and a floating unit (3) moored to the buoy—can rotate in a horizontal plane, the means for attaching the floating unit to the buoy being such that the floating unit may also move in a vertical plane so as to accommodate relative motion between the buoy and the floating unit, said floating unit attaching means being formed of a rigid connecting yoke (1) which is attached at one end to the buoy and at the other to the floating unit and said floating unit attaching means also comprising flexible joints (32–34) associated with the rigid yoke, two lateral (33) and one axial (34) flexible joints allowing for a horizontal hinge motion between buoy and yoke at one side and between yoke and floating unit at the other side of the yoke, the buoy (5) having a rectangular shape of which the length is considerably larger than its width and whereby the catenary shaped anchor chains (6) are connected to the central shaft (9) whose diameter size is small with respect to the width dimension of the buoy (5), and the flexible attachment means being located above the water line along one short side constituting the width of the rectangular buoy near deck level.

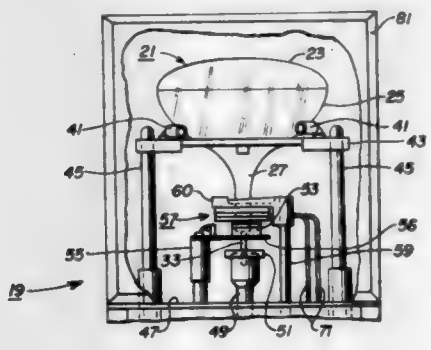
4,406,637
PROCESSING THE MOUNT ASSEMBLY OF A CRT TO SUPPRESS AFTERGLOW

Karl G. Hernqvist, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 2, 1981, Ser. No. 279,740

Int. Cl.³ H01J *9/00, 9/385*

U.S. Cl. 445—45 10 Claims



1. In a method of making a cathode-ray tube comprising an envelope and a mount assembly including a plurality of sequentially-spaced electrodes sealed in said envelope,

said method including assembling said mount assembly, sealing said mount assembly into said envelope, then exhausting gases from said envelope to a low pressure below 10^{-4} torr and heating conductive parts of said mount assembly in said low pressure to a maximum temperature above about 450° C.,

the improvement comprising, prior to achieving said low pressure, selectively heating at least a portion of one of said electrodes of said mount assembly at superior temperatures above said maximum temperature in an atmosphere having a partial pressure of oxygen gas substantially greater than 10^{-4} torr for a sufficient time period to oxidize the surface of said at least one electrode to produce a visible discoloration thereon when cooled but insufficient to produce an electrically-insulating layer on said surface.

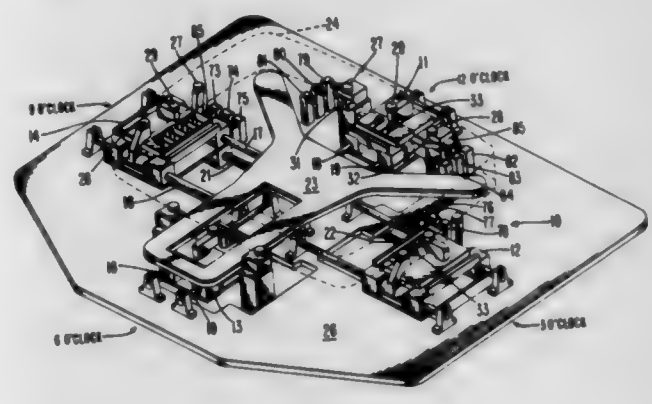
4,406,638
SYSTEM FOR REMOVING SHADOW MASK ASSEMBLIES FROM KINESCOPE PANELS OF VARYING SIZES

Mario E. De Angelis, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 6, 1981, Ser. No. 290,472

Int. Cl.³ H01J *9/18*

U.S. Cl. 445—68 15 Claims



1. In a system for removing shadow mask assemblies from kinescope panels of varying sizes, wherein said panels include mounting studs arranged at particular positions with respect to the major and minor axes of said panels and wherein said shadow mask assemblies include retaining springs having apertures for engaging said studs, an improvement comprising:

a first pair of blade mounts arranged to simultaneously move linearly in opposite directions substantially parallel to said major axis;

a second pair of blade mounts arranged to simultaneously move linearly in opposite directions substantially parallel to said minor axis and independently of the motion of said first blade mounts;

each of said blade mounts including means for sensing the size of said panels and means for centering said panels;

each of said blade mounts supporting a number of blades determined by the number of stud locations at each position whereby shadow mask frame assemblies can be removed from all sizes of panels.

4,406,639
WET PROCESSING OF ELECTRODES OF A CRT TO SUPPRESS AFTERGLOW

Robert H. Williams, Scranton, Pa., assignor to RCA Corporation, New York, N.Y.

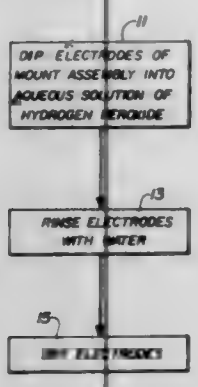
Filed Sep. 29, 1981, Ser. No. 306,713

Int. Cl.³ H01J *9/02*

U.S. Cl. 445—59 6 Claims

1. In a method of making a CRT comprising an evacuated envelope and, located within said envelope, a unitary mount

assembly comprising a plurality of electrodes including a final high-voltage electrode and a focus electrode spaced from said final high-voltage electrode, said method including assembling said mount assembly and sealing said mount assembly into said envelope,



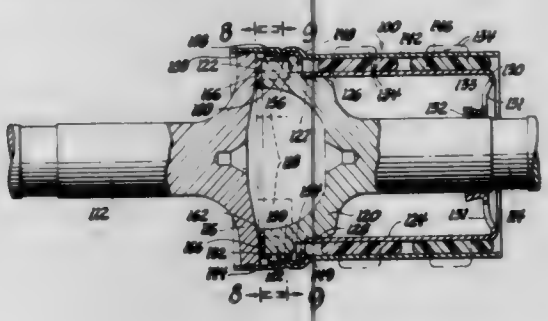
the improvement comprising, prior to sealing said mount assembly into said envelope, dipping at least said high-voltage electrode and the adjacent portions of said focus electrode into an aqueous solution consisting essentially of hydrogen peroxide and water, rinsing said dipped electrodes with water and then drying said dipped electrodes.

4,406,640

DRIVE AXLE ASSEMBLY HAVING LIMITED TORSIONAL DAMPER

Leonard N. Franklin, Reese; Joseph A. Stearns, Frankenmuth, and David J. McGregor, Saginaw, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 218,517, Dec. 22, 1980, abandoned. This application Aug. 11, 1982, Ser. No. 407,040
Int. Cl.³ F16D *3/14*
U.S. Cl. 464—91 10 Claims



1. A drive axle assembly having a limited torsional damper comprising;

a first drive shaft having an integral radial flange at one end,

a second drive shaft having an integral hollow head at an end adjacent the integral radial flange of the first drive shaft,

said radial flange and said hollow head having lugs which cooperate to provide a lost motion, positive drive between said drive shafts,

a canister secured to said hollow head at one end and supported on said second drive shaft at the other end,

a sleeve having an elongated end portion surrounding the canister and an opposite end portion of larger diameter secured to said radial flange,

radially compressed elastomeric bushing means disposed between the elongated end portion and the sleeve and the canister for transmitting torque and damping the torque transmitted between the axles until cooperating lugs of the flange and the hollow head engage to provide positive drive between the drive shafts, and

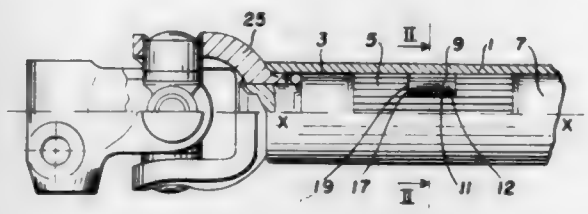
a stop inside the sleeve which is engageable with said head to prevent longitudinal separation of the drive shafts, in the event the compressed elastomeric bushing means fail.

4,406,641

TORQUE TRANSMITTING COUPLING

Bernard Mallet, Limay, France, assignor to Nadella, France

Filed Oct. 2, 1980, Ser. No. 193,309
Claims priority, application France, Oct. 22, 1979, 79 26125
Int. Cl.³ F16D *3/06*
U.S. Cl. 464—162 5 Claims



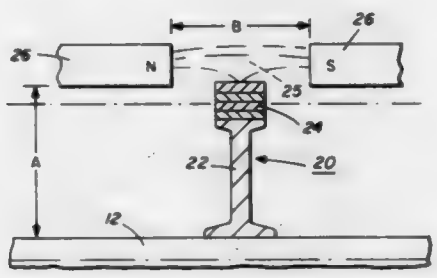
1. A coupling comprising a first element in the form of a tubular sleeve having inner axial splines, a second element in the form of a shaft or other torque transmitting member which has outer axial splines complementary to and cooperative with the splines of the sleeve and is slidably mounted in the sleeve, a radially recessed portion on one side of one said elements, and a spring plate which is disposed in said recessed portion and elastically jammed between the recessed portion and a confronting portion of the other of said elements by engagement of a centre portion of the plate with said recessed portion and engagement of two opposed axially extending edge portions of the plate with said other element wherein the spring plate has a substantially convex side facing said recessed portion, thereby to bias the shaft radially against the sleeve and take up play between said splines.

4,406,642

SHAFT DAMPENING APPARATUS

Fredlee M. McNall, Allegany, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 13, 1981, Ser. No. 253,430
Int. Cl.³ F16F *15/10*
U.S. Cl. 464—180 7 Claims



1. In a mechanism having a shaft and spaced apart bearings supporting said shaft for rotation, shaft dampening apparatus for dampening lateral amplitudes of vibration incurred by said shaft in the course of rotation, said shaft dampening apparatus comprising in combination:

(a) magnet means for producing a magnetic field axially extending concentrically about said shaft at an axial location thereabout between said bearings and generally coinciding with the location at which excessive lateral amplitude of vibration is anticipated to occur; and

(b) annular member means having an electrically conductive band positioned axially displaced from said magnet means and radially adjacent the magnetic field produced by said magnet means;

(c) one of said annular member means or said magnet means being rotationally secured to said shaft and the other of said annular member means of said magnet means being supported stationary radially outward of said one means whereby excessive vibrational amplitude incurred by said shaft in the course of shaft rotation causes said magnetic field to be penetrated by the electrically conductive band

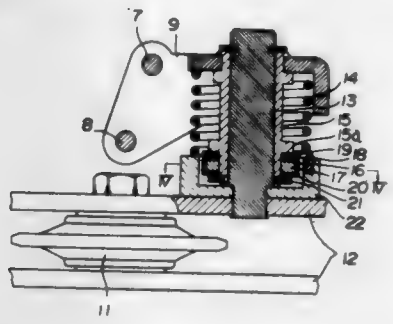
of said annular member means to induce an electrical current in said band effective to repel said vibrational amplitude.

4,406,643

DERAILLEUR FOR A BICYCLE

Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Nov. 24, 1980, Ser. No. 209,989
Claims priority, application Japan, Dec. 19, 1979, 54-166120
Int. Cl.³ F16H *9/00, 11/00*
U.S. Cl. 474—82 **8 Claims**



1. A derailleur for a bicycle which changes a driving chain to a desired one of a plurality of chain gears, said derailleur comprising:

(a) a derailleur body comprising a base member, two linkage members pivoted to said base member, and a movable member pivoted to said linkage members;

(b) a chain changeover frame having two pulleys and being supported pivotally to said movable member;

(c) a tension spring interposed between said changeover frame and said movable member for exerting tension on said driving chain;

(d) a resistance applying means connected between said changeover frame and said movable member for applying a resistance to the swinging movement of said changeover frame relative to said movable member only when said changeover frame swings in a direction opposite to a working direction of said tension spring acting on said changeover frame, so that said changeover frame swings in said working direction against less applied resistance than that existing when said changeover frame swings in a direction opposite to said working direction.

4,406,644

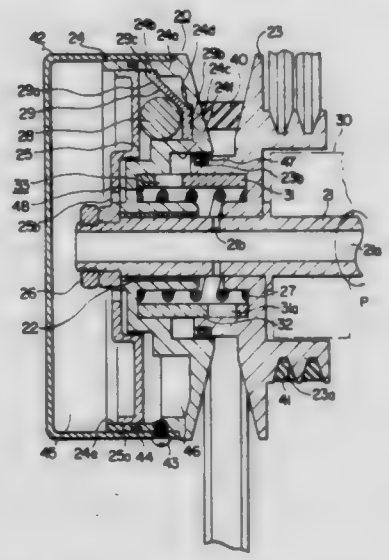
POWER TRANSMISSION SYSTEM

Hiroji Kinbara, Aichi; Yoshiyuki Hattori, Toyoake; Kazuma Matsui, Toyohashi; Hideyuki Hayakawa, Nishio; Masaaki Takizawa, Mishima; Masaru Tamura, and Yasunobu Jufuku, both of Susono, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyoda, both of, Japan

Filed Jan. 8, 1981, Ser. No. 223,304
Claims priority, application Japan, Jan. 9, 1980, 55-1482
Int. Cl.³ F16H *11/06*
U.S. Cl. 474—13 **3 Claims**

1. A power transmission system comprising:

a shaft; a stationary pulley part fixed to said shaft; a movable pulley part disposed in axially opposite relationship to said stationary pulley part and movable in the axial direction along said shaft toward and away from said stationary pulley part to vary the width of a belt-receiving groove formed between said stationary and movable pulley parts; a V-belt received in said belt-receiving groove; a holder fixed to the side of said movable pulley part opposite to the side thereof which is contacted by said V-belt, said holder having an inclined surface extending obliquely with respect to the axis of said shaft; a circular stationary plate fixed to said shaft and disposed axially outwardly of said holder; at least one fly weight held between said stationary plate and said holder; a cover having an end wall disposed axially outwardly of said stationary plate and having a substantially cylindrical outer peripheral section sealingly and fixedly connected to said movable pulley part, said cover cooperating with said stationary plate to define a first variable volume space therebetween, means providing a seal between said stationary plate and said movable pulley part, said seal means allowing an axial movement of said movable pulley part and said cover



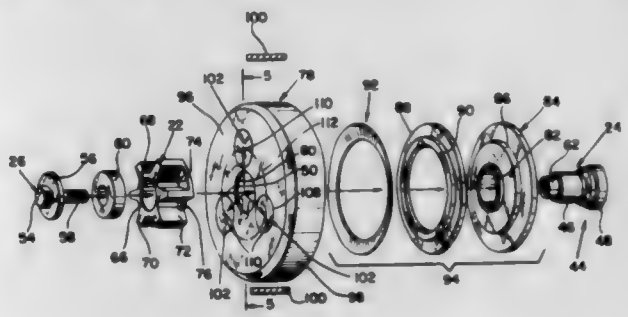
relative to said stationary plate, said stationary plate cooperating with said movable pulley part to define a second variable volume space therebetween, said movable and stationary pulley part cooperating together to define a third variable volume space therebetween; means for communicating said first, second and third spaces with the atmosphere to maintain said spaces substantially at the atmospheric pressure.

4,406,645

SPROCKET-BRAKE DRUM CONSTRUCTION FOR CHAIN SAW

Ernest R. Dynie; Colin Overy, and Ronald J. Lipscombe, all of Brockville, Canada, assignors to Black & Decker Inc., Newark, Del.

PCT No. PCT/US80/01011, § 371 Date Oct. 30, 1980, § 102(e) Date Oct. 30, 1980, PCT Pub. No. WO82/00436, PCT Pub. Date Feb. 18, 1982
PCT Filed Aug. 8, 1980, Ser. No. 201,412
Int. Cl.³ F16H *55/30, 55/42*
U.S. Cl. 474—158 **8 Claims**



2. A drive coupling for a chain saw in which a motive means is mounted in the housing having a saw chain rotatively mounted on a saw bar extending forwardly from the housing and drive through the drive coupling by the motive means, a brake means including a brake band operative between an open non-braking position and a closed braking position, a clutch operatively associated with the drive coupling to permit braking of the drive coupling during operation of the motive means, the drive coupling including the clutch comprising:

(a) a drive shaft,

(b) a brake drum detachably connected to the drive shaft,

and adapted to be stopped from rotation by the brake means,

(c) a sprocket detachably connected to the drive shaft and mechanically connected to the brake drum,

(d) a plurality of lugs formed on the brake drum along a predetermined circumferential line,

(e) a plurality of teeth formed on the sprocket,

(f) openings formed between at least some of the teeth to permit the lugs to be engaged between the teeth of the opening,

(g) the clutch including a plate clamp, thrust washer and spring washer on the side of the brake drum remote from the sprocket and a thrust washer on the side of the sprocket remote from the brake drum,

(h) fastening means connected to the drive shaft with a predetermined torque to assemble the sprocket and brake drum intermediate the clutch,

(i) a hub formed on the sprocket,

(j) the thrust washer adjacent the sprocket engaging the hub thereof,

(k) the plate clamp keyed to the drive shaft and having a raised annular recess facing the brake drum,

(l) the thrust washer adjacent the brake drum nesting in the recess of the plate clamp, and having an axial flange thereon, and

(m) the spring washer affixed to the thrust washer at one edge of said washer and abutting the adjacent surface of the brake drum at the outer edge of said washer to spring load the thrust washer against the plate clamp whereby the clutch permits the brake drum and sprocket to stop relative to the drive shaft upon braking of the brake drum.

4,406,646

METHOD OF PRODUCING SELF-SUPPORTING PLASTIC BAG

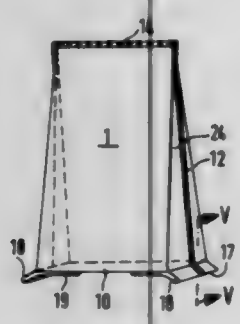
Hans G. Jentsch, Daimlerstrasse 4, D-4300 Essen, Fed. Rep. of Germany

Filed Mar. 6, 1981, Ser. No. 241,128

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1980, 3008809

Int. Cl.³ B31B *29/00*

U.S. Cl. 493—209 **10 Claims**



1. A method for producing a self-supporting bag of synthetic foil, comprising the steps of:

(a) forming a bag seamlessly closed at its bottom and open at the top;

(b) grasping two oppositely located side walls of the bag and moving the same apart such that at the bottom of the bag an essentially flat and seamless bottom surface with two outwardly extending double-walled tip portions is formed;

(c) holding a strip-like portion of each tip portion bordering the bottom surface substantially in the plane of the bottom surface;

(d) folding the remainder of the tip portion by about 180° and placing the free end of the tip portion from underneath against the bottom surface, to thereby form a four-walled fold protruding outwardly from the bottom surface; and

(e) welding each four-walled fold for defining a strip-like welded crease section located laterally outside the bottom surface, whereby a flat-bottom bag is formed which has a supporting surface enlarged by the welded multi-walled folds and stabilized and which has tightly closed tip portions.

4,406,647

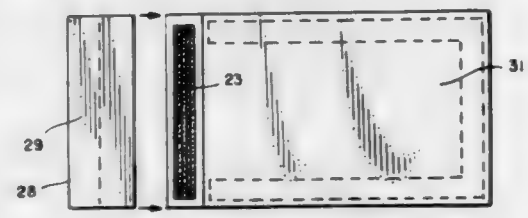
METHOD OF MAKING, INSERTING, AND REMOVING ENVELOPE INSERTS FOR MAGAZINES

John F. Foffel, St. Charles, Ill., assignor to Berlin Industries, Addison, Ill.

Division of Ser. No. 149,851, May 14, 1980, Pat. No. 4,313,557. This application Jul. 29, 1981, Ser. No. 288,193

Int. Cl.³ B31B *41/00*

U.S. Cl. 493—216 **3 Claims**



1. A method of inserting an envelope construction in a magazine and removing the envelope construction from the magazine comprising the steps of:

superposing first and second sheets and securing the sheets together to provide an envelope insert, each of said sheets having pair of end edges, each end edge of each sheet overlying an end edge of the other sheet whereby said envelope has a constant thickness of only two sheets provided by said pair of sheets between said end edges, one of said sheets having a perforation line spaced from one of the end edges of the sheet and the other of said sheets having a perforation line between said perforation line of said one sheet and the end edge of said other sheet which overlies said one end of said one sheet to provide a flap portion on said other sheet between the perforation line of said other sheet and the perforation line of said one sheet, and adhesive on the flap portion,

inserting the first edges of the first and second sheets between pages of a magazine,

tearing the first and second sheets along said perforation lines, and

folding said flap portion over the first sheet and securing it to the first sheet.

4,406,648

CREASING MACHINE

Elio Cavagna, via Milano 13, San Zenone al Lambro, and Antonio Colombo, via Lomeni 4, Magenta, both of Italy

Filed Sep. 8, 1981, Ser. No. 300,293

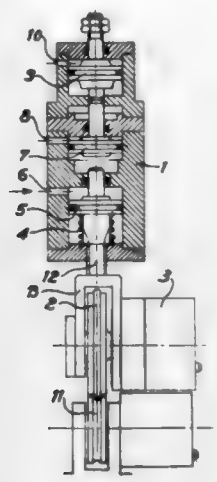
Claims priority, application Italy, Sep. 29, 1980, 25005 A/80

Int. Cl.³ B31B *1/25*

U.S. Cl. 493—403 **5 Claims**

1. An improved creasing machine, particularly for use in the industry of cardboard articles and packages, comprising a creasing roller, a fixed counter-roller, an axially movable fork supporting the creasing roller and integral with a sliding shaft, a sliding chamber for said shaft, a resilient means acting on the shaft maintaining the creasing roller at position of maximum distance or spacing relative to the fixed counter-roller, and a

plurality of approach cylinders, which are coaxial and arranged in aligned sequence, the pistons of which slide along the



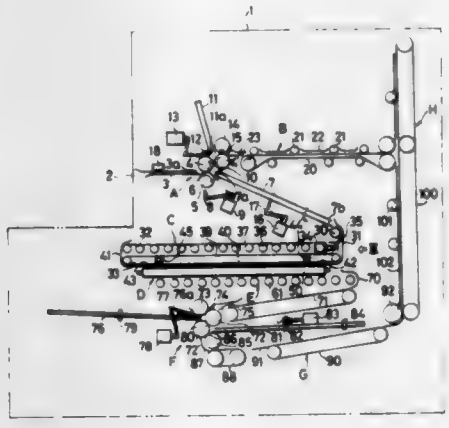
same axis, coinciding with the slide axis of the shaft, and have different stroke.

4,406,649

SHEET FOLDING MACHINE USED WITH COPYING MACHINE

Koichi Yamamura, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1981, Ser. No. 305,319
Claims priority, application Japan, Oct. 1, 1980, 55-135778
Int. Cl.³ B65H *45/14*
U.S. Cl. 493—421 **12 Claims**



1. A sheet folding machine comprising:

a sheet inlet section having a sheet folding means including a pair of folding rollers and a feed roller located adjacent loading ends of a discharge section and a sheet receiving pocket, said sheet folder means having a plurality of pockets for receiving a sheet including said sheet receiving pocket, means disposed in a sheet conveying path in said sheet receiving pocket for selectively blocking said sheet receiving pocket to cause said sheet to either pass through said folder means for folding and then to said discharge section or allowing said sheet to pass through said sheet conveying path;

first conveying means placed in a sheet discharge path of said sheet receiving pocket for displacing said sheet in a widthwise direction;

second conveying means on said discharge path downstream of said first conveying means for conveying said sheet selectively in one direction and in an opposite direction;

switch means disposed at sheet loading ends of said first and second conveying means for switching the delivery of said sheet to said first and second conveying means wherein said sheet is delivered through said first conveying means to said second conveying means or directly to said second conveying means;

sheet folding means in the discharge path of said second conveying means for folding said sheet in a first direction;

first and second folding mechanisms arranged in succession and receiving a sheet from said sheet folding means, said first folding mechanism folding said sheet in two in the sheet discharge path direction and said second folding mechanism adapted to fold said sheet in two in a direction opposite to said sheet discharge path direction;

means for inhibiting the folding operation of said first sheet folding mechanism and delivering said sheet directly to said second sheet folding mechanism;

means for folding said sheet in two positions in said second sheet folding mechanism; and

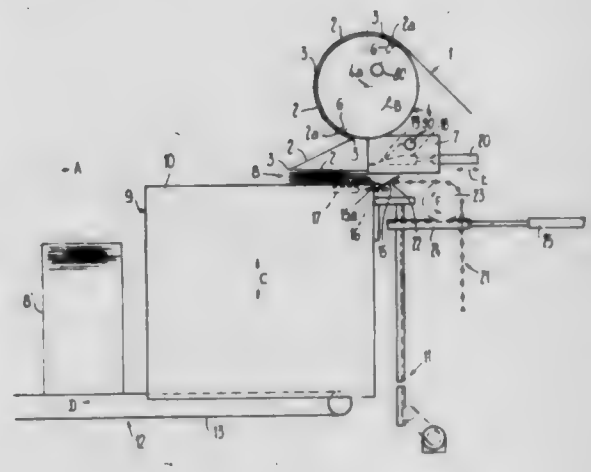
a sheet conveying mechanism provided at the sheet discharge side of said second sheet folding mechanism.

4,406,650

APPARATUS FOR FORMING INDIVIDUAL STACKS FROM AN ENDLESS WEB

Willi Felix, Strengelbach, Switzerland, assignor to Jos. Hunkeler AG Fabrik für Graphische Maschinen, Wikon, Switzerland

Filed Mar. 23, 1981, Ser. No. 246,917
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1980, 3013865
Int. Cl.³ B65H *45/00, 45/20*
U.S. Cl. 493—410 **27 Claims**



1. An apparatus for forming individual stacks from an endless web composed of interconnected web sections, comprising:

means for the substantially zig-zag folding of a continuously infed web at connection locations of the web sections with one another;

a support element upon which there can be supported stacks formed of the zig-zag folded web, each stack having an uppermost web section;

a separation device for the periodic separation of the uppermost web section of one of the stacks reposing upon the support element from a next following web section of the web which forms a lowermost web section of a next successive stack which is to be formed after forming the one stack reposing upon the support element and which one reposing stack is composed of a predetermined number of mutually interconnected, superimposed web sections of the web;

holder means for temporarily fixedly and individually retaining during said periodic separation each of said uppermost web section of said one reposing stack and said next following lowermost web section of said next successive stack which is to be formed and which web sections are to be separated from one another;

a support device movable into an effectual position engaging below arriving web sections intended to form said next successive stack when said one reposing stack which

defines a previously finished-formed stack is being removed from the support element;

means for displacing said support device into said effectual position;

said support element, when ready to receive a new stack, taking-over a partial stack of said next successive stack which is to be formed and temporarily formed upon said support device;

said holder means comprising a first retention arrangement for the retention of at least the uppermost web section of the previously finsihed-formed stack and a second retention arrangement for holding at least the lowermost web section of the next successive stack to be formed;

both of said retention arrangements being located in spaced superimposed relationship in order to retain in a raised position from one another, during the separation operation, the web sections which are to be separated from one another; and

said first retention arrangement comprising at least one movable holder element which can be brought into a position where it defines means for directly pressing upon the previously finished-formed stack.

10. An apparatus for forming individual stacks from an endless web composed of interconnected web sections, comprising:

means for the substantially zig-zag folding of a continuously infed web at connection locations of the web sections with one another;

a support element upon which there can be supported stacks formed of the zig-zag folded web, each stack having an uppermost web section;

a separation device for the periodic separation of the uppermost web section of one of the stacks reposing upon the support element from a next following web section of the web which forms a lowermost web section of a next successive stack which is to be formed after forming the one stack reposing upon the support element and which one reposing stack is composed of a predetermined number of mutually interconnected, superimposed web sections of the web;

holder means for temporarily fixedly and individually retaining during said periodic separation each of said uppermost web section of said one reposing stack and said next following lowermost web section of said next successive stack which is to be formed and which web sections are to be separated from one another;

a support device movable into an effectual position engaging below arriving web sections intended to form said next successive stack when said one reposing stack which defines a previously finished-formed stack is being removed from the support element;

means for displacing said support device into said effectual position;

said support element, when ready to receive a new stack, taking-over a partial stack of said next successive stack which is to be formed and temporarily formed upon said support device;

said folding means comprises a rotatably driven drum over which there is guided the web to be folded in zig-zag configuration;

means for fixedly retaining each second incoming web section at the region of a leading edge thereof during the rotation of the drum for such length of time until the retained web region is located at an underside region on the drum;

said fixedly retaining means comprises at least two selectively operative holder devices provided for said drum; and

said holder devices being arranged in spaced relationship from one another at the circumference of said drum by an amount essentially corresponding to twice the length of a web section.

4,406,651

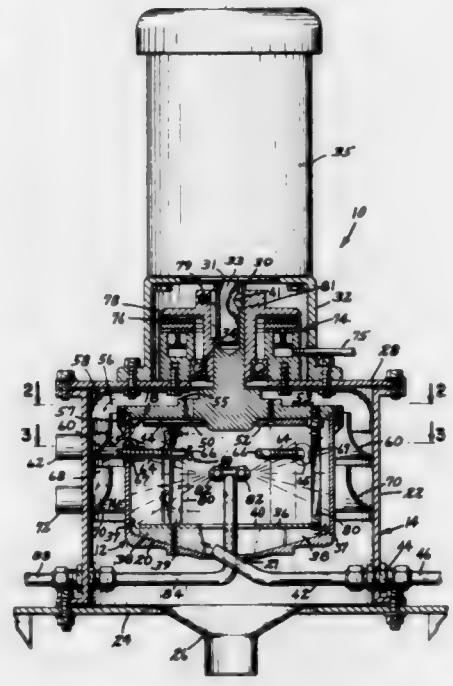
MULTI-PHASE SELF PURGING CENTRIFUGE

Denis J. Dudrey, Bloomington; John T. Herman, Mahtomedi, and Bernard A. Matthys, Apple Valley, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Apr. 15, 1982, Ser. No. 368,651

Int. Cl.[3] B04B *1/10, 11/00*

U.S. Cl. 494—29 9 Claims



1. A centrifuge appartus for separating multi-phase fluid, comprising:

(a) a housing having a vertical axis;

(b) a bowl having a cylindrical side wall portion and a bottom wall portion, said bowl being enclosed by a top wall member, said bowl further being mounted for rotation in said housing about said vertical axis;

(c) means for introducing multi-phase fluid into said bowl proximate the bottom portion thereof;

(d) means for driving said bowl at a predetermined rotational speed;

(e) a rotor assembly coaxially mounted in said bowl proximate said bottom portion for rotation with said bowl, said rotor assembly rotating with said bowl to impel the multi-phase fluid and any solid particles suspended therein outwardly toward said cylindrical side wall portion, whereby said fluid is separated by centrifugal forces into heavier phase fluid and ligher phase fluid while said solid particles are collected on the inner surface of said cylindrical side wall portion;

(f) said top wall member defining openings therein for discharging said heavier phase fluid;

(g) baffle means extending transversely of said bowl proximate said top wall member for preventing said lighter phase fluid from discharging through said openings in said top wall member;

(h) discharge means positioned in sid cylindrical side wall portion and extending radially into the interior of said bowl for discharging said lighter phase fluid;

(i) purge means for stopping the rotation of said bowl thereby initiating a purge cycle defined by the disruption of the rotation of said fluid, whereby solid matter accumulated on the inner surface of said cylindrical side wall portion is dislodged therefrom and resuspended in the fluid; and

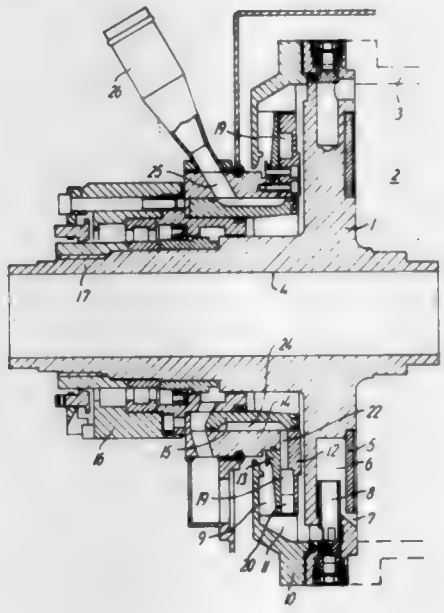
(j) drain means in said bowl for draining said fluid with said resuspended particles from said bowl during the purge cycle.

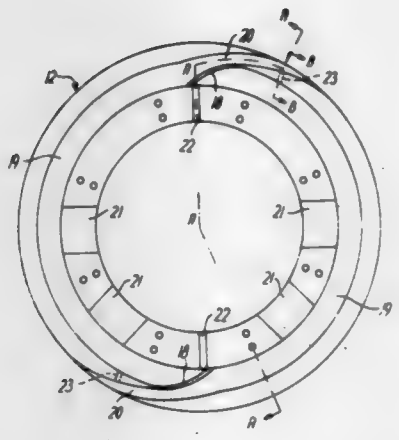
4,406,652

CENTRIFUGE WITH A SKIMMER DISC FOR DISCHARGING A LIQUID PHASE

Helmut K. Nielsen, Slangerup, Denmark, assignor to Alfa-Laval Separation A/S, Denmark

Filed Jun. 4, 1982, Ser. No. 385,088
Claims priority, application Denmark, Jun. 30, 1981, 2909/81
Int. Cl.³ B04B *1/00, 11/08*
U.S. Cl. 494—56 9 Claims





1. In a centrifuge for separating a mixture containing at least one liquid phase, comprising a rotary drum and a stationary, annular skimmer disc for discharging the liquid phase through at least one discharge duct in the skimmer disc, said discharge duct having a substantially tangential inlet at the outer periphery of the disc and an outlet located closer to the centre of the disc, the improvement comprising a by-pass duct issuing from a region of the flow path of the liquid phase where the static liquid pressure, during operation, is higher than at the inlet of the discharge duct and opening into the outer periphery of the skimmer disc in the region of said inlet, and a throttling means provided in said by-pass duct intermediate its ends.

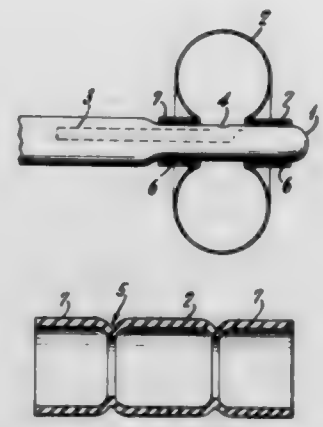
4,406,653

ADHESIVELY MOUNTED CATHETER BALLOON

Chris E. Nunez, Garden Grove, Calif., assignor to Critikon, Inc., Tampa, Fla.

Filed Jan. 26, 1982, Ser. No. 342,873
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—103 1 Claim

1. In a balloon catheter assembly employing an elongated catheter having a lumen communicating through an inflation port with an inflatable balloon member, the improvement wherein said balloon member is formed as an elongated elastomeric tube which in uninflated condition has three respective annular segments separated by a pair of respective inwardly extending annular ridges, a central one of said annular segments being inflatable and overlaying said port of said catheter, and said other two segments being adhesively attached to said



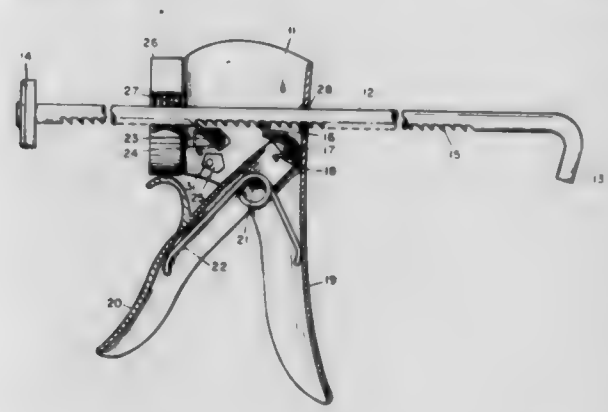
catheter, wherein said ridges form well defined boundaries between respective adjacent attached and unattached segments of said balloon member.

4,406,654

ADJUSTABLE FEEDING DEVICE FOR THE ADMINISTRATION OF DOSAGES OF GELS AND PASTES TO FARM ANIMALS

Robert L. Bristow, Titusville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 22, 1982, Ser. No. 351,066
Int. Cl.³ A61D *7/00*
U.S. Cl. 604—209 5 Claims



1. An animal-feeding device for orally delivering a plurality of measured doses of gels, pastes or other similar preparations, which may be medicated, comprising: a housing, an externally-attached feed-containing cartridge, an injecting means, a propelling means, and an adjustable dose regulator, wherein said injecting means comprises a plunger-rod supported by bearings where said plunger-rod enters and exits said housing or makes contact therewith, and having a plurality of inclined teeth which traverse the plunger-rod along a longitudinal surface and serve as a ratchet, and the front end of said plunger-rod is terminated by a plunger which fits into said feed cartridge while the rear end of said plunger-rod forms a handle, and said plunger-rod passes through said housing and is freely rotatable and movable therethrough, and said plunger-rod is powered by said propelling means; wherein said propelling means comprises a handle pivotally-attached to said stationary handle of said housing, a spring traversing said pivotal attachment locus with one portion of said spring contacting said pivotally-attached handle while another portion of said spring contacts said stationary handle, and said pivotally-attached handle contains a pivotally-attached pawl which contacts said plunger rod or said ratchet of said plunger-rod, and a pawl spring which traverses said pivotal attachment locus of said pawl and one portion of said pawl spring contacts said pivotally-attached handle while another portion of said pawl spring contacts said pawl, and a housing-mounted pivotally-attached

pawl located anterior to said pawl of said pivotally-attached handle and said housing-pawl contacts said plunger-rod or said ratchet of said plunger-rod and has a housing-pawl spring which traverses said pivotal attachment locus of said housing pawl and one portion of said housing-pawl spring contacts said housing at a stationary location while another portion of said housing-pawl spring contacts said housing-pawl; wherein said adjustable regulator comprises a pivotally-attached convex polygonal cam having from four to seven sides and an adjusting knob firmly attached to said pivot whereby said polygonal cam regulates said feeding device by selectively regulating said propelling means thereby affecting said injecting means.

4,406,655

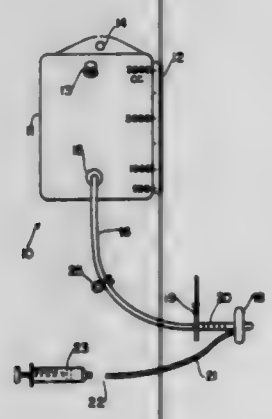
COLON CLEANSING SYSTEM AND TECHNIQUE

Ralph S. Clayton, Rte. 3, Box 210 A, Summit, Miss. 39666

Continuation of Ser. No. 62,352, Jul. 31, 1979, abandoned, which is a division of Ser. No. 937,591, Aug. 28, 1978, abandoned. This application Jul. 15, 1981, Ser. No. 283,474

Int. Cl.³ A61M *3/00*

U.S. Cl. 604—257 **20 Claims**



1. A colon cleansing kit having component parts capable of being assembled at the point of use to provide a system for cleansing out a person's entire colon, from rectum to cecum without the need for prior orally taken laxatives, comprising:

a fluid carrying bag having a capacity of at least 1500 cc,

a tube connected to the bag and extending therefrom, the tube having an inside diameter of a size appropriate for the passage therethrough of an aqueous liquid solution, the tube being open in the vicinity of its end remote from the bag for the delivery of such liquid,

an inflatable balloon attached to the exterior of the tube near its said remote end, the balloon positioned to be located and inflated in the person's rectum when said remote end of the tube is passed through the person's anal opening, so as to seal the rectum to prevent fluid from passing through the anal opening around the exterior of the tube,

a conduit attached to and leading from the balloon for inflating the balloon when located in the person's rectum,

a valve in the conduit at the end thereof opposite from the balloon, the valve normally urged closed by a spring biased means acting toward the said opposite end of the conduit, the valve being capable of opening for flow therethrough in either direction only by engagement of the valve by an object placed into the valve through the said opposite end of the conduit, and

a piston and cylinder syringe having calibrated markings thereon indicating the volume displaced by the piston within the syringe, the volume of the syringe related to the volume of the balloon so that calibrations on the syringe indicate the volume delivered into the balloon, the syringe being insertable in said conduit and having means for opening the valve when inserted therein to permit inflation and deflation of the balloon through the valve and conduit, by operation of the piston in one direction or the other, respectively, so that the amount of fluid introduced into the balloon can be visually and directly ascertained by observing the calibrated markings on the piston and cylinder syringe, as the piston moves relative to the cylinder.

4,406,656

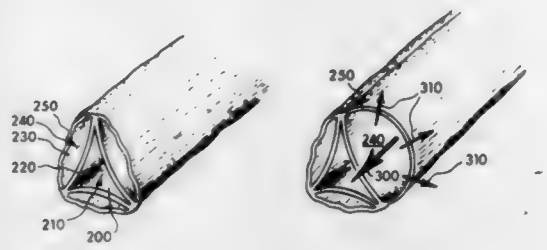
VENOUS CATHETER HAVING COLLAPSIBLE MULTI-LUMENS

Brack G. Hattler, Denver; Ronnie D. Richards, Arvada, and William J. Horgan, Littleton, all of Colo., assignors to Brack Gillium Hattler, Denver, Colo.

Filed Jun. 1, 1981, Ser. No. 268,766

Int. Cl.³ A61M *25/00*

U.S. Cl. 604—280 **8 Claims**



1. A multi-lumen catheter comprising:

a plurality of collapsible lumens, each of said collapsible lumens having a formed fluid passageway therein, each of said collapsible lumens being formed from material wherein each of said collapsible lumens is capable of expanding radially outwardly under the pressure of fluid flowing therein, and wherein each of said collapsible lumens collapses when fluid is not flowing therein and wherein the total cross-sectional area of said collapsible lumens substantially increases when fluid is flowing in any of said collapsible lumens, and

means engaging each of said plurality of collapsible lumens for holding said plurality of collapsible lumens together in a bundle, said holding means being flexible, but stiff enough to prevent bending of any one of said plurality of collapsible lumens, wherein each of said collapsible lumens collapses substantially about said holding means when fluid is not flowing therein.

4,406,657

NOISE-ATTENUATING DEVICE FOR COLOSTOMY

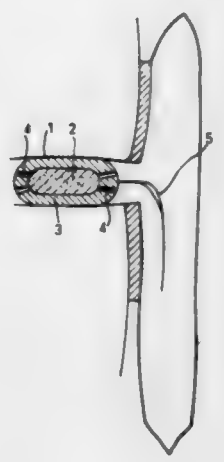
Jean Curutcharry, Guethary, France, assignor to Laboratoires Biotrol S.A., France

Filed Apr. 3, 1981, Ser. No. 250,628

Claims priority, application France, Apr. 4, 1980, 80 07774

Int. Cl.³ A61F *5/44*

U.S. Cl. 604—328 **9 Claims**



1. A combination of a collecting bag and a reusable device for reducing noise emitted by an artificial anus;

the device comprising a body of open-cell porous material

sheathed in an outer casing that does not adhere to stoma walls with which it is adapted to make direct contact;

the casing of the body having upstream and downstream ends (with respect to flow of stool and body fluid through the stoma), each of which comprises a through opening in communication with the porous material and suited for passing emitted intestinal gases;

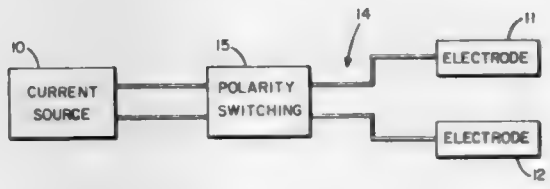
said device being adapted to be inserted into an accessible intestine end portion, to be displaced into the collecting bag by stool and to be reinserted into the accessible intestine end portion thereafter.

4,406,658

IONTOPHORETIC DEVICE WITH REVERSIBLE POLARITY

Gary A. Lattin, Forest Lake, and Richard Spevak, Minneapolis, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 6, 1981, Ser. No. 241,284
Int. Cl.³ A61N *1/30*
U.S. Cl. 604—20 **13 Claims**



1. An iontophoretic device comprising:

a source of electrical current;

first electrode means for containing a charged ionic substance for delivery to said body;

second electrode means for containing said charged ionic substance for delivery to said body;

timing means coupled to said source of electrical current for timing a first period and a second period; and

polarity switching means coupled to said timing means, said source of electrical current and said first and second electrode means for applying said electrical current across said first and second electrode means in a first direction to effect delivery of said ionic substance contained in one of said first and second electrode means during said first period and for applying said electrical current across said first and second electrode means in a second direction to effect delivery of said ionic substance contained in the other of said first and second electrode means during said second period.

4,406,659

LEAKAGE-ABSORBING SUPPLEMENT TO UROSTOMY BAG

Marna J. Broida, 110 Dielman Rd., St. Louis, Mo. 63124

Filed Nov. 12, 1981, Ser. No. 320,349
Int. Cl.³ A61F *5/44*
U.S. Cl. 604—339 **10 Claims**

1. For wear under a urostomy bag of the type having a skin-adhered flange to be sealed surrounding the stoma,

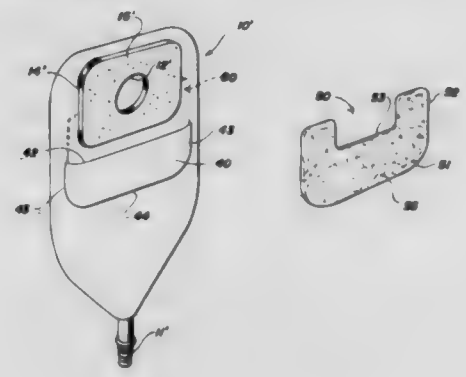
a replaceable pad-like device for absorbing leakage between such flange and the skin, comprising:

(a) a water-impermeable pouch wider than such flange and having

an inner wall formed of thin flexible plastic material and having an upper edge spacedly below such flange, and

an outer wall formed of similar material and including a yoke portion extending upward above the upper edge of the inner wall, said upward-extending portion having a cut-out so proportioned as to fit adjacent to at least the lowermost portion of such flange and a substantial flange portion thereabove,

whereby to receive leakage across the border between the seal and the skin when the wearer's body is upright, in combination with



(b) an absorbent pad both within the pouch and extending above said upper edge of the inner wall substantially co-extensive with and covering that surface of said upward-extending yoke portion of the outer wall of the pouch which is presented toward the wearer's body, together with

(c) means to mount said device to the body of the wearer with said covered yoke portion fitted adjacent to the outer edge of substantially the lower half of such flange.

4,406,660

NON WOVEN FABRICS SUITABLE FOR DIAPER AND DIAPER COVERSTOCK

Jean-Marc Beiner, Antibes; Jerome F. Levy, and Bernard J. M. Sweens, both of Biot, all of France, assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 98,583, Nov. 29, 1979. This application Nov. 14, 1980, Ser. No. 206,759
Claims priority, application United Kingdom, Dec. 4, 1978, 47036/78; Dec. 20, 1978, 49235/78
Int. Cl.³ A61F *13/16*
U.S. Cl. 604—376 **9 Claims**

1. A non-woven fibrous product whose fibres comprise at least 50%, by weight of dry fibre weight, of hydrophilic fibres, as hereinbefore defined, in which the fibres are bonded together by an emulsion copolymer of a monomer composition comprising:

(a) 50–80% of the total monomers of at least one C_4–C_8 ester of acrylic and/or methacrylic acid;

(b) 10–49% by weight of the total monomers of at least one of methyl methacrylate, styrene and α-methyl styrene; and

(c) 0.5–10% by weight of the total monomers of acid comprising at least one monoethylenically unsaturated dicarboxylic acid, optionally in combination with at least one monoethylenically unsaturated monocarboxylic acid;

the copolymer being free from units containing methylol groups and free from added aminoplasts.

4,406,661

PROCESS FOR DYEING AND PRINTING SYNTHETIC, HYDROPHOBIC FIBRE MATERIAL WITH DISCHARGEABLE AZO DISPERSE DYE

Ulrich Bühler, Schöneck; Joachim Ribka, Offenbach am Main-Bürgel; Horst Tappe, Dietzenbach, and Kurt Roth, Hofheim, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 268,128, May 28, 1981. This application Jun. 10, 1982, Ser. No. 386,916

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021269

Int. Cl.³ C09B *43/12*; D06P *5/15*

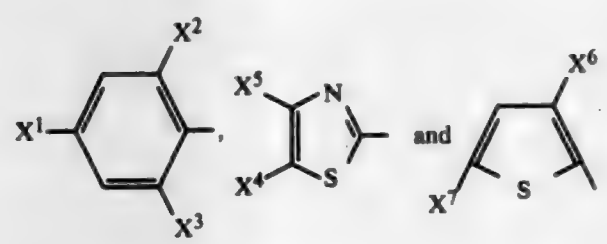
U.S. Cl. 8—464 5 Claims

1. In the process for the production of white or variously colored designs on a colored substrate on textile materials containing hydrophobic, synthetic fibers by impregnating the materials with dye liquors containing dyeing auxiliaries and padding auxiliaries as well as dyestuffs which are dischargeable to white, drying or incipiently drying the impregnated materials, printing the materials with an alkaline discharge reserve paste which contains a discharging agent, and subsequently subjecting the materials to a heat treatment at temperatures from 100° to 230° C.,

the improvement comprises said discharging agent being a base which produces a pH value of at least 8 in a 5% strength aqueous solution and the dyestuffs which are dischargeable to white are of the formula

$$D—N=N—K—NHSO_2R$$

wherein D is 6-nitrobenzthiazol-2-yl, 5-nitrobenzisothiazol-3-yl or a formula selected from the group consisting of



wherein X^1 and X^2 independently of one another are each halogen; nitro; cyano; trifluoromethyl; alkyl having 1 to 4 carbon atoms; alkyl having 1 to 4 carbon atoms substituted by hydroxyl, methoxy, ethoxy, hydroxyethoxy, methoxyethoxy, ethoxyethoxy, chloro, bromo or cyano; alkylsulphonyl having 1 to 4 carbon atoms alkoxysulphonyl having 1 to 4 carbon atoms substituted by hydroxyl, methoxy, ethoxy, hydroxyethoxy, methoxyethoxy, ethoxyethoxy, chlorine, bromine or cyano; phenylsulphonyl; phenylsulphonyl substituted by methoxy, methyl, chloro, bromo or nitro; alkylcarbonyl having 1 to 4 carbon atoms in the alkyl moiety; alkylcarbonyl having 1 to 4 carbon atoms in the alkyl moiety substituted by hydroxyl, methoxy, ethoxy, hydroxyethoxy, methoxyethoxy, ethoxyethoxy, chloro, bromo or cyano; benzoyl; benzoyl with the phenyl moiety substituted by alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, nitro or halogen; alkoxycarbonyl having 1 to 4 carbon atoms in the alkoxy moiety; alkoxycarbonyl having 1 to 4 carbon atoms in the alkoxy moiety substituted by phenyl, hydroxyl, alkoxy having 1 to 4 carbon atoms or alkylcarbonyloxy having 1 to 4 carbon atoms in the alkyl moiety; phenylazo; or phenylazo substituted by cyano, nitro, chloro, bromo, trifluoromethyl, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms or alkoxycarbonyl having 1 to 4 carbon atoms in the alkoxy moiety;

X^3 is hydrogen or has one of the meanings of X^1;

X^4 is nitro; cyano; alkylsulphonyl having 1 to 4 carbon atoms in the alkyl moiety; phenylsulphonyl; phenylsulphonyl substituted by methoxy, methyl, chloro, bromo or nitro; alkoxycarbonyl having 1 to 4 carbon atoms in the alkyl moiety; phenoxycarbonyl; or phenoxycarbonyl substituted in the phenyl moiety by alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, nitro, fluoro, chloro, or bromo;

X^5 is hydrogen; alkyl having 1 to 4 carbon atoms; phenyl; or phenyl substituted by alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, nitro or halogen;

X^6 is bromo; chloro; nitro; cyano; alkoxycarbonyl having 1 to 4 carbon atoms in the alkyl moiety; alkylcarbonyl having 1 to 4 carbon atoms in the alkyl moiety; or alkylsulphonyl having 1 to 4 carbon atoms in the alkyl moiety;

X^7 is nitro; cyano; bromo; chloro; alkylsulphonyl having 1 to 4 carbon atoms in the alkyl moiety; or alkoxycarbonyl having 1 to 4 carbon atoms in the alkoxy moiety;

K is a coupling component of the 1,4-phenylene; 1,4-naphthylene; 2,5-thiazolyl; or 2,5-thienyl series; and

R is alkyl having 1 to 8 carbon atoms; alkyl having 1 to 8 carbon atoms monosubstituted by a monosubstituent selected from the group of hydroxyl, chloro, bromo, cyano, alkoxy having 1 to 4 carbon atoms, hydroxyalkoxy having 1 to 4 carbon atoms, alkenoxy having 3 to 4 carbon atoms, cycloalkoxy having 5 to 6 carbon atoms, alkylcarbonyloxy having 2 to 4 carbon atoms, phenyl, phenoxy and benzoyloxy, with said phenyl, phenoxy and benzoyloxy being unsubstituted or substituted in the phenyl nucleus by alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, chloro, bromo or cyano; disubstituted alkyl having 1 to 8 carbon atoms substituted by hydroxyl and one of said monosubstituents; alkenyl having 2 to 4 carbon atoms; alkenyl having 2 to 4 carbon atoms substituted by hydroxyl, methoxy, ethoxy, chloro, bromo or cyano; phenyl; or phenyl substituted by alkyl having 1 to 4 carbon atoms, hydroxyalkyl having 1 to 4 carbon atoms, alkoxyalkyl having a total of 2 to 8 carbon atoms, hydroxyalkoxyalkyl having a total of 2 to 8 carbon atoms, alkanoyloxyalkyl having a total of 2 to 8 carbon atoms, alkoxy having 1 to 4 carbon atoms, hydroxyalkoxy having 1 to 4 carbon atoms, alkoxyalkoxyalkoxy having a total of 2 to 8 carbon atoms, hydroxyalkoxyalkoxy having a total of 2 to 8 carbon atoms, alkanoyloxyalkoxy having a total of 2 to 8 carbon atoms, chloro, bromo or nitro.

4,406,662

HEAT TRANSFER PRINTING ON A FILLED POLYMETHYL METHACRYLATE ARTICLE

Joseph F. Beran, Wilmington, Del., and Emery J. Gorondy, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 5, 1982, Ser. No. 355,170

Int. Cl.³ B41M *1/26*

U.S. Cl. 8—471 1 Claim

1. A process for heat transfer printing a design onto the surface of a filled polymeric article, said article consisting essentially of 55 to 80% by weight alumina trihydrate and 20 to 45% by weight polymethyl methacrylate, said process comprising preheating said article to a temperature of at least about 96° C., placing a carrier supporting sublimable disperse dye adjacent to said surface of said preheated article, said disperse dye forming a design, and applying sufficient heat to said carrier in intimate contact with said surface to cause said disperse dye to sublime and to diffuse into said surface.

4,406,663

PROCESS FOR CONCENTRATION OF SLURRIES COMPRISING INSOLUBLE COAL PRODUCTS

Roger A. Baldwin, Warr Acres; John E. Halko, Okarche, and Ron S. Henke, Oklahoma City, all of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Mar. 9, 1981, Ser. No. 241,935

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 21 Claims

1. A process for producing a flowable concentrated aqueous

slurry comprising insoluble coal products from a dilute aqueous slurry consisting of water and insoluble coal products which comprise:

providing a dilute aqueous slurry consisting of water and insoluble coal products, said dilute slurry having a solids level below about 60 weight percent;

concentrating said aqueous slurry to form a nonflowable concentrate having a solids level in excess of 65 weight percent;

admixing an alkaline agent and a diluent to form a first mixture, said alkaline agent being present in sufficient quantity to provide a pH level of said first mixture of above about 9.0;

admixing a predetermined amount of said nonflowable concentrate with said first mixture to form a second mixture;

admixing a predetermined amount of a surfactant with said second mixture to form a third mixture, said surfactant comprising at least about 0.01 percent by weight of the total solids; and

admixing an additional amount of said nonflowable concentrate with said third mixture to form a flowable concentrated aqueous slurry containing in excess of about 60 weight percent solids.

4,406,664

PROCESS FOR THE ENHANCED SEPARATION OF IMPURITIES FROM COAL AND COAL PRODUCTS PRODUCED THEREFROM

Lester E. Burgess; Karl M. Fox, both of Swarthmore; Phillip E. McGarry, Palmerton, and David E. Herman, Jim Thorpe, all of Pa., assignors to Gulf & Western Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 114,357, Jan. 22, 1980, Pat. No. 4,332,593. This application May 28, 1981, Ser. No. 267,777

Int. Cl.³ C10M *1/32*

U.S. Cl. 44—51 **31 Claims**

1. In a process for beneficiating coal which comprises chemically surface treating coal in an aqueous medium containing a liquid organic carrier to render said coal hydrophobic and oleophilic, thereafter separating the coal phase from the ash containing water phase and recovering the hydrophobic and oleophilic coal phase, the improvement comprising subjecting the chemically treated coal to high shear intermixing with at least one aqueous wash medium, whereby ash and other hydrophilic impurities are released into the water and a hydrophobic and oleophilic coal phase floats upon and separates from a water phase.

4,406,665

DIESEL FUEL COMPOSITION

Allen H. Filbey, Bloomfield Hills, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Aug. 16, 1982, Ser. No. 408,074

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—53 **4 Claims**

1. Liquid fuel adapted for use in a diesel engine, said fuel being selected from the group consisting of liquid hydrocarbons of the diesel boiling range, alcohols and mixtures thereof, said fuel containing a cetane number increasing amount of a tetrahydrofuranol nitrate.

4,406,666

DEVICE FOR THE GASIFICATION OF CARBON BY MEANS OF A MOLTEN METAL BATH

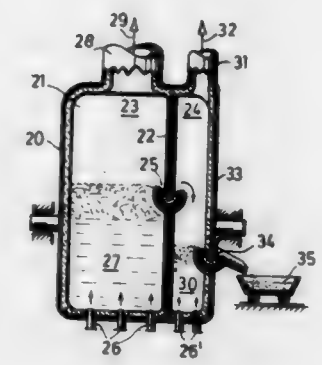
Peter Paschen; Chatty Rao, both of Bergisch-Gladbach; Alfred Kryczun; Roland Pfeiffer, both of Cologne; Heinz-Dieter Waldhecker, Bergisch-Gladbach, and Rolf Pufal, Cologne, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Continuation of Ser. No. 82,539, Oct. 9, 1979, abandoned. This application Sep. 3, 1981, Ser. No. 299,163

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1978, 2843879

Int. Cl.³ C10J *3/48*

U.S. Cl. 48—92 **14 Claims**



1. In a device for the gasification of carbon containing materials for the continuous production of carbon monoxide and hydrogen gases of the type in which the carbon materials and any oxidizing agents and slag-forming constituents required are supplied through inlets located below the surface of a molten metal bath in a reactor, with at least one opening in the reactor provided for the release of the gases produced and an opening for discharging slag, the improvement comprising:

said reactor having a partition wall defining two chambers in said reactor, said partition wall having an opening therein connecting said two chambers, said opening permitting passage of a liquid phase from a first chamber to a second chamber;

a gas seal in the form of a syphon in said opening in said partition wall;

said inlets for the carbon material, oxidizing agents, and slag-forming materials being nozzles disposed in a lower portion on one side of said reactor;

a gas discharge element removably attached to one of said openings for the release of gases in the reactor for retrieving said gases;

a stationary gas discharge line receiving the gases from said gas discharge element;

a releaseable means for normally sealing connecting said gas discharge element to said stationary gas discharge line and to said opening for the release of gases;

an opening for discharging a liquid phase of said molten metal bath from said reactor, said opening disposed in an end wall of said reactor;

a further opening in said reactor having a removable closing means disposed above the surface of said molten metal bath for filling said reactor with molten metal and for repair access; and

means supporting said reactor permitting angular movement about a horizontal axis,

said releasable means permitting said reactor to be tilted, swiveled, or rotated about said horizontal axis without breaking the seal between said opening for the release of gases and said stationary gas discharge line to alter the position of the molten metal bath in the reactor without discharge thereof, for exposing portions of the inside reactor surface including said nozzles normally positioned beneath the surface of the metal bath during gasification operation for replacing and cleaning thereof.

4,406,667

NITRIDE COATED COMPOSITE SILICON NITRIDE CUTTING TOOLS

Vinod K. Sarin, Lexington; Sergej-Tomislav Buljan, Acton, and Charles D'Angelo, Southboro, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 20, 1982, Ser. No. 380,380
Int. Cl.³ B24D *11/00*
U.S. Cl. 51—295 15 Claims

1. A coated composite ceramic cutting tool comprising a composite silicon nitride substrate body having at least one adherent coating layer; said substrate body consisting essentially of particles of a hard refractory material uniformly distributed in a matrix consisting essentially of a first phase of silicon nitride and a refractory second phase comprising silicon nitride and an effective amount of a densification aid selected from the group consisting of yttrium oxide, hafnium oxide, the lanthanide rare earth oxides, and mixtures thereof; said adherent coating layer consisting essentially of a refractory metal nitrides.

4,406,668

NITRIDE COATED SILICON NITRIDE CUTTING TOOLS

Vinod K. Sarin, Lexington, and Sergej-Tomislav Buljan, Acton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 20, 1982, Ser. No. 380,383
Int. Cl.³ B24D *11/00*
U.S. Cl. 51—295 13 Claims

1. A coated ceramic cutting tool comprising a densified silicon nitride substrate body having at least one adherent coating layer; said substrate body consisting essentially of a first phase of silicon nitride and a refractory second phase comprising silicon nitride and an effective amount of a densification aid selected from the group consisting of silicon dioxide, aluminum oxide, magnesium oxide, yttrium oxide, hafnium oxide, zirconium oxide, the lanthanide rare earth oxides, and mixtures thereof; said adherent coating layer consisting essentially of a refractory metal nitrides.

4,406,669

CARBONITRIDE COATED COMPOSITE MODIFIED SILICON ALUMINUM OXYNITRIDE CUTTING TOOLS

Vinod K. Sarin, Lexington, and Sergej-Tomislav Buljan, Acton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 20, 1982, Ser. No. 380,389
Int. Cl.³ B24D *11/00*
U.S. Cl. 51—295 15 Claims

1. A coated abrasion resistant composite ceramic cutting tool comprising a substrate body and at least one adherent refractory metal carbonitride coating layer; said substrate body consisting essentially of a particulate material selected from the group consisting of the refractory metal carbides, nitrides, carbonitrides and mixtures thereof uniformly distributed in a matrix comprising a modified silicon aluminum oxynitride, said particulate material comprising from about 5 volume percent to about 60 volume percent of said cutting tool and having an average particle size of between about 0.5 microns and about 20 microns; said silicon aluminum oxynitride having a modifier selected from the group consisting of the oxides of silicon, yttrium, magnesium, hafnium, zirconium, beryllium, the lanthanides and combinations thereof.

4,406,670

NITRIDE COATED COMPOSITE MODIFIED SILICON ALUMINUM OXYNITRIDE CUTTING TOOLS

Vinod K. Sarin, Lexington, and Sergej-Tomislav Buljan, Acton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 20, 1982, Ser. No. 380,452
Int. Cl.³ B24D *11/00*
U.S. Cl. 51—295 14 Claims

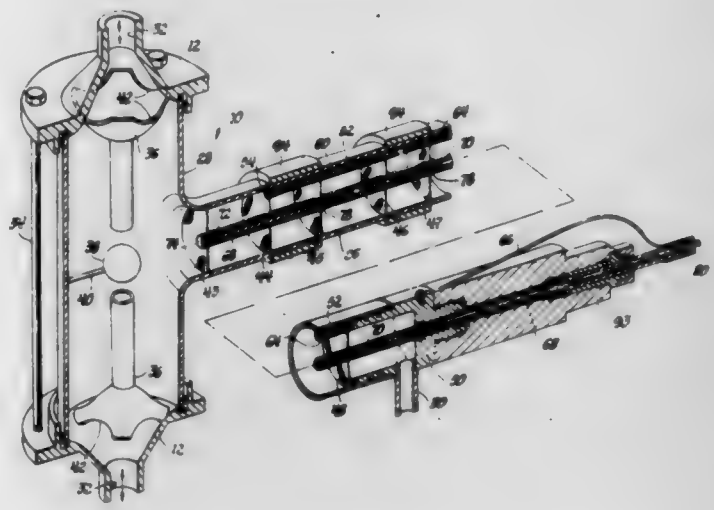
1. A coated abrasion resistant composite ceramic cutting tool comprising a substrate body and at least one adherent refractory metal nitride coating layer; said substrate body consisting essentially of a particulate material selected from the group consisting of the refractory metal carbides, nitrides, carbonitrides and mixtures thereof uniformly distributed in a matrix comprising a modified silicon aluminum oxynitride, said particulate material comprising from about 5 volume percent to about 60 volume percent of said cutting tool and having an average particle size of between about 0.5 microns and about 20 microns; said modified silicon aluminum oxynitride having a modifier selected from the group consisting of the oxides of silicon, yttrium, magnesium, hafnium, zirconium, beryllium, the lanthanides and combinations thereof.

4,406,671

ASSEMBLY AND METHOD FOR ELECTRICALLY DEGASSING PARTICULATE MATERIAL

Walter J. Rozmus, Traverse City, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Nov. 16, 1981, Ser. No. 322,025
The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.
Int. Cl.³ B03C *9/00*; B65B *31/02*
U.S. Cl. 55—2 16 Claims



1. An assembly for cleaning particulate material which is at least in part contaminated by gas, said assembly comprising; a vacuum chamber (28) and a gas outlet conduit extending from said vacuum chamber for connection to a vacuum source, said vacuum chamber having vertically spaced first and second ends with a flow passage at each end for directing the flow of the particulate material into and out of said chamber, electric field-producing means for producing an electric field to subject the gas-contaminated particulate material to the electric field to electrically charge the gaseous contaminants and cause separation of the gaseous contaminants from the particulate material to facilitate removal of the gaseous contaminants along a path of gas flow from said vacuum chamber through said gas outlet conduit wherein said electric field-producing means includes a series of electrodes (43, 44, 45, 46, 47, 48, 143, 145, 146, 147, 148, 143, 245, 246) spaced from one another generally along the path of gas flow from said vacuum chamber through said gas outlet conduit with adjacent electrodes in

the series along the path being oppositely charged and the distance between said adjacent electrodes along the series decreasing in the direction of the path of gas flow.

14. A method of degassing gas-contaminated particulate material wherein gas-contaminated particulate material is passed through a vacuum chamber which is continuously subjected to a vacuum source through a vacuum outlet conduit while subjecting the gas-contaminated particulate material to an electric field to charge the gaseous contaminants, thus causing them to separate from particulate, material and establish a gas flow path through the outlet conduit to the vacuum source, the method further comprising establishing a series of electrical potentials spaced from one another generally along the gas flow path to the vacuum source with adjacent potentials in the series along the path being of opposite polarity and with the distance between the adjacent potentials along the series decreasing in the direction of the gas flow path to the vacuum source.

4,406,672

PROCESS AND INSTALLATION FOR THE INTERMITTENT CLEANING OF DUST-LADEN CRUDE GASES

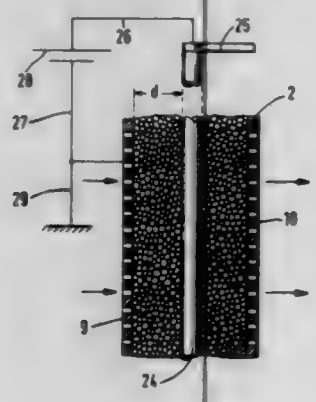
Wolfgang Berz, St. Moritz, Switzerland, assignor to Gimag Aktiengesellschaft, Switzerland

Filed Mar. 9, 1981, Ser. No. 242,082

Claims priority, application Switzerland, Mar. 11, 1980, 1904/80

Int. Cl.³ B03C *3/00*

U.S. Cl. 55—6 **31 Claims**



1. A process for the intermittent cleaning of dust laden crude gases, said process comprising the steps of:

(a) providing a vertically disposed filter bed unit within a gas-tight housing and including means for retaining filter material to form a stationary filter bed of granular, electrically insulating filter material located between two gas-permeable walls which are spaced apart from one another,

(b) the filter bed has a layer thickness d of between 25 and 100 mm and the granular filter material has an average grain size of between 0.5 and 2 mm,

(c) applying an electrical potential of between 38,000 and 60,000 volts in the region of the stationary filter bed while introducing dust laden crude gases through the filter material which remains stationary in the filter bed during a crude gas cleaning mode, and then

(d) switching off said electrical potential and circulating the granular filter material within the filter bed unit during a regenerating mode to completely clean the filter material within said filter bed unit.

4,406,673

ULTRATHIN SOLID MEMBRANE, PROCESS FOR PRODUCTION THEREOF, AND USE THEREOF FOR CONCENTRATING A SPECIFIED GAS IN A GASEOUS MIXTURE

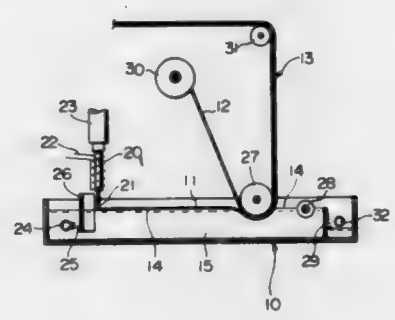
Takeyoshi Yamada; Shizuka Kurisu; Shizuo Azuma; Kiyoshi Sugie, and Teizo Yamaji, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 18, 1980, Ser. No. 217,582

Claims priority, application Japan, Dec. 27, 1979, 54-169461; Jun. 2, 1980, 55-72678; Jul. 14, 1980, 55-95057; Nov. 6, 1980, 55-155197; Nov. 6, 1980, 55-155198

Int. Cl.³ B01D *53/22, 39/16*

U.S. Cl. 55—16 **29 Claims**



1. A process for producing an ultrathin solid membrane, which comprises dissolving an addition polymer derived from at least one monomer having from 2 to 20 carbon atoms and selected from the group consisting of ethylenically unsaturated hydrocarbon monomers and conjugated unsaturated hydrocarbon monomers in a solvent composed mainly of volatile, substantially water-immiscible organic liquid medium capable of dissolving the addition polymer and being selected from the group consisting of a hydrocarbon and a halogenated hydrocarbon, said solvent containing 0.1 to 15% by weight of another organic compound selected from the group consisting of alicyclic alcohols, aromatic alcohols, ketones, aldehydes, carboxylic acids, peroxides, and mixtures thereof, said organic compound having a distribution coefficient k, which is the ratio of the concentration of the other organic compound in the organic liquid medium to that in water, of from 0.5 to 35, and said solvent meeting the following equation

$$c_l-(a_l+b_l)\geqq 25$$

wherein c_l is the surface tension (dynes/cm) of water, a_l is the surface tension (dynes/cm) of the solution of the addition polymer in the solvent, and b_l is the interfacial tension (dynes/cm) between the solvent solution and water, and thereafter allowing the solvent solution of the addition polymer to spread spontaneously on the surface of a liquid support consisting substantially of water whereby the solvent in the solvent solution is removed to an amount sufficient to form a solid membrane on the surface of the liquid support.

4,406,674

METHOD FOR SEPARATING GAS MIXTURES BY MEANS OF A PRESSURE CHANGING TECHNIQUE

Karl Knoblauch; Ekkehard Richter, both of Essen; Klaus Giesler, Gelsenkirchen, and Werner Körbächer, Mühlheim, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Jun. 1, 1982, Ser. No. 384,156

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122701

Int. Cl.³ B01D *53/04*

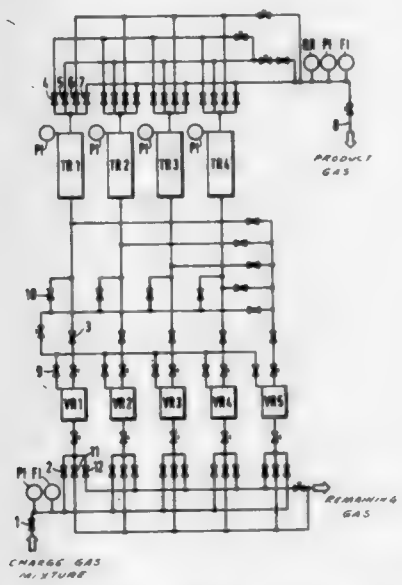
U.S. Cl. 55—25 **8 Claims**

1. A method for separating gas mixtures by means of pressure changing techniques in a two stage absorption reactor consisting of a prefilter and a separation reactor by direct flow loading of the adsorption reactor at increased pressure wherein at least higher hydrocarbon aromatics and naphthenes present

in the mixture are adsorbed in the prefilter and the remaining undesired gas components are adsorbed in the separation reactor whereby the product gas is discharged at the end of the separation filter which comprises

(a) completing the adsorption process before the prefilter and separation reactor are disconnected;

(b) partially reducing the gas pressures in the prefilter and separation reactor using direct and counter current gas flows respectively before reconnecting the prefilter and separation reactor;



(c) after said reconnection when necessary again reducing the gas pressures in said prefilter and separation reactor employing counter flow of gas;

(d) thereafter rinsing the prefilter and separation reactor employing counter flow of rinsing gas; and

(e) thereafter increasing the gas pressures in the rinsed prefilter and separation reactor to reach load pressures using direct and counter gas flow respectively.

4,406,675

RPSA PROCESS

Thomas J. Dangieri, Carmel, N.Y., and Robert T. Cassidy, Waldwick, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 10, 1981, Ser. No. 329,502
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—26 **47 Claims**

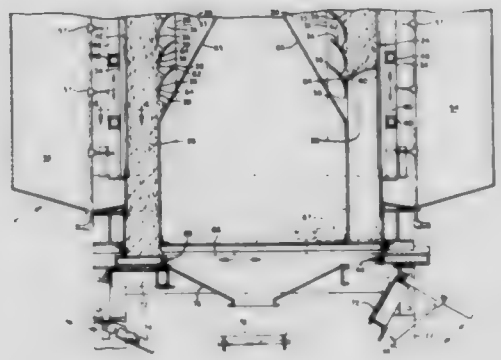
1. In a rapid pressure swing adsorption process for the selective adsorption of at least one more readily adsorbable gas component from a feed gas mixture in an adsorption system having at least two adsorbent beds, each of which undergoes a cyclic processing sequence that includes (1) feeding said gas mixture to the feed end of the bed for adsorption at high adsorption pressure, with withdrawal of the less readily adsorable gas component as product effluent from the discharge end of the bed, (2) countercurrently depressurizing said bed, thereby exhausting the more readily adsorbable component from the feed end of the bed, and (3) repressurizing said bed from the lower pressure reached during countercurrent depressurization, the improvement comprising temporarily discontinuing the feeding of said gas mixture to the adsorption system upon completion of the feed step to each bed in the system, the time of said feed step to each bed and the time of discontinuity of feed before commencing the passing of said gas mixture to the next succeeding bed being approximately the same throughout the processing cycle, the feed step at adsorption pressure for each bed being shorter in duration than said exhaust step, whereby the discontinous feed cycle enables greater productivity to be achieved for a given product gas purity without increase the size of the adsorption system, thereby enhancing overall process performance.

4,406,676

METHOD AND APPARATUS FOR FILTERING A STREAM OF GAS WHILE DRYING WASTE LIGNOCELLULOSIC MATERIAL

George R. Potter, 784 Beaver Creek Rd., Coos Bay, Oreg. 97470

Continuation-in-part of Ser. No. 212,311, Dec. 2, 1980, abandoned. This application Jan. 18, 1982, Ser. No. 340,091
Int. Cl.³ B01D *46/34*; F26B *17/12*
U.S. Cl. 55—98 **9 Claims**



1. A method for filtering a stream of gas, utilizing comminuted lignocellulosic waste material as filter material while drying the lignocellulosic waste material, comprising:

(a) introducing a quantity of filter material, comprising comminuted lignocellulosic waste material at a predetermined average input moisture content, downwardly into a generally upright filter bed having gas inlet and gas outlet sides respectively;

(b) passing a stream of gaseous effluent containing combustible pollutants through said filter bed and said filter material contained therein, in a generally horizontal direction by introducing said gaseous effluent into the gas inlet side thereof and exhausting said gaseous effluent from the gas outlet side thereof, thereby causing said pollutants to accumulate on the surface of said filter material while simultaneously evaporating moisture into said gaseous effluent from a first portion of said filter material adjacent the gas inlet side of said filter bed;

(c) prior to exhausting said gaseous effluent from the gas outlet side of said filter bed, condensing from said gaseous effluent a portion, less than all, of the moisture evaporated from said first portion of said filter material so as to maintain a second portion of said filter material, extending over at least a major portion of the gas outlet side of said filter bed, at a higher moisture content than said predetermined average input moisture content.

5. Filter/dryer apparatus for containing a quantity of comminuted lignocellulosic waste material for use as a filter material for filtering a stream of pollutant-laden gaseous effluent, comprising:

(a) generally upright filter bed means for containing a quantity of a filter material and permitting passage of a stream of gaseous effluent containing particulate pollutants generally horizontally therethrough;

(b) means for introducing a quantity of waste lignocellulosic material into the top of said filter bed means as a filter material;

(c) upright means for defining a gas inlet side of said filter bed means, said upright means including a plurality of horizontally extending louvers arranged one above another and spaced closely enough together to prevent said filter material from spilling from within said filter bed means;

(d) gas-permeable means for defining a gas outlet side of said filter bed means, said gas-permeable means including a grid positioned and arranged to be generally vertically movable and having a plurality of closely spaced apart, generally vertically extending bars;

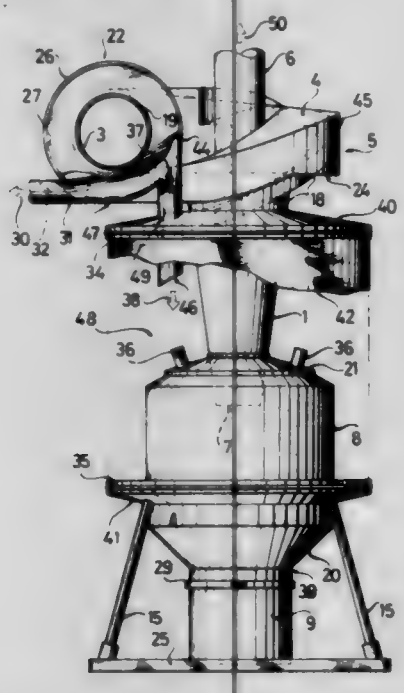
(e) motor means for reciprocatingly moving said grid upward and downward;
(f) shuttle means for periodically displacing a quantity of a filter material generally horizontally from the bottom of said filter bed means; and
(g) means for correlating operation of said shuttle means with reciprocating movement of said grid.

4,406,677

DUAL CYCLONE DUST SEPARATOR FOR EXHAUST GASES

Hans-Johann Obermeier, No. 22, Ketzbergerstrasse, 5650 Solingen, Fed. Rep. of Germany

Filed Nov. 25, 1981, Ser. No. 324,751
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1980, 3048239
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—315 **9 Claims**



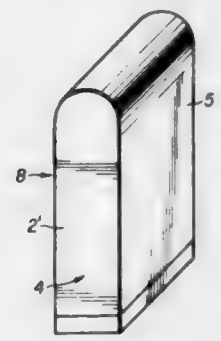
1. A dual cyclone dust separator for exhaust gases and the like comprising:
(a) a first annular separator chamber having an outer curved wall between upper and lower walls and spiral channel means extending from an inlet to an outlet therein for directing a stream of dust-laden exhaust gases along a spiral path substantially horizontal from said inlet to said outlet, an inlet conduit connected to said inlet of said first annular chamber for directing said stream of dust-laden gases into said first annular chamber and along said spiral path, a second separator chamber extending downwardly from said lower wall of said first annular chamber, and a first exhaust conduit extending upwardly from said second separator chamber, said spiral channel means having an inlet end spaced along said path downstream of said inlet and upstream of said outlet and extending tangentially and progressively downwardly along said outer wall and into said second separator chamber for diverting dust particles separated from said exhaust gases along said outer wall and a first portion of said stream of exhaust gases from said first annular chamber into said second separator chamber while allowing the remaining portion of said stream of said exhaust gases to continue along said spiral path towards said outlet;
(b) said second separator chamber for separating said dust particles from said first portion including means for diverting said first portion of said stream of exhaust gases upwardly through said first exhaust conduit;
(c) a third annular separator chamber having a curved outer wall and an inlet tangential to said outer wall and connected to said outlet of said first annular separator chamber, said third annular chamber having spiral deflector means for directing said remaining portion of said stream of said exhaust gases from said first annular separator along a further spiral path substantially vertical in said third chamber, a second exhaust conduit spaced along said further path from said inlet of said third annular separator chamber and being disposed tangentially to said curved outer wall and extending downwardly for diverting further dust particles and a second portion of said stream of exhaust gases from said third annular separator chamber while allowing the remaining portion of said stream of exhaust gases to continue along said further spiral path, and a third exhaust conduit downstream along said further spiral path from said second exhaust conduit and disposed tangentially to said curved outer wall for exhausting said remaining portion of said exhaust gases in said third annular separator; and
(d) separating means connected to said second exhaust conduit for separating said further dust particles from said second portion of said stream of exhaust gases and receiving said further dust particles.

4,406,678

DUST COLLECTOR FOR VACUUM CLEANER

Horst Neugart, Wuppertal, Fed. Rep. of Germany, assignor to Vorwerk & Co Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Feb. 8, 1982, Ser. No. 346,913
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1981, 8104740[U]
Int. Cl.³ B01D *46/02*
U.S. Cl. 55—372 **4 Claims**



1. A dust collector for a vacuum cleaner with a blower, comprising
a housing bounding an inner chamber and having an inlet, a main air-impermeable wall, and a limited air-permeable wall forming an outlet;
a filter bag having an inlet and accommodated in said inner changer of said housing and connectable with the blower via said inlets; and
an additional filtering member capable of retaining fine dust particles forming said air permeable wall which defines said outlet and connected with said air-impermeable wall.

4,406,679

APPARATUS FOR AND METHOD OF PREPARING CRYSTALS FOR WASHING

Patrick J. Wrobel, and James H. Fraser, both of Andover, Mass., assignors to Concentration Specialists, Inc., Andover, Mass.

Filed Sep. 21, 1981, Ser. No. 303,881
Int. Cl.³ B01D *9/04*
U.S. Cl. 62—541 **17 Claims**

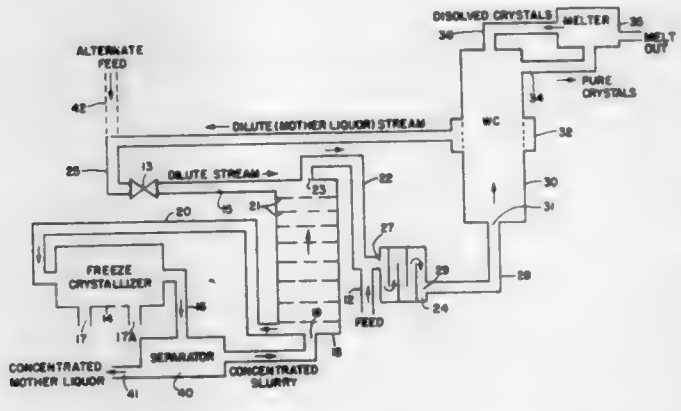
9. A freeze concentration system for a liquid feed stream containing a mixture of substances comprising:
crystallizing means producing a concentrated slurry from said slurry having crystals of one of said substances in a concentrated mother liquor of said liquid mixture;
a concentration gradient column for receiving said first

slurry at one end and a dilute liquor stream at the other end, said crystals flowing countercurrent to said dilute liquor stream, said column containing first outlet means adjacent to said one end for removing concentrated mother liquor, second outlet means adjacent to said other end for removing a dilute slurry containing crystals in a dilute mother liquor;

means combining the feed stream with said dilute slurry;

means for receiving said dilute slurry for increasing the residence time of said crystals in said dilute slurry in a gradient column feed stream and for permitting said crystals to ripen and grow, said ripened crystals containing mother liquor adhering on their surfaces; and

washing means for purifying said ripened crystals and for separating said purified crystals from the dilute mother liquor.



12. A freeze concentration process comprising:

cooling a first stream containing a solute to form a slurry of essentially pure solvent crystals in a concentrated mother liquor, said crystals having mother liquor adhered to the surfaces of said crystals;

substituting a less viscous dilute mother liquor for said concentrated mother liquor to form a dilute slurry in a gradient column;

passing said dilute slurry directly to a holding tank to allow said crystals to dwell in said dilute mother liquor to enlarge the size of the crystals;

passing said dilute slurry with enlarged crystals to a purifier for removing dilute mother liquor from the surface of the enlarged crystals; and

supplying feed to said dilute stream or dilute slurry.

4,406,680

PROCESS FOR PRODUCING HIGH-PURITY SILICA GLASS

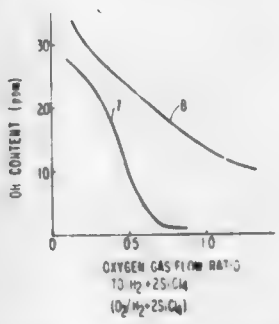
Takao Edahiro, Mito; Gotaro Tanaka, Kanagawa; Toru Kuwahara, Kanagawa, and Masaaki Yoshida, Kanagawa, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo and Sumitomo Electric Industries, Ltd., Osaka, both of, Japan

Continuation of Ser. No. 163,139, Jun. 26, 1980, abandoned. This application Feb. 1, 1982, Ser. No. 344,583

Claims priority, application Japan, Jun. 26, 1979, 54-81139

Int. Cl.³ C03B *19/06, 20/00*

U.S. Cl. 65—18.2 **3 Claims**



1. A process for producing a high-purity silica glass by flame oxidation using a burner comprised of coaxial cylindrical channels, comprising the steps of:

supplying silicon chlorides, hydrogen gas, oxygen gas, and inert gas;

decomposing the silicon chlorides by flame oxidation to form a soot of silica glass;

depositing the soot on a starter member; and

sintering the deposited soot to provide a transparent vitreous substance;

the silicon chlorides being supplied from the innermost cylinder of the burner; the oxygen gas being supplied from a channel adjacent to the channel for supplying the silicon chlorides and the inert gas being supplied from a channel between channels of the oxygen gas and the hydrogen gas, the volume ratio of said oxygen gas to the sum of twice said chlorides plus the hydrogen gas being greater than 0.665 and less than about 20.

4,406,681

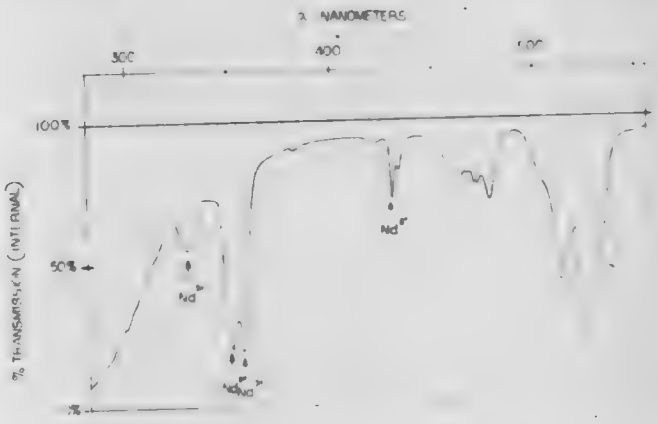
METHOD OF MAKING MANGANESE SENSITIZED NEODYMIUM FLUORESCENT GLASSES

Charles F. Rapp, Newark, Ohio, assignor to Schott Optical Glass, Inc., Duryea, Pa.

Filed Aug. 29, 1979, Ser. No. 70,596

Int. Cl.³ C03B *5/22*

U.S. Cl. 65—32 **14 Claims**



1. In the method of preparing an inorganic luminescent glass which (1) contains Nd_2O_3 as a fluorescent species, sensitized by MnO, and (2) is essentially free of oxides of Mn having a valence greater than +2, the improvement which comprises essentially eliminating such higher valence Mn oxides inherently present in such a glass in the molten state, by providing as an internal reducing agent homogeneously dissolved in a melt of such a glass, an oxide of a metal more easily oxidized than MnO, as essentially the sole effective agent for eliminating from said glass such higher oxides of Mn present in the glass melt, and cooling said glass melt to a solid glass, during which cooling the said higher oxides of Mn present in the glass melt are reduced by said internal reducing agent.

4,406,682

METHOD OF OPERATING A FLOAT GLASS FORMING CHAMBER TO REDUCE DRIPPAGE

Fred M. Ernsberger, Fox Chapel, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 2, 1981, Ser. No. 298,684

Int. Cl.³ C03B *18/18*

U.S. Cl. 65—99.4 **6 Claims**

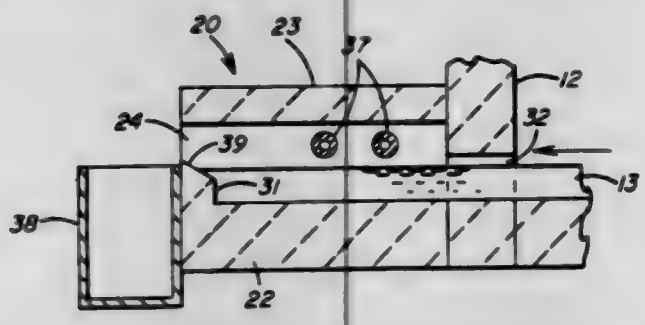
1. In a float glass method of forming glass into a flat sheet while said glass is supported on a pool of molten metal comprised of tin, wherein sulfur from the glass enters the molten metal, reacts with the tin in the batch, and accumulates to a level at which significant volatilization and subsequent condensation of tin sulfide from the molten metal pool occurs, the improvement comprising:

suppressing volatilization of sulfur compounds by maintain-

ing as the molten metal an alloy of tin with 5 to 30 percent copper on an atomic basis of the entire alloy;

repeatedly drawing a portion of the molten metal alloy having sulfur dissolved therein to a purification chamber;

in the purification chamber, cooling the withdrawn portion to a temperature of 500° C. or less so as to insolubilize sulfur compounds from the withdrawn portion of the molten metal, and separating the insolubilized sulfur com-



pounds from the withdrawn portion of the molten metal; and

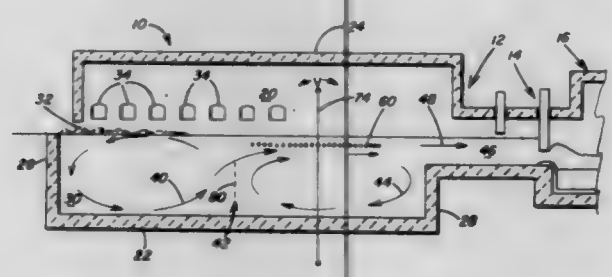
repeatedly returning the portion of molten metal to the pool, wherein the insoluble sulfur compounds are separated from the withdrawn portions of the molten metal to such a degree as to reduce the sulfur content of the molten metal sufficiently below a saturation level to suppress volatilization of sulfur from the molten metal.

4,406,683

METHOD OF AND APPARATUS FOR REMOVING GAS INCLUSIONS FROM A MOLTEN GLASS POOL

Henry M. Demarest, Jr., Natrona Heights, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 4, 1981, Ser. No. 327,330
Int. Cl.³ C03B *5/20*
U.S. Cl. 65—134 **12 Claims**



1. A method of removing gas inclusions from a pool of molten glass by controlling the pattern of flow therein, the molten glass pool contained in a chamber having an inlet end, an outlet end, and a chamber atmosphere over the molten glass pool, wherein the pattern of molten glass flow includes a selected portion adjacent to the surface of said molten glass pool moving toward said outlet end of said chamber at a rate of flow, comprising the steps of: positioning a substantially flat, foraminous, gas inclusion-permeable, flow-parallel surface in a generally horizontal orientation immersed in and effectively parallel to said selected portion of flow pattern to generate forces along said flow-parallel surface, to diminish said rate of flow by viscous drag, to permit gas inclusions in said molten glass to rise through said flow-parallel surface toward the surface of said molten glass pool to reside therealong for time sufficient for said gas inclusions to dissipate into said chamber atmosphere.

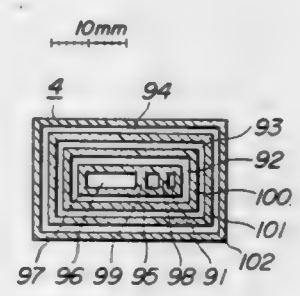
8. In glass melting apparatus including a chamber for containing a pool of molten glass, the chamber having an inlet end, an outlet end, and an atmosphere over a pool of molten glass having gas inclusions therein, wherein a pattern of flow is generated in said molten glass pool which includes a selected portion adjacent to the surface of said pool and moving toward said outlet end of said chamber, the improvement comprising: a substantially flat, foraminous, gas inclusion-permeable, flow-parallel surface generally horizontally oriented and immersed in and effectively parallel to said selected portion of said pattern of flow, said flow-parallel surface diminishing the rate of flow of said selected portion by viscous drag forces generated therealong and permitting gas inclusions in said molten glass pool to rise therethrough toward the surface of said molten glass pool to dissipate into said chamber atmosphere.

4,406,684

CORE TORCH FOR FABRICATING SINGLE-MODE OPTICAL FIBER PREFORMS

Masao Kawachi; Satoru Tomaru; Takao Edahiro, and Shoichi Suto, all of Mito, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Division of Ser. No. 188,914, Sep. 19, 1980, Pat. No. 4,345,928.
This application Jun. 9, 1982, Ser. No. 386,752
Claims priority, application Japan, Oct. 9, 1979, 54-129530; Jul. 11, 1980, 55-93841
Int. Cl.³ C03B *19/06*
U.S. Cl. 65—157 **4 Claims**



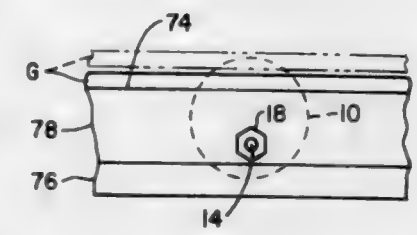
1. A torch for fabricating a porous preform for a core used in fabricating single-mode optical fibers, said torch comprising a glass raw material gas blowing nozzle and a combustible gas blowing nozzle, said combustible gas blowing nozzle surrounding said glass raw material gas blowing nozzle in such a manner that a glass raw material gas blown out from said glass raw material gas blowing nozzle is deviated from the center of an inner area defined by said combustible gas blowing nozzle, with respect to an oxy-hydrogen flame stream blown out from said combustible gas blowing nozzle.

4,406,685

ECCENTRICALLY MOUNTED STOP FOR OUTLINE MOLDS FOR SHAPING GLASS SHEETS

Stephen J. D. Jursa, Saxonburg, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 8, 1982, Ser. No. 355,941
Int. Cl.³ C03B *23/023*
U.S. Cl. 65—287 **6 Claims**



1. A stop adapted for attachment to a mold selected from outline molds of different outline configurations defining shapes of different depths of bend desired for glass sheets to be shaped to different patterns, said stop comprising a glass engaging member having a front surface positioned to engage an edge surface of a glass sheet to be mounted in engaging relation to said front surface when loaded onto a selected one of said outline molds for shaping, means to support said glass engaging member relative to a localized portion of an upwardly facing

shaping surface defined by said selected outline mold, and said glass engaging member being mounted for rotation to said support means in eccentric relation thereto, whereby when said glass engaging member is rotated about said support means, the vertical dimension of said glass engaging member relative to said shaping surface is changed to correlate with the height of stop needed to engage an edge of a glass sheet to be bent to a shape conforming to that developed by said outline mold.

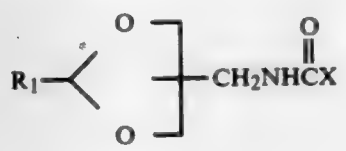
4,406,686

HALOALKYLAMINOMETHYLDIOXOLANE HERBICIDE ANTIDOTES

Francis H. Walker, Mill Valley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 24, 1981, Ser. No. 286,328
Int. Cl.³ A01N *43/00*; C07D *317/00*
U.S. Cl. 71—88 **17 Claims**

1. A compound having the formula



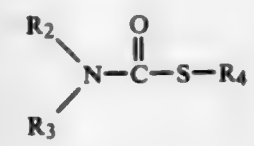
in which

X is halomethyl, wherein halo is selected from the group consisting of chlorine, bromine, and iodine and the methyl group is mono-, di-, or tri-substituted; and

R_1 is selected from the group consisting of lower alkyl having 1–4 carbon atoms, inclusive, and alkenyloxy having from 2–6 carbon atoms, inclusive, provided that, if R_1 is alkyl the haloacetylaminomethyl moiety is attached to the ring at the 2-position.

5. A herbicidal composition comprising:

(a) an herbicidally effective amount of a thiocarbamate compound of the formula



in which

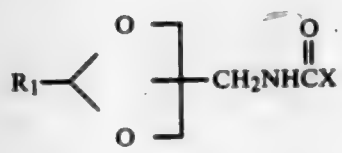
R_2 is alkyl having 1–6 carbon atoms, inclusive;

R_3 is selected from the group consisting of alkyl having 1–6 carbon atoms, inclusive; and cyclohexyl; or

R_2 and R_3 form indistinguishable parts of a single alkylene ring having 4–10 carbon atoms, inclusive; and

R_4 is selected from the group consisting of alkyl having 1–6 carbon atoms, inclusive; haloalkyl wherein halo is selected from the group consisting of chlorine, bromine and iodine and alkyl has 1–6 carbon atoms, inclusive; alkenyl having 2–6 carbon atoms, inclusive; haloalkenyl wherein halo is selected from the group consisting of chlorine, bromine and iodine and alkenyl has 2–6 carbon atoms, inclusive; benzyl; and halo-substituted benzyl, wherein halo is selected from the group consisting of chlorine, bromine and iodine; and

(b) a non-phytotoxic antidotally effective amount of a compound of the formula



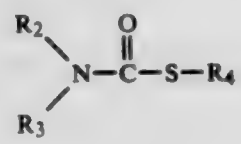
in which

X is halomethyl, wherein halo is selected from the group consisting of chlorine, bromine, and iodine and the methyl group is mono-, di-, or tri-substituted; and

R_1 is selected from the group consisting of lower alkyl having 1–4 carbon atoms, inclusive, and alkenyloxy having from 2–6 carbon atoms, inclusive, provided that, if R_1 is alkyl the haloacetylaminomethyl moiety is attached to the ring at the 2-position.

13. A method of controlling undesirable vegetation and reducing herbicidal crop injury due to a thiocarbamate herbicide which comprises applying to the locus where control is desired a herbicidal composition comprising:

(a) an herbicidally effective amount of a thiocarbamate compound of the formula



in which

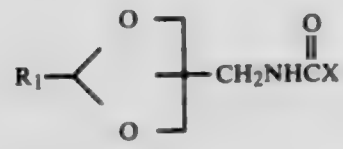
R_2 is alkyl having 1–6 carbon atoms, inclusive;

R_3 is selected from the group consisting of alkyl having 1–6 carbon atoms, inclusive; and cyclohexyl; or

R_2 and R_3 form indistinguishable parts of a single alkylene ring having 4–10 carbon atoms, inclusive; and

R_4 is selected from the group consisting of alkyl having 1–6 carbon atoms, inclusive; haloalkyl wherein halo is selected from the group consisting of chlorine, bromine and iodine and alkyl has 1–6 carbon atoms, inclusive; alkenyl having 2–6 carbon atoms, inclusive; haloalkenyl wherein halo is selected from the group consisting of chlorine, bromine and iodine and alkenyl has 2–6 carbon atoms, inclusive; benzyl; and halo-substituted benzyl, wherein halo is selected from the group consisting of chlorine, bromine and iodine; and

(b) a non-phytotoxic antidotally effective amount of a compound of the formula



in which

X is halomethyl, wherein halo is selected from the group consisting of chlorine, bromine, and iodine and the methyl group is mono-, di-, or tri-substituted; and

R_1 is selected from the group consisting of lower alkyl having 1–4 carbon atoms, inclusive, and alkenyloxy having from 2–6 carbon atoms, inclusive, provided that, if R_1 is alkyl the haloacetylaminomethyl moiety is attached to the ring at the 2-position.

4,406,687

USE OF ISOUREA DERIVATIVES AND TRIAZINE DERIVATIVES IN COMBINATION WITH GIBBERELLINS AS PLANT GROWTH REGULATORS

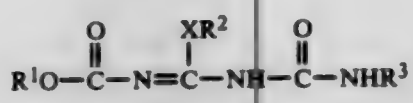
Kozo Oyamada; Takashi Matsui; Junzo Tobitsuka, all of Hiromachi; Yoshio Yamazaki, and Masami Ogawa, both of Yasumachi, all of Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Division of Ser. No. 67,147, Aug. 16, 1979, Pat. No. 4,303,440, which is a continuation of Ser. No. 891,027, Mar. 28, 1978, Pat. No. 4,211,550, which is a continuation of Ser. No. 703,963, Jul. 9, 1976, abandoned. This application Aug. 11, 1981, Ser. No. 292,041

Claims priority, application Japan, Jul. 16, 1971, 46-87030; Sep. 5, 1975, 50-107823; Sep. 22, 1975, 50-114473
Int. Cl.³ A01N *9/12, 9/22*
U.S. Cl. 71—89 **11 Claims**

1. A process for the treatment of a plant by the administra-

tion in the presence of at least one gibberellin of a growth-stimulating effective amount of a synergistic agent selected from the group consisting of: compounds having the formula (I):



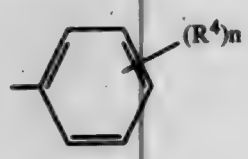
(I)

wherein:

R^1 represents a hydrogen atom or a lower alkyl group, a lower alkenyl group, a lower alkynyl group or a phenyl group;

R^2 represents a lower alkyl group, a lower alkenyl group, a lower alkynyl group or a benzyl group;

R^3 represents a lower alkyl group, a cyclohexyl group or a group of the formula:



in which R^4 represents a lower alkyl group, a lower alkoxy group or a halogen atom and n is 0, 1, 2 or 3; and

X represents an oxygen or a sulphur atom.

4,406,688

HERBICIDAL 4-BENZOYL-5-PHENACYLOXY-PYRAZOLE DERIVATIVES, COMPOSITION AND METHOD

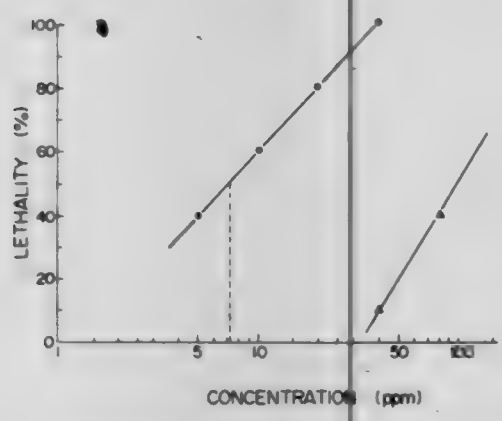
Kazuhiko Konno; Atsushi Goh; Kazuhito Miyoshi, and Kaoru Ikeda, all of Ami, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Japan

Filed Oct. 22, 1981, Ser. No. 313,970

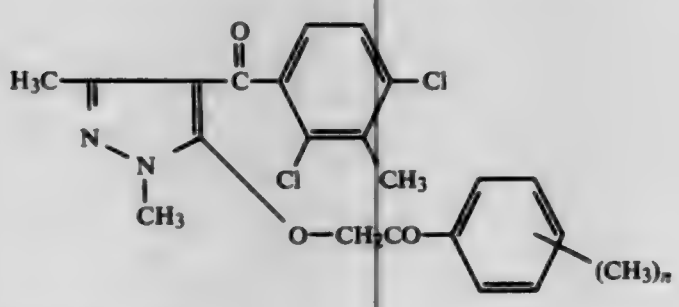
Claims priority, application Japan, Oct. 27, 1980, 55-149308

Int. Cl.³ A01N *43/56*; C07D *231/20*

U.S. Cl. 71—92 **12 Claims**



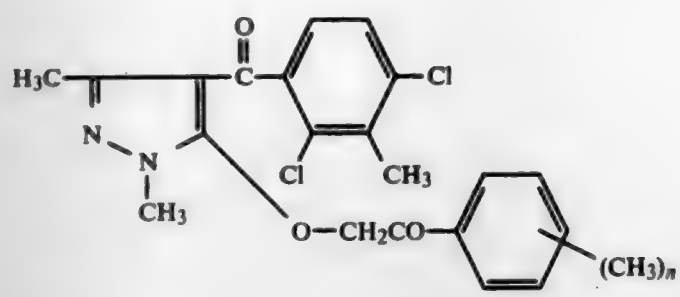
1. A compound having the following formula



(1)

wherein n is 0 or 1.

11. A method for controlling weeds which comprises applying a herbicidally effective amount of a compound of the following formula



(1)

wherein n is 0 or 1, to the locus where weeds are growing or will grow.

4,406,689

CERTAIN ARALKYLOXY OR THIO-PYRIDYL-IMIDAZO-PYRIDINES AND THEIR HERBICIDAL USE

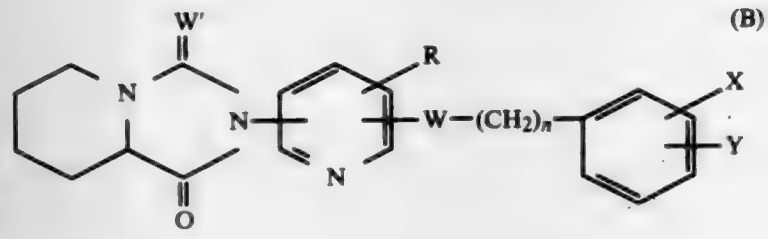
Richard J. Anderson, Palo Alto, and Michael M. Leippe, Boulder Creek, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 348,555, Feb. 12, 1982, which is a continuation-in-part of Ser. No. 273,834, Jun. 15, 1981, abandoned. This application Feb. 22, 1982, Ser. No. 350,911

Int. Cl.³ C07D *471/04*; A01N *43/40*

U.S. Cl. 71—92 **13 Claims**

1. A compound of the following formula:



(B)

wherein,

n is one, two or three;

R is hydrogen, bromo, chloro, fluoro or iodo;

each of W and W′ is, independently, oxygen or sulfur; and

each of X and Y is, independently, selected from hydrogen, bromo, chloro, fluoro, iodo, lower alkyl, lower alkoxy, lower thioalkyl, lower haloalkyl, lower haloalkoxy.

13. A method for the control of weeds which comprises treating said weed or its locus with an herbicidally effective amount of a compound of formula (B) as defined in claim 1.

4,406,690

CERTAIN ARALKYLOXY OR ARALKYLTHIO-PYRIDYL-PHTHALIMIDES AND THEIR USE AS HERBICIDES

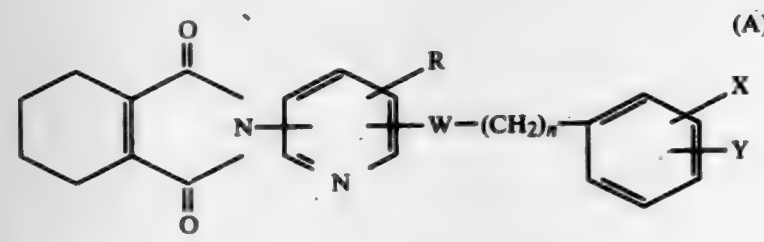
Richard J. Anderson, Palo Alto, and Michael M. Leippe, Boulder Creek, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 273,834, Jun. 15, 1981, abandoned. This application Feb. 12, 1982, Ser. No. 348,555

Int. Cl.³ A01N *43/40*; C07D *401/04*

U.S. Cl. 71—94 **27 Claims**

1. A compound selected from those of the following formula (A):



(A)

wherein,

n is one, two or three;
R is hydrogen, bromo, chloro, fluoro or iodo;
W is oxygen or sulfur; and
each of X and Y is, independently, selected from hydrogen, bromo, chloro, fluoro, iodo, lower alkyl, lower alkoxy, lower thioalkyl, lower haloalkyl, lower haloalkoxy.

25. A method for the control of plants which comprises treating said plant with an effective amount of a compound of formula (A) as defined in claim 1.

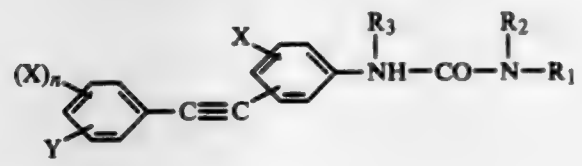
4,406,691

HERBICIDAL ETHYNYL-PHENYLUREAS

Henry Szczepanski, Rheinfelden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 9, 1980, Ser. No. 214,813
Claims priority, application Switzerland, Dec. 18, 1979, 11214/79
Int. Cl.³ A01N *47/30*; C07C *127/19*
U.S. Cl. 71—120 10 Claims

1. An ethynylphenylurea of the formula



wherein
R_1 is hydrogen, C_1–C_6-alkyl, C_1–C_4-alkoxy, C_2–C_6-alkenyl, phenyl optionally substituted by halogen or benzyl optionally substituted by halogen;
R_2 is hydrogen, C_1–C_6-alkyl, C_3–C_6-cycloalkyl, C_2–C_6-alkenyl, C_2–C_6-alkynyl or benzyl optionally substituted by halogen;
R_3 is hydrogen or C_1–C_4-alkyl;
each X is hydrogen, halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl or nitro;
n is 1 or 2; and
Y is hydrogen, halogen or nitro.

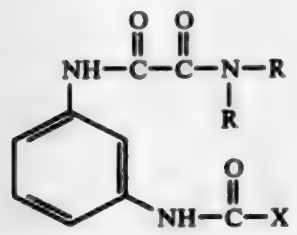
4,406,692

META-SUBSTITUTED DIALKYLAMINOOXANILIDE POST-EMERGENT HERBICIDES

Rayman Y. Wong, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 6, 1981, Ser. No. 251,408
Int. Cl.³ A01N *37/18, 47/30*; C07C *127/17, 103/24*
U.S. Cl. 71—120 27 Claims

15. A method of post-emergent weed pest control comprising:
applying to the locus where control is desired an herbicidally effective amount of a compound of the formula



wherein
R is alkyl having 1–4 carbon atoms, inclusive; or alkenyl having 2–4 carbon atoms, inclusive; and
X is selected from the group consisting of alkyl having 1–4 carbon atoms, inclusive; cycloalkyl having 3–6 carbon atoms, inclusive; dialkylamine wherein the alkyl groups each have 1–4 carbon atoms, inclusive; and N-alkyl-N-alkoxyamine wherein the alkyl and alkoxy groups each have 1–4 carbon atoms, inclusive.

4,406,693

METHOD FOR REFINING CONTAMINATED IRIDIUM

Bahman Heshmatpour, Waltham, Mass., and Richard L. Heestand, Oak Ridge, Tenn., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Aug. 31, 1982, Ser. No. 413,636
Int. Cl.³ B22F *9/16*; C22B *11/06*
U.S. Cl. 75—0.5 A 1 Claim

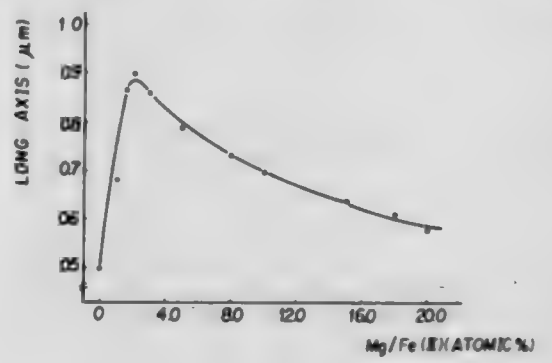
1. A method of refining iridium containing a contaminant, comprising:
forming an alloy ingot of the contaminated iridium and an alloying agent selected from the group consisting of manganese and a mixture of manganese and copper sufficient to provide at least 58% by weight manganese in said alloy ingot; and
dissolving said alloying agent from said alloy ingot with hydrochloric acid to provide refined iridium powder.

4,406,694

PROCESS FOR PRODUCING ACICULAR FERROMAGNETIC ALLOY PARTICLES AND ACICULAR FERROMAGNETIC ALLOY PARTICLES OBTAINED BY THE SAID PROCESS

Akio Mishima; Yosiro Okuda; Tosiharu Harada, and Akira Mukaizaka, all of Hiroshima, Japan, assignors to Toda Kogyo Corp., Hiroshima, Japan

Filed Jul. 23, 1981, Ser. No. 285,983
Claims priority, application Japan, Aug. 5, 1980, 55-108577
Int. Cl.³ B22F *1/02, 9/18*
U.S. Cl. 75—0.5 AA 8 Claims



1. A process for producing an acicular ferromagnetic alloy particles mainly containing iron and magnesium, which comprises preparing a suspension of iron(II) hydroxide and water-soluble magnesium salt, the suspension having a pH value of at least 11 and containing the magnesium salt in an amount of 0.5 to 20.0 atomic % based on the amount of the iron(II) hydroxide in the suspension and calculated as the ratio of Mg to Fe(II), oxidizing the suspension with an oxygen-containing gas to form an acicular particles of iron(III) oxide hydroxide substituted with magnesium, forming coats of phosphorus compound and subsequent silicon compound on the acicular particles, heating the resultant particle at 500° to 900° C. under a non-reducing atmosphere and then reheating the particle thus treated at 350° to 600° C. under reducing atmosphere.

4,406,695

PROCESS FOR PRODUCING ALLOY STEEL PRODUCT OR IRON POWDER BY FURNACING GROUND IRON OR MOLTEN IRON ON A MOLTEN LEAD BATH

Herman E. Gardner, 23471 Sussex, Oak Park, Mich. 48237

Filed May 7, 1981, Ser. No. 261,461
Int. Cl.³ C21B *15/00*
U.S. Cl. 75—37 6 Claims

1. A process for producing a carbon containing iron powder by furnacing a mixture comprising of at least 77 percent of a ground iron powder containing 3 to 6 percent carbon and the balance being an oxygen bearing iron powder material on a molten lead bath at 1100° C. to 1200° C. wherein carbon mon-

oxide is produced as a by product of the furnacing step and is converted to a petroleum product using hydrogen in the Fischer-Tropsch process.

4,406,696

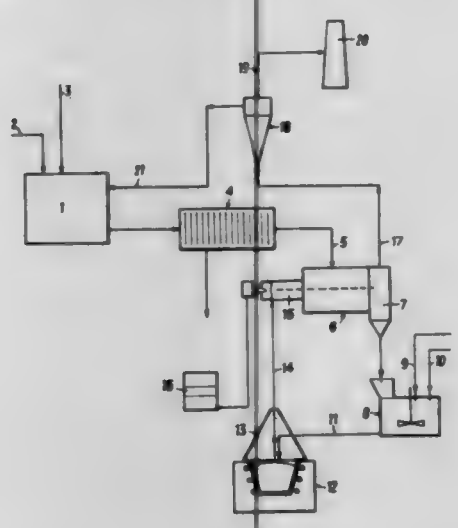
PROCESS FOR RECOVERING OF METALS FROM SOLUTIONS OF METAL SALTS

Walter Hans, Kindberg/Aumühl; Hans D. Reiterer, Graz; Ernst Eichberger, Wels, and Gerhard Lazar, Linz, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Apr. 14, 1981, Ser. No. 254,125

Int. Cl.[3] C22B *15/00*

U.S. Cl. 75—72 11 Claims



1. Process for recovering of metals of the 1st, 2nd, 4th, 5th, 6th, 7th and 8th sub-group of the periodic law from solutions of their salts comprising neutralizing the acid metal salt solutions for precipitating the metals as a precipitate of hydroxides or carbonates, compressing the precipitate, adding finely divided metal of the metal present as a salt together with a carbon source originating from waste material, together with $CaCO_3$, all these components of the mixture being used in a finely particulate state, mechanically agitating this mixture and, for reducing the salt of the metal present, heating to a temperature above the melting point of the respective metal.

4,406,697

RADIOACTIVE ^{57}CO SOURCE

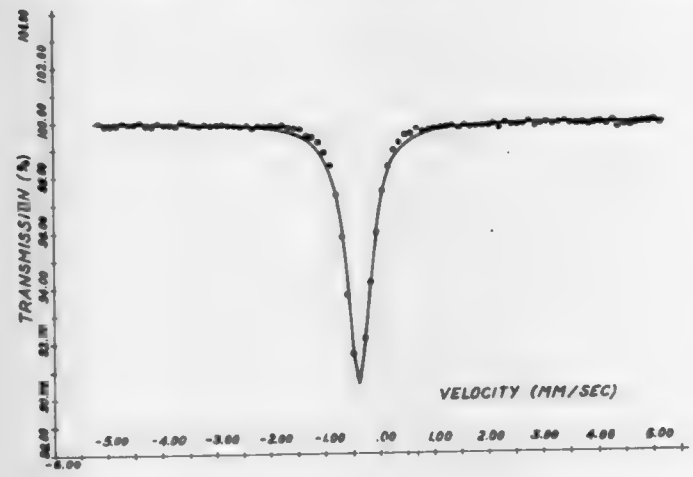
Fritz Parak, No. 65, Hermann Stockmann Strasse, 8060 Dachau; Jörg Loock, No. 2, Fafnerstrasse, 8000 München 19, both of Fed. Rep. of Germany, and Runar Kouzmine, Garching, Fed. Rep. of Germany, assignors to Fritz Parak and Jörg Loock, both of München, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 945, Jan. 4, 1979, abandoned. This application Jan. 21, 1981, Ser. No. 227,009

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820754

Int. Cl.[3] C22C *43/00*

U.S. Cl. 75—122.5 5 Claims



1. A process for preparing a radioactive ^{57}Co source comprising contacting $^{57}CoCl_2$ with Sb, reducing said $^{57}CoCl_2$, and melting said Sb to form an alloy containing said composition $^{57}CoSb_3$.

4,406,698

MARTENSITIC STAINLESS CAST STEEL HAVING HIGH CAVITATION EROSION RESISTANCE

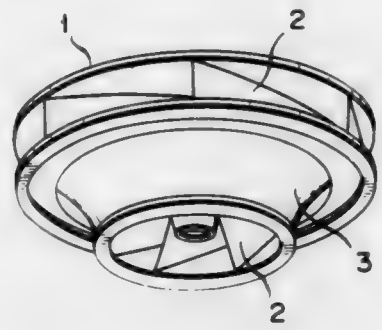
Takashi Yebisuya, Kawasaki; Masao Yamamoto, Tokyo; Mituo Kawai, and Koichi Tajima, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 21, 1981, Ser. No. 256,120

Claims priority, application Japan, Apr. 28, 1980, 55-56507; Apr. 28, 1980, 55-56508; Jul. 16, 1980, 55-96236

Int. Cl.[3] C22C *38/58, 38/42, 38/48*

U.S. Cl. 75—125 17 Claims



1. Martensitic stainless cast steel having high cavitation erosion resistance and consisting essentially of carbon of 0.1 wt% or less, silicon of 1.0 wt% or less, manganese of 2.0–9.0 (exclusive of 2.0) wt%, nickel of 0.5–8.0 wt%, chromium of 11.0–14.0 wt%, molybdenum of 2.0 wt% or less and the balance of essentially iron.

4,406,699

HIGH-TEMPERATURE ELECTRICALLY CONDUCTIVE CERAMIC COMPOSITE AND METHOD FOR MAKING SAME

David E. Beck, Knoxville; Jack G. Gooch, Seymour; Cressie E. Holcombe, Jr., and David R. Masters, both of Knoxville, all of Tenn., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Jun. 9, 1981, Ser. No. 271,889
Int. Cl.³ C22C *30/00*; C04B *35/48*
U.S. Cl. 75—233 4 Claims

1. A sintered ceramic susceptor consisting essentially of about 20 to 50 vol.% niobium and an oxide selected from the group consisting of zirconium oxide, zirconium oxide plus a stabilizer therefor, a mixture of zirconium oxide and calcium aluminate, and a mixture of calcium aluminate and zirconium oxide plus the stabilizer therefor, the stabilizer for the zirconium oxide being selected from the group of oxides consisting of calcium oxide in a concentration of about 4–5 wt.% of the zirconium oxide content, magnesium oxide in a concentration of about 4–5 wt.% of the zirconium oxide content and yttria in a concentration of about 8–15 wt.% of the zirconium oxide content, each stabilizer being of a concentration sufficient to retain the zirconium oxide in a cubic phase for inhibiting the nonuniform expansion of the zirconium oxide as a function of temperature, said susceptor being characterized by being electrically conductive at room temperature for initiating induction heating and by being essentially nonreactive with molten uranium.

4,406,700

POWDER PRODUCED BY EMBRITTLING OF METALLIC GLASSY ALLOY BY HYDROGEN CHARGING

Arnulf J. Maeland, Succasunna, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 94,128, Nov. 14, 1979, Pat. No. 4,304,593.
This application Jul. 13, 1981, Ser. No. 282,898
The portion of the term of this patent subsequent to Dec. 8, 1998, has been disclaimed.
Int. Cl.³ B22F *9/04*
U.S. Cl. 75—251 7 Claims

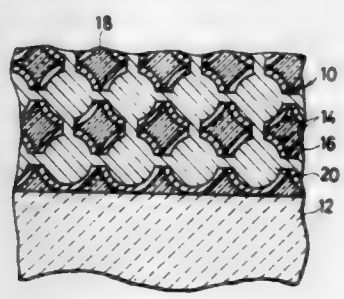
1. A ductile glassy metal powder produced by charging a solid metallic glass body with hydrogen at a temperature below its glass transition temperature for time sufficient to effect embrittlement; and comminuting the embrittled metallic glass body.

4,406,701

ELECTROCONDUCTIVE PASTE

Nobutatsu Yamaoka, Harunamachi, and Kazuo Sasazawa, Maebashi, both of Japan, assignors to Taiyo Yuden Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1982, Ser. No. 349,311
Claims priority, application Japan, Feb. 27, 1981, 56-27880
Int. Cl.³ H01B *1/02*
U.S. Cl. 106—1.17 10 Claims



1. An electroconductive paste to be baked on ceramic bodies to provide the conductors or electrodes of ceramic capacitors, varistors or the like, comprising 100 parts by weight of zinc powder, from about 0.01 to about 10.00 parts by weight of a glass frit, from about 0.01 to about 14.99 parts by weight of an organotitanium compound, the sum of the glass frit and the organotitanium compound in use being up to about 15 parts by weight, and an organic vehicle for pasting the mixture of the zinc powder and the glass frit and the organotitanium compound, the organic vehicle being driven off upon baking of the pasted mixture such that it does not form part of the completed conductors.

4,406,702

ADDITIVE COMPOSITIONS FOR HYDRAULIC CEMENT BASE MIXTURES

Christian M. Joseph, Le Pre St. Aubin, Auzouer, Chateaurenault, Indre et Loire, France

Filed Feb. 13, 1979, Ser. No. 11,888
Claims priority, application France, Jan. 20, 1978, 78 02246
Int. Cl.³ C04B *31/30*; B01F *17/04*
U.S. Cl. 106—90 10 Claims

1. Additive composition for hydraulic cement base mixtures consisting essentially of a salt of a very high molecular weight condensation product of naphthalenesulfonic acid with formaldehyde, wherein at least 35% by weight of said condensation product has a molecular weight greater than 5000, and a glucoheptonic acid salt.

4,406,703

COMPOSITE MATERIALS MADE FROM PLANT FIBERS BONDED WITH PORTLAND CEMENT AND METHOD OF PRODUCING SAME

Bernard M. Guthrie, and Robert B. Torley, both of Corvallis, Oreg., assignors to Permawood International Corporation, Philomath, Oreg.

Continuation-in-part of Ser. No. 118,503, Feb. 4, 1980, abandoned. This application Dec. 4, 1980, Ser. No. 213,040
Int. Cl.³ C04B *7/353*
U.S. Cl. 106—93 37 Claims

1. In a method of producing composite materials from plant fibers containing water-soluble compounds and portland cement the step comprising contacting the plant fibers with a material selected from the class consisting of dichromate ion and permanganate ion to substantially negate the adverse effects of the water-soluble compounds in the plant fibers on the setting of the cement.

4,406,704

HIGH-SOLIDS SINGLE-PACKAGE AIR-DRYABLE PRIMER

Mark D. Troutman, Greensburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 16, 1982, Ser. No. 369,721
Int. Cl.³ C09D *3/64*; G09D *5/08*
U.S. Cl. 106—259 16 Claims

1. A high solids single-package air-dryable primer comprising:

(1) about 15 to about 30% by weight air-dryable synthetic alkyd resin;
(2) about 10 to about 30% by weight organic solvent for said resin;
(3) at least about 0.4% by weight suspending agent;
(4) at least 1 pbw polar additive for every 3 pbw of said suspending agent;
(5) about 3% to about 8% by weight coloring pigment;
(6) about 15% to about 20% by weight corrosion inhibitor;
(7) at least about 0.3% by weight dryer; and
(8) about 30 to about 40% by weight extender pigment.

4,406,705

HARD WAXES COMPRISING TERPOLYMERS OF ETHYLENE WITH UNSATURATED CARBOXYLIC ACIDS AND UNSATURATED CARBOXYLIC ACID ESTERS

Dieter Oeder, Weisenheim; Wolfram Dietsche, Frankenthal; Stefan Weiss, Neckargemuend; Walter Ziegler, Edingen, and Albert Hettche, Hessheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 349,159

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1981, 3109950

Int. Cl.³ C08L *91/06*

U.S. Cl. 106—270 2 Claims

1. A water-emulsifiable hard wax consisting of homogeneous terpolymers of ethylene with—based on weight of terpolymer—from 1 to 8% by weight of C_3–C_8-olefinically unsaturated carboxylic acids and from 0.5 to 10% by weight of C_1–C_{12}-alkyl esters of such unsaturated carboxylic acids and having a Staudinger index, determined according to DIN 53,728, of from 5 to 55, an acid number of from 8 to 62 and a Höppler hardness, measured by DFG standard method M-III-9a(57), at 23° C., of from 250 to 800 bar.

4,406,706

YELLOW COLORANT COMPOSITION AND PAINTS UTILIZING THE SAME

John M. Dale, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Mar. 18, 1982, Ser. No. 359,479

Int. Cl.³ C09D *5/00*

U.S. Cl. 106—288 B 12 Claims

1. A yellow colorant composition consisting essentially of elemental sulfur having associated intimately therewith a yellow coloring substance.

4,406,707

METHOD FOR REMOVING VINYL DECALS

Ronnie J. Moore, 2767 Whitehurst Dr., Marietta, Ga. 30062, and Michael D. Brown, Smyrna, Ga., assignors to Ronnie J. Moore, Marietta, Ga.

Division of Ser. No. 218,473, Dec. 22, 1980, Pat. No. 4,336,072. This application Nov. 5, 1981, Ser. No. 318,632

Int. Cl.³ B08B *3/08*

U.S. Cl. 134—4 4 Claims

1. A method for removing a vinyl decal from a painted surface without substantially damaging said painted surface, said method comprising the steps of:

contacting said decal for a time sufficient to loosen said decal from said surface with a chemical composition consisting essentially of between approximately 62% and 85% by weight of an aromatic solvent selected from the group consisting of toluene, xylene, aromatic naphtha and combinations thereof; between approximately 7% and 30% by weight ethylene glycol monobutyl ether; and between approximately 0% and 9% by weight ethylene glycol monoethyl ether; and

physically removing said loosened decal from said painted surface.

4,406,708

METHODS FOR UTILIZING DENTAL PROSTHESES

Sven-Gunnar Hesselgren, Kummelvagen 19, S-161 39 Bromma, Sweden

Continuation-in-part of Ser. No. 47,050, Jun. 11, 1979, Pat. No. 4,339,279. This application Mar. 1, 1982, Ser. No. 353,802

Claims priority, application Sweden, Jun. 16, 1978, 7806939

Int. Cl.³ A61K *5/00*; C08L *1/26*; B08B *7/04*

U.S. Cl. 134—37 14 Claims

1. A method for utilizing a dental prosthesis comprising applying to said dental prosthesis a retention composition comprising (1) an effective amount of an orally acceptable retention agent to provide sufficient adhesive characteristics to said composition to maintain said dental prosthesis in position in the mouth of a subject; and (2) an effective amount of sodium bicarbonate to inhibit the growth of bacteria and fungi.

4,406,709

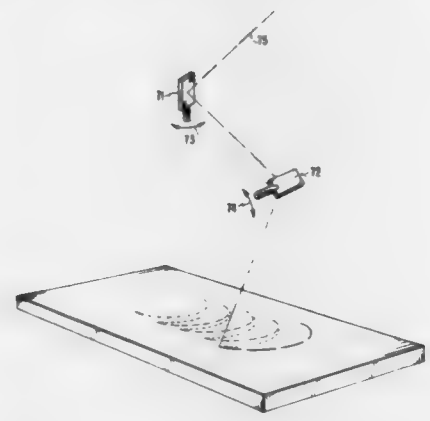
METHOD OF INCREASING THE GRAIN SIZE OF POLYCRYSTALLINE MATERIALS BY DIRECTED ENERGY-BEAMS

George K. Celler; Harry J. Leamy, both of Summit, and Lee E. Trimble, Hillsborough, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 24, 1981, Ser. No. 276,932

Int. Cl.³ H01L *21/263*

U.S. Cl. 148—1.5 16 Claims



1. A method of forming crystallites in a material comprising scanning relatively a directed energy beam across the material with a scanning pattern that has

(1) a local, higher velocity, short-term, oscillatory motion such that local portions of the material are repetitively heated and allowed to cool, and

(2) a slower velocity, longer term, motion which results in long-term advance of the beam across the material,

the scanning pattern resulting in cooler-to-hotter temperature gradients in the wake of the long-term advancing motion which point away from the direction of the long-term advancing motion,

such that a crystallite grows along the direction of the long-term advancing motion.

4,406,710

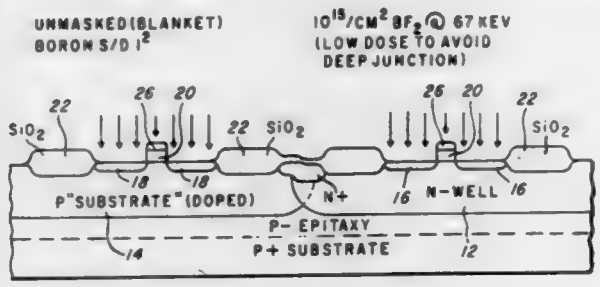
MASK-SAVING TECHNIQUE FOR FORMING CMOS SOURCE/DRAIN REGIONS

Roderick D. Davies, 1203 Chesterton Dr., Richardson, Tex. 75080, and David B. Scott, 4524 Cleveland, Plano, Tex. 75075

Filed Oct. 15, 1981, Ser. No. 311,684

Int. Cl.³ H01L *21/265*; B01J *17/00*

U.S. Cl. 148—1.5 10 Claims



1. A method for forming respective CMOS source/drain regions of first and of second conductivity type in respective desired locations in a semiconductor surface, comprising the steps of:

(a) implanting a first-conductivity-type dopant in the respec-

tive desired locations of said first-conductivity-type sources and drains; and

(b) implanting a second-conductivity-type dopant in the respective desired locations both of said first type and of said second type sources and drains, said second-type dopant being applied at a lower dose than said first type dopant;

said second type dopant being such that the presence of said second-conductivity-type dopant reduces the diffusivity of said first-conductivity-type dopant.

4,406,711

METHOD FOR THE PRODUCTION OF HOMOGENEOUS STEEL

Michihiko Nagumo; Takeshi Kubota, both of Kawasaki, and Keiji Konno, Ohita, all of Japan, assignors to Nippon Steel Corporation, Japan

Filed Oct. 26, 1981, Ser. No. 315,347

Claims priority, application Japan, Jun. 25, 1981, 56-97482

Int. Cl.³ C21D *8/00*

U.S. Cl. 148—2 **7 Claims**

1. A method for the production of a homogeneous steel which comprises:

(a) providing a steel casting, said casting consisting of C≦1.0 weight %, Si≦1.0%, and 0.2–3.0 weight % Mn, one or more elements selected from the group consisting of V≦0.2 weight %, Nb≦0.2 weight %, Mo≦1.0 weight %, Cu≦2.0 weight %, Cr≦2.0 weight %, Ni≦3.0 weight %, B≦0.002 weight %, Ti≦0.1 weight %, Al≦0.1 weight %, Ca≦0.01 weight %, the balance Fe, and unavoidable impurities:

(b) subjecting said steel casting to a primary hot working step at more than 20% reduction of area at an austenitic temperature of less than 1200° C.;

(c) soaking said steel casting at a temperature at which the core temperature of said steel casting is maintained at 1000° C. or higher for a period of more than 30 minutes to 5 hours, by continuous heating, immediately subsequent to said primary hot working step (b), and

(d) subjecting the steel of step (c) to secondary hot working whereby a region is formed wherein the diffusion coefficient of the segregations of both alloying and impurity elements is increased and wherein said segregations are removed from said steel casting in said region to obtain a steel having excellent resistance to cracks.

4,406,712

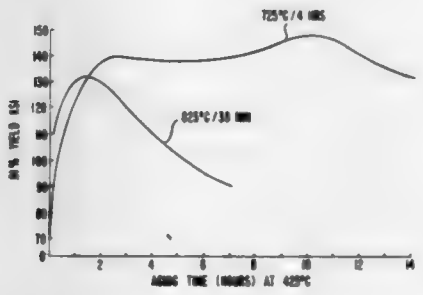
CU-NI-SN ALLOY PROCESSING

Theodore J. Louzon, Bridgewater, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 133,617, Mar. 24, 1980, abandoned. This application Aug. 7, 1981, Ser. No. 291,070

Int. Cl.³ C22F *1/08*

U.S. Cl. 148—11.5 C **16 Claims**



1. Method for producing an article of manufacture comprising a body of an alloy which is susceptible to spinodal decomposition, said alloy comprising an amount of at least 80 weight percent Cu, Ni, and Sn,

said alloy comprising Ni in a percentage by weight which here is designated as n and which is in a range of from 3 to 15 weight percent of said alloy,

said alloy comprising Sn in a percentage by weight which here is designated as s and which is in a range of 3.5–15 weight percent of said alloy,

said method comprising heat treating said body, rapidly cooling, and aging,

said method being characterized in that heat treating is at a temperature which corresponds to a multiphase state of said alloy, which is greater than or equal to 5 times n plus 550 degrees Celsius, which is less than or equal to 5 times n plus 725 degrees Celsius, which is less than 17 times the sum of n and s plus 465 degrees Celsius, and which is less than or equal to 725 degrees Celsius,

whereby an amount of at least 0.1 weight percent of said alloy is nonlamellar gamma phase prior to cooling.

4,406,713

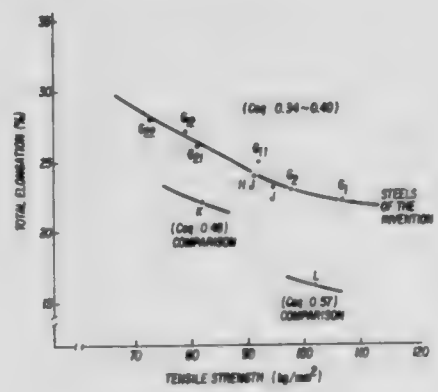
METHOD OF MAKING HIGH-STRENGTH, HIGH-TOUGHNESS STEEL WITH GOOD WORKABILITY

Toshiaki Yutori, and Rikuo Ogawa, both of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 20, 1981, Ser. No. 246,059

Int. Cl.³ C21D *8/00*

U.S. Cl. 148—12 B **16 Claims**



1. A method for making a high-strength, high-toughness steel with good workability which comprises working a steel containing 0.005–0.3% C and 0.3–2.5% Mn, in the course of hot working thereof, at temperatures within the range of from the Ar_3 point to 930° C. at an area reduction rate of at least 30%, and, in the course of cooling, rapidly cooling the steel in the ferrite phase precipitation temperature range when the ferrite phase has occupied 5–65% of the steel whereby a two-phase structure comprising ferrite and martensite is produced.

4,406,714

HEAT TREATMENT OF METALS

Robert G. Bowes, 7 Riverside Crescent, Otley, West Yorkshire; Keith Bennett, 18 Aspen Close, Long Lee, Keighley, West Yorkshire, and Paul F. Stratton, 42 Park Lea, Bradley Grange, Bradley, Huddersfield, West Yorkshire, all of England

Filed Apr. 27, 1981, Ser. No. 258,083

Claims priority, application United Kingdom, May 2, 1980, 8014576

Int. Cl.³ C21D *1/48*

U.S. Cl. 148—16.5 **12 Claims**

1. A method of austenitic nitro-carburising ferrous metal in a heat treatment furnace comprising the steps of heating said furnace to a temperature in the range of 690°–750° C.; and introducing nitrogen; ammonia; and a liquid or vaporous compound of carbon, hydrogen and oxygen into the furnace to form an atmosphere comprised of nitrogen, methane, 6–11% free ammonia, 7–11% carbon monoxide, 1–2% carbon dioxide and hydrogen and has a dew point of −5°–+5° C. without the separate addition of methane such that a scuff resistant epsilon

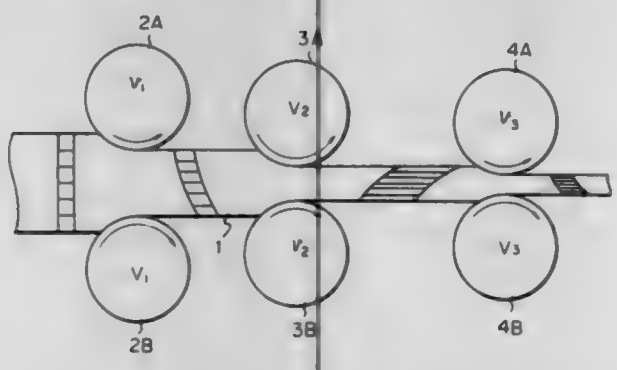
compound layer including oxygen, nitrogen and carbon is formed on the surface of said ferrous metal.

4,406,715

PROCESS FOR PRODUCING GRAIN-ORIENTED ELECTROMAGNETIC STEEL STRIP

Tadashi Nakayama; Tsutomu Haratani; Fumio Matsumoto, and Hiromi Matsumoto, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 21, 1981, Ser. No. 256,198
Claims priority, application Japan, Apr. 26, 1980, 55-55773
Int. Cl.³ H01F *1/04*
U.S. Cl. 148—111 **4 Claims**



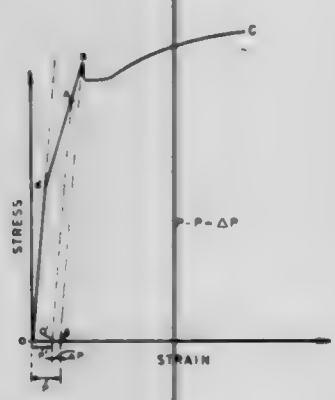
1. A process for producing a grain-oriented electro-magnetic steel strip or sheet product from a slab of continuously cast steel, comprising hot rolling said slab into a hot-rolled strip by passage through a plurality of roll stands wherein at least two of the roll stands have a rolling temperature within the range of from 1250° to 950° C. and each of said two roll stands has upper and lower working rolls which relative to each other are circumferentially high-speed and low-speed rolls and the upper roll of one roll stand is a high-speed roll and the upper roll of the other of the said two roll stands is a low-speed roll, cold rolling said hot-rolled strip into a cold-rolled strip and recrystallization annealing the cold-rolled strip so as to produce said product.

4,406,716

PROCESS FOR INCREASING THE LIFETIME OF A REFRACTORY MATERIAL PIECE MADE OF METALLIC CARBIDE PARALLEL FIBERS EMBEDDED INTO A METALLIC MATRIX

Tasadduq Khan, Jouy en Josas, France, assignor to Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.), Chatillon Sous Bagneux, France

Filed Feb. 19, 1981, Ser. No. 235,948
Claims priority, application France, Feb. 28, 1980, 80 04488
Int. Cl.³ C21D *9/00*; C22F *1/10*
U.S. Cl. 148—130 **7 Claims**



1. A process for reconditioning a unidirectionally reinforced worn out turbine blade wherein

(a) the turbine blade is originally formed by unidirectional solidification of a refractory composite material comprising a nickel and/or iron and/or cobalt-based superalloy matrix and a reinforcing phase consisting of aligned monocrystalline fibers made of a transition metal monocarbide of the groups IV and V, said composite material having at room temperature an internal state of stress such that the fibers are in compression and embedded in a matrix under tension; and

(b) the turbine blade has been exposed in use to limited permanent plastic deformation of 1 to 1.5 percent in the direction of the fibers with the fibers remaining in their elasticity range; the reconditioning process comprising the steps of:

(i) in order to restore the initial length of the turbine blade, heating the worn-out turbine blade without external mechanical stress to a temperature of at most 1250° C. and sufficiently high to bring the turbine blade to a state of stress between the fibers and the matrix close to the state of stress that existed at the same temperature during formation of the turbine blade in step (a) but sufficiently low to prevent any degradation of the fibers or the matrix; and

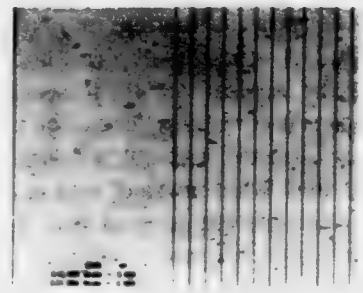
(ii) subsequently cooling the treated turbine blade to enable the fibers to recover their initial length due to their non-modified elasticity, the turbine blade thus recovering the desired state of stress and its initial length.

4,406,717

WROUGHT ALUMINUM BASE ALLOY PRODUCT HAVING REFINED AL-FE TYPE INTERMETALLIC PHASES

William D. Vernam; Ralph W. Rogers, Jr., and Harry C. Stumpf, all of New Kensington, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 23, 1980, Ser. No. 219,571
Int. Cl.³ C22C *21/06*
U.S. Cl. 148—440 **8 Claims**



1. A wrought aluminum alloy product, the alloy consisting essentially of about 2.2 to 10 wt.% Mg, 0.3 wt.% max. Mn, 0 to 0.35 wt.% Cr, 0.005 to 2.5 wt.% Sr, 0.04 to 1 wt.% Fe, 0.3 wt.% max. free Si, 3.5 wt.% max. Zn, 1 wt.% max. Cu, 0.3 wt.% max. Ti, the remainder aluminum and incidental impurities, the product being characterized by the presence of an intermetallic phase of the type containing Al-Fe in a refined condition.

4,406,718

TETRAAZIDO POLYESTERS AND METHODS OF PREPARATION

Milton B. Frankel, Tarzana; Edgar R. Wilson, Glendale, and Joseph E. Flanagan, Woodland Hills, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

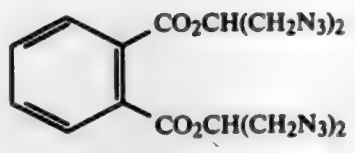
Filed Jul. 16, 1981, Ser. No. 283,708
Int. Cl.³ C06B *25/18*; C07C *117/00*
U.S. Cl. 149—96 **11 Claims**

1. A tetraazido polyester of the formula:

$$(CH_2)_n—[CO_2CH(CH_2N_3]_2$$

where n varies from 2 to 10.

3. A tetraazido polyester of the formula:

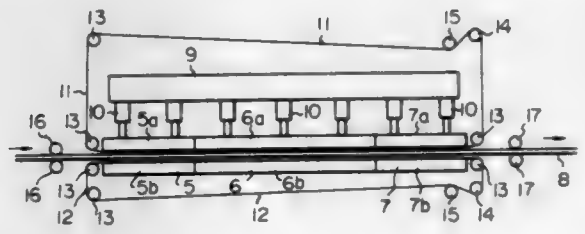


4,406,719

PROCESS AND APPARATUS FOR PREPARING LAMINATED HEAT-SHRINKABLE STRIP WITH ELECTRIC CONDUCTOR WIRE EMBEDDED THEREIN

Takuo Mitsumoto; Yuzo Takahashi, and Mamoru Miyamoto, all of Ichihara, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Feb. 9, 1982, Ser. No. 347,243
Claims priority, application Japan, Feb. 10, 1981, 56-17505
Int. Cl.³ H01B *13/06;* B32B *31/08*
U.S. Cl. 156—52 10 Claims



1. A process for preparing a laminated heat-shrinkable strip comprising upper and lower heat-shrinkable sheets fused together with an electric conductor wire sandwiched therebetween, comprising the steps of:

preparing a continuous starting strip comprised of unfused sheets placed one on top of the other with an electric conductor therebetween;

subjecting successive sections of said starting strip while said sections are stationary, to a pressing operation, each operation consisting of simultaneously prehot-pressing a first length which is slightly longer than half a predetermined length, hot-pressing a second length which is adjacent to said first length and which is the same as or longer than said predetermined length, and cold-pressing a third length which is adjacent to said second length and which is slightly longer than half said predetermined length;

shifting forward said starting strip by an amount corresponding to half said predetermined length after completion of each said pressing operation and before the start of each next pressing operation;

cutting the resultant strip into the predetermined length to form individual strip products of the predetermined lengths, wherein:

(1) upper and lower looped belts arranged so that the lower section of said upper looped belt and the upper section of said lower looped belt are located over said sections of said starting strip to be subjected to the pressing operation with said starting strip sandwiched between said sections of said belts and said belts are driven so as to be shifted forward intermittently with said starting strip; and

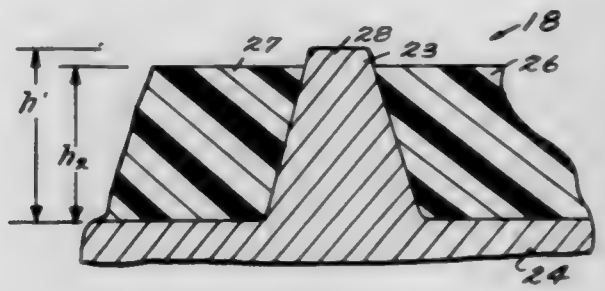
(2) a combination of said upper and lower belt sections and said starting strip sandwiched therebetween is subjected to said prehot-pressing, said hot-pressing and said cold-pressing.

4,406,720

ULTRASONIC PRODUCTION OF NONWOVENS

Kenneth Y. Wang, Greensboro, N.C., and Berlie R. Hill, Cana, Va., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Nov. 6, 1981, Ser. No. 318,799
Int. Cl.³ B29C *27/08;* B32B *31/20*
U.S. Cl. 156—73.2 13 Claims



1. Ultrasonic welding apparatus comprising:

an ultrasonic horn;

an anvil roller mounted for cooperation with said ultrasonic horn to effect ultrasonic welding of material disposed therebetween; and

said anvil roller having: a plurality of spaced radially extending projections formed along the entire circumferential surface thereof, said projections, comprising ultrasonically conducting material; and a surface-defining material provided between said projections said surface-defining material consisting of ultrasonically insulating material.

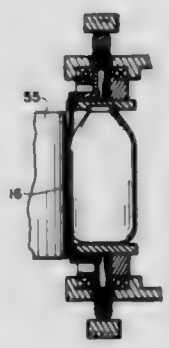
11. A method of producing a non-woven fabric from a batt of random, loose, ultrasonically fusible fibers utilizing an ultrasonic welding machine having a horn and anvil roller, the method consisting of the steps of: (a) continuously feeding, in a given direction, solely the batt between the horn and the anvil roller; and (b) continuously applying ultrasonic energy to the batt with the horn and anvil roller to produce primary welds in a predetermined pattern in the batt and tack welds at fabric crossover points between the primary welds; and (c) withdrawing a substantially smooth-surface non-woven fabric from between the horn and anvil roller.

4,406,721

SYSTEM AND APPARATUS FOR APPLYING HEAT SHRINK FILM TO CONTAINERS AND OTHER ARTICLES AND HEAT SHRINKING THE SAME

Wolfgang Hoffmann, Modesto, Calif., assignor to B & H Manufacturing Company, Inc., Ceres, Calif.

Continuation-in-part of Ser. No. 382,374, May 27, 1982. This application Nov. 1, 1982, Ser. No. 438,386
Int. Cl.³ B29C *27/00;* B32B *31/00*
U.S. Cl. 156—86 10 Claims



1. Apparatus for wrapping segments of heat shrinkable sheet material around articles, such articles having a cylindrical body and at least one end portion adjoining the body and sloping inwardly therefrom, said segments having a leading end and a trailing; end and a length between such ends which is greater than the circumference of the body to allow the

segment to be wrapped around the body with an overlap sufficient to form a seam, said segments having a width greater than the length of the body such that, when the segment is wrapped around the body, an edge portion of the segment will overlap at least one sloping end portion and will provide a free standing edge, said apparatus comprising:

(a) an article transport adapted to transport such articles in sequence to an applicator station with the body of each article accessible

(b) a segment transport adapted to transport such segments in sequence to said applicator station with the leading end of each segment tangent to the body of the respective article.

(c) means for adhesively securing such leading end to the body of the respective article by compressing the leading end between the container and the segment transport

(d) means for then spinning the article about its cylindrical axis

(e) means serving during such spinning to wrap the segment about the body,

(f) means tangent to the body of the article serving to apply pressure to the overlapping ends of the segment to adhesively secure the trailing end to the leading end of the segment,

(g) extensible-retractable tongue means insertable when extended between the free standing edge or edges of the segment and the end portion or portions of the article and acting, when in extended inserted position to provide a continuation of the body portion of the article and to cooperate with said tangent means (f) to apply pressure and form a seam at the overlap of the leading and trailing ends of the segment and

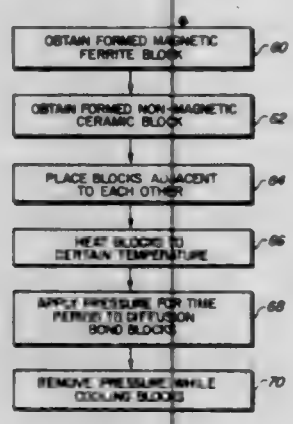
(h) means cyclicly operating such extensible-retractable tongue means to extend it into the space between the free standing edge or edges of the segment and the sloping end portion or portions of the container during seam formation and thereafter retracting such means.

4,406,722

DIFFUSION BONDING OF DISSIMILAR CERAMICS

William W. Chow, and Eugene B. Rigby, both of Tucson, Ariz., assignors to International Business Machines Corp., Armonk, N.Y.

Filed May 3, 1982, Ser. No. 373,926
Int. Cl.³ C03B *29/00*; C04B *37/00*
U.S. Cl. 156—89 **12 Claims**



1. A process for diffusion bonding of ceramic pieces respectively consisting of dissimilar ceramic materials having expansion curves with a certain temperature range where the respective thermal expansion curves of each ceramic material intersect, said process comprising the steps of:

obtaining the ceramic pieces;

placing the obtained ceramic pieces adjacent each other for bonding;

heating the placed ceramic pieces to the certain temperature range;

applying pressure to the heated ceramic pieces to effect a diffusion bond while maintaining the ceramic pieces at the certain temperature range;

removing the applied pressure; and

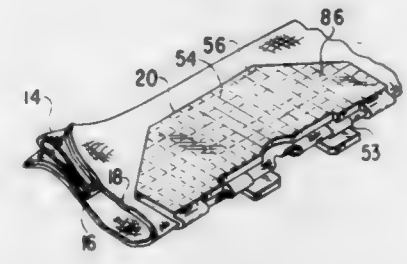
cooling the bonded ceramic pieces to ambient temperature.

4,406,723

FABRIC REPAIRING METHOD

Michael Marra, Huntington; Thomas J. Pendleton, North Wilton, both of Conn.; Douglas W. Smith, Oakland, and Artin G. Vartoukian, Roselle Park, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Apr. 28, 1982, Ser. No. 372,497
Int. Cl.³ B32B *35/00*
U.S. Cl. 156—98 **10 Claims**



1. A method of repairing damage to fabric which comprises folding a portion of the fabric including the damaged area into overlying layers extending to a folded edge, removing from the folded layers a piece of the fabric including the damaged area and extending around said folded edge, unfolding said fabric, removing from an inconspicuous part of the same fabric or from a like piece of material a patch substantially corresponding in size and configuration to the hole left by removal from the folded layers of the said fabric piece including the damaged area, placing a pad impregnated with a thermoplastic adhesive in overlapping relationship with the said hole on the normally unexposed side of the damaged fabric, disposing said patch in the hole and bonding the patch to the pad and surrounding fabric with the application of heat.

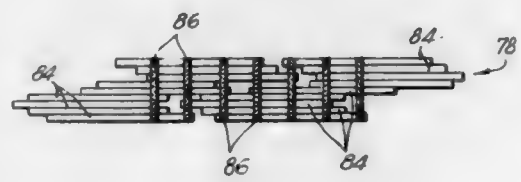
7. A method of repairing damage to a lined fabric including the method steps of claim 1 and an additional step in which the lining is pulled back from the damaged area before the fabric is folded.

4,406,724

METHOD FOR PRODUCING UNWOVEN NOVEL ORIENTED PRE-STRESSED WEB

Clarence L. Bostian, Jr., Salisbury, N.C., and Jerome D. Gelula, 535 E. 86 St., New York, N.Y. 10028, assignors to Jerome D. Gelula, New York, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,042
Int. Cl.³ B32B *5/08*
U.S. Cl. 156—161 **1 Claim**



1. A method of forming a web of at least a plurality of fibers oriented in at least one predetermined direction, comprising steps which include: causing a plurality of fibers to be oriented in substantially parallel configuration with respect to one another, causing at least some of said oriented fibers to be interconnected with one another at a plurality of portions spaced longitudinally along their respective lengths, causing at least some of said interconnecting portions initially spaced a first distance from one another to be moved such that they are a

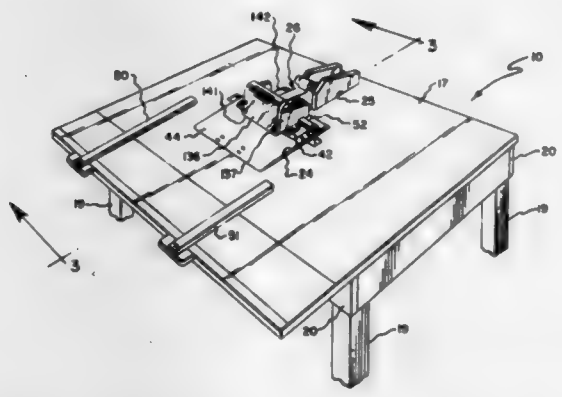
second and greater distance from one another, and applying stabilizing resin to said interconnecting fiber portions and facilitating curing of said stabilizing resin prior to release of stress caused by said movement to the greater distance, thereby enhancing the ability of said web to withstand stresses applied thereto.

4,406,725

FASTENER BONDING MACHINE

Joseph T. Corey, Eggertsville, N.Y., assignor to Permclip Products Corporation, Buffalo, N.Y.

Filed Nov. 6, 1980, Ser. No. 204,462
Int. Cl.³ B30B *15/06, 15/34*
U.S. Cl. 156—358 **20 Claims**



1. A fastener bonding machine comprising a base, a heatable platen on said base, means for heating said platen, first gauge means on said base for orienting a fastener having a pronged member and an overlay member with adhesive thereon in contiguous relationship to said platen, leaf-receiving means including second gauge means on said base for receiving a leaf to which said fastener is to be bonded with said leaf being oriented in overlying relationship to said fastener, a presser member for pressing said leaf toward said platen with said fastener therebetween, a motor, a toggle linkage between said motor and said presser member, means for energizing said motor to move said toggle linkage from a relatively nonaligned position to a relatively aligned position to cause said presser member to approach said platen to press said leaf and fastener together while said fastener is being heated by said platen and to thereafter cause said toggle linkage to return to said relatively nonaligned position to permit removal of said leaf after said fastener has been adhesively secured thereto, a crank on said motor, a link between said crank and said toggle linkage whereby rotation of said crank actuates said toggle linkage, switch means for energizing said motor, and control means for causing said motor to move said crank through a cycle from a first position where said toggle linkage causes said presser member to be away from said platen to a second position wherein said presser member is adjacent said platen and dwells in said second position and back to said first position where it stops, said leaf-receiving means comprising a pivotable plate, and spring means for normally biasing said pivotable plate away from said platen.

4,406,726

APPARATUS FOR PRODUCING COMPACTED INSULATING GLASS HAVING PARALLEL PLANAR FACES

Peter Lisec, Bahnhofstrasse 34 (Niederosterreich), Amstetten-Hausmening, Austria

Filed Oct. 6, 1981, Ser. No. 309,119
Claims priority, application Austria, May 11, 1981, 2080/81
Int. Cl.³ B30B *1/08, 1/24, 15/06*
U.S. Cl. 156—360 **21 Claims**

1. In apparatus for producing compacted insulating glass panels having parallel planar faces, comprising

a stationary frame,

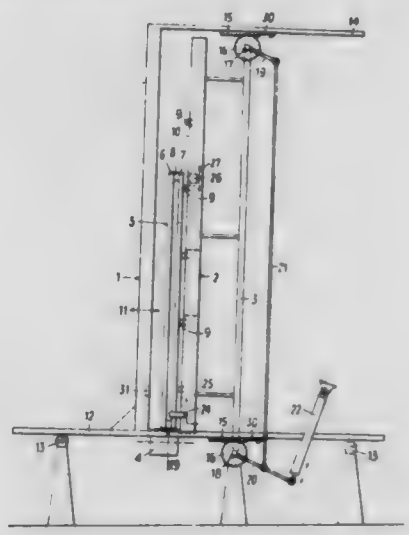
two substantially vertical press platens, one of which is stationary and has a bottom longitudinal edge, and the other of which is mounted in said frame and movable relative to the stationary press platen to perform a compacting operation, and

a conveyor disposed adjacent to and extending along said longitudinal edge and operable to convey insulating glass between said press platens,

the improvement residing in that

racks extending at right angles to said movable press platen are rigidly connected to said movable press platen,

pinions in mesh with said racks are rotatably mounted on stationary axles secured to said frames,



common drive means are connected to said pinions to rotate them about said axles,

said pinions are interconnected by coupling means constraining said pinions to rotate in unison,

said movable press platen has top and bottom edges,

shafts are rotatably mounted on stationary axes in said frame and operatively connected to said common drive means,

said pinions are non-rotatably connected to said shafts,

said coupling means comprise levers, which are non-rotatably connected to respective ones of said shafts, and a rod connecting said levers, and

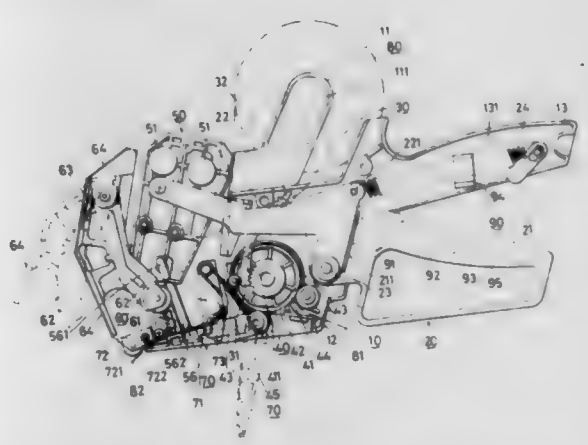
said common drive means are connected to one of said levers.

4,406,727

MANUALLY-OPERATED LABELER

Mituo Fujita, Sakatoshi, Japan, assignor to Kabushiki Kaisha Shinsei Industries, Tokyo, Japan

Filed Oct. 16, 1981, Ser. No. 312,343
Claims priority, application Japan, Oct. 24, 1980, 55-148406; Jun. 12, 1981, 56-90518
Int. Cl.³ B65C *11/02*
U.S. Cl. 156—384 **6 Claims**



1. A manually-operated labeler for dispensing labels from a carrier strip onto which said labels are stuck, comprising:

a case having a carrier strip holder for holding a roll of carrier strip onto which a number of labels are stuck in order;

an actuating mechanism having an operating part which extends inside said case and is pivotally mounted in said case;

a feed drive mechanism provided on said operating part of the actuating mechanism;

a carrier strip feeding mechanism housed in said case and having a feed drum which engages with a carrier strip being unrolled from a roll of carrier strip, said feed drum being driven by said feed drive mechanism during movement thereof for feeding a fixed length of carrier strip when said carrier strip feeding mechanism is driven by said feed drive mechanism;

a carrier strip trunback part in said case around the edge of which the carrier strip is turned back by the feeding action of said feeding mechanism for separating a label stuck on said carrier strip;

a printing device mounted on said operating part for movement toward and away from said carrier strip turnback part and provided with a mounting frame which is pivoted to said operating part and contains at least one printing mechanism having type elements on the end of said printing device which is toward said carrier strip turnback part;

guide means operatively associated with said printing device for guiding said end of said printing device to said carrier strip turnback part along a path inside the arc along which said end would move if unguided; and

an ink supplying device provided with an ink roller which is to be pressed against the type elements of said printing device and swingable in an opposite direction to the direction of the movement of said end of the printing device so as to cause the ink roller to roll along said type elements and then separate from the printing device when the printing device approaches the label to be printed;

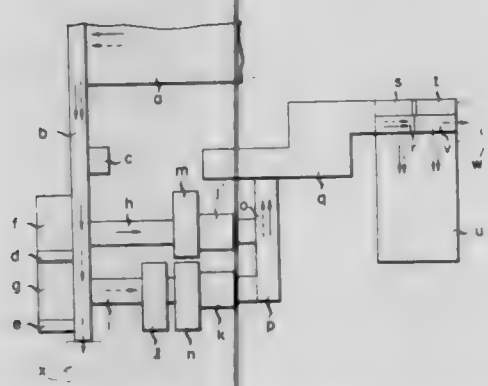
whereby the distance which the ink roller moves in said labeler is shortened by the swinging of said ink roller and said printing device in opposite directions.

4,406,728

APPARATUS FOR BINDING ARTICLES WITH TAPE

Hiroshi Ohba, and Shigeo Horino, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 6, 1981, Ser. No. 318,798
Claims priority, application Japan, Nov. 11, 1980, 55-158544
Int. Cl.³ B29C *17/00*
U.S. Cl. 156—468 **18 Claims**



1. An apparatus for binding an article with a tape in a binding position, comprising:

a push-in mechanism for pushing the article into the binding position through a push-in passage,

a tape supplying mechanism for supplying the tape to the binding position;

a loop forming mechanism for forming a loop of a predetermined shape, said loop forming mechanism including a plurality of tape loop supporting members which are free to move between a forward position in which said loop supporting members engage with the loop so as to support the loop and a backward position in which said loop supporting members are withdrawn from the loop, and further including a rotating member which guides the movement of said loop supporting members to the forward and backward positions and which rotates integrally with said loop supporting members,

a pull-in mechanism for displacing said loop suporting member from the forward position to the backward position to withdraw said supporting members from the loop,

a tape tightening mechanism for winding the tape loop on the periphery of the article and tightening the tape by pulling the tape in a direction opposite to the tape feeding direction,

a cutting mechanism for cutting a trailing end of the tape which is wound around the article,

a tape press-sealing mechanism for press-sealing the trailing end of the tape to an adjacent surface thereof,

a take-up mechanism for removing the bound article from the tape binding position through a take-up passage, and

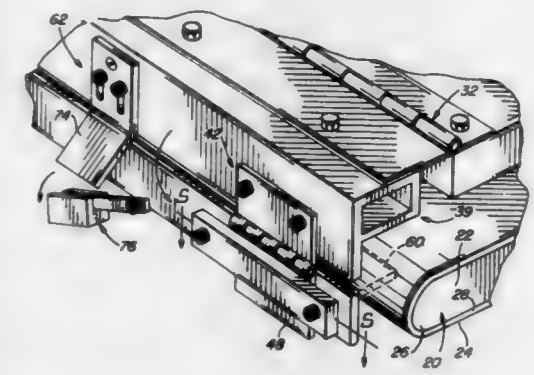
a pressing mechanism for pressing the article which is placed in the binding position, said pressing mechanism including stationary pressing means which is stationary in the direction of pressing and which corresponds to one surface of the article and movable pressing means which is movable in the direction of pressing in order to press the article against said stationary pressing means and which corresponds to the other surface of the article, said movable pressing means having a first groove which is aligned with said push-in passage and a second groove which is aligned with said take-up passage and which crosses said first groove.

4,406,729

ROUND EDGE FORMER

Gilbert N. Elias, Phoenix, Ariz., assignor to Evans Rotork, Inc., Glendale, Ariz.

Filed Nov. 4, 1981, Ser. No. 318,047
Int. Cl.³ B32B *17/04*
U.S. Cl. 156—479 **6 Claims**



1. Apparatus for attaching a laminate to the top and bottom side of a substrate and about a 180° rounded edge of the substrate joining the top and bottom sides, said apparatus comprising in combination:

(a) a pivotally mounted member for forcing the laminate against the top side of the substrate upon pivotal movement of said member;

(b) a spine extending from said member for guiding the laminate adjacent the substrate from the top side of the substrate to the apex of the rounded edge of the substrate and for bearing against the apex of the rounded edge to maintain the laminate thereagainst on completion of the pivotal movement of said member; and

(c) a guide pivotally secured to said member for guiding the laminate adjacent the substrate from the apex of the rounded edge of the substrate to the bottom side of the substrate upon pivotal movement of said guide and for forcing the laminate against the bottom side of the sub-

strate on completion of the pivotal movement of said guide while said spine retains the laminate adjacent the apex of the rounded edge;

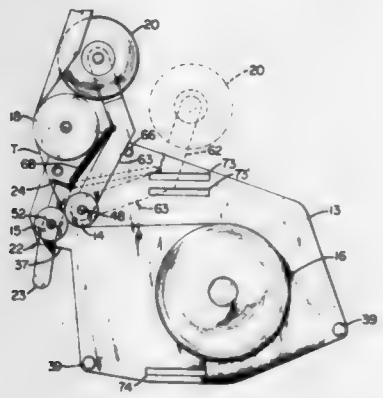
whereby, pivotal movement of said member locates the laminate adjacent the substrate from the top side to the apex of the rounded edge and pivotal movement of said guide locates the laminate adjacent the substrate from the apex of the rounded edge to the bottom side.

4,406,730

DRYWALL TAPE DISPENSER

James J. Altmix, 13124 Acres Green Dr., Littleton, Colo. 80124

Filed Dec. 1, 1981, Ser. No. 326,408
Int. Cl.³ B32B *1/00*
U.S. Cl. 156—574 14 Claims



1. In a tape applicator device wherein an open frame is provided with spaced apart sidewalls, a tape supply roll journaled between said sidewalls and a first pressure roller is journaled between said sidewalls adjacent to one edge of said open frame, the improvement comprising:

guide roll means journaled in said open frame between said tape supply roll and pressure roll for guiding tape from said supply roll across a surface of said pressure roll externally of said open frame;

tape cutter means pivotally mounted on said open frame including a hand operable lever projecting externally of said open frame and a cutter blade pivotal in response to actuation of said lever into the path of travel of said tape whereby said tape cutter means is operative to sever said tape at a predetermined location; and

a second pressure roller including means pivotally mounting said second pressure roller on said guide roll means for pivotal movement between a position away from the path of travel of said tape and a working position in the path of travel of said tape downstream of and in alignment with said first pressure roller.

4,406,731

APPARATUS FOR AND METHOD OF SEALING SHAFTS IN CRYSTAL-GROWING FURNACE SYSTEMS

Carl P. Chartier, Danvers, Mass., assignor to Ferrofluidics Corporation, Nashua, N.H.

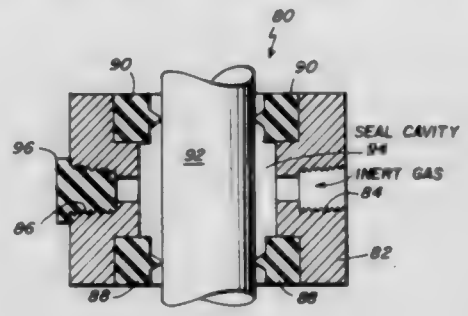
Filed Jun. 9, 1981, Ser. No. 271,980
Int. Cl.³ C30B *15/30*
U.S. Cl. 156—617 SP 18 Claims

8. In a method for growing a crystal from a melt, which method comprises:

(a) maintaining a contaminant-free atmosphere at a first pressure for the growing of a crystal from a melt;

(b) positioning a movable shaft element between the contaminant atmosphere at a second pressure and the contaminant-free atmosphere; and

(c) sealing the shaft element with a seal about the shaft element, the seal composed of inner and outer sealing elements to form inner and outer sealing barriers about the shaft element and a peripheral cavity therebetween and between the contaminant-free atmosphere and the contaminant atmosphere, the improvement which comprises providing an inert fluid in the cavity about the sealed shaft element, the inert fluid having a pressure in the cavity greater than the first or second pressure, the inert fluid



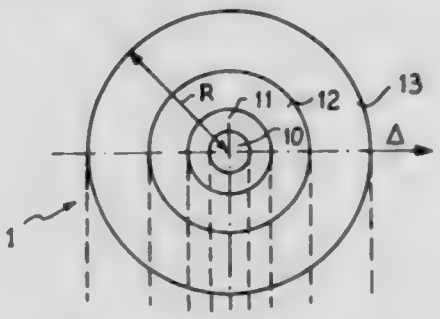
benign to the growing of the crystal in the contaminant-free atmosphere or acceptable in the contaminant-free atmosphere, whereby, on leaking of the shaft seal element, the contaminated atmosphere is prevented from entering the contaminant-free atmosphere.

4,406,732

PROCESS FOR THE CONTROLLED MODIFICATION OF THE GEOMETRICAL-CHARACTERISTICS OF THE END OF A MONOMODE OPTICAL FIBER AND APPLICATION THEREOF TO OPTICAL COUPLING

Pierre Kayoun, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 4, 1982, Ser. No. 354,792
Claims priority, application France, Mar. 17, 1981, 81 05287
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; G01N *21/00*
U.S. Cl. 156—626 11 Claims



1. A process for the controlled modification of the geometrical characteristics of the end of a monomode optical fiber, the fiber being formed from a central region and at least one peripheral region having different optical refraction indices, these index differences being obtained by incorporating in a basic material in a given percentage at least one doping material, which process comprises the following steps:

previous preparation of the end of said fiber so as to obtain an endmost face free from splinters,

chemical etching for a predetermined time at differentiated rates of said regions with given doping percentages at the end of the fiber,

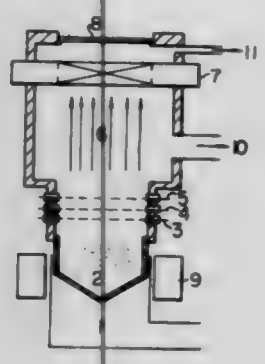
neutralization of the etching,

injection into the fiber of guided radiation and control of the state of modification of said geometrical characteristics of the end of the fiber by plotting the variations of the remote field of said radiation radiated by said etched end.

4,406,733
DRY ETCHING METHOD

Shinichi Tachi, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 21, 1982, Ser. No. 451,956
Claims priority, application Japan, Jan. 22, 1982, 57-7594
Int. Cl.³ H01L *21/306*
U.S. Cl. 156—643 5 Claims

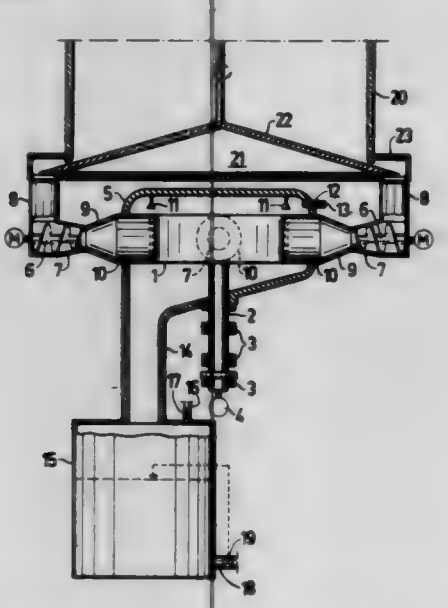


1. A dry etching method, wherein PF_5-gas is used as a source gas for producing plasma for etching a semiconductor substrate.

4,406,734
METHOD FOR THE MANUFACTURE OF MECHANICAL PULP

Hjalmar S. I. Bystedt, Enebyberg, Sweden, assignor to Sunds Defibrator AB, Stockholm, Sweden

Filed Oct. 9, 1980, Ser. No. 195,708
The portion of the term of this patent subsequent to Feb. 8, 2000, has been disclaimed.
Int. Cl.³ D21B *1/04*
U.S. Cl. 162—23 7 Claims

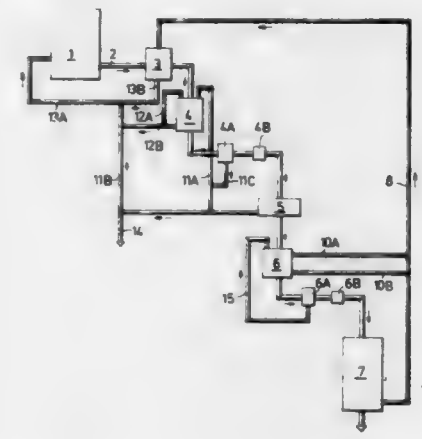


1. Method for manufacturing mechanical pulp from lignocellulosic material in the form of chips by forcing the said material into contact with the circumferential surface of a grinding disc which revolves about an axis perpendicular to the opposing end faces of said grinding disc in a sealed pressurized housing, which method is characterized by first compressing the chips in the presence of water while passing them through an outwardly flared passage into a conical continuous steam-tight plug and thereafter passing said conical plug through a cylindrical passage connected to said outwardly flared passage to form an expanded straight cylindrical steam-tight plug, which expanded plug is maintained in forced contact with at least one grinding area on the circumferential surface of the grinding disc during the grinding operation and by adding water to the housing to wash the resultant fibers and fiber fragments from the grinding disc into the housing.

4,406,735
PROCESS FOR ALKALINE OXYGEN GAS BLEACHING OF CELLULOSE PULP

Hans O. Samuelson, Gothenburg, Sweden, assignor to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed May 27, 1981, Ser. No. 267,968
Claims priority, application Sweden, May 27, 1980, 8003911-8
Int. Cl.³ D21C *3/16, 9/10*
U.S. Cl. 162—40 23 Claims



1. A process for the bleaching delignification of chemically digested cellulose pulp with oxygen gas in the presence of alkali after activating the pulp with nitrogen dioxide and washing the activated pulp with water or a dilute aqueous solution, which comprises the following steps in the sequence stated:

(1) removing digestion liquor from the pulp by treating the pulp with waste liquor from the oxygen gas bleaching delignification, stage (5), thereby forcing a major part of the waste digestion liquor out of the pulp;

(2) pretreating the resulting pulp with acid wash liquor recovered from washing the pulp after the activating stage (3) at a pulp consistency within the range from about 1 to about 20% at a temperature within the range from about 20° to about 80° C. for a reaction period not exceeding about sixty minutes, these conditions being so selected and controlled that any lowering of the intrinsic viscosity of the pulp in this stage does not exceed 5%;

(3) activating the pretreated pulp with nitrogen dioxide;

(4) washing the activated pulp with a member selected from the group consisting of water and a dilute aqueous solution;

(5) subjecting the washed pulp to bleaching delignification with oxygen gas in the presence of alkali; and (6) thereby obtaining bleached delignified pulp.

4,406,736
METHOD OF BLEACHING PULP WITH AN AQUEOUS SOLUTION OF CHLORINE DIOXIDE AND CHLORINE FOLLOWED BY A CHLORINE SOLUTION

Douglas W. Reeve, Orton, Canada, assignor to ERCO Industries Limited, Islington, Canada

Continuation of Ser. No. 98,524, Nov. 29, 1979, Pat. No. 4,299,653, Continuation-in-part of Ser. No. 30,557, Apr. 16, 1979, abandoned. This application Aug. 17, 1981, Ser. No. 293,592
The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.
Int. Cl.³ C01B *11/02;* D21C *9/14*
U.S. Cl. 162—88 4 Claims

1. A method of bleaching pulp using chlorine dioxide, which comprises:

(a) continuously forming a gaseous mixture of chlorine dioxide, chlorine and steam by:

(i) continuously feeding a sodium chlorate solution to an aqueous acid reaction medium present in a unilocular reaction zone,

(ii) continuously feeding sulphuric acid to said aqueous reaction medium in an amount to maintain the total acid

normality of the reaction medium in the range of about 2 to about 4.8 normal,

(iii) continuously feeding sodium chloride, hydrochloric acid or a mixture of sodium chloride and hydrochloric acid to said aqueous reaction medium,

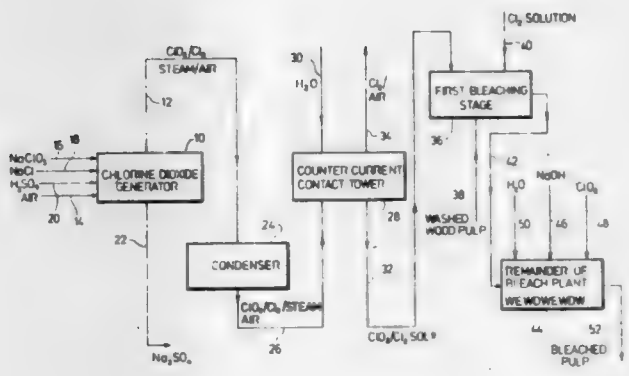
(iv) continuously maintaining said reaction medium at a temperature of about 55° to about 85° C. while maintaining said reaction zone under a subatmospheric pressure of about 80 to about 300 mm Hg to cause the formation of chlorine dioxide and chlorine and the evaporation of water from the reaction medium,

(v) continuously depositing anhydrous neutral sodium sulphate from the reaction medium in said reaction zone once the reaction medium becomes saturated thereby after start up, and

(vi) continuously removing the gaseous mixture of chlorine dioxide, chlorine and steam from the reaction zone;

(b) continuously cooling said gaseous stream to a temperature of about 15° to about 55° C. to cause condensation of at least a substantial proportion of the steam therefrom to provide a chlorine dioxide- and chlorine-containing gas stream;

(c) continuously contacting the latter gas stream with water having a temperature of about 3° to about 10° C. at a flow



rate sufficient to form an aqueous solution of chlorine dioxide and chlorine containing chlorine in an amount of 6 to 10% of the available chlorine of that solution, and a gaseous chlorine stream; and

(d) bleaching a cellulosic fibrous material pulp for about 10 to about 60 minutes at a temperature of about 35° C. to about 70° C. in an aqueous suspension having a consistency of about 2 to about 16% by weight of pulp and containing no more dissolved organic material than about 2% by weight TOC on pulp at an overall equivalent chlorine concentration of about 2 to about 10% by weight on the pulp, by:

(i) subjecting said suspension to a first bleaching step at an acid pH value using at least part of said aqueous solution of chlorine dioxide and chlorine formed in step (c), and

(ii) without an intermediate washing step, subjecting the suspension to a second bleaching step at an acid pH using a chlorine solution formed from at least part of said gaseous chlorine stream from step (c) and commencing about 5 seconds to about 10 minutes after commencement of said first bleaching step,

the chlorine dioxide in said aqueous solution of chlorine dioxide and chlorine constituting about 20 to about 90% of the total available chlorine used in said first and second bleaching steps.

4,406,737

CREPING PAPER USING CATIONIC WATER SOLUBLE ADDITION POLYMER

Joseph J. Latimer, Perkiomenville, and Travis E. Stevens, Ambler, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

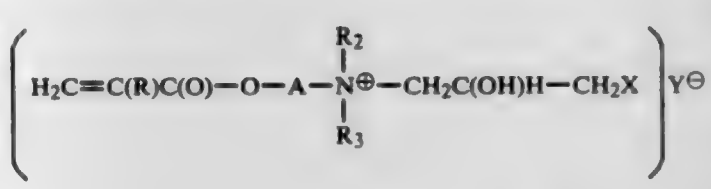
Continuation of Ser. No. 684,427, May 7, 1976, Pat. No. 4,308,092, which is a continuation-in-part of Ser. No. 640,664, Dec. 15, 1975, abandoned. This application Sep. 11, 1981, Ser. No. 301,345

The portion of the term of this patent subsequent to Dec. 29, 1998, has been disclaimed.

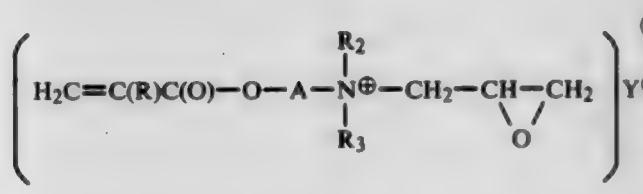
Int. Cl.³ D21H *5/24*

U.S. Cl. 162—111 **20 Claims**

1. A method of creping paper comprising the steps of incorporating in a paper web or paper pulp subsequently formed into a web of paper, an effective amount up to 7% by weight based on pulp solids of a water soluble polymer salt, in aqueous solution, the polymer being derived from an additional polymerizable ethylenically unsaturated amine-containing monomer, and where used, a compound of the formula:



with or without a compound of the formula:



wherein

R_2 and R_3 are lower alkyl having 1 to 4 carbon atoms or together with a nitrogen atom form a heterocyclic ring,

R is hydrogen or methyl,

X is iodine, bromine, or chlorine,

A is a (C_2–C_6 alkylene group having at least two carbon atoms in a chain between the adjoined O an N atoms or A is a polyoxyethylene group of the formula:

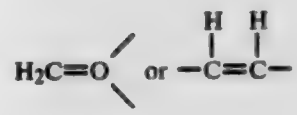
$$—(CH_2CH_2O)_xCH_2CH_2—$$

wherein

x is from 1 to 11, and

Y is an anion

optionally with at least one other monoethylenically unsaturated monomer VIII having a group of the formula:



the quantity of the amine-containing monomer being such that the polymer is water-soluble when converted into an organic or inorganic acid salt of the amino component of the polymer, said paper being repulpable by virtue of the water solubility of the salt, in the case of pulp forming a web applying the wet web of said paper to a hot drying surface, and doctoring said web from said surface at a point at which said web contains moisture content of between 2% and 50%, whereby the wet paper web is adhered to the drying surface to an extent which enables the combined adherency and doctoring to achieve improved creping of the paper, and the absorbency being such that 0.1 ml. of water is absorbed by the dry web in less than about 300 seconds.

4,406,738

USE OF AN ORGANOPOLYSILOXANE PREPARATION FOR THE TREATMENT OF PAPER FOR THE PRODUCTION OF PLASTER BOARDS

Hans-Ferdi Fink; Götz Koerner, and Edmund Luksch, all of Essen, Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Jan. 25, 1982, Ser. No. 342,202

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1981, 3149791

Int. Cl.³ D21F *11/00*

U.S. Cl. 162—124 16 Claims

1. In a method for preparing papers for use in plaster board wherein pulp in aqueous dispersion is converted into a paper sheet by dewatering followed by drying, the improvement which comprises making the surface of the paper hydrophobic by adding to the paper dispersion during the drying step a composition comprising an aqueous emulsion of an organopolysiloxane formed from the reaction of a polysiloxanol having the formula

$$HO-[SiO(R^1)_2-]_nH$$

in which

R^1 is a methyl or a phenyl radical, at least 90% of the R^1 radicals however being methyl radicals, and

n=20 to 250,

with a silane having the formula

$$H_2N-R^3-Si(OR^2)_3$$

in which

R^2 is lower alkyl radical with 1 to 4 carbon atoms,

R^3 is a bivalent alkyl radical with 1 to 6 carbon atoms or the $-(CH_2)_xR^4(CH_2)_y-NH_2$ radical, in which

R^4 is oxygen, sulfur or the —NH— or $-NH-CH_2CH_2-NH-$ radical and

$x \geqq 3$, and

$y \geqq 2$,

in such amounts that 1 SiOH group of the polysiloxanol corresponds to more than 1 and up to 3 OR^2 groups of the silane and an emulsifier and then allowing the composition to cure.

4,406,739

GUIDE ROLL AND SUCTION BOX FOR TWIN-WIRE FORMING SYSTEM

Matti Kankaanpää, Espoo, Finland, assignor to Valmet Oy, Finland

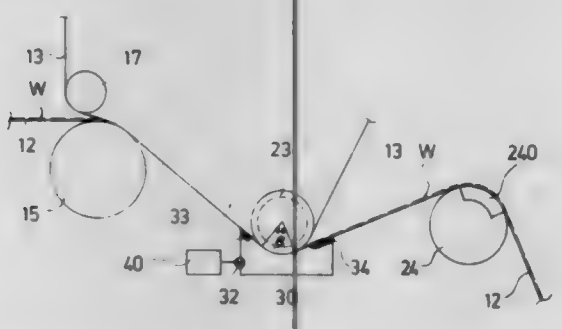
PCT No. PCT/FI81/00018, § 371 Date Nov. 3, 1981, § 102(e) Date Nov. 3, 1981, PCT Pub. No. WO81/02753, PCT Pub. Date Oct. 1, 1981

PCT Filed Mar. 13, 1981, Ser. No. 320,962

Claims priority, application Finland, Mar. 14, 1980, 800808

Int. Cl.³ D21F *1/00, 1/40, 1/50, 11/02*

U.S. Cl. 162—203 14 Claims



9. In a method in a former of a paper making machine for dewatering a web at least partially between two wires and for detaching the web from one of the wires, the former including a carrying wire loop and a covering wire loop wherein an initial dewatering of the web takes place on an initial part of the run of the carrying wire loop, and wherein the covering wire loop is conducted onto the web carried on the carrying wire at a point following said initial part to cover the web to form a joint run of a sandwich structure constituted by the web carrying wire, the web covering wire and the web carried therebetween, and wherein the web is dewatered on the joint run through the covering wire, the joint run ending at a point where the covering wire separates from the carrying wire and web carried thereby whereupon the web is carried on the carrying wire for conduction to a press section of the paper making machine, the improvement comprising the steps of:

situating a guide roll within the covering wire loop at the end of the joint run so that the joint run engages a sector of the guide roll;

situating a suction box within the carrying wire loop in cooperating relationship with the wire guide roll, the suction box including first and second cover parts defining a substantially free gap therebetween, the free gap facing the portion of the joint run which engages the sector of the guide roll, the two cover parts having respective surfaces forming an angle with respect to each other;

conducting the joint run so that the carrying wire engages the surface of the first cover part of the suction box;

changing the direction of the joint run by conducting the same over the sector of the guide roll with the guide roll pressing against the joint run from the side of the covering wire;

dewatering the web substantially in the area of the directional change under the effects of the pressure of the wires on the web, the centrifugal force acting on the web produced by the change in direction thereof as the joint run is conducted over the guide roll sector, and by the pressure differential created by the suction box;

separating the covering wire from the carrying wire and web carried thereby and causing the covering wire to follow the guide roll while simultaneously subjecting the web and carrying wire to suction effect created by the suction box; and

conducting the web carrying wire subsequent to said separation step into engagement with the surface of the second cover part of the suction box.

4,406,740

APPARATUS FOR EFFECTING THE FINE-ADJUSTMENT OF THE LIP OF A HEAD-BOX OF A PAPER MAKING MACHINE

Francois M. P. Brieu, Saint-Cloud, France, assignor to Chleq Frote et Cie, Paris, France

Filed Aug. 13, 1981, Ser. No. 292,420

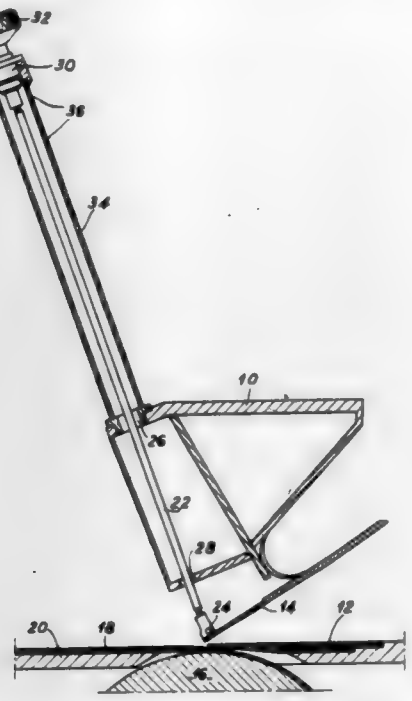
Claims priority, application France, Aug. 18, 1980, 80 18048

Int. Cl.³ D21F *1/06*

U.S. Cl. 162—259 13 Claims

1. Apparatus for adjusting the position of one of a pair of slice lips of a paper machine head-box with respect to the other, said one lip being an inclined scraper blade pivotally connected to said head-box, said adjusting being by displacing said blade in a pre-determined direction, said apparatus comprising a frame portion of said head box; positioning means connected to said frame portion and said scraper blade, said positioning means including a heat-expansible part and a support tube surrounding said heat-expansible part, with a passage being defined between said heat-expansible part and said support tube permitting flow of a fluid therebetween, said support tube having one end mounted on said frame portion and extending away from said frame portion in said pre-determined direction, said heat-expansible part having one end attached to an opposite end of said support tube and having its other end

interconnected with said scraper blade; means for heating said heat-expansible part; and means for controlling said means for



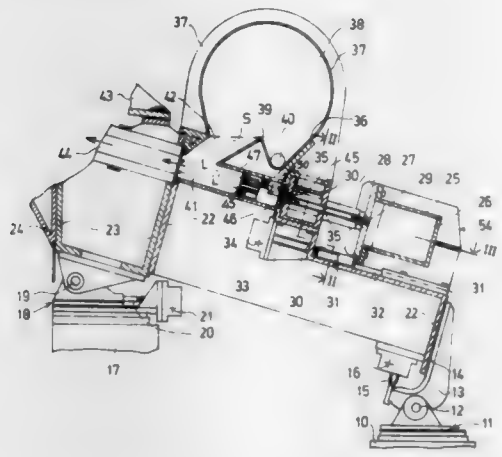
heating said heat-expansible part in dependence upon the required position of said scraper blade in relation to the other lip.

4,406,741

ADJUSTABLE HEADBOX FOR A PAPER MACHINE

Alvi Kirjavainen, Jyväskylä, Finland, assignor to Valmet Oy, Finland

Filed Dec. 8, 1981, Ser. No. 328,792
Claims priority, application Finland, Dec. 17, 1980, 803946
Int. Cl.³ D21F *1/02, 1/06*
U.S. Cl. 162—336 **8 Claims**



1. In a paper machine, a headbox comprising:

distribution header means;

a system of distribution pipes having an upstream end communicating with said distribution header means and a downstream end;

an equalizing chamber having an effective length in the direction of pulp flow including a downstream end and an upstream end constituted by movable front wall means having flow passage means formed there through communicating with said downstream end of said distribution pipe system;

means for adjusting the position of said front wall means of said equalizing chamber to adjust the effective length of said equalizing chamber;

a turbulence section having an upstream end communicating with said downstream end of said equalizing chamber;

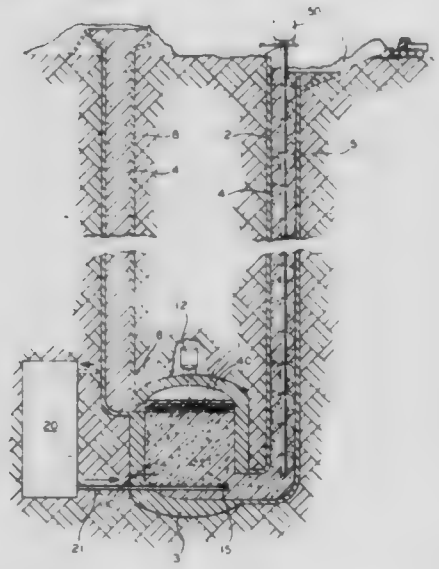
and lip means following said turbulence section for delivering pulp flow to a forming wire.

4,406,742

APPARATUS FOR LEAD PRESSURED EXTRACTION OF CARBONACEOUS MATERIALS

James E. Dick, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 198,517, Oct. 20, 1980, Pat. No. 4,337,148.
This application Apr. 7, 1982, Ser. No. 366,257
Int. Cl.³ C10G *1/00, 1/04, 71/00*
U.S. Cl. 196—14.52 **18 Claims**



1. Apparatus for extracting carbonaceous material comprising:

(a) a hydrostatic inlet channel having a vertical height large enough to establish a pressure at the lower end of said inlet channel for efficient extraction of carbonaceous material when said channel is filled with molten lead and being constructed to sustain the temperature and pressure established when filled with molten lead,

(b) in fluid communication with said inlet channel an extraction chamber, arranged in such a manner that solids introduced via said inlet channel into the lower portion of said extraction chamber will float upwardly in said extraction chamber when filled with molten lead,

(c) separating means in said extraction chamber for a substantial separation of solids and extraction fluid,

(d) a hydrostatic outlet channel in communication with said extraction chamber, said outlet channel having a vertical height large enough to establish a pressure at the lower end of said outlet channel for extracting carbonaceous material from carbonaceous material containing starting material when said hydrostatic outlet channel is filled with molten lead and being constructed to sustain temperature and pressure conditions established when said channel is filled with molten lead, said hydrostatic outlet channel being arranged to receive solids from said separating means,

(e) an inlet conduit for adding solvent to the extraction chamber and into contact with extractable starting material introduced into the extraction chamber to allow the establishment of a mixture of solvent and extractable starting material in said extraction chamber,

(f) a withdrawal conduit for withdrawing a fluid of solvent and extracted carbonaceous material from the upper portion of the extraction chamber,

(g) inlet conveying means associated with said hydrostatic inlet channel allowing the conveyance of extractable starting material through said inlet channel in contact with molten lead into said extraction chamber,

(h) outlet conveying means between said extraction chamber and said outlet channel for conveying extracted starting material from the extraction chamber to the lower portion of said outlet channel,

(i) heating and heat insulating means associated with said hydrostatic inlet and outlet channels and said extraction chamber, said heating and insulating means being capable

of maintaining the minimum temperature of said hydrostatic inlet channel and said hydrostatic outlet channel at a temperature above the melting point of lead.

4,406,743

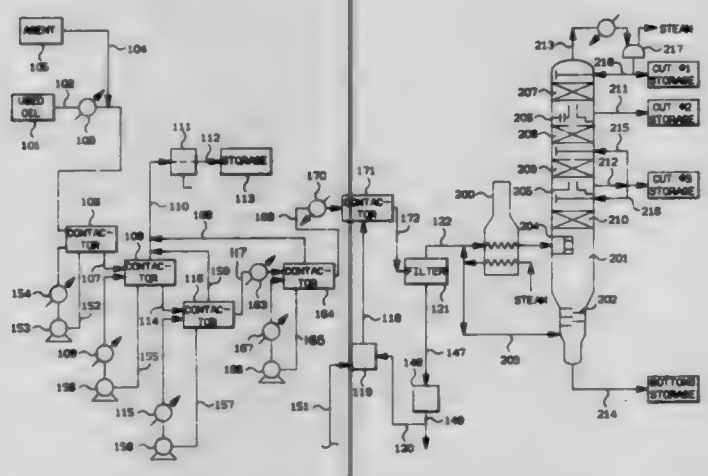
FRACTIONATION COLUMN FOR RECLAIMING USED LUBRICATING OIL

Donald K. MacQueen, and William E. Wood, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 273,297, Jun. 15, 1981. This application Sep. 24, 1982, Ser. No. 422,776

Int. Cl.³ C10G *7/04, 7/06, 25/00*

U.S. Cl. 196—46 **9 Claims**



1. A fractionation column useful for the vacuum fractionation of used lubricating oil comprising an upper column section, a mid column section, and a lower column section, said upper column section being greater in diameter than the mid column section which in turn is greater in diameter than the lower column section, a plurality of oppositely spaced staggered plates each which extends about halfway across the mid column section from the walls of the mid column section, upper and lower withdrawal trays spaced apart in the upper column section, said upper tray being a partial liquid withdrawal tray, said lower tray being a total liquid withdrawal tray, an inlet for operating steam positioned beneath the lowermost of the plates in the mid column section, an inlet for oil feed positioned above the uppermost plate of the mid column section and below the total drawoff tray, an outlet for withdrawing liquid from the total withdrawal tray, a first liquid distributor positioned between said total withdrawal tray and said partial withdrawal tray, a conduit means for recycling liquid from said total withdrawal tray to said first liquid distributor, a second liquid distributor positioned between said total withdrawal tray and said inlet for the oil feed, a conduit means for recycling liquid from said total withdrawal tray to said second liquid distributor, a third liquid distributor located above said partial withdrawal tray, an outlet for taking overhead products from said column, a conduit means for recycling liquid from said overhead product to said third liquid distributor.

4,406,744

PROCESS FOR THE PRODUCTION OF HYDROGENATED TAR AND DISTILLATES AND LOW SULFUR COKE FROM COAL

Clyde Berg, 3655 E. Ocean Blvd., Suite 2-H, Long Beach, Calif. 90803

Filed Nov. 16, 1981, Ser. No. 321,901

Int. Cl.³ C10B *49/06, 57/02, 57/12*

U.S. Cl. 201—17 **7 Claims**

1. A process for production of hydrogenated coal tar, distillate products and a low sulfur content coke from a coal containing sulfur impurities, including iron sulfides, which comprises:

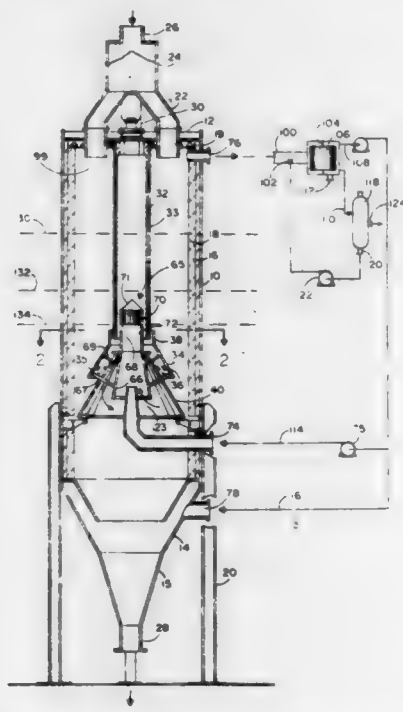
(a) introducing particulate coal solids into the top of a dense bed and passing said coal downwardly through said dense bed by withdrawing coke solids from the bottom of said bed and withdrawing evolved volatile coal tar fractions and gases from the top of said bed and maintaining conditions within said bed to provide the following successive treatment zones:

(i) a condensing zone having a depth from 20 to 40 percent of the depth of said bed where the coke is heated to a temperature of about 900 degrees F. and the higher boiling coal tar fractions are condensed and refluxed to subjacent zones;

(ii) a hydrogenation zone having a depth from 10 to about 30 percent of the depth of said bed where the coke and refluxed higher boiling tars are heated to a temperature of about 1200 degrees F. in the presence of hydrogen evolved in the subjacent desulfurization zone;

(iii) a desulfurization zone having a depth from 3 to about 10 feet where the coke product from the preceding zone is heated to a temperature of about 1800 degrees F. and reacts with steam, producing hydrogen, and the sulfur impurities including iron sulfides are desulfurized by reaction with steam; and

(iv) a cooling zone having a depth from 4 to about 10 feet where the coke product is cooled to a temperature below about 500 degrees F.;



(b) generating a hot flue gas by burning a fuel in a burner centrally positioned within said bed;

(c) mixing the hot flue gas with steam, carbon monoxide and hydrogen and discharging the mixture into the lower portion of said desulfurization zone for direct contact with said coal and coke solids and to effect desulfurization of said coal by;

(d) introducing a recycle gas stream containing hydrogen, carbon monoxide and steam into the lower portion of said cooling zone for countercurrent flow, contact with coke solids therein;

(e) withdrawing a vapor stream from the upper portion of said condensing zone to induce said countercurrent flow of gases through said successive treatment zones;

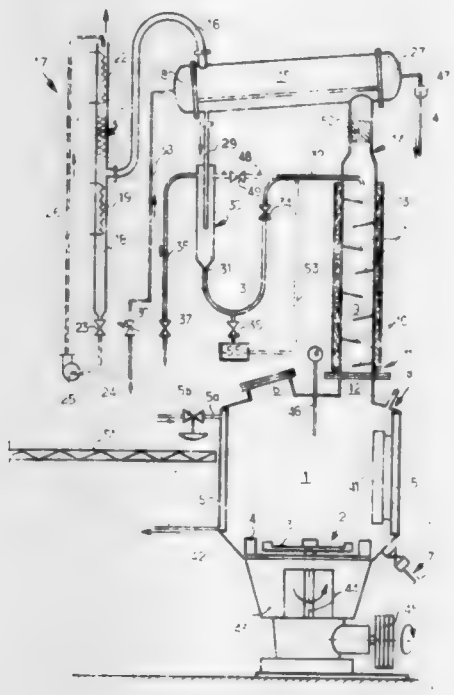
(f) condensing and separating liquid coal tar and distillate fractions from said vapor stream and returning a portion of said vapor stream as said recycle gas stream;

(g) maintaining the temperatures of coal and coke solids in the aforesaid zones by combustion of a fuel in said burner and by controlling the flow of solids through said zones to effect pyrolysis of said coal to coal tar and coke and to effect desulfurization of said coke and hydrogenation of said coal tar.

4,406,745
DEVICE FOR HIGH SPEED PRODUCTION OF AROMATIC ESSENTIAL OILS FROM PERFUME-GENERATING PLANTS OR PARTS THEREOF

Jean-Pierre Martel, Mougins, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Division of Ser. No. 899,511, Apr. 24, 1978, Pat. No. 4,257,945.
This application Oct. 6, 1980, Ser. No. 194,139
Claims priority, application France, Apr. 27, 1977, 77 12831
Int. Cl.³ B01D *3/14*
U.S. Cl. 202—161 13 Claims



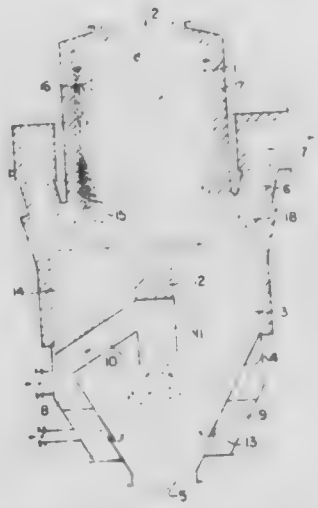
1. A device comprising elements designed, sized and positioned for high-speed production of aromatic essential oils from perfume-generating plants or parts thereof, including at least one enclosure provided with crushing means for crushing said plants into fine particles and forming therefrom an aqueous slurry; means for regulating the temperature prevailing within said enclosure to simultaneously heat said slurry as it is being formed to a temperature sufficiently high to form water vapors with a high content in essential oils from said plants, means for feeding said plants to said enclosure, means for drawing off said slurry; a distillation column in communication with the atmosphere comprising in particular inclined baffle plates forming trays and connected to said enclosure so as to collect and recover the vapors evolving from said slurry, said distillation column thereby constituting means for subjecting said formed vapors to fractionation under substantially atmospheric pressure thus concentrating the content of the essential oils therein to form enriched vapors; at least an apparatus for condensing the vapors issuing from the head of said column so as to form at least one condensate substantially saturated with essential oils; means for removing the essential oils from said condensate; and means for recycling at least a portion of the remaining condensate which is substantially free of essential oils to the top of the distillation column.

4,406,746
COKE DRY COOLER IN THE FORM OF A SHAFT

Wilhelm Danguillier; Jürgen Tietze, both of Bochum; Wolfgang Grams, Herne, and Heinz Thubeauville, Bochum, all of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Feb. 5, 1982, Ser. No. 346,381
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1981, 3104795
Int. Cl.³ C10B *39/02, 39/10*
U.S. Cl. 202—228 7 Claims

1. A coke dry cooler in the form of a shaft comprising a top cylindrical receiving chamber of substantially constant diameter throughout its height containing a charging opening, and therebelow, a cylindrical cooling chamber having a diameter larger than that of said receiving chamber and having a gas supply and a coke outlet at its bottom end, gas-outlet means disposed in the top part of the wall of said cooling chamber for withdrawing the gases which flow upwards countercurrently with respect to the coke charge, the top part of said cooling

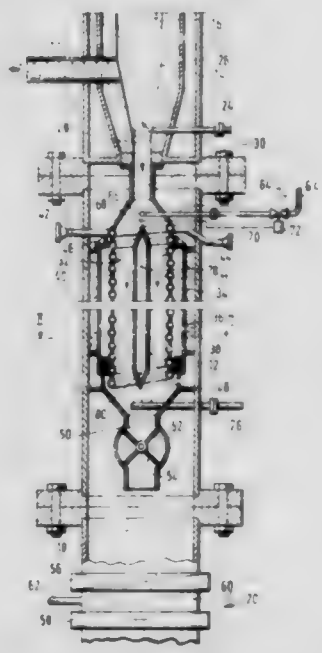


chamber wall projecting outwardly with respect to said receiving chamber, characterized in that in the region of the transition between said cylindrical receiving chamber and said cooling chamber said shaft is provided with a continuous annular projection which is highly resistant to wear and is stepped to project inwardly with respect to the wall of said receiving chamber for forming a negative coke charge cone therein.

4,406,747
APPARATUS FOR THE COOLING OF SOLID RESIDUES OF GASIFICATION

Günter Velling, Bornheim-Hersel, Fed. Rep. of Germany, assignor to Rheinische Braunkohlenwerke AG, Cologne, Fed. Rep. of Germany

Division of Ser. No. 104,249, Dec. 17, 1979, Pat. No. 4,288,294.
This application Jun. 17, 1981, Ser. No. 274,701
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856059
Int. Cl.³ C10B *39/02, 39/04*
U.S. Cl. 202—227 5 Claims



1. Apparatus for cooling the solid residues of gasification from a reactor operated at a pressure above atmospheric for the gasification of carbonaceous materials, which apparatus is

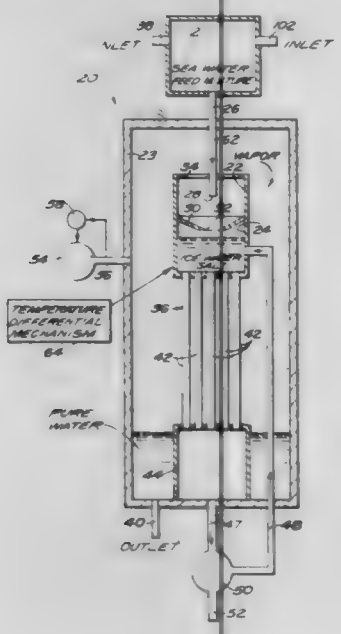
disposed below the reactor and, together with the reactor, forms a pressure system with the reactor, said apparatus having an upper region and a lower region, said upper region of the cooling apparatus being substantially chutelike, at least some of the wall surface of said apparatus defining a cooling chamber comprising pipes through which a heat exchange medium can flow, elongated guide means positioned centrally of said cooling chamber and extending in the direction of flow of said residues of gasification substantially the length of said chamber from said upper region to said lower region, thereby forming an annular passage in said chamber through which said residues flow, said cooling chamber being provided with a first feed line for introducing a cooling liquid directly into said upper region of the cooling apparatus and into the solid residues located therein, a temperature sensor disposed downstream of this location in said upper region in the direction of flow of the residues of gasification to be cooled, and said lower region of the cooling apparatus being provided with a second feed line for introducing a gas directly into said lower region of the apparatus.

4,406,748

LIQUID PURIFICATION SYSTEM

Frank W. Hoffman, 101 Mulberry St., Springfield, Mass. 01105

Filed Sep. 25, 1981, Ser. No. 305,892
Int. Cl.³ B01D *3/02*
U.S. Cl. 202—233 **11 Claims**



1. A liquid purification system comprising:

means for inducing a phase change in a first liquid containing dissolved impurities, wherein said phase change includes a vapor phase essentially free of said impurities, and wherein said vapor phase removes heat from said first liquid and thereby reduces the temperature of the liquid phase thereof,

heat exchange means which contain a second liquid which is the same as said first liquid but with a greater concentration of said impurities and at a lower temperature, and wherein said heat exchange means and said phase change means have an opening therebetween for conveying the liquid and/or solid phases of said first liquid from said phase changing means into said heat exchange means,

means operatively connected to said heat exchange means for maintaining the greater concentration of impurities in said second liquid,

means open to said phase changing means for receiving the vapor free of impurities therefrom which extends to and about said heat exchange means including passage means for conveying the vapor from said opening to said heat exchange means at essentially the same pressure and temperature the vapor is at as it leaves said phase change means,

said heat exchange means having a relatively large surface area open to said conveying means so that said vapor free of impurities flows into and through said conveying means and into contact with said heat exchange means for condensation thereof as the heat from said vapor is transferred to said second liquid and as the liquid and/or solid phases of said first liquid cool said second liquid within said heat exchange means, and

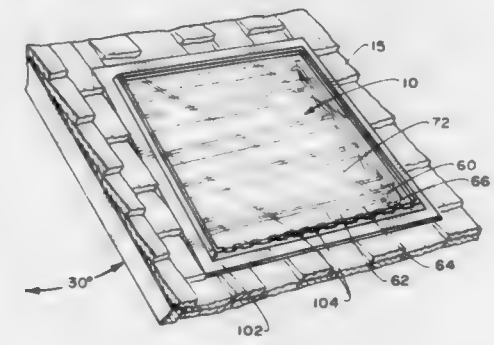
pressure means operatively connected to said phase change and vapor conveying means for maintaining the pressure therein at essentially the same level and for reducing said pressure to induce the phase change in the first liquid.

4,406,749

SOLAR WATER DISTILLATION APPARATUS

David B. Wetzel, 1722 Thurston Dr., Laguna Beach, Calif. 92651

Filed Feb. 23, 1982, Ser. No. 351,644
Int. Cl.³ B01D *3/00*
U.S. Cl. 202—234 **8 Claims**



1. A solar water distillation apparatus comprising:

first means for providing energy to said apparatus solely from the sun;

second means for operating and for maintaining operation of said apparatus during periods of reduced solar emission, said second means comprises:

a housing having a bottom wall, said bottom wall having a peripheral edge, an enclosing side wall assembly attached to said bottom wall at said peripheral edge, said side wall assembly extending a predetermined distance from said bottom wall, said bottom wall being formed into a plurality of troughs located in a side-by-side relationship, conduit means connecting said troughs, said conduit means being formed within said bottom wall, said side wall assembly and said bottom wall defining an internal chamber, said side wall assembly having a pair of opposite walls known as a front wall and a back wall, said internal chamber being adapted to contain a quantity of water;

an inlet assembly connected to said housing, said inlet assembly for supplying water into said internal chamber, said water to substantially fill each said trough and flow from one said trough to another said trough through said conduit means;

a lid mounted on said housing closing to the ambient said internal chamber, said lid being transparent;

a distilled water outlet assembly attached to said housing, solar heat energy within said internal chamber causes distilling of the water contained therein which condenses into droplets on said lid which then moves along the surface of said lid to be deposited at said distilled water outlet assembly to then be discharged to a collecting container located exteriorly of said housing; and

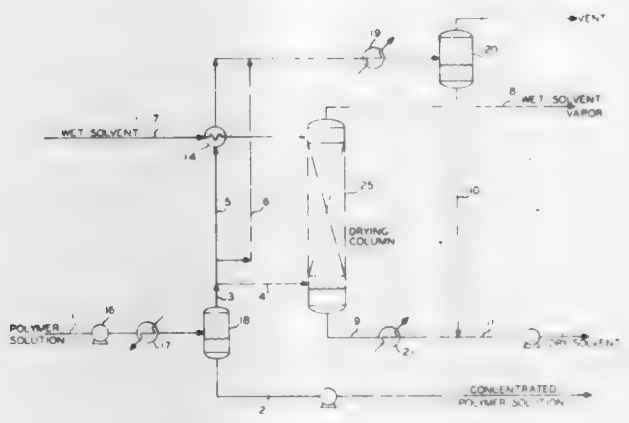
heat accumulating chambers mounted within said housing located exteriorly of said troughs and being closed by wall structure therebetween, there being a single heat absorbing chamber located between each directly adjacent pair of troughs, whereby said heat absorbing chambers are to function as heat capacitance means to retain heat energy within said internal chamber.

4,406,750

SOLVENT REMOVAL FROM POLYMER SOLUTION UTILIZING FLASHED VAPOR AS A HEAT SOURCE

Howard B. Irvin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 29, 1981, Ser. No. 306,802
Int. Cl.³ B01D *1/14, 3/06;* C08F *6/10*
U.S. Cl. 203—22 6 Claims



1. A process for the flash separation of solvent from a polymer solution and drying of a wet solvent with flashed solvent which comprises the steps of:

(a) passing a polymer solution to a flash zone and therein subjecting same to flashing conditions such that solvent vapor is flashed overhead and a solution concentrated in polymer is removed as bottoms,

(b) dividing the flashed solvent vapor in (a) into at least two portions,

(c) introducing a first portion of said flashed solvent vapor as stripping medium into a lower portion of a stripping zone,

(d) passing a wet solvent feed to an upper portion of said stripping zone and contacting same with said stripping medium under conditions such that wet solvent vapor is removed overhead and dry solvent liquid is removed as bottom s from said stripping zone, and

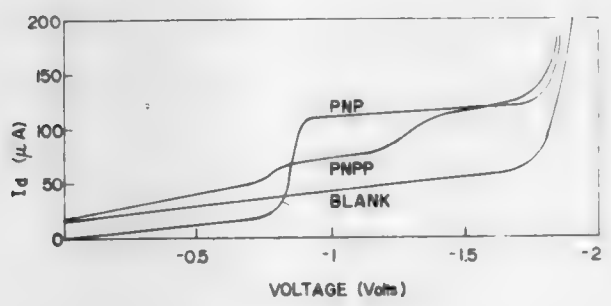
(e) passing a second portion of said flashed solvent vapor in indirect heat exchange with the wet solvent feed being passed to said stripping zone to preheat the feed to the stripping zone.

4,406,751

ELECTROCHEMICAL DETERMINATION OF ORTHOPHOSPHORIC MONOESTER PHOSPHOHYDROLASE ACTIVITY (EC 3.1.3.1 AND EC 3.1.3.2: ALKALINE AND ACID PHOSPHATASES)

Karl G. Blass, 148 Cardinal Crescent, Regina, Saskatchewan, Canada, and Chung-Shun Ho, 2H, Shek Kip Mei St., 2/F, Flt A, Shamshuipo, K1n, Hong Kong

Filed Aug. 11, 1982, Ser. No. 333,573
Int. Cl.³ G01N *27/56;* C12Q *1/42*
U.S. Cl. 204—1 T 2 Claims



1. A process for electrochemically measuring phosphatase activity in a biological fluid sample, comprising incubating the sample with an aromaic phosphate ester reagent containing a nitro group and monitoring at electrodes arranged in the sample the current produced in inaubation reaction.

4,406,752

ELECTROWINNING OF NOBLE METALS

Joseph L. Weininger, and Bang M. Kim, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 320,252, Nov. 12, 1981. This application Nov. 29, 1982, Ser. No. 444,931
Int. Cl.³ C25B *1/07*
U.S. Cl. 204—3 4 Claims

1. A method for electrowinning of noble metals comprising:

passing a solution containing noble metals through an electrolytic cell having an anode and cathode, the cathode of which comprises a carbon fiber mass;

simultaneously applying a direct current voltage between said anode and cathode, the negative polarity of said voltage being applied to said cathode, so as to deposit said dissolved metal on said carbon fiber cathode;

removing said fiber mass from said cell; and

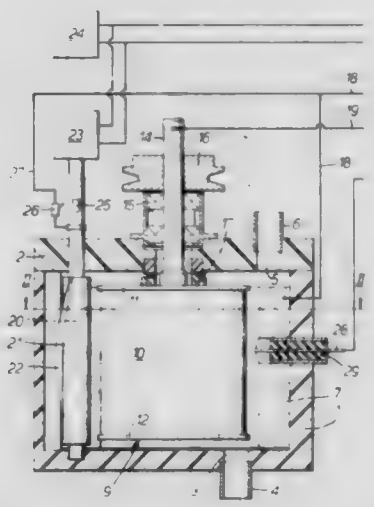
heating said plated fiber mass to a temperature sufficient to burn off said carbon fibers.

4,406,753

ELECTROLYTIC METAL RECOVERY CELL AND OPERATION THEREOF

Colin C. Blake, Rochford, and Charles C. O. Goodall, Ilford, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Jan. 10, 1983, Ser. No. 456,872
Claims priority, application United Kingdom, Jan. 19, 1982, 8201367; Mar. 11, 1982, 8207061
Int. Cl.³ C25D *1/20, 17/12*
U.S. Cl. 204—10 10 Claims



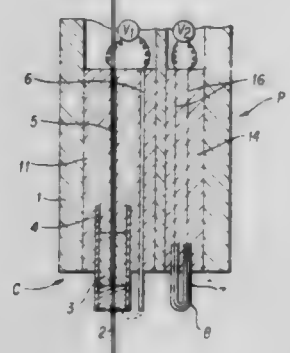
7. A method of controlling the operation of an electrolytic metal recovery cell, comprising the steps of contacting a rotating cylinder cathode with a solution comprising ions of the metal to be recovered under conditions such as to result in the electrodeposition of the metal on the rotating cathode in powder form, monitoring a desired value of cathode potential with respect to a reference potential, operating cutter means to remove metal deposited over the whole face of the cathode at predetermined time intervals irrespective of the cathode potential, and generating an overriding signal to operate said cutter means when the monitored cathode potential deviates a predetermined amount from said desired values.

4,406,754

METHOD AND PROBE FOR THE RAPID DETERMINATION OF SULFUR LEVEL

Kiichi Narita; Toshio Onoye, and Akira Egami, all of Kobe, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Mar. 24, 1981, Ser. No. 246,944
Claims priority, application Japan, Mar. 28, 1980, 55-41090; Dec. 10, 1980, 55-174249
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—1 T 23 Claims



1. A method for the rapid determination of a sulfur level in material which comprises contacting a sulfur-containing material, to be measured, serving as a counter electrode, with a sulfide solid electrolyte comprising CaS and 0.4–3.5% by wt. of TiS_2, said sulfide solid electrolyte being in contact with a reference electrode made of a material having a certain sulfur potential, to form a cell, measuring the electromotive force generated between the reference and counter electrodes, measuring the working temperature of the counter electrode, and calculating a sulfur level from the two parameters of the electromotive force and working temperature.

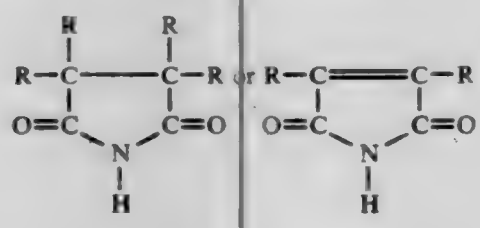
4,406,755

BRIGHT PALLADIUM ELECTRODEPOSITION

Ronald J. Morrissey, Cranston, R.I., assignor to Technic Inc., Providence, R.I.

Filed Mar. 8, 1982, Ser. No. 355,334
Int. Cl.³ C25D *3/50*
U.S. Cl. 204—47 12 Claims

1. A palladium electroplating solution of pH from about 3–7 containing palladium in the form of a soluble organopalladium complex of an inorganic palladium salt and an organic polyamine complexing agent having from 2 to about 8 carbon atoms and from 2 to about 5 amino groups; said solution being an aqueous solution; and said solution containing from 1 to about 50 grams per liter of a cyclic organic imide of formula



in which each R is independently selected from the group consisting of hydrogen, alkyl of 1–5 carbon atoms; and alkoxy of 1–5 carbon atoms; and said solution also containing about 0.005–1 gram per liter of at least one nitrogen-containing organic heterocyclic compound at least one nitrogen of which is incorporated into a six-membered ring.

4,406,756

HARD CHROMIUM PLATING FROM HEXAVALENT PLATING BATH

Anthony D. Baranyi, Mississauga, Canada, assignor to Canadian Corporate Management Company Limited, Mississauga, Canada

Filed Jul. 13, 1981, Ser. No. 282,522
Int. Cl.³ C25D *3/10*
U.S. Cl. 204—51 25 Claims

1. A chromium plating bath comprising an electrically-conductive acidic aqueous solution containing dissolved therein hexavalent (VI) chromium and a source of sulfate ion in a weight ratio of hexavalent chromium (calculated as CrO_3) to sulfate ion (calculated as H_2SO_4) of from about 50:1 to about 200:1, the bath being electrolytically decomposable on passage of an electric current therethrough to plate out a hard metallic chromium deposit at the cathode, said bath being a substantially wholly aqueous solution and being substantially free of metal so-depositable with chromium and having dissolved therein a minor effective amount of up to about 15 g/l of an organic bath efficiency-improving additive selected from the group consisting of: lower alkyl aminoacids; di(lower alkyl)-formamides; di(lower alkyl)sulfoxides; and mixtures thereof, wherein the lower alkyl groups contain from 1 to 3 carbons.

4,406,757

ANODIZATION METHOD

Jen-chi Huang, Ossining, N.Y., assignor to Polychrome Corporation, Yonkers, N.Y.

Continuation-in-part of Ser. No. 363,199, Mar. 29, 1982. This application May 19, 1982, Ser. No. 379,590
Int. Cl.³ C25D *11/04, 11/02;* B41N *1/08*
U.S. Cl. 204—58 4 Claims

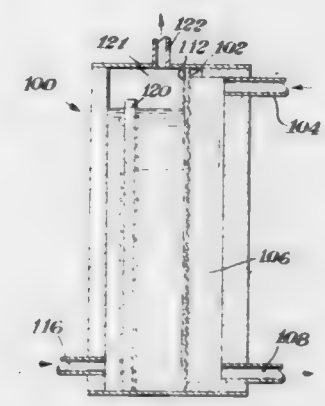
1. In a process for electrochemically anodizing a lithographic-grade aluminum web, the improvement which comprises contacting said aluminum web with a sulfuric acid electrolyte in the presence of an anode consisting essentially of iridium oxide uniformly coated over a titanium metal substrate, at a direct current density of less than 400 amps/square foot.

4,406,758

METHOD OF OPERATING A LIQUID-GAS ELECTROCHEMICAL CELL

James A. McIntyre, and Robert F. Phillips, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 18, 1982, Ser. No. 349,891
Int. Cl.³ C25B *1/46, 1/30*
U.S. Cl. 204—98 9 Claims



1. A method for electrochemically reacting a liquid with a gas in an electrochemical cell of the type having at least two electrodes separated by a liquid permeable separator; at least one of said electrodes supporting said separator and being porous and self-draining, said method comprising:

(a) flowing a gas into at least a portion of the pores of the self-draining electrode;

(b) controllably flowing the liquid through said separator

and into the self-draining electrode at a rate about equal to the drainage rate of the electrode and in a quantity sufficient to fill only a portion of the electrode pores;

(c) electrochemically reacting the liquid with the gas to form at least one nonvolatile product; and

(d) removing the electrochemical products from said self-draining electrode.

4,406,759

METHOD AND APPARATUS FOR RESHARPENING CUTTING TOOLS BY ELECTROPOLISHING PROCESS

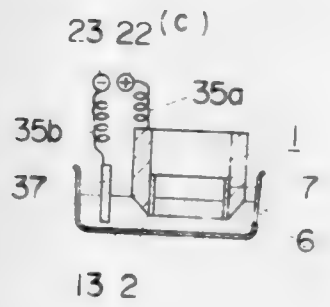
Joichi Saitoh, Hotarugaike-higashi, Japan, assignor to Kotobuki Seihan Printing Co., Ltd., Osaka, Japan

Division of Ser. No. 206,081, Nov. 12, 1981, Pat. No. 4,331,515. This application Oct. 20, 1981, Ser. No. 313,179

Claims priority, application Japan, Nov. 22, 1979, 54-151644; Jun. 9, 1980, 55-77531

Int. Cl.³ C25F *3/00, 3/14*

U.S. Cl. 204—129.55 **3 Claims**



1. A method of resharpening cutting tools by electro-polishing process, comprising the steps of forming a protective film on a non-polished surface of an edge of the tool, immersing said edge in an electrolytic solution, applying a DC voltage between said tool serving as an anode and a cathode, which is immersed in said electrolytic solution, for a predetermined time to thereby polish said edge by dissolving and removing said protective film.

4,406,760

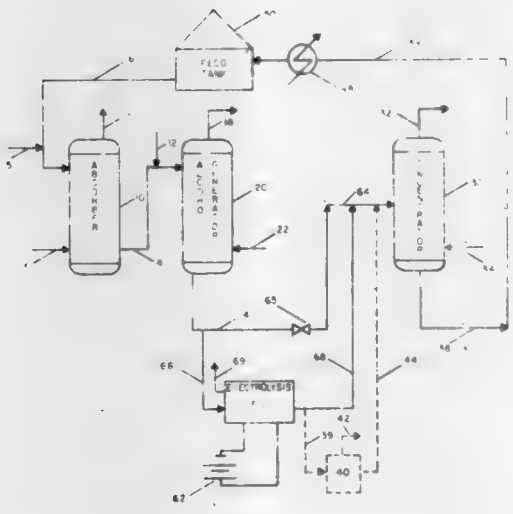
ELECTROLYTIC PROCESS FOR TREATING SULFURIC ACID STREAMS

George A. Knudsen, Scotch Plains, and Charles Savini, Warren, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 25, 1981, Ser. No. 325,002

Int. Cl.³ C25B *3/02*

U.S. Cl. 204—130 **7 Claims**



1. An improved process for preparing alcohols which comprises:

(a) absorbing an olefin in an absorbing zone with an aqueous concentrated sulfuric acid solution to form an alkyl ester of the sulfuric acid corresponding to said olefin;

(b) recovering a liquid stream from said absorbing zone containing said sulfuric acid alkyl ester and contacting said recovered liquid with water for liberation of the corresponding alcohol;

(c) passing the resulting diluted liquid to an alcohol generation zone for recovery of said alcohol as a vaporous product, thereby forming a spent sulfuric acid stream containing from about 40 to 55 wt. % sulfuric acid and at least about 500 ppm by weight of organo-sulfuric acid impurities;

(d) passing at least a portion of said spent acid to an electrolysis zone and subjecting the acid therein to conditions sufficient to electrolytically oxidize at least a portion of said organo-sulfonic acid impurities to form electrolysis products therefrom; and

(e) passing the resulting electrolytically treated spent sulfuric acid, in combination with the remaining portion of the spent sulfuric acid not treated in the electrolysis zone, to an acid-concentrator wherein aqueous vapors are removed to form a concentrated sulfuric acid solution of enhanced thermal stability suitable for recycle to the absorbing zone.

4,406,761

METHOD OF DESCALING METAL SHEETS

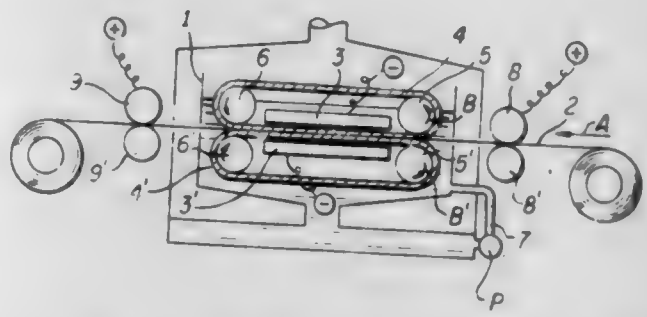
Kazutoshi Shimogori, Kobe; Kazuichi Kajiwara, Kakogawa; Kenji Miki, Himeji, and Toshio Fukutsuka, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Apr. 24, 1981, Ser. No. 257,096

Claims priority, application Japan, May 1, 1980, 55-58879; Feb. 10, 1981, 56-18710

Int. Cl.³ C25F *1/04, 7/00*

U.S. Cl. 204—144.5 **7 Claims**



1. A method of descaling metal sheets which comprises carrying out anodic electrolysis using a metal sheet as the anode while sliding a nonconducting abrasive means relatively to and on the surface of said metal sheet in an electrolytic solution selected from the group consisting of hydrobromic, hydroiodic, hydrochloric, sulfuric or nitric acid or a mixture therof, and a neutral salt thereof and at an anodic current density above 4 A/dm^2.

4,406,762

ELECTRON BEAM COAL DESULFURIZATION

Asim B. Ray, and Paul L. Feldman, both of Bridgewater, N.J., assignors to Research-Cottrell, Inc., Somerville, N.J.

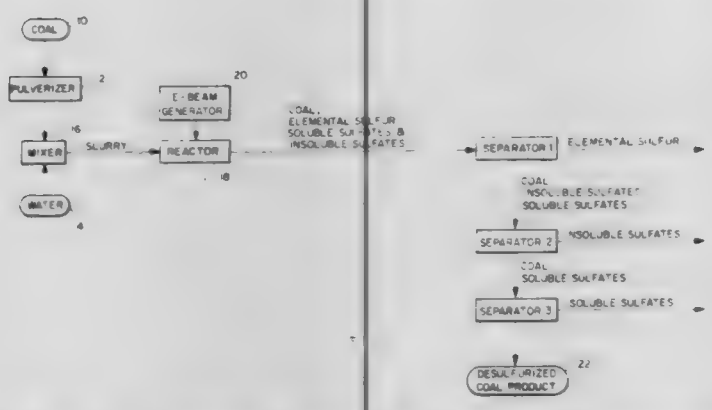
Filed Jan. 19, 1982, Ser. No. 340,761

Int. Cl.³ B01J *19/12*

U.S. Cl. 204—157.1 H **8 Claims**

1. A process for removing organic and inorganic sulfur

compounds from coal comprising slurrying pulverized coal in water, irradiating the slurry with an electron beam to convert



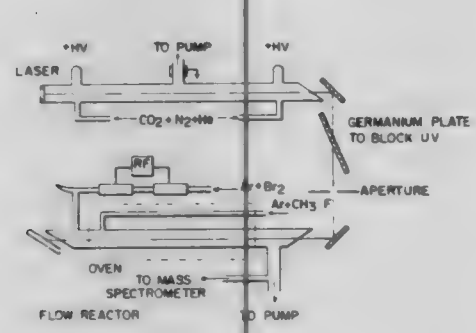
the sulfur to removable forms, and removing the removable forms of sulfur from the coal slurry.

4,406,763

SEPARATION OF CARBON ISOTOPES

David S. Y. Hsu, Clinton, and Thomas J. Manuccia, Jr., Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 3, 1981, Ser. No. 250,997
Int. Cl.³ C01B *31/00*; B01D *59/00*
U.S. Cl. 204—158 HA **10 Claims**



1. A method for separating carbon isotopes which comprises:

mixing the two isotopic species of methyl fluoride, bromine atoms, and a deactivating gas;

irradiating at a saturating level flux with a laser tuned to an absorption band of one of said isotopic species of methyl fluoride, thereby vibrationally exciting said absorbing species;

reacting methyl fluoride with bromine, whereby absorbing species reacts at a faster rate than said nonabsorbing species; and

separating the products.

4,406,764

PHOTO-CURABLE EPOXY RESIN COMPOSITION WITH ORGANIC ALUMINUM AND α-KETOSILYL COMPOUNDS

Syuzi Hayase, Yokohama, and Takeo Ito, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 22, 1982, Ser. No. 341,827
Claims priority, application Japan, Jan. 27, 1981, 56-9670
Int. Cl.³ C08F *2/50*; C08G *59/68*
U.S. Cl. 204—159.11 **13 Claims**

1. A photo-curable epoxy resin composition comprising:

an epoxy resin; and

a catalytic component comprising:

an organic aluminum compound, and

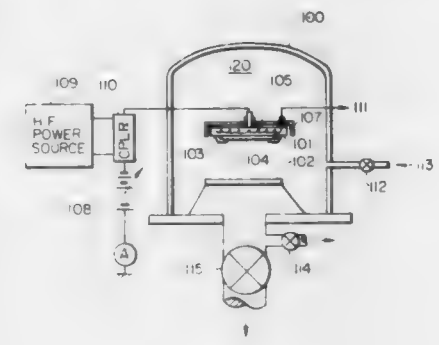
an alpha-ketosilyl compound, whereby the composition is curable upon exposure to light to produce a cured product free from ionic impurities.

4,406,765

APPARATUS AND PROCESS FOR PRODUCTION OF AMORPHOUS SEMICONDUCTOR

Akio Higashi; Kazuhiro Kawaziri, and Jin Murayama, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 16, 1980, Ser. No. 222,168
Claims priority, application Japan, Jan. 28, 1980, 55-9102
Int. Cl.³ H01L *21/316*; C23C *11/00*; C01B *33/02*
U.S. Cl. 204—164 **8 Claims**



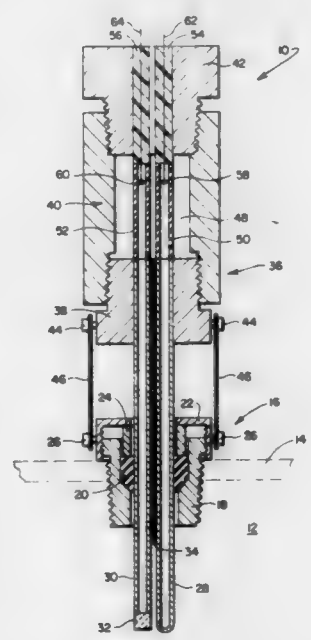
1. A process for producing an amorphous semiconductor comprising the steps of: introducing a predetermined gas into a vacuum chamber and causing a discharge phenomenon by applying an electric field to decompose said gas, said electric field comprising a DC electric field superposed on one of a high frequency electric field and a pulsed electric field having a pulse width in a range of from about 10^{-10} sec. to about 10^{-3} sec. and a pulse cycle time in the ranges of from about 10^{-9} sec. to about 10^{-1} sec.

4,406,766

APPARATUS FOR MEASURING THE pH OF A LIQUID

Digby D. Macdonald, Columbus, Ohio, assignor to The Ohio State University, Columbus, Ohio

Filed Oct. 13, 1981, Ser. No. 310,515
Int. Cl.³ G01N *27/30*
U.S. Cl. 204—433 **12 Claims**



1. Apparatus for measuring the pH of a liquid at high temperatures and pressures, said apparatus comprising:

a hollow first electrode formed at least in part of a ceramic capable of exhibiting a pH-dependent potential thereacross;

a hollow second electrode, at least part of the surface of said second electrode being porous;

a first flexible-walled member having walls defining a first chamber therewithin, said first chamber communicating with the interior of said hollow first electrode but being otherwise fluid-tight;

a second flexible-walled member having walls defining a second chamber therewithin, said second chamber communicating with the interior of said hollow second electrode but being otherwise fluid-tight;

first and second measuring electrodes disposed within said first and second chambers respectively;

walls defining a third chamber enclosing said first and second flexible-walled members;

pressure equalizing means for substantially equalizing the pressure of a medium surrounding the exterior surfaces of said first and second hollow electrodes and the pressure in said third chamber; and

thermal insulating means for thermally insulating a medium surrounding said first and second flexible-walled members from the temperature of said medium surrounding said hollow first and second electrodes.

4,406,767

ANODE HOODING SYSTEM FOR A FUSED SALT ELECTROLYTIC CELL

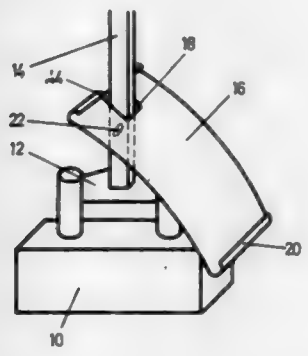
Werner K. Fischer, Venthone, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed May 10, 1982, Ser. No. 376,413

Claims priority, application Switzerland, May 20, 1981, 3288/81

Int. Cl.³ C25C *3/22*

U.S. Cl. 204—247 **15 Claims**



1. A system for hooding an electrolytic cell used in the production of aluminum having at least one anode rod for supporting at least one anode comprising at least two cams projecting from opposite sides of said anode rod in directions substantially parallel to the floor of said cell and a rectangular aluminum hood having a cut-out opening in its upper region for receiving said anode rod with some play wherein said hood rests on said cams.

4,406,768

ELECTROCHEMICAL CELL ASSEMBLY

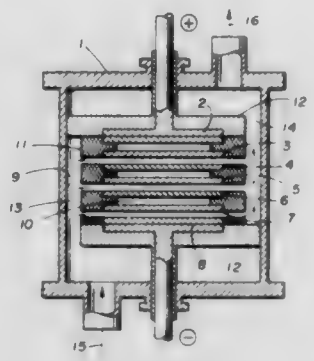
Christopher J. H. King, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 24, 1981, Ser. No. 334,335

Int. Cl.³ C25B *9/00, 15/08*

U.S. Cl. 204—268 **4 Claims**

1. An electrochemical cell assembly comprising a cylindrical electrolytic chamber having interior peripheral walls, a plurality of stacked bi-polar substantially square parallel planar electrodes so arranged within the chamber that the corners and edges of the electrodes in juxtaposition with the interior peripheral walls of the chamber define four electrolyte circulation manifolds, means for applying a direct current across the stack of electrodes, means for introducing electrolyte at one end of the chamber, means for introducing electrolyte into at least one and not more than two of the manifolds, means for withdrawing the electrolyte from at least one other manifold, means for exiting the electrolyte at the other end of the cylinder, and channelling and insulative spacer means comprising at



least two spacers between and along the edges of each pair of adjacent electrodes so disposed as to provide full-length, mono-directional electrolyte channels across the interfaces of adjacent electrodes.

4,406,769

ELECTRODE EDGE PROTECTOR, ELECTRODE PROVIDED WITH SUCH PROTECTOR AND ELECTRODEPOSITS AND/OR PRODUCTS OF ELECTROLYSIS MANUFACTURED BY EMPLOYING SUCH ELECTRODES

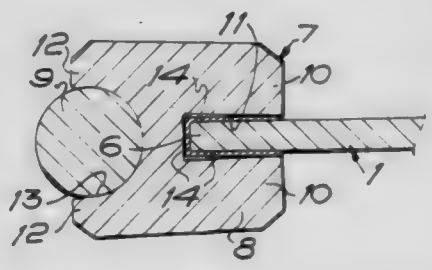
Peter Berger, The Old Vicarage, Gringley-on-the-Hill, Doncaster DN10 4RF, England

Filed Jul. 6, 1981, Ser. No. 280,466

Claims priority, application United Kingdom, Jul. 26, 1980, 8024541

Int. Cl.³ C25D *1/00*

U.S. Cl. 204—281 **14 Claims**

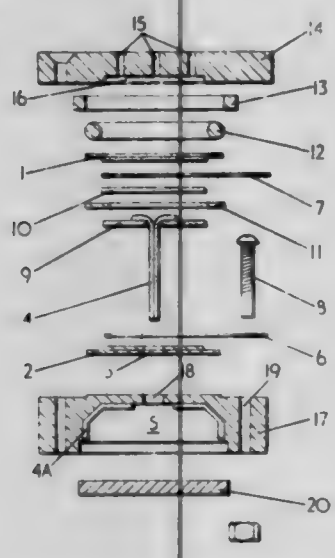


1. An edge protector for an electrode, said edge protector comprising first and second elongate elements, both said elements being made of a rigid material which is firstly electrically insulating and secondly is chemically and thermally stable in the intended process environment of said electrode, said first element having a generally 'H'-shaped cross-section so as to define open slots on opposite sides thereof, one said slot profiled generally as a circular segment greater than a semicircle and defined between a pair of outer jaws and the other said slot defined between a pair of inner jaws, with an edge of an electrode being insertable into and located within said inner jaws, and said second element being constituted by a member of circular cross-section dimensioned and shaped for interference snap fitting engagement with said outer jaws whereby said outer jaws are forced further apart with the result that said outer jaws endeavor to close said inner jaws which are levered towards one another, thereby to exert a substantially uniform pressure upon said surface of said electrode when located within said inner jaws to form a seal to prevent electrolyte from wetting said edge of said electrode located within said inner jaws.

4,406,770
GAS SENSOR

Yat S. Chan, London; Anthony D. S. Tantram, Great Bookham; Bryan S. Hobbs, Chertsey, and John R. Finbow, Kempston, all of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Feb. 1, 1982, Ser. No. 344,787
Claims priority, application United Kingdom, Feb. 3, 1981, 8103258
Int. Cl.³ G01N 27/54
U.S. Cl. 204—406 17 Claims



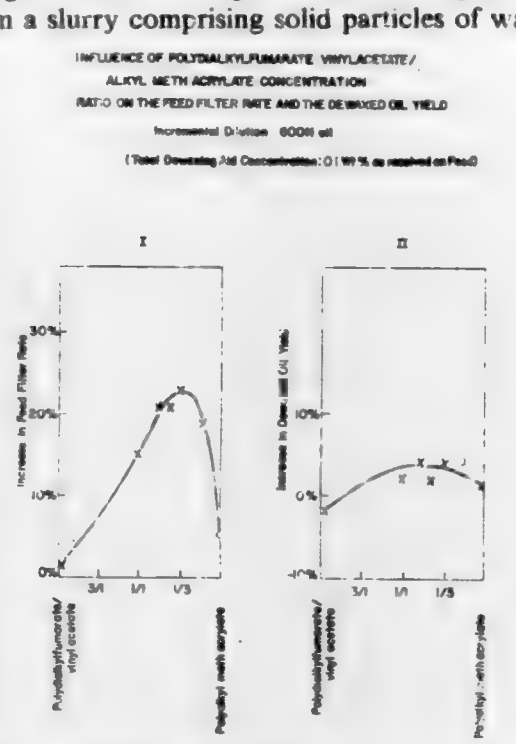
1. A planar electrochemical cell gas sensor comprising
a first planar (sensing) electrode,
a first plastics housing part having a diffusion barrier capable of permitting a gaseous atmosphere to be sensed to diffuse to contact said first planar (sensing) electrode.
a second plastics housing part having an electrolyte chamber formed therein,
a second planar (counter) electrode carried on a planar support, said support having a hole or slit therein,
a planar hydrophilic non-conducting porous separator interposed between said first and second electrodes and in contact therewith, and
a hydrophilic non-conducting porous wick in contact with said separator, said wick passing through said opening in said counter electrode and said hole or slit in said planar support and extending into said electrolyte chamber,
said electrolyte chamber being partially filled with an electrolyte that contacts said wick and provides an electrolytic connection between the sensing and counter electrodes in all orientations of the sensor.

4,406,771
SOLVENT DEWAXING WAXY HYDROCARBON OIL DISTILLATES USING A COMBINATION POLY DI-ALKYL FUMARATE-VINYL ACETATE COPOLYMER HAVING PENDENT CARBON SIDE CHAIN LENGTH OF PREDOMINANTLY C_{22} AND POLYALKYL(METH-)ACRYLATE POLYMER DEWAXING AID

Cedric L. Briens, Richmond, and Bruce M. Sankey, Sarnia, both of Canada, assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Sep. 29, 1982, Ser. No. 426,680
Int. Cl.³ C10G 73/04
U.S. Cl. 208—33 13 Claims

1. A solvent dewaxing process comprising mixing a waxy hydrocarbon oil distillate with dewaxing solvent and a dewaxing aid wherein said dewaxing aid comprises a mixture of:
A. poly alkyl (meth-) acrylate polymer; and
B. polydialkylfumarate/vinyl acetate copolymer wherein the pendent alkyl side chain groups are of from 16–30 carbons in length but are predominantly C_{22}; and
C. chilling said oil/dewaxing solvent/dewaxing aid mixture to form a slurry comprising solid particles of wax and a

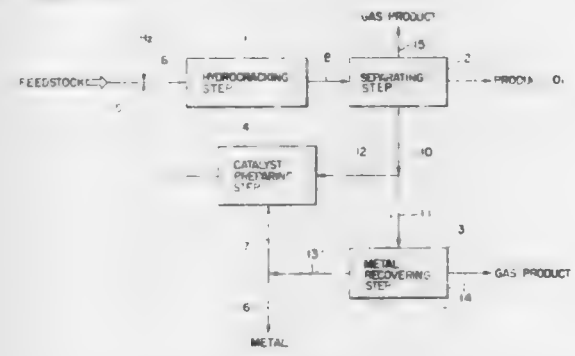


solution of dewaxed oil and dewaxing solvent and separating said wax from said dewaxed oil solution.

4,406,772
HYDROCONVERSION OF HEAVY HYDROCARBON OILS

Yoshiyuki Sasaki, Yatabe; Etsuro Nakamura, Ushiku; Yoshimoto Ojima, Nagareyama; Teruo Kondo, Tsuchiura; Koji Ukegawa, Sakura, and Akimitsu Matsumura, Noda, all of Japan, assignors to Director-General of Agency of Industrial Science & Technology, Tokyo, Japan

Filed Jun. 11, 1982, Ser. No. 387,478
Claims priority, application Japan, Jun. 17, 1981, 56-93249
Int. Cl.³ C10G 47/10, 45/04
U.S. Cl. 208—112 5 Claims



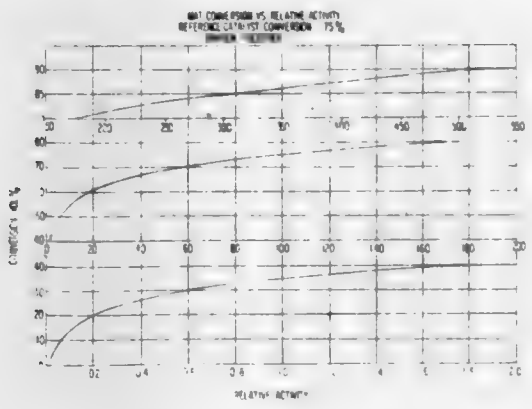
1. A process for the hydroconversion of a heavy hydrocarbon oil, comprising the steps of:
reacting the heavy hydrocarbon oil with hydrogen in the presence of a catalyst to obtain a hydrocracked product including a coke on which are deposited metals contained in the heavy hydrocarbon oil and coke-forming components;
separating gaseous and liquid products from the hydrocracked product, leaving a residue containing said metals-containing coke;
dividing said residue into a first portion and a second portion;
subjecting said second residue portion to a metal recovery treatment to recover metal components;
mixing at least a part of said recovered metal components with said first residue portion;
pulverizing said mixture so that the solids matters in said mixture have particle sizes in the range of 20–200μ; and
recycling said pulverized mixture to said reacting step as said catalyst.

4,406,773

MAGNETIC SEPARATION OF HIGH ACTIVITY CATALYST FROM LOW ACTIVITY CATALYST

William P. Hettinger, Jr., Russell, and Roger M. Benslay, Catlettsburg, both of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed May 13, 1981, Ser. No. 263,396
Int. Cl.³ C10G *11/05*
U.S. Cl. 208—120 60 Claims



1. A process for economically converting carbo-metallic oils to lighter products in a system comprising a progressive-flow reactor and a catalyst regenerator comprising:

a. providing a converteer feed containing 650° F.+ material, said 650° F.+ material being characterized by a carbon residue on pyrolysis of at least about 1 and by containing at least about 4 parts per million of Nickel Equivalents of heavy metal(s);

b. bringing said converter feed together with particulate cracking catalyst to form a stream comprising a suspension of said catalyst in said feed and causing the resultant stream to flow through a progressive flow type reactor having an elongated reaction chamber which is at least in part vertical or inclined for a predetermind vapor riser residence time in the range of about 0.5 to about 10 seconds at a temperature of about 900° to about 1400° F. and under a pressure of about 10 to about 50 pounds per square inch absolute sufficient for causing a conversion pass in the range of about 50% to about 90% while producing coke in amounts in the range of about 6 to about 14% by weight based on fresh feed, and laying down coke on the catalyst in amounts in the range of about 0.3 to about 3% by weight.

c. separating spent, coke-laden catalyst from the stream of hydrocarbons formed by vaporized feed and resultant cracking products;

d. maintaining, in one or more regeneration zones, one or more fluidized catalyst regeneration beds comprising spent catalyst undergoing regeneration by combustion of the coke with oxygen on the spent catalyst, and supplying additional spent catalyst to one or more of such fluidized regeneration bed or beds;

e. retaining said catalyst particles in said regeneration zone or zones in contact with a flow of said combustion-supporting gas under conditions of temperature, atmosphere and average total residence time in said zone or zones in the range of about 5 to about 30 minutes sufficient for combustion of the coke on the catalyst and for reducing the level of carbon on the catalyst to about 0.25% by weight or less, while forming gaseous combustion product gases comprising CO and/or CO_2;

f. recycling the regenerated catalyst to the reactor for contact with fresh feed;

g. withdrawing a portion of the catalyst from the cycle said catalyst having a spectrum of activities including catalyst particles of relatively high activity and catalyst particles of relatively low activity; and

h. passing the withdrawn portion of catalyst through at least one magnetic field having sufficient strength to trap at least a first portion of the catalyst while permitting at least a second portion of said withdrawn catalyst to leave the magnetic field, whereby the second portion of said catalyst is lower in metals contamination and higher in catalytic activity than is the average of said withdrawn catalyst.

4,406,774

DEHYDRATION OF HYDROCARBONS

Donald R. Cummings, Cheltenham, and Colin W. Braathen, Borehamwood, both of England, assignors to Dut Pty Limited, Sydney, Australia

Continuation of Ser. No. 54,418, Jul. 3, 1979, abandoned. This application Jan. 16, 1981, Ser. No. 225,517
Claims priority, application United Kingdom, Jul. 17, 1978, 30086/78
Int. Cl.³ C10G *33/04, 21/00*
U.S. Cl. 208—130 18 Claims

1. In a method of removing water dissolved or dispersed in a hydrocarbon feedstock by intimately mixing said hydrocarbon feedstock with a polar organic solvent which is very soluble in water, cooling the mixture whereby the water dissolved or dispersed in said hydrocarbon feedstock is absorbed preferentially in said solvent and a hydrocarbon phase and a solvent-containing aqueous phase are formed, and separating said phases, the improvement in which

the hydrocarbon feedstock is selected from light hydrocarbons and mixtures of light hydrocarbons, said hydrocarbon feedstock is mixed in the liquid state with the solvent and the solvent comprises methanol which is employed in the form of an aqueous solution thereof having a methanol concentration no greater than 60% by weight and which solution is substantially insoluble in said hydrocarbon feedstock and has freezing point below the temperature to which the mixture is cooled, said solvent being employed in an amount such that the water content of the aqueous phase after cooling does not exceed that of said solvent by more than 20% by weight, said cooling of said mixture is to a temperature of −20°C to −60°C, and

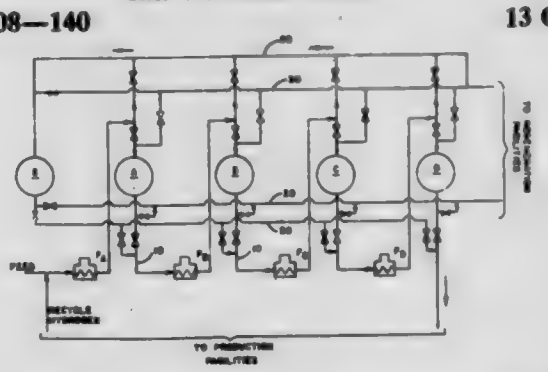
at least a part of the aqueous phase separated from the hydrocarbon phase after cooling is recycled to provide the aqueous solution to be mixed with fresh hydrocarbon feedstock, and the volume and methanol concentration of the liquor being recycled are each continuously or intermittently restored toward that of the aqueous solution initially employed without distillation by withdrawing a portion of said liquor as a bleedstream and by adding methanol to said recycling stream.

4,406,775

CATALYST REGENERATION PROCESS

James P. Bailor, Denville, and Louis S. Dauber, Cranford, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Feb. 1, 1982, Ser. No. 344,877
Int. Cl.³ B01J *23/90*
U.S. Cl. 208—140 13 Claims



1. In a process for reforming, with hydrogen, a naphtha feed which is contacted at reforming conditions in a reforming unit constituted a plurality of on-stream reactors connected in series, each of which contains a noble metal catalyst which is deactivated by coke which is deposited on the catalyst such that each reactor must be periodically isolated from the other on-stream reactors of the series and the catalyst thereof regenerated by burning the coke from the catalyst at controlled

conditions, this constituting an initial phase of catalyst reactivation,

the improvement comprising

establishing a gas regeneration system which includes separate, interconnected primary and secondary regeneration gas circuits in which gas is circulated from one circuit to another,

(i) the primary regeneration gas circuit containing, in series, a preheat gas furnace, the isolated reactor which contains said deactivated, coked catalyst, and a steam boiler,

(ii) the secondary circuit containing a regeneration gas scrubber, and

regeneration gas compression means for circulating the gas in the circuits,

withdrawing gas from said secondary circuit and passing said gas through the preheat gas furnace to preheat the gas, passing the preheated gas to the isolated reactor and contacting said preheated gas with said catalyst to burn the coke from the catalyst, passing the flue gas from the coke burn through the steam boiler, cooling the flue gas without the occurrence of condensation, and then passing cooled flue gas into the secondary circuit,

countercurrently contacting the flue gas within the secondary circuit with cooling water to condense out the combustion water, and water desorbed from the catalyst, and scrub out the hydrogen chloride, while reducing the temperature of the flue gas, drawing off the condensate from the scrubber, and

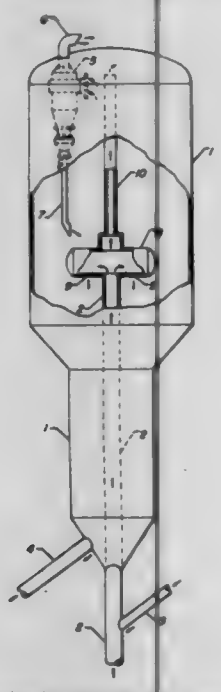
injecting makeup gas into said gas regeneration system to prevent moisture levels from exceeding an amount which would produce corrosion within the system.

4,406,776

FLUIDIZED CATALYTIC CRACKING PROCESS AND APPARATUS

Charles W. Strother, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 25, 1982, Ser. No. 411,215
Int. Cl.[3] C10G *11/18*
U.S. Cl. 208—153 3 Claims



1. A fluidized catalytic cracking process which is performed within a reaction vessel to reduce coke deposits within said vessel and which comprises the steps of:

(a) passing a feed stream comprising hydrocarbonaceous compounds having boiling points above 350° F. upward through a riser reaction conduit in contact with a particulate cracking catalyst to form a reaction product stream of hydrocarbon vapors and fluidized catalyst particles;

(b) passing said reaction product stream at the uppermost section of said riser reaction conduit to a flow diversion device to form at least two streams, each having substantially equal concentrations of fluidized catalyst therein;

(c) passing a first stream obtained in the separation of the reaction product stream in a downward direction with respect to the direction of passage through said riser reaction conduit, wherein said first stream comprises at least 80 volume percent of the vapors and catalyst discharged from said riser reaction conduit;

(d) passing a second stream obtained in the separation of the reaction product stream upward above said flow diversion device through a vertical vent conduit having axial alignment with said riser reactor conduit and discharging said second stream into the upper portion of said reaction vessel, wherein said second stream comprises from about 2 to about 10 volume percent of said vapors and catalyst discharged from said riser reactor conduit and which possesses a substantially equal concentration of fluidized catalyst as contained in the downward directed stream of step (c), whereby coke deposition on the interior of said upper portion of reactor vessel is reduced;

(e) withdrawing used catalyst from a lower portion of the reaction vessel; and

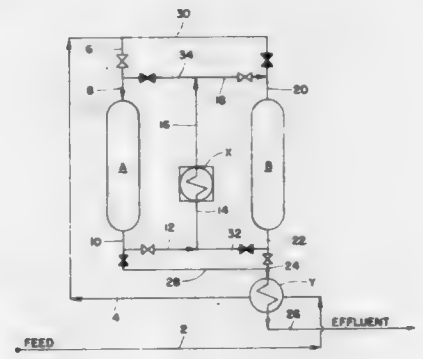
(f) withdrawing a reaction zone effluent stream comprising said hydrocarbon vapors formed in said catalytic cracking of said hydrocarbonaceous compounds in said feed stream from an upper locus of said reaction vessel.

4,406,777

FIXED BED REACTOR OPERATION

Melcon G. Melconian, Princeton, N.J., assignor to Mobil Oil Corporation, N.Y.

Filed Jan. 19, 1982, Ser. No. 340,588
Int. Cl.[3] C10G *51/02*
U.S. Cl. 208—156 10 Claims



1. In a catalytic chemical conversion process of the type wherein a reaction mixture is brought into contact with a quantity of catalyst under reaction conditions effective to obtain a predetermined conversion of said reaction mixture, wherein said catalyst is (a) gradually deactivated during the period of reaction, (b) removed from service when deactivated to a predetermined level, (c) regenerated or replaced and (d) returned to service, wherein the reaction temperature of the reaction mixture is increased to maintain the predetermined conversion during the reaction period from an initial reaction temperature to a final reaction temperature above which either the catalyst activity is below the predetermined level or the predetermined conversion cannot be obtained, the improvement which comprises:

(a) providing the quantity of catalyst in equal amounts in a multiplicity of fixed beds, said multiplicity being n, a whole integer,

(b) passing the reaction mixture under said reaction conditions serially through said multiplicity of said fixed beds, the initial temperature of said first of said fixed beds being said initial reaction temperature and the initial temperature of each succeeding fixed bed being substantially equal to the reaction temperature at the end of a fractional part of the total reaction period when the same reaction mixture is converted at the said predetermined conversion in a single fixed bed containing said quantity of said catalyst, said fractional part being

$$\frac{\text{(the number of said fixed bed in the series)} - 1}{n},$$

(c) adjusting the temperature of the effluent from each fixed bed, except the nth bed, to provide the reaction temperature required in the next succeeding fixed bed,
(d) increasing the reaction temperature in each of said fixed beds to maintain the predetermined conversion until the reaction temperature in the nth fixed bed is substantially equal to said final reaction temperature,
(e) removing said nth fixed bed from service while continuing to pass the reaction mixture through the remaining fixed bed(s),
(f) regenerating or replacing the catalyst to reactivate said nth fixed bed, and
(g) returning said nth fixed bed to service by passing the reaction mixture through said reactivated fixed bed as the first bed in the series of fixed beds and the (n−1)th fixed bed as the last bed in said series.

4,406,778

SPENT OIL RECOVERY PROCESS

Michele Borza, Cremona; Sergio Leoncini, S.Donato Milanese, and Aldo Modenesi, Fiorenzuola D'Arda, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Jun. 11, 1982, Ser. No. 387,611
Claims priority, application Italy, Jul. 7, 1981, 22778 A/81
Int. Cl.³ C10M *11/00*
U.S. Cl. 208—179 **10 Claims**

1. A spent oil recovery process comprising
(a) feeding the spent oil to a predistillation column in order to remove the water and light hydrocarbons from the top of the column;
(b) subjecting the spent oil to thermal treatment;
(c) feeding the predistilled and thermally treated spent oil to an extraction column into which a gas under supercritical conditions is separately fed, in order to dissolve most of the hydrocarbon fraction and leave undissolved the impurities and additives contained in the oil;
(d) feeding the dissolved hydrocarbon fraction of (c) into one or a series of separation columns to separate one or more gas-rich oil fractions from the corresponding oildepleted gas equilibrium fractions;
(e) expanding to the same pressure in separation stages both the undissolved product of (c), thus separating the residue containing hydrocarbons, additives and impurities from the gas used for the extraction, and also the gas-rich oil fraction or fractions of (d), with the exception of that of the single separation column or of the last column in the series of separation columns, thus separating hydrocarbon fractions of different viscosities;
(f) compressing and recycling to the extraction column the gas recovered under (e) and that withdrawn as overhead product from the last separation column;
(g) withdrawing the residue and oil at different viscosities from the separation stages of (e) and from the bottom of the single separation column or from the last column of the series of separation columns.

4,406,779

MULTIPLE CATALYST SYSTEM FOR HYDRODENITROGENATION OF HIGH NITROGEN FEEDS

Albert L. Hensley, Jr., Munster, Ind.; A. Martin Tait, Naperville, Ill.; Jeffrey T. Miller, Naperville, Ill., and Thomas D. Nevitt, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 13, 1981, Ser. No. 320,868
Int. Cl.³ C10G *45/04*
U.S. Cl. 208—254 H **30 Claims**

1. A process for hydrodenitrogenation of high nitrogen content hydrocarbon feeds comprising contacting the feed with hydrogen under hydrodenitrogenation conditions in the presence of a multiple catalyst system comprising a first hydrodenitrogenation catalyst of apparent higher order reaction kinetics and lower rate constant for hydrodenitrogenation and at least one subsequent hydrodenitrogenation catalyst of apparent lower order reaction kinetics and higher rate constant for hydrodenitrogenation, wherein the volume of the first hydrodenitrogenation catalyst in said system is effective to reduce the nitrogen content of the feed to a level at which the instantaneous hydrodenitrogenation reaction rate of at least one aforesaid subsequent hydrodenitrogenation catalyst approximates the instantaneous hydrodenitrogenation reaction rate of the first hydrodenitrogenation catalyst, the remainder of catalyst volume in said system comprising said subsequent hydrodenitrogenation catalyst.

4,406,780

SEPARATION AND OXYGEN-ALKYLATION OF PHENOLS FROM PHENOL-CONTAINING HYDROCARBONACEOUS STREAMS

Kenneth A. Gould, Berkley Heights, and Robert B. Long, Atlantic Highlands, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 18, 1981, Ser. No. 293,968
Int. Cl.³ C07C *37/68*; C10G *17/00*
U.S. Cl. 208—263 **14 Claims**

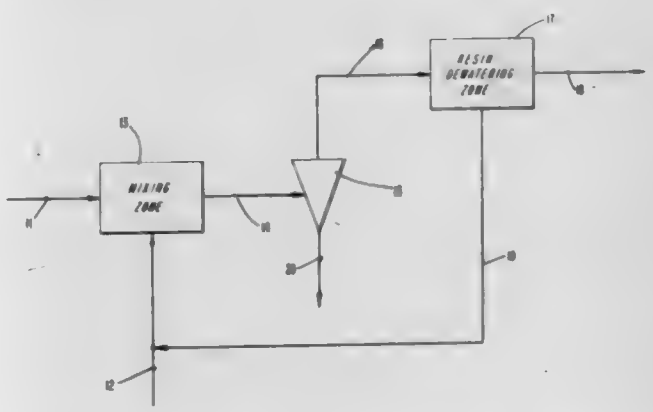
1. A method for removing phenols from phenol-containing coal liquid stream and converting the phenols to ethers, which method comprises:
(a) contacting the coal liquids with (i) one or more C_1 to C_{10} aliphatic, alicyclic, or aromatic-aliphatic alcohols, and (ii) one or more acids capable of protonating the olefin of step (c) below, wherein enough alcohol and acid are employed so that two liquid phases are formed, an alcohol/acid phase which contains phenols extracted from the coal liquids, and a coal liquid phase;
(b) separating the two phases; and
(c) contacting the alcohol/acid phase with one or more C_2 to C_{16} olefins at a temperature from about −20° C. to about 150° C. thereby etherifying a substantial portion of the phenols of the alcohol/acid phase.

4,406,781

PROCESS FOR THE SEPARATION OF MINERAL SUBSTANCES

E. Richard Nightingale, 132 Glenside Rd., Murray Hill, N.J. 07974

Filed Nov. 9, 1981, Ser. No. 319,626
Int. Cl.³ B04C *5/26*
U.S. Cl. 209—211 **39 Claims**



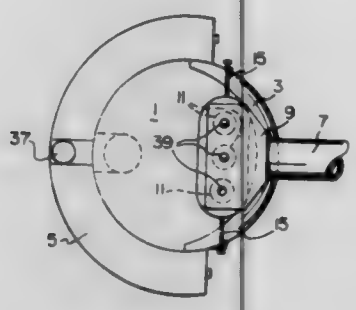
1. A process for the separation of resin from coal material, which comprises
mixing a resin-containing coal material with a non-solvent liquid to form a slurry, and
subjecting the slurry to centrifugal force in the presence of a gas.

4,406,782

CASCADE FLOTATION PROCESS

Hjalmar A. K. Hitland, Val d'Or, Canada, assignor to Ross-Finlay Ltd./Ltee, Val d'Or, Canada

Filed Jun. 24, 1981, Ser. No. 276,868
Claims priority, application Canada, Sep. 2, 1981, 370407
Int. Cl.³ B03D *1/02*
U.S. Cl. 209—164 **14 Claims**



1. The process of separating minerals or metals from a crushed ore mixture of crushed ore, aqueous solution, and flotation agent which comprises:

flowing the mixture in a confined delivery means;

aspirating air into said mixture flowing in said delivery means; and

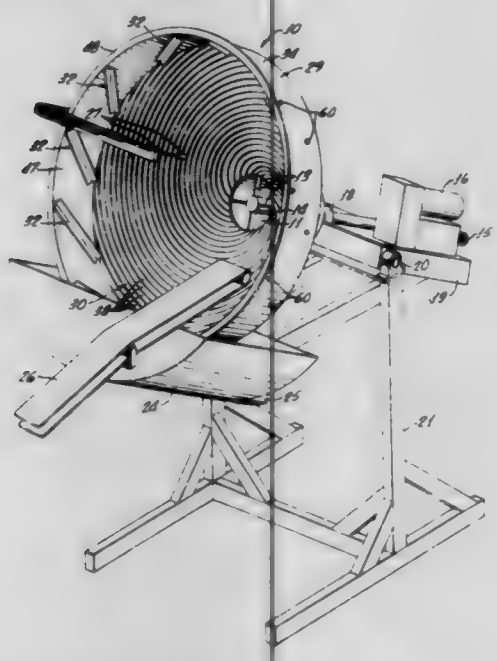
allowing said mixture to fall freely into a flotation container wherein the mixture is separated whereby aeration of said mixture is achieved by said aspirated air and by aeration produced during said free fall.

4,406,783

APPARATUS FOR SEPARATING ORE

Keith B. Cleland, 4460 Park Newport, Newport Beach, Calif. 92660

Filed Nov. 19, 1981, Ser. No. 323,140
Int. Cl.³ B03B *5/74*
U.S. Cl. 209—444 **17 Claims**



1. An ore separating device comprising

a shallow container having

a first concave portion with an opening at its center

and a peripheral flange portion projecting from the outer edge of said first portion,

means for positioning said container with its axis at an angle to the horizontal,

means for rotating said container about its axis in a predetermined direction,

a liner for said first portion,

said liner defining spiral outwardly facing ridges on one side thereof,

removable fastener means engaging said liner and said first portion for holding said liner in said first portion,

an annular rim member complementarily overlying the surface of said second portion adjacent the periphery of said liner,

said annular rim member engaging the peripheral edge of said liner for retaining said peripheral edge of said liner in said first portion,

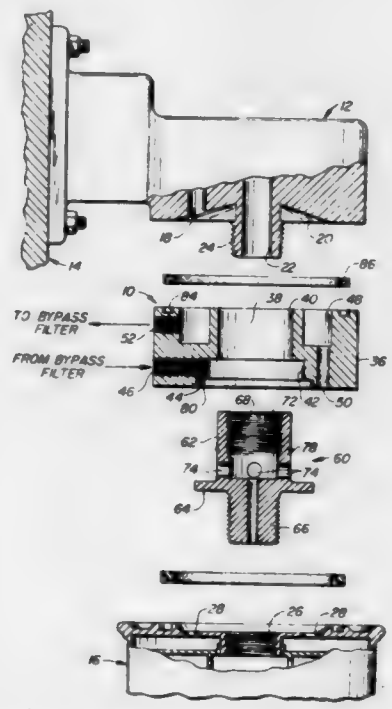
and a plurality of spaced vanes on said peripheral flange portion for causing agitation of ore in said container upon rotation of said container about its axis in said predetermined direction.

4,406,784

BYPASS OIL FILTER ADAPTER

Clarence L. Cochran, Stockton, Calif., assignor to Frantz Filters, Inc., Stockton, Calif.

Filed Apr. 12, 1982, Ser. No. 367,321
Int. Cl.³ F01M *1/10*; B01D *27/10*
U.S. Cl. 210—168 **4 Claims**



1. In combination with an engine lubricating system including a full flow filter **16** and a filter mounting block **12** having means **18**, **20** for flowing dirty oil to said full flow filter and means **22**, **24** for receiving clean oil from said filter, an adapter **10** for bypassing a portion of the dirty oil to a bypass filter and for returning cleaned oil from the bypass filter to the block, said adapter comprising:

a body **36** having a substantially unobstructed central passage **38** open at each end defining at least three sections of successively larger cross-sectional area **40**, **42**, **44**, a first radial conduit **46** defining an oil inlet from the bypass filter to the middle section **42**, an annular channel **48** formed in the body surrounding the smallest section **40** and located to receive dirty oil when the adapter is mounted on the block, a second radial conduit **52** defining a dirty oil outlet from the channel **48** to the bypass filter and an axial conduit **50** defining an oil outlet from the annular channel to the full flow oil filter; and

an insert **60** including means for securing the full flow oil filter to the filter mounting block and having an axial passage **68** for returning clean oil from the full flow filter to the mounting block and at least one radial passage **74** communicating with said axial passage, whereby the insert may be inserted into the axial opening of the body, said insert and said body together defining an annular chamber **76** which is in communication with the first radial passage **46** in the body and the radial passage **74** in the insert so that clean oil may return to the axial passage **68** through

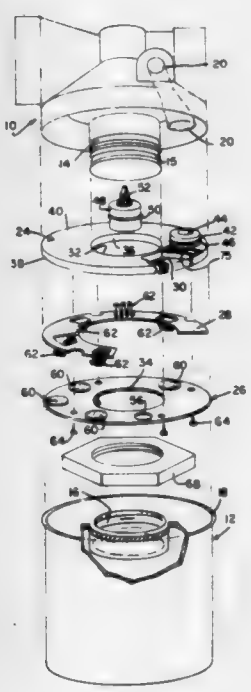
the insert regardless of the orientation of the body relative to the insert.

4,406,785

DIESEL FUEL HEATER

David A. Siefer, Gloversville, N.Y., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 24, 1981, Ser. No. 334,292
Int. Cl.[3] F02M *31/00*; B01D *35/18*
U.S. Cl. 210—186 10 Claims



1. A diesel fuel heater in combination with, a fuel filter housing having an inlet and outlet and including a filter element secured to the filter housing, said heater comprising; a heater housing having means defining an inlet thereto, at least one positive temperature coefficient thermistor, means coupling power to the thermistor, a mounting plate for the thermistor having means defining an outlet therefrom, means retaining the thermistor to the mounting plate, and means for mounting the heater housing and mounting plate to the fuel filter housing with the heater housing overlying the mounting plate and defining therewith a fuel passage extending from the inlet of the heater housing to the outlet from the mounting plate, the circulating fuel passing via the filter housing through the fuel passage over the thermistor to the filter element.

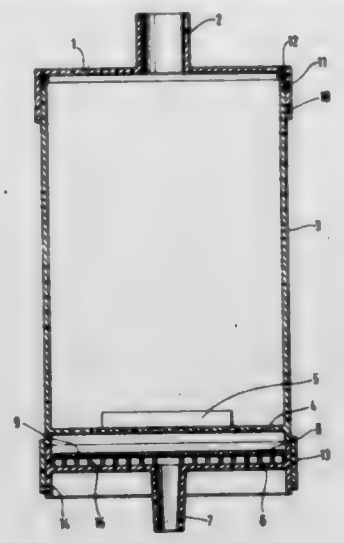
4,406,786

PRESSURE FILTERING DEVICE

Wolfgang Hein, Dassel, Fed. Rep. of Germany, assignor to Carl Schliecher & Schuell GmbH & Co., KG, Einbeck, Fed. Rep. of Germany

Filed Feb. 9, 1982, Ser. No. 347,223
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1981, 3109472
Int. Cl.[3] B01B *29/38*
U.S. Cl. 210—223 3 Claims

1. A pressure-filtering apparatus with magnetic stirring comprising a cylindrical center part, an upper part detachably secured to said center part with a pressure-tight securement, a lower part detachably secured to said center part with a pressure-tight securement, inlet means on said upper part, outlet means and a filter support formed on said lower part, a filter element disposed on said filter support, a disc plate formed integrally in said center part, and a magnetic stirring means disposed on said disc plate, said filter element being disposed between said filter support and said disc plate and being spaced from said disc plate so that the inlet side of said filter element



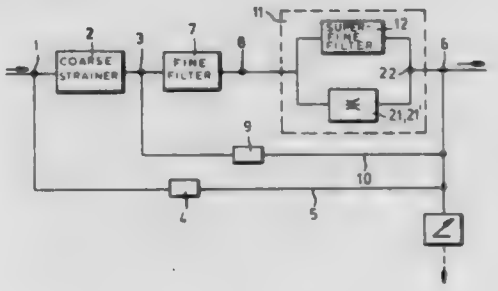
does not contact said disc plate during assembly and operation of the pressure-filtering apparatus.

4,406,787

CARTRIDGE-TYPE FILTERING ASSEMBLY FOR MOTOR OIL AND THE LIKE

Ferenc Süto, Szigetszentmiklos; Jozsef Fodor, Budapest; Frigyes Siegfried, Budapest, and Jozsef Gyarfas, Budapest, all of Hungary, assignors to "ARMAFILT" Egyesült Müszaki Tömito es Gepszakmai Ipari Szövetkezet, Budapest, Hungary

Continuation of Ser. No. 167,017, Jul. 9, 1980, abandoned. This application Jan. 18, 1982, Ser. No. 340,012
Claims priority, application Hungary, Jul. 12, 1979, AA 935
Int. Cl.[3] B01D *27/00*
U.S. Cl. 210—315 4 Claims



1. A cartridge-type filtering assembly for motor oil and the like, comprising:

an inner and an outer perforated cylindrical shell centered on a common axis and separated by an annular space;

a pair of annular face plates transverse to said axis closing said annular space at opposite ends thereof;

a first tubular filter element of star-shaped cross-section in said annular space centered on said axis, said first filter element consisting of undulating sheet material of relatively large porosity whose undulations define an annular array of generally triangular first compartments and have first peaks pointing to one of said shells; and

a second tubular filter element of star-shaped cross-section in said annular space concentric with said first filter element, said second filter element consisting of undulating sheet material of relatively small porosity whose undulations define an annular array of generally triangular second compartments open toward the other of said shells and have second peaks pointing toward said one of said shells, said first compartments being directly connected to respective second compartments through restricted passages bypassing the pores of said second filter element.

4,406,788

PARTICULATE SOLIDS CONVEYING AND DRAINING DEVICE

Frederick W. Meadus, and Bryan D. Sparks, both of Ottawa, Canada, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Sep. 10, 1982, Ser. No. 417,488
Claims priority, application Canada, Feb. 25, 1982, 397054
Int. Cl.³ B01D *21/26, 33/02*
U.S. Cl. 210—512.1 5 Claims



1. A particulate solids conveying and draining device, for mounting in a solids outlet of a wall, comprising:

(a) a funnel-shaped rotor extending towards an outer end through the solids outlet and substantially symmetrical about an axis of generation of the funnel shape and tapering inwardly along that axis, in the direction for movement of solids through the outlet, towards the outer end, the rotor having liquid return ports leading to a hollow central portion thereof, the liquid return ports being circumferentially spaced around the outer end and being shaped with a substantially straight side on a trailing side for a direction of rotation of the funnel-shaped rotor, with each straight side extending along the axis of generation of the funnel shape;

(b) liquid collecting means attached to the funnel-shaped rotor in the hollow central portion for returning liquid, passing into the hollow central portion, by the return ports, to an inner end of the funnel-shaped rotor;

(c) for each liquid return port, a particulate solid scooping and spilling member attached to the funnel-shaped rotor and extending therealong and outwardly therefrom, with each member comprising a paddle scooping portion adjacent the inner end of the funnel-shaped rotor and a draining, particulate solids spilling rib portion adjacent the substantially straight side of the associated liquid return port, the paddle scooping portions being for mounting adjacent an inner side of the wall with the rib portions extending through the outlet therein;

(d) an outer end wall closing the hollow, central portion of the funnel-shaped rotor and spaces between the rib portions;

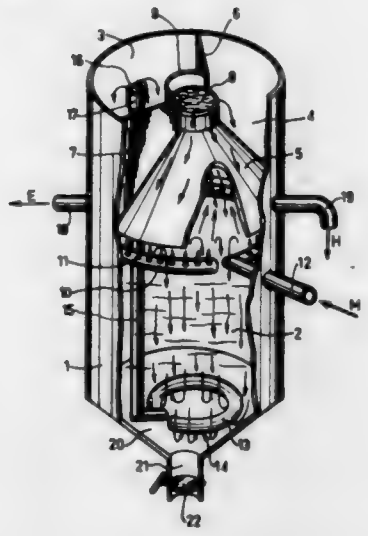
(e) whereby, in operation, when the device is mounted in the solids outlet of the wall and rotated so that the particulate solids scooping and spilling members dip into a particulate solids and liquid mixture, the rib portions and the outer end wall direct draining liquid picked up by the scooping portions into the liquid return ports, while the scooping portions direct particulate material, picked up thereby, across the funnel-shaped rotor from that scooping portion to spill off the outer edge of a rib portion of another, adjacent, particulate solid scooping and spilling member which is leading in the direction of rotation.

4,406,789

APPARATUS AND INSTALLATION FOR SEPARATING IMMISCIBLE LIQUIDS WITH DIFFERENT SPECIFIC GRAVITIES

Francois Brignon, Villemomble, France, assignor to Etablissemens Andre Bardet S.A., Montreuil, France

Filed Apr. 15, 1981, Ser. No. 254,532
Claims priority, application France, Apr. 21, 1980, 80 08931
Int. Cl.³ B01D *17/02*
U.S. Cl. 210—519 9 Claims



1. Apparatus for separating two immiscible liquids of different specific gravity which includes a tank having defined therein an inlet and two outlets, separate chambers for collecting the light and heavy liquid phases and a separation chamber containing a light phase header in its upper portion, a heavy phase header in its lower portion and a static mixture distributor between said two headers, said headers affording communication between said separation chamber and said corresponding collecting chambers, said static distributor being operatively connected to said inlet and each of said collecting chambers being operatively connected to a separate one of said outlets, characterized in that the upper portion of said separation chamber is delimited by a wall in the shape of an upwardly converging funnel including at its top a port which opens into said light phase collecting chamber, in that said distributor comprises an internal peripheral duct which extends horizontally about the side wall of said tank and defines distribution holes spaced about the latter and in that said heavy phase header comprises a hollow header element provided with take-off holes on its lower side and a riser which operatively communicates with the interior of said heavy phase header element and opens into said heavy phase collecting chamber at a level slightly lower than that of said funnel port.

4,406,790

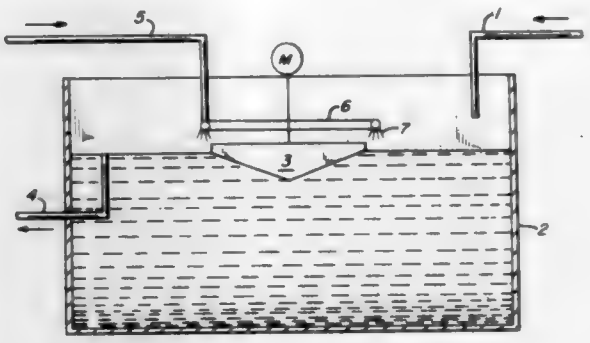
METHOD FOR OPERATING A BIOLOGICAL SEWAGE PURIFICATION PLANT

Andreas Birkner, Bochum, Fed. Rep. of Germany, assignor to DR. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Continuation of Ser. No. 262,040, May 11, 1981, abandoned.
This application Jul. 9, 1982, Ser. No. 396,940
Int. Cl.³ C02F *3/16*
U.S. Cl. 210—612 4 Claims

1. A method for operating a biological sewage purification plant, comprising the steps of aerating the sewage within the tank, and from a location above the surface of sewage in the

tank directing onto said surface but not beneath said surface a heating medium which forms a blanket over the surface and



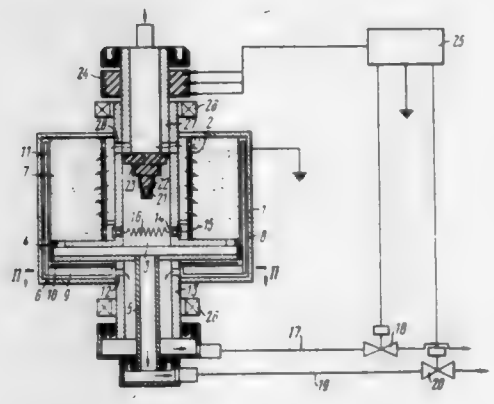
which maintains the temperature of the sewage at a point which will promote optimum bacterial growth.

4,406,791

METHOD OF BREAKING DOWN EMULSIONS AND A DEVICE FOR CARRYING SAME INTO EFFECT

Vadim M. Khapaev, Sevastopol, U.S.S.R., assignor to Sevastopolsky Priborostroitelny Institut, U.S.S.R.

Continuation of Ser. No. 19,743, Mar. 12, 1979, abandoned. This application Sep. 15, 1980, Ser. No. 187,553
Claims priority, application U.S.S.R., Mar. 23, 1977, 2465157
Int. Cl.[3] B01D *17/04*
U.S. Cl. 210—649 1 Claim



1. A method of breaking down emulsions comprising the steps of: providing a porous coalescent-agent medium constituted by a body of filler granules formed of a polymeric material having a specific gravity lower than that of the lighter component of the emulsion being broken down, said filler granules forming voids therebetween, preliminarily filling the voids between said filler granules with said lighter eulsion component which acts as part of the active coalescent surface, bubbling the emulsion through the coalescent porous medium while maintaining said preliminary filling of lighter emulsion component in the voids between said filler granules, and exposing the coalescent porous medium as the emulsion is bubbled therethrough to a centrifugal force field tending to densely pack said filler granules to decrease the size of the voids therebetween and wherein a free passage area through the voids between the filler granules of the polymeric coalescent-agent medium is continuously maintained irrespective of the presence of suspended particulate matter in the emulsion to be broken down at least in part due to the presence of the lighter emulsion component in the voids.

4,406,792

SEPARATION AGENT

Magnus J. Glad, Nyckelkroken 64, S-22 247 Lund; Sten A. Ohlson, Merkuriusgatan 10, S-22 357 Lund; Lennart H. Hansson, Harlemansvag 4a, S-22 230 Lund; Mats-Olle Mansson, Slalomgrand 10, S-24 300 Hoor; Per-Olof Larsson, Fagelhundsvagen 56, S-22 003 Lund, and Klaus H. Mosbach, Lackalanga 31, S-24 402 Furulund, all of Sweden

Filed Nov. 16, 1981, Ser. No. 321,692
Int. Cl.[3] B01D *15/08*
U.S. Cl. 210—656 8 Claims

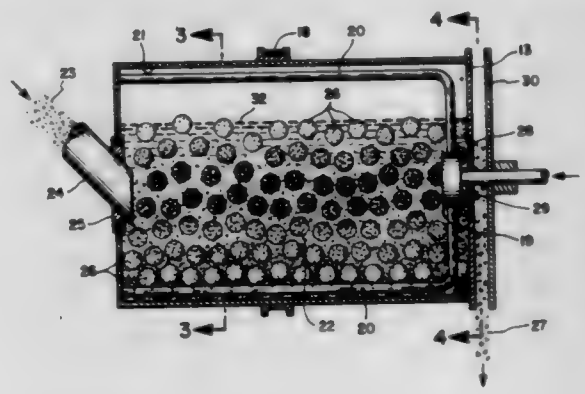
5. A process for separation of substances containing vicinal cis-hydroxy groups, said process comprising the steps of contacting a solution of said substances with a separation agent so as to absorb said substances onto said separation agent, wherein said separation agent comprises a water-insoluble solid selected from the group consisting of silica material, silicate material, and mixtures of such materials, and wherein said solid has covalently bound to at least one of the silicon atoms of said solid a substituent containing a dihydroxyboryl group or acid, salt, or complex of such group; and eluting said substances from said separation agent so as to chromatographically separate one or more of said substances from each other.

4,406,793

USE OF FREE BODIES TO INCREASE SIZE OF DISPERSED PHASE PARTICLES

Jan Kruyer, 4643 82nd Ave., Edmonton, Alberta, Canada T6B 2L9

Continuation-in-part of Ser. No. 178,000, Aug. 14, 1980, abandoned. This application Jun. 14, 1982, Ser. No. 387,957
Int. Cl.[3] B01D *15/02*
U.S. Cl. 210—669 49 Claims



48. A method for increasing the mean particle size of aqueous particles dispersed in an oil phase which comprises tumbling a mixture of oil phase having dispersed aqueous particles in the presence of some free bodies having at least one hydrophilic surface for a time sufficient to allow said aqueous particles to come into contact with said bodies and unite into larger particles.

49. A method for increasing the mean particle size of oil particles dispersed in an aqueous phase which comprises tumbling a mixture of aqueous phase having dispersed oil particles in the presence of some free bodies having at least one oleophilic surface for a time sufficient to allow said oil particles to come into contact with said free bodies and unite into larger particles.

4,406,794

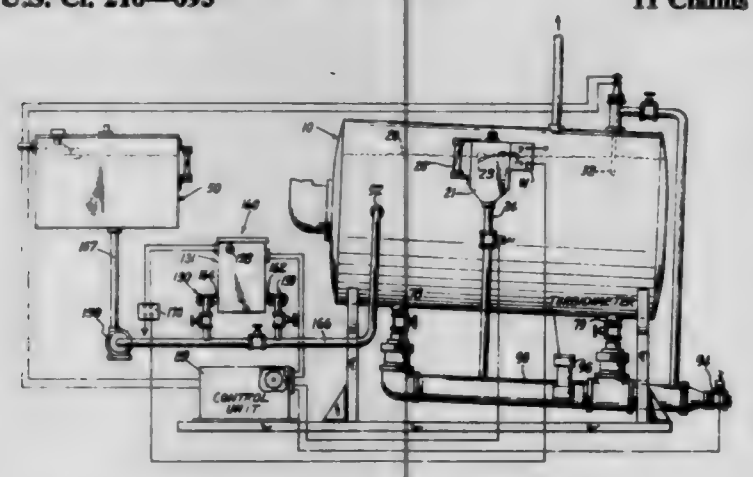
EXTERNAL SLUDGE COLLECTOR FOR BOILER BOTTOM BLOWDOWN AND AUTOMATIC BLOWDOWN CONTROL INITIATED BY CONDUCTIVITY PROBE WITHIN THE BOILER AND METHOD

Miguel F. Brigante, 16550 NW. 10th Ave., Miami, Fla. 33169

Continuation-in-part of Ser. No. 153,219, May 27, 1980, Pat. No. 4,288,323. This application Aug. 28, 1981, Ser. No. 297,258

Int. Cl.³ C02F *1/48*

U.S. Cl. 210—695 11 Claims



1. A method of electromagnetic boiler feed water treatment combined with bottom blowdown of the sludge collecting at the bottom of the boiler comprising:

treating all of the feed water into the boiler with a constant primary dc magnetic field of about 900 gauss to 1200 gauss while rotatively propelling said feed water through a ferromagnetic tube by means of a magnetizable propeller having from 6–8 flights and spaced from the inner wall by 1/16 inch to 1/64 inch at 200 to 800 revolutions per minute thereby providing a rotating secondary field within said tube with from 24 to 32 changes in direction and to prevent suspended particles from coalescing to form scale from sludge;

sensing the dissolved solids content with a conductivity probe located in said boiler at a location remote from the entry location of the feed water into the boiler;

providing an external sludge collector connected to and in communication with the bottom openings of the boiler, said sludge collector having a diameter 2½ to 4 times the diameter of said bottom openings; and

said sludge collector having a negative slope with respect to the boiler of from 0° to 3° to permit gravity flow of sludge therein and further having a blowdown valve at the lower end of said collector responsive to the total dissolved solids sensed by said conductivity probe whereby the solids separating from the boiler pass unimpeded into said sludge collector and then out by means of said blowdown valve.

3. Apparatus combining electromagnetic feed water treatment and bottom blowdown of sludge forming scale in a boiler comprising:

an electromagnetic treatment unit provided with a primary constant dc magnetic field of 900 to 1200 gauss by means of an electromagnetic coil surrounding a ferromagnetic tube through which all of the feed water passes by the rotation of a propeller having 6 to 8 flights and spaced from the inner wall of said tube by 1/16 inch to 1/64 inch while rotating at 200 to 800 revolutions per minute thereby providing a secondary magnetic field within such tube which prevents suspended sludge materials in the feed water from coelesing and forming scale in the boiler;

a conductivity probe in said boiler at a location remote from the entry of the electromagnetically treated feed water which measures total dissolved solids and is electrically connected to a blowdown valve to remove any sludge which forms;

said boiler having two bottom openings spaced from the ends thereof;

an external sludge collector in the form of a straight conduit having a uniform enlarged diameter 2½ to 4 times the diameter of said bottom opening and a negative slope of 0° to 3° with respect to said boiler;

connecting means which connects the near opening relative to the electromagnetic treatment unit to the inlet of said straight conduit of enlarged diameter and which connects the far opening to the exit end of said enlarged diameter conduit; and

a blowdown valve connected at said exit end which responds to the conductivity sensing probe and which blows out the sludge from said enlarged conduit thereby removing it and avoiding the conversion of said sludge to scale within said boiler.

4,406,795

EXTRACTION PROCESS

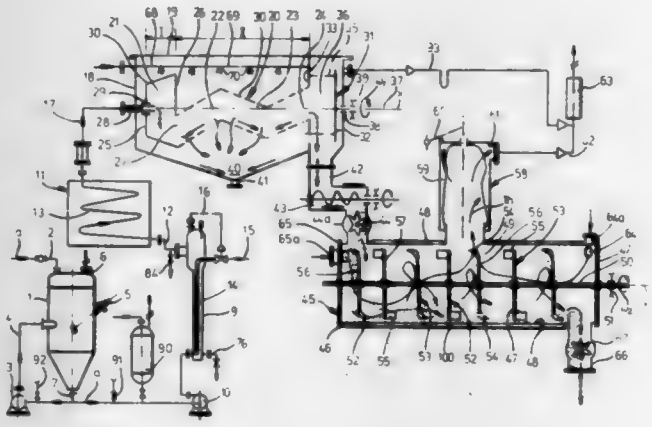
Istvan Takacs; György Kerey; Peter Rudolf; Janos Illes; Bela Szabo; Endre Vereczkey; Zoltan Banos; Gyula Bosits, and Laszlo Czebe, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Division of Ser. No. 131,887, Mar. 19, 1980. This application Jul. 9, 1981, Ser. No. 281,646

Claims priority, application Hungary, Mar. 21, 1979, RI-703

Int. Cl.³ C02F *1/00*

U.S. Cl. 210—771 7 Claims



1. A method of heat treating a biologically contaminatable material to obtain solids in a granular form and to remove fats therefrom, said method comprising the steps of:

(a) passing said material in a liquid from through a heat exchanger with a residence time of a maximum of two minutes and at a temperature sufficient to heat said material to 50° C. to 125° C.;

(b) thereafter continuously displacing said material along a storage path while maintaining it at a temperature of 50° to 125° C. for a minimum of two minutes thereby melting any fats contained in said material;

(c) filtering the material following hot storage in step (b) by introducing said material into one end of an elongate filter body having a plurality of angularly adjoining sections and rotating said body about a horizontal axis eccentric to said body in a closed housing containing vapor at a temperature of 50° to 125° C., thereby advancing solids from said material from one end of said body to the opposite end thereof and extracting a liquid phase from said material through a wall of said filter body, said solids being advanced through said body for a minimum of four minutes; and

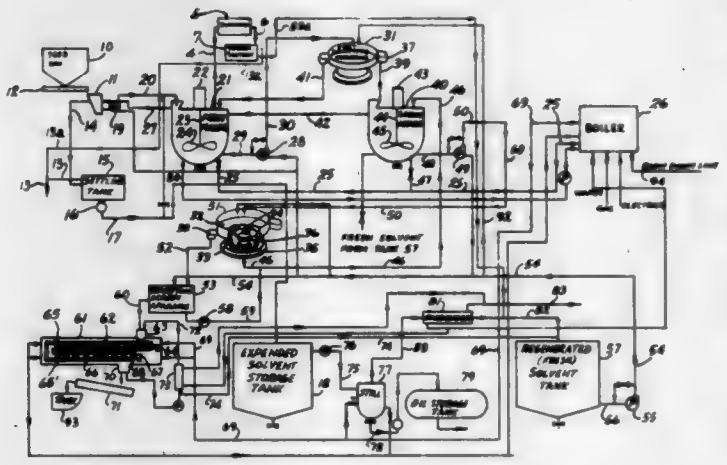
(d) drying the solids recovered from said opposite end of said body.

4,406,796

METHOD AND APPARATUS FOR CLEANING FINE WASTE MATERIAL MIXED WITH OIL AND WATER

Leonard A. Duval, 207 Harmon Rd., Aurora, Ohio 44202

Continuation-in-part of Ser. No. 93,004, Nov. 9, 1979, Pat. No. 4,288,329. This application Sep. 3, 1981, Ser. No. 298,941
The portion of the term of this patent subsequent to Sep. 8, 1998, has been disclaimed.
Int. Cl.³ B01D *21/02*; B08B *3/10*
U.S. Cl. 210—772 6 Claims



1. An apparatus for cleaning fine solid waste material mixed with oil and water, comprising one integrated system having at least one primary mixer and at least one coacting primary dewetting separator and one coacting final dewetting screen apparatus and a plurality of coacting centrifugal pumps acting both for mixing and transportation of a slurry containing fine solid waste material and solvent, together with a coacting final dryer of fine solids, a reservoir for expended solvent, a reservoir for regenerated solvent, and an evaporating still connected between said reservoirs, and a condenser for solvent vapors from said still, and conduit from said condenser to said regenerated solvent reservoir, and a storage tank for oil recovered from said find solid waste material; said integrated system having a feed sump for receiving said fine solid waste material mixed with oil and water and in which much of said water floats on top, means for drawing off said water, a first of said pumps connected to receive a mixture of partially expended solvent and fine solid waste material from said sump and to mix and transport said mixture to said primary mixer, conduit means connected between the upper portion of said mixer and said sump for moving partially expended solvent to said sump, a second of said pumps connected to receive a slurry of solvent and fine solid waste material from said primary mixer and to transfer said slurry to said primary dewetting separators, conduit means connected between said primary separator and said mixer to transfer partially expended solvent to said mixer, conduit means connected between said primary dewetting separator and said final dewetting screen apparatus to transfer fine solid material thereto, conduit means connected between said final dewetting screen apparatus and said regenerated solvent reservoir through a solvent pump to transfer regenerated solvent to said final dewetting screen apparatus, means for transferring clean fine solid material from said final dewetting screen apparatus to said final dryer, coacting means for receiving dry and clean fine solid material from said dryer, coacting means receiving solvent vapors from said final dryer and condensing said vapors and returning solvent therefrom to said regenerated solvent reservoir, conduit means for returning expended solvent from said sump to said expended solvent reservoir.

4,406,797

FIRE EXTINGUISHANT MATERIALS

Robert L. Altman, Berkeley, Calif.; Ludwig A. Mayer, and Alan C. Ling, both of San Jose, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 3, 1981, Ser. No. 317,977
Int. Cl.³ A62D *1/00*
U.S. Cl. 252—5 11 Claims

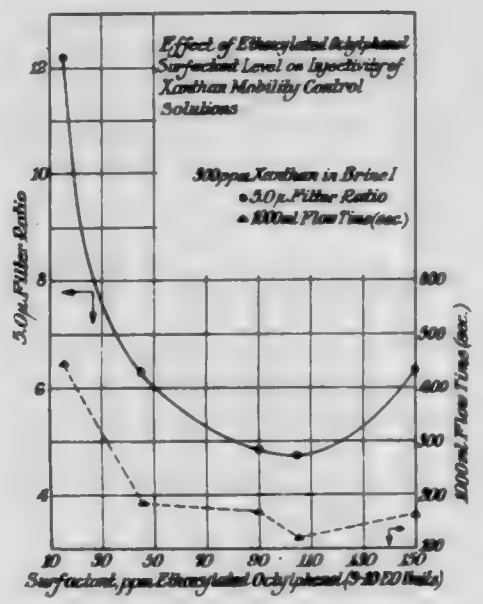
1. A fire extinguishant composition comprising substantial proportions each of (a) an aluminum compound selected from the group consisting of $Al(OH_3)$, AlOOH and alkali metal dawsonites and (b) a metal halide selected from the group consisting of alkali metal, tin and lead halides.

4,406,798

SURFACTANT ENHANCED INJECTIVITY OF XANTHAN MOBILITY CONTROL SOLUTIONS FOR TERTIARY OIL RECOVERY

James W. Miller, Mystic, and Bryce E. Tate, Niantic, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Aug. 24, 1981, Ser. No. 295,272
Int. Cl.³ E21B *43/22*
U.S. Cl. 252—8.55 D 6 Claims



1. An aqueous mobility control solution for tertiary oil recovery from saline oil fields, which comprises from about 200 to 2000 parts per million xanthan biopolymer in the form of "clean, unreconstituted fermentation broth" containing cells of an organism belonging to the genus Xanthomonas and from about 20 to 200 parts per million water-soluble surfactant of the formula:

$$R(OCH_2CH_2)_nY \text{ or} \quad (I)$$

$$R'(OCH_2CH_2)_{n'}(OCH_2\underset{\displaystyle CH_3}{\underset{|}{CH}})_mY \quad (II)$$

wherein

R is alkyl or alkenyl of from 12 to 18 carbons, octylphenyl or nonylphenyl;

R′ is alkyl of from 1 to 6 carbons;

n is an integer of from 5 to 20;

n′ is an integer of from 10 to 40 and

m is an integer of from 20 to 50 such that

n′/m is from about 0.4 to 2; and

Y is hydroxyl, OSO_3M or SO_3M, wherein M is an alkali metal cation or ammonium.

4,406,799

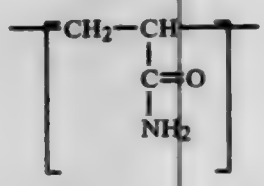
PROCESS FOR SECONDARY RECOVERY

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

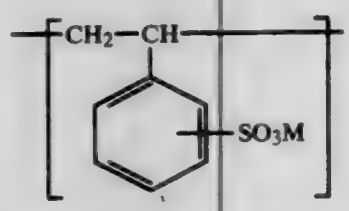
Division of Ser. No. 233,428, Feb. 11, 1981, Pat. No. 4,343,712, which is a continuation-in-part of Ser. No. 75,635, Sep. 14, 1979, abandoned. This application Apr. 28, 1982, Ser. No. 372,598
Int. Cl.³ E21B *43/22*
U.S. Cl. 252—8.55 D 6 Claims

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:

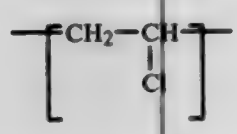
(A) injecting into the formation via an injection well a drive fluid comprising water having dissolved therein about 0.01 to about 5.0 weight percent of an alkoxylated terpolymer of number average molecular weight of about 50,000 to about 8,000,000 comprising recurring E-type units of the formula:



recurring F-type units of the formula:



and recurring G-type units of the formula:



wherein M is selected from the group consisting of hydrogen, sodium, potassium and ammonia and wherein in the said terpolymer the weight percent of the E-type units ranges from about 60 to about 95, the weight percent of the G-type units ranges from about 2 to about 10 and with the balance being the F-type units; said terpolymer being alkoxylated with about 2 to about 150 weight percent of a material selected from the group consisting of ethylene oxide and a mixture of ethylene oxide and propylene oxide wherein the weight percent of ethylene oxide in the said mixture is about 60 to about 95.

(B) forcing the said fluid through the formation, and

(C) recovering hydrocarbons through the production well.

4,406,800

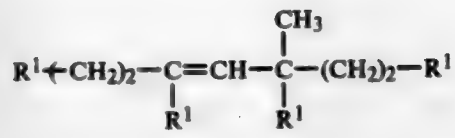
GREASE COMPOSITION CONTAINING POLY(ALPHA-OLEFIN)

John B. Christian, Yellow Springs, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 23, 1982, Ser. No. 326,973
Int. Cl.³ C10M *3/44*
U.S. Cl. 252—28 10 Claims

1. A grease composition comprising:

(a) about 70 to 90 percent by weight of a poly(alpha-olefin) base fluid of the formula I:



I

wherein R^1 is an alkyl group having 4 to 12 carbon atoms; and

(b) about 10 to 30 percent by weight of a thickener including a tetraalkyl ammonium smectite clay.

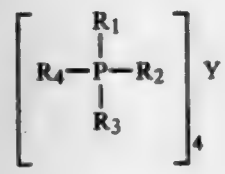
4,406,801

GREASE COMPOSITIONS CONTAINING QUATERNARY PHOSPHONIUM THIOSTANNATES

Judith B. Onopchenko; Gary M. Singerman, both of Monroeville, Pa., and Raynor T. Sebulsky, Kingwood, Tex., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jul. 12, 1982, Ser. No. 397,606
Int. Cl.³ C10M *1/44*
U.S. Cl. 252—46.7 8 Claims

1. A grease composition comprising a hydrocarbon lubricating oil thickened to a grease with a substituted-urea thickener and a quantity sufficient to improve the extreme pressure properties of the grease of (a) calcium carbonate and (b) a quaternary phosphonium thiostannate having the formula:



where Y is thiostannate, SnS_4, or hexathiodistannate, Sn_2S_6; R_1, R_2, R_3 and R_4 are independently selected from alkyl, alkenyl, hydroxyalkyl and hydroxyalkenyl having from 1 to about 20 carbon atoms, and the sum of the carbon atoms in R_1, R_2, R_3 and R_4 is between about 4 and about 80.

4,406,802

FRICTION REDUCING ADDITIVES AND COMPOSITIONS THEREOF

Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Clementon, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 30, 1981, Ser. No. 259,219
Int. Cl.³ C10M *1/20, 1/32, 1/54*
U.S. Cl. 252—49.6 12 Claims

1. A lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease prepared therefrom and a minor effective amount of a multi-functional additive compound having friction reducing and oxidation and corrosion inhibiting characteristics selected from the group consisting of borated mixed C_{12}–C_{15} alcohols and hydrolyzed 1-(2-hydroxyethyl)-2-heptadecenylimidazoline; and borated mixed oleyl alcohol and glycerol monooleate or mixtures of said borated compounds prepared by borating under suitable boration conditions selected mixtures of appropriate compounds in suitable solvent or mixtures thereof at temperatures of from about 110° to 280° C. said compounds having one or more alkyl or substituted alkyl groups attached thereto, and where said group is straight or branched chain, cyclic or contains one or more double bonds, halogen or one or more sulfur atoms or aromatic rings and said group having from about 10 to about 30 carbon atoms.

4,406,803

METHOD FOR IMPROVING FUEL ECONOMY OF INTERNAL COMBUSTION ENGINES

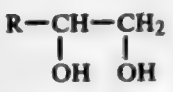
Thomas V. Liston, and Timothy R. Erdman, both of San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 210,067, Nov. 24, 1980, abandoned. This application Apr. 20, 1982, Ser. No. 370,025

Int. Cl.³ C10M 1/20

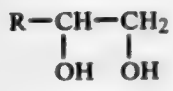
U.S. Cl. 252—52 R 6 Claims

1. In a lubricating oil formulated for use in the crankcase of an internal combustion engine, the improvement of including in said formulated oil about 0.10 to 5.0 weight percent of an alkane-1,2 -diol of the formula:



wherein R is alkyl containing from 8 to 28 carbon atoms, or mixtures thereof.

4. A method for reducing fuel consumption in an internal combustuon engine by treating the moving surfaces thereof with a composition comprising a major amount of a lubricant containing a fuel-reducing amount of an alkane-1,2-diol of the formula:



wherein R is alkyl containing from 8 to 28 carbon atoms, or mixtures thereof.

4,406,804

HEAT ACCUMULATING MATERIAL

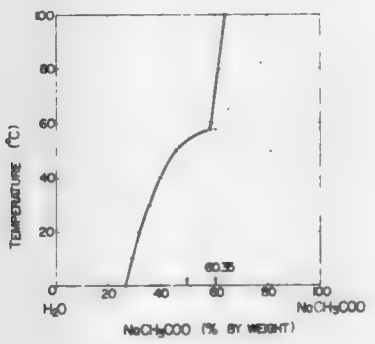
Takahiro Wada; Shoichi Ishihara, both of Katano, and Ryoichi Yamamoto, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

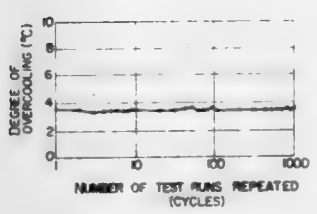
Filed Sep. 21, 1981, Ser. No. 303,985

Claims priority, application Japan, Sep. 27, 1980, 55-134905; Mar. 17, 1981, 56-38954

Int. Cl.³ C09K 3/34, 5/00, 5/06

U.S. Cl. 252—70 5 Claims





1. A heat accumulating material characterized in that at least one nucleation catalyst, selected from the group of compounds consisting of tetrasodium pyrophosphate ($Na_4P_2O_7$), trisodium monohydrogenpyrophosphate ($Na_3HP_2O_7$), disodium dihydrogenpyrophosphate ($Na_2H_2P_2O_7$) and monosodium trihydrogenpyrophosphate ($NaH_3P_2O_7$), is blended in a system consisting of sodium acetate (CH_3COONa) and water.

4,406,805

HYDRATED $MgCl_2$ REVERSIBLE PHASE CHANGE COMPOSITIONS

George A. Lane, and Harold E. Roesow, both of Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich.

Continuation of Ser. No. 219,010, Dec. 22, 1980, Pat. No. 4,338,208. This application Nov. 20, 1981, Ser. No. 323,594

Int. Cl.³ C09K 5/06

U.S. Cl. 252—70 13 Claims

1. A reversible liquid/solid phase change composition comprising hydrated $MgCl_2$ and as a nucleating additive, one or more of the group of $Sr(OH)_2$, $SrCO_3$, BaO, or Na_3AlF_6 added to the composition in an amount effective to suppress average supercooling of the $MgCl_2$ liquid phase to about 2° C. or less.

8. A method of preparing a hydrated $MgCl_2$ composition of suppressed supercooling properties, comprising admixing uniformly in such composition, one or more of $Sr(OH)_2$, $SrCO_3$, BaO, or Na_3AlF_6 in an amount effective to suppress average supercooling of the $MgCl_2$ liquid phase to about 2° C. or less.

4,406,806

THERMAL ENERGY STORAGE

Gaston J. Despault; Aly E. Fouda; J. Bryan Taylor, and C. Edward Capes, all of Ottawa, Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Feb. 24, 1982, Ser. No. 351,852

Claims priority, application Canada, Mar. 19, 1981, 373435

Int. Cl.³ C09K 5/06; F24H 7/00

U.S. Cl. 252—70 4 Claims

1. A thermal energy storage material comprising a mixture of Na_2SO_4, Na_2HPO_4 and water, with a Na_2SO_4:Na_2HPO_4 mole ratio range of from 1.1:0.9 to 1:2, and sufficient water to convert all the Na_2SO_4 and Na_2HPO_4 to $Na_2SO_4.10H_2O$ and $Na_2HPO_4.12H_2O$, respectively.

4,406,807

SELECTED SILOXANE ADDUCTS OF TRIS(2-HYDROXYETHYL)ISOCYANURATE AND THEIR USE AS FUNCTIONAL FLUIDS

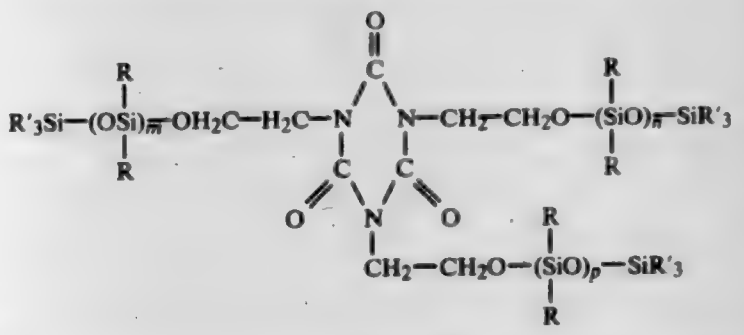
Jacqueline M. Renner, New Haven; Robert N. Scott, Wallingford, and David F. Gavin, Cheshire, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 289,667, Aug. 3, 1981. This application Dec. 30, 1982, Ser. No. 454,801

Int. Cl.³ C09K 5/00; C10M 3/44

U.S. Cl. 252—78.3 12 Claims

1. In a method wherein a first mechanical effort is converted to pressure at a first location, the pressure is transmitted from said first location to a second location via a hydraulic fluid, and said pressure is converted to a second mechanical effort at said second location; wherein the improvement comprises using as said hydraulic fluid one which comprises an effective amount of a compound having the formula:



wherein each R and R′ is individually selected from lower alkyl groups having 1 to 4 carbon atoms and lower alkoxy groups having 1 to 4 carbon atoms; and the sum of m, n, and p

is from 0 to about 20; with the proviso that R′ is a lower alkoxy group when the sum of m, n, and p is 0.

4,406,808

HIGH BULK DENSITY CARBONATE-ZEOLITE BUILT HEAVY DUTY NONIONIC LAUNDRY DETERGENT

William J. Gangwisch, New Brunswick; Virgil J. Richter, West Orange; Harold E. Wixon, New Brunswick, and Joseph B. Wraga, Bogota, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 839,781, Oct. 6, 1977, abandoned. This application Jun. 4, 1982, Ser. No. 384,994

The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.

Int. Cl.³ C11D *3/08, 3/10, 3/12, 11/02*

U.S. Cl. 252—91 6 Claims

1. A method of manufacturing a free-flowing, phosphate-free, particulate, heavy duty laundry detergent product having a bulk density of greater than 0.6 gram/milliliters which comprises:

(a) preparing a crutcher mix by adding sufficient detergent building, ion exchanging aluminosilicate zeolite in the form of an aqueous slurry to an aqueous slurry of sodium carbonate and water soluble sodium silicate to form a gel, said zeolite having an average ultimate particle diameter of about 15 microns or less,

(b) shearing the gel to reduce the viscosity thereof,

(c) spray drying the crutcher mix to form spray-dried beads having a water content of about 2 to about 16%, and

(d) mixing with said beads a nonionic detergent in liquid form so that the detergent is absorbed into the beads, the finished detergent product having proportions of zeolite, sodium carbonate, silicate and nonionic detergent in the range of about 1:0.1–1.5:0.1–0.3:0.2–1.0, on an anhydrous basis; wherein the detergent product imparts a pH within the range of 8.5 to 11 when dissolved in aqueous solution to a concentration of about 0.05–0.1%.

6. The method according to claim 1 wherein about 0.5–3% of a proleolytic enzyme is post-added to the spray-dried beads based on the weight of the final product.

4,406,809

DISINFECTING CLEANING INTENSIFIER FOR DRY CLEANING

Kaspar D. Hasenclever, Taunusstein, Fed. Rep. of Germany, assignor to Chemische Fabrik Kreussler & Co. GmbH, Wiesbaden, Fed. Rep. of Germany

Filed Mar. 22, 1982, Ser. No. 360,635

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111158

Int. Cl.³ C11D *1/40, 1/44, 3/43;* D06L *1/04*

U.S. Cl. 252—106 5 Claims

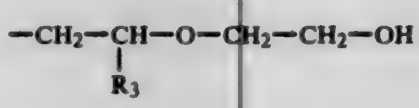
1. A disinfecting cleaning intensifier for dry cleaning, comprising in addition to at least one disinfecting quaternary ammonium chloride, a non-ionic surfactant and water, the diammonium salt of an aliphatic linear α,ω-dicarboxylic acid containing from 2 to 5 methylene groups or the triammonium salt of a tricarboxylic acid and a tertiary amine corresponding to the general formula $NR_1R_1R_2$ or $NR_1'R_1'R_2'$ in which

R_1 represents methyl,

R_2 represents a fatty alkyl group containing from 8 to 18 carbon atoms,

R_1' represents a hydroxy ethyl group, $—CH_2—CH_2—OH$, and

R_2' represents an ethylene glycol monoalkyl ether radical corresponding to the following formula



$$—CH_2—\underset{\displaystyle R_3}{\underset{|}{CH}}—O—CH_2—CH_2—OH$$

in which R represents a fatty alkyl group containing from 10 to 18 carbon atoms,

or a mixture of these tertiary ammonium salts wherein said components are in amounts and proportions effective to reduce pigment-induced discoloration, improve overall cleaning effect and increase disinfecting effect.

4,406,810

USE OF PRINS REACTION PRODUCTS OF DIISOBUTYLENE IN AUGMENTING OR ENHANCING THE AROMA OF DETERGENTS

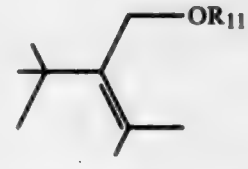
Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 280,683, Jul. 6, 1981. This application Jun. 24, 1982, Ser. No. 391,598

Int. Cl.³ C11D *3/50*

U.S. Cl. 252—174.11 3 Claims

1. A process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic, cationic, nonionic or zwitterionic detergent base, an aroma augmenting or enhancing quantity of a compound defined according to the structure:



wherein R_{11} represents hydrogen or acetyl.

4,406,811

COMPOSITION AND METHOD FOR CONTROLLING CORROSION IN AQUEOUS SYSTEMS

Ronald Christensen, Westmont, and Audrone Gelazis, Chicago, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jan. 16, 1980, Ser. No. 112,431

Int. Cl.³ C02F *5/10*

U.S. Cl. 252—180 20 Claims

1. A composition for controlling corrosion and scale formation in aqueous systems with multiple metallurgies comprising:

about 0.1–25% by weight of a triazole chosen from the group consisting of tolyltriazone and benzotriazole;

about 0.1–25% by weight of an aliphatic mono- or di- carboxylic acid having a straight chain, branched or cyclo-backbone of from 8–38 carbon atoms, said aliphatic mono- or di- carboxylic acid being capable of controlling corrosion of mild steel;

about 0.1–20% by weight of a nonionic wetting agent chosen from the group consisting of polyoxyalkylene glycols, polyoxyalkylene glycol ethers and polyoxyalkylene-polyamine condensation products; and

about 1.0–35% by weight of a scale inhibitor comprising a combination of amino tri(methylenephosphonic acid) and 2-phosphono-butane-tricarboxylic acid-1,2,4 in a weight ratio of from 1:4 to 4:1.

4,406,812

DEODORANT AND RECONDITIONER FOR METAL WORKING FLUIDS

Jean C. Childers, Charlotte, N.C., assignor to Chemed Corporation, Cincinnati, Ohio

Filed Dec. 4, 1980, Ser. No. 212,768

Int. Cl.³ C01B *13/00, 15/00*

U.S. Cl. 252—186.21 5 Claims

1. The method of deodorizing and rejuvenating a used metal working fluid comprising,

adding to said fluid an effective amount of a composition

comprising, in approximate percent by weight of the composition:

2–99% of at least one oxygen-releasing compound of the class consisting of hydrogen peroxide; addition compounds of hydrogen peroxide with alkaline metal compounds which are carbonates, borates, or pyrophosphates; the hydrates of such addition compounds; and addition compounds of hydrogen peroxide and urea;

0–10% water soluble alkaline buffering agent; and

0–10% water soluble chelant,

and maintaining the pH of the fluid in the range of approximately 7.5–9.5.

4,406,813

DISOXIDANT AND PROCESS FOR PREPARING SAME

Daishiro Fujishima, and Shinichiro Fujishima, both of 18-12, Asahi-machi, Sagamihara-shi, Kanagawa-ken, Japan

PCT No. PCT/JP80/00191, § 371 Date Apr. 20, 1982, § 102(e) Date Apr. 20, 1982, PCT Pub. No. WO82/00599, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 21, 1980, Ser. No. 373,491

Int. Cl.³ B01J *20/02;* **C09K** *15/02*

U.S. Cl. 252—188.28 **8 Claims**

1. A disoxidant in the form of a mixture of a disoxidation component M consisting of fine metallic powder of a particle size not greater than 100 mesh and a disoxidation reaction control component F consisting of 20–60% by volume of fine powder of a porous filler f-1 of a particle size not greater than 100 mesh and 80–40% by volume of coarse powder f-2 of a particle size greater than 100 mesh and having a total weight content controlled in the range of 20–90% based on the amount of saturated water absorption thereof and a volume ratio M/F of said disoxidation component M to said disoxidation reaction control component F in the range of ½–1/10.

4,406,814

LIQUID CRYSTALLINE MATERIALS AND OPTICAL DISPLAYS UTILIZING SAME

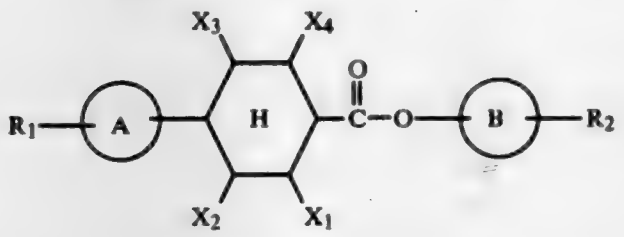
Joseph P. Ferrato, Silver Lake, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 10, 1981, Ser. No. 252,733

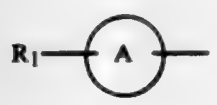
Int. Cl.³ C09K *3/34;* **G02F** *1/13;* **C07C** *121/60, 121/46, 69/757, 69/75, 69/017*

U.S. Cl. 252—299.1 **12 Claims**

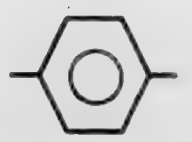
1. A nematic liquid crystalline material having the formula



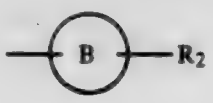
where: X_1 is a methane or ethane group; X_2, X_3, and X_4 are each selected from the group consisting of methane, ethane, chlorine, cyano, and hydrogen;



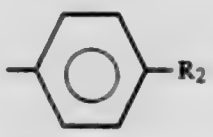
is a substituted phenyl of the formula R_1



an alkyl group of the formula $-C_nH_{2n+1}$ where n is an integer from 1 through 12, or an alkoxy group of the formula $C_nH_{2n+1}-O-$ where n is an integer from 1 through 12 wherein R_1 is an alkyl group of the formula $-C_nH_{2n+1}$ or an alkoxy group of the formula $C_nH_{2n+1}-O-$ where n is an integer from 1 through 12;



is a substituted phenyl of the formula



wherein R_2 is a cyano group of an alkyl group of the formula $-C_nH_{2n+1}$ or an alkxy group of the formula $C_nH_{2n+1}-O-$ where n is an integer from 1 through 12.

4,406,815

TRANSMISSION REDUCING AEROSOL

Arnold Magnusson, Bergfinkvägen 2, Grödinge, Sweden (S-140 32); Lennart Holm, Svampstigen 49, Rönninge, Sweden (S-150 24); Ragnar Lundin, Lignellsvägen 20, Tumba, Sweden (S-147 00); Hans-Olov Lindstrand, Ervallakroken 5, Bandhagen, Sweden (S-124 43); Östen Johansson, Apelvägen 3, Tyresö, Sweden; Sven Wahlborn, Djäknevägen 37, Täby, Sweden (S-183 40), and Staffan Höijer, Mellquists Väg 15, Skoghall, Sweden (S-663 00)

Filed Mar. 29, 1979, Ser. No. 25,049

Claims priority, application Sweden, Mar. 31, 1978, 78036639

Int. Cl.³ C09K *3/30;* **G01S** *7/38*

U.S. Cl. 252—305 **7 Claims**

1. An aerosol composition for attenuating the transmission and reflectance of electromagnetic radiation within the infrared range consisting essentially of activated carbon particles, 80% of said particles having diameters which are approximately equally distributed in the range between 1 to 9 μm and approximately equal amounts of the remaining activated carbon particles having diameters larger and smaller than said range.

4,406,816

PROCESS FOR THE PREPARATION OF MICROCAPSULES, AND THE MICROCAPSULES OBTAINED THEREBY

Wolfgang Sliwka, Weinheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Sep. 30, 1980, Ser. No. 192,473

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1979, 2940786

Int. Cl.³ B01J *13/02*

U.S. Cl. 252—69 **12 Claims**

1. An improved process for the preparation of microcapsules, wherein the microcapsules are prepared by condensing melamine-formaldehyde precondensates, their C_1-C_4-alkyl ethers, or mixtures thereof, in water in which the solid, liquid or gaseous substantially water-insoluble material forming the

capsule core is dispersed, in the presence of a dissolved polymer which contains negatively charged ionic groups, at a pH of from 3 to 6.5 and at a temperature of from 20° to 100° C., the improvement being that the polymer dissolved in the water is a homopolymer or copolymer which possesses sulfonic acid groups and contains neither phenyl nor sulfophenyl groups and has a K value, measured by the Fikentscher method, of from 100 to 170 or a viscosity of from 200 to 5,000 mPa.s at a shear gradient of 489 s^{-1} (the viscosity being measured in 20% strength by weight solution at 25° C.), said polymer being present at from 1.0 to 5.5% by weight based on the aqueous phase, and that the melamine-formaldehyde precondensate is added continuously or in portions in step with the rate of condensation.

12. Microcapsules prepared by the process of claim 1, 2, 3 or 4.

4,406,817

PROCESS FOR THE PRODUCTION OF SEDIMENTATION STABLE ANTI-FOAM AGENTS

Karl-Hans Müller, Bruchkobel, Fed. Rep. of Germany; Roland Tailfer, Muno, Belgium, and Günter Türk, Hanau, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jan. 16, 1981, Ser. No. 225,795

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1980, 3001573

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—348 **16 Claims**

1. A process for the production of a sedimentation stable antifoam agent for aqueous systems having a long lasting activity comprising mixing 0.5 to 20 parts of a precipitated, jet mill ground silica having the following properties:

Surface area according to BET (DIN 66 131)	M^2g	160 ± 30
Particle size distribution curve of the secondary particles according to FIG. 1 (Coulter Counter)		
Loss on drying 2 hours at 105° C. (DIN 55 921)	wt. %	6 ± 3
Loss on ignition* 2 at 1000° C. (DIN 53 200)	wt. %	5 + 2
pH in 5% aqueous dispersion (DIN 53 200)		8.3
SiO_2 content**	wt. %	>90

*based on the material dried 2 hours at 105° C.
**based on the material fired 2 hours at 1000° C.

with 80 to 99.5 parts of a dimethylpolsiloxane oil having a viscosity at 25° C. of 20 to 1,000,000 centistokes, homogenizing the mixture and heating the mixture to a temperature of 25° to 380° C. and holding at this temperature for a time span of 0.1 to 10 hours, said jet mill ground silica having been treated with alkali solution during the jet mill grinding to adjust the pH of the silica to 8.3.

4,406,818

OLEFIN POLYMERIZATION

Joel L. Martin; M. Bruce Welch, both of Bartlesville, Okla.; Richard E. Dietz, Borger, Tex., and Charles E. Capshew, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 28, 1982, Ser. No. 343,643

Int. Cl.³ B01J *31/26*

U.S. Cl. 252—429 B **13 Claims**

1. An olefin polymerization catalyst formed by

(1) preparing a hydrocarbon solution of a titanium tetrahydrocarbyloxide compound or a zirconium tetrahydrocarbyloxide compound and an organoaluminum halide compound;

(2) contacting the solution formed in step (1) with an organomagnesium compound alone or admixed with a minor amount of a trialkylaluminum;

(3) treating the product contained in step (2) with a metal halide selected from a silicon tetrahalide and titanium tetrahalide; and

(4) combining the product obtained in step (3) with an organoaluminum compound to form an active polymerization catalyst.

4,406,819

ZEOLITE MOLECULAR SIEVE HAVING REDUCED SOLUBILITY IN AN AQUEOUS SYSTEM

Santi Kulprathipanja, Hoffman Estates, and Herman S. Bloch, Skokie, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 217,945, Dec. 18, 1980, Pat. No. 4,333,768. This application Mar. 19, 1982, Ser. No. 360,098

Int. Cl.³ B01J *29/08, 20/18*

U.S. Cl. 252—430 **16 Claims**

1. An adsorbent consisting essentially of a crystalline aluminosilicate and a cellulose ether binder having utility in a process for the separation of a component from a feed mixture comprising an aqueous solution of a mixture of components by contacting said solution with said adsorbent which adsorbent exhibits adsorption selectivity towards said component thereby separating said component from said feed mixture and thereafter recovering said selectively adsorbed component, said cellulose ether binder reducing the extent of disintegration of said adsorbent.

5. A method for the manufacture of an adsorbent consisting essentially of crystalline aluminosilicate and a cellulose ether binder suitable for use in a process for the separation of a component from a feed mixture comprising an aqueous solution of a mixture of components, which method comprises:

(a) mixing together a powder of said crystalline aluminosilicalite, a powder of said binder and a liquid organic solvent to form a malleable mixture;

(b) forming said malleable mixture into discrete formations;

(c) removing said solvent from said formations to obtain hard dry formations; and

(d) breaking said hard dry formations into particles of desired sizes.

4,406,820

CONTROLLED ADDITION OF PROMOTERS TO ETHYLENE OXIDE CATALYSTS

Paul J. Busse, Omaha, Nebr., assignor to InterNorth, Inc., Omaha, Nebr.

Filed Apr. 2, 1982, Ser. No. 364,985

Int. Cl.³ B01J *31/04*

U.S. Cl. 252—430 **2 Claims**

1. In a method for improving the selectivity of supported silver catalysts by incorporating a promoter therein, the improvement which comprises forming a solution of a compound of the promoter and an anion selected from the group consisting of unsaturated carboxylic acids, aminocarboxylic acids, and hydroxybenzoic acids in a solvent and contacting said catalyst with said solution.

4,406,821

ETHERIFICATION CATALYST

Dan Farcasiu, Princeton, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 30, 1982, Ser. No. 412,784

Int. Cl.³ B01J *27/02*

U.S. Cl. 252—440 **15 Claims**

1. A catalyst comprising a sulfated composite of an oxide of a transition metal selected from the group consisting essentially of W, Hf, Nb, Ta, Zr and mixtures thereof on a support comprising a high surface area alumina.

4,406,822

METHOD OF MAKING ZEOLITES

Robert N. Sanders, Baton Rouge, and Sebastian M. Laurent, Greenwell Springs, both of La., assignors to Ethyl Corporation, Richmond, Va.

Filed Oct. 5, 1981, Ser. No. 308,356
The portion of the term of this patent subsequent to Sep. 27, 2000, has been disclaimed.
Int. Cl.[3] B01J *29/06, 20/18*
U.S. Cl. 252—455 Z 21 Claims

1. A method of co-synthesizing zeolite A and zeolite X, comprising adding a sodium aluminate solution to a sodium silicate solution activated with a relatively small amount of bulk or seed zeolite X amount of zeolite X, mixing the resultant solution for at least ten minutes at a temperature of about 15° C. to 25° C., then heating the mixture to a temperature of about 85° C. to 110° C. to form a product which is a combination of zeolite A and zeolite X particles of about 40 percent to 60 percent crystalline with the balance being an amorphous functional binder.

5. A method for producing a combination of zeolite A and zeolite X by the reaction of sodium aluminate and sodium silicate characterized by the following steps:

(a) forming an aqueous solution of sodium aluminate;
(b) forming an aqueous solution of sodium silicate;
(c) adding the sodium aluminate solution to the sodium silicate solution in the presence of a relatively small amount or seed amount zeolite X, cooling to a temperature of about 15° C. to 25° C. and mixing together for at least ten minutes to produce a reaction mixture comprising a sodium silicate mother liquor and an amorphous sodium alumina silicate;
(d) heating mixture to a temperature of about 85° C. to 110° C., the reaction mixture having the following molar ratios of components:
(i) water to sodium oxide—36.6:1 to 34.1:1,
(ii) sodium oxide to silica—0.9:1 to 1.5:1,
(iii) silica to alumina—2.8:1 to 3.0:1;
(e) heating and continuing the reaction at these molar ratios until a combination of zeolite A and zeolite X is formed while controlling the molar ratios and reaction time to produce a fine particle size combination zeolite A and zeolite X of about 40 percent crystallinity with the remainder being an amorphous functional binder;
(f) recovering the combination zeolite A and zeolite X.

4,406,823

METHOD OF MAKING ZEOLITES

Sebastian M. Laurent, Greenwell Springs, and Robert N. Sanders, Baton Rouge, both of La., assignors to Ethyl Corporation, Richmond, Va.

Filed Oct. 5, 1981, Ser. No. 308,450
The portion of the term of this patent subsequent to Sep. 27, 2000, has been disclaimed.
Int. Cl.[3] B01J *20/18, 29/06*
U.S. Cl. 252—455 Z 24 Claims

1. A method of co-synthesizing zeolite A and zeolite X, comprising mixing a sodium aluminate solution with a sodium silicate solution in the presence of a seed amount of zeolite X, chilling the solution to about −5° C.-25° C., then heating the mixture to about 90° C.-110° C. to form a product which is a combination of zeolite A and zeolite X.

4. A method for producing a combination of zeolite A and zeolite X by the reaction of sodium aluminate and sodium silicate characterized by the following steps:

(a) forming an aqueous solution of sodium aluminate;
(b) forming an aqueous solution of sodium silicate;
(c) mixing said sodium aluminate and said sodium silicate solutions in the presence of a seed amount of zeolite X and chilling to a temperature of −5° C. to 25° C. to produce a reaction mixture comprising a sodium silicate mother liquor and an amorphous sodium alumina silicate;
(d) heating said mixed sodium aluminate and sodium silicate at a temperature of about 90° C.-110° C., the reaction mixture having the following molar ratios of components:
(i) water to sodium oxide-36.6:1 to 34.1:1,
(ii) sodium oxide to silica-0.9:1 to 1.5:1,
(iii) silica to alumina-2.8:1 to 3.0:1;
(e) heating and continuing the reaction at these molar ratios until a combination of zeolite A and zeolite X is formed while controlling the molar ratios and reaction time to produce a fine particle size combination zeolite A and zeolite X having an average particle size of less than 2 microns in diameter; and
(f) recovering the combination zeolite A and zeolite X.

4,406,824

CATALYSTS FOR THE O-SUBSTITUTION OF PHENOLS

Max Fremery, Wesseling; Karl-Heinz Keim, Heimerzheim, and Joachim Korff, Bornheim-Sechtem, all of Fed. Rep. of Germany, assignors to Union Rheinische Braunkohlen Kraftstoff AG, Wesseling, Fed. Rep. of Germany

Continuation of Ser. No. 248,709, Mar. 30, 1981, Pat. No. 4,359,591. This application Feb. 8, 1982, Ser. No. 346,562
Int. Cl.[3] B01J *21/06, 23/86, 23/78*
U.S. Cl. 252—458 9 Claims

1. A catalyst consisting essentially of (a) iron oxide, (b) chromium oxide, (c) silicon oxide and (d) at least one oxide of a metal selected from the group consisting of alkaline earth metal, lanthanum and manganese, the molar ratio between catalyst components (a):(b):(c):(d) being 100:0. 1–10:0. 1–10:0. 01–10.

4. A catalyst consisting essentially of (a) iron oxide, (b) chromium oxide, (c) at least one oxide of a metal selected from the group consisting of germanium, titanium, zirconium, tin and lead, and (d) at least one oxide of a metal selected from the group consisting of alkaline earth, lanthanum and manganese, the molar ratio between catalyst components (a):(b):(c):(d) being 100:0.1–10:0.1–10:0.01–10.

4,406,825

ELECTRICALLY CONDUCTING POLYACETYLENES

Guido Pez, Boonton, and Lowell R. Anderson, Morristown, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 957,635, Nov. 3, 1978, Pat. No. 4,269,738. This application Jan. 23, 1981, Ser. No. 227,823
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.[3] H01B *1/00*
U.S. Cl. 252—500 1 Claim

1. A composition comprising a solid polyacetylene having incorporated therein a fluorine-containing peroxide of the group consisting of bisfluorosulfuryl peroxide, bistrifluoromethylsulfuryl peroxide, bistrifluoroacetyl peroxide, bistrifluoromethyl trioxide and bistrifluoromethyl peroxide and their mixtures; wherein the specific direct current conductivity of the composition is greater than that of said polyacetylene alone, as measured by the four-probe method at room temperature; said peroxide being present in an amount of about 0.001 to 40 weight percent of said polyacetylene present.

4,406,826

HEAT CURABLE CONDUCTIVE INK

Charles R. Morgan, Brookeville, and Arthur D. Ketley, Chevy Chase, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

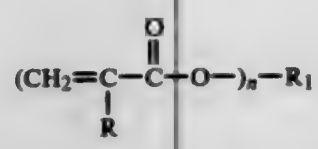
Filed Mar. 5, 1981, Ser. No. 241,144
Int. Cl.[3] H01B *1/02;* B05D *3/06*
U.S. Cl. 252—512 6 Claims

1. A solventless screen printable, heat curable conductive ink composition comprising

(1) a member of the group consisting of

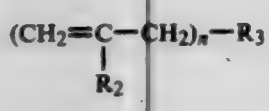
(a) a polythiol in combination with a liquid, ethylenically,

unsaturated monomer, oligomer or prepolymer of the formula:



wherein R is H or CH_3, R_1 is an organic moiety and n is at least 2,

(b) a polythiol in combination with a liquid ethylenically unsaturated monomer, oligomer or prepolymer of the formula:



wherein R_2 is H or CH_3, R_3 is an organic moiety and n is at least 2, and

(c) mixtures of (a) and (b);

(2) a thermal initiator; and

(3) a metal as an electrically conductive material in the range of 65–85 weight percent of the conductive ink composition.

4,406,827

COHESIVE NONSTICKY ELECTRICALLY CONDUCTIVE GEL COMPOSITION

Hatim M. Carim, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 4, 1979, Ser. No. 72,230

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—518 **18 Claims**

1. An electrically conductive gel for use in establishing a low resistance contact between an electrode and a biological body, comprising an aqueous solution of crosslinked natural gum, said crosslinked natural gum being present in said aqueous solution in sufficient quantity to impart a gel-like body to the material and to provide the electrically conductive gel with sufficient internal strength to remain cohesive without reinforcement, said aqueous solution comprising ionized salts in a concentration of 0.8 to 25 percent by weight, and water in a concentration of from about 16 to 93 percent by weight, and said gel being nonsticky in character.

4,406,828

ODORANT AND/OR FLAVORANT SUBSTANCES

Hans U. Gonzenbach, and Paul A. Ochsner, both of Geneva, Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

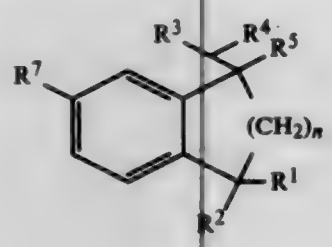
Filed Aug. 6, 1980, Ser. No. 175,789

Claims priority, application Switzerland, Aug. 10, 1979, 7355/79; Jun. 30, 1980, 5003/80

Int. Cl.³ C11B *9/00*

U.S. Cl. 252—522 R **23 Claims**

1. An odorant composition comprising an olfactorily effective amount of a compound of the general formula



wherein:

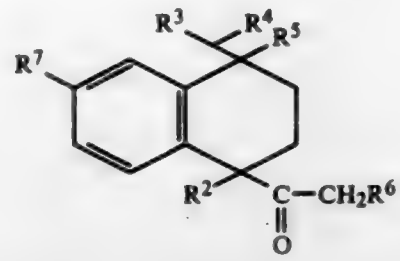
R^1 represents —CO—CH_2R^6;

R^2 through R^7 represent hydrogen or methyl; and

n stands for 1 or 2,

and at least one other odorant compound.

12. A compound having the formula



wherein R^2 through R^7 represent hydrogen or methyl.

4,406,829

NOVEL CYCLOPROPANE CARBOXYLATE ESTERS

Jacques Martel, Bondy; Jean Buendia, Le Perreux-sur-Marne, and Francois Nezot, Thiais, all of France, assignors to Roussel Uclaf, Paris, France

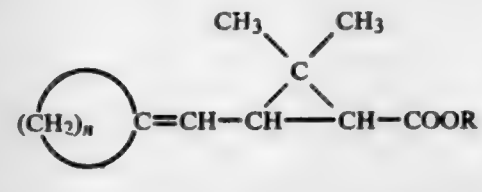
Filed Nov. 5, 1981, Ser. No. 318,445

Claims priority, application France, Nov. 18, 1980, 80 24407

Int. Cl.³ C07C *69/743*

U.S. Cl. 252—522 R **5 Claims**

1. A method of imparting a pleasant odor to a composition comprising incorporating into the composition an odorantly effective amount of at least one compound in all its possible isomeric forms and mixtures thereof of the formula



wherein n is 2,3 or 4 and R is selected from the group consisting of (a) alkyl of 1 to 12 carbon atoms optionally substituted with cycloalkyl of 3 to 6 carbon atoms or a hydrocarbon of 2 to 8 carbon atoms optionally interrupted by an oxygen or ketone, (b) alkenyl and alkynyl of 3 to 8 carbon atoms (c) cycloalkyl of 3 to 12 carbon atoms optionally containing at least one double bond and substituted with at least one alkyl and (d) aralkyl of 7 to 12 carbon atoms optionally substituted with at least one member of the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halogen and —CF_3.

4,406,830

REGULATORY GLYCOPROTEIN FOR IMMUNE RESPONSE AND THE USE THEREOF IN THE PRODUCTION OF T-CELL GROWTH FACTOR

Hans-Ake Fabricius, Breisach, and Eckart U. Köttgen, Freiburg, both of Fed. Rep. of Germany, assignors to Shanksville Corporation, N.V., Netherlands Antilles

Filed Apr. 17, 1981, Ser. No. 255,251

Int. Cl.³ C07G *7/00*; C12N *5/00, 5/02*

U.S. Cl. 260—112 R **2 Claims**

1. A biologically active blood serum glycoprotein having a molecular weight of about 90,000 and being able to cause T-cell growth factor production in the presence of Interleukin-1 and T-lymphocytes; said glycoprotein being further characterized by at least one sialic acid moiety as a biologically active site; by retaining more than one-half of its biological activity after being heated to 80° C. for 30 minutes; by its specific binding affinity to wheat germ agglutinin and Cibacron Blue A; and by its lack of specific binding affinity to lysine.

4,406,831
MEAT PROTEIN PRODUCT AND PROCESS

Louis A. G. Atteck, Kenton, England, assignor to AMRAF Limited, London, England

Filed Apr. 29, 1981, Ser. No. 258,782
Int. Cl.³ A23J *1/02, 1/04*
U.S. Cl. 260—112 R 6 Claims

1. A process for the production of a protein material from pre-rigor meat muscle, comprising: treating the muscle protein in a saline solution to dissolve lean meat protein in the solution; and removing water by evaporation to obtain a dried powder product with soluble protein material, which material is capable of gelling when heated in aqueous solution.

4,406,832
PEPTIDE-TYPE SUBSTRATES USEFUL IN THE QUANTITATIVE DETERMINATION OF ENDOTOXIN

Donald F. Mills, University City, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Sep. 3, 1981, Ser. No. 298,994
Int. Cl.³ C07C *103/52;* C12Q *1/38*
U.S. Cl. 260—112.5 R 9 Claims

1. A chromogenic or fluorogenic peptide-type compound adapted for use in determining endotoxin in a sample by a LAL-type assay, the compound having the formula:

$$R_1\text{-}A_1\text{-}A_2\text{-}A_3\text{-}A_4\text{-}B\text{-}R_2$$

wherein R_1 represents hydrogen, a blocking aromatic hydrocarbon or acyl; A_1 represents an L or D-amino acid selected from either Ileu, Val or Leu; A_2 represents Glu or Asp; A_3 represents Ala or Cyst; A_4 represents Arg, B represents a linkage group selected from ester and amide linkage groups; and R_2 represents a chromogenic or fluorogenic group which is covalently attached to the C-carboxyl terminal of arginine through the B linkage group.

4,406,833
SURFACTANTS DERIVED FROM FATTY ACID ESTERS AND PROTEINACEOUS MATERIAL

Werner R. Boehme, Glen Ellyn, Ill., and Oliver J. Muscio, Murray, Ky., assignors to Fats and Proteins Research Foundation, Inc., Des Plaines, Ill.

Filed Jun. 4, 1982, Ser. No. 385,036
Int. Cl.³ C07G *7/00;* C08H *1/06*
U.S. Cl. 260—123.7 10 Claims

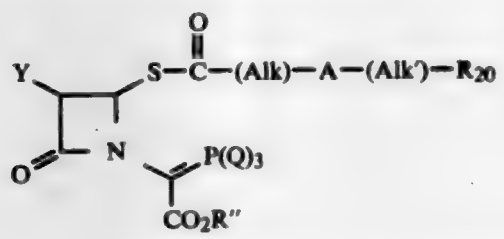
1. A surface active agent comprising the direct condensation reaction product of a fatty acid ester and a hydrolyzed proteinaceous material.

4,406,834
2,6 DISUBSTITUTED PENEMS AND INTERMEDIATES THEREFOR

Marcel Menard, Candiac, and Alain Martel, Delson, both of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 77,886, Sep. 21, 1979, Pat. No. 4,282,150, which is a continuation-in-part of Ser. No. 968,663, Dec. 1, 1978, abandoned. This application Apr. 13, 1981, Ser. No. 253,982
Int. Cl.³ C07D *205/08, 499/04*
U.S. Cl. 260—239 A 3 Claims

1. An intermediate having the formula



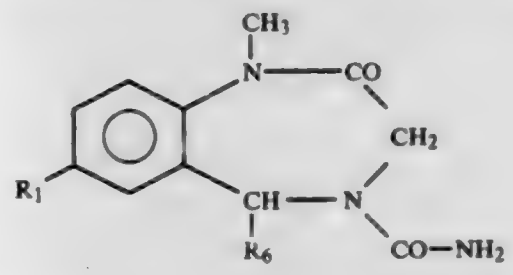
wherein Q is phenyl or (lower)alkyl; R" is a conventional carboxyl protecting group; Alk is a C_1-C_2 alkylene group optionally substituted by a C_1-C_4 alkyl radical; A is O, S, SO, SO_2 or NR_{21} in which R_{21} is hydrogen, (lower)alkyl, phenyl or phenyl(lower)alkyl; Alk' is a C_2-C_4 alkylene group; R_{20} is —NHOH, $-NR_{22}R_{23}$ in which R_{22} and R_{23} are each independently hydrogen or (lower)alkyl, $-N_3$ or NO_2; and Y is hydrogen; or a pharmaceutically acceptable salt thereof.

4,406,835
TRANQUILLO-SEDATIVE BENZODIAZEPINE DERIVATIVES

Julia Röhricht; Lajos Kisfaludy; Laszlo Ürögdi; Eva Palosi; Szabolcs Szeberenyi, and Laszlo Szporny, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Continuation of Ser. No. 795,894, May 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 580,307, May 23, 1975, Pat. No. 4,045,433. This application Oct. 9, 1981, Ser. No. 310,420
Claims priority, application Hungary, May 29, 1974, RI 538
The portion of the term of this patent subsequent to Aug. 3, 1999, has been disclaimed.
Int. Cl.³ C07D *243/24*
U.S. Cl. 260—239.3 D 2 Claims

1. A compound of the formula (I) in racemic form



wherein
R_1 is chloro or nitro; and
R_6 is phenyl or.

4,406,836
METHOD FOR CONDENSING FATTY ACIDS

Constantine D. Miserlis, Arlington, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Filed Dec. 3, 1981, Ser. No. 327,122
Int. Cl.³ C11C *1/08*
U.S. Cl. 260—419 5 Claims

1. In a process for condensing high-titre fatty acids entrained in a steam stream by heat exchange with a cooling medium in a surface condenser having a shell side and a tube side:
The improvement comprising the combination of: (a) positioning said surface condenser in a vertical orientation; (b) passing cooling medium through the shell side of said surface condenser; and (c) maintaining conditions within the tube side of said condenser to prevent significant fouling thereof.

4,406,837
METHYLTRICAPRYL AMMONIUM MOLYBDATES

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 28, 1982, Ser. No. 402,479
Int. Cl.³ C07F *11/00*
U.S. Cl. 260—429 R 6 Claims

1. Methyltricaprylammonium molybdates having the empirical formula ti $[CH_3(C_8H_{17})_3N]_aMo_bO_cH_d$

where a, b and c are (2,1,4); (2,2,7); (3,5,17); (2,6,19); (4,8,26) or (6,7,24) and d is 0 or 1.

4,406,838

TRIOCTYLAMMONIUM MOLYBDATES

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 28, 1982, Ser. No. 402,480
Int. Cl.³ C07F *11/00*
U.S. Cl. 260—429 R 4 Claims

1. Trioctylammonium molybdates having the empirical formula

$$[(C_8H_{17})_3NH]_aMo_bO_c$$

where a, b and c are (2, 6, 19); (6, 7, 24) or (4, 8, 26.

4,406,839

PROCESS FOR PREPARING ORGANIC SOLVENT SOLUBLE AMINE MOLYBDATES

William J. Kroenke, and Angel J. Magistro, both of Brecksville, Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 28, 1982, Ser. No. 402,483
Int. Cl.³ C07F *11/00*
U.S. Cl. 260—429 R 8 Claims

1. A process for making an amine molybdate comprising combining together in a reaction vessel an amine or amine salt, a molybdate or molybdic acid or molybdenum trioxide, and at least two immiscible liquid materials, one of said immiscible liquid materials being an aqueous phase and one of said immiscible liquid materials being a volatile organic solvent phase in which the amine molybdate formed by the reaction of the said amine or amine salt and said molybdenum compound is soluble, continuously stirring the mixture in said reaction vessel for 0.08 to 72 hours thereby causing the said amine or amine salt and molybdenum compound to react together and form said amine molybdate as a solute in said volatile organic solvent phase, and separating said volatile organic solvent phase with said amine molybdate dissolved therein from other immiscible liquid phases of said mixture.

4,406,840

TRI(TRIDECYL)AMMONIUM MOLYBDATES

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 28, 1982, Ser. No. 402,484
Int. Cl.³ C07F *11/00*
U.S. Cl. 260—429 R 4 Claims

1. Tri(tridecyl)ammonium molybdates having the empirical formula

$$[(C_{13}H_{27})_3NH]_aMo_bO_c$$

where a, b and c are (2,6,19); (4,8,26) or (6,7,24).

4,406,841

PROCESS FOR PRODUCING 2,6-DIFLUOROBENZONITRILE

Ryuzo Nishiyama, Takatsuki; Kaoichi Fujikawa; Yasuhiro Tsujii, both of Moriyama; Shigeo Murai, Yohkaichi, and Hisayoshi Jyonishi, Shiga, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

Filed Aug. 17, 1982, Ser. No. 408,932
Claims priority, application Japan, Aug. 31, 1981, 56-136659; Apr. 30, 1982, 57-72630
Int. Cl.³ C07C *121/52*
U.S. Cl. 260—465 G 11 Claims

1. A process for producing 2,6-difluorobenzonitrile which comprises reducing a chloro fluorobenzonitrile selected from 3-chloro-2,6-difluorobenzonitrile, 3,5-dichlor-2,6-difluorobenzonitrile or a mixture thereof by hydrogen gas in the presence of a palladium or platinum catalyst at a temperature of 0° to 200° C.

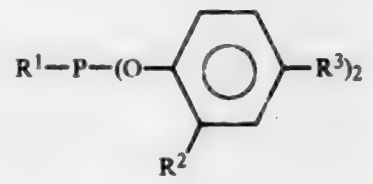
4,406,842

ORTHO-ALKYLATED PHENYL PHOSPHONITES

John D. Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 179,848, Aug. 20, 1980, abandoned, which is a continuation of Ser. No. 64,239, Aug. 6, 1979, abandoned, which is a continuation of Ser. No. 898,270, Apr. 20, 1978, abandoned. This application Aug. 31, 1981, Ser. No. 298,032
Int. Cl.³ C07F *9/48*; C08J *3/20*
U.S. Cl. 260—962 5 Claims

1. A compound of the formula



wherein

R^1 is alkyl of 1 to 18 carbon atoms, phenyl or phenyl substituted by 1 to 3 alkyl groups with 1 to 8 carbon atoms in each alkyl group,

R^2 is tertiary alkyl of 4 to 18 carbon atoms, benzyl, α-methylbenzyl or α,α-dimethylbenzyl, and

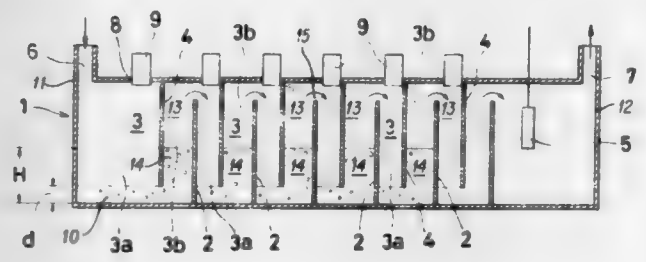
R^3 is hydrogen, alkyl of 1 to 18 carbon atoms, benzyl, α-methylbenzyl or α,α-dimethylbenzyl.

4,406,843

APPARATUS FOR ADJUSTING THE HUMIDITY OF GAS TO A CONSTANT VALUE

Osamu Nakamura, Ikeda; Isao Ogino, Minoo, and Teruo Kodama, Ikeda, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Continuation of Ser. No. 169,636, Jul. 17, 1980, abandoned, which is a division of Ser. No. 128,150, Mar. 7, 1980. This application Nov. 9, 1981, Ser. No. 319,400
Claims priority, application Japan, Mar. 30, 1979, 54/38478
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—22 4 Claims



1. An apparatus for adjusting the humidity of a gas comprising:

a closed container for containing a saturated aqueous solution of a salt continuously containing crystals of said salt;

said closed container further comprising first and second end portions;

a gas inlet disposed within said first end portion;

a gas outlet disposed within said second end portion;

a plurality of partition walls disposed at fixed intervals within said closed container defining a plurality of chambers having upper and lower interior portions and having openings formed therein alternately open into said upper and lower interior portions of said chambers;

said solution further comprising a volume sufficient for submerging said chamber openings in said lower interior portions of said chambers;

said gas supplied from said gas inlet into said closed container coming into contact with said solution present in

each of said plurality of chambers while passing through said solution; and

supply means for said aqueous solution disposed within said upper portion of at least one of said plurality of chambers for diluting said aqueous solution.

4,406,844

FABRICATION OF SEMICONDUCTOR MODULES WITH CERAMIC SUBSTRATES AND DETECTION OF RESIDUAL GLASS

Howard A. Froot, Hartsdale, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 19, 1981, Ser. No. 313,072
Int. Cl.³ C09K *1/10*
U.S. Cl. 264—21 **9 Claims**

1. A nondestructive method for determining the presence of residual glass during the manufacture of alumina ceramic substrates comprising the steps of:

preparing a mixture comprising ceramic forming alumina particles and glass doped with a rare earth oxide that fluoresces in response to selected wavelengths of radiation;

forming a green sheet containing a binder having said ceramic forming alumina particles and doped glass material;

firing said green sheet to produce a ceramic substrate; and

irradiating said fired structure with radiation of said selected wavelengths to induce fluorescence in said doped glass material for determining the presence of residual glass on predetermined areas of said substrate.

4,406,845

METHOD FOR RESTORATION AND RE-UTILIZATION OF DISCHARGED GAS AND ARRANGEMENT EMPLOYED THEREFOR

Tohatirou Sakon, Kobe, and Ikuo Oyobe, Shirakawa, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogen, Japan

Filed Oct. 16, 1981, Ser. No. 311,954
Claims priority, application Japan, Oct. 21, 1980, 55-148048
Int. Cl.³ B29H *5/02*
U.S. Cl. 264—37 **2 Claims**

1. A method for the restoration and re-utilization of discharged gas for use in vulcanization employing an inert gas in part of the vulcanizing steps of elastomer products, which comprises the steps of restoring a mixture of used inert gas discharged from a vulcanizing unit and vulcanizing medium for steam separation thereof, subjecting the elastomer product mounted in a metal mold to a preshaping by supplying the inert gas obtained by the steam separation to the vulcanizing unit prior to starting of the vulcanization, and subjecting said inert gas obtained by said steam separation to supplementary pressurization by inert gas obtained from an inert gas generating unit when said inert gas is to be supplied to said vulcanizing unit.

4,406,846

FOAMED THERMOPLASTIC RESIN COMPRISING POLY(P-METHYLENEBENZOATE)

Edward E. Paschke, Wheaton, and James L. Throne, Naperville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Nov. 30, 1982, Ser. No. 445,435
Int. Cl.³ B29H *7/29*; C08J *9/10, 9/14*
U.S. Cl. 264—50 **9 Claims**

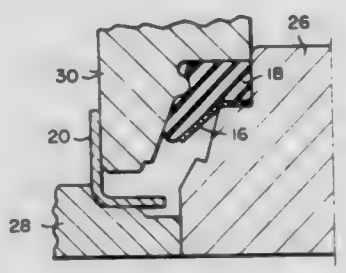
1. A process for preparing a thermoplastic foamed resin product comprising a polymer composition of poly(p-methylenebenzoate) wherein said polymer is foamed in the presence of a foaming agent selected from the group consisting of an inert, non-toxic gas and a chemical foaming agent which thermally decomposes to produce an inert, non-toxic gas.

4,406,847

METHOD FOR MAKING A LIP TYPE SHAFT SEAL HAVING A RESIN LINER

Robert D. O'Neal, Gastonia, N.C.; Dean R. Bainard, Clover, S.C., and Douglas A. Cather, Jr., Gastonia, N.C., assignors to Garlock Inc., Longview, Tex.

Continuation of Ser. No. 23,141, Mar. 23, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 219,364
Int. Cl.³ B29D *3/00, 23/01*
U.S. Cl. 264—138 **23 Claims**



1. A method for molding an annular lip type shaft seal of the type having an annular elastomeric shaft seal element and a resin liner integrally molded therewith and bonded thereto, said method comprising the steps of:

(a) placing a resin liner element having a thickness t, an elastomeric preform and a seal shell in a mold having an annular lip forming surface;

(b) providing, on said lip forming surface, an annular shoulder having a shoulder surface facing said liner element and adapted to contact an outer edge of said liner element during molding for preventing said resin liner element from flowing axially past said shoulder, said shoulder being located axially between a liner forming surface and an elastomeric seal element forming surface, said shoulder making an angle α with said liner forming surface and having a perpendicular height d above said liner forming surface;

(c) providing α and d with the values $\alpha \leqq 85°$ and $d \geqq t$; and

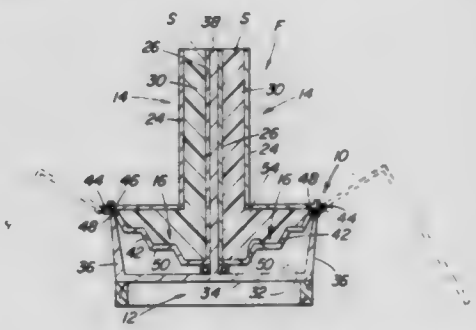
(d) operating said mold for forming said liner element into said liner and causing said elastomer to flow to form said shaft seal element and applying heat and pressure thereto for forming said seal.

4,406,848

METHOD AND APPARATUS FOR MOLDING PLASTIC WINDOW SILLS

Norbert E. Simpson, 9650 Poundstone Pl., Englewood, Colo. 80111

Filed Jun. 12, 1981, Ser. No. 273,056
Int. Cl.³ B29C *17/12, 5/00*
U.S. Cl. 264—161 **8 Claims**



1. The improved method of forming a cast sill having a shelf bordered along the front edge and at the ends by a decorative face flange using a pouring form having a base, a generally J-shaped insert having a trough at the bottom thereof resting atop the base, combination end plugs and spacers arranged in longitudinally-spaced relation within the trough, and an L-shaped lid cooperating with the insert and plugs when placed atop thereof to define a mold cavity having a pour opening in

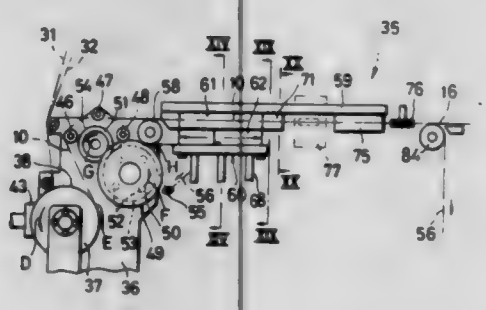
the top and an air vent remote from said pour opening which comprises the steps of: force-feeding a hardenable plastic mix in fluid form through the pour opening under pressure, using the mix thus introduced to sweep the air within the mold cavity ahead thereof and out of the vent, filling the mold cavity, allowing the fluid mix to set, and stripping the mold from the hardened sill thus cast.

4,406,849

METHOD OF AND APPARATUS FOR CONTINUOUSLY MANUFACTURING SLIDE FASTENER COUPLING ELEMENTS

Kihei Takahashi, Uozu, and Kiyoshi Takeshima, Namerikawa, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Aug. 10, 1981, Ser. No. 291,484
Claims priority, application Japan, Aug. 19, 1980, 55-113647
Int. Cl.³ B29D *5/00*
U.S. Cl. 264—167 **14 Claims**



1. A method of continuously manufacturing molded slide fastener coupling elements, comprising the steps of:

(a) introducing thermoplastic synthetic resin successively into cavities around a circumferential surface of a die wheel while the latter is rotating, to mold a strip of coupling element blanks;

(b) removing said strip of coupling element blanks continuously out of said cavities;

(c) continuously folding said strip of coupling element blanks about its longitudinal axis while still hot into a U-shaped cross-section while being further heated by the folding means to provide semi-finished coupling heads with legs on each side thereof;

(d) heat-setting and forming the still hot folded coupling element blanks into slide fastener coupling elements of a finalized shape and dimensions, the legs thereof being still further heated, and the strip being continuously fed along; and

(e) discharging said slide fastener coupling elements continuously at a speed which is substantially the same as the speed at which the strip of coupling element blanks is molded continuously on said die wheel.

6. An apparatus for continuously manufacturing slide fastener coupling elements comprising:

(a) a frame;

(b) a die wheel mounted on said frame for continuous rotation at a peripheral speed and having on and around a circumferential surface thereof a plurality of die cavities for molding a strip of coupling element blanks having central coupling heads with legs on each side thereof;

(c) an extruder nozzle mounted on said frame and directed toward said circumferential surface of the die wheel for injecting hot thermoplastic synthetic resin successively into said die cavities;

(d) a folder unit mounted on said frame for folding said strip of coupling element blanks about its longitudinal axis as the strip is continuously withdrawn from said die wheel, said folder unit including a first heater for adding heat to said strip while it is being folded;

(e) a second heater unit for further heating said folded strip of coupling element blanks;

(f) an element-forming die mounted on said frame and mounting said second heater unit for shaping said folded strip of coupling element blanks, heated by said second heater, into slide fastener coupling elements;

(g) a cooling unit mounted on said frame for cooling said strip of coupling elements; and

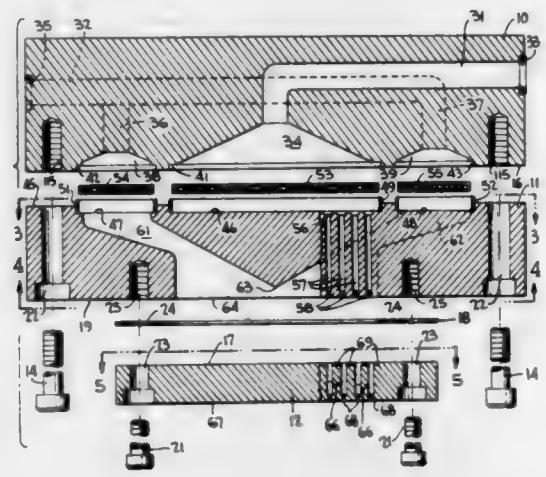
(h) a discharging unit located adjacent to said cooling unit for discharging said strip of coupling elements at a speed which is substantially the same as said peripheral speed of said die wheel.

4,406,850

SPIN PACK AND METHOD FOR PRODUCING CONJUGATE FIBERS

William H. Hills, West Melbourne, Fla., assignor to Hills Research & Development, Inc., West Melbourne, Fla.

Filed Sep. 24, 1981, Ser. No. 305,219
Int. Cl.³ D01D *3/00*
U.S. Cl. 264—171 **21 Claims**



1. A fiber extrusion spin-pack for the production of sheath-core bi-component fibers by melt spinning, said spin-pack comprising:

a spinneret having first and second opposite surfaces and a plurality of spaced polymer flow channels defined therethrough between said first and second surfaces, each flow channel having an inlet orifice defined within said first surface, said inlet orifices being arranged in a pattern of rows and columns along said first surface;

plural core polymer flow passages having respective ingress openings, each core polymer flow passage arranged in spaced axial alignment with a respective flow channel inlet orifice, said core polymer passages and inlet openings being arrayed in a pattern of columns and rows corresponding to the pattern of inlet orifices in said spinneret;

core polymer supply means for delivering pressurized molten core polymer to said plural core polymer flow passages;

core polymer filtering means disposed flush against said ingress openings between said core polymer supply means and said core polymer flow passages for filtering and shearing core polymer delivered to said core polymer flow passages;

wherein said core polymer flow passages define flow paths, from said filter means to respective spinneret inlet orifices, which are substantially equal in length and cross-sectional area to provide substantially equal core polymer pressure drops through said paths;

plural sheath polymer flow passages, each disposed substantially midway between respective rows of said core polymer flow passages, said sheath polymer flow passages each terminating in respective outlet openings aligned with respective spaces between rows of said spinneret inlet orifices and which are at least co-extensive with adjacent rows of spinneret inlet orifices;

sheath polymer supply means for delivery of pressurized molten sheath polymer of said sheath polymer flow passages; and

sheath polymer filter means disposed between said sheath polymer supply means and said sheath polymer flow passages for filtering and shearing sheath polymer delivered to said sheath polymer flow passages.

4,406,851

PROCESS FOR THE MANUFACTURE OF INSULATED WINDING WIRES THROUGH EXTRUSION OF THERMOPLASTICS

Harald Janssen, Birkenkamp 1, 2057 Reinbek, Fed. Rep. of Germany; Eberhard Kertscher, Cle des Champs 4, CH-1032 Romanel, Switzerland; Hans-Georg Matthies, Homburgerstrasse 2, and Rainer Theysoh, Brüsseler Ring 38, both of 6700 Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 181,229, Aug. 25, 1980, abandoned. This application Jan. 4, 1982, Ser. No. 337,005

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935458

Int. Cl.³ B29F *3/10*

U.S. Cl. 264—174 1 Claim

1. In a method of manufacturing insulated electric wire of the enamelled wire type comprising the steps of introducing polyethylene terephthalate containing crystallites having a melting point above 170° C. into an extruder and extruding at or above the crystalline melting point of said polyethylene terephthalate, the polyethylene terephthalate onto and around a metal wire so as to form on said wire a thin sheath having a thickness complying with the requirements of German Standard DIN 46435, the improvement which comprises said polyethylene terephthalate being filled with titanium dioxide in an amount of 5 to 15% by weight whereby fissure formation is diminished.

4,406,852

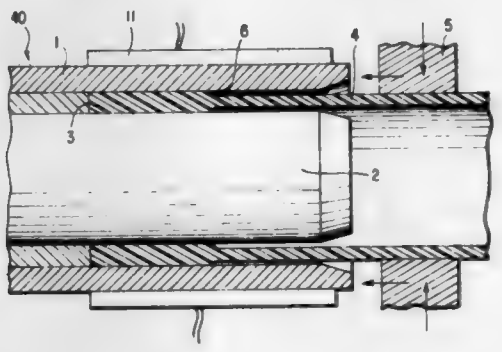
METHOD FOR FORMING A CONNECTING SLEEVE HAVING AN INTERNAL GROOVE AT THE END SECTION OF A TUBE OF THERMOPLASTIC MATERIAL

Karl-Heinz Riegel, Hof, Fed. Rep. of Germany, assignor to Rehau Plastiks AG & Co., Rehau, Fed. Rep. of Germany

Filed Dec. 21, 1981, Ser. No. 332,804

Int. Cl.³ B29D *23/00*

U.S. Cl. 264—296 4 Claims



1. A method for forming a connecting sleeve having an internal groove at the end section of a tube made of crystalline or partially crystalline thermoplastic material in which the end section, which has a free frontal end, is heated to the deformation temperature, is then axially preliminary upset in a heatable upsetting device which defines an annular gap until the annular gap is filled, thus increasing the wall thickness of said end section, and is then shaped to form the connecting sleeve during axial displacement in a molding device and is finally cooled, comprising:

(1) heating the end section to a a processing temperature within the range of the deformation temperature, which is relatively narrow, and up to almost the crystalline melting temperature of the thermoplastic material, and when the end section reaches the processing temperature, preliminary upsetting the end section in the preliminary upsetting device by the application of a first axial upsetting force so that the preliminary upsetting begins in the free frontal end of the end section and continues until the annular gap in the preliminary upsetting device is filled,

(2) removing the heated and preliminary upset end section from the preliminary upsetting device, and

(3) bringing the so removed end section immediately to a final shaping device, and applying an axial upsetting force in the final shaping device to form the connecting sleeve while maintaining the temperature of the tube end at the processing temperature.

4,406,853

METHOD OF PREPARATION OF REGENERATED FIBER COLLAGEN CONDOM

Teruo Miyata, Tokyo, Japan, assignor to Collagen Development Corporation, New York, N.Y.

Division of Ser. No. 125,538, Feb. 28, 1980, Pat. No. 4,349,026. This application Sep. 15, 1981, Ser. No. 302,335

Int. Cl.³ B29C *13/04*

U.S. Cl. 264—304 7 Claims

1. A method for the manufacture of a condom consisting of an isotropically-strong membrane of crosslinked, regenerated fiber collagen which comprises the steps of:

(a) forming an acidic dispersion fiber collagen;

(b) forming a membrane of said collagen and imparting isotropic strength thereto by at least twice performing the steps of successively dipping a mandrel into the acidic dispersion, slowly removing the mandrel from the dispersion under a spinning motion and neutralizing and drying the membrane thereon;

(c) crosslinking the finally dried membrane while on the mandrel; and

(d) removing the membrane from the mandrel.

4,406,854

METHOD OF MOLDING A BOTTLE-SHAPED CONTAINER OF SYNTHETIC RESIN

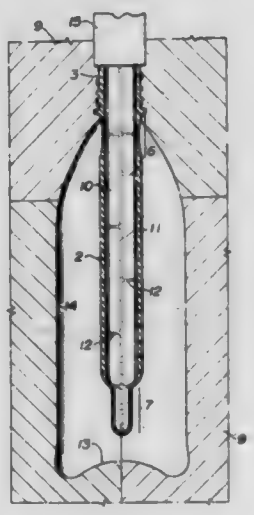
Yataro Yoshino, Tokyo, Japan, assignor to Yoshino Kogyosho Co. Ltd., Tokyo, Japan

Division of Ser. No. 100,912, Dec. 6, 1979, abandoned. This application Sep. 29, 1981, Ser. No. 306,674

Claims priority, application Japan, Dec. 13, 1978, 53/154345

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—532 4 Claims



1. A process for forming a bottle-shaped container, comprising:

heating a parison of biaxially orientable resin to a temperature for biaxial orientation blow molding; then

longitudinally stretching and axially orienting the parison in a blowing mold, said parison comprising, in unstretched condition:

an upper port forming portion;

a body of substantially uniform thickness;

a shoulder forming portion located between the upper port forming portion and the body; and

a bottom forming portion, wherein the shoulder and bottom portions each have a thickness which is about 80% or less than that of said body, said shoulder forming and bottom forming portions being reduced further in thickness and being the portions of the parison mainly oriented by said longitudinal stretching; and then

blowing said longitudinally stretched parison to a bottle shape to biaxially orient the resin of the body;

the shoulder forming and bottom forming portions undergoing an amount of orientation which approaches that undergone by the body.

4,406,855

LEAK DETECTION INSTALLATION

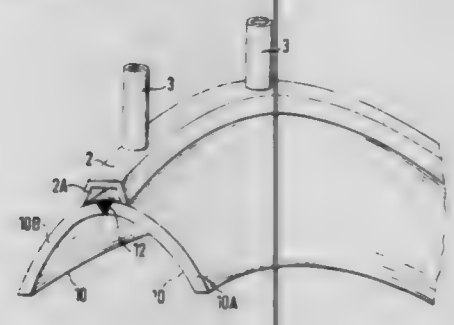
Hans-Georg Schwiers, Ketsch; Josef Schoening, Hambruecken, and Guenter Kissling, Hemsbach, all of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Cologne, Fed. Rep. of Germany

Filed May 27, 1980, Ser. No. 153,527

Claims priority, application Fed. Rep. of Germany, May 29, 1979, 2921707

Int. Cl.³ G21C *17/00*

U.S. Cl. 376—250 **17 Claims**



13. A leak detection system for a gas cooled high temperature nuclear power plant comprising:

a concrete pressure vessel;

a plurality of pressure vessel cavities in said pressure vessel for housing a reactor core, at least one gas driven turbine and a reactor cooling circuit having at least one gas collection device;

a metal liner for each of said pressure vessel cavities comprising a plurality of metal plates welded together;

a plurality of detection cavities formed in said concrete pressure vessel adjacent the welded areas of said liners;

flexible foam, of sufficient strength to remain self-supporting and intact under the operating pressures and conditions of said nuclear power plant and being adhesively secured in said detection cavities;

a plurality of gas detection connector conduits connecting said detection cavities with said gas collection devices;

means for applying reduced pressure to said gas collection device said connector conduits and said detection cavities;

means for measuring the gas content in predetermined isolated detection cavities in cooperation with said means for applying reduced pressure.

4,406,856

REMOVAL OF PORTIONS OF TUBES FROM STEAM GENERATOR OF NUCLEAR REACTOR

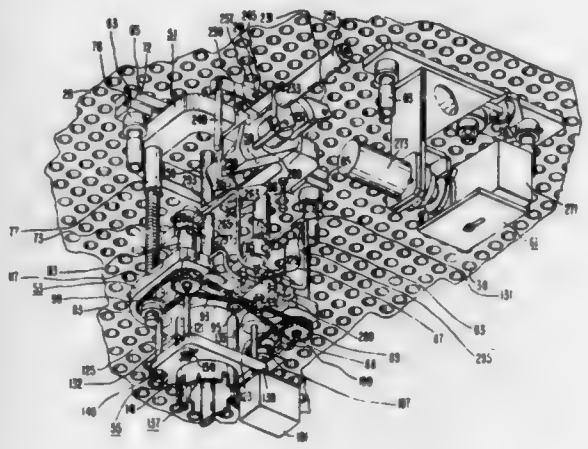
Robert L. Wilkins, Houston, Tex., and Charles F. Williams, Swartz Creek, Mich., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 29, 1980, Ser. No. 192,159

Int. Cl.³ G21C *19/00*

U.S. Cl. 376—260 **18 Claims**

1. Apparatus for removing portions of tubes from a steam generator of a nuclear reactor, said steam generator including a header having openings into which said tubes extend from within said generator, the said apparatus including a base plate, means securing said base plate to the face of said header opposite to the face from which said tubes extend, the said base plate being secured at a location of said header where a portion of a tube to be removed is readily accessible, a carriage suspended from said base plate movable towards and away from said base plate, means connected to said carriage, for moving said carriage away from and towards said base plate, gripper means for



gripping the external surface of the portion of the tube to be removed suspended from said carriage, movable away from and towards said carriage, said gripper means including a gripper and mechanism for actuating said gripper to engage and be disengaged from the outside surface of said portion to be removed, and means connected to said external-surface gripper means for moving said external-surface gripper means away from and towards said carriage.

4,406,857

ALLOY FOR ANTIFRICTION BEARING LAYER AND PROCESS OF FORMING AN ANTIFRICTION LAYER ON STEEL SUPPORTING STRIP

Duraid Mahrus, and Antonio C. Paulos, both of Sao Paulo, Brazil, assignors to Metal Leve S.A. Industria e Comercio, Brazil

Filed Sep. 22, 1981, Ser. No. 304,601

Claims priority, application Brazil, Sep. 26, 1980, 8006233

Int. Cl.³ C22C *9/08*; B22F *7/04*

U.S. Cl. 420—474 **4 Claims**

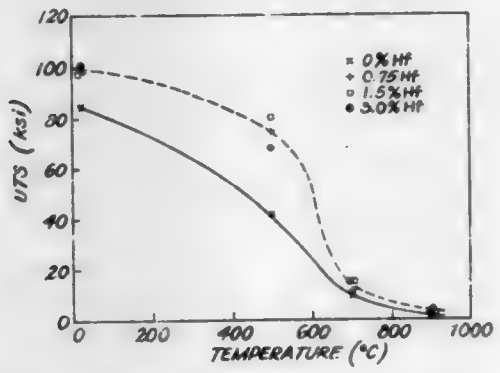
1. Powdered Cu-Sn-Pb alloy having increased mechanical properties and in which the agglomeration of lead globules upon sintering is prevented and corrosion resistance is increased so that said alloy is particularly suitable for antifriction bearings, said alloy consisting essentially of 2–10% by weight nickel, 8–27% by weight lead, 0.5–10% by weight tin, and the balance copper.

4. Method of producing an antifriction bearing material, which comprises applying onto a steel supporting strip a layer of powdered Cu-Sn-Pb alloy having increased mechanical properties and in which the agglomeration of lead globules upon sintering is prevented and corrosion resistance is increased so that said alloy is particularly suitable for antifriction bearings, said alloy consisting essentially of 2–10% by weight nickel, 8–27% by weight lead, 0.5–10% by weight tin and the balance copper, sintering said powdered layer on said steel supporting strip at a temperature sufficiently high to sinter the particles to themselves and to the steel strip, subjecting the thus obtained steel strip having said sintered particles thereon to rolling, and again sintering the same, thereby obtaining an anti-friction bearing material having a homogeneously distributed discontinuous lead phase in the sintered layer.

4,406,858
COPPER-BASE ALLOYS CONTAINING STRENGTHENING AND DUCTILIZING AMOUNTS OF HAFNIUM AND ZIRCONIUM AND METHOD

David A. Woodford, and Rodger H. Bricknell, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,901
Int. Cl.³ C22C 9/00
U.S. Cl. 420—475 10 Claims



1. A copper-base alloy containing from about 0.1 to about 5.0 weight percent of an alloying element selected from the group consisting of hafnium and zirconium, said copper-base alloy having substantially increased strength and tensile ductility, particularly intermediate temperature range tensile ductility, compared to substantially the same copper-base alloy without said alloying element, said copper-base alloy without said alloying element being subject to low or nil intermediate temperature range tensile ductility, said copper-base alloy without said alloying element being a leaded tin bronze consisting essentially of about, by weight, 6% Sn, 1.5% Pb, 4.5% Zn, 0.75% Ni, 0.20% Fe, 0.20% Sb, 0.05% S, 0.005% Si, 0.02% P, the balance copper.

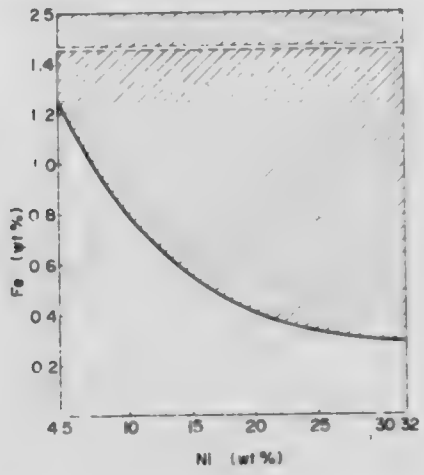
4. A copper-base alloy containing from about 0.1 to about 5.0 weight percent of an alloying element selected from the group consisting of hafnium and zirconium, said copper-base alloy having substantially increased strength and tensile ductility, particularly intermediate temperature range tensile ductility, compared to substantially the same copper-base alloy without said alloying element, said copper-base alloy without said alloying element being subject to low or nil intermediate temperature range tensile ductility, said copper-base alloy without said alloying element consisting essentially of about, by weight, 13% Ni, 2% Fe, 5% Mn, 3% Al, the balance copper.

4,406,859
ANTICORROSION COPPER ALLOYS

Yoshihisa Toda, Ashiya; Hiroshi Yamamoto, and Kenzi Sata, both of Amagasaki, all of Japan, assignors to The Furukawa Electric Company, Ltd., Tokyo, Japan

Filed Nov. 10, 1982, Ser. No. 440,526
Claims priority, application Japan, Nov. 10, 1981, 56-180029
Int. Cl.³ C22B 25/00
U.S. Cl. 420—487 10 Claims

1. An anticorrosion copper alloy essentially consisting of 4.5–32 wt % of Ni and 0.3–2.5 wt % of Fe shown as coordinates within the shaded area of FIG. 1; either one or more elements selected from 0.01–1.0 wt % of In, 0.003–0.2 wt % of

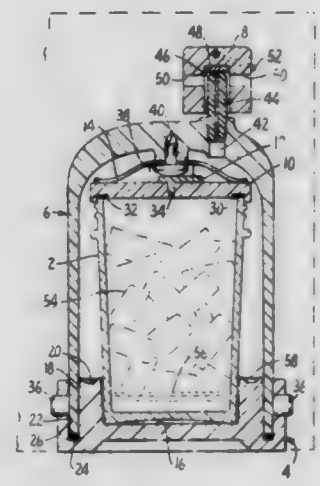


Pd and 0.003–0.1 wt % of Pt; and the remainder Cu and normal impurities.

4,406,860
MICROWAVE CANNING APPARATUS

Max P. Beauvais, 46 Southridge West, Tiburon, Calif. 94920, and Raymond E. Camezon, 623 Tunbridge Rd., Danville, Calif. 94526

Continuation-in-part of Ser. No. 305,279, Sep. 24, 1981, which is a continuation of Ser. No. 122,354, Feb. 19, 1980, abandoned.
This application Jan. 4, 1982, Ser. No. 336,676
Int. Cl.³ A61L 2/06, 2/12; A23L 3/10
U.S. Cl. 422—113 7 Claims



1. An apparatus for use in a microwave oven for canning food products in a non-metallic jar comprising:

a non-metallic jar having a mouth;

a compressible gasket means;

a jar lid of a metallic material and having sealing means for engaging the mouth of the jar and forming an air-tight seal therewith under the influence of greater atmospheric pressure outside the jar than inside; and

an enclosure of non-metallic material generally transparent to microwave energy enveloping said jar and lid and comprising

a base member for engaging the base of said jar and holding said jar in a predetermined position;

a cover member releasably engaging said base member with said gasket means compressively positioned therebetween, and enclosing at least the portions of said jar and lid not enclosed by said base member, said cover member, gasket means, and said base member forming a pressure-tight seal therebetween when so engaged, as to prevent the entry of gas from outside the enclosure to within the enclosure,

means connected to said cover member for resiliently urging said jar lid against said jar mouth, and

pressure control means communicating with the interior of said enclosure for limiting the maximum pressure within said enclosure to a predetermined amount above the ambient pressure outside said enclosure thereby sealing the enclosure against entry of air whereby the jar and the jar lid enclosing a food product and held within the enveloping enclosure may be heated within a microwave oven to form steam of the predetermined maximum pressure within the jar to sterilize the food product, said pressure control means in combination with said cover member and said jar lid sealing means providing for venting of steam from the jar and from the enclosure, and upon subsequent cooling of the enclosure and the jar causing the pressure within the enclosure and outside the jar to be less than the ambient outside the enclosure and greater than the pressure in the jar, said pressure control means preventing the entry of air into said enclosure, thereby causing the venting of the steam from the jar, again, and to effect an air-tight seal between the lid and the jar when removed from the enclosure.

4,406,861

MICROWAVE CANNING APPARATUS

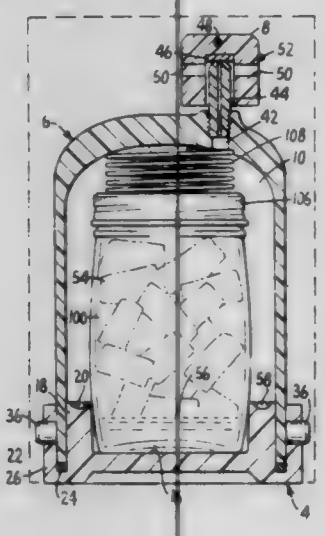
Max P. Beauvais, 46 Southridge West, Tiburon, Calif. 94920, and Raymond E. Camezon, 623 Tunbridge Rd., Danville, Calif. 94526

Continuation-in-part of Ser. No. 336,676, Jan. 4, 1982, which is a continuation-in-part of Ser. No. 305,279, Sep. 24, 1981, which is a continuation of Ser. No. 122,354, Feb. 19, 1980, abandoned.

This application Mar. 8, 1982, Ser. No. 356,222

Int. Cl.³ A61L *2/06, 2/12;* A23L *3/10*

U.S. Cl. 422—113 **5 Claims**



1. An apparatus for use in a microwave oven for canning food products in a non-metallic comprising:

a non-metallic jar having a mouth;

a compressible gasket means;

a jar lid having sealing means for engaging the mouth of the jar and forming an air-tight seal therewith under the influence of greater atmospheric pressure outside the jar than inside;

a ring which threadably engages the top portion of the non-metallic jar and urging the jar lid against said jar mouth, and

an enclosure of non-metallic material generally transparent to microwave energy enveloping said jar and said lid and comprising

a base member for supporting said jar;

a cover member releasably engaging said base member with said gasket means compressively positioned therebetween, and enclosing at least the portions of said jar and said lid not enclosed by said base member, said cover member, gasket means, and said base member forming a pressure-tight seal therebetween when so engaged, as to prevent the entry of gas from outside the enclosure to within the enclosure, and

pressure control means communicating with the interior of said enclosure for limiting the mximum pressure within said enclosure to a predetermined amount above the ambient pressure outside said enclosure thereby sealing the enclosure against entry of air whereby the jar, the lid and the ring enclosing a food product and held within the enveloping enclosure may be heated within a microwave oven to form steam of the predetermined maximum pressure within the jar to sterilize the food product said pressure control means in combination with said cover member and said jar lid sealing means providing for venting of steam from the jar and from the enclosure, and upon subsequent cooling of the enclosure and the jar causing the pressure within the enclosure and outside the jar to be less than the ambient outside the enclosure and greater than the pressure in the jar, said pressure control means preventing the entry of air into said enclosure, thereby causing the venting of the steam from the jar, again, and to effect an air-tight seal between the lid and the jar when removed from the enclosure.

4,406,862

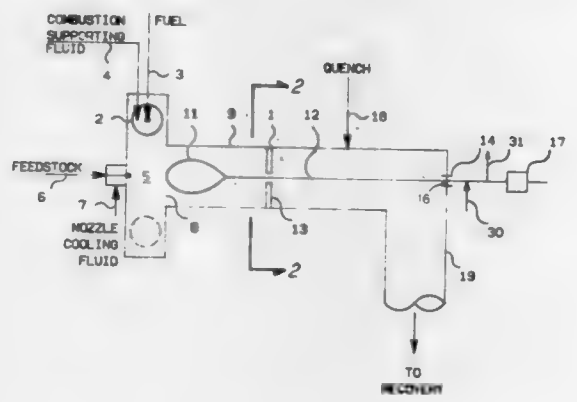
VARIABLE VENTURI CARBON BLACK REACTOR

John R. Casperson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 16, 1981, Ser. No. 274,092

Int. Cl.³ C09C *1/48;* B01J *19/26*

U.S. Cl. 422—156 **10 Claims**



1. A carbon black reactor comprising:

(a) a mixing section with conduit means for the introduction of reactants;

(b) a reaction section positioned downstream of the mixing section and in open communication therewith;

(c) a teardrop-shaped choke positioned within said reaction section; and

(d) means for producing reciprocating movement of said choke along the longitudinal axis of said reactor within said reaction section during operation of said reactor.

4,406,863

INTEGRATED SOLID PROPELLANT GAS GENERATOR AND FLUID HEAT EXCHANGER

Donald S. Jenkins, Tarzana, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 9, 1982, Ser. No. 347,381

Int. Cl.³ F28D *21/00*

U.S. Cl. 422—205 **5 Claims**

1. An integrated solid propellant gas generator and fluid heat exchanger, comprising:

a. a housing;

b. means, within said housing, for encasing a solid propellant therein, wherein this means comprises a casing surrounding said solid propellant, with said casing supported within said housing;

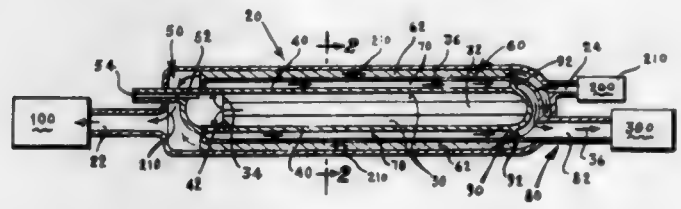
c. means for igniting and burning said solid propellant, thereby generating a hot flow of gas, wherein this means is operably connected to, and is disposed adjacent to an opening of, said solid propellant encasing means;

d. means, within said housing, for containing said hot gas flow of said propellant gas and for directing said hot gas flow out of said housing, wherein this means includes:

a chamber in which flows said hot gas generated by the burning of said solid propellant; and

means, in communication with said chamber, for ducting said hot gas flow of solid propellant gas out of said housing and into machinery capable of utilizing said hot gas flow;

e. means for receiving a liquid propellant therein, with said liquid propellant being capable of vaporizing upon absorbing heat from said hot flow of said propellant gas and thereby forming a pressurized gas, wherein this means is disposed within said housing, surrounds said casing, and is located adjacent to said means for containing said said hot



flow of solid propellant gas, and wherein said liquid propellant receiving means includes a housing inlet which connects said housing and said liquid propellant receiving means to a source of liquid propellant, and also wherein said liquid propellant receiving means and the external surface of said casing form said chamber in which flows said hot gas generated by the burning of said solid propellant, and further wherein said liquid propellant receiving means defines the flow path of said liquid propellant into, within, and out of said housing, with the flow of said liquid propellant directed by this means such as to be adjacent to and separated from said hot gas flow of burning solid propellant; and

f. means, operably connected to said liquid propellant receiving means, for allowing said pressurized gas in said liquid propellant receiving means to exit therefrom and from said housing, wherein said means for allowing said pressurized gas to exit includes a housing outlet connected to machinery which requires pressurized gas.

4,406,864

RECOVERY OF URANIUM FROM MATERIAL CONTAINING IRON, ARSENIC AND SILICEOUS MATTER

Donald R. Weir; Ian M. Masters, both of Fort Saskatchewan, and Roman M. Genik-Sas-Berezowsky, Edmonton, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Canada

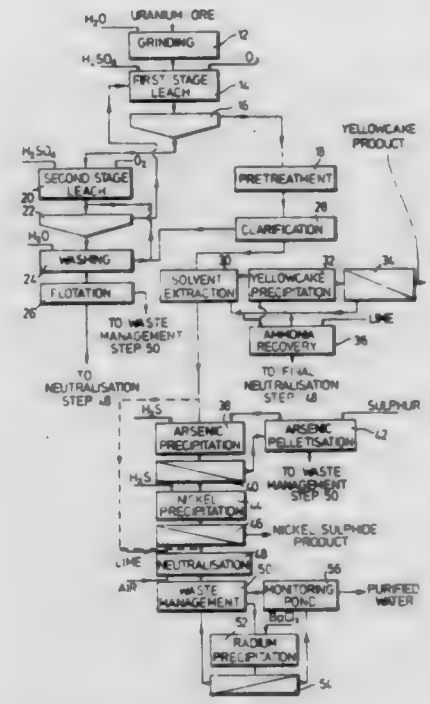
Filed Oct. 1, 1980, Ser. No. 192,767

Claims priority, application Canada, Aug. 22, 1980, 358968

Int. Cl.³ C01G *43/01, 28/00, 53/11*

U.S. Cl. 423—9 **8 Claims**

1. A process for the recovery of uranium values from uranium-containing material which also contains iron, arsenic and siliceous matter, comprising leaching the uranium-containing material in aqueous sulphuric acid solution in first and second stages, carrying out the first stage at atmospheric pressure to produce a residue and a leach solution containing uranium values and ferrous and ferric ions with a ratio of ferrous to ferric ions being at least about 10 to 1, passing the residue from the first stage to the second stage, carrying out the second stage under a total pressure of at least about 230 kPa to produce a residue and a leach solution containing uranium values and dissolved iron predominantly in ferric form, recycling the leach solution from the second stage to the first stage, and recovering uranium values from the first stage leach solution



by solvent extraction with a solvent extraction agent which has little affinity for arsenic.

4,406,865

METAL EXTRACTION BY SOLID-LIQUID AGGLOMERATES

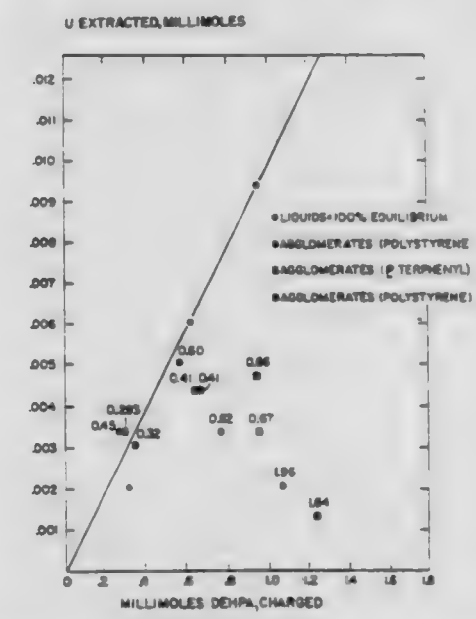
Everett J. Fuller, Gillette, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 969,813, Dec. 15, 1978, abandoned. This application Oct. 20, 1980, Ser. No. 199,025

Claims priority, application United Kingdom, Dec. 12, 1979, 7942806; Fed. Rep. of Germany, Dec. 13, 1979, 2950567

Int. Cl.³ B01D *11/04*

U.S. Cl. 423—10 **18 Claims**



1. A process for extracting at least one dissolved metal value from a liquid phase which comprises:

(a) contacting said liquid phase with solid-liquid agglomerates, comprising a finely divided solid, of average particle size of up to about 100 microns, dispersed in a binding liquid for the solid, said binding liquid and said solid being substantially insoluble in said liquid phase, wherein either solid, liquid or both, being capable of chemically interacting with said at least one metal value, thereby removing same from said liquid phase and wherein said agglomerates are substantially larger in average particle size than

said finely divided solid, for a time sufficient to load said agglomerates with said at least one metal value;
(b) separating said loaded agglomerates from said liquid phase;
(c) stripping said at least one metal value from said loaded agglomerates.

4,406,866

RECOVERY OF REFRACTORY METAL VALUES FROM SCRAP CEMENTED CARBIDE

Kenneth T. Reilly, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Sep. 20, 1982, Ser. No. 420,459
Int. Cl.³ C01G *41/00*
U.S. Cl. 423—61 **1 Claim**

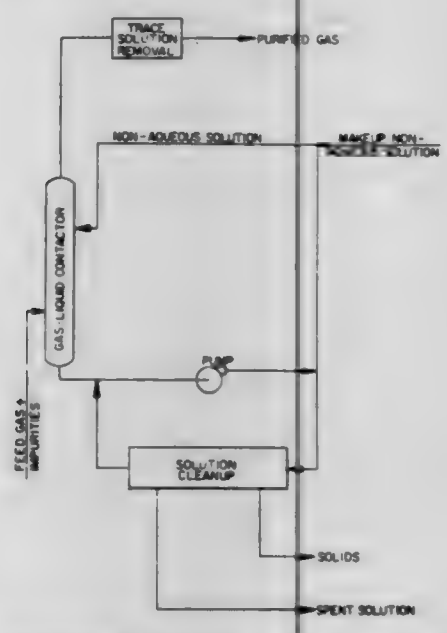
1. A process for recovering tungsten values from a tungsten carbide cemented with binder metal having an aluminum oxide coating comprising treating said coated cemented tungsten carbide with an azeotropic solution of hydrochloric acid for a sufficient period of time to permit said hydrochloric acid to permeate said aluminum oxide coating and dissolve said binder metal and yield a binder depleted tungsten carbide including coating, said aluminum oxide coating being substantially insoluble in said hydrochloric acid, separating said binder depleted tungsten carbide and coating from said solution of hydrochloric acid containing dissolved binder metal, comminuting said depleted tungsten carbide to form a tungsten carbide powder, oxidizing said tungsten carbide powder in a gas containing oxygen to form a tungsten oxide powder, and digesting said tungsten oxide powder in an aqueous solution of sodium hydroxide to form a soluble tungstate.

4,406,867

PROCESS FOR THE PURIFICATION OF NON-REACTING GASES

Arthur E. Marcinkowsky, Charleston; George E. Keller, II, South Charleston, both of W. Va., and Robert A. Jones, Jr., Irvine, Calif., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 141,141, Apr. 17, 1980, Pat. No. 4,313,916, which is a continuation-in-part of Ser. No. 89,316, Oct. 31, 1979, abandoned, which is a continuation-in-part of Ser. No. 38,736, May 14, 1979, abandoned. This application Jan. 13. 1982, Ser. No. 339,166
The portion of the term of this patent subsequent to Feb. 2, 1999, has been disclaimed.
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—226 **9 Claims**



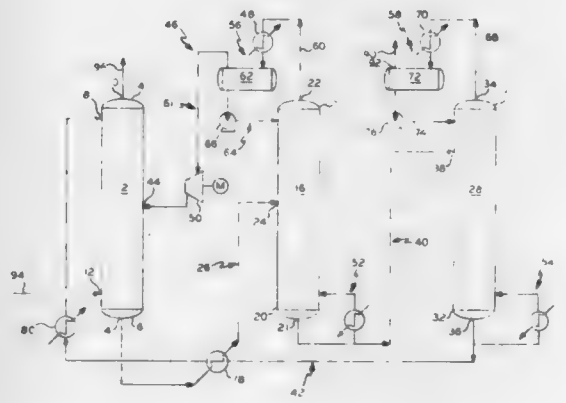
1. In a regenerative process for the purification of an inert or a non-reacting industrial gas stream by the removal of trace amounts of carbon dioxide therefrom comprising contacting said gas stream with an essentially non-aqueous liquid solution of at least one member selected from the group consisting of; (a) hydroxides, carbonates and bicarbonates of sodium, potassium and lithium and (b) liquid aliphatic polyhydric alcohol having a carbon to oxygen ratio of 1 to about 5 and at least two oxygen thereof being separated by not more than the two sequential carbon atoms; separating the purified industrial gas from the reaction products of said contacting step including said solution; increasing said reaction products stream to an elevated temperature up to 200° C.; reducing the partial pressure of carbon dioxide in the vapor phase above said reaction product stream; separating carbon dioxde from said reaction product stream; and recycling the treated reaction product stream to said liquid solution for contacting a further quantity of said industrial gas stream.

4,406,868

PROCESS AND APPARATUS FOR REMOVING H_2S FROM GAS STREAMS

Cecil O. Carter, Wann, and Dwight D. Boesiger, Bartlesville, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 13, 1981, Ser. No. 321,017
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—228 **16 Claims**



1. A process comprising:
(a) contacting a first gas stream containing CO_2, H_2S and at least one hydrocarbon with a solution of at least one alkanolamine in a contacting zone;
(b) withdrawing from the contacting zone a rich solution of at least one alkanolamine which is rich in H_2S and CO_2 from the first gas stream;
(c) introducing the rich solution into a separation zone;
(d) selectively stripping the rich solution in the separation zone to produce a second gas stream issuing from the separation zone which contains a higher CO_2:H_2S mole ratio than the first stream; and
(e) conveying the second gas stream into an alkanolamine contacting zone.

4,406,869

PROCESS FOR PRODUCING ANHYDROUS SODIUM CARBONATE CRYSTAL

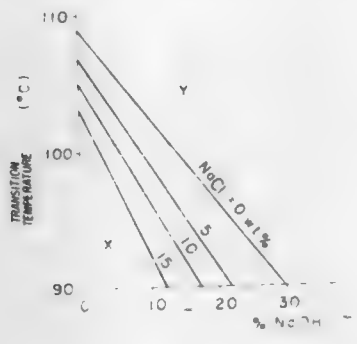
Keiichi Nakaya, Chiba; Kohji Kawanami, and Suekazu Hirata, both of Ichihara, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jan. 19, 1981, Ser. No. 226,168
Claims priority, application Japan, Feb. 4, 1980, 55-11475
The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.
Int. Cl.³ C01D *15/08*; B01D *1/00*
U.S. Cl. 423—421 **15 Claims**

1. A process for producing an anhydrous sodium carbonate crystal which comprises:
(a) continuous feeding an aqueous solution of sodium carbonate in a sodium carbonate monohydrate crystallizing zone;

(b) crystallizing sodium carbonate mono hydrate crystal in said zone;

(c) evaporatively crystallizing said sodium carbonate hydrate to an anhydrous sodium carbonate crystal by adding both NaCl and NaOH whereby crystals of anhydrous sodium carbonate having an average diameter of about 100μ to about 700μ are obtained in an anhydrous sodium



carbonate crystallizing zone, producing a mother liquor and water vapor,

(d) separating said mother liquor and recycling said separated mother liquor into said sodium carbonate hydrate crystallizing zone; and

(e) recycling heat contained in said water vapor by compressing said water vapor and feeding said water vapor into said anhydrous sodium carbonate crystallizing zone.

4,406,870

METHOD FOR THE SEPARATION OF CARBON ISOTOPES BY CHEMICAL EXCHANGE METHOD

Tetsuya Miyake, Tokyo; Kunihiko Takeda, and Heiichiro Obanawa, both of Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP80/00326, § 371 Date Aug. 10, 1981, § 102(e) Date Aug. 10, 1981, PCT Pub. No. WO81/01802, PCT Pub. Date Jul. 9, 1981

PCT Filed Dec. 2, 1980, Ser. No. 293,220

Claims priority, application Japan, Dec. 27, 1979, 54-170780; Mar. 15, 1980, 55-32858

Int. Cl.³ C01B *31/00*

U.S. Cl. 423—445 **9 Claims**

1. A method for the separation of the isotopes of carbon, C^{12} and C^{13}, comprising effecting an isotope exchange reaction with respect to carbon between a dissociated type chemical species of a carbon-containing acid and a non-dissociated type chemical species of said acid, wherein an aqueous solution of a dissociated type chemical species of a carbon-containing acid and a non-dissociated type chemical species of said acid are contacted with an anion exchange resin as a solid phase to adsorb the dissociated type chemical species of the anion exchange resin, while allowing an isotope exchange reaction with respect to carbon to proceed between the dissociated type chemical species and the non-dissociated type chemical species, thereby separating C^{12} and C^{13}, respectively, into a solution phase and the solid phase if an equilibrium constant K for an isotope exchange reaction represented by

$$C^{13}XH + C^{12}X^- \underset{}{\overset{K}{\rightleftharpoons}} C^{12}XH + C^{13}X^-$$

wherein K represents an equilibrium constant for isotope exchange, CXH represents a carbon-containing acid and CX^- represents an acid-dissociated type chemical species of the carbon-containing acid

is more than 1 or separate C^{12} and C^{13}, respectively, into the solid phase and a solution phase if K as defined above is less than 1, whereby C^{13} is concentrated in the phase into which C^{13} is separated.

4,406,871

PROCESS FOR GROWING DIAMONDS

Mikhail I. Samoilovich, ulitsa Krasnoi Molodezhi, 4, kv. 64; Boris I. Zadneprovsky, ulitsa Lenina, 24, kv. 3, both of Alexandrev Vladimirskoi oblasti; Albert V. Nikitin, prospekt Stroitelei, 52, kv. 55, Ivanovo; Jury M. Putilin, ulitsa Revoljutsii, 4, kv. 40; Vladimir M. Radyansky, ulitsa Tereshkovoi, 2, korpus 2, kv. 15, both of Alexandrov Vladimirskoi oblasti, and Anatoly A. Shaposhnikov, 5 Vatutinsky pereulok, 31, kv. 10, Moscow, all of U.S.S.R.

PCT No. PCT/SU80/00083, § 371 Date Apr. 30, 1981, § 102(e) Date Apr. 20, 1981, PCT Pub. No. WO81/00560, PCT Pub. Date Mar. 5, 1981

PCT Filed May 30, 1980, Ser. No. 253,834

Claims priority, application U.S.S.R., Aug. 30, 1979, 2800401

Int. Cl.³ C01B *31/06*

U.S. Cl. 423—446 **10 Claims**

1. In a process for growing diamonds from carbonaceous substances at elevated temperatures and pressures within the range of thermodynamic stability of the diamond, in the presence of solvent-catalyst metals, the improvement which comprises:

effecting the growing of said diamonds in the presence of an active additive selected from the group consisting of cyanamide, at least one of its metal derivatives in Groups 1, 2 and 8 of the Periodic Table, and mixtures thereof.

4,406,872

DESULFURIZATION OF DELAYED PETROLEUM COKE

Robert S. Kapner, West Caldwell, N.J., and Robert O'Brien, Woodside, N.Y., assignors to Diamond West Energy Corporation, New York, N.Y.

Filed May 28, 1981, Ser. No. 267,782

Int. Cl.³ C01B *57/00, 31/26;* C09C *1/56;* C01B *31/02*

U.S. Cl. 423—461 **3 Claims**

1. A process for desulfurizing delayed coke of high sulfur content above 3% by weight, which comprises the steps of

(a) raising said coke to an elevated reaction temperature in the range of 1400° to 1600° C.,

(b) contacting said elevated temperature coke with a first added active sulfur-bearing gas for a first period of about 5 minutes to 30 minutes wherein said first added gas is selected from the group consisting of hydrogen sulfide, carbonyl sulfide, refinery sour gas, mercaptans, carbon disulfide, a mixture of carbonyl sulfide with water, and a mixture of carbon monoxide and sulfur dioxide, wherein said first added gas is purged at the end of said first period, and

(c) then contacting said coke from step (b) with a second added gas for a second period of up to one hour and maintaining said elevated temperature to obtain coke of reduced sulfur content, wherein said second added gas is selected from the group consisting of (i) an inert gas and (ii) said first added gas diluted with an inert gas.

4,406,873

PROCESS FOR SULFUR PRODUCTION

David K. Beavon, Pasadena, Calif., assignor to The Ralph M. Parsons Co., Pasadena, Calif.

Continuation-in-part of Ser. No. 198,624, Oct. 20, 1980, abandoned, which is a continuation-in-part of Ser. No. 33,873, Apr. 27, 1979, Pat. No. 4,279,882. This application Jul. 16, 1981, Ser. No. 284,097

The portion of the term of this patent subsequent to Jul. 21, 1998, has been disclaimed.

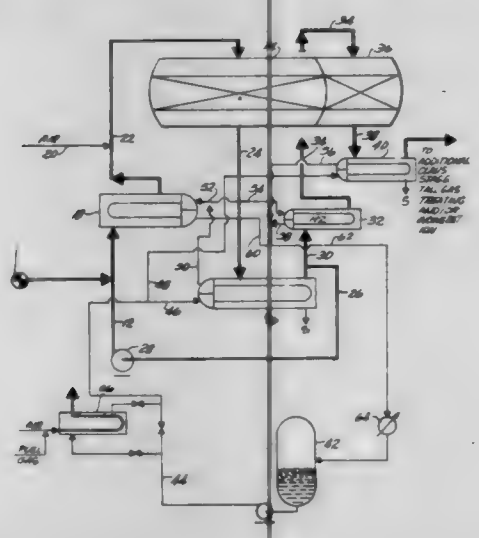
Int. Cl.³ C01B *17/04*

U.S. Cl. 423—574 R **3 Claims**

1. A process for the production of sulfur with control of process temperature by use of a liquid heat transfer fluid which comprises:

(a) providing a closed loop heat transfer system containing a liquid heat transfer fluid;

(b) condensing sulfur from product gas stream containing sulfur, sulfur dioxide, and hydrogen sulfide by indirect heat exchange with cooled liquid heat transfer fluid stream in a first indirect heat exchange zone to provide a cooled residual gas comprising hydrogen sulfide and sulfur dioxide and a heated liquid heat transfer fluid stream, said product gas stream being formed by contacting, in a catalytic selective oxidation zone, a feed gas heated, at least in part, for feed to said catalytic selective oxidation zone by indirect heat exchange with a first portion of the heated liquid heat transfer fluid stream in a second indirect heat exchange zone, said feed gas comprising an acid gas feed containing 10 percent and up to 100 percent by volume hydrogen sulfide in admixture with oxygen present in an amount of from about 70 percent to 130 percent of the stoichiometric amount required for oxidation of the hydrogen sulfide to elemental sulfur and a recycle gas which is a portion of the cooled residual gas comprising hydrogen sulfide and sulfur dioxide exiting the first indirect heat exchange zone, with a selective oxidation catalyst capable



of selectively oxidizing hydrogen sulfide to sulfur dioxide substantially without formation of sulfur trioxide and catalytically converting introduced hydrogen sulfide to sulfur dioxide and sulfur at a temperature above the kindling temperature of the catalyst and below an upper reaction temperature of about 1000° F., said upper reaction temperature being selectively controlled by the amount of recycle gas introduced to the catalytic selective oxidation zone;

(c) indirectly heating the balance of cooled residual gas exiting the first heat exchange zone in a third indirect heat exchange zone with a second portion of the heated liquid heat transfer fluid stream to a temperature for feed to a Claus conversion stage;

(d) passing the heated balance of the residual gas stream to at least one Claus conversion zone to form additional sulfur; and

(e) combining liquid heat transfer fluid streams from the second and third indirect heat exchange zones and cooling the combined liquid heat transfer fluid streams for recycle to the process.

4,406,874

ZRMN$_2$-TYPE ALLOY PARTIALLY SUBSTITUTED WITH CERIUM/PRASEODYMIUM/NEODYMIUM AND CHARACTERIZED BY AB$_2$ STOICHIOMETRY

William E. Wallace, Pittsburgh, Pa.; Faiz Pourarian, Qazvin, Iran, and Vijay K. Sinha, Bihar, India, assignors to Koppers Company, Inc., Pittsburgh, Pa.

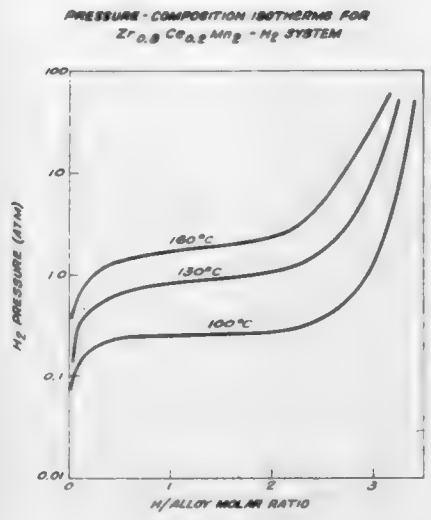
Filed Apr. 30, 1982, Ser. No. 373,640

Int. Cl.^{3} C22C *22/00*; C01B *6/24*

U.S. Cl. 423—644 **24 Claims**

1. A ternary alloy provided by elements in an atomic ratio expressed by the formula:

$$Zr_{1-x}M_xMn_2$$



wherein "M" is selected from the group consisting of cerium, praseodymium and neodymium, and wherein "x" has a value between zero and about 0.3.

4,406,875

RADIOLABELED AMINE COMPOUNDS AND THEIR USE

Rudolf B. J. de Jong, Sijbekarspel, and Jan Nielsen, Schoorl, both of Netherlands, assignors to Byk-Mallinckrodt CIL B.V., Petten, Netherlands

PCT No. PCT/NL80/00005, § 371 Date Oct. 7, 1980, § 102(e) Date Oct. 7, 1980, PCT Pub. No. WO80/01685, PCT Pub. Date Aug. 21, 1980

PCT Filed Feb. 7, 1980, Ser. No. 194,797

Claims priority, application Netherlands, Feb. 7, 1979, 7900964

Int. Cl.^{3} A61K *49/00, 43/00*

U.S. Cl. 424—1 **28 Claims**

1. A radiolabeled amine compound of the general formula:

$$Y—(CH_2)_2—X—(CH_2)_2—NH_2$$

wherein X is selected from the group consisting of oxygen; sulfur; lower alkylene; radioactive selenium; and radioactive tellurium; and when X is a radioactive selenium or tellurium atom, Y is a hydrocarbyl amino group, and when X is an oxygen atom, a sulfur atom or a lower alkylene group, Y is a radioactive iodine-substituted hydrocarbyl amino group; or a pharmaceutically acceptable acid salt of said amine compound.

4,406,876

SULFUR FREE SMALL-PARTICLE PRODUCTION OF TECHNETIUM SULFUR COLLOID

Joseph Steigman; Nathan A. Solomon, both of Brooklyn, N.Y., and Lydia L. Y. Hwang, Tokyo, Japan, assignors to Research Foundation of the State Univ. of New York, Albany, N.Y.

Filed Oct. 14, 1980, Ser. No. 196,836

Int. Cl.^{3} A61K *49/00, 43/00*

U.S. Cl. 424—1 **13 Claims**

2. A process for the preparation of technetium 99m colloid substantially free of sulfur which comprises the steps of:

a. providing pertechnetate to a reagent mixture comprising a gelling agent and alkali metal thiosulfate, and acid and a chelating agent,

b. heating the mixture

c. cooling the mixture and adding a buffer thereto to bring the pH to a value of at least 6;

d. reheating the mixture.

4,406,877

^{82}RB GENERATING METHOD AND ELUENT

Rudi D. Neirinckx, East Windsor, and Michael D. Loberg, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 4, 1980, Ser. No. 156,285
Int. Cl.[3] A61K *43/00, 49/00*
U.S. Cl. 424—1.1 12 Claims

1. A low ^{82}Sr breakthrough method of generating ^{82}Rb from a ^{82}Sr charged inorganic adsorbant column comprising eluting the ^{82}Rb from the said inorganic adsorbant with an eluent comprising a pharmaceutically acceptable saline and buffer solution.

8. A pharmaceutically acceptable solution comprising ^{82}Rb, a saline solution and a buffer.

4,406,878

IODINATED CONTRAST AGENT FOR RADIOGRAPHY

Charles D. DeBoer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 930,290, Aug. 2, 1978, abandoned. This application Sep. 19, 1979, Ser. No. 76,718
Int. Cl.[3] A61K *49/04*
U.S. Cl. 424—5 7 Claims

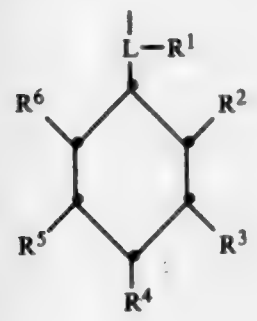
1. A radiographic contrast composition comprising a radiographically effective amount of a contrast agent and a carrier for said agent, said contrast agent comprising a water-insoluble, non-water-swellable iodinated polymer having an iodine content in excess of 35 wt%, said polymer being cross-linked and containing a repeating unit of the formula



wherein

A represents the residue of a repeating unit in the backbone chain of said polymer and bears appended hydroxyl groups; and

X represents an organic moiety containing an iodinated aromatic group, said moiety being of the formula



wherein

L represents a linking group selected from the class consisting of ester groups, ether groups, amide groups, thioester groups, carbonate groups, carbamate groups, and sulfide groups; and

each of R^1 to R^6, which may be the same or different, represents hydrogen, an iodine-containing substituent, or a hydrophilic group-containing substituent, with the provisos that (i) the iodine content of X is within the range of from 40 to 80 wt%; and (ii) said hydrophilic group is a member selected from the class consisting of carboxyl groups, sulfo groups, amino groups, salts of the aforementioned carboxyl, sulfo and amino groups, and polyol groups.

4,406,879

PHTHALAZINOL PREPARATION

Hiroshi Miyazaki, Kawasaki; Taka'aki Ohkuma, Tokyo; Yukiko Minatogawa, Tokorozawa, and Hiroshi Ninomiya, Sayama, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha and Banyu Pharmaceutical Co., Ltd., both of Tokyo, Japan

Filed Oct. 29, 1980, Ser. No. 201,929
Claims priority, application Japan, Nov. 7, 1979, 54-143396
Int. Cl.[3] A61K *9/20, 9/36, 31/495*
U.S. Cl. 424—14 7 Claims

1. A pharmaceutical composition comprising: (1) 0.5 to 10 W/W % of a water-soluble cellulose ether, (2) 5 to 59.5 W/W % of a polyhydric alcohol, (3) up to 30 W/W % of a pharmaceutically acceptable carrier and (4) 80 to 40 W/W % of 6,8-dimethyl-7-ethoxycarbonyl-4-hydroxymethyl-1-phthalazone.

7. A process for increasing the concentration of 6,8-dimethyl-7-ethoxycarbonyl-4-hydroxymethyl-1-phthalazone in the blood, characterized in that a pharmaceutical composition comprising following components (1) through (4):

(1) 0.5–10 w/w % of at least one water-soluble cellulose ether selected from the group consisting of hydroxypropylmethyl cellulose, hydroxypropyl cellulose and methyl cellulose,

(2) 5–59.5 w/w % of at least one polyhydric alcohol selected from the group consisting of propylene glycol and polyethylene glycol of an average molecular weight of 200–1000,

(3) up to 30 w/w % of a pharmaceutical carrier, and

(4) 80–40 w/w % of 6,8-dimethyl-7-ethoxycarbonyl-4-hydroxymethyl-1-phthalazone is administered in the form of troches to be kept below the tongue.

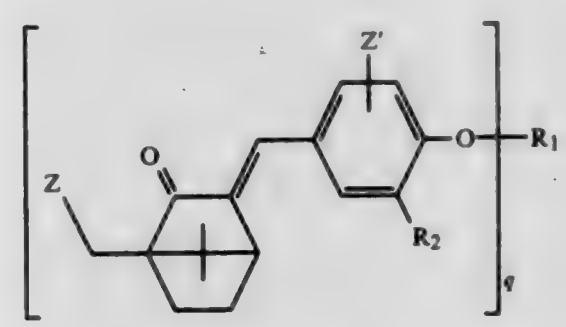
4,406,880

OXYBENZYLIDENE-BORNANONES, THEIR PREPARATION AND THEIR USE IN COSMETICS

Claude Bouillon, Eaubonne, and Charles Vayssie, Villepinte, both of France, assignors to L'Oreal, Paris, France

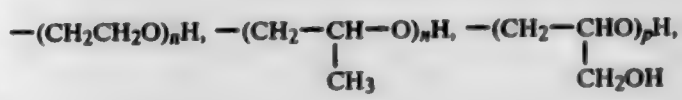
Division of Ser. No. 56,262, Jul. 10, 1979. This application May 22, 1981, Ser. No. 266,449
Claims priority, application France, Jul. 11, 1978, 78 20701
Int. Cl.[3] A61K *7/00, 7/42, 7/44*
U.S. Cl. 424—40 16 Claims

1. A composition suitable for cosmetic application which comprises an effective amount of a compound of the general formula I:

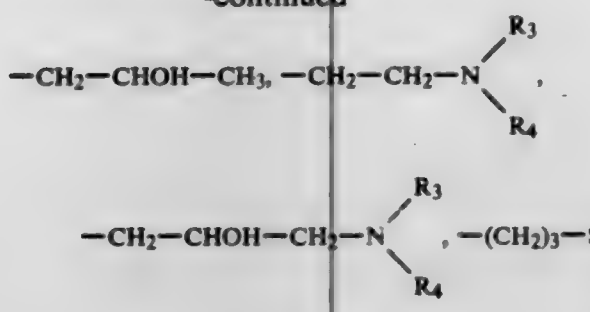


I

in which: Z and Z′ independently denote a hydrogen atom or a SO_3H radical or a salt thereof with an inorganic or organic base, at least one of Z and Z′ denoting a hydrogen atom; R_1 denotes a hydrogen atom, an alkyl radical containing 4 to 18 carbon atoms when R_2 is other than an alkoxy radical, an alkyl radical containing 1 to 18 carbon atoms when R_2 is an alkoxy radical, an alkenyl radical containing 3 to 18 carbon atoms, a radical of formula



-continued



or a salt thereof with an organic or inorganic base, or $-(CH_2)_mCO_2R$, in which R denotes H or an alkyl radical containing 1 to 8 carbon atoms, or a divalent radical of formula $-(CH_2)_m-$ or $-CH_2-CHOH-CH_2-$, m having a value from 1 to 10, n having a value from 1 to 20 and p having a value from 1 to 6, and R_3 and R_4 each independently denote a hydrogen atom or an optionally branched or hydroxy alkyl radical, or R_3 and R_4 together form a morpholino or a piperidino ring with the nitrogen atom to which they are attached; R_2 denotes a hydrogen atom, an alkoxy radical containing 1 to 4 carbon atoms or a divalent radical —O— bonded to the radical R_1 if the latter is also divalent; q denotes 1 or 2, such that if q is 2, R_1 is a said divalent radical, with the proviso that if R_1 denotes hydrogen, R_2 also denotes hydrogen; when q is 1, at least one of Z, Z', R_1 and R_2 is not hydrogen and when Z and Z' are both hydrogen, R_1 is not $-CH_2-$ when R_2 is —O—; and a cosmetically acceptable vehicle or a mixture of the cosmetically acceptable vehicle and a cosmetically acceptable adjuvant in an amount of 1 to 98% by weight.

4,406,881

ANTIMICROBIAL AGENT

Peter A. Ladanyi, Fort Collins, Colo., assignor to Vipont Laboratories, Fort Collins, Colo.

Continuation of Ser. No. 151,706, May 20, 1980, abandoned, which is a continuation of Ser. No. 24,604, Mar. 28, 1979, abandoned. This application Sep. 18, 1981, Ser. No. 303,389

Int. Cl.³ A61K *7/16, 33/30*

U.S. Cl. 424—49 **12 Claims**

1. A method for treating dental carries in mammals comprising topically applying to the affected area an effective amount of the following composition:

a. from about 0.1 to about 10% by weight of a hydrochloric acid salt of sanguinarine;

b. from about 2% to about 60% by weight of zinc chloride;

c. the remainder being a solvent selected from the group consisting of water, glycerine, propylene glycol, petrolatum, and C_1–C_6 alcohols.

4,406,882

PHARMACEUTICAL COMPOSITION FOR TREATING DISEASES OF THE ORAL CAVITY

John C. Turner, London, and Lily Baxendale, Hertfordshire, both of England, assignors to Biorex Laboratories Limited, England

Filed Jan. 25, 1982, Ser. No. 342,706

Claims priority, application United Kingdom, Feb. 6, 1981, 8103789

Int. Cl.³ A61K *7/16, 7/22, 7/24*

U.S. Cl. 424—49 **6 Claims**

1. A water-soluble or water-dispersible particulate composition comprising:

per one part by weight of at least one glycyrrhetinic acid derivative selected from the group consisting of glycyrrhetinic acid hemiesters and the salts thereof and the esters of glycyrrhetinic acid and of 3-0-acyl derivatives of glycyrrhetinic acid, 10 to 100 parts by weight of at least one compound selected from the group consisting of lactose and sorbitol, 10 to 50 parts by weight of at least one buffer selected from the group consisting of sodium citrate, potassium citrate, sodium tartrate, potassium tartrate, sodium malate and potassium malate and 0.1 to 10 parts by weight of disodium edetate.

4,406,883

CONTROLLED RELEASE SUPPOSITORIES CONSISTING ESSENTIALLY OF A LINEAR POLYMER PARTICULARLY, POLYVINYL PYRROLIDONES

Geoffry A. Byrne, Gifford, and Ross I. Aylott, Edinburgh, both of Scotland, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 817,412, Jul. 20, 1977, Pat. No. 4,292,300. This application Mar. 27, 1981, Ser. No. 248,475

Int. Cl.³ A61K *9/02, 9/22, 31/79*

U.S. Cl. 424—80 **7 Claims**

1. A non-dissolving, non-disintegrating slow-release shaped suppository consisting essentially of polyvinyl pyrrolidone, water, and a therapeutically effective amount of a water-soluble therapeutically active ingredient, wherein the water is present in an amount of more than 35 parts by weight whereby the suppository has flexibility and becomes slippery when moistened.

4,406,884

TOPICAL ANTIMICROBIAL COMPOSITION

Mahdi B. Fawzi, Fairfield, and Melvin A. Barbera, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 23, 1981, Ser. No. 276,557

Int. Cl.³ A61K *31/19, 31/20, 31/78*

U.S. Cl. 424—81 **13 Claims**

1. A topical pharmaceutical composition in the form of an aqueous lotion or aqueous gel, having a pH no greater than about 5, comprising a safe and effective amount of an antimicrobial agent selected from the group consisting of C_5–C_{12} fatty acids and mixtures thereof.

4,406,885

PREPARATION OF NATIVE ONCORNAVIRUS ENVELOPE SUBUNITS AND VACCINES THEREFROM

Abraham Pinter, Brooklyn, N.Y., assignor to Research Corporation, New York, N.Y.

Filed Dec. 28, 1978, Ser. No. 973,958

Int. Cl.³ A61K *39/12, 37/02*

U.S. Cl. 424—88 **5 Claims**

1. A non-denatured glycoprotein, [gp90] having a molecular weight of 90,000 daltons, comprised of units of gp70 and p15 (E), capable of immunoprecipitation with anti-gp70 sera and anti-p15 (E) sera, yielding gp70 and p15 (E) upon reduction with mercaptoethanol, which is aqueous solution in the presence of nonionic detergents exists as a complex with a molecular weight of 360,000 to 450,000.

4,406,886

PURIFICATION OF ANTIHEMOPHILIA FACTOR VIII BY PRECIPITATION WITH ZINC IONS

Milan Bier, Tucson, Ariz., and Peter R. Foster, Edinburgh, Scotland, assignors to University Patents, Inc., Norwalk, Conn.

Filed Jan. 14, 1983, Ser. No. 458,128

Int. Cl.³ A61K *35/14*

U.S. Cl. 424—101 **12 Claims**

1. The method for the preparation and purification of Factor VIII concentrates which comprises the addition of zinc ions in solution to a cryoprecipitate derived from blood plasma and comprising Factor VIII, fibrinogen, and fibronectin, said zinc ions being added in an amount sufficient to initate a precipitation of fibrinogen and fibronectin rich zinc-protein complexes from said cryoprecipitate.

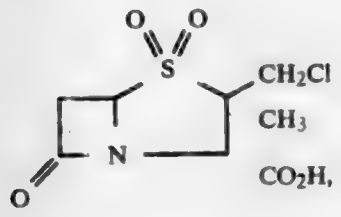
4,406,887

METHOD FOR TREATING RESISTANT BACTERIA INCLUDING ANAEROBES

Maxwell Gordon, Syracuse, and I. Jacob Pachter, Fayetteville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Oct. 13, 1981, Ser. No. 310,346
Int. Cl.³ A61K 35/00
U.S. Cl. 424—114 8 Claims

1. A method for the treatment of a presumed bacteroides infection in a mammalian host which comprises parenteral treatment of said host with a non-toxic dose of 500 to 6000 mg. of ceftazidime per day and concurrently administering thereto a BL-P2013 compound selected from the group consisting of the acid having the formula:



a pharmaceutically acceptable salt of said acid, and an ester of said acid selected from the group consisting of phenacyl, acetoxymethyl, pivaloyloxymethyl, α-acetoxyethyl, α-acetoxybenzyl, α-pivaloyloxyethyl, phthalidyl, indanyl, methoxymethyl, benzoyloxymethyl, α-ethylbutyryloxymethyl, propionyloxymethyl, valeryloxymethyl, and isobutyryloxymethyl the amount of said BL-P2013 compound being equal in weight to said dose of ceftazidime and effective with said dose of ceftazidime to inhibit the growth of said Bacteroides.

4,406,888

AQUEOUS MICELLAR SOLUTIONS OF LEVONANTRADOL AND N-METHYLLEVONANTRADOL AND LYOPHILIC FORMS THEREOF FOR RECONSTITUTION

Armando J. Aguiar, and Bijan Rasadi, both of Gales Ferry, Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Jan. 9, 1981, Ser. No. 223,672
Int. Cl.³ A61K 31/47
U.S. Cl. 424—175 12 Claims

1. A pharmaceutical composition comprising an aqueous micellar solution of (a) levonantradol or (b) N-methyllevonantradol, or a pharmaceutically acceptable acid addition salt of (a) or (b), as active ingredient, wherein (a) or (b) or salt of (a) or (b) is present at a concentration of from about 0.01 to about 5.0 mg/ml of (a) or (b); (c) at least a critical micelle concentration of a nonionic amphiphile selected from the group consisting of sorbitan fatty acid esters, polyoxyethylene sorbitan fatty acid esters, polyoxyethylene glycol esters and glyceryl fatty acid esters having a hydrophile-lipophile balance number of from about 11 to about 18, and (d) a stabilizing amount of an antioxidant of from about 0.1 to about 2% (w/v).

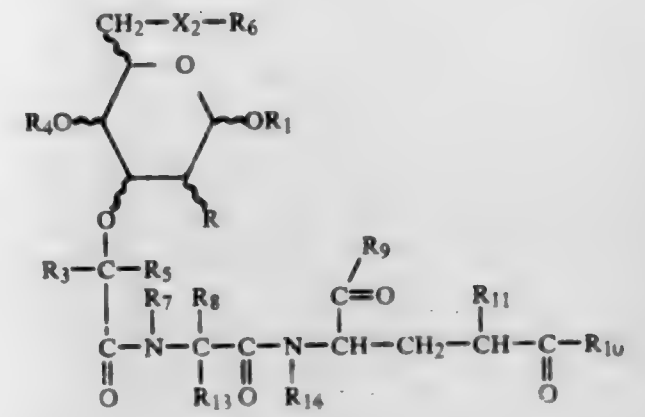
4,406,889

DERIVATIVES OF ALDOHEXOSES, INTERMEDIATES, PROCESSES FOR THEIR MANUFACTURE, PREPARATIONS CONTAINING SUCH COMPOUNDS, AND THEIR USE

Albert Hartmann, Grenzach, Fed. Rep. of Germany; Gerhard Baschang, Bettingen, Switzerland; Oskar Wacker, Basel, Switzerland, and Jaroslav Stanek, Birsfelden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 10, 1981, Ser. No. 233,223
Claims priority, application Switzerland, Feb. 15, 1980, 1265/80
Int. Cl.³ A61K 37/02, 31/71; C07C 103/52
U.S. Cl. 424—177 34 Claims

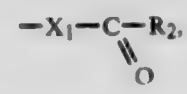
1. Derivatives of pyranoses of the formula I,



(I)

in which

R represents hydroxy, amino or a radical of the formula



X_1 and X_2, independently of one another, each represents NR_{15} or an oxygen atom, wherein R_{15} represents hydrogen or lower alkyl,

R_1 and R_4, independently of one another, each represents hydrogen or acyl or a hydroxy-protecting group,

R_6 represents hydrogen, acyl or, if X_2 represents an oxygen atom, a hydroxy-protecting group,

R_2 represents alkyl or alkoxy, each of which is unsubstituted or substituted by free, etherified or esterified hydroxy or mercapto, oxo, amino or acylamino, or represents phenyl-lower alkoxy or phenyl, each of which is unsubstituted or substituted, substitutents of the phenyl-moiety being lower alkyl or free, etherified or esterified hydroxy, and substituents of the alkoxy-moiety being free, etherified or esterified hydroxy,

R_3, R_5, R_7, R_{13} and R_{14}, independently of one another, each represents hydrogen or lower alkyl, and

R_8 represents a lower alkyl or phenyl-lower alkyl radical, which may also be bonded to R_7 and which carries an oxycarbonyl, mercaptocarbonyl or aminocarbonyl group which is bonded to an aliphatic, cycloaliphaticaliphatic, cycloaliphatic or aromatic radical R_o which may be interrupted by oxycarbonyl, mercaptocarbonyl and/or iminocarbonyl and has more than 6 and up to 90 carbon atoms,

R_9 and R_{10} each represent optionally etherified hydroxy or amino which is unsubstituted or substituted by lower alkyl which is unsubstituted or substituted by free, etherified or esterified hydroxy or mercapto or by free, esterified or amidated carboxy, and

R_{11} represents hydrogen or a radical of the formula —C(=O)—R_{12} (Ia), in which R_{12} represents optionally etherified hydroxy or amino which is unsubstituted or substituted by lower alkyl which is unsubstituted or substituted by free, etherified or esterified hydroxy or mercapto or by free, esterified or amidated carboxy, and salts of compounds of the formula I having at least one salt-forming group.

29. A pharmaceutical preparation that contains an immunopotentiating effective amount of a pharmacologically active compound of the formula I according to claim 1 or a pharmaceutically acceptable salt of such a compound having a salt-forming group together with a significant amount of a pharmaceutically acceptable carrier.

30. A method for potentiating the immune response of humans and animals which comprises administering an effective amount of a compound of claim 1 or a pharmaceutically acceptable salt of such a compound having a salt-forming group.

4,406,890

NOVEL LIPOPHILIC MURAMYL PEPTIDES AND PROCESSES FOR THEIR MANUFACTURE

Lajos Tarcsay, Grenzach-Wyhlen, Fed. Rep. of Germany; Gerhard Baschang, Bettingen, Switzerland; Albert Hartmann, Grenzach, Fed. Rep. of Germany, and Jaroslav Stanek, Birsfelden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

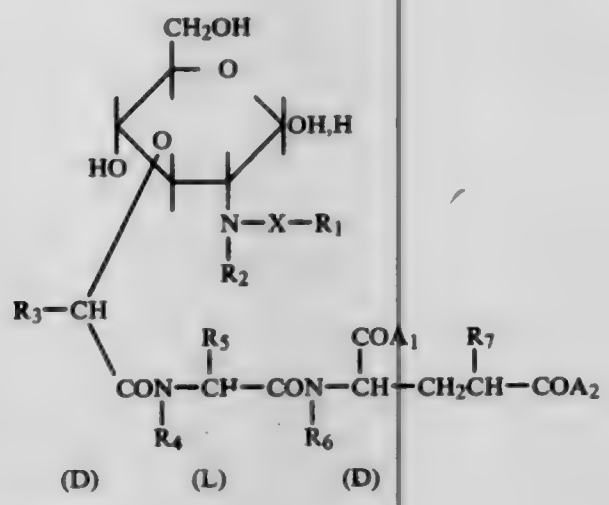
Continuation-in-part of Ser. No. 172,035, Jul. 24, 1980, abandoned, and a continuation-in-part of Ser. No. 226,966, Jan. 21, 1981. This application Jul. 16, 1981, Ser. No. 283,759

Claims priority, application Switzerland, Jul. 25, 1979, 6893/79

Int. Cl.³ A61K *37/02*; C07C *103/52*; C07G *7/00*

U.S. Cl. 424—177 **43 Claims**

1. Muramyl peptides of the formula



(I)

(D) (L) (D)

in which

X represents carbonyl or carbonyloxy,

R_1 represents optionally substituted alkyl or aryl,

R_2, R_4 and R_6 represent hydrogen or lower alkyl,

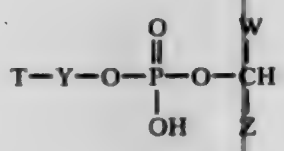
R_3 represents hydrogen or lower alkyl,

R_5 represents hydrogen, lower alkyl, free or functionally modified hydroxy-lower alkyl, free or functionally modified mercapto-lower alkyl, optionally substituted amino-lower alkyl, cycloalkyl, cycloalkyl-lower alkyl, optionally substituted aryl or aralkyl, or nitrogen-containing heterocyclyl or heterocyclyl-lower alkyl,

R_4 and R_5 together also represent alkylene having 3 or 4 carbon atoms,

R_7 represents hydrogen or optionally esterified or amidated carboxyl and

one of the radicals A_1 and A_2 represents a radical of the formula



(II)

in which

T represents -NH or -O,

Y represents an optionally substituted alkylene group which may also be interrupted by one or two oxycarbonyl and-/or iminocarbonyl groups,

W represents hydrogen, and

Z represents a 1,2-dihydroxyethyl or 2-hydroxyethyl group in which at least one of the hydroxy groups is esterified by an optionally unsaturated, long-chained aliphatic carboxylic acid or etherified by an optionally unsaturated, long-chained aliphatic alcohol,

or

W and Z each represents a hydroxymethyl group esterified by an optionally unsaturated, long-chained aliphatic carboxylic acid or etherified by an optionally unsaturated, long-chained aliphatic alcohol,

and the other of the radicals A_1 and A_2 is free or etherified hydroxy, amino, lower alkylamino or aminocarbonyl lower alkylamino, and pharmaceutically acceptable salts thereof.

30. A pharmaceutical composition useful for modulating the immune response of warm-blooded animals including man which comprises as active ingredient an effective dose of a pharmaceutically acceptable salt of a muramyl peptide according to claim 1, or a mixture of such a muramyl peptide and such a salt in association with a significant amount of a pharmaceutically acceptable carrier.

4,406,891

N-METHANESULFONIC ACID DERIVATIVES OF ISTAMYCIN A OR B AND PRODUCTION THEREOF

Hamao Umezawa, Tokyo, and Shinichi Kondo, Yokohama, both of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

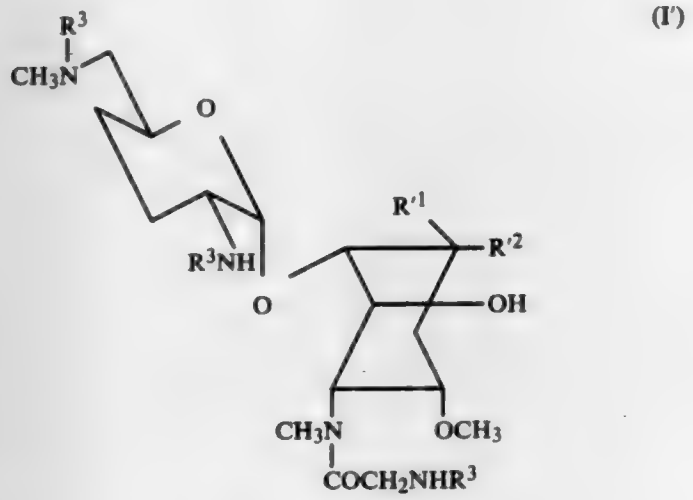
Filed Aug. 4, 1981, Ser. No. 289,963

Claims priority, application Japan, Aug. 22, 1980, 55-114685

Int. Cl.³ A61K *31/71*; C07H *15/22*

U.S. Cl. 424—180 **8 Claims**

1. An N-methanesulfonic acid derivative of istamycin A or B of the formula



(I')

wherein $R^{1'}$ is a hydrogen atom and $R^{2'}$ is $—NHR^3$, or $R^{1'}$ is $—NHR^3$ and $R^{2'}$ is a hydrogen atom, and one, two, three or four of the R^3 groups represent(s) $—CHRSO_3M$ and the other R^3 groups represent(s) a hydrogen atom where R is a hydrogen atom, a 1–4 carbon alkyl group, a methoxymethyl, monochloromethyl or dichloromethyl substituted alkyl group, a phenyl group or a p-methoxy or o-hydroxy substituted phenyl group, and M is a hydrogen atom, an ammonium cation, an alkali metal atom or an alkaline earth metal atom.

8. An antibacterial pharmaceutical composition for treating bacterial infections in a living animal, comprising an antibacterially effective amount of a compound according to claim 1, in combination with a pharmaceutically acceptable carrier therefor.

4,406,892

ORGANOSILICON QUATERNARY AMMONIUM ANTIMICROBIAL COMPOUNDS

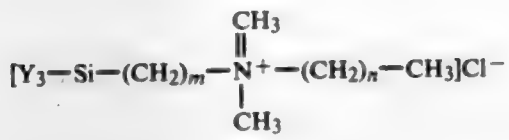
William W. Eudy, Cornwall-On-Hudson, NY, assignor to International Paper Company, New York, N.Y.

Division of Ser. No. 91,749, Nov. 6, 1979, Pat. No. 4,282,366. This application Apr. 2, 1981, Ser. No. 250,183

Int. Cl.³ A01N *55/00*

U.S. Cl. 424—184 **7 Claims**

1. A method of rendering a substrate resistant to the growth of gram-positive bacteria and gram-negative bacteria comprising treating the surface of said substrate with an organosilicon quaternary ammonium compound of the formula:



wherein m+n is 16 to 19, m is 1 or 4 to 6 and n is 13 to 17 or m+n is 20 to 23, m is 4 to 11 and n is 9 to 17; and Y is a hydrolyzable radical or hydroxy group;
the surface of said substrate having free hydroxy groups which can covalently bond with the silyl moiety of the organosilicon quaternary ammonium compound.

4,406,893

N-ALKOXYCARBONYL-N'-[2-NITRO-4 OR 5-ALKYLTHIOPHENYL]-N''-[SUBSTITUTED ALKYL]-GUANIDINES USEFUL AS ANTHELMINTICS

M. Mehdi Nafissi-Varchei, North Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

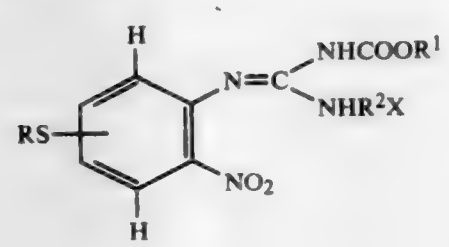
Continuation-in-part of Ser. No. 198,424, Oct. 20, 1980, Pat. No. 4,348,406. This application Feb. 8, 1982, Ser. No. 346,442

Claims priority, application European Pat. Off., Oct. 12, 1981, 81108212.2

Int. Cl.³ A61K *31/36;* **C07C** *149/40, 141/16;* **C07F** *9/02*

U.S. Cl. 424—199 **16 Claims**

1. A compound of the formula



wherein
R and R^1 are C_1 to C_6 alkyl;
R_2 is C_1 to C_6 alkylene;
X is an acid function selected from the group consisting of COOH, SO_3H, OSO_3H, PO_3H_2 and OPO_3H_2; and the pharmaceutically acceptable salts thereof.

12. A method of treating helminth infestation in mammals which comprises administering to an infected animal an anthelmintic effective amount of a compound of claim 1.

4,406,894

INSECT PESTICIDAL COMPOSITION

Haruki Ogawa, Fujieda, and Tomonori Shimazu, Shizuoka, both of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo and Kuraray Co., Ltd., Kurashiki, both of, Japan

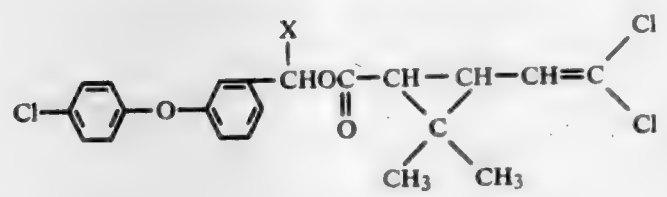
Filed Sep. 29, 1981, Ser. No. 306,671

Claims priority, application Japan, Sep. 30, 1980, 55/136005

Int. Cl.³ A01N *37/08, 57/00*

U.S. Cl. 424—225 **8 Claims**

1. An insect pesticidal composition which comprises O,O-di-C_{2-3} alkyl S-benzyl- or S-halobenzyl-phosphorothiolate and a pyrethroid compound having the formula



(I)

wherein X represents hydrogen atom or ethynyl group as active ingredients and wherein the ratio of the pyrethroid compound to the phosphorothiolate compound is in the range of 1:10 to 10:1.

4,406,895

BASE-SUBSTITUTED ANTHRANILIC ACIDS, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Karl Sturm, Heidesheim; Roman Muschaweck, Frankfurt am Main, and Max Hropot, Flörsheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

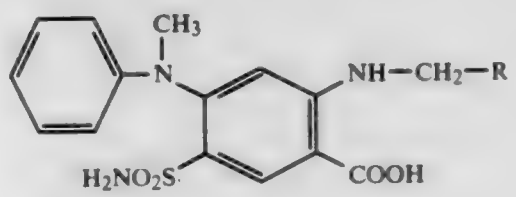
Filed Jan. 20, 1982, Ser. No. 341,006

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1981, 3101960

Int. Cl.³ A61K *31/625, 31/63;* **C07D** *231/42;* **C07C** *143/78*

U.S. Cl. 424—229 **5 Claims**

1. A base-substituted anthranilic acid of the formula I



I

in which R denotes furyl, thienyl or phenyl, or a physiologically acceptable salt thereof.

4,406,896

ADJUVANTS FOR RECTAL DELIVERY OF DRUG SUBSTANCES

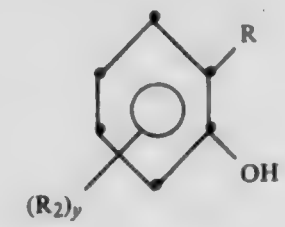
Takeru Higuchi; Toshiaki Nishihata, and Howard J. Rytting, all of Lawrence, Kans., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 213,121, Dec. 5, 1980, abandoned, which is a continuation-in-part of Ser. No. 105,645, Dec. 20, 1979, abandoned. This application Jun. 25, 1981, Ser. No. 277,444

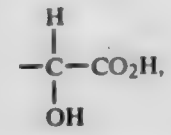
Int. Cl.³ A61K *31/43, 31/54, 31/425, 31/625*

U.S. Cl. 424—232 **19 Claims**

1. A method for enhancing the rate of absorption of a rectally administered β-lactam antibiotic drug from a rectal compartment into the blood stream, said method comprising the steps of preparing a β-lactam drug form capable of being rectally administered, said drug form comprising a therapeutically effective dosage amount of a drug selected from the group consisting of a thienamycin, penicillin or cephalosporin capable of being absorbed into the blood stream from the rectal compartment and an adjuvant of the formula:



wherein R_1 is CO_2H, $(CH_2)COOH$,



SO_3H, or a pharmaceutically acceptable salt thereof wherein R_2 is OH, H, a lower alkoxy radical, a lower alkyl radical, a halo radical, or a tri-halo lower alkyl radical, and wherein y is an integer of 1 or 2, said adjuvant being present in said drug form in a sufficient amount to be effective in enhancing said absorption rate, and administering said drug form into said rectal compartment.

4,406,897

6-ARYL-4-HYDRAZINYL-S-TRIAZIN-2-ONES

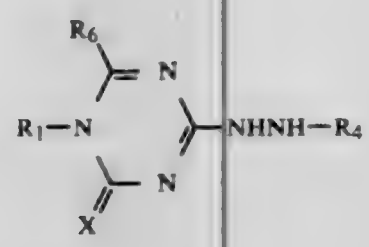
Henry F. Campbell; Thomas H. Scholz, both of Lansdale, and George H. Douglas, Malvern, all of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Filed Jul. 6, 1981, Ser. No. 280,808

Int. Cl.³ C07D *251/16, 251/42;* A61K *31/53;* C07D *413/04*

U.S. Cl. 424—246 **16 Claims**

1. A compound of the formula



wherein:

X is oxygen or sulfur;

R_1 is hydrogen, lower alkyl, cycloalkyl of C3 to C6, lower alkenyl, lower alkynyl, phenyl loweralkyl or substituted phenyl loweralkyl;

R_4 is hydrogen, lower alkyl, cycloalkyl of C3 to C6, lower alkenyl, lower alkynyl, lower alkanoyl, carboloweralkoxy, carbamoyl, phenyl, substituted phenyl, benzoyl, substituted benzoyl, phenyl loweralkyl, substituted phenyl loweralkyl, heterocyclic, substituted heterocyclic, halo lower alkyl, or halo lower alkanoyl;

R_6 is phenyl, substituted phenyl, phenyl loweralkyl, substituted phenyl loweralkyl, heterocyclic, substituted heterocyclic, heterocyclic lower alkyl, or substituted heterocyclic lower alkyl;

wherein:

substituted phenyl means a phenyl group in which one or more of the phenyl hydrogens has been replaced by the same or different substituents selected from the group consisting of halo, lower alkyl, halo lower alkyl, nitro, amino, acylamino, hydroxy, lower alkoxy, phenyl lower alkoxy, acyloxy, cyano, halo lower alkoxy or lower alkyl sulfonyl;

wherein:

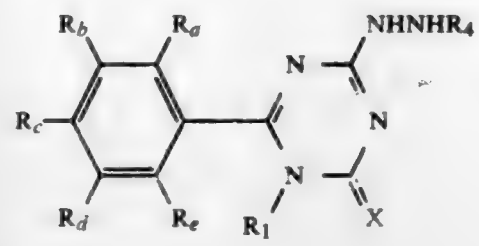
heterocyclic means a cyclic or bicyclic group having 1 to 3 hetero atoms which may be nitrogen, oxygen or sulfur, selected from the group consisting of oxazolidinyl, thiazolidinyl, pyrazolidinyl, imidazolidinyl, piperidyl, piperazinyl, thiamorpholinyl, 1-pyrrole, 2-pyrrole, 3-pyrrole, 2-furan, 3-furan, 2-thiophene, 3-thiophene, 2-tetrahydrothiophene, 3-tetrahydrothiophene, 1-imidazole, 2-imidazole, 4-imidazole, 5-imidazole, 2-oxazole, 4-oxazole, 5-oxazole, 2-thiazole, 4-thiazole, 5-thiazole, 1-pyrazole, 3-pyrazole, 4-pyrazole, 5-pyrazole, 1-pyrrolidine, 2-pyrrolidine, 3-pyrrolidine, 2-pyridyl, 3-pyridyl, 4-pyridyl, 2-pyrimidine, 4-pyrimidine, 5-pyrimidine, 6-pyrimidine, 2-purine, 6-purine, 8-purine, 9-purine, 2-quinoline, 3-quinoline, 4-quinoline, 5-quinoline, 6-quinoline, 7-quinoline, 8-quinoline, 1-isoquinoline, 3-isoquinoline, 4-isoquinoline, 5-isoquinoline, 6-isoquinoline, 7-isoquinoline, 8-isoquinoline, carbazole, trimethylenetriaminyl, ethyleneiminyl and morpholinyl;

and wherein:

substituted heterocyclic means a heterocyclic group in which one or more of the hydrogens on the ring carbons have been replaced by substituents as given above with respect to substituted phenyl;

or a pharmaceutically acceptable acid addition salt thereof.

15. A method for lowering blood pressure in humans and other mammals which comprises administering thereto an effective blood pressure lowering amount of a compound of the formula



wherein:

X is oxygen or sulfur;

R_1 is hydrogen or lower alkyl;

R_4 is hydrogen, lower alkyl, lower alkanoyl, carboloweralkoxy, phenyl, benzoyl, substituted phenyl, pyridyl, or substituted pyridyl;

R_a, R_b, R_c, R_d and R_e are hydrogen, lower alkyl, lower alkoxy, halo, halo lower alkyl, amino, nitro, lower alkanoyl, lower alkyl, carbamoyl, hydroxy, cyano, carboloweralkoxy, carboxyl, or lower alkyl sulfonyl;

wherein:

substituted phenyl means a phenyl group in which one or more of the phenyl hydrogens has been replaced by the same or different substituents selected from the group consisting of halo, lower alkyl, halo lower alkyl, nitro, amino, acylamino, hydroxy, lower alkoxy, phenyl lower alkoxy, acyloxy, cyano, halo lower alkoxy or lower alkyl sulfonyl;

and wherein:

substituted pyridyl means a pyridyl group in which one or more of the hydrogens on pyridyl ring carbons have been replaced by substituents as given above with respect to substituted phenyl;

or a pharmaceutically acceptable acid addition salt thereof.

4,406,898

OXAZOLE AND OXADIAZOLE CEPHALOSPORINS

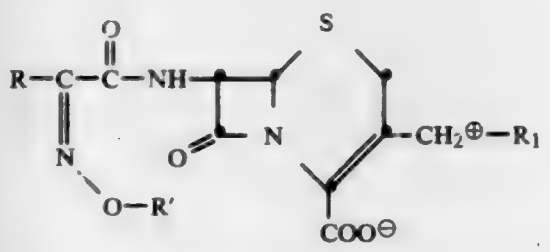
William H. W. Lunn, and Robert T. Vasileff, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 300,354, Sep. 8, 1981, abandoned. This application Jan. 19, 1982, Ser. No. 340,627

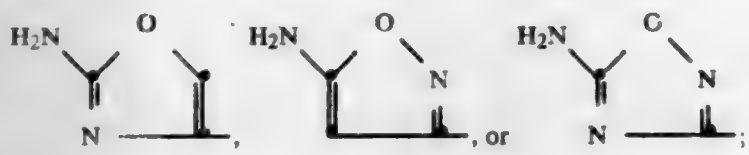
Int. Cl.³ C07D *501/38;* A61K *31/545*

U.S. Cl. 424—246 **19 Claims**

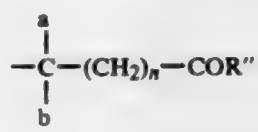
1. A compound of the formula



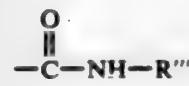
wherein R is an amino-substituted heterocyclic of the formula



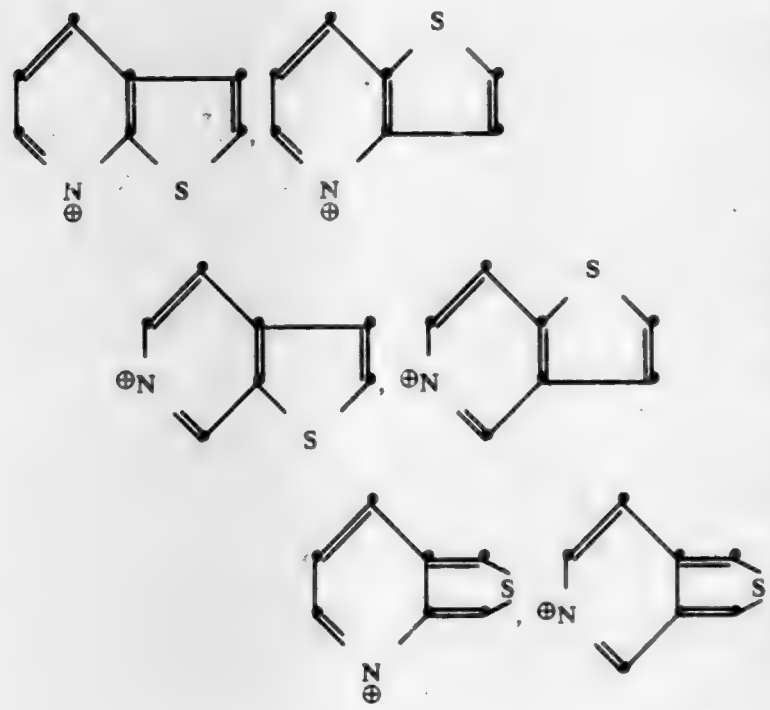
R′ is a hydrogen, C_1–C_4 alkyi, or a carboxy-substituted alkyl or carboxy-substituted cycloalkyl group of the formula



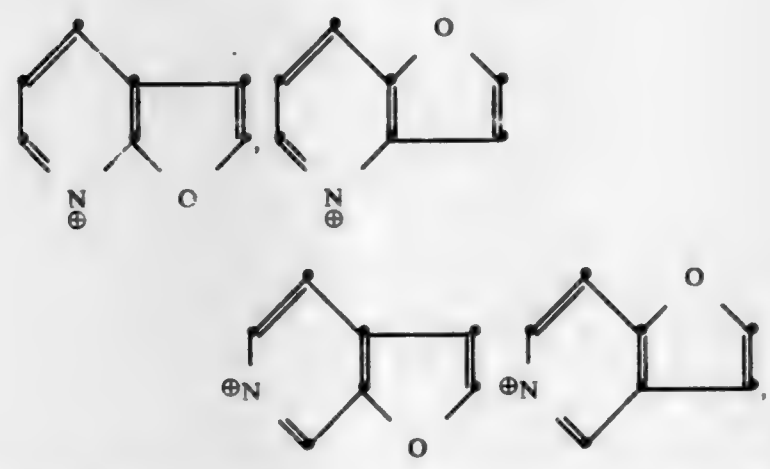
wherein a and b when taken separately are independently hydrogen or C_1–C_3 alkyl, and when taken together with the carbon atom to which they are attached form a C_3–C_7 carbocyclic ring; R″ is hydroxy, C_1–C_4 alkoxy, or amino; or R′ is an N-substituted carbamoyl group of the formula



wherein R‴ is C_1–C_3 alkyl, phenyl, or C_1–C_3 alkyl substituted by phenyl; $\oplus R_1$ is a bicyclicpyridinium group selected from the group consisting of a thienopyridinium group of the formulas



or a furopyridinium group of the formulas



and said thienopyridinium and said furopyridinium wherein either or both of the hetero rings thereof is substituted by one or two C_1–C_4 alkyl, halogen, carboxy, carbamoyl, or C_1–C_4 alkoxycarbonyl groups; and the pharmaceutically acceptable non-toxic salts thereof.

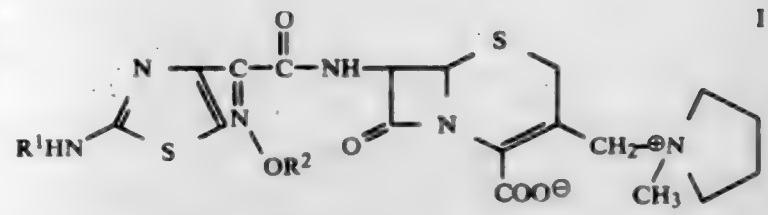
4,406,899

CEPHALOSPORINS

Shimpei Aburaki, Tokyo; Hajime Kamachi, Urayasu; Yukio Narita; Jun Okumura, both of Yokohama, and Takayuki Naito, Kawasaki, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Filed Mar. 4, 1982, Ser. No. 354,851
Int. Cl.³ A61K *31/545*; C07D *501/46*
U.S. Cl. 424—246 **11 Claims**

1. A compound of the formula



I

wherein R^1 is hydrogen or a conventional amino-protecting group, and R^2 is a straight or branched chain alkyl group containing from 1 to 4 carbon atoms, allyl, 2-butenyl or 3-butenyl, or a nontoxic pharmaceutically acceptable salt or solvate thereof.

8. An antibacterial composition comprising an anti-bacterially effective amount of at least one compound of claim 1 and an inert pharmaceutical carrier.

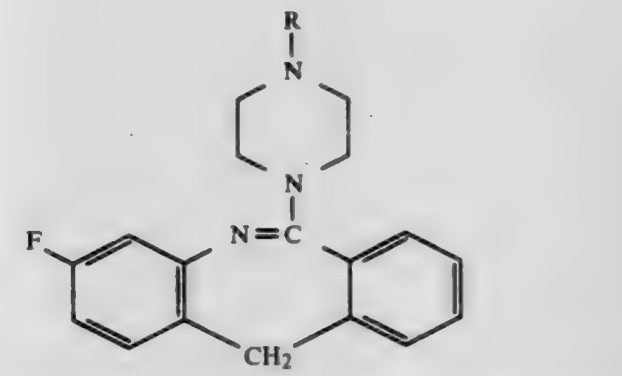
4,406,900

NEUROLEPTIC USE OF MORPHANTHRIDINES

Fritz Hunziker, Berne, and Rudolf Fischer, Kehrsatz, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Division of Ser. No. 111,459, Jan. 11, 1980, Pat. No. 4,308,207, which is a continuation-in-part of Ser. No. 912,496, Jun. 5, 1978, abandoned, which is a continuation of Ser. No. 848,498, Nov. 4, 1977, abandoned. This application Sep. 22, 1981, Ser. No. 304,357
Int. Cl.³ A61K *31/38*
U.S. Cl. 424—250 **3 Claims**

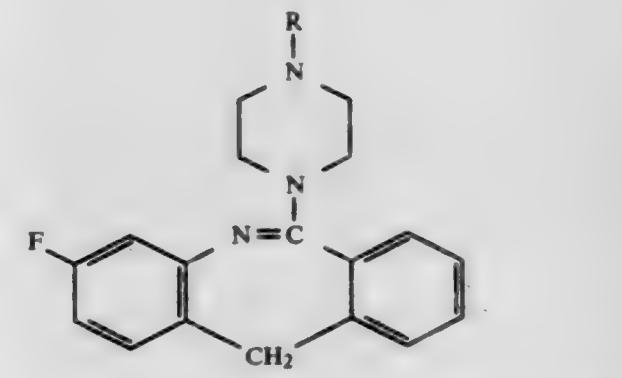
1. A pharmaceutical composition useful in treating neuroses, psychoses, depressions or spastic conditions, or for relaxing muscles, or for inducing, promoting or prolonging sleep comprising a pharmaceutically acceptable carrier or diluent and a therapeutically effective amount of a compound of formula I,



I

wherein R is hydrogen or C_{1-4} alkyl, or a pharmaceutically acceptable acid addition salt thereof.

2. A method of treating neuroses or psychoses which comprises administering to an animal in need of such treatment a therapeutically effective amount of a compound of formula I,



I

wherein R is hydrogen or C_{1-4} alkyl, or a pharmaceutically acceptable acid addition salt thereof.

4,406,901
ETHERS OF SUBSTITUTED HYDROXYMETHYLPYRAZINES

Paolo Cozzi; Antonio Pillan; Leone Bertone, and Pier P. Lovisolo, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

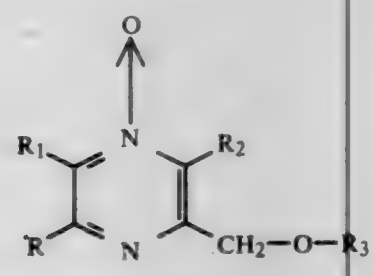
Filed Nov. 16, 1981, Ser. No. 321,628

Claims priority, application United Kingdom, Dec. 9, 1980, 803957

Int. Cl.³ A61K *31/495*; C07D *241/12*

U.S. Cl. 424—250 8 Claims

1. A method of inducing an anti-lipolytic effect in a patient in need of such treatment, said method comprising administering to said patient a therapeutically effective amount of a compound of the formula



(I)

wherein each of the groups R, R_1 and R_2, which may be the same or different, is a hydrogen atom or a C_1–C_6 straight or branched chain alkoxy or a C_1–C_6 straight or branched chain alkyl group.

4,406,902
DIPEPTIDASE INHIBITORS

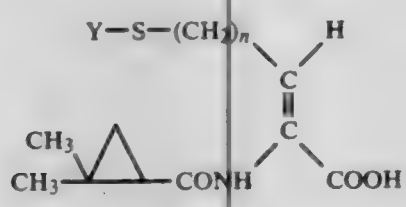
Wallace T. Ashton, Clark; Louis Barash, Westfield; Jeannette E. Brown, Summit, and Donald W. Graham, Mountainside, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 187,930, Sep. 17, 1980, abandoned. This application Jul. 23, 1981, Ser. No. 285,161

Int. Cl.³ C07D *213/70*

U.S. Cl. 424—251 12 Claims

1. The compound of the following formula:



wherein n is an integer from 3-5, Y is pyridyl, pyrimidinyl, tetrazolyl, imidazolyl, thiadiazolyl, thiazolinyl, phenyl, or phenyl having 1 or 2 substituents selected from hydroxyl, oxo, carboxyl, or methyl; and the loweralkyl (C_{1-6}) esters and pharmaceutically acceptable salts thereof.

4,406,903
XANTHINE DERIVATIVES USEFUL AS ANTIDEPRESSIVES

Terence J. Ward, Slough; Martyn D. Wood, Reading, and Michael G. Wyllie, Maidenhead, all of England, assignors to John Wyeth and Brother Limited, Maidenhead, England

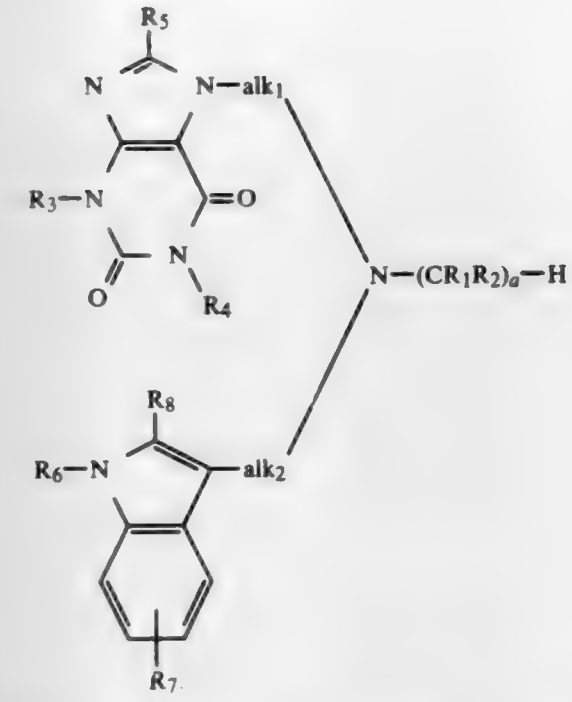
Filed Jan. 12, 1982, Ser. No. 338,929

Claims priority, application United Kingdom, Jan. 21, 1981, 8101820

Int. Cl.³ A61K *31/52*; C07D *473/06, 473/08*

U.S. Cl. 424—253 8 Claims

1. A compound selected from those having the formula I



(I)

and their pharmaceutically acceptable salts, wherein

alk_1 and alk_2 are, independently, lower alkylene which may be a straight or branched chain, either one or both of alk_1 and alk_2 includes a hydrogen atom carried by the carbon atom linked directly to the nitrogen atom bearing $-(CR_1R_2)_aH$;

R_1 and R_2 are independently so selected from hydrogen and alkyl that $-CHR_1R_2$ is lower alkyl;

a is selected from 0 and 1;

R_3, R_4, R_5, R_6 and R_8 are independently selected from hydrogen and lower alkyl; and

R_7 is selected from hydrogen, hydroxy, lower alkoxy, phenyl(lower)alkoxy, lower alkyl, halogen, trifluoromethyl and di(loweralkyl)amino.

8. A pharmaceutical composition comprising an anti-depressively active amount of a compound as claimed in claim 1 in association with a pharmaceutically acceptable carrier.

4,406,904
METHOD OF INHIBITING LUTEINIZING HORMONE SECRETION WITH 6,7-BENZOMORPHAN DERIVATIVES

Hendricus B. A. Welle, Maarssen, Netherlands, and Magda Marko, Binningen, Switzerland, assignors to ACF Chemiefarma NV, Maarssen, Netherlands

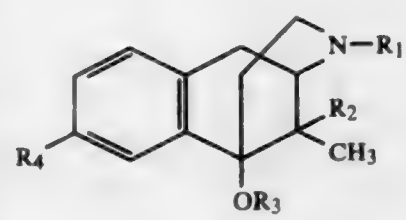
Continuation-in-part of Ser. No. 198,513, Oct. 20, 1980, abandoned. This application Jul. 13, 1981, Ser. No. 283,084

Claims priority, application Netherlands, Oct. 23, 1979, 7907800

Int. Cl.³ A61K *31/485*

U.S. Cl. 424—260 17 Claims

1. A method of inhibiting luteinising hormone secretion in a subject in need of such treatment, which method comprises administering to said subject a luteinising hormone secretion inhibiting effective amount of a compound of formula I



(I)

wherein

R_1 is hydrogen; alkyl, alkenyl, alkynyl, cycloalkyl or cycloalkylalkyl, each of which may be substituted with either hydroxy or alkoxy or with both; alkenyloxyalkyl,

aralkyl, arylhydroxyalkyl, aralkenyl, tetrahydrofurylalkyl or optionally alkyl-substituted furylalkyl or isoxazolylalkyl,

R_2 is hydrogen or methyl,

R_3 is hydrogen, alkyl, alkenyl, alkynyl, aralkyl, hydroxyalkyl or alkoxyalkyl and

R_4 is hydrogen, hydroxy, alkoxy or alkenyloxy, whereby hydroxy groups in said compound may each be optionally acylated; or a pharmaceutically acceptable acid addition salt thereof.

4,406,905

2-PYRIDYL-2-THIAZOLINE-4-CARBOXYLIC ACID DERIVATIVES

Hans Zähner, Tübingen, Fed. Rep. of Germany; Hans-Ulrich Naegeli, Muttenz, and Heinrich Peter, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

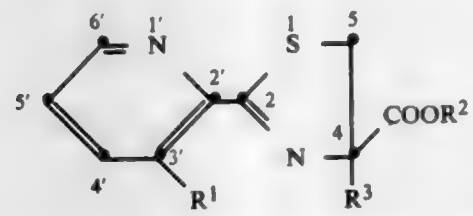
Filed Jul. 23, 1981, Ser. No. 285,909

Claims priority, application Switzerland, Jul. 28, 1980, 5755/80; Aug. 5, 1980, 5925/80

Int. Cl.³ A61K *31/44*; C07D *409/04*

U.S. Cl. 424—263 22 Claims

1. A 2-(3'hydroxy-pyrid-2'-yl)-2-thiazoline-4-carboxylic acid derivative of the formula



(I)

in a racemic or optically active form, in which R_1 represents free hydroxy, hydrocarbyloxy, hydrocarbylcarbonyloxy or hydrocarbyloxycarbonyloxy, hydrocarbyl denoting an aliphatic radical having 1–7 carbon atoms, a cycloaliphatic radical having 3 to 8 ring members, a phenyl radical, or an aliphatic radical having 1–7 carbon atoms that is substituted by at least one cycloaliphatic radical having 3 to 8 ring members or by at least one phenyl radical, or in which R^1 represents monocyclic aromatic or lower aliphatic sulphonyloxy; R^2 represents hydrogen, an aliphatic radical having 1–7 carbon atoms, a cycloaliphatic radical having 3 to 8 ring members, a phenyl radical or an aliphatic radical having 1–7 carbon atoms that is substituted by at least one cycloaliphatic radical having 3 to 8 ring members or by at least one phenyl radical; and R^3 represents hydrogen or lower alkyl; or a salt of such a derivative or a heavy metal ion complex of said derivative having a free 4-carboxy group.

4,406,906

CEREBRAL THERAPEUTIC AGENT AND ITS USE

Horst Meyer; Friedrich Bossert; Stanislav Kazda; Friedrich Hoffmeister, all of Wuppertal, and Wulf Vater, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 27,540, Apr. 5, 1979, abandoned. This application Feb. 5, 1982, Ser. No. 346,319

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1978, 2815578

Int. Cl.³ A61K *31/44*

U.S. Cl. 424—263 4 Claims

1. A method of combating pathologically reduced cerebral functions and performance weaknesses, cerebral insufficiency and disorders in cerebral circulation and metabolism in warm-blooded animals which comprises administering to the said animals a cerebral specific effective amount for treating said conditions of 1,4dihydro-2,6dimethyl-4-(3'-nitrophenyl)-pyridino-3-(β-methoxyethyl ester)-5-isopropyl ester either alone or in admixture with a diluent or in the form of a medicament.

4,406,907

CERTAIN 2,5-DISUBSTITUTED PYRIDINE DERIVATIVES PRODUCING β-ADRENERGIC BLOCKING ACTION

Philippe Manoury, le Plessis Robinson; Jean Binet, Breuillet, and Icilio Cavero, Creteil, all of France, assignors to Synthelabo, Paris, France

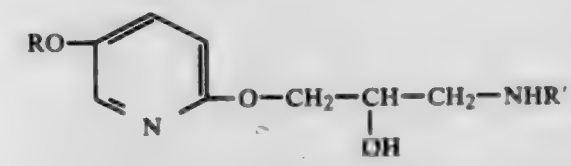
Filed Mar. 24, 1982, Ser. No. 361,200

Claims priority, application France, Mar. 25, 1981, 81 06005

Int. Cl.³ A61K *31/44*; C07D *213/69*

U.S. Cl. 424—263 8 Claims

1. A compound of the formula:



wherein R represents a group $R_1O(CH_2)_2$— in which R_1 is a (C_{3-6})cycloalkyl radical, or a (C_{3-6})cycloalkyl-(C_{1-4})alkyl radical, and R' represents isopropyl or tert.-butyl, and its pharmaceutically acceptable acid addition salts.

8. Method for producing beta-adrenergic blocking and correcting cardia rhythm disorders in a patient which comprises administering to said patient an amount of a compound of the formula of claim 1, or a pharmaceutically acceptable acid addition salt thereof, in a dose effective to produce the said effects.

4,406,908

TETRAZOLYLCOUMARIN DERIVATIVES AND ANTIALLERGIC COMPOSITIONS CONTAINING THE SAME

Tetsuo Matsuda, Kyoto; Jun Nakano, Moriyama; Yukio Terashima, Shiga; Yuji Suzuki, and Kiyonoshin Itikawa, both of Otsu, all of Japan; assignors to Kakenyaku Kako Co., Ltd., Tokyo, Japan

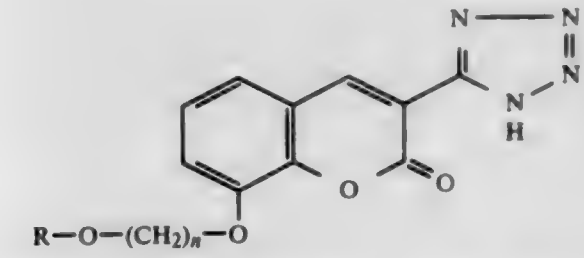
Filed May 6, 1981, Ser. No. 260,900

Claims priority, application Japan, May 10, 1980, 55-62062

Int. Cl.³ A61K *31/41*; C07D *257/04*

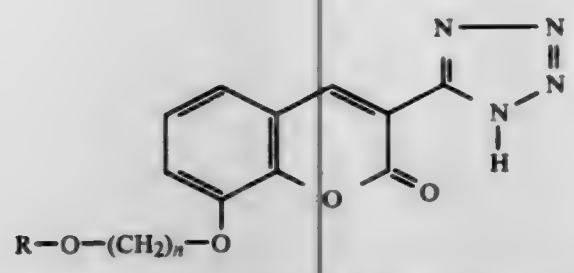
U.S. Cl. 424—269 5 Claims

1. A tetrazolylcoumarin derivative of the following formula:



or a pharmaceutically acceptable salt thereof wherein R is a straight or branched alkyl group having 1 to 4 carbon atoms, a straight or branched alkenyl group having 2 to 4 carbon atoms, an alkoxyalkyl group of the general formula: $CH_3(CH_2)_l$—O—$(CH_2)_m$— in which l is 0 or an integer of 1 to 3 and m is an integer of 2 to 4, or phenyl group, and n is an integer of 2 to 4.

3. A pharmaceutical composition having an antiallergic activity which comprises as an essential active ingredient an effective amount of a tetrazolylcoumarin derivative of the following formula:



wherein R is a straight or branched alkyl group having 1 to 4 carbon atoms, a straight or branched alkenyl group having 2 to 4 carbon atoms, an alkoxyalkyl group of the general formula: $CH_3(CH_2)_l—O—(CH_2)_m—$ in which l is 0 or an integer of 1 to 3 and m is an integer of 2 to 4, or phenyl group, and n is an integer of 2 to 4 or its pharmaceutically acceptable salt, and a pharmaceutically acceptable carrier.

4,406,909

COMBATING FUNGI WITH 4-SUBSTITUTED 1-AZOLYL-1-PHENOXY-3,3-DIMETHYL-BUTAN-2-ONES AND -OLS

Wolfgang Krämer; Hans-Ludwig Elbe, both of Wuppertal; Karl H. Büchel, Burscheid; Wilhelm Brandes, Leichlingen, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

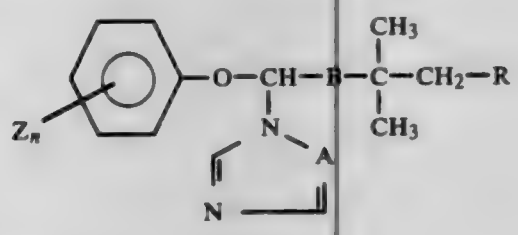
Filed May 19, 1981, Ser. No. 265,050

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1980, 3021551

Int. Cl.³ A01N *43/50, 43/64*; C07D *233/60, 249/08*

U.S. Cl. 424—269 **9 Claims**

1. A 4-substituted 1-azolyl-1-phenoxy-3,3-dimethyl-butan-2-one or -ol of the formula



in which

A is a nitrogen atom or CH,

B is —CO— or CH(OH),

R is X—R^1,

R^1 is optionally substituted phenyl or naphthyl or optionally substituted phenylalkyl or naphthylalkyl with 1 to 2 carbon atoms in the alkyl part, each substituent being selected from halogen, cyano, nitro, alkoxycarbonyl with 1 to 4 carbon atoms in the alkyl part, alkyl or alkoxy with 1 to 4 carbon atoms, dialkylamino with 1 to 2 carbon atoms in each alkyl part and phenyl optionally substituted by halogen,

X is oxygen, sulphur, SO or SO_2,

Z each independently is halogen, alkyl or alkoxy with 1 to 4 carbon atoms, halogenalkyl with 1 to 2 carbon atoms and 1 to 5 halogen atoms, alkylthio with 1 to 4 carbon atoms, alkylsulphonyl with 1 to 4 carbon atoms, nitro, cyano, alkoxycarbonyl with 1 to 4 carbon atoms in the alkyl part or phenyl optionally substituted by halogen, and

n is 0, 1, 2 or 3,

or an addition product thereof with a physiologically acceptable acid or with a metal salt.

8. A method of combating fungi comprising applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound or addition product according to claim **1**.

4,406,910

PESTICIDAL 3-(2,3-DIHYDRO-2-ALKYLBENZOFURAN-7-YL)-5-(R-OXY)-1,3,4-OXADIAZOL-2(3H)-ONES

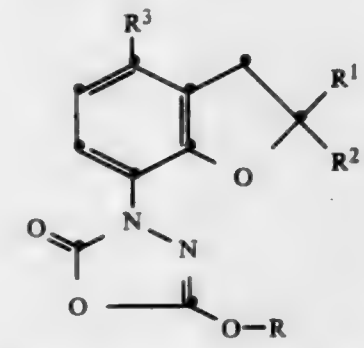
Kurt H. Pilgram, and Richard D. Skiles, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 273,833, Jun. 15, 1981, abandoned, which is a continuation-in-part of Ser. No. 187,234, Sep. 15, 1980, abandoned. This application May 6, 1982, Ser. No. 375,438

Int. Cl.³ A01N *43/82*; C07D *271/10*

U.S. Cl. 424—272 **5 Claims**

1. A compound of the formula:



wherein R is alkyl of one or two carbon atoms or is 2-propynyl, R^1 is hydrogen or alkyl of 1 to 3 carbon atoms, R^2 is alkyl of 1 to 3 carbon atoms, and R^3 is hydrogen, middle halogen or alkyl of 1 to 3 carbon atoms.

4,406,911

METHOD OF PRODUCING AND BAKING FROZEN YEAST LEAVENED DOUGH

Robert W. Larson, Croton-on-Hudson; Wen C. Lou, Yorktown Heights; Vivian C. DeVito, Tuckahoe, and Karen A. Neidinger, Ossining, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 164,374, Jun. 30, 1980, abandoned, which is a continuation-in-part of Ser. No. 953,807, Oct. 23, 1978, abandoned. This application Mar. 30, 1981, Ser. No. 248,147

Int. Cl.³ A21D *8/00*

U.S. Cl. 426—19 **9 Claims**

1. A method of producing and baking a frozen, yeast-leavened dough which can be placed in an oven while in the frozen state and when baked expands to at least 1.5 times its original volume to provide fresh, hot bread texture and flavor, comprising the steps of:

(a) preparing a yeast-containing dough under ambient temperature;

(b) fermenting the resultant dough for at least 5 minutes temperatures from about 20° C. to about 30° C. which permit production of a dough that is not sensitive to changes during frozen storage;

(c) dividing the fermented dough into separate portions of dough;

(d) molding each portion of fermented dough into the desired shape and proofing to allow additional fermentation, the proofing time being sufficient for each portion of dough to attain a specific volume of from about 1.98 cubic centimeters per gram to about 3.08 cubic centimeters per gram;

(e) freezing each portion of the dough of step (d) such that the core temperature reaches −1.0° C. to −25.0° C. within 1 to 6 hours;

(f) storing the frozen dough at a temperature range of −30.0° C. to −10.0° C.;

(g) removing the frozen dough from frozen storage and, without an intervening proofing step, baking the dough in an oven having a temperature of about 170° C. to 180° C. whereby a finished baked dough is prepared within about

one hour's time after removal of the dough from frozen storage.

4,406,912

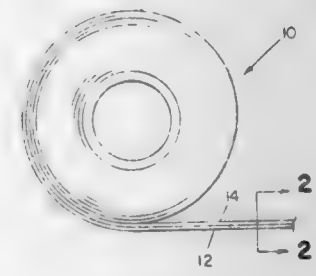
LIFT-OFF ELEMENT

Gerald T. Downing, Port Washington, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Continuation of Ser. No. 166,984, Jul. 8, 1980, abandoned. This application Jan. 11, 1982, Ser. No. 338,395

Int. Cl.[3] **B41J** *31/05;* **B32B** *27/34*

U.S. Cl. 428—352 **6 Claims**

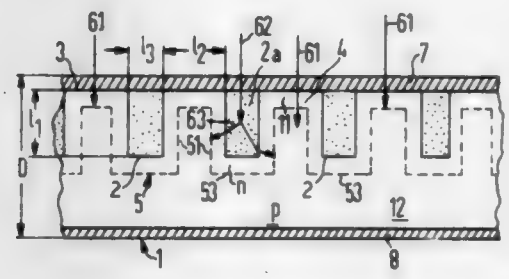


1. A lift-off element comprising a backing layer and a lift-off layer, said lift-off layer comprising a binder polyamide adhesive resin having a softening point at a first temperature and oleic acid.

4,406,913
SOLAR CELL WITH INCREASED EFFICIENCY

Claus Weyrich, Gauting, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 4, 1981, Ser. No. 327,482
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1981, 3047383
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—259 8 Claims

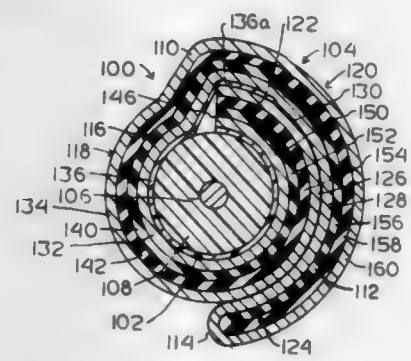


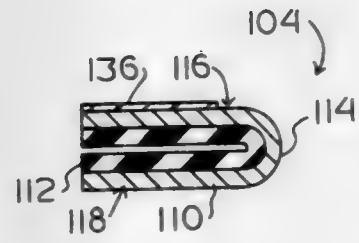
1. A solar cell comprising:
a semiconductor body having a solar radiation-receiving surface having a plurality of parallel grooves therein forming a plurality of ribs, said semiconductor body having a pn-junction which follows the contour of said ribs and grooves; and
a filler material filling said grooves, said filler material being permeable to said solar radiation and having particles suspended therein for scattering said solar radiation for increasing the amount of said solar radiation which reaches the sides of said ribs.

4,406,914
SLOTLESS MULTI-SHIELDED CABLE AND TAPE THEREFOR

John W. Kincaid, Batavia, Ill., assignor to Belden Corporation, Geneva, Ill.

Filed Aug. 10, 1981, Ser. No. 291,798
Int. Cl.³ H01B *11/06*
U.S. Cl. 174—107 7 Claims





1. A tape for shielding the conductive core of an electrical cable comprising: a strip folded together along its length so as to define a first member and a second member, the first member having the same width as the second member, the folded strip having an enfolding conductive layer and an enfolded insulating layer, the conductive layer being substantially coextensive with the insulating layer to extend over substantially all of the exposed areas of the folded first and second members; and an adhesive extending over a longitudinal region spaced from the fold and along a portion of the enfolding conductive layer which is part of the first member.

6. A shielded electrical cable comprising:
a core having a longitudinally extending conductor and insulation surrounding said conductor;
folded tape having a longitudinally extending fold defining a more central member and a more peripheral member folded together, the more central member having the same width as the more peripheral member, said width being greater than the circumference of said core, said folded tape having an enfolding layer of conductive material and an enfolded insulating layer, the enfolding layer being substantially coextensive with the insulating layer to extend over substantially all of the exposed areas of the folded together central and peripheral members, said folded tape being wrapped around said core to form a region of tape overlap so that the portion of the enfolding layer of conductive material that is part of the more central member is in physical and electrical contact with the portion of the enfolding layer of conductive material which is part of the more peripheral member;
adhesive extending between said core and the portion of said enfolding layer of conductive material that is part of the more central member so as to effect a bond therebetween and so as to leave intact the physical and electrical contact between the portion of said enfolding layer of conductive material that is part of the more central member and the portion of said enfolding layer of conductive material that is part of the more peripheral member; and
an outer jacket disposed circumferentially and longitudinally over the portion of the enfolding layer of conductive material which is part of the more peripheral member.

4,406,915
OFFSET REFORMABLE JUMPER

Gary E. Lang, Garden Grove, Calif., assignor to Allied Corporation, Morristown, N.J.

Filed Apr. 10, 1981, Ser. No. 252,963
Int. Cl.³ H01B *7/04*
U.S. Cl. 174—117 F 4 Claims



1. A reformable multiconductor cable, comprising:
a multiconductor ribbon cable having a plurality of longitudinally extending parallel conductors laterally spaced apart in a predetermined arrangement;
said multiconductor ribbon cable including a pliable longitudinally extending insulating body, said plurality of longitudinally extending parallel conductors being embedded in said insulating body;
said insulating body being intermittently laterally removed to form a plurality of longitudinally spaced sections of uninsulated parallel longitudinally extending conductors;
said insulating body being intermittently longitudinally interrupted intermediate said plurality of longitudinally extending laterally spaced conductors to form a plurality of longitudinally spaced sections of separated insulated parallel longitudinally extending conductors;
said sections of uninsulated parallel longitudinally extending conductors and said sections of separated insulated parallel longitudinally extending conductors being symmetri-

cally longitudinally spaced along said multiconductor ribbon cable;

said cable having a length of at least two said sections of separate insulated parallel conductors and at least one said intermediate section of uninsulated parallel conductors;

said cable being terminated at opposite ends adjacent to and spaced from one said section of separated insulated conductors and being stripped of said insulating body to expose the bare wire of said conductors at said opposite ends;

said insulating body being obliquely laterally removed to form at least one oblique section of uninsulated conductors;

said body being intermittently broken to form a plurality of longitudinally spaced oblique sections of separated insulated parallel conductors;

said cable having at least two first cable sections, each said first cable section including one said spaced section of separated insulated conductors and being bounded by said spaced sections of uninsulated conductors;

each said first cable section being offset from an adjacent said first cable section so that said uninsulated conductors are disposed substantially perpendicularly to an end of each said first cable section;

said adjacent first cable sections being folded at a first one of said sections of uninsulated conductors, said uninsulated conductors defining a bight and two sides;

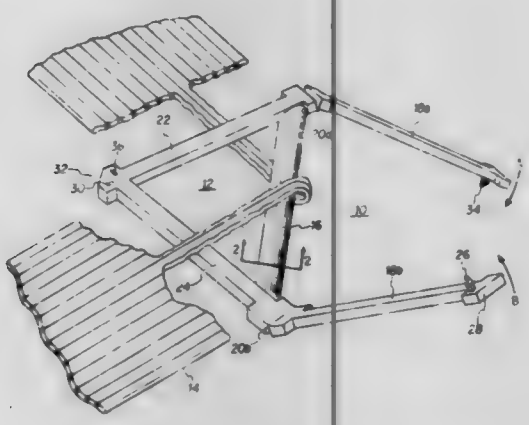
said cable being cut at two said sections of uninsulated conductors distal to said first section of uninsulated conductors.

4,406,916

ADAPTOR FOR ROUTING FLAT RIBBON CABLES

Stephen R. Southerland, Plano, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 18, 1981, Ser. No. 332,035
Int. Cl.³ H02G *3/00*
U.S. Cl. 174—135 **11 Claims**



1. An adaptor for routing a coplanar change of direction of flat multiconductor ribbon cable by obliquely folding the cable without sharp creasing, comprising:

a guide member for having a cable routed along a top side thereof, then around an oblique edge and then along a bottom side thereof and including a pair of hinged arms movable to a closed position to be capable of holding such a cable against respective said top and bottom sides.

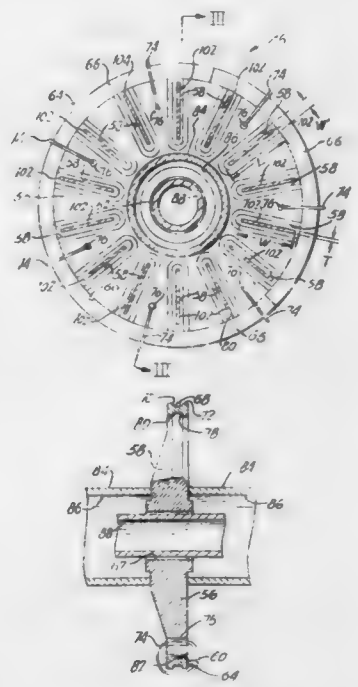
4,406,917

INSULATOR FOR ELECTRICAL HEATING ELEMENT ASSEMBLY

William I. Bayly, Livingston, N.J., assignor to AGF Inc., Elizabeth, N.J.

Division of Ser. No. 144,238, Apr. 28, 1980, Pat. No. 4,322,606.
This application Oct. 9, 1981, Ser. No. 310,032
Int. Cl.³ H01B *17/00*
U.S. Cl. 174—138 J **4 Claims**

3. An electrical insulator for use in an electrical heating element assembly which includes a plurality of heating means, said insulator comprising an inner section having an outer peripheral edge, an outer section having an inner peripheral edge, positioning means for removably positioning said outer section about said inner section such that said outer peripheral edge of said inner section is substantially adjacent said inner peripheral edge of said outer section, fixing means for fixing the axial position of said outer section relative to said inner section, said fixing means including a tongue and groove joint which includes a tongue provided on one of said peripheral edges and a groove provided in the other of said peripheral



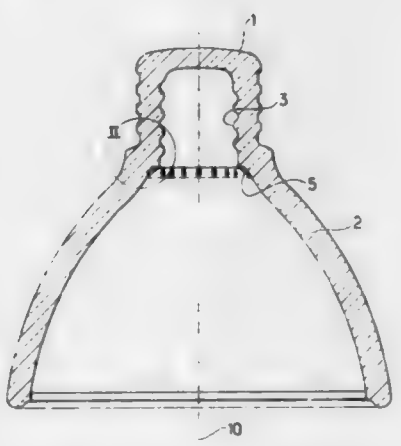
edges, and receiving means provided in one of said peripheral edges for removably receiving a plurality of electrical heating means, said inner and outer sections cooperating to completely surround each heating means, whereby each heating means may be electrically insulated from the other heating means, and said receiving means being sized and shaped such that each heating means may be loosely and movably received between the surrounding surfaces of said inner and outer sections, whereby the natural expansion of a plurality of heating means insulated by said insulator is not inhibited during the electrical energization thereof for heating purposes.

4,406,918

TEMPERED GLASS DIELECTRIC MEMBER FOR AN ELECTRICAL INSULATOR, AND AN INSULATOR USING SAID MEMBER

Charles Saby, Saint-Yorre, France, assignor to Ceraver, Paris, France

Filed Jul. 26, 1982, Ser. No. 401,568
Claims priority, application France, Aug. 5, 1981, 81 15204
Int. Cl.³ H01B *17/02, 17/20*
U.S. Cl. 174—196 **7 Claims**



1. A tempered glass dielectric member for an electrical

insulator, the member being in the form of a hollow body having a skirt surmounted by a head, the entire body exhibiting circular symmetry about an axis; said hollow body having an internal ring at an intermediate level between the head and the skirt, said ring having a corrugated surface traced by a generator line at a constant angle to said axis and moving around a closed corrugated curve situated in a plane orthogonal to said axis.

4,406,919

METHOD AND APPARATUS FOR MONITORING INTERMEDIATE REGENERATIVE REPEATERS

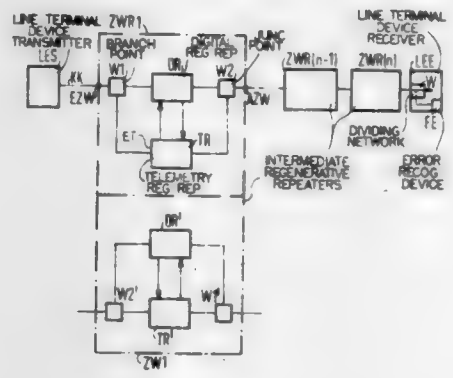
Reginhard Pospischil, Lochham, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,849

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1980, 3027755

Int. Cl.³ H04L *25/02, 1/00*

U.S. Cl. 178—69 G **14 Claims**



11. An intermediate regenerative repeater comprising:

a digital signal regenerative repeater for receiving, regenerating and transmitting coded digital data signals; a telemetry signal regenerative repeater including monitor means connected to said digital regenerative repeater and operable to produce signals representing incoming and outgoing code errors; and

telemetry means connected to said monitoring means and operable in response to the code errors to generate a corresponding telemetry signal and transmit the same with the digital data signals and in a frequency band different from that of the digital data signals.

4,406,920

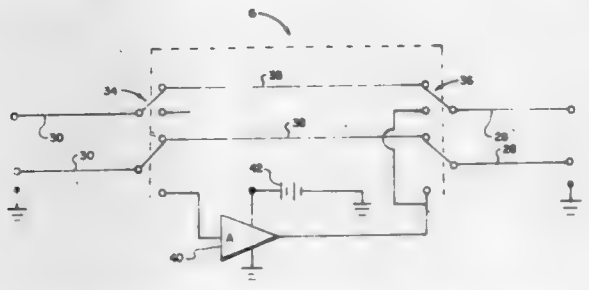
MONITOR AMPLIPHONES

Robert W. Krauel, Jr., 128 Westerfield, Bossier City, La. 71111

Continuation-in-part of Ser. No. 951,015, Oct. 12, 1978, Pat. No. 4,245,136. This application Dec. 22, 1980, Ser. No. 218,525

Int. Cl.³ H04S *7/00, 3/00*

U.S. Cl. 179—1 MN **3 Claims**



1. Headphone apparatus for comparing a reference performance to an indepdndent performance of a musical work comprising:

right and left earpieces each comprising a generally cup-shaped casing adapted for covering the ears of a listener,

only one speaker carried within each of said earpieces,

coupling means connected to said speaker in each earpiece for coupling a first source of audio frequency signals representing said reference performance to said speaker, and

electronic signal processing means, including amplifier means, having an input adapted for connection to a second source of audio frequency signals representing said independent performance and an output connected to said speaker in each earpiece, for coupling said second source to said speaker, and switching means for, in a first position, coupling said second source directly to said speaker, and in a second position, coupling said second source to said amplifier means and the output of said amplifier means to said speaker.

4,406,921

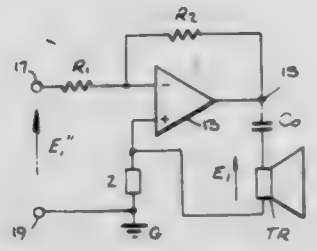
APPARATUS FOR IMPROVING LINEARITY OF ELECTROMECHANICAL TRANSDUCERS

Daniel R. von Recklinghausen, Arlington, Mass., assignor to Electro Audio Dynamics, Inc., Great Neck, N.Y.

Filed Jun. 15, 1981, Ser. No. 273,742

Int. Cl.³ H04R *29/00*

U.S. Cl. 179—1 N **7 Claims**



1. In a circuit including a transducer for producing acoustic signals in an acoustic impedance under test the improvement comprising a compensating circuit including a negative impedance coupled in the input of the transducer, said negative impedance comprising an operational amplifier having the input signal applied to a negative input and the amplifier output signal fed back to the same input and with the amplifier output coupled through a capacitor to the transducer and the positive operational amplifier input.

4,406,922

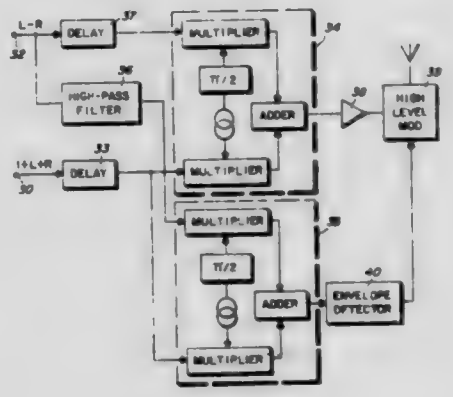
STEREO BROADCAST SYSTEM

Norman W. Parker, Wheaton, and Francis H. Hilbert, Addison, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 151,236, May 19, 1980. This application Aug. 21, 1981, Ser. No. 295,185

Int. Cl.³ H04H *5/00*

U.S. Cl. 179—1 GS **14 Claims**



1. A compatible AM stereophonic system for transmitting and receiving signals wherein the signal transmitted is a compatible quadrature signal below a transition frequency and a quadrature signal above the transition frequency and wherein the transmitter comprises:

first and second input means for receiving sum and difference signals respectively;

first modulating means coupled to the input means for providing a first pair of quadrature signals amplitude modulated with the sum and difference signals respectively and combining said signals;

limiter means coupled to the modulating means for removing the amplitude variation from the modulated signal, leaving a phase modulated signal;

means coupled to the input means for providing a modulating audio signal which is the envelope of a substantially pure quadrature signal above a predetermined frequency and is 1+L+R below the predetermined frequency;

second modulating means coupled to the audio signal providing means and the limiter means for amplitude modulation of the phase modulated signal by the modulating audio signal;

and receiver means comprising:

input means for receiving the output signal of the transmitter;

demodulating means for providing a first output signal substantially equal to 1+L+R and a second output signal substantially equal to L−R; and

matrixing means coupled to the demodulating means for providing output signals substantially equal to L and R.

4,406,923

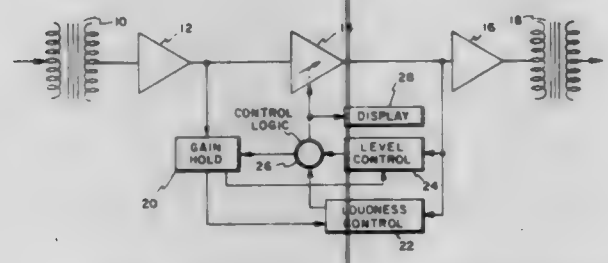
AUTOMATIC LOUDNESS CONTROLLER

John C. Burne, III, and Emil L. Torick, both of Darien, Conn., assignors to CBS Inc., New York, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,841

Int. Cl.³ G01H *5/00*

U.S. Cl. 179—1 VL **8 Claims**



1. Apparatus for automatically controlling the level of audio frequency program signals to maintain uniform average loudness of sounds corresponding to said signals while simultaneously holding the signal level below a preset limit, said apparatus comprising, in combination:

variable gain means connected to receive and adapted to amplify input audio frequency program signals and produce amplified output signals;

loudness analyzing means operative responsively to said amplified output signals for producing a first control signal for controlling the gain of said variable gain means in accordance with loudness level of the program signals;

signal level analyzing means operative responsively to said amplified output signals for producing a second control signal for controlling the gain of said variable gain means in accordance with the signal level of the program signals and for limiting the amount of gain which can be contributed by said loudness analyzing means; and

logic means connected to receive and operative responsively to said first and second control signals for determining which should be in control of said variable gain means and for connecting the appropriate control signal to said variable gain means.

4,406,924

RADIO-CONTROLLED DEVICES FOR USE IN POWER DISTRIBUTION CIRCUITS

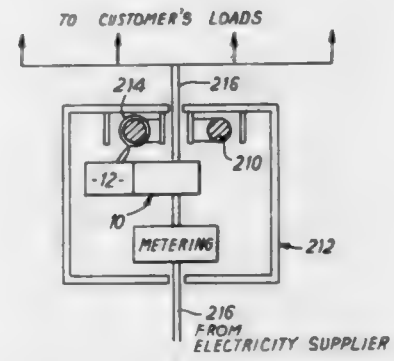
Howard A. Dorey, Godalming, England, assignor to Sangamo Weston Limited, Enfield, England

Filed Feb. 17, 1981, Ser. No. 234,534

Claims priority, application United Kingdom, Feb. 18, 1980, 8005455

Int. Cl.³ H04B *7/00*; H04Q *7/00*

U.S. Cl. 179—2 A **2 Claims**



1. In a radio-controlled device for use in conjunction with an AC power distribution circuit at a point in or adjacent an electricity meter for measuring the amount of electrical power or energy supplied to said distribution circuit, the device being of the type which includes:

remotely operable means adapted to be operatively associated with said distribution circuit; and

a radio receiver having an input for receiving a broadcast signal comprising a carrier signal modulated with a digital signal, and arranged to control the operation of said remotely operable means in dependence upon said digital signal;

the combination with said radio receiver of an aerial circuit coupled to at least a part of the distribution circuit downcircuit of said meter and the input of said radio receiver, such that said part of the distribution circuit serves as an aerial for receiving said broadcast signal.

4,406,925

MESSAGE DELIVERY SYSTEM

Royce D. Jordan, Duluth, and Edgar L. O'Neal, Tucker, both of Ga., assignors to The Audichron Company, Atlanta, Ga.

Filed Aug. 24, 1981, Ser. No. 295,722

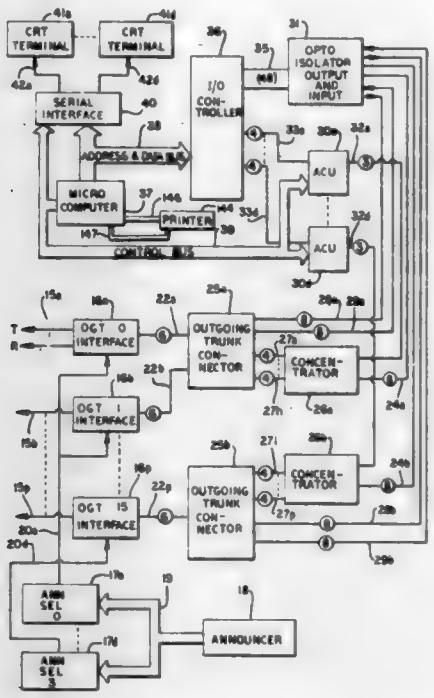
Int. Cl.³ H04M *3/42*

U.S. Cl. 179—18 B **6 Claims**

6. In an automatic call placement system for delivering a predetermined message to a plurality of extensions on the telephone exchange, each of said extensions corresponding to a unique one of a plurality of extension signals, said automatic call placement system including announcement reproducing apparatus providing electrical signals embodying said predetermined message, a selectively operable input means for entering a data pair comprising a pair of distinct ones of said plurality of said extension signals, and for entering a predetermined block call signal; storage means for storing said data pair; a processor; a data bus connecting said processor, and a dialing and connection means for seizing one of a plurality of trunks connected to said exchange and for providing a distinct one of a plurality of sets of dialing signals to said one of a plurality of trunks in response to each of said plurality of extension signals present on said data bus; the improvement comprising:

control means connected to and responsive to said storage means and said input means for controlling said dialing and connection means to sequentially provide each of a subset of said plurality of extension signals lying between said pair of distinct extension signals which comprise said data pair, and subsequently to connect said announcement reproducing apparatus to each of said plurality of trunks which was seized by said dialing and connection means in

response to each extension signal of said subset of said plurality of extension signals, in response to said block call signal from said input means;



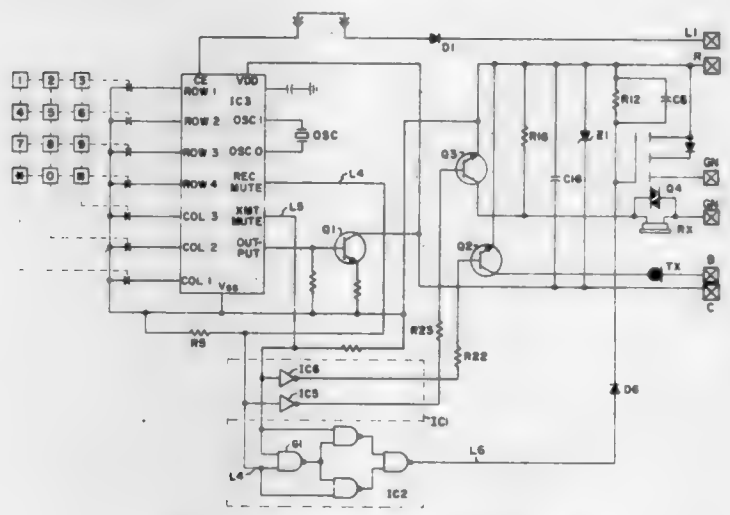
whereby said predetermined message is sequentially delivered to each of said plurality of extensions which corresponds to each extension signal in said subset of said plurality of extension signals.

4,406,926

TELEPHONE STATION CIRCUIT USING DIGITAL TONE GENERATION

Robert H. Duncan, Memphis, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,054
Int. Cl.³ H04M *1/26*
U.S. Cl. 179—84 VF **5 Claims**



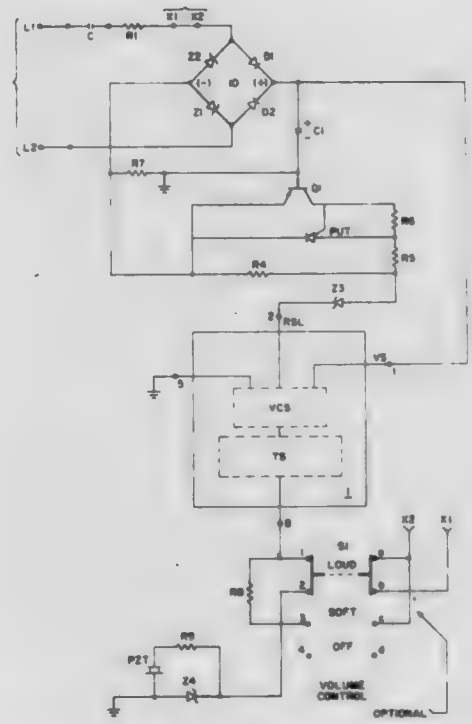
1. In a telephone station circuit employing dual tone multifrequency generator means for producing an output comprised of two tones in response to depression of a selected button of a button key pad, and including a transmitter and a receiver coupled to the output of said generator means, said generator means responsive to depression of said selected button for generating a first signal, said generator means operative a time period after said first signal for generating a second signal, the improvement comprising means responsive to said first signal for series muting the coupling to said receiver, further means responsive to said first signal for shunt muting said receiver, means responsive to said second signal for muting said transmitter from the output of said generator means, logic means responsive to said second signal for terminating the shunt muting of said receiver while maintaining the series muting of said receiver coupling.

4,406,927

ELECTRONIC TONE RINGER

Karl E. Pommer, II, Corinth, Miss., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 8, 1981, Ser. No. 261,929
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—84 T **7 Claims**



1. An electronic circuit for generating audio output signals in response to input ringing signals on a telephone line, and in which said circuit includes an oscillation circuit responsive only to voltages above a predetermined threshold applied to its input terminal for generating oscillations, wherein the predetermined threshold voltage level is determined by the voltage applied to a threshold input of the oscillation ciruit wherein the improvement comprises rectifier bridge means for blocking direct current from said electronic circuit and for transmitting voltages in response to alternating current signals on the telephone line, an input path from said rectifier bridge to said threshold input terminal, resistance means in said input path for setting the threshold voltage applied to the threshold input terminal, switching means responsive to voltages with higher currents than are normally present in ringing voltages to operate and switch the input path to raise the setting of the threshold applied to the input terminal of said oscillating circuit, and in which there is a transducer responsive to the generated oscillations of said oscillation circuit for generating said audio output signal.

4,406,928

MULTI-PURPOSE TELEPHONE HOLDER APPARATUS

William G. MacKenzie, Middletown, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

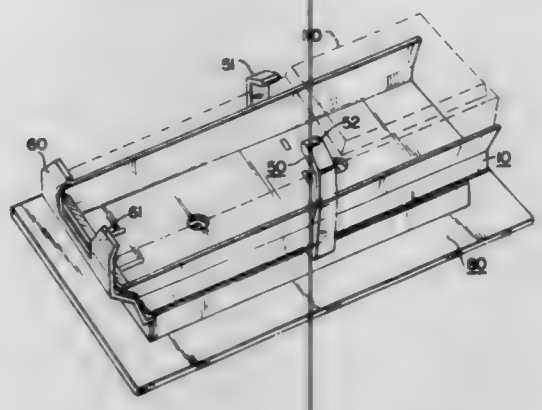
Filed Apr. 2, 1981, Ser. No. 250,461
Int. Cl.³ H01M *1/04*
U.S. Cl. 179—146 R **19 Claims**

1. Apparatus for receiving a telephone instrument in one of a vertical or horizontal positions, said telephone instrument including a telephone handset and a telephone subset incorporated in a handheld member, comprising in combination:

a support member for holding said telephone instrument in a horizontal position and having a bottom surface with a back and a front, first and second sidewalls and a back wall, with an open top and an open front end; and

a removable clip member mounted on said support member to grasp the telephone instrument when the support mem-

ber is mounted in a vertical position, the clip member having a top, a bottom, a front, a back and a planar base



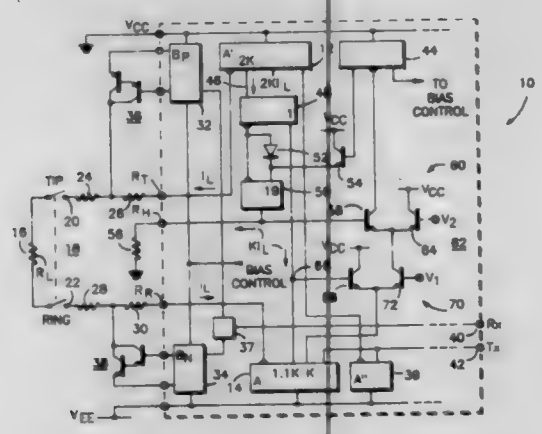
with first and second flexible side arms and a bifurcated flexible bottom arm.

4,406,929

HOOK STATUS DETECTOR FOR A SUBSCRIBER LOOP INTERFACE CIRCUIT

W. David Pace, Tempe, and W. Eric Main, Mesa, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Feb. 26, 1981, Ser. No. 238,508
Int. Cl.³ H04B *1/58*
U.S. Cl. 179—170 NC **21 Claims**



16. In an integrated subscriber loop interface circuit for providing two-wire balanced to four-wire single ended signal conversion between telephone central office equipment and a loop incorporating a telephone handset including a first and a second current mirror circuit of opposite conductivity type to provide direct current to the loop whenever the handset is taken off hook, each of the first and second current mirror circuits having a plurality of outputs, a circuit for detecting the telephone handset on-hook to off-hook status, comprising:

first circuit means having an input and first and second outputs for producing first and second currents thereat proportional to the loop current when the telephone is off-hook, said input being connected to a first output of the first current mirror circuit, said first output being coupled to an external terminal of the subscriber loop interface circuit at which is supplied said first current and said second output being connected to a first output of the second current mirror circuit;

second circuit means external to the subscriber loop interface circuit which is coupled to said external terminal for establishing a voltage thereat in accordance to said first current;

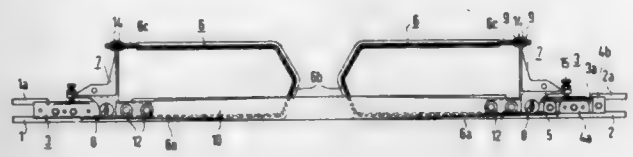
threshold circuit means coupled to said first and second outputs of said first circuit means and to said first output and a second output of the second current mirror circuit which is responsive to said voltage established by said second circuit means becoming greater than a predetermined first threshold potential in conjunction with all of said second current sourced from said second output of said first circuit means being sunk at said first output of the second current mirror circuit for changing from a first conducting state to a second conductive state to provide a signal at an output indicative to the telephone being in an off-hook condition.

4,406,930

TROLLEY WIRE SECTION INSULATOR WITH TWO PARALLEL INSULATING SLIDING STRIPS

Hermann Menhorn, Mölln; Georg Müller, Buckenhof; Christoph Nitschke, Erlanger; Helmut Wehrberger, Röttenbach, and Klaus Kaesewinkel, Reckling-hauser, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Nov. 3, 1981, Ser. No. 317,745
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1980, 3042870; Dec. 1, 1980, 3045258; Jul. 20, 1981, 3128634
Int. Cl.³ B60M *1/18;* H01B *17/42*
U.S. Cl. 191—39 **13 Claims**



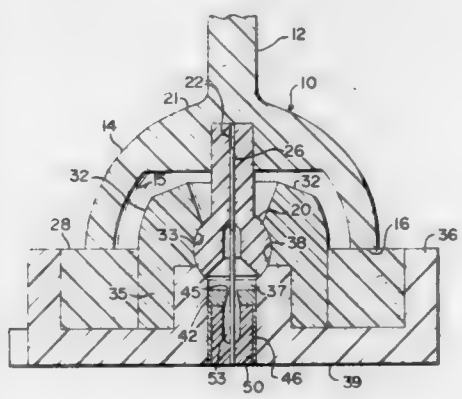
1. In a section insulator for two trolley wires of an electric railway comprising a trolley wire terminal fastened to each trolley wire, a brace fastened to each terminal, two insulating sliding strips connected to and extending between the braces, sides of the insulating sliding strips forming sliding surfaces for a current collector, and an arcing horn fastened to each brace between the two insulating sliding strips, the improvement comprising insulating sliding strips made of a fiber-reinforced plastic in which filament fibers are disposed parallel to each other and perpendicularly to the sliding surface, and arcing horns which are approximately at least U-shaped with a first leg of the U-shape extending from the brace and forming a leading runner, a second leg of the U-shape spaced from the first leg and returned to the brace, the second leg forming an adjusting loop, and a cross-piece of approximately V-shape connecting the two legs and forming an arc guide.

4,406,931

JOYSTICK SWITCH

Frank P. Dola, Port Richey, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 23, 1982, Ser. No. 391,311
Int. Cl.³ H01H *25/00*
U.S. Cl. 200—6 A **7 Claims**



1. A joystick switch comprising:

a support member with an integral elongate handle, said support member carrying a ball member coaxially with said elongate handle, said ball member having a bore

therein which is coaxial with the axis of said elongate handle, said bore slideably receiving a length of resilient wire which is straight when in an undeformed state, said wire extending beyond said ball member,

a base member having socket means thereon, said base member having an aperture extending therethrough from said socket means, said socket means receiving said ball member therein, said wire extending into said aperture, said base member having four discrete contacts fixed therein and situated radially about said aperture, the center of said aperture being coaxial with said handle when said wire is in an undeformed state, said straight length of wire passing clearly through said aperture when said wire is in an undeformed state, said wire being fixed relative to a surface of said base opposite said aperture from said socket means,

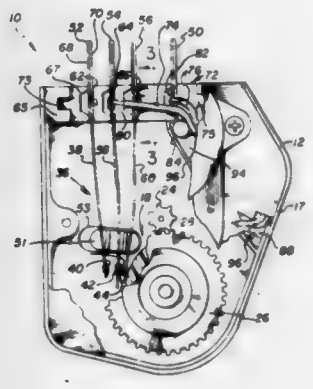
first resilient means between said support member and said base member, said first resilient means urging said support member toward a position where said wire is straight, whereby, arcuate movement of said handle will cause said ball member to rotate in said socket means and said wire to deflect toward said contacts.

4,406,932

CAM OPERATED TIMER WITH IMPROVED ELECTRICAL CONNECTIONS

Elmo W. Voland, Indianapolis, and George W. Adams, Greenwood, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed May 13, 1981, Ser. No. 263,294
Int. Cl.³ H01H *43/10*
U.S. Cl. 200—38 R **4 Claims**



1. In a timer having motor driven cam programming means,

(a) a housing carrying said cam programming means including surrounding walls and end plates cooperating with said surrounding walls and a cover engaging said walls,

(b) at least one combination electrical terminal and electrical contact blade engaging said cam programming means including a pair of legs, at least a portion of which are in a side-by-side relationship,

(c) at least one slot in at least one wall of said surrounding walls and a cavity in said wall opening to said slot,

(d) a jack formed in one of said legs extending into said slot and receiving an electrical lead,

(e) a groove in said cover disposed in a direction substantially normal to an axial length of said electrical contact blade and receiving said electrical lead, and

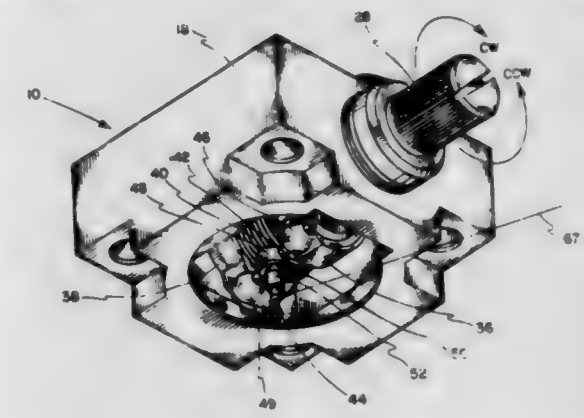
(f) an aperture in said housing remote from said jack through which said electrical lead extends.

4,406,933

NEUTRAL POSITION LIMIT SWITCH LEVER HEAD

J. Michael Boozer, Asheville, N.C., assignor to Square D Company, Palatine, Ill.

Filed Feb. 11, 1982, Ser. No. 347,852
Int. Cl.³ H01H *3/16*
U.S. Cl. 200—47 **12 Claims**



1. A neutral position limit switch comprising:

an operator having at least first and second off-center movable elements each having at least one up position and one down position;

a snap switch attached to said operator and having a stem for operating said snap switch;

a support cover sandwiched between said operator and said snap switch and having a first side and a second side, said first side facing said operator, said support cover also having a substantially centrally located aperture;

a linear actuator extending through said centrally located aperture in said support cover and in contact with said stem for operating said snap switch; and,

a tri-lobe roller follower having three ball shaped segments, a first end ball segment in contact with said first movable element, a second center ball segment in contact with said linear actuator and a third end ball segment in contact with said second movable element, said tri-lobe roller follower being held in position by a recess in said first side of said support cover;

wherein said linear actuator is in a neutral intermediate position when one of said off-center movable elements is in an up position and said other movable element is in a down position, said linear actuator is in a down position when both of said movable elements are in a down position and said linear actuator is in an up position when both of said movable elements are in an up position.

4,406,934

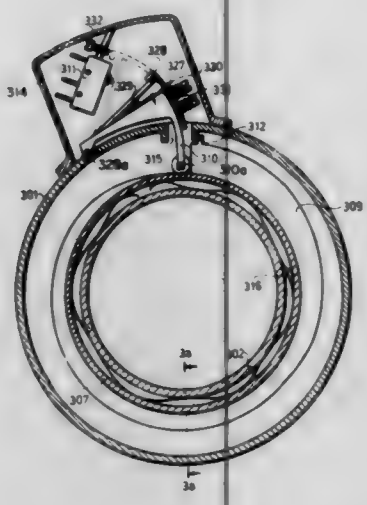
APPARATUS FOR SENSING THE EXTENT OF TURNING OF A ROTATABLE PART

Rezso Elszasz, Budapest, Hungary, assignor to Olajterv Koolajes Gazipari Tervezo Vallalat, Budapest, Hungary

Continuation-in-part of Ser. No. 80,314, Oct. 1, 1979, abandoned, which is a continuation of Ser. No. 907,325, May 18, 1978, abandoned. This application May 12, 1981, Ser. No. 263,021
Claims priority, application Hungary, May 18, 1977, KO 2860
Int. Cl.³ H01H *3/16*
U.S. Cl. 200—61.39 **8 Claims**

1. Apparatus for sensing the extent of rotation of a rotatable part, comprising a fixed ring, a rotatable ring carried by said fixed ring, said rings enclosing between them an annular space, a third ring carried by said rotatable ring for rotation in said annular space, at least one switch actuator means carried by

said third ring in said space, and at least one switch means carried by said fixed ring and actuable by said at least one



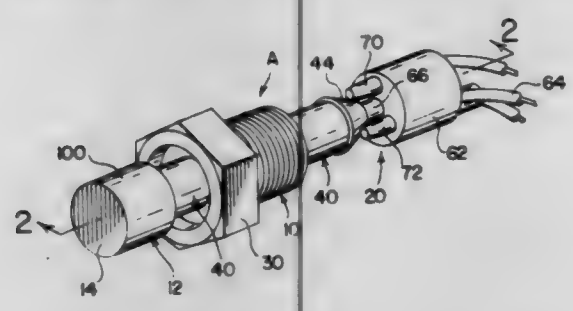
switch actuator means for detecting the extent of rotation of said third ring relative to said fixed ring.

4,406,935

DOOR JAMB SWITCH

John H. Montag, Warren, and Gary B. Zulauf, Pinckney, both of Mich., assignors to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Dec. 15, 1981, Ser. No. 331,123
Int. Cl.³ H01H *3/16*
U.S. Cl. 200—61.82 **15 Claims**



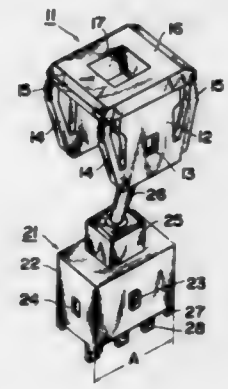
1. In a self-adjusting door jamb switch having a first member adapted to be fixedly secured onto a door jamb, a cylindrical mounting sleeve through and in frictional engagement with said first member, said sleeve having a longitudinal axis and an opened end, a switch element having at least two contacts and a first actuated condition and a second actuated condition, and a plunger within said mounting sleeve, concentric with and movable along the axis of said mounting sleeve between a first, door opened, position with said switch element in said first actuated condition and a second, door closed, position with said switch element in said second actuated condition, wherein said plunger supports one of said contacts and includes an outwardly extending knob with a protrusion adapted to be engaged by a door movable with respect to said jamb, and a surface facing said open end of said cylindrical mounting sleeve, said surface being generally orthogonal to said axis for covering said opened end of said sleeve when said plunger is in said door closed position, the improvement comprising: a generally cylindrical water deflector sleeve concentric with said axis and telescoped around said mounting sleeve at said opened end, said deflector sleeve having a first end secured to said knob adjacent said orthogonal surface, a second end extending toward said first member and a length between said first and second ends allowing movement in unison of said knob and plunger with said contact into said second position.

4,406,936

MOUNTING FRAME EQUIPPED WITH DECORATIVE PLATE FOR MOUNTING SWITCH OR THE LIKE

Shigeo Ohashi, Tokyo, Japan, assignor to Nihon Kaiheiki Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1981, Ser. No. 306,821
Claims priority, application Japan, Oct. 11, 1980, 55-145034[U]; Feb. 20, 1981, 56-23743[U]
Int. Cl.³ H01H *9/02*; G08B *5/00*
U.S. Cl. 200—296 **6 Claims**



1. A mounting frame (11) for mounting a switch (21) or the like on a panel (29), which comprises:

a decorative plate (16) formed with a through-hole (17) to be fitted into an upper sleeve portion (25) of the switch (21);

two flat plate leg portions (12) integrally formed with and vertically suspended from the lower end portion on both sides of the decorative plate (16) to be resiliently deformable in the direction perpendicular to the width of the leg portions (12) so that the leg portions (12) clamp a main body portion (22) of the switch (21) a pair of resilient plates (14) integrally formed with and upwardly extending from both lower end portions of the leg portions (12) to be resiliently deformable in the direction of width of the leg portion so that the pair of resilient plates is fittable into a fitting hole of the panel (29), each resilient plate being formed at upper end portion thereof with an outwardly facing corrugated portion for rigidly engaging with the fitting hole of the panel, and

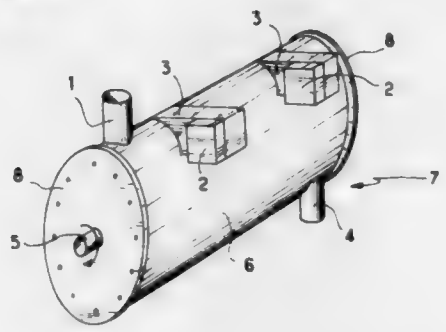
engagement means (13,13*a*,13*b*,13*c*) provided on the leg portions (12) for engaging with a corresponding engagement portion provided on the main body portion (22) of the switch (21).

4,406,937

MICROWAVE DEVICE FOR THE HEAT TREATMENT OF POWDERY OR GRANULAR MATERIALS

Joël Soulier, La Chaussee d'Ivry, Route de Pacy, 28260 Anet, France

Filed Mar. 5, 1981, Ser. No. 240,946
Claims priority, application France, Mar. 13, 1980, 80 05607
Int. Cl.³ H05B *6/78*
U.S. Cl. 219—10.55 A **13 Claims**



1. A device for the heat treatment of divided material by

microwave radiation to create a progressive wave, said device comprising:

a cylindrical sleeve formed from an electrical conducting material;

metal dividing walls fixed to the interior surface of said sleeve and spaced from one another by a first distance, said walls extending substantially perpendicular to the axis of said sleeve;

a nonpolar lining positioned in said sleeve in spaces between said walls, said sleeve, said walls and said lining defining a fixed waveguide portion;

a movable waveguide portion comprised by a helix inside said sleeve and rotatable about an axis coaxial with the axis of said cylindrical sleeve, the pitch of said helix being equal to said first distance, whereby said divided material may be transported along the length of said sleeve;

a plurality of magnetrons positioned on the outer surface of said sleeve, the axial distance between two successive ones of said magnetrons being a function of said helix pitch;

a first opening in said sleeve for admitting said material;

a second opening in said sleeve for discharging said material, said first and second openings being dimensioned so that said microwaves cannot leave said sleeve via said openings.

4,406,938

DISCHARGE MACHINING APPARATUS

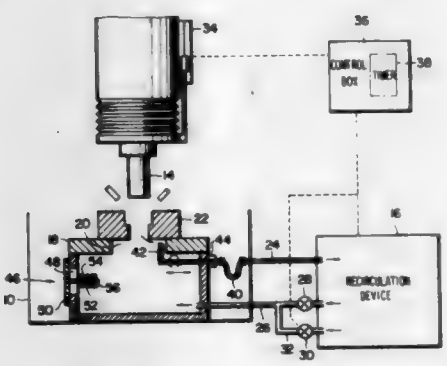
Shigeo Yamada; Tamio Takawashi, and Toshimitsu Sakakibara, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1981, Ser. No. 302,270

Claims priority, application Japan, Sep. 17, 1980, 55-129869; Sep. 17, 1980, 55-129870

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 D **2 Claims**



1. A discharge machining apparatus comprising a machining station having a tank for holding a machining solution, apertured cover means for supporting a workpiece electrode on the upper surface of said tank, machining solution recirculation means for supplying and exhausting machining solution into and out of said tank, including means for directing solution over said workpiece through said apertured cover means and an exhaust pipe having an inlet end located within said tank which is reciprocable and rotatable about its axis to adjustably locate said inlet end relative to said apertured cover means, a moveable electrode, means for vertically moving said electrode towards and away from said workpiece to periodically vent said tank, means for controlling the amount of machining solution recirculated through said tank to periodically overflow said tank when said electrode is raised and safety valve means in said tank.

4,406,939

METHOD FOR THE MANUFACTURE OF A CODE DISK FOR OPTICAL INCREMENTAL SHAFT ENCODERS AND ABSOLUTE SHAFT ENCODERS

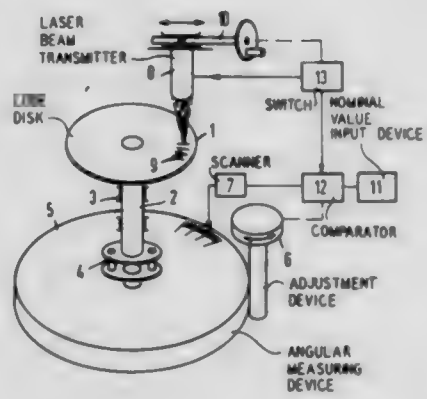
Walter Golker, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 20, 1981, Ser. No. 285,432

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1980, 3036005

Int. Cl.³ B23K *26/00*

U.S. Cl. 219—121 LJ **4 Claims**



1. A method for manufacturing a code disk for optical incremental shaft encoders or absolute shaft encoders from a blank code disk having an opaque layer thereon, comprising the steps of:

connecting a center portion of said blank code disk in fixed relation to a rotatable shaft which is to be subsequently used for rotating said code disk in said encoder;

rotating said shaft and said blank code disk in selected angular increments;

removing a selected portion of said opaque at each angular increment by means of a selectively operated laser beam transmitter disposed above said blank code disk; and

maintaining said fixed relation of said code disk and said shaft upon incorporation of said code disk and shaft in said encoder,

whereby a code pattern comprised of said removed portions of said opaque layer is precisely centrically disposed relative to a rotational axis of said code disk.

4,406,940

LASER PROCESSING MACHINE

Akira Tsutsumi, La Mirada, Calif., assignor to Amada Engineering & Service Co., Inc., La Mirada, Calif.

Filed Oct. 22, 1981, Ser. No. 313,811

Claims priority, application Japan, Oct. 23, 1980, 55-147676; Jun. 17, 1981, 56-092392

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LV **5 Claims**

1. A laser machine having a head assembly for processing a workpiece, comprising:

a lens means, disposed in the head assembly, for condensing a laser beam;

a nozzle means, arranged beneath the lens means, for applying the laser beam to the workpiece;

means, connected in the head assembly, for vertically moving the lens means and the nozzle means together in fixed relation to each other;

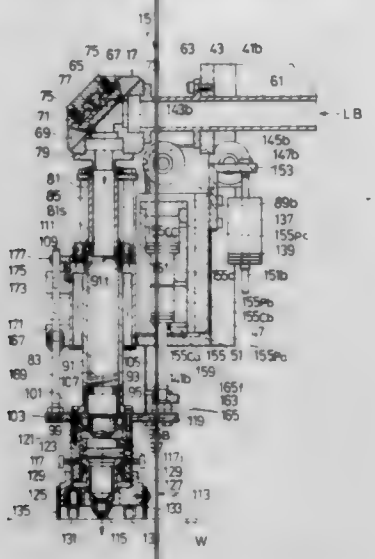
wherein said vertically moving means includes:

a movable tube means, arranged above the lens means, for allowing the lens means to resiliently move upwardly;

a first helical spring means for biasing the movable tube means downwardly;

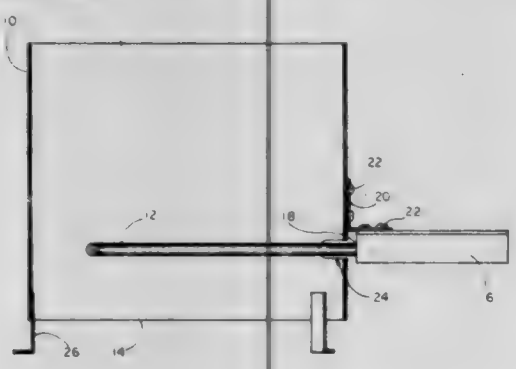
a ring-like holding means, arranged between the lens

means and the nozzle means, for allowing the nozzle means to resiliently move upwardly; and



a second helical spring means for biasing the ring-like holding means downwardly.

4,406,941
ELECTRIC IGNITING DEVICE FOR CHARCOAL
John D. Schmerein, Jr., 815 River La., Neenah, Wis. 54956
Filed Mar. 25, 1982, Ser. No. 361,746
Int. Cl.³ F23Q *7/04*
U.S. Cl. 219—261 **4 Claims**



1. An electrical charcoal igniting device consisting of the combination of an upright open-ended sleeve of fire-resistant sheet metal with an electric starting element,

said sleeve comprising a closed wall structure having a top open end and a bottom open end,

said bottom open end of said sleeve being provided with supporting leg means,

said electric starting element comprising a high resistance heat loop connected to an insulating handle,

said heat loop being disposed inside of said sleeve near to, but spaced from, the bottom end of said sleeve,

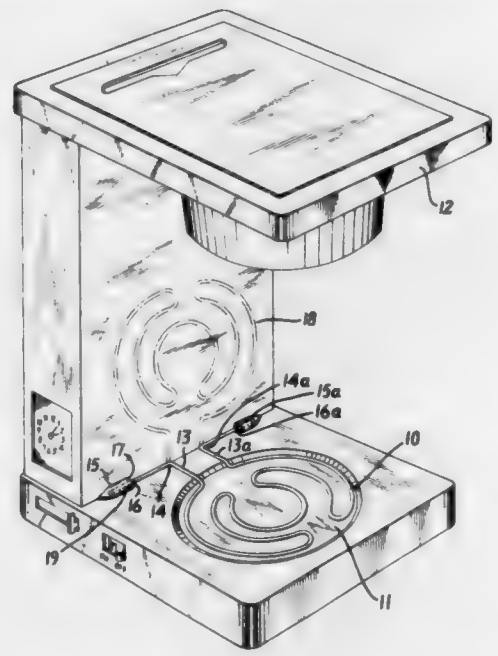
said sleeve having an aperture in said closed wall near said bottom end, through which aperture a portion of said heat loop disposed adjacent to said handle extends,

and said handle, adjacent to where said handle is connected to said heat loop, being firmly secured to the interior of said sleeve,

whereby said handle is adapted to lift said sleeve and said heat loop as a unit.

4,406,942
OVERHEATING PREVENTION SPACER FOR AUTOMATIC COFFEE MAKER
Vito Lo Conti, Iroquois Ave., Palisades, N.Y. 10964
Filed May 18, 1981, Ser. No. 264,971
Int. Cl.³ H05B *3/20;* F24C *15/10*
U.S. Cl. 219—283 **2 Claims**

1. In an automatic coffee maker having an electrically heated hot plate having a planar heated surface adapted to support a coffee pot for maintaining a beverage at a constant elevated temperature, the improvement comprising a spacer positioned intermediate the pot and the planar surface of a hot plate to prevent excessive heating of coffee in the pot, the spacer comprising a continuous heat conductive wire element shaped to rest immediately above and in contact with the planar surface of the heat source to support a coffee pot and to space the pot at a small distance above the heat source, arm portions on the wire element extending laterally away from the hot plate in

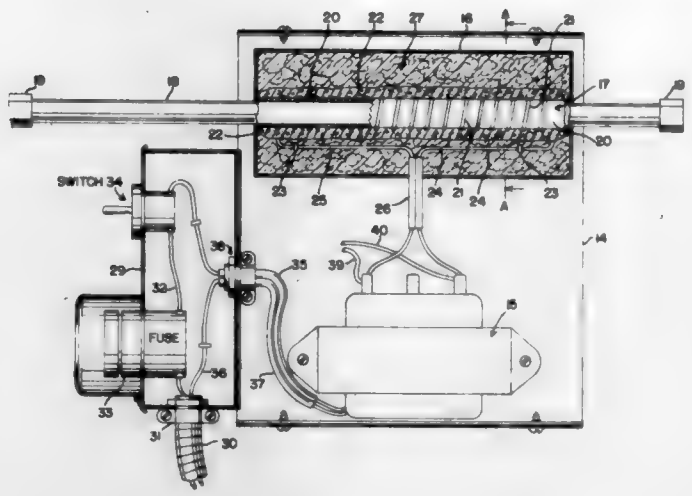


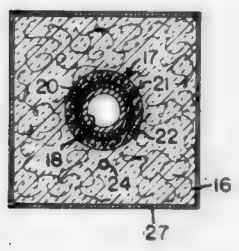
one direction, the arm portions being retained in pivotal retention in hinge means on said hot plate, the wire element being resilient, and wherein the wire element, when positioned in either vertical or horizontal position, is under tension sufficient to exert slight pressure against the hinges to retain the wire element in position, whereby the spacer is held in place over the hot plate when the spacer is in operating position and whereby the spacer can swivel upwardly to an approximately vertical position to permit cleaning of the surface of the hot plate or use of the surface without the spacer.

4,406,943
TEMPERATURE SELF-LIMITING ELECTRIC FUEL OIL HEATER FOR OIL BURNER UNITS
Robert S. Wilkinson, Box 61, West Newfield, Me. 04095
Filed Jan. 9, 1980, Ser. No. 110,695
Int. Cl.³ F23D *11/44;* H05B *3/40;* F24H *1/10*
U.S. Cl. 219—301 **10 Claims**

1. A heater for No. 2 fuel oil to ensure a predetermined condition thereof at the orifice of a burner unit and adapted to constitute an elongated section of an oil conduit through which oil is supplied by the pump of the burner unit, said heater comprising an open-ended tubular metal core defining an elongated chamber, a helical heating coil of high temperature durability alloy wire of predetermined length surrounding said core and in heat-transferring relation thereto, means electrically insulating said core from said coil and constituting at least one coat of porcelain-like cement on the portion of the core underlying said coil with the exterior of which said coil is in continuous contact, and electrical and thermal insulating means comprising a coating of a refractory-type cement of lower conductivity than said coat encasing the exterior of said coil, and a 12 to 24 volt, 4–7 amp transformer the secondary of which is connected to said coil and provides a current the voltage and amperage of which is such in relation to the total resistance of the coil that the temperature of the coil is self-

limiting and in the approximate range of from 70° F. to 175° F., said core defining elongated chamber constructed and ar-





ranged to be located close to but on the upstream side of the pump of a burner unit.

4,406,944

DEVICES FOR MOUNTING INFRARED LAMPS IN FURNACES

N. Robert Crain, Huntington Beach, and Robert P. Hardison, Tustin, both of Calif., assignors to Radiant Technology Corp., Cerritos, Calif.

Filed Mar. 23, 1981, Ser. No. 246,235
Int. Cl.³ F27D *11/02*; F27B *9/06*
U.S. Cl. 219—388 **13 Claims**

1. In an infrared furnace:

an elongated heating chamber having sidewalls formed of insulation with sheet metal covers on the outer surfaces thereof;

an endless conveyor belt supported for movement through said heating chamber;

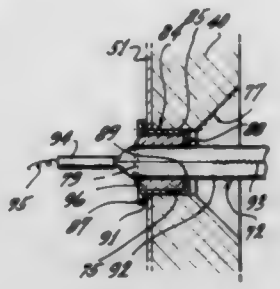
a plurality of pairs of opposing circular holes provided in the sidewalls above and below said endless conveyor belt, the inner half portions of each of the holes in the insulation provided with a chamfer;

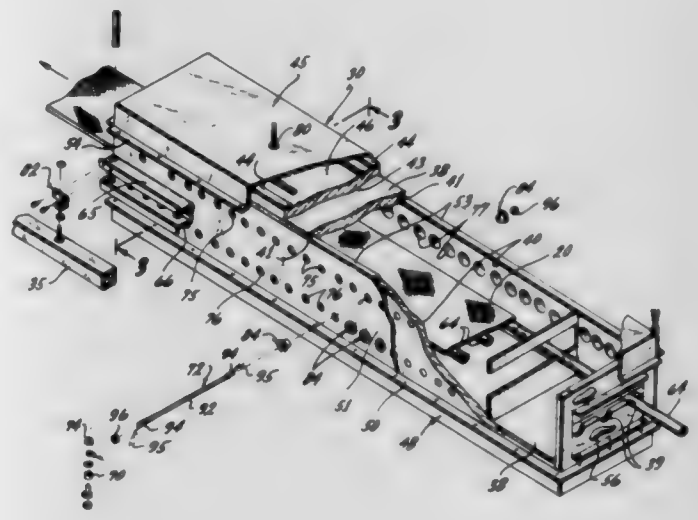
a plurality of ceramic holders, each having a hollow cylindrical body, said body provided with a shoulder on the outer end thereof and a bottom wall on the inner end thereof having a concentric circular opening with diametrically disposed notches;

each ceramic holder having its body positioned with a close fit in one of said circular holes on the sidewalls with its shoulder secured by sealant to said sheet metal cover;

a plurality of infrared lamps, each comprising a quartz tube having an infrared emitter extending axially therethrough and flat metal terminals on the ends thereof, the width of said terminals being greater than the diameter of said quartz tube;

each said infrared lamp transversely disposed within said heating chamber with the end portions of its quartz tube respectively extending with a close fit through the circular openings in the bottom walls of the ceramic holders on the opposite sidewalls of said heating chamber with the metal terminals protruding outside the sheet metal covers thereof; and





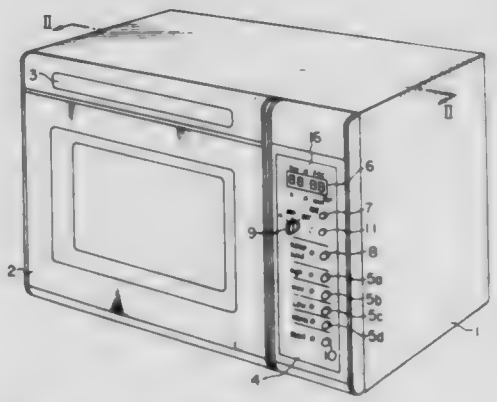
a gasket made of a resilient refractory material disposed on each end portion of said quartz tube and tightly packed within the hollow cylindrical body of said ceramic holder around the end portions of the quartz tube.

4,406,945

HEATING APPARATUS WITH NUMERICAL DISPLAY

Shigeki Ueda, Nara, and Norio Onizuka, Kashihara, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Jul. 7, 1981, Ser. No. 281,193
Claims priority, application Japan, Sep. 5, 1980, 55-123749
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—506 **3 Claims**



1. A heating apparatus comprising:

a heating chamber for accommodating therein an object to be heated;

heating means for supplying heat energy to said heating chamber;

timer means for controlling the period of time during which power is supplied to said heating means;

output change-over means for varying the output level of said heating means;

a main control unit for controlling said timer means and said output change-over means in accordance with a preset

heating time and a preset output level of said heating means, said main control unit including a counter and a memory;

output selection means coupled to said main control unit, said output selection means including a plurality of output keys respectively representing different output levels of said heating means, depression of one of said output keys selecting a corresponding output level and simultaneously a heating time corresponding to the length of time said one output key is depressed;

numerical value input means coupled to said main control unit, said numerical value input means including a digit change-over switch for selecting a digit position representing a unit of heating time including at least one of hour, minute and second units and for selecting an increment or decrement position to progressively increase or decrease the numerical value of the heating time whereby, upon depressing the one of said output keys after selecting the digit position by said digit change-over switch, the output level corresponding to the depressed one output key is preset in said memory, and said counter counts the length of time of the depression of said one output key to progressively increase the numerical value of the heating time for the selected unit when said digit change-over switch is in the increment position, said counter counting the length of time of the depression to progressively decrease when said digital change-over switch is in the decrement position, the counted heating time being preset in said memory; and

display means connected to said main unit for displaying digitally the counted heating time.

4,406,946

PULSE SIGNAL GENERATING DEVICE FOR TAPE RECORDER

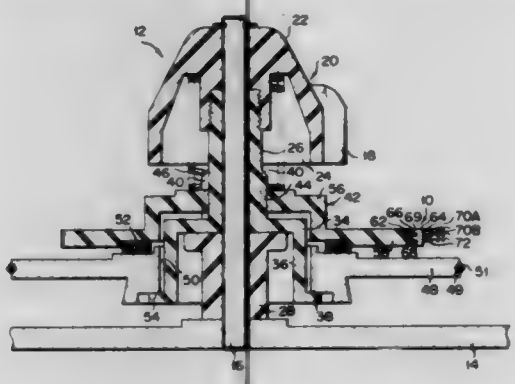
Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1981, Ser. No. 279,326

Claims priority, application Japan, Jul. 11, 1980, 55-94794; Jul. 11, 1980, 55-97803[U]; Jul. 11, 1980, 55-97961[U]

Int. Cl.³ G01D *5/34*

U.S. Cl. 250—231 SE **16 Claims**



1. A pulse signal generating device for a tape recorder having a rotatable reel hub engaging member and a rotating shaft portion coupled to said reel hub engaging member and which rotates in connection with tape running, comprising:

a rotary member attached to said rotating shaft portion of the tape recorder and coupled to said reel hub engaging member, said rotary member having a central axis, and said rotary member rotating together with said rotating shaft portion and said reel hub engaging member around said central axis, said rotary member having an outer peripheral surface which includes at least one first surface portion with a predetermined light reflection factor and at least one second surface portion with a light reflection factor different from said predetermined light reflection factor, said first and second surface portions adjoining each other along the circumferential direction of said rotary member; and

a photo-reflector facing said outer peripheral surface of said rotary member and including a light emitting element to emit light toward said outer peripheral surface of said rotary member and a light receiving element for receiving light reflected from said outer peripheral surface of said rotary member, said light emitting element and said light receiving element being flush with each other, said light receiving element producing pulse signals in response to light reflected from the first and second surface portions, severally.

4,406,947

CALIBRATING DEVICE FOR IONIZING RADIATION DOSIMETERS

Charles A. Burton, and Gordon K. Riel, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 17, 1981, Ser. No. 255,122

Int. Cl.³ G01D *18/00*; G12B *13/00*

U.S. Cl. 250—252.1 **12 Claims**



1. A calibrating device for ionizing radiation dosimeters comprising a cylindrical drum,

a solid polymeric lining filling the entire opening within the drum, wherein the polymeric filling is capable of shielding ionizing radiation, a cylindrical opening through the polymeric filling, said opening filled with a longitudinal sleeve means located within said filling including multiple slotted means positioned in a rigid sleeve member, wherein each slotted means corresponds to a separate calibration position, the said sleeve fitted with handle means to hold and vertically move a radiation source along the axis of the cylindrical opening for the purpose of moving the radiation source from a storage position to multiple calibration positions and with means to remove the handle from the source so that the cylindrical opening from the source to the top is open to receive a radiation dosimeter that is to be calibrated by exposure to the source.

4,406,948

DEVICE FOR MEASURING THIN FILMS BY MEANS OF BETA RADIATION

Helmut Fischer, Bergwaldstr. 38, 7261 Gechingen; Willi Steegmuller, Tulpenstr. 19, 7407 Rottenburg/Neckar 15, and Werner Volz, Buckenhaldenweg 7, Sindelfingen-6, all of Fed. Rep. of Germany

Filed Oct. 14, 1980, Ser. No. 196,541

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1980, 3030227

Int. Cl.³ G01N *23/00*

U.S. Cl. 250—308 **16 Claims**

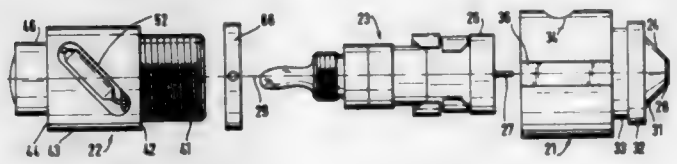
1. In a device for measuring thin films with the beta backscatter radiation technique, having an aperture ring which has

a small aperture opening, a beta radiation point source which is coaxial with the aperture opening and is located at a distance behind the aperture opening, a support arrangement for the point source, a Geiger-Müller (GM) counter, having an anode and a cathode, arranged coaxially behind the support arrangement, a holder arrangement for the GM-counter, a contact arrangement for the GM-counter anode, and a contact arrangement for the GM-counter cathode;

the improvement comprising:

an outer tube arrangement, having at least a first partial tube and a second partial tube,

at least one fine adjustment arrangement for coaxially displacing the partial tubes with respect to one another, and



at least one blocking means for blocking the fine adjustment arrangment,

the partial tubes, the beta radiation point source and the GM-counter being coaxially arranged,

one of the partial tubes being connected with one of the following: the aperture ring, the beta radiation point source, and the GM-counter, the other partial tube being connected with the other two,

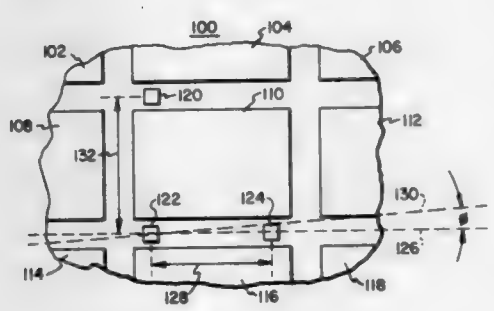
one of the partial tubes being connected galvanically conducting with the GM-counter anode and the other of the partial tubes being connected galvanically conducting with the GM-counter cathode.

4,406,949

METHOD AND APPARATUS FOR ALIGNING AN INTEGRATED CIRCUIT

John V. Spohnheimer, The Colony, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Jul. 13, 1981, Ser. No. 282,858
Int. Cl.³ G01B *11/00*
U.S. Cl. 250—548 **4 Claims**



1. A method for determining the location of an integrated circuit on a semiconductor substrate, comprising the steps of:

scanning a laser beam in a first scan across a target structure fabricated on said substrate such that said laser beam makes a first transition from impinging on a region of said substrate of impinging on a layer of nontransparent material which essentially blocks transmission of said laser beam and makes a second transition from impinging on said nontransparent material to impinging on said region wherein said region has an opposite conductivity type from that of said substrate;

applying a voltage to reverse bias a PN junction formed between said region and said substrate;

monitoring the current flow through said PN junction wherein said laser beam generates a current through said PN junction when said laser beam strikes said region but generates a lesser amplitude of current through said PN junction when said laser beam strikes said nontransparent material;

correlating the position of said laser beam with changes in amplitude of said current to locate edges of said non transparent layer; and

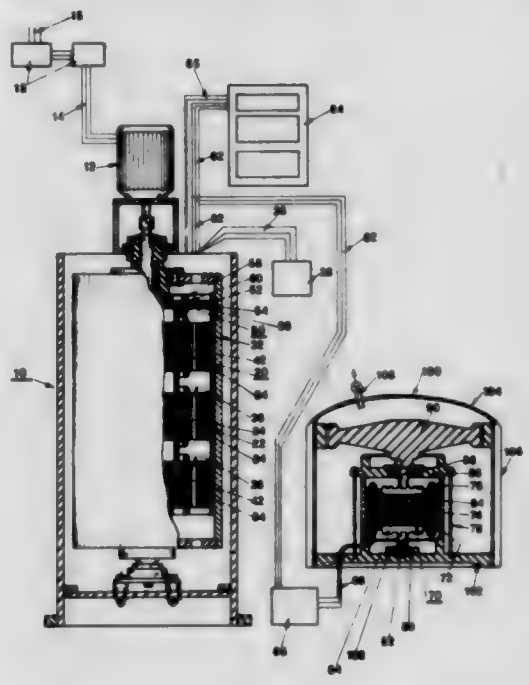
determining a mid-location of said nontransparent material as being midway between said edges.

4,406,950

GREATLY PROLONGED PERIOD NON-INTERRUPTIBLE POWER SUPPLY SYSTEM

John F. Roesel, Jr., Bradenton, Fla., assignor to Precise Power Corporation, Bradenton, Fla.

Filed Jul. 6, 1981, Ser. No. 280,604
Int. Cl.³ H02J *9/06*
U.S. Cl. 290—4 C **6 Claims**



1. In a mechanically driven A.C. generator system capable of generating A.C. potential for a greatly prolonged period of time after external power to the driving means for the generator system fails, in combination:

(a) a rotatable A.C. generator comprising a main A.C. generator for producing a main A.C. potential having a selected voltage and frequency while the generator is rotating within a given RPM range and a rotatable auxiliary A.C. generator operatively connected to the main A.C. generator and producing a secondary high frequency A.C. potential, the rotational kinetic energy of the main and auxiliary generators at their normal operating speed being only sufficient to enable the main A.C. generator to rotate in the given RPM range for a short period of time after the external power to the driving means fails,

(b) driving means energizable from the external source of power to rotate the main A.C. and the auxiliary A.C. generators, the driving means ceasing to cause the generators to rotate at their normal operating speed when the external source of power fails, and

(c) a sealed chamber containing a high speed A.C. induction motor connected to and driving a flywheel, the high speed A.C. motor being energizable with the high frequency A.C. potential from the auxiliary A.C. generator to cause it to rotate at high speed whereby large amounts of kinetic energy are stored in the motor and flywheel, windage losses being low due to a low windage loss atmosphere being present in the sealed chamber, the A.C. motor capable of functioning as a generator when the driving means ceases to operate and the main and the auxiliary A.C. generators being to slow down, so that it will generate high frequency A.C. potential by converting the stored rotational kinetic energy in the flywheel and its rotor and to supply such high frequency A.C. to the auxiliary gener-

ator which will then function as a motor to drive the main A.C. generator for a greatly prolonged time in the given RPM range.

4,406,951

HYDRAULIC PUMP DRIVE SYSTEM FOR AN AUTOMOTIVE VEHICLE

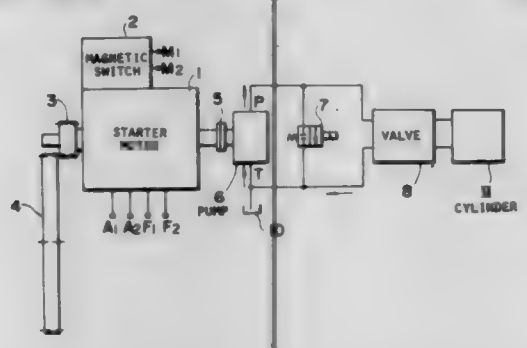
Naohiko Inoue, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Aug. 6, 1981, Ser. No. 290,716

Claims priority, application Japan, Aug. 8, 1980, 55-112443[U]

Int. Cl.³ B62D *3/14*

U.S. Cl. 307—10 R **20 Claims**



1. A hydraulic pump drive system for an automotive vehicle, which comprises:

(a) a hydraulic pump for generating hydraulic fluid pressure having an inlet duct and an outlet duct;

(b) first signalling means for signalling when the engine of said vehicle is to be started;

(c) second signalling means for signalling when the hydraulic pump is to be operated;

(d) a starter motor having a drive shaft connected to said hydraulic pump so as to drive said hydraulic pump and having an armature and a field winding;

(e) engagement means for engaging the drive shaft of said starter motor with the engine;

(f) a control circuit responsive to said first signalling means and to said second signalling means for connecting the armature and the field winding of said starter motor in series and activating said engagement means when said first signalling means signals that the engine is to be started, and for connecting the armature and the field winding of said starter motor in parallel and deactivating said engagement means when said first signalling means does not signal that the engine is to be started and said second signalling means signals that said hydraulic pump is to be operated, whereby said starter motor functions as a series-wound motor to start the engine, and said starter motor functions as a shunt motor to drive said hydraulic pump after the engine has been started.

4,406,952

OPENING SWITCH FOR INTERRUPTING CURRENT USING A PLASMA FOCUS DEVICE

George M. Molen, 5327 Rolfe Ave., Norfolk, Va. 23508, and James L. Cox, Jr., 905 Bentley Heath Common, Virginia Beach, Va. 23452

Filed Jan. 7, 1982, Ser. No. 337,761

Int. Cl.³ H01F *27/42*; H03K *3/86*

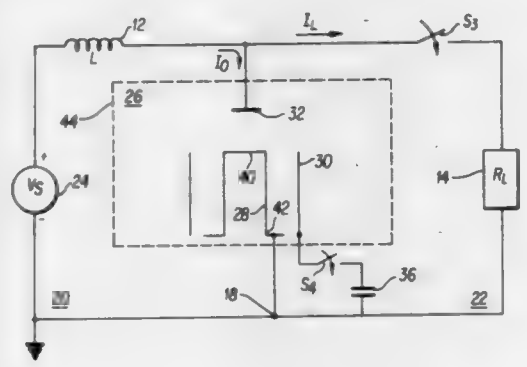
U.S. Cl. 307—104 **24 Claims**

12. An inductive energy storage system for supplying a high-energy electrical pulse to a load, said system comprising:

a high-amperage current source including first and second terminals;

an inductor including first and second terminals, said first terminal of said inductor being coupled to a first terminal of said current source;

plasma focus switch means including first and second terminals, a plasma focus device having a center and outer electrode with said center electrode connected to said second terminal of said plasma focus switch means, an auxiliary electrode connected to said first terminal of said plasma focus switch means for controlling the flow of current between said first and second terminals of said plasma focus switch means, said first terminal of said plasma focus switch means being coupled to said second terminal of said inductor, said second terminal of said plasma focus switch means being coupled to said second terminal of said current source and to a first terminal of



said load with said first terminal of said plasma switch focus means being coupled to a second terminal of said load;

means for closing said plasma focus switch means whereby when said plasma focus switch is closed a current flows from said current source through said inductor thereby storing energy in said inductor and whereby a current flowing through said auxiliary electrode is interrupted due to a plasma pinch.

4,406,953

TIMER SWITCH

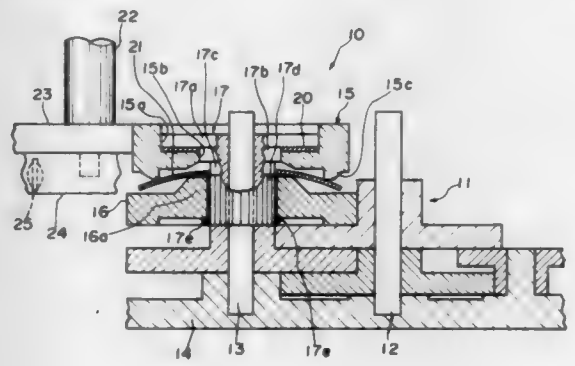
Toshio Tanaka, Susono; Hiroshi Omata, Gotenba, and Kuniaki Uno, Susono, all of Japan, assignors to Kabushiki Kaisha Higashifuji Seisakusho, Tokyo, Japan

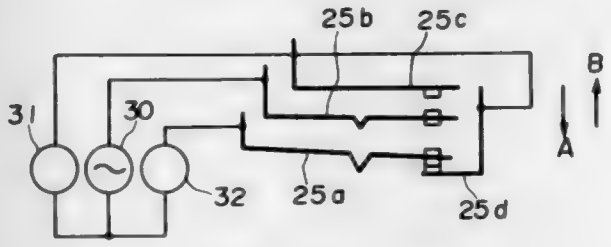
Filed Aug. 20, 1981, Ser. No. 294,613

Claims priority, application Japan, Aug. 25, 1980, 55-116863; Dec. 29, 1980, 55-185170; Dec. 29, 1980, 55-185171; Dec. 29, 1980, 55-185172

Int. Cl.³ H01H *7/00*

U.S. Cl. 307—141 **15 Claims**





1. Apparatus which comprises:

(a) a casing;

(b) an electric motor mounted on said casing;

(c) an interval shaft mounted on said casing for rotation about its axis;
(d) a cam of a generally disc-shape mounted on said interval shaft for rotation therewith;
(e) an electrical switching means for switching electrical current including a plurality of resilient contact plates mounted on said casing, said cam acting on at least one of said contact plates;
(f) a drive gear fixedly secured to said interval shaft for rotation therewith;
(g) a bushing rotatably mounted on said casing and having an axis of rotation disposed adjacent to said interval shaft in parallel relation thereto;
(h) a first clutch gear rotatably mounted on said bushing, said first clutch gear being in mesh with said drive gear and having an annular flange;
(i) a second clutch gear fixedly mounted on said bushing for rotation therewith, said second clutch gear being disposed in closely spaced opposed relation to said first clutch gear and being operatively connected to said motor, and said second clutch gear having a central circular boss; and
(j) a slip friction clutch comprising a flat resilient plate, said slip friction clutch being mounted on said bushing and interposed between said opposed first and second clutch gears, said central boss being disposed within said annular flange in concentric relation thereto to thereby deform said slip friction clutch into an arcuate cross-section so that said central boss and said annular flange frictionally engage opposite sides of said slip friction clutch, respectively, and said slip friction clutch urging said first clutch gear away from said second clutch gear into frictional engagement with said bushing;
(k) whereby upon rotation of said interval shaft, said first clutch gear is rotated independently of said second clutch gear, frictionally moving relative to said slip friction clutch and said bushing whereas upon rotation of said motor, said slip friction clutch connects said first and second clutch gears for rotation in unison.

8. Apparatus according to claim 1, in which said cam has a pair of first and second cam surfaces at its periphery, said electrical switching means comprising first, second, third and fourth contact plates mounted at their one ends on said casing in juxtaposed relation, the third contact plate being greater in width than the other three contact plates, said first and second cam surfaces acting on the second and third contact plates, respectively, the third contact plate being selectively brought by said second cam surface into and out of engagement with the fourth contact plate, and the second contact plate being selectively brought by said first cam surface into engagement with one of the first and third contact plates.

9. Apparatus according to claim 8, further comprising a load and power source, in which the second contact plate is electrically connected to one terminal of the load, the third contact plate being electrically connected to one terminal of the power source, the fourth contact plate being electrically connected to said motor, the other terminals of the load, the power source and the motor being connected together, the load and said motor being connected in parallel with the power source through the contact plates, and the first and fourth contact plates being electrically connected together.

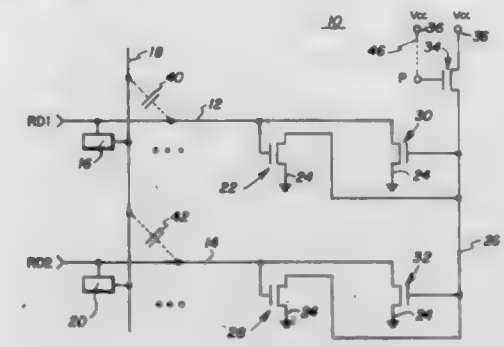
4,406,954

SHARED QUIET LINE FLIP-FLOP

Robert J. Proebsting, Dallas, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Jun. 2, 1980, Ser. No. 227,054
Int. Cl.³ G11C *7/02*; H03K *17/16, 3/013, 3/356*
U.S. Cl. 307—200 B **18 Claims**

1. A quiet line flip-flop for reducing noise in a plurality of electrically conductive lines, comprising:
a first node coupled to said lines;
means for charging said first node to a first state;
means for charging said first node to a second state when any one of said lines is forced to a voltage above a preset voltage; and



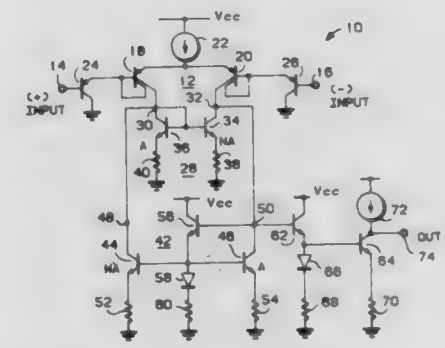
means for providing a conductive path between each of said lines and a low voltage node when said first node is charged to said first state and for opening said conductive paths when said first node is charged to said second state.

4,406,955

COMPARATOR CIRCUIT HAVING HYSTERESIS

James J. Lo Cascio, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 1, 1981, Ser. No. 269,250
Int. Cl.³ H03K *5/153, 5/24*
U.S. Cl. 307—355 **11 Claims**



1. Comparator circuit having hysteresis, the hysteresis being caused to occur prior to the output of the comparator circuit switching output level states in response to a differential input signal being supplied thereto comprising:
differential amplifier means having first and second inputs, first and second outputs, said first and second inputs being responsive to the differential signal supplied thereto for producing differential currents at said first and second outputs;
first current mirror means coupled to said first and second outputs of said differential amplifier means for producing a first predetermined input offset voltage in said differential amplifier means when activated;
second current mirror means coupled to said first and second outputs of said differential amplifier means in parallel to said first current mirror means for producing a second predetermined input offset voltage in said differential amplifier means when activated, said second current mirror means being activated by the magnitude of the differential input signal incrementally exceeding said first predetermined input offset voltage in a positive sense for regeneratively inactivating said first current mirror means and said first current mirror means being activated by said magnitude of the differential input signal incrementally exceeding said second input offset voltage in a negative sense for regeneratively inactivating said second current means such that hysteresis is produced internally to the comparator circuit; and
output circuit means including first and second transistors each having a base, collector and an emitter, said base of

said first transistor being coupled to said second output of said differential amplifier means, said emitter being coupled to said base of said second transistor, said emitter of said second transistor being coupled to a first terminal at which is supplied a reference potential, said collectors being coupled to a second terminal at which is supplied an operating potential with said collector of said second transistor being coupled to the output of the circuit, and diode bias means coupled between said emitter of said first transistor and said first terminal for biasing said first transistor.

4,406,956

FET CIRCUIT FOR CONVERTING TTL TO FET LOGIC LEVELS

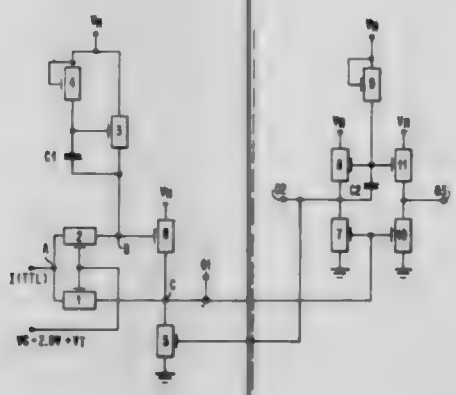
Rainer Clemen, Böblingen; Walter Fischer, Herrenberg, and Werner O. Haug, Böblingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 11, 1980, Ser. No. 177,298

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935465

Int. Cl.³ H03K *19/092, 19/094*

U.S. Cl. 307—475 **7 Claims**



1. A field effect transistor circuit for converting bipolar transistor logic levels to field effect transistor logic levels independent of field effect transistor threshold voltage variations, comprising:

first and second field effect transistors each having a gating electrode and first and second gated electrodes and having their respective gating electrodes and first gated electrodes connected in common;

means for biasing said gating electrodes of said first and second transistors connected in common to a reference potential;

an input terminal connected to said first gated electrodes of said first and second field effect transistors connected in common;

the second gated electrode of said first field effect transistor being connected to an output terminal and to a first gated electrode of a third field effect transistor;

the second gated electrode of said second field effect transistor being connected to a load device and to a gating electrode of said third field effect transistor;

a second gated electrode of said third field effect transistor and said load device being connected to a first potential source; and

a fourth field effect transistor having a gating electrode and first and second gated electrodes, the second gated electrode of said fourth field effect transistor being connected to said output terminal, the first gated electrode of said fourth field effect transistor being connected to a second potential source, and the gating electrode of said fourth field effect transistor being connected to an output of a power inverting circuit having its input coupled to said output terminal.

4,406,957

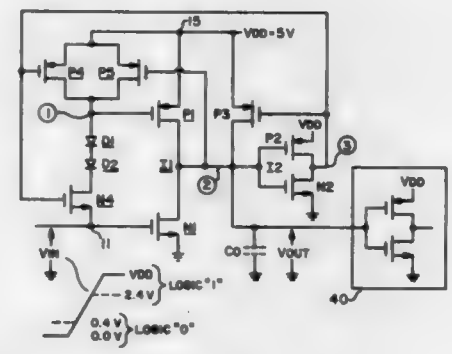
INPUT BUFFER CIRCUIT

James H. Atherton, Freeport, Ill., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 22, 1981, Ser. No. 313,943

Int. Cl.³ H03K *19/094, 19/092, 19/017*

U.S. Cl. 307—475 **6 Claims**



1. The combination comprising:

first and second insulated-gate field-effect transistors (IGFETs) of complementary conductivity type, each IGFET having source and drain electrodes defining the ends of a conduction path, and a control electrode;

a signal input terminal, a signal output terminal, and

first and second power terminals for the application therebetween of an operating potential;

means connecting the control electrode of said second IGFET to said signal input terminal;

means connecting the drain electrodes of said first and second IGFETs to said signal output terminal;

means connecting said source of said first IGFET to said first power terminal;

means connecting said source of said second IGFET to said second power terminal;

selectively enabled level shift means coupled between the control electrodes of said second and first IGFETs for, in response to an input signal at said input terminal having a polarity and magnitude to turn-on said second IGFET, level shifting the input signal level and applying it to the control electrode of said second IGFET in a direction to reduce the forward bias between the control and source electrodes of said first IGFET; and

means coupled between the output terminal and the control electrode of said first IGFET for turning-it off a predetermined period after its turn-on in response to an input signal at said input terminal of a polarity and magnitude to turn-off said second IGFET and turn-on said first IGFET.

4,406,958

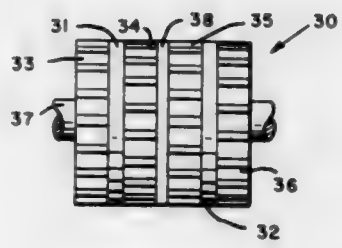
STEPPING MOTORS WITH DISC MAGNET

Albert Palmero, Harwinton; Robert N. Brigham, Monroe, and Robert S. Lundin, Litchfield, all of Conn., assignors to The Superior Electric Company, Bristol, Conn.

Continuation-in-part of Ser. No. 62,687, Aug. 1, 1979, abandoned. This application Apr. 6, 1981, Ser. No. 251,298

Int. Cl.³ H02K *21/12*

U.S. Cl. 310—49 R **14 Claims**



1. A rotor for a stepping motor comprising an assembly

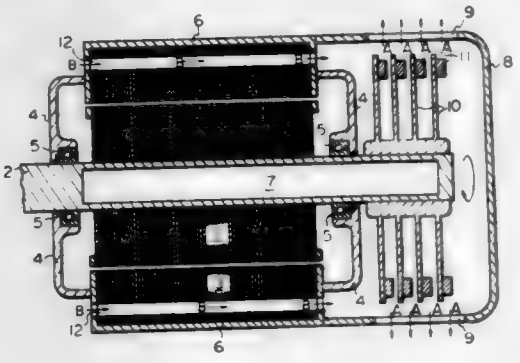
including a pair of pole pieces and an axially magnetized permanent-magnet disc disposed between said pole pieces, said pole pieces having peripheral teeth whose outermost surfaces are disposed in a cylinder, each of said pole pieces including respective sides of said teeth thereof having a respective flat face abutting said permanent-magnet disc, the diameter of the disc being essentially equal to the diameter of said cylinder of the peripheral teeth and significantly greater than the root diameter of said teeth.

4,406,959

ROTARY ELECTRIC MOTOR

Kelichi Harano, Sagamihara; Shigeki Kawada, Hino, and Shigeaki Oyama, Hachioji, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed May 7, 1981, Ser. No. 261,487
Claims priority, application Japan, May 7, 1980, 55-59388
Int. Cl.³ H02K *9/00*
U.S. Cl. 310—58 **6 Claims**



1. A structure for use with a rotary electric motor of a sealed type, comprising:

a first housing;

a second housing having at least one air opening which leads to the outside air, said second housing being sealed from said first housing;

a rotor shaft rotatably supported by said first housing, a projection of said rotor shaft located within said second housing;

a rotor mounted on said rotor shaft and being sealed in said first housing;

a stator fixed to said first housing and disposed around the outer circumference of said rotor, the space between the outer surface of said rotor and the inner surface of said stator being sealed from the outside air by said first housing;

a plurality of air vents disposed within said stator, parallel to the longitudinal direction of said motor, and leading to the outside air and to the spaces within said second housing, wherein air flowing through said air vents does not flow into said first housing; and

a means for forcibly moving air through passages formed by said plurality of air vents, the space within said second housing and the air opening thereof.

4,406,960

LAMINATED MAGNETIC CIRCUIT STATOR WITH CLAMPING FINGERS FOR A ROTATING ELECTRODYNAMIC MACHINE, NOTABLY OF THE IMMERSED BULB TYPE

Roger Gillet, Belfort, and Yves Laumond, Andelnans, both of France, assignors to Alsthom-Atlanatique, Paris, France

Filed Aug. 12, 1982, Ser. No. 407,412
Claims priority, application France, Sep. 24, 1981, 81 18035
Int. Cl.³ H02K *1/16*
U.S. Cl. 310—217 **7 Claims**

1. A laminated magnetic circuit stator with clamping fingers for a rotating electrodynamic machine, notably of the immersed bulb type, the circuit stator having a longitudinal axis coincident with that of the machine and comprising:

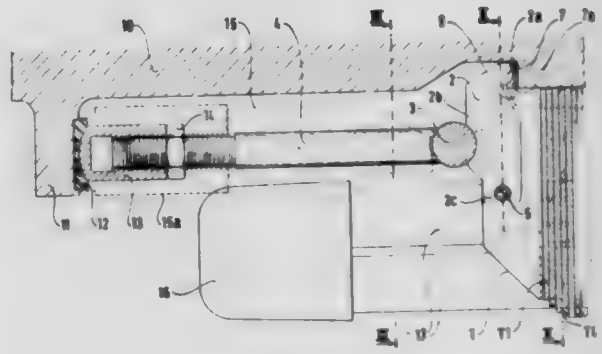
a magnetic circuit consisting of a stack, along the longitudinal direction, of thin metal sheets (T4) forming circular rings in transverse planes, the inner edge of these sheets being formed with angularly distributed notches (8*a*), the remaining portion of the sheet between two angularly successive notches constituting a tooth (8) projecting radially inwards, the solid part of the sheets externally of the notches forming a "magnetic ring" (8*c*) conducting the stator magnetic flux in the circumferential direction, the height of said ring as measured radially being possibly less than the depth of the notches also as measured radially,

winding bars (17) housed in said notches with their heads (16) projecting longitudinally beyond each side of the stack,

clamping fingers (1) distributed angularly over the two ends of the stack to distribute clamping forces over the ring and each tooth, each of said fingers having a radial length, a longitudinal height and a tangential thickness, an external part of the length of the finger extending over said magnetic ring and an internal part over one only of said teeth,

bearing means on each side of the stack to apply said clamping force to each of the fingers,

a shell (10) surrounding the magnetic circuit and consisting of a thick cylinder of sheet metal projecting longitudinally beyond each side of the stack and the winding heads,



and engagement means (9) for engaging the outer edge of the magnetic sheets with the internal surface of the shell,

the improvement wherein for the circuit, each of the fingers is provided with a finger shaft (5) to receive a clamping force, the longitudinal direction of said shaft being circumferential, the radial position of said shaft enabling the finger to distribute the clamping force between the magnetic ring (8*c*) and the tooth (8),

said bearing means for applying the clamping force comprising, at one end at least of the magnetic circuit;

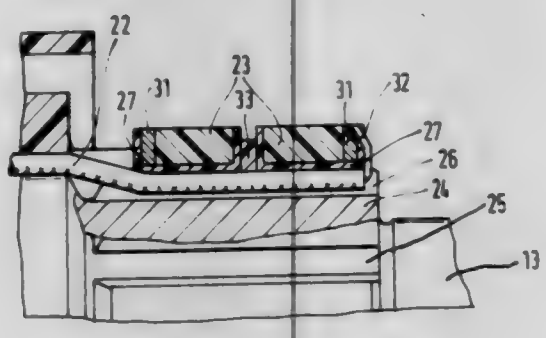
a clamping lever (2) extending radially opposite each tooth (8) and having an external pivot (2*a*) bearing on a proximal support (7*a*) fastened to the shell (10) in the vicinity of the clamping finger (1), an intermediate pivot (2*b*) and an internal pivot (2*c*) bearing on said finger shaft (5),

and longitudinal thrust transmitting rods (4) each with a proximal end bearing on the intermediate pivot (2*b*) of at least one clamping lever (2) and a distal end disposed beyond the heads (16) of the stator winding bars and bearing longitudinally and in an adjustable manner on a distal support (11) fastened to the shell to apply a longitudinal thrust to the intermediate pivots so that the clamping lever transmits a fraction of said thrust to the finger axis (5), offsetting it towards the stator axis to constitute said clamping force.

4,406,961
SLIP RING ASSEMBLY

Gerhard Pflüger, Markgröningen; Burkhardt Schmidt; Martin Scholpp, both of Stuttgart; Reinhold Wamsler, and Manfred Frister, both of Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 20, 1982, Ser. No. 380,341
Claims priority, application Fed. Rep. of Germany, May 27, 1981, 3121105
Int. Cl.³ H01R *39/08*
U.S. Cl. 310—232 8 Claims

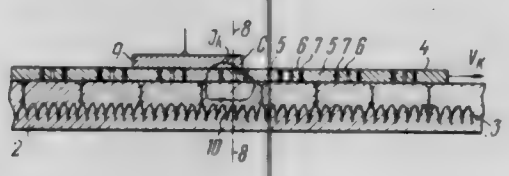


1. Slip ring assembly on the rotor shaft (13) of an electrical machine having a rotary exciter winding (21), comprising:
an insulating layer (27) firmly bonded on said shaft consisting of fluidized bed material sintered in place thereon, and
two slip rings (23) firmly seated by a pressed-on fit on said insulating layer and each connected by an electrical conductor to one end (22) of said winding (21),
said shaft having an alternation of longitudinal grooves (27) and ridges (25) in the portion thereof where said slip rings are seated, said electrical conductor (32) connecting to one of said slip rings (23) being brought from said winding end to said one of said slip rings by way of one of said grooves (27), and
said grooves in said shaft, except in so far as a conductor is guided in a said groove, being filled with an impregnating resin by which said slip rings are secured to said insulating layer of said shaft.

4,406,962
COMMUTATOR ELECTRIC MACHINE

Georgy N. Fridman, Leninsky prospekt, 61, kv. 40; Vladilen K. Kalashnikov, ulitsa Scherbakovskaya, 40/42, kv. 119; Vladimir M. Biznya, ulitsa Scherbakovskaya, 40/42, kv. 189; Efim M. Kovarsky, ulitsa Scherbakovskaya, 40/42, kv. 209; Boris A. Borisov, ulitsa Akademika Komarova, 12, kv. 117; Lev S. Semenov, ulitsa Krasnykh Zor, 53, kv. 27; Valentin A. Malyshev, Volzhsky bulvar, 18 korpus 2, kv. 118; Nikolai S. Voronin, Gruzinsky val, 18/15, kv. 98; Lev. N. Staskevich, Ryazansky prospekt, 48 kv. 47, all of Moscow; Evgeny F. Zinin, Moskovskaya oblast, ulitsa Kalinina, 9, kv. 3, Zheleznodorozhny; Galina M. Dulitskaya, ulitsa F. Poletaeva, 15, korpus 3, kv. 19, and Elvira R. Shegai, ulitsa Krasny Kazanets, 19 kv. 75, both of Moscow, all of U.S.S.R.

Filed May 18, 1981, Ser. No. 264,685
Int. Cl.³ H02K *13/10*
U.S. Cl. 310—233 6 Claims

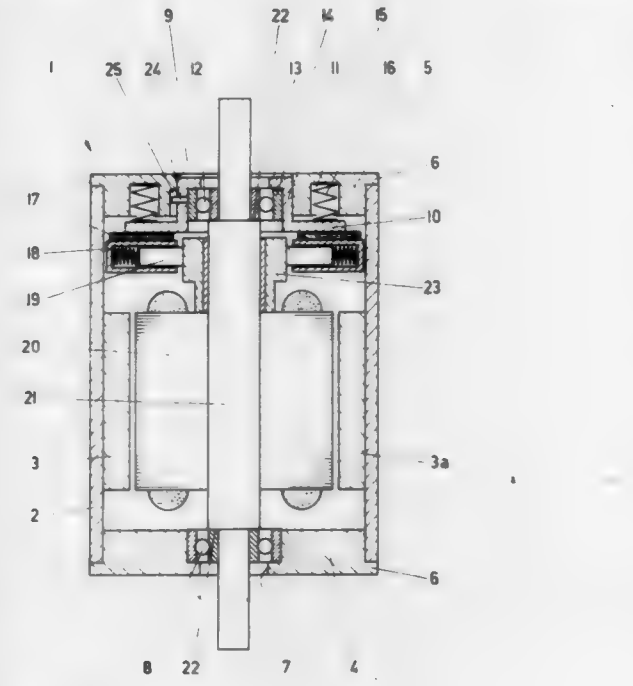


1. A commutator electric machine, comprising: a field magnet structure; an armature having winding sections and electromagnetically connected with said field magnet structure; a commutator having main bars electrically connected with said winding sections of said armature, and auxiliary bars, each main bar of said commutator and at least one of said auxiliary bars of said commutatorbeing electrically interconnected by interbar current-conducting spacers, the electric contact between said interbar current-conducting spacers and said bars of said commutator taking place along the side surfaces of said bars; and, brushes engaging said main and auxiliary bars of said commutator and not engaging said interbar current-conducting spacers of said commutator.

4,406,963
ELECTRICAL MACHINE

Peter Wolf, Lucerne, and Hugo Fritschy, Sachseln, both of Switzerland, assignors to Interelectric AG, Sachseln, Fed. Rep. of Germany

Continuation of Ser. No. 950,855, Oct. 12, 1978, abandoned.
This application Jan. 29, 1981, Ser. No. 229,491
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748550
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—239 9 Claims



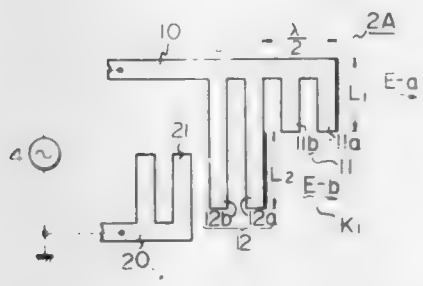
1. An electrical machine comprising:
a stator frame having first and second end plates;
first and second bearings located in said first and second end plates, respectively;
an armature having a shaft which is rotatably mounted in said first and second bearings, and a winding on said armature;
a commutator mounted on said shaft and connected to said armature winding;
a holding plate supported in said stator frame, said holding plate being axially movable along the axis of rotation of said rotor, and being circumferentially immovable with respect to said stator frame, said holding plate having a central hollow hub, the inner wall of said hub receiving said second bearing and the outer wall of said hub being mounted in a recessed portion of said second end plate, said hub having a radially inwardly projecting shoulder, a side face of said shoulder abutting said second bearing, said second bearing being axially immovable with respect to said shaft; and
brushes mounted on said holding plate and cooperating with said commutator.

4,406,964

ACOUSTIC SURFACE WAVE TRANSDUCER WITH IMPROVED INBAND FREQUENCY CHARACTERISTICS

Takao Chiba; Nobuyoshi Sakamoto, and Kenji Kohro, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd. and Nippon Hoso Kyokai, both of Tokyo, Japan

Filed Jul. 15, 1981, Ser. No. 283,630
Claims priority, application Japan, Jul. 23, 1980, 55-99763
Int. Cl.[3] H03H *9/64*
U.S. Cl. 310—313 B 10 Claims



1. An acoustic surface wave transducer configuration comprising:

substrate means having at least a piezoelectric surface,

a first interdigital electrode having a pair of comb-line type half electrodes engaged interdigitally with each other, disposed on said piezoelectric surface, and being operable to convert an input electrical signal from a power source to acoustic surface waves which propagate on said piezoelectric surface,

a second interdigital electrode having a pair of comb-line type half electrodes engaged interdigitally with each other, disposed on said piezoelectric surface spaced from said first interdigital electrode by a predetermined distance, to convert said acoustic surface waves in said piezoelectric surface to an output electrical signal, and

an edge effect canceller located at least at one of the extreme radiating edges of at least one of said interdigital electrodes,

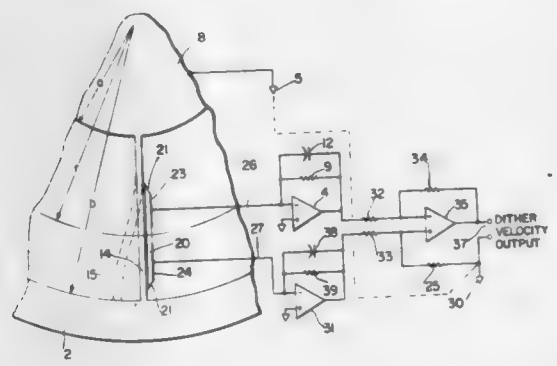
said edge effect canceller being constructed so that the length of the extreme end finger of said half electrode is approximately half of the electrode of the second extreme end finger of said half electrode so that the unobstructed edge lengths are equal, and the spacing between said extreme end finger and the second extreme end finger is ½ of the wavelength of the acoustic surface wave.

4,406,965

DITHER PICK-OFF TRANSDUCER FOR RING LASER GYROSCOPE

Bo H. G. Ljung, Wayne, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed May 12, 1981, Ser. No. 262,732
Int. Cl.[3] H01L *41/08;* G01B *9/02*
U.S. Cl. 310—319 8 Claims



1. A piezoelectric dither pick-off transducer system for use with a ring laser gyroscope having radial spokes connecting a hub and a rim, the system comprising:

a piezoelectric transducer having at least two output leads for push-pull operation and mounted to a spoke at the inflection point thereof;

differential means connected at its inputs to the leads for measuring the difference between dither signals at the inputs; and

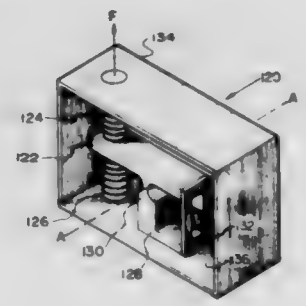
terminals connected to the output of the differential means for measuring a generated dither signal.

4,406,966

ISOLATING AND TEMPERATURE COMPENSATING SYSTEM FOR RESONATORS

Jerome M. Paros, Redmond, Wash., assignor to Paroscientific, Inc., Redmond, Wash.

Filed Jan. 28, 1980, Ser. No. 115,731
Int. Cl.[3] H01L *41/08*
U.S. Cl. 310—321 24 Claims



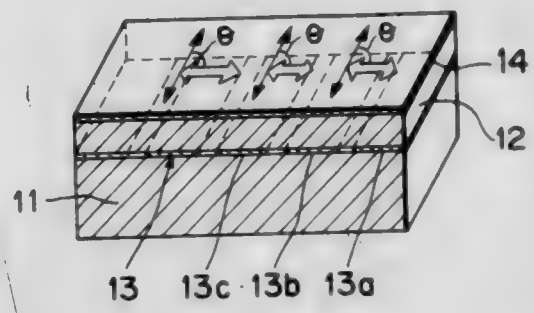
1. A system for isolating a resonator having a pair of mounts from a force producing environment, comprising an elongated, resilient bellows having its ends closed by respective rigid end covers to which said mounts are secured such that forces imparted to the ends of said bellows are coupled to said resonator while said bellows isolates said resonator from the force producing environment external to said bellows.

4,406,967

ULTRASONIC PROBE

Hiroshi Obara, and Naohiro Murayama, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,567
Claims priority, application Japan, Aug. 23, 1980, 55-116162
Int. Cl.[3] H04R *17/00;* H01L *41/18*
U.S. Cl. 310—366 5 Claims



1. An ultrasonic probe containing a piezoelectric element comprising:

a backing material;

a uniaxially elongated polymer piezoelectric material;

the piezoelectric material interposed between a pair of electrodes;

at least one of the electrodes being divided into a plurality of long and small electrode portions and arranged in parallel with each other; and

the electrodes being arranged at an angle θ in the scope ranging from 45° to 135° with respect to the direction in which the piezoelectric material is uniaxially elongated.

4,406,968

SPARKPLUG FOR INTERNAL COMBUSTION ENGINE

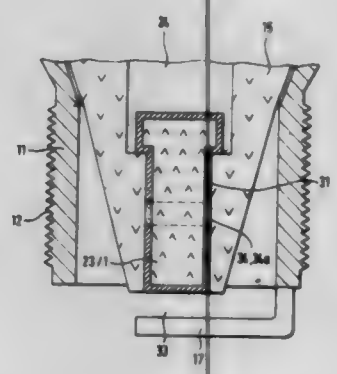
Karl-Hermann Friese, Leonberg, and Rudolf Pollner, Bamberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 28, 1981, Ser. No. 297,353

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1980, 3038720

Int. Cl.³ H01T *13/20*

U.S. Cl. 313—136 15 Claims



1. An improved sparkplug for internal combustion engines comprising a metallic generally tubular housing having a ground electrode at its ignition end, said metallic housing having an inner bore enveloping insulator which has a longitudinal bore, said longitudinal bore having an electrical connecting pin extending inward through the contact side of the sparkplug and contacting an electrically conductive matrix material in the inner portion of said longitudinal bore, and said longitudinal bore having a central electrode in contact with said electrically conductive matrix material and extending to the ignition end of said sparkplug and being separated from said ground electrode by a discharge gap,

the improvement comprising

said central electrode comprising a core pin composed of an electrically non-conductive material and having an electrically conductive coating on the outer walls of said core pin which is in electrical contact with said matrix material and the ignition end portion of said sparkplug, said electrically non-conductive material forming said core pin having a thermal coefficient of expansion substantially the same as the thermal coefficient of expansion of said insulator.

4,406,969

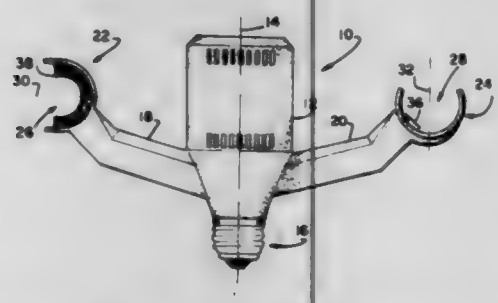
CIRCULAR FLUORESCENT LAMP HOLDER

Thomas Haraden, Ipswich, and Harold L. Hough, Beverly, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 11, 1981, Ser. No. 329,909

Int. Cl.³ H01J *5/48, 5/50*

U.S. Cl. 313—318 3 Claims



1. A holder for a circular lamp, said holder comprising: a central body having a longitudinal axis; a pair of diametrically opposed arms projecting from said body and terminating in lamp holding means; and lamp receiving openings in said lamp holding means, each of said openings being disposed about its own axis, a first of said opening having its axis parallel to said longitudinal axis and the other of said openings having its axis normal to said longitudinal axis.

4,406,970

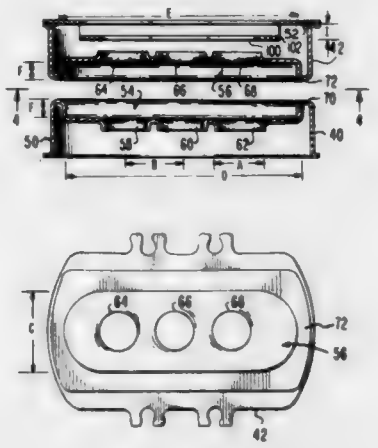
COLOR PICTURE TUBE HAVING AN EXPANDED FOCUS LENS TYPE INLINE ELECTRON GUN WITH AN IMPROVED STIGMATOR

Richard H. Hughes, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 10, 1981, Ser. No. 282,229

Int. Cl.³ H01J *29/50, 29/62*

U.S. Cl. 313—414 2 Claims



1. In a color picture tube having an inline electron gun for generating and directing three electron beams, a center beam and two side beams, along coplanar paths toward a screen of said tube, said gun including a main focus lens for focusing said electron beams, the main focus lens being formed by two spaced electrode members each having three separate inline apertures therein, each electrode also including a peripheral rim, the peripheral rims of the two electrodes facing each other, and the apertured portion of each electrode being within a recess set back from the rim, the improvement comprising

the main focus lens electrode closest to said screen including a slot on the side facing the screen, said slot extending in the inline direction of the three electron beam paths, and said slot being wider, in a direction perpendicular to the plane of the three electron beam paths, at the side beam paths than at the center beam path.

4,406,971

COLOR CATHODE RAY TUBE HAVING A REFERENCE WHITE FLUORESCENT SCREEN

Yutaka Takano; Koji Yajima; Takashi Ishii; Tadahisa Yoshida; Katsuhiro Ota, all of Nagaokakyo, and Shigeru Yagishita, Yokohama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Fuji Telecasting Co., Limited, both of Tokyo, Japan

Continuation of Ser. No. 913,323, Jun. 7, 1978, abandoned, which is a continuation-in-part of Ser. No. 874,692, Feb. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 679,442, Apr. 22, 1976, abandoned. This application Jul. 11, 1979, Ser. No. 56,560

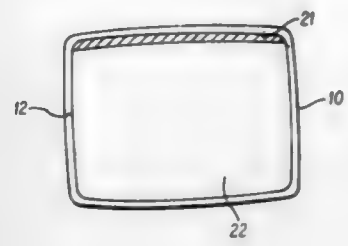
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1976, 2617195; Netherlands, Apr. 22, 1976, 7604251; France, Apr. 22, 1976, 7611910; United Kingdom, Apr. 23, 1976, 16711/76

Int. Cl.³ H01J *29/10*

U.S. Cl. 313—461 9 Claims

1. In a color cathode ray tube having on an inner surface of a face plate a first fluorescent part for luminescence of a predetermined reference white color by irradiation with electron beams from three tricolor electron guns, and a second fluorescent part for luminescence of red, green and blue fluorescent tricolor dots or tricolor stripes on the remainder of the face plate, an improvement comprising:

the first fluorescent part for the reference white color formed of a blended mixture of the tricolor fluorescent materials used for the second fluorescent part which imparts said reference white color upon irradiation with electron beams from said three tricolor electron guns.



4,406,972

GETTERING DEVICE FOR COLOR TELEVISION DISPLAY TUBE

Jan J. B. Fransen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,475

Claims priority, application Netherlands, Mar. 26, 1980, 8001759

Int. Cl.³ H01J 7/18

U.S. Cl. 313—481 **11 Claims**



1. A color television display tube including a gettering device positioned therein, said gettering device comprising a source of evaporable gettering metal and at least one gas source of pulverulent gas-releasing material, characterized in that the particles of the pulverulent gas-releasing material are covered by a metal layer.

2. A gettering device comprising a source of evaporable gettering metal and at least one gas source of pulverulent gas-releasing material, characterized in that the particles of the pulverulent gas-releasing material are covered by a metal layer.

4,406,973

BLACK GLASS SHIELD AND METHOD FOR ABSORBING STRAY LIGHT FOR IMAGE INTENSIFIERS

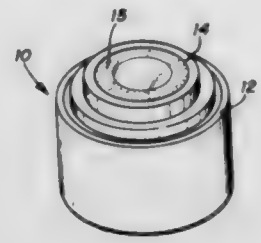
Grady K. Stowe, Dallas, Tex., assignor to Varo, Inc., Garland, Tex.

Continuation of Ser. No. 225,435, Jan. 15, 1981, abandoned. This application Feb. 16, 1983, Ser. No. 466,911

Int. Cl.³ H01J 40/00

U.S. Cl. 313—541 **16 Claims**

1. A shielding device for a cathode substrate in an image intensifier tube comprising a shield disposed around the periphery of said cathode substrate and adjacent the entire longitudinal surface of said cathode substrate, said shield having an index of refraction greater than that of said cathode substrate for preventing internal reflection within said cathode substrate by forming an optical interface to reflect and absorb off-axis light that impinges upon the optical interface at an angle of incidence greater than zero degrees after entering said cathode substrate.



4,406,974

BEAM-INDEXING COLOR PICTURE TUBE

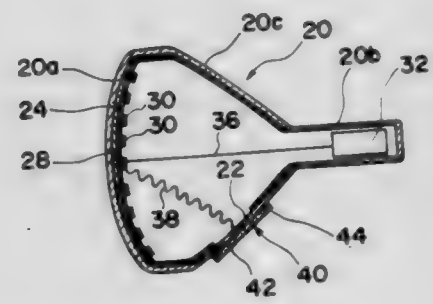
Tatsuo Tanaka, Kyoto, and Takashi Nakakado, Takatsuki, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 1, 1981, Ser. No. 307,681

Claims priority, application Japan, Oct. 7, 1980, 55-140759

Int. Cl.³ H01J 29/89, 29/96

U.S. Cl. 315—3 **21 Claims**



1. In a beam-indexing color picture tube having a gun for producing an electron beam that scans across a screen of the tube, a plurality of index phosphor stripes provided on said screen for emitting first index light signal as the beam spots on said index phosphor stripe, and a detector for detecting the first index light signal, an improvement wherein said detector comprises:

a transparent window formed on said tube for permitting said first index light signal to pass therethrough;

a planar fluorescent collector mounted on said window for receiving said first index light signal, said planar fluorescent collector having fluorescent material doped therein for absorbing said first index light signal and for generating second index light signal having a wavelength different from that of said first index light signal; and

a photodetector mounted on said planar fluorescent collector for receiving said second index light signal and for generating electrical signal representing said first index light signal.

4,406,975

LAMPS

Ralph D. Nixon, Braintree, England, assignor to English Electric Valve Company, Chelmsford, England

Filed Sep. 8, 1980, Ser. No. 185,380

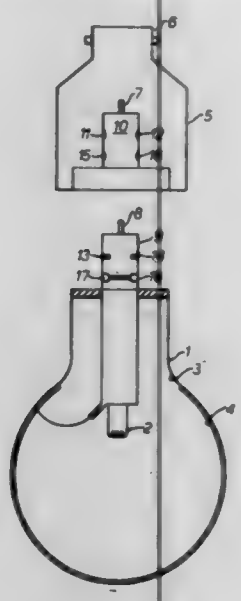
Claims priority, application United Kingdom, Sep. 6, 1979, 7930931

Int. Cl.³ H01J 63/06, 29/96

U.S. Cl. 315—209 R **5 Claims**

1. A lamp including an evacuated envelope within which are mounted an electron emissive cathode and an anode, with a light transmissive portion of the envelope being provided with an internal layer of fluorescent material so that light is emitted through said portion when electrons are incident upon said

fluorescent material; a power supply which is mounted on said envelope in a manner so as to be separable therefrom and which is provided with an electrical plug dimensioned and arranged to cooperate as a lamp socket, means for receiving



a.c. power via said plug and means for deriving therefrom a d.c. anode potential for said evacuated envelope; and means for inhibiting the generation of said d.c. anode potential unless the power supply is mounted on the said evacuated envelope.

4,406,976

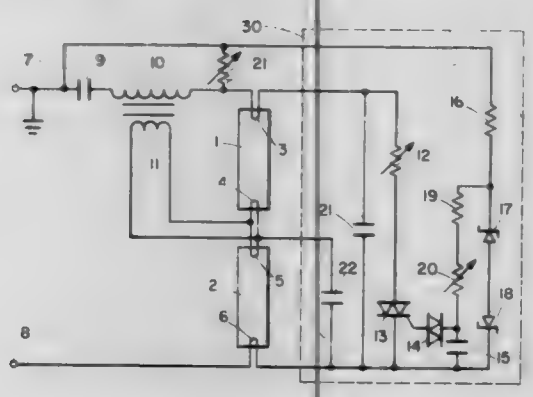
DISCHARGE LAMP BALLAST CIRCUIT

Robert W. Wisbey, Arlington Heights, and Joseph S. Droho, Chicago, both of Ill., assignors to 501 Advance Transformer Company, Chicago, Ill.

Filed Mar. 30, 1981, Ser. No. 249,282

Int. Cl.³ H02H *3/20;* H05B *37/02, 41/14*

U.S. Cl. 315—309 **14 Claims**



1. A discharge lamp ballast device comprising, a pair of input terminals for connection to a source of A.C. supply voltage, a capacitor, an inductor, means for connecting the capacitor and the inductor in a series circuit with at least one electric discharge lamp across said pair of input terminals, a semiconductor switching element having a control electrode, means coupling said semiconductor switching element across the electrodes of said at least one discharge lamp, a control circuit coupled to said input terminals and to the control electrode of said semiconductor switching element for triggering the switching element into conduction during each half cycle of the A.C. supply voltage, and a voltage dependent non-linear impedance device connected in shunt with a part of said series circuit that includes at least the capacitor so as to limit the voltage to be developed across the capacitor to a predetermined value.

4,406,977

POWER SUPPLY CIRCUIT

Hubert J. Ploumen, Borne, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

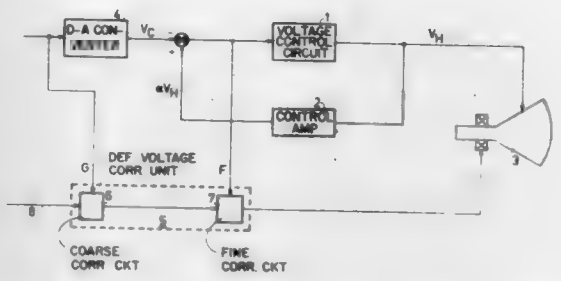
PCT No. PCT/NL80/00007, § 371 Date Dec. 4, 1980, § 102(e) Date Nov. 26, 1980, PCT Pub. No. WO80/02217, PCT Pub. Date Oct. 16, 1980

PCT Filed Mar. 21, 1980, Ser. No. 224,572

Claims priority, application Netherlands, Apr. 4, 1979, 7902630

Int. Cl.³ H04N *9/27*

U.S. Cl. 315—375 **4 Claims**



1. A power supply circuit, provided with a voltage control circuit with negative feedback for applying a rapidly changing high voltage V_H to the anode of a penetron-type cathode ray tube for a color display system, and with a deflection voltage correcting unit for obtaining color-independent pictures on the screen of the cathode ray tube, which deflection voltage correcting unit is controlled by a signal G, typical of a certain display color, by means of which signal G the input voltage V_C of the voltage control circuit with negative feedback is obtained, characterized in that the deflection voltage correcting unit comprises a coarse correcting circuit and connected thereto a fine correcting circuit, where the coarse correcting circuit is controlled by the signal G and the fine correction circuit by a correction signal F derived from the control value $V_C - \alpha V_H$ supplied to the voltage control circuit, where $\alpha < 1$.

4,406,978

HORIZONTAL DEFLECTION OUTPUT TRANSFORMER FOR A TELEVISION RECEIVER

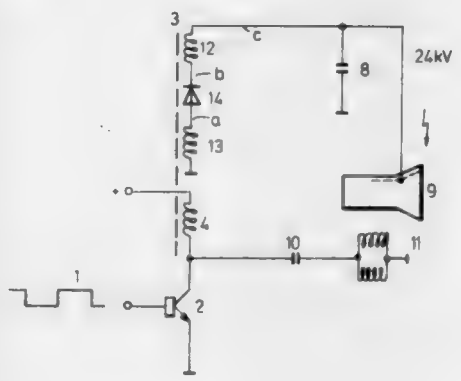
Walter Goseberg; Alfred Pollak, and Wolfgang Reichow, all of Hanover, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 21, 1981, Ser. No. 226,612

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1980, 3001975

Int. Cl.³ H01J *29/70*

U.S. Cl. 315—411 **22 Claims**



1. In a horizontal deflection circuit output transformer for a television picture tube having an anode, which transformer includes a primary coil, a secondary coil inductively coupled to the primary coil, and rectifier means connected to the secondary coil and cooperating therewith to generate a high voltage for the picture tube anode, the improvement wherein: said secondary coil is divided to consist of only two partial

windings; said rectifier means is located physically, and connected electrically, exclusively between said partial windings; the end of one said partial winding remote from said rectifier means is connected to ground; and the end of the other said partial winding remote from said rectifier means is arranged for direct conductive connection to the picture tube anode.

4,406,979

FAIL-SAFE SYSTEM FOR PULSE-CONTROLLED THREE-TERMINAL D.C. MOTOR

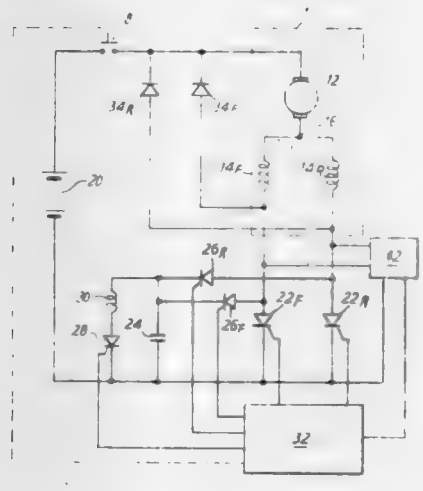
Albert E. Sloan, Gateshead, England, assignor to Technical Operations Limited, Gates Head Nell, England

Filed Mar. 13, 1981, Ser. No. 243,486

Claims priority, application United Kingdom, Mar. 18, 1980, 8009096

Int. Cl.³ H02P 5/16

U.S. Cl. 318—255 **5 Claims**



1. A pulse control circuit for a d.c. series motor having an armature and two oppositely-wound field windings comprising a contactor in series with the motor, two main thyristors each connected in series with the armature and a respective one of the field windings, firing circuit means and commutation circuit means for the main thyristors, means for controlling the firing and commutation of each main thyristor thereby to control the mark-to-space ratio of the thyristor, one or other of the main thyristors being brought into operation in dependence upon the desired direction of drive of the armature, means for sensing failure of commutation of the main thyristor in operation, and means for causing opening of the contactor in response to such sensing, characterized in that there are provided means for firing the other main thyristor immediately commutation failure is sensed, thereby to establish simultaneous conduction of the two main thyristors to limit the net field flux throughout the period during which the contactor is opening.

4,406,980

SPEED AND DIRECTION CONTROL MECHANISM

Steven J. A. Waldhauser, and Richard D. Masbruch, both of Lewiston, N.Y., assignors to Wetrok, Inc., Niagara Falls, N.Y.

Filed May 26, 1981, Ser. No. 267,064

Int. Cl.³ H02P 7/08

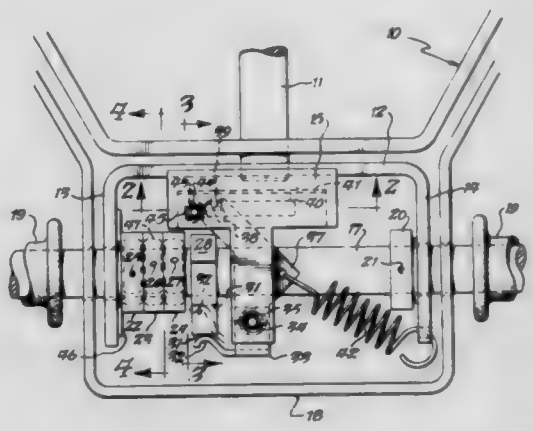
U.S. Cl. 318—257 **14 Claims**

1. A speed and direction control mechanism for a self-propelled machine incorporating a propulsion motor to drive said machine, said control mechanism comprising:

(a) a control handle rotatably supported in a frame and extending beyond said frame a distance sufficient to permit gripping thereof whereby said handle can be manually rotated;

(b) speed control means responsive to the angular position of said control handle to vary the speed of said motor, said speed control means including a variable resistor connected to control the voltage applied across said motor;

(c) drive means interconnecting said control handle and said variable resistor whereby rotation of said handle varies the resistance of said resistor to change the speed of said motor, said drive means comprising speed control cam means carried by said control shaft and cam follower means cooperable with said cam means, said cam follower means being connected to said variable resistor, so that the speed of said propulsion motor can be varied by the position of said cam means;



(d) switch actuation means carried by said control handle and rotatable therewith; and

(e) switch means responsive to the position of said switch actuation means to close a circuit and permit current to flow in a predetermined direction to said propulsion motor, whereby to permit movement of said machine in a given direction.

4,406,981

ROTATION STOPPING APPARATUS FOR A MOTOR

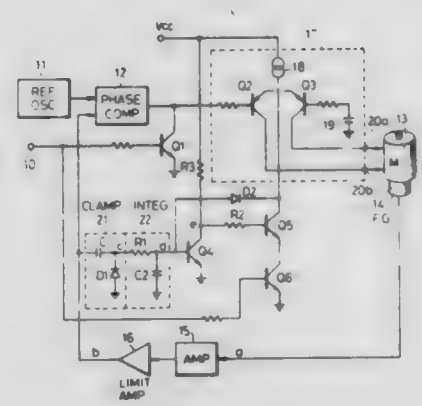
Yasuaki Watanabe, Kasukabe, and Yukio Okabe, Noda, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 6, 1981, Ser. No. 318,879

Claims priority, application Japan, Nov. 4, 1980, 55/154876; Nov. 4, 1980, 55/154877; Nov. 5, 1980, 55/155598

Int. Cl.³ H02P 3/10

U.S. Cl. 318—258 **11 Claims**



1. Apparatus for stopping the rotation of a motor, said apparatus comprising:

a single signal generating means responsive to said motor for generating a signal having a frequency which varies according to the speed of said motor;

means responsive to said signal generating means for forming a voltage having a level corresponding to the frequency of said signal;

motor driving means responsive to said voltage for normally driving said motor with current of one polarity to operate said motor in a forward direction during a normal run and for driving said motor with current of an opposite polarity to stop said motor;

detector means responsive to said voltage for indicating when said voltage falls below a threshold level; and

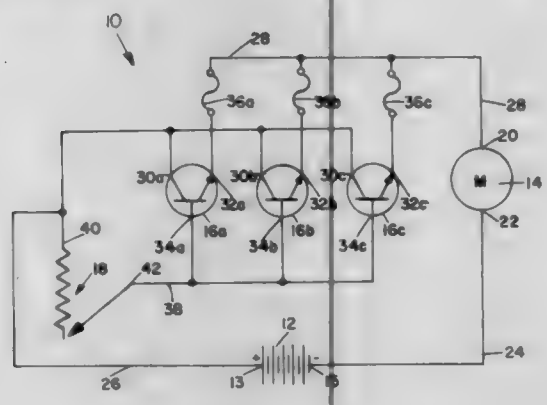
interrupting means responsive to said detector means for terminating said current of opposite polarity when said voltage falls below said threshold level.

4,406,982

DC MOTOR CONTROL CIRCUIT

Theodore A. McClellan, Jr., Elberta, Mich., assignor to T. & L. Enterprises, Inc., Elberta, Mich.

Filed Nov. 12, 1981, Ser. No. 320,514
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—345 F **10 Claims**



1. A DC motor control circuit comprising:

a DC voltage source;

a DC motor electrically connected in series with said voltage source;

a controllable current control device having a current input terminal, a current output terminal, and a control input terminal, said control device being electrically connected in series by said current input terminal and said current output terminal with said voltage source and said motor; and

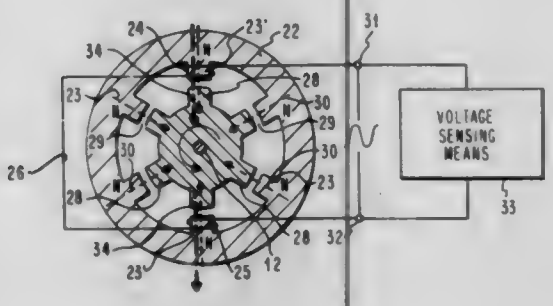
variable resistance means connected between said current input terminal and said control input terminal for controlling the speed of said motor, all of the current passing through said current control device also passing through said motor.

4,406,983

ROTATIONAL MAGNETIC TRANSDUCER

Ciro N. Ramirez, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1981, Ser. No. 335,480
Int. Cl.³ G05B *1/06*
U.S. Cl. 318—653 **7 Claims**



1. In a magnetic transducer having a plurality of magnetic poles arranged annularly about an axis to form a stator and a rotor rotating about said axis to induce changes in the magnetic flux between said poles, the improvement wherein,

at least one pair of said stator poles having the same polarity are positioned substantially 180° apart, and

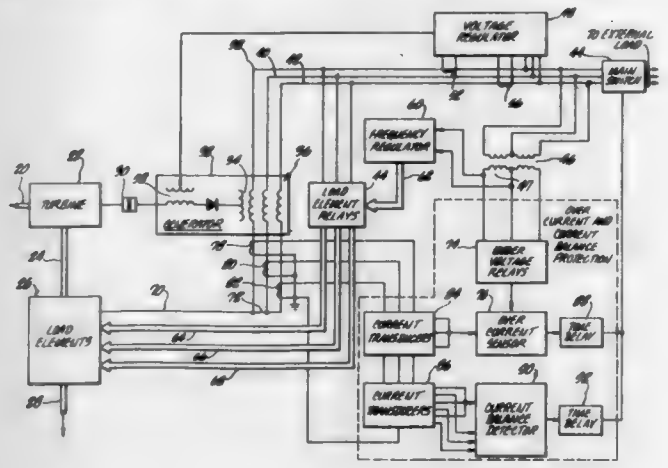
each pole in said at least one pair has a sense coil thereon for generating an output electric signal in response to said induced changes in flux, said sense coils being connected in series with each other.

4,406,984

CURRENT RESPONSIVE DEVICES FOR SYNCHRONOUS GENERATORS

Robert F. Karlicek, Fullerton, Calif., assignor to Southern California Edison Company, Rosemead, Calif.

Division of Ser. No. 119,581, Feb. 7, 1980, Pat. No. 4,344,027.
This application Apr. 9, 1982, Ser. No. 366,873
Int. Cl.³ H02H *7/26*; H02P *9/30*
U.S. Cl. 322—27 **5 Claims**



1. A device for detecting a current imbalance between phases of a polyphase alternating current generator comprising

maximum current detecting means responsive to the generator for generating an output substantially proportional to the maximum peak current in the generator,

phase current detecting means responsive to the generator for generating an output for each phase of the generator substantially proportional to the peak current within the respective phase, and

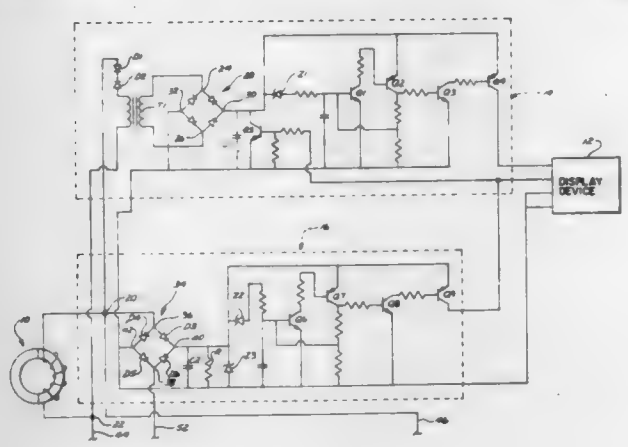
comparing means responsive to the maximum current detecting means and to the phase current detecting means for generating an output when the maximum peak current exceeds a phase peak current by a predetermined amount to thus detect a current imbalance within the generator.

4,406,985

POWER CABLE FAULT FINDING APPARATUS AND METHOD

Alan C. Phillips, Los Altos, and James L. Buxton, Menlo Park, both of Calif., assignors to City of Seattle, The City Light Dep't., Seattle, Wash.

Filed Oct. 27, 1980, Ser. No. 201,188
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—51 **38 Claims**



1. A fault detecting apparatus adapted to detect in an electric cable a fault causing current surge at a fault level which is dependent upon both magnitude and duration of the current surge, said apparatus to be reliably responsive to a fault condition and nonresponsive to a no-fault condition, where said fault causing current surge is characterized in that for each fault current level above a minimum fault level, there is a corresponding fault time period within which a fault will occur, and

magnitude of the fault current has an inverse functional relationship with magnitude of fault time period, in that for a given increase in magnitude of fault current level, there is a decrease in fault time period, said apparatus comprising:

a. a current sensing means adapted to be responsive to a current being monitored to produce a first signal having a value which varies as a function of magnitude of the current being monitored.

b. circuit means operatively connected to said current sensing means to be responsive to said first signal and produce a second signal of a value which has an inverse functional relationship to the fault-time period corresponding to the magnitude of the current being monitored,

c. integrating means to integrate said second signal as a function of time to produce a fault signal where an integrated value produced by said integrating means is above a predetermined value,

d. indicating means operatively connected to said integrating means to indicate a fault condition in response to said fault signal.

4,406,986

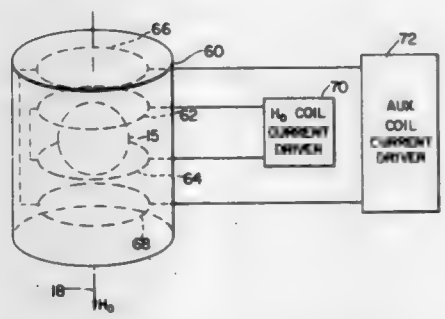
AUXILIARY DC FIELD COIL FOR IMPROVING RATE BIAS INSTABILITY OF MAGNETIC RESONANCE GYROSCOPES

Ivan A. Greenwood, Stamford, Conn., assignor to The Singer Company, Little Falls, N.J.

Filed Apr. 20, 1981, Ser. No. 255,619

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—304 **10 Claims**



1. In a magnetic resonance gyro having first and second field generators, first and second detectors, first and second analyzers, a pumping lamp, first and second mirrors, first and second polarizers, a plasma containing readout lamp and first and second absorption cells for receiving light generated by the lamp, the gyro also having apparatus comprising:

a first coil located adjacent an absorption cell for generating a DC H_o field through the cell; and

a second coil located in spaced proximate relation to the first coil for completing an inhomogeneous H_o field in the cell, and driven with sufficient current wherein rate bias instability due to lamp translation effects is substantially compensated.

4,406,987

CHARGE LEVEL SENSOR

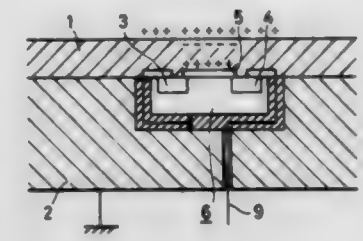
Toshihisa Hamano, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 20, 1981, Ser. No. 245,841

Int. Cl.³ G01R *29/12*

U.S. Cl. 324—457 **10 Claims**

1. An electrostatic copier with a charge level sensor comprising: a substrate formed as a rotary member, at least one recess being formed in said substrate; a semiconductor sensor provided in said recess in said substrate; and an electric-charge



retaining layer formed over the surface of said substrate and said semiconductor sensor in said recess.

4,406,988

CIRCUIT FOR PROCESSING A DIGITAL SIGNAL

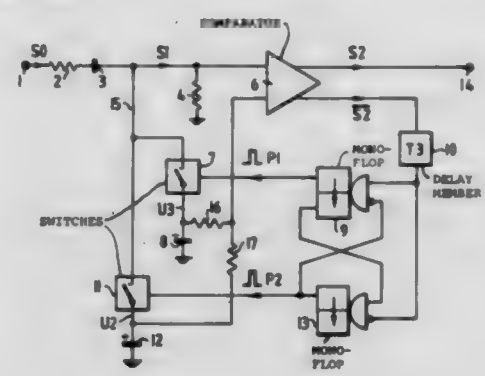
Werner Scholz, Gehrden, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 2, 1981, Ser. No. 238,160

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007502

Int. Cl.³ H03K *5/153*

U.S. Cl. 328—150 **15 Claims**



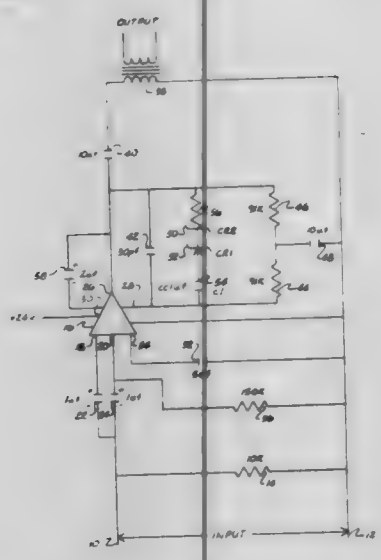
1. In a circuit for processing a useful signal which varies in amplitude between positive and negative values about a zero value and contains information in the locations of its zero passages, which circuit includes: a zero passage detector having an input; a first capacifor connected in series between a source of the useful signal and the detector input for supplying a signal representative of the useful signal; and means for coupling, at the detector input, the signal representative of the useful signal with a first clamping potential only during the positive value intervals of the signal representative of the useful signal and with a second clamping potential only during the negative intervals of the signal representative of the useful signal, the improvement wherein said circuit further comprises a source of the first clamping potential and a source of the second clamping potential, and said signal coupling means comprise: a first controllable switch connected to said source of the first clamping potential for selectively coupling the first clamping potential with the signal representative of the useful signal; a second controllable switch connected to said source of the second clamping potential for selectively coupling the second clamping potential with the signal representative of the useful signal; and control pulse generating means connected for applying to each said switch control pulses derived from the signal representative of the useful signal and having a timing such that said first switch is closed for a predetermined period during each positive value interval of the signal representative of the useful signal and said second switch is closed for a predetermined period during each negative value interval of the signal representative of the useful signal, with the predetermined closing period of each said switch being determined by the duration of the control pulses applied thereto.

4,406,989

AUTOMATIC LEVEL CONTROL CIRCUIT

Pierce C. Toole, Cocoa, and Denais M. McCarthy, Rockledge, both of Fla., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 17, 1981, Ser. No. 284,288
Int. Cl.[3] H03F 3/18
U.S. Cl. 330—110 6 Claims



1. An automatic level control circuit for an operational amplifier for minimizing the instantaneous gain of said amplifier after a period of no signal input, comprising:

input, output and feedback terminals provided on said operational amplifier;

a supply voltage connected to said operational amplifier;

a voltage dividing circuit connected to said feedback terminal and said output terminal;

a gain control feedback circuit connected between said output terminal and said feedback terminal;

said gain control feedback circuit including:

(i) a pair of zener diodes connected back-to-back, and

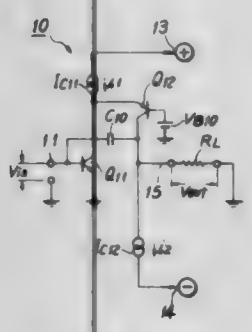
(ii) a capacitor connected in series with said zener diodes.

4,406,990

DIRECT COUPLED DC AMPLIFICATION CIRCUIT

Masao Noro, Asaka, Japan, assignor to Stax Industries, Ltd., Tokyo, Japan

Filed Aug. 26, 1981, Ser. No. 296,096
Claims priority, application Japan, Aug. 28, 1980, 55-117741
Int. Cl.[3] H03F 3/45, 3/26
U.S. Cl. 330—296 3 Claims



1. An amplification stage for a direct-coupled DC amplification circuit, comprising in combination:

an input terminal connected to a signal voltage source;

a first transistor having its base connected to said input terminal and its emitter grounded;

positive and negative power input terminals, one of which being connected to the collector of said first transistor via a first constant current circuit;

a second transistor of a type complementary to said first transistor, having its emitter connected to a junction between the collector of said first transistor and said first constant current circuit;

a bias voltage source connected to the base of said second transistor and supplying said second transistor with a bias voltage of a value between the power source voltage on the side of said first constant current circuit and the ground voltage;

the other of said positive and negative power input terminals being connected to the collector of said second transistor via a second constant current circuit;

a signal output terminal connected to a junction between the collector of said second transistor and said second constant current circuit and supplying a load with an amplified signal; and

a phase compensating element connected between the collector of said second transistor and the base of said first transistor;

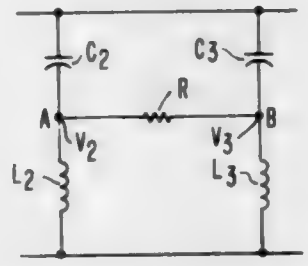
whereby, among said first and second constant current circuits, the set current of said constant current circuit on the positive power input terminal side is set to be greater than that of said constant current circuit on the negative power input terminal side.

4,406,991

HIGH POWER RESONANCE FILTERS

Eugene C. Strycula, Pittsburgh; Derek A. Paice, Murrysville, and Laszlo Gyugyi, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 4, 1982, Ser. No. 345,849
Int. Cl.[3] H03H 7/01, 7/03
U.S. Cl. 333—175 4 Claims



1. A high power resonance filter, comprising:

(a) a first resonant branch having a first series connected capacitive element and inductive element;

(b) a second resonant branch having a second series connected capacitive element and inductive element;

(c) a resistive branch connected at a junction of the first series connected capacitive element and inductive element and a junction of the second series connected capacitive element and inductive element between the first and second resonant branches;

(d) the first resonant branches and second resonant branches having two common nodes to form a resonant filter network; and

(e) the first resonant branches and second resonant branches having a common junction to an a.c. power network.

4,406,992

SEMICONDUCTOR PRESSURE TRANSDUCER OR OTHER PRODUCT EMPLOYING LAYERS OF SINGLE CRYSTAL SILICON

Anthony D. Kurtz, Englewood; Timothy A. Nunn, Ridgewood, and Joseph R. Mallon, Franklin Lakes, all of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

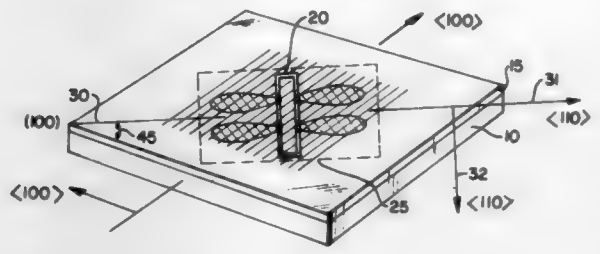
Filed Apr. 20, 1981, Ser. No. 255,461
Int. Cl.[3] G01L 1/22
U.S. Cl. 338—2 11 Claims

1. A semiconductor transducer comprising:

a substrate layer of single crystal silicon, having a grating pattern disposed upon a surface thereof,

an intermediate dielectric layer of silicon dioxide directly

formed on a surface of said substrate layer with said dielectric layer having said grating pattern disposed upon the surface thereof, and



at least one single crystal silicon sensor directly grown on said intermediate layer according to said grating pattern.

4,406,993

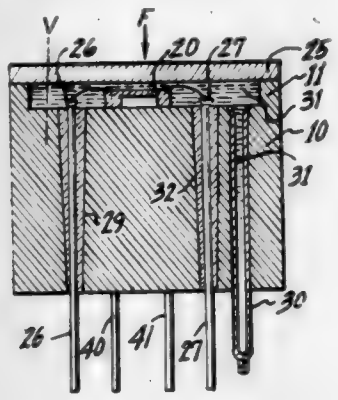
OIL FILLED PRESSURE TRANSDUCERS

Anthony D. Kurtz, Englewood, N.J., assignor to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Filed Aug. 28, 1981, Ser. No. 297,093

Int. Cl.³ H01L *10/10*

U.S. Cl. 338—42 **9 Claims**



1. An oil filled pressure transducer comprising:

a housing having a top peripheral flange surrounding a top surface area of said housing defining a recess, said housing having a relatively flat bottom surface area, said housing having a plurality of tapered apertures directed from said top surface area to said bottom surface area with the diameter of said apertures being larger at said top surface than at said bottom surface, a plurality of terminal pins each separate one located coaxially in one of said apertures with each of said terminal pins having a relatively flat head of a larger diameter than the diameter of the body of said pin with said flat heads positioned above said top surface area and means for insulatively bonding said pins within said apertures with said pins extending below said bottom surface and a pressure sensor located on said top surface and having terminals coupled to said pins, a diaphragm secured to said peripheral flange to cover said top surface area, a fluid transmitting medium located within said recess, said housing further containing a fluid receiving tube having a top flared end communicating with said top surface area and having a bottom end extending below said bottom surface for introducing said fluid transmitting medium to said recess.

4,406,994

WIRE-WOUND RESISTOR

Hubertus J. J. Brech, deceased, late of Vessem, Netherlands, and by Friedrich J. de Haan, administrator, Dommelen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 18, 1982, Ser. No. 340,554

Claims priority, application Netherlands, Feb. 19, 1981, 8100816

Int. Cl.³ H01C *3/00*

U.S. Cl. 338—296 **2 Claims**

1. A wire-wound resistor whose turns are covered with a layer of enamel on the basis of a zinc silicoborate, characterized in that the enamel has a composition in percent by weight within the following range of compositions:

SiO_2	6–18	CaO	5–12
B_2O_3	35–60	Al_2O_3	5–15
Na_2O	2–12	ZrO_2	5–10
ZnO	10–25	CoO	0,1–2

with the additional condition that $Al_2O_3+ZrO_2>2\ Na_2O$, while,

BaO	< 10	Fe_2O_3	< 2
MgO	< 3	Cr_2O_3	< 2
TiO_2	< 5	NiO	< 2
MnO	< 4		

4,406,995

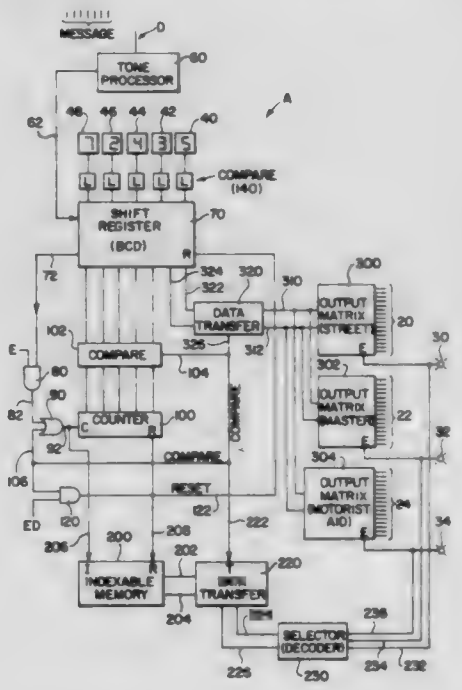
BASE STATION FOR MONITORING CALL BOXES

William L. May, Austin, Tex., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed May 12, 1981, Ser. No. 262,896

Int. Cl.³ G08B *1/08*; G05B *23/02*

U.S. Cl. 340—539 **20 Claims**



1. In a base station for monitoring the status of several function conditions at remote call boxes, each of which is assigned a distinctive identification code and is capable of selectively transmitting a message in the form of a plurality of successive signals upon a change in a function condition, several of said signals being representative of a box identification code and at least one of said signals being a code representative of the changed function condition, said base station having means for decoding said message, the improvement comprising: said decoding means including means for creating a particular one

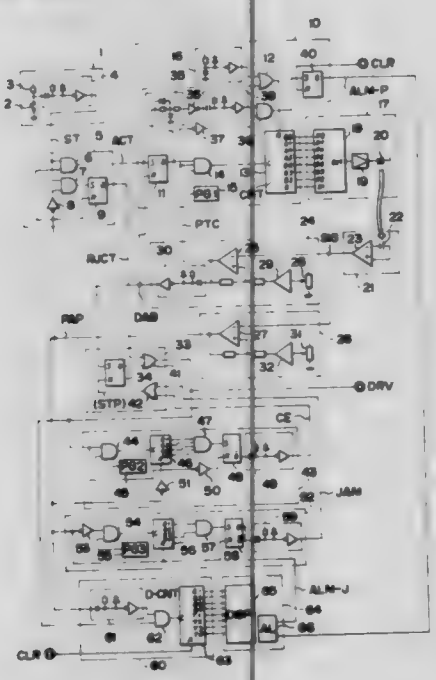
of a plurality of output selector signals upon decoding of a given box idenfication code in a message being processed; means for creating a particular output function signal in response to said coded representation of said message being processed; means for directing said output function signal in parallel to a plurality of output matrixes each of which has a particular exhibited function indicia controlled by said output function signal when said matrix is energized and means for energizing a selected one of said matrixes by the created output selector signal.

4,406,996

INTENSITY COMPENSATOR CIRCUIT FOR OPTICAL SENSOR IN BANK NOTE MACHINE

Yoshinobu Oka, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Jun. 26, 1981, Ser. No. 277,602
Claims priority, application Japan, Jun. 27, 1980, 55-87580
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—674 **5 Claims**



1. An optical detection device for use in a bank note counting apparatus that performs a counting operation, said device comprising a light emitting circuit for emitting a quantity of light, a light receiving circuit for receiving the light emitted from said light emitting circuit, a comparator for comparing the intensity of light received by said light receiving means with a pre-set level to generate an output signal instructing stepwise lowering of the power of said light emitting circuit, and a control circuit for stopping the lowering of the power of said light emitting circuit when said light intensity reaches said pre-set level.

4,406,997

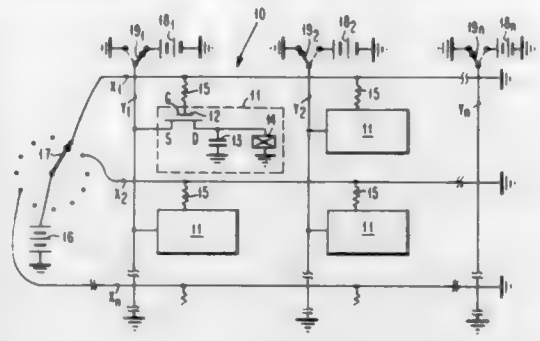
METHOD AND MEANS FOR MINIMIZING THE EFFECT OF SHORT CIRCUITS IN FLAT PANEL DISPLAYS

Steven W. Depp, and Anthony Juliana, Jr., both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1981, Ser. No. 307,267
Int. Cl.³ G09G *3/32*
U.S. Cl. 340—718 **8 Claims**

1. A flat panel display device of the line-at-a-time addressed type comprising a set of X drive lines and a set of Y drive lines arranged in overlying spaced relationship to form an X-Y matrix, and a plurality of field effect transistors (FETs), each FET selectively operable by applying a potential across a unique pair of X and Y drive lines for controlling activation of a corresponding optical transducer, each FET including a gate electrode connected to a drive line of one of the sets of drive lines, and two other electrodes operationally connected respectively to a drive line of the other set of drive lines and to a unique optical transducer, characterized in that

means providing a high value resistance is interposed in



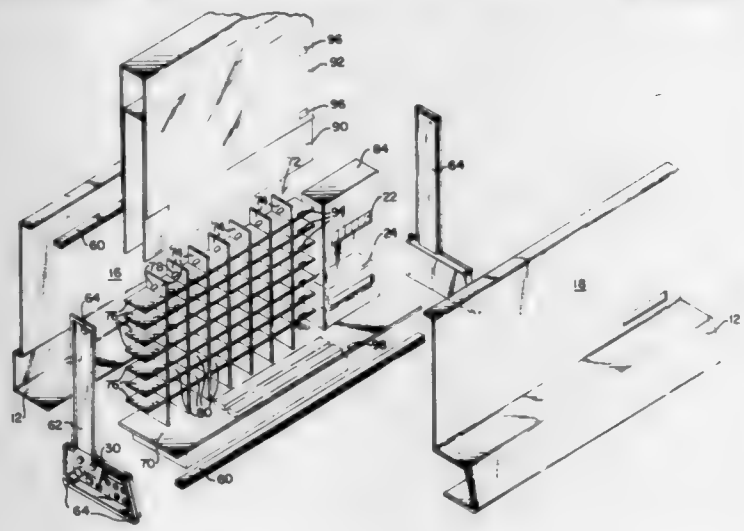
series between each gate electrode and associated drive line of said one set to minimize the effect a short circuit caused by a defective gate electrode establishing an electrical connection between X and Y drive lines.

4,406,998

NON-VERBAL COMMUNICATION DEVICE

Linda Willough, 10201 NE. 143rd St., Bothell, Wash. 98011

Filed Mar. 20, 1981, Ser. No. 246,009
Int. Cl.³ G08B *5/00, 5/36*
U.S. Cl. 340—815.01 **24 Claims**



23. A non-verbal communication device, comprising:

a plurality of optically isolated light cells arranged in a matrix, each of said cells having a first open end and an opposing second open end;

individually energizable, light-emitting means mounted in each of said cells for simultaneous transmission of light emitted to said first and second open ends;

a first light-transmissive panel covering the first open ends of said cells and a second light-transmissive panel covering the second open ends of said cells;

a removable overlay covering said first and second panels, said overlay having a first portion with a plurality of discrete message blocks which are superimposed on said first panel over resepctive cells of said matrix, each of said message blocks containing a plurality of messages, and a second portion with a plurality of discrete message blocks which are superimposed on said second panel over respective and corresponding cells of said matrix, each of said message blocks containing a plurality of messages identical to said messages contained in said message blocks of said first portion to position the same message on the opposite sides of said cells, said first and second portions each further including a plurality of identical message designating blocks which are superimposed on said first and second panels over respective cells of said matrix to position the same message designating block on opposite sides of said cells, said message designating blocks corresponding in number to the number of messages in each

message block and each correlated to one message of said plurality of messages in a message block; and

means for allowing an individual to selectively energize each of said light-emitting means corresponding to said message blocks to illuminate the message block containing the plurality of messages including the message to be communicated to a second party positioned to view said second portion of said overlay while said individual is positioned to view said first portion of said overlay, and for allowing said individual to selectively energize each of said light-emitting means corresponding to said message designating blocks to indicate which of said plurality of messages in the illuminated message block said individual desires to communicate.

4,406,999

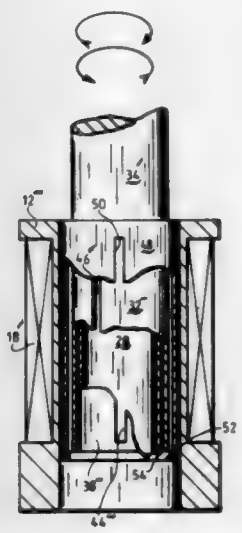
INDUCTIVE SENSOR

Frank L. Ward, Exeter, N.H., assignor to Clarostat Mfg. Co., Inc., Dover, N.H.

Division of Ser. No. 137,994, Apr. 7, 1980, abandoned. This application Jul. 2, 1981, Ser. No. 280,140

Int. Cl.³ G08C *19/06, 19/12*

U.S. Cl. 340—870.31 **12 Claims**



1. A sensor which converts an axial displacement of an object into an electrical signal for monitoring said displacement having: a housing; a coil wound about said housing; a ferromagnetic core fixed in said housing and axially located with respect to the center axis of the coil; first sleeve of conductive material substantially encasing said core and having a slotted portion intermediate its ends; second sleeve capable of receiving a displacing force on it by said object, said second sleeve being made of a conductive material and adapted to be axially displaced by said object over said core, between said core and said coil; wherein the induction of said coil is a function of the shape of the shape and variable in accordance with a predetermined relationship to the displacement of the second sleeve with respect to the core and the monitoring of the variation of induction indicates the displacement of said object.

4,407,000

COMBINED DIPOLE AND FERRITE ANTENNA

Masanori Sasaki, and Isao Yokoyama, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jun. 25, 1981, Ser. No. 277,100

Int. Cl.³ H01Q *7/08, 21/29*

U.S. Cl. 343—726 **6 Claims**

1. A reception antenna structure comprising;

a housing,

a horizontal first antenna portion having a pair of substantially rectangular wings extending from the top of said housing in the opposite direction from each other,

each of said wings having a folded elongated conductor with a plurality of first arms with the length D in the parallel direction of said wings, and a plurality of second arms with the length H in the perpendicular direction to said first arms,

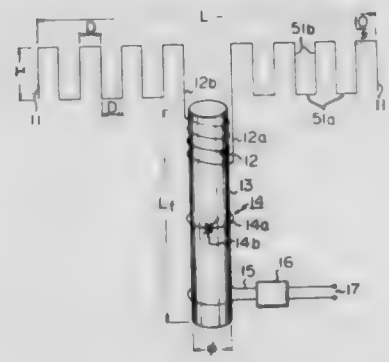
extreme ends of said folded elongated conductors in said wings being left free,

an elongated ferrite pole positioned vertically in said housing,

said ferrite pole having a coupling coil, a tank coil, and an output coil,

said coupling coil being coupled with the inner ends of said folded elongated conductors in said pair of wings,

said tank coil being coupled with an adjustable capacitor forming a resonator circuit,



said output coil being coupled with output terminals,

said first antenna portion with a pair of wings having the total horizontal length L in the range from 350 mm to 700 mm,

the length of said first arm being in the range from 6 mm to 12 mm, and the length of said second arm being in the range from 40 mm to 150 mm, and

said ferrite pole being a circular post with the diameter in the range from 10 mm to 30 mm, and the length in the range from 50 mm to 150 mm.

4,407,001

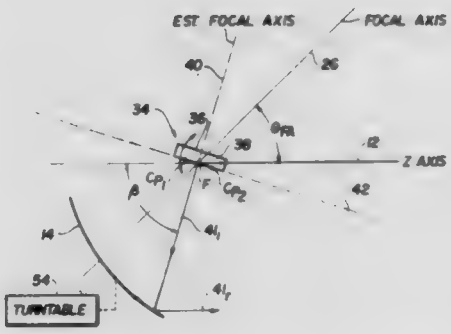
FOCAL AXIS RESOLVER FOR OFFSET REFLECTOR ANTENNAS

Richard F. Schmidt, Seabrook, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 2, 1981, Ser. No. 308,009

Int. Cl.³ H01Q *19/02*

U.S. Cl. 343—840 **27 Claims**



1. The method of determining the focal axis (26) of an offset reflector paraboloidal antenna (14), whose focal point (F) is known, comprising the steps of:

estimating a focal axis (40) running from the surface of said antenna through said focal point (F);

positioning means (34) for generating a plurality of electric field components at said focal point (F) and aligning said means with the estimated focal axis (40);

directing said electric field components to said antenna along said estimated focal axis whereupon far field sum

and difference radiation patterns (Σ, Δ) are provided by said offset antenna (14);

rotating said generating means (34) about an axis (40) through the focal point (F) in a common place;

detecting the far field radiation patterns (Σ, Δ);

measuring a characteristic of the far field radiation patterns (Σ, Δ) which varies as a function of rotation (β) of said generating means; and

determining an extreme magnitude of said characteristic, which magnitude indicates a particular position ($\beta=\theta_{FA}$) of rotation of said means (34) for generating sum and difference fields and which position corresponds to the focal axis (26) being determined.

4,407,002

HEAT TRANSFER TYPE THERMAL RECORDING APPARATUS

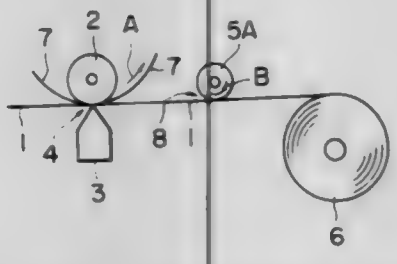
Toshiharu Inui; Yoshiki Kikuchi, and Takashi Ohmori, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 10, 1981, Ser. No. 320,151

Claims priority, application Japan, Nov. 17, 1980, 55-163489

Int. Cl.³ B41J *3/10, 3/20*

U.S. Cl. 346—76 PH **7 Claims**



1. In a heat transfer type thermal recording apparatus of the type including a thermal heating element which is selectively heated in accordance with pictorial information, an ink donor sheet carrying ink on a surface thereof and travelling along a donor sheet path past said heating element, and a back roll adjacent said heating element for urging a recording sheet against said surface of said donor sheet in the vicinity of said heating element, whereby, upon selective heating of said heating element in accordance with image information, ink will be transferred to said recording sheet and a negative image will be left on said donor sheet, the improvement comprising:

heating means along said donor sheet path downstream of said heating element for erasing said negative image from said donor sheet by melting the remaining ink on said donor sheet and transferring melted ink to said heating means.

4,407,003

THERMAL PRINTER

Hiroshi Fukui, Yokosuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1982, Ser. No. 340,221

Claims priority, application Japan, Mar. 5, 1981, 56-31890

Int. Cl.³ G01D *15/10*

U.S. Cl. 346—76 PH **5 Claims**

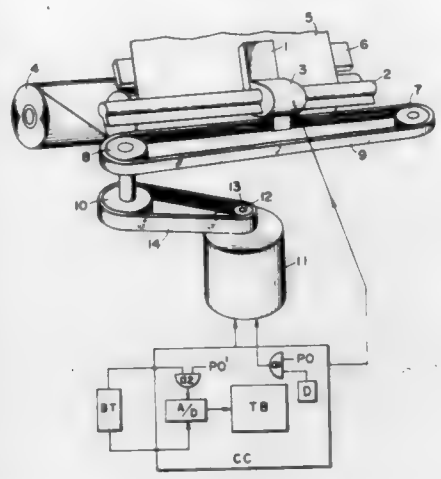
1. A thermal printer, comprising:

a thermal head;

a motor for driving said thermal head;

a power source for heating said thermal head and for driving said motor; and

means for detecting a voltage of said power source used in a printer, for controlling a period of time for heating said



thermal head and for driving said motor in accordance with the result of said detection.

4,407,004

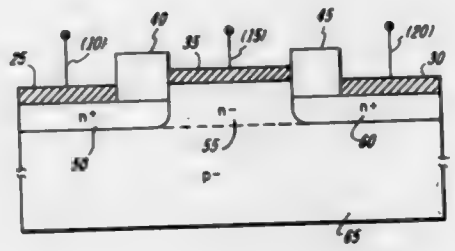
SELF-ALIGNED MESFET HAVING REDUCED SERIES RESISTANCE

Keming W. Yeh, Los Angeles, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 959,963, Nov. 13, 1978, abandoned. This application Feb. 12, 1981, Ser. No. 233,798

Int. Cl.³ H01L *29/78*

U.S. Cl. 357—23 **2 Claims**



1. A MESFET device comprising a semiconductor material substrate doped to one conductivity type and having first and second opposing major faces, a source region doped to the other conductivity type formed in a first portion of said first face of said substrate, said source region having a planar outer surface, a drain region doped to the other conductivity type formed in a second portion of said first face of said substrate at a location displaced from said source region, said drain region having a planar outer surface, a gate channel region doped to said other conductivity type formed in a third portion of said first face of said substrate, said gate channel region having an outer surface, said gate channel region interconnecting said source region and said drain region, said source and drain regions being more heavily doped than said gate channel region, the outer surface of said gate channel region being further removed from said second face of said substrate than said outer planar surfaces of said source and drain regions are removed from said second face of said substrate, a first ohmic contact to said outer surface or said source region, a second ohmic contact to said outer surface of said drain region, Schottky contact means extending the full length of said gate channel region for providing a Schottky barrier along the entire length of said outer surface of said gate chanel region, the outer displacements of said outer planar surfaces of said source and drain regions relative to the outer surface of said gate channel region and the extent of said Schottky barrier locating said Schottky barrier close to said source and drain regions whereby the source to gate resistance and the drain to gate resistance of the device are each very low.

4,407,005
N-CHANNEL JFET DEVICE HAVING A BURIED CHANNEL REGION, AND METHOD FOR MAKING SAME

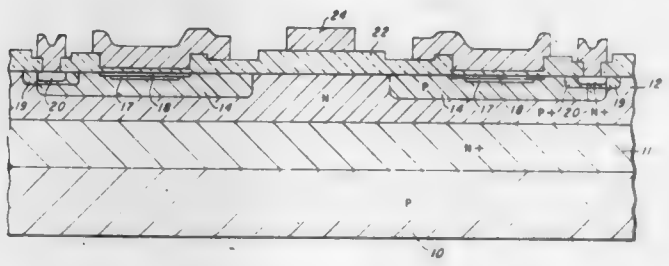
Kenneth M. Bell, Princeton, and Joe R. Trogolo, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 113,853, Jan. 21, 1980. This application Oct. 5, 1981, Ser. No. 308,699

The portion of the term of this patent subsequent to Mar. 30, 1999, has been disclaimed.

Int. Cl.³ H01L *29/18*

U.S. Cl. 357—23 **2 Claims**



1. An N-channel junction field effect transistor comprising:
(a) a P-type semiconductor substrate;
(b) an N-type epitaxial layer on one surface of said substrate;
(c) a first P-type gate region formed as a well in said N-type epitaxial region, said first P-type region comprising the bottom gate for said transistor;
(d) a second P-type gate region formed at the surface of said substrate;
(e) an N-type channel region buried beneath said second P-type gate region and above said first P-type region, said N-type channel region extending partially outside said first P-type region; and
(f) an N-type source region at the surface of said epitaxial layer and surrounded by said P-type regions, said N-type channel region providing electrical communication between said N-type source region and said N-type epitaxial layer, said N-type epitaxial layer operative as a drain region.

4,407,006
SPIRAL STRIP BRUSHLIKE STRESS BUFFERING POWER SEMICONDUCTOR CONTACTS

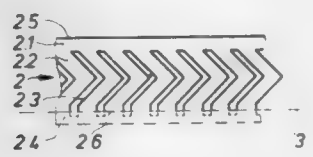
Hubert Holick, Lampertheim, and Alfred Jester, Speyer, both of Fed. Rep. of Germany, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

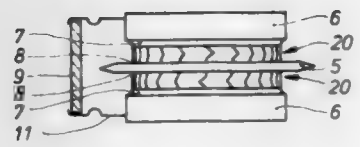
Filed Aug. 29, 1980, Ser. No. 182,822

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1979, 2937049

Int. Cl.³ H01L *23/04, 23/48*

U.S. Cl. 357—68 **7 Claims**





1. A semiconductor component formed of a casing in which a semiconductor disk having at least one pn-junction is material-connected with a metal disk, serving as a heat conduction path and as a current supply path, comprising:
a planar metal tape wound to form a spiral for making a connection of the metal disk to the semiconductor disk;
said tape provided with plural transverse slots at regular intervals to form plural resilient metal crosspieces, building numerous conductors arranged in a brush-like bundle;
said transverse slots being V-shaped and in the plane of the metal tape,
each of the crosspieces having one end material-connected only with the semiconductor disk but not with each other, and being inter-connected at the other end by a non-slotted piece of the metal tape,
said non-slotted piece having a frontal area material-connected with the metal disk.

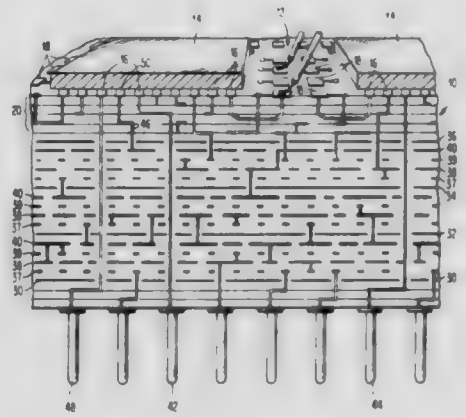
4,407,007
PROCESS AND STRUCTURE FOR MINIMIZING DELAMINATION IN THE FABRICATION OF MULTI-LAYER CERAMIC SUBSTRATE

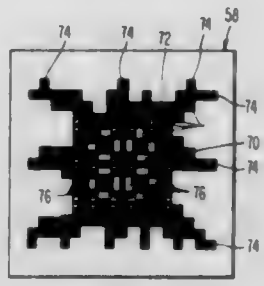
Kamalesh S. Desai; Carl L. Eggerding, both of Wappingers Falls, N.Y.; John A. Ferrante, Sherman, Conn.; Raymond Ricci, Wappingers Falls, and Ernest N. Urfer, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 28, 1981, Ser. No. 268,044

Int. Cl.³ H01L *23/48, 29/44, 29/52*

U.S. Cl. 357—74 **3 Claims**





1. In an improved semiconductor device package having a sintered multilayer ceramic substrate formed of laminated ceramic sheets, at least one integrated circuit semiconductor device mounted on the top surface of the substrate, I/O conductions on the bottom surface of the substrate, and an internal metallurgy system formed of printed conductive circuit patterns and filled vias on and in the sheets, the improvement comprising:
a plurality of improved design large area conductive metal planes supported on ceramic sheets included in said metallurgy system, the conductive pattern including small areas surrounding a rectangular grid of via holes, a substantially solid central area of conductive meal occupying not more than 60% of the total area of the supporting sheet, and broad stripes emanating from said central area, said con-

ductive pattern in use maximizing the ceramic to ceramic interface areas between the ceramic sheet supporting the conductive metal plane and the adjacent ceramic sheet.

4,407,008

METHOD AND APPARATUS FOR LIGHT-INDUCED SCANNING-MICROSCOPE DISPLAY OF SPECIMEN PARAMETERS AND OF THEIR DISTRIBUTION

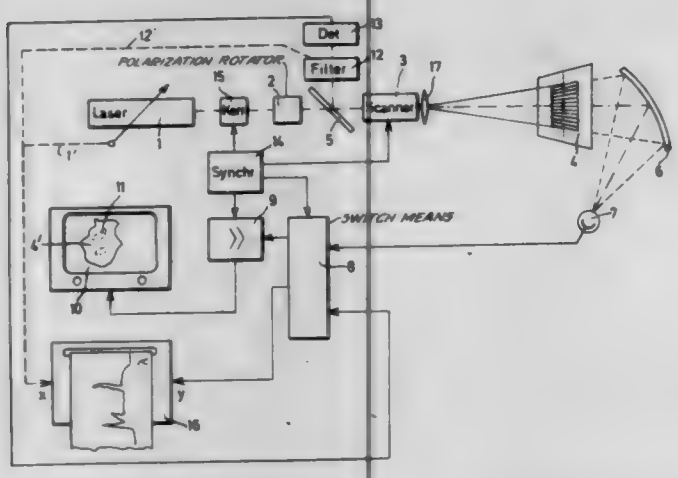
Werner Schmidt; Gerhard Mueller, both of Aalen; Klaus Weber, Konigsbronn, and Volker Wilke, Aalen, all of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Oct. 7, 1981, Ser. No. 309,371

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1980, 3037983

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—93 **27 Claims**



1. A method for the light-induced scanning-microscope display of specimen parameters and of their distribution, in which method the specimen is scanned in raster form on the illumination side by a beam of light, and radiation coming from the specimen is detected in phase with the raster, characterized by the fact that at least two different radiation components are detected, at least one of which radiation components lies in a spectral region not used on the illumination side and at least one of said components is focused, via the objective (17, 25, 113) used to focus the scanning beam and via the scanning unit (3, 23, 53, 120) used for its deflection, the focus being at a stationary receiver (13, 29, 47, 63, 116).

4,407,009

RETROFITTING A TELEVISED OUTPUT DEVICE ON A THERMAL IMAGER

James R. Adamson, Jr., and Stanley L. Carts, Jr., both of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 27, 1981, Ser. No. 315,373

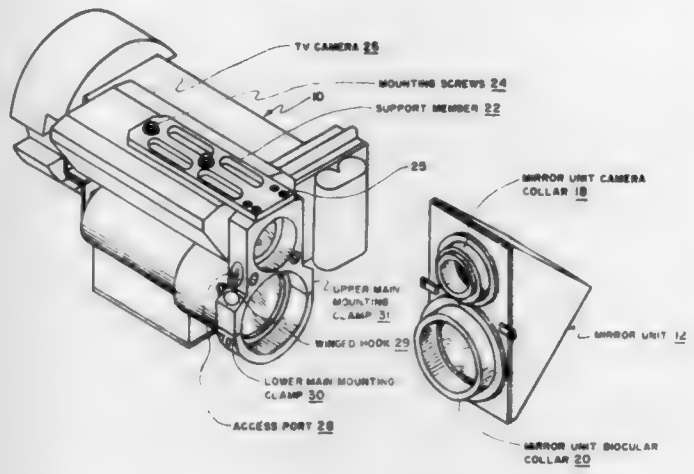
Int. Cl.³ H04N *5/26, 5/33*

U.S. Cl. 358—113 **3 Claims**

1. A means of retrofitting a TV camera on a thermal imager system to provide remote viewing of a scene by a CRT display, said means comprising:

mounting means for mounting said TV camera in an inverted position over said thermal imager system, said mounting means comprised of a main mounting clamp having openings therein through which the camera objective lens and the biocular lens project with a main support member attached to both the TV camera and said main mounting clamp and a camera rear stabilizing bracket that is attached between said system and the rear side of said TV camera from said objective lens; and

an unpluggable mirror unit providing a folded light path for said TV camera in an inverted mode necessary for right-side up imagery transmitted to said CRT display when plugged or providing a direct view of the scene when unplugged, said unpluggable mirror unit having securing means on the exterior of a mirror housing for attachment to said main mounting clamp and is comprised of two flat mirrors vertically mounted at right angles to each other on back surfaces within said mirror housing and a camera collar and biocular collar on a front outer surface wherein



said camera collar and biocular collar fit snugly into said main mounting clamp around said camera objective lens and said biocular lens whereby imagery from the scene is projected through the biocular lens and is reflected off said two flat mirrors and through said camera objective lens into said TV camera.

4,407,010

SOLID STATE IMAGE PICKUP DEVICE

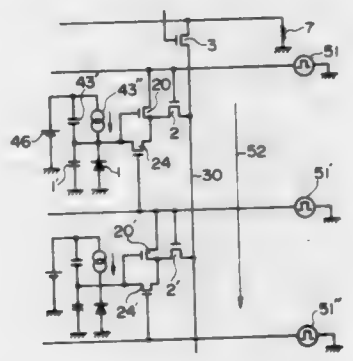
Toru Baji, Kokubunji; Toshihisa Tsukada; Norio Koike, both of Tokyo; Toshiyuki Akiyama, Hachioji; Iwao Takemoto, Hinodemachi; Shigeru Shimada, Houya; Chushirou Kusano, Hachioji; Shinya Ohba, Kokubunji, and Haruo Matsumaru, Hinodemachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 6, 1981, Ser. No. 290,570

Claims priority, application Japan, Aug. 20, 1980, 55-113511

Int. Cl.³ H04N *3/14*

U.S. Cl. 358—213 **10 Claims**

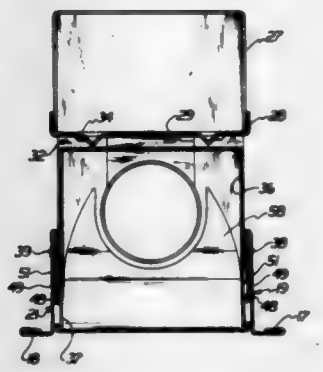


1. A solid state image pickup device comprising a plurality of solid state elements two-dimensionally arranged on a semiconductor substrate, each of said solid state elements forming a picture cell of the solid state image pick-up device and including a photoelectric converting element coupled to a first switching field effect transistor, said first field effect transistor being coupled to selection lines for enabling scanning of the picture cells, each of said photoelectric converting elements being indirectly connected to the associated first field effect transistor through a second amplifying field effect transistor, and means coupled to said photoelectric converting elements for resetting said photoelectric converting elements.

4,407,011
INTEGRATED LIGHTING SYSTEMS FOR SUSPENDED CEILINGS OR THE LIKE

Albert H. Lahm, Lorain, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Filed Dec. 8, 1980, Ser. No. 214,172
Int. Cl.³ F21S *1/02*
U.S. Cl. 362—150 17 Claims

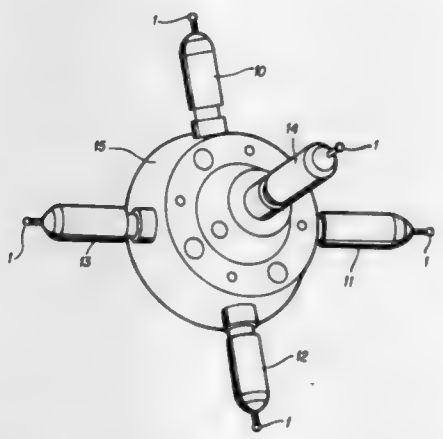


1. An integrated ceiling comprising a support grid defining a plurality of grid spaces adapted to receive ceiling panels which cooperate with the grids to provide a finished ceiling, said grids including runners, at least some of said runners having spaced and opposed panel support flanges and a horizontally extending web between said flanges, an elongated opening in said web, and a separate tube-type lighting fixture supported on said runner at said opening, said fixture including an elongated tube light above said opening.

4,407,012
MULTI-DIRECTIONAL LIGHT SOURCE

Jean-Pierre Desmaret, Drancy, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jan. 20, 1982, Ser. No. 341,138
Claims priority, application France, Jan. 20, 1981, 81 00938
Int. Cl.³ F21V *7/04*
U.S. Cl. 362—32 4 Claims



1. A multi-directional light source comprising a basic light source including:

an optical fiber having a first end communicatable with a light generator, and a second end;

a rigid metal tube encasing a portion of said optical fiber, said portion not including said second end;

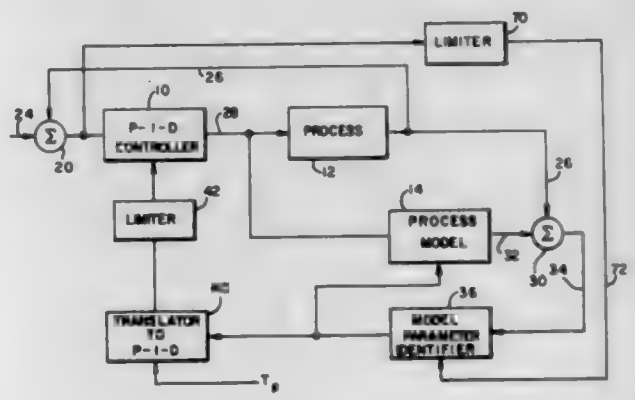
a ball ground from a light transmitting material, said ball having a diameter greater than that of said optical fiber, said ball being fixed to said second end of said fiber,

whereby light from said light generator is transmitted through said optical fiber and through said ball, further comprising a composite light source including five of said basic light sources wherein four of said basic light sources are located in a plane defining two rectangular coordinate axes, one of said basic light sources being positioned on each said coordinate axis on each side of the point of intersection of said axes, and wherein a fifth said basic light source is located on a third coordinate axis perpendicular to said two rectangular axes and intersecting said point of intersection.

4,407,013
SELF TUNING OF P-I-D CONTROLLER BY CONVERSION OF DISCRETE TIME MODEL IDENTIFICATION PARAMETERS

Samuel A. Arcara, Telford, and Paul Anderson, Green Lane, both of Pa., assignors to Leeds & Northrup Company, North Wales, Pa.

Filed Oct. 20, 1980, Ser. No. 198,804
Int. Cl.³ G05B *13/04, 11/42*
U.S. Cl. 364—149 14 Claims



1. In a method for controlling a process of the type which includes generating a signal which corresponds to a selected set point, providing a continuously tunable controller of the type which has at least a variable integral and a variable differential characteristic wherein said characteristics vary in response to a first set of parameters having a first form, and wherein said tunable controller controls a process and a variable process model and wherein said variable process model is responsive to a second set of parameters having a second form, and means are provided for varying said second set of parameters, the improvement comprising

providing means for changing the form of said second set of parameters to the form of said first set of parameters and using said last named set of parameters to individually control each of the characteristics of said tunable controller.

4,407,014
COMMUNICATIONS SUBSYSTEM HAVING A DIRECT CONNECT CLOCK

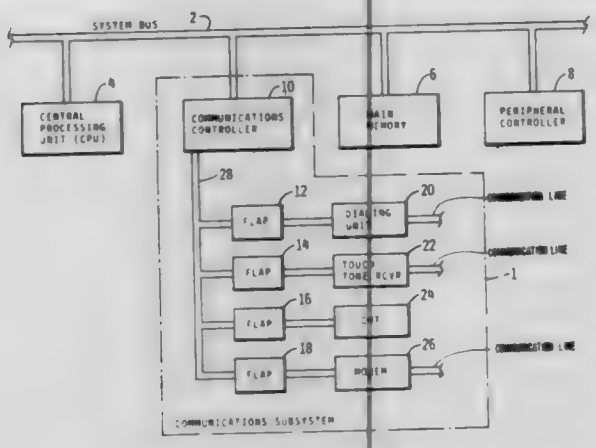
Thomas O. Holtey, Newton, Mass.; Richard P. Kelly, Nashua, N.H., and Daniel G. Peters, Billerica, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Oct. 6, 1980, Ser. No. 194,310
Int. Cl.³ G06F *3/02, 3/04*
U.S. Cl. 364—200 5 Claims

1. In combination with a communication line coupled to a data processing system comprising a system bus, at least one central processing unit (CPU), one main memory system, one peripheral controller and a communications subsystem, all coupled in common to the system bus, said communications subsystem including a communications controller coupled to said system bus, a plurality of flexible line adapters (FLAPs), each coupled to said communicatons controller, and further including typical communication devices such as a modem, a dialing unit, a touch-tone receiver, and a cathode ray tube (CRT), a plurality of each of said typical communication devices coupled to one each of said FLAPs, a communications subsystem having a direct connect logic apparatus for causing clock signals to be transmitted to each direct connected device of said typical communication device, said apparatus comprising:

(a) a data signal line coupled to said communications controller and to said typical communication devices;

(b) a clock signal line also coupled to said communications controller and to said typical communication devices; and,



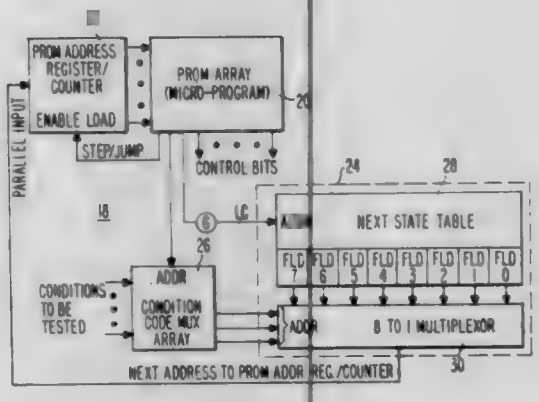
(c) a direct connect logic device coupled to said data signal line and clock signal line for receiving the data signals and clock signals generated by the communications controller and transmitting the data signals and clock signals to said typical communication devices wherein the delays in the data signals and the clock signals are substantially equal.

4,407,015

MULTIPLE EVENT DRIVEN MICRO-SEQUENCER

Daniel P. Ziobro, Downingtown, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 26, 1980, Ser. No. 210,557
Int. Cl.³ G06F 9/16
U.S. Cl. 364—200 **11 Claims**



1. A multiple event driven micro-sequencer for use in a microprogram controlled system, said microprogram controlled system including an addressable storage for storing microinstructions, said microprogram controlled system capable of activating selected control signals in response to executing said microintructions, said multiple event driven micro-sequencer comprising:

register-counter means, coupled to said addressable storage, said register-counter means for storing the address of the addressable storage location to be accessed;

means for generating a condition code, said condition code generating means responsive to a plurality of inputted test conditions; and

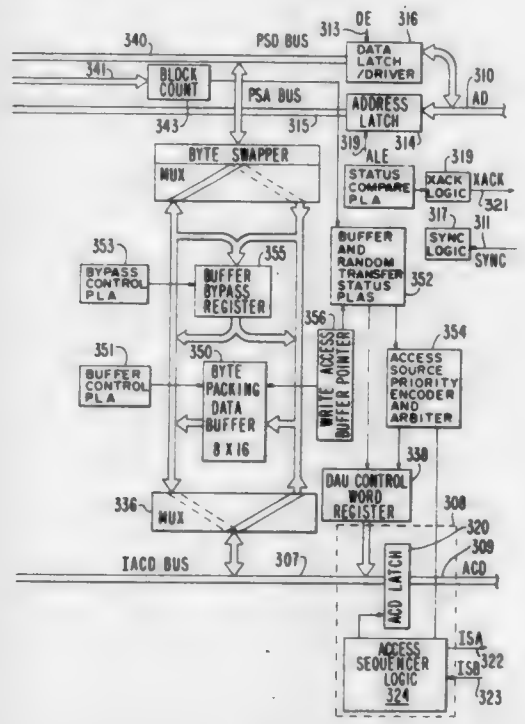
next state means, responsive to said generated condition code and said microprogram controlled system, said next state means for providing said register-counter means with an entire next state address.

4,407,016

MICROPROCESSOR PROVIDING AN INTERFACE BETWEEN A PERIPHERAL SUBSYSTEM AND AN OBJECT-ORIENTED DATA PROCESSOR

John A. Bayliss; Craig B. Peterson, both of Portland, and Doran K. Wilde, Aloha, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 18, 1981, Ser. No. 235,470
Int. Cl.³ G06F 9/20
U.S. Cl. 364—200 **14 Claims**



12. For use in combination with a generalized data processor (GDP) system including a GDP system memory, and a GDP system bus (**309**) connected to said GDP memory; and a peripheral subsystem having a peripheral subsystem storage having a peripheral subsystem storage, and a peripheral subsystem bus (**310, 311, 313**) connected to said peripheral subsystem storage, a microprocessor comprising:

a microinstruction bus (**340**);

a microexecution unit (MEU) including a microinstruction bus lower driver (**344**);

a data acquisition unit (DAU) including a microinstruction bus upper driver (**342**);

said MEU and said DAU being connected together by means of said microinstruction bus, said microinstruction bus being connected to said microinstruction bus upper driver (**342**) in said DAU and said microinstruction bus lower driver (**344**) in said MEU;

first means (**314, 316, 317, 319**) for connecting said DAU to said peripheral subsystem bus;

second means (**332, 334, 336, 338**) for connecting said DAU to said GDP system bus; and,

third means (**330**) for connecting said MEU to said GDP system bus;

said DAU including memory access path means connected to said first and second means;

said memory access path means including fourth means for receiving addresses and commands placed on said peripheral subsystem bus, said fourth means including an address register (**314**) for latching an address received over said peripheral subsystem bus a data register (**316**) for latching data received over said peripheral subsystem bus, said data latch being connected to said upper driver (**342**);

said MEU including execution means (**304**) connected to said microinstruction bus (**340**) for executing operators contained in said commands, to perform operations requested by said peripheral subsystem and including control means connected to said third means (**330**) for responding to messages received from said GDP system over said GDP system bus,

said DAU further including recognizing means (**300**) con-

nected to said address register (314) for comparing an address in said address register (314) with the contents of a plurality of window registers in said recognizing means, said recognizing means including means for generating a match signal (301) upon the condition that said address in said address register (314) matches one of a plurality of nonoverlapping address ranges stored in said recognizing means, said address ranges corresponding to address ranges in the address space of said peripheral subsystem, said address ranges (windows) defining segments in said peripheral subsystem address space whereby said peripheral subsystem can access through said DAU to said GDP system memory;

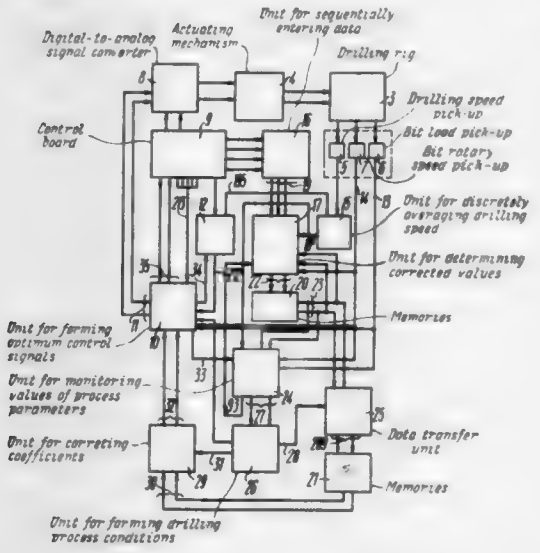
said execution means in said MEU including means (343, 351, 358, 359, 372) for configuring said memory access path means in said DAU such that said windows can be set-up, modified, turned off, turned on, or moved in said subsystem address space by said MEU in response to commands received by said peripheral subsystem through said command register in said DAU.

4,407,017

METHOD AND APPARATUS FOR CONTROLLING DRILLING PROCESS

Valentin V. Zhilikov, poselok Malakhovka, Bykovskoe shosse, 35, kv. 5, Moskovskaya oblast; Boris I. Motsokhein, B.Cherkizovskaya ulitsa, 9, korpus I, kv. I52, and Boris M. Parfenov, B.Cherkizovskaya ulitsa, 9, korpus I, kv. I32, both of, Moscow, all of U.S.S.R.

Filed Feb. 18, 1981, Ser. No. 331,998
Claims priority, application U.S.S.R., Sep. 6, 1978, 2652601
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—420 **50 Claims**



1. A method for controlling drilling process, using two control modes of which one mode is a mode of trial of a rock formation being drilled and the other mode is a drilling mode proper, said formation trial mode being a multicycle mode, and wherein each cycle of said trial mode comprises the steps of:

pre-setting values of control signals for controlling drilling process;

measuring drilling speed corresponding to said pre-set values of control signals;

pre-setting during the first cycle certain approximate values of coefficients of an adaptive model being corrected;

computing the drilling speed during the cycle of said trial mode using said pre-set values of control signals and said pre-set approximate values of coefficients of the adaptive model being corrected;

comparing said computed drilling speed to said measured drilling speed for one and the same cycle;

forming, based on the results of the comparison, a corrected value of a respective coefficient of the adaptive model being corrected;

determining, taking into account said corrected coefficients, values of control signals closest to optimum values, which are used as settings for acting on the bit during the next cycle of said trial mode;

using corrected coefficients of the adaptive model obtained during the preceding cycle for determining control signals for each next cycle, the values of control signals being determined approximating optimum values for given drilling conditions upon transition to each next cycle; and

if the measured drilling speed coincides with the computed drilling speed in two consecutive cycles, forming a signal for changing over from said trial mode to said drilling mode proper, the control signal formed during the last two cycles being the control signal to be used in said drilling mode proper; and

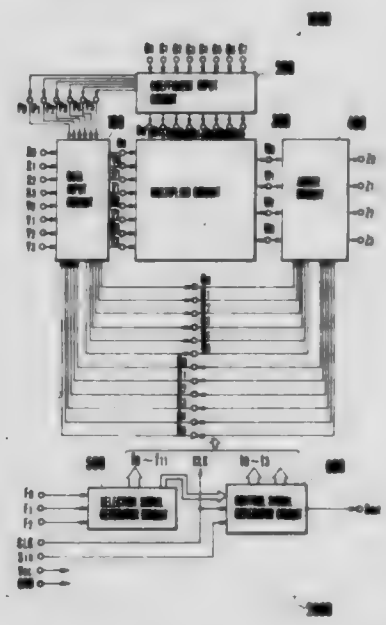
if controlled parameters of the process deviate from desired parameters, effecting a change over from said drilling mode proper to said rock formation trial mode.

4,407,018

DIGITAL SIGNAL PROCESSOR SUITED FOR LSI FABRICATION

Akira Kanemasa, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1981, Ser. No. 252,861
Claims priority, application Japan, Apr. 18, 1980, 55-51272
Int. Cl.³ G06F *15/31*
U.S. Cl. 364—736 **3 Claims**



1. A digital signal processor suited for LSI fabrication comprising:

data input circuit means for carrying out scaling on a plurality of serial data supplied through a first external terminal group;

coefficient input circuit means for carrying out 2's complement conversion on a plurality of specific data from a plurality of serial data supplied through a second external terminal group;

multiplier circuit means for carrying out a plurality of multiplications and additions on data from said data input circuit means and said coefficient input circuit means;

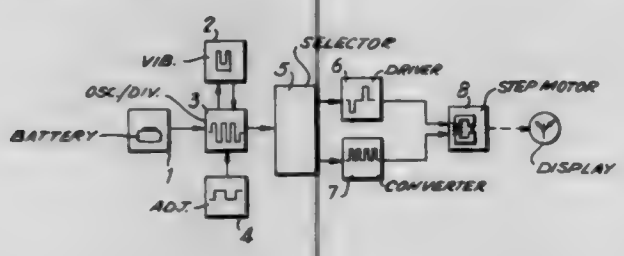
adder circuit means for carrying out a plurality of additons and subtractions as well as overflow detection and correction on data from said multiplier circuit means and said data input circuit means, and for supplying data to a third external terminal group and said data input circuit means; and

means for altering data connections in each of said circuits depending on the combination of logical zeros and ones entered through a fourth external terminal group so that one of a plurality of functional modes is selected.

4,407,019
ELECTRONIC WRISTWATCH

Yoshinori Futami, and Tokumon Ogawa, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 927,250, Jul. 21, 1978. This application Feb. 19, 1981, Ser. No. 235,787
Claims priority, application Japan, Jul. 21, 1977, 52-87724
Int. Cl.³ G04B 17/12
U.S. Cl. 368—200 16 Claims

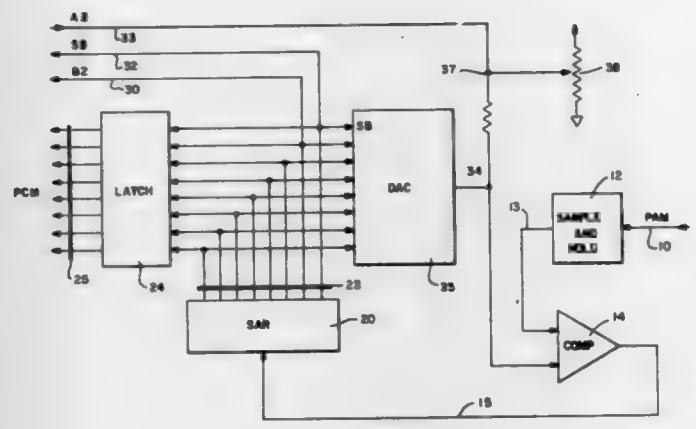


1. In an electronic wristwatch including a first oscillator means for outputting a high frequency time standard signal having a timing rate, first divider means for receiving said high frequency time standard signal and producing a low frequency timekeeping signal, adjustment means coupled to said first divider means for effecting a predetermined adjustment of the frequency of said low frequency timekeeping signal produced by said first divider means by varying the division ratio of said first divider means, said adjustment means including a plurality of switches, said dividing ratio of said first divider means being subject to selective variation by selective setting of said plural switches, and driving means and display means adapted to provide a display of time in response to said low frequency timekeeping signal being applied thereto, the improvement therein comprising converter means for producing a timing rate adjustment measurement signal, said measurement signal including a first component and second component, said first component being at least representative of the predetermined amount of adjustment included in the frequency of said low frequency timekeeping signal to provide accuracy in timekeeping, and further coding said selected setting of said plurality of switches of said adjustment means in accordance with the period of said predetermined adjustment, said second component of said ajustment signal being said timing rate signal divided by said first divider means without operation of said adjustment means, said first component and said second component generating alternately and continuously with periodicity, said converter means being adapted to operate in response to at least said low frequency timekeeping signal being applied thereto; and further comprising coil means whereto said timing rate adjustment measurement signal is applied, said coil means generating externally detectable signals in response to said measurement signal.

4,407,020
AUTOMATIC COMPENSATION CIRCUIT AND METHOD

Bradley A. Helliwell, Los Gatos; David G. Messerschmitt, Walnut Creek, and Ronald J. Hagen, Livermore, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Aug. 25, 1980, Ser. No. 180,530
Int. Cl.³ H04J 3/10
U.S. Cl. 370—6 8 Claims



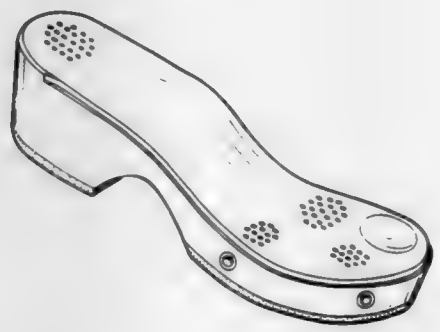
1. An offset compensation circuit comprising means connected to receive an input signal representing a recurring multichannel pulse amplitude modulated information signal, means for generating an offset control signal for each of said channels, means responsive to said offset control signal and said input signal for generating a sampled signal for each channel, means responsive to each sampled signal for generating a first control signal representing the sign of each sample, means for storing for each channel an offset data word corresponding to the sign of the previously sampled signal, means responsive to said first control signal for incrementing the stored offset data word for each channel when the first control signal has a first state and for decrementing the stored offset data word when the first control signal has a second state, and means responsive to the adjusted offset data word for adjusting the offset of the input signal for each channel during a subsequent time frame.

DESIGNS

SEPTEMBER 27, 1983

270,679
Patent Not Issued For This Number

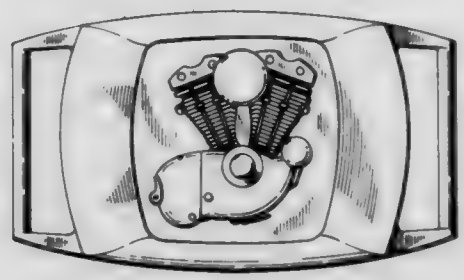
270,680
WOODEN SOLE FOR CLOG
Allan Jansson, Lidberga gard, A-186 00 Vallentuna, Sweden
Filed Apr. 23, 1981, Ser. No. 256,925
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322



270,681
MITTEN
Willie M. Banks, Gary, Ind., assignor to BSM, Inc., Chesterton, Ind.
Filed May 21, 1981, Ser. No. 265,968
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—367

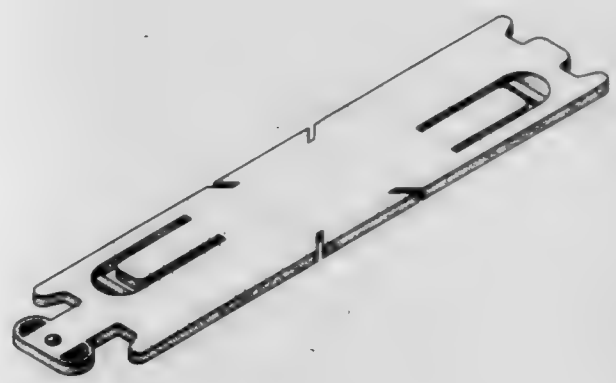


270,682
BELT BUCKLE
Thomas H. Rudd, Wayzata, Minn., assignor to Drag Specialties, Inc., Minneapolis, Minn.
Filed Jul. 22, 1981, Ser. No. 286,011
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—431

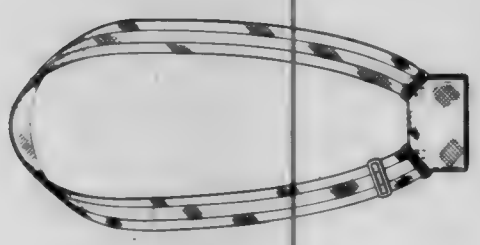




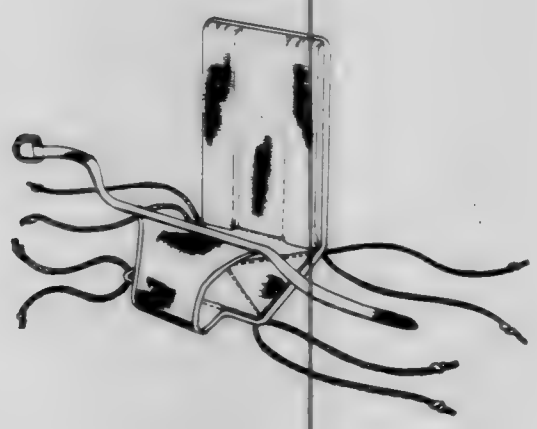
270,683
SEWING THREAD ORGANIZER
Ellen D. McCarn, Birmingham, Ala., assignor to McCarn Industries, Inc., Birmingham, Ala.
Filed May 11, 1981, Ser. No. 262,218
The portion of the term of this patent subsequent to Aug. 24, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D03—*99*
U.S. Cl. D3—23



270,684
SAFETY POUCH
Joan Menna, 405 E. 54th St., New York, N.Y. 10022
Filed Jun. 26, 1981, Ser. No. 277,825
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—42



270,685
INFANT SAFETY SEAT
Sandra L. Busch, 6520 132nd St. West, Apple Valley, Minn. 55124
Filed Jan. 23, 1981, Ser. No. 227,629
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—7



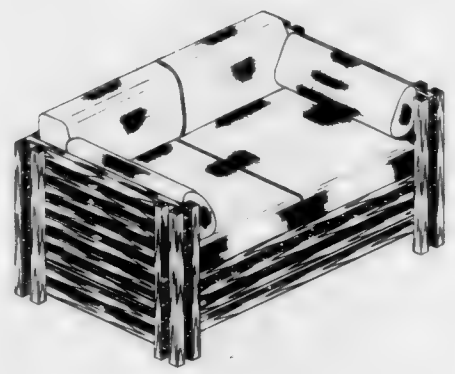
270,686
INFANT SEAT
Robert I. Glawe, 1020 Kaplan Dr., Waterloo, Iowa 50702
Filed Aug. 13, 1981, Ser. No. 292,690
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—9



270,687
VALET STAND
Enrico Tonucci, Pesaro, Italy, assignor to Fiam S.R.L., Tavullia, Italy
Filed Mar. 17, 1981, Ser. No. 244,631
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—29



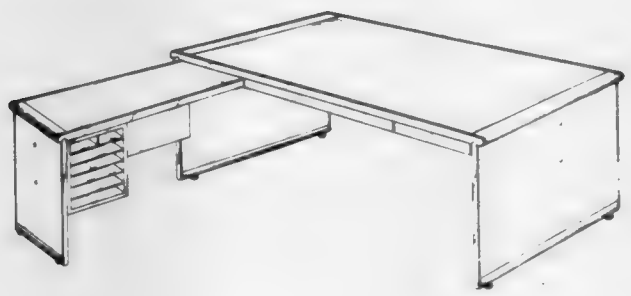
270,688
SEAT
Robert V. Thompson, Boatyard Condominiums, 75th Ave. North, Myrtle Beach, S.C. 29577
Filed Apr. 23, 1981, Ser. No. 256,794
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63



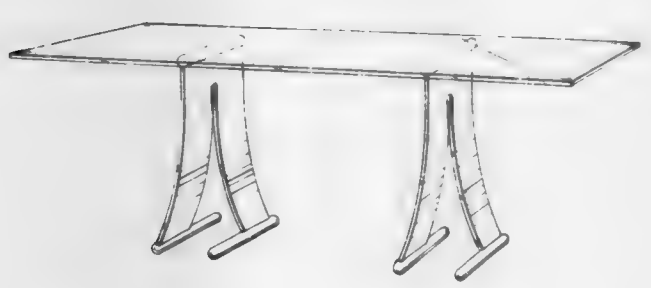
270,689
CEILING MOUNTED SUPPORT FOR TELEVISION OR THE LIKE
William Boscacci, San Leandro, Calif., assignor to Lucasey Manufacturing Company, Inc., Oakland, Calif.
Filed Oct. 27, 1980, Ser. No. 201,331
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—113



270,690
DESK WITH RETURN
Roger Daventry, Unit 13, 531 Hay St., Subiaco, 6008, Australia
Filed Nov. 6, 1980, Ser. No. 207,062
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—162



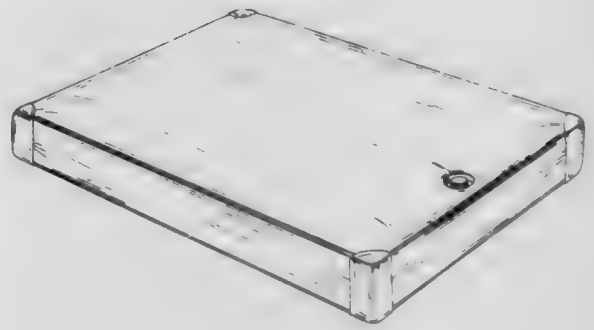
270,691
TABLE
Enrico Tonucci, Pesaro, Italy, assignor to Fiam S.R.L., Tavullia, Italy
Filed Mar. 17, 1981, Ser. No. 244,633
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—175



270,692
COMBINED COFFEE TABLE AND DUAL FOOT RAIL UNIT
Willard C. Somers, P.O. Box 200, Celina, Ohio 45822
Filed May 5, 1981, Ser. No. 260,705
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



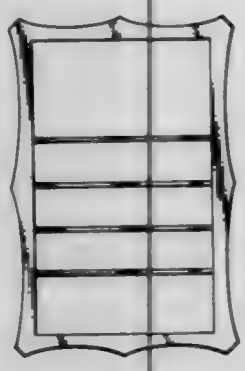
270,693
WATER BED MATTRESS
Lynn D. Larson, Walton, Nebr.
Continuation of Ser. No. 749,890, Dec. 13, 1976. This application Sep. 8, 1980, Ser. No. 184,999
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



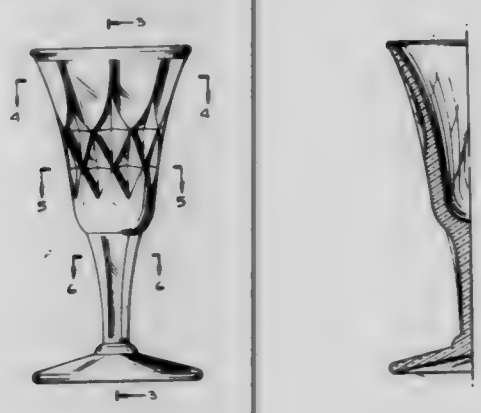
270,694
CURTAIN GATHERING TAPE
W. A. E. M. De Gruijter, Brasschaat, Netherlands, assignor to Copron, B.V., Rotterdam, Netherlands
Filed Jun. 11, 1981, Ser. No. 272,695
Term of patent 14 years
Int. Cl. D5—*05, 99*
U.S. Cl. D6—208.1



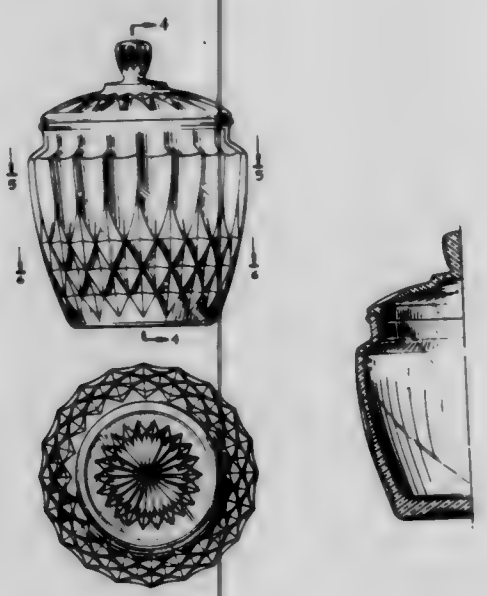
270,695
PICTURE FRAME
Carmen L. Rinaldo, 25 Sherwood Ave., Ossining, N.Y. 10562
Filed Sep. 3, 1981, Ser. No. 299,059
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—244



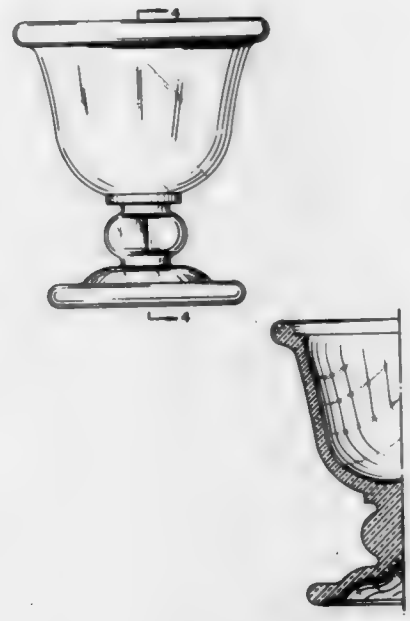
270,696
GOBLET OR SIMILAR ARTICLE
James L. Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 140,180, Apr. 14, 1980, Pat. No. Des. 267,697. This application Apr. 23, 1982, Ser. No. 371,253
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—11



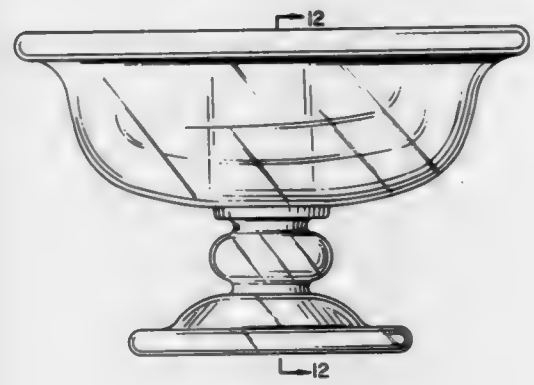
270,697
COVERED JAR OR SIMILAR ARTICLE
James L. Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 140,180, Apr. 14, 1980, Pat. No. Des. 267,697. This application May 3, 1982, Ser. No. 374,053
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—17



270,698
BOWL OR SIMILAR ARTICLE
Wayne Husted, Tiburon, Calif., assignor to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 37,715, May 11, 1979, Pat. No. Des. 266,135. This application Nov. 24, 1981, Ser. No. 324,441
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—22





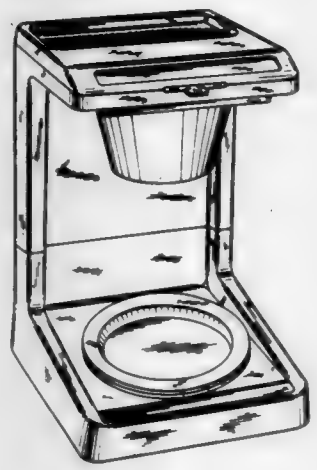


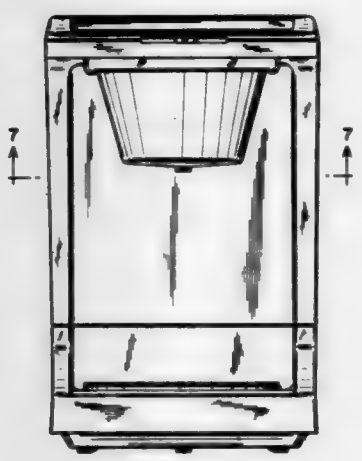
270,699

COFFEE MAKER

William J. Rakocy, Madison, and Ronald L. Muller, Old Saybrook, both of Conn., assignors to North American Philips Corporation, New York, N.Y.

Filed Apr. 1, 1981, Ser. No. 250,972
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—309





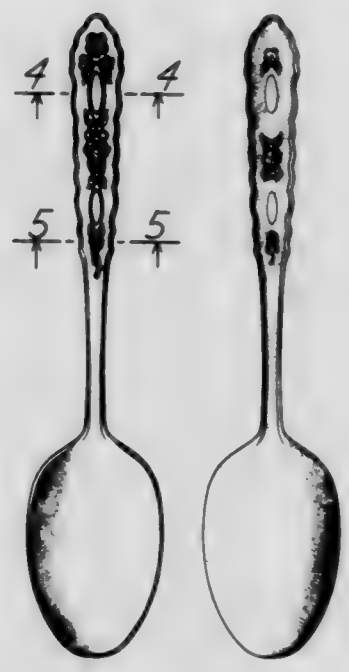


270,700

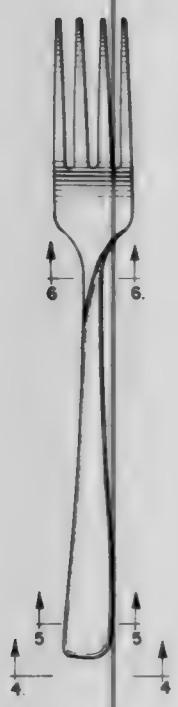
SPOON OR SIMILAR ARTICLE

Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.

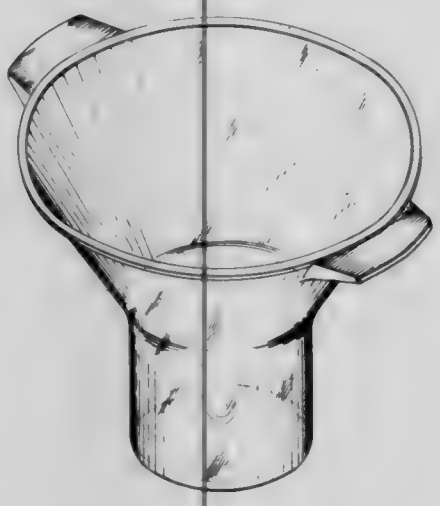
Filed Oct. 13, 1981, Ser. No. 310,508
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137



270,701
FORK OR SIMILAR ARTICLE
Oleg L. Cassini, New York, N.Y., assignor to American Home Products Corporation, New York, N.Y.
Filed Sep. 25, 1981, Ser. No. 305,607
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—150



270,702
MICROWAVE CORN POPPER
Robert F. Bowen, Burlington, and Thomas J. Martel, North Reading, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Feb. 18, 1982, Ser. No. 349,745
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—325



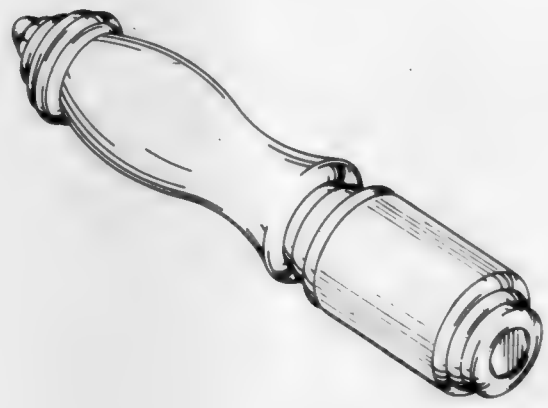
270,703
CONVECTIVE HEATING TRAY
Nabil A. El-Hag, Lake Peekskill, N.Y.; Marilee D. Egan, Ridgefield, Conn.; Kenneth D. Bixler, Hungtington, and Robert E. Ralphs, Katonah, both of N.Y., assignors to General Foods Corporation, White Plains and Diamond International Corp., New York, both of, N.Y.
Filed Apr. 23, 1981, Ser. No. 256,759
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—357



270,704
DISPENSING SPIGOT FOR AN INSULATED BEVERAGE CONTAINER
Craig Ruxton, and Charles J. Rodriguez, both of Harris County, Tex., assignors to Igloo Corporation, Houston, Tex.
Filed Oct. 2, 1981, Ser. No. 307,928
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—398



270,705
STRIKING MAUL
Brian R. Borrer, 3431 N. 63rd Pl., Scottsdale, Ariz. 85251
Filed May 4, 1981, Ser. No. 260,345
Term of patent 14 years
Int. Cl. D8—*02*
U.S. Cl. D8—77



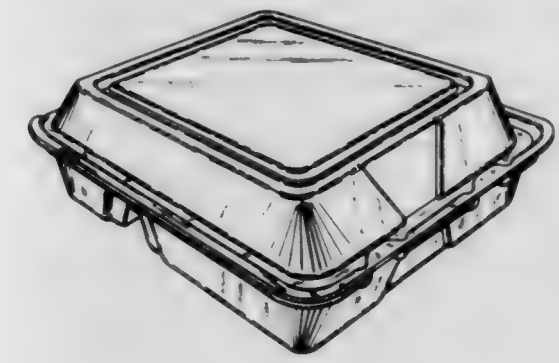
270,706
HANDLE FOR A HAND TOOL
Douglas R. Cleminshaw, Preble, NY, assignor to Richard E. Gray, Fayetteville, N.Y.
Filed May 21, 1981, Ser. No. 266,120
Term of patent 14 years
Int. Cl. D8—*04*
U.S. Cl. D8—83



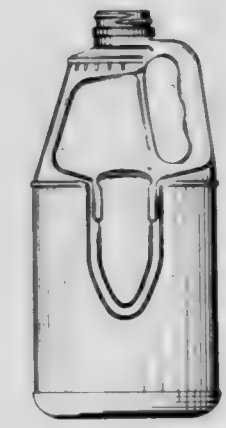
270,707
TWO-PIECE OPERATOR HEAD FOR A TOOL-OPERATED LOCK
Edwin W. Davis, Medina, and Gordon G. Zeidman, Columbus, both of Ohio, assignors to The Eastern Company, Cleveland, Ohio
Filed Oct. 22, 1980, Ser. No. 199,549
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—331



270,708
PACKAGING CONTAINER
Kenneth B. Dart, Okemos, Mich., assignor to Dart Container Corporation, Mason, Mich.
Filed Mar. 20, 1981, Ser. No. 246,029
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—347



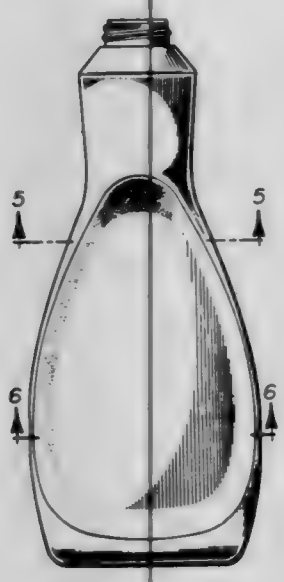
270,709
PLASTIC JUG OR THE LIKE
Ronald D. Taylor, Sr., 3366 Queen Palm Rd., Jacksonville Beach, Fla. 32250
Filed Feb. 12, 1981, Ser. No. 233,833
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—378



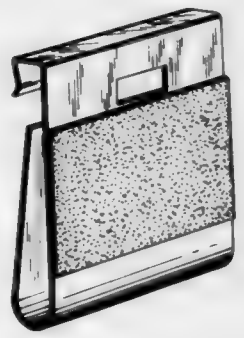
270,710
JAR OR SIMILAR ARTICLE
Floyd E. Pettengill, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Filed Jan. 16, 1981, Ser. No. 225,625
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—390



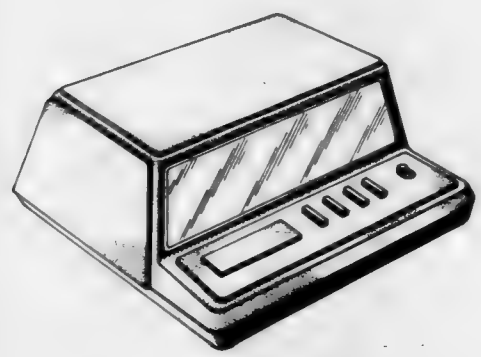
270,711
BOTTLE
Richard L. Weckman, Perrysburg, Ohio, assignor to The Clorox Company, Oakland, Calif.
Filed Jun. 8, 1981, Ser. No. 271,722
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—404



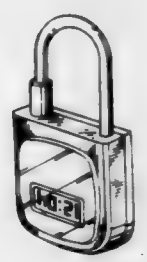
270,712
JEWELRY DISPLAY CARD
Daniel A. Triangolo, Hope, R.I., assignor to Danal Jewelry Company, Providence, R.I.
Filed May 18, 1981, Ser. No. 264,536
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—457



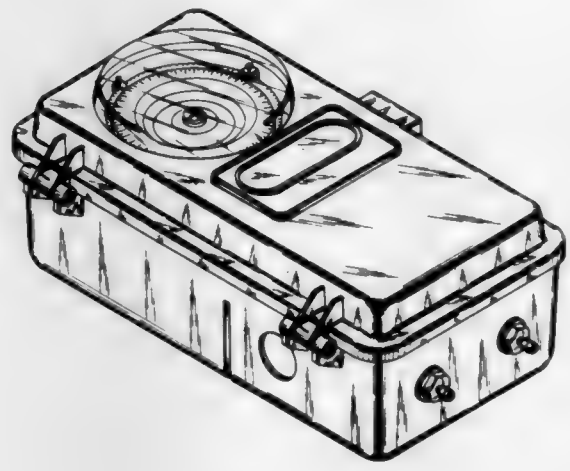
270,713
DIGITAL CLOCK
Arnold Thaler, Plantation, Fla., assignor to Cosmo Time Corp., Miami, Fla.
Filed Apr. 9, 1981, Ser. No. 252,273
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—15



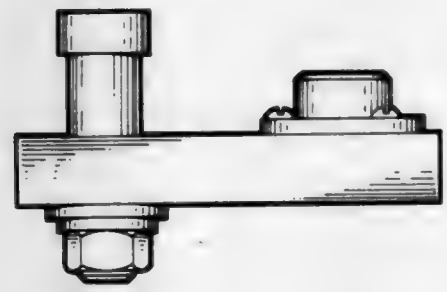
270,714
BELT-LOOP AND KEY-RING WATCH
Chan K. Sang, Kwai Chung, Hong Kong, assignor to Kemaca Trading Limited, Hong Kong, Hong Kong
Filed Aug. 5, 1981, Ser. No. 289,957
Claims priority, application Australia, Feb. 16, 1981, 83348
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—33



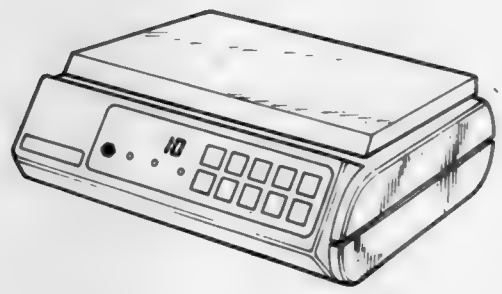
270,715
TIMER CONTROL BOX
Charles M. Perethian, Santa Margarita, Calif., assignor to California Cooperage, San Luis Obispo, Calif.
Filed Sep. 25, 1981, Ser. No. 305,614
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D10—40



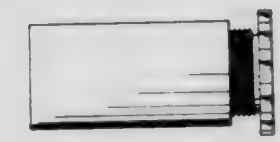
270,716
BUBBLE LEVEL DEVICE FOR A CUTTER NOZZLE
Lars-Gunnar Karlsson, Lidhult, and Bruno Granath, Unnaryd, both of Sweden, assignors to Kalmar Last Makin Verkstad AB, Sweden
Filed Feb. 4, 1981, Ser. No. 231,390
Claims priority, application Sweden, Aug. 8, 1980, 80-1500
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—69

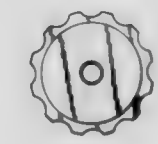


270,717
ELECTRONIC WEIGH SCALE
Richard J. Wells, Ferndale, Mich., assignor to GSE, Inc., Farmington Hills, Mich.
Filed Aug. 24, 1981, Ser. No. 295,416
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—91

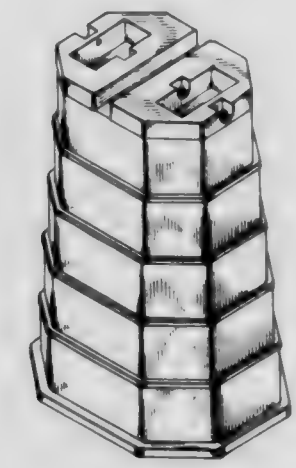


270,718
FIELD HAND PUMP FOR USE IN THE MEASURING OF PROPERTIES OF DRILLING MUD, OR THE LIKE
David E. Cain, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.
Filed Mar. 9, 1981, Ser. No. 242,134
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—94





270,719
TRAFFIC CONTROL BARRICADE
Ben J. Porath, Grafton, and Daniel J. Manning, Milwaukee, both of Wis., assignors to The Kelch Corporation, Mequon, Wis.
Filed Mar. 9, 1981, Ser. No. 242,014
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109

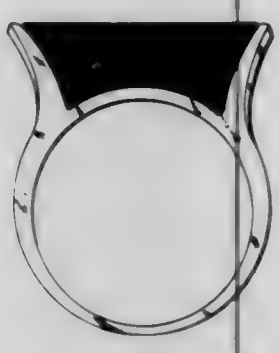


270,720
RING
Leo Schneider, Miami Lakes, Fla., assignor to William Schneider, Inc., Miami, Fla.
Filed Jun. 26, 1981, Ser. No. 277,977
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—28



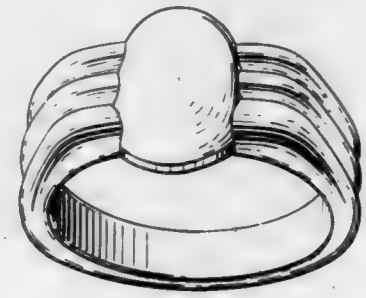


270,721
RING
Marina Bulgari, Athens, Greece, assignor to Zoldia Anstalt, Vaduz, Liechtenstein
Filed Oct. 9, 1981, Ser. No. 310,429
Claims priority, application Italy, Apr. 13, 1981, 35735/81[U]
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—35

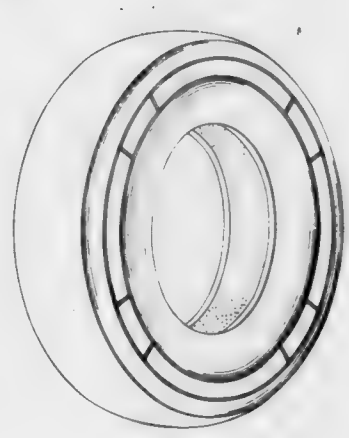




270,722
RING
Gianni Bulgari, Rome, Italy, assignor to Ditta Sotirio Bulgari Di Costantino E Giorgio Bulgari S., Rome, Italy
Filed Feb. 5, 1982, Ser. No. 346,333
Claims priority, application Italy, Aug. 7, 1981, 3596181/8 U]
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—35



270,723
TIRE
Peter McDonald, Hudson, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Mar. 25, 1981, Ser. No. 247,474
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—152



270,724
VALVE CAP
Monte S. Anderson, P.O. Box 132, N. Lafayette St., Oolitic, Ind. 47451
Filed Jul. 9, 1981, Ser. No. 281,870
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—153



270,725

REMOTE CONTROL CONSOLE

Kenneth R. Fenne, Glen Ellyn, Ill., assignor to Pittway Corporation, Aurora, Ill.

Filed Oct. 31, 1980, Ser. No. 202,617
Term of patent 14 years
Int. Cl. D13—*03;* D14—*02*
U.S. Cl. D13—12

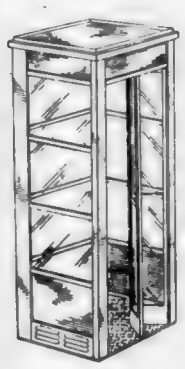


270,726

MINIATURE TELEPHONE ENCLOSURE

Samuel Weiss, 3875 Bathurst Street, Apt. 3, Downsview, Ontario, Canada

Filed Dec. 19, 1980, Ser. No. 218,279
Claims priority, application Canada, Jun. 19, 1980, 19-06-80-3
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60

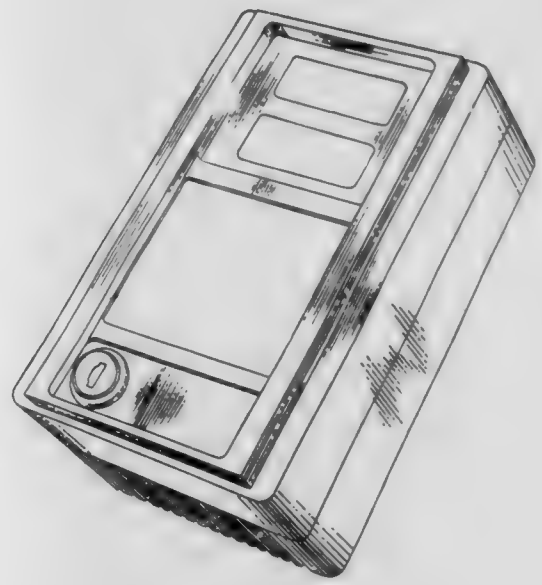


270,727

CASE FOR A KEYBOARD AND DISPLAY UNIT

Roman Y. Gonzales, Andover, Mass., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Feb. 17, 1981, Ser. No. 234,969
Term of patent 14 years
Int. Cl. D14—*02;* D18—*01*
U.S. Cl. D14—100

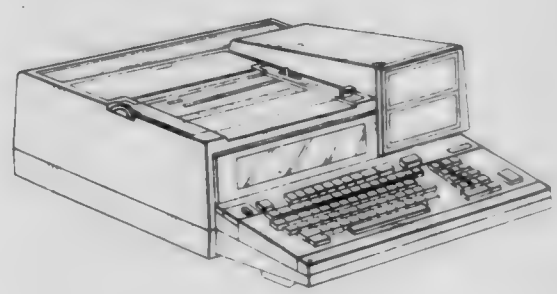


270,728

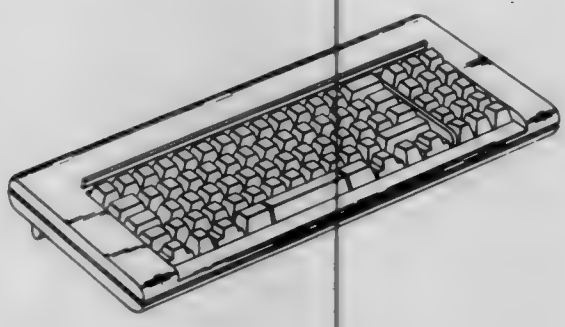
DESK-TOP COMPUTER

Masahiro Kando, Tokyo, and Sakae Uematsu, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

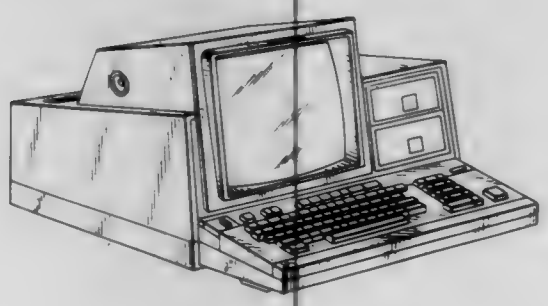
Filed Feb. 18, 1981, Ser. No. 235,766
Claims priority, application Japan, Aug. 21, 1980, 34260/1980
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—100



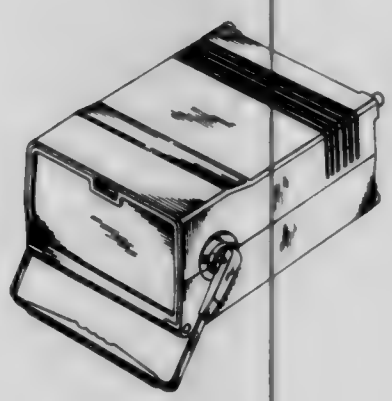
270,729
INTERACTIVE TERMINAL KEYBOARD
Donald F. Lahey, Saratoga, and Dallas G. Molerin, Union City, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 14, 1981, Ser. No. 300,782
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—100



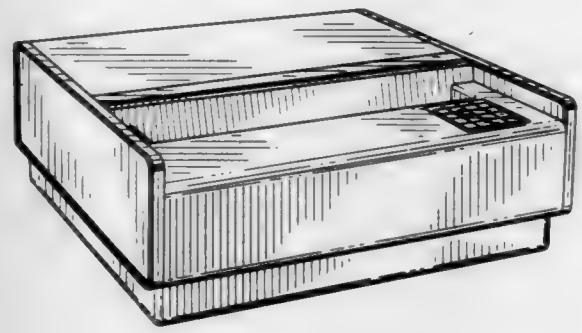
270,730
DESK-TOP COMPUTER
Masahiro Kando, Tokyo, and Sakae Uematsu, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 18, 1981, Ser. No. 235,765
Claims priority, application Japan, Aug. 21, 1980, 34259/1980
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—106



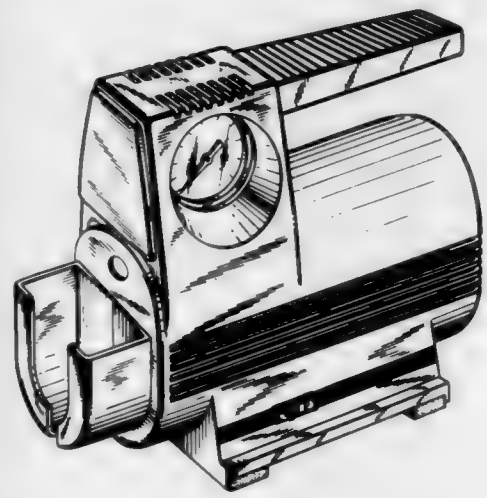
270,731
PORTABLE DATA TERMINAL
John B. MacDonald, Boston, Mass., and Jack E. Schenkel, Mason, Ohio, assignors to Cincinnati Milacron Industries, Inc., Cincinnati, Ohio
Filed May 4, 1981, Ser. No. 260,357
Term of patent 14 years
Int. Cl. D14—*02*; D13—*03*
U.S. Cl. D14—106



270,732
PRINTER UNIT
Richard B. Brown, Webb City, Mo., and Noland E. Vogt, Woodside, Calif., assignors to Cardinal Scale Manufacturing Company, Webb City, Mo.
Filed May 12, 1981, Ser. No. 263,077
Term of patent 14 years
Int. Cl. D14—*02*; D18—*02*
U.S. Cl. D14—111



270,733
AIR COMPRESSOR UNIT
William J. Davis, Levittown, Pa., assignor to Interdynamics, Inc., Brooklyn, N.Y.
Filed Sep. 2, 1982, Ser. No. 414,493
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—9

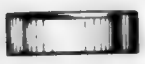


270,734
SHOULDER SUPPORT FOR CAMERAS OR SIMILAR ARTICLES
Gary P. Emerson, 34226 Gap Rd., Golden, Colo. 80401
Filed Mar. 30, 1981, Ser. No. 249,284
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—44

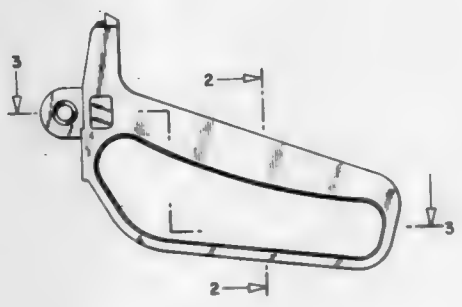


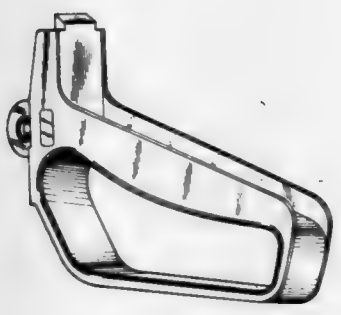
270,735
GUITAR BODY
Mathew McPherson, Sr., 5817 Olinger Rd., Edina, Minn. 55436
Filed Jan. 28, 1981, Ser. No. 229,093
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20



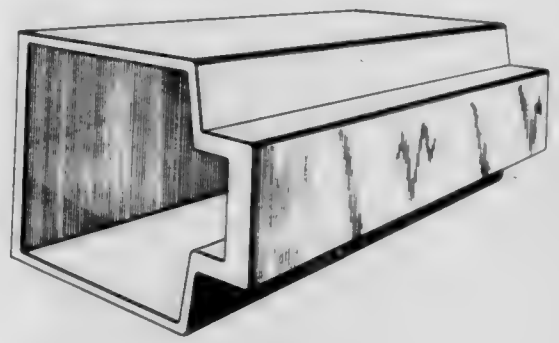


270,736
DRIVING LEVER FOR A LABELLING APPARATUS
Werner Becker, Hirschhorn, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Dec. 22, 1980, Ser. No. 218,642
Claims priority, application Switzerland, Jul. 4, 1980, 111268
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—19

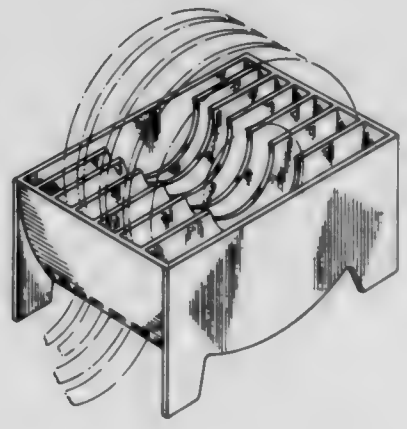




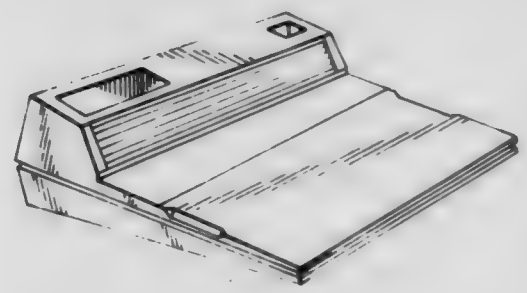
270,737
BEAM FOR A STENCILE FRAME OR SIMILAR ARTICLE
Sylve J. D. Ericsson, Tumba, Sweden, assignor to Svecia Silkscreen Maskiner AB, Norsborg, Sweden
Filed May 5, 1980, Ser. No. 146,782
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—23



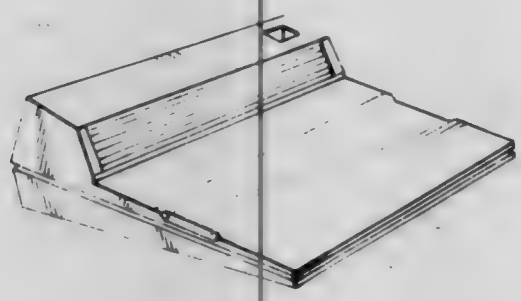
270,738
COMBINED HOLDER AND DISPENSER FOR ROLLS OF TAPE
Gene L. Mayo, 135 Dolton Ave., San Carlos, Calif. 94070
Filed Nov. 2, 1981, Ser. No. 316,822
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—67



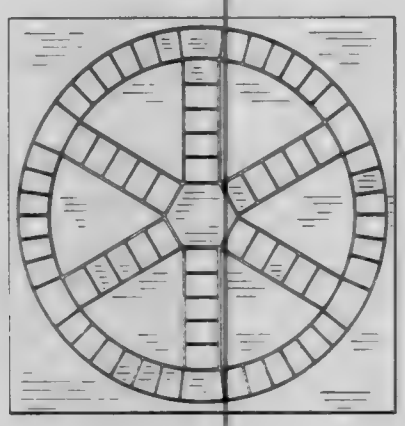
270,739
DUAL NOTEPAPER PAD AND PEN HOLDER
Walter C. Pearson, St. Paul, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
Filed Aug. 3, 1981, Ser. No. 289,771
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—78



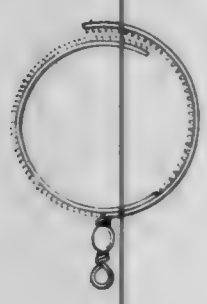
270,740
COMBINED NOTEPAPER PAD AND PEN HOLDER
Walter C. Pearson, St. Paul, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
Filed Aug. 3, 1981, Ser. No. 289,772
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—78



270,741
GAME BOARD
Chris Haney, Niagara-on-the-Lake, and Scott Abbott, Hudson Heights, both of Canada, assignors to Horn Abbot Ltd., St. Catherines, Canada
Filed Nov. 10, 1981, Ser. No. 320,094
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—35



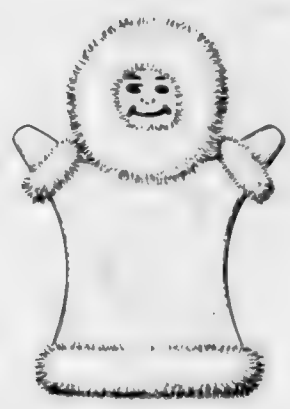
270,742
FINGER SWIVEL
Kenneth Vadnais, Wayne County, Mich., assignor to S & S Industries, Inc., Wyandotte, Mich.
Filed Jul. 3, 1978, Ser. No. 921,871
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59



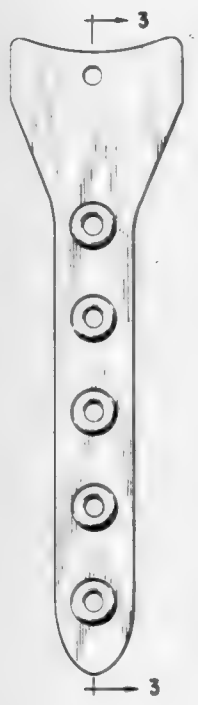
270,743
STEERED PUSH TOY
James L. Fields, 256 Wilowen Dr., Nashville, Tenn. 37210
Filed Mar. 26, 1981, Ser. No. 247,799
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—71



270,744
ESKIMO PUPPET
Lowell J. Carlson, Buffalo, Minn., assignor to Carlson Dolls Co., Maple Lake, Minn.
Filed Jan. 11, 1982, Ser. No. 338,370
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—153



270,745
CADDY FOR GOLF TEES
Thomas Voss, 940 Edwards Ave., Dundee, Ill. 60118
Filed Jun. 29, 1981, Ser. No. 278,556
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—208



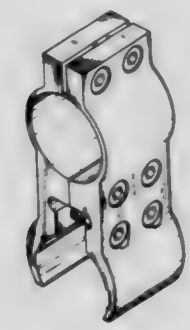
270,746
GOLF PUTTER HEAD
Charles A. Sanna, 909 Farwell Dr., Madison, Wis. 53704
Filed Sep. 21, 1981, Ser. No. 303,987
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—219



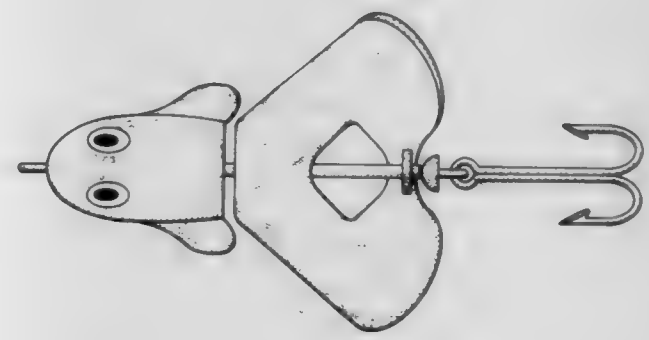
270,747
GOLFERS ACCESSORY KIT
Robert J. Eisinger, Golden, and Brian S. Smith, Denver, both of Colo., assignors to Eisinger-Smith, Inc., Golden, Colo.
Filed Jun. 29, 1981, Ser. No. 278,586
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D21—234



270,748
PISTOL TELESCOPE MOUNT
Daniel L. Bechtel, P.O. Box 11281, Fort Worth, Tex. 76109
Filed Sep. 17, 1981, Ser. No. 303,146
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7



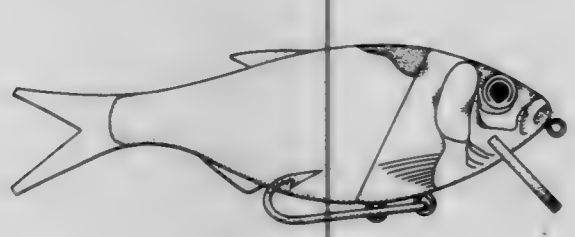
270,749
FISHING LURE
James R. Gowing, Altus, and Clyde S. Gudermuth, Jr., Fort Smith, both of Ark., assignors to EBSCO Industries, Inc., Birmingham, Ala.
Filed Jul. 23, 1981, Ser. No. 285,954
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



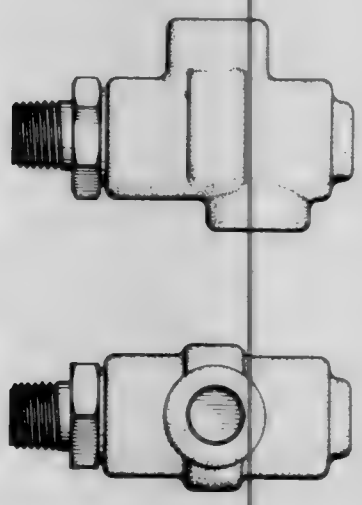
270,750
FISHING LURE
Eleftherious Zaffis, 45410 Garden Sq., Palm Desert, Calif. 92260
Filed Dec. 21, 1981, Ser. No. 332,869
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



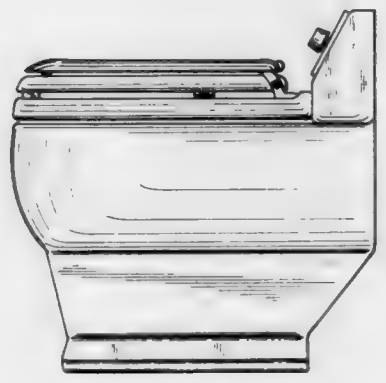
270,751
FISHING LURE
James R. Gowing, Altus, and Clyde S. Gudermuth, Jr., Fort Smith, both of Ark., assignors to EBSCO Industries, Inc., Birmingham, Ala.
Filed Jul. 23, 1981, Ser. No. 285,956
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28

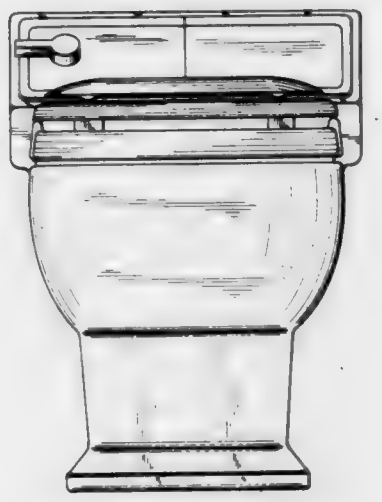


270,752
BYPASS VALVE
Marc S. Gorans, Willmar, Minn., assignor to Phillips Temro, Inc., Eden Prairie, Minn.
Filed Feb. 17, 1981, Ser. No. 234,658
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19

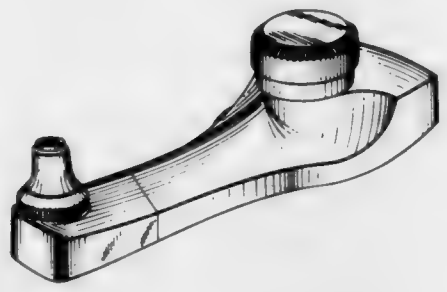


270,753
SEWERLESS TOILET OR SIMILAR ARTICLE
Kenneth J. DeGraw, Montvale, and Earl W. Nickerson, Ocean City, both of N.J., assignors to American Standard Inc., New York, N.Y.
Filed Nov. 12, 1981, Ser. No. 320,269
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48





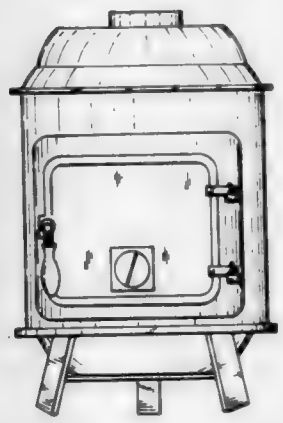
270,754
BUNSEN BURNER
Clement Benzaria, Z.1. route d'Envermeu, 76370 Neuville Les Dieppe, France
Filed Jul. 28, 1981, Ser. No. 287,100
Claims priority, application France, Mar. 17, 1981, 810979
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—77



270,755
STOVE

Michael Minshall, Toronto; Brian Park, Eganville; Carlos Etchegoyen, Mississauga, and Bert Bobrovniczky, Don Mills, all of Canada, assignors to Spacemaker Limited, Mississauga, Canada

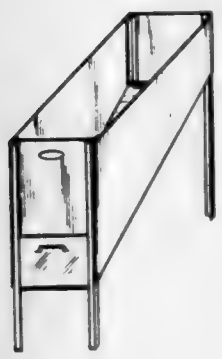
Filed Dec. 16, 1981, Ser. No. 331,212
Claims priority, application Canada, Jun. 17, 1981, 1706818
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



270,756
COAL BIN

David S. Brown, 30 Squires Glen Rd., Madison, Conn. 06443

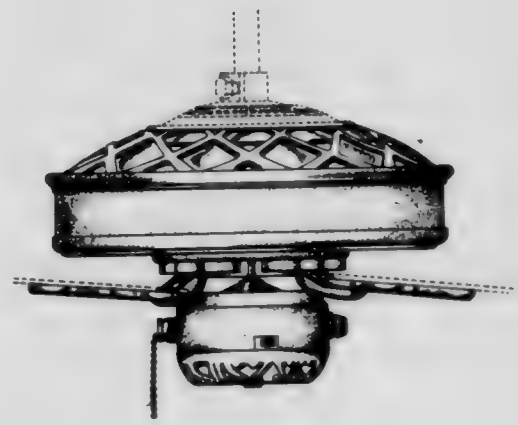
Filed Feb. 13, 1981, Ser. No. 234,248
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D23—138.5



270,757
COMBINED MOTOR HOUSING, CONTROL UNIT AND BLADE HOLDERS FOR A CEILING FAN

Warren E. Dennis, Pasadena, Calif., assignor to Casablanca Fan Company, Inc., City of Industry, Calif.

Filed Dec. 21, 1981, Ser. No. 333,164
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—158



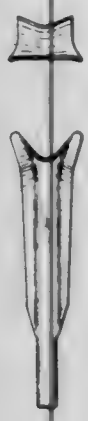
270,758
ORTHODONTIC INSTRUMENT FOR APPLYING ELASTIC LIGATURES

Neville Clarke, 6 Fisk St., Wurruk, Victoria, and Richard C. Case, 16 Hamilton Rd., Malvern, Victoria, both of Australia

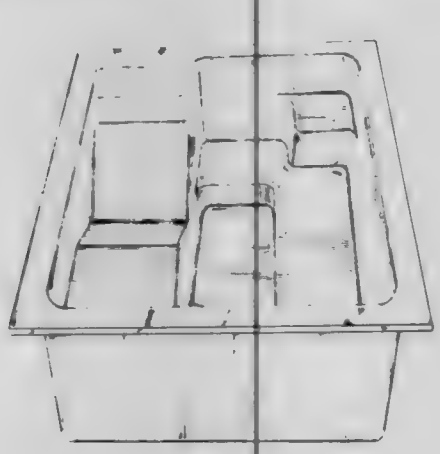
Filed Sep. 19, 1980, Ser. No. 189,393
Claims priority, application Australia, Mar. 31, 1980, 80600
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10



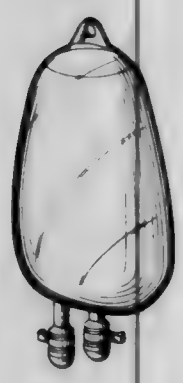
270,759
NASAL IMPLANT
Richard E. Straith, 625 Hillcrest Dr., Bloomfield Hills, Mich. 48013
Filed Apr. 27, 1981, Ser. No. 257,595
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—33



270,760
WHIRLPOOL TUB
Robert B. Wiley, 436 4th Ave. North, Tierra Verde, Fla. 33715
Filed Mar. 13, 1981, Ser. No. 243,529
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02;* D25—*99*
U.S. Cl. D24—38



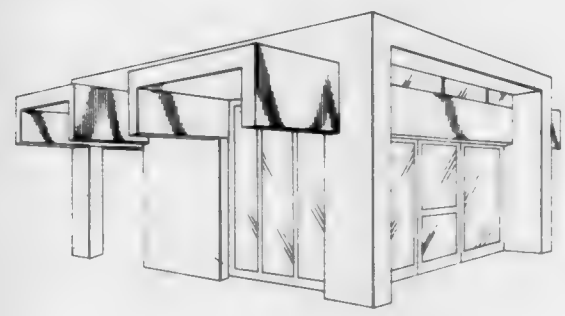
270,761
MEDICAL LIQUID CONTAINER
Mark E. Larkin, Lindenhurst, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Jan. 9, 1981, Ser. No. 223,670
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—58



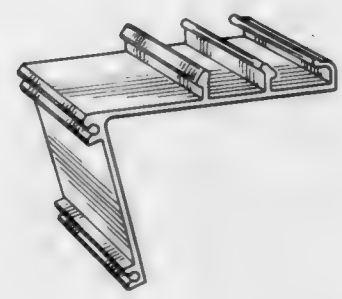
270,762
SWABBING STICK
Jack W. Kaufman, 357 Frankel Blvd., Merrick, N.Y. 11566
Filed Mar. 9, 1981, Ser. No. 241,687
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—63



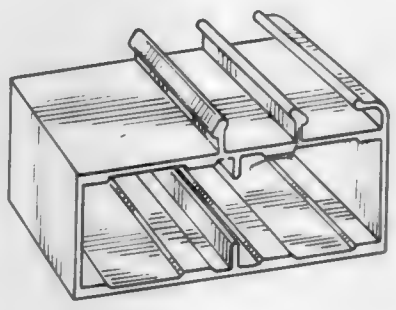
270,763
BUILDING STRUCTURE
John E. Barthel, Dallas, Tex., assignor to First International Services Corporation, Dallas, Tex.
Filed Jul. 13, 1981, Ser. No. 283,057
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—33



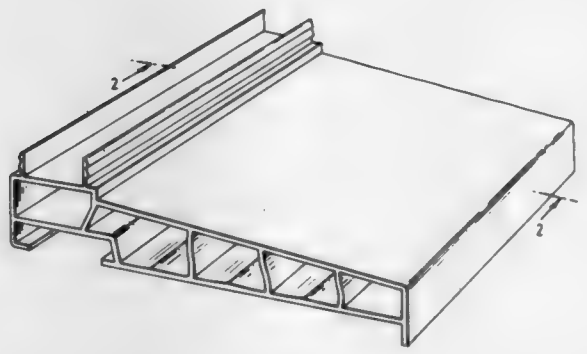
270,764
TUBULAR EXTRUDED SUPPORT AND RETAINER FOR PLASTIC SHEET COVERS
Stephen R. Kenin, Taos, N. Mex., assignor to Solar Resources, Inc., Taos, N. Mex.
Filed Aug. 6, 1981, Ser. No. 290,705
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



270,765
EXTRUDED SUPPORT AND RETAINER FOR PLASTIC SHEET COVERS
Stephen R. Kenin, Taos, N. Mex., assignor to Solar Resources, Inc., Taos, N. Mex.
Filed Aug. 6, 1981, Ser. No. 290,707
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



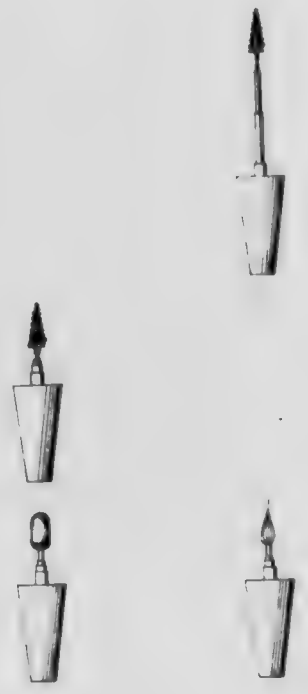
270,766
WINDOW SILL
Peter W. Gray, Nelson, England, assignor to Hepworth Plastics Limited, Sheffield, England
Filed Sep. 18, 1981, Ser. No. 303,656
Claims priority, application United Kingdom, Mar. 25, 1981, 999 619
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



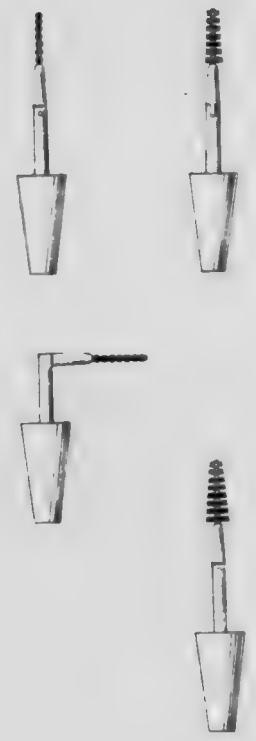
270,767
END CAP FOR A WINDOW SILL
Peter W. Gray, Brierfield, England, assignor to Hepworth Plastics Limited, Sheffield, England
Filed Sep. 18, 1981, Ser. No. 303,691
Claims priority, application United Kingdom, Mar. 25, 1981, 999 618
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



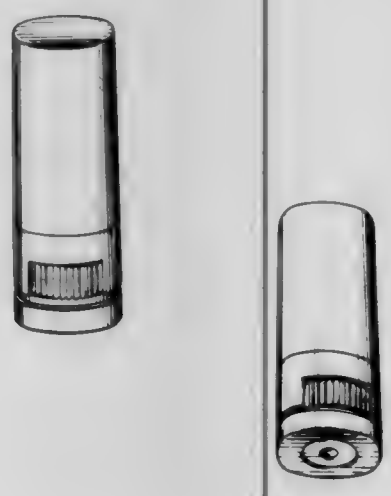
270,768
RETRACTABLE COSMETIC APPLICATOR
Henry J. Cassai, 95-15 107 St., Ozone Park, N.Y. 11416, and Gino H. Cassai, 924 E. 96 St., Brooklyn, N.Y. 11236
Filed Jun. 14, 1982, Ser. No. 388,251
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—7



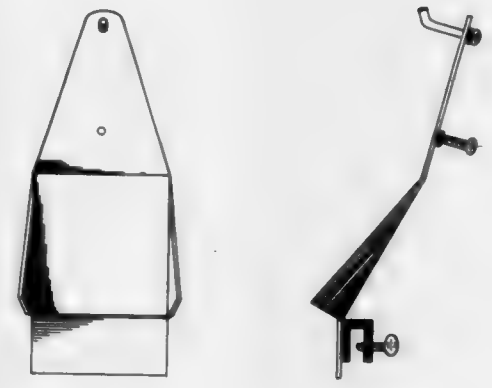
270,769
ADJUSTABLE MASCARA APPLICATOR
Henry J. Cassai, 95-15 107 St., Ozone Park, N.Y. 11416, and Gino H. Cassai, 924 E. 96th St., Brooklyn, N.Y. 11236
Filed Dec. 22, 1982, Ser. No. 435,320
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—7



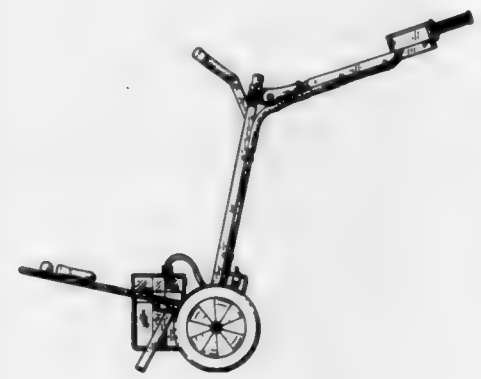
270,770
MAKEUP STICK CASE
Dieter Bakic, Römerstrasse 15, 8000 Munchen 40, Fed. Rep. of Germany
Filed May 21, 1981, Ser. No. 266,118
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1980, 12 349
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—76



270,771
PAINT BRUSH HOLDER
Toby R. Brown, 2032 Dixwell, Davenport, Iowa 52802
Filed May 14, 1981, Ser. No. 263,550
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D32—54



270,772
MOTORIZED GOLF BAG CARRIER
Frank J. Radencic, 7932 Haskell, Kansas City, Kans. 66109
Filed Jul. 10, 1981, Ser. No. 281,971
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—15



270,773
COIN BANK
Michael T. Block, 580 W. 184th St., Gardena, Calif. 90248
Filed Aug. 12, 1982, Ser. No. 407,471
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D99—35



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF SEPTEMBER, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.O. Arkitektkontor AB: *See—*
Lagher, Gunnar H., 4,406,147., Cl. 72-383.000.

A-T-O Inc. (now Figgie International): *See—*
McGill, Robert W., 4,406,110., Cl. 53-249.000.

A. W. Chesterton Company: *See—*
Rockwood, Robert E.; and Antkowiak, Richard P., 4,406,465., Cl. 277-96.100.

Aburaki, Shimpei; Kamachi, Hajime; Narita, Yukio; Okumura, Jun; and Naito, Takayuki, to Bristol-Myers Company. Cephalosporins. 4,406,899., Cl. 424-246.000.

ACF Chemiefarma NV: *See—*
Welle, Hendricus B. A.; and Marko, Magda, 4,406,904., Cl. 424-260.000.

ACF Industries, Incorporated: *See—*
Kilmoyer, James E., 4,406,303., Cl. 137-554.000.

Acoustic Standards Corporation: *See—*
Ophir, Jonathan; Maklad, Nabil F.; and Jaeger, Paul M., 4,406,153., Cl. 73-1.0DV.

Adam, Peter; Meyer-Spradow, Horst; and Reisinger, Lothar, to MTU Motoren- und Turbinen-Union Munchen, GmbH. Process for the production of a sodium-filled valve. 4,406,046., Cl. 29-156.70C.

Adams, George W.: *See—*
Voland, Elmo W.; and Adams, George W., 4,406,932., Cl. 200-38.00R.

Adams, Johnie R. Rotating head for rotary drilling rigs. 4,406,333., Cl. 175-209.000.

Adamson, James R., Jr.; and Carts, Stanley L., Jr., to United States of America, Army. Retrofitting a televised output device on a thermal imager. 4,407,009., Cl. 358-113.000.

Aday, Jorge L., to Ethicon, Inc. Folder retainer for multistrand surgical sutures. 4,406,363., Cl. 206-63.300.

Adomitis, John T.: *See—*
Larson, Richard I.; Brassfield, Henry C.; and Adomitis, John T., 4,406,410., Cl. 241-5.000.

Aerovironment, Inc.: *See—*
Radkey, Robert L.; and Hibbs, Bart D., 4,406,433., Cl. 244-145.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Martel, Jean-Pierre, 4,406,745., Cl. 202-161.000.

Agency of Industrial Science & Technology: *See—*
Nakamura, Osamu; Ogino, Isao; and Kodama, Teruo, 4,406,843., Cl. 261-22.000.

AGF Inc.: *See—*
Bayly, William I., 4,406,917., Cl. 174-138.00J.

Agfa-Gevaert AG: *See—*
Rossbach, Horst, 4,406,528., Cl. 352-169.000.
Viehrig, Wolfgang; and Engels, Willy, 4,406,534., Cl. 354-310.000.

Agfa-Gevaert Aktiengesellschaft: *See—*
Buhler, Rudolf, 4,406,538., Cl. 355-37.000.

Aguiar, Armando J.; and Rasadi, Bijan, to Pfizer Inc. Aqueous micellar solutions of levonantradol and N-methyllevonantradol and lyophilic forms thereof for reconstitution. 4,406,888., Cl. 424-175.000.

Aihara, Takayuki, to Olympus Optical Company Limited. Apparatus for effecting automatic analysis. 4,406,547., Cl. 356-414.000.

Akesaka, Toshio, to Kabushiki Kaisha Iseki Kaihatsu Koki. Shield tunneling method and machine therefor. 4,406,498., Cl. 299-11.000.

Akita, Shinji, to Nippon Kokan Kabushiki Kaisha. Roll changing apparatus for rolling mills. 4,406,145., Cl. 72-239.000.

Akita, Shinji: *See—*
Numano, Masachika; and Akita, Shinji, 4,406,141., Cl. 72-98.000.

Akiyama, Toshiyuki: *See—*
Baji, Toru; Tsukada, Toshihisa; Koike, Norio; Akiyama, Toshiyuki; Takemoto, Iwao; Shimada, Shigeru; Kusano, Chushirou; Ohba, Shinya; and Matsumaru, Haruo, 4,407,010., Cl. 358-213.000.

Akkerman, James W., to United States of America, National Aeronautics and Space Administration. Automatic compression adjusting mechanism for internal combustion engines. 4,406,256., Cl. 123-78.00E.

Aktiengesellschaft Adolf Saurer: *See—*
Egbers, Gerhard; El Helw, El S.; and Weinsdorfer, Helmut, 4,406,312., Cl. 139-453.000.

Albrecht, Leonard N.; and Taylor, Bert C., Jr., to TRAXystems. Panel latching and locking apparatus for modular pickup truck bed cover systems. 4,406,493., Cl. 296-100.000.

Alexandersson, Sven A., to Bruun & Sorensen A/S. Jaw crusher for bulky waste and like matter. 4,406,412., Cl. 241-36.000.

Alfa-Laval Separation A/S: *See—*
Nielsen, Helmut K., 4,406,652., Cl. 494-56.000.

Allen, John B., to Texas Instruments Incorporated. Missile detecting and tracking unit. 4,406,429., Cl. 244-3.110.

Allied Corporation: *See—*
Kern, Calvin V.; and Villano, James J., 4,406,420., Cl. 242-54.00R.
Lang, Gary E., 4,406,915., Cl. 174-117.00F.
Maeland, Arnulf J., 4,406,700., Cl. 75-251.000.
Pez, Guido; and Anderson, Lowell R., 4,406,825., Cl. 252-500.000.

Allington, Robert W., to Isco, Inc. Apparatus and method for temperature correction of liquid chromatography. 4,406,158., Cl. 73-61.10C.

Allis-Chalmers Corporation: *See—*
Prince, George T., 4,406,356., Cl. 192-3.570.

Allison, James H., to Baker International Corporation. Plastically deformable conduit seal for subterranean wells. 4,406,469., Cl. 277-123.000.

Alsthom-Atlanatique: *See—*
Gillet, Roger; and Laumond, Yves, 4,406,960., Cl. 310-217.000.

Altman, Robert L.; Mayer, Ludwig A.; and Ling, Alan C., to United States of America, National Aeronautics and Space Administration. Fire extinguishant materials. 4,406,797., Cl. 252-5.000.

Altmix, James J. Drywall tape dispenser. 4,406,730., Cl. 156-574.000.

Aluminum Company of America: *See—*
Vernam, William D.; Rogers, Ralph W., Jr.; and Stumpf, Harry C., 4,406,717., Cl. 148-440.000.

Alwin Manufacturing Company, Inc.: *See—*
Schultz, Arthur N.; Diring, James A.; and Krueger, Donald G., 4,406,421., Cl. 242-55.530.

Amada Engineering & Service Co., Inc.: *See—*
Tsutsumi, Akira, 4,406,940., Cl. 219-121.0LV.

AMCA International Corporation: *See—*
Schneider, Joseph J.; and Kaucic, Robert A., 4,406,150., Cl. 72-478.000.
Simonsen, Ole F.; Lee, Wining A.; and Chan, Hung K. P., 4,406,151., Cl. 72-478.000.

Amemiya, Shinichi: *See—*
Horiguchi, Satoru; and Amemiya, Shinichi, 4,406,160., Cl. 73-73.000.

American Cyanamid Company: *See—*
Bristow, Robert L., 4,406,654., Cl. 604-209.000.
Campbell, Jay E.; Reichmann, Richard H.; and Li, Lehmann K., 4,406,392., Cl. 227-19.000.

American Hospital Supply Corporation: *See—*
McPhee, Charles J., 4,406,042., Cl. 24-130.000.

AMP Incorporated: *See—*
Beinhaur, Ernest L., 4,406,060., Cl. 29-855.000.
Dola, Frank P., 4,406,931., Cl. 200-6.00A.
Hayes, Earl J., 4,406,511., Cl. 339-103.00M.

AMRAF Limited: *See—*
Atteck, Louis A. G., 4,406,831., Cl. 260-112.00R.

Andersen, Helge B. Kicking strap for sailing-boats. 4,406,240., Cl. 114-99.000.

Andersen, William F., to Westinghouse Electric Corp. Annular shock absorbing system for a missile launcher. 4,406,211., Cl. 89-1.816.

Anderson, Lowell R.: *See—*
Pez, Guido; and Anderson, Lowell R., 4,406,825., Cl. 252-500.000.

Anderson, Paul: *See—*
Arcara, Samuel A.; and Anderson, Paul, 4,407,013., Cl. 364-149.000.

Anderson, Richard J.; and Leippe, Michael M., to Zoecon Corporation. Certain aralkyloxy or thio-pyridyl-imidazo-pyridines and their herbicidal use. 4,406,689., Cl. 71-92.000.

Anderson, Richard J.; and Leippe, Michael M., to Zoecon Corporation. Certain aralkyloxy or aralkylthio-pyridyl-phthalimides and their use as herbicides. 4,406,690., Cl. 71-94.000.

Anderson, Richard N., to Hunter Douglas, Inc. Wall mount bracket for a venetian blind headrail. 4,406,435., Cl. 248-261.000.

Anderson, Weston A.; and Fisher, Gerald M. Electronic teaching aid. 4,406,626., Cl. 434-169.000.

Anderson, William C.; and Schoumaker, Raoul J. P., to Westinghouse Electric Corp. Cable manager. 4,406,379., Cl. 220-335.000.

Andreas Stihl: *See—*
Itzrodt, Gerd, 4,406,066., Cl. 30-382.000.

Anklin, Richard T.: *See—*
Gall, Richard L.; Anklin, Richard T.; and Mende, William B., 4,406,411., Cl. 428-577.000.

Anthony, Dennis R. Travelling-matte processes. 4,406,529., Cl. 353-30.000.

Antkowiak, Richard P.: *See—*
Rockwood, Robert E.; and Antkowiak, Richard P., 4,406,465., Cl. 277-96.100.

Antone, Howard J. Champagne cork remover. 4,406,182., Cl. 81-3.38R.

Aprea, George F.; and Pohle, Werner P., to Wm. Steinen Mfg. Co. High flow low energy solid cone spray nozzle. 4,406,407., Cl. 239-487.000.

Araki, Ken; Sakai, Hiromitsu; and Sugiura, Yutaka, to C. Uyemura & Co., Ltd. Apparatus for controlling electroless plating bath. 4,406,248., Cl. 118-690.000.

Araki, Ken; Sakai, Hiromitsu; and Sugiura, Yutaka, to C. Uyemura & Co., Ltd. Apparatus for controlling electroless plating bath. 4,406,249., Cl. 118-690.000.

Araki, Ken; Sakai, Hiromitsu; and Sugiura, Yutaka, to C. Uyemura & Co., Ltd. Apparatus for controlling electroless plating bath. 4,406,250., Cl. 118-690.000.

Arcara, Samuel A.; and Anderson, Paul, to Leeds & Northrup Company. Self tuning of P-I-D controller by conversion of discrete time model identification parameters. 4,407,013., Cl. 364-149.000.

Arco Industries Ltd.: *See*—
D'Andrade, Bruce M., 4,406,084., Cl. 46-208.000.

Arene, Francois; Castagner, Bernard; and Peyroux, Jean-Serge, to Societe d'Etudes, de Realisations et d'Applications Techniques (S.E.R.A.T). Projectile-firing weapons. 4,406,209., Cl. 89-1.701.

"ARMAFILT" Egyesult Muszaki Tomito es Gepszakmai Ipari Szovetkezet: *See*—
Suto, Ferenc; Fodor, Jozsef; Siegfried, Frigyes; and Gyarfas, Jozsef, 4,406,787., Cl. 210-315.000.

Armitage, Harry J. Work shaping. 4,406,191., Cl. 82-14.00C.

Armstrong World Industries, Inc.: *See*—
Beck, Martin J.; and Boesel, George F. W., 4,406,104., Cl. 52-283.000.
Beck, Martin J.; and Boesel, George F. W., 4,406,108., Cl. 52-741.000.

Arrowhead Continental: *See*—
Giebeler, Ben F., 4,406,485., Cl. 285-391.000.

Artos Engineering Company: *See*—
Butler, John D., 4,406,109., Cl. 53-116.000.

Asahi Glass Company Ltd.: *See*—
Nakaya, Keiichi; Kawanami, Kohji; and Hirata, Suekazu, 4,406,869., Cl. 423-421.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Miyake, Tetsuya; Takeda, Kunihiko; and Obanawa, Heiichiro, 4,406,870., Cl. 423-445.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Itoh, Kiyoshi; and Kamoshita, Tetuo, 4,406,525., Cl. 350-486.000.
Sato, Sigetada; and Okudaira, Sadao, 4,406,523., Cl. 350-426.000.

Asaka, Hiroshi; and Nakagawa, Michio. Aseismatic device for doors. 4,406,087., Cl. 49-70.000.

Asaka, Urataro; Suzuki, Akira; and Kimura, Kiyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for liquid supply in internal combustion engine. 4,406,269., Cl. 123-549.000.

Ascani, Leonard A., Jr.; and Burroughs, Billy A., to Rockwell International Corporation. Method of making filamentary reinforced metallic structures. 4,406,393., Cl. 228-157.000.

Ashland Oil, Inc.: *See*—
Hettinger, William P., Jr.; and Benslay, Roger M., 4,406,773., Cl. 208-120.000.

Ashton, Wallace T.; Barash, Louis; Brown, Jeannette E.; and Graham, Donald W., to Merck & Co., Inc. Dipeptidase inhibitors. 4,406,902., Cl. 424-251.000.

Askew, Henry E. Toggle nut. 4,406,569., Cl. 411-346.000.

Askins, William E.; and Trauger, John P., to Woodstream Corporation. Trigger mechanism for rotating frame animal traps. 4,406,082., Cl. 43-92.000.

Atchley, Frank W.; Vorbeck, Donald W.; and Wurz, Ronald L., to Atco Manufacturing Co. Inc. Animal bite valve. 4,406,253., Cl. 119-72.500.

Atco Manufacturing Co. Inc.: *See*—
Atchley, Frank W.; Vorbeck, Donald W.; and Wurz, Ronald L., 4,406,253., Cl. 119-72.500.

Ateliers de Constructions Electriques de Charleroi (ACEC): *See*—
Gennaux, Jean, 4,406,340., Cl. 180-65.00F.

Atherton, James H., to RCA Corporation. Input buffer circuit. 4,406,957., Cl. 307-475.000.

Atlantic Richfield Company: *See*—
Burger, Edward D.; and Kohn, Gary A., 4,406,467., Cl. 277-105.000.

Atlas Copco AB: *See*—
Jysky, Goran H., 4,406,330., Cl. 175-66.000.

Atteck, Louis A. G., to AMRAF Limited. Meat protein product and process. 4,406,831., Cl. 260-112.00R.

Audichron Company, The: *See*—
Jordan, Royce D.; and O'Neal, Edgar L., 4,406,925., Cl. 179-18.00B.

Augat Inc.: *See*—
Roberts, Harold A., 4,406,515., Cl. 350-96.210.

Automated Container Corporation: *See*—
Zysset, Edgar H., 4,406,378., Cl. 220-273.000.

Automation Industries, Inc.: *See*—
Baldwin, Kenneth B., 4,406,506., Cl. 339-36.000.

Avramovich, Radosav, to Daniel Woodhead, Inc. Grounding clip for electrical fixtures. 4,406,505., Cl. 339-14.00R.

Aylott, Ross I.: *See*—
Byrne, Geoffry A.; and Aylott, Ross I., 4,406,883., Cl. 424-80.000.

Azuma, Shizuo: *See*—
Yamada, Takeyoshi; Kurisu, Shizuka; Azuma, Shizuo; Sugie, Kiyoshi; and Yamaji, Teizo, 4,406,673., Cl. 55-16.000.

B. F. Goodrich Company, The: *See*—
Barnes, Thomas E.; and Landsness, Clifford A., 4,406,201., Cl. 83-487.000.
Kroenke, William J., 4,406,837., Cl. 260-429.00R.
Kroenke, William J., 4,406,838., Cl. 260-429.00R.
Kroenke, William J.; and Magistro, Angel J., 4,406,839., Cl. 260-429.00R.
Kroenke, William J., 4,406,840., Cl. 260-429.00R.

B & H Manufacturing Company, Inc.: *See*—
Hoffmann, Wolfgang, 4,406,721., Cl. 156-86.000.

Backstein, Gunter; Fiebrich, Joachim; and Unger, Hans W., to Rheinmetall GmbH. Ignition fuse for spin-stabilized projectiles. 4,406,225., Cl. 102-235.000.

Badali, Joseph A., to Browning Arms Company. Anti-twist forearm mounting system. 4,406,080., Cl. 42-75.00A.

Badger Company, Inc., The: *See*—
Miserlis, Constantine D., 4,406,836., Cl. 260-419.000.

Bailey, Ronald L., to Young Dental Manufacturing Company, Inc. Coupling ensemble for dental handpiece. 4,406,621., Cl. 433-126.000.

Bailey, William. Method of assembling ladder construction. 4,406,048., Cl. 29-432.100.

Bailor, James P.; and Dauber, Louis S., to Exxon Research and Engineering Co. Catalyst regeneration process. 4,406,775., Cl. 208-140.000.

Bainard, Dean R.: *See*—
O'Neal, Robert D.; Bainard, Dean R.; and Cather, Douglas A., Jr., 4,406,847., Cl. 264-138.000.

Baji, Toru; Tsukada, Toshihisa; Koike, Norio; Akiyama, Toshiyuki; Takemoto, Iwao; Shimada, Shigeru; Kusano, Chushirou; Ohba, Shinya; and Matsumaru, Haruo, to Hitachi, Ltd. Solid state image pickup device. 4,407,010., Cl. 358-213.000.

Baker, Alan C.; and Roach, John E., Jr., to Brunswick Corporation. Jet-propelled missile with single propellant-explosive. 4,406,210., Cl. 89-1.808.

Baker International Corporation: *See*—
Allison, James H., 4,406,469., Cl. 277-123.000.
Bowyer, Michael L., 4,406,325., Cl. 166-214.000.
Brooks, Robert T., 4,406,328., Cl. 166-332.000.

Baldwin, Kenneth B., to Automation Industries, Inc. Shielded cover for a quick-release electrical connector. 4,406,506., Cl. 339-36.000.

Baldwin, Roger A.; Halko, John E.; and Henke, Ron S., to Kerr-McGee Corporation. Process for concentration of slurries comprising insoluble coal products. 4,406,663., Cl. 44-51.000.

Ballard, James E.: *See*—
DeMeyer, Ronald A.; Wilson, Vernon T.; Subh, Nabil T.; and Ballard, James E., 4,406,246., Cl. 118-505.000.

Banko, Anton, to Surgical Design Corp. Ultrasonic handpiece design. 4,406,284., Cl. 128-303.00R.

Banos, Zoltan: *See*—
Takacs, Istvan; Kerey, Gyorgy; Rudolf, Peter; Illes, Janos; Szabo, Bela; Vereczkey, Endre; Banos, Zoltan; Bosits, Gyula; and Czebe, Laszlo, 4,406,795., Cl. 210-771.000.

Banyu Pharmaceutical Co., Ltd.: *See*—
Miyazaki, Hiroshi; Ohkuma, Taka'aki; Minatogawa, Yukiko; and Ninomiya, Hiroshi, 4,406,879., Cl. 424-14.000.

Baran, Walter J., Jr., to United Technologies Corporation. Inspection hole plug for gas turbine engine. 4,406,580., Cl. 415-118.000.

Baranyi, Anthony D., to Canadian Corporate Management Company Limited. Hard chromium plating from hexavalent plating bath. 4,406,756., Cl. 204-51.000.

Barash, Louis: *See*—
Ashton, Wallace T.; Barash, Louis; Brown, Jeannette E.; and Graham, Donald W., 4,406,902., Cl. 424-251.000.

Barbera, Melvin A.: *See*—
Fawzi, Mahdi B.; and Barbera, Melvin A., 4,406,884., Cl. 424-81.000.

Bardenhagen, Dietrich; Hausler, Nikolaus; Niemann, Helmut; Greve, Heinz; and Schluter, Karl-Heinz, to Hauni-Werke Korber & Co. KG. Method and apparatus for transporting rod-shaped articles. 4,406,197., Cl. 83-152.000.

Barmag Barmer Maschinenfabrik AG: *See*—
Maier, Roland, 4,406,116., Cl. 57-340.000.

Barnes, Thomas E.; and Landsness, Clifford A., to B. F. Goodrich Company, The. Fabric cutting. 4,406,201., Cl. 83-487.000.

Barrett, Lawrence G. Unitized floor panel and method of laying the same. 4,406,099., Cl. 52-127.300.

Barsted, Roger, to Coal Industry (Patents) Ltd. Brake equipment for underground mining machines. 4,406,354., Cl. 192-3.00N.

Bartsch, Ulrich: *See*—
Salje, Ernst; and Bartsch, Ulrich, 4,406,202., Cl. 83-835.000.

Baschang, Gerhard: *See*—
Hartmann, Albert; Baschang, Gerhard; Wacker, Oskar; and Stanek, Jaroslav, 4,406,889., Cl. 424-177.000.
Tarcsay, Lajos; Baschang, Gerhard; Hartmann, Albert; and Stanek, Jaroslav, 4,406,890., Cl. 424-177.000.

BASF Aktiengesellschaft: *See*—
Oeder, Dieter; Dietsche, Wolfram; Weiss, Stefan; Ziegler, Walter; and Hettche, Albert, 4,406,705., Cl. 106-270.000.
Sliwka, Wolfgang, 4,406,816., Cl. 252-69.000.

Batz, Manfred: *See*—
Karl, Leopold; Batz, Manfred; Wundling, Herbert; and Weiss, Ralph, 4,406,531., Cl. 353-117.000.

Bauer, Wolfgang. Line boring machine. 4,406,566., Cl. 408-129.000.

Baugh, John L.; and Montgomery, James W., to Hughes Tool Company. Bottom lock pipe seal assembly. 4,406,324., Cl. 166-125.000.

Baughman, Richard C.; and Flamini, Stephen J., to Eastman Kodak Company. Adhesive dispensing system. 4,406,247., Cl. 118-684.000.

Baumann, Otto; Dohse, Hans-Peter; Reibetanz, Wilbert; and Wanner, Karl, to Robert Bosch GmbH. Drilling tool. 4,406,334., Cl. 175-315.000.

Baxendale, Lily: *See*—
Turner, John C.; and Baxendale, Lily, 4,406,882., Cl. 424-49.000.

Baxter Travenol Laboratories, Inc.: *See—*
Kulle, Lee K.; Hess, John M.; and Scott, James W., 4,406,440., Cl. 251-6.000.

Bayer Aktiengesellschaft: *See—*
Kramer, Wolfgang; Elbe, Hans-Ludwig; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,406,909., Cl. 424-269.000.
Meyer, Horst; Bossert, Friedrich; Kazda, Stanislav; Hoffmeister, Friedrich; and Vater, Wulf, 4,406,906., Cl. 424-263.000.

Bayliss, John A.; Peterson, Craig B.; and Wilde, Doran K., to Intel Corporation. Microprocessor providing an interface between a peripheral subsystem and an object-oriented data processor. 4,407,016., Cl. 364-200.000.

Bayly, William I., to AGF Inc. Insulator for electrical heating element assembly. 4,406,917., Cl. 174-138.00J.

BBC Brown, Boveri & Company Limited: *See—*
Holick, Hubert; and Jester, Alfred, 4,407,006., Cl. 357-68.000.

Beatrice Foods Co.: *See—*
McNiel, Claude M.; and Valle, Louis G., 4,406,319., Cl. 160-177.000.

Beauvais, Max P.; and Camezon, Raymond E. Microwave canning apparatus. 4,406,860., Cl. 422-113.000.

Beauvais, Max P.; and Camezon, Raymond E. Microwave canning apparatus. 4,406,861., Cl. 422-113.000.

Beavon, David K., to Ralph M. Parsons Co., The. Process for sulfur production. 4,406,873., Cl. 423-574.00R.

Beck, David E.; Gooch, Jack G.; Holcombe, Cressie E., Jr.; and Masters, David R. High-temperature electrically conductive ceramic composite and method for making same. 4,406,699., Cl. 75-233.000.

Beck, Martin J.; and Boesel, George F. W., to Armstrong World Industries, Inc. Suspended ceiling wall angle. 4,406,104., Cl. 52-283.000.

Beck, Martin J.; and Boesel, George F. W., to Armstrong World Industries, Inc. Method for installing a suspended ceiling. 4,406,108., Cl. 52-741.000.

Becker, Karl-Heinz; Milla, Peter; Hergt, Peter; and Hellmann, Heinz-Dieter, to Klein, Schanzlin & Becker Aktiengesellschaft. Centrifugal pump with double volute casing. 4,406,583., Cl. 415-219.00C.

Beech Aircraft Corporation: *See—*
Mills, Gary L., 4,406,129., Cl. 62-7.000.

Beeker, Charles W.; Dean, Arthur P.; and Rouse, William G., to United States of America, Army. System for multistage, aerial dissemination and rapid dispersion of preselected substances. 4,406,227., Cl. 102-505.000.

Beiner, Jean-Marc; Levy, Jerome F.; and Sweens, Bernard J. M., to Rohm and Haas Company. Non woven fabrics suitable for diaper and diaper coverstock. 4,406,660., Cl. 604-376.000.

Beinhaur, Ernest L., to AMP Incorporated. Anode cover assembly having internal support member. 4,406,060., Cl. 29-855.000.

Belden Corporation: *See—*
Kincaid, John W., 4,406,914., Cl. 174-107.000.

Bell, Kenneth M.; and Trogolo, Joe R., to Texas Instruments Incorporated. N-Channel JFET device having a buried channel region, and method for making same. 4,407,005., Cl. 357-23.000.

Bell Telephone Laboratories, Incorporated: *See—*
Celler, George K.; Leamy, Harry J.; and Trimble, Lee E., 4,406,709., Cl. 148-1.500.
Hasegawa, Akira, 4,406,516., Cl. 350-96.290.
Louzon, Theodore J., 4,406,712., Cl. 148-11.50C.

Bell, Thomas L. Display tray. 4,406,372., Cl. 206-566.000.

Bendix Corporation, The: *See—*
Eifler, Raymond J., 4,406,507., Cl. 339-59.00R.

Bennett, Charles R.; and Guarner, Peter, to Texaco Inc. Method and apparatus for filling discrete drums with a liquid. 4,406,313., Cl. 141-1.000.

Bennett, Keith: *See—*
Bowes, Robert G.; Bennett, Keith; and Stratton, Paul F., 4,406,714., Cl. 148-16.500.

Bennett, William G.; and Spease, Arthur L., to Teleflex Incorporated. Remote control assembly (vibration dampening). 4,406,177., Cl. 74-501.00P.

Benslay, Roger M.: *See—*
Hettinger, William P., Jr.; and Benslay, Roger M., 4,406,773., Cl. 208-120.000.

Benthin, Johannes, to Suntec Sonnenschutztechnik GmbH. Holding element for mounting bearing pieces. 4,406,436., Cl. 248-262.000.

Bentley, Norman P., to Charlies Rental. Pipe wiper. 4,406,331., Cl. 175-84.000.

Beran, Joseph F.; and Gorondy, Emery J., to Du Pont de Nemours, E. I., and Company. Heat transfer printing on a filled polymethyl methacrylate article. 4,406,662., Cl. 8-471.000.

Berg, Clyde. Process for the production of hydrogenated tar and distillates and low sulfur coke from coal. 4,406,744., Cl. 201-17.000.

Berger, Peter. Electrode edge protector, electrode provided with such protector and electrodeposits and/or products of electrolysis manufactured by employing such electrodes. 4,406,769., Cl. 204-281.000.

Berghahn, Walter G., to Bristol-Myers Company. Reversible child resistant closure. 4,406,376., Cl. 215-224.000.

Bergman, Hans, to Termic Instrument AB. Refuse handling system. 4,406,220., Cl. 100-49.000.

Bergwerksverband GmbH: *See—*
Knoblauch, Karl; Richter, Ekkehard; Giessler, Klaus; and Korbacher, Werner, 4,406,674., Cl. 55-25.000.

Berkhof, Hendrikus, to Honeywell Inc. Diaphragm operated pressure regulator. 4,406,400., Cl. 236-80.00F.

Berlin Industries: *See—*
Foffel, John F., 4,406,647., Cl. 493-216.000.

Berlioz, Jean: *See—*
Roncato, Giordano; Berlioz, Jean; and Roy, Louis, 4,406,196., Cl. 83-117.000.

Berndt, Fred P., Jr. Door bottom sealing apparatus. 4,406,088., Cl. 49-309.000.

Berry, Foster W.; and Torresen, Robert, to Brunswick Corporation. Sectionalized bowling lane and method of assembly thereof. 4,406,455., Cl. 273-51.000.

Berry, Foster W.; Torresen, Robert; and Boruta, David M., to Brunswick Corporation. Method of resurfacing a bowling lane and product of said method. 4,406,456., Cl. 273-51.000.

Bertin & Cie: *See—*
Marichy, Gerard, 4,406,405., Cl. 239-102.000.

Bertin, Patrice, to Valeo. Power-assisted steering device. 4,406,341., Cl. 180-148.000.

Bertone, Leone: *See—*
Cozzi, Paolo; Pillan, Antonio; Bertone, Leone; and Lovisolo, Pier P., 4,406,901., Cl. 424-250.000.

Berz, Wolfgang, to Gimag Aktiengesellschaft. Process and installation for the intermittent cleaning of dust-laden crude gases. 4,406,672., Cl. 55-6.000.

Bettin, Leonard A.; Galos, Imre; and Dufour, Donald J., to International Harvester Co. Rotary valve. 4,406,442., Cl. 251-310.000.

Bielomatik Leuze GmbH & Co.: *See—*
Buck, Hermann, 4,406,449., Cl. 271-189.000.

Bier, Milan; and Foster, Peter R., to University Patents; Inc. Purification of antihemophilia factor VIII by precipitation with zinc ions. 4,406,886., Cl. 424-101.000.

Binet, Jean: *See—*
Manoury, Philippe; Binet, Jean; and Cavero, Icilio, 4,406,907., Cl. 424-263.000.

Bingham, Richard. Protecting cover for automobile windows. 4,406,320., Cl. 160-368.00S.

Bionaz, Jean, to Valeo. Transmission with hydraulic coupling member and locking clutch. 4,406,355., Cl. 192-3.300.

Biorex Laboratories Limited: *See—*
Turner, John C.; and Baxendale, Lily, 4,406,882., Cl. 424-49.000.

Bir, Phillip. Oxygen cannulae for continuous administration of oxygen, and its associated mounting structure and method for mounting same onto the head of a patient. 4,406,283., Cl. 128-207.180.

Birkner, Andreas, to DR. C. Otto & Comp. G.m.b.H. Method for operating a biological sewage purification plant. 4,406,790., Cl. 210-612.000.

Biznya, Vladimir M.: *See—*
Fridman, Georgy N.; Kalashnikov, Vladilen K.; Biznya, Vladimir M.; Kovarsky, Efim M.; Borisov, Boris A.; Semenov, Lev S.; Malyshev, Valentin A.; Voronin, Nikolai S.; Staskevich, Lev. N.; Zinin, Evgeny F.; Dulitskaya, Galina M.; and Shegai, Elvira R., 4,406,962., Cl. 310-233.000.

Black & Decker Inc.: *See—*
Dynie, Ernest R.; Overy, Colin; and Lipscombe, Ronald J., 4,406,645., Cl. 474-158.000.

Blake, Colin C.; and Goodall, Charles C. O., to Ciba-Geigy AG. Electrolytic metal recovery cell and operation thereof. 4,406,753., Cl. 204-10.000.

Blanchard, Clarence E., to Outboard Marine Corporation. Outboard motor with dual trim and tilt axes. 4,406,632., Cl. 440-61.000.

Blanchard, Clarence E., to Outboard Marine Corporation. Outboard motor with steering arm located aft of transom and below tilt axis. 4,406,634., Cl. 440-61.000.

Blass, Karl G.; and Ho, Chung-Shun. Electrochemical determination of orthophosphoric monoester phosphohydrolase activity (EC 3.1.3.1 and EC 3.1.3.2: alkaline and acid phosphatases). 4,406,751., Cl. 204-1.00T.

Bloch, Herman S.: *See—*
Kulprathipanja, Santi; and Bloch, Herman S., 4,406,819., Cl. 252-430.000.

Bloom, Bernard. Uniform cap with adjustable sweatband. 4,406,021., Cl. 2-181.000.

Bloomfield, Philip: *See—*
Scott, William R.; Bloomfield, Philip; Weist, William T.; and McMahon, Karen M., 4,406,059., Cl. 29-857.000.

Boden, Richard M., to International Flavors & Fragrances Inc. Use of Prins reaction products of diisobutylene in augmenting or enhancing the aroma of detergents. 4,406,810., Cl. 252-174.110.

Bodenseewerk Perkin-Elmer & Co., GmbH: *See—*
Grossman, Klaus; Tamm, Rolf; and Tomoff, Toma, 4,406,540., Cl. 356-36.000.
Tomoff, Toma; Tamm, Rolf; Huber, Bernhard; and Walsh, Alan, 4,406,541., Cl. 356-312.000.

Boehme, Werner R.; and Muscio, Oliver J., to Fats and Proteins Research Foundation, Inc. Surfactants derived from fatty acid esters and proteinaceous material. 4,406,833., Cl. 260-123.700.

Boeing Company, The: *See—*
DeAnda, Alfonso; and Harris, Leon R., 4,406,041., Cl. 24-115.00R.

Boesel, George F. W.: *See—*
Beck, Martin J.; and Boesel, George F. W., 4,406,104., Cl. 52-283.000.
Beck, Martin J.; and Boesel, George F. W., 4,406,108., Cl. 52-741.000.

Boesiger, Dwight D: *See—*
Carter, Cecil O.; and Boesiger, Dwight D, 4,406,868., Cl. 423-228.000.

Boettcher, Woodrow; Goldman, Emanuel; and Gallaghan, John A., to United States of America, Navy. Device for burning pyrotechnic

mixtures in a very low pressure environment. 4,406,228., Cl. 102-513.000.

Bogenschutz, Thomas M., to General Signal Corporation. Brake hanger for railway brakes. 4,406,444., Cl. 267-30.000.

Boggy, Richard D.; Johnson, Richard H.; Eggleston, John M.; and Schulthess, Carl W., to Spectra-Physics, Inc. Rapid scanning autocorrelation detector. 4,406,542., Cl. 356-345.000.

Bolton, Theodore S.; and Lang, Richard D., to Carrier Corporation. Method for assembling an air conditioning unit including a tube sheet isolator. 4,406,132., Cl. 62-77.000.

Bond, Harry L. F.; and Gronbech, Robert W., to Davy-Loewy Limited. Rolling mill stand having axially adjustable intermediate rolls. 4,406,144., Cl. 72-238.000.

Boozer, J. Michael, to Square D Company. Neutral position limit switch lever head. 4,406,933., Cl. 200-47.000.

Borg-Warner Corporation: *See*—
Meixner, Edwin J., 4,406,168., Cl. 73-862.360.

Borisov, Boris A.: *See*—
Fridman, Georgy N.; Kalashnikov, Vladilen K.; Biznya, Vladimir M.; Kovarsky, Efim M.; Borisov, Boris A.; Semenov, Lev S.; Malyshev, Valentin A.; Voronin, Nikolai S.; Staskevich, Lev. N.; Zinin, Evgeny F.; Dulitskaya, Galina M.; and Shegai, Elvira R., 4,406,962., Cl. 310-233.000.

Boruta, David M.: *See*—
Berry, Foster W.; Torresen, Robert; and Boruta, David M., 4,406,456., Cl. 273-51.000.

Borza, Michele; Leoncini, Sergio; and Modenesi, Aldo, to Snamprogetti S.p.A. Spent oil recovery process. 4,406,778., Cl. 208-179.000.

Bosits, Gyula: *See*—
Takacs, Istvan; Kerey, Gyorgy; Rudolf, Peter; Illes, Janos; Szabo, Bela; Vereczkey, Endre; Banos, Zoltan; Bosits, Gyula; and Czebe, Laszlo, 4,406,795., Cl. 210-771.000.

Bossert, Friedrich: *See*—
Meyer, Horst; Bossert, Friedrich; Kazda, Stanislav; Hoffmeister, Friedrich; and Vater, Wulf, 4,406,906., Cl. 424-263.000.

Bostian, Clarence L., Jr.; and Gelula, Jerome D., to Gelula, Jerome D. Method for producing unwoven novel oriented pre-stressed web. 4,406,724., Cl. 156-161.000.

Bouillon, Claude; and Vayssie, Charles, to L'Oreal. Oxybenzylidenebornanones, their preparation and their use in cosmetics. 4,406,880., Cl. 424-40.000.

Bouley, Alan C.: *See*—
Chu, Tak-Kin; and Bouley, Alan C., 4,406,050., Cl. 29-572.000.

Bourda, Maurice, to Etablissement Conceptex. Articulated framework for bed, relaxation seat or armchair. 4,406,027., Cl. 5-17.000.

Bouwknegt, Jan, to U.S. Philips Corporation. Package for electrical and/or electronic components. 4,406,367., Cl. 206-329.000.

Bowes, Robert G.; Bennett, Keith; and Stratton, Paul F. Heat treatment of metals. 4,406,714., Cl. 148-16.500.

Bowman, Chris C.: *See*—
Nemiroff, Michael H.; and Bowman, Chris C., 4,406,543., Cl. 356-359.000.

Bowyer, Michael L., to Baker International Corporation. Selective no-go apparatus. 4,406,325., Cl. 166-214.000.

Boyd, Edward L.: *See*—
Buckley, Richard D.; Boyd, Edward L.; and Palmer, Betty J., 4,406,056., Cl. 29-605.000.

Braathen, Colin W.: *See*—
Cummings, Donald R.; and Braathen, Colin W., 4,406,774., Cl. 208-130.000.

Braden, Denver, to Palomar Systems & Machines, Inc. Means and method for testing and sorting miniature electronic units. 4,406,373., Cl. 209-574.000.

Brandes, Wilhelm: *See*—
Kramer, Wolfgang; Elbe, Hans-Ludwig; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,406,909., Cl. 424-269.000.

Brandschain, Daniel B. Vehicle lifting and towing apparatus. 4,406,476., Cl. 280-402.000.

Brandt, Herman F.; Daniel, Wayne A.; and Sperling, Anthony A., to General Motors Corporation. Peak combustion pressure controlled spark timing control system with engine speed dependent filter. 4,406,265., Cl. 123-425.000.

Brassfield, Henry C.: *See*—
Larson, Richard I.; Brassfield, Henry C.; and Adomitis, John T., 4,406,410., Cl. 241-5.000.

Brech, Hubertus J. J., deceased; and by de Haan, Friedrich J., administrator, to U.S. Philips Corporation. Wire-wound resistor. 4,406,994., Cl. 338-296.000.

Brickhouse, Todd, to Collier Bros. Pencil sharpener. 4,406,315., Cl. 145-3.310.

Bricknell, Rodger H.: *See*—
Woodford, David A.; and Bricknell, Rodger H., 4,406,858., Cl. 420-475.000.

Bridgestone Tire Company Limited: *See*—
Okamoto, Satoru, 4,406,316., Cl. 152-209.00R.

Briens, Cedric L.; and Sankey, Bruce M., to Exxon Research and Engineering Co. Solvent dewaxing waxy hydrocarbon oil distillates using a combination poly di-alkyl fumarate-vinyl acetate copolymer having pendent carbon side chain length of predominantly C_{22} and polyalkyl(meth-)acrylate polymer dewaxing aid. 4,406,771., Cl. 208-33.000.

Brieu, Francois M. P., to Chleq Frote et Cie. Apparatus for effecting the fine-adjustment of the lip of a head-box of a paper making machine. 4,406,740., Cl. 162-259.000.

Brigante, Miguel F. External sludge collector for boiler bottom blowdown and automatic blowdown control initiated by conductivity probe within the boiler and method. 4,406,794., Cl. 210-695.000.

Brigham, Robert N.: *See*—
Palmero, Albert; Brigham, Robert N.; and Lundin, Robert S., 4,406,958., Cl. 310-49.00R.

Brignon, Francois, to Establissemens Andre Bardet S.A. Apparatus and installation for separating immiscible liquids with different specific gravities. 4,406,789., Cl. 210-519.000.

Bristol Babcock Inc.: *See*—
Huck, Lewis F.; and Huck, James J., 4,406,025., Cl. 4-443.000.

Bristol-Myers Company: *See*—
Aburaki, Shimpei; Kamachi, Hajime; Narita, Yukio; Okumura, Jun; and Naito, Takayuki, 4,406,899., Cl. 424-246.000.
Berghahn, Walter G., 4,406,376., Cl. 215-224.000.
Gordon, Maxwell; and Pachter, I. Jacob, 4,406,887., Cl. 424-114.000.
Menard, Marcel; and Martel, Alain, 4,406,834., Cl. 260-239.00A.

Bristow, Robert L., to American Cyanamid Company. Adjustable feeding device for the administration of dosages of gels and pastes to farm animals. 4,406,654., Cl. 604-209.000.

British Aerospace Public Limited Company: *See*—
Meston, Spencer D., 4,406,097., Cl. 52-118.000.
Prince, Laurence A.; and Twigger, Kevin M., 4,406,212., Cl. 91-28.000.

Broida, Marna J. Leakage-absorbing supplement to urostomy bag. 4,406,659., Cl. 604-339.000.

Bronander, Wilhelm B., Jr., to Scandia Packaging Machinery Company. Wrapped combination of soap and receptacle for the soap. 4,406,364., Cl. 206-77.100.

Brooks, Donald G. Pressure air manifold and outlets system for grain header or harvester cutting platforms. 4,406,112., Cl. 56-12.900.

Brooks, Robert T., to Baker International Corporation. Apparatus for locking a ball valve element in one position. 4,406,328., Cl. 166-332.000.

Brose Fahrzeugteile GmbH & Co. Kommanditgesellschaft: *See*—
Koch, Wilhelm; and Schust, Gerhard, 4,406,089., Cl. 49-352.000.

Brown, Jeannette E.: *See*—
Ashton, Wallace T.; Barash, Louis; Brown, Jeannette E.; and Graham, Donald W., 4,406,902., Cl. 424-251.000.

Brown, Michael D.: *See*—
Moore, Ronnie J.; and Brown, Michael D., 4,406,707., Cl. 134-4.000.

Brown & Williamson Tobacco Corporation: *See*—
Lamb, Charles G., 4,406,294., Cl. 131-336.000.
Sanford, Robert A.; and McMurtrie, Andrew, 4,406,295., Cl. 131-336.000.

Browning Arms Company: *See*—
Badali, Joseph A., 4,406,080., Cl. 42-75.00A.

Bruening, Robert A. Low friction seal for a floating roof. 4,406,377., Cl. 220-222.000.

Brunner, Rudolf, to Heilmeier & Weinlein. Control valve. 4,406,305., Cl. 137-596.000.

Brunson, Welton K.: *See*—
Hubbard, Vance M.; and Brunson, Welton K., 4,406,281., Cl. 128-132.00R.

Brunswick Corporation: *See*—
Baker, Alan C.; and Roach, John E., Jr., 4,406,210., Cl. 89-1.808.
Berry, Foster W.; and Torresen, Robert, 4,406,455., Cl. 273-51.000.
Berry, Foster W.; Torresen, Robert; and Boruta, David M., 4,406,456., Cl. 273-51.000.

Bruun & Sorensen A/S: *See*—
Alexandersson, Sven A., 4,406,412., Cl. 241-36.000.

Buchan, Alexander B.; and Kingswood, Andrew R. Launching and recovery apparatus. 4,406,244., Cl. 114-368.000.

Buchanan, Robert H. Portable garment dryer. 4,406,071., Cl. 34-91.000.

Buchel, Karl H.: *See*—
Kramer, Wolfgang; Elbe, Hans-Ludwig; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,406,909., Cl. 424-269.000.

Buck, Hermann, to Bielomatik Leuze GmbH & Co. Apparatus for depositing sheets in a stack. 4,406,449., Cl. 271-189.000.

Buckley, Richard D.; Boyd, Edward L.; and Palmer, Betty J., to Westinghouse Electric Corp. Method of making a cellulose-free transformer coil. 4,406,056., Cl. 29-605.000.

Budde, Dirk. Compressed air driven double diaphragm pump. 4,406,596., Cl. 417-393.000.

Buechel, Franz; and Kindle, Edwin, to Hilti Aktiengesellschaft. Magazine for caseless propellant charges. 4,406,079., Cl. 42-49.00R.

Buendia, Jean: *See*—
Martel, Jacques; Buendia, Jean; and Nezot, Francois, 4,406,829., Cl. 252-522.00R.

Buhler, Rudolf, to Agfa-Gevaert Aktiengesellschaft. Method and arrangement for automatic exposure control in color copiers. 4,406,538., Cl. 355-37.000.

Buhler, Ulrich; Ribka, Joachim; Tappe, Horst; and Roth, Kurt, to Cassella Aktiengesellschaft. Process for dyeing and printing synthetic, hydrophobic fibre material with dischargeable azo disperse dye. 4,406,661., Cl. 8-464.000.

Buljan, Sergej-Tomislav: *See*—
Sarin, Vinod K.; Buljan, Sergej-Tomislav; and D'Angelo, Charles, 4,406,667., Cl. 51-295.000.
Sarin, Vinod K.; and Buljan, Sergej-Tomislav, 4,406,668., Cl. 51-295.000.
Sarin, Vinod K.; and Buljan, Sergej-Tomislav, 4,406,669., Cl. 51-295.000.

Sarin, Vinod K.; and Buljan, Sergej-Tomislav, 4,406,670., Cl. 51-295.000.

Bullock, Joseph G.; and Rueger, William J., to International Business Machines Corporation. Method and apparatus for regulating webs transported in a reel-to-reel web handler. 4,406,425., Cl. 242-183.000.

Buras, John W.: *See*—
Gabrius, Algimantis J.; and Buras, John W., 4,406,457., Cl. 273-121.00A.

Burger, Edward D.; and Kohn, Gary A., to Atlantic Richfield Company. High pressure electrical isolation flange gasket. 4,406,467., Cl. 277-105.000.

Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., to Gulf & Western Industries, Inc. Process for the enhanced separation of impurities from coal and coal products produced therefrom. 4,406,664., Cl. 44-51.000.

Burley, Harvey A., to General Motors Corporation. Valved prechamber diesel engine and methods of operating. 4,406,260., Cl. 123-258.000.

Burlington Industries, Inc.: *See*—
Duncan, L. Scot; Germuska, Richard W.; Kral, Stephen L.; Lasecki, Robert R.; and Riley, Michael W., 4,406,570., Cl. 414-282.000.
Wang, Kenneth Y.; and Hill, Berlie R., 4,406,720., Cl. 156-73.200.

Burne, John C., III; and Torick, Emil L., to CBS Inc. Automatic loudness controller. 4,406,923., Cl. 179-1.0VL.

Burroughs, Billy A.: *See*—
Ascani, Leonard A., Jr.; and Burroughs, Billy A., 4,406,393., Cl. 228-157.000.

Burroughs Corporation: *See*—
Mowry, William H., Jr.; and Poccia, Michael J., 4,406,389., Cl. 226-29.000.
Nemiroff, Michael H.; and Bowman, Chris C., 4,406,543., Cl. 356-359.000.
Ziobro, Daniel P., 4,407,015., Cl. 364-200.000.

Burton, Charles A.; and Riel, Gordon K., to United States of America, Navy. Calibrating device for ionizing radiation dosimeters. 4,406,947., Cl. 250-252.100.

Bury, George J., to Illinois Tool Works Inc. Cable routine clip. 4,406,438., Cl. 248-544.000.

Busse, Paul J., to InterNorth, Inc. Controlled addition of promoters to ethylene oxide catalysts. 4,406,820., Cl. 252-430.000.

Butler, David V.: *See*—
Orlowski, Jan A.; Butler, David V.; and Kidd, Patrick D., 4,406,625., Cl. 433-228.000.

Butler, John D., to Artos Engineering Company. Automatic cord hanking machine. 4,406,109., Cl. 53-116.000.

Butterworth, Arthur L.: *See*—
Smaby, Stephen A.; and Butterworth, Arthur L., 4,406,594., Cl. 417-368.000.

Buxton, Inc.: *See*—
Friedman, Harvey W., 4,406,043., Cl. 24-171.000.

Buxton, James L.: *See*—
Phillips, Alan C.; and Buxton, James L., 4,406,985., Cl. 324-51.000.

Byk-Mallinckrodt CIL B.V.: *See*—
de Jong, Rudolf B. J.; and Nielsen, Jan, 4,406,875., Cl. 424-1.000.

Byrne, Geoffry A.; and Aylott, Ross I., to Merrell Dow Pharmaceuticals Inc. Controlled release suppositories consisting essentially of a linear polymer particularly, polyvinyl pyrrolidones. 4,406,883., Cl. 424-80.000.

Bystedt, Hjalmar S. I., to Sunds Defibrator AB. Method for the manufacture of mechanical pulp. 4,406,734., Cl. 162-23.000.

C. Uyemura & Co., Ltd.: *See*—
Araki, Ken; Sakai, Hiromitsu; and Sugiura, Yutaka, 4,406,248., Cl. 118-690.000.
Araki, Ken; Sakai, Hiromitsu; and Sugiura, Yutaka, 4,406,249., Cl. 118-690.000.
Araki, Ken; Sakai, Hiromitsu; and Sugiura, Yutaka, 4,406,250., Cl. 118-690.000.

Cackowski, Joseph M. Floor mat. 4,406,492., Cl. 296-1.00F.

Camezon, Raymond E.: *See*—
Beauvais, Max P.; and Camezon, Raymond E., 4,406,860., Cl. 422-113.000.
Beauvais, Max P.; and Camezon, Raymond E., 4,406,861., Cl. 422-113.000.

Camm, Alan J.: *See*—
Nappholz, Tibor A.; Swift, Stephen J.; and Camm, Alan J., 4,406,287., Cl. 128-419.0PG.

Campbell, Henry F.; Scholz, Thomas H.; and Douglas, George H., to William H. Rorer, Inc. 6-Aryl-4-hydrazinyl-s-triazin-2-ones. 4,406,897., Cl. 424-246.000.

Campbell, Jay E.; Reichmann, Richard H.; and Li, Lehmann K., to American Cyanamid Company. Surgical stapling instrument. 4,406,392., Cl. 227-19.000.

Campbell, Willis R.: *See*—
Parrish, Charles A.; Freimuth, John H.; Campbell, Willis R.; Diederich, Anthony F., Jr.; and Clevenger, James T., Jr., 4,406,221., Cl. 100-88.000.

Campiche, Eric. Afocal optical device. 4,406,524., Cl. 350-453.000.

Canadian Corporate Management Company Limited: *See*—
Baranyi, Anthony D., 4,406,756., Cl. 204-51.000.

Canadian Patents & Development Limited: *See*—
Despault, Gaston J.; Fouda, Aly E.; Taylor, J. Bryan; and Capes, C. Edward, 4,406,806., Cl. 252-70.000.
Meadus, Frederick W.; and Sparks, Bryan D., 4,406,788., Cl. 210-512.100.

Cannone, Robert P. Illumination devices. 4,406,040., Cl. 24-3.00J.

Canon Kabushiki Kaisha: *See*—
Fukui, Hiroshi, 4,407,003., Cl. 346-76.0PH.
Suzuki, Akiyoshi, 4,406,546., Cl. 356-400.000.
Yamamoto, Hiroshi, 4,406,533., Cl. 354-145.000.

Capes, C. Edward: *See*—
Despault, Gaston J.; Fouda, Aly E.; Taylor, J. Bryan; and Capes, C. Edward, 4,406,806., Cl. 252-70.000.

Capshew, Charles E.: *See*—
Martin, Joel L.; Welch, M. Bruce; Dietz, Richard E.; and Capshew, Charles E., 4,406,818., Cl. 252-429.00B.

Carim, Hatim M., to Minnesota Mining and Manufacturing Company. Cohesive nonsticky electrically conductive gel composition. 4,406,827., Cl. 252-518.000.

Carl Schliecher & Schuell GmbH & Co., KG: *See*—
Hein, Wolfgang, 4,406,786., Cl. 210-223.000.

Carl Zeiss-Stiftung: *See*—
Schmidt, Werner; Mueller, Gerhard; Weber, Klaus; and Wilke, Volker, 4,407,008., Cl. 358-93.000.

Carmer, Richard V.: *See*—
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,406,055., Cl. 29-596.000.

Caron, Jean: *See*—
Hazan, Jean-Pierre; Steers, Michel; and Caron, Jean, 4,406,028., Cl. 8-158.000.

Carrier Corporation: *See*—
Bolton, Theodore S.; and Lang, Richard D., 4,406,132., Cl. 62-77.000.
Kropiwnicki, Tadek M., 4,406,592., Cl. 417-363.000.

Carter, Cecil O.; and Boesiger, Dwight D, to Phillips Petroleum Company. Process and apparatus for removing H_2S from gas streams. 4,406,868., Cl. 423-228.000.

Carts, Stanley L., Jr.: *See*—
Adamson, James R., Jr.; and Carts, Stanley L., Jr., 4,407,009., Cl. 358-113.000.

Cascade Corporation: *See*—
Gaibler, Dennis W., 4,406,575., Cl. 414-667.000.

Cash, Hugh P.: *See*—
Horwinski, Elwood R.; and McGuire, Edward P. (said Elwood R. Horwinski assors. to), 4,406,288., Cl. 128-422.000.

Casio Computer Co., Ltd.: *See*—
Takahashi, Naoki, 4,406,549., Cl. 368-63.000.

Casperson, John R., to Phillips Petroleum Company. Variable venturi carbon black reactor. 4,406,862., Cl. 422-156.000.

Cassella Aktiengesellschaft: *See*—
Buhler, Ulrich; Ribka, Joachim; Tappe, Horst; and Roth, Kurt, 4,406,661., Cl. 8-464.000.

Cassidy, Robert T.: *See*—
Dangieri, Thomas J.; and Cassidy, Robert T., 4,406,675., Cl. 55-26.000.

Castagner, Bernard: *See*—
Arene, Francois; Castagner, Bernard; and Peyroux, Jean-Serge, 4,406,209., Cl. 89-1.701.

Caterpillar Tractor Co.: *See*—
Christensen, Jon C., 4,406,501., Cl. 305-10.000.
Keske, Frank E.; and Goloff, Alexander, 4,406,257., Cl. 123-90.480.

Cathay Pen Corporation: *See*—
Tsai, Kuo L., 4,406,555., Cl. 401-216.000.

Cather, Douglas A., Jr.: *See*—
O'Neal, Robert D.; Bainard, Dean R.; and Cather, Douglas A., Jr., 4,406,847., Cl. 264-138.000.

Cavagna, Elio; and Colombo, Antonio. Creasing machine. 4,406,648., Cl. 493-403.000.

Cavero, Icilio: *See*—
Manoury, Philippe; Binet, Jean; and Cavero, Icilio, 4,406,907., Cl. 424-263.000.

CBS Inc.: *See*—
Burne, John C., III; and Torick, Emil L., 4,406,923., Cl. 179-1.0VL.
Paray, Steven C., 4,406,205., Cl. 84-183.000.

Celler, George K.; Leamy, Harry J.; and Trimble, Lee E., to Bell Telephone Laboratories, Incorporated. Method of increasing the grain size of polycrystalline materials by directed energy-beams. 4,406,709., Cl. 148-1.500.

Centrum Konstrukcyjnotechnologiczne Maszyn Gorniczych: *See*—
Pretor, Wincenty; Skoczynski, Wojciech; Janik, Edward; Zych, Henryk; and Serwotka, Ryszard, 4,406,565., Cl. 405-258.000.

Ceraver: *See*—
Saby, Charles, 4,406,918., Cl. 174-196.000.

Cermetek, Inc.: *See*—
Raphael, Howard A., 4,406,513., Cl. 350-96.160.

Cerrato, Vincent J., to Vending Components, Inc. Keg-tapping structure. 4,406,301., Cl. 137-212.000.

Chagnot, Bruce J., to Sunpower, Inc. Hermetically sealed transmission system for a free piston Stirling engine. 4,406,124., Cl. 60-520.000.

Chalmers, Wallace G. Vehicle suspension incorporating cross-over links. 4,406,479., Cl. 280-678.000.

Chamoux, Jean P. Apparatus for authentic reproduction of original base document. 4,406,539., Cl. 355-43.000.

Champion Spark Plug Company: *See*—
Gimple, James; and Weinstein, Richard, 4,406,468., Cl. 277-115.000.

Chan, Hung K. P.: *See*—
Simonsen, Ole F.; Lee, Wining A.; and Chan, Hung K. P., 4,406,151., Cl. 72-478.000.

Chan, Yat S.; Tantram, Anthony D. S.; Hobbs, Bryan S.; and Finbow, John R., to Coal Industry (Patents) Limited. Gas sensor. 4,406,770., Cl. 204-406.000.

Charlies Rental: *See—*
Bentley, Norman P., 4,406,331., Cl. 175-84.000.
Chartier, Carl P., to Ferrofluidics Corporation. Apparatus for and method of sealing shafts in crystal-growing furnace systems. 4,406,731., Cl. 156-617.0SP.
Chemed Corporation: *See—*
Childers, Jean C., 4,406,812., Cl. 252-186.210.
Chemische Fabrik Kreussler & Co. GmbH: *See—*
Hasenclever, Kaspar D., 4,406,809., Cl. 252-106.000.
Chervendinev, Peter G.; Yankulov, Ventzislav G.; and Ostromski, Toma T., to CUV "Progress". Printing device. 4,406,552., Cl. 400-172.000.
Chervenelekov, Theo S., to DSO "pharmachim". Apparatus for producing temporary dental crowns. 4,406,624., Cl. 433-156.000.
Chevron Research Company: *See—*
Liston, Thomas V.; and Erdman, Timothy R., 4,406,803., Cl. 252-52.00R.
Chiba, Takao; Sakamoto, Nobuyoshi; and Kohro, Kenji, to Oki Electric Industry Co., Ltd.; and Nippon Hoso Kyokai. Acoustic surface wave transducer with improved inband frequency characteristics. 4,406,964., Cl. 310-313.00B.
Childers, Jean C., to Chemed Corporation. Deodorant and reconditioner for metal working fluids. 4,406,812., Cl. 252-186.210.
Chisholm, Lisa E.; and Daubert, Richard F., to Illinois Tool Works Inc. Fastener for attachment of a continuous article to a support. 4,406,033., Cl. 16-4.000.
Chiu, Huan-Juei; and Chiu, Ming-Sheng. Flushing controller for toilet. 4,406,024., Cl. 4-324.000.
Chiu, Ming-Sheng: *See—*
Chiu, Huan-Juei; and Chiu, Ming-Sheng, 4,406,024., Cl. 4-324.000.
Chleq Frote et Cie: *See—*
Brieu, Francois M. P., 4,406,740., Cl. 162-259.000.
Chong, Sooi: *See—*
Jardine, Colin D.; Chong, Sooi; Coles, Rodney H.; and Hebb, Stephen, 4,406,417., Cl. 241-284.000.
Chow, William W.; and Rigby, Eugene B., to International Business Machines Corp. Diffusion bonding of dissimilar ceramics. 4,406,722., Cl. 156-89.000.
Christensen, Jon C., to Caterpillar Tractor Co. Recoil system with guided slide assembly for track-type vehicles. 4,406,501., Cl. 305-10.000.
Christensen, Ronald; and Gelazis, Audrone, to Nalco Chemical Company. Composition and method for controlling corrosion in aqueous systems. 4,406,811., Cl. 252-180.000.
Christian, John B., to United States of America, Air Force. Grease composition containing poly(alpha-olefin). 4,406,800., Cl. 252-28.000.
Christoph, Leonhard: *See—*
Hempel, Joachim; Christoph, Leonhard; and Schone, Wolfram, 4,406,094., Cl. 52-40.000.
Chu, Tak-Kin; and Bouley, Alan C., to United States of America, Navy. Method for fabricating lead halide sensitized infrared photodiodes. 4,406,050., Cl. 29-572.000.
Church, Thomas A.: *See—*
Smith, Jason T.; Church, Thomas A.; and Johnson, Theodore, 4,406,360., Cl. 198-781.000.
Ciba-Geigy AG: *See—*
Blake, Colin C.; and Goodall, Charles C. O., 4,406,753., Cl. 204-10.000.
Ciba-Geigy Corporation: *See—*
Hartmann, Albert; Baschang, Gerhard; Wacker, Oskar; and Stanek, Jaroslav, 4,406,889., Cl. 424-177.000.
Spivack, John D., 4,406,842., Cl. 260-962.000.
Szczepanski, Henry, 4,406,691., Cl. 71-120.000.
Tarcsay, Lajos; Baschang, Gerhard; Hartmann, Albert; and Stanek, Jaroslav, 4,406,890., Cl. 424-177.000.
Zahner, Hans; Naegeli, Hans-Ulrich; and Peter, Heinrich, 4,406,905., Cl. 424-263.000.
CIR S.p.A. Divisione SASIB: *See—*
Pezzi, Giovanni, 4,406,156., Cl. 73-38.000.
Cities Service Company: *See—*
Yildirim, Erdal, 4,406,499., Cl. 299-17.000.
City of Seattle, The City Light Dep't.: *See—*
Phillips, Alan C.; and Buxton, James L., 4,406,985., Cl. 324-51.000.
Clark, Marvin A.: *See—*
Pope, Janson M., Jr., 4,406,346., Cl. 181-131.000.
Clarostat Mfg. Co., Inc.: *See—*
Ward, Frank L., 4,406,999., Cl. 340-870.310.
Clayton, Ralph S. Colon cleansing system and technique. 4,406,655., Cl. 604-257.000.
Clebant, Jean-Claude, to Societe Europeenne De Propulsion. Articulated pipe line. 4,406,482., Cl. 285-114.000.
Cleland, Keith B. Apparatus for separating ore. 4,406,783., Cl. 209-444.000.
Clemen, Rainer; Fischer, Walter; and Haug, Werner O., to International Business Machines Corporation. FET Circuit for converting TTL to FET logic levels. 4,406,956., Cl. 307-475.000.
Clement, Michael H. Perpendicularity indicator for machine tool and method of operation. 4,406,069., Cl. 33-185.00R.
Clevenger, James T., Jr.: *See—*
Parrish, Charles A.; Freimuth, John H.; Campbell, Willis R.; Diederich, Anthony F., Jr.; and Clevenger, James T., Jr., 4,406,221., Cl. 100-88.000.
Coal Industry (Patents) Ltd.: *See—*
Barsted, Roger, 4,406,354., Cl. 192-3.00N.
Chan, Yat S.; Tantram, Anthony D. S.; Hobbs, Bryan S.; and Finbow, John R., 4,406,770., Cl. 204-406.000.
Cochran, Clarence L., to Frantz Filters, Inc. Bypass oil filter adapter. 4,406,784., Cl. 210-168.000.
Cockman, Euliss C., Jr. Ratchet handle with multi-mode turning capability. 4,406,184., Cl. 81-57.290.
Coenen, Hendrikus P.; and Van Wageningen, Cornelis, to Gazelle Rijwielfabriek B.V. Device for fastening an axle with rolling bearings in cylindrical tubing. 4,406,504., Cl. 308-192.000.
Cogan, Adrian I., to GTE Laboratories Incorporated. Non-epitaxial static induction transistor processing. 4,406,052., Cl. 29-576.00B.
Cole, Rodger E.; and Vander Meer, Richard H., to Goldco Engineering, Inc. Method and apparatus for mass transit of cylindrical articles between differing elevations. 4,406,359., Cl. 198-626.000.
Coles, Rodney H.: *See—*
Jardine, Colin D.; Chong, Sooi; Coles, Rodney H.; and Hebb, Stephen, 4,406,417., Cl. 241-284.000.
Colgate-Palmolive Company: *See—*
Gangwisch, William J.; Richter, Virgil J.; Wixon, Harold E.; and Wraga, Joseph B., 4,406,808., Cl. 252-91.000.
Colin, Marcel. Device for loading and compacting rubbish in a fixed or mobile receptacle. 4,406,573., Cl. 414-525.00R.
Collagen Development Corporation: *See—*
Miyata, Teruo, 4,406,853., Cl. 264-304.000.
Collier Bros.: *See—*
Brickhouse, Todd, 4,406,315., Cl. 145-3.310.
Colombo, Antonio: *See—*
Cavagna, Elio; and Colombo, Antonio, 4,406,648., Cl. 493-403.000.
Colt Industries Operating Corp.: *See—*
Kiesling, Norbert W., 4,406,266., Cl. 123-438.000.
Colvin, John B., to Pilkington Brothers Limited. Structural glass assemblies. 4,406,105., Cl. 52-285.000.
Commonwealth Edison Co.: *See—*
Jeffers, Donald M.; and Kokal, Vincent, 4,406,047., Cl. 29-426.500.
Comte, Robert. Device for absorbing friction between ship's hulls and the quay walls. 4,406,241., Cl. 114-220.000.
Concentration Specialists, Inc.: *See—*
Wrobel, Patrick J.; and Fraser, James H., 4,406,679., Cl. 62-541.000.
Confon AG: *See—*
Halm, Hans, 4,406,076., Cl. 40-389.000.
Conoco Inc.: *See—*
Fair, Delbert W., 4,406,345., Cl. 181-119.000.
Conrad, Lawrence H., to Minnesota Mining & Manufacturing Company. Variable magnification lens. 4,406,522., Cl. 350-425.000.
Conveyersmith, Inc.: *See—*
Smith, Jason T.; Church, Thomas A.; and Johnson, Theodore, 4,406,360., Cl. 198-781.000.
Cook, Henry D.: *See—*
Littlejohn, Charles E.; and Cook, Henry D., 4,406,351., Cl. 182-47.000.
Corain, Luciano, to Nuovo Pignone S.p.A. Device for changing the reed beating position in looms for terry fabrics. 4,406,308., Cl. 139-27.000.
Corey, Joseph T., to Permclip Products Corporation. Fastener bonding machine. 4,406,725., Cl. 156-358.000.
Cornelius, Gail. Water motor for an irrigation system. 4,406,408., Cl. 239-721.000.
Cornell Research Foundation, Inc.: *See—*
Cukierski, Gwendolyn, 4,406,318., Cl. 160-126.000.
Corning Glass Works: *See—*
Olshansky, Robert, 4,406,517., Cl. 350-96.310.
Coussineux, Henri E. Method and apparatus for measuring the speed of vehicles. 4,406,165., Cl. 73-488.000.
Cox, James L., Jr.: *See—*
Molen, George M.; and Cox, James L., Jr., 4,406,952., Cl. 307-104.000.
Cozzi, Paolo; Pillan, Antonio; Bertone, Leone; and Lovisolo, Pier P., to Farmitalia Carlo Erba S.p.A. Ethers of substituted hydroxymethylpyrazines. 4,406,901., Cl. 424-250.000.
Crain, N. Robert; and Hardison, Robert P., to Radiant Technology Corp. Devices for mounting infrared lamps in furnaces. 4,406,944., Cl. 219-388.000.
Crandall, Richard. Secrecy-coded cassette. 4,406,426., Cl. 242-197.000.
Crimaldi, Daniel. Motion producing mechanism. 4,406,231., Cl. 104-172.0BT.
Criscione, John J. Percussion practice pad. 4,406,207., Cl. 84-411.00P.
Critikon, Inc.: *See—*
Nunez, Chris E., 4,406,653., Cl. 604-103.000.
Cronce, Gary M.: *See—*
Rasor, William; and Cronce, Gary M., 4,406,386., Cl. 224-321.000.
Cuisinarts Research & Development, Inc.: *See—*
Williams, James E., 4,406,603., Cl. 425-191.000.
Cukierski, Gwendolyn, to Cornell Research Foundation, Inc. Drapery assembly including insulated drapery liner. 4,406,318., Cl. 160-126.000.
Cummings, Donald R.; and Braathen, Colin W., to Dut Pty Limited. Dehydration of hydrocarbons. 4,406,774., Cl. 208-130.000.
Curley, Charles M., to SCM Corporation. Print hammer release mechanism. 4,406,223., Cl. 101-93.480.
Curutcharry, Jean, to Laboratoires Biotrol S.A. Noise-attenuating device for colostomy. 4,406,657., Cl. 604-328.000.
Custode, Frank Z.: *See—*
Tam, Matthias L.; and Custode, Frank Z., 4,406,049., Cl. 29-571.000.
CUV "Progress": *See—*
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CXA Ltd./CXA Ltee: *See—*
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Cycles Peugeot: *See—*
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Takacs, Istvan; Kerey, Gyorgy; Rudolf, Peter; Illes, Janos; Szabo, Bela; Vereczkey, Endre; Banos, Zoltan; Bosits, Gyula; and Czebe, Laszlo, 4,406,795., Cl. 210-771.000.
Czelusniak, Paul A., Jr., to Fieldcrest Mills, Inc. Method and apparatus for forming a woven pile fabric. 4,406,309., Cl. 139-402.000.
D. Gottlieb & Co.: *See—*
Gabrius, Algimantis J.; and Buras, John W., 4,406,457., Cl. 273-121.00A.
D. Swarovski & Co.: *See—*
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Dai Nippon Insatsu Kabushiki Kaisha: *See—*
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Daido Tokushuko Kabushiki Kaisha: *See—*
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Daimler-Benz Aktiengesellschaft: *See—*
Puchta, Herbert, 4,406,175., Cl. 74-473.00R.
Dale, John M., to Southwest Research Institute. Yellow colorant composition and paints utilizing the same. 4,406,706., Cl. 106-288.00B.
Dale, John R., to United States of America, Navy. Flotation device. 4,406,631., Cl. 441-30.000.
D'Andrade, Bruce M., to Arco Industries Ltd. Toy car with rubber band motor. 4,406,084., Cl. 46-208.000.
D'Angelo, Charles: *See—*
Sarin, Vinod K.; Buljan, Sergej-Tomislav; and D'Angelo, Charles, 4,406,667., Cl. 51-295.000.
Dangieri, Thomas J.; and Cassidy, Robert T., to Union Carbide Corporation. RPSA Process. 4,406,675., Cl. 55-26.000.
Danguillier, Wilhelm; Tietze, Jurgen; Grams, Wolfgang; and Thubeauville, Heinz, to Dr. C. Otto & Comp. G.m.b.H. Coke dry cooler in the form of a shaft. 4,406,746., Cl. 202-228.000.
Daniel, Wayne A.: *See—*
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Daniel Woodhead, Inc.: *See—*
Avramovich, Radosav, 4,406,505., Cl. 339-14.00R.
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Daubert, Richard F.: *See—*
Chisholm, Lisa E.; and Daubert, Richard F., 4,406,033., Cl. 16-4.000.
Davies, Roderick D.; and Scott, David B. Mask-saving technique for forming CMOS source/drain regions. 4,406,710., Cl. 148-1.500.
Davis, James S.: *See—*
Fanaritis, John P.; and Davis, James S., 4,406,128., Cl. 60-655.000.
Davis, Joseph; and Sidat, Donald D., to United Technologies Corporation. Oil weepage return for carbon seal plates. 4,406,459., Cl. 277-25.000.
Davis, William E., Jr.: *See—*
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Davitt, Alan L.; and Simon, James R., to CXA Ltd./CXA Ltee. Non-electric delay blasting method. 4,406,226., Cl. 102-311.000.
Davy-Loewy Limited: *See—*
Bond, Harry L. F.; and Gronbech, Robert W., 4,406,144., Cl. 72-238.000.
Day, Curtis H.: *See—*
Loup, Ronald L.; Day, Curtis H.; and Teichert, Rainer, 4,406,307., Cl. 137-625.650.
de la Roche Kerandraon, Olivier; Guillaume, Pierre; and Paroldi, Daniel. Device to convert the energy of a fluid in motion. 4,406,586., Cl. 416-85.000.
Dean, Arthur P.: *See—*
Beeker, Charles W.; Dean, Arthur P.; and Rouse, William G., 4,406,227., Cl. 102-505.000.
Dean, Frances, Executrix: *See—*
Dean, Jonlee R., 4,406,454., Cl. 273-1.0GC.
Dean, Jonlee R., to Dean, Frances, Executrix. Arm wrestling apparatus. 4,406,454., Cl. 273-1.0GC.
DeAnda, Alfonso; and Harris, Leon R., to Boeing Company, The. Anti-telescoping cable clamp assembly for wire bundles. 4,406,041., Cl. 24-115.00R.
De Angelis, Mario E., to RCA Corporation. System for removing shadow mask assemblies from kinescope panels of varying sizes. 4,406,638., Cl. 445-68.000.
Deaver, Pete E.; Lingafelter, Jerry K.; and Hamill, Odis F., to Walker-Neer Manufacturing Co., Inc. Drilling ramp. 4,406,098., Cl. 52-119.000.
De Blieck, John H. Sight rib for firearm leveling. 4,406,078., Cl. 42-1.00S.
DeBoer, Charles D., to Eastman Kodak Company. Iodinated contrast agent for radiography. 4,406,878., Cl. 424-5.000.
Debortoli, George; and Osborne, Brian T., to Northern Telecom Limited. Retainer for a connector in cross-connect apparatus for telecommunications. 4,406,510., Cl. 339-103.00M.
Deere & Company: *See—*
DeMeyer, Ronald A.; Wilson, Vernon T.; Subh, Nabil T.; and Ballard, James E., 4,406,246., Cl. 118-505.000.
DeFrees, Barbara Baldwin: *See—*
DeFrees, Joseph H., 4,406,299., Cl. 137-71.000.
DeFrees, Joseph H., to DeFrees, Barbara Baldwin. Liquid level valve. 4,406,299., Cl. 137-71.000.
Degussa Aktiengesellschaft: *See—*
Muller, Karl-Hans; Tailfer, Roland; and Turk, Gunter, 4,406,817., Cl. 252-348.000.
de Haan, Friedrich J., administrator: *See—*
Brech, Hubertus J. J., deceased; and de Haan, Friedrich J., administrator, 4,406,994., Cl. 338-296.000.
de Jong, Rudolf B. J.; and Nielsen, Jan, to Byk-Mallinckrodt CIL B.V. Radiolabeled amine compounds and their use. 4,406,875., Cl. 424-1.000.
Demarest, Henry M., Jr., to PPG Industries, Inc. Method of and apparatus for removing gas inclusions from a molten glass pool. 4,406,683., Cl. 65-134.000.
DeMeyer, Ronald A.; Wilson, Vernon T.; Subh, Nabil T.; and Ballard, James E., to Deere & Company. Protective mask. 4,406,246., Cl. 118-505.000.
Demmer, John. Heat exchange assembly for swimming pool. 4,406,278., Cl. 126-416.000.
Dempster Systems Inc.: *See—*
Scharf, Heino W., 4,406,474., Cl. 280-154.000.
Demuth, Hans; Kropp, Peter; and Noll, Karl, to Wieland-Werke AG. Heat-transmitting device for heat pumps. 4,406,137., Cl. 62-238.600.
Denka Engineering Kabushiki Kaisha: *See—*
Moriyama, Takashi, 4,406,443., Cl. 266-225.000.
Depp, Steven W.; and Juliana, Anthony, Jr., to International Business Machines Corporation. Method and means for minimizing the effect of short circuits in flat panel displays. 4,406,997., Cl. 340-718.000.
Desai, Kamalesh S.; Eggerding, Carl L.; Ferrante, John A.; Ricci, Raymond; and Urfer, Ernest N., to International Business Machines Corporation. Process and structure for minimizing delamination in the fabrication of multi-layer ceramic substrate. 4,407,007., Cl. 357-74.000.
Desmaret, Jean-Pierre, to Regie Nationale des Usines Renault. Multi-directional light source. 4,407,012., Cl. 362-32.000.
Despault, Gaston J.; Fouda, Aly E.; Taylor, J. Bryan; and Capes, C. Edward, to Canadian Patents & Development Limited. Thermal energy storage. 4,406,806., Cl. 252-70.000.
DeVito, Vivian C.: *See—*
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Diamant, Marcus. Toothbrush. 4,406,032., Cl. 15-167.00R.
Diamond West Energy Corporation: *See—*
Kapner, Robert S.; and O'Brien, Robert, 4,406,872., Cl. 423-461.000.
Dick, James E., to Phillips Petroleum Company. Apparatus for lead pressured extraction of carbonaceous materials. 4,406,742., Cl. 196-14.520.
Diederich, Anthony F., Jr.: *See—*
Parrish, Charles A.; Freimuth, John H.; Campbell, Willis R.; Diederich, Anthony F., Jr.; and Clevenger, James T., Jr., 4,406,221., Cl. 100-88.000.
Diehl GmbH & Co.: *See—*
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Dill, Herbert C., to Hughes Tool Company. Insert with locking projection. 4,406,337., Cl. 175-410.000.
Dinges, Kenneth N. Concealed fastener panel construction and method of installation. 4,406,106., Cl. 52-478.000.
Director-General of Agency of Industrial Science & Technology: *See—*
Sasaki, Yoshiyuki; Nakamura, Etsuro; Ojima, Yoshimoto; Kondo, Teruo; Ukegawa, Koji; and Matsumura, Akimitsu, 4,406,772., Cl. 208-112.000.
Diring, James A.: *See—*
Schultz, Arthur N.; Diring, James A.; and Krueger, Donald G., 4,406,421., Cl. 242-55.530.
Dismukes, Newton B. Rotary earth boring tool. 4,406,332., Cl. 175-107.000.
Dixon, Charles, to Southwire Company. Conduit coupling holding apparatus. 4,406,058., Cl. 29-809.000.
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Birkner, Andreas, 4,406,790., Cl. 210-612.000.
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Dola, Frank P., to AMP Incorporated. Joystick switch. 4,406,931., Cl. 200-6.00A.
DOM-Sicherheitstechnik GmbH & Co. KG: *See—*
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Donaldson Company, Inc.: *See—*
Dudrey, Denis J.; Herman, John T.; and Matthys, Bernard A., 4,406,651., Cl. 494-29.000.
Donn Incorporated: *See—*
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Donnelly, Donald E., to Emerson Electric Co. Oil burner primary control for interrupted ignition system. 4,406,612., Cl. 431-71.000.

Dorey, Howard A., to Sangamo Weston Limited. Radio-controlled devices for use in power distribution circuits. 4,406,924., Cl. 179-2.00A.
Dornier, Claudius, Jr.; Gunter, Heinz; Krojer, Hubert; and Spintzyk, Johannes. Retractable landing gear for jumbo aircraft. 4,406,432., Cl. 244-102.00R.
Double A Products Company: *See*—
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Douglas, George H.: *See*—
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Dow Chemical Co., The: *See*—
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McIntyre, James A.; and Phillips, Robert F., 4,406,758., Cl. 204-98.000.
Downing, Gerald T., to W. H. Brady Co. Lift-off element. 4,406,912., Cl. 428-352.000.
Drabert, Fritz; and von Waldegge, Ulrich H. Backrest for chairs. 4,406,496., Cl. 297-284.000.
Dreinhoff, Karl-Heinz; and Wambach, Hermann, to Siemens Aktiengesellschaft. End of ribbon indicator for a typewriter ribbon cassette. 4,406,554., Cl. 400-249.000.
Dresser Industries, Inc.: *See*—
McNail, Fredlee M., 4,406,642., Cl. 464-180.000.
Droho, Joseph S.: *See*—
Wisbey, Robert W.; and Droho, Joseph S., 4,406,976., Cl. 315-309.000.
DSO "pharmachim": *See*—
Chervenelekov, Theo S., 4,406,624., Cl. 433-156.000.
Dudrey, Denis J.; Herman, John T.; and Matthys, Bernard A., to Donaldson Company, Inc. Multi-phase self purging centrifuge. 4,406,651., Cl. 494-29.000.
Dufour, Donald J.: *See*—
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Duijvestijn, Pius E. M., to Shell Oil Company. Process and burner for the partial combustion of a liquid or gaseous fuel. 4,406,610., Cl. 431-4.000.
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Fridman, Georgy N.; Kalashnikov, Vladilen K.; Biznya, Vladimir M.; Kovarsky, Efim M.; Borisov, Boris A.; Semenov, Lev S.; Malyshev, Valentin A.; Voronin, Nikolai S.; Staskevich, Lev. N.; Zinin, Evgeny F.; Dulitskaya, Galina M.; and Shegai, Elvira R., 4,406,962., Cl. 310-233.000.
Dunbar, Glenn G. Weight cart. 4,406,338., Cl. 177-50.000.
Duncan, Gordon. High pressure water gun. 4,406,383., Cl. 222-495.000.
Duncan, L. Scot; Germuska, Richard W.; Kral, Stephen L.; Lasecki, Robert R.; and Riley, Michael W., to Burlington Industries, Inc. Materials handling system. 4,406,570., Cl. 414-282.000.
Duncan, Robert H., to International Telephone and Telegraph Corporation. Telephone station circuit using digital tone generation. 4,406,926., Cl. 179-84.0VF.
Dunn, Rodney D. Internal combustion engine with steam power assist. 4,406,127., Cl. 60-618.000.
Du Pont de Nemours, E. I., and Company: *See*—
Beran, Joseph F.; and Gorondy, Emery J., 4,406,662., Cl. 8-471.000.
Jagen, Paul R., 4,406,509., Cl. 339-91.00R.
Schell, Mark S., 4,406,512., Cl. 339-177.00R.
Durek, Joachim. Disintegrator and method for the operation thereof. 4,406,409., Cl. 241-5.000.
Dut Pty Limited: *See*—
Cummings, Donald R.; and Braathen, Colin W., 4,406,774., Cl. 208-130.000.
Duval, Leonard A. Method and apparatus for cleaning fine waste material mixed with oil and water. 4,406,796., Cl. 210-772.000.
Dynie, Ernest R.; Overy, Colin; and Lipscombe, Ronald J., to Black & Decker Inc. Sprocket-brake drum construction for chain saw. 4,406,645., Cl. 474-158.000.
E. R. Squibb & Sons, Inc.: *See*—
Neirinckx, Rudi D.; and Loberg, Michael D., 4,406,877., Cl. 424-1.100.
Eastman Kodak Company: *See*—
Baughman, Richard C.; and Flamini, Stephen J., 4,406,247., Cl. 118-684.000.
DeBoer, Charles D., 4,406,878., Cl. 424-5.000.
Mir, Jose M.; and Varner, Jerry R., 4,406,521., Cl. 350-392.000.
Eaton Corporation: *See*—
Ferrato, Joseph P., 4,406,814., Cl. 252-299.100.
Kolze, Lawrence A., 4,406,306., Cl. 62-324.600.
Eckardt, Rudolf; and Neuendorf, Hans-Cristoph, to Flachglass Aktiengesellschaft. Apparatus for grinding the edges of glass sheets. 4,406,091., Cl. 51-101.00R.
Edahiro, Takao; Tanaka, Gotaro; Kuwahara, Toru; and Yoshida, Masaaki, to Nippon Telegraph & Telephone Public Corporation; and Sumitomo Electric Industries, Ltd. Process for producing high-purity silica glass. 4,406,680., Cl. 65-18.200.
Edahiro, Takao: *See*—
Kawachi, Masao; Tomaru, Satoru; Edahiro, Takao; and Suto, Shoichi, 4,406,684., Cl. 65-157.000.
Edelman, Seymour. Piezoelectric heat exchanger. 4,406,323., Cl. 165-84.000.
Egami, Akira: *See*—
Narita, Kiichi; Onoye, Toshio; and Egami, Akira, 4,406,754., Cl. 204-1.00T.
Egbers, Gerhard; El Helw, El S.; and Weinsdorfer, Helmut, to Aktiengesellschaft Adolf Saurer. Apparatus for selecting a number of weft threads at weaving machines. 4,406,312., Cl. 139-453.000.
Egerer, Josef, to Staedtler & Uhl. Stretch head. 4,406,038., Cl. 19-129.00R.
Eggerding, Carl L.: *See*—
Desai, Kamalesh S.; Eggerding, Carl L.; Ferrante, John A.; Ricci, Raymond; and Urfer, Ernest N., 4,407,007., Cl. 357-74.000.
Eggert, Wolfgang: *See*—
Janutta, Reinhard; and Eggert, Wolfgang, 4,406,275., Cl. 125-11.0CD.
Eggleston, John M.: *See*—
Boggy, Richard D.; Johnson, Richard H.; Eggleston, John M.; and Schulthess, Carl W., 4,406,542., Cl. 356-345.000.
Eguchi, Yasukata, to Janome Sewing Machine Co. Ltd. Electronic sewing machine. 4,406,235., Cl. 112-158.00E.
Eguchi, Yasukata; and Nomoto, Reishi, to Janome Sewing Machine Co. Ltd. Suturing instrument for surgical operation. 4,406,237., Cl. 112-169.000.
Eheim, Franz; Konrath, Karl; Schwarz, Manfred; and Weiss, Otmar, to Robert Bosch GmbH. Fuel injection pump. 4,406,268., Cl. 123-502.000.
Eichberger, Ernst: *See*—
Hans, Walter; Reiterer, Hans D.; Eichberger, Ernst; and Lazar, Gerhard, 4,406,696., Cl. 75-72.000.
Eifler, Raymond J., to Bendix Corporation, The. Electrical connector insert. 4,406,507., Cl. 339-59.00R.
Eimer, Klaus; Kraker, Felix; Schildmann, Hans W.; Schmitz, Gunther; and Sonnenschein, Hans, to Taprogge Gesellschaft mbH. Cleaning member for cleaning the interior of heat exchanger tubes. 4,406,031., Cl. 15-104.06R.
Ekstrom, Thomas E.: *See*—
Rowen, William I.; Ekstrom, Thomas E.; and Rexford, Donald L., 4,406,117., Cl. 60-39.270.
Elbe, Hans-Ludwig: *See*—
Kramer, Wolfgang; Elbe, Hans-Ludwig; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,406,909., Cl. 424-269.000.
Electro Audio Dynamics, Inc.: *See*—
von Recklinghausen, Daniel R., 4,406,921., Cl. 179-1.00N.
El Helw, El S.: *See*—
Egbers, Gerhard; El Helw, El S.; and Weinsdorfer, Helmut, 4,406,312., Cl. 139-453.000.
Eli Lilly and Company: *See*—
Lunn, William H. W.; and Vasileff, Robert T., 4,406,898., Cl. 424-246.000.
Elias, Gilbert N., to Evans Rotork, Inc. Round edge former. 4,406,729., Cl. 156-479.000.
Elliott, Richard M.: *See*—
Johnson, Herbert; and Elliott, Richard M., 4,406,234., Cl. 112-121.120.
Elliott Turbomachinery Co., Inc.: *See*—
Geary, Carl H., Jr., 4,406,466., Cl. 277-96.100.
Huesgen, Eugene L.; and Walsh, George P., 4,406,172., Cl. 74-3.000.
Elszasz, Rezso, to Olajterv Koolaj- es Gazipari Tervezo Vallalat. Apparatus for sensing the extent of turning of a rotatable part. 4,406,934., Cl. 200-61.390.
Emerson Electric Co.: *See*—
Donnelly, Donald E., 4,406,612., Cl. 431-71.000.
Emhart Industries, Inc.: *See*—
Voland, Elmo W.; and Adams, George W., 4,406,932., Cl. 200-38.00R.
Ener-Nat SA: *See*—
Kohli, Benjamin, 4,406,279., Cl. 126-450.000.
Engels, Willy: *See*—
Viehrig, Wolfgang; and Engels, Willy, 4,406,534., Cl. 354-310.000.
English Electric Valve Company: *See*—
Nixon, Ralph D., 4,406,975., Cl. 315-209.00R.
Enoki, Shigekazu: *See*—
Suzuki, Kohji; Kaneko, Toshio; Oyama, Hajime; and Enoki, Shigekazu, 4,406,536., Cl. 355-3.0DD.
Enzmann, Klaus. Sailboats, especially catamarans. 4,406,239., Cl. 114-39.000.
Eppendorf Geratebau Netheler & Hinz GmbH: *See*—
Kuhn, Gunther, 4,406,170., Cl. 73-864.160.
ERCO Industries Limited: *See*—
Reeve, Douglas W., 4,406,736., Cl. 162-88.000.
Erdman, Timothy R.: *See*—
Liston, Thomas V.; and Erdman, Timothy R., 4,406,803., Cl. 252-52.00R.
Ernsberger, Fred M., to PPG Industries, Inc. Method of operating a float glass forming chamber to reduce drippage. 4,406,682., Cl. 65-99.400.
Esaki, Toshio: *See*—
Takada, Munekazu; and Esaki, Toshio, 4,406,544., Cl. 356-376.000.
Escher Wyss GmbH: *See*—
Wuhrer, Wolfgang, 4,406,635., Cl. 440-69.000.
Esselte Pendaflex Corporation: *See*—
Holland-Letz, Gunter; and Nagel, Gerhard, 4,406,222., Cl. 101-92.000.
Essex Group, Inc.: *See*—
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,406,055., Cl. 29-596.000.
Establissemens Andre Bardet S.A.: *See*—
Brignon, Francois, 4,406,789., Cl. 210-519.000.

Establissements Ernest Pantz Paris: *See*—
Nasi, Cesarino, 4,406,562., Cl. 403-347.000.
Etablissement Conceptex: *See*—
Bourda, Maurice, 4,406,027., Cl. 5-17.000.
Ethicon, Inc.: *See*—
Aday, Jorge L., 4,406,363., Cl. 206-63.300.
Ethyl Corporation: *See*—
Filbey, Allen H., 4,406,665., Cl. 44-53.000.
Laurent, Sebastian M.; and Sanders, Robert N., 4,406,823., Cl. 252-455.00Z.
Sanders, Robert N.; and Laurent, Sebastian M., 4,406,822., Cl. 252-455.00Z.
Eudy, William W., to International Paper Company. Organosilicon quaternary ammonium antimicrobial compounds. 4,406,892., Cl. 424-184.000.
Evans, Robert D.: *See*—
Reader, Arthur M.; and Evans, Robert D., 4,406,310., Cl. 139-420.00R.
Evans Rotork, Inc.: *See*—
Elias, Gilbert N., 4,406,729., Cl. 156-479.000.
Ewing, Peter D., to NSS Industries. Sucker rod assembly. 4,406,561., Cl. 403-343.000.
Exxon Research and Engineering Co.: *See*—
Bailor, James P.; and Dauber, Louis S., 4,406,775., Cl. 208-140.000.
Briens, Cedric L.; and Sankey, Bruce M., 4,406,771., Cl. 208-33.000.
Farcasiu, Dan, 4,406,821., Cl. 252-440.000.
Fuller, Everett J., 4,406,865., Cl. 423-10.000.
Gould, Kenneth A.; and Long, Robert B., 4,406,780., Cl. 208-263.000.
Knudsen, George A.; and Savini, Charles, 4,406,760., Cl. 204-130.000.
Eysholdt, Ursula: *See*—
Rossi, Guglielmo; Eysholdt, Ursula; and Mulier, Gerd, 4,406,322., Cl. 165-14.000.
Fabricius, Hans-Ake; and Kottgen, Eckart U., to Shanksville Corporation, N.V. Regulatory glycoprotein for immune response and the use thereof in the production of T-cell growth factor. 4,406,830., Cl. 260-112.00R.
Fabrowsky, Hans-Dieter, to Herbert Hanchen KG. Low-friction seal. 4,406,463., Cl. 277-53.000.
Fair, Delbert W., to Conoco Inc. Seismic transducer baseplate and housing assembly. 4,406,345., Cl. 181-119.000.
Fair, Walter B.; and Richardson, Edwin A., to Shell Oil Company. Chemically-aided gas cap drive. 4,406,327., Cl. 166-300.000.
Fairbanks, David W., to RCA Corporation. Stylus dispensing apparatus and method. 4,406,381., Cl. 221-1.000.
Fanaritis, John P.; and Davis, James S., to Struthers-Wells Corporation. Combined cycle power plant with circulating fluidized bed heat transfer. 4,406,128., Cl. 60-655.000.
Farcasiu, Dan, to Exxon Research and Engineering Co. Etherification catalyst. 4,406,821., Cl. 252-440.000.
Farmitalia Carlo Erba S.p.A.: *See*—
Cozzi, Paolo; Pillan, Antonio; Bertone, Leone; and Lovisolo, Pier P., 4,406,901., Cl. 424-250.000.
Fasse, Mark E.; and Glesmann, Herbert C., to Pathfinder Systems, Inc. Automatic guidance mechanism steering clutch. 4,406,232., Cl. 104-244.100.
Fats and Proteins Research Foundation, Inc.: *See*—
Boehme, Werner R.; and Muscio, Oliver J., 4,406,833., Cl. 260-123.700.
Fawzi, Mahdi B.; and Barbera, Melvin A., to Procter & Gamble Company, The. Topical antimicrobial composition. 4,406,884., Cl. 424-81.000.
Federal Paper Board Co., Inc.: *See*—
Kulig, Francis V., 4,406,365., Cl. 206-188.000.
Feldman, Paul L.: *See*—
Ray, Asim B.; and Feldman, Paul L., 4,406,762., Cl. 204-157.10H.
Felix, Willi, to Jos. Hunkeler AG Fabrik fur Graphische Maschinen. Apparatus for forming individual stacks from an endless web. 4,406,650., Cl. 493-410.000.
Ferrante, John A.: *See*—
Desai, Kamalesh S.; Eggerding, Carl L.; Ferrante, John A.; Ricci, Raymond; and Urfer, Ernest N., 4,407,007., Cl. 357-74.000.
Ferrato, Joseph P., to Eaton Corporation. Liquid crystalline materials and optical displays utilizing same. 4,406,814., Cl. 252-299.100.
Ferris, Carlisle K. Camouflaged aircraft. 4,406,428., Cl. 244-1.00R.
Ferrofluidics Corporation: *See*—
Chartier, Carl P., 4,406,731., Cl. 156-617.0SP.
Fichte, Frank; and Paul, Wolfgang, to VEB Kombinat Polygraph "Werner Lamberz" Leipzig. Device for positioning a sheet separator. 4,406,447., Cl. 271-31.000.
Fiebrich, Joachim: *See*—
Backstein, Gunter; Fiebrich, Joachim; and Unger, Hans W., 4,406,225., Cl. 102-235.000.
Fieldcrest Mills, Inc.: *See*—
Czelusniak, Paul A., Jr., 4,406,309., Cl. 139-402.000.
Filbey, Allen H., to Ethyl Corporation. Diesel fuel composition. 4,406,665., Cl. 44-53.000.
File, Peter G.: *See*—
Hillegonds, Clarence G.; Stankos, William C.; File, Peter G.; and Mills, Luther P., 4,406,514., Cl. 350-96.210.
Finbow, John R.: *See*—
Chan, Yat S.; Tantram, Anthony D. S.; Hobbs, Bryan S.; and Finbow, John R., 4,406,770., Cl. 204-406.000.
Fink, Hans-Ferdi; Koerner, Gotz; and Luksch, Edmund, to Th. Goldschmidt AG. Use of an organopolysiloxane preparation for the treatment of paper for the production of plaster boards. 4,406,738., Cl. 162-124.000.
Fischer Gesellschaft m.b.H.: *See*—
Staufer, Adolf, 4,406,478., Cl. 280-604.000.
Fischer, Helmut; Steegmuller, Willi; and Volz, Werner. Device for measuring thin films by means of beta radiation. 4,406,948., Cl. 250-308.000.
Fischer, Rudolf: *See*—
Hunziker, Fritz; and Fischer, Rudolf, 4,406,900., Cl. 424-250.000.
Fischer, Walter: *See*—
Clemen, Rainer; Fischer, Walter; and Haug, Werner O., 4,406,956., Cl. 307-475.000.
Fischer, Werner K., to Swiss Aluminium Ltd. Anode hooding system for a fused salt electrolytic cell. 4,406,767., Cl. 204-247.000.
Fisher, Gerald M.: *See*—
Anderson, Weston A.; and Fisher, Gerald M., 4,406,626., Cl. 434-169.000.
Fitzpatrick, Peter: *See*—
Locke, Alan W.; and Fitzpatrick, Peter, 4,406,161., Cl. 73-118.000.
Flachglass Aktiengesellschaft: *See*—
Eckardt, Rudolf; and Neuendorf, Hans-Cristoph, 4,406,091., Cl. 51-101.00R.
Flamini, Stephen J.: *See*—
Baughman, Richard C.; and Flamini, Stephen J., 4,406,247., Cl. 118-684.000.
Flanagan, Joseph E.: *See*—
Frankel, Milton B.; Wilson, Edgar R.; and Flanagan, Joseph E., 4,406,718., Cl. 149-96.000.
Fodor, Jozsef: *See*—
Suto, Ferenc; Fodor, Jozsef; Siegfried, Frigyes; and Gyarfas, Jozsef, 4,406,787., Cl. 210-315.000.
Foffel, John F., to Berlin Industries. Method of making, inserting, and removing envelope inserts for magazines. 4,406,647., Cl. 493-216.000.
Fomento de Inversiones Industriales S.A.: *See*—
Negaty-Hindi, Guy; Pujol, Carlos; and Zurcher, Erwin, 4,406,115., Cl. 57-22.000.
Ford Motor Company: *See*—
Gall, Richard L.; Anklin, Richard T.; and Mende, William B., 4,406,411., Cl. 428-577.000.
Irish, David C., 4,406,120., Cl. 60-284.000.
Rahnke, Christian J., 4,406,125., Cl. 60-602.000.
Sharma, Rameshwar P., 4,406,267., Cl. 123-458.000.
Forpahl, Ray E.: *See*—
Robertson, William C.; Robertson, Robert H.; and Forpahl, Ray E., 4,406,595., Cl. 417-383.000.
Forshee, David J. V-Shaped engine translation rack. 4,406,366., Cl. 206-319.000.
Forster, Paul. Mounting of airfoil members on land vehicles. 4,406,491., Cl. 296-1.00S.
Foseco International Limited: *See*—
Gaisser, Gary T.; and Gregan, Daniel P., 4,406,370., Cl. 206-454.000.
Foster, Peter R.: *See*—
Bier, Milan; and Foster, Peter R., 4,406,886., Cl. 424-101.000.
Fouda, Aly E.: *See*—
Despault, Gaston J.; Fouda, Aly E.; Taylor, J. Bryan; and Capes, C. Edward, 4,406,806., Cl. 252-70.000.
Fox, Karl M.: *See*—
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,406,664., Cl. 44-51.000.
Frankel, Milton B.; Wilson, Edgar R.; and Flanagan, Joseph E., to United States of America, Navy. Tetraazido polyesters and methods of preparation. 4,406,718., Cl. 149-96.000.
Franklin, Leonard N.; Stearns, Joseph A.; and McGregor, David J., to General Motors Corporation. Drive axle assembly having limited torsional damper. 4,406,640., Cl. 464-91.000.
Fransen, Jan J. B., to U.S. Philips Corporation. Gettering device for color television display tube. 4,406,972., Cl. 313-481.000.
Frantz Filters, Inc.: *See*—
Cochran, Clarence L., 4,406,784., Cl. 210-168.000.
Fraser, James H.: *See*—
Wrobel, Patrick J.; and Fraser, James H., 4,406,679., Cl. 62-541.000.
Freimuth, John H.: *See*—
Parrish, Charles A.; Freimuth, John H.; Campbell, Willis R.; Diederich, Anthony F., Jr.; and Clevenger, James T., Jr., 4,406,221., Cl. 100-88.000.
Fremery, Max; Keim, Karl-Heinz; and Korff, Joachim, to Union Rheinische Braunkohlen Kraftstoff AG. Catalysts for the o-substitution of phenols. 4,406,824., Cl. 252-458.000.
Fridman, Georgy N.; Kalashnikov, Vladilen K.; Biznya, Vladimir M.; Kovarsky, Efim M.; Borisov, Boris A.; Semenov, Lev S.; Malyshev, Valentin A.; Voronin, Nikolai S.; Staskevich, Lev. N.; Zinin, Evgeny F.; Dulitskaya, Galina M.; and Shegai, Elvira R. Commutator electric machine. 4,406,962., Cl. 310-233.000.
Fried, Krupp Gesellschaft mit beschrankter Haftung: *See*—
Konigs, Herbert; and Weber, Heinz, 4,406,361., Cl. 198-863.000.
Kruger, Heinrich; and Tack, Hans, 4,406,195., Cl. 82-36.00B.
Friedman, Harvey W., to Buxton, Inc. Belt buckle construction. 4,406,043., Cl. 24-171.000.
Friese, Karl-Hermann; and Pollner, Rudolf, to Robert Bosch GmbH. Sparkplug for internal combustion engine. 4,406,968., Cl. 313-136.000.
Frister, Manfred: *See*—
Pfluger, Gerhard; Schmidt, Burkhardt; Scholpp, Martin; Wamsler, Reinhold; and Frister, Manfred, 4,406,961., Cl. 310-232.000.

Fritschy, Hugo: *See*—
Wolf, Peter; and Fritschy, Hugo, 4,406,963., Cl. 310-239.000.

Frohberger, Paul-Ernst: *See*—
Kramer, Wolfgang; Elbe, Hans-Ludwig; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,406,909., Cl. 424-269.000.

Froot, Howard A., to International Business Machines Corporation. Fabrication of semiconductor modules with ceramic substrates and detection of residual glass. 4,406,844., Cl. 264-21.000.

Fuji Photo Film Co., Ltd.: *See*—
Higashi, Akio; Kawaziri, Kazuhiro; and Murayama, Jin, 4,406,765., Cl. 204-164.000.

Fuji Telecasting Co., Limited: *See*—
Takano, Yutaka; Yajima, Koji; Ishii, Takashi; Yoshida, Tadahisa; Ota, Katsuhiro; and Yagishita, Shigeru, 4,406,971., Cl. 313-461.000.

Fuji Xerox Co., Ltd.: *See*—
Hamano, Toshihisa, 4,406,987., Cl. 324-457.000.
Inui, Toshiharu; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,407,002., Cl. 346-76.0PH.
Yamamura, Koichi, 4,406,649., Cl. 493-421.000.

Fujikawa, Kanichi: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Tsujii, Yasuhiro; Murai, Shigeo; and Jyonishi, Hisayoshi, 4,406,841., Cl. 260-465.00G.

Fujishima, Daishiro; and Fujishima, Shinichiro. Disoxidant and process for preparing same. 4,406,813., Cl. 252-188.280.

Fujishima, Shinichiro: *See*—
Fujishima, Daishiro; and Fujishima, Shinichiro, 4,406,813., Cl. 252-188.280.

Fujita, Mituo, to Kabushiki Kaisha Shinsei Industries. Manually-operated labeler. 4,406,727., Cl. 156-384.000.

Fujitsu Fanuc Limited: *See*—
Harano, Keiichi; Kawada, Shigeki; and Oyama, Shigeaki, 4,406,959., Cl. 310-58.000.
Inaba, Hajimu; Kita, Masao; Sakakibara, Shinsuke; and Nihei, Ryo, 4,406,576., Cl. 414-735.000.

Fujitsu Limited: *See*—
Takasaki, Kanetake; and Shioya, Yoshimi, 4,406,053., Cl. 29-588.000.

Fujiwara, Koichi; Shiozawa, Takeo; Miki, Katsumi; Uchimura, Masahiko; Miyajima, Kazunori; and Tonouchi, Yasuo, to Kabushiki Kaisha Kobe Seiko Sho. Electromagnetic stirrer for use in a continuous steel casting apparatus. 4,406,321., Cl. 164-504.000.

Fujiwara, Mitsuru: *See*—
Kasuya, Katsuhiko; Fujiwara, Mitsuru; Matsunaga, Tetsuzo; Imai, Masaya; and Takahashi, Yasuo, 4,406,602., Cl. 418-201.000.

Fukui, Hiroshi, to Canon Kabushiki Kaisha. Thermal printer. 4,407,003., Cl. 346-76.0PH.

Fukushi, Yutaka: *See*—
Kamata, Keiji; Suzuki, Hikoshiro; and Fukushi, Yutaka, 4,406,397., Cl. 236-1.00B.

Fukushima, Masao, to Nissan Motor Co., Ltd. Method and apparatus for reducing engine vibration induced vehicle cabin noise and/or resonance. 4,406,344., Cl. 180-300.000.

Fukutsuka, Toshio: *See*—
Shimogori, Kazutoshi; Kajiwara, Kazuichi; Miki, Kenji; and Fukutsuka, Toshio, 4,406,761., Cl. 204-144.500.

Fuller, Everett J., to Exxon Research and Engineering Co. Metal extraction by solid-liquid agglomerates. 4,406,865., Cl. 423-10.000.

Funk, Harald F. System for treating and recovering energy from exhaust gases. 4,406,118., Cl. 60-39.183.

Furukawa Electric Company, Ltd., The: *See*—
Toda, Yoshihisa; Yamamoto, Hiroshi; and Sata, Kenzi, 4,406,859., Cl. 420-487.000.

Furukawa, Yoshimi, to Honda Giken Kogyo Kabushiki Kaisha. Steering system for vehicles. 4,406,472., Cl. 280-91.000.

Furuta, Katsuhisa; Hirai, Takeshi; and Nakamura, Yoshinori, to Showa Electric Wire & Cable Co., Ltd. Method of controlling an enamelling oven. 4,406,399., Cl. 236-15.0BC.

Futami, Yoshinori; and Ogawa, Tokumon, to Kabushiki Kaisha Suwa Seikosha. Electronic wristwatch. 4,407,019., Cl. 368-200.000.

Gabrius, Algimantis J.; and Buras, John W., to D. Gottlieb & Co. Method of and apparatus for mounting playfield window. 4,406,457., Cl. 273-121.00A.

Gaetano, Salvatore. Collapsible bidirectional jogging apparatus. 4,406,451., Cl. 272-69.000.

Gaibler, Dennis W., to Cascade Corporation. Quick-mount side shifter for use on a forklift truck. 4,406,575., Cl. 414-667.000.

Gaisser, Gary T.; and Gregan, Daniel P., to Foseco International Limited. Additive containers for metal casting. 4,406,370., Cl. 206-484.000.

Gall, Richard L.; Anklin, Richard T.; and Mende, William B., to Ford Motor Company. Reclamation and rejuvenation of plastic and metal from metallized plastic. 4,406,411., Cl. 428-577.000.

Gallaghan, John A.: *See*—
Boettcher, Woodrow; Goldman, Emanuel; and Gallaghan, John A., 4,406,228., Cl. 102-513.000.

Gallimore, Claris G. Hanger clip for leaflets and the like. 4,406,074., Cl. 40-10.00R.

Galos, Imre: *See*—
Bettin, Leonard A.; Galos, Imre; and Dufour, Donald J., 4,406,442., Cl. 251-310.000.

Gangwisch, William J.; Richter, Virgil J.; Wixon, Harold E.; and Wraga, Joseph B., to Colgate-Palmolive Company. High bulk density carbonate-zeolite built heavy duty nonionic laundry detergent. 4,406,808., Cl. 252-91.000.

Garbaccio, Dino: *See*—
Grafelmann, Hans L.; and Garbaccio, Dino, 4,406,623., Cl. 433-174.000.

Gardner, Herman E. Process for producing alloy steel product or iron powder by furnacing ground iron or molten iron on a molten lead bath. 4,406,695., Cl. 75-37.000.

Garlock Inc.: *See*—
O'Neal, Robert D.; Bainard, Dean R.; and Cather, Douglas A., Jr., 4,406,847., Cl. 264-138.000.

Garner, Donald R. Fishing bobber with line release. 4,406,081., Cl. 43-43.110.

Garrett Corporation, The: *See*—
Itamoto, John T., 4,406,166., Cl. 73-502.000.

Garrett, Lane S.: *See*—
Gray, Michael J., 4,406,550., Cl. 374-110.000.

Garter, Max J. Poured concrete forming system for spa pools. 4,406,439., Cl. 249-64.000.

Gavin, David F.: *See*—
Renner, Jacqueline M.; Scott, Robert N.; and Gavin, David F., 4,406,807., Cl. 252-78.300.

Gazelle Rijwielfabriek B.V.: *See*—
Coenen, Hendrikus P.; and Van Wageningen, Cornelis, 4,406,504., Cl. 308-192.000.

Geary, Carl H., Jr., to Elliott Turbomachinery Co., Inc. Gas lift bearing and oil seal. 4,406,466., Cl. 277-96.100.

Geertsema, John A.; and Lichty, Alvin H., to Geertsema, John A. Removable tool handle and socket therefor. 4,406,559., Cl. 403-287.000.

Gelazis, Audrone: *See*—
Christensen, Ronald; and Gelazis, Audrone, 4,406,811., Cl. 252-180.000.

Gellert, Jobst U. Valve pin and method of manufacture. 4,406,609., Cl. 425-566.000.

Gelula, Jerome D.: *See*—
Bostian, Clarence L., Jr.; and Gelula, Jerome D., 4,406,724., Cl. 156-161.000.

Gem Signs, Inc.: *See*—
Moon, John E., 4,406,077., Cl. 40-509.000.

General Descaling Company Limited: *See*—
Platts, Douglas J., 4,406,030., Cl. 15-104.06R.

General Dynamics Corporation: *See*—
Rogers, William C.; and Davis, William E., Jr., 4,406,568., Cl. 409-182.000.

General Electric Company: *See*—
Larson, Richard I.; Brassfield, Henry C.; and Adomitis, John T., 4,406,410., Cl. 241-5.000.
Nettro, Ronald L., 4,406,401., Cl. 236-12.120.
Rowen, William I.; Ekstrom, Thomas E.; and Rexford, Donald L., 4,406,117., Cl. 60-39.270.
Vakil, Himanshu B., 4,406,134., Cl. 62-114.000.
Weininger, Joseph L.; and Kim, Bang M., 4,406,752., Cl. 204-3.000.
Woodford, David A.; and Bricknell, Rodger H., 4,406,858., Cl. 420-475.000.
Zarchy, Andrew S., 4,406,154., Cl. 73-23.000.

General Foods Corporation: *See*—
Larson, Robert W.; Lou, Wen C.; DeVito, Vivian C.; and Neidinger, Karen A., 4,406,911., Cl. 426-19.000.

General Motors Corporation: *See*—
Brandt, Herman F.; Daniel, Wayne A.; and Sperling, Anthony A., 4,406,265., Cl. 123-425.000.
Burley, Harvey A., 4,406,260., Cl. 123-258.000.
Franklin, Leonard N.; Stearns, Joseph A.; and McGregor, David J., 4,406,640., Cl. 464-91.000.
Harris, Stephen J.; and Peters, Bruce D., 4,406,254., Cl. 123-1.00A.
Nels, Terry E., 4,406,394., Cl. 228-170.000.
Trabert, Hans-Gerhard, 4,406,489., Cl. 293-115.000.

General Signal Corporation: *See*—
Bogenschutz, Thomas M., 4,406,444., Cl. 267-30.000.
Ross, Steven L., 4,406,571., Cl. 414-412.000.

Genik-Sas-Berezowsky, Roman M.: *See*—
Weir, Donald R.; Masters, Ian M.; and Genik-Sas-Berezowsky, Roman M., 4,406,864., Cl. 423-9.000.

Gennaux, Jean, to Ateliers de Constructions Electriques de Charleroi (ACEC). Motor reducer with braking means. 4,406,340., Cl. 180-65.00F.

Germuska, Richard W.: *See*—
Duncan, L. Scot; Germuska, Richard W.; Kral, Stephen L.; Lasecki, Robert R.; and Riley, Michael W., 4,406,570., Cl. 414-282.000.

Gersch, Richard C., to Subco, Inc. Tool holder. 4,406,194., Cl. 82-36.00R.

Ghali, Amin; and Dilger, Walter. Shear reinforcement for concrete flat slabs. 4,406,103., Cl. 52-260.000.

Giebeler, Ben F., to Arrowhead Continental. Tubular connector. 4,406,485., Cl. 285-391.000.

Giessler, Klaus: *See*—
Knoblauch, Karl; Richter, Ekkehard; Giessler, Klaus; and Korbacher, Werner, 4,406,674., Cl. 55-25.000.

Gillade, Frans P. Power transmission. 4,406,178., Cl. 74-689.000.

Gillet, Roger; and Laumond, Yves, to Alsthom-Atlanatique. Laminated magnetic circuit stator with clamping fingers for a rotating electrodynamic machine, notably of the immersed bulb type. 4,406,960., Cl. 310-217.000.

Gilson, James. Airflow converter. 4,406,579., Cl. 415-2.00R.

Gimag Aktiengesellschaft: *See*—
Berz, Wolfgang, 4,406,672., Cl. 55-6.000.

Gimple, James; and Weinstein, Richard, to Champion Spark Plug Company. Seal assembly. 4,406,468., Cl. 277-115.000.

Givaudan Corporation: *See—*
Gonzenbach, Hans U.; and Ochsner, Paul A., 4,406,828., Cl. 252-522.00R.

Glad, Magnus J.; Ohlson, Sten A.; Hansson, Lennart H.; Mansson, Mats-Olle; Larsson, Per-Olof; and Mosbach, Klaus H. Separation agent. 4,406,792., Cl. 210-656.000.

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Fasse, Mark E.; and Glesmann, Herbert C., 4,406,232., Cl. 104-244.100.

Glockner, Hermann: *See—*
Schrecke, Horst G.; and Glockner, Hermann, 4,406,503., Cl. 308-187.000.

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Oswald, Thomas L.; and Lund, David L., 4,406,057., Cl. 29-623.400.

Goettl, Adam D., to Goettl Enterprises. Impeller assembly for a blower mechanism. 4,406,585., Cl. 416-60.000.

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Goettl, Adam D., 4,406,585., Cl. 416-60.000.

Goh, Atsushi: *See—*
Konno, Kazuhiko; Goh, Atsushi; Miyoshi, Kazuhito; and Ikeda, Kaoru, 4,406,688., Cl. 71-92.000.

Goldco Engineering, Inc.: *See—*
Cole, Rodger E.; and Vander Meer, Richard H., 4,406,359., Cl. 198-626.000.

Goldman, Emanuel: *See—*
Boettcher, Woodrow; Goldman, Emanuel; and Gallaghan, John A., 4,406,228., Cl. 102-513.000.

Golker, Walter, to Siemens Aktiengesellschaft. Method for the manufacture of a code disk for optical incremental shaft encoders and absolute shaft encoders. 4,406,939., Cl. 219-121.0LJ.

Goloff, Alexander: *See—*
Keske, Frank E.; and Goloff, Alexander, 4,406,257., Cl. 123-90.480.

Gomersall, Rodney. Valve actuators. 4,406,314., Cl. 141-4.000.

Gonzenbach, Hans U.; and Ochsner, Paul A., to Givaudan Corporation. Odorant and/or flavorant substances. 4,406,828., Cl. 252-522.00R.

Gooch, Jack G.: *See—*
Beck, David E.; Gooch, Jack G.; Holcombe, Cressie E., Jr.; and Masters, David R., 4,406,699., Cl. 75-233.000.

Good, W. Travis; and Monjay, Dick J. Liner for eave mounted gutters. 4,406,093., Cl. 52-11.000.

Goodall, Charles C. O.: *See—*
Blake, Colin C.; and Goodall, Charles C. O., 4,406,753., Cl. 204-10.000.

Goodman System Company, Inc., The: *See—*
Goodman, Toronta P., 4,406,255., Cl. 123-25.00J.

Goodman, Toronta P., to Goodman System Company, Inc., The. Fuel detonation-responsive fluid injection system for an internal combustion engine. 4,406,255., Cl. 123-25.00J.

Gordon, Maxwell; and Pachter, I. Jacob, to Bristol-Myers Company. Method for treating resistant bacteria including anaerobes. 4,406,887., Cl. 424-114.000.

Gorman, Thomas G.: *See—*
Robb, Neil E.; and Gorman, Thomas G., 4,406,581., Cl. 415-172.00A.

Gorondy, Emery J.: *See—*
Beran, Joseph F.; and Gorondy, Emery J., 4,406,662., Cl. 8-471.000.

Goseberg, Walter; Pollak, Alfred; and Reichow, Wolfgang, to Licentia Patent-Verwaltungs-GmbH. Horizontal deflection output transformer for a television receiver. 4,406,978., Cl. 315-411.000.

Goss, Duke W. Gravity stabilized portable power tool hanger. 4,406,064., Cl. 30-296.00A.

Gould, Kenneth A.; and Long, Robert B., to Exxon Research and Engineering Co. Separation and oxygen-alkylation of phenols from phenol-containing hydrocarbonaceous streams. 4,406,780., Cl. 208-263.000.

Grafelmann, Hans L.; and Garbaccio, Dino. Screw-type bone implant for receiving a dental prosthesis. 4,406,623., Cl. 433-174.000.

Graham, Donald W.: *See—*
Ashton, Wallace T.; Barash, Louis; Brown, Jeannette E.; and Graham, Donald W., 4,406,902., Cl. 424-251.000.

Grams, Wolfgang: *See—*
Danguillier, Wilhelm; Tietze, Jurgen; Grams, Wolfgang; and Thubeauville, Heinz, 4,406,746., Cl. 202-228.000.

Gray, Michael J., to Garrett, Lane S. Temperature monitoring and utilization system. 4,406,550., Cl. 374-110.000.

Greene, Michael L.; and Valenta, Frank J., to United States of America, Navy. Delay cartridge with temperature programmed flash chamber. 4,406,229., Cl. 102-530.000.

Greenvourcel, Jacob. Set of modular elements particularly useful for assembling candelabra. 4,406,616., Cl. 431-295.000.

Greenwood, Ivan A., to Singer Company, The. Auxiliary DC field coil for improving rate bias instability of magnetic resonance gyroscopes. 4,406,986., Cl. 324-304.000.

Greer, Jack B. Rotor assembly for hammermills. 4,406,415., Cl. 241-194.000.

Gregan, Daniel P.: *See—*
Gaisser, Gary T.; and Gregan, Daniel P., 4,406,370., Cl. 206-484.000.

Greve, Heinz: *See—*
Bardenhagen, Dietrich; Hausler, Nikolaus; Niemann, Helmut; Greve, Heinz; and Schluter, Karl-Heinz, 4,406,197., Cl. 83-152.000.

Gronbech, Robert W.: *See—*
Bond, Harry L. F.; and Gronbech, Robert W., 4,406,144., Cl. 72-238.000.

Grossman, Klaus; Tamm, Rolf; and Tomoff, Toma, to Bodenseewerk Perkin-Elmer & Co., GmbH. Apparatus for use in flameless atomic absorption spectroscopy. 4,406,540., Cl. 356-36.000.

GTE Laboratories Incorporated: *See—*
Cogan, Adrian I., 4,406,052., Cl. 29-576.00B.
Sarin, Vinod K.; Buljan, Sergej-Tomislav; and D'Angelo, Charles, 4,406,667., Cl. 51-295.000.
Sarin, Vinod K.; and Buljan, Sergej-Tomislav, 4,406,668., Cl. 51-295.000.
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GTE Products Corporation: *See—*
Haraden, Thomas; and Hough, Harold L., 4,406,969., Cl. 313-318.000.
Reilly, Kenneth T., 4,406,866., Cl. 423-61.000.
Siefer, David A., 4,406,785., Cl. 210-186.000.

Guarner, Peter: *See—*
Bennett, Charles R.; and Guarner, Peter, 4,406,313., Cl. 141-1.000.

Guerra, Romeo E.; and Nelson, Robert H., to Nova Patents of North America, Inc. Igniter for a gas discharge pipe. 4,406,615., Cl. 431-278.000.

Guillaume, Pierre: *See—*
de la Roche Kerandraon, Olivier; Guillaume, Pierre; and Paroldi, Daniel, 4,406,586., Cl. 416-85.000.

Gulf Research & Development Company: *See—*
Onopchenko, Judith B.; Singerman, Gary M.; and Sebulsky, Raynor T., 4,406,801., Cl. 252-46.700.

Gulf & Western Industries, Inc.: *See—*
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,406,664., Cl. 44-51.000.

Gulf & Western Manufacturing Company: *See—*
May, William L., 4,406,995., Cl. 340-539.000.
Montag, John H.; and Zulauf, Gary B., 4,406,935., Cl. 200-61.820.

Gummow, Stephen A. Dual action ratchet wrench. 4,406,186., Cl. 81-60.000.

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Dornier, Claudius, Jr.; Gunter, Heinz; Krojer, Hubert; and Spintzyk, Johannes, 4,406,432., Cl. 244-102.00R.

Guthrie, Bernard M.; and Torley, Robert B., to Permawood International Corporation. Composite materials made from plant fibers bonded with portland cement and method of producing same. 4,406,703., Cl. 106-93.000.

Gyarfas, Jozsef: *See—*
Suto, Ferenc; Fodor, Jozsef; Siegfried, Frigyes; and Gyarfas, Jozsef, 4,406,787., Cl. 210-315.000.

Gyugyi, Laszlo: *See—*
Strycula, Eugene C.; Paice, Derek A.; and Gyugyi, Laszlo, 4,406,991., Cl. 333-175.000.

H. Krantz GmbH & Co.: *See—*
Schiffers, Theo, 4,406,139., Cl. 68-258.000.

Haar, Lucas H., to ITT Industries, Inc. Mechanically controlled brake power booster. 4,406,213., Cl. 91-376.00R.

Haas, Theo. Stove. 4,406,276., Cl. 126-83.000.

Habegger, Millard A. Method and apparatus for regulating flue draft. 4,406,396., Cl. 236-1.00G.

Hagen, Ronald J.: *See—*
Helliwell, Bradley A.; Messerschmitt, David G.; and Hagen, Ronald J., 4,407,020., Cl. 370-6.000.

Hajek, Josef, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Ink through and doctor blade assembly for printing machines. 4,406,224., Cl. 101-363.000.

Halko, John E.: *See—*
Baldwin, Roger A.; Halko, John E.; and Henke, Ron S., 4,406,663., Cl. 44-51.000.

Halm, Hans, to Confon AG. Card index for fixing to a vertical wall or for placing on a base. 4,406,076., Cl. 40-389.000.

Hamano, Toshihisa, to Fuji Xerox Co., Ltd. Charge level sensor. 4,406,987., Cl. 324-457.000.

Hamill, Odis F.: *See—*
Deaver, Pete E.; Lingafelter, Jerry K.; and Hamill, Odis F., 4,406,098., Cl. 52-119.000.

Hamilton, Joel A. Continuous motion, constant velocity web feeding apparatus. 4,406,390., Cl. 226-112.000.

Hamm, Robert, to Maag Gear-Wheel & Machine Company Limited. Power take-off gearing for assembly at a marine vessel drive or propulsion system. 4,406,633., Cl. 440-75.000.

Hand, George E., to Kerr Concrete Pipe Company. Apparatus for forming concrete pipe of uniform density including control means to vary feed rate of concrete/aggregate as function of packerhead torque. 4,406,605., Cl. 425-145.000.

Hanna Mining Company, The: *See—*
Jardine, Colin D.; Chong, Sooi; Coles, Rodney H.; and Hebb, Stephen, 4,406,417., Cl. 241-284.000.

Hans, Walter; Reiterer, Hans D.; Eichberger, Ernst; and Lazar, Gerhard, to Voest-Alpine Aktiengesellschaft. Process for recovering of metals from solutions of metal salts. 4,406,696., Cl. 75-72.000.

Hanson, Raymond A. Breakwater. 4,406,564., Cl. 405-26.000.

Hansson, Lennart H.: *See—*
Glad, Magnus J.; Ohlson, Sten A.; Hansson, Lennart H.; Mansson, Mats-Olle; Larsson, Per-Olof; and Mosbach, Klaus H., 4,406,792., Cl. 210-656.000.

Harada, Tosiharu: *See*—
Mishima, Akio; Okuda, Yosiro; Harada, Tosiharu; and Mukaizaka, Akira, 4,406,694., Cl. 75-0.5AA.

Haraden, Thomas; and Hough, Harold L., to GTE Products Corporation. Circular fluorescent lamp holder. 4,406,969., Cl. 313-318.000.

Harano, Keiichi; Kawada, Shigeki; and Oyama, Shigeaki, to Fujitsu Fanuc Limited. Rotary electric motor. 4,406,959., Cl. 310-58.000.

Harasaki, Hayathugu, to Toyo Kogyo Co. Ltd. Engine mounting structure for an automobile body. 4,406,343., Cl. 180-297.000.

Haratani, Tsutomu: *See*—
Nakayama, Tadashi; Haratani, Tsutomu; Matsumoto, Fumio; and Matsumoto, Hiromi, 4,406,715., Cl. 148-111.000.

Hardison, Robert P.: *See*—
Crain, N. Robert; and Hardison, Robert P., 4,406,944., Cl. 219-388.000.

Hark, William B., to Seasom Controls Limited. Apparatus for creating waves in a body of liquid. 4,406,162., Cl. 73-148.000.

Harris Corporation: *See*—
Hillegonds, Clarence G.; Stankos, William C.; File, Peter G.; and Mills, Luther P., 4,406,514., Cl. 350-96.210.

Harris, Leon R.: *See*—
DeAnda, Alfonso; and Harris, Leon R., 4,406,041., Cl. 24-115.00R.

Harris, Stephen J.; and Peters, Bruce D., to General Motors Corporation. Method for lean operation of spark-ignited gasoline-fueled reciprocating engine. 4,406,254., Cl. 123-1.00A.

Harris, William H. Stemmed femoral component for the human hip. 4,406,023., Cl. 3-1.912.

Hart, Walter R. Crab catcher. 4,406,083., Cl. 43-105.000.

Hartmann, Albert; Baschang, Gerhard; Wacker, Oskar; and Stanek, Jaroslav, to Ciba-Geigy Corporation. Derivatives of aldohexoses, intermediates, processes for their manufacture, preparations containing such compounds, and their use. 4,406,889., Cl. 424-177.000.

Hartmann, Albert: *See*—
Tarcsay, Lajos; Baschang, Gerhard; Hartmann, Albert; and Stanek, Jaroslav, 4,406,890., Cl. 424-177.000.

Hasegawa, Akira, to Bell Telephone Laboratories, Incorporated. Monomode fiberguide telecommunication system utilizing soliton pulses. 4,406,516., Cl. 350-96.290.

Hasegawa, Takanori; and Oshio, Susumu, to Riso Kagaku Corporation. Reflecting type overhead projector with automatically variable safety illumination. 4,406,530., Cl. 353-66.000.

Hasenclever, Kaspar D., to Chemische Fabrik Kreussler & Co. GmbH. Disinfecting cleaning intensifier for dry cleaning. 4,406,809., Cl. 252-106.000.

Hatakeyama, Koichi, to Jusco Kabushiki Kaisha. Cooking utensil. 4,406,218., Cl. 99-401.000.

Hattler, Brack G.; Richards, Ronnie D.; and Horgan, William J., to Hattler, Brack Gillium. Venous catheter having collapsible multilumens. 4,406,656., Cl. 604-280.000.

Hattler, Brack Gillium: *See*—
Hattler, Brack G.; Richards, Ronnie D.; and Horgan, William J., 4,406,656., Cl. 604-280.000.

Hattori, Yoshiyuki: *See*—
Kinbara, Hiroji; Hattori, Yoshiyuki; Matsui, Kazuma; Hayakawa, Hideyuki; Takizawa, Masaaki; Tamura, Masaru; and Jufuku, Yasunobu, 4,406,644., Cl. 474-13.000.

Haug, Werner O.: *See*—
Clemen, Rainer; Fischer, Walter; and Haug, Werner O., 4,406,956., Cl. 307-475.000.

Hauni-Werke Korber & Co. KG: *See*—
Bardenhagen, Dietrich; Hausler, Nikolaus; Niemann, Helmut; Greve, Heinz; and Schluter, Karl-Heinz, 4,406,197., Cl. 83-152.000.
Janutta, Reinhard; and Eggert, Wolfgang, 4,406,275., Cl. 125-11.0CD.

Hausler, Nikolaus: *See*—
Bardenhagen, Dietrich; Hausler, Nikolaus; Niemann, Helmut; Greve, Heinz; and Schluter, Karl-Heinz, 4,406,197., Cl. 83-152.000.

Haws, Paul M. Mobile concrete mixing apparatus. 4,406,548., Cl. 366-8.000.

Hayakawa, Hideyuki: *See*—
Kinbara, Hiroji; Hattori, Yoshiyuki; Matsui, Kazuma; Hayakawa, Hideyuki; Takizawa, Masaaki; Tamura, Masaru; and Jufuku, Yasunobu, 4,406,644., Cl. 474-13.000.

Hayase, Syuzi; and Ito, Takeo, to Tokyo Shibaura Denki Kabushiki Kaisha. Photo-curable epoxy resin composition with organic aluminum and α-ketosilyl compounds. 4,406,764., Cl. 204-159.110.

Hayashi, Nobutoshi: *See*—
Kamiya, Sigeru; Nozawa, Masaei; Hayashi, Nobutoshi; and Morino, Seiji, 4,406,119., Cl. 60-275.000.

Hayes-Albion Corp.: *See*—
Robb, Neil E.; and Gorman, Thomas G., 4,406,581., Cl. 415-172.00A.

Hayes, Earl J., to AMP Incorporated. Flat cable connector strain relief. 4,406,511., Cl. 339-103.00M.

Hayward, Charles F., to Pioneer Hi-Bred International, Inc. Wheat and method of producing the same. 4,406,086., Cl. 47-58.000.

Hazan, Jean-Pierre; Steers, Michel; and Caron, Jean, to U.S. Philips Corporation. Method of detecting the release of dye from laundry during a washing operation in a washing machine and implementation of said method. 4,406,028., Cl. 8-158.000.

Hazenbroek, Jacobus E., to Systemate B.V. Device for cutting slaughtered poultry in separate pieces. 4,406,037., Cl. 17-11.000.

Hebb, Stephen: *See*—
Jardine, Colin D.; Chong, Sooi; Coles, Rodney H.; and Hebb, Stephen, 4,406,417., Cl. 241-284.000.

Heestand, Richard L.: *See*—
Heshmatpour, Bahman; and Heestand, Richard L., 4,406,693., Cl. 75-0.50A.

Heidmann, Charles, to Steelcase Inc. Partition wireway with flexible sides. 4,406,101., Cl. 52-220.000.

Heilmeier & Weinlein: *See*—
Brunner, Rudolf, 4,406,305., Cl. 137-596.000.

Hein, Wolfgang, to Carl Schliecher & Schuell GmbH & Co., KG. Pressure filtering device. 4,406,786., Cl. 210-223.000.

Heinen, Jochen, to Siemens Aktiengesellschaft. Device for epitaxial depositing layers from a liquid phase. 4,406,245., Cl. 118-404.000.

Helliwell, Bradley A.; Messerschmitt, David G.; and Hagen, Ronald J., to TRW Inc. Automatic compensation circuit and method. 4,407,020., Cl. 370-6.000.

Hellmann, Heinz-Dieter: *See*—
Becker, Karl-Heinz; Milla, Peter; Hergt, Peter; and Hellmann, Heinz-Dieter, 4,406,583., Cl. 415-219.00C.

Hemmerich, Johann, to Kernforschungsanlage Julich GmbH. Cold surface for cryogenic pumps. 4,406,130., Cl. 62-55.500.

Hempel, Joachim; Christoph, Leonhard; and Schone, Wolfram, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Apparatus for anchoring self-supporting, tall structures. 4,406,094., Cl. 52-40.000.

Henke, Ron S.: *See*—
Baldwin, Roger A.; Halko, John E.; and Henke, Ron S., 4,406,663., Cl. 44-51.000.

Henriques, Joseph. Flue heat recovery system. 4,406,402., Cl. 237-19.000.

Hensley, Albert L., Jr.; Tait, A. Martin; Miller, Jeffrey T.; and Nevitt, Thomas D., to Standard Oil Company (Indiana). Multiple catalyst system for hydrodenitrogenation of high nitrogen feeds. 4,406,779., Cl. 208-254.00H.

Herbert Hanchen KG: *See*—
Fabrowsky, Hans-Dieter, 4,406,463., Cl. 277-53.000.

Hergt, Peter: *See*—
Becker, Karl-Heinz; Milla, Peter; Hergt, Peter; and Hellmann, Heinz-Dieter, 4,406,583., Cl. 415-219.00C.

Herman, David E.: *See*—
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,406,664., Cl. 44-51.000.

Herman, John T.: *See*—
Dudrey, Denis J.; Herman, John T.; and Matthys, Bernard A., 4,406,651., Cl. 494-29.000.

Hermes, Glenn P. Drawing tool organizer. 4,406,368., Cl. 206-371.000.

Hernqvist, Karl G., to RCA Corporation. Processing the mount assembly of a CRT to suppress afterglow. 4,406,637., Cl. 445-45.000.

Herzfeld, Victor A. Portable exerciser. 4,406,453., Cl. 272-137.000.

Heshmatpour, Bahman; and Heestand, Richard L. Method for refining contaminated iridium. 4,406,693., Cl. 75-0.50A.

Hess, John M.: *See*—
Kulle, Lee K.; Hess, John M.; and Scott, James W., 4,406,440., Cl. 251-6.000.

Hesselgren, Sven-Gunnar. Methods for utilizing dental prostheses. 4,406,708., Cl. 134-37.000.

Hettche, Albert: *See*—
Oeder, Dieter; Dietsche, Wolfram; Weiss, Stefan; Ziegler, Walter; and Hettche, Albert, 4,406,705., Cl. 106-270.000.

Hettinger, William P., Jr.; and Benslay, Roger M., to Ashland Oil, Inc. Magnetic separation of high activity catalyst from low activity catalyst. 4,406,773., Cl. 208-120.000.

Heuberger, Lawrence K., to Omac, Inc. Air scoop lip warmer de-icing system. 4,406,431., Cl. 244-53.00B.

Hibbs, Bart D.: *See*—
Radkey, Robert L.; and Hibbs, Bart D., 4,406,433., Cl. 244-145.000.

Higashi, Akio; Kawaziri, Kazuhiro; and Murayama, Jin, to Fuji Photo Film Co., Ltd. Apparatus and process for production of amorphous semiconductor. 4,406,765., Cl. 204-164.000.

Higuchi, Takeru; Nishihata, Toshiaki; and Rytting, Howard J., to Merck & Co., Inc. Adjuvants for rectal delivery of drug substances. 4,406,896., Cl. 424-232.000.

Hilbert, Francis H.: *See*—
Parker, Norman W.; and Hilbert, Francis H., 4,406,922., Cl. 179-1.0GS.

Hill, Berlie R.: *See*—
Wang, Kenneth Y.; and Hill, Berlie R., 4,406,720., Cl. 156-73.200.

Hillegonds, Clarence G.; Stankos, William C.; File, Peter G.; and Mills, Luther P., to Harris Corporation. Single fiber connector for pluggable card or module optical interconnections. 4,406,514., Cl. 350-96.210.

Hills Research & Development, Inc.: *See*—
Hills, William H., 4,406,850., Cl. 264-171.000.

Hills, William H., to Hills Research & Development, Inc. Spin pack and method for producing conjugate fibers. 4,406,850., Cl. 264-171.000.

Hilti Aktiengesellschaft: *See*—
Buechel, Franz; and Kindle, Edwin, 4,406,079., Cl. 42-49.00R.

Hines, Gordon E.; and Kerlin, Jack H., to Hines Industries, Inc. Hard bearing, 2-plane, horizontal dynamic balancer. 4,406,164., Cl. 73-476.000.

Hines Industries, Inc.: *See*—
Hines, Gordon E.; and Kerlin, Jack H., 4,406,164., Cl. 73-476.000.

Hirai, Takeshi: *See*—
Furuta, Katsuhisa; Hirai, Takeshi; and Nakamura, Yoshinori, 4,406,399., Cl. 236-15.0BC.

Hirata, Suekazu: *See*—
Nakaya, Keiichi; Kawanami, Kohji; and Hirata, Suekazu, 4,406,869., Cl. 423-421.000.

Hirozawa, Yasuo, to Hitachi, Ltd. Pre-mixing type burner. 4,406,617., Cl. 431-351.000.

Hisatake, Michio; and Sano, Yasuro, to Janome Sewing Machine Co. Ltd. Sewing machine with cyclic pattern stitching device. 4,406,238., Cl. 112-277.000.

Hitachi, Ltd.: *See*—
Baji, Toru; Tsukada, Toshihisa; Koike, Norio; Akiyama, Toshiyuki; Takemoto, Iwao; Shimada, Shigeru; Kusano, Chushirou; Ohba, Shinya; and Matsumaru, Haruo, 4,407,010., Cl. 358-213.000.
Hirozawa, Yasuo, 4,406,617., Cl. 431-351.000.
Ikeuchi, Kazuo; Koga, Tsuguaki; Inoue, Tomoaki; and Oyabu, Katsumi, 4,406,169., Cl. 73-862.540.
Kasuya, Katsuhiko; Fujiwara, Mitsuru; Matsunaga, Tetsuzo; Imai, Masaya; and Takahashi, Yasuo, 4,406,602., Cl. 418-201.000.
Matsumura, Hiroyoshi; Katsuyama, Toshio; and Suganuma, Tsuneo, 4,406,518., Cl. 350-96.310.
Tachi, Shinichi, 4,406,733., Cl. 156-643.000.
Tsuchida, Masayuki; Inoue, Toshio; Mizutani, Yoich; and Suzuki, Toshitsugu, 4,406,589., Cl. 417-295.000.

Hitland, Hjalmar A. K., to Ross-Finlay Ltd./Ltee. Cascade flotation process. 4,406,782., Cl. 209-164.000.

Ho, Chung-Shun: *See*—
Blass, Karl G.; and Ho, Chung-Shun, 4,406,751., Cl. 204-1.00T.

Hobbs, Bryan S.: *See*—
Chan, Yat S.; Tantram, Anthony D. S.; Hobbs, Bryan S.; and Finbow, John R., 4,406,770., Cl. 204-406.000.

Hochtemperatur-Reaktorbau GmbH: *See*—
Schwiers, Hans-Georg; Schoening, Josef; and Kissling, Guenter, 4,406,855., Cl. 376-250.000.

Hockensmith, John L., to JLG Industries Inc. Telescopic boom construction. 4,406,375., Cl. 212-268.000.

Hoechst Aktiengesellschaft: *See*—
Strum, Karl; Muschaweck, Roman; and Hropot, Max, 4,406,895., Cl. 424-229.000.

Hoffman, Frank W. Liquid purification system. 4,406,748., Cl. 202-233.000.

Hoffmann, Wolfgang, to B & H Manufacturing Company, Inc. System and apparatus for applying heat shrink film to containers and other articles and heat shrinking the same. 4,406,721., Cl. 156-86.000.

Hoffmeister, Friedrich: *See*—
Meyer, Horst; Bossert, Friedrich; Kazda, Stanislav; Hoffmeister, Friedrich; and Vater, Wulf, 4,406,906., Cl. 424-263.000.

Hofmann, Rudolf. Compressor suction regulator. 4,406,588., Cl. 417-281.000.

Hoijer, Staffan: *See*—
Magnusson, Arnold; Holm, Lennart; Lundin, Ragnar; Lindstrand, Hans-Olov; Johansson, Osten; Wahlborn, Sven; and Hoijer, Staffan, 4,406,815., Cl. 252-305.000.

Hokkai Can Co., Ltd.: *See*—
Miyahara, Nagao; and Kikuchi, Sadaaki, 4,406,157., Cl. 73-52.000.

Holcombe, Cressie E., Jr.: *See*—
Beck, David E.; Gooch, Jack G.; Holcombe, Cressie E., Jr.; and Masters, David R., 4,406,699., Cl. 75-233.000.

Holick, Hubert; and Jester, Alfred, to BBC Brown, Boveri & Company Limited. Spiral strip brushlike stress buffering power semiconductor contacts. 4,407,006., Cl. 357-68.000.

Holland-Letz, Gunter; and Nagel, Gerhard, to Esselte Pendaflex Corporation. Printing mechanism for printing bar codes on pressure-sensitive labels adhering to a carrier tape. 4,406,222., Cl. 101-92.000.

Hollandse Signaalapparaten B.V.: *See*—
Ploumen, Hubert J., 4,406,977., Cl. 315-375.000.

Holloway, William G. Mobile fluid storage tank. 4,406,471., Cl. 280-5.00C.

Holm, Lennart: *See*—
Magnusson, Arnold; Holm, Lennart; Lundin, Ragnar; Lindstrand, Hans-Olov; Johansson, Osten; Wahlborn, Sven; and Hoijer, Staffan, 4,406,815., Cl. 252-305.000.

Holmes, Buddy L.: *See*—
Winthrop, Michael F.; and Holmes, Buddy L., 4,406,627., Cl. 434-219.000.

Holtey, Thomas O.; Kelly, Richard P.; and Peters, Daniel G., to Honeywell Information Systems Inc. Communications subsystem having a direct connect clock. 4,407,014., Cl. 364-200.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Asaka, Urataro; Suzuki, Akira; and Kimura, Kiyoshi, 4,406,269., Cl. 123-549.000.
Furukawa, Yoshimi, 4,406,472., Cl. 280-91.000.
Miyakoshi, Shinichi; and Isono, Tokio, 4,406,475., Cl. 280-277.000.

Honeywell Inc.: *See*—
Berkhof, Hendrikus, 4,406,400., Cl. 236-80.00F.
Nelson, Lorne W., 4,406,138., Cl. 62-305.000.

Honeywell Information Systems Inc.: *See*—
Holtey, Thomas O.; Kelly, Richard P.; and Peters, Daniel G., 4,407,014., Cl. 364-200.000.
Karcher, DeWayne E., 4,406,572., Cl. 414-404.000.

Horgan, William J.: *See*—
Hattler, Brack G.; Richards, Ronnie D.; and Horgan, William J., 4,406,656., Cl. 604-280.000.

Horiguchi, Satoru; and Amemiya, Shinichi, to Dai Nippon Insatsu Kabushiki Kaisha. Method of inspecting a resist layer on a gravure printing plate, and device for practicing same. 4,406,160., Cl. 73-73.000.

Horike, Masayoshi: *See*—
Uemura, Yukio; and Horike, Masayoshi, 4,406,494., Cl. 296-214.000.

Horino, Ippei; Tsumura, Yuzo; and Iwata, Masatoshi, to Kabushiki Kaisha Komatsu Seisakusho. Diesel fuel injection nozzle. 4,406,404., Cl. 239-91.000.

Horino, Shigeo: *See*—
Ohba, Hiroshi; and Horino, Shigeo, 4,406,728., Cl. 156-468.000.

Horodysky, Andrew G.; and Kaminski, Joan M., to Mobil Oil Corporation. Friction reducing additives and compositions thereof. 4,406,802., Cl. 252-49.600.

Horwinski, Elwood R.; and McGuire, Edward P., to Cash, Hugh P., by said Elwood R. Horwinski. Bladder control device and method. 4,406,288., Cl. 128-422.000.

Hott, William M.; and Hundley, John W., to Philips Industries, Inc. Ventilator device and mounting arrangement therefor. 4,406,216., Cl. 98-116.000.

Hotz, Hans R. Device for cleaning the rolls of draft rolling mills of textile machines. 4,406,039., Cl. 19-262.000.

Hough, Harold L.: *See*—
Haraden, Thomas; and Hough, Harold L., 4,406,969., Cl. 313-318.000.

Houle, Michel, to J. Houle & Fils Inc. Apparatus for handling slurry and manure pump. 4,406,413., Cl. 241-46.040.

Howlett, Eric M. Wide angle color photography method and system. 4,406,532., Cl. 354-114.000.

Hropot, Max: *See*—
Strum, Karl; Muschaweck, Roman; and Hropot, Max, 4,406,895., Cl. 424-229.000.

Hsu, David S. Y.; and Manuccia, Thomas J., Jr., to United States of America, Navy. Separation of carbon isotopes. 4,406,763., Cl. 204-158.0HA.

Huang, Cham-Ber. Harmonica. 4,406,206., Cl. 84-377.000.

Huang, Jen-chi, to Polychrome Corporation. Anodization method. 4,406,757., Cl. 204-58.000.

Hubbard, Vance M.; and Brunson, Welton K., to Tecnol, Inc. Fluid impermeable cover for operating room tourniquet. 4,406,281., Cl. 128-132.00R.

Huber, Bernhard: *See*—
Tomoff, Toma; Tamm, Rolf; Huber, Bernhard; and Walsh, Alan, 4,406,541., Cl. 356-312.000.

Huck, James J.: *See*—
Huck, Lewis F.; and Huck, James J., 4,406,025., Cl. 4-443.000.

Huck, Lewis F.; and Huck, James J., to Bristol Babcock Inc. Bidet apparatus for use in connection with a conventional flush toilet. 4,406,025., Cl. 4-443.000.

Huesgen, Eugene L.; and Walsh, George P., to Elliott Turbomachinery Co., Inc. Overspeed trip mechanism and method of assembling. 4,406,172., Cl. 74-3.000.

Hughes, Richard H., to RCA Corporation. Color picture tube having an expanded focus lens type inline electron gun with an improved stigmator. 4,406,970., Cl. 313-414.000.

Hughes Tool Company: *See*—
Baugh, John L.; and Montgomery, James W., 4,406,324., Cl. 166-125.000.
Dill, Herbert C., 4,406,337., Cl. 175-410.000.
Lake, Charles W.; and Weber, Herb, 4,406,092., Cl. 51-425.000.
Witten, Raymond L., 4,406,462., Cl. 277-93.0SD.

Hundley, John W.: *See*—
Hott, William M.; and Hundley, John W., 4,406,216., Cl. 98-116.000.

Hunter Douglas, Inc.: *See*—
Anderson, Richard N., 4,406,435., Cl. 248-261.000.

Hunter, Walter D., to Texaco Development Corp. Process for secondary recovery. 4,406,799., Cl. 252-8.55D.

Hunziker, Fritz; and Fischer, Rudolf, to Sandoz Ltd. Neuroleptic use of morphanthridines. 4,406,900., Cl. 424-250.000.

Hwang, Lydia L. Y.: *See*—
Steigman, Joseph; Solomon, Nathan A.; and Hwang, Lydia L. Y., 4,406,876., Cl. 424-1.000.

Ichikawa, Kentaro, to Tokyo Shibaura Denki Kabushiki Kaisha. Multistage hydraulic machine and a method of operating same. 4,406,577., Cl. 415-1.000.

Igashira, Toshihiko: *See*—
Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, 4,406,273., Cl. 123-625.000.

Iizuka, Hisakazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a semiconductor device. 4,406,051., Cl. 29-576.00B.

Ikeda, Kaoru: *See*—
Konno, Kazuhiko; Goh, Atsushi; Miyoshi, Kazuhito; and Ikeda, Kaoru, 4,406,688., Cl. 71-92.000.

Ikeuchi, Kazuo; Koga, Tsuguaki; Inoue, Tomoaki; and Oyabu, Katsumi, to Hitachi, Ltd. Method of and system for monitoring bearing conditions. 4,406,169., Cl. 73-862.540.

Ikeura, Kenji, to Nissan Motor Company, Limited. Intake air flow rate control system for an internal combustion engine or an automotive vehicle. 4,406,261., Cl. 123-339.000.

Ikeura, Kenji, to Nissan Motor Company, Ltd. Engine idling speed control system and method for an internal combustion engine. 4,406,262., Cl. 123-339.000.

Illes, Janos: *See*—
Takacs, Istvan; Kerey, Gyorgy; Rudolf, Peter; Illes, Janos; Szabo, Bela; Vereczkey, Endre; Banos, Zoltan; Bosits, Gyula; and Czebe, Laszlo, 4,406,795., Cl. 210-771.000.

Illinois Tool Works Inc.: *See—*
Bury, George J., 4,406,438., Cl. 248-544.000.
Chisholm, Lisa E.; and Daubert, Richard F., 4,406,033., Cl. 16-4.000.

Imai, Hideo, to Kawasaki Electric Wire Co., Ltd. Apparatus for orienting terminal blades attached to a wire for producing an electrical cord therefrom. 4,406,604., Cl. 425-126.00R.

Imai, Masaya: *See—*
Kasuya, Katsuhiko; Fujiwara, Mitsuru; Matsunaga, Tetsuzo; Imai, Masaya; and Takahashi, Yasuo, 4,406,602., Cl. 418-201.000.

Imax Systems Corporation: *See—*
Shaw, William C., 4,406,519., Cl. 350-117.000.

Inaba, Hajimu; Kita, Masao; Sakakibara, Shinsuke; and Nihei, Ryo, to Fujitsu Fanuc Limited. Industrial robot with a safeguard mechanism. 4,406,576., Cl. 414-735.000.

Ingersoll-Rand Company: *See—*
Towner, Joseph L., 4,406,601., Cl. 418-191.000.

Inoue, Naohiko, to Nissan Motor Company, Limited. Hydraulic pump drive system for an automotive vehicle. 4,406,951., Cl. 307-10.00R.

Inoue, Tomoaki: *See—*
Ikeuchi, Kazuo; Koga, Tsuguaki; Inoue, Tomoaki; and Oyabu, Katsumi, 4,406,169., Cl. 73-862.540.

Inoue, Toshio: *See—*
Tsuchida, Masayuki; Inoue, Toshio; Mizutani, Yoich; and Suzuki, Toshitsugu, 4,406,589., Cl. 417-295.000.

Institut Francais du Petrole: *See—*
Rojey, Alexandre; and Ramet, Claude, 4,406,135., Cl. 62-114.000.

Intel Corporation: *See—*
Bayliss, John A.; Peterson, Craig B.; and Wilde, Doran K., 4,407,016., Cl. 364-200.000.

Interelectric AG: *See—*
Wolf, Peter; and Fritschy, Hugo, 4,406,963., Cl. 310-239.000.

International Business Machines Corporation: *See—*
Bullock, Joseph G.; and Rueger, William J., 4,406,425., Cl. 242-183.000.
Chow, William W.; and Rigby, Eugene B., 4,406,722., Cl. 156-89.000.
Clemen, Rainer; Fischer, Walter; and Haug, Werner O., 4,406,956., Cl. 307-475.000.
Depp, Steven W.; and Juliana, Anthony, Jr., 4,406,997., Cl. 340-718.000.
Desai, Kamalesh S.; Eggerding, Carl L.; Ferrante, John A.; Ricci, Raymond; and Urfer, Ernest N., 4,407,007., Cl. 357-74.000.
Froot, Howard A., 4,406,844., Cl. 264-21.000.
Ramirez, Ciro N., 4,406,983., Cl. 318-653.000.

International Flavors & Fragrances Inc.: *See—*
Boden, Richard M., 4,406,810., Cl. 252-174.110.

International Harvester Co.: *See—*
Bettin, Leonard A.; Galos, Imre; and Dufour, Donald J., 4,406,442., Cl. 251-310.000.

International Paper Company: *See—*
Eudy, William W., 4,406,892., Cl. 424-184.000.

International Telephone and Telegraph Corporation: *See—*
Duncan, Robert H., 4,406,926., Cl. 179-84.0VF.
MacKenzie, William G., 4,406,928., Cl. 179-146.00R.
Pommer, Karl E., II, 4,406,927., Cl. 179-84.00T.

InterNorth, Inc.: *See—*
Busse, Paul J., 4,406,820., Cl. 252-430.000.

Inui, Toshiharu; Kikuchi, Yoshiki; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Heat transfer type thermal recording apparatus. 4,407,002., Cl. 346-76.0PH.

Irish, David C., to Ford Motor Company. Catalyst over temperature protector. 4,406,120., Cl. 60-284.000.

Irvin, Howard B., to Phillips Petroleum Company. Solvent removal from polymer solution utilizing flashed vapor as a heat source. 4,406,750., Cl. 203-22.000.

Isco, Inc.: *See—*
Allington, Robert W., 4,406,158., Cl. 73-61.10C.

Ishihara Sangyo Kaisha Ltd.: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Tsujii, Yasuhiro; Murai, Shigeo; and Jyonishi, Hisayoshi, 4,406,841., Cl. 260-465.00G.

Ishihara, Shoichi: *See—*
Wada, Takahiro; Ishihara, Shoichi; and Yamamoto, Ryoichi, 4,406,804., Cl. 252-70.000.

Ishii, Takashi: *See—*
Takano, Yutaka; Yajima, Koji; Ishii, Takashi; Yoshida, Tadahisa; Ota, Katsuhiro; and Yagishita, Shigeru, 4,406,971., Cl. 313-461.000.

Isono, Tokio: *See—*
Miyakoshi, Shinichi; and Isono, Tokio, 4,406,475., Cl. 280-277.000.

Itamoto, John T., to Garrett Corporation, The. Analog fluidic speed sensor. 4,406,166., Cl. 73-502.000.

Itikawa, Kiyonoshin: *See—*
Matsuda, Tetsuo; Nakano, Jun; Terashima, Yukio; Suzuki, Yuji; and Itikawa, Kiyonoshin, 4,406,908., Cl. 424-269.000.

Ito, Takeo: *See—*
Hayase, Syuzi; and Ito, Takeo, 4,406,764., Cl. 204-159.110.

Itoh, Kiyoshi; and Kamoshita, Tetuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Light beam scanning device. 4,406,525., Cl. 350-486.000.

ITT Industries, Inc.: *See—*
Haar, Lucas H., 4,406,213., Cl. 91-376.00R.

Itzrodt, Gerd, to Andreas Stihl. Power saw. 4,406,066., Cl. 30-382.000.

Iwata, Masatoshi: *See—*
Horino, Ippei; Tsumura, Yuzo; and Iwata, Masatoshi, 4,406,404., Cl. 239-91.000.

Izzi, Lewis B., to Plastic Oddities, Inc. Water closet coupling. 4,406,480., Cl. 285-12.000.

J. Houle & Fils Inc.: *See—*
Houle, Michel, 4,406,413., Cl. 241-46.040.

Jacob, Rudi: *See—*
Pechau, Gerhard; Schwartz, Ronald; and Jacob, Rudi, 4,406,198., Cl. 83-170.000.

Jaeger, Paul M.: *See—*
Ophir, Jonathan; Maklad, Nabil F.; and Jaeger, Paul M., 4,406,153., Cl. 73-1.0DV.

Jaffe, Walther. Marking-plates. 4,406,075., Cl. 40-16.400.

Jagen, Paul R., to Du Pont de Nemours, E. I., and Company. Jack and plug electrical assembly. 4,406,509., Cl. 339-91.00R.

Janik, Edward: *See—*
Pretor, Wincenty; Skoczynski, Wojciech; Janik, Edward; Zych, Henryk; and Serwotka, Ryszard, 4,406,565., Cl. 405-258.000.

Janome Sewing Machine Co. Ltd.: *See—*
Eguchi, Yasukata, 4,406,235., Cl. 112-158.00E.
Eguchi, Yasukata; and Nomoto, Reishi, 4,406,237., Cl. 112-169.000.
Hisatake, Michio; and Sano, Yasuro, 4,406,238., Cl. 112-277.000.

Janssen, Harald; Kertscher, Eberhard; Matthies, Hans-Georg; and Theysoh, Rainer. Process for the manufacture of insulated winding wires through extrusion of thermoplastics. 4,406,851., Cl. 264-174.000.

Janutta, Reinhard; and Eggert, Wolfgang, to Hauni-Werke Korber & Co. KG. Apparatus for dressing and profiling grinding wheels. 4,406,275., Cl. 125-11.0CD.

Jardine, Colin D.; Chong, Sooi; Coles, Rodney H.; and Hebb, Stephen, to Hanna Mining Company, The. Mill liner for dry autogenous mills. 4,406,417., Cl. 241-284.000.

Jeffers, Donald M.; and Kokal, Vincent, to Commonwealth Edison Co. Instrument and procedure for replacing nuclear reactor jet pump holddown beams. 4,406,047., Cl. 29-426.500.

Jenkins, Donald S., to United States of America, Air Force. Integrated solid propellant gas generator and fluid heat exchanger. 4,406,863., Cl. 422-205.000.

Jentsch, Hans G. Method of producing self-supporting plastic bag. 4,406,646., Cl. 493-209.000.

Jergens, Inc.: *See—*
Seidel, Lawrence H., 4,406,445., Cl. 269-32.000.

Jester, Alfred: *See—*
Holick, Hubert; and Jester, Alfred, 4,407,006., Cl. 357-68.000.

JLG Industries Inc.: *See—*
Hockensmith, John L., 4,406,375., Cl. 212-268.000.

Johansson, Osten: *See—*
Magnusson, Arnold; Holm, Lennart; Lundin, Ragnar; Lindstrand, Hans-Olov; Johansson, Osten; Wahlborn, Sven; and Hoijer, Staffan, 4,406,815., Cl. 252-305.000.

John Wyeth and Brother Limited: *See—*
Ward, Terence J.; Wood, Martyn D.; and Wyllie, Michael G., 4,406,903., Cl. 424-253.000.

Johnson, Dean E., to Phillips Petroleum Company. Cable-bending tool. 4,406,149., Cl. 72-458.000.

Johnson, Herbert; and Elliott, Richard M., to USM Corporation. Positioning apparatus. 4,406,234., Cl. 112-121.120.

Johnson and Johnson: *See—*
Kaprelian, George; Monfredo, Joseph; and Meyerson, Melvin, 4,406,620., Cl. 433-5.000.

Johnson, Richard H.: *See—*
Boggy, Richard D.; Johnson, Richard H.; Eggleston, John M.; and Schulthess, Carl W., 4,406,542., Cl. 356-345.000.

Johnson, Theodore: *See—*
Smith, Jason T.; Church, Thomas A.; and Johnson, Theodore, 4,406,360., Cl. 198-781.000.

Jonathan Temple & Co., Inc.: *See—*
Philips, Michael R., 4,406,422., Cl. 242-118.400.

Jones, Addison B., to Rockwell International Corporation. Inductive heating arrangement for evaporating thin film alloy onto a substrate. 4,406,252., Cl. 118-724.000.

Jones, Robert A., Jr.: *See—*
Marcinkowsky, Arthur E.; Keller, George E., II; and Jones, Robert A., Jr., 4,406,867., Cl. 423-226.000.

Jordan, Royce D.; and O'Neal, Edgar L., to Audichron Company, The. Message delivery system. 4,406,925., Cl. 179-18.00B.

Joseph, Christian M. Additive compositions for hydraulic cement base mixtures. 4,406,702., Cl. 106-90.000.

Jos. Hunkeler AG Fabrik fur Graphische Maschinen: *See—*
Felix, Willi, 4,406,650., Cl. 493-410.000.

JRT Associates: *See—*
Yeh, Richard S., 4,406,629., Cl. 434-311.000.

Jufuku, Yasunobu: *See—*
Kinbara, Hiroji; Hattori, Yoshiyuki; Matsui, Kazuma; Hayakawa, Hideyuki; Takizawa, Masaaki; Tamura, Masaru; and Jufuku, Yasunobu, 4,406,644., Cl. 474-13.000.

Juliana, Anthony, Jr.: *See—*
Depp, Steven W.; and Juliana, Anthony, Jr., 4,406,997., Cl. 340-718.000.

Junkers, John K. Universally usable hydraulic wrench for simultaneously tightening or loosening two threaded connectors. 4,406,185., Cl. 81-57.390.

Jursa, Stephen J. D., to PPG Industries, Inc. Eccentrically mounted stop for outline molds for shaping glass sheets. 4,406,685., Cl. 65-287.000.

Jusco Kabushiki Kaisha: *See—*
Hatakeyama, Koichi, 4,406,218., Cl. 99-401.000.

Jyonishi, Hisayoshi: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Tsujii, Yasuhiro; Murai, Shigeo; and Jyonishi, Hisayoshi, 4,406,841., Cl. 260-465.00G.
Jysky, Goran H., to Atlas Copco AB. Method of binding dust. 4,406,330., Cl. 175-66.000.
Kabushiki Kaisha Daikin Seisakusho: *See*—
Nagano, Tamio; and Nishimura, Yoshio, 4,406,357., Cl. 192-106.200.
Kabushiki Kaisha Gakushu Kenkyusha (Gakken Co., Ltd.): *See*—
Maezawa, Osamu; Saitho, Yusuke; and Tominaga, Koichi, 4,406,551., Cl. 400-163.200.
Kabushiki Kaisha Higashifuji Seisakusho: *See*—
Tanaka, Toshio; Omata, Hiroshi; and Uno, Kuniaki, 4,406,953., Cl. 307-141.000.
Kabushiki Kaisha Iseki Kaihatsu Koki: *See*—
Akesaka, Toshio, 4,406,498., Cl. 299-11.000.
Kabushiki Kaisha Kobe Seiko Sho: *See*—
Fujiwara, Koichi; Shiozawa, Takeo; Miki, Katsumi; Uchimura, Masahiko; Miyajima, Kazunori; and Tonouchi, Yasuo, 4,406,321., Cl. 164-504.000.
Narita, Kiichi; Onoye, Toshio; and Egami, Akira, 4,406,754., Cl. 204-1.00T.
Shimogori, Kazutoshi; Kajiwara, Kazuichi; Miki, Kenji; and Fukutsuka, Toshio, 4,406,761., Cl. 204-144.500.
Yutori, Toshiaki; and Ogawa, Rikuo, 4,406,713., Cl. 148-12.00B.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Horino, Ippei; Tsumura, Yuzo; and Iwata, Masatoshi, 4,406,404., Cl. 239-91.000.
Kabushiki Kaisha Morita Seisakusho: *See*—
Kataoka, Kenzo; Watanabe, Hiroo; and Ogawa, Haruo, 4,406,470., Cl. 279-1.0SG.
Matsui, Takahiro; and Tachibana, Akifumi, 4,406,123., Cl. 60-459.000.
Kabushiki Kaisha Riken: *See*—
Wada, Masahiko, 4,406,192., Cl. 82-19.000.
Kabushiki Kaisha Shinsei Industries: *See*—
Fujita, Mituo, 4,406,727., Cl. 156-384.000.
Kabushiki Kaisha Suwa Seikosha: *See*—
Futami, Yoshinori; and Ogawa, Tokumon, 4,407,019., Cl. 368-200.000.
Kaesewinkel, Klaus: *See*—
Menhorn, Hermann; Muller, Georg; Nitschke, Christoph; Wehrberger, Helmut; and Kaesewinkel, Klaus, 4,406,930., Cl. 191-39.000.
Kajiwara, Kazuichi: *See*—
Shimogori, Kazutoshi; Kajiwara, Kazuichi; Miki, Kenji; and Fukutsuka, Toshio, 4,406,761., Cl. 204-144.500.
Kakenyaku Kako Co., Ltd.: *See*—
Matsuda, Tetsuo; Nakano, Jun; Terashima, Yukio; Suzuki, Yuji; and Itikawa, Kiyonoshin, 4,406,908., Cl. 424-269.000.
Kalashnikov, Vladilen K.: *See*—
Fridman, Georgy N.; Kalashnikov, Vladilen K.; Biznya, Vladimir M.; Kovarsky, Efim M.; Borisov, Boris A.; Semenov, Lev S.; Malyshev, Valentin A.; Voronin, Nikolai S.; Staskevich, Lev. N.; Zinin, Evgeny F.; Dulitskaya, Galina M.; and Shegai, Elvira R., 4,406,962., Cl. 310-233.000.
Kamachi, Hajime: *See*—
Aburaki, Shimpei; Kamachi, Hajime; Narita, Yukio; Okumura, Jun; and Naito, Takayuki, 4,406,899., Cl. 424-246.000.
Kamata, Keiji; Suzuki, Hikoshiro; and Fukushi, Yutaka, to Topre Corporation. Central air conditioning equipment. 4,406,397., Cl. 236-1.00B.
Kaminski, Joan M.: *See*—
Horodysky, Andrew G.; and Kaminski, Joan M., 4,406,802., Cl. 252-49.600.
Kamiya, Sigeru; Nozawa, Masaei; Hayashi, Nobutoshi; and Morino, Seiji, to Nippon Soken, Inc. Carbon-particle decontaminating system. 4,406,119., Cl. 60-275.000.
Kamoshita, Tetuo: *See*—
Itoh, Kiyoshi; and Kamoshita, Tetuo, 4,406,525., Cl. 350-486.000.
Kaneko, Toshio: *See*—
Suzuki, Kohji; Kaneko, Toshio; Oyama, Hajime; and Enoki, Shigekazu, 4,406,536., Cl. 355-3.0DD.
Kanemasa, Akira, to Nippon Electric Co., Ltd. Digital signal processor suited for LSI fabrication. 4,407,018., Cl. 364-736.000.
Kankaanpa , Matti, to Valmet Oy. Guide roll and suction box for twin-wire forming system. 4,406,739., Cl. 162-203.000.
Kapeller, Josef: *See*—
Lukesch, Norbert; and Kapeller, Josef, 4,406,441., Cl. 251-214.000.
Kapner, Robert S.; and O'Brien, Robert, to Diamond West Energy Corporation. Desulfurization of delayed petroleum coke. 4,406,872., Cl. 423-461.000.
Kaprelian, George; Monfredo, Joseph; and Meyerson, Melvin, to Johnson and Johnson. Facebow swivel. 4,406,620., Cl. 433-5.000.
Karcher, DeWayne E., to Honeywell Information Systems Inc. Transfer system. 4,406,572., Cl. 414-404.000.
Karl, Leopold; Batz, Manfred; Wundling, Herbert; and Weiss, Ralph, to Kindermann & Co. GmbH. Drive for a circular magazine of a slide projector. 4,406,531., Cl. 353-117.000.
Karlicek, Robert F., to Southern California Edison Company. Current responsive devices for synchronous generators. 4,406,984., Cl. 322-27.000.
Kasuya, Katsuhiko; Fujiwara, Mitsuru; Matsunaga, Tetsuzo; Imai, Masaya; and Takahashi, Yasuo, to Hitachi, Ltd. Screw rotor with specific tooth profile. 4,406,602., Cl. 418-201.000.
Kataishi, Takao; and Seo, Iwazou, to Misawa Home Co., Ltd. Releasing apparatus. 4,406,608., Cl. 425-436.0RM.
Kataoka, Kenzo; Watanabe, Hiroo; and Ogawa, Haruo, to Kabushiki Kaisha Morita Seisakusho. Chuck device for dental handpiece. 4,406,470., Cl. 279-1.0SG.
Kato, Kunio; and Tamura, Yoshihide, to Taisei Kensetsu Kabushiki Kaisha. Precast concrete silo complex and a method of constructing it. 4,406,102., Cl. 52-224.000.
Katoh, Mitsumi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument of fixed formant synthesis type. 4,406,204., Cl. 84-1.190.
Katsuyama, Toshio: *See*—
Matsumura, Hiroyoshi; Katsuyama, Toshio; and Suganuma, Tsuneo, 4,406,518., Cl. 350-96.310.
Kaucic, Robert A.: *See*—
Schneider, Joseph J.; and Kaucic, Robert A., 4,406,150., Cl. 72-478.000.
Kawachi, Masao; Tomaru, Satoru; Edahiro, Takao; and Suto, Shoichi, to Nippon Telegraph & Telephone Public Corporation. Core torch for fabricating single-mode optical fiber preforms. 4,406,684., Cl. 65-157.000.
Kawada, Shigeki: *See*—
Harano, Keiichi; Kawada, Shigeki; and Oyama, Shigeaki, 4,406,959., Cl. 310-58.000.
Kawai, Hisasi: *See*—
Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, 4,406,273., Cl. 123-625.000.
Kawai, Mituo: *See*—
Yebisuya, Takashi; Yamamoto, Masao; Kawai, Mituo; and Tajima, Koichi, 4,406,698., Cl. 75-125.000.
Kawanami, Kohji: *See*—
Nakaya, Keiichi; Kawanami, Kohji; and Hirata, Suekazu, 4,406,869., Cl. 423-421.000.
Kawasaki Electric Wire Co., Ltd.: *See*—
Imai, Hideo, 4,406,604., Cl. 425-126.00R.
Kawasaki Steel Corporation: *See*—
Maeyama, Kimio, 4,406,618., Cl. 432-23.000.
Kawaziri, Kazuhiro: *See*—
Higashi, Akio; Kawaziri, Kazuhiro; and Murayama, Jin, 4,406,765., Cl. 204-164.000.
Kayoun, Pierre, to Thomson-CSF. Process for the controlled modification of the geometrical-characteristics of the end of a monomode optical fiber and application thereof to optical coupling. 4,406,732., Cl. 156-626.000.
Kazda, Stanislav: *See*—
Meyer, Horst; Bossert, Friedrich; Kazda, Stanislav; Hoffmeister, Friedrich; and Vater, Wulf, 4,406,906., Cl. 424-263.000.
Kee Klamps Limited: *See*—
Pickering, David J., 4,406,560., Cl. 403-297.000.
Keesee, Kenneth C.; and Ruckman, James A., to Westvaco Corporation. Portable earth anchor. 4,406,100., Cl. 52-155.000.
Keim, Karl-Heinz: *See*—
Fremery, Max; Keim, Karl-Heinz; and Korff, Joachim, 4,406,824., Cl. 252-458.000.
Keiper Automobiltechnik GmbH & Co. KG: *See*—
Kluting, Bernd, 4,406,497., Cl. 297-366.000.
Keller, George E., II: *See*—
Marcinkowsky, Arthur E.; Keller, George E., II; and Jones, Robert A., Jr., 4,406,867., Cl. 423-226.000.
Kelly, Richard P.: *See*—
Holtey, Thomas O.; Kelly, Richard P.; and Peters, Daniel G., 4,407,014., Cl. 364-200.000.
Kelsey-Hayes Company: *See*—
Rozmus, Walter J., 4,406,671., Cl. 55-2.000.
Kelstrom, Donald G.; Williams, John D.; and Woodrich, Lester H., to UOP Inc. Annular corrugator. 4,406,142., Cl. 72-98.000.
Kerey, Gyorgy: *See*—
Takacs, Istvan; Kerey, Gyorgy; Rudolf, Peter; Illes, Janos; Szabo, Bela; Vereczkey, Endre; Banos, Zoltan; Bosits, Gyula; and Czebe, Laszlo, 4,406,795., Cl. 210-771.000.
Kerlin, Jack H.: *See*—
Hines, Gordon E.; and Kerlin, Jack H., 4,406,164., Cl. 73-476.000.
Kern, Calvin V.; and Villano, James J., to Allied Corporation. Sliding door actuating mechanism. 4,406,420., Cl. 242-54.00R.
Kernforschungsanlage Julich GmbH: *See*—
Hemmerich, Johann, 4,406,130., Cl. 62-55.500.
Kerr Concrete Pipe Company: *See*—
Hand, George E., 4,406,605., Cl. 425-145.000.
Kerr-McGee Corporation: *See*—
Baldwin, Roger A.; Halko, John E.; and Henke, Ron S., 4,406,663., Cl. 44-51.000.
Kerr, William S. Table extension for table saws. 4,406,200., Cl. 83-473.000.
Kertscher, Eberhard: *See*—
Janssen, Harald; Kertscher, Eberhard; Matthies, Hans-Georg; and Theysoh, Rainer, 4,406,851., Cl. 264-174.000.
Keske, Frank E.; and Goloff, Alexander, to Caterpillar Tractor Co. Cam roller follower. 4,406,257., Cl. 123-90.480.
Kessler, Donald L., to Tecumseh Products Company. Hermetic compressor. 4,406,590., Cl. 417-360.000.
Kessler, Donald L., to Tecumseh Products Company. Mounting spud arrangement for a hermetic compressor. 4,406,593., Cl. 417-363.000.
Ketley, Arthur D.: *See*—
Morgan, Charles R.; and Ketley, Arthur D., 4,406,826., Cl. 252-512.000.

Khan, Tasadduq, to Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.). Process for increasing the lifetime of a refractory material piece made of metallic carbide parallel fibers embedded into a metallic matrix. 4,406,716., Cl. 148-130.000.

Khapaev, Vadim M., to Sevastopolsky Priborostroitelny Institut. Method of breaking down emulsions and a device for carrying same into effect. 4,406,791., Cl. 210-649.000.

Kida, Makoto: *See*—
Numazawa, Akio; Matoba, Taketo; and Kida, Makoto, 4,406,176., Cl. 74-492.000.

Kidd, Patrick D.: *See*—
Orlowski, Jan A.; Butler, David V.; and Kidd, Patrick D., 4,406,625., Cl. 433-228.000.

Kiesling, Norbert W., to Colt Industries Operating Corp. Fuel metering and discharging apparatus for a combustion engine. 4,406,266., Cl. 123-438.000.

Kiess, Ronald J.; and Nichols, Gary R., to Magnavox Government and Industrial Electronics Company. Magnetic sensor for distributorless ignition system and position sensing. 4,406,272., Cl. 123-617.000.

Kikuchi, Sadaaki: *See*—
Miyahara, Nagao; and Kikuchi, Sadaaki, 4,406,157., Cl. 73-52.000.

Kikuchi, Yoshiki: *See*—
Inui, Toshiharu; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,407,002., Cl. 346-76.0PH.

Kilmoyer, James E., to ACF Industries, Incorporated. Gate valve with position indicator. 4,406,303., Cl. 137-554.000.

Kim, Bang M.: *See*—
Weininger, Joseph L.; and Kim, Bang M., 4,406,752., Cl. 204-3.000.

Kim, Chul Ho: *See*—
Kim, Chung U., 4,406,243., Cl. 114-264.000.

Kim, Chung U., to Kim, Chul Ho. Waterborne structure. 4,406,243., Cl. 114-264.000.

Kimura, Kiyoshi: *See*—
Asaka, Urataro; Suzuki, Akira; and Kimura, Kiyoshi, 4,406,269., Cl. 123-549.000.

Kinbara, Hiroji; Hattori, Yoshiyuki; Matsui, Kazuma; Hayakawa, Hideyuki; Takizawa, Masaaki; Tamura, Masaru; and Jufuku, Yasunobu, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Power transmission system. 4,406,644., Cl. 474-13.000.

Kincaid, John W., to Belden Corporation. Slotless multi-shielded cable and tape therefor. 4,406,914., Cl. 174-107.000.

Kindermann & Co. GmbH: *See*—
Karl, Leopold; Batz, Manfred; Wundling, Herbert; and Weiss, Ralph, 4,406,531., Cl. 353-117.000.

Kindle, Edwin: *See*—
Buechel, Franz; and Kindle, Edwin, 4,406,079., Cl. 42-49.00R.

King, Christopher J. H., to Monsanto Company. Electrochemical cell assembly. 4,406,768., Cl. 204-268.000.

Kingswood, Andrew R.: *See*—
Buchan, Alexander B.; and Kingswood, Andrew R., 4,406,244., Cl. 114-368.000.

Kirjavainen, Alvi, to Valmet Oy. Adjustable headbox for a paper machine. 4,406,741., Cl. 162-336.000.

Kisfaludy, Lajos: *See*—
Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, 4,406,835., Cl. 260-239.30D.

Kissling, Guenter: *See*—
Schwiers, Hans-Georg; Schoening, Josef; and Kissling, Guenter, 4,406,855., Cl. 376-250.000.

Kita, Masao: *See*—
Inaba, Hajimu; Kita, Masao; Sakakibara, Shinsuke; and Nihei, Ryo, 4,406,576., Cl. 414-735.000.

Klaus, Frank A.: *See*—
Osborne, Thomas D., Jr., 4,406,187., Cl. 81-180.00R.

Klawer, Wilhelmus H.: *See*—
Wesseling, Karel H.; and Klawer, Wilhelmus H., 4,406,289., Cl. 128-670.000.

Klein, Schanzlin & Becker Aktiengesellschaft: *See*—
Becker, Karl-Heinz; Milla, Peter; Hergt, Peter; and Hellmann, Heinz-Dieter, 4,406,583., Cl. 415-219.00C.

Klockner-Humboldt-Deutz AG: *See*—
Paschen, Peter; Rao, Chatty; Kryczun, Alfred; Pfeiffer, Roland; Waldhecker, Heinz-Dieter; and Pufal, Rolf, 4,406,666., Cl. 48-92.000.

Kluting, Bernd, to Keiper Automobiltechnik GmbH & Co. KG. Apparatus for securing a variable position fitting element, particularly a fitting element for vehicle seats. 4,406,497., Cl. 297-366.000.

Knapp, Philip B. Liquid metering and dispensing apparatus. 4,406,406., Cl. 239-313.000.

Knight, David W., to U.S. Baird Corporation, The. Multi-station transfer press having transfer slide safety release means. 4,406,148., Cl. 72-405.000.

Knoblauch, Karl; Richter, Ekkehard; Giessler, Klaus; and Korbacher, Werner, to Bergwerksverband GmbH. Method for separating gas mixtures by means of a pressure changing technique. 4,406,674., Cl. 55-25.000.

Knudsen, George A.; and Savini, Charles, to Exxon Research & Engineering Co. Electrolytic process for treating sulfuric acid streams. 4,406,760., Cl. 204-130.000.

Koch, Wilhelm; and Schust, Gerhard, to Brose Fahrzeugteile GmbH & Co. Kommanditgesellschaft. Cable window driving mechanism for motor vehicles. 4,406,089., Cl. 49-352.000.

Kochendorfer, Richard; and Krauss, Helmut. Gudgeon pin. 4,406,558., Cl. 403-151.000.

Kodama, Teruo: *See*—
Nakamura, Osamu; Ogino, Isao; and Kodama, Teruo, 4,406,843., Cl. 261-22.000.

Koerner, Gotz: *See*—
Fink, Hans-Ferdi; Koerner, Gotz; and Luksch, Edmund, 4,406,738., Cl. 162-124.000.

Koga, Tsuguaki: *See*—
Ikeuchi, Kazuo; Koga, Tsuguaki; Inoue, Tomoaki; and Oyabu, Katsumi, 4,406,169., Cl. 73-862.540.

Kohler, Gisbert, to Stihl, Andreas. Cutting head for a free-cutting device. 4,406,065., Cl. 30-347.000.

Kohli, Benjamin, to Ener-Nat SA. Sunray captor. 4,406,279., Cl. 126-450.000.

Kohn, Gary A.: *See*—
Burger, Edward D.; and Kohn, Gary A., 4,406,467., Cl. 277-105.000.

Kohro, Kenji: *See*—
Chiba, Takao; Sakamoto, Nobuyoshi; and Kohro, Kenji, 4,406,964., Cl. 310-313.00B.

Koike, Norio: *See*—
Baji, Toru; Tsukada, Toshihisa; Koike, Norio; Akiyama, Toshiyuki; Takemoto, Iwao; Shimada, Shigeru; Kusano, Chushirou; Ohba, Shinya; and Matsumaru, Haruo, 4,407,010., Cl. 358-213.000.

Kokal, Vincent: *See*—
Jeffers, Donald M.; and Kokal, Vincent, 4,406,047., Cl. 29-426.500.

Kolze, Lawrence A., to Eaton Corporation. Heat pump switchover valve. 4,406,306., Cl. 62-324.600.

Kondo, Shinichi: *See*—
Umezawa, Hamao; and Kondo, Shinichi, 4,406,891., Cl. 424-180.000.

Kondo, Teruo: *See*—
Sasaki, Yoshiyuki; Nakamura, Etsuro; Ojima, Yoshimoto; Kondo, Teruo; Ukegawa, Koji; and Matsumura, Akimitsu, 4,406,772., Cl. 208-112.000.

Koniga, Herbert; and Weber, Heinz, to Fried, Krupp Gesellschaft mit beschrankter Haftung. Connection conveyor device for conveying material. 4,406,361., Cl. 198-863.000.

Konno, Kazuhiko; Goh, Atsushi; Miyoshi, Kazuhito; and Ikeda, Kaoru, to Mitsubishi Petrochemical Co., Ltd. Herbicidal 4-benzoyl-5-phenacyloxy-pyrazole derivatives, composition and method. 4,406,688., Cl. 71-92.000.

Konno, Keiji: *See*—
Nagumo, Michihiko; Kubota, Takeshi; and Konno, Keiji, 4,406,711., Cl. 148-2.000.

Konrath, Karl: *See*—
Eheim, Franz; Konrath, Karl; Schwarz, Manfred; and Weiss, Otmar, 4,406,268., Cl. 123-502.000.

Koot, Nick. Special circulation sub. 4,406,335., Cl. 175-317.000.

Koppers Company, Inc.: *See*—
Wallace, William E.; Pourarian, Faiz; and Sinha, Vijay K., 4,406,874., Cl. 423-644.000.

Korbacher, Werner: *See*—
Knoblauch, Karl; Richter, Ekkehard; Giessler, Klaus; and Korbacher, Werner, 4,406,674., Cl. 55-25.000.

Korff, Joachim: *See*—
Fremery, Max; Keim, Karl-Heinz; and Korff, Joachim, 4,406,824., Cl. 252-458.000.

Kotobuki Seihan Printing Co., Ltd.: *See*—
Saitoh, Joichi, 4,406,759., Cl. 204-129.550.

Kottgen, Eckart U.: *See*—
Fabricius, Hans-Ake; and Kottgen, Eckart U., 4,406,830., Cl. 260-112.00R.

Kotzur, Frank W., to Windings, Inc. Method and apparatus for winding flexible material. 4,406,419., Cl. 242-18.00R.

Kouzmine, Runar: *See*—
Parak, Fritz; Loock, Jorg; and Kouzmine, Runar, 4,406,697., Cl. 75-122.500.

Kovarsky, Efim M.: *See*—
Fridman, Georgy N.; Kalashnikov, Vladilen K.; Biznya, Vladimir M.; Kovarsky, Efim M.; Borisov, Boris A.; Semenov, Lev S.; Malyshev, Valentin A.; Voronin, Nikolai S.; Staskevich, Lev. N.; Zinin, Evgeny F.; Dulitskaya, Galina M.; and Shegai, Elvira R., 4,406,962., Cl. 310-233.000.

Krachler, Walter; and Schachner, Bruno, to List, Hans. Measuring apparatus for the determination of the particulates content of exhaust gases. 4,406,155., Cl. 73-28.000.

Kraker, Felix: *See*—
Eimer, Klaus; Kraker, Felix; Schildmann, Hans W.; Schmitz, Gunther; and Sonnenschein, Hans, 4,406,031., Cl. 15-104.06R.

Kral, Stephen L.: *See*—
Duncan, L. Scot; Germuska, Richard W.; Kral, Stephen L.; Lasecki, Robert R.; and Riley, Michael W., 4,406,570., Cl. 414-282.000.

Kramer, Wolfgang; Elbe, Hans-Ludwig; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Combating fungi with 4-substituted 1-azolyl-1-phenoxy-3,3-dimethyl-butan-2-ones and -ols. 4,406,909., Cl. 424-269.000.

Krammer, Rudolf; Stutzle, Dietmar; and Wich, Harald, to Diehl GmbH & Co. Optical remote control arrangement for a projectile. 4,406,430., Cl. 244-3.130.

Krasnow, Leonard L.: *See*—
Villasenor, Richard A.; and Krasnow, Leonard L., 4,406,285., Cl. 128-305.000.

Krauel, Robert W., Jr. Monitor ampliphones. 4,406,920., Cl. 179-1.0MN.

Krauss, Helmut: *See*—
Kochendorfer, Richard; and Krauss, Helmut, 4,406,558., Cl. 403-151.000.

Krocker, Robert E.: *See*—
Saunders, James F.; and Krocker, Robert E., 4,406,133., Cl. 62-80.000.

Kroenke, William J., to B. F. Goodrich Company, The. Methyltricapryl ammonium molybdates. 4,406,837., Cl. 260-429.00R.

Kroenke, William J., to B. F. Goodrich Company, The. Trioctylammonium molybdates. 4,406,838., Cl. 260-429.00R.

Kroenke, William J.; and Magistro, Angel J., to B. F. Goodrich Company, The. Process for preparing organic solvent soluble amine molybdates. 4,406,839., Cl. 260-429.00R.

Kroenke, William J., to B. F. Goodrich Company, The. Tri(tridecyl-)ammonium molybdates. 4,406,840., Cl. 260-429.00R.

Krojer, Hubert: *See*—
Dornier, Claudius, Jr.; Gunter, Heinz; Krojer, Hubert; and Spintzyk, Johannes, 4,406,43[illegible], Cl. 244-102.00R.

Kropiwnicki, Tadek M., to Carrier Corporation. Motor-compressor unit and a method of assembling motor-compressor units. 4,406,592., Cl. 417-363.000.

Kropp, Peter: *See*—
Demuth, Hans; Kropp, Peter; and Noll, Karl, 4,406,137., Cl. 62-238.600.

Krueger, Donald G.: *See*—
Schultz, Arthur N.; Diring, James A.; and Krueger, Donald G., 4,406,421., Cl. 242-55.530.

Kruger, Heinrich; and Tack, Hans, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Quick-release tool assembly. 4,406,195., Cl. 82-36.00B.

Kruyer, Jan. Use of free bodies to increase size of dispersed phase particles. 4,406,793., Cl. 210-669.000.

Kryczun, Alfred: *See*—
Paschen, Peter; Rao, Chatty; Kryczun, Alfred; Pfeiffer, Roland; Waldhecker, Heinz-Dieter; and Pufal, Rolf, 4,406,666., Cl. 48-92.000.

Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automatic transmission control system with holddown device. 4,406,181., Cl. 74-869.000.

Kubo, Seitoku: *See*—
Numazawa, Akio; Kubo, Seitoku; Kuramoehi, Koujiro; and Kyushima, Tatsuo, 4,406,179., Cl. 74-740.000.

Kubota, Takeshi: *See*—
Nagumo, Michihiko; Kubota, Takeshi; and Konno, Keiji, 4,406,711., Cl. 148-2.000.

Kuda, Vladimir: *See*—
Vystrcil, Karel; Vasicek, Vladimir; and Kuda, Vladimir, 4,406,311., Cl. 139-435.000.

Kuhn, Gunther, to Eppendorf Geratebau Netheler & Hinz GmbH. Repeating pipetting device. 4,406,170., Cl. 73-864.160.

Kulig, Francis V., to Federal Paper Board Co., Inc. Basket type bottle carrier. 4,406,365., Cl. 206-188.000.

Kulite Semiconductor Products, Inc.: *See*—
Kurtz, Anthony D.; Nunn, Timothy A.; and Mallon, Joseph R., 4,406,992., Cl. 338-2.000.
Kurtz, Anthony D., 4,406,993., Cl. 338-42.000.

Kulle, Lee K.; Hess, John M.; and Scott, James W., to Baxter Travenol Laboratories, Inc. Flow regulating device. 4,406,440., Cl. 251-6.000.

Kulpa, Walter J.; and Wologodzew, Leo, to Pitney Bowes Inc. Paper cassette. 4,406,448., Cl. 271-160.000.

Kulprathipanja, Santi; and Bloch, Herman S., to UOP Inc. Zeolite molecular sieve having reduced solubility in an aqueous system. 4,406,819., Cl. 252-430.000.

Kumiai Chemical Industry Co., Ltd.: *See*—
Ogawa, Haruki; and Shimazu, Tomonori, 4,406,894., Cl. 424-225.000.

Kunz Maschinen - und Apparatebau GmbH: *See*—
Kunz, Udo, 4,406,029., Cl. 15-77.000.

Kunz, Udo, to Kunz Maschinen - und Apparatebau GmbH. Machine for removing burrs from sheet metal or the like. 4,406,029., Cl. 15-77.000.

Kuramochi, Koujiro: *See*—
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,406,181., Cl. 74-869.000.
Numazawa, Akio; Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,406,179., Cl. 74-740.000.

Kuraray Co., Ltd.: *See*—
Ogawa, Haruki; and Shimazu, Tomonori, 4,406,894., Cl. 424-225.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Obara, Hiroshi; and Murayama, Naohiro, 4,406,967., Cl. 310-366.000.

Kurisu, Shizuka: *See*—
Yamada, Takeyoshi; Kurisu, Shizuka; Azuma, Shizuo; Sugie, Kiyoshi; and Yamaji, Teizo, 4,406,673., Cl. 55-16.000.

Kurtz, Anthony D.; Nunn, Timothy A.; and Mallon, Joseph R., to Kulite Semiconductor Products, Inc. Semiconductor pressure transducer or other product employing layers of single crystal silicon. 4,406,992., Cl. 338-2.000.

Kurtz, Anthony D., to Kulite Semiconductor Products, Inc. Oil filled pressure transducers. 4,406,993., Cl. 338-42.000.

Kusano, Chushirou: *See*—
Baji, Toru; Tsukada, Toshihisa; Koike, Norio; Akiyama, Toshiyuki; Takemoto, Iwao; Shimada, Shigeru; Kusano, Chushirou; Ohba, Shinya; and Matsumaru, Haruo, 4,407,010., Cl. 358-213.000.

Kuwahara, Toru: *See*—
Edahiro, Takao; Tanaka, Gotaro; Kuwahara, Toru; and Yoshida, Masaaki. 4,406,680., Cl. 65-18.200.

Kyushima, Tatsuo: *See*—
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,406,181., Cl. 74-869.000.
Numazawa, Akio; Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,406,179., Cl. 74-740.000.

Laboratoires Biotrol S.A.: *See*—
Curutcharry, Jean, 4,406,657., Cl. 604-328.000.

Lacasse, Ernest. Drive cylinder. 4,406,215., Cl. 92-85.00R.

Lacroix, Bernard, to Cycles Peugeot. Electrically propelled two-wheeled vehicle. 4,406,342., Cl. 180-220.000.

Ladanyi, Peter A., to Vipont Laboratories. Antimicrobial agent. 4,406,881., Cl. 424-49.000.

Lagain, Georges. Control device for reciprocating member. 4,406,173., Cl. 74-54.000.

Lagher, Gunnar H., to A.O. Arkitektkontor AB, a part interest. Pipe-bending apparatus. 4,406,147., Cl. 72-383.000.

LaGrange, Nyle D., to Marley-Wylain Company. Submersible pump discharge head. 4,406,582., Cl. 415-214.000.

Lahm, Albert H., to Donn Incorporated. Integrated lighting systems for suspended ceilings or the like. 4,407,011., Cl. 362-150.000.

Lake, Charles W.; and Weber, Herb, to Hughes Tool Company. Surface cleaning machine. 4,406,092., Cl. 51-425.000.

Lamb, Charles G., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,406,294., Cl. 131-336.000.

Landsness, Clifford A.: *See*—
Barnes, Thomas E.; and Landsness, Clifford A., 4,406,201., Cl. 83-487.000.

Lane, George A.; and Rossow, Harold E., to Dow Chemical Co., The. Hydrated $MgCl_2$ reversible phase change compositions. 4,406,805., Cl. 252-70.000.

Lang, Gary E., to Allied Corporation. Offset reformable jumper. 4,406,915., Cl. 174-117.00F.

Lang, Richard D.: *See*—
Bolton, Theodore S.; and Lang, Richard D., 4,406,132., Cl. 62-77.000.

Lanier, Jerry W.; and Thomas, O. Leon, to Southwire Company. Core wire coating strander. 4,406,114., Cl. 57-7.000.

Lantz, Charles H.: *See*—
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Lapcevic, Paul S. Weight lifting exercise device. 4,406,452., Cl. 272-123.000.

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Mallet, Bernard, to Nadella. Torque transmitting coupling. 4,406,641., Cl. 464-162.000.
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Waldhauser, Steven J. A.; and Masbruch, Richard D., 4,406,980., Cl. 318-257.000.
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Rasor, William; and Cronce, Gary M., 4,406,386., Cl. 224-321.000.
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Wada, Takahiro; Ishihara, Shoichi; and Yamamoto, Ryoichi, 4,406,804., Cl. 252-70.000.
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McClellan, Theodore A., Jr., to T. & L. Enterprises, Inc. DC Motor control circuit. 4,406,982., Cl. 318-345.00F.
McDonald, Lowell R. Combination boat and automobile trailer. 4,406,477., Cl. 280-414.100.
McDuffie, Thomas F. Hydraulic oil well pumping apparatus. 4,406,122., Cl. 60-368.000.
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McGill, Howard L., to Schlumberger Technology Corporation. Inflatable well packer apparatus reinforced with tire cording. 4,406,461., Cl. 277-34.600.
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McGinnis, William R.: *See*—
Olsen, John K.; McGinnis, William R.; and Olsen, Barbara H., 4,406,336., Cl. 175-410.000.
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McIntyre, James A.; and Phillips, Robert F., to Dow Chemical Company, The. Method of operating a liquid-gas electrochemical cell. 4,406,758., Cl. 204-98.000.
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McNall, Fredlee M., to Dresser Industries, Inc. Shaft dampening apparatus. 4,406,642., Cl. 464-180.000.
McNeil Corporation: *See*—
Rademacher, Thomas P., 4,406,628., Cl. 434-254.000.
McNiel, Claude M.; and Valle, Louis G., to Beatrice Foods Co. Venetian blind drive control. 4,406,319., Cl. 160-177.000.
McPhee, Charles J., to American Hospital Supply Corporation. Tubing clip. 4,406,042., Cl. 24-130.000.
Meadus, Frederick W.; and Sparks, Bryan D., to Canadian Patents & Development Ltd. Particulate solids conveying and draining device. 4,406,788., Cl. 210-512.100.
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Stein, Marc T., 4,406,286., Cl. 128-419.0PG.
Meixner, Edwin J., to Borg-Warner Corporation. System for measuring torque and/or speed of rotating shaft. 4,406,168., Cl. 73-862.360.
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Membrino, Hercules. Self-contained pad of plastic bags. 4,406,371., Cl. 206-554.000.
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Gall, Richard L.; Anklin, Richard T.; and Mende, William B., 4,406,411., Cl. 428-577.000.
Menhorn, Hermann; Muller, Georg; Nitschke, Christoph; Wehrberger, Helmut; and Kaesewinkel, Klaus, to Siemens Aktiengesellschaft. Trolley wire section insulator with two parallel insulating sliding strips. 4,406,930., Cl. 191-39.000.
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Merten, Hans, to Otto Kuhlmann GmbH & Co. Pneumatic tire of vehicle, wire core for use therein and apparatus for producing said wire core. 4,406,317., Cl. 152-362.00R.
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Miki, Katsumi: *See*—
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Becker, Karl-Heinz; Milla, Peter; Hergt, Peter; and Hellmann, Heinz-Dieter, 4,406,583., Cl. 415-219.00C.
Miller, James W.; and Tate, Bryce E., to Pfizer Inc. Surfactant enhanced injectivity of xanthan mobility control solutions for tertiary oil recovery. 4,406,798., Cl. 252-8.55D.
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Hensley, Albert L., Jr.; Tait, A. Martin; Miller, Jeffrey T.; and Nevitt, Thomas D., 4,406,779., Cl. 208-254.00H.
Mills, Blaine N. Nut-holder attachment for open-end wrench. 4,406,188., Cl. 81-180.00D.
Mills, Donald F., to Mallinckrodt, Inc. Peptide-type substrates useful in the quantitative determination of endotoxin. 4,406,832., Cl. 260-112.50R.
Mills, Gary L., to Beech Aircraft Corporation. Saturated cryogenic fuel system. 4,406,129., Cl. 62-7.000.
Mills, Luther P.: *See*—
Hillegonds, Clarence G.; Stankos, William C.; File, Peter G.; and Mills, Luther P., 4,406,514., Cl. 350-96.210.
Minatogawa, Yukiko: *See*—
Miyazaki, Hiroshi; Ohkuma, Taka'aki; Minatogawa, Yukiko; and Ninomiya, Hiroshi, 4,406,879., Cl. 424-14.000.
Ministry of International Trade & Industry: *See*—
Nakamura, Osamu; Ogino, Isao; and Kodama, Teruo, 4,406,843., Cl. 261-22.000.
Minnesota Diversified Products, Inc.: *See*—
Slavik, Raymond F., 4,406,095., Cl. 52-95.000.
Minnesota Mining and Manufacturing Company: *See*—
Carim, Hatim M., 4,406,827., Cl. 252-518.000.
Conrad, Lawrence H., 4,406,522., Cl. 350-425.000.
Mir, Jose M.; and Varner, Jerry R., to Eastman Kodak Company. Light valve imaging apparatus having improved addressing electrode structure. 4,406,521., Cl. 350-392.000.
Misawa Home Co., Ltd.: *See*—
Kataishi, Takao; and Seo, Iwazou, 4,406,608., Cl. 425-436.0RM.
Miserlis, Constantine D., to Badger Company, Inc., The. Method for condensing fatty acids. 4,406,836., Cl. 260-419.000.
Mishima, Akio; Okuda, Yosiro; Harada, Tosiharu; and Mukaizaka, Akira, to Toda Kogyo Corp. Process for producing acicular ferromagnetic alloy particles and acicular ferromagnetic alloy particles obtained by the said process. 4,406,694., Cl. 75-0.5AA.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Takano, Yutaka; Yajima, Koji; Ishii, Takashi; Yoshida, Tadahisa; Ota, Katsuhiro; and Yagishita, Shigeru, 4,406,971., Cl. 313-461.000.
Yamada, Shigeo; Takawashi, Tamio; and Sakakibara, Toshimitsu, 4,406,938., Cl. 219-69.00D.
Mitsubishi Petrochemical Co., Ltd.: *See*—
Konno, Kazuhiko; Goh, Atsushi; Miyoshi, Kazuhito; and Ikeda, Kaoru, 4,406,688., Cl. 71-92.000.
Mitsumoto, Takuo; Takahashi, Yuzo; and Miyamoto, Mamoru, to Ube Industries, Ltd. Process and apparatus for preparing laminated heat-shrinkable strip with electric conductor wire embedded therein. 4,406,719., Cl. 156-52.000.
Mitutoyo Mfg. Co., Ltd.: *See*—
Tomita, Yutaka; and Shibagaki, Akiro, 4,406,068., Cl. 33-174.00L.
Miyahara, Nagao; and Kikuchi, Sadaaki, to Nikka Densoku Ltd.; and Hokkai Can Co., Ltd. Feedback method and apparatus for testing the internal pressure of a sealed container. 4,406,157., Cl. 73-52.000.
Miyajima, Kazunori: *See*—
Fujiwara, Koichi; Shiozawa, Takeo; Miki, Katsumi; Uchimura, Masahiko; Miyajima, Kazunori; and Tonouchi, Yasuo, 4,406,321., Cl. 164-504.000.
Miyake, Tetsuya; Takeda, Kunihiko; and Obanawa, Heiichiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for the separation of carbon isotopes by chemical exchange method. 4,406,870., Cl. 423-445.000.
Miyakoshi, Shinichi; and Isono, Tokio, to Honda Giken Kogyo Kabushiki Kaisha. Front wheel suspension system for motorcycles. 4,406,475., Cl. 280-277.000.
Miyamoto, Mamoru: *See*—
Mitsumoto, Takuo; Takahashi, Yuzo; and Miyamoto, Mamoru, 4,406,719., Cl. 156-52.000.
Miyata, Teruo, to Collagen Development Corporation. Method of preparation of regenerated fiber collagen condom. 4,406,853., Cl. 264-304.000.
Miyazaki, Hiroshi; Ohkuma, Taka'aki; Minatogawa, Yukiko; and Ninomiya, Hiroshi, to Nippon Kayaku Kabushiki Kaisha; and Banyu Pharmaceutical Co., Ltd. Phthalazinol preparation. 4,406,879., Cl. 424-14.000.
Miyoshi, Kazuhito: *See*—
Konno, Kazuhiko; Goh, Atsushi; Miyoshi, Kazuhito; and Ikeda, Kaoru, 4,406,688., Cl. 71-92.000.
Mizuno, Kohtaro: *See*—
Okamoto, Eisaku; and Mizuno, Kohtaro, 4,406,203., Cl. 84-1.030.
Mizutani, Yoich: *See*—
Tsuchida, Masayuki; Inoue, Toshio; Mizutani, Yoich; and Suzuki, Toshitsugu, 4,406,589., Cl. 417-295.000.
Mo och Domsjo Aktiebolag: *See*—
Samuelson, Hans O., 4,406,735., Cl. 162-40.000.
Mobil Oil Corporation: *See*—
Horodysky, Andrew G.; and Kaminski, Joan M., 4,406,802., Cl. 252-49.600.
Melconian, Melcon G., 4,406,777., Cl. 208-156.000.
Ueberschaer, Hubert J., 4,406,171., Cl. 73-864.620.
Modenesi, Aldo: *See*—
Borza, Michele; Leoncini, Sergio; and Modenesi, Aldo, 4,406,778., Cl. 208-179.000.
Molen, George M.; and Cox, James L., Jr. Opening switch for interrupting current using a plasma focus device. 4,406,952., Cl. 307-104.000.
Monfredo, Joseph: *See*—
Kaprelian, George; Monfredo, Joseph; and Meyerson, Melvin, 4,406,620., Cl. 433-5.000.
Monjay, Dick J.: *See*—
Good, W. Travis; and Monjay, Dick J., 4,406,093., Cl. 52-11.000.
Monsanto Company: *See*—
King, Christopher J. H., 4,406,768., Cl. 204-268.000.
Montag, John H.; and Zulauf, Gary B., to Gulf & Western Manufacturing Company. Door jamb switch. 4,406,935., Cl. 200-61.820.
Montgomery, James W.: *See*—
Baugh, John L.; and Montgomery, James W., 4,406,324., Cl. 166-125.000.
Montone, Liber J.; and Yokitis, Joseph E., to Western Electric Company, Inc. Methods of and apparatus for measuring surface areas. 4,406,545., Cl. 356-380.000.
Moon, John E., to Gem Signs, Inc. Changeable exhibitor. 4,406,077., Cl. 40-509.000.
Moore, Ronnie J.; and Brown, Michael D., to Moore, Ronnie J. Method for removing vinyl decals. 4,406,707., Cl. 134-4.000.
Morgan, Charles R.; and Ketley, Arthur D., to W. R. Grace & Co. Heat curable conductive ink. 4,406,826., Cl. 252-512.000.
Mori, Goro, to Ricoh Company, Ltd. Reproduction system with a variable magnifying function. 4,406,537., Cl. 355-14.0SH.
Mori, Kouichi: *See*—
Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, 4,406,273., Cl. 123-625.000.
Morino, Seiji: *See*—
Kamiya, Sigeru; Nozawa, Masaei; Hayashi, Nobutoshi; and Morino, Seiji, 4,406,119., Cl. 60-275.000.
Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, 4,406,273., Cl. 123-625.000.
Moriyama, Takashi. Method and apparatus for fastening a connection terminal to one end of an insulated wire. 4,406,061., Cl. 29-867.000.
Moriyama, Takashi, to Denka Engineering Kabushiki Kaisha. Apparatus for distributing gas-laden refining powdered-particles into molten metal. 4,406,443., Cl. 266-225.000.
Morrissey, Ronald J., to Technic Inc. Bright palladium electrodeposition. 4,406,755., Cl. 204-47.000.
Mosbach, Klaus H.: *See*—
Glad, Magnus J.; Ohlson, Sten A.; Hansson, Lennart H.; Mansson, Mats-Olle; Larsson, Per-Olof; and Mosbach, Klaus H., 4,406,792., Cl. 210-656.000.
Mosca, Gerd. Parcel tying-up machine. 4,406,219., Cl. 100-7.000.
Mostek Corporation: *See*—
Proebsting, Robert J., 4,406,954., Cl. 307-200.00B.
Spohnheimer, John V., 4,406,949., Cl. 250-548.000.
Motorola, Inc.: *See*—
Lo Cascio, James J., 4,406,955., Cl. 307-355.000.
Pace, W. David; and Main, W. Eric, 4,406,929., Cl. 179-170.0NC.
Parker, Norman W.; and Hilbert, Francis H., 4,406,922., Cl. 179-1.0GS.
Motosugi, Katsuhiko: *See*—
Sekiya, Setsuro; Motosugi, Katsuhiko; and Takahashi, Hiroshi, 4,406,258., Cl. 123-188.00M.
Motsokhein, Boris I.: *See*—
Zhilikov, Valentin V.; Motsokhein, Boris I.; and Parfenov, Boris M., 4,407,017., Cl. 364-420.000.
Mowbray, Dorian F., to Lucas Industries Limited. Governor for engines. 4,406,264., Cl. 123-387.000.
Mowry, William H., Jr.; and Poccia, Michael J., to Burroughs Corporation. High speed web processing unit adjustable to variable length documents. 4,406,389., Cl. 226-29.000.
MTU Motoren- und Turbinen-Union Munchen, GmbH: *See*—
Adam, Peter; Meyer-Spradow, Horst; and Reisinger, Lothar, 4,406,046., Cl. 29-156.70C.
Mueller, Gerhard: *See*—
Schmidt, Werner; Mueller, Gerhard; Weber, Klaus; and Wilke, Volker, 4,407,008., Cl. 358-93.000.
Mueller, John: *See*—
Wildmoser, Martin M., 4,406,607., Cl. 425-392.000.
Mukaizaka, Akira: *See*—
Mishima, Akio; Okuda, Yosiro; Harada, Tosiharu; and Mukaizaka, Akira, 4,406,694., Cl. 75-0.5AA.
Mulier, Gerd: *See*—
Rossi, Guglielmo; Eysholdt, Ursula; and Mulier, Gerd, 4,406,322., Cl. 165-14.000.
Muller, Georg: *See*—
Menhorn, Hermann; Muller, Georg; Nitschke, Christoph; Wehrberger, Helmut; and Kaesewinkel, Klaus, 4,406,930., Cl. 191-39.000.
Muller, Karl-Hans; Tailfer, Roland; and Turk, Gunter, to Degussa Aktiengesellschaft. Process for the production of sedimentation stable anti-foam agents. 4,406,817., Cl. 252-348.000.
Mullins, Harvey L. Mobile lawn rake attachment. 4,406,113., Cl. 56-400.160.

Multiplex Company, Inc.: *See—*
Roth, Allen R., 4,406,382., Cl. 222-64.000.

Murai, Shigeo: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Tsujii, Yasuhiro; Murai, Shigeo; and Jyonishi, Hisayoshi, 4,406,841., Cl. 260-465.00G.

Murakami, Hideo, to Ryobi Limited. Clutch mechanism for use in fishing reels. 4,406,427., Cl. 242-218.000.

Murayama, Jin: *See—*
Higashi, Akio; Kawaziri, Kazuhiro; and Murayama, Jin, 4,406,765., Cl. 204-164.000.

Murayama, Naohiro: *See—*
Obara, Hiroshi; and Murayama, Naohiro, 4,406,967., Cl. 310-366.000.

Muschaweck, Roman: *See—*
Strum, Karl; Muschaweck, Roman; and Hropot, Max, 4,406,895., Cl. 424-229.000.

Muscio, Oliver J.: *See—*
Boehme, Werner R.; and Muscio, Oliver J., 4,406,833., Cl. 260-123.700.

Myco, Inc.: *See—*
Yedor, Harry M., 4,406,374., Cl. 211-192.000.,

Nadella: *See—*
Mallet, Bernard, 4,406,641., Cl. 464-162.000.

Naegeli, Hans-Ulrich: *See—*
Zahner, Hans; Naegeli, Hans-Ulrich; and Peter, Heinrich, 4,406,905., Cl. 424-263.000.

Nafissi-Varchei, M. Mehdi, to Schering Corporation. N-Alkoxycarbonyl-N'-[2-nitro-4 or 5-alkylthiophenyl]-N''-[substituted alkyl]-guanidines useful as anthelmintics. 4,406,893., Cl. 424-199.000.

Nagano, Tamio; and Nishimura, Yoshio, to Kabushiki Kaisha Daikin Seisakusho. Damper disk. 4,406,357., Cl. 192-106.200.

Nagel, Gerhard: *See—*
Holland-Letz, Gunter; and Nagel, Gerhard, 4,406,222., Cl. 101-92.000.

Nagumo, Michihiko; Kubota, Takeshi; and Konno, Keiji, to Nippon Steel Corporation. Method for the production of homogeneous steel. 4,406,711., Cl. 148-2.000.

Naito, Susumu; and Yamana, Toshifumi, to Rinnai Kabushiki Kaisha. Safety apparatus for room heating device. 4,406,613., Cl. 431-76.000.

Naito, Takayuki: *See—*
Aburaki, Shimpei; Kamachi, Hajime; Narita, Yukio; Okumura, Jun; and Naito, Takayuki, 4,406,899., Cl. 424-246.000.

Nakagawa, Michio: *See—*
Asaka, Hiroshi; and Nakagawa, Michio, 4,406,087., Cl. 49-70.000.

Nakakado, Takashi: *See—*
Tanaka, Tatsuo; and Nakakado, Takashi, 4,406,974., Cl. 315-3.000.

Nakama, Daiji: *See—*
Suzuki, Yoshikazu; Yuda, Takuo; and Nakama, Daiji, 4,406,557., Cl. 403-71.000.

Nakamura, Etsuro: *See—*
Sasaki, Yoshiyuki; Nakamura, Etsuro; Ojima, Yoshimoto; Kondo, Teruo; Ukegawa, Koji; and Matsumura, Akimitsu, 4,406,772., Cl. 208-112.000.

Nakamura, Osamu; Ogino, Isao; and Kodama, Teruo, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Apparatus for adjusting the humidity of gas to a constant value. 4,406,843., Cl. 261-22.000.

Nakamura, Yoshinori: *See—*
Furuta, Katsuhisa; Hirai, Takeshi; and Nakamura, Yoshinori, 4,406,399., Cl. 236-15.0BC.

Nakano, Jun: *See—*
Matsuda, Tetsuo; Nakano, Jun; Terashima, Yukio; Suzuki, Yuji; and Itikawa, Kiyonoshin, 4,406,908., Cl. 424-269.000.

Nakaya, Keiichi; Kawanami, Kohji; and Hirata, Suekazu, to Asahi Glass Company Ltd. Process for producing anhydrous sodium carbonate crystal. 4,406,869., Cl. 423-421.000.

Nakayama, Tadashi; Haratani, Tsutomu; Matsumoto, Fumio; and Matsumoto, Hiromi, to Nippon Steel Corporation. Process for producing grain-oriented electromagnetic steel strip. 4,406,715., Cl. 148-111.000.

Nalco Chemical Company: *See—*
Christensen, Ronald; and Gelazis, Audrone, 4,406,811., Cl. 252-180.000.

Nally, Rickard P.; and Vandenham, Elbert H., to NCR Corporation. Disposable, snap-in-type ribbon cassette having a resilient ribbon spool mounting arm. 4,406,553., Cl. 400-208.000.

Nappholz, Tibor A.; Swift, Stephen J.; and Camm, Alan J., to Telectronics Pty. Ltd. Variable length scanning burst tachycardia control pacer. 4,406,287., Cl. 128-419.0PG.

Narita, Kiichi; Onoye, Toshio; and Egami, Akira, to Kabushiki Kaisha Kobe Seiko Sho. Method and probe for the rapid determination of sulfur level. 4,406,754., Cl. 204-1.00T.

Narita, Yukio: *See—*
Aburaki, Shimpei; Kamachi, Hajime; Narita, Yukio; Okumura, Jun; and Naito, Takayuki, 4,406,899., Cl. 424-246.000.

Nasi, Cesarino, to Etablissements Ernest Pantz Paris. Assembly node for a spatial structure and spatial structure equipped with such a node. 4,406,562., Cl. 403-347.000.

Naumec, John R., to United Technologies Corporation. Indexing apparatus for electron beam drilling. 4,406,180., Cl. 74-822.000.

Navarro, John N., to Thomas & Betts Corporation. Method of forming a multichannel connector. 4,406,062., Cl. 29-881.000.

Nazer, Ralph. Music teaching aid. 4,406,208., Cl. 84-453.000.

NCR Corporation: *See—*
Nally, Rickard P.; and Vandenham, Elbert H., 4,406,553., Cl. 400-208.000.

Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk: *See—*
Wesseling, Karel H.; and Klawer, Wilhelmus H., 4,406,289., Cl. 128-670.000.

Neefe, Charles W. Method of making lenses with a lenticular cut. 4,406,189., Cl. 82-1.00C.

Negaty-Hindi, Guy; Pujol, Carlos; and Zurcher, Erwin, to Fomento de Inversiones Industriales S.A. Method of and means for unraveling a portion of textile yarn. 4,406,115., Cl. 57-22.000.

Neidinger, Karen A.: *See—*
Larson, Robert W.; Lou, Wen C.; DeVito, Vivian C.; and Neidinger, Karen A., 4,406,911., Cl. 426-19.000.

Neirinckx, Rudi D.; and Loberg, Michael D., to E. R. Squibb & Sons, Inc. ^{82}Rb Generating method and eluent. 4,406,877., Cl. 424-1.100.

Nels, Terry E., to General Motors Corporation. Method of friction band manufacture. 4,406,394., Cl. 228-170.000.

Nelson, Lorne W., to Honeywell Inc. Load management control air conditioning system. 4,406,138., Cl. 62-305.000.

Nelson, Robert H.: *See—*
Guerra, Romeo E.; and Nelson, Robert H., 4,406,615., Cl. 431-278.000.

Nemiroff, Michael H.; and Bowman, Chris C., to Burroughs Corporation. High contrast flatness interferometer. 4,406,543., Cl. 356-359.000.

Neri, Bruno; and Manservisi, Renato, to Sasib S.p.A. Device for feeding sheets to packaging machines. 4,406,251., Cl. 118-704.000.

Nettro, Ronald L., to General Electric Company. Water temperature control system for a washing machine. 4,406,401., Cl. 236-12.120.

Neuendorf, Hans-Cristoph: *See—*
Eckardt, Rudolf; and Neuendorf, Hans-Cristoph, 4,406,091., Cl. 51-101.00R.

Neugart, Horst, to Vorwerk & Co Interholding GmbH. Dust collector for vacuum cleaner. 4,406,678., Cl. 55-372.000.

Nevitt, Thomas D.: *See—*
Hensley, Albert L., Jr.; Tait, A. Martin; Miller, Jeffrey T.; and Nevitt, Thomas D., 4,406,779., Cl. 208-254.00H.

Nezot, Francois: *See—*
Martel, Jacques; Buendia, Jean; and Nezot, Francois, 4,406,829., Cl. 252-522.00R.

Nichols, Gary R.: *See—*
Kiess, Ronald J.; and Nichols, Gary R., 4,406,272., Cl. 123-617.000.

Nielsen, Helmut K., to Alfa-Laval Separation A/S. Centrifuge with a skimmer disc for discharging a liquid phase. 4,406,652., Cl. 494-56.000.

Nielsen, Jan: *See—*
de Jong, Rudolf B. J.; and Nielsen, Jan, 4,406,875., Cl. 424-1.000.

Niemann, Helmut: *See—*
Bardenhagen, Dietrich; Hausler, Nikolaus; Niemann, Helmut; Greve, Heinz; and Schluter, Karl-Heinz, 4,406,197., Cl. 83-152.000.

Nifco Inc.: *See—*
Suzuki, Yoshikazu; Yuda, Takuo; and Nakama, Daiji, 4,406,557., Cl. 403-71.000.

Nightingale, E. Richard. Process for the separation of mineral substances. 4,406,781., Cl. 209-211.000.

Nihei, Ryo: *See—*
Inaba, Hajimu; Kita, Masao; Sakakibara, Shinsuke; and Nihei, Ryo, 4,406,576., Cl. 414-735.000.

Nihon Kaiheiki Kogyo Kabushiki Kaisha: *See—*
Ohashi, Shigeo, 4,406,936., Cl. 200-296.000.

Nijhuis, Johan W., to Machinefabriek G. J. Nijhuis B.V. Apparatus for conveying animals to be stunned. 4,406,036., Cl. 17-1.00A.

Nikitin, Albert V.: *See—*
Samoilovich, Mikhail I.; Zadneprovsky, Boris I.; Nikitin, Albert V.; Putilin, Jury M.; Radyansky, Vladimir M.; and Shaposhnikov, Anatoly A., 4,406,871., Cl. 423-446.000.

Nikka Densoku Ltd.: *See—*
Miyahara, Nagao; and Kikuchi, Sadaaki, 4,406,157., Cl. 73-52.000.

Ninomiya, Hiroshi: *See—*
Miyazaki, Hiroshi; Ohkuma, Taka'aki; Minatogawa, Yukiko; and Ninomiya, Hiroshi, 4,406,879., Cl. 424-14.000.

Nippon Electric Co., Ltd.: *See—*
Kanemasa, Akira, 4,407,018., Cl. 364-736.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Katoh, Mitsumi, 4,406,204., Cl. 84-1.190.
Okamoto, Eisaku; and Mizuno, Kohtaro, 4,406,203., Cl. 84-1.030.

Nippon Hoso Kyokai: *See—*
Chiba, Takao; Sakamoto, Nobuyoshi; and Kohro, Kenji, 4,406,964., Cl. 310-313.00B.

Nippon Kayaku Kabushiki Kaisha: *See—*
Miyazaki, Hiroshi; Ohkuma, Taka'aki; Minatogawa, Yukiko; and Ninomiya, Hiroshi, 4,406,879., Cl. 424-14.000.

Nippon Kokan Kabushiki Kaisha: *See—*
Akita, Shinji, 4,406,145., Cl. 72-239.000.
Numano, Masachika; and Akita, Shinji, 4,406,141., Cl. 72-98.000.

Nippon Soken, Inc.: *See—*
Kamiya, Sigeru; Nozawa, Masaei; Hayashi, Nobutoshi; and Morino, Seiji, 4,406,119., Cl. 60-275.000.
Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, 4,406,273., Cl. 123-625.000.

Nippon Steel Corporation: *See—*
Nagumo, Michihiko; Kubota, Takeshi; and Konno, Keiji, 4,406,711., Cl. 148-2.000.
Nakayama, Tadashi; Haratani, Tsutomu; Matsumoto, Fumio; and Matsumoto, Hiromi, 4,406,715., Cl. 148-111.000.

Nippon Telegraph & Telephone Public Corporation: *See*—
Edahiro, Takao; Tanaka, Gotaro; Kuwahara, Toru; and Yoshida, Masaaki, 4,406,680., Cl. 65-18.200.
Kawachi, Masao; Tomaru, Satoru; Edahiro, Takao; and Suto, Shoichi, 4,406,684., Cl. 65-157.000.
Nippondenso Co., Ltd.: *See*—
Kinbara, Hiroji; Hattori, Yoshiyuki; Matsui, Kazuma; Hayakawa, Hideyuki; Takizawa, Masaaki; Tamura, Masaru; and Jufuku, Yasunobu, 4,406,644., Cl. 474-13.000.
Nishihata, Toshiaki: *See*—
Higuchi, Takeru; Nishihata, Toshiaki; and Rytting, Howard J., 4,406,896., Cl. 424-232.000.
Nishimura, Yoshio: *See*—
Nagano, Tamio; and Nishimura, Yoshio, 4,406,357., Cl. 192-106.200.
Nishiyama, Ryuzo; Fujikawa, Kanichi; Tsujii, Yasuhiro; Murai, Shigeo; and Jyonishi, Hisayoshi, to Ishihara Sangyo Kaisha Ltd. Process for producing 2,6-difluorobenzonitrile. 4,406,841., Cl. 260-465.00G.
Nissan Motor Co., Ltd.: *See*—
Fukushima, Masao, 4,406,344., Cl. 180-300.000.
Ikeura, Kenji, 4,406,261., Cl. 123-339.000.
Ikeura, Kenji, 4,406,262., Cl. 123-339.000.
Inoue, Naohiko, 4,406,951., Cl. 307-10.00R.
Sakurai, Yukio, 4,406,214., Cl. 98-2.080.
Suzuki, Hisao, 4,406,146., Cl. 72-353.000.
Torii, Hiromasa; and Watanabe, Takeshi, 4,406,490., Cl. 296-1.00C.
Uemura, Yukio; and Horike, Masayoshi, 4,406,494., Cl. 296-214.000.
Nisshin Steel Co., Ltd.: *See*—
Maeda, Taro, 4,406,167., Cl. 73-622.000.
Nitschke, Christoph: *See*—
Menhorn, Hermann; Muller, Georg; Nitschke, Christoph; Wehrberger, Helmut; and Kaesewinkel, Klaus, 4,406,930., Cl. 191-39.000.
Nixon, Ralph D., to English Electric Valve Company. Lamps. 4,406,975., Cl. 315-209.00R.
Noll, Karl: *See*—
Demuth, Hans; Kropp, Peter; and Noll, Karl, 4,406,137., Cl. 62-238.600.
Nomoto, Reishi: *See*—
Eguchi, Yasukata; and Nomoto, Reishi, 4,406,237., Cl. 112-169.000.
Nooteboom, Urias G.: *See*—
Van Heijst, Willem J.; and Nooteboom, Urias G., 4,406,636., Cl. 441-5.000.
Noro, Masao, to Stax Industries, Ltd. Direct coupled DC amplification circuit. 4,406,990., Cl. 330-296.000.
Northern Telecom Limited: *See*—
Debortoli, George; and Osborne, Brian T., 4,406,510., Cl. 339-103.00M.
St. Louis, Jacques R., 4,406,054., Cl. 29-588.000.
Nova Patents of North America, Inc.: *See*—
Guerra, Romeo E.; and Nelson, Robert H., 4,406,615., Cl. 431-278.000.
Nozawa, Masaei: *See*—
Kamiya, Sigeru; Nozawa, Masaei; Hayashi, Nobutoshi; and Morino, Seiji, 4,406,119., Cl. 60-275.000.
NSS Industries: *See*—
Ewing, Peter D., 4,406,561., Cl. 403-343.000.
Nujack Oil Pump Corporation: *See*—
Stanton, George E., 4,406,597., Cl. 417-399.000.
Numano, Masachika; and Akita, Shinji, to Nippon Kokan Kabushiki Kaisha. Straightening apparatus for steel pipes and the like. 4,406,141., Cl. 72-98.000.
Numazawa, Akio; Matobe, Taketo; and Kida, Makoto, to Toyota Jidosha Kogyo Kabushiki Kaisha. Steering shaft support device. 4,406,176., Cl. 74-492.000.
Numazawa, Akio; Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for preloading an antifriction bearing in an automatic transmission. 4,406,179., Cl. 74-740.000.
Nunez, Chris E., to Critikon, Inc. Adhesively mounted catheter balloon. 4,406,653., Cl. 604-103.000.
Nunn, Timothy A.: *See*—
Kurtz, Anthony D.; Nunn, Timothy A.; and Mallon, Joseph R., 4,406,992., Cl. 338-2.000.
Nuovo Pignone S.p.A.: *See*—
Corain, Luciano, 4,406,308., Cl. 139-27.000.
Obanawa, Heiichiro: *See*—
Miyake, Tetsuya; Takeda, Kunihiko; and Obanawa, Heiichiro, 4,406,870., Cl. 423-445.000.
Obara, Hiroshi; and Murayama, Naohiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Ultrasonic probe. 4,406,967., Cl. 310-366.000.
Obermeier, Hans-Johann. Dual cyclone dust separator for exhaust gases. 4,406,677., Cl. 55-315.000.
O'Brien, Robert: *See*—
Kapner, Robert S.; and O'Brien, Robert, 4,406,872., Cl. 423-461.000.
Ochsner, Paul A.: *See*—
Gonzenbach, Hans U.; and Ochsner, Paul A., 4,406,828., Cl. 252-522.00R.
Oeder, Dieter; Dietsche, Wolfram; Weiss, Stefan; Ziegler, Walter; and Hettche, Albert, to BASF Aktiengesellschaft. Hard waxes comprising terpolymers of ethylene with unsaturated carboxylic acids and unsaturated carboxylic acid esters. 4,406,705., Cl. 106-270.000.
Office National d'Etudes et de Recherches Aerospatiales (O.N.E.R.A.): *See*—
Khan, Tasadduq, 4,406,716., Cl. 148-130.000.
Ogawa, Haruki; and Shimazu, Tomonori, to Kumiai Chemical Industry Co., Ltd.; and Kuraray Co., Ltd. Insect pesticidal composition. 4,406,894., Cl. 424-225.000.
Ogawa, Haruo: *See*—
Kataoka, Kenzo; Watanabe, Hiroo; and Ogawa, Haruo, 4,406,470., Cl. 279-1.0SG.
Ogawa, Masami: *See*—
Oyamada, Kozo; Matsui, Takashi; Tobitsuka, Junzo; Yamazaki, Yoshio; and Ogawa, Masami, 4,406,687., Cl. 71-89.000.
Ogawa, Rikuo: *See*—
Yutori, Toshiaki; and Ogawa, Rikuo, 4,406,713., Cl. 148-12.00B.
Ogawa, Tokumon: *See*—
Futami, Yoshinori; and Ogawa, Tokumon, 4,407,019., Cl. 368-200.000.
Ogino, Isao: *See*—
Nakamura, Osamu; Ogino, Isao; and Kodama, Teruo, 4,406,843., Cl. 261-22.000.
Ogyu, Shingo. Sound arrester of circular blade. 4,406,274., Cl. 125-13.00R.
Ohashi, Shigeo, to Nihon Kaiheiki Kogyo Kabushiki Kaisha. Mounting frame equipped with decorative plate for mounting switch or the like. 4,406,936., Cl. 200-296.000.
Ohba, Hiroshi; and Horino, Shigeo, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for binding articles with tape. 4,406,728., Cl. 156-468.000.
Ohba, Shinya: *See*—
Baji, Toru; Tsukada, Toshihisa; Koike, Norio; Akiyama, Toshiyuki; Takemoto, Iwao; Shimada, Shigeru; Kusano, Chushirou; Ohba, Shinya; and Matsumaru, Haruo, 4,407,010., Cl. 358-213.000.
Ohio State University, The: *See*—
Macdonald, Digby D., 4,406,766., Cl. 204-433.000.
Ohkuma, Taka'aki: *See*—
Miyazaki, Hiroshi; Ohkuma, Taka'aki; Minatogawa, Yukiko; and Ninomiya, Hiroshi, 4,406,879., Cl. 424-14.000.
Ohlson, Sten A.: *See*—
Glad, Magnus J.; Ohlson, Sten A.; Hansson, Lennart H.; Mansson, Mats-Olle; Larsson, Per-Olof; and Mosbach, Klaus H., 4,406,792., Cl. 210-656.000.
Ohmori, Takashi: *See*—
Inui, Toshiharu; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,407,002., Cl. 346-76.0PH.
Ojima, Yoshimoto: *See*—
Sasaki, Yoshiyuki; Nakamura, Etsuro; Ojima, Yoshimoto; Kondo, Teruo; Ukegawa, Koji; and Matsumura, Akimitsu, 4,406,772., Cl. 208-112.000.
Oka, Yoshinobu, to Laurel Bank Machine Co., Ltd. Intensity compensator circuit for optical sensor in bank note machine. 4,406,996., Cl. 340-674.000.
Okabe, Yukio: *See*—
Watanabe, Yasuaki; and Okabe, Yukio, 4,406,981., Cl. 318-258.000.
Okamoto, Eisaku; and Mizuno, Kohtaro, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic performance device utilizing data having various word lengths. 4,406,203., Cl. 84-1.030.
Okamoto, Satoru, to Bridgestone Tire Company Limited. Wheel and low air pressure tire combination. 4,406,316., Cl. 152-209.00R.
Oki Electric Industry Co., Ltd.: *See*—
Chiba, Takao; Sakamoto, Nobuyoshi; and Kohro, Kenji, 4,406,964., Cl. 310-313.00B.
Okuda, Yosiro: *See*—
Mishima, Akio; Okuda, Yosiro; Harada, Tosiharu; and Mukaizaka, Akira, 4,406,694., Cl. 75-0.5AA.
Okudaira, Sadao: *See*—
Sato, Sigetada; and Okudaira, Sadao, 4,406,523., Cl. 350-426.000.
Okumura, Jun: *See*—
Aburaki, Shimpei; Kamachi, Hajime; Narita, Yukio; Okumura, Jun; and Naito, Takayuki, 4,406,899., Cl. 424-246.000.
Olajterv Koolaj- es Gazipari Tervezo Vallalat: *See*—
Elazasz, Rezso, 4,406,934., Cl. 200-61.390.
Oldengott, Hans. Sealing lid means for coke oven chamber. 4,406,619., Cl. 432-250.000.
Olesen, Russell, to Puritan-Bennett Corporation. Pop-off gas evacuator valve for anesthesia machine. 4,406,302., Cl. 137-514.500.
Olin Corporation: *See*—
Renner, Jacqueline M.; Scott, Robert N.; and Gavin, David F., 4,406,807., Cl. 252-78.300.
Olsen, Barbara H.: *See*—
Olsen, John K.; McGinnis, William R.; and Olsen, Barbara H., 4,406,336., Cl. 175-410.000.
Olsen, John K.; McGinnis, William R.; and Olsen, Barbara H. Drilling bit. 4,406,336., Cl. 175-410.000.
Olshansky, Robert, to Corning Glass Works. Optical waveguide having optimal index profile for multicomponent nonlinear glass. 4,406,517., Cl. 350-96.310.
Olympus Optical Company Limited: *See*—
Aihara, Takayuki, 4,406,547., Cl. 356-414.000.
Osanai, Akira, 4,406,946., Cl. 250-231.0SE.
Spencer, Kieran O., 4,406,339., Cl. 180-8.00C.
Omac, Inc.: *See*—
Heuberger, Lawrence K., 4,406,431., Cl. 244-53.00B.
Omata, Hiroshi: *See*—
Tanaka, Toshio; Omata, Hiroshi; and Uno, Kuniaki, 4,406,953., Cl. 307-141.000.

O'Neal, Edgar L.: *See—*
Jordan, Royce D.; and O'Neal, Edgar L., 4,406,925., Cl. 179-18.00B.

O'Neal, Robert D.; Bainard, Dean R.; and Cather, Douglas A., Jr., to Garlock Inc. Method for making a lip type shaft seal having a resin liner. 4,406,847., Cl. 264-138.000.

Onizuka, Norio: *See—*
Ueda, Shigeki; and Onizuka, Norio, 4,406,945., Cl. 219-506.000.

Onopchenko, Judith B.; Singerman, Gary M.; and Sebulsky, Raynor T., to Gulf Research & Development Company. Grease compositions containing quaternary phosphonium thiostannates. 4,406,801., Cl. 252-46.700.

Onoye, Toshio: *See—*
Narita, Kiichi; Onoye, Toshio; and Egami, Akira, 4,406,754., Cl. 204-1.00T.

Oota, Hiroyuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Coffee maker. 4,406,217., Cl. 99-280.000.

Ophir, Jonathan; Maklad, Nabil F.; and Jaeger, Paul M., to Acoustic Standards Corporation. Ultrasonic beam characterization device. 4,406,153., Cl. 73-1.0DV.

Orlowski, Jan A.; Butler, David V.; and Kidd, Patrick D., to Scientific Pharmaceuticals, Inc. Adducts of 1,4-bis[(3-Methacroyl-2-hydroxy-propoxy)methyl]cyclohexane and derivatives thereof with isocyanates. 4,406,625., Cl. 433-228.000.

Osanai, Akira, to Olympus Optical Co., Ltd. Pulse signal generating device for tape recorder. 4,406,946., Cl. 250-231.0SE.

Osborne, Brian T.: *See—*
Debortoli, George; and Osborne, Brian T., 4,406,510., Cl. 339-103.00M.

Osborne, Thomas D., Jr., to Klaus, Frank A. Anchoring mechanism for motor driven wrench. 4,406,187., Cl. 81-180.00R.

Oser, Michael S.: *See—*
Treuhaft, Martin B.; and Oser, Michael S., 4,406,500., Cl. 299-80.000.

Oshio, Susumu: *See—*
Hasegawa, Takanori; and Oshio, Susumu, 4,406,530., Cl. 353-66.000.

Ostgaard, John T.: *See—*
Palmer, Rodney L.; and Ostgaard, John T., 4,406,152., Cl. 73-1.00H.

Ostromski, Toma T.: *See—*
Chervendinev, Peter G.; Yankulov, Ventzislav G.; and Ostromski, Toma T., 4,406,552., Cl. 400-172.000.

Oswald, Thomas L.; and Lund, David L., to GNB Batteries Inc. Method of making lead-acid battery element stack. 4,406,057., Cl. 29-623.400.

Ota, Katsuhiro: *See—*
Takano, Yutaka; Yajima, Koji; Ishii, Takashi; Yoshida, Tadahisa; Ota, Katsuhiro; and Yagishita, Shigeru, 4,406,971., Cl. 313-461.000.

Otto Kuhlmann GmbH & Co.: *See—*
Merten, Hans, 4,406,317., Cl. 152-362.00R.

Outboard Marine Corporation: *See—*
Blanchard, Clarence E., 4,406,632., Cl. 440-61.000.
Blanchard, Clarence E., 4,406,634., Cl. 440-61.000.

Overy, Colin: *See—*
Dynie, Ernest R.; Overy, Colin; and Lipscombe, Ronald J., 4,406,645., Cl. 474-158.000.

Oy Fiskars AB: *See—*
Zaitz, Allen J., 4,406,063., Cl. 30-230.000.

Oyabu, Katsumi: *See—*
Ikeuchi, Kazuo; Koga, Tsuguaki; Inoue, Tomoaki; and Oyabu, Katsumi, 4,406,169., Cl. 73-862.540.

Oyama, Hajime: *See—*
Suzuki, Kohji; Kaneko, Toshio; Oyama, Hajime; and Enoki, Shigekazu, 4,406,536., Cl. 355-3.0DD.

Oyama, Shigeaki: *See—*
Harano, Keiichi; Kawada, Shigeki; and Oyama, Shigeaki, 4,406,959., Cl. 310-58.000.

Oyamada, Kozo; Matsui, Takashi; Tobitsuka, Junzo; Yamazaki, Yoshio; and Ogawa, Masami, to Sankyo Company Limited. Use of isourea derivatives and triazine derivatives in combination with gibberellins as plant growth regulators. 4,406,687., Cl. 71-89.000.

Oyobe, Ikuo: *See—*
Sakon, Tohatirou; and Oyobe, Ikuo, 4,406,845., Cl. 264-37.000.

Pace, W. David; and Main, W. Eric, to Motorola Inc. Hook status detector for a subscriber loop interface circuit. 4,406,929., Cl. 179-170.0NC.

Pachter, I. Jacob: *See—*
Gordon, Maxwell; and Pachter, I. Jacob, 4,406,887., Cl. 424-114.000.

Paice, Derek A.: *See—*
Strycula, Eugene C.; Paice, Derek A.; and Gyugyi, Laszlo, 4,406,991., Cl. 333-175.000.

Paige Company Containers, Inc., The: *See—*
Paige, Richard E., 4,406,380., Cl. 220-416.000.

Paige, Richard E., to Paige Company Containers, Inc., The. Collapsible carton. 4,406,380., Cl. 220-416.000.

Palmer, Betty J.: *See—*
Buckley, Richard D.; Boyd, Edward L.; and Palmer, Betty J., 4,406,056., Cl. 29-605.000.

Palmer, Rodney L.; and Ostgaard, John T., to Richmond Tank Car Company. Method and apparatus for calibrating a railroad tank car. 4,406,152., Cl. 73-1.00H.

Palmero, Albert; Brigham, Robert N.; and Lundin, Robert S., to Superior Electric Company, The. Stepping motors with disc magnet. 4,406,958., Cl. 310-49.00R.

Palomar Systems & Machines, Inc.: *See—*
Braden, Denver, 4,406,373., Cl. 209-574.000.

Palosi, Eva: *See—*
Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, 4,406,835., Cl. 260-239.30D.

Parak, Fritz; Loock, Jorg; and Kouzmine, Runar, to Parak, Fritz; and Loock, Jorg. Radioactive ^{57}Co source. 4,406,697., Cl. 75-122.500.

Paray, Steven C., to CBS Inc. Musical instrument lid safety lock. 4,406,205., Cl. 84-183.000.

Parfenov, Boris M.: *See—*
Zhilikov, Valentin V.; Motsokhein, Boris I.; and Parfenov, Boris M., 4,407,017., Cl. 364-420.000.

Parker, Bruce W.; and LeVan, George L. Earplug for an underwater diver. 4,406,282., Cl. 128-151.000.

Parker, Norman W.; and Hilbert, Francis H., to Motorola Inc. Stereo broadcast system. 4,406,922., Cl. 179-1.0GS.

Paroldi, Daniel: *See—*
de la Roche Kerandraon, Olivier; Guillaume, Pierre; and Paroldi, Daniel, 4,406,586., Cl. 416-85.000.

Paros, Jerome M., to Paroscientific, Inc. Isolating and temperature compensating system for resonators. 4,406,966., Cl. 310-321.000.

Paroscientific, Inc.: *See—*
Paros, Jerome M., 4,406,966., Cl. 310-321.000.

Parrish, Charles A.; Freimuth, John H.; Campbell, Willis R.; Diederich, Anthony F., Jr.; and Clevenger, James T., Jr., to Sperry Corporation. Bale retainer for roll baling machine. 4,406,221., Cl. 100-88.000.

Paschen, Peter; Rao, Chatty; Kryczun, Alfred; Pfeiffer, Roland; Waldhecker, Heinz-Dieter; and Pufal, Rolf, to Klockner-Humboldt-Deutz AG. Device for the gasification of carbon by means of a molten metal bath. 4,406,666., Cl. 48-92.000.

Paschke, Edward E.; and Throne, James L., to Standard Oil Company (Indiana). Foamed thermoplastic resin comprising poly(p-methylenebenzoate). 4,406,846., Cl. 264-50.000.

Pathfinder Systems, Inc.: *See—*
Fasse, Mark E.; and Glesmann, Herbert C., 4,406,232., Cl. 104-244.100.

Patula, Edward J., to United States Steel Corporation. Return pass practice for the high mill of a seamless-pipe mill. 4,406,143., Cl. 72-209.000.

Paul, Wolfgang: *See—*
Fichte, Frank; and Paul, Wolfgang, 4,406,447., Cl. 271-31.000.

Paulos, Antonio C.: *See—*
Mahrus, Duraid; and Paulos, Antonio C., 4,406,857., Cl. 420-474.000.

Payette, Lionel J.: *See—*
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,406,055., Cl. 29-596.000.

Pechau, Gerhard; Schwartz, Ronald; and Jacob, Rudi, to Veb Schwermaschinenbau-Kombinat "Ernst Thalmann" Magdeburg. Drum-type wire shear. 4,406,198., Cl. 83-170.000.

Pedersen, Arne. Boiler liner for oil- or gas-fired boilers as well as procedure for the mounting of same. 4,406,614., Cl. 431-171.000.

Pelto, John H. Rotary fluid device. 4,406,121., Cl. 60-330.000.

Pendleton, Thomas J.: *See—*
Marra, Michael; Pendleton, Thomas J.; Smith, Douglas W.; and Vartoukian, Artin G., 4,406,723., Cl. 156-98.000.

Perkin-Elmer Corp., The: *See—*
Tomoff, Toma; Tamm, Rolf; Huber, Bernhard; and Walsh, Alan, 4,406,541., Cl. 356-312.000.

Perkins, Jean K. Fluid temperature blending control. 4,406,398., Cl. 236-12.150.

Perlman, Perry M. Universal connector. 4,406,483., Cl. 285-161.000.

Permawood International Corporation: *See—*
Guthrie, Bernard M.; and Torley, Robert B., 4,406,703., Cl. 106-93.000.

Permclip Products Corporation: *See—*
Corey, Joseph T., 4,406,725., Cl. 156-358.000.

Perry, John C. Vibration actuated liquid pump. 4,406,587., Cl. 417-211.000.

Peter, Heinrich: *See—*
Zahner, Hans; Naegeli, Hans-Ulrich; and Peter, Heinrich, 4,406,905., Cl. 424-263.000.

Peters, Bruce D.: *See—*
Harris, Stephen J.; and Peters, Bruce D., 4,406,254., Cl. 123-1.00A.

Peters, Daniel G.: *See—*
Holtey, Thomas O.; Kelly, Richard P.; and Peters, Daniel G., 4,407,014., Cl. 364-200.000.

Peterson, Craig B.: *See—*
Bayliss, John A.; Peterson, Craig B.; and Wilde, Doran K., 4,407,016., Cl. 364-200.000.

Peyroux, Jean-Serge: *See—*
Arene, Francois; Castagner, Bernard; and Peyroux, Jean-Serge, 4,406,209., Cl. 89-1.701.

Pez, Guido; and Anderson, Lowell R., to Allied Corporation. Electrically conducting polyacetylenes. 4,406,825., Cl. 252-500.000.

Pezzi, Giovanni, to CIR S.p.A. Divisione SASIB. Method and device for the inspection of ventilated cigarettes. 4,406,156., Cl. 73-38.000.

Pfeiffer, Roland: *See—*
Paschen, Peter; Rao, Chatty; Kryczun, Alfred; Pfeiffer, Roland; Waldhecker, Heinz-Dieter; and Pufal, Rolf, 4,406,666., Cl. 48-92.000.

Pfizer Inc.: *See—*
Aguiar, Armando J.; and Rasadi, Bijan, 4,406,888., Cl. 424-175.000.
Miller, James W.; and Tate, Bryce E., 4,406,798., Cl. 252-8.55D.

Pfluger, Gerhard; Schmidt, Burkhardt; Scholpp, Martin; Wamsler, Reinhold; and Frister, Manfred, to Robert Bosch GmbH. Slip ring assembly. 4,406,961., Cl. 310-232.000.

Philips Industries, Inc.: *See—*
Hott, William M.; and Hundley, John W., 4,406,216., Cl. 98-116.000.

Philips, Michael R., to Jonathan Temple & Co., Inc. Spool assembly. 4,406,422., Cl. 242-118.400.

Phillips, Alan C.; and Buxton, James L., to City of Seattle, The City Light Dep't. Power cable fault finding apparatus and method. 4,406,985., Cl. 324-51.000.

Phillips Petroleum Company: *See—*
Carter, Cecil O.; and Boesiger, Dwight D, 4,406,868., Cl. 423-228.000.
Casperson, John R., 4,406,862., Cl. 422-156.000.
Dick, James E., 4,406,742., Cl. 196-14.520.
Irvin, Howard B., 4,406,750., Cl. 203-22.000.
Johnson, Dean E., 4,406,149., Cl. 72-458.000.
MacQueen, Donald K.; and Wood, William E., 4,406,743., Cl. 196-46.000.
Martin, Joel L.; Welch, M. Bruce; Dietz, Richard E.; and Capshew, Charles E., 4,406,818., Cl. 252-429.00B.

Phillips, Robert F.: *See—*
McIntyre, James A.; and Phillips, Robert F., 4,406,758., Cl. 204-98.000.

Picchiottino, Andre A. Heating installation notably for space heating and for sanitary hot water production. 4,406,136., Cl. 62-238.600.

Pickering, David J., to Kee Klamps Limited. Pipe connector. 4,406,560., Cl. 403-297.000.

Pigeroulet, Jean: *See—*
Leblanc, Jean; and Pigeroulet, Jean, 4,406,263., Cl. 123-357.000.

Pilgram, Kurt H.; and Skiles, Richard D., to Shell Oil Company. Pesticidal 3-(2,3-dihydro-2-alkylbenzofuran-7-yl)-5-(R-oxy)-1,3,4-oxadiazol-2(3H)-ones. 4,406,910., Cl. 424-272.000.

Pilkington Brothers Limited: *See—*
Colvin, John B., 4,406,105., Cl. 52-285.000.

Pillan, Antonio: *See—*
Cozzi, Paolo; Pillan, Antonio; Bertone, Leone; and Lovisolo, Pier P., 4,406,901., Cl. 424-250.000.

Pinter, Abraham, to Research Corporation. Preparation of native oncornavirus envelope subunits and vaccines therefrom. 4,406,885., Cl. 424-88.000.

Pioneer Hi-Bred International, Inc.: *See—*
Hayward, Charles F., 4,406,086., Cl. 47-58.000.

Pisani, Luigi, to Rockwell International Corporation. Apparatus for converting web material into tubular form. 4,406,233., Cl. 112-63.000.

Pitney Bowes Inc.: *See—*
Kulpa, Walter J.; and Wolpgodzew, Leo, 4,406,448., Cl. 271-160.000.

Plastic Oddities, Inc.: *See—*
Izzi, Lewis B., 4,406,480., Cl. 285-12.000.

Platts, Douglas J., to General Descaling Company Limited. Pipeline spheres. 4,406,030., Cl. 15-104.06R.

Ploumen, Hubert J., to Hollandse Signaalapparaten B.V. Power supply circuit. 4,406,977., Cl. 315-375.000.

Poccia, Michael J.: *See—*
Mowry, William H., Jr.; and Poccia, Michael J., 4,406,389., Cl. 226-29.000.

Pohle, Werner P.: *See—*
Aprea, George F.; and Pohle, Werner P., 4,406,407., Cl. 239-487.000.

Pollak, Alfred: *See—*
Goseberg, Walter; Pollak, Alfred; and Reichow, Wolfgang, 4,406,978., Cl. 315-411.000.

Pollner, Rudolf: *See—*
Friese, Karl-Hermann; and Pollner, Rudolf, 4,406,968., Cl. 313-136.000.

Polselli, Luigi: *See—*
Polselli, Rudolph T.; and Polselli, Luigi, 4,406,488., Cl. 292-293.000.

Polselli, Rudolph T.; and Polselli, Luigi. Quick release door lock. 4,406,488., Cl. 292-293.000.

Polychrome Corporation: *See—*
Huang, Jen-chi, 4,406,757., Cl. 204-58.000.

Pommer, Karl E., II, to International Telephone and Telegraph Corporation. Electronic tone ringer. 4,406,927., Cl. 179-84.00T.

Pope, Janson M., Jr., to Clark, Marvin A., a part interest. Stethoscope with one-handed headset operation. 4,406,346., Cl. 181-131.000.

Pospischil, Reginhard, to Siemens Aktiengesellschaft. Method and apparatus for monitoring intermediate regenerative repeaters. 4,406,919., Cl. 178-69.00G.

Potter, George R. Method and apparatus for filtering a stream of gas while drying waste lignocellulosic material. 4,406,676., Cl. 55-98.000.

Pourarian, Faiz: *See—*
Wallace, William E.; Pourarian, Faiz; and Sinha, Vijay K., 4,406,874., Cl. 423-644.000.

PPG Industries, Inc.: *See—*
Demarest, Henry M., Jr., 4,406,683., Cl. 65-134.000.
Ernsberger, Fred M., 4,406,682., Cl. 65-99.400.
Jursa, Stephen J. D., 4,406,685., Cl. 65-287.000.

Precise Power Corporation: *See—*
Roesel, John F., Jr., 4,406,950., Cl. 290-4.00C.

Preston, Mark D. Dielectric conditioning. 4,406,070., Cl. 34-1.000.

Pretor, Wincenty; Skoczynski, Wojciech; Janik, Edward; Zych, Henryk; and Serwotka, Ryszard, to Centrum Konstrukcyjnotechnologiczne Maszyn Gorniczych. Slidable filling dam. 4,406,565., Cl. 405-258.000.

Pribyl & Associates, Inc.: *See—*
Pribyl, George, 4,406,385., Cl. 224-252.000.

Pribyl, George, to Pribyl & Associates, Inc. Film carrier. 4,406,385., Cl. 224-252.000.

Prince, George T., to Allis-Chalmers Corporation. Hydraulic detent lock for transmission. 4,406,356., Cl. 192-3.570.

Prince, Laurence A.; and Twigger, Kevin M., to British Aerospace Public Limited Company. Hydraulic apparatus. 4,406,212., Cl. 91-28.000.

Procter & Gamble Company, The: *See—*
Fawzi, Mahdi B.; and Barbera, Melvin A., 4,406,884., Cl. 424-81.000.

Proebsting, Robert J., to Mostek Corporation. Shared quiet line flip-flop. 4,406,954., Cl. 307-200.00B.

Puchta, Herbert, to Daimler-Benz Aktiengesellschaft. Remote control device for a change-speed gear arrangement of a motor vehicle. 4,406,175., Cl. 74-473.00R.

Pufal, Rolf: *See—*
Paschen, Peter; Rao, Chatty; Kryczun, Alfred; Pfeiffer, Roland; Waldhecker, Heinz-Dieter; and Pufal, Rolf, 4,406,666., Cl. 48-92.000.

Pujol, Carlos: *See—*
Negaty-Hindi, Guy; Pujol, Carlos; and Zurcher, Erwin, 4,406,115., Cl. 57-22.000.

Puritan-Bennett Corporation: *See—*
Olesen, Russell, 4,406,302., Cl. 137-514.500.

Putilin, Jury M.: *See—*
Samoilovich, Mikhail I.; Zadneprovsky, Boris I.; Nikitin, Albert V.; Putilin, Jury M.; Radyansky, Vladimir M.; and Shaposhnikov, Anatoly A., 4,406,871., Cl. 423-446.000.

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Rademacher, Thomas P., to McNeil Corporation. Training device for swimmers. 4,406,628., Cl. 434-254.000.

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Crain, N. Robert; and Hardison, Robert P., 4,406,944., Cl. 219-388.000.

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Rahnke, Christian J., to Ford Motor Company. Variable flow rate turbocharger. 4,406,125., Cl. 60-602.000.

Rakenneasennus E. Stahlberg KY: *See—*
Stahlberg, Erik H., 4,406,556., Cl. 403-23.000.

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Beavon, David K., 4,406,873., Cl. 423-574.00R.

Ramer, James L. Manhole fluid line attachment apparatus. 4,406,484., Cl. 285-178.000.

Ramet, Claude: *See—*
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Ramirez, Ciro N., to International Business Machines Corporation. Rotational magnetic transducer. 4,406,983., Cl. 318-653.000.

Ranco Incorporated: *See—*
Rossi, Guglielmo; Eysholdt, Ursula; and Mulier, Gerd, 4,406,322., Cl. 165-14.000.

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Paschen, Peter; Rao, Chatty; Kryczun, Alfred; Pfeiffer, Roland; Waldhecker, Heinz-Dieter; and Pufal, Rolf, 4,406,666., Cl. 48-92.000.

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Aguiar, Armando J.; and Rasadi, Bijan, 4,406,888., Cl. 424-175.000.

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Atherton, James H., 4,406,957., Cl. 307-475.000.
De Angelis, Mario E., 4,406,638., Cl. 445-68.000.
Fairbanks, David W., 4,406,381., Cl. 221-1.000.
Hernqvist, Karl G., 4,406,637., Cl. 445-45.000.
Hughes, Richard H., 4,406,970., Cl. 313-414.000.
Williams, Robert H., 4,406,639., Cl. 445-59.000.

Reader, Arthur M.; and Evans, Robert D. Secondary carpet backing fabrics. 4,406,310., Cl. 139-420.00R.

Reeve, Douglas W., to ERCO Industries Limited. Method of bleaching pulp with an aqueous solution of chlorine dioxide and chlorine followed by a chlorine solution. 4,406,736., Cl. 162-88.000.

Regan, Kent R. Mini parallel bars. 4,406,450., Cl. 272-63.000.

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Desmaret, Jean-Pierre, 4,407,012., Cl. 362-32.000.
Rehau Plastiks AG & Co.: *See—*
Riegel, Karl-Heinz, 4,406,852., Cl. 264-296.000.
Reibetanz, Wilbert: *See—*
Baumann, Otto; Dohse, Hans-Peter; Reibetanz, Wilbert; and Wanner, Karl, 4,406,334., Cl. 175-315.000.
Reichmann, Richard H.: *See—*
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Reichow, Wolfgang: *See—*
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Adam, Peter; Meyer-Spradow, Horst; and Reisinger, Lothar, 4,406,046., Cl. 29-156.70C.
Reiterer, Hans D.: *See—*
Hans, Walter; Reiterer, Hans D.; Eichberger, Ernst; and Lazar, Gerhard, 4,406,696., Cl. 75-72.000.
Renner, Jacqueline M.; Scott, Robert N.; and Gavin, David F., to Olin Corporation. Selected siloxane adducts of tris(2-hydroxyethyl-)isocyanurate and their use as functional fluids. 4,406,807., Cl. 252-78.300.
Repa Feinstanzwerk GmbH: *See—*
Wier, Franz, 4,406,044., Cl. 24-230.0AL.
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Pinter, Abraham, 4,406,885., Cl. 424-88.000.
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Research Foundation of the State Univ. of New York: *See—*
Steigman, Joseph; Solomon, Nathan A.; and Hwang, Lydia L. Y., 4,406,876., Cl. 424-1.000.
Rexford, Donald L.: *See—*
Rowen, William I.; Ekstrom, Thomas E.; and Rexford, Donald L., 4,406,117., Cl. 60-39.270.
Rexius, William G.: *See—*
Schian, Richard F.; and Rexius, William G., 4,406,090., Cl. 51-95.00R.
Rheinische Braunkohlenwerke AG: *See—*
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Rheinmetall GmbH: *See—*
Backstein, Gunter; Fiebrich, Joachim; and Unger, Hans W., 4,406,225., Cl. 102-235.000.
Rhodes, Tony, to Mattel, Inc. Modular radio control for use with multiple toy vehicles. 4,406,085., Cl. 46-254.000.
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Buhler, Ulrich; Ribka, Joachim; Tappe, Horst; and Roth, Kurt, 4,406,661., Cl. 8-464.000.
Ricci, Raymond: *See—*
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Richards, Ronnie D.: *See—*
Hattler, Brack G.; Richards, Ronnie D.; and Horgan, William J., 4,406,656., Cl. 604-280.000.
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Richmond Tank Car Company: *See—*
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Richter, Ekkehard: *See—*
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Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, 4,406,835., Cl. 260-239.30D.
Takacs, Istvan; Kerey, Gyorgy; Rudolf, Peter; Illes, Janos; Szabo, Bela; Vereczkey, Endre; Banos, Zoltan; Bosits, Gyula; and Czebe, Laszlo, 4,406,795., Cl. 210-771.000.
Richter, Virgil J.: *See—*
Gangwisch, William J.; Richter, Virgil J.; Wixon, Harold E.; and Wraga, Joseph B., 4,406,808., Cl. 252-91.000.
Ricoh Company, Ltd.: *See—*
Mori, Goro, 4,406,537., Cl. 355-14.0SH.
Sakamoto, Koji; and Yanagawa, Nobuyuki, 4,406,535., Cl. 355-3.0DD.
Suzuki, Kohji; Kaneko, Toshio; Oyama, Hajime; and Enoki, Shigekazu, 4,406,536., Cl. 355-3.0DD.
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Riel, Gordon K.: *See—*
Burton, Charles A.; and Riel, Gordon K., 4,406,947., Cl. 250-252.100.
Rigby, Eugene B.: *See—*
Chow, William W.; and Rigby, Eugene B., 4,406,722., Cl. 156-89.000.
Riley, Michael W.: *See—*
Duncan, L. Scot; Germuska, Richard W.; Kral, Stephen L.; Lasecki, Robert R.; and Riley, Michael W., 4,406,570., Cl. 414-282.000.
Riley, Sidney L. Vehicle assist for disabled. 4,406,574., Cl. 414-543.000.
Rinnai Kabushiki Kaisha: *See—*
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Riso Kagaku Corporation: *See—*
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Roach, John E., Jr.: *See—*
Baker, Alan C.; and Roach, John E., Jr., 4,406,210., Cl. 89-1.808.
Robb, Neil E.; and Gorman, Thomas G., to Hayes-Albion Corp. Shrouded fan assembly. 4,406,581., Cl. 415-172.00A.
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Wallace, Robert S.; and Robbins, Arlington R., 4,406,369., Cl. 206-387.000.
Robert Bosch GmbH: *See—*
Baumann, Otto; Dohse, Hans-Peter; Reibetanz, Wilbert; and Wanner, Karl, 4,406,334., Cl. 175-315.000.
Eheim, Franz; Konrath, Karl; Schwarz, Manfred; and Weiss, Otmar, 4,406,268., Cl. 123-502.000.
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Robertson, Robert H.: *See—*
Robertson, William C.; Robertson, Robert H.; and Forpahl, Ray E., 4,406,595., Cl. 417-383.000.
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Ascani, Leonard A., Jr.; and Burroughs, Billy A., 4,406,393., Cl. 228-157.000.
Jones, Addison B., 4,406,252., Cl. 118-724.000.
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Scott, James P.; Lantz, Charles H.; and Sheill, David D., 4,406,352., Cl. 188-72.800.
Southerland, Stephen R., 4,406,916., Cl. 174-135.000.
Tam, Matthias L.; and Custode, Frank Z., 4,406,049., Cl. 29-571.000.
Rockwood, Robert E.; and Antkowiak, Richard P., to A. W. Chesterton Company. Centrifugal pump. 4,406,465., Cl. 277-96.100.
Roesel, John F., Jr., to Precise Power Corporation. Greatly prolonged period non-interruptible power supply system. 4,406,950., Cl. 290-4.00C.
Rogers, Ralph W., Jr.: *See—*
Vernam, William D.; Rogers, Ralph W., Jr.; and Stumpf, Harry C., 4,406,717., Cl. 148-440.000.
Rogers, William C.; and Davis, William E., Jr., to General Dynamics Corporation. Precision tool. 4,406,568., Cl. 409-182.000.
Rohm and Haas Company: *See—*
Beiner, Jean-Marc; Levy, Jerome F.; and Sweens, Bernard J. M., 4,406,660., Cl. 604-376.000.
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Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, to Richter Gedeon Vegyeszeti Gyar Rt. Tranquillo-sedative benzodiazepine derivatives. 4,406,835., Cl. 260-239.30D.
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Rom, Rudolph A., to Lockformer Company, The. Apparatus for making collars having an integral notcher. 4,406,199., Cl. 83-212.000.
Roncato, Giordano; Berlioz, Jean; and Roy, Louis, to Vetrotex Saint Gobain. Device for cutting continuous threads, and notably glass threads. 4,406,196., Cl. 83-117.000.
Ross-Finlay Ltd./Ltee: *See—*
Hitland, Hjalmar A. K., 4,406,782., Cl. 209-164.000.
Ross, Steven L., to General Signal Corporation. Ampoule crusher mechanism. 4,406,571., Cl. 414-412.000.
Rossbach, Horst, to Agfa-Gevaert AG. Motion picture apparatus. 4,406,528., Cl. 352-169.000.
Rossi, Guglielmo; Eysholdt, Ursula; and Mulier, Gerd, to Ranco Incorporated. Heating and/or cooling system. 4,406,322., Cl. 165-14.000.
Rossow, Harold E.: *See—*
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Buhler, Ulrich; Ribka, Joachim; Tappe, Horst; and Roth, Kurt, 4,406,661., Cl. 8-464.000.
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Rowen, William I.; Ekstrom, Thomas E.; and Rexford, Donald L., to General Electric Company. Cyclic load duty control for gas turbine. 4,406,117., Cl. 60-39.270.
Roy, Henry R., to Roy, Kathryn. Prosthetic valve means for cardiovascular surgery. 4,406,022., Cl. 3-1.500.
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Roy, Louis: *See—*
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Rozmus, Walter J., to Kelsey-Hayes Company. Assembly and method for electrically degassing particulate material. 4,406,671., Cl. 55-2.000.
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Murakami, Hideo, 4,406,427., Cl. 242-218.000.
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Saby, Charles, to Ceraver. Tempered glass dielectric member for an electrical insulator, and an insulator using said member. 4,406,918., Cl. 174-196.000.
Sadigh-Behzadi, Amir-Akbar, to Thomas & Betts Corporation. Dual-in-line package assembly. 4,406,508., Cl. 339-75.00M.
St. Clair, Albert R. System for accumulating and handling strips of pocketed springs. 4,406,391., Cl. 226-118.000.
St. Louis, Jacques R., to Northern Telecom Limited. Method of mounting and packaging elongate silicon devices on a ceramic base. 4,406,054., Cl. 29-588.000.
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Saitoh, Joichi, to Kotobuki Seihan Printing Co., Ltd. Method and apparatus for resharpening cutting tools by electropolishing process. 4,406,759., Cl. 204-129.550.
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Chiba, Takao; Sakamoto, Nobuyoshi; and Kohro, Kenji, 4,406,964., Cl. 310-313.00B.
Sakamoto, Seiichi: *See—*
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Sakon, Tohatirou; and Oyobe, Ikuo, to Sumitomo Rubber Industries, Ltd. Method for restoration and re-utilization of discharged gas and arrangement employed therefor. 4,406,845., Cl. 264-37.000.
Sakurai, Yukio, to Nissan Motor Co., Ltd. Bypass passageway construction for a vehicle air conditioner system. 4,406,214., Cl. 98-2.080.
Salje, Ernst; and Bartsch, Ulrich, to Salje, Ernst. Rotatable article, such as a tool, provided with means for damping vibration. 4,406,202., Cl. 83-835.000.
Saller, Stephen W., to Wire Machinery Corporation of America. Reel support system. 4,406,423., Cl. 242-129.510.
Samis, Philip L. Apparatus for engraving indicia on small objects. 4,406,567., Cl. 409-92.000.
Samoilovich, Mikhail I.; Zadneprovsky, Boris I.; Nikitin, Albert V.; Putilin, Jury M.; Radyansky, Vladimir M.; and Shaposhnikov, Anatoly A. Process for growing diamonds. 4,406,871., Cl. 423-446.000.
Samuelson, Hans O., to Mo och Domsjo Aktiebolag. Process for alkaline oxygen gas bleaching of cellulose pulp. 4,406,735., Cl. 162-40.000.
Sanden Corporation: *See—*
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Sanders, Robert N.; and Laurent, Sebastian M., to Ethyl Corporation. Method of making zeolites. 4,406,822., Cl. 252-455.00Z.
Sanders, Robert N.: *See—*
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Sangamo Weston Limited: *See—*
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Sankey, Bruce M.: *See—*
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Oyamada, Kozo; Matsui, Takashi; Tobitsuka, Junzo; Yamazaki, Yoshio; and Ogawa, Masami, 4,406,687., Cl. 71-89.000.
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Sasaki, Yoshiyuki; Nakamura, Etsuro; Ojima, Yoshimoto; Kondo, Teruo; Ukegawa, Koji; and Matsumura, Akimitsu, to Director-General of Agency of Industrial Science & Technology. Hydroconversion of heavy hydrocarbon oils. 4,406,772., Cl. 208-112.000.
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Sasib S.p.A.: *See—*
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Sato, Katsuharu, to Universal Pioneer Corporation. Beam splitter optical system of signal pickup device. 4,406,520., Cl. 350-173.000.
Sato, Sigetada; and Okudaira, Sadao, to Asahi Kogaku Kogyo Kabushiki Kaisha. Compact wide-angle zoom lens. 4,406,523., Cl. 350-426.000.
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Saunders, James F.; and Krocker, Robert E., to Trane Company, The. Control and method for defrosting a heat pump outdoor heat exchanger. 4,406,133., Cl. 62-80.000.
Savini, Charles: *See—*
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Schantz, Lawrence F. Detachable load carrier for a vehicle. 4,406,384., Cl. 224-42.070.
Scharf, Heino W., to Dempster Systems Inc. Vehicle fender attachment and support structure. 4,406,474., Cl. 280-154.000.
Schell, Mark S., to Du Pont de Nemours, E. I., and Company. Triple row coax cable connector. 4,406,512., Cl. 339-177.00R.
Schering Corporation: *See—*
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Schian, Richard F.; and Rexius, William G. Methods and apparatus for grinding spiral tool cutting edges having non-circumferentially relieved edges. 4,406,090., Cl. 51-95.00R.
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Schlumberger Technology Corporation: *See—*
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Schmale, Karl-Ernst, 4,406,035., Cl. 16-384.000.
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Pfluger, Gerhard; Schmidt, Burkhardt; Scholpp, Martin; Wemsler, Reinhold; and Prister, Manfred, 4,406,961., Cl. 310-232.000.
Schmidt, Richard F., to United States of America, National Aeronautics and Space Administration. Focal axis resolver for offset reflector antennas. 4,407,001., Cl. 343-840.000.

Schmidt, Werner; Mueller, Gerhard; Weber, Klaus; and Wilke, Volker, to Carl Zeiss-Stiftung. Method and apparatus for light-induced scanning-microscope display of specimen parameters and of their distribution. 4,407,008., Cl. 358-93.000.

Schmitz, Gunther: *See*—
Eimer, Klaus; Kraker, Felix; Schildmann, Hans W.; Schmitz, Gunther; and Sonnenschein, Hans, 4,406,031., Cl. 15-104.06R.

Schneckloth, Raymond C. Recreational vehicle drain support. 4,406,434., Cl. 248-83.000.

Schneider, Joseph J.; and Kaucic, Robert A., to AMCA International Corporation. Apparatus and process for improved manufacture of shells for tunnel tubes. 4,406,150., Cl. 72-478.000.

Schoening, Josef: *See*—
Schwiers, Hans-Georg; Schoening, Josef; and Kisaling, Guenter, 4,406,855., Cl. 376-250.000.

Scholpp, Martin: *See*—
Pfluger, Gerhard; Schmidt, Burkhardt; Scholpp, Martin; Wamaler, Reinhold; and Frister, Manfred, 4,406,961., Cl. 310-232.000.

Scholz, Thomas H.: *See*—
Campbell, Henry F.; Scholz, Thomas H.; and Douglas, George H., 4,406,897., Cl. 424-246.000.

Scholz, Werner, to Licentia Patent-Verwaltungs-GmbH. Circuit for processing a digital signal. 4,406,988., Cl. 328-150.000.

Schone, Wolfram: *See*—
Hempel, Joachim; Christoph, Leonhard; and Schone, Wolfram, 4,406,094., Cl. 52-40.000.

Schonhut, Kurt. Metal frame for eyeglasses. 4,406,527., Cl. 351-153.000.

Schoonbeck, Richard. Method and apparatus to repair holes in walls. 4,406,107., Cl. 52-514.000.

Schott Optical Glass, Inc.: *See*—
Rapp, Charles F., 4,406,681., Cl. 65-32.000.

Schoumaker, Raoul J. P.: *See*—
Anderson, William C.; and Schoumaker, Raoul J. P., 4,406,379., Cl. 220-335.000.

Schrecke, Horst G.; and Glockner, Hermann, to SKF Kugellagerfabriken GmbH. Device for supplying an oil-air mixture to bearing locations. 4,406,503., Cl. 308-187.000.

Schulthess, Carl W.: *See*—
Boggy, Richard D.; Johnson, Richard H.; Eggleston, John M.; and Schulthess, Carl W., 4,406,542., Cl. 356-345.000.

Schultz, Arthur N.; Diring, James A.; and Krueger, Donald G., to Alwin Manufacturing Company, Inc. Paper towel dispenser with rack and gear drive. 4,406,421., Cl. 242-55.530.

Schust, Gerhard: *See*—
Koch, Wilhelm; and Schust, Gerhard, 4,406,089., Cl. 49-352.000.

Schwab, Kurt, to D. Swarovski & Co. Warning reflector. 4,406,045., Cl. 29-527.200.

Schwartz, Ronald: *See*—
Pechau, Gerhard; Schwartz, Ronald; and Jacob, Rudi, 4,406,198., Cl. 83-170.000.

Schwarz, Manfred: *See*—
Eheim, Franz; Konrath, Karl; Schwarz, Manfred; and Weiss, Otmar, 4,406,268., Cl. 123-502.000.

Schwesinger, Dennis W. Exhalation monitoring apparatus. 4,406,291., Cl. 128-728.000.

Schwiers, Hans-Georg; Schoening, Josef; and Kissling, Guenter, to Hochtemperatur-Reaktorbau GmbH. Leak detection installation. 4,406,855., Cl. 376-250.000.

Schymura, Konrad, to Metallgesellschaft Aktiengesellschaft. Face seal arrangement for sealing a rotatable tubular member. 4,406,464., Cl. 277-65.000.

Scientific Pharmaceuticals, Inc.: *See*—
Orlowski, Jan A.; Butler, David V.; and Kidd, Patrick D., 4,406,625., Cl. 433-228.000.

SCM Corporation: *See*—
Curley, Charles M., 4,406,223., Cl. 101-93.480.

Scoggins Mfg., Inc.: *See*—
Scoggins, Tommy D., 4,406,395., Cl. 232-43.100.

Scoggins, Tommy D., to Scoggins Mfg., Inc. Ash receptacle. 4,406,395., Cl. 232-43.100.

Scott, David B.: *See*—
Davies, Roderick D.; and Scott, David B., 4,406,710., Cl. 148-1.500.

Scott, James P.; Lantz, Charles H.; and Sheill, David D., to Rockwell International Corporation. Disc brake actuator. 4,406,352., Cl. 188-72.800.

Scott, James W.: *See*—
Kulle, Lee K.; Hess, John M.; and Scott, James W., 4,406,440., Cl. 251-6.000.

Scott, Robert N.: *See*—
Renner, Jacqueline M.; Scott, Robert N.; and Gavin, David F., 4,406,807., Cl. 252-78.300.

Scott, William R.; Bloomfield, Philip; Weist, William T.; and McMahon, Karen M., to United States of America, Navy. Method for making a piezoelectric transducer. 4,406,059., Cl. 29-857.000.

Seasom Controls Limited: *See*—
Hark, William B., 4,406,162., Cl. 73-148.000.

Sebulsky, Raynor T.: *See*—
Onopchenko, Judith B.; Singerman, Gary M.; and Sebulsky, Raynor T., 4,406,801., Cl. 252-46.700.

Segawa, Hiyotaro. Liners for use in a rod mill. 4,406,414., Cl. 241-183.000.

Seidel, Lawrence H., to Jergens, Inc. Hydraulic toe clamp. 4,406,445., Cl. 269-32.000.

Sekiya, Setsuro; Motosugi, Katsuhiko; and Takahashi, Hiroshi, to Toyota Jidosha K.K. Helically-shaped intake port of an internal combustion engine. 4,406,258., Cl. 123-188.00M.

Semenov, Lev S.: *See*—
Fridman, Georgy N.; Kalashnikov, Vladilen K.; Biznya, Vladimir M.; Kovarsky, Efim M.; Borisov, Boris A.; Semenov, Lev S.; Malyshev, Valentin A.; Voronin, Nikolai S.; Staskevich, Lev. N.; Zinin, Evgeny F.; Dulitskaya, Galina M.; and Shegai, Elvira R., 4,406,962., Cl. 310-233.000.

Seo, Iwazou: *See*—
Kataishi, Takao; and Seo, Iwazou, 4,406,608., Cl. 425-436.0RM.

Serwotka, Ryszard: *See*—
Pretor, Wincenty; Skoczynski, Wojciech; Janik, Edward; Zych, Henryk; and Serwotka, Ryszard, 4,406,565., Cl. 405-258.000.

Sevastopolsky Priborostroitelny Institut: *See*—
Khapaev, Vadim M., 4,406,791., Cl. 210-649.000.

Sexton Enterprises, Inc.: *See*—
Sexton, Tilman L., 4,406,473., Cl. 280-94.000.

Sexton, Tilman L., to Sexton Enterprises, Inc. Safety stabilizer for vehicle steering linkage. 4,406,473., Cl. 280-94.000.

Shanksville Corporation, N.V.: *See*—
Fabricius, Hans-Ake; and Kottgen, Eckart U., 4,406,830., Cl. 260-112.00R.

Shaposhnikov, Anatoly A.: *See*—
Samoilovich, Mikhail I.; Zadneprovsky, Boris I.; Nikitin, Albert V.; Putilin, Jury M.; Radyansky, Vladimir M.; and Shaposhnikov, Anatoly A., 4,406,871., Cl. 423-446.000.

Sharma, Rameshwar P., to Ford Motor Company. Electromagnetically controlled fuel injection pump spill port valve assembly. 4,406,267., Cl. 123-458.000.

Shaw, William C., to Imax Systems Corporation. Projection screen assembly. 4,406,519., Cl. 350-117.000.

Shegai, Elvira R.: *See*—
Fridman, Georgy N.; Kalashnikov, Vladilen K.; Biznya, Vladimir M.; Kovarsky, Efim M.; Borisov, Boris A.; Semenov, Lev S.; Malyshev, Valentin A.; Voronin, Nikolai S.; Staskevich, Lev. N.; Zinin, Evgeny F.; Dulitskaya, Galina M.; and Shegai, Elvira R., 4,406,962., Cl. 310-233.000.

Sheill, David D.: *See*—
Scott, James P.; Lantz, Charles H.; and Sheill, David D., 4,406,352., Cl. 188-72.800.

Shell Oil Company: *See*—
Duijvestijn, Pius E. M., 4,406,610., Cl. 431-4.000.
Fair, Walter B.; and Richardson, Edwin A., 4,406,327., Cl. 166-300.000.
Pilgram, Kurt H.; and Skiles, Richard D., 4,406,910., Cl. 424-272.000.

Sherritt Gordon Mines Limited: *See*—
Weir, Donald R.; Masters, Ian M.; and Genik-Sas-Berezowsky, Roman M., 4,406,864., Cl. 423-9.000.

Shibagaki, Akiro: *See*—
Tomita, Yutaka; and Shibagaki, Akiro, 4,406,068., Cl. 33-174.00L.

Shimada, Shigeru: *See*—
Baji, Toru; Tsukada, Toshihisa; Koike, Norio; Akiyama, Toshiyuki; Takemoto, Iwao; Shimada, Shigeru; Kusano, Chushirou; Ohba, Shinya; and Matsumaru, Haruo, 4,407,010., Cl. 358-213.000.

Shimano Industrial Company Limited: *See*—
Shimano, Keizo, 4,406,643., Cl. 474-82.000.

Shimano, Keizo, to Shimano Industrial Company Limited. Derailleur for a bicycle. 4,406,643., Cl. 474-82.000.

Shimazu, Tomonori: *See*—
Ogawa, Haruki; and Shimazu, Tomonori, 4,406,894., Cl. 424-225.000.

Shimogori, Kazutoshi; Kajiwara, Kazuichi; Miki, Kenji; and Fukutsuka, Toshio, to Kabushiki Kaisha Kobe Seiko Sho. Method of descaling metal sheets. 4,406,761., Cl. 204-144.500.

Shioya, Yoshimi: *See*—
Takasaki, Kanetake; and Shioya, Yoshimi, 4,406,053., Cl. 29-588.000.

Shiozawa, Takeo: *See*—
Fujiwara, Koichi; Shiozawa, Takeo; Miki, Katsumi; Uchimura, Masahiko; Miyajima, Kazunori; and Tonouchi, Yasuo, 4,406,321., Cl. 164-504.000.

Shirasu, Katsunori: *See*—
Tsunoda, Sachio; and Shirasu, Katsunori, 4,406,578., Cl. 415-1.000.

Shoji, Hiroshi: *See*—
Sugino, Yoshihide; and Shoji, Hiroshi, 4,406,193., Cl. 82-34.00R.

Showa Electric Wire & Cable Co., Ltd.: *See*—
Furuta, Katsuhisa; Hirai, Takeshi; and Nakamura, Yoshinori, 4,406,399., Cl. 236-15.0BC.

SIBEX (Construction) Limited: *See*—
Summerell, Michael, 4,406,481., Cl. 285-15.000.

Sidat, Donald D.: *See*—
Davis, Joseph; and Sidat, Donald D., 4,406,459., Cl. 277-25.000.

Siefer, David A., to GTE Products Corporation. Diesel fuel heater. 4,406,785., Cl. 210-186.000.

Siegfried, Frigyes: *See*—
Suto, Ferenc; Fodor, Jozsef; Siegfried, Frigyes; and Gyarfas, Jozsef, 4,406,787., Cl. 210-315.000.

Siemens Aktiengesellschaft: *See*—
Dreinhoff, Karl-Heinz; and Wambach, Hermann, 4,406,554., Cl. 400-249.000.
Golker, Walter, 4,406,939., Cl. 219-121.0LJ.
Heinen, Jochen, 4,406,245., Cl. 118-404.000.
Menhorn, Hermann; Muller, Georg; Nitschke, Christoph; Wehrberger, Helmut; and Kaesewinkel, Klaus, 4,406,930., Cl. 191-39.000.
Michel, Alfred, 4,406,611., Cl. 431-12.000.
Pospischil, Reginhard, 4,406,919., Cl. 178-69.00G.

Weyrich, Claus, 4,406,913., Cl. 136-259.000.

Simon, James R.: *See*—
Davitt, Alan L.; and Simon, James R., 4,406,226., Cl. 102-311.000.

Simonsen, Ole F.; Lee, Wining A.; and Chan, Hung K. P., to AMCA International Corporation. Collapsible fixture for manufacture of tunnel tubes. 4,406,151., Cl. 72-478.000.

Simonson, William B., Sr. Fuel expander. 4,406,270., Cl. 123-557.000.

Simpson, Norbert E. Method and apparatus for molding plastic window sills. 4,406,848., Cl. 264-161.000.

Singer Company, The: *See*—
Greenwood, Ivan A., 4,406,986., Cl. 324-304.000.
Ljung, Bo H. G., 4,406,965., Cl. 310-319.000.
Marra, Michael; Pendleton, Thomas J.; Smith, Douglas W.; and Vartoukian, Artin G., 4,406,723., Cl. 156-98.000.
Socha, Robert J., 4,406,236., Cl. 112-158.00E.
Szostak, Jan, 4,406,174., Cl. 74-409.000.

Singerman, Gary M.: *See*—
Onopchenko, Judith B.; Singerman, Gary M.; and Sebulsky, Raynor T., 4,406,801., Cl. 252-46.700.

Sinha, Vijay K.: *See*—
Wallace, William E.; Pourarian, Faiz; and Sinha, Vijay K., 4,406,874., Cl. 423-644.000.

SKF Kugellagerfabriken GmbH: *See*—
Schrecke, Horst G.; and Glockner, Hermann, 4,406,503., Cl. 308-187.000.

Skiles, Richard D.: *See*—
Pilgram, Kurt H.; and Skiles, Richard D., 4,406,910., Cl. 424-272.000.

Skoczynski, Wojciech: *See*—
Pretor, Wincenty; Skoczynski, Wojciech; Janik, Edward; Zych, Henryk; and Serwotka, Ryszard, 4,406,565., Cl. 405-258.000.

Slavik, Raymond F., to Minnesota Diversified Products, Inc. Attic insulation vent. 4,406,095., Cl. 52-95.000.

Slayton, Richard M., to United Technologies Corporation. Anti-weepage valve for rotating seals. 4,406,460., Cl. 277-25.000.

Sliwka, Wolfgang, to BASF Aktiengesellschaft. Process for the preparation of microcapsules, and the microcapsules obtained thereby. 4,406,816., Cl. 252-69.000.

Sloan, Albert E., to Technical Operations Limited. Fail-safe system for pulse-controlled three-terminal d.c. motor. 4,406,979., Cl. 318-255.000.

Smaby, Stephen A.; and Butterworth, Arthur L., to Trane Company, The. Compressor oil pump. 4,406,594., Cl. 417-368.000.

Smith, Douglas W.: *See*—
Marra, Michael; Pendleton, Thomas J.; Smith, Douglas W.; and Vartoukian, Artin G., 4,406,723., Cl. 156-98.000.

Smith, Francis H., to Vickers Limited. Focusing of optical viewing apparatus. 4,406,526., Cl. 350-524.000.

Smith, Jason T.; Church, Thomas A.; and Johnson, Theodore, to Conveyersmith, Inc. Accumulating conveyer. 4,406,360., Cl. 198-781.000.

Smith, Samuel D. Safety device for ladders. 4,406,350., Cl. 182-8.000.

Snamprogetti S.p.A.: *See*—
Borza, Michele; Leoncini, Sergio; and Modenesi, Aldo, 4,406,778., Cl. 208-179.000.

Socha, Robert J., to Singer Company, The. Needle shift warning arrangement in an electronically controlled sewing machine. 4,406,236., Cl. 112-158.00E.

Societe d'Etudes, de Realisations et d'Applications Techniques (S.E.R.A.T): *See*—
Arene, Francois; Castagner, Bernard; and Peyroux, Jean-Serge, 4,406,209., Cl. 89-1.701.

Societe Europeenne De Propulsion: *See*—
Clebant, Jean-Claude, 4,406,482., Cl. 285-114.000.

Solomon, Nathan A.: *See*—
Steigman, Joseph; Solomon, Nathan A.; and Hwang, Lydia L. Y., 4,406,876., Cl. 424-1.000.

Sonnenschein, Hans: *See*—
Eimer, Klaus; Kraker, Felix; Schildmann, Hans W.; Schmitz, Gunther; and Sonnenschein, Hans, 4,406,031., Cl. 15-104.06R.

Soulier, Joel. Microwave device for the heat treatment of powdery or granular materials. 4,406,937., Cl. 219-10.55A.

Southerland, Stephen R., to Rockwell International Corporation. Adaptor for routing flat ribbon cables. 4,406,916., Cl. 174-135.000.

Southern California Edison Company: *See*—
Karlicek, Robert F., 4,406,984., Cl. 322-27.000.

Southwest Research Institute: *See*—
Dale, John M., 4,406,706., Cl. 106-288.00B.

Southwire Company: *See*—
Dixon, Charles, 4,406,058., Cl. 29-809.000.
Lanier, Jerry W.; and Thomas, O. Leon, 4,406,114., Cl. 57-7.000.

Spademan, Richard G. Sport shoe with a dynamic tongue assembly. 4,406,073., Cl. 36-119.000.

Spano, Joseph: *See*—
Wexler, Howard; and Spano, Joseph, 4,406,296., Cl. 132-148.000.

Sparks, Bryan D.: *See*—
Meadus, Frederick W.; and Sparks, Bryan D., 4,406,788., Cl. 210-512.100.

Speese, Arthur L.: *See*—
Bennett, William G.; and Speese, Arthur L., 4,406,177., Cl. 74-501.00P.

Spectra-Physics, Inc.: *See*—
Boggy, Richard D.; Johnson, Richard H.; Eggleston, John M.; and Schulthess, Carl W., 4,406,542., Cl. 356-345.000.

Spencer, Kieran O., to Olympus Optical Company Limited. Oversized tub for a walking dragline. 4,406,339., Cl. 180-8.00C.

Sperling, Anthony A.: *See*—
Brandt, Herman F.; Daniel, Wayne A.; and Sperling, Anthony A., 4,406,265., Cl. 123-425.000.

Sperry Corporation: *See*—
Parrish, Charles A.; Freimuth, John H.; Campbell, Willis R.; Diederich, Anthony F., Jr.; and Clevenger, James T., Jr., 4,406,221., Cl. 100-88.000.

Spevak, Richard: *See*—
Lattin, Gary A.; and Spevak, Richard, 4,406,658., Cl. 604-20.000.

Spintzyk, Johannes: *See*—
Dornier, Claudius, Jr.; Gunter, Heinz; Krojer, Hubert; and Spintzyk, Johannes, 4,406,432., Cl. 244-102.00R.

Spivack, John D., to Ciba-Geigy Corporation. Ortho-alkylated phenyl phosphonites. 4,406,842., Cl. 260-962.000.

Spohnheimer, John V., to Mostek Corporation. Method and apparatus for aligning an integrated circuit. 4,406,949., Cl. 250-548.000.

Square D Company: *See*—
Boozer, J. Michael, 4,406,933., Cl. 200-47.000.

Staedtler & Uhl: *See*—
Egerer, Josef, 4,406,038., Cl. 19-129.00R.

Stahlberg, Erik H., to Rakenneasennus E. Stahlberg KY. Means for fixing boards on a base. 4,406,556., Cl. 403-23.000.

Standard-Knapp, Inc.: *See*—
Raudat, John L., 4,406,111., Cl. 53-497.000.

Standard Oil Company (Indiana): *See*—
Hensley, Albert L., Jr.; Tait, A. Martin; Miller, Jeffrey T.; and Nevitt, Thomas D., 4,406,779., Cl. 208-254.00H.
Paschke, Edward E.; and Throne, James L., 4,406,846., Cl. 264-50.000.

Stanek, Jaroslav: *See*—
Hartmann, Albert; Baschang, Gerhard; Wacker, Oskar; and Stanek, Jaroslav, 4,406,889., Cl. 424-177.000.
Tarcsay, Lajos; Baschang, Gerhard; Hartmann, Albert; and Stanek, Jaroslav, 4,406,890., Cl. 424-177.000.

Stankos, William C.: *See*—
Hillegonds, Clarence G.; Stankos, William C.; File, Peter G.; and Mills, Luther P., 4,406,514., Cl. 350-96.210.

Stanton, George E., to Nujack Oil Pump Corporation. Method for pumping a liquid from a well and apparatus for use therein. 4,406,597., Cl. 417-399.000.

Staskevich, Lev. N.: *See*—
Fridman, Georgy N.; Kalashnikov, Vladilen K.; Biznya, Vladimir M.; Kovarsky, Efim M.; Borisov, Boris A.; Semenov, Lev S.; Malyshev, Valentin A.; Voronin, Nikolai S.; Staskevich, Lev. N.; Zinin, Evgeny F.; Dulitskaya, Galina M.; and Shegai, Elvira R., 4,406,962., Cl. 310-233.000.

Stathopoulos, Nicholas M. Modular staircase assembly. 4,406,347., Cl. 182-1.000.

Staufer, Adolf, to Fischer Gesellschaft m.b.H. Process and apparatus for forming a profiled tread surface on a ski. 4,406,478., Cl. 280-604.000.

Stauffer Chemical Company: *See*—
Walker, Francis H., 4,406,686., Cl. 71-88.000.
Wong, Rayman Y., 4,406,692., Cl. 71-120.000.

Stax Industries, Ltd.: *See*—
Noro, Masao, 4,406,990., Cl. 330-296.000.

Stearns, Joseph A.: *See*—
Franklin, Leonard N.; Stearns, Joseph A.; and McGregor, David J., 4,406,640., Cl. 464-91.000.

Steegmuller, Willi: *See*—
Fischer, Helmut; Steegmuller, Willi; and Volz, Werner, 4,406,948., Cl. 250-308.000.

Steelcase Inc.: *See*—
Heidmann, Charles, 4,406,101., Cl. 52-220.000.

Steers, Michel: *See*—
Hazan, Jean-Pierre; Steers, Michel; and Caron, Jean, 4,406,028., Cl. 8-158.000.

Steigman, Joseph; Solomon, Nathan A.; and Hwang, Lydia L. Y., to Research Foundation of the State Univ. of New York. Sulfur free small-particle production of technetium sulfur colloid. 4,406,876., Cl. 424-1.000.

Steimle, Wayne D. Pool or spa sweep jet head attachments. 4,406,026., Cl. 4-492.000.

Stein, Marc T., to Medtronic, Inc. Fast recharge output circuit. 4,406,286., Cl. 128-419.0PG.

Stendal, Karl-Emil, to Stendals Elektriska AB. Looking device for vertical sliding gates and similar. 4,406,487., Cl. 292-201.000.

Stendals Elektriska AB: *See*—
Stendal, Karl-Emil, 4,406,487., Cl. 292-201.000.

Stephan, Robert W., to Vickers, Incorporated. Variable displacement vane pump with vanes contacting relatively rotatable rings. 4,406,599., Cl. 418-22.000.

Stepp, William J. Vertical axis windmill with multistage feathering of blades and safety storm control. 4,406,584., Cl. 416-41.000.

Stevens, Travis E.: *See*—
Latimer, Joseph J.; and Stevens, Travis E., 4,406,737., Cl. 162-111.000.

Stihl, Andreas: *See*—
Kohler, Gisbert, 4,406,065., Cl. 30-347.000.

Stowe, Grady K., to Varo, Inc. Black glass shield and method for absorbing stray light for image intensifiers. 4,406,973., Cl. 313-541.000.

Stratton, Paul F.: *See*—
Bowes, Robert G.; Bennett, Keith; and Stratton, Paul F., 4,406,714., Cl. 148-16.500.

Strother, Charles W., to UOP Inc. Fluidized catalytic cracking process and apparatus. 4,406,776., Cl. 208-153.000.

Strum, Karl; Muschaweck, Roman; and Hropot, Max, to Hoechst Aktiengesellschaft. Base-substituted anthranilic acids, a process for their preparation and their use. 4,406,895., Cl. 424-229.000.

Struthers-Wells Corporation: *See*—
Fanaritis, John P., and Davis, James S., 4,406,128., Cl. 60-655.000.

Strycula, Eugene C.; Paice, Derek A.; and Gyugyi, Laszlo, to Westinghouse Electric Corp. High power resonance filters. 4,406,991., Cl. 333-175.000.

Stumpf, Harry C.: *See*—
Vernam, William D.; Rogers, Ralph W., Jr.; and Stumpf, Harry C., 4,406,717., Cl. 148-440.000.

Stutzle, Dietmar: *See*—
Krammer, Rudolf; Stutzle, Dietmar; and Wich, Harald, 4,406,430., Cl. 244-3.130.

Subco, Inc.: *See*—
Gersch, Richard C., 4,406,194., Cl. 82-36.00R.

Subh, Nabil T.: *See*—
DeMeyer, Ronald A.; Wilson, Vernon T.; Subh, Nabil T.; and Ballard, James E., 4,406,246., Cl. 118-505.000.

Suganuma, Tsuneo: *See*—
Matsumura, Hiroyoshi; Katsuyama, Toshio; and Suganuma, Tsuneo, 4,406,518., Cl. 350-96.310.

Sugie, Kiyoshi: *See*—
Yamada, Takeyoshi; Kurisu, Shizuka; Azuma, Shizuo; Sugie, Kiyoshi; and Yamaji, Teizo, 4,406,673., Cl. 55-16.000.

Sugino, Yoshihide; and Shoji, Hiroshi, to Yamatake Honeywell Co., Ltd. Apparatus for urging workpieces against chucks. 4,406,193., Cl. 82-34.00R.

Sugiura, Yutaka: *See*—
Araki, Ken; Sakai, Hiromitsu; and Sugiura, Yutaka, 4,406,248., Cl. 118-690.000.
Araki, Ken; Sakai, Hiromitsu; and Sugiura, Yutaka, 4,406,249., Cl. 118-690.000.
Araki, Ken; Sakai, Hiromitsu; and Sugiura, Yutaka, 4,406,250., Cl. 118-690.000.

Sumitomo Electric Industries, Ltd.: *See*—
Edahiro, Takao; Tanaka, Gotaro; Kuwahara, Toru; and Yoshida, Masaaki, 4,406,680., Cl. 65-18.200.

Sumitomo Rubber Industries, Ltd.: *See*—
Sakon, Tohatirou; and Oyobe, Ikuo, 4,406,845., Cl. 264-37.000.

Summerell, Michael, to SIBEX (Construction) Limited. Sealing clamps. 4,406,481., Cl. 285-15.000.

Sunds Defibrator AB: *See*—
Bystedt, Hjalmar S. I., 4,406,734., Cl. 162-23.000.

Sunpower, Inc.: *See*—
Chagnot, Bruce J., 4,406,124., Cl. 60-520.000.

Suntec Sonnenschutztechnik GmbH: *See*—
Benthin, Johannes, 4,406,436., Cl. 248-262.000.

Superior Door Corporation: *See*—
Lindemann, Elmer A., 4,406,034., Cl. 16-284.000.

Superior Electric Company, The: *See*—
Palmero, Albert; Brigham, Robert N.; and Lundin, Robert S., 4,406,958., Cl. 310-49.00R.

Surgical Design Corp.: *See*—
Banko, Anton, 4,406,284., Cl. 128-303.00R.

Suto, Ferenc; Fodor, Jozsef; Siegfried, Frigyes; and Gyarfas, Jozsef, to "ARMAFILT" Egyesult Muszaki Tomito es Gepszakmai Ipari Szovetkezet. Cartridge-type filtering assembly for motor oil and the like. 4,406,787., Cl. 210-315.000.

Suto, Shoichi: *See*—
Kawachi, Masao; Tomaru, Satoru; Edahiro, Takao; and Suto, Shoichi, 4,406,684., Cl. 65-157.000.

Suzuki, Akira: *See*—
Asaka, Urataro; Suzuki, Akira; and Kimura, Kiyoshi, 4,406,269., Cl. 123-549.000.

Suzuki, Akiyoshi, to Canon Kabushiki Kaisha. Photoelectric detecting device. 4,406,546., Cl. 356-400.000.

Suzuki, Hikoshiro: *See*—
Kamata, Keiji; Suzuki, Hikoshiro; and Fukushi, Yutaka, 4,406,397., Cl. 236-1.00B.

Suzuki, Hisao, to Nissan Motor Company, Limited. Forging die for a part with internal, tapered grooves. 4,406,146., Cl. 72-353.000.

Suzuki, Kohji; Kaneko, Toshio; Oyama, Hajime; and Enoki, Shigekazu, to Ricoh Company, Ltd. Developing device. 4,406,536., Cl. 355-3.0DD.

Suzuki, Toshitsugu: *See*—
Tsuchida, Masayuki; Inoue, Toshio; Mizutani, Yoich; and Suzuki, Toshitsugu, 4,406,589., Cl. 417-295.000.

Suzuki, Yoshikazu; Yuda, Takuo; and Nakama, Daiji, to Yushin Co., Ltd.; and Nifco Inc. Link rod connector. 4,406,557., Cl. 403-71.000.

Suzuki, Yuji: *See*—
Matsuda, Tetsuo; Nakano, Jun; Terashima, Yukio; Suzuki, Yuji; and Itikawa, Kiyonoshin, 4,406,908., Cl. 424-269.000.

Sweens, Bernard J. M.: *See*—
Beiner, Jean-Marc; Levy, Jerome F.; and Sweens, Bernard J. M., 4,406,660., Cl. 604-376.000.

Swift, Stephen J.: *See*—
Nappholz, Tibor A.; Swift, Stephen J.; and Camm, Alan J., 4,406,287., Cl. 128-419.0PG.

Swiss Aluminium Ltd.: *See*—
Fischer, Werner K., 4,406,767., Cl. 204-247.000.

Switlik, Stanley, II. Clip for safety harnesses. 4,406,348., Cl. 182-3.000.

Synthelabo: *See*—
Manoury, Philippe; Binet, Jean; and Cavero, Icilio, 4,406,907., Cl. 424-263.000.

Systemate B.V.: *See*—
Hazenbroek, Jacobus E., 4,406,037., Cl. 17-11.000.

Szabo, Bela: *See*—
Takacs, Istvan; Kerey, Gyorgy; Rudolf, Peter; Illes, Janos; Szabo, Bela; Vereczkey, Endre; Banos, Zoltan; Bosits, Gyula; and Czebe, Laszlo, 4,406,795., Cl. 210-771.000.

Szczepanski, Henry, to Ciba-Geigy Corporation. Herbicidal ethynylphenylureas. 4,406,691., Cl. 71-120.000.

Szeberenyi, Szabolcs: *See*—
Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, 4,406,835., Cl. 260-239.30D.

Szostak, Jan, to Singer Company, The. Noise reducing arrangement for gears. 4,406,174., Cl. 74-409.000.

Szporny, Laszlo: *See*—
Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, 4,406,835., Cl. 260-239.30D.

T. & L. Enterprises, Inc.: *See*—
McClellan, Theodore A., Jr., 4,406,982., Cl. 318-345.00F.

Tachi, Shinichi, to Hitachi, Ltd. Dry etching method. 4,406,733., Cl. 156-643.000.

Tachibana, Akifumi: *See*—
Matsui, Takahiro; and Tachibana, Akifumi, 4,406,123., Cl. 60-459.000.

Tack, Hans: *See*—
Kruger, Heinrich; and Tack, Hans, 4,406,195., Cl. 82-36.00B.

Tailfer, Roland: *See*—
Muller, Karl-Hans; Tailfer, Roland; and Turk, Gunter, 4,406,817., Cl 252-348.000.

Taisei Kensetsu Kabushiki Kaisha: *See*—
Kato, Kunio; and Tamura, Yoshihide, 4,406,102., Cl. 52-224.000.

Tait, A. Martin: *See*—
Hensley, Albert L., Jr.; Tait, A. Martin; Miller, Jeffrey T.; and Nevitt, Thomas D., 4,406,779., Cl. 208-254.00H.

Taiyo Yuden Co., Ltd.: *See*—
Yamaoka, Nobutatsu; and Sasazawa, Kazuo, 4,406,701., Cl. 106-1.170.

Tajima, Koichi: *See*—
Yebisuya, Takashi; Yamamoto, Masao; Kawai, Mituo; and Tajima, Koichi, 4,406,698., Cl. 75-125.000.

Takacs, Istvan; Kerey, Gyorgy; Rudolf, Peter; Illes, Janos; Szabo, Bela; Vereczkey, Endre; Banos, Zoltan; Bosits, Gyula; and Czebe, Laszlo, to Richter Gedeon Vegyeszeti Gyar Rt. Extraction process. 4,406,795., Cl. 210-771.000.

Takada, Munekazu; and Esaki, Toshio, to Unitika, Ltd. Method and apparatus for measuring human body or the like. 4,406,544., Cl. 356-376.000.

Takahashi, Hiroshi: *See*—
Sekiya, Setsuro; Motosugi, Katsuhiko; and Takahashi, Hiroshi, 4,406,258., Cl. 123-188.00M.

Takahashi, Kihei; and Takeshima, Kiyoshi, to Yoshida Kogyo K. K. Method of and apparatus for continuously manufacturing slide fastener coupling elements. 4,406,849., Cl. 264-167.000.

Takahashi, Naoki, to Casio Computer Co., Ltd. Electronic timepiece with alarm and voice announcement function. 4,406,549., Cl. 368-63.000.

Takahashi, Yasuo: *See*—
Kasuya, Katsuhiko; Fujiwara, Mitsuru; Matsunaga, Tetsuzo; Imai, Masaya; and Takahashi, Yasuo, 4,406,602., Cl. 418-201.000.

Takahashi, Yuzo: *See*—
Mitsumoto, Takuo; Takahashi, Yuzo; and Miyamoto, Mamoru, 4,406,719., Cl. 156-52.000.

Takano, Yutaka; Yajima, Koji; Ishii, Takashi; Yoshida, Tadahisa; Ota, Katsuhiro; and Yagishita, Shigeru, to Mitsubishi Denki Kabushiki Kaisha; and Fuji Telecasting Co., Limited. Color cathode ray tube having a reference white fluorescent screen. 4,406,971., Cl. 313-461.000.

Takasaki, Kanetake; and Shioya, Yoshimi, to Fujitsu Limited. Process for manufacturing a semiconductor device having a non-porous passivation layer. 4,406,053., Cl. 29-588.000.

Takashi, Ono; and Tsuyoshi, Suda, to Daido Tokushuko Kabushiki Kaisha. Method of conveying strip materials. 4,406,388., Cl. 226-7.000.

Takawashi, Tamio: *See*—
Yamada, Shigeo; Takawashi, Tamio; and Sakakibara, Toshimitsu, 4,406,938., Cl. 219-69.00D.

Takeda, Kunihiko: *See*—
Miyake, Tetsuya; Takeda, Kunihiko; and Obanawa, Heiichiro, 4,406,870., Cl. 423-445.000.

Takemoto, Iwao: *See*—
Baji, Toru; Tsukada, Toshihisa; Koike, Norio; Akiyama, Toshiyuki; Takemoto, Iwao; Shimada, Shigeru; Kusano, Chushirou; Ohba, Shinya; and Matsumaru, Haruo, 4,407,010., Cl. 358-213.000.

Takeshima, Kiyoshi: *See*—
Takahashi, Kihei; and Takeshima, Kiyoshi, 4,406,849., Cl. 264-167.000.

Takizawa, Masaaki: *See*—
Kinbara, Hiroji; Hattori, Yoshiyuki; Matsui, Kazuma; Hayakawa, Hideyuki; Takizawa, Masaaki; Tamura, Masaru; and Jufuku, Yasunobu, 4,406,644., Cl. 474-13.000.

Tam, Matthias L.; and Custode, Frank Z., to Rockwell International Corporation. Very high density cells comprising a ROM and method of manufacturing same. 4,406,049., Cl. 29-571.000.
Tamm, Rolf: *See—*
Grossman, Klaus; Tamm, Rolf; and Tomoff, Toma, 4,406,540., Cl. 356-36.000.
Tomoff, Toma; Tamm, Rolf; Huber, Bernhard; and Walsh, Alan, 4,406,541., Cl. 356-312.000.
Tamura, Masaru: *See—*
Kinbara, Hiroji; Hattori, Yoshiyuki; Matsui, Kazuma; Hayakawa, Hideyuki; Takizawa, Masaaki; Tamura, Masaru; and Jufuku, Yasunobu, 4,406,644., Cl. 474-13.000.
Tamura, Yoshihide: *See—*
Kato, Kunio; and Tamura, Yoshihide, 4,406,102., Cl. 52-224.000.
Tanaka, Gotaro: *See—*
Edahiro, Takao; Tanaka, Gotaro; Kuwahara, Toru; and Yoshida, Masaaki, 4,406,680., Cl. 65-18.200.
Tanaka, Tatsuo; and Nakakado, Takashi, to Sanyo Electric Co., Ltd. Beam-indexing color picture tube. 4,406,974., Cl. 315-3.000.
Tanaka, Toshio; Omata, Hiroshi; and Uno, Kuniaki, to Kabushiki Kaisha Higashifuji Seisakusho. Timer switch. 4,406,953., Cl. 307-141.000.
Tantram, Anthony D. S.: *See—*
Chan, Yat S.; Tantram, Anthony D. S.; Hobbs, Bryan S.; and Finbow, John R., 4,406,770., Cl. 204-406.000.
Tappe, Horst: *See—*
Buhler, Ulrich; Ribka, Joachim; Tappe, Horst; and Roth, Kurt, 4,406,661., Cl. 8-464.000.
Taprogge Gesellschaft mbH: *See—*
Eimer, Klaus; Kraker, Felix; Schildmann, Hans W.; Schmitz, Gunther; and Sonnenschein, Hans, 4,406,031., Cl. 15-104.06R.
Tarcsay, Lajos; Baschang, Gerhard; Hartmann, Albert; and Stanek, Jaroslav, to Ciba-Geigy Corporation. Novel lipophilic muramyl peptides and processes for their manufacture. 4,406,890., Cl. 424-177.000.
Tate, Bryce E.: *See—*
Miller, James W.; and Tate, Bryce E., 4,406,798., Cl. 252-8.55D.
Tateishi, Isao. Jaw crusher. 4,406,416., Cl. 241-269.000.
Taylor, Bert C., Jr.: *See—*
Albrecht, Leonard N.; and Taylor, Bert C., Jr., 4,406,493., Cl. 296-100.000.
Taylor, J. Bryan: *See—*
Despault, Gaston J.; Fouda, Aly E.; Taylor, J. Bryan; and Capes, C. Edward, 4,406,806., Cl. 252-70.000.
TDK Electronics Co., Ltd.: *See—*
Sasaki, Masanori; and Yokoyama, Isao, 4,407,000., Cl. 343-726.000.
Technic Inc.: *See—*
Morrissey, Ronald J., 4,406,755., Cl. 204-47.000.
Technical Operations Limited: *See—*
Sloan, Albert E., 4,406,979., Cl. 318-255.000.
Tecnol, Inc.: *See—*
Hubbard, Vance M.; and Brunson, Welton K., 4,406,281., Cl. 128-132.00R.
Tecumseh Products Company: *See—*
Kessler, Donald L., 4,406,590., Cl. 417-360.000.
Kessler, Donald L., 4,406,593., Cl. 417-363.000.
Teichert, Rainer: *See—*
Loup, Ronald L.; Day, Curtis H.; and Teichert, Rainer, 4,406,307., Cl. 137-625.650.
Teijin Limited: *See—*
Yamada, Takeyoshi; Kurisu, Shizuka; Azuma, Shizuo; Sugie, Kiyoshi; and Yamaji, Teizo, 4,406,673., Cl. 55-16.000.
Telectronics Pty. Ltd.: *See—*
Nappholz, Tibor A.; Swift, Stephen J.; and Camm, Alan J., 4,406,287., Cl. 128-419.0PG.
Teleflex Incorporated: *See—*
Bennett, William G.; and Spease, Arthur L., 4,406,177., Cl. 74-501.00P.
Teramachi, Hiroshi. Unlimited sliding ball bearing spline assembly. 4,406,502., Cl. 308-6.00C.
Terashima, Yukio: *See—*
Matsuda, Tetsuo; Nakano, Jun; Terashima, Yukio; Suzuki, Yuji; and Itikawa, Kiyonoshin, 4,406,908., Cl. 424-269.000.
Terauchi, Kiyoshi; and Sakamoto, Seiichi, to Sanden Corporation. Scroll-type fluid displacement apparatus with rotation prevention/-thrust bearing means for orbiting scroll member. 4,406,600., Cl. 418-55.000.
Termic Instrument AB: *See—*
Bergman, Hans, 4,406,220., Cl. 100-49.000.
Texaco Development Corp.: *See—*
Hunter, Walter D., 4,406,799., Cl. 252-8.55D.
Texaco Inc.: *See—*
Bennett, Charles R.; and Guarner, Peter, 4,406,313., Cl. 141-1.000.
Texas Instruments Incorporated: *See—*
Allen, John B., 4,406,429., Cl. 244-3.110.
Bell, Kenneth M.; and Trogolo, Joe R., 4,407,005., Cl. 357-23.000.
Th. Goldschmidt AG: *See—*
Fink, Hans-Ferdi; Koerner, Gotz; and Luksch, Edmund, 4,406,738., Cl. 162-124.000.
Theysoh, Rainer: *See—*
Janssen, Harald; Kertscher, Eberhard; Matthies, Hans-Georg; and Theysoh, Rainer, 4,406,851., Cl. 264-174.000.
Thomas & Betts Corporation: *See—*
Navarro, John N., 4,406,062., Cl. 29-881.000.
Sadigh-Behzadi, Amir-Akbar, 4,406,508., Cl. 339-75.00M.
Thomas, Michael D.; and Ryder, Francis E., to Ryder International Corporation. Lens carrying case. 4,406,362., Cl. 206-5.100.
Thomas, O. Leon: *See—*
Lanier, Jerry W.; and Thomas, O. Leon, 4,406,114., Cl. 57-7.000.
Thomson-CSF: *See—*
Kayoun, Pierre, 4,406,732., Cl. 156-626.000.
Throne, James L.: *See—*
Paschke, Edward E.; and Throne, James L., 4,406,846., Cl. 264-50.000.
Thubeauville, Heinz: *See—*
Danguillier, Wilhelm; Tietze, Jurgen; Grams, Wolfgang; and Thubeauville, Heinz, 4,406,746., Cl. 202-228.000.
Tietze, Jurgen: *See—*
Danguillier, Wilhelm; Tietze, Jurgen; Grams, Wolfgang; and Thubeauville, Heinz, 4,406,746., Cl. 202-228.000.
Tobitsuka, Junzo: *See—*
Oyamada, Kozo; Matsui, Takashi; Tobitsuka, Junzo; Yamazaki, Yoshio; and Ogawa, Masami, 4,406,687., Cl. 71-89.000.
Toda Kogyo Corp.: *See—*
Mishima, Akio; Okuda, Yosiro; Harada, Tosiharu; and Mukaizaka, Akira, 4,406,694., Cl. 75-0.5AA.
Toda, Yoshihisa; Yamamoto, Hiroshi; and Sata, Kenzi, to Furukawa Electric Company, Ltd., The. Anticorrosion copper alloys. 4,406,859., Cl. 420-487.000.
Tokico Ltd.: *See—*
Tsuchida, Masayuki; Inoue, Toshio; Mizutani, Yoich; and Suzuki, Toshitsugu, 4,406,589., Cl. 417-295.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Hayase, Syuzi; and Ito, Takeo, 4,406,764., Cl. 204-159.110.
Ichikawa, Kentaro, 4,406,577., Cl. 415-1.000.
Iizuka, Hisakazu, 4,406,051., Cl. 29-576.00B.
Ohba, Hiroshi; and Horino, Shigeo, 4,406,728., Cl. 156-468.000.
Oota, Hiroyuki, 4,406,217., Cl. 99-280.000.
Tsunoda, Sachio; and Shirasu, Katsunori, 4,406,578., Cl. 415-1.000.
Yebisuya, Takashi; Yamamoto, Masao; Kawai, Mituo; and Tajima, Koichi, 4,406,698., Cl. 75-125.000.
Tomaru, Satoru: *See—*
Kawachi, Masao; Tomaru, Satoru; Edahiro, Takao; and Suto, Shoichi, 4,406,684., Cl. 65-157.000.
Tominaga, Koichi: *See—*
Maezawa, Osamu; Saitho, Yusuke; and Tominaga, Koichi, 4,406,551., Cl. 400-163.200.
Tomita, Yutaka; and Shibagaki, Akiro, to Mitutoyo Mfg. Co., Ltd. Probe tracing method and means for coordinate measuring machine. 4,406,068., Cl. 33-174.00L.
Tomoff, Toma; Tamm, Rolf; Huber, Bernhard; and Walsh, Alan, to Perkin-Elmer Corp., The; and Bodenseewerk Perkin-Elmer & Co., GmbH. Assembly useful with an atomic spectrometer. 4,406,541., Cl. 356-312.000.
Tomoff, Toma: *See—*
Grossman, Klaus; Tamm, Rolf; and Tomoff, Toma, 4,406,540., Cl. 356-36.000.
Tonouchi, Yasuo: *See—*
Fujiwara, Koichi; Shiozawa, Takeo; Miki, Katsumi; Uchimura, Masahiko; Miyajima, Kazunori; and Tonouchi, Yasuo, 4,406,321., Cl. 164-504.000.
Toole, Pierce C.; and McCarthy, Dennis M., to United States of America, National Aeronautics and Space Administration. Automatic level control circuit. 4,406,989., Cl. 330-110.000.
Topre Corporation: *See—*
Kamata, Keiji; Suzuki, Hikoshiro; and Fukushi, Yutaka, 4,406,397., Cl. 236-1.00B.
Torick, Emil L.: *See—*
Burne, John C., III; and Torick, Emil L., 4,406,923., Cl. 179-1.0VL.
Torii, Hiromasa; and Watanabe, Takeshi, to Nissan Motor Co., Ltd. License plate holder. 4,406,490., Cl. 296-1.00C.
Torley, Robert B.: *See—*
Guthrie, Bernard M.; and Torley, Robert B., 4,406,703., Cl. 106-93.000.
Torresen, Robert: *See—*
Berry, Foster W.; and Torresen, Robert, 4,406,455., Cl. 273-51.000.
Berry, Foster W.; Torresen, Robert; and Boruta, David M., 4,406,456., Cl. 273-51.000.
Towner, Joseph L., to Ingersoll-Rand Company. Rotary positive displacement machine. 4,406,601., Cl. 418-191.000.
Toyo Kogyo Co. Ltd.: *See—*
Harasaki, Hayathugu, 4,406,343., Cl. 180-297.000.
Yokokura, Tsunetoshi; and Tsuchida, Tsuyoshi, 4,406,126., Cl. 60-605.000.
Toyota Jidosha K.K.: *See—*
Sekiya, Setsuro; Motosugi, Katsuhiko; and Takahashi, Hiroshi, 4,406,258., Cl. 123-188.00M.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kinbara, Hiroji; Hattori, Yoshiyuki; Matsui, Kazuma; Hayakawa, Hideyuki; Takizawa, Masaaki; Tamura, Masaru; and Jufuku, Yasunobu, 4,406,644., Cl. 474-13.000.
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,406,181., Cl. 74-869.000.
Numazawa, Akio; Matoba, Taketo; and Kida, Makoto, 4,406,176., Cl. 74-492.000.
Numazawa, Akio; Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,406,179., Cl. 74-740.000.
Trabert, Hans-Gerhard, to General Motors Corporation. Motor vehicle front part made of plastics. 4,406,489., Cl. 293-115.000.

Trane Company, The: *See*—
Saunders, James F.; and Krocker, Robert E., 4,406,133., Cl. 62-80.000.
Smaby, Stephen A.; and Butterworth, Arthur L., 4,406,594., Cl. 417-368.600.
Trauger, John P.: *See*—
Ashim, William E.; and Trauger, John P., 4,406,082., Cl. 43-92.000.
TRAXystems: *See*—
Albrecht, Leonard N.; and Taylor, Bert C., Jr., 4,406,493., Cl. 296-100.000.
Treuhaft, Martin B.; and Oser, Michael S. Cutting assembly including expanding wall segments of auger. 4,406,500., Cl. 299-80.000.
Trimble, Lee E.: *See*—
Celler, George K.; Lessay, Harry J.; and Trimble, Lee E., 4,406,709., Cl. 148-1.580.
Trogolo, Joe R.: *See*—
Bell, Kenneth M.; and Trogolo, Joe R., 4,407,005., Cl. 357-23.000.
Troutman, Mark D., to Westinghouse Electric Corp. High-solids single-package air-dryable primer. 4,406,704., Cl. 106-259.000.
True Temper Corporation: *See*—
Luebke, Robert W., 4,406,403., Cl. 238-2.000.
TRW Inc.: *See*—
Helliwell, Bradley A.; Messerschmitt, David G.; and Hagen, Ronald J., 4,407,020., Cl. 370-6.000.
Tsai, Kuo L., to Cathay Pen Corporation, a part interest. Nib replaceable writing instrument. 4,406,555., Cl. 401-216.000.
Tsuchida, Masayuki; Inoue, Toshio; Mizutani, Yoich; and Suzuki, Toshitsugu, to Tokico Ltd.; and Hitachi, Ltd. Compressor. 4,406,589., Cl. 417-295.000.
Tsuchida, Tsuyoshi: *See*—
Yokokura, Tsunetoshi; and Tsuchida, Tsuyoshi, 4,406,126., Cl. 60-605.000.
Tsujii, Yasuhiro: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Tsujii, Yasuhiro; Murai, Shigeo; and Jyonishi, Hisayoshi, 4,406,841., Cl. 260-465.00G.
Tsukada, Toshihisa: *See*—
Baji, Toru; Tsukada, Toshihisa; Koike, Norio; Akiyama, Toshiyuki; Takemoto, Iwao; Shimada, Shigeru; Kusano, Chushirou; Ohba, Shinya; and Matsumaru, Haruo, 4,407,010., Cl. 358-213.000.
Tsumura, Yuzo: *See*—
Horino, Ippei; Tsumura, Yuzo; and Iwata, Masatoshi, 4,406,404., Cl. 239-91.000.
Tsunoda, Sachio; and Shirasu, Katsunori, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for operating pumps. 4,406,578., Cl. 415-1.000.
Tsutsumi, Akira, to Amada Engineering & Service Co., Inc. Laser processing machine. 4,406,940., Cl. 219-121.0LV.
Tsuyoshi, Suda: *See*—
Takashi, Ono; and Tsuyoshi, Suda, 4,406,388., Cl. 226-7.000.
Turk, Gunter: *See*—
Muller, Karl-Hans; Tailfer, Roland; and Turk, Gunter, 4,406,817., Cl. 252-348.000.
Turner, Clifton E. Foldable bench assembly. 4,406,495., Cl. 297-135.000.
Turner, John C.; and Baxendale, Lily, to Biorex Laboratories Limited. Pharmaceutical composition for treating diseases of the oral cavity. 4,406,882., Cl. 424-49.000.
Twigger, Kevin M.: *See*—
Prince, Lawrence A.; and Twigger, Kevin M., 4,406,212., Cl. 91-28.000.
Ube Industries, Ltd.: *See*—
Mitsumoto, Takuo; Takahashi, Yuzo; and Miyamoto, Mamoru, 4,406,719., Cl. 156-52.000.
Uchimura, Masahiko: *See*—
Fujiwara, Koichi; Shiozawa, Takeo; Miki, Katsumi; Uchimura, Masahiko; Miyajima, Kazunori; and Tonouchi, Yasuo, 4,406,321., Cl. 164-504.000.
Ueberschaer, Hubert J., to Mobil Oil Corporation. Liquid sampling device. 4,406,171., Cl. 73-864.620.
Ueda, Shigeki; and Onizuka, Norio, to Matsushita Electric Industrial Co. Ltd. Heating apparatus with numerical display. 4,406,945., Cl. 219-506.000.
Uemura, Yukio; and Horike, Masayoshi, to Nissan Motor Co., Ltd. Head lining mounting structure. 4,406,494., Cl. 296-214.000.
Ukegawa, Koji: *See*—
Sasaki, Yoshiyuki; Nakamura, Etsuro; Ojima, Yoshimoto; Kondo, Teruo; Ukegawa, Koji; and Matsumura, Akimitsu, 4,406,772., Cl. 208-112.000.
Ukrainskoe Nauchnoproizvodstvennoe Obiedinenie Tsell Juloznobumazhnoi Promyshlennosti (Ukrspobumprom): *See*—
Yanishevsky, Nisson M., 4,406,159., Cl. 73-63.000.
Ulbing, Otmar, to USM Corporation. Centerfinding machine. 4,406,067., Cl. 33-172.00D.
Umezawa, Hamao; and Kondo, Shinichi, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. N-Methanesulfonic acid derivatives of istamycin A or B and production thereof. 4,406,891., Cl. 424-180.000.
Unger, Hans W.: *See*—
Backstein, Gunter; Fiebrich, Joachim; and Unger, Hans W., 4,406,225., Cl. 102-235.000.
Union Carbide Corporation: *See*—
Dengieri, Thomas J.; and Cassidy, Robert T., 4,406,675., Cl. 55-26.000.
Marcinkowsky, Arthur E.; Keller, George E., II; and Jones, Robert A., Jr., 4,406,867., Cl. 423-226.000.
Union Rheinische Braunkohlen Kraftstoff AG: *See*—
Fremery, Max; Keim, Karl-Heinz; and Korff, Joachim, 4,406,824., Cl. 252-458.000.
Unique Designs, a general partnership: *See*—
Wallace, Robert S.; and Robbins, Arlington R., 4,406,369., Cl. 206-387.000.
U.S. Baird Corporation, The: *See*—
Knight, David W., 4,406,148., Cl. 72-405.000.
United States of America
Air Force: *See*—
Christian, John B., 4,406,800., Cl. 252-28.000.
Jenkins, Donald S., 4,406,863., Cl. 422-205.000.
Winthrop, Michael F.; and Holmes, Buddy L., 4,406,627., Cl. 434-219.000.
Army: *See*—
Adamson, James R., Jr.; and Carts, Stanley L., Jr., 4,407,009., Cl. 358-113.000.
Beeker, Charles W.; Dean, Arthur P.; and Rouse, William G., 4,406,227., Cl. 102-505.000.
National Aeronautics and Space Administration: *See*—
Akkerman, James W., 4,406,256., Cl. 123-78.00E.
Altman, Robert L.; Mayer, Ludwig A.; and Ling, Alan C., 4,406,797., Cl. 252-5.000.
Schmidt, Richard F., 4,407,001., Cl. 343-840.000.
Toole, Pierce C.; and McCarthy, Dennis M., 4,406,989., Cl. 330-110.000.
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Boettcher, Woodrow; Goldman, Emanuel; and Gallaghan, John A., 4,406,228., Cl. 102-513.000.
Burton, Charles A.; and Riel, Gordon K., 4,406,947., Cl. 250-252.100.
Chu, Tak-Kin; and Bouley, Alan C., 4,406,050., Cl. 29-572.000.
Dale, John R., 4,406,631., Cl. 441-30.000.
Frankel, Milton B.; Wilson, Edgar R.; and Flanagan, Joseph E., 4,406,718., Cl. 149-96.000.
Greene, Michael L.; and Valenta, Frank J., 4,406,229., Cl. 102-530.000.
Hsu, David S. Y.; and Manuccia, Thomas J., Jr., 4,406,763., Cl. 204-158.0HA.
Scott, William R.; Bloomfield, Philip; Weist, William T.; and McMahon, Karen M., 4,406,059., Cl. 29-857.000.
U.S. Philips Corporation: *See*—
Bouwknegt, Jan, 4,406,367., Cl. 206-329.000.
Brech, Hubertus J. J., deceased; and de Haan, Friedrich J., administrator, 4,406,994., Cl. 338-296.000.
Fransen, Jan J. B., 4,406,972., Cl. 313-481.000.
Hazan, Jean-Pierre; Steers, Michel; and Caron, Jean, 4,406,028., Cl. 8-158.000.
United States Steel Corporation: *See*—
Patula, Edward J., 4,406,143., Cl. 72-209.000.
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Baran, Walter J., Jr., 4,406,580., Cl. 415-118.000.
Davis, Joseph; and Sidat, Donald D., 4,406,459., Cl. 277-25.000.
Naumec, John R., 4,406,180., Cl. 74-822.000.
Slayton, Richard M., 4,406,460., Cl. 277-25.000.
Unitika, Ltd.: *See*—
Takada, Munekazu; and Esaki, Toshio, 4,406,544., Cl. 356-376.000.
Universal Pioneer Corporation: *See*—
Sato, Katsuharu, 4,406,520., Cl. 350-173.000.
University Patents, Inc.: *See*—
Bier, Milan; and Foster, Peter R., 4,406,886., Cl. 424-101.000.
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Tanaka, Toshio; Omata, Hiroshi; and Uno, Kuniaki, 4,406,953., Cl. 307-141.000.
UOP Inc.: *See*—
Kelstrom, Donald G.; Williams, John D.; and Woodrich, Lester H., 4,406,142., Cl. 72-98.000.
Kulprathipanja, Santi; and Bloch, Herman S., 4,406,819., Cl. 252-430.000.
Strother, Charles W., 4,406,776., Cl. 208-153.000.
Wagner, Walter R., 4,406,326., Cl. 166-227.000.
Upsher, Michael S. Laryngoscope including a disposable blade and its method of use. 4,406,280., Cl. 128-11.000.
Urfer, Ernest N.: *See*—
Desai, Kamalesh S.; Eggerding, Carl L.; Ferrante, John A.; Ricci, Raymond; and Urfer, Ernest N., 4,407,007., Cl. 357-74.000.
Urlberger, Hermann H. Protective barrier provided with at least one longitudinal side bar. 4,406,563., Cl. 404-6.000.
Urogdi, Laszlo: *See*—
Rohricht, Julia; Kisfaludy, Lajos; Urogdi, Laszlo; Palosi, Eva; Szeberenyi, Szabolcs; and Szporny, Laszlo, 4,406,835., Cl. 260-239.30D.
USM Corporation: *See*—
Johnson, Herbert; and Elliott, Richard M., 4,406,234., Cl. 112-121.120.
Ulbing, Otmar, 4,406,067., Cl. 33-172.00D.
Vakil, Himanshu B., to General Electric Company. Two capillary vapor compression cycle device. 4,406,134., Cl. 62-114.000.
Valenta, Frank J.: *See*—
Greene, Michael L.; and Valenta, Frank J., 4,406,229., Cl. 102-530.000.
Valeo: *See*—
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Valle, Louis G.: *See*—
McNiel, Claude M.; and Valle, Louis G., 4,406,319., Cl. 160-177.000.
Valmet Oy: *See*—
Kankaanpa , Matti, 4,406,739., Cl. 162-203.000.
Kirjavainen, Alvi, 4,406,741., Cl. 162-336.000.
Vamvakas, Michael, to Vamvakas, Michael. Piston type valve. 4,406,304., Cl. 137-544.000.
Vandenham, Elbert H.: *See*—
Nally, Rickard P.; and Vandenham, Elbert H., 4,406,553., Cl. 400-208.000.
Vander Meer, Richard H.: *See*—
Cole, Rodger E.; and Vander Meer, Richard H., 4,406,359., Cl. 198-626.000.
Van Etten, Richard C. Adapter plate for the conversion of a 4-barrel carburetor to a 2-barrel configuration. 4,406,259., Cl. 123-198.00R.
Van Heijst, Willem J.; and Nooteboom, Urias G. Single-point mooring systems. 4,406,636., Cl. 441-5.000.
van Iterson, Jan E. Commercial fruit drying system. 4,406,072., Cl. 34-93.000.
Van Wageningen, Cornelis: *See*—
Coenen, Hendrikus P.; and Van Wageningen, Cornelis, 4,406,504., Cl. 308-192.000.
Varner, Jerry R.: *See*—
Mir, Jose M.; and Varner, Jerry R., 4,406,521., Cl. 350-392.000.
Varo, Inc.: *See*—
Stowe, Grady K., 4,406,973., Cl. 313-541.000.
Vartoukian, Artin G.: *See*—
Marra, Michael; Pendleton, Thomas J.; Smith, Douglas W.; and Vartoukian, Artin G., 4,406,723., Cl. 156-98.000.
Vasicek, Vladimir: *See*—
Vystrcil, Karel; Vasicek, Vladimir; and Kuda, Vladimir, 4,406,311., Cl. 139-435.000.
Vasileff, Robert T.: *See*—
Lunn, William H. W.; and Vasileff, Robert T., 4,406,898., Cl. 424-246.000.
Vater, Wulf: *See*—
Meyer, Horst; Bossert, Friedrich; Kazda, Stanislav; Hoffmeister, Friedrich; and Vater, Wulf, 4,406,906., Cl. 424-263.000.
Vayssie, Charles: *See*—
Bouillon, Claude; and Vayssie, Charles, 4,406,880., Cl. 424-40.000.
VEB Kombinat Polygraph "Werner Lamberz" Leipzig: *See*—
Fichte, Frank; and Paul, Wolfgang, 4,406,447., Cl. 271-31.000.
Veb Schwermaschinenbau-Kombinat "Ernst Thalmann" Magdeburg: *See*—
Pechau, Gerhard; Schwartz, Ronald; and Jacob, Rudi, 4,406,198., Cl. 83-170.000.
Velling, Gunter, to Rheinische Braunkohlenwerke AG. Apparatus for the cooling of solid residues of gasification. 4,406,747., Cl. 202-227.000.
Vending Components, Inc.: *See*—
Cerrato, Vincent J., 4,406,301., Cl. 137-212.000.
Vereczkey, Endre: *See*—
Takacs, Istvan; Kerey, Gyorgy; Rudolf, Peter; Illes, Janos; Szabo, Bela; Vereczkey, Endre; Banos, Zoltan; Bosits, Gyula; and Czebe, Laszlo, 4,406,795., Cl. 210-771.000.
Vernam, William D.; Rogers, Ralph W., Jr.; and Stumpf, Harry C., to Aluminum Company of America. Wrought aluminum base alloy product having refined Al-Fe type intermetallic phases. 4,406,717., Cl. 148-440.000.
Vetrotex Saint Gobain: *See*—
Roncato, Giordano; Berlioz, Jean; and Roy, Louis, 4,406,196., Cl. 83-117.000.
Vickers, Incorporated: *See*—
Stephan, Robert W., 4,406,599., Cl. 418-22.000.
Vickers Limited: *See*—
Smith, Francis H., 4,406,526., Cl. 350-524.000.
Victor Company of Japan, Ltd.: *See*—
Watanabe, Yasuaki; and Okabe, Yukio, 4,406,981., Cl. 318-258.000.
Viehrig, Wolfgang; and Engels, Willy, to Agfa-Gevaert AG. Arrangement for transferring photosensitive material from cassettes into a handling machine. 4,406,534., Cl. 354-310.000.
Vilchek, Andrew. Escape apparatus. 4,406,349., Cl. 182-7.000.
Villano, James J.: *See*—
Kern, Calvin V.; and Villano, James J., 4,406,420., Cl. 242-54.00R.
Villasenor, Richard A.; and Krasnow, Leonard L., to Villasenor, Richard A. Manual radial and chordal keratotometry apparatus. 4,406,285., Cl. 128-305.000.
Villemaud, Jean E. Automatic conveyor system. 4,406,230., Cl. 104-88.000.
Vipont Laboratories: *See*—
Ladanyi, Peter A., 4,406,881., Cl. 424-49.000.
Voest-Alpine Aktiengesellschaft: *See*—
Hans, Walter; Reiterer, Hans D.; Eichberger, Ernst; and Lazar, Gerhard, 4,406,696., Cl. 75-72.000.
Lukesch, Norbert; and Kapeller, Josef, 4,406,441., Cl. 251-214.000.
Voland, Elmo W.; and Adams, George W., to Emhart Industries, Inc. Cam operated timer with improved electrical connections. 4,406,932., Cl. 200-38.00R.
Volz, Werner: *See*—
Fischer, Helmut; Steegmuller, Willi; and Volz, Werner, 4,406,948., Cl. 250-308.000.
von Recklinghausen, Daniel R., to Electro Audio Dynamics, Inc. Apparatus for improving linearity of electromechanical transducers. 4,406,921., Cl. 179-1.00N.
von Waldegge, Ulrich H.: *See*—
Drabert, Fritz; and von Waldegge, Ulrich H., 4,406,496., Cl. 297-284.000.
Vorbeck, Donald W.: *See*—
Atchley, Frank W.; Vorbeck, Donald W.; and Wurz, Ronald L., 4,406,253., Cl. 119-72.500.
Voronin, Nikolai S.: *See*—
Fridman, Georgy N.; Kalashnikov, Vladilen K.; Biznya, Vladimir M.; Kovarsky, Efim M.; Borisov, Boris A.; Semenov, Lev S.; Malyshev, Valentin A.; Voronin, Nikolai S.; Staskevich, Lev. N.; Zinin, Evgeny F.; Dulitskaya, Galina M.; and Shegai, Elvira R., 4,406,962., Cl. 310-233.000.
Vorwerk & Co Interholding GmbH: *See*—
Neugart, Horst, 4,406,678., Cl. 55-372.000.
Vystrcil, Karel; Vasicek, Vladimir; and Kuda, Vladimir, to ZVS Vyzkumnevyvojovy ustav konecernova ucelova organizace. Weft guiding comb for a jet loom. 4,406,311., Cl. 139-435.000.
W. H. Brady Co.: *See*—
Downing, Gerald T., 4,406,912., Cl. 428-352.000.
W. R. Grace & Co.: *See*—
Morgan, Charles R.; and Ketley, Arthur D., 4,406,826., Cl. 252-512.000.
W. Schlafhorst & Co.: *See*—
Raasch, Hans, 4,406,418., Cl. 242-18.0DD.
Wabash, Inc.: *See*—
Wolf, Ronald J., 4,406,271., Cl. 123-599.000.
Wacker, Oskar: *See*—
Hartmann, Albert; Baschang, Gerhard; Wacker, Oskar; and Stanek, Jaroslav, 4,406,889., Cl. 424-177.000.
Wada, Masahiko, to Kabushiki Kaisha Riken. Apparatus for machining a planar side face of a piston ring. 4,406,192., Cl. 82-19.000.
Wada, Takahiro; Ishihara, Shoichi; and Yamamoto, Ryoichi, to Matsushita Electric Industrial Co., Ltd. Heat accumulating material. 4,406,804., Cl. 252-70.000.
Wagner, Walter R., to UOP Inc. Plastic well screen and method of forming same. 4,406,326., Cl. 166-227.000.
Wahlborn, Sven: *See*—
Magnusson, Arnold; Holm, Lennart; Lundin, Ragnar; Lindstrand, Hans-Olov; Johansson, Osten; Wahlborn, Sven; and Hoijer, Staffan, 4,406,815., Cl. 252-305.000.
Walbeoffe-Wilson, John H.; Lynn-Evans, Julian D.; and Wright, Patrick D. Wrist-type pulse monitor. 4,406,290., Cl. 128-689.000.
Waldhauser, Steven J. A.; and Masbruch, Richard D., to Wetrok, Inc. Speed and direction control mechanism. 4,406,980., Cl. 318-257.000.
Waldhecker, Heinz-Dieter: *See*—
Paschen, Peter; Rao, Chatty; Kryczun, Alfred; Pfeiffer, Roland; Waldhecker, Heinz-Dieter; and Pufal, Rolf, 4,406,666., Cl. 48-92.000.
Walker, Brooks. Wheeled garment bag. 4,406,353., Cl. 190-18.00A.
Walker, Francis H., to Stauffer Chemical Company. Haloalkylaminomethyldioxolane herbicide antidotes. 4,406,686., Cl. 71-88.000.
Walker-Neer Manufacturing Co., Inc.: *See*—
Deaver, Pete E.; Lingafelter, Jerry K.; and Hamill, Odis F., 4,406,098., Cl. 52-119.000.
Wallace, Robert S.; and Robbins, Arlington R., to Unique Designs, a general partnership. Tape cassette holder. 4,406,369., Cl. 206-387.000.
Wallace, William E.; Pourarian, Faiz; and Sinha, Vijay K., to Koppers Company, Inc. $ZrMn_2$-Type alloy partially substituted with cerium/-praseodymium/neodymium and characterized by AB_2 stoichiometry. 4,406,874., Cl. 423-644.000.
Walling, John R. Long stroke, double acting pump. 4,406,598., Cl. 417-404.000.
Walsh, Alan: *See*—
Tomoff, Toma; Tamm, Rolf; Huber, Bernhard; and Walsh, Alan, 4,406,541., Cl. 356-312.000.
Walsh, George P.: *See*—
Huesgen, Eugene L.; and Walsh, George P., 4,406,172., Cl. 74-3.000.
Walton, John R. Pipet washer. 4,406,297., Cl. 134-102.000.
Wambach, Hermann: *See*—
Dreinhoff, Karl-Heinz; and Wambach, Hermann, 4,406,554., Cl. 400-249.000.
Wamsler, Reinhold: *See*—
Pfluger, Gerhard; Schmidt, Burkhardt; Scholpp, Martin; Wamsler, Reinhold; and Frister, Manfred, 4,406,961., Cl. 310-232.000.
Wang, Kenneth Y.; and Hill, Berlie R., to Burlington Industries, Inc. Ultrasonic production of nonwovens. 4,406,720., Cl. 156-73.200.
Wanner, Karl: *See*—
Baumann, Otto; Dohse, Hans-Peter; Reibetanz, Wilbert; and Wanner, Karl, 4,406,334., Cl. 175-315.000.
Ward, Frank L., to Clarostat Mfg. Co., Inc. Inductive sensor. 4,406,999., Cl. 340-870.310.
Ward, Terence J.; Wood, Martyn D.; and Wyllie, Michael G., to John Wyeth and Brother Limited. Xanthine derivatives useful as antidepressives. 4,406,903., Cl. 424-253.000.
Watanabe, Hiroo: *See*—
Kataoka, Kenzo; Watanabe, Hiroo; and Ogawa, Haruo, 4,406,470., Cl. 279-1.0SG.
Watanabe, Takeshi: *See*—
Torii, Hiromasa; and Watanabe, Takeshi, 4,406,490., Cl. 296-1.00C.
Watanabe, Yasuaki; and Okabe, Yukio, to Victor Company of Japan, Ltd. Rotation stopping apparatus for a motor. 4,406,981., Cl. 318-258.000.
Waymatic, Inc.: *See*—
Wright, Clem B., 4,406,437., Cl. 248-529.000.

Weasel, George E., Jr. Refrigerated produce transport. 4,406,131., Cl. 62-64.000.

Weber, Heinz: *See*—
Konigs, Herbert; and Weber, Heinz, 4,406,361., Cl. 198-863.000.

Weber, Herb: *See*—
Lake, Charles W.; and Weber, Herb, 4,406,092., Cl. 51-425.000.

Weber, Klaus: *See*—
Schmidt, Werner; Mueller, Gerhard; Weber, Klaus; and Wilke, Volker, 4,407,008., Cl. 358-93.000.

Weeks, Colin G. Oceanographic sensor system. 4,406,242., Cl. 114-242.000.

Wehrberger, Helmut: *See*—
Menhorn, Hermann; Muller, Georg; Nitschke, Christoph; Wehrberger, Helmut; and Kaesewinkel, Klaus, 4,406,930., Cl. 191-39.000.

Weininger, Joseph L.; and Kim, Bang M., to General Electric Company. Electrowinning of noble metals. 4,406,752., Cl. 204-3.000.

Weinsdorfer, Helmut: *See*—
Egbers, Gerhard; El Helw, El S.; and Weinsdorfer, Helmut, 4,406,312., Cl. 139-453.000.

Weinstein, Richard: *See*—
Gimple, James; and Weinstein, Richard, 4,406,468., Cl. 277-115.000.

Weir, Donald R.; Masters, Ian M.; and Genik-Sas-Berezowsky, Roman M., to Sherritt Gordon Mines Limited. Recovery of uranium from material containing iron, arsenic and siliceous matter. 4,406,864., Cl. 423-9.000.

Weiss, Otmar: *See*—
Eheim, Franz; Konrath, Karl; Schwarz, Manfred; and Weiss, Otmar, 4,406,268., Cl. 123-502.000.

Weiss, Ralph: *See*—
Karl, Leopold; Batz, Manfred; Wundling, Herbert; and Weiss, Ralph, 4,406,531., Cl. 353-117.000.

Weiss, Stefan: *See*—
Oeder, Dieter; Dietsche, Wolfram; Weiss, Stefan; Ziegler, Walter; and Hettche, Albert, 4,406,705., Cl. 106-270.000.

Weist, William T.. *See*—
Scott, William R.; Bloomfield, Philip; Weist, William T.; and McMahon, Karen M., 4,406,059., Cl. 29-857.000.

Welch, M. Bruce: *See*—
Martin, Joel L.; Welch, M. Bruce; Dietz, Richard E.; and Capshew, Charles E., 4,406,818., Cl. 252-429.00B.

Welle, Hendricus B. A.; and Marko, Magda, to ACF Chemiefarma NV. Method of inhibiting luteinizing hormone secretion with 6,7-benzomorphan derivatives. 4,406,904., Cl. 424-260.000.

Wesseling, Karel H.; and Klawer, Wilhelmus H., to Nederlandse Centrale Organisatie voor Toegepast-Natuurwetenschappelijk. Device for the indirect, non-invasive and continuous measurement of blood pressure. 4,406,289., Cl. 128-670.000.

Western Electric Company, Inc.: *See*—
Montone, Liber J.; and Yokitis, Joseph E., 4,406,545., Cl. 356-380.000.

Westinghouse Electric Corp.: *See*—
Andersen, William F., 4,406,211., Cl. 89-1.816.
Anderson, William C.; and Schoumaker, Raoul J. P., 4,406,379., Cl. 220-335.000.
Buckley, Richard D.; Boyd, Edward L.; and Palmer, Betty J., 4,406,056., Cl. 29-605.000.
Strycula, Eugene C.; Paice, Derek A.; and Gyugyi, Laszlo, 4,406,991., Cl. 333-175.000.
Troutman, Mark D., 4,406,704., Cl. 106-259.000.
Wilkins, Robert L.; and Williams, Charles F., 4,406,856., Cl. 376-260.000.

Westvaco Corporation: *See*—
Keesee, Kenneth C.; and Ruckman, James A., 4,406,100., Cl. 52-155.000.

Wetrok, Inc.: *See*—
Waldhauser, Steven J. A.; and Masbruch, Richard D., 4,406,980., Cl. 318-257.000.

Wetzel, David B. Solar water distillation apparatus. 4,406,749., Cl. 202-234.000.

Wexler, Howard; and Spano, Joseph, to Wexler, Howard. Jewelry system. 4,406,296., Cl. 132-148.000.

Weyrich, Claus, to Siemens Aktiengesellschaft. Solar cell with increased efficiency. 4,406,913., Cl. 136-259.000.

White-BSA Tools Limited: *See*—
Mason, Peter A., 4,406,190., Cl. 82-2.500.

White, David R. Lock mechanism. 4,406,486., Cl. 292-144.000.

Wich, Harald: *See*—
Krammer, Rudolf; Stutzle, Dietmar; and Wich, Harald, 4,406,430., Cl. 244-3.130.

Wieland-Werke AG: *See*—
Demuth, Hans; Kropp, Peter; and Noll, Karl, 4,406,137., Cl. 62-238.600.

Wier, Franz, to Repa Feinstanzwerk GmbH. Lock for safety belts. 4,406,044., Cl. 24-230.0AL.

Wilde, Doran K.: *See*—
Bayliss, John A.; Peterson, Craig B.; and Wilde, Doran K., 4,407,016., Cl. 364-200.000.

Wildmoser, Martin M., to Mueller, John, a part interest. Tube shaping device. 4,406,607., Cl. 425-392.000.

Wilke, Volker: *See*—
Schmidt, Werner; Mueller, Gerhard; Weber, Klaus; and Wilke, Volker, 4,407,008., Cl. 358-93.000.

Wilkins, Robert L.; and Williams, Charles F., to Westinghouse Electric Corp. Removal of portions of tubes from steam generator of nuclear reactor. 4,406,856., Cl. 376-260.000.

Wilkinson, Robert S. Temperature self-limiting electric fuel oil heater for oil burner units. 4,406,943., Cl. 219-301.000.

William H. Rorer, Inc.: *See*—
Campbell, Henry F.; Scholz, Thomas H.; and Douglas, George H., 4,406,897., Cl. 424-246.000.

Wm. Steinen Mfg. Co.: *See*—
Aprea, George F.; and Pohle, Werner P., 4,406,407., Cl. 239-487.000.

Williams, Charles F.: *See*—
Wilkins, Robert L.; and Williams, Charles F., 4,406,856., Cl. 376-260.000.

Williams, James E., to Cuisinarts Research & Development, Inc. Pasta extruder apparatus for attachment to a food processor or similar appliance. 4,406,603., Cl. 425-191.000.

Williams, John D.: *See*—
Kelstrom, Donald G.; Williams, John D.; and Woodrich, Lester H., 4,406,142., Cl. 72-98.000.

Williams, Robert H., to RCA Corporation. Wet processing of electrodes of a CRT to suppress afterglow. 4,406,639., Cl. 445-59.000.

Willough, Linda. Non-verbal communication device. 4,406,998., Cl. 340-815.010.

Wilson, Edgar R.: *See*—
Frankel, Milton B.; Wilson, Edgar R.; and Flanagan, Joseph E., 4,406,718., Cl. 149-96.000.

Wilson, Edwin H. Roof siphon drain. 4,406,300., Cl. 137-132.000.

Wilson, Vernon T.: *See*—
DeMeyer, Ronald A.; Wilson, Vernon T.; Subh, Nabil T.; and Ballard, James E., 4,406,246., Cl. 118-505.000.

Windings, Inc.: *See*—
Kotzur, Frank W., 4,406,419., Cl. 242-18.00R.

Winthrop, Michael F.; and Holmes, Buddy L., to United States of America, Air Force. Waveform simulator for an electronic system maintenance trainer. 4,406,627., Cl. 434-219.000.

Wire Machinery Corporation of America: *See*—
Saller, Stephen W., 4,406,423., Cl. 242-129.510.

Wisbey, Robert W.; and Droho, Joseph S., to 501 Advance Transformer Company. Discharge lamp ballast circuit. 4,406,976., Cl. 315-309.000.

Witten, Raymond L., to Hughes Tool Company. Self-aligning mechanical face seal. 4,406,462., Cl. 277-93.0SD.

Wix, Jerry W. Fast acting ratchet wrench. 4,406,183., Cl. 81-57.290.

Wixon, Harold E.: *See*—
Gangwisch, William J.; Richter, Virgil J.; Wixon, Harold E.; and Wraga, Joseph B., 4,406,808., Cl. 252-91.000.

Wolf, Peter; and Fritschy, Hugo, to Interelectric AG. Electrical machine. 4,406,963., Cl. 310-239.000.

Wolf, Ronald J., to Wabash, Inc. Capacitor discharge ignition system and method of manufacture thereof. 4,406,271., Cl. 123-599.000.

Wologodzew, Leo: *See*—
Kulpa, Walter J.; and Wologodzew, Leo, 4,406,448., Cl. 271-160.000.

Wolter, Heinz, to DOM-Sicherheitstechnik GmbH & Co. KG. Anti-theft device for automobile wheels. 4,406,140., Cl. 70-231.000.

Wong, Rayman Y., to Stauffer Chemical Company. Meta-substituted dialkylaminooxanilide post-emergent herbicides. 4,406,692., Cl. 71-120.000.

Wood, Garfield A., Jr., to Woodstream Corporation. Fishing boat for use with electrically powered fishing motors. 4,406,630., Cl. 440-6.000.

Wood, Martyn D.: *See*—
Ward, Terence J.; Wood, Martyn D.; and Wyllie, Michael G., 4,406,903., Cl. 424-253.000.

Wood, William E.: *See*—
MacQueen, Donald K.; and Wood, William E., 4,406,743., Cl. 196-46.000.

Woodford, David A.; and Bricknell, Rodger H., to General Electric Company. Copper-base alloys containing strengthening and ductilizing amounts of hafnium and zirconium and method. 4,406,858., Cl. 420-475.000.

Woodrich, Lester H.: *See*—
Kelstrom, Donald G.; Williams, John D.; and Woodrich, Lester H., 4,406,142., Cl. 72-98.000.

Woodstream Corporation: *See*—
Askins, William E.; and Trauger, John P., 4,406,082., Cl. 43-92.000.
Wood, Garfield A., Jr., 4,406,630., Cl. 440-6.000.

Wraga, Joseph B.: *See*—
Gangwisch, William J.; Richter, Virgil J.; Wixon, Harold E.; and Wraga, Joseph B., 4,406,808., Cl. 252-91.000.

Wright, Clem B., to Waymatic, Inc. Knock-down support base for merchandise display rack. 4,406,437., Cl. 248-529.000.

Wright, Patrick D.: *See*—
Walbeoffe-Wilson, John H.; Lynn-Evans, Julian D.; and Wright, Patrick D., 4,406,290., Cl. 128-689.000.

Wrobel, Patrick J.; and Fraser, James H., to Concentration Specialists, Inc. Apparatus for and method of preparing crystals for washing. 4,406,679., Cl. 62-541.000.

Wuhrer, Wolfgang, to Escher Wyss GmbH. Marine vessel with at least one propeller. 4,406,635., Cl. 440-69.000.

Wundling, Herbert: *See*—
Karl, Leopold; Batz, Manfred; Wundling, Herbert; and Weiss, Ralph, 4,406,531., Cl. 353-117.000.

Wurz, Ronald L.: *See*—
Atchley, Frank W.; Vorbeck, Donald W.; and Wurz, Ronald L., 4,406,253., Cl. 119-72.500.

Wyllie, Michael G.: *See*—
Ward, Terence J.; Wood, Martyn D.; and Wyllie, Michael G., 4,406,903., Cl. 424-253.000.

Xerox Corporation: *See*—
Yeh, Keming W., 4,407,004., Cl. 357-23.000.

Yagishita, Shigeru: *See*—
Takano, Yutaka; Yajima, Koji; Ishii, Takashi; Yoshida, Tadahisa; Ota, Katsuhiro; and Yagishita, Shigeru, 4,406,971., Cl. 313-461.000.

Yajima, Koji: *See*—
Takano, Yutaka; Yajima, Koji; Ishii, Takashi; Yoshida, Tadahisa; Ota, Katsuhiro; and Yagishita, Shigeru, 4,406,971., Cl. 313-461.000.

Yamada, Shigeo; Takawashi, Tamio; and Sakakibara, Toshimitsu, to Mitsubishi Denki Kabushiki Kaisha. Discharge machining apparatus. 4,406,938., Cl. 219-69.00D.

Yamada, Takeyoshi; Kurisu, Shizuka; Azuma, Shizuo; Sugie, Kiyoshi; and Yamaji, Teizo, to Teijin Limited. Ultrathin solid membrane, process for production thereof, and use thereof for concentrating a specified gas in a gaseous mixture. 4,406,673., Cl. 55-16.000.

Yamaji, Teizo: *See*—
Yamada, Takeyoshi; Kurisu, Shizuka; Azuma, Shizuo; Sugie, Kiyoshi; and Yamaji, Teizo, 4,406,673., Cl. 55-16.000.

Yamamoto, Hiroshi, to Canon Kabushiki Kaisha. Flash photograph system. 4,406,533., Cl. 354-145.000.

Yamamoto, Hiroshi: *See*—
Toda, Yoshihisa; Yamamoto, Hiroshi; and Sata, Kenzi, 4,406,859., Cl. 420-487.000.

Yamamoto, Masao: *See*—
Yebisuya, Takashi; Yamamoto, Masao; Kawai, Mituo; and Tajima, Koichi, 4,406,698., Cl. 75-125.000.

Yamamoto, Ryoichi: *See*—
Wada, Takahiro; Ishihara, Shoichi; and Yamamoto, Ryoichi, 4,406,804., Cl. 252-70.000.

Yamamura, Koichi, to Fuji Xerox Co., Ltd. Sheet folding machine used with copying machine. 4,406,649., Cl. 493-421.000.

Yamana, Toshifumi: *See*—
Naito, Susumu; and Yamana, Toshifumi, 4,406,613., Cl. 431-76.000.

Yamaoka, Nobutatsu; and Sasazawa, Kazuo, to Taiyo Yuden Co., Ltd. Electroconductive paste. 4,406,701., Cl. 106-1.170.

Yamatake Honeywell Co., Ltd.: *See*—
Sugino, Yoshihide; and Shoji, Hiroshi, 4,406,193., Cl. 82-34.00R.

Yamazaki, Yoshio: *See*—
Oyamada, Kozo; Matsui, Takashi; Tobitsuka, Junzo; Yamazaki, Yoshio; and Ogawa, Masami, 4,406,687., Cl. 71-89.000.

Yanagawa, Nobuyuki: *See*—
Sakamoto, Koji; and Yanagawa, Nobuyuki, 4,406,535., Cl. 355-3.0DD.

Yanishevsky, Nisson M., to Ukrainskoe Nauchnoproizvodstvennoe Obiedinenie Tsell Juloznobumazhnoi Promyshlennosti (Ukrnpobumprom). Apparatus for testing and recording the freeness of pulp. 4,406,159., Cl. 73-63.000.

Yankulov, Ventzislav G.: *See*—
Chervendinev, Peter G.; Yankulov, Ventzislav G.; and Ostromski, Toma T., 4,406,552., Cl. 400-172.000.

Yebisuya, Takashi; Yamamoto, Masao; Kawai, Mituo; and Tajima, Koichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Martensitic stainless cast steel having high cavitation erosion resistance. 4,406,698., Cl. 75-125.000.

Yedor, Harry M., to Myco, Inc. Locking device for display rack. 4,406,374., Cl. 211-192.000.

Yeh, Keming W., to Xerox Corporation. Self-aligned MESFET having reduced series resistance. 4,407,004., Cl. 357-23.000.

Yeh, Richard S., to JRT Associates. Cards for spelling readout. 4,406,629., Cl. 434-311.000.

Yildirim, Erdal, to Cities Service Company. Method of in situ bitumen recovery by percolation. 4,406,499., Cl. 299-17.000.

Yokitis, Joseph E.: *See*—
Montone, Liber J.; and Yokitis, Joseph E., 4,406,545., Cl. 356-380.000.

Yokokura, Tsunetoshi; and Tsuchida, Tsuyoshi, to Toyo Kogyo Co., Ltd. Secondary air supply system for automobile engine having superchager. 4,406,126., Cl. 60-605.000.

Yokoyama, Isao: *See*—
Sasaki, Masanori; and Yokoyama, Isao, 4,407,000., Cl. 343-726.000.

Yoon, Han S. Removable attachment for partial denture. 4,406,622., Cl. 433-172.000.

Yoshida Kogyo K. K.: *See*—
Takahashi, Kihei; and Takeshima, Kiyoshi, 4,406,849., Cl. 264-167.000.

Yoshida, Masaaki: *See*—
Edahiro, Takao; Tanaka, Gotaro; Kuwahara, Toru; and Yoshida, Masaaki, 4,406,680., Cl. 65-18.200.

Yoshida, Tadahisa: *See*—
Takano, Yutaka; Yajima, Koji; Ishii, Takashi; Yoshida, Tadahisa; Ota, Katsuhiro; and Yagishita, Shigeru, 4,406,971., Cl. 313-461.000.

Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, to Nippon Soken, Inc. Ignition system for internal combustion engine. 4,406,273., Cl. 123-625.000.

Yoshino Kogyosho Co. Ltd.: *See*—
Yoshino, Yataro, 4,406,854., Cl. 264-532.000.

Yoshino, Yataro, to Yoshino Kogyosho Co. Ltd. Method of molding a bottle-shaped container of synthetic resin. 4,406,854., Cl. 264-532.000.

Young Dental Manufacturing Company, Inc.: *See*—
Bailey, Ronald L., 4,406,621., Cl. 433-126.000.

Yuda, Takuo: *See*—
Suzuki, Yoshikazu; Yuda, Takuo; and Nakama, Daiji, 4,406,557., Cl. 403-71.000.

Yushin Co., Ltd.: *See*—
Suzuki, Yoshikazu; Yuda, Takuo; and Nakama, Daiji, 4,406,557., Cl. 403-71.000.

Yutori, Toshiaki; and Ogawa, Rikuo, to Kabushiki Kaisha Kobe Seiko Sho. Method of making high-strength, high-toughness steel with good workability. 4,406,713., Cl. 148-12.00B.

Zadneprovsky, Boris I.: *See*—
Samoilovich, Mikhail I.; Zadneprovsky, Boris I.; Nikitin, Albert V.; Putilin, Jury M.; Radyansky, Vladimir M.; and Shaposhnikov, Anatoly A., 4,406,871., Cl. 423-446.000.

Zahner, Hans; Naegeli, Hans-Ulrich; and Peter, Heinrich, to Ciba-Geigy Corporation. 2-Pyridyl-2-thiazoline-4-carboxylic acid derivatives. 4,406,905., Cl. 424-263.000.

Zahradnik, Miles D. Coin protector for coin operated washer dryer. 4,406,358., Cl. 194-1.00A.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; and Kondo, Shinichi, 4,406,891., Cl. 424-180.000.

Zaitz, Allen J., to Oy Fiskars AB. Pinking shears. 4,406,063., Cl. 30-230.000.

Zarchy, Andrew S., to General Electric Company. Low level alkali metal detection in combustion gas streams. 4,406,154., Cl. 73-23.000.

Zhilikov, Valentin V.; Motsokhein, Boris I.; and Parfenov, Boris M. Method and apparatus for controlling drilling process. 4,407,017., Cl. 364-420.000.

Ziegler, Walter: *See*—
Oeder, Dieter; Dietsche, Wolfram; Weiss, Stefan; Ziegler, Walter; and Hettche, Albert, 4,406,705., Cl. 106-270.000.

Zinin, Evgeny F.: *See*—
Fridman, Georgy N.; Kalashnikov, Vladilen K.; Biznya, Vladimir M.; Kovarsky, Efim M.; Borisov, Boris A.; Semenov, Lev S.; Malyshev, Valentin A.; Voronin, Nikolai S.; Staskevich, Lev. N.; Zinin, Evgeny F.; Dulitskaya, Galina M.; and Shegai, Elvira R., 4,406,962., Cl. 310-233.000.

Ziobro, Daniel P., to Burroughs Corporation. Multiple event driven micro-sequencer. 4,407,015., Cl. 364-200.000.

Zoecon Corporation: *See*—
Anderson, Richard J.; and Leippe, Michael M., 4,406,689., Cl. 71-92.000.
Anderson, Richard J.; and Leippe, Michael M., 4,406,690., Cl. 71-94.000.

Zulauf, Gary B.: *See*—
Montag, John H.; and Zulauf, Gary B., 4,406,935., Cl. 200-61.820.

Zurcher, Erwin: *See*—
Negaty-Hindi, Guy; Pujol, Carlos; and Zurcher, Erwin, 4,406,115., Cl. 57-22.000.

ZVS Vyzkumnevyvojovy ustav konecernova ucelova organizace: *See*—
Vystrcil, Karel; Vasicek, Vladimir; and Kuda, Vladimir, 4,406,311., Cl. 139-435.000.

Zych, Henryk: *See*—
Pretor, Wincenty; Skoczynski, Wojciech; Janik, Edward; Zych, Henryk; and Serwotka, Ryszard, 4,406,565., Cl. 405-258.000.

Zysset, Edgar H., to Automated Container Corporation. Metallic convenience closure. 4,406,378., Cl. 220-273.000.

501 Advance Transformer Company: *See*—
Wisbey, Robert W.; and Droho, Joseph S., 4,406,976., Cl. 315-309.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF SEPTEMBER, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Albright & Wilson Ltd.: *See*—
Rooney, Terence R., Re. 31,395., Cl. 106-3.000.

Beecham Inc.: *See*—
Rodon, Maria, Re. 31,397., Cl. 424-54.000.

Bush, Terry D.; and Denen, Dennis J., to Floyd Bell Associates, Inc. Electronic audio signalling device for telephones. Re. 31,398., Cl. 179-84.00T.

Chasens, Bernard, to General Instrument Corp. Vertical coil for a deflection yoke. Re. 31,399., Cl. 335-213.000.

Denen, Dennis J.: *See*—
Bush, Terry D.; and Denen, Dennis J., Re. 31,398., Cl. 179-84.00T.

Eli Lilly and Company: *See*—
Hamill, Robert L.; and Hoehn, Marvin M., Re. 31,396., Cl. 260-112.50R.

Elliott Turbomachinery Co., Inc.: *See*—
Streifert, Keith L., Re. 31,394., Cl. 384-99.000.

Fauser, Edwin: *See*—
Schirmer, Gunter; Fauser, Edwin; and Steinke, Leo, Re. 31,392., Cl. 123-612.000.

Floyd Bell Associates, Inc.: *See*—
Bush, Terry D.; and Denen, Dennis J., Re. 31,398., Cl. 179-84.00T.

General Instrument Corp.: *See*—
Chasens, Bernard, Re. 31,399., Cl. 335-213.000.

Hamill, Robert L.; and Hoehn, Marvin M., to Eli Lilly and Company. A-21978 Antibiotics and process for their production. Re. 31,396., Cl. 260-112.50R.

Hoehn, Marvin M.: *See*—
Hamill, Robert L.; and Hoehn, Marvin M., Re. 31,396., Cl. 260-112.50R.

National Instrument Company, Inc.: *See*—
Rosen, Sidney, Re. 31,393., Cl. 141-179.000.

Robert Bosch GmbH: *See*—
Schirmer, Gunter; Fauser, Edwin; and Steinke, Leo, Re. 31,392., Cl. 123-612.000.

Rodon, Maria, to Beecham Inc. Oral compositions. Re. 31,397., Cl. 424-54.000.

Rooney, Terence R., to Albright & Wilson Ltd. Aluminum polishing compositions. Re. 31,395., Cl. 106-3.000.

Rosen, Sidney, to National Instrument Company, Inc. Star-wheel indexing system for automatic filling machines. Re. 31,393., Cl. 141-179.000.

Schirmer, Gunter; Fauser, Edwin; and Steinke, Leo, to Robert Bosch GmbH. Arrangements for electronically determining and adjusting the ignition time of an internal combustion engine. Re. 31,392., Cl. 123-612.000.

Steinke, Leo: *See*—
Schirmer, Gunter; Fauser, Edwin; and Steinke, Leo, Re. 31,392., Cl. 123-612.000.

Streifert, Keith L., to Elliott Turbomachinery Co., Inc. Flexible damped bearing assembly. Re. 31,394., Cl. 384-99.000.

LIST OF REEXAM PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Greenwood, Alden T. Diver's jacket and buoyancy control device. B1 3,436,777., 9-27-83, Cl. 405-186.000.

Ljungberg, Lars G. F., to Sandvikens Jernverks Aktiebolag. Corrosion resistant steel alloy. B1 3,337,331., 9-27-83, Cl. 148-37.000.

PPG Industries, Inc.: *See*—
Rinehart, Jay K., B1 4,294,764., Cl. 549-373.000.

Rinehart, Jay K., to PPG Industries, Inc. N-(optionally substituted 1,3-dioxolan- or dioxan-2-ylmethyl)-N-alkyl, alkenyl, or alkynyl-2,2-dichloroacetamides. B1 4,294,764., 9-27-83, Cl. 549-373.000.

Sandvikens Jernverks Aktiebolag: *See*—
Ljungberg, Lars G. F., B1 3,337,331., Cl. 148-37.000.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See*—
Larkin, Mark E., 270,761., Cl. D24-58.000.

Abbott, Scott: *See*—
Haney, Chris; and Abbott, Scott, 270,741., Cl. D21-35.000.

American Home Products Corporation: *See*—
Cassini, Oleg L., 270,701., Cl. D7-150.000.

American Standard Inc.: *See*—
DeGraw, Kenneth J.; and Nickerson, Earl W., 270,753., Cl. D23-48.000.

Anchor Hocking Corporation: *See*—
Husted, Wayne, 270,698., Cl. D7-22.000.
Pettengill, Floyd E., 270,710., Cl. D9-390.000.
Thrush, James L., 270,696., Cl. D7-11.000.
Thrush, James L., 270,697., Cl. D7-17.000.

Anderson, Monte S. Valve cap. 270,724., 9-27-83, Cl. D12-153.000.

Bakic, Dieter. Makeup stick case. 270,770., 9-27-83, Cl. D28-76.000.

Banks, Willie M., to BSM, Inc. Mitten. 270,681., 9-27-83, Cl. D2-367.000.

Barthel, John E., to First International Services Corporation. Building structure. 270,763., 9-27-83, Cl. D25-33.000.

Bechtel, Daniel L. Pistol telescope mount. 270,748., 9-27-83, Cl. D22-7.000.

Becker, Werner, to Easelte Pendaflex Corporation. Driving lever for a labelling apparatus. 270,736., 9-27-83, Cl. D18-19.000.

Benzaria, Clement. Bunsen burner. 270,754., 9-27-83, Cl. D23-77.000.

Bixler, Kenneth D.: *See*—
El-Hag, Nabil A.; Egan, Marilee D.; Bixler, Kenneth D.; and Ralphs, Robert E., 270,703., Cl. D7-357.000.

Block, Michael T. Coin bank. 270,773., 9-27-83, Cl. D99-35.000.

Bobrovniczky, Bert: *See*—
Minshall, Michael; Park, Brian; Etchegoyen, Carlos; and Bobrovniczky, Bert, 270,755., Cl. D23-97.000.

Borrer, Brian R. Striking maul. 270,705., 9-27-83, Cl. D8-77.000.

Boscacci, William, to Lucasey Manufacturing Company, Inc. Ceiling mounted support for television or the like. 270,689., 9-27-83, Cl. D6-113.000.

Bowen, Robert F.; and Martel, Thomas J., to Raytheon Company. Microwave corn popper. 270,702., 9-27-83, Cl. D7-325.000.

Brown, David S. Coal bin. 270,756., 9-27-83, Cl. D23-138.500.

Brown, Richard B.; and Vogt, Noland E., to Cardinal Scale Manufacturing Company. Printer unit. 270,732., 9-27-83, Cl. D14-111.000.

Brown, Toby R. Paint brush holder. 270,771., 9-27-83, Cl. D32-54.000.

BSM, Inc.: *See*—
Banks, Willie M., 270,681., Cl. D2-367.000.

Bulgari, Gianni, to Ditta Sotirio Bulgari Di Costantino E Giorgio Bulgari S. Ring. 270,722., 9-27-83, Cl. D11-35.000.
Bulgari, Marina, to Zoldia Anstalt. Ring. 270,721., 9-27-83, Cl. D11-35.000.
Busch, Sandra L. Infant safety seat. 270,685., 9-27-83, Cl. D6-7.000.
Cain, David E., to Halliburton Company. Field hand pump for use in the measuring of properties of drilling mud, or the like. 270,718., 9-27-83, Cl. D10-94.000.
California Cooperage: *See*—
Perethian, Charles M., 270,715., Cl. D10-40.000.
Canon Kabushiki Kaisha: *See*—
Kando, Masahiro; and Uematsu, Sakae, 270,728., Cl. D14-100.000.
Kando, Masahiro; and Uematsu, Sakae, 270,730., Cl. D14-106.000.
Cardinal Scale Manufacturing Company: *See*—
Brown, Richard B.; and Vogt, Noland E., 270,732., Cl. D14-111.000.
Carlson Dolls Co.: *See*—
Carlson, Lowell J., 270,744., Cl. D21-153.000.
Carlson, Lowell J., to Carlson Dolls Co. Eskimo puppet. 270,744., 9-27-83, Cl. D21-153.000.
Casablanca Fan Company, Inc.: *See*—
Dennis, Warren E., 270,757., Cl. D23-158.000.
Case, Richard C.: *See*—
Clarke, Neville; and Case, Richard C., 270,758., Cl. D24-10.000.
Cassai, Gino H.: *See*—
Cassai, Henry J.; and Cassai, Gino H., 270,768., Cl. D28-7.000.
Cassai, Henry J.; and Cassai, Gino H., 270,769., Cl. D28-7.000.
Cassai, Henry J.; and Cassai, Gino H. Retractable cosmetic applicator. 270,768., 9-27-83, Cl. D28-7.000.
Cassai, Henry J.; and Cassai, Gino H. Adjustable mascara applicator. 270,769., 9-27-83, Cl. D28-7.000.
Cassini, Oleg L., to American Home Products Corporation. Fork or similar article. 270,701., 9-27-83, Cl. D7-150.000.
Cincinnati Milacron Industries, Inc.: *See*—
MacDonald, John B.; and Schenkel, Jack E., 270,731., Cl. D14-106.000.
Clarke, Neville; and Case, Richard C. Orthodontic instrument for applying elastic ligatures. 270,758., 9-27-83, Cl. D24-10.000.
Cleminshaw, Douglas R., to Gray, Richard E. Handle for a hand tool. 270,706., 9-27-83, Cl. D8-83.000.
Clorox Company, The: *See*—
Weckman, Richard L., 270,711., Cl. D9-404.000.
Copron, B.V.: *See*—
De Gruijter, W. A. E. M., 270,694., Cl. D6-208.100.
Cosmo Time Corp.: *See*—
Thaler, Arnold, 270,713., Cl. D10-15.000.
Danal Jewelry Company: *See*—
Triangolo, Daniel A., 270,712., Cl. D9-457.000.
Dart Container Corporation: *See*—
Dart, Kenneth B., 270,708., Cl. D9-347.000.
Dart, Kenneth B., to Dart Container Corporation. Packaging container. 270,708., 9-27-83, Cl. D9-347.000.
Daventry, Roger. Desk with return. 270,690., 9-27-83, Cl. D6-162.000.
Davis, Edwin W.; and Zeidman, Gordon G., to Eastern Company, The. Two-piece operator head for a tool-operated lock. 270,707., 9-27-83, Cl. D8-331.000.
Davis, William J., to Interdynamics, Inc. Air compressor unit. 270,733., 9-27-83, Cl. D15-9.000.
DeGraw, Kenneth J.; and Nickerson, Earl W., to American Standard Inc. Sewerless toilet or similar article. 270,753., 9-27-83, Cl. D23-48.000.
De Gruijter, W. A. E. M., to Copron, B.V. Curtain gathering tape. 270,694., 9-27-83, Cl. D6-208.100.
Dennis, Warren E., to Casablanca Fan Company, Inc. Combined motor housing, control unit and blade holders for a ceiling fan. 270,757., 9-27-83, Cl. D23-158.000.
Diamond International Corp.: *See*—
El-Hag, Nabil A.; Egan, Marilee D.; Bixler, Kenneth D.; and Ralphs, Robert E., 270,703., Cl. D7-357.000.
Ditta Sotirio Bulgari Di Costantino E Giorgio Bulgari S.: *See*—
Bulgari, Gianni, 270,722., Cl. D11-35.000.
Drag Specialties, Inc.: *See*—
Rudd, Thomas H., 270,682., Cl. D2-431.000.
Eastern Company, The: *See*—
Davis, Edwin W.; and Zeidman, Gordon G., 270,707., Cl. D8-331.000.
EBSCO Industries, Inc.: *See*—
Gowing, James R.; and Gudermuth, Clyde S., Jr., 270,749., Cl. D22-27.000.
Gowing, James R.; and Gudermuth, Clyde S., Jr., 270,751., Cl. D22-28.000.
Egan, Marilee D.: *See*—
El-Hag, Nabil A.; Egan, Marilee D.; Bixler, Kenneth D.; and Ralphs, Robert E., 270,703., Cl. D7-357.000.
Eisinger, Robert J.; and Smith, Brian S., to Eisinger-Smith, Inc. Golfers accessory kit. 270,747., 9-27-83, Cl. D21-234.000.
Eisinger-Smith, Inc.: *See*—
Eisinger, Robert J.; and Smith, Brian S., 270,747., Cl. D21-234.000.
El-Hag, Nabil A.; Egan, Marilee D.; Bixler, Kenneth D.; and Ralphs, Robert E., to General Foods Corporation; and Diamond International Corp. Convective heating tray. 270,703., 9-27-83, Cl. D7-357.000.
Emerson, Gary P. Shoulder support for cameras or similar articles. 270,734., 9-27-83, Cl. D16-44.000.
Ericsson, Sylve J. D., to Svecia Silkscreen Maskiner AB. Beam for a stencile frame or similar article. 270,737., 9-27-83, Cl. D18-23.000.
Esselte Pendaflex Corporation: *See*—
Becker, Werner, 270,736., Cl. D18-19.000.
Etchegoyen, Carlos: *See*—
Minshall, Michael; Park, Brian; Etchegoyen, Carlos; and Bobrovniczky, Bert, 270,755., Cl. D23-97.000.
Fenne, Kenneth R., to Pittway Corporation. Remote control console. 270,725., 9-27-83, Cl. D13-12.000.
Fiam S.R.L.: *See*—
Tonucci, Enrico, 270,687., Cl. D6-29.000.
Tonucci, Enrico, 270,691., Cl. D6-175.000.
Fields, James L. Steered push toy. 270,743., 9-27-83, Cl. D21-71.000.
Firestone Tire & Rubber Company, The: *See*—
McDonald, Peter, 270,723., Cl. D12-152.000.
First International Services Corporation: *See*—
Barthel, John E., 270,763., Cl. D25-33.000.
General Foods Corporation: *See*—
El-Hag, Nabil A.; Egan, Marilee D.; Bixler, Kenneth D.; and Ralphs, Robert E., 270,703., Cl. D7-357.000.
Glawe, Robert I. Infant seat. 270,686., 9-27-83, Cl. D6-9.000.
Gonzales, Roman Y., to Gould Inc. Case for a keyboard and display unit. 270,727., 9-27-83, Cl. D14-100.000.
Gorans, Marc S., to Phillips Temro, Inc. Bypass valve. 270,752., 9-27-83, Cl. D23-19.000.
Gould Inc.: *See*—
Gonzales, Roman Y., 270,727., Cl. D14-100.000.
Gowing, James R.; and Gudermuth, Clyde S., Jr., to EBSCO Industries, Inc. Fishing lure. 270,749., 9-27-83, Cl. D22-27.000.
Gowing, James R.; and Gudermuth, Clyde S., Jr., to EBSCO Industries, Inc. Fishing lure. 270,751., 9-27-83, Cl. D22-28.000.
Granath, Bruno: *See*—
Karlsson, Lars-Gunnar; and Granath, Bruno, 270,716., Cl. D10-69.000.
Gray, Peter W., to Hepworth Plastics Limited. Window sill. 270,766., 9-27-83, Cl. D25-74.000.
Gray, Peter W., to Hepworth Plastics Limited. End cap for a window sill. 270,767., 9-27-83, Cl. D25-74.000.
Gray, Richard E.: *See*—
Cleminshaw, Douglas R., 270,706., Cl. D8-83.000.
GSE, Inc.: *See*—
Wells, Richard J., 270,717., Cl. D10-91.000.
Gudermuth, Clyde S., Jr.: *See*—
Gowing, James R.; and Gudermuth, Clyde S., Jr., 270,749., Cl. D22-27.000.
Gowing, James R.; and Gudermuth, Clyde S., Jr., 270,751., Cl. D22-28.000.
Halliburton Company: *See*—
Cain, David E., 270,718., Cl. D10-94.000.
Haney, Chris; and Abbott, Scott, to Horn Abbot Ltd. Game board. 270,741., 9-27-83, Cl. D21-35.000.
Hepworth Plastics Limited: *See*—
Gray, Peter W., 270,766., Cl. D25-74.000.
Gray, Peter W., 270,767., Cl. D25-74.000.
Horn Abbot Ltd.: *See*—
Haney, Chris; and Abbott, Scott, 270,741., Cl. D21-35.000.
Husted, Wayne, to Anchor Hocking Corporation. Bowl or similar article. 270,698., 9-27-83, Cl. D7-22.000.
Igloo Corporation: *See*—
Ruxton, Craig; and Rodriguez, Charles J., 270,704., Cl. D7-398.000.
Interdynamics, Inc.: *See*—
Davis, William J., 270,733., Cl. D15-9.000.
International Business Machines Corporation: *See*—
Lahey, Donald F.; and Molerin, Dallas G., 270,729., Cl. D14-100.000.
Jansson, Allan. Wooden sole for clog. 270,680., 9-27-83, Cl. D2-322.000.
Kalmar Last Makin Verkstad AB: *See*—
Karlsson, Lars-Gunnar; and Granath, Bruno, 270,716., Cl. D10-69.000.
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Kaufman, Jack W. Swabbing stick. 270,762., 9-27-83, Cl. D24-63.000.
Kelch Corporation, The: *See*—
Porath, Ben J.; and Manning, Daniel J., 270,719., Cl. D10-109.000.
Kemaca Trading Limited: *See*—
Sang, Chan K., 270,714., Cl. D10-33.000.
Kenin, Stephen R., to Solar Resources, Inc. Tubular extruded support and retainer for plastic sheet covers. 270,764., 9-27-83, Cl. D25-74.000.
Kenin, Stephen R., to Solar Resources, Inc. Extruded support and retainer for plastic sheet covers. 270,765., 9-27-83, Cl. D25-74.000.
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Larkin, Mark E., to Abbott Laboratories. Medical liquid container. 270,761., 9-27-83, Cl. D24-58.000.
Larson, Lynn D. Water bed mattress. 270,693., 9-27-83, Cl. D6-201.000.
Lucasey Manufacturing Company, Inc.: *See*—
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MacDonald, John B.; and Schenkel, Jack E., to Cincinnati Milacron Industries, Inc. Portable data terminal. 270,731., 9-27-83, Cl. D14-106.000.

Manning, Daniel J.: *See*—
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Mayo, Gene L. Combined holder and dispenser for rolls of tape. 270,738., 9-27-83, Cl. D19-67.000.
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McDonald, Peter, to Firestone Tire & Rubber Company, The. Tire. 270,723., 9-27-83, Cl. D12-152.000.
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Menna, Joan. Safety pouch. 270,684., 9-27-83, Cl. D3-42.000.
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Pearson, Walter C., 270,739., Cl. D19-78.000.
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Minshall, Michael; Park, Brian; Etchegoyen, Carlos; and Bobrovniczky, Bert, to Spacemaker Limited. Stove. 270,755., 9-27-83, Cl. D23-97.000.
Molerin, Dallas G.: *See*—
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Muller, Ronald L.: *See*—
Rakocy, William J.; and Muller, Ronald L., 270,699., Cl. D7-309.000.
Nickerson, Earl W.: *See*—
DeGraw, Kenneth J.; and Nickerson, Earl W., 270,753., Cl. D23-48.000.
North American Philips Corporation: *See*—
Rakocy, William J.; and Muller, Ronald L., 270,699., Cl. D7-309.000.
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Park, Brian: *See*—
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Pearson, Walter C., to Minnesota Mining & Manufacturing Company. Combined notepaper pad and pen holder. 270,740., 9-27-83, Cl. D19-78.000.
Perethian, Charles M., to California Cooperage. Timer control box. 270,715., 9-27-83, Cl. D10-40.000.
Pettengill, Floyd E., to Anchor Hocking Corporation. Jar or similar article. 270,710., 9-27-83, Cl. D9-390.000.
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Pittway Corporation: *See*—
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Porath, Ben J.; and Manning, Daniel J., to Kelch Corporation, The. Traffic control barricade. 270,719., 9-27-83, Cl. D10-109.000.
Radencic, Frank J. Motorized golf bag carrier. 270,772., 9-27-83, Cl. D34-15.000.
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Ralphs, Robert E.: *See*—
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Bowen, Robert F.; and Martel, Thomas J., 270,702., Cl. D7-325.000.
Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 270,700., 9-27-83, Cl. D7-137.000.
Rinaldo, Carmen L. Picture frame. 270,695., 9-27-83, Cl. D6-244.000.
Rodriguez, Charles J.: *See*—
Ruxton, Craig; and Rodriguez, Charles J., 270,704., Cl. D7-398.000.
Rudd, Thomas H., to Drag Specialties, Inc. Belt buckle. 270,682., 9-27-83, Cl. D2-431.000.
Ruxton, Craig; and Rodriguez, Charles J., to Igloo Corporation. Dispensing spigot for an insulated beverage container. 270,704., 9-27-83, Cl. D7-398.000.
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Vadnais, Kenneth, 270,742., Cl. D21-59.000.
Sang, Chan K., to Kemaca Trading Limited. Belt-loop and key-ring watch. 270,714., 9-27-83, Cl. D10-33.000.
Sanna, Charles A. Golf putter head. 270,746., 9-27-83, Cl. D21-219.000.
Schenkel, Jack E.: *See*—
MacDonald, John B.; and Schenkel, Jack E., 270,731., Cl. D14-106.000.
Schneider, Leo, to William Schneider, Inc. Ring. 270,720., 9-27-83, Cl. D11-28.000.
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Somers, Willard C. Combined coffee table and dual foot rail unit. 270,692., 9-27-83, Cl. D6-177.000.
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Minshall, Michael; Park, Brian; Etchegoyen, Carlos; and Bobrovniczky, Bert, 270,755., Cl. D23-97.000.
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Ericsson, Sylve J. D., 270,737., Cl. D18-23.000.
Taylor, Ronald D., Sr. Plastic jug or the like. 270,709., 9-27-83, Cl. D9-378.000.
Thaler, Arnold, to Cosmo Time Corp. Digital clock. 270,713., 9-27-83, Cl. D10-15.000.
Thompson, Robert V. Seat. 270,688., 9-27-83, Cl. D6-63.000.
Thrush, James L., to Anchor Hocking Corporation. Goblet or similar article. 270,696., 9-27-83, Cl. D7-11.000.
Thrush, James L., to Anchor Hocking Corporation. Covered jar or similar article. 270,697., 9-27-83, Cl. D7-17.000.
Tonucci, Enrico, to Fiam S.R.L. Valet stand. 270,687., 9-27-83, Cl. D6-29.000.
Tonucci, Enrico, to Fiam S.R.L. Table. 270,691., 9-27-83, Cl. D6-175.000.
Triangolo, Daniel A., to Danal Jewelry Company. Jewelry display card. 270,712., 9-27-83, Cl. D9-457.000.
Uematsu, Sakae: *See*—
Kando, Masahiro; and Uematsu, Sakae, 270,728., Cl. D14-100.000.
Kando, Masahiro; and Uematsu, Sakae, 270,730., Cl. D14-106.000.
Vadnais, Kenneth, to S & S Industries, Inc. Finger swivel. 270,742., 9-27-83, Cl. D21-59.000.
Vogt, Noland E.: *See*—
Brown, Richard B.; and Vogt, Noland E., 270,732., Cl. D14-111.000.
Voss, Thomas. Caddy for golf tees. 270,745., 9-27-83, Cl. D21-208.000.
Weckman, Richard L., to Clorox Company, The. Bottle. 270,711., 9-27-83, Cl. D9-404.000.
Weiss, Samuel. Miniature telephone enclosure. 270,726., 9-27-83, Cl. D14-60.000.
Wells, Richard J., to GSE, Inc. Electronic weigh scale. 270,717., 9-27-83, Cl. D10-91.000.
Wiley, Robert B. Whirlpool tub. 270,760., 9-27-83, Cl. D24-38.000.
William Schneider, Inc.: *See*—
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Zaffis, Eleftherious. Fishing lure. 270,750., 9-27-83, Cl. D22-27.000.
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ISSUED SEPTEMBER 27, 1983

NOTE.—First number, class; second number, subclass; third number, patent number

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CLASS 3

1.5 4,406,022
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06 : 5,110
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5,112
48 : 5,109

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